



EduScience UK
We Contribute To Future Education



General Science Catalogue

+44 (20) 38685740

www.eduscienceuk.com

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EduScience UK
We Contribute To Future Education

“COMPLETE SOLUTIONS OF EDUCATIONAL SUPPLIES”

EduScience is a UK based science equipment's Manufacturer, partnered with Reputed Science Education Factories one of the oldest established companies in the field of science education. It was foremost in the development of the Nuffield Science Project acting as consultants to British Government to revolutionize science teaching across the world.

EduScience provide the highest quality and support service possible to meet today's demands from science education.

- Design, bringing new equipment to school's laboratories
- Manufacture, state of the art manufacturing
- Quality and Safety, all products meet or exceed all EU and international regulations on safety, quality and performance
- Curriculum Relevant, focused on products precisely matched to your curriculum requirements
- Technical Support, through advice, teacher and technician training and field support in your school.

More than a supplier of Science Education Supplies

Technical Expertise

Our team consists of specialists in Physics, Chemist and Biology as well as ICT and Math

As a designer and manufacturer, we understand the equipment you have in your lab.

We can provide advice and experimental notes, spare parts, repair and calibration.

Specialist in the Field

Everything one needs for teaching science including laboratory design and furniture.

Confidence Builder

Our teaching notes help with lesson planning and our support team is on hand to build teacher confidence and remove the feeling of isolation for specialist and non-specialist teachers.

Apparatus matched precisely to your Curriculum

Spend your budget wisely, buy purchasing relevant equipment. We match apparatus to your practical lesson requirements exactly to your curriculum needs.

International Regulations

Our rigorous Quality Assurance policy means that all of our products usually exceed those in place throughout the world.

Product Development

A progressive development programmer ensures that science teaching keeps in step with progress to provide your students with the experience of higher education, industry or research.

EduScience with Its heritage has always been about progressive design and development since the 1960s. and continues today offering curriculum development to Governments around the world and produces bespoke equipment to meet their specific needs. You can tap into this vast experience and knowledge.

PRODUCTS

From Analogue Meter to Zoological specimens, a true comprehensive provider of everything you could need for your lab whether an established or brand new facility.

STEM

- Science, specialist in integrating science into Technology, Engineering and Math
- Technology, from design through to robotics, data logging and cross curricula links
- Engineering, the latest technology from 3D printing to workshop resources
- Math, designed by educationalist and maths experts with software and practical lessons

Stem Kits,

For teachers with busy schedules EduScience STEM kits help lesson planning and preparation leaving you more time to inspire your students with exciting resources.



ROBOTICS

The buzz word around the world today, is Robotics, even if students are not destined to work in the field a knowledge of robotics is essential for an understanding of industry and even domestic applications

EduScience robotic kits help students to develop problem solving ability and logical thinking skills while learning about robotics and science principles.

SCIENCE DATA LOGGING AND SENSORS

Our innovative new data logging system using Data logger and direct USB sensors and our specialized software for data capture and analysis making science much more easy and joyful.



PRACTICAL PHYSICS

Take the fear out of leading practical physics lessons. Using EduScience Kits or teaching systems provides easy to prepare practical lessons in your lab which inspire the students and enhance their learning experience.

EduScience Kits or teaching systems cover every area in physics

Electricity, Electrostatics, Optics, Energy, Alternative Energy, Atomic and Nuclear, Forces etc.

CHEMISTRY LAB RESOURCES

EduScience offer complete range of chemistry lab equipment's including glassware, Chemicals and disposables we keep many of those products in our store to cater the immediate needs.





BIOLOGY LAB RESOURCES

EduScience have produced a complete comprehensive range of resources for practical work for biology students from elementary to high school to first year teaching labs in universities.

As experts in the field of microscopy we can offer training for teachers and technicians in the application for microscopes and maintenance

ENVIRONMENTAL AND FORENSIC SCIENCE.

Environmental science along with the study of forensics grips the imagination and curiosity of students across all age ranges.

EduScience Kits and models support student's learning of principles, concepts and methodology. All of these skills are transferable within current curricula. Our Kits, excite and inspire as well as supporting teachers in lesson planning and reducing technical time in preparation and lesson management.



EDUCATIONAL AND LABORATORY FURNITURE

EduScience produce complete range of laboratory and class room furniture's in standard and custom made, we promise to provide you comprehensive furnishing solutions that convert your school into a place where everyone feels comfortable. It's also our challenge to remain committed to setting new standards in quality, design, and service.

PRIMARY EDUCATION SCIENCE AND MATH

EduScience aim is to support teachers by providing unique, high-quality educational tools that enhance instruction and provide engaging learning experiences that meet children's individual needs. EduScience versatile products include play and learning activity sets, manipulatives and games that build foundational skills in all subject areas through exploration, imagination and fun.



SMART MATERIAL AND FUN SCIENCE

EduScience have been working with teachers and educational specialists to deliver playful learning experiences that bring subjects to life in the classroom and make learning fun and impactful. We have a wide range of physical and digital educational resources that encourage students to think creatively, reason systematically and release their potential to shape their own future.

SERVICES



TEACHER AND TECHNICIAN TRAINING

We provide comprehensive teacher training program and lab technicians with hands on experiments

CURRICULUM DEVELOPMENTS

We work with Ministries of education worldwide to identify the best bespoke scenario for developing science, mathematics and technology education curriculum for their country, to support national aims and objectives. And introduce STEM concepts that complement the current curriculum

MICROSCOPE SERVICING

Our experienced engineers are able to service your microscopes.

BALANCE SERVICING

Our experienced engineers will service your balances and ensure that they are accurately calibrated.

PROJECTS HANDLING

We have a wealth of expertise identifying your needs and according to your curriculum requirements, packing, delivering with our own transport, and helping you unpack and check off your new laboratory equipment.













HAZARDOUS CHEMICAL WASTE DISPOSAL

We employ a specialist team of chemists to pack and label hazardous chemicals ready for removal. Our trained ADR drivers will then transport to a registered waste station, and we provide full documentation for your peace of mind.

CLASSROOM AND LABORATORY REFIT

We use a professional furniture manufacturing company to assess your needs and design a tailored solution, using your chosen materials, including modern and innovative designs

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How to order

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Our Team is here to Help!

If you have questions about orders, products, services, or would like to place an order by phone, or email, Customer Service is ready to assist you.

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- Email: Services@eduscienceuk.com

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Forward your quotation requests to the attention of our Quotations Department via mail, or email. You can speed up the quote process by emailing your inquiry list to our Quotations Department. Or through our contact form in the website or mail, please include a contact name, your complete address, and your fax and telephone numbers, products name, required qty and our product number

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- Email: sales@eduscienceuk.com

Quotations Department

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United Kingdom



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For customers outside the United Kingdom, forward your quotation requests to the attention of our International Quotations Department via mail, fax, or email. or through our contact form in the website, please include a contact name, your complete address, and your fax and telephone numbers, products name, required qty and our product number

For more detailed information about International ordering, please read the following international ordering information

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International Quotations Department

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Emergencies

In the event of a serious spill, contamination, ingestion, or other emergency situations,

Please call +44 7796264499 (8am to 5pm, ET, Monday-Friday).

International Ordering

EduScience Serves the World!

For over 60 years, EduScience UK Ltd Company has served the needs of educators and distributors in more than 70 countries worldwide. This level of experience and world-class support means that EduScience understands your unique needs.

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1. Please send us your inquiry by email to Salesint@eduscienceuk.com
 2. Make sure to put your complete contact information
 3. Please indicate your inquired products qty and unit
 4. Please indicate your bid closing date
- . Please allow up to 2 business days for us to review your request and get in touch with you. You may also provide inquiry details to us via contact us form in our online. Platform

Our International Sales Team is ready to help you

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Braintree, Essex-United kingdom

Does EduScience Have a Distributor in Your Country?

1. If you would like to be referred to a EduScience distributor in your country, or if you are interested in becoming a distributor for EduScience, please send an email to Salesint@eduscienceuk.com

Special Considerations about Placing International Orders

Please be aware that on all international quotations, shipping charges and product specific fees may apply. Because of the complexity of international orders, EduScience's experienced International Sales team can assist you with the quote and order process, and can advise you on products that require special requirements prior to being exported:

- UK Fish & Wildlife
- Hazardous materials
- Agricultural products
- Voltage requirements

Note: Custom's related "taxes and duties" are your responsibility and are not paid for by EduScience UK Ltd Company.

Payment Options

Purchase Orders & Net 30 Accounts

If your school or organization in the UK has Net 30 payment terms with EduScience, you will be able to enter a Purchase Order during Checkout. If you are not sure if you have an account, please Contact us accounts@eduscienceuk.com (8am - 5pm, ET, Mon-Fri). If you are a new customer and wish to apply for credit, please call our accounts and fill our Credit Application form.

Credit Card Payments

All online customers may purchase securely with a credit or purchasing card during Checkout. When you place an order, EduScience UK Ltd Company authorizes your credit card to make sure sufficient credit is available. A hold is placed on funds equal to your order total until the order is shipped. When you shop at EduScience.com, you can rest assured that you or your institution's credit/purchasing card and personal information is completely safe and secure. We currently take the following credit cards on our website:

- MasterCard
- Visa

International Letter of credit Payments

When goods value above 10,000 USD then payments of goods can be made by letter of credit we would like to ask that particular attention to be given to the following when instructing your bankers. Adherence to this point will avoid delays or inconvenience and the expenses of amending letters of credit

The credit must be:

In favor of Edu Science uk
Irrevocable and Confirmed
Payable at 100% at sight

For the full value of the order
Claused to allow partial shipments
Claused to all transshipment

Payable against the usual documents evidencing shipments from agreed Port/Airport

Allowing 21 days from shipments date for personation of documents



Prepayments

To prepay send Telex transfer or money order with your purchase order, call us for exact shipping charges in advance or add your courier account number.

All payment to be in USD to Edu Science UK bank account.

Shipping Information

Shipping Methods for Online Orders

We offer three convenient shipping methods for online orders. Please note that many products can only ship using limited shipping methods, such as living/perishable items, which can only ship Second Day or Overnight. Please see details lower on this page.

Standard delivery—Orders arrive in 15-20 business days.

Shipping Rates and Fees

Shipping rates and handling fees are based on the type of purchasing you are doing. See Shipping Information for Special Item Types for details.

All Customers - our sales specialist will calculate your freight and handling charges based on the weight of the items in your order and the

distance to your shipping destination.

Schools, Institutions, and Organizations - for qualified customers, our website will calculate your freight & handling charges based on the weight of the items in your order, the destination/distance, and your freight terms and discounts.

During Checkout, you will see a Freight & Handling total for your entire order. You must be logged in and your User Profile must be associated to your school in order to get the appropriate freight terms and applicable discounts.

Shipping Information for Special Item Types

Hazardous Materials

The shipment of many hazardous items is regulated by the UK Department of Transportation. Items subject to regulation are identified by one of three hazardous material icons on our website. Hazardous materials shipments incur an additional transportation fee which is charged by the carrier.

Orders for hazardous materials (and kits and sets containing these items) can only be accepted from schools, research institutions, medical facilities, and businesses. Hazardous materials cannot be shipped to individuals, homeschoolers, and other customers, but there is often a safe item that can be substituted.

Drop-Shipped Items

Some of our items are drop-shipped directly from the manufacturer. Drop-shipped items vary in their shipping timeframes and this information is available on the item's detail page—such as "This item ships from the manufacturer and will arrive in 4-6 weeks". These items are also separated from in-stock products on the Shipping Methods step of Checkout.

Backordered Items

When an item is not in stock, but we have more on the way, you can backorder the item. Backorder information along with the expected availability date is provided at the order confirmation stage

The EduScience Pledge: 100% Satisfaction Guarantee

All of our products are unconditionally guaranteed. If for any reason you are not satisfied with any item, you may return it for a replacement, a refund, or credit. It's that simple.

Return an Item

- Contact Customer Service at + 44 1376340506 or info@eduscienceuk.com (8 am to 5 pm, ET, Monday–Friday).
- Have your purchase order number and EduScience Performance invoice/confirmed order number available.

A Customer Service Representative will give you a Return Authorization Number and any additional instructions. The number allows us to quickly credit your account or credit card once the item has been returned and processed.

Items not in Resalable Condition

Items not in resalable condition cannot be returned unless damaged or defective. Items held more than 1 month and returned in resalable condition are subject to Preapproval and a 25% restocking fee.

Drop-Shipped Items

For drop-shipped items (such as furniture or equipment), a 25% restocking fee will apply if you return the product for any reason other than shipping damage or manufacturing defect. You are responsible for shipping the product back to the manufacturer in resalable condition and in the original packing

Product highlights



1M Tall Robot For Research And Developments

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ESR61107

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Robot Basic Combination

Cat.No
ESS60903

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Industrial Automatic Manufacturing Line

Cat.No
ESS60946

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Human Muscular Skeleton Model with Ligaments

Cat.No Page No.

ESB51038 96



Flexible Spinal Column Model With Colour Coded Regions

Cat.No Page No.

ESB51061 100



Mitosis Cell Model

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ESB51391 126



Microscope USB Digital With 3.5" Screen

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ESB52743 159

Product highlights



Electricity and Magnetism Kit 3

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Resonance Tube And Complements, Set

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ESP60343	448



Ripple Tank With Digital Stroboscope

Cat.No	Page No.
ESP60279	437



Aerodynamics Kit

Cat.No Page No.
ESP60193 430

Alternative Energy Conversion, KIT

Cat.No Page No.
ESP59972 415



WiLab Wirless Senser Connector

Cat.No Page No.
ESD50159 49



Planck's Constant Compact Apparatus

Cat.No Page No.
ESP60669 467

Product highlights



Bunsen Burner

Cat.No Page No.
ESL57367 **504**



Balance Digital Analytical

Cat.No Page No.
ESL57683 **517**



Water Still 4 Ltr /Hour Metal Element

Cat.No Page No.
ESL58353 **542**



Hot Plat Magnetic Stirrer LCD

Cat.No Page No.
ESL58441 **548**

Mobile Science Bench

Cat.No Page No.
ESA62324 **554**



Charging Cabinet

Cat.No Page No.
ESA62414 **562**





EduScience UK



ROBOTIC & STEAM



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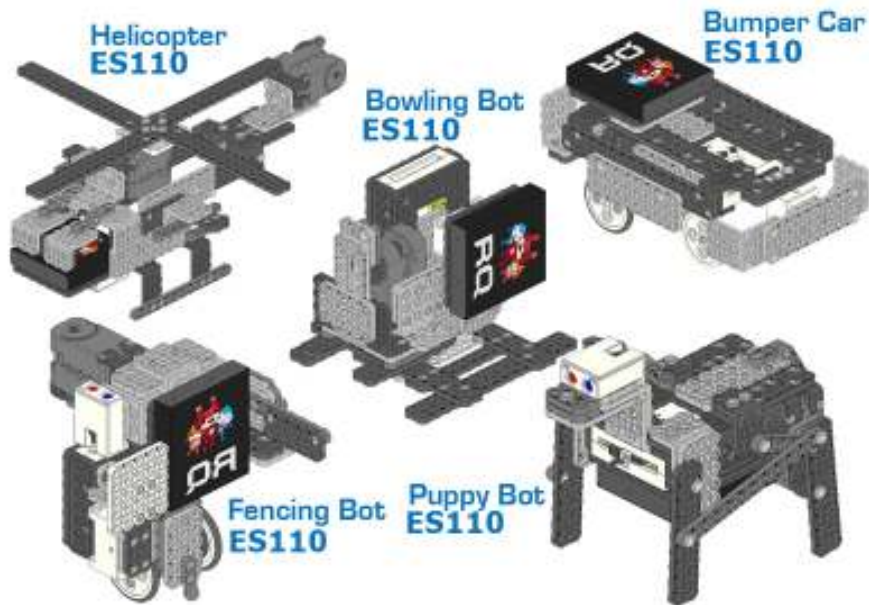
ROBOTIC & STEAM

- Robotic Kit
- Humanoid Robot
- Steam Activity Kits
- Technology



Robot Construction Kit Introductory Level

Reconfigurable, upgradable(ES110 & ES120 & ES130) and programmable kit



Programmable Kit

Kit for kids and parents.
 Robotic construction kit for robot and coding education.
 10 different robot models in each level (Total 30 models).
 Includes sensors: IR, sound, touch and more.

Includes a workbook for basic principles and assembly.
 Includes a coding book for Scratch coding.

ES Robotic KIT is an educational robot kit for kids and parents or school education. It is consisting of 3 connected levels and each level comes with 10 different robot models with instructions. ES KIT helps children to develop problem solving and logical thinking skills while teaching them about robotics, science principle and coding.

For more and higher level of examples, try ES 120 and ES 130 as they comes with more servo motors, frames, sensors and more interesting robot models.

Robot Construction Kit Introductory Level 1 ES110



Consist of the following :

10 Robot examples
 Main parts: DC motors x 2, Touch Sensor, ESR Controller, IR remote controller, Battery case (4 x AAA: Not included), Assembly tool.
 Compatibility with ES KIT parts and frames.
 Book: Workbook, Scratch coding book

Robot Examples:

- Punching Bot
- Cultivator
- Swing Bot
- Fish Bot
- Rolling Bot
- Helicopter
- Bumper Car
- Bowling Bot
- Puppy Bot
- Fencing Bot.

ESR61101

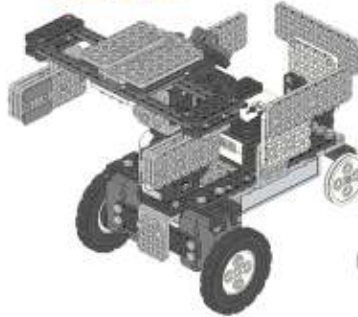


Robot Construction Kit Upgrade Level 2 ES 120

Bug Bot
ES120



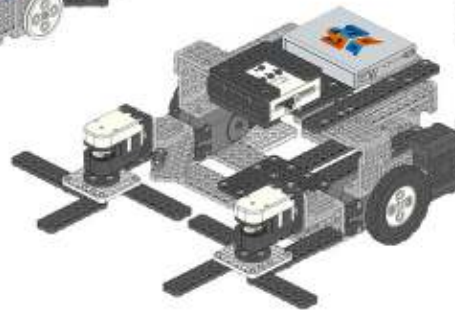
Transport Bot
ES120



Shooting Bot
ES120



Crayfish Bot
ES120



Cleaning Bot
ES120

Consist of the following :

- 10 Robot examples
- Main parts: Smart servo motors x 2, LED, Touch sensor,
- Soccer ball, Big gears, Tires
- Book: Workbook

Robot Examples:

Battle Bot
ES120



Black/White Flag
ES120



Walking Bot
ES120

Soccer Bot
ES120



Side Car
ES120



- Battle Bot
- Black/White Flag
- Walking Bot
- Side Car
- Soccer Bot
- Bug Bot
- Transport Bot
- Shooting Bot
- Crayfish Bot
- Cleaning Bot.

ESR61102

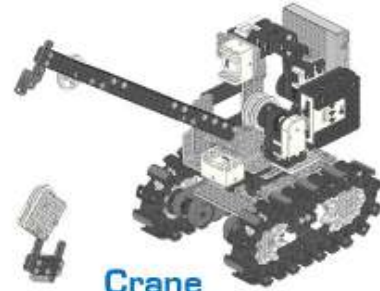


Robot Construction Kit Upgrade Level 3 ES 130

Curling Bot
ES130



Exploration Bot
ES130



Crane
ES130



Excavator
ES130



HU Tank
ES130

Consist of the following :

- 10 Robot examples
- Main parts: Smart servo motors x 2, IR sensor,
- Battery case, Serial board, Dice, Caterpillar
- Book: Workbook

Robot Examples:

Tank Bot
ES130



Four-Wheeled Bot
ES130



Dino
ES130



Vulcan Bot
ES130



Fork Lift
ES130

- Tank Bot
- Four-Wheeled Bot
- Dino
- Vulcan Bot
- Fork Lift
- Curling Bot
- Exploration Bot
- Crane
- Excavator
- HU Tank.

ESR61103





Highend Humanoid Robot Kit(Assembly Kit)

16 Servo motors(w/CK Exclusive Actuators)
 Obstacle/Sound Detection and Acceleration Sensors
 Control by Android Apps (Blue-tooth)
 Programmable by various platforms

FEATURES

Obstacle Sensor
 Remote Control
 Sound Detection Sensor
 Acceleration Sensor
 16 Servo Motors (LED Illumination)
 UART Serial Communication
 Quick and simple joint assembly
 160 Degree of Freedom
 3 Different sensors for creative programming

SPECIFICATION

Size/Weight:28.5x17x5x10.5cm/1.25kg
 DOF (Degree of Freedom):16 servo motors
 IR sensor : Obstacle detection
 Sound sensor : Sound detection
 Acceleration sensor : Gravity detection
 Battery(11V Li-poly):30 minutes Approx.
 Blue-tooth : Optional
 External case : Engineering plastic.

ESR61106





Humanoid Robot Kit(Pre-Assembles)

For Robot education and hobby
Kit for people of age 12 and older.
Programmable by SCRATCH.
Easy assembly and programming guide.
Includes sensors: IR and sound sensor.
16 degrees of freedom.

FEATURES

All round robot kit for education, entertainment, robot soccer and competition.
Easy step by step assembly guide for beginners.
Patented joint connection method.
Includes IR and sound sensor.
Includes programming examples for Motion builder and Scratch builder software.
Compatibility with ES Robotic KIT parts and frames.
Includes IR remote controller (Game pad type).

ES Robotics Smart controller

Processor: ARM Cortex™-M3
Core/speed: 32bit/24MHz
Memory: 64KB
Voltage: 2V ~ 3.6V
Internal Mic/Buzzer
Servo, motor and sensor ports

SPECIFICATION

Height / Weight: 19cm / 620g
DOF (Degree of Freedom): 16 degrees of freedom
IR sensor : Obstacle detection
Sound sensor : Sound detection
Sound output:9 melody songs
Battery (11V Li-poly):Operation: 50~60 Min Approx.
Blue-tooth :Supported.

ESR61105





Humanoid Robot Kit (Assembly Kit)

For Robot education and hobby
 Kit for people of age 12 and older.
 Programmable by SCRATCH.
 Easy assembly and programming guide.
 Includes sensors: IR and sound sensor.
 16 degrees of freedom.

FEATURES

All round robot kit for education, entertainment, robot soccer and competition.
 Easy step by step assembly guide for beginners.
 Patented joint connection method.
 Includes IR and sound sensor.
 Includes programming examples for Motion builder and Scratch builder software.
 Compatibility with ES Robotic KIT parts and frames.
 Includes IR remote controller (Game pad type).

ES Robotic Smart controller

Processor: ARM? CortexTM-M3
 Core/speed: 32bit/24MHz
 Memory: 64KB
 Voltage: 2V ~ 3.6V
 Internal Mic/Buzzer
 Servo, motor and sensor ports

IR sensor : Obstacle detection
 Sound sensor : Sound detection
 Sound output:9 melody songs
 Battery (11V Li-poly):Operation: 50~60 min Approx.
 Blue-tooth : Supported.

ESR61104

SPECIFICATION

Height / Weight: 19cm / 620g
 DOF (Degree of Freedom): 16 degrees of freedom



1M Tall Robot For Research And Developments

Multi-purpose Humanoid Robot Platform
 Well-proportioned 1m tall humanoid robot.
 Walking algorithm for biped humanoid robot.
 Fall detection algorithm utilizing a 9-axis IMU sensor.
 Fully support soccer mode for Robocup competition.
 300FPS vision processing

FEATURES:

Front

Vision Camera microphone
 Speaker
 Cooling Fan
 Expandable Hand Module
 Expandable FSR Module

Back

Power and Emergency Switch
 MU 9 Axis
 Built-in PV
 Interface Module
 Battery Pack
 Main battery switch and DC Power Input

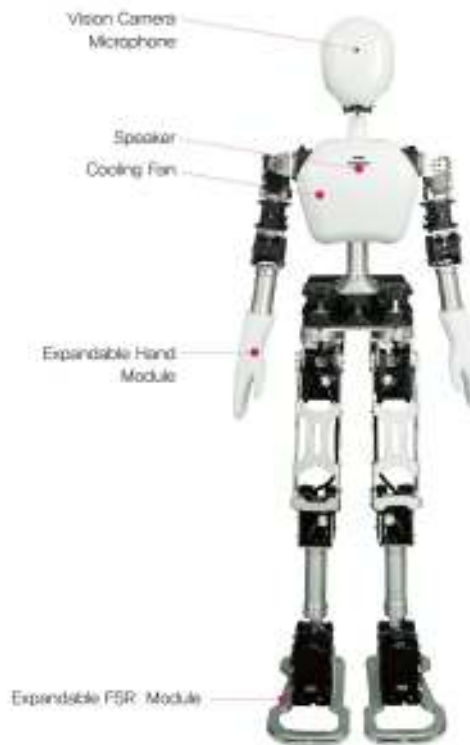
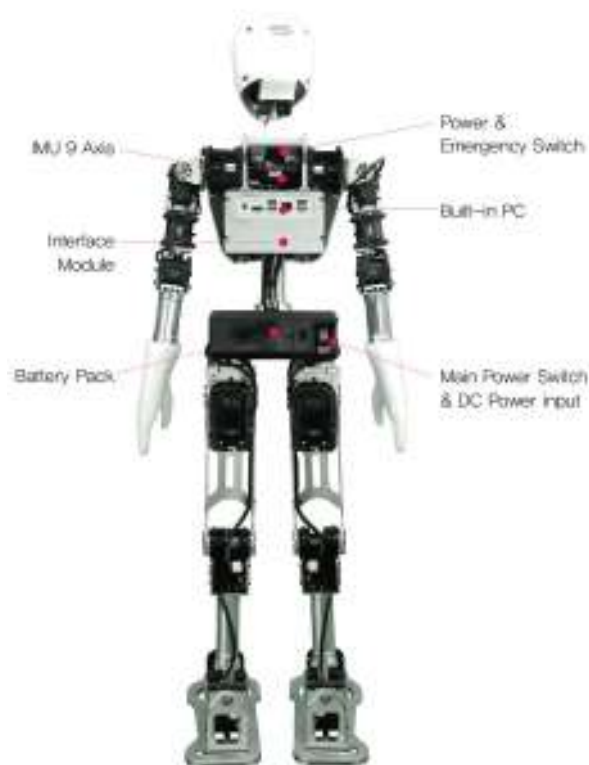
SPECIFICATIONS:

Weight:9.5kg
 Height:100 cm
 Width:35 cm
 DOF (Degree fo Freedom):23 DOF
 12 DOF for legs
 8 DOF arms
 1 DOF for waist
 2 DOF for head
 Sensor : IMU 2G 9Axis, ?180?(Roll/Yaw), ?90?(Pitch)
 Wireless:802.11 b/g/n
 External interface:USB2.0 x 2 , Ethernet 10/100/1000 Base T,USB3.0 x 2,
 HDMI x 1



Speaker:1 ea
 Microphone:1 ea
 Vision Camera : Logitech C905 / HD 1600x1200 pixel
 Battery : Lithium Polymer 18.5V, 2250mA
 Operation hour:20min ~ 40min
 Charging time:30min
 O/S: Window7; Linux Ubuntu 14.04.

ESR61107



Skrbot

Skrbot: playful companion, a robot developing along with a child's skill

Models of programmable robots with 40 indicated mobile app and driving in CV++

Skrware offers specially designed electronics kit, which act as Skrbot's brain, enabling to build any personalized construction and keep upgrading it

Users can either purchase a 3D model via 3DPrinter and print it themselves or buy a DIY Skrbot Kit

Skrware is developing a series of modular electronic bricks responsible for indicated functions, automatically recognized by the Skrbot App



ESR61117

Skrbot: personalized & programmable robot

Skrbot can be upgraded with new electronic parts and brick modules, developing along with children's skills

The image shows three different configurations of the Skrbot robot. From left to right: 1) A basic configuration with two large wheels and a gripper. 2) A configuration with a single large wheel and a smaller wheel, possibly for a different movement style. 3) A more complex configuration with multiple sensors and a gripper.

Drive around	Follow the line	Avoid obstacles	Grab and carry
move Skrbot whenever you want with a set of motors	code Skrbot to follow any path you set for it	develop Skrbot so that no obstacle stops it on its way	use the gripper to move objects on your way

Skrbots App

Skrbots App: a personal mobile Skrbot controller with a programming interface

Skrbots App is a mobile app that breaks the barriers to programming by making complex problems much easy to understand, logical way with a user-friendly block-coding interface

Skrbots App is required to communicate with every Skrbot browser:

- Work mode** - where users code Skrbot's functions while learning programming with a simple, graphic interface
- Play mode** - where the app is used as a remote control of a robot, drone or droid



ESR61118





Orbit Material for Mathematics Class Set

“No matter what geometry topic your students are learning, there is a place for a set of Orbit Material for Mathematics.”

ATM Equipment Review.

Completely revised and updated in 2012, the Orbit Material for Mathematics provides a flexible and fun hands-on construction resource with which to teach a wide range of curriculum topics from lower primary to secondary school.

Using this material, pupils will be able to explore the features and properties of a wide range of 2D and 3D geometric shapes and patterns, following the simple instructions and visual guides on the work cards. Topics for study include simple polygons and polyhedra, complex polyhedra and duals, angles, tessellations, number patterns, symmetry and perimeter.

Class set includes: 406 moulded joiners, 680 straws, 74 work cards and teachers notes. Please note colours of joiners may vary from those pictured.

The material is compatible with the Construct-o-straws™ construction sets, kubic bubbles and Orbit molecular modelling sets.

The set is particularly suitable for extension work, gifted and talented students and can be used for extra curricular activities such as engineering clubs..

ESS60846



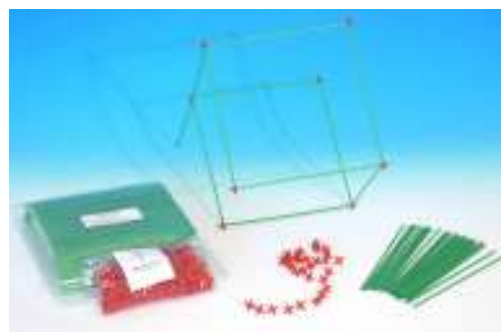
Construct-O-straws Class Pack

The very young are attracted by the bright colours and easy method of joining pieces together. Older children are intrigued by making more complex models. The system imposes very few restrictions on a child’s imagination, which allows them freedom of expression in a three dimensional medium.

Contents packed in a plastic bag

180 coloured straws, 108 joiners, 4 wheels, 8 bases / large wheels.

ESS60848



Maths and Art Kit

Special starter pack based on the Maths and Art project run by Devon Learning & Development Partnership in association with sculptor Simon Thomas.

Pre-packed angular nodes and flexible straws to enable follow up and extension work based on the Maths and Art Project.

Contains 500 Minit Oxygen OI joiners and 1000 Minit green straws..

ESS60849



Cubic Bubble Set

Soap film always makes the shape with least surface area. With this Kubic Bubble set you can make unusual and complex three dimensional film shapes supported by cubes, tetrahedrons, octahedron’s, and triangular prisms.

Pupils will love constructing the sets and making film shapes. Use the sets to discuss a variety of scientific and mathematical principles, from basic geometry to surface tension, light refraction and minimum energy surfaces.

This set includes the pieces to make 1 set of 4 frameworks - tetrahedron, cube, prism & octahedron. Supplied with teachers notes and suitable from primary to higher level education depending on the topics studied..

ESS60847



Minit Buckyball activity kit

A fascinating group activity using free lecture material from Professor Sir Harry Kroto. Each pack has 100 kits making it a great outreach or extension activity in addition to using in the classroom.

The Buckyball kits use the Minit molecular modelling system.

Each kit makes either a C60 ‘buckyball’ or C70 ‘rugby-ball’ fullerene. The diameter of the assembled C60 model is 12cm.

ESS60850





Science and Technology Innovation Kit

Contain more than 200 components, which can make twelve standard reference models: three motorcycles, three tractors, three cars, three aircrafts, etc. This model can cultivate students' operational ability and cognitive and thinking ability. Besides, it can also arouse students' interest in products and inspire their innovative thinking ability and exploring consciousness.

Size : 43*32*8 (cm).

ESS60851



Bionic Combination

Contain more than 300 components, which can make six standard reference models: bipedalism chicken, quadruped dog, cattle, six foot reptile, etc.

These six standard reference models simulate and imitate natural animals with two, six or more feet. They also imitate the correlation and methods of controlling among joints when animal walks.

Students can grasp knowledge of different mechanical transmissions and structures like crank connecting rod. It enhances their ability to use knowledge flexibly and understand basic knowledge of bionics.

Size : 43*32*8 (cm).

ESS60853



Universal Combination of Structural Basis

Contain more than 400 components, which can make forty-one standard reference models: tricycle, trolley, single axle tractor, truck, tractor, racing car, garage with car, lifting platform with car, TV Tower, fan, windmill, aircraft, etc.

By putting together different structures, students can understand basic knowledge of machine and engineering. For example, this model can let students get a general knowledge of gear transmission, lever principle, pulley principle, relationship between structure and force and structural stability.

Size : 43*32*8 (cm)

ESS60852



Sanitation Clean Machinery

Contain more than 310 components, which can make five different types of sanitation vehicles. Good tool for students to master comprehensive application of chain drive and belt drive, as well as basic elements of vehicle design.

Size : 43*32*8 (cm).

ESS60854





Super Intelligence Remote-control Crane Combination

Contain more than 2000 components, which can make three standard reference models: large-sized movable Longmen crane, heavy duty crane, crane for architectural construction. Arm of each model is over 1.1meters and equipped with wireless remote control system. This combination can support four-control signal, four-independent motor and drive, so that we can realize manual control, electric control and wireless control. The skip can lift down and up, move back and forth. The arm can rotate 360 degrees at freedom.

By assembling the production line, students can know block and tackle, lever, transmission, and wireless control well. The combination is based on structural engineering, mechanical engineering and electrical comprehensive application

Size : 43*32*8 (cm)

ESS60856



Engineering Machinery

Contain more than 740 components, which can make five standard reference models: radar vehicle, four-wheel track drive engineering vehicle, road wrecker, snow removal truck, and bulldozer.

Students can understand characteristics of engineering machinery and its application in special environments. This is a wonderful guide for students to think about how to design special-purpose machines.

Size : 43*32*8 (cm)

ESS60855



Mechanical and Structure

Contain more than 360 components, which can make thirty standard reference models: transmission rail, turntable, crank transmission mechanism, gear transmission mechanism, mobile lifting ladder, lifting machine, etc.

Students can understand power transmission model and gear shift of the car, calculate gear ratio, analyze the realization of car steering, grasp working principle of rear wheel drive and four wheel drive and differential gear.

Size : 43*32*8 (cm)

ESS60857





Energy Technology

Contain more than 260 components, which can make eight standard reference models: hydraulic forging machine, hydro generator, wind turbine, solar pump, solar guidance device, solar energy rotary cradle, etc. This combination elaborates correlative knowledge of natural energy. Participants can understand how's electricity produced, stored and drive these models. It contains solar energy, wind energy, water energy, etc. With this unit, participants can also understand conversion and utilization between various energies; Advantages and disadvantages of various energy; Definition, calculation, work and power calculation of energy; storage of energy, etc. Hence, we can cultivate students' environmental consciousness and understand the use of clean energy in the low carbon economy development.

Size : 43*32*8 (cm)

ESS60858



Electronic Technology

Contain more than 300 components, which can make sixteen standard reference models: flashlight, logic gating circuit, refrigerator light, stair floodlight, circuit tester, elevator, series-parallel circuit, simple flashlight, signal beacon, punching machine, lamp controller, automatic door, alarm equipment, electric fence gate, hand dryer, sorting machine, etc. It covers correlative knowledge of electronic technology, application and detection of sensor, single chip microcomputer and programming, etc. By using this equipment, participants can understand simple circuit and application and detection of all kinds of sensors.

Size : 43*32*8 (cm)

ESS60860



Pneumatic Technology Portfolio

Contain more than 400 components, which can make nine standard reference models: pneumatic lifting platform, air compressor, pneumatic sliding door, pneumatic turntable, linear pneumatic feeding device, pipe laying machine, etc.

It covers correlative knowledge of pneumatic technology. With this model, participants can know the working principle of air produces motion, transmission of force, press, pressure, cylinder, charging valve, manual valve, etc.

Size : 43*32*8 (cm)

ESS60859



Industrial Technology Revolution

Contain more than 270 components, which can make twelve standard reference models: safety elevator, motor, generator, helicopters, wiper, Morse telegraph, hair hygrometer, cardan shaft, etc. Students can know how industrial technology revolution changed and improved people's life during Renaissance period. With this, students' interests in inventing and creating will be cultivated; the capacity of applying knowledge will be increased.

Size : 43*32*8 (cm)

ESS60861





Leonardo Da Vinci machinery

Contain more than 230 components, which can make ten standard reference models: wing, forge tongs, crane with braking claw, catapult, chariots, ladders, revolving bridge, etc. Students can experience the relationship between art and design, innovative thinking and mechanical structure by making different models.

Size : 43*32*8 (cm)

ESS60862



Cantilever crane

Contain more than 670 components, which can make three different types of cantilever cranes. Through piecing these models, students can know correlative knowledge about machine, force and lever block and tackle, motor control. It can also cultivate students' thinking ability and problem solving ability.

Size : 43*32*8

ESS60863



Ball Traveling Kits

ESS60864



Housekeeping Kits

The kit contain 50 kinds of parts, using more than 170 components to be able to stitch and create different Robots : home guards, cleaning robots, lawn robots, feeding robots and other 4 standard models and their instructions. All robots are wheeled stitching. The main device deceleration Metal Gear motor 3, voltage 9V, speed 128 rpm, load torque 0.4 kg.cm, high-speed motor 2, voltage 9 V, speed 8900 rpm, 4 fan 2, Flame sensor 1, Gray-scale sensor 2, seven lanterns 1,

Bluetooth sensor 1 and provide programmable app control software, rechargeable wireless camera 1, focal length 3.6 mm, support 5 meters away from black and white Night vision, 4 light-free infrared lights, with mobile alarm function, wireless monitoring, wireless remote control function, fire warning, independent inspection of remote alarm function



TRC Controller Kit Included

ESS60866



Darwin Bio Kits

This Kit contain 52 Kinds of parts, using more than 340 components can be stitched together so you can create different Models including : dog, Scorpion, Meerkat, Dragonfly, Mandrill and other 5 standard models and their guidance books. All robots are wheeled stitching. The main device deceleration Metal Gear motor 2, voltage 9V, speed 128 rpm, load torque 0.4 kg.cm, ultrasonic sensor 1 detection distance 7-250 cm, gray-scale sensor 2, seven lights 1, Bluetooth sensor 1 and provide programmable app control software, rechargeable wireless camera Focal length 3.6 mm, support 5 meters away from black and white Night vision, 4 light-free infrared lamps, with mobile alarm function, wireless monitoring, wireless remote control function, fire warning, independent inspection of remote alarm function.

ESS60865



Motion & Energy Kits (Exploratory)

ESS60867





Remote Control Kit

Using 16-bit processor, 128X64 dot-matrix liquid crystal display, high-speed USB interface, 4 RJ12 input and online communication interface, can measure 4 analog signals simultaneously, 4 serial devices, 4 I2c devices, 4 digital. The device has 4 channels of synchronous counters. Four RJ12 output ports can simultaneously drive four 9V/2A high current output stepless speed regulating power motors, eight servo motor outputs, and four relays or lamps. Both internal and external power supply modes are available. Can be connected to sound, digital thermometer, ultrasonic, color sensor can identify red, yellow, blue, green and other 8 colors, infrared ranging, compass and other sensors

ESS60871



Polar Robots Kits

This kit contains 49 kinds of parts, using more than 560 components to be able to stitch and create different Robots: roaming robots, polar flight robots, polar pioneers, polar special warfare robots, polar guard robots and other 5 standard models and their guidance books. All robots are crawler stitching. The main device deceleration Metal Gear motor 3, voltage 9 V, speed 128 rpm, load torque 0.4 kg.cm, high-speed motor 2, voltage 9 V, speed 8900 rpm, sound sensor 1, color sensor 1, identify 9 colors, ultrasonic sensor 1 detection distance 7-250 cm, Gray-scale Sensor 2, seven lanterns 2, Bluetooth sensor 1 and provide programmable app control software.

TRC Controller Kit Included

ESS60872

Textbook E & R Experiments guide

Engineering and Robotics Technology Experiments Guide

ESS60874



3D Printer Skriware 1

3D printer ideal for Education and Personal use Ideal for the first start in 3D printing technology Robust, steel & polycarbonate construction enhancing precision Small and price competitive with other high-quality producers

Magnetic Bed Easily Removable, Durable Body HQ Materials.

Precision 0,05-0,3mm

Filament PLA support

Connectivity WiFi, Ethernet.

ESS60875

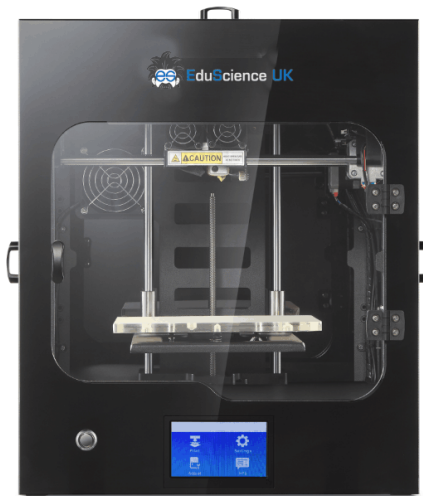


3D Printer Skriware 2

3D printer ideal for school use Ideal for beginners as well as more advanced users interested in multi-material 3D printing Most effective construction in terms of building volume and size on the market A revolutionary UX at the centre of 7" multi-touch, full-colour touchscreen, Live Camera Feed, Automatic Material Detection, Innovative, User-Oriented Interface, Extended Material Support, Dual Extruder, Removable PEI Bed

ESS60876





3D Printer Portable ES3-D150

Fully-enclosed, metal frame 3D Printer for middle school and high school, with three layer filter extraction system

With 3.5" color touch screen

Printing volume is 200mm*150mm*150mm, quick release acrylic platform

Nozzle diameter : 0.4mm, quick release single nozzle

Resolution : 0.1-0.5mm

Printing speed : 20-130mm/s

Accuracy of positioning : (Z) 0.0025mm; (X,Y) 0.011mm

Filament Size : 1.75mm; 9.

Compatible filament : ABS/PLA

Voltage input : 110-240V

Maximum power : 240W

Include : 500g PLA filament with each printer

With Wi-Fi function, Android phone/pad App control.

ESS60877



3D Printer Desktop ES-3D250

Printer size : L520xW430xH450mm

Valid print range : L250*W250*H250mm

Printer weight : N.W. 17kgs, G.W. 21kgs

Body material : Alluminum & Plastic frame body, silent printing state.

Print material : PLA, ABS, PETG, WOOD

Printing method : FDM Payment

Print accuracy : 0.1MM

Operating system Windows7 +, Mac OS X

Noise : <50dB

Electrical performance Voltage power: AC100-240V, 120W

Enter the file Support : stl / .obj / G-code.

Connection method : WIFI, USB, TF card

ESS60878



3D Printer Desktop ES3-DF3

Printer size $\Phi 305 \times 510$ mm Quantity 1 set

Valid print range : $\Phi 150 \times 175$ mm

Printer weight : N.W. 7.2kgs, G.W. 10kgs

Body material : ABS+PC

Print material : PLA

Printing method : FDM .

Print accuracy : 0.1MM

Operating system : Windows7 +, Mac OS X

noise : <50dB

Electrical performance Voltage power: AC100-240V, 120W

Enter the file Support : stl / .obj / .dedi / .jpg / .png / .bmp / .3mf format

Connection method : WIFI, USB, TF card

ESS60879





3D Printing Library

3D model library and online store for custom 3D designs Skrimarket works as a cloud-based platform enabling users to store saved 3D models and trade them with others

It has two fundamental features:

Personal library of 3D models, both uploaded and created by the user - coming from 3rd-party modelling tools and from Skribot Creator Online marketplace, where users can purchase new updates for Skribot models -both new parts and electronic modules.

[ESS60893](#)



3D Robotic Creator Software

Unleash your creative spirit and share with others Skribot Creator is an online 3D design tool for prototyping new 3D-printable models and modifying existing ones. A smart tool linking a creative design with electronics and engineering, allowing to create personalized, programmable models, whose abilities and design quality depend on the skill of their creator. Direct link with an online library of models, enabling 1-click-printing via Skriware 3D printers and sharing within a community. Creator will be constantly developed adding pay-per-click special modules upgrading Skribot functionalities.

[ESS60895](#)



Filament For 3D Printer

- [ESS60880](#) PLA filament
- [ESS60881](#) ABS+ filament
- [ESS60882](#) PET-G filament
- [ESS60883](#) PLA+ filament
- [ESS60884](#) TPU filament
- [ESS60885](#) PC-ABS filament
- [ESS60886](#) Glassbend filament
- [ESS60887](#) PVA+ filament





TRC Controller With Bag

Controller: using 16 bit or higher, processor, 128*64 dot matrix LCD, high-speed USB interface, four RJ12 input and online communication interface, measuring four analog signals, four-way serial port equipment, four-way I2C equipment, four-way digital equipment and four-way synchronous counter.

Four RJ12 output ports can simultaneously drive four 9V/2A current output stepless speed control motors, eight-way servo motor output, four-way relay or lamp control.

Apply two kinds of power supply modes: Internal and external power supply.

The controller can connect different sensors: sound sensor, digital thermometer, ultrasonic sensor, color sensor, infrared distance and compass.

Size : 37*19*8 (cm)

ESS60900



IMC controller

It adopts 16-bit processor or more with 128X64 dot LCD display, 1 high-speed USB interface and 4 RJ12 interfaces. It is both an input port and an output port. It handles various types of sensors, output devices and online communication. 8 independent digital interfaces, 4 dedicated analog interfaces, 4 I2C interfaces 4 9V/2A high current output stepless speed motor interface, 4 servo motor output, 4 synchronous counters, single bus interface, etc. Can be connected to sound, digital thermometer, ultrasonic, color, infrared ranging, compass and other sensors.

Size : 37*19*8 (cm)

ESS60901



Robot Basic Combination

Contain more than 140 components and several sensors, which can make six standard reference models: traffic lights, automatic hand dryer, robot engineer, tracing robot, etc.

Main device: two reducing motor with metal gear, one high-speed motor, one touch sensor, one 9V red light, one 9V green light, one 9V yellow light, one line-tracking sensor, one infrared sensor and one magnetic sensor.

Size : 43*32*8 (cm)

ESS60903



Software Development Platform

DFT robot software development system:

The system is matched up with TRC and IMC intelligent controller device, which can provide students with computer terminal Windows programming software. The development platform, which is graphics visualization programming software, is totally composed of three modules: process module, control module and built-in module. Beginners can use graphical programming; advanced players can use C language programming, or interactive programming of graphical language and C language.

The interface is beautiful and friendly, easy to learn and use.

ESS60902





Bionic Robot Combination

Bionic is a kind of inter discipline which is developed from engineering technology and biology science. More and more people have found out that some functions about plants and animals have exceeded technological design scheme that human has done. Bionic attempts to simulate plants' and animals' such functions, which is also the subject of this bionic robot combination.

Contain more than 300 components and several sensors, which can make four standard reference models: beetle, crab, quadruped animal and multi-legged animal.

Size : 43*32*8 (cm)

ESS60905



Industrial Robot

Contain more than 400 components, which can make four standard reference models: flipping robot, welding robot, 3-DOF manipulator and multi-DOF manipulator.

The flipping robot may be flipped and grasped firmly and relaxed. The welding robot can realize multipoint welding in any space. 3-DOF manipulator can grab things in vertical and horizontal direction with the level of 360 degrees. The 4-DOF manipulator can grab arms and expand freely in any space.

Main device: Eight touch sensors, one light, four gear boxes and four motors.

Size : 43*32*8 (cm)

ESS60906



Mobile Robot Combination 1

Contain more than 460 components and several sensors, which can make six standard reference models: exploration robot, light search robot, trace exploration robot, obstacle avoidance robot, etc.

Main parts: two reducing motor with metal gear, one high-speed motor, one touch sensor, one 9V red light, one 9V green light, one 9V yellow light, one line-tracking sensor, one infrared sensor and one magnetic sensor.

Size : 43*32*8 (cm)

ESS60904



Automatic Robot

Contain more than 480 components, which can make four standard reference models: catching robot, intelligent three-dimensional warehouse, rotary manipulator and three axis robot. Four robots can also be connected into a mutual collaborative system.

Main device: six touch sensor, two 9V/1A high power metal gear box motors, two 9V/0.4A motors and two gear boxes.

Size : 43*32*8 (cm)

ESS60907





Exploration robot

Contain more than 240 components, which can make six standard reference models: automatic tracked vehicle, trail search robot, color recognition robot, tunnel robot, exploration robot and rescue robot. The exploration robot refers to one gray
Main device: one grey scale sensor, one flame sensor, one ultrasonic distance measuring sensor, one color sensor, one 9V-red light, a 9V-green light and two 9V high torque motors.
Size : 43*32*8 (cm)

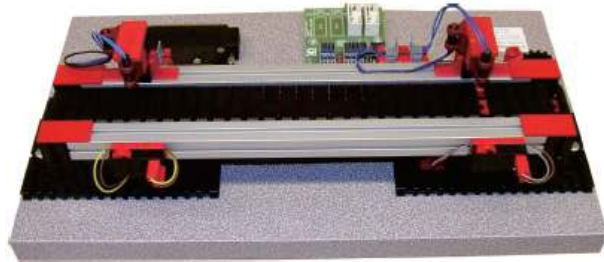
ESS60908



Small Car Washing Line

Working voltage: 24VDC
Sensor: Limit switch: 4
Reflected light sensor: 2
Actuator: Two-way motor: 2
50W light bulb: 3
Size (length*width*height) : 540*390*400 mm

ESS60909



Small Transmission Belt

Working voltage: 24VDC
Sensor: Limit switch: 2
Magnetic switch: 2
Actuator: Two-way motor: 1
Light-emitting diodes: 2
Size (length*width*height) : 350*200*120 mm

ESS60911



Small Kiln with Electronically Controlled Open

Working voltage: 24VDC
Sensor: Limit switch: 2
Magnetic sensor: 2
Temperature sensor: 1
Actuator: Two-way motor: 1
50W light bulb: 1
Size (length*width*height) : 187*259*150 mm

ESS60910

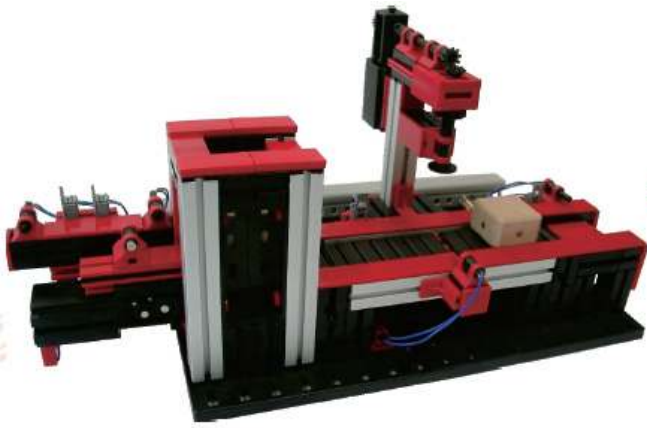


Small Elevated Warehouse

Working voltage: 24VDC
Sensor: Limit switch: 16
Magnetic switch: 1
Actuator: Light-emitting diodes:2
Two-way motor: 3
Size (length*width*height) : 550*300*470 mm

ESS60912





Small Single Machine Assembly Line

Working voltage: 24VDC

Sensor: Limit switch: 3

Magnetic switch: 4

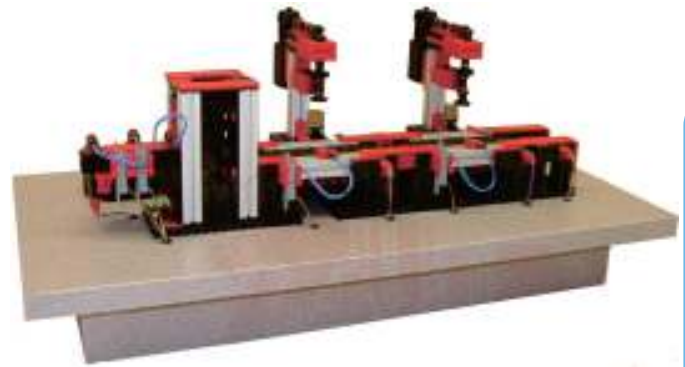
Actuator: Two-way motor: 1

One-way motor: 4

Light bulb: 2

Size (length*width*height) : 550*270*270mm

ESS60913



Small Flexible Processing Line

Working voltage: 24VDC

Sensor: Limit switch: 3

Magnetic switch: 4

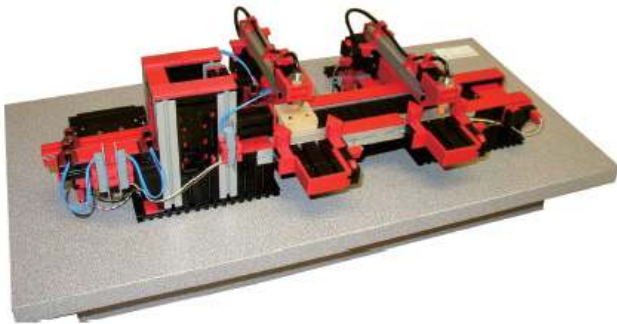
Actuator: Two-way motor: 1

One-way motor: 4

Light bulb: 2

Size (length*width*height) : 550*270*270 mm

ESS60914



Small Transmission & Sorting Line

Working voltage: 24VDC

Sensor: Magnetic switch: 5

Actuator: Two-way motor: 1

One-way motor: 2

Size (length*width*height) : 350*185*150mm

ESS60915



Operation Assembly Line with Double Workbench

Working voltage: 24VDC

Sensor: Limit switch: 4

Correlation light sensor: 4

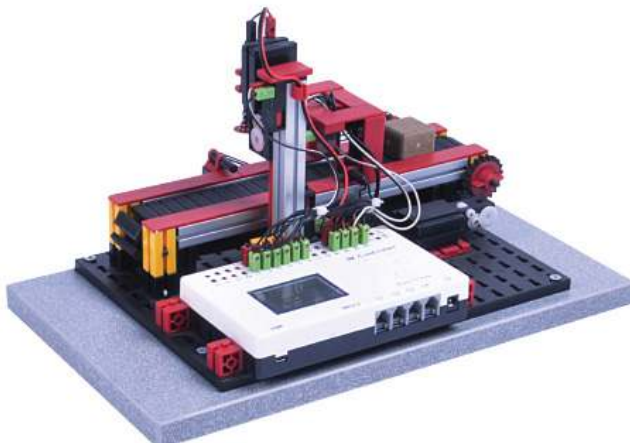
Actuator: Two-way motor: 2

One-way motor: 6

Light bulb: 4

Size (length*width*height) : 550*410*190mm

ESS60916



Punch Machine With Detection

Working voltage: 9V/24VDC

Sensor: Limit switch: 2

Magnetic sensor: 3

Actuator: Two-way motor: 1

One-way motor: 1

Control part: Digital input: 5

Digital output:

ESS60917





Punching Machine with Transmission Belt

Working voltage: 9V/24VDC
 Sensor: Limit switch: 2
 Correlation light sensor: 2
 Actuator: Two-way motor: 1
 One-way motor: 1
Size (length*width*height) : 550*410*190mm

ESS60918



PLC LOGO Training Experiment Kit

Working voltage 12~24V DC|0.5A
 4 potentiometer adjustable voltage 0~10 VmA (simulation input)
 1 Potentiometer Belo simulation 60Hz~5 kHz
 1 Infrared receiver, used to receive 10 frequencies chosen by remote control.
 8 Signal input
 4 LED status indication output.
 4 Slide switch: from digital to simulation
 1 Slide switch: from digital to infrared receiver
 1 Slide switch: from digital to sound output
 1 The slot is used to extend module
 1 Infrared receiver
 34 Learning card
Size : 565*340*185mm

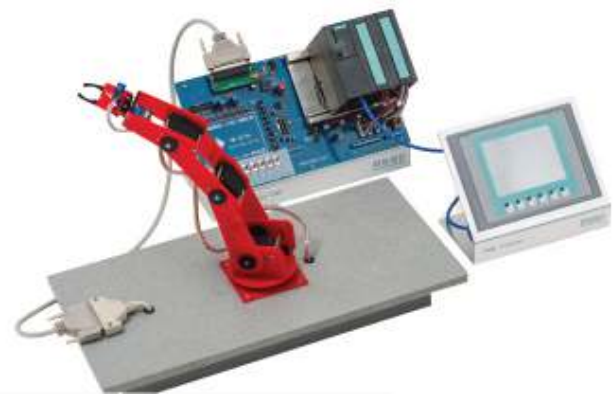
ESS60919



PLC S1200-7 Training Experiment Kit

Configurations
 A training device without S7-1200 CPU
 DVD learning CD
 34 learning cards
 Power source: AC220V/DC24/1A
 One infrared remote control
Size (length*width*height) : 330*230*160mm

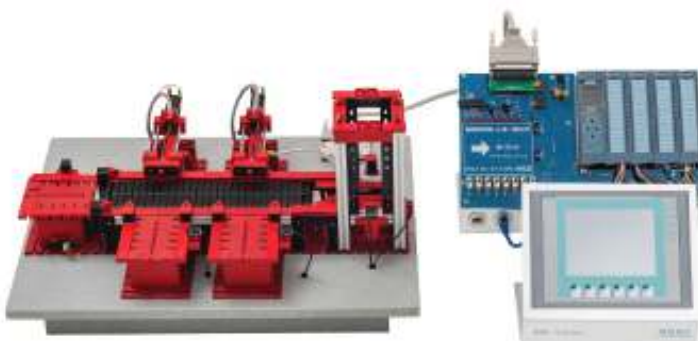
ESS60920



PLC S300-7 Training Experiment Kit

Configurations
 A training device without S7-300CPU
 DVD learning CD
 34 learning cards
 Power source: AC220V/DC24/1A
 One infrared remote control
Size (length*width*height) : 565*340*185mm

ESS60921

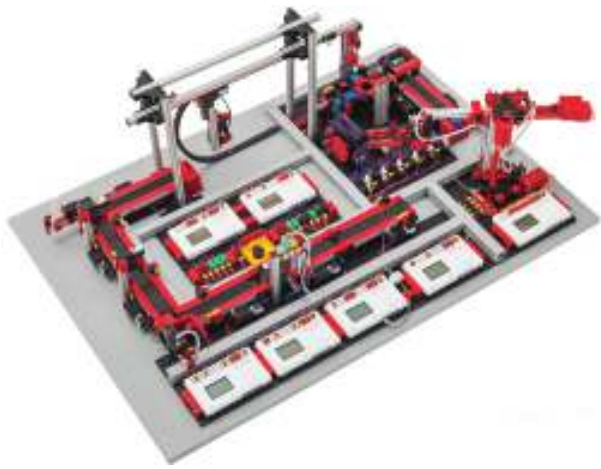


PLC S1500-7 Training Experiment Kit

Configurations
 A training device
 DVD learning CD
 34 learning cards
 Power source: AC220V/DC24/1A
Size (length*width*height) : 350*235*230mm

ESS60922





CNC Pneumatic Processing Assembly Line

Working voltage: DC 9V

Sensor: Limit switch: 10

Photoelectric sensor: 5

Proximity sensor: 2

Actuator: Two-way motor: 14

Size (length*width*height) : 1100*750*340 mm

ESS60923



Three-Axis Gantry Crane Rack

Working voltage: 24VDC

Sensor: Inductive proximity switch: 1

Mechanical switch: 8

Incremental encoder: 2

Actuator: Two-way motor: 5

Electromagnet: 1

Control part: Digital input: 9

Counting input: 6

Digital input: 7

Size (length*width*height) : 660*540*450 mm

ESS60925



Automatic Car Washing Line

Working voltage: 24VDC

Sensor: Unidirectional light sensor: 4

Magnetic induction switch: 9

Limit switch: 12

Actuator: One-way motor: 4

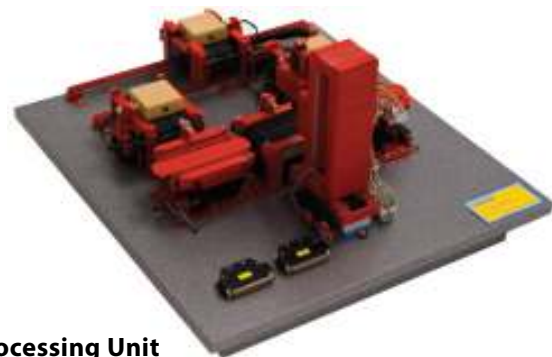
Two-way motor: 8

Control part: Digital input: 25

Digital output: 20

Size (length*width*height) : 1100*750*600 mm

ESS60926



Processing Unit

Working voltage: 24VDC

Sensor: Inductive proximity switch: 6

Limit switch: 10

Actuator: One-way motor: 6

Two-way motor: 6

Control part: Digital input: 11

Digital output: 18

ESS60927



Processing Line

Working voltage: 24VDC

Sensor: Inductive proximity switch: 5

Limit switch: 10

Actuator: One-way motor: 2

Two-way motor: 3

Control part: Digital input: 15

Digital output: 18

Size (length*width*height) : 600*350*330mm

ESS60928





Eccentric Press

Working voltage: 24VDC
 Sensor: Unidirectional light sensor: 3
 Limit switch: 7
 Actuator: One-way motor: 1
 Two-way motor: 1
 Control part: Digital input: 10
 Digital output: 3
Size (length*width*height) : 390*270*260mm

ESS60929



Elevated Warehouse

Working voltage: 24VDC
 Sensor: Magnetic sensor: 6
 Limit switch: 13
 Actuator: Two-way motor: 4
 Luminous tube: 5
 Control part: Digital input: 20
 Digital output: 29
Size (length*width*height) : 600*550*500mm

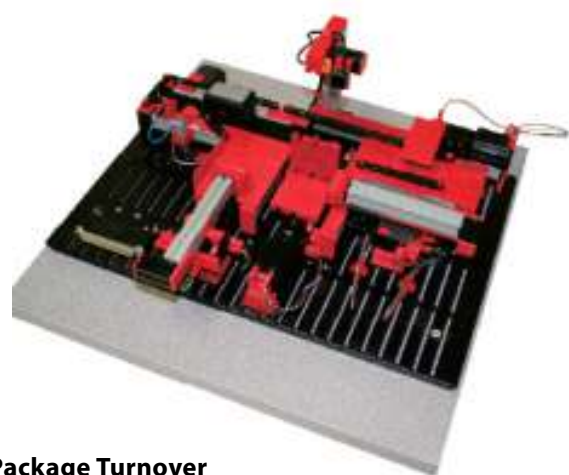
ESS60930



Assembly Line

Working voltage: 24VDC
 Sensor: Reflected light sensor: 1
 Unidirectional light sensor: 2
 Limit switch: 23
 Actuator: Two-way motor: 5
 Relay: 1
 Control part: Digital input: 26
 Digital output: 11
Size (length*width*height) : 1290*470*600mm

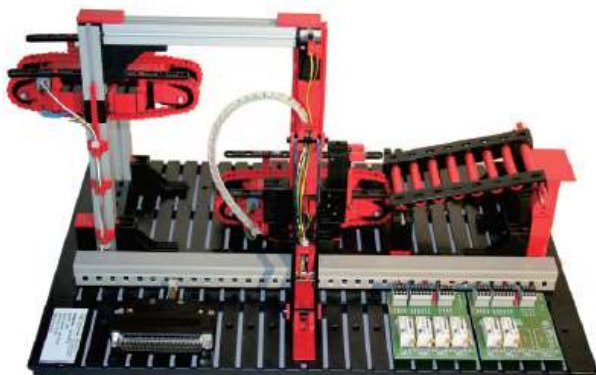
ESS60931



Package Turnover

Working voltage: 24VDC
 Sensor: Unidirectional light sensor: 1
 Inductive proximity switch: 3
 Limit switch: 4
 Actuator: Two-way motor: 1
 Buzzer: 1
 Light-emitting diodes: 4
 Control part: Digital input: 8
 Digital output: 7
Size (length*width*height) : 675*390*130mm

ESS60932



Elevator

Working voltage: 24VDC
 Sensor: Reflected light sensor: 2
 Unidirectional light sensor: 2
 Limit switch: 10
 Actuator: Two-way motor: 5
 Control part: Digital input: 14
 Digital output: 10
Size (length*width*height) : 400*400*250mm

ESS60933

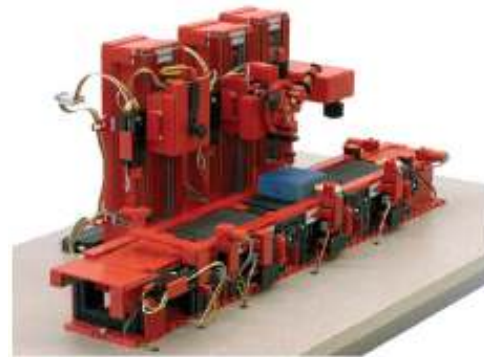




Climate Chamber

Working voltage: 24VDC
 Sensor: Inductive proximity switch: 2
 Limit switch: 2
 Actuator: Two-way motor: 3
 Control part: Digital input: 4
 Digital output: 6
Shape size (length*width*height) : 390*270*215mm

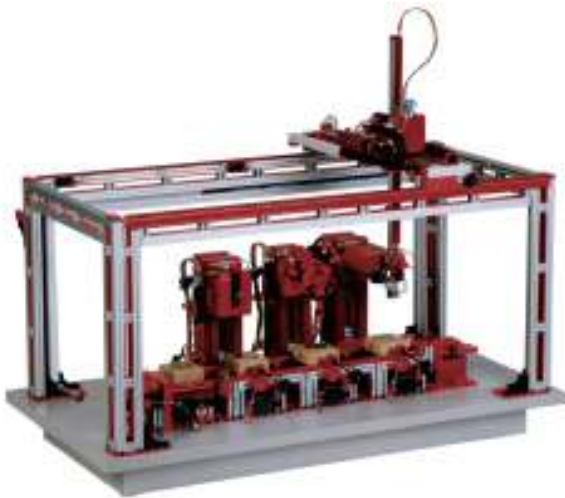
ESS60934



Flexible Manufacturing Line

Sensor: PT temperature sensor: 2
 Limit switch: 4
 Actuator: Two-way motor: 2
 One-way motor: 1
 50W filament lamp: 1
 Control part: Digital input: 4
 Digital output: 4
Size (length*width*height) : 540*390*350 mm

ESS60935



Transmission and Processing Line

with Tri-axial Door Frame
 Working voltage: 24VDC
 Sensor: Unidirectional light sensor: 2
 Inductive proximity switch: 3
 Limit switch: 12
 Actuator: One-way motor: 7
 Two-way motor: 5
Size (length*width*height) : 860*450*270mm

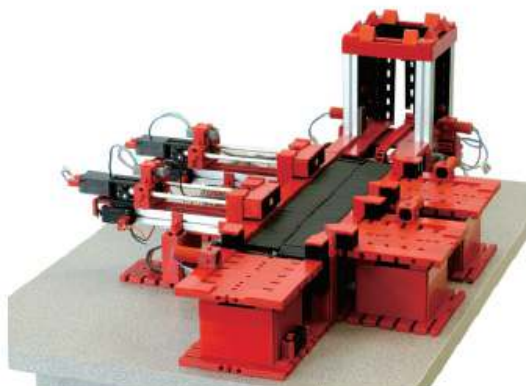
ESS60936



Automatic Door Model

Working voltage: 24VDC
 Sensor: Reflected light sensor: 4
 Unidirectional light sensor: 1
 Inductive proximity switch: 3
 Actuator: One-way motor: 2
 Two-way motor: 3
 Electromagnet: 1
 Cylinder: 3
Size (length*width*height) : 860*450*450mm

ESS60937



Transmission & Sorting Line

Working voltage: 24VDC
 Sensor: Reflected light sensor: 3
 Unidirectional light sensor: 1
 Inductive proximity switch: 2
 Magnetic sensor: 3
 Limit switch: 5
 Actuator: One-way motor: 2
 Two-way motor: 2
Size (length*width*height) : 540*390*270mm

ESS60938

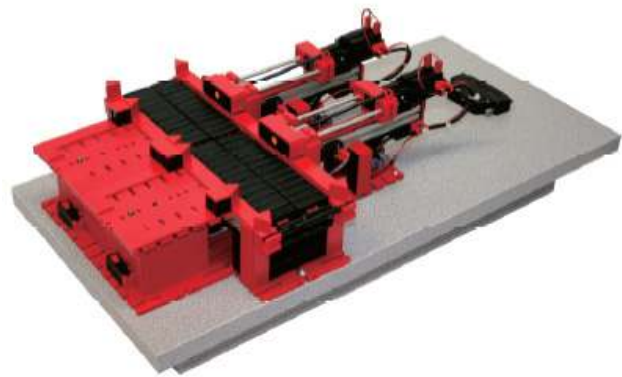




Transmission and Classification with Three-axis Door Frame

Working voltage: 24VDC
 Sensor: Reflected light sensor: 4
 Unidirectional light sensor: 1
 Inductive proximity switch: 3
 Actuator: Two-way motor: 3
 Cylinder: 3
Size (length*width*height) : 860*450*450mm

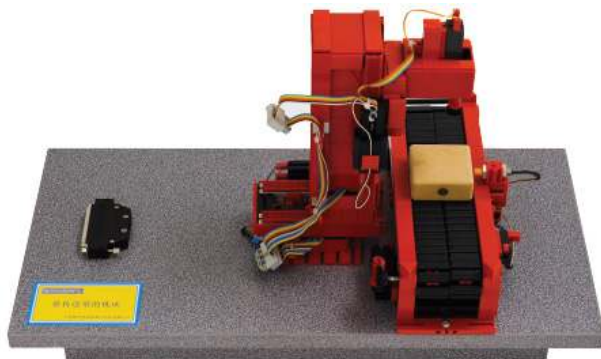
ESS60939



Double Push Rod Conveyor Belt

Working voltage: 24VDC
 Sensor: Inductive Proximity Switch: 2
 Limit switch: 6
 Magnetic switch: 2
 Actuator: Light-emitting diodes: 2
 Two-way motor: 3
Size (length*width*height) : 270*550*200mm

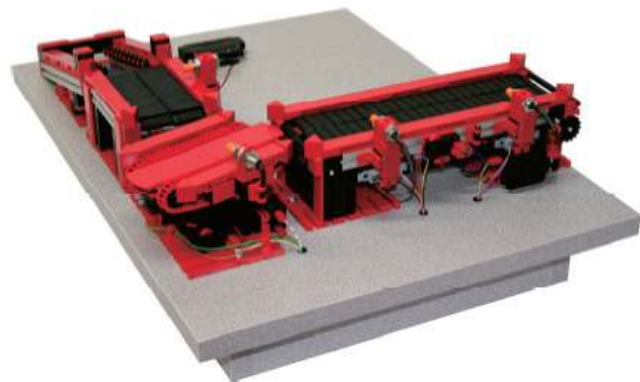
ESS60940



Conveyor Belt with Machine Processing

Working voltage: 24VDC
 Sensor: Inductive proximity switch: 4
 Limit switch: 5
 Actuator: Light-emitting diodes: 1
 Two-way motor: 3
 One-way motor: 1
Size (length*width*height) : 270*550*350mm

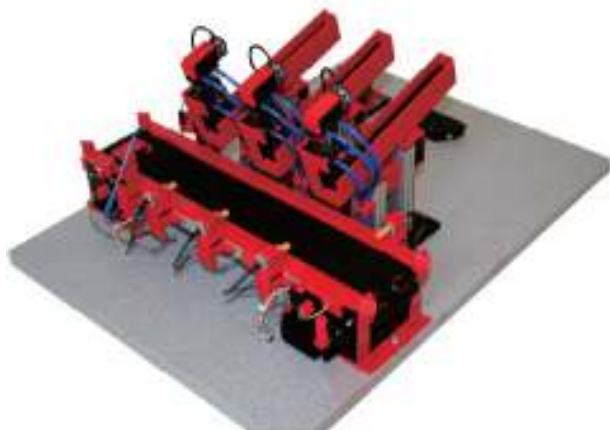
ESS60941



Conveyor belt

Rotation/Sliding Table Conveyor
 Working voltage: 24VDC
 Sensor: Inductive proximity switch: 4
 Limit switch: 4
 Optical inductor: 1
 Actuator: Light-emitting diodes: 1
 Two-way motor: 4
Size (length*width*height) : 450*550*180mm

ESS60942

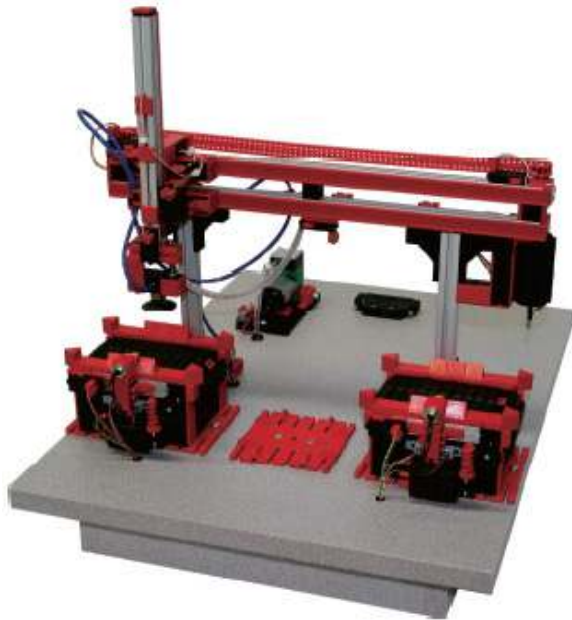


Pneumatic Sorting Machine

Sensor: Inductive proximity switch: 4
 Limit switch: 2
 Magnetic switch: 2
 Optical inductor: 3
 Press sensor: 1
 Actuator: Light-emitting diodes: 2
 Two-way motor: 3
Size (length*width*height) : 405*550*260mm

ESS60943

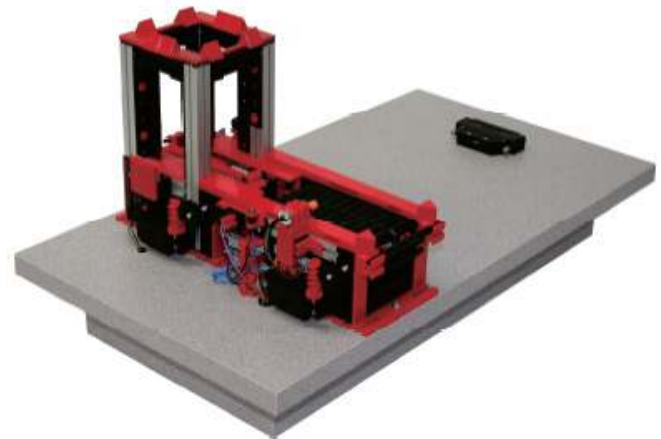




Chunk Handling Machine

Working voltage: 24VDC
 Sensor: Inductive proximity switch: 2
 Limit switch: 7
 Magnetic switch: 1
 Incremental encoder: 1
 Actuator: Two-way motor: 4
 Pneumatic valve: 1
 Air pump: 1
 Magnet: 1
Size (length*width*height) : 405*550*260mm

ESS60945



Conveyor Belt with Bin

Working voltage: 24VDC
 Sensor: Magnetic switch: 3
 Inductive proximity switch: 1
 Unidirectional light sensor: 1
 Limit switch: 1
 Actuator: One-way motor: 1
 Light-emitting diodes: 1
Size (length*width*height) : 300*550*270mm

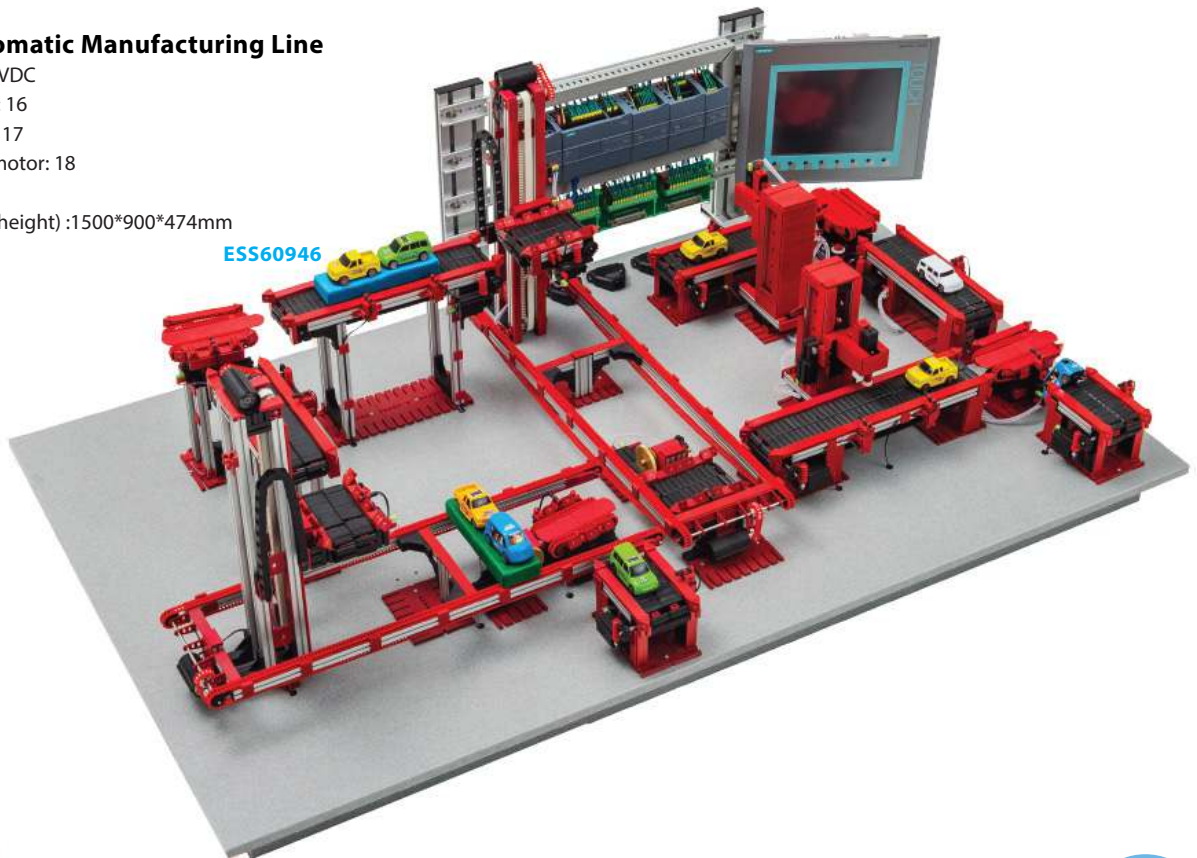
ESS60944

Industrial Automatic Manufacturing Line

Working voltage: 24VDC
 Sensor: Limit switch: 16
 Magnetic switch: 17
 Actuator: Two-way motor: 18

Size (length*width*height) : 1500*900*474mm

ESS60946





EduScience UK



BIOLOGY



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BIOLOGY

- Data Logging & Sensors
- Animals & Ecology
- Human Body
- Plants and Organisms
- Genetics
- Microbiolog





CMES Data Logger

VinciLab

Modern Data-logger for Science



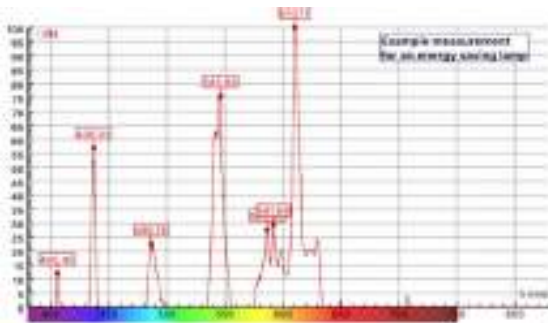
VinciLab is an advanced mobile graphic data acquisition system. It is a handheld Linux device equipped with two processors and 4GB memory. Its 5" capacitive color touch screen offers easy control of the device. For wireless connectivity VinciLab is equipped with Wi-Fi and Bluetooth. VinciLab can be used standalone and with a computer, in the classroom and in the field.



ESD50000

Operating System	Linux
Display	5" (800 x 480 pixel) capacitive color touch screen
Processors	Two: main (ARM 720 MHz) and measurement
Memory	4 GB, of which 1.5 GB user memory in the 'My Files' folder Expandable with a USB flash drive
Power	Rechargeable battery Li-Ion 3.7 V, 4000 mAh USB Power Adapter (100-240 V AC, DC 5V/2A) included
Connectivity	Wi-Fi 802.11 b/g/n Bluetooth® 2.1 + EDR
Computer connection	Mini USB port also used for powering
USB port	Full USB for USB peripherals
Other ports	Audio In/Audio Out
Sensor inputs	4 analog BT (right-hand) inputs and 2 digital BT (left-hand) inputs. Each analog input can work as a counter
Built-in sensors	Sound sensor, max. frequency 44 100 Hz 3-axis Accelerometer (2g, 4g, 8g), max. frequency 400 Hz
ADC resolution	12 bits
Sampling frequency	Max. 1 MHz, simultaneously on 2 analog inputs
Outputs	Via digital sensor inputs Eight 1-bit or two analog outputs
Software on board	Dedicated Desktop Applications Coach 6 Application for data collection, graphing and analysis





Coach 7 Desktop

Our Coach software is the most versatile and complete software for STEM Education.

Coach integrates ICT tools, which resemble technologies used by professional scientists and facilitate an inquiry-based approach to education. By collecting high-quality, real-time data, constructing and using models, using simulations and visualizations, comparing results from experiments and models, students can be actively involved in authentic learning activities.

Coach 7 is the successor of Coach 6 and offers new features and enhancements of our unique and powerful environment.

5 years Single User License

ESD50013



Blood Pressure Sensor

The Blood Pressure sensor 0377i is used to measure arterial blood pressure in humans (non-invasive). It measures the pressure signal caused by the interaction between the cuff and the blood flow through the brachial artery.

Range: 20 .. 250 mm Hg

Accuracy: 3 mm-Hg

Includes: standard adult size adjustable cuff (27 cm to 39 cm) and bulb pump (with release valve).

Can be used to:

- Blood pressure as a vital sign
- Effect of exercise on blood pressure.

ESD50025



CO2 Gas Sensor Low-range

The CO2 sensor BT24i is used to monitor low concentrations of gaseous carbon dioxide. The sensor uses the Non-Dispersive Infrared Detection (NDIR) method.

Range: 0 .. 5000 ppm

Typical resolution: 20 ppm

Includes: 250-mL sampling bottle.

Can be used to:

- Investigate CO2 level during respiration of small animals and insects,
- Monitor CO2 changes during photo-respiration and photosynthesis in light/dark.
- Measure CO2 level during cellular respiration of peas or beans.

ESD50026





Dissolved Oxygen sensor *

The Dissolved Oxygen sensor BT34i can be used to measure the concentration of dissolved oxygen in water samples. The sensor is automatically temperature compensated, using a thermistor built into the sensor. Disposable caps with pre-fit membranes allow you to quickly and conveniently change membranes.

Range: 0 to 15 mg/L

Resolution (12-bit): 0.2 mg/L

Includes: replacement membrane cap, polishing strip, oxygen probe electrolyte, filling pipette, empty calibration bottle and Sodium Sulphite Calibration Standard.

Can be used to:

- Monitor dissolved oxygen concentration in an aquatic systems, measure Biological Oxygen Demand (B.O.D.) in water samples.
- Determine the relationship between the dissolved oxygen concentration and the temperature of water.

ESD50028



CO2 Gas Sensor High-range

The CO2 sensor BT25i is used to monitor high concentration of gaseous carbon dioxide. The sensor uses the Non-Dispersive Infrared Detection (NDIR) method.

Range: 0 .. 100000 ppm

Typical resolution: 1000 ppm

Includes: 250-mL sampling bottle.

Can be used to:

- Investigate CO2 levels of human breath,
- Monitor production of CO2 during chemical reactions,
- Monitor production of CO2 during decomposition of organic materials in soils.

ESD50027



ECG Sensor

The ECG sensor BT36i measures voltages that are produced by the heart. These voltages are measured at the skin of the wrists and elbow through electrodes. The voltages are amplified by the sensor and filtered and transferred through an optical coupler.

Range: 0 .. 5 mV

Resolution (12-bit): 1.2 μ V

Includes: a package of 100 electrode patches.

Can be used to:

- Monitor ECG in rest and after mild exercise,
- Investigate CG changes with mild stimulants,
- Record the electrical activity of a muscle (EMG).

ESD50029



Exercise Heart-rate Sensor

The Exercise Heart-rate sensor BT47i monitors a person's heart beat. Each time the heart beats, an electrical signal is generated. This signal is measured at the surface of the skin by electrodes embedded in the chest belt of the sensor. The system consists of a transmitter belt, plug-in receiver, and an elastic strap.

Transmitter: T31 by Polar Transmitter

Range: 90 cm

Can be used to:

- Compare the heart rate of different individuals,
- Check the person's heart rate before, before, during and after a vigorous activity,
- Monitor the recovery rate.

ESD50030



Flow Rate Sensor *

The Flow rate sensor 0387i measures the velocity of flowing water. It can be used to study the discharge, flow patterns, and sediment transport of flowing water. The Flow rate sensor is equipped with impeller rod with 5-m cable.

Range : 0 .. 4.0 m/s

Resolution (12-bit): 0.005 m/s

Can be used to:

- Measure stream flow rates,
- Investigate sediment transport,
- Determine stream discharge values

ESD50031

NOTE All * Marked sensors need a sensor cable (IEEE1394-BT) ESD50250, which has to be purchased separate.





Heart-rate Sensor *

The Heart-rate sensor 027i provides a simple way to study the heart's function. The sensor clip consists of a small infrared LED and an infrared light sensor. The sensor measures the light level transmitted through a tissue of the ear lobe that occur as the blood volume changes in the tissue.

Range : 0 .. 5 V, each heartbeat gives a peak.

Can be used to :

- Investigate the heart rate of different individuals.
- Measure of the heart rate before and after a vigorous activity.
- Determine the recovery rate of the heart after physical exercise.
- Measure the heart rate before and after drinking coffee or Coca-Cola.

ESD50032



Oxygen Gas Sensor *

The Oxygen Gas sensor BT59i measures the gaseous oxygen concentration. The wide measurement range allows it to be used in study of human and cellular respiration.

Range : 0 .. 100 %

Resolution (12-bit): 0.03 %

Lifetime : 5 years in open air

Can be used to :

- Monitor changes in oxygen concentration during photosynthesis and respiration of plants,
- Monitor respiration of animals, insects, or germinating seeds,
- Measure the oxygen levels during human respiration.

ESD50033



Spirometer Sensor

The Spirometer BT82i measures air flow rate during human respiration. The sensor consists of a flow tube through which the air is inhaled and exhaled and a differential pressure sensor.

Range : -5 .. 5 L/s

Resolution (12-bit): 0.01 L/s

Includes : disposable bacterial filter and 10 disposable mouthpieces.

Can be used to:

- Record breathing patterns before, during and after exercise,
- Measure important lung capacities like Forced Expiratory Volume, Forced Vital Capacity and Tidal Volume.

ESD50035



Temperature Sensor *

This Temperature sensor BT01 is a low-cost, general-purpose temperature sensor that can be used to measure temperature in the range of -40°C to 140°C, in liquids (water, mild acidic solutions) and air. The sensing element of the sensor is an NTC thermistor, which is positioned in a stainless steel tube. The thermistor is a variable resistor whose resistance decreases non-linearly with increasing temperature.

Range : -20 °C .. 140 °C

Accuracy : 2°C at -40°C, 0.6 at 30°C, 1.8°C at 140°C

Can be used to:

- Monitor indoor and outdoor temperatures,
- Monitor freezing and boiling water,
- Investigate the temperature during endothermic and exothermic reactions,
- Investigate evaporation

ESD50036



Relative Humidity Sensor

Relative Humidity Sensor The Relative Humidity sensor BT72i measures relative humidity. The sensor consists of an integrated circuit, which uses a capacitive polymer to sense humidity. The holes in the sensor box provide air circulation

Range : 0 to 100 %, Resolution (12-bit): 0.04 % RH

Can be used to:

- Study transpiration rates of plants,
- Optimize conditions in a greenhouse or terrarium,
- Determine good days for static electric demonstration.

ESD50034

NOTE All * Marked sensors need a sensor cable (IEEE1394-BT) ESD50250, which has to be purchased separate.



**Light Sensor ***

The Light sensor 0142i measures light intensities in the range between 0 and 200 lux. It consists of a photo-transistor, which receives light through a glass fibre. Because of its range the sensor is suitable for measurements in normal indoor situations.

The sensor can also be used as a light gate.

Range: 0 .. 200 lx

Resolution (12-bit): 0.05 lx

Can be used to:

- Verify inverse square law,
- Monitor changes in light caused by a chemical reaction,
- Investigate light reflection and absorption,
- Investigate light interference patterns.

ESD50037

**pH Sensor**

The pH sensor BT61i is a general-purpose pH measurement system that allows measuring the degree of acidity/pH value. The sensor consists of a pH amplifier and pH electrode.

The pH Electrode is not delivered with the pH sensor and has to be purchased separately (Order Code 031).

Range: 0.. 14 pH

Resolution (12-bit): 0.005 pH

Can be used to :

- Measure pH values of different acids and bases,
- Monitor pH in acid-base titration experiments,
- Monitor pH during chemical reactions,
- Investigate of water quality in streams and lakes

ESD50038

**Thermocouple ***

The Thermocouple sensor 0135i measures temperatures in two ranges, which can be selected using the switch. The sensor uses a thermocouple type K, which consists of Chromega and Alomega wires that are welded together to form a measuring junction.

Range: -200.. 1300 °C, -20 .. 110 °C

Resolution (12-bit): 0.39 °C, 0.035 °C

Can be used to :

- Measure the temperature inside a Bunsen burner flame or candles,
- Determine the melting point of copper, bismuth, or other solids,
- Measure temperature in specific heat experiments.

ESD50039

**Turbidity sensor**

The Turbidity sensor BT88i measures the turbidity of water samples in the range between 0 ... 200 NTU.

Range: 0 .. 200 NTU

Resolution (12-bit): 0.2 NTU

Includes: one empty cuvette and one cuvette containing 100 NTU Stable CAI Formazin Standard, which is used to calibrate the sensor.

Can be used to :

- Measure turbidity of a water sample from various locations,
- Determine the rate of settling of a sample,
- Measure the formation of a precipitate.

ESD50040

**Pressure Sensor**

The Pressure sensor BT66i is designed to measure absolute gas pressure. The pressure is measured via a pressure valve, which is located on the side of the box. The sensor has two measurement ranges, which can be selected using a switch.

Range: 0 .. 700 kPa, 0 .. 130 kPa

Resolution (12-bit): 0.2 kPa, 0.04 kPa

Includes: a plastic 20-ml syringe with Lure-lock, two plastic tubes (5 cm and 45 cm long), a three-way valve with Lure-lock connectors, two Lure-lock connectors.

Can be used to :

- Measure pressure changes in gas-law experiments, Boyle's and Gay-Lussac's laws,
- Measure vapour pressure of liquids,
- Measure air pressure for weather studies.

ESD50041

NOTE All * Marked sensors need a sensor cable (IEEE1394-BT) ESD50250, which has to be purchased separate.





Basic Biology Sensors Bundle Kit

- CO2 Gas Sensor (Low) BT24i
- ECG Sensor BT36i
- Heart-rate Sensor 027i
- Light Sensor BT50i
- PH Sensor BT61i and Electrode 031
- Temperature Sensor BT01
- Thermocouple 0135i
- Relative Humidity Sensor BT72i
- 4 Sensor Cables BTsc_4

ESD50042



Biology Sensor Bundle Extension Kit

- CO2 Gas sensor (High) BT25i
- Dissolved Oxygen sensor BT34i
- Oxygen Gas sensor BT59i
- Pressure sensor BT66i
- Spirometer BT82i
- Turbidity sensor BT88i

ESD50043



WiLab Wireless Sensor Connector

The WiLab is an easy-to-use data-logger for STEM Education that can be used for measurement and control. WiLab offers two types of connectivity:

wired via USB cable for computers (Windows and Mac), and Android tablets (via OTG cable), wireless via Bluetooth®1 for tablets (iPad, Android) and Chromebooks.

The following items are included with WiLab:

USB cable for connecting WiLab to a USB port or to the USB power adapter.

USB Power Adapter for powering WiLab and charging its battery.

User's Guide.

ESD50159

Xlogger System Introduction :

Xlogger is an innovative new data logging system using direct USB sensors & Excel* for data capture and analysis. Our sensors plug straight into USB ports on any Windows computer. No dedicated software program just Microsoft Excel*

Data is logged directly into Excel* and graphed automatically

Simple toolbar commands control everything

Completely intuitive - start logging straight away

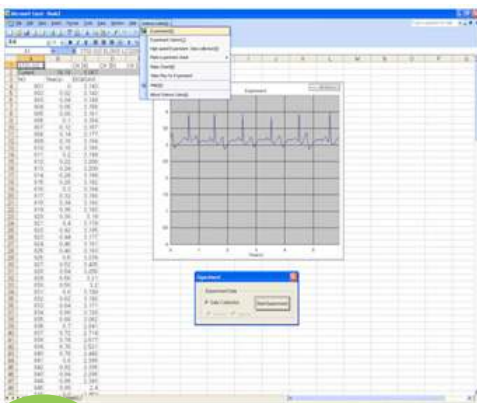
Students work in the familiar Excel* environment

All the power of Excel* for analysing data is immediately available

All the standard sensors with new ones being developed

Simply plug them in and start logging (no calibration needed)

Robust construction and encapsulated leads



ES Data-Logging Software

Xlogger is an innovative new data logging system using direct USB sensors & Excel* for data capture and analysis. Our sensors plug straight into USB ports on any Windows computer. No dedicated software program just Microsoft Excel*

Data is logged directly into Excel* and graphed automatically
 Simple toolbar commands control everything
 Completely intuitive - start logging straight away
 Students work in the familiar Excel* environment
 All the power of Excel* for analysing data is immediately available
 All the standard sensors with new ones being developed
 Simply plug them in and start logging (no calibration needed)
 Robust construction and encapsulated leads



ESD50014





USB Temperature Sensor
Xlogger Stainless Steel Temperature Sensor.
Range : -25°C to 125°C
Resolution : ±0.1°C

ESD50185



USB Relative Humidity Sensor.
Xlogger Relative Humidity Sensor.
Range : 0 to 100%
Resolution : ±0.4%
Accuracy : ±2% at 25°C

ESD50187



PH electrode
The pH electrode 031 is a gel-filled Ag-AgCl combination-electrode in a plastic tube. It has a coax cable, with a BNC connector. It is supplied in a bottle filled with a protective solution. The electrode cannot be refilled.

ESD50242



USB Oxygen Sensor
Xlogger Oxygen Sensor.
Range : 0 - 100% Oxygen

ESD50184



USB Barometer Sensor
Xlogger Barometer.
Range : 0 to +2068 hPa (mbar)
Resolution : 0.6 hPa

ESD50188



USB Light Sensor
Xlogger Light Sensor.
Range : 0 - 15,000 Lux

ESD50186



USB Turbidity Sensor
Xlogger Turbidity Sensor.
Range : 0-200 NTU
Accuracy : ±2NTU under 25NTU, ±5% over 25NTU

ESD50189





Disposable Bacterial Filter

Disposable bacterial filter for Spirometer BT82i.

ESD50243



Disposable Mouthpiece

Package of 100 disposable mouthpieces for Spirometer BT82i.

ESD50244



Electrode Patches

Package of 100 electrode patches for ECG sensors 0628i, BT36i and ML84m.

ESD50245



Adapter 4mm – BT

For connecting sensors with 4-mm plugs to interfaces with BT inputs such as CMES,

ESD50248



BT-BT Extension Cable (Analogue)

A 5-m long cable for extending the length of analogue BT sensor cables.

ESD50247



CO2 to O2 Tee

The CO2-O2 Tee allows connecting a CO2 Gas Sensor and O2 Gas Sensor to be used at the same time.

ESD50246



Disposable Bacterial Filter

(Pkg of 1)

For BT82i Spirometer

ESD50252



Disposable Mouthpiece

(Pkg of 100)

For BT82i Spirometer

ESD50253



Data Logger Stand

Plastic stand for the CMES data-logger.

ESD50249



Photosynthesis set incl.

Chamber and LED lamp

ESD50254



Replacement Membrane Cap

for BT34i DO sensor

ESD50251



BT - IEEE1394 Cable

The BT – IEEE1394 sensor cable (1.5 m length) is used for BT sensors, which are equipped with the IEEE1394 socket.

These sensor cables are sold per piece (BTsc_1) and in packages of four (BTsc_4).

ESD50250

4 X BT-IEEE1394 Sensor Cable

set of 4 nos bt ieee1394 sensors cable

ESD50255



NEW

EduScience Wireless Sensors

EduScience Wireless Sensors can be used to measure without an interface. They are simple, user-friendly, and offer more mobility and flexibility. They can be used anywhere without the need for power or wired connections and are suitable for a wide range of student experiments.

Connectivity: The sensors operate wirelessly via Bluetooth or wired via USB and can be used with a variety of

Devices: computers, Chromebooks and mobile devices.

Display: The sensors are equipped with a color OLED screen which displays the battery level and the measured sensor value. This unique feature makes the sensors suitable for use as independent measuring devices.

Battery: The sensors have a large battery capacity and a smart way to save power by automatically turning off when they're not used. They can be used an average of 12 hours without needing to be charged.

work with all platforms on which the ES Data logging Coach software works.

Wireless Temperature Sensor

Range:- 40 to 125 C

Range : -40 to 125 C

Resolution : 0.06 C

can be used for the Following Experiments :

- Principle of the mixture.
- Cooling.
- Thermal equilibrium.
- Specific Heat Of Metals.
- Radiation equilibrium



ESD50046

Wireless Gas Pressure Sensor

Range: -1000~+3000hPa

Resolution:0.244 hPa

Wireless gas pressure sensor" measures relative values to ambient pressure. When measuring pressure, it

converts to an intermediate form, such as a displacement, which converts the displacement into an electrical output, such as a voltage or current. This wireless sensor does not require a separate cable so that can be used easily in complex experiment environments. Also, it is possible to connect up to 4 sensors at same time, so you can use it with other kinds of sensors together.

Experiment list ; Boyle's Law ; Cloud creation principle

Reaction rate according to acid concentration

Solubility of Gas with Temperature



ESD50103



Wireless PH Sensor

Range : 0~14 pH

Resolution: 0.001 pH

Wireless pH sensor is a sensor that measures hydrogen ion concentration.

It is a principle to determine the pH value from the potential difference between the glass electrode and the reference electrode with two standard solutions that know the pH value.

The Science Cube Wireless pH Sensor does not require a separate connection cable, so it can be easily used in complex experimental environments such as monitoring pH change during neutralization of acid-base, chemical reaction and checking pH in a water tank during photosynthesis.

You can use this sensor for investigation of acid rain and water quality as well. Experiment

list Neutralization

PH measurement of various solutions

ESD50098



Wireless pH with Glass Body (100°C)

Range : 0~14 pH

Resolution: 0.001 pH

Wireless pH sensor is a sensor that measures hydrogen ion concentration.

It is a principle to determine the pH value from the potential difference between the glass electrode and the reference electrode with two standard solutions that know the pH value.

The Science Cube Wireless pH Sensor does not require a separate connection cable, so it can be easily used in complex experimental environments such as monitoring pH change during neutralization of acid-base, chemical reaction and checking pH in a water tank during photosynthesis.

You can use this sensor for investigation of acid rain and water quality as well. Experiment

list Neutralization

PH measurement of various solutions

ESD50098GS





Wireless Conductivity Sensor

Range: 0~4 20:000 uS/cm

Resolution: 0.3 uS/cm

The wireless conductivity sensor can measure the conductivity of a solution or the total ion concentration of an aqueous sample. Conductivity measurement can directly infer the super ion concentration of the sample, even if the specific ion is unknown during the environmental test of the aqueous sample.

Experiment list

Significance of cell division

Electrolytes and non-electrolytes

Neutralization reaction

ESD50099



Wireless CO₂ Gas Sensor

Range: 0~5.000 ppm

Resolution: 2.44 ppm

The wireless CO sensor can measure carbon dioxide in the air or in confined spaces such as botanical gardens and animal kennels. In addition, it is a sensor that can measure the amount of carbon dioxide produced by respiration of small creatures such as crickets by using an experimental tool such as an Erlenmeyer flask. Experiment list Yeast respiration photosynthesis Respiratory rate as a function of temperature Metabolic rate of insects according to temperature Changes in citric acid and sodium bicarbonate

ESD50051

Wireless Electrode Amplifier Sensor



ESD50166

Wireless Colorimeter/ Turbidity Sensor

Measurement Range: ± 0.5 V, ± 2 V, ± 10 V

Measurement range: ± 0.5 V, ± 2 V, ± 10 V

Display: 0.96"

Battery: Li-polymer (700mAh)

Wireless: BLE 4.2

Wired: USB-C

Experiment list : Charging measurement by induction and frictional contact



ESD50105



Wireless Light/Color/UV Sensor

Range : -12.5 ~+12.5 mA

Range: - Illuminance: 1 ~199,000

lux Chromaticity: 1 to 65,535 counts

UV: 0-11 UV index

Resolution - Illuminance: 0.1 lux

Chromaticity: 1 count

UV: 0.1 UV index

The wireless Light/Color/UV sensor is a sensor that measures wavelengths from the visible light range to the ultraviolet range so that optics-related experiments can be carried out.

Experiment list

Light intensity according to distance photosynthesis

The brightness of the light bulb depending on the battery light

synthesis Principle of sunscreen

ESD50169



Wireless Oxygen Gas Sensor

Range: 0 ~ 25%

Resolution: 0.01%

The wireless oxygen sensor is a sensor that accurately measures the amount of oxygen in the air or in an enclosed space, The wide range enables any experiment or measurement, and can measure atmospheric air along with carbon dioxide,

Experiment list

Photosynthesis

Plant oxygen

ESD50049



Wireless ORP

(Oxygen Reduction Probe) Sensor

Range: -450 ~41,000mV

Resolution: 0.5mV

Wireless ORP sensor ORP sensor is a test device that measures the ratio of oxidation (loss of electrons) and reduction (gain of electrons) of dissolved substances in solution.

The unit is m, and it can be measured together with the pH value of a solution.

Experiment list :Measurement of redox degree

Transformation of Coke

ESD50101



Wireless Weather Station

Temperature: -40 -60°C

Humidity: 0-100 %RH

Barometer: 300-1,100hPa

Wind Direction: 0-360°

Wind Speed: 0-30 m/s -Light: 0

188,000 Lx - UV: 0-10 Index

The wireless weather sensor is a multi-sensor that can measure various meteorological measurement with one sensor.

Built-in display and wireless communication add portability and convenience.

Experiment List

Weather observation during the day

Weather forecast through change

of weather information in

our village. Compare the

weather in your current

location with the local weather forecast.



ESD50056



Wireless Fine Particles Sensor

Range :0~ 500 min

Resolution: 1 am

The wireless fine dust sensor can measure fine dust in the air and simultaneously measure fine dust (10um) and ultrafine dust (2.5um).

Experiment list

Measure whether fine dust is generated when using a gas stove

Measurement of fine dust in the air

Measuring the effect of air purifying plants

Measurement of fine dust according to location

ESD50055



Wireless B-Differential Gas Pressure Sensor

Range: -650 ~ 4650 hPa

Resolution: 0.355 hPa

Wireless pressure sensor B has a narrower range than pressure sensor A.

It can measure pressure more accurately, has excellent resolution and is used in chemical experiments where a small amount of gas is generated.

Experiment list

Decomposition of hydrogen peroxide

How clouds are formed

Reaction rate according to surface area

Experiment list

Decomposition of hydrogen peroxide

How clouds are formed

Reaction rate according to surface are

ESD50102



Wireless Temperature / Humidity Sensor

Range: 0~100%

Resolution: 2%

Wireless temperature-humidity sensor is a sensor that can measure relative humidity and temperature at the same time. It outputs a voltage according to the relative humidity in the air and detects humidity by air circulation.

Experiment list

Measurement of evaporation rate according to humidity

Observation of optimal growth conditions by relative humidity in greenhouses, etc.

Comparison of static electricity generation according to humidity

ESD50048

Wireless Heart Rate Sensor

Measurement

Range: 0 ~ 250 BPM

Resolution: 1 BPM

Display: 0.96"

Battery: Li-polymer (700mAh)

Wireless: BLE 4.2 - Wired: USB-C

Experiment list: Comparison of atrial rate before and after exercise
Measurement of effects of stimulants, etc. (caffeinated beverages such as cola, coffee, etc.) Measure your heart rate during various movements (sitting, standing, sudden movements, etc.)

ESD50053



New

Wireless Hand Grip Heart Rate

ESD129HRWL

Wireless EKG Sensor

Range: 0~5 mV

Resolution: 5 UV

Experiment list

ECG measurement

Stimulus and response

Comparing visual, auditory

and tactile response times



ESD50052



Wireless Thermocouple Temperature Sensor

Range: -200 ~ 1200°C

Resolution: 0.6 °C

Experiment list

Flash point measurement

Temperature measurement for inner flame, outer flame and flame core



ESD50047



Wireless Dissolved Oxygen Sensor

Range : 0~50 mg/L

Resolution: 1%

The wireless DO sensor is an optical dissolved oxygen sensor and is a wireless DO sensor for measuring dissolved oxygen in aqueous solution.

Measured values are automatically compensated for temperature, barometric pressure and salinity

Experiment list

Photosynthesis of aquatic plants

Water quality measurement

ESD50048

Wireless Salinity Sensor

Range: 0~ 50 pot

Resolution: 0.02 pot

Experiment list Measuring sea salt level

Measuring salinity

by season



ESD50100

Wireless Spirometer Sensor

Range: -5~5 L/s

Display : 0.96"

Battery : Li- polymer (700mAh)

Wireless : BLE 4.2

Wired : USB-C

Experiment list

Spirometry

Pulmonary function test



ESD50054

ECO/ Photosynthesis Chamber

This product is designed for educational purposes to be used in scientific; applications is an experiment kit that can perform photosynthesis and respiration tests of underwater plants and land plants as well. In order to realize natural photosynthesis, a special lighting LED dimmer is used to minimize an increasing of temperature inside the chamber caused by the heat of light during indoor experiments. Other animals (frogs, grasshoppers, etc.) can be used for respiration and seed germination experiments. kit composition is as follows:

1. Chamber: A device that collects O₂ and Co₂ during photosynthesis and respiration experiments of plants.
2. Light source & power: It is a lighting device that generates light for photosynthesis and the intensity of light can be adjusted.
3. Blackout (light-shielding): A curtain to block light in the breathing test of plants
4. Accessories : sensor fixed rubbers and stands

Light Source for ECO/ Photosynthesis Chamber

ESD50270

ESD50271



ESD50270

ESD50271

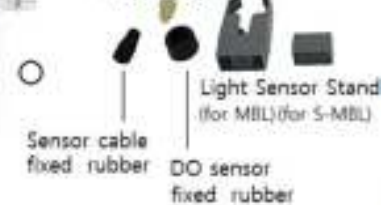
Accessories :

- Blackout
- Light Power Source
- Clip & O ring
- Temp . Sensor Fixed Rubber
- Light Sensor Stand
- Sensor Cable Fixed Rubber
- DO Sensor Fixed Rubber



Clip & O ring

Temp. sensor fixed rubber



Sensor cable fixed rubber

DO sensor fixed rubber

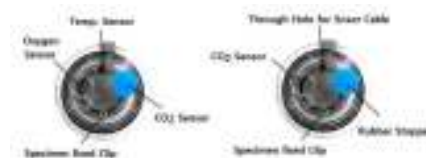
Light Sensor Stand (for MBL) (for S-MBL)

Carbon Dioxide Sensor needs a warm-up time about 30 seconds to 3 minutes and it is recommended to use it when the value stabilizes.

- Oxygen Sensor is only recommended for breathing experiments because the level of oxygen is too fine compared to the range that can be detected by the oxygen sensor during photosynthesis experiments.
- The lighting device generates heat and is very HOT, so be careful about burns and use it only for experiments.
- If the photosynthesis experiment is conducted for more than 5 hours, connect the power supply of interface (data logger) to perform the experiment.

Specification

Chamber D.O. 105 x 150mm
 Light Source LED 3.0W * 6 EA
 Power Supply Input : AC220V,
 Output : DC24V, 1.5A (36W)





Butter Fly Net
Butter fly net with metal handle
ESB50351



Insect Net
Insect net with metal handle
ESB50352



Insects Set Jumbo
Set of different insect made of plastic, large size
ESB50354



Bug Bot
Plastic viewers with 2X lenses and grid printed on the base. Diameter: 50mm.
ESB50353



Magnifier 2 Way
These ideal first microscopes consist of a slide tray, a vertical microscope which allows the pupils to study specimens from above, and a horizontal viewer which allows the study of specimens from below. The vertical section, when in place, forms a sealed unit which prevents any live insects from escaping, but can also be lifted off and used as a magnifying glass.
ESB50461



Soil Test Apparatus
Use to measure soil pH.
Consist of :
Test Tube \varnothing 16 x 150 mm 4 pcs
Test Tube \varnothing 13 x 100 mm 6 pcs
Dropping Pipette 15 cm, Red Bulb 2 pcs
Barium Sulphate (100 g/bottle) 1 pc
Aquadest (200 ml/bottle) 1 pc
Spoon, Stainless Steel 1 pc
Universal Indicator (10 booklet/pack) 1 pc
Test Tube Brush \varnothing 24 mm 1 pc
Manual Book Soil Test Apparatus 1 pc
Wooden Box 1 pc
Dimension :
(L) 20.00 x (W) 19.00 x (H) 19.00 cm
Weight : 1.330 kg

ESB50356



Trundle Wheel
Clicker can be set to 3 positions (off, every 100mm or every metre). Moulded in strong plastic with a hard wearing tyre for use indoors or outside.
ESB50355



Sieves SET
15cm dia. 5 mesh, 10 mesh, 40 mesh, 60 mesh, 120 mesh, 250 mesh with cover & bottom plate.
ESB50357



Hydrometer

HYDROMETER measuring range : 1.0001.200-

HYDROMETER measuring range : 1.2001.400-

ESB50358

ESB50359

**Crystallizer Cold Chamber**

EduSciences convenient portable Crystallizer Cold Chambers provide an inexpensive alternative to the traditional chill table. Feature removable 60 mm x 15 mm clear polystyrene specimen dishes ideal for handling live insects such as *Drosophila* and mosquitoes. Insects are immobilized for study by subjecting them to cold temperatures. Product includes two 9 cm diameter polypropylene Crystallizers, which are placed in a freezer for one to two hours until they reach a temperature of -18°C (0°F). The polystyrene specimen dish is placed on the chilled metal surface of the Crystallizer to protect insects as they remain chilled for examination. Each Crystallizer will require re-chilling after approximately one hour. Two Crystallizers are provided so that one may be chilled while the other is being used. Prior to first use, freeze Crystallizers overnight. Specimen Chambers Pack of 10 Grades 9-14

ESB50360

**Cells I**

The focus of this kit is to learn about cell structures and organelles and correlate cell structure with function. Students view living and dead cells, prokaryotic and eukaryotic cells, live plant and animal cells, and live micro-organisms from pond water. Students gaining experience making wet mounts and stain cells using iodine and methylene blue. Includes cell theory, mitosis and cytokinesis. Designed to share reagents in groups of four. Requires microscopes, goggles, gloves, pond water, potato, and onion. Grade 7-10. Box dimensions B-Box 12 x 11 x 4-1/2 inches, Grades 7-10.

ESB50462

**Cells II**

(Lab Supports Photosynthesis and Respiration, Energy Storage and Transport)

Students model cellular osmosis and diffusion in the lab and study the different methods of cellular transport; passive transport, active transport, facilitated diffusion, pinocytosis and phagocytosis. Students learn how plant and animal cells obtain and store chemical energy. They learn how energy is released during cellular respiration and stored as ATP. They compare the energy content of carbohydrates, lipids, and proteins using calorimetry. They compare the processes of anaerobic and aerobic respiration and the organisms in which each occurs. Students study the process of photosynthesis and separate simulated plant pigments using paper chromatography.

Requires thermometers, beaker, test tubes, test tube support, goggles, scissors, coloured pencils, matches, and food samples for calorimetry. Grades 7-10..

ESB50463





Chart - General Zoology-I Set

Set of 8 charts covering different topics General Zoology - each Size 50x70cm

Includes : Typical Animal Cell * Animal Mitosis * Hydra * Paramecium* Amoeba Proteus * Hookworm * Tapeworm * Earthworm.

ESB50375

Chart - General Zoology-II Set

Set of 8 charts covering different topics General Zoology - each Size 50x70cm

Includes : Euglena * Animal Kingdom * L.H. Of Frog (Metamorphosis)* L.H. of Mosquito * Epithelial & Connective Tissue * Simple & Complex Tissue * Rabbit Dissection & Skeleton

ESB50376

Chart - General Zoology-III Set

Set of 8 charts covering different topics General Zoology - each Size 50x70cm

Includes : Frog Anatomy and Skeleton* Frog Digestive * Frog Circulatory * Frog Respiratory System* Frog Nervous System* Frog Reproductive System (Male)* Frog Reproductive System (Female)* Frog Heart

ESB50377

Chart - General Zoology-IV Set

Set of 8 charts covering different topics General Zoology - each Size 50x70cm

Includes : Rat Excretory System* Rat Digestive System* Rat Circulatory System* Rat Reproductive System (F)* Rat Reproductive System (M)* Rat Anatomy, Dissection showing internal organs (F)* Rat Brain and Heart

ESB50378





The Fish Factory

The purpose of this exercise is to stress the relationship between structure and function and to study the adaptability of fish to their environments. The activities teach about classification systems, anatomy, habitats, and behaviour. Students create a new fish and assign their creation a genus and species name. Then they coordinate its habitat, survival techniques, behaviour, and feeding patterns. At the end of their project, students defend the characteristics they have selected for their new fish species in a five minute presentation. Designed for 24 students working in groups of two. Grades 5-9

ESB50464



Resources Of The Living Ocean

The activities in this kit examine the uniqueness and importance of fish and elodea algae; two of the main living resources of the ocean. Students study the relationship of form and function in fish as they examine fin shapes and sizes, body shapes, mouth size and shape, colour and camouflage. Students predict habitats and behaviours by observing structures on fresh fish and may use a dichotomous key to identify the fish by genus species. They will study oxygen production through photosynthesis in elodea. Required, but not included: microscopes, fresh whole fish, elodea, lamps or sockets with bulbs, ice and a cooler, and glassware. Designed for 24 students working in six groups of four. Grades 9-12

ESB50465



American Beaver Skull

Highly detailed, anatomically correct plastic replica of an American Beaver skull. This robust, high-quality replica is perfect for classroom studies at any level.

The American beaver is the largest rodent found in North America. These aquatic herbivores make large dams of wood and mud to flood and create habitat. Using their large incisors, beavers can chew through the biggest trees. It is for this reason that the American beaver has become a nuisance in some areas where they are overpopulated.

ESB50466



Animal Adaptation Skull Kit - Birds

Highly detailed, anatomically correct plastic replicas of a selection of birds. This robust, high-quality replica is perfect for classroom studies at any level. This kit examines some unique beak adaptations used for feeding and communication. Kit includes: Curriculum and teaching guide, Toucan, Ibis, Great-horned owl, and Spoonbill skull replicas.

ESB50467





American Black Bear Skull

Highly detailed, anatomically correct plastic replica of an American Black Bear skull. This robust, high-quality replica is perfect for classroom studies at any level.

The American black bear is found in disjointed populations from Alaska to Mexico. Black bears are omnivorous feeding on plants, berries, insects, small vertebrates and carrion. Black bears grow to reach six feet tall and can weigh over 300 pounds. The American black bear is a skilful climber and can run up to 25 miles per hour. Also available, black bear articulated fore paw. This specimen is perfect for comparative anatomy with a human hand.

ESB50468



Badger Skull Model

A life size plastic cast of a carefully selected adult Badger (Meles Meles) skull. The mandible is articulated and the dentition is complete, clearly showing the characteristics of a typical carnivore. The skull has the excellent surface detail typical of ES skulls, is robust enough for students to handle and easily cleaned with soapy water.

ESB50470



Animal Adaptation Skull Kit - Mammals

Highly detailed, anatomy

Mammals are a very diverse order of animals. They inhabit nearly every corner of the Earth. This kit focuses on a few of the extreme adaptations mammals have made to occupy their many niches. Kit includes: Curriculum and teaching guide, Owl monkey, Giant anteater, and Sea otter skull replicas.

ESB50469



Cat Skull, Model Plastic

A life size plastic cast of a carefully selected adult cat skull. The mandible is removable and the dentition is complete, showing the characteristics of a typical carnivore. This robust cast shows excellent detail and is ideal for handling by students. It is easily cleaned with soapy water.

ESB50472

Bird Of Prey Skull Kit

Highly detailed, anatomically correct plastic replicas of a selection of birds of prey. This robust, high-quality set is perfect for teaching about birds of prey (raptors) and their unique predatory adaptations and lifestyle. Kit includes: Curriculum and teaching guide, Red-tailed hawk, Great-horned owl - P, Peregrine falcon, and Bald eagle skull replicas.

ESB50471





Chimpanzee Skull Model, Plastic

A life size plastic cast of a carefully selected adult female Chimpanzee. The mandible is removable and the dentition is complete. The skull is robust enough for students to handle and is easily cleaned with soapy water.

Size 13x13x21cm.

ESB50473



Comparative Skull Set

Highly detailed, anatomically correct plastic replicas of a selection of animals. This robust, high-quality skull set gives the student the opportunity to compare the skulls and dentition of two carnivores, two herbivores and one omnivore, as well as a bird and a reptile.

Set Contains: Turtle, Fox, Turkey, Rabbit, Bobcat, Skunk and Porcupine.

ESB50474



Dietary Skull Set

Highly detailed, anatomically correct plastic replicas of a selection of mammals. This robust, high-quality skull set is perfect for classroom studies at any level. These mammal skulls demonstrate their dietary differences - illustrated by each animals dentition. The coyote and mink show the typical slicing carnivore teeth, while the beaver and muskrat show the grinding crushing molars consistent with herbivorous diets. The raccoon and skunk, both being omnivorous, possess both sharp, slicing canines and broad flat molars.

Set Contains: Coyote, Beaver, Raccoon, Mink, Muskrat and Skunk.

ESB50475



Domestic Pig Skull Model

Highly detailed, anatomically correct plastic replica of a Domestic Pig skull. This robust, high-quality replica is perfect for classroom studies at any level.

The domestic hog, also known as swine, wild boar or feral hog, descended from introductions of Eurasian wild hogs. Pigs are believed to have been domesticated in Asia between 7000 and 10,000 years ago. Today, the domestic hog is farmed world wide as a food source. Feral, or wild, hog populations exist in the US from escaped domestic swine and introduced specimens for sport hunting.

ESB50477



Dog Skull Model , Plastic

A life size plastic cast of a carefully selected medium size adult dog skull. The mandible is removable and the dentition is complete, clearly showing the characteristics of a typical carnivore. The skull has the excellent surface detail typical of ES skulls, is robust enough for students to handle and easily cleaned with soapy water.

ESB50476





Gorilla Skull, Plastic

A life size plastic cast of a carefully selected adult male Gorilla, the largest of the primates. The mandible is removable and the dentition is complete. The skull is robust enough for students to handle and is easily cleaned with soap and water.

Size 18x20x40cm.

ESB50478



Hare Skull

Highly detailed, anatomically correct plastic replica of a Hare skull. This robust, high-quality replica is perfect for classroom studies at any level. The Hare, also called the Jack-rabbit in the United States, is found throughout most of the world. They are born precocial, meaning they are born with hair and are independent shortly after birth. Hares and Jack-rabbits are probably best known for their large ears and powerful hind jumping legs.

ESB50479



Hedgehog Skull

Highly detailed, anatomically correct plastic replica of a Hedgehog skull. This robust, high-quality replica is perfect for classroom studies at any level.

Hedgehogs are covered with sharp quills that aid in their protection. Many species of hedgehogs can roll into a ball, hiding all vulnerable areas of the body under the protective spines. Hedgehogs live under logs or in burrows that they dig. They eat a wide variety of foods, including invertebrates, reptiles, carrion, roots, and fruits. Hedgehogs are active only at night, and some species hibernate in the winter.

ESB50480



Mountain Goat Skull

Highly detailed, anatomically correct plastic replica of a Mountain Goat skull. This robust, high-quality replica is perfect for classroom studies at any level.

The mountain goat is found in North America from southern Alaska, throughout much of British Columbia and into north-western United States. This agile species inhabits mountainous rocky cliffs and hillsides generally above the tree line. The mountain goat is an herbivorous browser feeding on shrubs, grasses, berries and lichens. Horns are found in both male and females of this species.

ESB50481



Mouse Skull

Highly detailed, anatomically correct plastic replica of a House Mouse skull. This robust, high-quality replica is perfect for classroom studies at any level.

The term «mouse» can refer to any number of small rodents within the Muridae family. The House mouse *Mus musculus*, is often associated with human populations and can be found on every continent. Mice, like all rodents, have ever growing incisors, and therefore, need to chew on wood or other materials to wear them down. This, along with their appreciation for human food and crops, and the propensity to spread disease, causes the mouse to be one of humanity's worst pests.

ESB50482





Orangutan Skull, Plastic

A life size plastic cast of a carefully selected adult male Orang Utan. The mandible is removable and the dentition is complete. The skull is robust enough for students to handle and is easily cleaned with soap and water.
Size 16x16x18cm.

ESB50483



Predator & Prey Skull Set

Highly detailed, anatomically correct plastic replicas of a selection of predator and prey skulls. This robust, high-quality replica skull set is perfect for classroom studies at any level. Offers two of the most common and abundant predators found in North America and three of the most common prey. The Coyote & Bobcat also fill similar prey niches on the North American food chain. Nicely demonstrates the natural order of things in the predator/prey world and shows anatomical features that make a predator successful. Set Contains: Coyote, Bobcat, Rabbit, Squirrel & Turkey.

ESB50484



Rabbit Skull, Plastic

A life size plastic cast of a carefully selected adult rabbit skull. The mandible is removable and the dentition is complete. This robust cast shows excellent detail and is ideal for handling by students. It is easily cleaned with soapy water..

ESB50485



Sheep Skull Model, Plastic

A life size plastic cast of a carefully selected adult sheep skull. The mandible is removable and the dentition is complete, clearly showing the characteristics of a typical herbivore. The skull has the excellent surface detail typical of ES skulls, is robust enough for students to handle and easily cleaned with soapy water.

ESB50488



Rainforest Skull Kit

Highly detailed, anatomically correct plastic replica of a selection of Rainforest animal skulls. This robust, high-quality replica skull set is perfect for classroom studies at any level. The tropical rainforest is home to the most biodiversity on the planet. This unique habitat has many wonderful species that have adapted to living in this lush environment. Kit includes: Curriculum and teaching guide, Spider monkey, Sloth, Toucan, and Ocelot skull replicas.

ESB50486





Red Fox Skull Model

Highly detailed, anatomically correct plastic replica of a Red Fox skull. This robust, high-quality replica is perfect for classroom studies at any level.

The red fox is native to North America, Europe and most of Asia and has been introduced to Australia and Africa. Although a member of the order Carnivora, the red fox is essentially an omnivore. It mostly eats rodents, lagomorphs, insects, fruit and occasionally carrion. Red foxes have a characteristic manner of hunting mice. The fox stands motionless, listening and watching intently for a mouse it has detected. It then leaps high and brings the forelimbs straight down forcibly to pin the mouse to the ground.

ESB50487



Small Clawed Otter Skull

Highly detailed, anatomically correct plastic replica of a Small-clawed Otter skull. This robust, high-quality replica is perfect for classroom studies at any level.

The small-clawed otter is native to south-eastern Asia. This species, as its name suggests, has greatly reduced claws, a characteristic shared by all three species within the Aonyx genera. The small-clawed otter is carnivorous feeding on crustaceans, molluscs and small amphibians. This intelligent species has been trained and employed by Malaysian fishermen to catch and deliver fish.

ESB50489



Transparent Canine Jaw, Life-Size

A life-size model of a canine jaw from a medium to large dog. This upper and lower jaw is modelled in transparent material to facilitate the illustration of the individual tooth roots in the canine jaw. The teeth are individually moulded and anatomically correct. Model is supplied as an upper and lower jaw complete with articulator.

ESB50490



Star Fish Model

the model features a detailed study of star fish. Three arms and the central disc of the star-fish are greatly enlarged. Asterias are dissected to show ventral and dorsal surfaces, digestive and water vascular systems, gonads, nerve ring and radial nerves, and the skeleton. A fourth arm is cross-sectioned to show the coelom and tube feet. The surface illustrates the podia and pedicel-lariae. The model can be removed from its stand for closer examination. With numbered Key Card.

Dimensions : 45x40x6cm

Weight : 2000g

ESB50460

Star Fish Model On Stand

The model provides a comprehensive examination of a starfish. Three arms and the central disc are significantly magnified for detailed observation. Asterias specimens are dissected to reveal ventral and dorsal surfaces, digestive and water vascular systems, gonads, nerve ring and radial nerves, as well as the skeleton. Additionally, a fourth arm is cross-sectioned to display the coelom and tube feet. The model's surface showcases podia and pedicel-lariae. It can be detached from its stand for closer inspection and includes a numbered Key Card for reference.

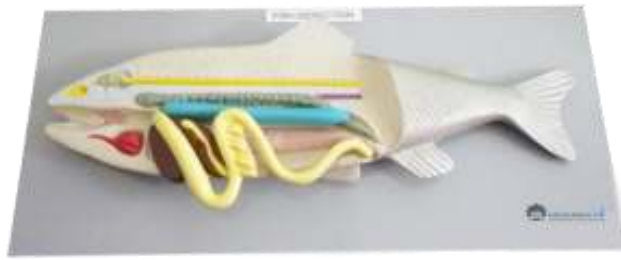
The model is securely mounted on a base With a stand, providing stability for educational or display purposes.

Dimensions : 53*38*13 cm

Weight :3500 g

ESB50457





Fish Model

The model depicts a lateral view of a standard dissection of a typical bony fish. It showcases various features such as the digestive tract, gills, fins, gonads, and swim bladder. Additionally, some details of the nervous, circulatory, and skeletal systems are also highlighted. Carefully painted and mounted on a plastic base

Base Dimensions : 37.5x17cm.

ESB50491



NEW



Fish Model On Stand

This life-size model, consisting of five parts, illustrates the anatomy of a typical bony fish. On the right side, it displays external structures such as fins, eyes, and nostrils, while the left side is longitudinally sectioned to unveil internal characteristics . The detachable components comprise:

Half head , Branchial arch , Liver with intestine , Gas bladder
The model is mounted on a base with a stand.

Dimensions: 40x26x24.5 cm

Weight: 1500 g

ESB50447

NEW



Chromosome Model

This single-piece model, 10000X enlarged, shows the structure of a human chromosome. All the main parts- centromere, telomere and loops - are extremely accurately reproduced.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 15*15*37CM

Weight : 520g

ESB51387

NEW



Comparative Tapeworm Model

This model provides a comparative analysis of the structures of Taenia saginata and Taenia solium scolex. It also illustrates the anatomy of the proglottid at three different stages of maturation: immature, mature, and gravid. Important structures such as suckers, hooklets, uterus, and testis are clearly labeled and referenced in the accompanying manual, making it an effective educational tool for studying the morphology and lifecycle of these parasitic organisms.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 53*38*9.5cm

Weight : 750g

ESB50456





Rat Dissection Model

This life-size model, consisting of six parts, serves as a crucial resource for zoological studies, offering a lifelike representation of rat anatomy. Through ventral dissection, it unveils the heart, lungs, liver, intestines, as well as the male and female reproductive systems. Additionally, the internal organs can be detached for more detailed inspection.

Dimensions :23*18*5.5 cm

Weight : 430 g

ESB50492

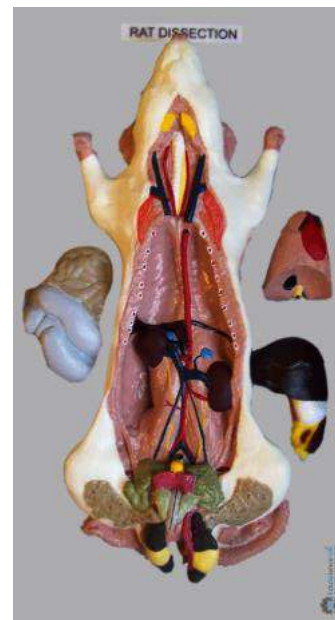
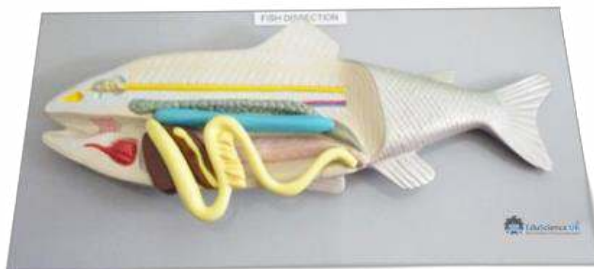
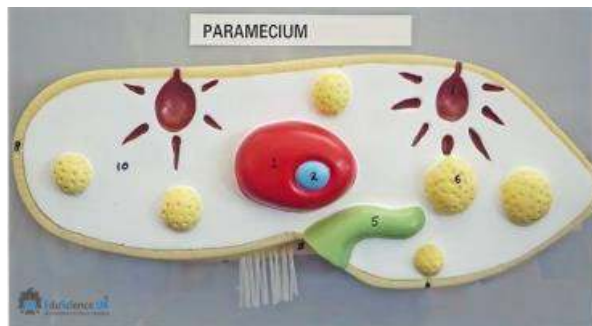


Rat Model General Dissection

An ideal introduction to mammalian anatomy, which can be used in the classroom in place of some dissections. Clearly coloured, the model is male, life size and mounted on a plastic base. The heart and lungs, liver and stomach, and intestines are removable to show other internal organs. A key card with 5 detailed diagrams is supplied.

Dimensions : 30*15 cm.

ESB50494



Rat Model / Fish Model / Paramecium Model

Set Of 3

A set of three models: Rat Model / Fish Model / Paramecium Model

Rat Model : An ideal introduction to mammalian anatomy, which can be used in the classroom in place of some dissections. Clearly coloured, the model is male, life size and mounted on a plastic base. The heart and lungs, liver and stomach, and intestines are removable to show other internal organs. A key card with 5 detailed diagrams is supplied.

Base size 30*15 cm.

Fish Model : Lateral view of a general dissection of a typical bony fish. The features shown include digestive tract, gills, fins, gonads and swim bladder. Some detail of the nervous, circulatory and skeletal systems also shown. Carefully painted and mounted on a plastic base

Size 37.5*17 cm.

Paramecium Model : A detailed model showing internal and external features of Paramecium, including mega nucleus, micronucleus, oral groove, buccal cavity, food vacuoles, contractile vacuoles, trichocysts and locomotory cilia. Mounted on base and supplied with key card.

Dimensions 25*12 cm.

ESB50493



Bird Dissection Domestic Hen Model

This life-size model, composed of eight parts, provides a comprehensive depiction of hen anatomy. On one side, it illustrates the external morphology, while the longitudinally sectioned portion on the other side reveals internal structures including muscles, heart, liver, intestine, stomach, lungs, reproductive system, and an egg. Accompanying the model is a multilingual key card identifying 39 structures.
 Dimensions : 40*26*47.5 cm
 Weight : 2400 g

ESB50451



Fetus Pig Dissection Model

The fetus pig model typically represents the anatomy of a developing pig embryo. It may come in various sizes depending on the stage of development being depicted. These models are commonly used in educational settings, particularly in biology and veterinary science, to study fetal development and anatomy in mammals. They often feature lifelike details and can be dissected to explore internal structures.
 Dimension : 39.5*53.5*18 cm

ESB50448



Fetus Cat Dissection Model

The cat model is a life-size representation of feline anatomy, it includes detailed musculature on one side to study superficial muscles and removable organs on the other side for examining internal structures. The model helps students learn about the anatomy and physiology of cats, including their skeletal system, muscles, internal organs, and reproductive system.
 Dimension :53*38*12 cm
 Weight :2800 g

ESB50452

Cat Skeleton Model

Highly detailed, anatomically correct plastic replica of a Cat skeleton. This robust, high-quality replica is perfect for classroom studies at any level. The model is securely mounted on a base, providing stability for educational or display purposes.
 Dimension : 64*13*23.5 cm
 Weight : 950 g

ESB50607





Canine Dissection Model

This is life size dog anatomical model. Right size shows the superficial muscles. Main organs can be taken out to study the internal structure.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 52*42*11 cm

Weight : 2100 g

ESB50450



Canine Skin Model

Enlarged cross-section of canine skin. One side features normal skin anatomy extending from the epidermis

down to the layer of subcutaneous fat. The reverse side demonstrates the progressing changes of a flea bite from wheal to infected pustule. The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 33*23*158cm

Weight : 2800g

ESB50897



Canine Knee Model

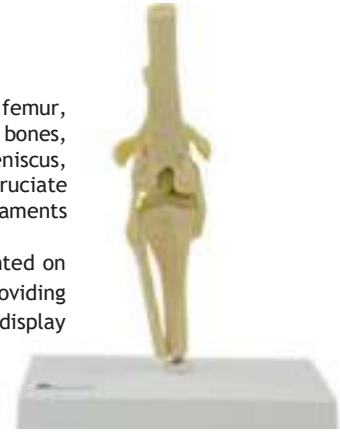
Average size knee with femur, fibula, patella and tibia bones, lateral and medial meniscus, anterior and posterior cruciate ligaments, plus six more ligaments and tendons.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 41*32*21cm

(Each Piece)

Weight : 2400g



ESB50609



Canine Ear Model

This two-sided, average size, canine ear depicts: a normal side with cochlea, auditory ossicles, auditory tube, tympanic bulla, middle ear cavity, tympanic membrane, horizontal canal, vertical canal, auricular cartilage, pinna and temporalis muscle abnormal side illustrates inflamed inner ear structures, inflammatory exudate in tympanic bulla, ear canal with partial occlusion from cellular hyperplasia, inflammatory exudate and an inflamed outer ear.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 13*16*15 cm

Weight : 350g

ESB50896

Canine Skeleton Model

Highly detailed, anatomically correct plastic replica of a Canine Skeleton. This robust, high-quality replica is perfect for classroom studies at any level.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimension : 40*20*30 cm

Weight : 3200 g

ESB50608





Horse Dissection Model (Fiber glass)

The product is longitudinally sectioned to show the section structure.

The left outer side of the product shows the distribution of superficial muscles and fascia, and some ribs; the inner side shows the head and neck structure and the shape and distribution of ribs, intercostal muscles, and abdominal wall muscles.

In the chest and abdomen, organs such as heart, lung, liver, stomach, and intestine can be removed, and some organs are shown in cross section to show the internal structure.

The model is securely mounted on a base, providing stability for educational or display purposes.

ESB50453



Sheep Dissection Model (Fiber glass)

The product is longitudinally sectioned to show the section structure.

Part of the skin was peeled off on the left side of the product, showing the shape and direction of the superficial muscles and fascia. The inside shows the shape and distribution of the head and neck structure and ribs, intercostal muscles, and abdominal wall muscles, and shows the cross-sectional structure of the breast.

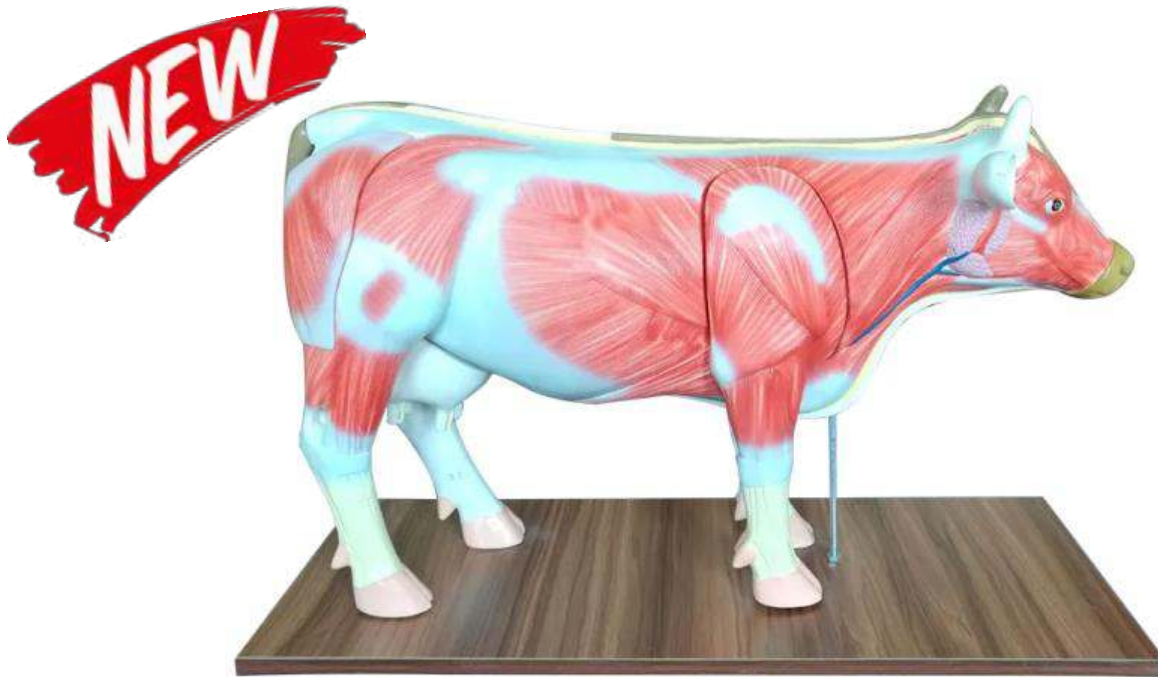
The right outside of the product shows the complete shape, and the inside shows the cross-sectional structure of the head and neck. In the chest and abdomen, organs such as the heart, lungs, liver, stomach, and intestines can be removed, and some organs are sectioned to show their internal structures. Uterine and vaginal sections can be removed..

Dimensions : 72*23*63 cm

Weight : 3800 g

ESB50455





Cow Dissection Model (Fiber glass)

The product is profiled to show the profile structure.

The left side of the product remains intact. The medial structure of the head and neck is shown, showing the shape and distribution of the ribs, intercostal muscles, and abdominal wall muscles. The cross-sectional structure of the breast is shown. In the chest and abdomen, the organs such as heart, lungs, diaphragm, liver, stomach, and intestines can be removed.

Part of the skin is peeled off on the right side of the product, showing the shape and direction of superficial muscles and fascia.

The inside shows the cross-sectional structure of the head and neck, ribs, and abdominal wall muscles, and the vagina and uterus are used as cross-sections.

Dimensions : 88*36*56 cm

Weight : 12500 g

ESB50454



Pig Dissection Model (Fiber glass)

The product is longitudinally sectioned to show the section structure.

The left side of the product is a cross-section on the head to show the cross-sectional structure, and the skin peeled off from the head shows muscle morphology and blood vessel distribution. The forelimbs can be removed to show the distribution and direction of superficial and deep muscles.

The exterior of the right half of the product shows the complete shape. The inside shows the cross-sectional structure of the head, brain, and throat. Organs such as the chest, abdomen, heart, lungs, liver, pancreas, gastrointestinal tract can be removed, and some internal organs are shown in section to show their internal structure..

Dimensions : 105*33*56 cm

Weight : 15500 g

ESB50449





Paramecium Model

A detailed model showing internal and external features of Paramecium, including mega nucleus, micro nucleus, oral groove, buccal cavity, food vacuoles, contractile vacuoles, trichocysts and locomotory cilia. Mounted on base and supplied with key card.

Dimensions 25*12cm.

ESB50496



Paramecium Model

The Paramecium Model (3D-Dimension) provides a detailed representation of both the internal and external features of Paramecium. It showcases structures such as the mega nucleus, micro nucleus, oral groove, buccal cavity, food vacuoles, contractive vacuoles, trichocysts, and cilia. The model is mounted on a base for stability. Additionally, it comes with a catalogue or shrink-wrapped key card containing numbered structures labeled in English for easy reference

Dimensions : 40x26x16cm

Weight : 1660g

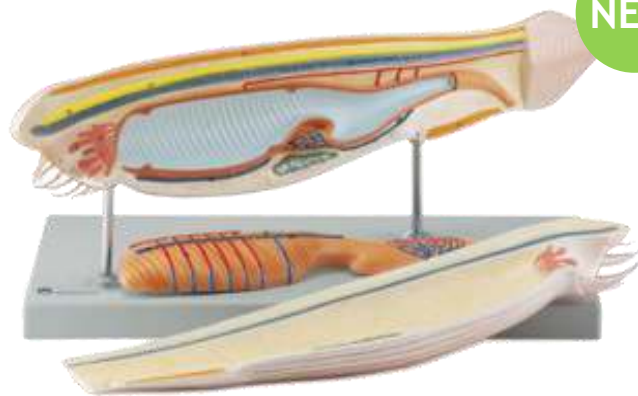
ESB50497



Model Of Amoeba

Enlarged 1000 times, 2 part amoeba model. Operable small pseudo podium for display of internal structures as magnified by electron microscope. Mounted on base. Numbered with key card for identification of features.

ESB50498



Model Of Amphioxus

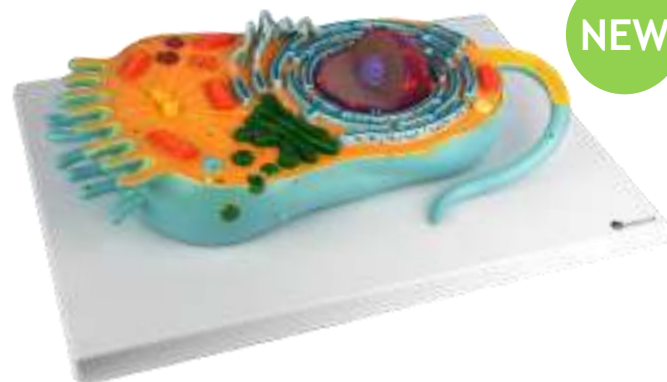
Enlarged to 10 times life-size, this three-part model illustrates the morphology of an Amphioxus. Its longitudinal section allows for easy study of the inner anatomy, with all main structures like the cerebral vesicle, neural tube, nephridium, gonad, and circulatory system clearly labeled and referenced on the accompanying multilingual key card (included). The model is mounted on a base,

Dimensions : 43x30x18 cm

Weight : 800 g



ESB50459



Animal Cell Model

This singular model, enlarged approximately 13,000 times, serves as an invaluable aid in studying the cytology of a eukaryotic cell. It meticulously replicates typical structures such as microvilli, flagellum, mitochondria, nucleus, rough and smooth endoplasmic reticulum with exceptional detail and precision. Additionally, the model is accompanied by a multilingual key card identifying 24 structures

Mounted on a base,

Dimensions : 55x38x15 cm

Weigh : 2000 g.

ESB50459SP





Animal Cell Model, 20000 Times Enlarged

Animal cell Model has been magnified 2000 times, mounted on board

Dimensions : 33*47*17cm

Weight : 3000g



Animal Cell Model

The two piece animal cell model shows the form and structure of a typical animal cell as viewed by an electron microscope. All important organelles are shown in raised relief and displayed in colour. Features included are:

- Nucleus
 - Mitochondrion
 - Smooth Endoplasmic Reticulum (ER)
 - Rough Endoplasmic Reticulum (ER)
 - Basal membrane
 - Collagen, fibres
 - Golgi apparatus
 - Microvilli Lysosome
- Dimensions : 21x11x31 cm



Frog Model

Enlarged to 3 times life size, this model offers a precise depiction of the frog's morphology. The ventral part is exposed, allowing for a detailed examination of the internal anatomy. Removable components consist of the heart, lungs, liver, stomach, and intestine. The accompanying multilingual key card identifies more than 15 structures for reference

Dimensions : 17*22* 39cm

Weight : 1500g



ESB50499



ESB50501

Frog Embryology Set

Five models showing near median sections through the egg during development from early gastrula to neurula. Features shown include dorsal lip, blastophore, blastocoel, rudimentary gut and CNS.

The models are 10cm high on the pedestal.

Frog Dissection

Model showing dissectable structure of frog. Mounted on board .Numbered with English Key card.

ESB50502

Simulated Frog Dissection Kit

- Authentically detailed frog body
- Removable texture organs
- Cross sections show muscle structure



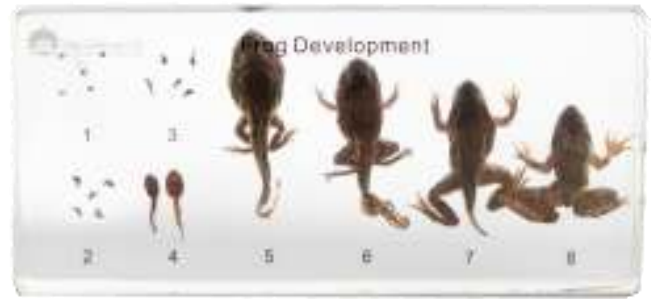
ESB50503

ESB50622



Life Cycle Of Frog- PE

The Frog life cycle epoxy resin block is the perfect tool for teaching pupils about the life cycle of the Frog . Includes : (eggs (spawn), subsequent stages of tadpole development: immediately after hatching, with external gills, and then with internal gills, the tadpole after developing its hind limbs and then also its forelimbs, young frog with a short tail, adult frog) The block is made of epoxy resin so it will not break even if it is accidentally dropped. Block Size :140*64*18 (±2)



ESB50507

Life Cycle Of Frog 5 Stages - PE

ESB50507

ESB50507/5

Life Cycle Of Frog 4 Stages - PE

ESB50507/4

Life Cycle Of Frog Round - PE

ESB50507/R



ESB50507/5



ESB50507/R

Φ 95*20



ESB50507/4

Life Cycle Of Frog Set- PE

Specimens consist of: Egg (Block Size: 32mm x 58mm x 17mm) - Tadpole (Block Size: 32mm x 58mm x 17mm) - Tadpole with hind legs (Block Size: 32mm x 58mm x 17mm) - Tadpole with limbs (Block Size: 32mm x 58mm x 17mm) - Tadpole with contraction tail (Block Size: 32mm x 58mm x 17mm) - Froglet (Block Size: 32mm x 58mm x 17mm) - Adult Frog (Block Size: 72mm x 72mm x 22mm)

All specimens are contained in high quality acrylic blocks. Made of durable acrylic plastic Includes a real specimen of each of the life cycle stages A great learning tool for kids or adults Stored in a foam display insert Display case measures: 250 x 177 x 40mm

ESB50507 ST



Life Cycle Of Cabbage Butterfly - PE

The butterfly life cycle epoxy resin block is the perfect tool for teaching pupils about the life cycle of the butterfly. From egg to caterpillar and then to chrysalis and finally to an adult butterfly, see all of the details up close. Includes : (eggs laid on a leaf, larva (caterpillar), chrysalis, mature male butterfly, mature female butterfly, host) The block is made of epoxy resin so it will not break even if it is accidentally dropped.

Block Size :140*64*18 (±2)



ESB50508



ESB50508/4



ESB50508/R

Φ 95*20

Life Cycle Of Cabbage Butterfly 4 Stages - PE

It has been embedded in Transparent Epoxy Resin Block for observation and study. Specimen Includes Eggs - larva (caterpillar) - pupa -perfect insect - imago (butterfly) ; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped. Block Size :110*43*20(±2)

ESB50508/4

ESB50508/R

Life Cycle Of Cabbage Butterfly Round- PE

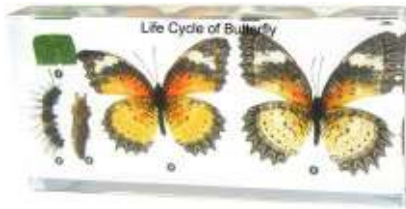
Life Cycle Of Cabbage Butterfly Set - PE

It has been embedded in Transparent Epoxy Resin Block for observation and study. Specimen Includes Eggs, chrysalis, caterpillar, Butterfly ; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size :Eggs, chrysalis, caterpillar: L 7.5cm x W 4cm Butterfly: L 7.5cm x W 7.5cm

ESB50508ST





Life Cycle Of Butterfly I - PE

The butterfly life cycle epoxy resin block is the perfect tool for teaching pupils about the life cycle of the butterfly. From egg to caterpillar and then to chrysalis and finally to an adult butterfly, see all of the details up close. The block is made of epoxy resin so it will not break even if it is accidentally dropped. Block Size :164*78*20 (±2)

ESB50509

Life Cycle Of Butterfly II - PE

The butterfly life cycle epoxy resin block is the perfect tool for teaching pupils about the life cycle of the butterfly. From egg to caterpillar and then to chrysalis and finally to an adult butterfly, see all of the details up close. The block is made of epoxy resin so it will not break even if it is accidentally dropped. Block Size :164*78*20 (±2)



ESB50510



ESB50510/R

ESB50510



NEW

Life Cycle Of Butterfly Set - PE

It has been embedded in Transparent Epoxy Resin Block for observation and study. Specimen Includes Eggs, chrysalis, caterpillar, Butterfly ; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped. Block Size :Eggs, chrysalis, caterpillar: L 7.5cm x W 4cm Butterfly: L 7.5cm x W 7.5cm

ESB50510/ST

Life Cycle Of Grasshopper - PE

See the full life cycle of a Grasshopper in this 9 stage development specimen Include :Egg, 1st Instar, 2nd Instar, 3rd Instar, 4th Instar, 5th Instar, Male Adult, Female Adult, Rice Leaf. . The real life grasshoppers are encased in break proof epoxy resin. Block Size :164*78*20 (±2)

ESB50511



ESB50511



ESB50511/R

Life Cycle Of Grasshopper 4 Stage – PE

ESB50511/4

Life Cycle Of Grasshopper Round - PE

ESB50511/R



ESB50511/4



NEW

Life Cycle Of Grasshopper Set- PE

See the full life cycle of a Grasshopper in this 5 stage development specimen. The real life grasshoppers are encased in break proof epoxy resin.

ESB50511ST



Life Cycle Of House Fly

Specimen of house fly life cycle stages

ESB50504



Life Cycle Of Mosquito

Specimen of mosquito life cycle stages

ESB50505



Life Cycle Of Silk Worm

Specimen of silk worm life cycle stages

ESB50506



Life Cycle Of Honey Bee - PE

Shows the full life cycle of a Honey Bee, from the egg right through to the full sized bee, including Includes : eggs, larva, pupa, 3 versions of an adult bee: queen, worker, drone, fragment of an empty patch, a patch filled with bee bread, i.e. a mixture of pollen, honey and nectar, queen cell - a characteristic cell in which the queen matures, beeswax, vial with liquid honey.). Each stage is clearly displayed and encased in break proof epoxy resin. Block Size :140*64*18 (±2)

ESB50512
ESB50512/5
ESB50512/R



Life Cycle Of Honey Bee 5 Stage - PE

Life Cycle Of Honey Bee Round - PE



Life Cycle Of Honey Bee Set- PE

Shows the full life cycle of a Honey Bee, from the egg right through to the full sized bee, including honey, pollen and beeswax. Each stage is clearly displayed and encased in break proof epoxy resin.

ESB50512ST

Life Cycle Of Silkworm - PE

Shows the full life cycle of silkworm, from the egg right through to the full sized silkworm Includes : (eggs, larvae immediately after hatching, subsequent stages of caterpillar development (after the 2nd, 3rd and 4th molting), caterpillar on a mulberry leaf, cocoon, chrysalis, adults, male and female, silk, silk fabric.). Each stage is clearly displayed and encased in break proof epoxy resin. Block Size :140*64*18(±2)

ESB50513

Life Cycle Of Silkworm 4 Stage - PE

Life Cycle Of Silkworm Round - PE

Life Cycle Of Silkworm 13 Stage - PE



ESB50513/13



ESB50513



ESB50513/R



ESB50513/4



Life Cycle Of Silkworm Set - PE

Shows the full life cycle of silkworm, Includes : (Eggs Larvae (silkworms) on a leaf Nymph and cocoon Adult butterfly Silk samples) from the egg right through to the full sized silkworm. Each stage is clearly displayed and encased in break proof epoxy resin. Size : 225 x 185 x 45 mm

ESB50513ST

Life Cycle Of Dragon fly - PE

Shows the full life cycle of a Dragonfly, from the egg right through to the full sized Dragonfly Includes : (Egg Nymph 1 Nymph 2 Adult (male) Adult (female)). Each stage is clearly displayed and encased in break proof epoxy resin. Block Size :164*78*20 (±2)

ESB50514

Life Cycle Of Dragon fly 4 Stage - PE

Life Cycle Of Dragon fly Round - PE



ESB50514



ESB50514/4



ESB50514/R





Life Cycle Of Dragon fly Set- PE

Shows the full life cycle of a Dragonfly includes : (Eggs Young larva Advanced larva Dragonfly) from the egg right through to the full sized Dragonfly. Each stage is clearly displayed and encased in break proof epoxy resin.
Size :225 x 185 x 45 mm

ESB50514ST

Life Cycle Of Cicada - PE

Shows the full life cycle of a Cicada, from the egg right through to the full sized Cicada Include : (Eggs - Nymph - Periostracum Cicadae - : Hulled Cicadae - Female Adult - Female Adult - Branch with eggs) .Each stage is clearly displayed and encased in break proof epoxy resin. Block Size :164*78*24 (±2)

ESB50515



Life Cycle Of Cockroach - PE

Shows the full life cycle of a Cockroach, from the egg right through to the full sized Cockroach. Each stage is clearly displayed and encased in break proof epoxy resin.
Block Size :140*64*20 (±2)

ESB50516

Life Cycle Of Firefly - PE

Shows the full life cycle of Firefly, from the egg , Nymph 1 , Nymph , Pupa , Adult full sized Firefly. Each stage is clearly displayed and encased in break proof epoxy resin.
Block Size :88*58*18 (±2)

ESB50894



Life Cycle Of Housefly - PE

Shows the full life cycle of a Housefly, from egg to larva, pupa, and adults housefly. Each stage is clearly displayed and encased in break proof epoxy resin.
Block Size : 88*58*18 (±2)

ESB50517

Life Cycle Of Damselfly - PE

Shows the full life cycle of a Damselfly, from egg, larva, pupa to adult full sized Damselfly. Each stage is clearly displayed and encased in break proof epoxy resin.
Block Size :164*78*20 (±2)

ESB50518



Life Cycle Of Mosquito - PE

Shows the full life cycle of a Mosquito , from the egg right through to the full sized Mosquito. Each stage is clearly displayed and encased in break proof epoxy resin.
Block Size :73*41*15 (±2)

ESB50895



Life Cycle Of Mantis - PE

Shows the full life cycle of Mantis, from the egg right through to the full sized Mantis. Each stage is clearly displayed and encased in break proof epoxy resin.
Block Size :164*78*24 (±2)



ESB50519



Life Cycle Of Insects Collection Set - PE

Shows the full life cycle of 12 different insects , from the egg right through to the full sized Each stage is clearly displayed and encased in break proof epoxy resin. Includes : (butterfly I, cabbage butterfly , grasshopper , silkworm , dragonfly , cockroach , housefly , mantis , honeybee, cicada , silkworm and mosquito)

ESB50522

Life Cycle Of Crab- PE

Shows the full life cycle of a Crab , from baby right through to the full sized Scorpion. Each stage is clearly displayed and encased in break proof epoxy resin.



ESB50893

Φ 95*20



Life Cycle Of Scorpion - PE

Shows the full life cycle of a Scorpion, from baby right through to the full sized Scorpion. Each stage is clearly displayed and encased in break proof epoxy resin.
Block Size :164*78*20 (±2)

ESB50520

Life Cycle of Turtle Set- PE

This real 27 different type of insects has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.



ESB50892



Life Cycle Of Chick Development - PE

Shows the full life cycle of a Chick, from the egg right through to the full sized Check. Each stage is clearly displayed and encased in break proof epoxy resin.
Block Size :177*125*65 (±5)

ESB50521

Scorpion Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study. Specimen Includes Scorpion Specimen ; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.
Block Size :88*58*18 (±2)



ESB50579



Water Snake - PE

This real Water snake has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :164*78*20(±2)

ESB50549





Specimen Conformation Of Grasshopper - PE

This real Grasshopper has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 88*58*24 (±2)

ESB50573

Specimen Of Spider I -PE

This real Spider has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 75*75*24 (±2)

NEW



ESB50580/I

NEW



Specimen Of Spider II -PE

This real Spider has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 135*90*35(±2)

ESB50580/II

NEW



Specimen Of Spider III -PE

This real Spider has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 75*75*24 (±2)

ESB50580/III

NEW



Specimen Of Spider & Scorpion Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study. Specimen Includes Scorpion Specimen ; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped. Block Size :88*58*18 (±2)

ESB50581

NEW



Specimen Of Leaf Beetles 3 Kinds- PE

This real Kinds 3 Kinds of Leaf Beetles has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :44*29*18(±1)

ESB50582



Specimen Of Chafer Beetle 3 kinds - PE

This real Specimens for 3 Kinds of of Chafer Beetle has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :110*43*28 (±2)

ESB50583/3



NEW

NEW



Specimen Of Chafer Beetle 2 Kinds - PE

This real Specimens for 2 Kinds of of Chafer Beetle has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :73*41*20(±2)

ESB50583/2

NEW



Specimen Of Chafer Beetle 8 Kinds- PE

This real Specimens for 8 Kinds of Chafer Beetle has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :164*78*20(±2)

ESB50583/8

NEW



Specimen Of Stinkbug 9 Kinds - PE

This real Specimens for 9 Kinds of Stinkbug has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :164*78*20(±2)

ESB50422

Specimen Of Stag Beetle 4 Types - PE

This real Specimens for 4 Kinds of Stag Beetle has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :95*95*20 (±2)

ESB50423



NEW



Specimen Mimesis Of Stick Insect,- PE

This real Mimesis of Stick Insect has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 140*64*18 (±2)

ESB50565

Specimen Of Centipede and Millipede - PE

This real Centipede Millipede has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 140*64*18 (±2)

ESB50570





Arthropod Representatives - PE

This real Arthropod Representatives Includes : (isopod, Scorpio, locust, spider, prawn, millipede) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 164*78*20 (±2)

ESB50536

Specimen Of Butterflies Types Set- PE

This real different type of Butterflies Includes : (Polyura Narcaea , Graphium Sarpedon ,Pathysa Nomius Esper,Danaus Genutia) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50424



Specimen Comparison Of Moth and Butterfly - PE

This real Moth and Butterfly has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 164*78*20 (±2)

ESB50535

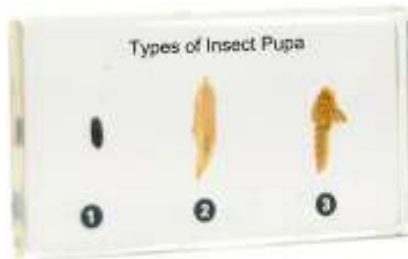
Specimen Of Insects Pupae I- PE

This real different type of Insects Pupae Free include : (Pupa Obtecta Pupa Coarctate Pupa) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 88*58*18 (±2)



ESB50543



Specimen Of Insects Pupae II- PE

This real different type of Insects Pupae include : (Pupa Obtecta Pupa Coarctate Pupa) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 73*41*15 (±2)

ESB50544

Specimen Of Insect Legs I- PE

This real different type of insects legs includes : (treadmill, clingy, flowing, funeral, crotch (for collecting pollen), lively, prehensile) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size :88*58*18 (±2)



ESB50538



Specimen Of Insect Wings Types- PE

This real different type of insects wings Includes : (hymenoptera, wing cover, the first hardened wing, example of wings in dipterans, cover leaf) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size :73*41*15 (±2)

ESB50540



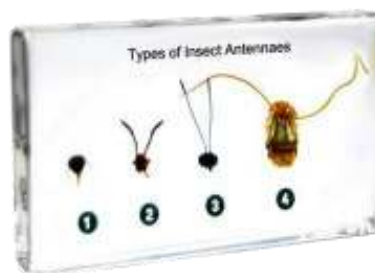


Specimen Of Insect Legs Types II- PE

This real different type of Insect Legs has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 73*41*15 (±2)

ESB50539



Specimen Of Insect Antennae's Types - PE

This real different Types of Insect Antennae's includes : (feathery, geniculate, coryneforme, filamentous, bristly) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size :73*41*15 (±2)

ESB50542



Specimen Of Insect Collection - PE

This real different type of Insect collection includes : (ant, ladybird, honey bee, beetle, bug, locust, wasp) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 164*78*20(±2)

ESB50572

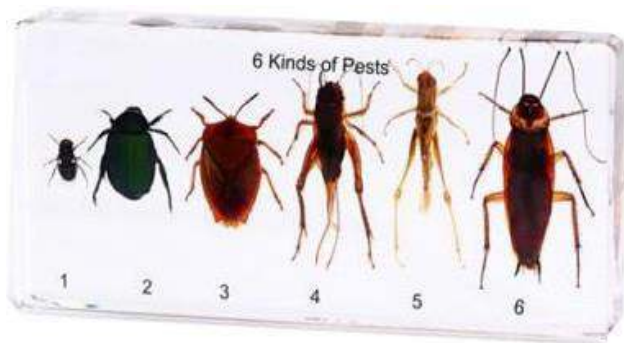


Specimen Of Insect Mouthparts Types- PE

This real different Types of Insect Mouthparts includes : (biting and licking, piercing-sucking, sucking, pungent) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size :73*41*15 (±2)

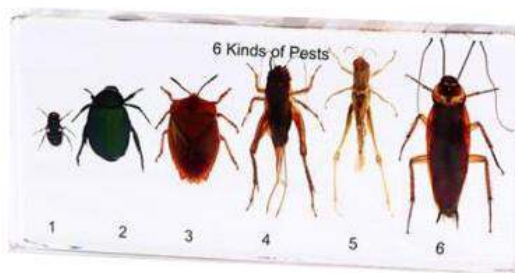
ESB50541



Specimen Of Harmful Insects Set - PE

This real 6 different type of Harmful insects includes : (Fly- Chafer - Lychee Stink Bug - Cricket - Cockroach - Grasshopper) has been embedded in one block block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 140*64*18(±2)

ESB50528



Specimen Of Beneficial & Pest - PE

This real different type of Beneficial Insects Includes : (Silkworm Multi-eating beetle Ground beetle Skylight Bee Ladybird- & pests : Fly- Chafer - Lychee Stink Bug - Cricket - Cockroach - Grasshopper) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 140*64*18(±2)x2

ESB50529





Specimen Of Pest Sets - PE

This real 10 different type of pests includes : (Fly- Chafer - Lychee Stink Bug - Cricket - Cockroach - Grasshopper - Beetle- Bamboo Weevil - Mole Cricket - Stag Beetle) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50530

Specimen Of Beneficial Insects 10 Kinds-PE

This real 10 different type of Beneficial Insects includes : (dragonfly -mantis - silkworm - dung beetle - ladybug - water beetle - three-leaf - honey bee - wasp - Mayfly beetle - box closed with magnesium) has been embedded in one block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped

ESB50527/10



Specimen Of Beneficial Insects Set - PE

This real 6 different type of Beneficial Insects includes : Silkworm Multi-eating beetle Ground beetle Skylight Bee Ladybird has been embedded in one block block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 140*64*18(±2)

ESB50527

Specimen Of Insects Classification Set –PE

It has been embedded in Transparent Epoxy Resin Block for observation and study. Specimen Includes 25 different insects Specimen ; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

ESB50425



Specimen Of Insects Set I - PE

This real 10 different type of insects includes : (Cicada, fly, bee, cockchafer, cockroach, dragonfly, butterfly, bug, praying mantis and locust). Has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50531

Specimen Of Insects Specimens Set II - PE

This real 16 different type of insects includes: (Chafer Beetle - Praying Mantis - Giant Hornet Wasp - Ant - Common Tiger Butterfly - Long Horned beetle - Cicada - Shield Bug - Spider - Dragonfly - Cricket - Cockroach - Walking Stick - Onion Fly - Silkworm Life Cycle - and Grasshopper Life Cycle) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50532



Specimen Of Insects Specimens Set III - PE

This real 27 different type of insects Includes : (Chafer beetle Lady bug Mole cricket Praying mantis Paper wasp Asiatic honey bee Ant Dung beetle Rhinoceros beetles Monarch Long horned beetle Cicada Shield bug Wesp spin Spider Dragonfly Cricket Australian cockroach Scorpion Centipede Walking stick Onion fly Chinese white shrimp Silkworm Crab Star fish Grasshopper Stag beetle) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped.

ESB50533



Specimen Of Insects Set IV - PE

This real 30 different type of insects Include : (Spider - Shrimp - Mulberry silkworm - Crab - Cricket - Cockroach -A beetle from the stag beetle family - Fly -A beetle from the longhorn beetle family - citrus longhorn beetle - Beetle-shaped beetle - Ant - Ground beetle - Beetle - Asian turquoise - Scorpion - Bug bug - Cicada - Dragonfly - Beetle; Bornean rhinoceros -Beetle, cowpea beetle - Hornet - Klecanka; wasp family - Butterfly - Honey bee - Locust - Weevil beetle - Elephant weevil beetle - Ladybug - Beetle, puddle beetle - Beetle-shaped beetlehas been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Size : 42x7x34 cm

ESB50534



Specimen of Chafer Beetles Kinds Set- PE

This real different type of Chafer Beetles has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50583/ST



Specimen Of Spiders Types Set- PE

This real different type of Spiders Includes : (Argiope bruennichi - Araneus ventricosus - Gasteracantha sauteri - Selenocosmia huwena) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 32*58*17mm X (3) + 72*72*22mm X (1)

ESB50580/ST



Specimen Of Stag Beetles Types Set - PE

This real different type of Stag Beetles has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped.

ESB50423/ST

Specimen Of Animal Kingdom Set I - PE

This real 27 different type of animals Includes : (butterfly-Dragonfly-mantis-Bat-butterfly-centipede-cockroach-cicada-turtle-dungbeetle-cricket-stage beetle-fish-housefly-Ant-ladybug-honeybee-crab-conch-starfish-shrimp-shell-spider-earthworm-grasshopper-chafer-scorpion) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50523



Specimen Of Animal Kingdom Set II - PE

This real 20 different type of animals include: Leech -Cuttlefish - Spider - Centipede - Crab - Long- horned beetle - Cricket - Cockroach - Wasp - Stink Bug- Cicada - Praying Mantis - Butterfly - Dragonfly - Walking Stick - Swordtail Fish - Frog - turtle - Bird - Bat) his set includes a Detailed Information Card and an Educational Booklet characterizing each one of these species. Size of product is 18 3/4 x 13 3/4 x 2 1/2 in. has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped.

ESB50524





Specimen of Animal Classification Set- PE

This real different type of animals Classification has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50426

Specimen of Animal Evolution Set - PE

This real different type of animals includes : (Cnidaria, Platyhelminthes, Nematoda, Annelida, Mollusca, Arthropda, and Chordata. The species are: Turtle - Leech- Tiger Barb - Toad - Paramecium - Sea Anemone - Cuttlefish - Scorpion - Mouse - Tapeworm - Roundworm - and a Bird) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Set t includes 12 pcs

ESB50525



Specimen of Marine Animal Set -PE

this real 8 differents type of Marine animals includes : (pagurid ([hermit crab in shell] Coenobita rugosus), spiral shell , lobster , starfish , cuttlefish , fiddler crab , sea anemone (, and clam) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50526/8

Specimen Of Marine Animal Types Set- PE

This real 11 different type of Marine Animal includes : (squid, octopus, starfish, fish - Selenotok vulgaris, mussel, sea anemone, seahorse, crabs: paguridae, uca crassipes, mictyris longicarpus, pyrhila pisum) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50526/11



Specimen of Tropical Fishes Types Set- PE

This real different type of Tropical Fishes has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50427

Specimen of Poisonous Animal Types Set- PE

This real different type of Poisonous Animal has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50428



Specimen of Lizard Dissection,- PE

This real Dissected Lizard has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 190*100*32 (±5)



ESB50555



Specimen of Rabbit Dissection,- PE

This real Dissected Rabbit has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 250*105*55 (±5)

ESB50556

Specimen of Rat Dissection - PE

this real Dissected Rat has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 200*90*40 (±5)



ESB50557



Specimen of Marine Clam Dissection - PE

This real Dissected Marine Clam has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 135*90*35 (±2)

ESB50558

Specimen of Squid Dissection - PE

This real Dissected squid has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 220*105*30 (±5)

ESB50559



Specimen of Fish Dissection - PE

This real dissected fish has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 190*100*32 (±5)

ESB50552



Specimen of Pigeon Dissection - PE

This real dissected Pigeon has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 250*105*55 (±5)

ESB50553



Specimen of Frog Dissection - PE

This real dissected frog has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 190*100*32 (±5)

ESB50554





NEW

Zebra Finch - PE

This real Zebra Finch has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size :110*43*28 (±2)

ESB50431

Specimen of Rabbit - PE

This real Rabbit has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :190*90*90(±5)

ESB50560



NEW

Specimen of White Mouse - PE

This real White Mouse has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped.

Block Size :110*43*28 (±2)

ESB50432

Specimen of Bat I- PE

This real bat has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size :75*75*24 (±2)

ESB50566/I



NEW

Specimen of Bat II- PE

This real bat has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size :135*90*35(±2)

ESB50566/II

Specimen of Bat III- PE

This real bat has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size :200*90*40(±2)

ESB50566/III



NEW



NEW

Specimen of Bat IV- PE

This real bat has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size :140*64*18 (±2)

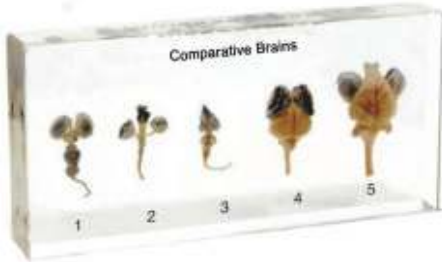
ESB50566/IV



Comparative Hearts Of 5 Classes - PE

This real different type of Hearts Includes : (fish (Chinese carp), amphibian (frog), reptile (snake), bird (pigeon), mammal (rabbit)) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50551



Specimen Comparative Brains - PE

Of 5 Classes

This real different type of Brain Includes : (fish (Chinese carp), amphibian (frog), reptile (snake), bird (pigeon), mammal (rabbit)) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*24 (±2)

ESB50550

Specimen Digestive, Excretory and Reproductive Systems of Toad - PE

This real dissected Digestive, Excretory and Reproductive Systems of Toad has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped Block Size :190*100*30 (±5)

ESB50411



Specimen Nervous System of Rabbit- PE

This real Nervous System of Rabbit has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped Block Size :190*100*30 (±5)

Specimen Digestive System of Rabbit- PE

This real Digestive System of Rabbi has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped Block Size :190*100*30 (±5)

ESB50413



Specimen Reproductive System of Rabbit- PE

This real Reproductive System of Rabbit has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped Block Size :190*100*30 (±5)



Specimen Disassembly of Spade Beetle- PE

This real Disassembly of Spade Beetle has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped Block Size :135*90*24 (±2)

ESB50415





NEW

Specimen of Leech - PE

This real Leech has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :73*41*20(±2)

ESB50435

Specimen of Earthworm- PE

This real type of Earthworm has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20 (±2)

ESB50436



NEW



ESB50547

NEW

Specimen of Roundworm - PE

This real Roundworm has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20 (±2)

ESB50547



ESB50547F



ESB50547M

Roundworm Male - PE

ESB50547M

Roundworm Female- PE

ESB50547F

Specimen of Neries - PE

This real Neries has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50568



Specimen of Pork Tapeworm Parasite Cysticercus,- PE

This real Pork tapeworm has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 88*58*18 (±2)

ESB50563

Specimen of Annelid Representatives - PE

This real different type of Annelid Representatives Includes (Platyhelminthes, Nematoda, and Annelida) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 140*64*20 (±2)

ESB50537



NEW



Specimen of Schistosoma - PE

This real Red Swamp Schistosoma has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :60*35*20(±2)

ESB50437



Specimen Of Frog - PE

This real Frog has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :75*75*26 (±2)



ESB50438



Specimen of Toad - PE

This real TOAD has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 75*75*26 (±2)



ESB50548

Specimen Of Turtle I - PE

This real Turtle has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :73*41*24 (±2)



ESB50439/I

Specimen Of Turtle II - PE

This real Turtle has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :75*75*30(±2)



ESB50439/II

Specimen Of Soldier Crab - PE

This real Soldier Crab has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :88*58*24 (±2)



ESB50545

Specimen Of Soldier Crab and Mutualist, - PE

This real Soldier Crab and Mutualist has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :88*58*24(±2)



ESB50546

Specimen of Fiddler Crab Conformation, Conformation - PE

This real Conformation of Fiddler Crab has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :73*41*24 (±2)

ESB50891



Specimen of Crabs Types Set- PE

This real different type of Crabs has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50440





Specimen Of Freshwater Mussel - PE

This real fresh water mussel has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 75*75*26 (±2)

ESB50567

Specimen Of Sea Urchin -PE

This real sea Urchin has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 73*41*24 (±2)

ESB50571



Coral - PE

This real Coral Simulation has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB50569

Specimen Of Sea Anemone - PE

This real Sea Anemone has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 73*41*24 (±2)

ESB50561



Specimen Of Simulated Seahorse - PE

This real Simulated Seahorse has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size 73*41*24 (±2)

ESB50441

Specimen Of Sea cucumber- PE

This real Red Swamp Crayfish has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :88*58*20 (±2)

ESB50442



Specimen Of Sponge- PE

This real Sponge has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :73*41*24 (±2)

ESB50443



Specimen Of Cuttlefish - PE

This real Cuttlefish has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 73*41*24(±2)



ESB50564



Specimen Of Jellyfish - PE

This real Jellyfish has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size 75*75*15 (±2)

ESB50562

NEW

Specimen Of Invertebrates- PE

This real 7 Different Invertebrates Includes : (earthworm- Shrimps- Squid-starfish-grasshopper-Cancer-anemonehas) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*24(±2)

ESB50445



Specimen Conformation Of Octopus - PE

This real Octopus has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 75*75*24 (±2)

ESB50575

Specimen Of Octopus I - PE

This real Octopus has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 75*75*24(±2)

NEW

ESB50575/I



NEW



Specimen Of Octopus II - PE

This real Octopus has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 95*95*30(±2)

ESB50575/II

Specimen Of Red Swamp Crayfish I - PE

This real Red Swamp Crayfish has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 110*43*28 (±2)

NEW

ESB50444/I



NEW



Specimen Of Red Swamp Crayfish II - PE

This real Red Swamp Crayfish has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 135*90*35(±2)

ESB50444/II





Specimen Conformation Of Lobster-PE

This real Lobster has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.
Block Size :110*43*28 (±2)

ESB50574

Specimen Of Mantis Shrimp-PE

It has been embedded in Transparent Epoxy Resin Block for observation and study. Specimen Include Mantis Shrimp; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.
Block Size :140*64*24 (±2)



ESB50446



Specimen Of Shrimp-PE

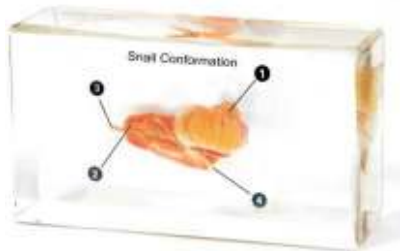
It has been embedded in Transparent Epoxy Resin Block for observation and study. Specimen Include Shrimp; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.
Block Size :140*64*24 (±2)

ESB50458

Specimen Of Prawn- PE

This real Prawn has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :140*64*18 (±2)

ESB50460



Specimen Of Snail Conformation - PE

This real Snail has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :73*41*24 (±2)

ESB50576

Specimen Of Carp Conformation - PE

This real Carp has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size :164*78*24 (±2)

ESB50577



Specimen Of Squid Conformation - PE

This real Squid has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.
Block Size :164*78*24 (±2)

ESB50578



Lizard Skeleton - PE

This real Lizard skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 164*78*24 (±2)



ESB50584

**Turtle Skeleton - PE**

This real Turtle skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 135*90*35 (±2)

ESB50585

Bat Skeleton - PE

This real Bat skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Key features have been labelled and identified on an information card. Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 135*90*24 (±2)



ESB50586

**Bird Skeleton - PE**

This real Bird skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Key features have been labelled and identified on an information card. Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 135*90*24 (±2)

ESB50587

Rat Skeleton - PE

This real Rat skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Key features have been labelled and identified on an information card. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 200*90*40 (±5)

ESB50588

**Rabbit Skeleton - PE**

This real rabbit skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Key features have been labelled and identified on an information card. Epoxy resin Block will not break even if it is accidentally dropped. Block Size : 200*90*40 (±5)

ESB50589

Toad Skeleton - PE

This real toad skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Key features have been labelled and identified on an information card.

Epoxy resin block will not break even if it is accidentally dropped. Due to nature of the product it may differ slightly from the image shown. Includes information cards.

Block Size : 135*90*35 (±5)

ESB50590





Fish (Crucian) Skeleton - PE

This crucian skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Key features have been labelled and identified on an information card. Epoxy resin block will not break even if it is accidentally dropped.
Block Size : 200*90*40 (±5)

ESB50591

Snake (Non-Venomous) Skeleton,PE

This real Snake Skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped.
Block Size : 135*90*24 (±2)

ESB50592



Pigeon Skeleton,PE

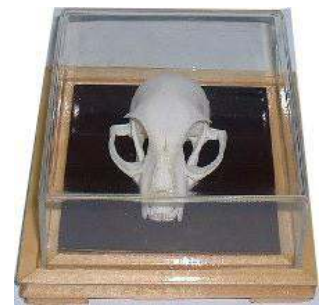
This pigeon skeleton has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Key features have been labelled and identified on an information card. Epoxy resin block will not break even if it is accidentally dropped.
Block Size : 177*125*65 (±5)

ESB50593

Skull,Cat

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive base that features a removable epoxy resin cover.

ESB50594



Skeleton,Chicken

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.

ESB50596

Skull Comparison Of Rabbit, Pigeon, Turtle, Toad, Fish

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive base that features a removable epoxy resin cover.

ESB50595



Skeleton Of Lizard

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.

ESB50597

Bat Skeleton

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.
Block Size : 140*64*20 (±2)

ESB50598



Skeleton Of Toad

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.



ESB50599

**Skeleton Of Pigeon**

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.

ESB50600

Skeleton Of Rabbit

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.

ESB50601

**Skeleton Of Snake**

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.

Block Size :110*44*28 (±2)

ESB50602

Skeleton Of Fish (Crucian)

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.

ESB50603

**Vertebra Comparison Of Rabbit, Pigeon, Turtle, Toad, Fish.**

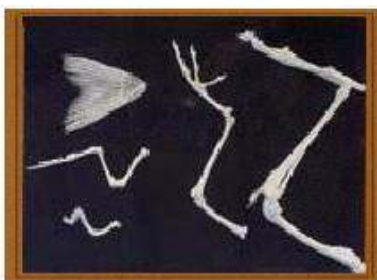
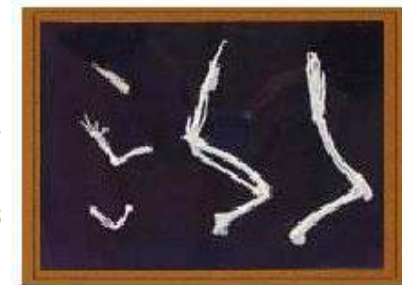
This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.

ESB50604

Forelimb Comparison Of Rabbit, Pigeon, Turtle, Toad, Fish.

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.

ESB50605

**Hind Leg Comparison Of Rabbit, Pigeon, Turtle, Toad, Fish.**

This natural bone skeleton has been meticulously prepared and mounted in a natural position. Enclosed key card identifies various bone structures. The specimen is mounted on an attractive wooden base that features a removable epoxy resin cover.

ESB50606





Rabbit Dissected In Formalin

This real rabbit specimen dissected and reserved in clear container filled with formalin , Key features have been labelled and identified on an information card.

ESB50612



Snake Dissected In Formalin

This real snake specimen dissected and reserved in clear container filled with formalin , Key features have been labelled and identified on an information card.

ESB50613



Lizard Dissected In Formalin

This real lizard specimen dissected and reserved in clear container filled with formalin , Key features have been labelled and identified on an information card.

ESB50615



Pigeon Dissected In Formalin

This real pigeon specimen dissected and reserved in clear container filled with formalin , Key features have been labelled and identified on an information card.

ESB50616



Toad Dissected In Formalin

This real toad specimen dissected and reserved in clear container filled with formalin , Key features have been labelled and identified on an information card.

ESB50618



Frog Dissected In Formalin

This real frog specimen dissected and reserved in clear container filled with formalin , Key features have been labelled and identified on an information card.

ESB50614



Fish (Crucian) Dissected In Formalin

This real crucian specimen dissected and reserved in clear container filled with formalin , Key features have been labelled and identified on an information card.

ESB50617



Grass-frog Developmental Stages Dissected In Formalin

This real Grass frog Developments in clear container filled with formalin , Key features have been labelled and identified on an information card.

ESB50619



**Dissecting Tray**

Dissecting Tray

Material: Stainless Steel Complete with 10mm paraffin wax filler

Size: 280 x 190 x 50 mm

ESB50626

**Dissecting Pan With Pad And Cover**

The pads are reusable and there is no need to melt sticky wax

The cover closes up for the day, it is excellent for large specimens (starfish, bullfrogs)

Size: 31 x 22.5 cm

ESB50627

**Dissecting Scissor Fine Point 110 mm**

Stainless steel, open shanks. 110mm. EACH.

ESB50630

**Dissecting Scissor Blunt Ends 125 mm**

Stainless steel, closed shanks. Overall length: 125mm. EACH.

ESB50628

Dissecting Scissor Blunt Ends 150 mm

Stainless steel, open shanks. 130mm. EACH.

ESB50629

Dissecting Kit

Stainless steel instruments in leather case consist of the following:

preparation needle, 130 mm long, pointed end.

preparation needle 130 mm long pointed curved end.

scalpel handle 140 mm long.

scalpel handle stainless 130mm, slotted to accept blades.

Ten scalpel sharp blades suitable for scalpel handle 4 packed in quick peel off aluminium foil.

One dissecting stainless scissors, fine pointed ends, 110 mm long.

One dissecting stainless scissors, sharp/blunt ends, 113 mm long.

One forceps, pointed ends with plastic slip cover, 110mm long.

One forceps, blunt ends with plastic slip cover, 130 mm long.

Brush



ESB50631

**Dissecting set Basic**

Designed for elementary, junior, and senior high school students. Kit contains the following:

Semitransparent hinged case with snap cover and insert for the seven instruments.

Attractive and reusable.

6 in. chrome replacement blade scalpel

4-1/2 in. stainless steel dissecting scissors

4-1/2 in. chrome-plated forceps

Straight dissecting needle

Bent dissecting needle

Pipette

6 in. ruler

ESB50632





Forceps Disposable , Plastic Pk/10

Blunt-end forceps of glass-filled nylon, serrated at tips with finger-grips along the shaft. Ideally suited to microbiology work where they may be destroyed after use. Length: 125mm (Colour may vary). Pack of 10.

ESB50634



Forceps Pointed Ends

Stainless steel. Pointed tip Forceps,

130mm length. EACH

ESB50635

100mm length. EACH

ESB50636

130mm length. EACH

ESB50637



Insert Needle Wooden Handle Pk/10

Needle length: 33mm. Mounted in 100mm hardwood handle. Pack of 10.

ESB50638



Insert Needle St. Steel Handle

Straight, stainless steel throughout. Needle length: 34mm. Handle length: 95mm. EACH.

ESB50639



Scalpel Handle No 3

Strong nickel-alloy handle, handle No. 3. Length: 95 mm. EACH.

ESB50641

Scalpel Handle No 4

Strong nickel-alloy handle, handle No. 4. Length: 100 mm. EACH.

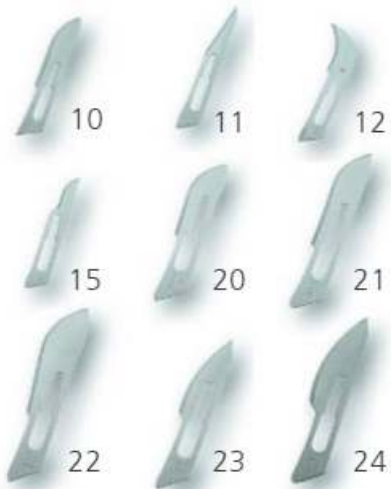
ESB50642



Scalpel 130 mm

St. Steel length 130 mm handle with blade.

ESB50640



Scalpel Blades

Surgical-quality steel blades for use with the Scalpel Handles

Cat. No	Size	No
ESB50643	3	10 Pk/3
ESB50644	3	11 Pk/5
ESB50645	4	21 Pk/5
ESB50646	4	22 Pk/5
ESB50647	4	23 Pk/5
ESB50648	4	24 Pk/5



Protozoa

Our high quality protozoa and algae are sold in jar sizes for your convenience. The small jar is approximately 30ml

- ESB50651 Amoeba proteus
- ESB50652 Chlamydomonas
- ESB50653 Colpidium
- ESB50654 Chilomonas
- ESB50655 Protozoa Mixed
- ESB50656 Ciliates Mixed
- ESB50657 Flagellates Mixed

Mixed cultures not suitable for sub culturing.

- ESB50658 Euglena gracilis
- ESB50659 Paramecium
- ESB50660 Protozoan Pellets

- ESB50661 Protoslow



Ideal for feeding Paramecium, Chilomonas and other protozoa. Add 1 pellet to 1 litre of previously boiled water, then divide culture into dishes of approx 150-200ml. Full instructions provided. pack of 25

A viscous solution used to slow mobile organisms making them easier to observe. Sold in an easy to use dropper bottle 30ml

Algae / Hydra / Platyhelminthes / Nematodes

Algae

- ESB50662 Alga gro Concentrate
- ESB50663 Anabena
- ESB50664 Mixed Algae
- ESB50665 Scenedesmus quadricauda
- ESB50666 Chlorella
- ESB50667 Chara/ Nitella
- ESB50668 Spirogyra Vegetative
- ESB50669 Dunaliella
- ESB50670 Volvox

For both fresh water and sea water, producing an almost universal algal medium. Each tube makes one litre of medium.20 ML

for making algae balls) Starter culture

per bag



Coelenterates

- ESB50671 Hydra
- ESB50672 Hydra Viridissima
- ESB50673 Hydra Vulgaris

Our choice of species per 10

Green Hydra per 10

Brown Hydra per 10

Nematodes

- ESB50674 Vinegar Eel

Anguilla Aceti

Platyhelminthes

- ESB50675 Planarian Species
- ESB50676 Polycelis
- ESB50677 Dugesia

per 10

per 10

Large brown species per 10



Locusts

High quality locusts selectively bred for study in the classroom. Locusts are an easy insect to maintain from 1st instar through to adult,feeding on fresh grass twice a day. Feed on lettuce, apple and carrot if grass is not available.

Schistocerca

- ESB50678 Desert Locust Adult. Schistocerca pack of 10
- ESB50679 5th Instar Male. Schistocerca pack of 10
- ESB50680 5th Instar Female. Schistocerca pack of 10
- ESB50681 5th Instar Mixed. Schistocerca pack of 10
- ESB50682 4th Instar Mixed Schistocerca pack of 10
- ESB50683 Mixed Instars Schistocerca pack of 10
- ESB50684 Hoppers Schistocerca pack of 30



Insects and Worms for Feeding

- Crickets An easily maintained & ideal food for a variety of lizards and frogs.
- ESB50685 Medium Sized pack of 100
- ESB50686 Cricket Adults pack of 100
- ESB50687 Cricket Hatchlings pack of 500
- ESB50688 Wax Moth Larvae A culture of larvae, excellent for feeding to reptiles and amphibians. pack of 25-30
- ESB50689 Dendrobena Small worm, ideal for feeding. pack of 100



Black Crickets

- ESB50690 Gryllus Adults and large nymphs pack of 70
- ESB50691 Adult males pack of 70
- ESB50692 Adult females pack of 70
- ESB50693 Tenebrio Culture «A typical beetle to use as an example of an insect life history. Easily kept on bran & fruit. Contains all the stages per culture
- ESB50694 Mealworm Larvae Tenebrio per 50g
- ESB50695 Mealworm Beetles Tenebrio. Enquire for availability. Pk/10

Drosophila - Fruit Flies (Melanogaster)

Drosophila are sold in living cultures, each containing approximately 30 specimens of each stage; Adult, Pupae, Larvae and Eggs.
The chromosomal position of the different characteristics are shown in brackets after each strain. Vestigial wing are a popular food source for spiders, small praying mantis and other invertebrates

Segregated flies

Please enquire for availability of Virgin Female Drosophila. There may be a delay during busy periods. Segregated Males can be supplied within 5 days. Both are supplied in packs of 30. Segregated flies must be sent by a recorded delivery.

Wild Type

- ESB50697 Small culture
- ESB50698 Large culture
- ESB50699 Virgin fem
- ESB50700 Male
- ESB50701 Adults 100



Ebony Vestigial (3/2)

- ESB50702 Small culture
- ESB50703 Virgin fem
- ESB50704 Male



Vestigial Wing (2)

- ESB50705 Small culture
- ESB50706 Large culture
- ESB50707 Virgin fem
- ESB50708 Male
- ESB50709 Adults 100



Ebony Body (3)

- ESB50710 Small culture
- ESB50711 Virgin fem
- ESB50712 Male

White Eyed (sex linked)

- ESB50713 Small culture
- ESB50714 Large culture
- ESB50715 Virgin fem
- ESB50716 Male
- ESB50717 Adults 100



Scarlet Eyed (3)

- ESB50718 Small culture
- ESB50719 Virgin fem
- ESB50720 Male
- ESB50721 Drosophila Kit

Contains all the essential equipment and media to culture fruit flies. Contents: 25 small vials, bungs and ladders, 2 funnels, 2 brushes, 250g medium and a relaxing jar. Complete with instructions

- ESB50722 Fly Nap Kit

An easy to use anaesthetic for Drosophila. They can remain anaesthetized for up to 60 minutes. The kit includes 10ml of Fly Nap, 12 wands and full instructions.



Butterflies

- ESB50723 Painted Lady Butterfly Kit

«Ten caterpillars supplied with sufficient nutrient for complete development. Kit includes a net cage (ACS 015) with full instructions. Individual pots, papers and lids. Available March to September per kit»

flies

Please check availability for all adult flies. All our maggots are the last stage before pupation.

- ESB50724 Blowfly Maggots Calliphora pk/100
- ESB50725 Blowfly Pupae Calliphora pk/100
- ESB50726 Blowfly Adults Calliphora pk/101
- ESB50727 Greenbottle Maggots Lucilia pk/100
- ESB50728 Greenbottle Pupae Lucilia pk/100
- ESB50729 Greenbottle Adults Lucilia pk/100
- ESB50730 House Fly Pupae Musca domesticae pk/100
- ESB50731 House Fly Adults Musca domesticae pk/100



Cockroaches

- ESB50732 Periplaneta Americana Adult mixed sex PK/5
- ESB50733 Periplaneta Adult females PK/10
- ESB50734 Periplaneta Adult males PK/10
- ESB50735 Periplaneta Egg cases PK/10
- ESB50736 Periplaneta Nymphs PK/10
- ESB50737 Blatta Orientals Adults mixed sex PK/100



Giant Cockroaches

- ESB50738 Giant Hissing Cockroaches A large forest floor species. Easily maintained and handled. Hisses when touched. Pack of 5
- ESB50739 Giant Death Head Cockroach Blaberus craniifer pack of 5
- ESB50740 Giant Peruvian/Peppered Cockroach Archimandrita tessellata pack of 5

Beetles and Land Invertebrates

- ESB50741 Flour Beetles Tribolium castanum. Wild type / Sooty
- ESB50742 per culture
- ESB50743 100 adults
- ESB50744 Tribolium Confusum Wild type , per culture
- ESB50745 Tribolium Confusum Wild type , per 100 adults
- ESB50746 Larder Beetles Dermesties. A medium sized beetle used in the laboratory for skeletal preparation. per culture»
- ESB50747 Seed Beetle «Callosobruchus maculatus. Seed beetles feed on black eyed or mung beans, easy to maintain culture. Culture contains egg laiden beans plus 20-25 adult beetles. per culture»
- ESB50748 Grain Weevil Sitophilus. A large species of weevil that infest wheat, oats and barley. Useful for population growth experiments. per culture



Land Invertebrates

- ESB50749** Land Invertebrate Collection
- ESB50750** Woodlice
- ESB50751** Spiders
- ESB50752** Spiders Mixed species
- ESB50753** Beetles Land species
- ESB50754** Millipedes Native species
- ESB50755** Giant Millipedes adult
- ESB50756** Centipedes Native species
- ESB50757** Red Ants *Myrmica rubra* (Apr-Oct.)
- ESB50758** Yellow Meadow Ants
- ESB50759** Black Ants *Lasius niger* (May-Sept)

Molluscs / Slugs

- ESB50760** Giant African Snails
- ESB50761** Cuttlefish Bones
- ESB50762** Giant African Land Snail Kit
- ESB50763** Garden Snail
- ESB50764** Mixed species of slugs

Ecotoxicology

Beneficial Organisms Grassland and Aquatic

- ESB50765** *Gammarus pulex*
- ESB50766** *Gammarus pulex*
- ESB50767** *Asellus*
- ESB50768** *Crangonyx*
- ESB50769** *Lumbriculus variegatus*
- ESB50770** *Eisenia foetida foetida*
- ESB50771** Chironomous
- ESB50772** *Lemna minor*

Annelids

- ESB50773** Brandling Worm
- ESB50774** Brandling Worm
- ESB50775** *Dendrobena*
- ESB50776** Earthworms
- ESB50777** Brandling Worm Media

Pond Life

- ESB50778** Damselfly Nymphs
- ESB50779** Mayfly Nymphs
- ESB50780** Pond Skater
- ESB50781** Dragonfly
- ESB50782** Freshwater Blackworms
- ESB50783** Water Beetles

An exciting display of ground dwelling mini beasts. This collection contains over 60 Specimens including Centipedes, Slugs, Spiders, Woodlice, Beetles etc. Plus a full colour name trail identity car , per pk»

- Pk/10
- Pardosa. Male - May / June. Female - May / Sept pk/10
- Pk/10
- Pk/10
- Pk/10
- pk/10
- Per 100
- Suitable for forming a temporary colony ,per 100
- Per 100



- Achatina. Juvenile , per 5
- Pack of 3
- This kit contains 5 juvenile snails, 1 medium tank, cuttlefish bones and peat plus full instructions on how to care for them.
- Helix aspersa Pk/5
- Pk/10 Please enquire about specific species. Slugs



Many species are needed to comply with the EEC registration requirements. Listed below are the species available from stock or on a seasonal basis. If you have a special requirement for unlisted specimens please enquire. Ecotoxicology items must be sent by courier or sp. del.

- 2-3 Months, juvenile per 100
- Adult, Mixed sex per 100
- Adult, Mixed sex per 100
- Adult, Mixed sex per 100
- Fresh water black worms per 100
- 300 - 600mg Sexually mature, hand selected per 100
- Midge larvae, mature aquatic bloodworm per 100
- Lesser duckweed, cultured per 100g



- «Hand selected mature worms, weighing between 300 - 600mg. Eisenia foetida foetida pk/100»
- «Eisenia species. A small alternative to lumbricus. Easily bred. Supplied in a tub with medium. approx 30»
- Composter worms - 500g
- Lumbricus terrestris. Mature lob worms each with clitellum , per 10
- 1kg

- Demoiselle per 10
- Chloen per 10
- Gerris (May-Oct)per 10
- Nymph, mixed species per 5
- Lumbriculus variegatus approx 30
- each



- ESB50784** Water Boatman
- ESB50785** Lesser Water Boatman
- ESB50786** Water Louse
- ESB50787** Freshwater Shrimp
- ESB50788** Mosquito Larvae
- ESB50789** Mosquito Pupae
- ESB50790** Caddisfly
- ESB50791** Blood Worm

Leeches

- ESB50792** Pond Leeches

Pond Snails

- ESB50793** Pond Whelk
- ESB50794** Trapdoor Snail
- ESB50795** Pond Whelk
- ESB50796** Ramshorn Snails
- ESB50797** Mixed Pond Snails
- ESB50798** Freshwater Aquarium Collection

- ESB50799** Daphnia Water Fleas
- ESB50800** Daphnia Bulk Bag

Living Marine

- ESB50801** Brine Shrimp Kit
- ESB50802** Brine Shrimp Eggs
- ESB50803** Brine Shrimp Adult
- ESB50804** Dunaliella
- ESB50805** Microbial Culture
- ESB50806** Alga Gro
- ESB50807** Marine Tube Worm
- ESB50808** Anemone
- ESB50809** Prawns
- ESB50810** Seaweed
- ESB50811** Limpets
- ESB50812** Periwinkle
- ESB50813** Mussel
- ESB50814** Red Rag Worm
- ESB50815** Shore Crab

- Notonecta per 10
- Corixa per 10
- Asellus per 10
- Gammarus per 10
- Culex per 10
- Culex per 10
- Larvae, Sept - April per 10
- Chironomus per 10

Mixed species per 10

- Lymnaea stagnalis per 10
- Viviparus viviparus per 10
- Lymnaea peregra per 10
- Planorbis corneus per 10
- This is a selection of snails per 10

A collection of pond life which consists of over 60 specimens. The collection includes: Planaria, Asellus, Gammarus, Daphnia etc. Plus a full colour name trail identity key card. The collection will vary at different times of the year. Used for a temporary class room setup. per bag c300

This bulk bag can be used to help clear algae from ponds.

This kit contains all the items needed to set up a brine shrimp culture. A full online PDF manual from the British Ecological Society can be found and downloaded by searching for 'Brine Shrimp Ecology' online. This kit is ideal for key stages 3 and 4 and the individual items can be replaced as and when needed. Brine shrimp egg cysts 60ml Liquid fertiliser 150ml Microbial culture 65ml Living culture Dunaliella 65ml Marine salt 50g Marine sand 250g

Artemia Franciscana. Brine shrimp eggs can lie in a dormant state for 10 years or more, waiting for the right environmental conditions and then spring into life to start their life cycle again. (Marine salt required). 60ml

Full grown shrimps feed on marine filter feeder diet. Available with 1 weeks notice.approx 30-50

Large culture

A sample of micro organism and algae from our own brine shrimp culture. 65ml

20ml

Pomatoceros. Supplied on stone. Used to demonstrate fertilisation. pack of 10

Actinia equina pack of 5

Leander pack of 10

Fucus species pack of 10

Patella pack of 10

Littorina pack of 10

Mytilus pack of 10

Nereis diversicolor pack of 100

Carcinus maenas. (Available May-Oct) pack of 100



PRESERVED

- ESB50816 Locust
- ESB50817 Millipede
- ESB50818 Centipedes species
- ESB50819 Woodlice species
- ESB50820 Housefly
- ESB50821 Blowfly Calliphora. Adult
- ESB50822 Blowfly Calliphora Larvae
- ESB50823 Blowfly Calliphora Pupae
- ESB50824 Cockroach
- ESB50825 Cockroach
- ESB50826 Giant Cockroach
- ESB50827 Spider Species
- ESB50828 Scorpion Species
- ESB50829 Butterfly Adult
- ESB50830 Butterfly Larvae
- ESB50831 Butterfly Pupae
- ESB50832 Ants (Garden)
- ESB50833 Beetles
- ESB50834 Wasp
- ESB50835 Mosquito Adult
- ESB50836 Mosquito Larvae
- ESB50837 Mosquito Pupae
- ESB50838 Flea
- ESB50839 Louse Species
- ESB50840 Bed Bug Species
- ESB50841 Aphids Species
- ESB50842 Prawn
- ESB50843 Shore Crab
- ESB50844 Freshwater Shrimp
- ESB50845 Crayfish
- ESB50846 Marine Shrimp
- ESB50847 Water Louse
- ESB50848 Water Beetle

Molluscs

- ESB50849 Garden Snail
- ESB50850 Cuttlefish
- ESB50851 Squid
- ESB50852 Freshwater Mussel
- ESB50853 Octopus Species
- ESB50854 Sea Mussel Mytilus edulis

Coelenterates

- ESB50855 Hydra
- ESB50856 Jelly Fish
- ESB50857 Sea Anemone

Poriferans

- ESB50858 Marine Sponge Species

- Schistocerca adult pack of 10
- Species pack of 10
- Pack of 10
- Pack of 10
- Musca domesticae. Adult pack of 10
- Pack of 10
- Pack of 10
- Pack of 10
- Periplaneta americana Pk/10
- Blatta orientalis Pack of 10
- Species each
- Pack of 10
- Each
- Pack of 10
- Pack of 10
- Pack of 10
- Pack of 10
- Pack of 10
- Pack of 10
- Pack of 5
- Pack of 5
- Pack of 5
- Pack of 10
- Leander serratus Pack of 5
- Carcinus maenas Pack of 5
- Gammarus pulex Pack of 10
- Astacus Vaccum packed unless requested in a jar. each
- Crangon pack of 5
- Asellus pack of 10
- Adult species each

- Helix aspersa , Pk/10
- Sepia officinalis , Each
- Loligo forbesi , Each
- Anodonta , pk/5
- Species , Each
- Mytilus edulis , Pk/5

- Pack of 10
- Aurelia , Each
- Named Species , Each

- Species , per 10



Nematodes

ESB50859 Pig Round Worm Ascaris Ascaris , pack of 5

Annelids

ESB50860 Lugworm Arenicola marina Pack of 5

ESB50861 Earthworm Lumbricus mature Pack of 10

ESB50862 Rag Worm Nereis Pack of 5

Echinodermata

ESB50863 Starfish Asterias small Each

ESB50864 Starfish Asterias Large Each

Platyhelminthes

ESB50865 Tape Worm Monezia Each

ESB50866 Sheep Liver Fluke Fasciola hepatica Pack of 5

Preserved Chordata - Carosafe

Colour injections of preserved specimens:

PLAIN: No colour.

SINGLE: Arterial system injected with red latex.

DOUBLE: Second injection of blue latex in systemic veins.

TRIPLE: Third injection of yellow latex in hepatic system

All of our specimens are ethically sourced.

Chordata on these pages are stored in Carosafe or Phenoxetol (odourless preservative)

ESB50867 Jumbo Frog Rana 12-14cm

ESB50868 Frog Rana Adult. 8-10cm

ESB50869 Frog Rana Double injected 10-12cm

ESB50870 Sheep Brain With dura matter

ESB50871 Sheep Kidney Each

ESB50872 Sheep Heart Roots of vessels intact each

ESB50873 Cow Eyes Pack of 5

ESB50874 Sheep Eyes Pack of 5

ESB50875 Bony Fish Large 10cm+ , Each

ESB50876 Stickleback Gasterosteus , pack of 10

ESB50877 Rat - Rattus 20cm-22cm Each

ESB50878 Rat - Rattus Single injected Arterial system injected with red latex.

ESB50879 Rat - Rattus Double injected Second injection of blue latex in systemic veins.

ESB50880 Rat - Rattus Triple injected Third injection of yellow latex in hepatic system.

ESB50881 Lancelet Pack of 5

ESB50882 River Lamprey Each

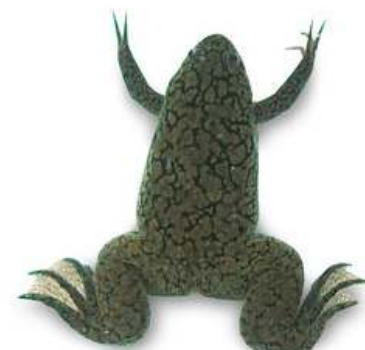
ESB50883 Lizard Anole , Each

ESB50884 Pregnant Rattus Each

ESB50885 Vertebrate Survey Kit-Carosafe «The set includes 9 specimens to show the diversity of vertebrate organisms. Set includes: Amphioxus, Lamprey, Dogfish, Perch, Necturus (salamander), Frog, Turtle, Pigeon, Rat, Teachers manual, Student guide»

ESB50886 Pigeon Plain

ESB50887 Pig Kidney Plain





Biochemistry I Kit

This kit was designed to introduce students to the chemistry of living things and relate biochemistry to everyday life. Includes five basic biochemistry experiments in which students use chemical methods to test for proteins, carbohydrates and lipids, use Pepsin to digest protein and Ninhydrin to detect amino acids, test the activity of salivary amylase (both in vitro and in vivo), develop a technique for determining ascorbic acid concentration and use it to evaluate the vitamin C levels in substances, and determine of the alkalinity of acidity of foods. A great exploratory or introductory experience is gained by performing the test procedures. Ideal for students in biology, general science, or biochemistry courses. Required, but not included: a hot plate or water bath, glass rods, and food samples for testing. Designed for 24 students working

in six groups of four. Grades 8-12

ESB50904



Biochemistry II Kit

Expose upper level students to an expansive survey of fascinating biochemistry experiments. The kit introduces students to scientific techniques while examining ten different topics at a more in-depth level than Biochemistry I. Includes: Determining the pH of Foods, Saliva, and Soil; Starch Determination, Sugar Determination, Fat Determination, Protein Determination, Amino Acid Determination - Pepsin to Digestion of Protein, Ninhydrin Amino Acid Detection, Effects of Varying Conditions on Salivary Amylase Activity, Modelling How Digestion Works, Determination of Ascorbic Acid Concentration, Paper Chromatography of Various Dyes and Plant Pigments

Using Different Solvents. Ideal for biology, nutrition, general science, or biochemistry courses. Required, but not included: a hot plate or water bath, 50mL beakers, forceps, storage jars with caps, funnels, and food samples for testing. Designed for 24 students working in six groups of four. Grades 9-12

ESB50906

Biochemistry I Refill

Refill for Biochemistry I. Grades 8-12

ESB50905



Enzymes (Introduction) Kit

Enzymes are often present in such small quantities that the amount of enzyme is determined by measuring its activity. Through the disappearance of a substrate or the appearance of a product. This kit is designed to study the enzyme activity of Invertase, Amylase, and Pepsin using specific enzyme assay systems. It includes five introductory experiments: Demonstrating Invertase Activity, Demonstrating Amylase Activity, Demonstrating Pepsin Activity, Demonstrating the Presence of Amylase in Saliva, and The Effect of Time on the Activity of Invertase. Invertase and amylase activity are measured using DNS colour change systems. Visual examination or a spectrophotometer can be used to determine enzyme reaction rates for these systems. Kit includes all necessary chemicals and a reply card for Invertase, Amylase - Pepsin & Haemoglobin to be shipped separately upon request. Reply card items are only shipped within the continental United States. Requires lab glassware; including beakers, test tubes, and graduated cylinders; a hot plate or water bath, and a spectrophotometer or colorimeter, absorption 540 nm (optional). Designed for a class of 24 working in groups of 4. Activities are appropriate for advanced biology classes and recommended for Grades 10 - 14.

ESB50907



Effect Of PH On Enzymes Kit

This kit demonstrates the effect of pH on enzyme activity using the enzymes Invertase and Amylase. The pH affects the activity of enzymes in two ways: by affecting the charges on groups in the enzyme's three-dimensional active site and by altering the charges which hold the enzyme molecule together. Altering the charges in the active site can greatly change enzyme activity, but these changes are usually reversible. When an enzyme molecule is denatured by pH changes, the effects are usually not reversible and the enzyme becomes permanently inactive. Enzyme activity is measured using DNS reduction to ANS, which may be assessed visually or by spectrophotometer. Required, but not included: lab glassware; including beakers, test tubes, and graduated cylinders; a hot plate or water bath, use of a spectrophotometer or colorimeter is optional (absorption 540 nm). Reply card must be returned to obtain Invertase and Amylase enzymes. Reply card items are only shipped within the continental United States. Designed for advanced biology classes and includes sufficient chemicals for 24 students working in six groups of four. Grades 10-14

ESB50908

**Enzymes In The Home Kit**

Using this kit, students will examine enzymatic processes that are commonly used in the home for making cheeses, tenderizing meat, and cleaning. Includes three experiments: Curds & Whey Using Rennet, Proteases and Other Meat Tenderizers, and Detection of Enzymes in Wash Detergents. Required, but not included: a balance, water bath, laboratory glassware including test tubes, graduated cylinders, and beakers; thermometers, test tube racks, distilled water, and ice. Designed for 24 students working in groups of four. Grades 9-14

ESB50909

**Advanced Enzymology Kit**

The enzyme Invertase hydrolyses sucrose into glucose and fructose. The amount of these reducing sugars can be measured with the chemical DNS which creates a distinctive colour change. Students use a spectrophotometer to determine the reaction rate of Invertase when subjected to varied substrate concentrations, competitive and non-competitive inhibitors, changes in pH, and changes in temperature. Kit includes all necessary chemicals and a reply card for the Invertase enzyme and glucose solutions to be shipped separately upon request. Reply card items are only shipped within the continental United States. Required, but not included: lab glassware; including beakers, test tubes, and graduated cylinders; a hot plate, and a spectrophotometer. Designed for advanced biology classes and includes sufficient chemicals for 24 students working in six groups of four.

ESB50910

**Physicalproperties Of Protein Kit**

This kit demonstrates the important effects of physical parameters such as temperature, pH, salt concentration, and dielectric constants on proteins and illustrates how these effects are used in the isolation and purification of proteins. A protein's amino acid composition and structure influence its physical characteristics. Experiments include: Isoelectric Precipitation of Casein, Separation of Albumin and Gelatin by Ammonium Sulphate Fractionation, Effects of Acetone on Albumin and Gelatin Solutions, Heat Denaturation of Albumin, and Precipitation of Protein by Lead Acetate. Required, but not included: Bunsen burner, glassware, test tube holders. Contains lead acetate. Designed for 24 students working in six groups of four. Grades 9-14

ESB50911

Physical properties Of Protein Refill

ESB50912





Properties Of Lipids Kit

Lipids constitute a heterogeneous collection of compounds grouped together because of their solubility properties. In nature they are essential for membrane structure and function and for energy storage. The tests in this kit demonstrate the properties of lipids, teach students how to identify lipids, show students how to dissolve lipids in polar substances, and allow students to distinguish between saturated and unsaturated lipids. Experiments include: Solubility of Lipids, Emulsification of Lipids, Grease Spot Test for Fats, Saponification of Fats, and Iodine Test for Absorption. This kit includes chloroform - Petroleum ether, and methanol. Required, but not included: a fume hood, water bath - Personal protective equipment, test tubes, and watch glasses. Designed for 24 students working in six groups of four. Grade: College Level

ESB50913



Qualitative Analysis Of Carbohydrates

With this kit students learn about the unique properties of carbohydrates and how to run analytical tests for characterizing various carbohydrates, starches, and sugars. Experiments includes the Anthrone test for carbohydrates, iodine test for starch, Benedict's test for reducing carbohydrates, Barfoed's test for reducing monosaccharides, Seliwanoff's test for ketosis, and Bial's test for pentoses. Required, but not included: Hot plate or burner, concentrated and 3M hydrochloric acid, concentrated sulphuric acid, glassware. Designed for 24 students working in six groups of four. Grades 10-14

ESB50914



Sequence Of A Peptide

Students will determine the amino acid sequence of a tri peptide isolated from a protein hydrolysate. The experiments in this kit enable students to determine the chain length of the peptide by formal titration, determine the amino acid content and composition of the tripeptide using chromatographic techniques to determine Rf values, and identify which amino acids are the N-terminal and C-terminal residues using solvent extraction, enzymatic digestion, and chromatographic techniques. This kit contains formaldehyde. Includes student data sheets. Designed for 24 students working in groups of four. Grade: College Level.

ESB50915

Sequence Of A Peptide Refill

Grades College

ESB50916



Amino Acid Analysis By TLC

Students learn the theory of chromatography; then separate two different unknown amino acid mixtures using thin layer chromatography (TLC) with amino acid standards run alongside the unknowns. Ninhydrin is used as a visualizing agent; then the rate of flow (Rf) values are calculated for each spot identified on the chromatograms. Students are challenged to predict the migration of the amino acids on the TLC after looking up the structures and pKa values of the four amino acid standards. The unknown components are identified by comparing the Rf values from the unknown amino acid mixtures to Rf data obtained from the four known amino acid standards. Required, but not included: hair dryer, 600 mL beakers for chromatography chambers, clear plastic rulers, and standard laboratory supplies. Designed for 24 students working in six groups of four. Grades 10-14

ESB50918

Amino Acid Analysis By TLC Refill

ESB50919





Qualitative Analysis Of Protein And Amino Acids

This kit demonstrates the principles of protein and amino acid analysis and enables students to identify unknown compounds. In this set of lab activities, students work with the proteins, albumin and gelatin, as well as the amino acids, glutamic acid, glycine, cystine, cysteine, tyrosine, tryptophan, and arginine. Ninhydrin is used to detect the presence of amines, indicating the presence of amino acids and/or proteins, the Biuret test is used to detect the presence of peptide bonds, and specific analytical tests are used for determining the presence of individual amino acids. Protein and amino acid analysis techniques are an integral part of biochemistry and the range of tests available for analysing amino acids and proteins are indicative of their importance. Required, but not included: concentrated nitric acid, ethanol, hot plates, balances, glassware, and distilled water. Designed for 24 students working in six groups of four. Grades 10-14

ESB50920

Glucose Test Strips

This Glucose Test Strips PK/20

ESB50934

Amino Acid Kit

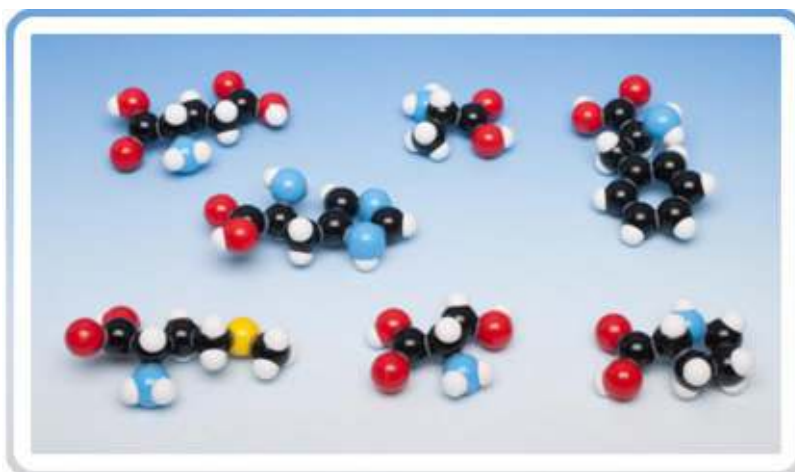
This molecular kit can be utilized to demonstrate 8 models of L-configuration amino-acids. The amino acid molecular model collection set includes 125 atom parts and 180= NV links. There is no better way to demonstrate the structure and function of amino acids than with this molecular model set.

The following amino acids can be assembled. Group 1 Valine, Group 2 Threonine, Group 3 Phenylalanine, Group 4 Methionine, Group 5 Histidine, Group 6 Aspartic acid, Group 7 Glutamine and Proline. Extra parts are included to form peptide bonds and hydrogen bonds to make a polypeptide chain and part of a beta-pleated sheet.

Diameter of atom parts ranges from 14.5 - 15 mm.

Contents:

- 24 Carbon black, 4-hole
- 19 Carbon black, 3-hole
- 77 Hydrogen white
- 10 Oxygen red -angular
- 10 Oxygen red - linear
- 1 Sulphur yellow
- 1 Nitrogen blue
- 9 Nitrogen blue trigonal
- 1 Nitrogen blue angular
- 8 Hydrogen
- 90 NV-links
- 2 Short link remover tools



ESB50917



Sphygmomanometer

(Blood Pressure Mercurial)

Mercurial measuring range 0-300mmHg



ESB50983

Blood Pressure Monitor Digital

Upper Arm Blood pressure Monitor
One Upper Arm Digital Blood Pressure Monitor
Detachable Upper Arm Cuff
Fitted with World Health Organisation classifications
Ideal for measuring blood pressure at home

Easy to use, one touch system
Large display with back-light coloured screen
Highly cost effective
Requires 4 x AA batteries (not included)
Clear easy to see buttons for operation
Automatic power off 3 mins



ESB50986

Blood Pressure Monitor Wrist Type

Easy to Use Wrist Blood pressure Monitor
The Wrist cuff has a circumference of 13.5cm-21.5cm
Measuring Accuracy of +/- 3mmHg of pressure
Measuring Accuracy of +/- 5% Pulse reading
Measuring pressure range of 0-299 mm-Hg
Measuring Pulse range of 40-199 pulse per minute

Auto power off feature to conserve battery life (3 Mins)
Electronic Inflation
Back-light display
IHB indicator

Supplied with a handy hard case for storage
Powered by 2 x AAA batteries not included

ESB50987

Blood Pulse Oximeter Fingertip

Fingertip Pulse Oximeter
Large Clear LED Screen
4 way movement for comfort
Automatic Power off
Highly accurate
SP02 measurement 70%-99%
Powered by 2x AAA batteries
lanyard supplied
Two Measurement types SP02 and Pulse rate (BPM)



ESB50988



Pumping Heart Model

Scientific experiments, pumping heart

ESB50991



Stethoscope Training , Dual Head

Chrome-plated binaural, lightweight anodized- aluminium chest piece (1-3/4 in. Dia.), 22 in. Vinyl Y-tubing, spare diaphragm, and a pair of soft mushroom ear tips. Overall length: 30 in.

ESB50989

Stethoscope

With very sensitive Chest-piece covers an essential range of sounds to listen to the heartbeats and functional sound of lungs. Very convenient to use and more suitable for medical students and colleges.



ESB50990





Human Disarticulated Skeleton, Full

This life size model shows the complete human skeleton with separated bones: skull, axial section, hyoid bone, ribs, sternum with rib cartilage, upper and lower limbs, sacrum and coccyx are represented in high detail. One hand and foot (left) are on wire, the other set is removed. The skull can be disassembled into 3 parts: skullcap, base of skull and mandible.

Dimensions : 54 x 39 x 21cm

Net weight : 8000 g

ESB51032



Human Disarticulated Skeleton, Half

This life-size model features a disarticulated human skeleton comprising one of each bone type: skull, axial skeleton, hyoid bone, ribs, intervertebral discs, sternum with rib cartilage, upper and lower limb, sacrum, and coccyx, all depicted in high detail. Additionally, the right hand and foot are represented on wire. The skull is designed to be disassembled into three parts: skullcap, base of the skull, and mandible.

Net Weight : 4000 g

ESB51032/H

NEW

Human Skeleton with Nerves Hanging 85cm

This 1/2 life size model shows the anatomy of the human skeleton.

With nerves and transparent intervertebral discs.

This skeleton is hanging, which spine is flexible.

All the main joints are articulated.

Arms and legs can be removed easily.

Dimensions : 50 x 24 x 16.5 cm

Net weight : 2500 g

ESB51034H



Human Skeleton, 45cm

This is 45cm height human skeleton model. Skullcap and legs can be removed easily. White color.

Dimensions : 29 x 16 x 11 cm

Net Weight : 600 g

ESM61860

NEW





Human Skeleton Model With Nerves 85cm

Mini skeleton with nerves outlined , The skull can be dissembled into 3 parts: skullcap, base of skull and mandible. All the main joints are articulated. Arms and legs can be removed easily. Mounted on a stand

Dimensions : 85 cm

ESB51034



Human Skeleton Model 85cm

Mini skeleton The skull can be dissembled into 3 parts: skullcap, base of skull and mandible. All the main joints are articulated. Arms and legs can be removed easily.

Mounted on a stand
Dimensions : height 85 cm

ESB51033

NEW



Human Skeleton Model With Nerves & Muscle, Numbered 85cm ,Hanging

"This 1/2 life size model shows the anatomy of the human skeleton. With nerves and transparent intervertebral discs. This skeleton is hanging, which spine is flexible.

All the main joints are articulated. Arms and legs can be removed easily. The half side of the skeleton shows the points of origin (red) and the points of insertion (blue) of the muscles.

Dimensions : height 85 cm

ESB51031H

NEW



Human Skeleton Model With Nerves Muscles 85cm

This 1/2 life size model shows the anatomy of the human skeleton. With nerves and transparent intervertebral discs. The skull can be dissembled into 3 parts: skullcap, base of skull and mandible. All the main joints are articulated. Arms and legs can be removed easily. The half side of the skeleton shows the points of origin (red) and the points of insertion (blue) of the muscles

Dimensions : 85 cm

ESB51030

NEW



Human Skeleton Model With Blood Vessels 85cm

This 1/2 life size model shows the anatomy of the human skeleton. It shows the artery, vein, nerves and heart. The skull can be disassembled into 3 parts: skullcap, base of skull and mandible. There is a brain inside the skull.

All the main joints are articulated. Arms and legs can be removed easily.

Dimensions : 85 cm Weight : 2500 g

ESB51029

NEW



Human Skeleton Model Hanging With Ligament & Muscle, Numbered 85cm

This 1/2 life size model shows the anatomy of the human skeleton. With nerves and transparent intervertebral discs. This skeleton is hanging, which spine is flexible.

All the main joints are articulated. Left arm and legs can be removed easily. The half side of the skeleton shows the points of origin (red) and the points of insertion (blue) of the muscles. The other side shows the ligaments..

Dimensions : 85 cm

ESB51031



Human Skeleton

Model 170cm

This life-size human skeleton model is meticulously crafted to showcase each skeletal part with exceptional detail. Hand-assembled for intricate accuracy and long-term durability, it features articulated main joints and easily detachable upper and lower limbs.

The detachable parts include:

Calvarium (skullcap)

Jaw

Legs

Skull

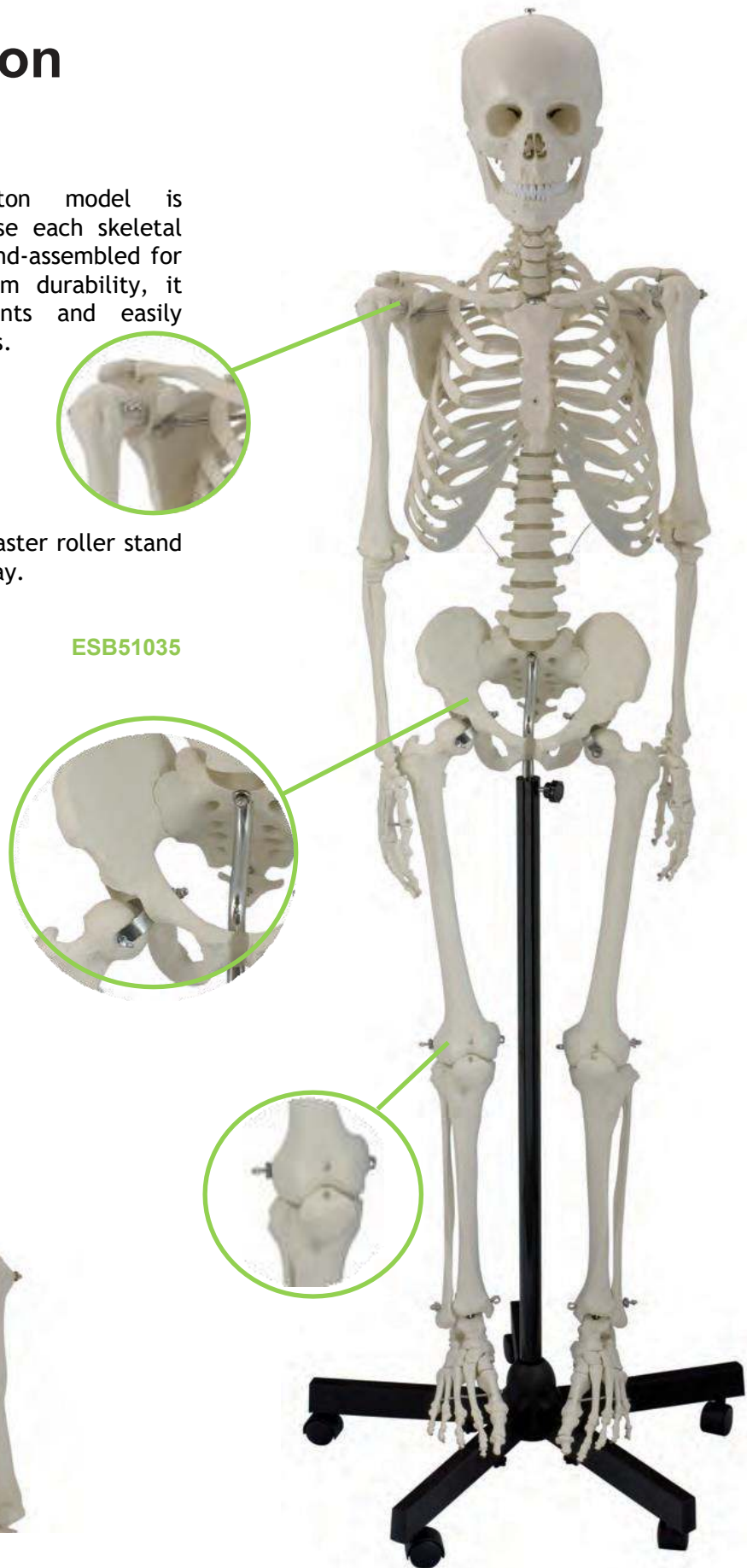
Arms

Additionally, it comes with a 5-caster roller stand for convenient mobility and display.

Dimensions : 176 cm height

Weight : 9000 g

ESB51035



NEW

Human Skeleton Flexible Model 170cm

This model is a replica of a life size human skeleton and shows all the skeleton parts in high details. It's hand-assembled to provide intricate details and long-lasting durability. The main joints are articulated; the upper and lower limbs can be removed easily. Spine is flexible.

Dimensions : 176 cm height
Weight : 9000 g

ESB51035FLX



Human Skeleton Model With Ligaments

Human Skeleton Model With Ligaments

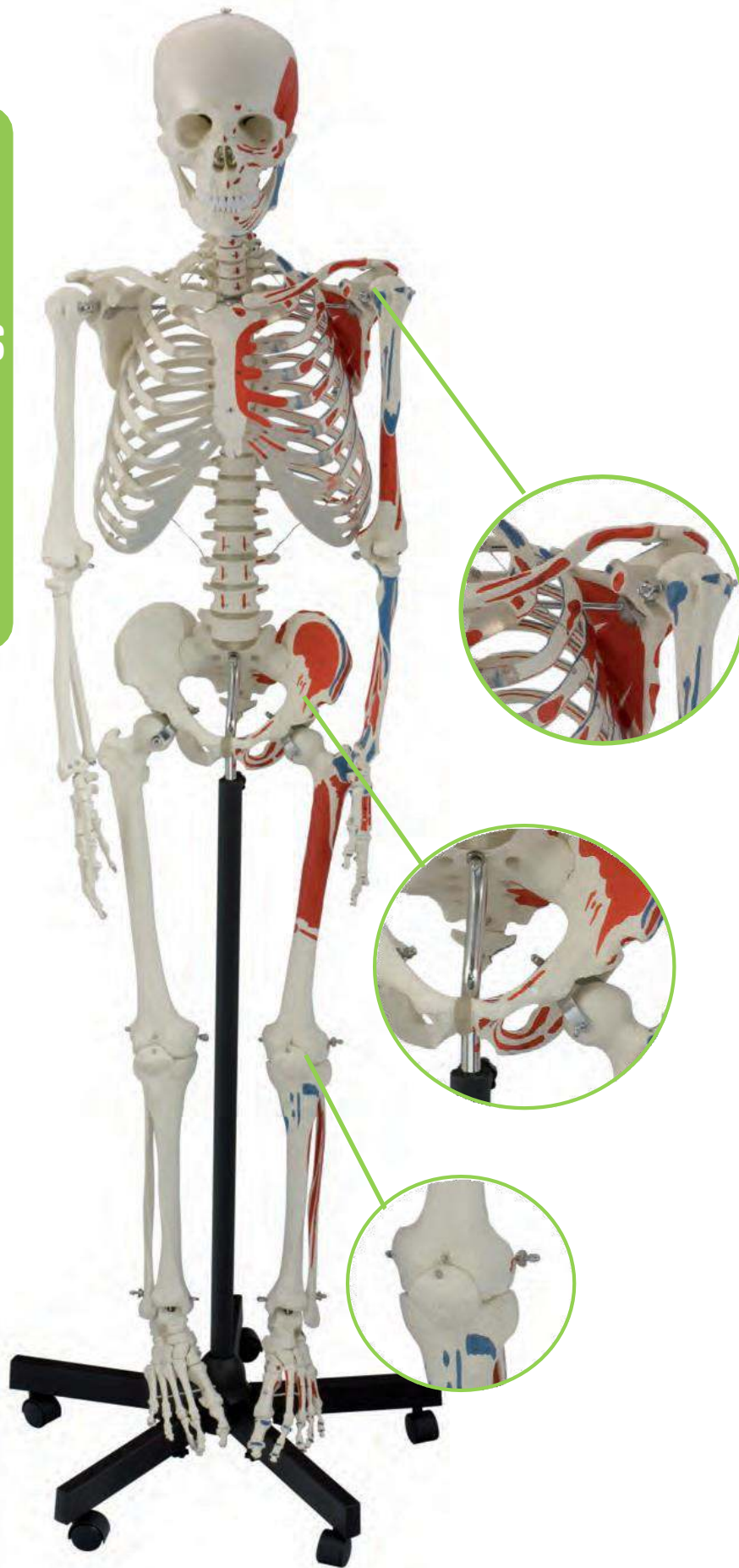
Full-size model is mounted upright and carefully casted in durable molding with natural colour plastic. Arms and legs are joined by connectors and can be moved to demonstrate natural movement around the joints. Both the arms and the legs are removable for further study. The skull features a moveable jaw, suture lines, Includes a roller base Size : 176cm height

Dimensions : 176 cm height

Weight : 9000 g

ESB51036





Human Muscular Skeleton Model

Full-size model is mounted upright and carefully casted in durable moulding with natural colour plastic. Arms and legs are joined by This model is a replica of a life size human skeleton and shows all the skeleton parts in high details. It is hand assembled to provide intricate details and long-lasting durability. The main joints are articulated; the upper and lower limbs can be removed easily. The following parts are detachable: Calvarium, Skull, Jaw, Arms, Legs. The left side of the skeleton shows the points of origin (red) and the points of insertion (blue) of the muscles.
 Dimensions : 96*45*27cm ;176 cm height
 Weight : 11000 g

ESB51037



Human Muscular Skeleton Model with Ligaments

Full-size model is mounted upright and carefully casted in durable moulding with natural colour plastic. Arms and legs are joined by connectors and can be moved to demonstrate natural movement around the joints. Both the arms and the legs are removable for further study. The skull features a moveable jaw, suture lines, Includes a roller base

Dimensions : 176 cm height

Net weight : 9000 g

ESB51038





Human Flexible Muscle Skeleton Model With Liagment, Numberd

This model is a replica of a life size human skeleton and shows all the skeleton parts in high details. It's hand-assembled to

provide intricate details and long-lasting are articulated; the upper and lower limbs following parts are detachable: Calvarium, Jaw, Legs, Skull, Arms. The left side of the skeleton shows the points of origin (red) and the points of insertion (blue) of the muscles. Muscles are numbered and with a manual. The right side shows the ligaments.

Spine is flexible.

Dimensions : 176 cm

Net weight : 9000 g

ESB51038FLX

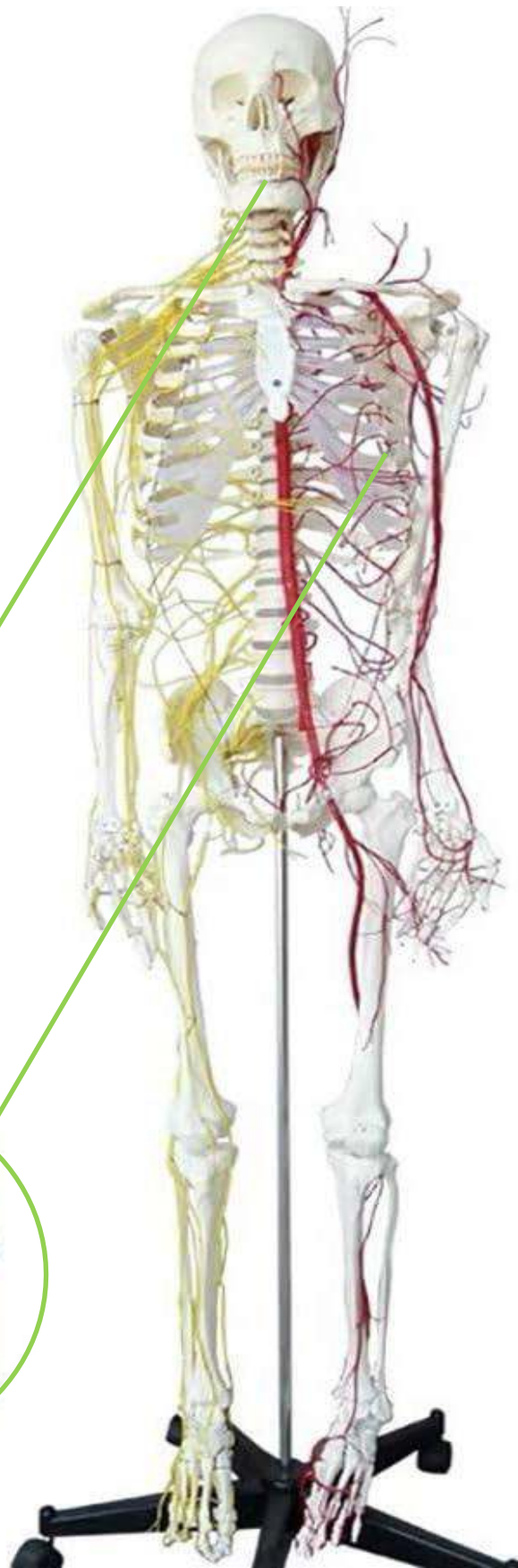
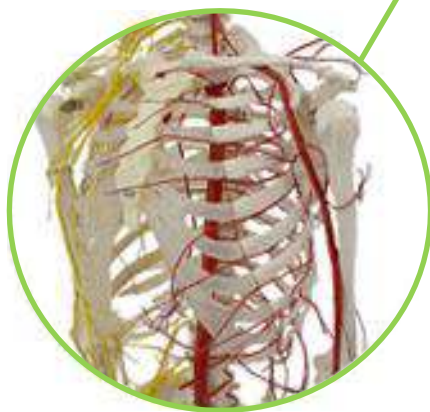


NEW

Human Skeleton With Nerves and Blood Vessels Model 170 cm

Full-size model is mounted upright and carefully casted in durable moulding with natural colour plastic. Arms and legs are joined by This model is a replica of a life size human skeleton and shows all the skeleton parts in high details. It's hand assembled to provide intricate details and longlasting durability. The main joints are articulated; the upper and lower limbs can be removed easily. The following parts are detachable: Calvarium, Skull, Jaw, Arms, Legs. The left side of the skeleton shows the points of origin (red) and the points of insertion (blue) of the muscles. Dimensions : 170 cm height

ESB51028



**Skull Mini Model**

Mini human skull model
 Dimensions : 10*7*8 cm
 Weight : 110 g

ESB51039

**Skull With Muscle Insertion**

This life-size model reproduces the human skull in great detail. All the most important anatomical structures are numbered; the left side of the skull shows the points of origin (red) and the points of insertion (blue) of the muscles. It can be disassembled into three parts: skullcap, base of skull and mandible.

Dimensions : 19.5*15*13 cm
 Weight : 800 g

ESB51043

**Classic Skull Model**

A detailed reproduction of a life size human skull with all structural details. The skullcap is removable to show the internal structure of the skull. The mandible is articulated and removable. All of the joints, sutures, fissure, foramina and processes are portrayed with utmost accuracy.

Dimensions : 19.5*15*13 cm
 Weight : 800 g

ESB51041

**Numbered Skull Model**

A detailed reproduction of a life size human skull with all structural details. The skullcap is removable to show internal details. The mandible is articulated and removable. All of the joints, sutures, fissure, foramina and processes are portrayed with utmost accuracy. Significant structures are numbered.

Dimensions : 19.5*15*13 cm
 Weight : 800 g

ESB51042





Skull Colored 22 Parts

This fascinating model of an average European adult skull can be disassembled into 22 single bones. During development of this model one of the main targets was to make the model easy to assemble and dismantle. Stable parts with convenient magnet connections make handling of the product a child's play. The detailed bones do not need any complicated pins to be stuck into holes, they almost slide into position, guided by realistic bone sutures and held by strong magnets. The perfect tool for Osteopaths. This version is perfect for visual distinction of the single bones. The bones are produced in different colours, commonly used in anatomy, geminate bones do have identical colour.

Dimensions : 27*18*23 cm
Weight:1500 g

ESB51044/22



Skull 22 Parts

This fascinating model of an average European adult skull can be disassembled into 22 single bones. During development of this model one of the main targets was to make the model easy to assemble and dismantle. Stable parts with convenient magnet connections make handling of the product a child's play. The detailed bones do not need any complicated pins to be stuck into holes, they almost slide into position, guided by realistic bone sutures and held by strong magnets. The perfect tool for Osteopaths.

Dimensions :21.5*19.5*17 cm

ESB51041/22



Skull Mini Model 15 Parts 1/2 life size

This Half Size life , 15 Parts Palm-Sized Anatomy Skull Model For: Medical Teaching Learning, Kids Learning Education Display; This 15 parts mini human skull has every detail; that the big models have, including: the holes, sockets, canals, and a complete set of human teeth. It also shows the bones structure, texture, articulating mandible, eye sockets, sutures, internal nasal cavity, and the endocranium cavity; a great teaching aid for anatomy and physiology courses and school teaching, learning display tool..

Dimensions :15*15*8 cm
Weight:1000 g

ESB51039/15



Skull Colored 15 Parts 1/2 life size

This Half Size life , Printed 15 Parts Palm-Sized Anatomy Skull Model For: Medical Teaching Learning, Kids Learning Education Display; This 15 parts mini human skull has every detail; that the big models have, including: the holes, sockets, canals, and a complete set of human teeth. It also shows the bones structure, texture, articulating mandible, eye sockets, sutures, internal nasal cavity, and the endocranium cavity; a great teaching aid for anatomy and physiology courses and school teaching, learning display tool..

Dimensions : 16*14*8 cm
Weight:700 g

ESB51039C/15





Baby Skull Model (Foetus Skull)

This model represents a human foetal skull in the 30th week of pregnancy.
 Dimensions : 21*16*33 cm

ESB51040



Skull With Cervical Vertebra Model

Life-size skull is highly detailed with representations of the fissures, foramina, processes, sutures, and cervical spine, including the seven cervical vertebrae, spinal cord, cervical nerves, vertebral arteries, basilar arteries, and rear cerebral arteries. Three-part skull can be disassembled into the skull cap, skull base, and mandible. Mandible is spring mounted to demonstrate natural movement and has three removable teeth. Mounted on stand.
 Dimensions :21*16*33 cm
 Weight : 1400 g

ESB51045

NEW



Colored And Muscle Skull With Cervical Vertebra

Life-size skull model with cervical spine column is of high quality and an original cast. It is mounted on a stand, with 7 cervical vertebrae. It is half side didactically Painted and half side painted with muscle insertions and origins in blue and red, which is numbered and corresponds to the manual description.
 Skull is 3-part: Calvaria, Base of Skull, and Mandible. Mandible of skull is mounted on a spring to easily demonstrate natural movement.
 Model height: 30cm include. Stand
 Dimensions: 14*19*20 cm

ESB51046/M





Coloured Skull Model

This life size model is a detailed reproduction of the human skull. The skullcap is removable to show internal details; the mandible is articulated and removable. All the joints, sutures, fissures, foramina and processes are portrayed with utmost accuracy. All the bones are depicted in different colours, making this model a useful tool to study the correct position and the relationship of all the structures.

Dimensions : 19.5*15*13 cm

Weight : 800 g

ESB51044



Coloured Skull With Cervical Vertebra

This life size model of skull with Cervical Vertebra is a detailed reproduction of the human skull. The skullcap is removable to show internal details; the mandible is articulated and removable. All the joints, sutures, fissures, foramina and processes are portrayed with utmost accuracy. All the bones are depicted in different colours, making this model a useful tool to study the correct position and the relationship of all the structures.

Dimensions : 21*16*33 cm

Weight : 1400 g

ESB51046



Arm Bone Model

A life size plastic skeleton of the hand with forearm bones (radius and ulna). All the joints are articulated.
 Dimensions : 14*5*39 cm
 Weight: 700 g

ESB51047



Foot Bone Model

A life size skeleton of the human foot with articulated joints. Natural movements of the foot can be demonstrate easily and effectively.
 Dimensions : 23*18*9 cm
 Weight : 450 g

ESB51353



Hand Bone Model

A life size plastic skeleton of the human hand with articulated joints. Dimensions : 11*11*24 cm Weight : 160 g

ESB51048

NEW



Bone Of The Leg With Half Pelvis

An articulated life size plastic skeleton of the lower limb with half pelvis, including the entire hip joint.
 Diminution: 50*24*16 cm
 Weight: 1800 g

ESB51354

NEW



Bone Of The Leg

An articulated life size plastic skeleton of the lower limb.

ESB51353





Upper Limb
Length:70 cm
Weight:350 g

ESB51355



Upper Limb With Scapula & Clavicle

ESB51357



Hanging Upper Limb With Scapula, Clavicle and Ligaments

ESB51358



Upper Limb With Holder

ESB51356



Hanging Lower Limb With Pelvis And Ligaments

An articulated life size plastic skeleton of the lower limb with half pelvis, including the entire hip joint. With ligaments and base

ESB51360



Lower Limb With Holder

An articulated life size plastic skeleton of the lower limb with half pelvis, including the entire hip joint. With a base

ESB51359





Female Skeletal Pelvis Model

A complete life size skeleton of a female human pelvis consisting of the pelvic bones (ischium, ilium and pubis), sacrum, coccyx and symphysis.

Dimensions : 24*18*21 cm
Weight : 1100 g

ESB51057



Male Skeletal Pelvis Model

A complete life size plastic skeleton of a human male pelvis consisting of the pelvic bones (ischium, ilium and pubis), sacrum, coccyx and symphysis.

Dimensions : 24*18*21 cm,
Weight : 1100 g

ESB51056



Model Of Pelvis With 4th And 5th Lumbar Vertebra

A complete life size plastic skeleton of a human male pelvis consisting of the pelvic bones (ischium, ilium and pubis), sacrum, coccyx and symphysis.

Dimensions : 21*20*24 cm
Weight : 1300 g

ESB51058



Pelvis With 5 Lumbar And Femurs

This life size model consists of the pelvic bones with femur heads, sacrum, coccyx and lumbar vertebrae with intervertebral discs.

Dimensions : 19*13*8.5 cm
Weight : g

ESB51361

NEW



Pelvis With 5 Lumbar And Femurs 1

This is reduced size model consists of the pelvic bones with femur heads, sacrum, coccyx and lumbar vertebrae with intervertebral discs.

Dimensions : 32*25*17 cm
Weight : 2000 g

ESB51362

NEW



Shoulder Joint Model With Muscle

Full size normal right shoulder includes: infraspinatus, subscapularis, supraspinatus, and teres major and minor muscles; acromion, clavicle, humerus and scapula bones; plus eight ligaments and tendons.

Dimensions : 16.5*13*23 cm
Weight : 1000 g

ESB51050/M

NEW



Knee Joint Model With Muscle

Full size normal knee includes: rectus femoris, vastus lateralis and vastus medialis muscles; femur, fibula, patella and tibia bones; anterior cruciate ligament, quadriceps femoris tendon plus six more ligaments and tendons.

Dimensions : 30*35*25 cm
Weight : 1500 g

ESB51051/M

NEW





Knee Joint Model

This life size model represents a functional model of knee joint with lateral ligaments, meniscus and patellar ligament.

Dimensions : 12*12*32 cm

Weight : 440 g

ESB51051



Elbow Joint Model

This single-piece life-size model is a realistic representation of the human elbow with ligaments.

Dimensions : 28*11*11 cm

Weight : 580 g

ESB51052



Hip Joint Model

This single piece life-size model illustrates the right hip joint with ligaments.

Dimensions : 15*12 *24.5 cm

Weight : 600 g

ESB51053



Shoulder Joint Model

This life size model shows the shoulder joint with ligaments.

Dimensions : 16.5*11*23 cm

Weight : 430 g

ESB51050



Hand Joint Model With Ligaments

This hand skeleton model shows the anatomical detail of main joint ligaments and tendons found in the hand, wrist, .

Dimensions : 11*11*24 cm,

Weight : 300 g

ESB51055



Foot Joint Model With Ligaments

This detailed foot skeleton model displays numerous important ligaments and tendons including the Achilles and peroneus longus tendons of the ankle. The foot skeleton consists of the foot bone and lower portions of the tibia and fibula, including the introsseous membrane found between them.

Dimensions : 23*18 *30 cm

Weight : 800 g

ESB51054





Classic Flexible Spinal Column Model

A fully flexible life size vertebral column including the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx, complete pelvis with symphysis, removable femur heads. The model also features representations of the vertebral arteries, spinal nerve branches and prolapsed L3-L4 inter vertebral disc

Dimensions : 89*24*18 cm
Weight : 3500 g

ESB51059



Flexible Spinal Column Model With Femur

A fully flexible life size vertebral column including the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx, complete pelvis with symphysis, removable femur heads. The model also features representations of the vertebral arteries, spinal nerve branches and prolapsed L3-L4 intervertebral disc

Size : 89*24*18 cm
Net weight : 3500 g

ESB51060



Flexible Spinal Column Model With Colour Coded Regions

A full flexible life size vertebral column including the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx and complete pelvis. Included are the vertebral arteries, spinal nerves and a prolapsed L3-L4 intervertebral disc. The various regions of the spinal column are colour coded for ease of identification.

Dimensions : 89*24*18 cm
Weight : 3000 g

ESB51061



Flexible Spinal Column With Femur

A fully flexible life size vertebral column consisting of the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx, complete pelvis with symphysis, removable femur heads. The model also features representations of the vertebral arteries, spinal nerve branches and a prolapsed L3-L4 intervertebral disc.

Dimensions : 89*24*18 cm
Weight : 3000 g

ESB51062





Vertebra Column Flexible With Femur Head

A fully flexible life size vertebral column including the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx, complete pelvis with symphysis, removable femur heads. The model also features representations of the vertebral arteries, spinal nerve branches and prolapsed L3-L4 intervertebral disc. The left side of the skeleton shows the points of origin (red) and the points of insertion (blue) of the muscles.

Dimensions : 89*24*18 cm

Weight : 3500 g

ESB51064

NEW



Flexible Spinal Column

A fully flexible life size vertebral column consisting of the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx and complete pelvis. Features include representations of the vertebral arteries, spinal nerve branches and a prolapsed L3-L4 intervertebral disc.

ESB51366

NEW



Flexible Spinal Column with Colour Coded Regions and Fur

A full flexible life size vertebral column including the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx and complete pelvis and femurs. Included are the vertebral arteries, spinal nerves and a prolapsed L3-L4 intervebral disc. The various regions of the spinal column are color coded for ease of identification.

ESB51367

NEW



Flexible Spinal Column, with Femur, open Sacrum identification. .

ESB51062/OS





Skeleton Of Human Trunk With Stand

A fully flexible life size plastic human trunk skeleton consisting of the following features: complete pelvis including the ischium, ilium and pubis, sacrum, coccyx and the symphysis, complete spinal column with ribs and sternum associated structures, occipital plate, clavicle and scapula.

Dimensions : 75*35*30 cm
Weight : 5000 g

ESB51198



Classic Spinal Column 1/2 life Size

A Half life size vertebral column consisting of the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx, complete pelvis with symphysis, removable femur heads. The model also features representations of the vertebral arteries, spinal nerve branches and a prolapsed L3-L4 intervertebral disc.

ESB51364



Flexible Spinal Column, with Femur, Open Sacrum, with Muscle insertion

ESB51062/OSM



Colored flexible spinal column with femur , Hanging

A hanging 1/2 life size colored flexible vertebral column consisting of the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx, complete pelvis with symphysis, removable femur heads. The model also features representations of the vertebral arteries, spinal nerve branches and a prolapsed L3-L4 intervertebral disc

ESB51365H



Colored Flexible Spinal Column with Femur

A Half life size colored flexible vertebral column consisting of the occipital plate, cervical, thoracic and lumbar vertebrae, sacrum, coccyx, complete pelvis with symphysis, removable femur heads. The model also features representations of the vertebral arteries, spinal nerve branches and a prolapsed L3-L4 intervertebral disc.

ESB51365





Cervical Vertebrae Occipital Bone With Spinal Cord Model

This real life replica of the anatomy of the cervical spinal column is a high quality model. Consisting of, occipital plate, the 7 cervical vertebrae with intervertebral discs, cervical nerves, vertebral arteries and spinal cord. The cervical spinal column is delivered on a stand.

Dimensions : 19 cm

Weight : 300 g

ESB51063



Lumbar Vertebra, Sacrum Bone With Spinal Nerves Model

This life size model consists of 5 lumbar vertebrae with intervertebral discs, lumbar nerves and spinal cord. The sacral crest and coccyx are removable to show the sacral segment of the spinal cord and associated nerve branches.

Dimensions : 37*12*12 cm

Weight : 800 g

ESB51065



NEW

Deluxe Muscled Cervical

Full size model features brain stem, occipital bone, atlas and axis through C7 (with herniated disc), T1 and T3. This model has a soft cerebellum and full nerve with right side brachial plexus. Muscles include suboccipital triangle, longus capitis, levator scapulae and scalene muscles. The right first and second ribs are also featured and include cartilage.

ESB51283



NEW

Transparent Lumbar Vertebra, Sacrum Bone with Spinal Nerves

ESB51065/T



NEW



Occipital, Atlas, Axis Model

ESB51371

NEW



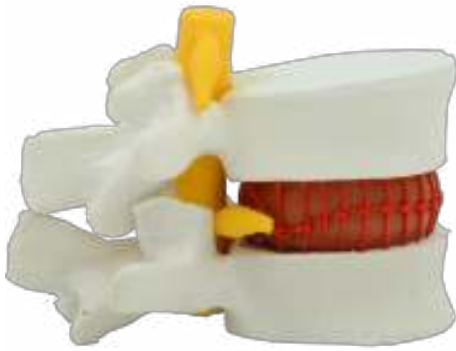
Thoracic Spinal Column

This life size model shows the thoracic spinal column. It consists of 12 thoracic vertebrae with intervertebral discs, thoracic nerves and spinal cord.

Dimensions 2*12*40cm,
Weight : 600 g

ESB51366

Biology



Lumbar Vertebra With Hemocyte

This life size model shows 2 lumbar vertebrae with spinal nerves

ESB51067

NEW



Bone Tissue Model

This model is composed of 4 parts and shows different structures of the human bones.

The external structure of the femur with periosteum, blood vessels, spongy bone, compact bone and haversian system.

Dimensions : 44*10*32cm,
Weight : 1500 g

ESB51068



Bone Structure Model

This 80X life-size enlarged model demonstrates a 3-D section of a lamellar bone, along with the normal structure of a tubular bone. Extremely detailed model utilizes various planes in cross, longitudinal, and two-plane sections through all the levels of bone to demonstrate the interaction between the individual bone structure elements. Mounted on a base.

ESB51069



NEW



Cardiac Muscle

This is enlarged cardiac muscle model.

ESB51285

NEW



Smooth Muscle

This is enlarged smooth muscle model

ESB51286



Skeletal Muscle Fiber Model

This model, enlarged approximately 40000X, shows the structure of skeletal muscle fibres, including the anatomical features of sarcomeres with sarcoplasmic reticulum, myosin and actin myofibrils and the neuromuscular plate.

Dimensions : 26*25*19 cm

Weight : 1300 g.

ESB51073



Male Perineum Model

This life size model shows the male perineal area, including the anus and external genitalia.

The pelvic diaphragm, urogenital perineum and anal perineum are well represented, including distribution of blood vessels and nerve endings

Mounted On Base.

Dimensions : 34 *34*14 cm

Weight : 2000 g

ESB51078/M

NEW



Masticatory Muscle

This is life size half head model, shows the masticatory muscle and brain structure.

ESB51288

NEW



Shoulder Model With Deep Muscle

This model illustrates in great details the muscles, ligament and bones of the shoulder. Through different muscles section it is possible to observe the profound musculature as far as to get bone. Life size model in 1 piece.

Dimensions : 11*11*25 cm

Weight : 530 g

ESB51075

NEW



Muscle of Tongue

This life size model is a ventral view of the human neck, showing excellent details of the main muscles, vascular structures, nerves and glands.

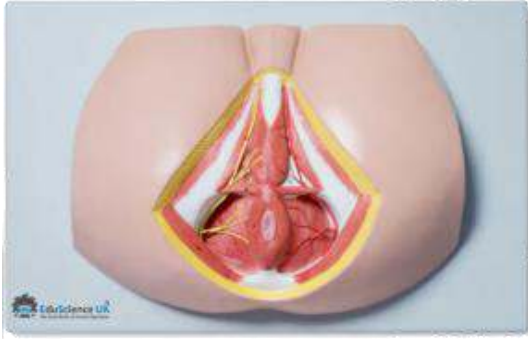
Mounted on board.

Dimensions : 33x23x11.5 cm

Weight: approx. 600 g

ESB51289





Female Perineum Model

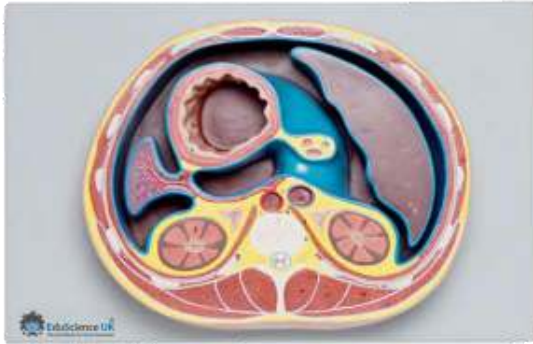
This life size model shows the female perineal area, including the anus and the external genitalia

The pelvic diaphragm, urogenital perineum with opening of the vagina and the anal perineum are well represented. Distribution of blood vessels and nerve endings is included.

Dimensions : 33*23*10cm

Weight : 1200g

ESB51078M



Schematic Cross Section Through Thorax

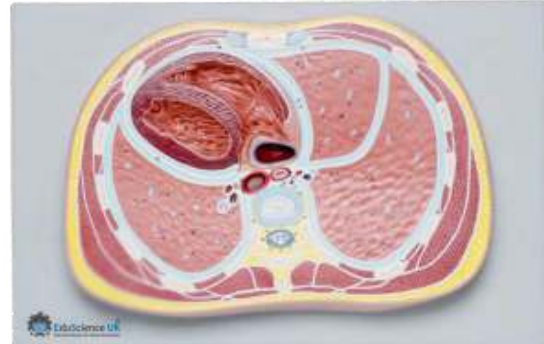
This life size model shows a cross sectional view through the thorax at the level of the v. In this model it is possible to observe the horizontally sectioned heart, lungs, veins, arteries and other thoracic structures.

Mounted On Base.

Dimensions : 34*24*13 cm.

Weight: approx. 3000 g

ESB00000



Schematic Cross Section Through Abdomen

This life size model shows a typical cross sectional view through the abdomen at the level of the

T12 vertebra. The stomach, liver, kidney, spleen and other abdomen structures are sectioned horizontally.

Mounted On Base.

Dimensions : 33*23*6 cm.

Weight: approx. 1350 g

ESB00000

Anatomy of The Neck

This life size model is a ventral view of the human neck, showing excellent details of the main muscles, vascular structures, nerves and glands.

Mounted on Base with stand.

Dimensions : 33*23*11 cm

Weight: approx. 600 g

ESB51203



Mediastinum Model

This life-sized model comprises five parts, featuring a two-part heart that offers an internal perspective of the chambers and valves. The sternum and thymus can be removed to expose the pericardial sac and the primary pulmonary and systemic vessels. Additionally, the trachea and esophagus are depicted entering the mediastinum through the superior thoracic aperture, while the inferior thoracic aperture is outlined by the diaphragmatic musculature.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions: 39.5*26*30.5 cm

Weight: 2800 g

ESB51088



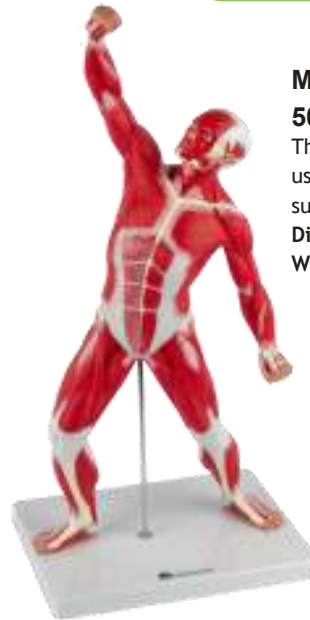


Muscular figure,21cm

This mini model accurately depicts the topography of the human superficial musculature.

Dimensions : 13*8*23 cm,
Weight : 350 g

ESB51615



**Muscle Figure
50 Cm Height Model**

This 1/4 life-size model is a useful tool to study human superficial musculature.

Dimensions : 25*20*53 cm,
Weight : 1500 g

ESB51070



Muscular Figure,25cm

This mini model accurately depicts the topography of the human superficial musculature.

Dimensions : 12*6,5*25 cm
Weight : 40 g

ESB51616



**Numbered Muscular
Figure
1 Part,50cm**

This reduced size model accurately depicts the topography of the human superficial musculature. Detailed parts are numbered and with a manual.

ESB51070N



Muscular Figure,40cm

This 1/4 life-size model is a useful tool to study human superficial musculature. Significant structures are

numbered and referenced on the accompanying manual.

Dimensions : 25.5*19*40.5 cm
Weight : 700 g

ESB51617

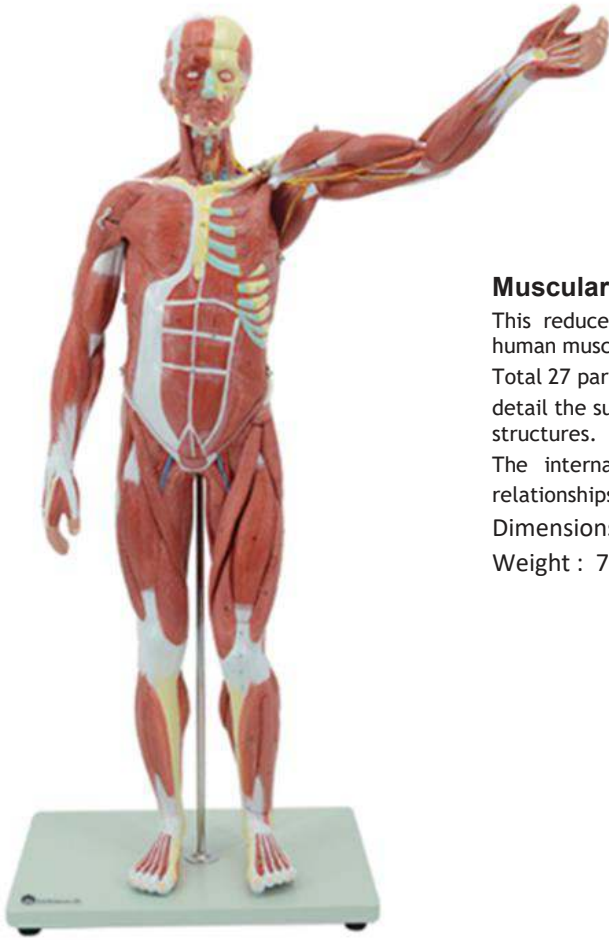


**Colored Muscular
Figure,1 Part,50cm**

This colored reduced size model accurately depicts the topography of the human superficial musculature.

ESB51618





Muscular Figure, 27 Parts, 78cm

This reduced size high quality model represents a replica of the complete human muscular and organs anatomy.

Total 27 parts. It illustrates with excellent detail the superficial and deeper muscles, tendons, ligaments, vessels and body structures.

The internal organs are removable for closer examination to study the relationships among all the body structures.

Dimensions : 82*27*18 cm

Weight : 7000 g

ESB51619

Muscular Figure, 30 Parts, 85cm

This 1/2 life size high quality model ; represents a replica of the complete human ; muscular and organs anatomy.

It illustrates with excellent detail the superficial and deeper muscles, tendons, ligaments, vessels and body structures. the internal organs are removable for closer examination to study the relationships among all the body structures.

Dimensions : 36*26*88.5 cm

Weight : 5000 g

ESB51620





Muscular Figure 140cm Height -32 Parts

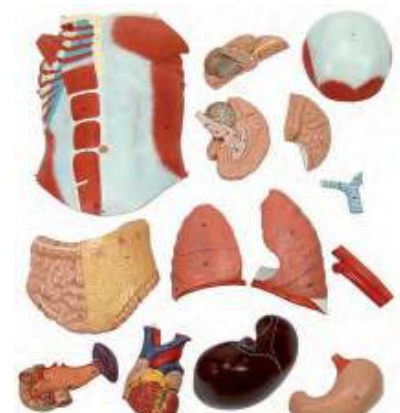
This 32 part -model is about 140cm tall and includes a 6-part muscular arm and an 8-part muscular leg. Removable parts include also skullcap, brain (cut along the longitudinal fissure and showing internal structures and blood vessels is removable), 140cm Height Muscular Figure

,32Parts halves of both lungs showing the bronchial tree and vascular system, 2-part heart clearly representing atria, ventricles, valves and section of heart wall, liver with gallbladder, stomach dissected in 2 parts, duodenum with pancreas and spleen, large intestine. Significant features are numbered and referenced on the accompanying manual.

Dimensions : 145*50*40 cm

Weight : 12000 g

ESB51621



170cm Height Muscular Figure

being developed, finished model should be prepared in the beginning of 2024.

ESB51622





Muscles Of Human Arm Model

This 7-part life size model shows, in great detail, the anatomical structure of the arm, complete with superficial and deeper muscles, vascular structures, nerves and ligaments. The hand and the shoulder are also well represented. The following parts are removable: - Deltoid muscle - Biceps muscle - Triceps muscle - Long palmar muscle with radial flexor muscle of wrist - Brachioradial muscle with radial extensor muscle of wrist - Palmar aponeurosis,
Dimensions : 72*32*24 cm,
Weight : 4700 g

ESB51071



Muscles Of The Hand Model 4-Parts

This life size model is composed of 4 parts. The palmar aponeurosis and the palmaris brevis can be removed to reveal the underlying network of muscles, tendons, vessels and nerves. A deeper palmar dissection allows observation of the palmaris longus tendon, the palmar carpal ligament and the median nerve. Part of the thenar muscles can be removed to expose the superficial palmar branch of the radial artery. A superficial dorsal dissection shows ligaments, nerves and vessels.
Dimensions : 39.5*25.5*8.5 cm,
Wweight : 1900 g

ESB51077

Anatomy Of The Hand Model 3-Parts

This 3-part model, enlarged 2X life size, shows the anatomy of the hand, including muscles, nerves, ligaments, vessels and bone structures. Aponeurosis is removable for closer examination.
Dimensions : 28*38*40 cm,
Weight : 965 g

ESB51074

NEW



Human Muscles of Arm Model

This model illustrates the muscles of the arm in the relaxed and contracted states. Muscles and tendons are shown in great detail.
Dimensions : 53*38*9.5 cm,
Weight : 700 g

ESB51290



Muscles Of The Hand Model 7-Parts

This life-size model shows the anatomy of the hand with great accuracy and detail; the superficial layers can be removed at different levels to expose the inner structures. Muscles, blood vessels, nerves, tendons, ligaments and bones are well represented.
Dimensions :13*11*33 cm
Weight: 330 g

ESB51074/7





Section Muscles Of Human Arm Model

The model is based on the body joints of the human body. The real joint MRI cut surface is designed for reference. It shows the structural relationship of bones, muscles, nerves and blood vessels in the joints of the human body.

imported PVC material, imported paint, computer color matching, advanced hand painting

Diminutions : 26*32*4 cm

ESB51291

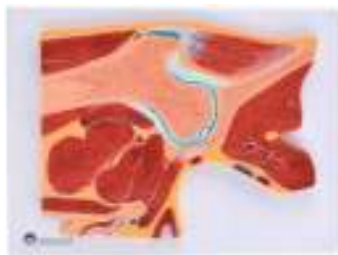


Elbow Joint Section Structure Model

This model is widely used in orthopedics, surgery, clinical teaching, occupational disease prevention, ergonomics, physical education, etc., with good auxiliary teaching and demonstration .Different colors are used to distinguish different positions, and the colors are bright and easy to attract students' attention, so you can to teaching demonstration, which promotes students' understanding and increases classroom fun. The texture is particularly clear, the mold is the injection molding precision mold, the anatomical logo is very standard. Therefore, you can be effective practice training ,it is the best tool for your learning. Enough The model Made in 1:1 ratio, showing the structural relationships of bones, muscles, nerves, blood vessels, etc. A rare aid tool for your in-depth research and study. It made of food-grade PVC environmentally friendly materials

Diminutions : , 26*32*4 cm

ESB51296



Section Of Hip

This model is widely used in orthopedics, surgery, clinical teaching, occupational disease prevention, ergonomics, physical education, etc., with good auxiliary teaching and demonstration. Different colors are used to distinguish different positions, and the colors are bright and easy to attract students' attention, so you can to teaching demonstration, which promotes students' understanding and increases classroom fun. It made of food-grade PVC environmentally friendly materials, Enough The model Made in 1:1 ratio, showing the structural relationships of bones, muscles, nerves, blood vessels, etc. A rare aid tool for your in-depth research and study.

Diminutions : 26*32*4 cm

ESB51295

Section Of Foot Model

The structure, bone, muscle, blood vessels and other structural relationships at the joints of the human foot are detailed. Suitable for hospitals, medical schools, anatomical studies, teaching demonstrations, doctor-patient communication and anatomical study. Great for school teaching tool, learning display, and collectibles, also will be a great addition to your lab supplies Made of high quality PVC material for durability.

Diminutions : 26*32*4 cm

ESB51292



Section Of Knee Model

This model is based on the equal ratio of the knee joint of the human body, and the actual IRM section of the articulation is used as a reference for the profile design. Made in ecological PVC, hand painted, excellent finish. The model is hand painted with artisanal know-how. It shows in detail the structural relations between bones, muscles, nerves and blood vessels in the human knee articulation, with corresponding text descriptions, which is for medical education and medical communication. patient. This is a rare practical anatomical model in the teaching of surgical medicine and an ideal model for school education. Ideal for school education tools, learning displays and collectibles, it will also be an excellent addition to your laboratory supplies.

Diminutions : 26*32*4 cm

ESB51293



Section of Shoulder Model

This model is based on the equal ratio of the human body shoulder articulation, and the actual MRI section of the articulation is used as a reference for the design of the profile. It shows in detail the structural relations between bones, muscles, nerves and blood vessels in the human shoulder articulation, with corresponding text descriptions, which is practical for medical education and communication doctor patient. Made in ecological PVC, hand painted, excellent finish. This is a rare practical anatomical model in the teaching of surgical medicine and an ideal model for school education. Ideal for school education tools, learning displays and collectibles, it will also be an excellent addition to your laboratory supplies.

Diminutions : 26*32*4 cm

ESB51294





Muscles of the Human Leg, 23 Parts

This life-size model, detachable into 23 parts, is an important support for understanding the complete anatomy of the human leg. The superficial and deeper musculature, represented with great accuracy and detail, maximus - Soleus - Gastrocnemius can be removed for closer examination. The model, also showing:

- Sartorius
- Ligaments
- Nerves
- Artery

Dimensions : 110*28*29cm
Weight : 11000g



NEW

ESB51072



Muscles Of Human Leg Model 13 Parts

This 13-part model shows, in great detail, the anatomical structure of the leg, complete with superficial and deeper muscles, vascular structures, nerves and ligaments. The following parts are removable:

- Sartorius
- Long head of biceps
- Gluteus
- Maximus
- Soleus
- Gastrocnemius
- Gracilis
- Semitendinosus
- and Semimembranosus
- Rectus femoris
- Extensor digitorum longus
- Sole of foot - tensor fasciae latae

Dimensions : 88cm
Weight : 4700g



ESB51072



Anatomy Of The Foot Model , 9-Parts

This 9-part model shows significant structures of the foot such as muscles, nerves, vessels and ligaments.

Dimensions : 23*8*12cm
Weight : 600g

ESB51076



NEW

This Life Size Model is Composed Of 3 Parts.

The plantar aponeurosis and the flexor brevis can be removed to show the underlying network of muscles, tendons, vessels and nerves. A deeper plantar dissection allows observation of the plantar muscles and plantar nerve branches. A superficial dorsal dissection shows ligaments, nerves and vessels.

Dimensions : 23*8*12cm
Weight : 650g

ESB51076/3





NEW

Anatomy Of The Foot,1 Parts

This life size model represents a superficial dissection of the foot with the primary muscles and ligaments.

Dimensions : 23*8*12 cm
Weight : 420 g

ESB51229



NEW

Section Of Foot

This life size model shows a human foot sectioned along the sagittal plane.

Dimensions : 23*8*12 cm
Weight : 450 g

ESB51228



Normal and Abnormal Feet, set of 3

3 life size models representing

- Normal feet
- Flat and feet
- Arched feet.

Dimensions : 21*14.5*31.5 cm
Weight : 420 g

ESB51232



Arched Foot

This is life size arched foot model.

ESB51233



Flat Foot

This is life size flat foot model.

ESB51234



Normal Foot

This is life size norm foot model.

ESB51235





Human Torso Mini Dual Sex- 16 Parts 45 cm

Torso Mini Dual Sex This half life size torso is an excellent tool in basic anatomy teaching. Composed of 16 parts, as follows:

Head (2 parts) showing a section of the brain and the upper respiratory tract

Half of the brain, showing internal structures

2 lungs

Heart (2 parts) showing the atria, ventricles and valves

Liver with gallbladder

Stomach

Single piece, including small intestine, large intestine and pancreas

Removable cover that expose interior of caecum

Male reproductive organs (2 parts)

Female reproductive organs (2 parts).

Dimensions : 43.5*19*11cm

Weight : 2200g

ESB51080

Human Torso Model Sexless 12 Parts 50cm

This half life size torso is an excellent tool in basic anatomy teaching. Composed of 12 parts, as follows:

Head (2 parts)(Right head shows the muscles and bone) showing a section of the brain and the upper respiratory tract .

Half of the brain, showing internal structures;

2 lungs ;

Heart (2 parts) showing the atria,

Ventricles and valves ;

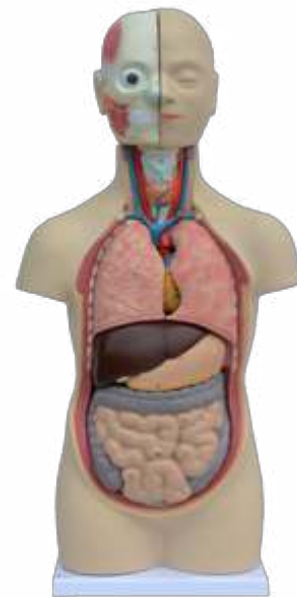
Liver with gallbladder;

Stomach; single piece, including small intestine, large intestine and pancreas

Dimensions : cm

Weight : g

ESB51629



Human Mini Torso Model ,50cm 12 Parts

Human Mini Torso Model ,50cm Height

This half life size torso is an excellent tool in basic anatomy teaching. Composed of 12 parts, as follows:

Head (2 parts) showing a section of the brain and the upper respiratory tract

Half of the brain, showing internal structures

2 lungs

Heart (2 parts) showing the atria, ventricles and valves

Liver with gallbladder

Stomach

Single piece, including small intestine, large intestine and pancreas

Removable cover that expose interior of caecum.

Dimensions : 52*25*13cm

Weight : 3000g

ESB51079



Human Torso Model Sexless 12 Parts**85 cm**

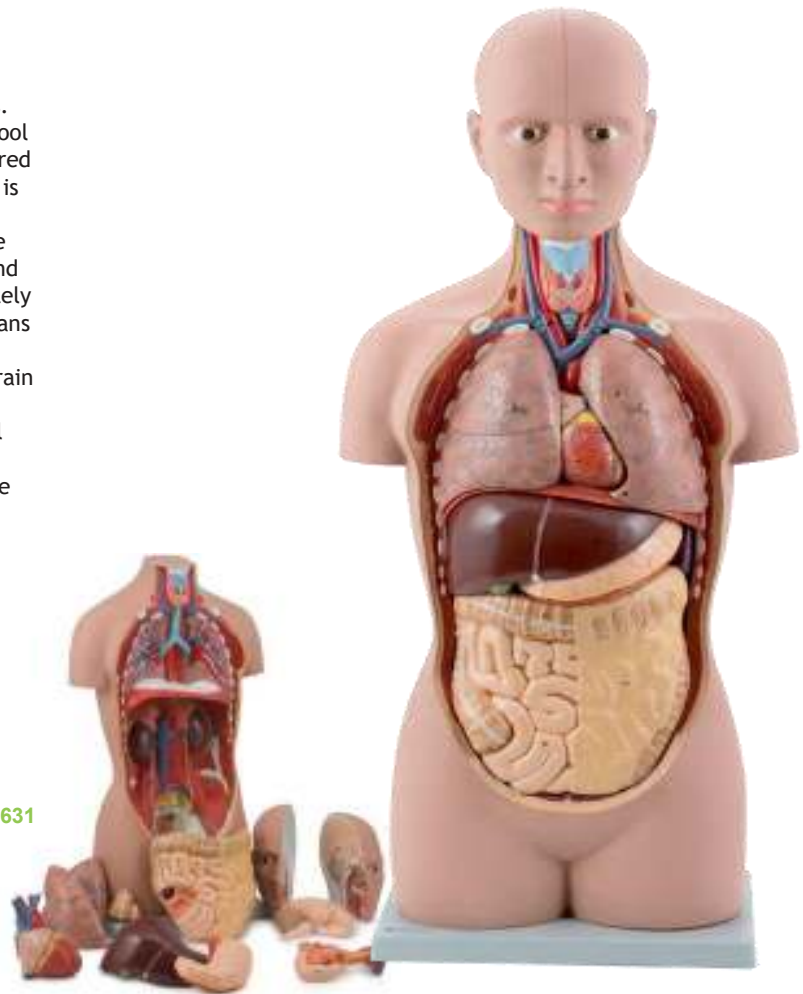
life-size sexless Human Torso is dissectible into 12 parts. Made with accurate in all of its detailing, it is a useful tool to show the human anatomy, the structures are numbered and identified on the accompanying key card. The head is removable and divided into 2 parts, Showing the inner structure of the brain. The neck is dissected through the ventral surface to show muscular, glandular, vascular and neural structures. The thorax and abdomen are completely open, providing an unrestricted view of the internal organs and structures. the 12 Parts are as follow :

- Head, divided into 2 parts, showing a section of the brain and the upper respiratory tract
- 1 Part Half of the brain, divided along the longitudinal fissure to expose internal structures and vessels
- 2 Parts Right and left lungs, showing the bronchial tree and vasculature
- 1 Part Heart
- 1 Part Liver with gallbladder
- 2 Parts Stomach
- 1 Part Pancreas, duodenum and spleen with vessels and ducts
- 2 Parts : Small and large intestine with removable window in caecal region
- 1 Part Hall Body

Dimensions : 89*41*23 cm

Weight : 10300g

ESB51631

**Torso Sexless Open Back -13 Parts**

This sexless life size torso is composed of 13 parts. Accurate in all of 85cm Torso Model asexual 13 Parts

This popular school torso is supplied with the following removable parts:

- 3-part head
 - 2 lungs
 - 2-part heart
 - 2-part Stomach
 - Liver with gall bladder
 - 1-part intestinal tract
 - Front half of kidney
- available in Africa skin color
Numbered with keycard

Dimensions : 41*23*70 cm
Weight : 9200g

ESB51082SP





Human Torso Model Sexless 16 Parts 85 cm

This life size sexless torso, composed of 16 parts, is appropriate for any human anatomy course. All of the major organ systems are represented with great attention to accuracy and detail.

Structures are numbered and identified on the accompanying key.

- half of the brain, divided along the longitudinal fissure, showing internal structures and blood vessels
- eye with optic nerve and extraocular muscles
- descending thoracic aorta and esophagus
- right and left lungs showing the bronchial tree and vasculature
- 2-part heart showing the atria, ventricles, cardiac valves and section through the ventricular heart wall
- half of one kidney, sectioned along the frontal plane to show the internal structure and vessels
- kidney, urethra and urinary bladder with prostate (removable in 2 parts)
- stomach, showing muscular and vascular structures
- pancreas, duodenum and spleen with vessels and ducts
- liver
- small and large
- intestine with removable cover over portion of caecum

Dimensions : 89*41*23cm

Weight : 9235g

ESB51636

Torso Sexless Open Back -17 Parts

This sexless life size torso is composed of 17 parts. Accurate in all of its detailing, this model is appropriate for use in any human anatomy classroom. Anatomical structures of the major body systems are numbered and identified on the accompanying key. The head is sectioned to expose one half of the brain. The neck is dissected through the central surface to show muscular, glandular, vascular and neural structures. The thorax and abdomen are completely open to afford an unrestricted view of internal organs and associated structures. The back is dissected revealing the muscular layers, vertebral column, spinal cord and nerve branches. One thoracic vertebra is removable for detailed examination of its structure and association with spinal cord.

Removable parts include the following:

Half of the brain, divided along the longitudinal fissure to show internal structure and blood vessels
Eye with optic nerve and extraocular muscles

Right and left lungs showing the bronchial tree and vasculature
Descending thoracic aorta and oesophagus

2-part heart showing the atria, ventricles, cardiac valves and section through the ventricular heart wall
Half of one kidney, sectioned along the frontal plain to show the internal structure and vessels

Kidney, urethra and urinary bladder with prostate (removable in two parts)
Stomach showing muscular and vascular structures

Pancreas, duodenum and spleen with vessels and ducts
Liver

Small and large intestine with removable cover over portion of caecum
12th thoracic vertebrae with spinal cord.

Dimensions : 41*23*70 cm

Weight : 9200g

ESB51082



Human Torso Model Sexless 18 Parts 85 cm

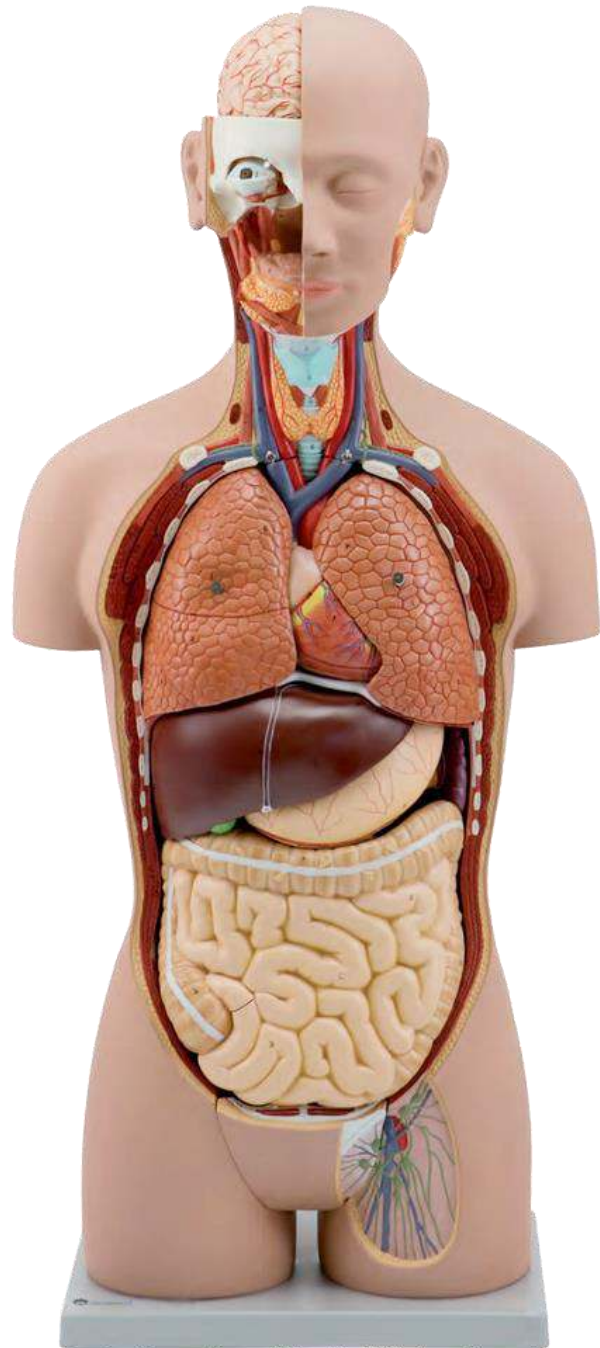
This life size torso is composed of 18 parts, providing a realistic and detailed reproduction of the internal organs. The head is sectioned to expose one half of the brain. The neck is dissected through the ventral surface to show muscular, glandular, vascular and neural structures. The thorax and abdomen are completely open to afford an unrestricted view of internal organs and associated structures. Anatomical structures of the major body systems are numbered and identified on the accompanying manual.

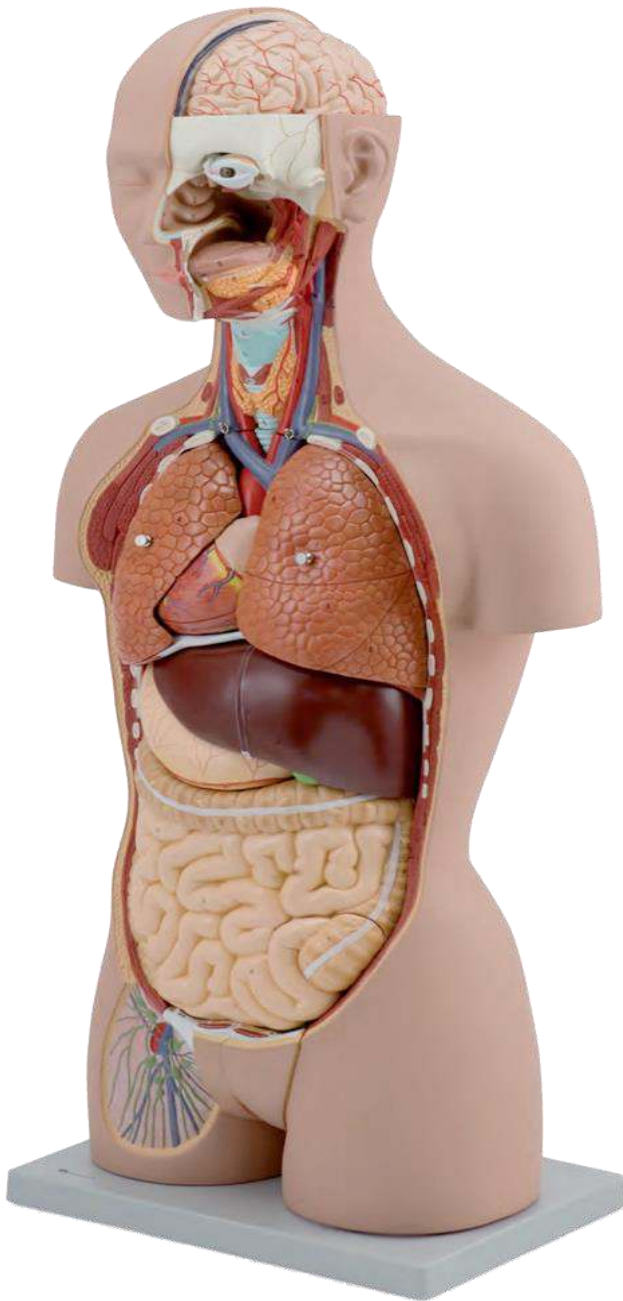
- Half of the brain, divided along the longitudinal fissure to expose internal structures and blood vessels
- Eye with optic nerve and extraocular muscles
- Trachea
- Descending thoracic aorta and esophagus
- right and left lungs (2 parts each), showing the bronchial tree and vasculature
- liver with gallbladder
- half of one kidney, sectioned along the frontal plane to show the internal structure and vessels
- 2-part heart showing the atria, ventricles, cardiac valves and section through the ventricular heart wall
- stomach
- pancreas, duodenum and spleen with vessels and ducts
- small and large intestine with removable window in caecal region
- removable cover in the groin area

Dimensions : 89*41*23 cm

Weight : 9300g

ESB51637





85cm Dual-Sex Torso, 25 Parts

This life size closed back torso is composed of 25 parts that feature the most realistic reproductions of anatomical structures in their most intimate detail.

The head is sectioned to expose half the brain. In addition, the neck is dissected to expose muscular, neural, vascular and glandular structures.

The thorax and abdomen are completely open, providing an unrestricted view of all internal features. Significant structures are numbered and referenced on the accompanying key.

- Separate male and female urogenital systems fit interchangeably into the main portion of the torso. Half of the brain, divided along the longitudinal fissure, showing internal structures and blood vessels
- Eye with optic nerve and extraocular muscles
- Descending thoracic aorta and esophagus
- Trachea
- Right and left lungs (2 parts each), showing the bronchial tree and vasculature
- Liver with gallbladder
- Half of one kidney sectioned along the frontal plane, showing the internal features and vessels
- 2-part heart with excellent depiction of atria, ventricles, valves and muscular heart wall
- Stomach
- Pancreas, duodenum and spleen with vessels and ducts
- Small and large intestines with removable cover over portion of caecum
- Male and female urogenital systems (4 parts each) sectioned medially with excellent views of internal structures

Dimensions : 89.5*41*23cm

Weight : 10400g

ESB51641

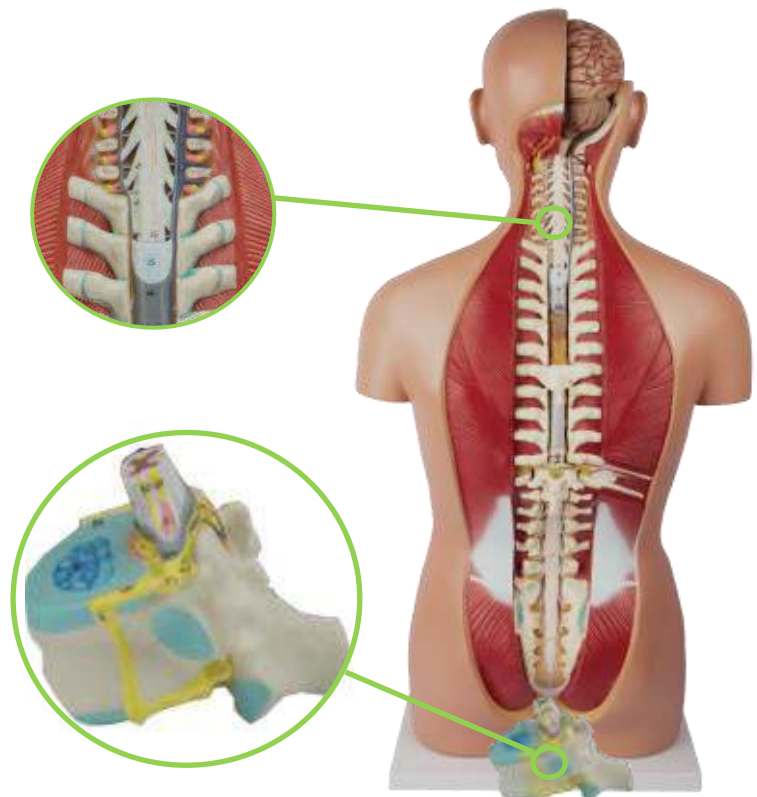
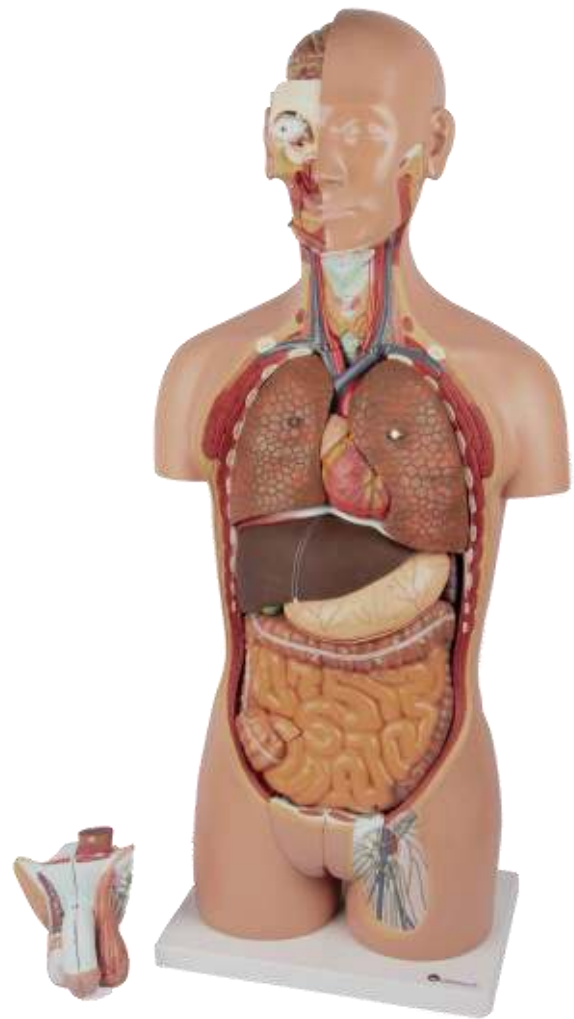


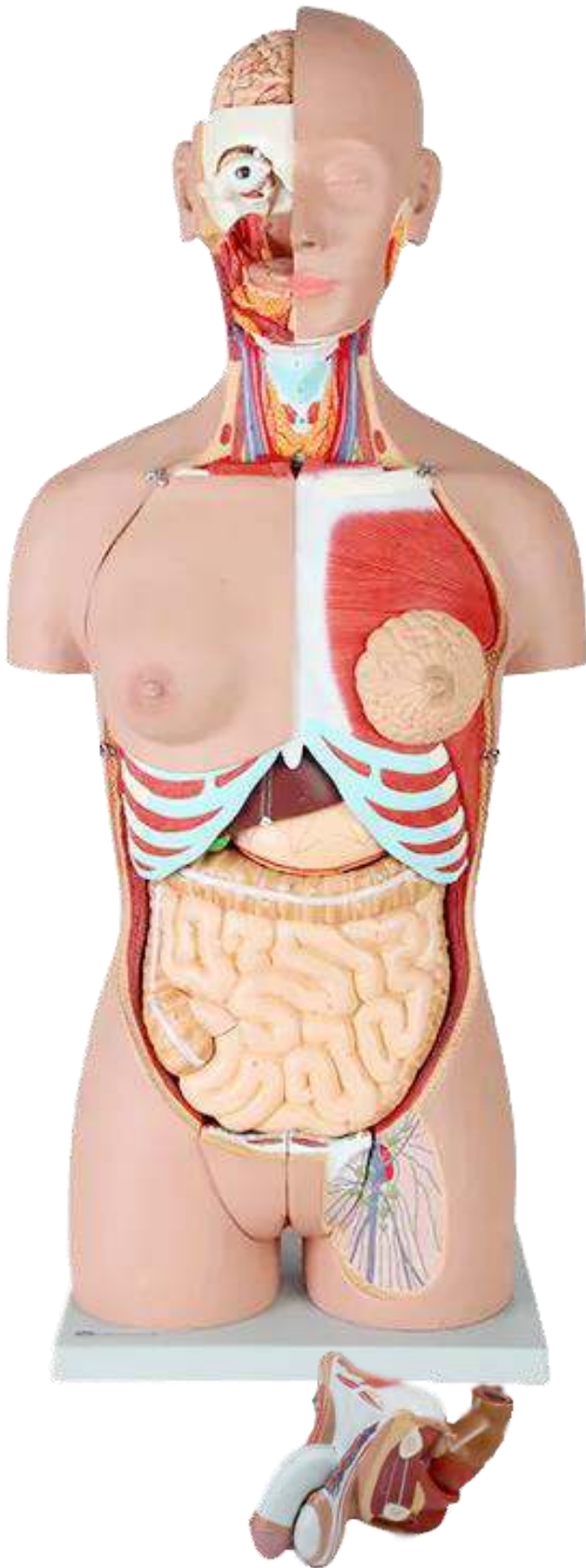
Human Dual Sex Exchangeable Deluxe Torso ,Open Back,27 Parts

This life size torso with open back is composed of 27 parts and provides an exceptionally realistic reproduction of anatomical structures in their finest detail. All of the body systems are represented with full accessibility. This model is without question a valuable addition to any biology or anatomy course. The open back exposes muscular layers as well as the vertebral column and associated nerve branches. A thoracic vertebra, including a section of spinal cord, is removable for dose examination of its anatomical details. The head is open and the brain is fully exposed on one side. The neck is dissected to expose muscular, neural, vascular and glandular structures. Significant structures are numbered and referenced on the accompanying key. The dissectable male and female urogenital systems are interchangeable.

- Removable structures include the following:
- Eye with optic nerve and extraocular muscles
- Half of the brain, divided along the longitudinal fissure, showing internal structures and blood vessels
- Trachea
- Descending thoracic aorta and oesophagus
- Right and left lungs (2 parts each), showing the bronchial tree and vasculature
- Liver with gallbladder
- Half of one kidney sectioned along the frontal plane, showing the internal structure and vessels
- 2-part heart with clear depiction of atria, ventricle, valves and section of heart wall
- Stomach dissected in 2 parts
- Pancreas, duodenum and spleen with vessels and ducts
- Small and large intestines with removable cover portion of caecum
- Male and female urogenital system (4 parts each) sectioned medially with excellent views of internal structures
- Thoracic vertebra with spinal cord

ESB51081





Human Dual-Sex Torso, 28 Parts, 85cm Open Back

This life size torso with open back is composed of 28 parts and provides an exceptionally realistic reproduction of anatomical structures in their finest detail.

All of the body systems are represented with full accessibility.

A thoracic vertebra, including a section of spinal cord, is removable for close examination of its anatomical details.

The head is open and the brain is fully exposed on one side.

The neck is dissected to expose muscular, neural, vascular and glandular structures. Significant features are numbered and referenced on the accompanying manual.

The dissectible male and female urogenital systems are interchangeable.

ESB51638



Human Dual-Sex Muscular Torso, 28 Parts, 85cm Open Back

This life size torso with open back is composed of 28 parts and provides an exceptionally realistic reproduction of anatomical structures in their finest detail.

All of the body systems are represented with full accessibility.

The left side exposes all significant superficial and deeper muscles with vessels and bones.

The open back shows muscular layers as well as the vertebral column and associated nerve branches.

A thoracic vertebra, including a section of spinal cord, is removable for close examination of its anatomical details.

The head is open and the brain is fully exposed on one side.

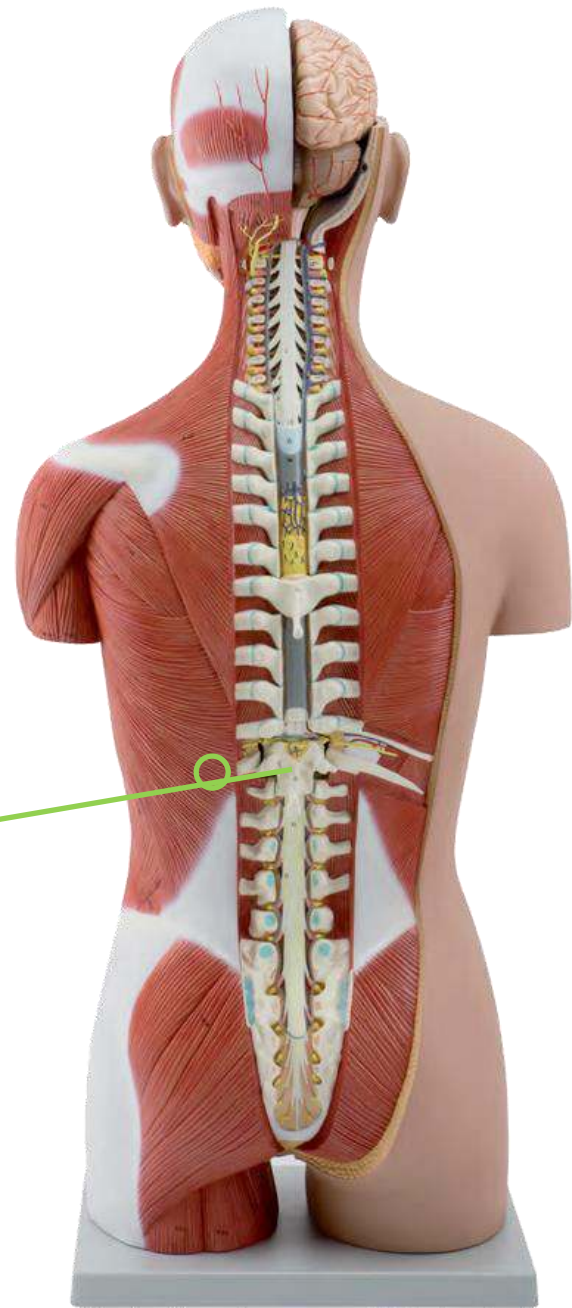
The neck is dissected to expose muscular, neural, vascular and glandular structures. Significant features are numbered and referenced on the accompanying manual.

The dissectible male and female urogenital systems are interchangeable.

Dimensions : 89*41*23cm

Weight : 10500g

ESB51639





Dual-Sex Muscular Torso, 28 Parts, Open Back 85cm

Life size, it is composed of 28 parts and all body systems are represented and easily accessible. The left side exposes all significant superficial and deep muscles with vessels and bones. The open back shows muscular layers as well as the vertebral column and associated nerve branches.

A thoracic vertebra, including a section of spinal cord, is removable for close examination of its anatomical details.

The head is open and the brain is fully exposed on one side.

The neck is dissected to expose muscular, neural, vascular and glandular structures. Significant features are numbered and referenced on the accompanying manual.

The dissectible male and female urogenital systems are interchangeable.

Dimensions : 89*41*3 cm

Weight : 5000 g

ESB51640



NEW

Human Torso Disc Model

This life-size torso model is sliced horizontally into 24 pieces, giving an idea of how computer tomography and magnetic resonance work. Each slice can be rotated and removed for closer examination of its anatomical detail, which is reproduced with great accuracy.

All structures including muscles, nerves are numbered and identified on the accompanying manual.

The model is securely mounted on a base, providing stability for educational or display purposes.

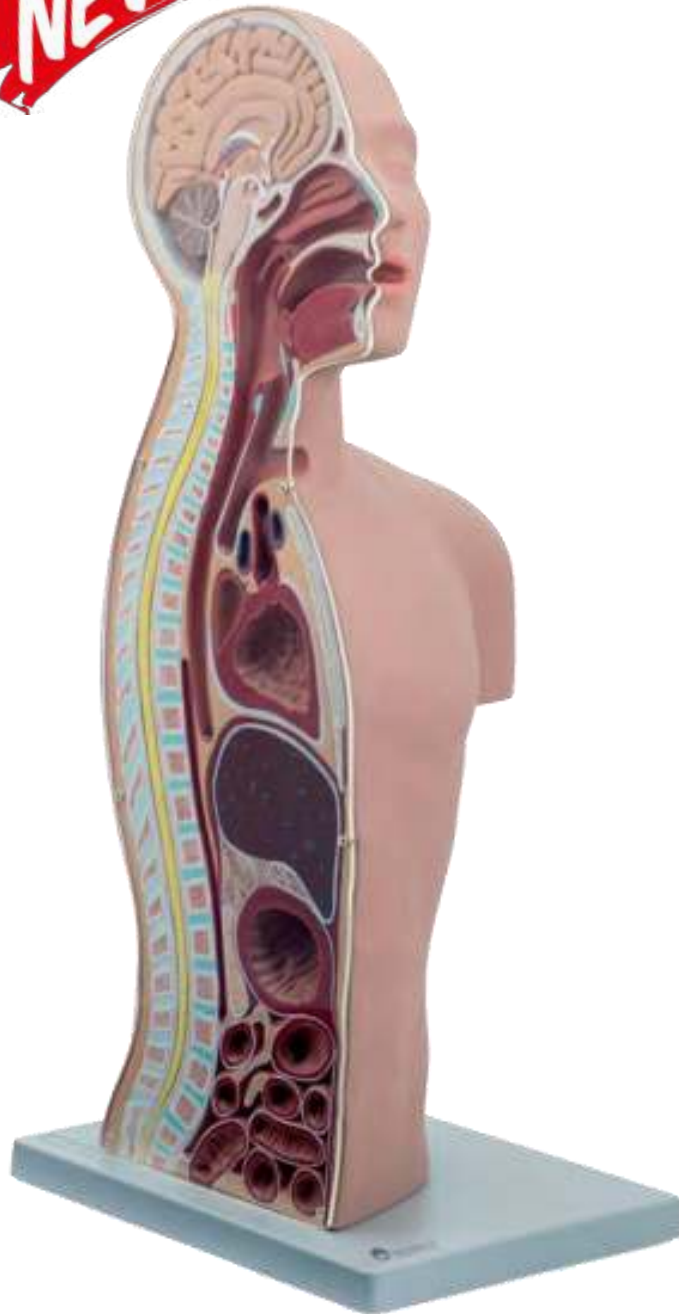
Dimensions : 17*15*18 cm,

Weight : 1000 g,

ESB51626



NEW



Nasogastric & Tracheostomy Model Life Size Torso

The N(aso) G(astric) & Tracheostomy Teaching Torso is a 3-dimensional, 2-sided hand-painted torso. One side, covered with a transparent lid, shows the sagittal section including the nose, mouth, pharynx, trachea, esophagus, lungs and stomach. The other side depicts the anatomically correct view of a human torso for teaching the proper method of measuring the NG tube's length. Torso also features a tracheostomy to demonstrate a variety of care techniques.

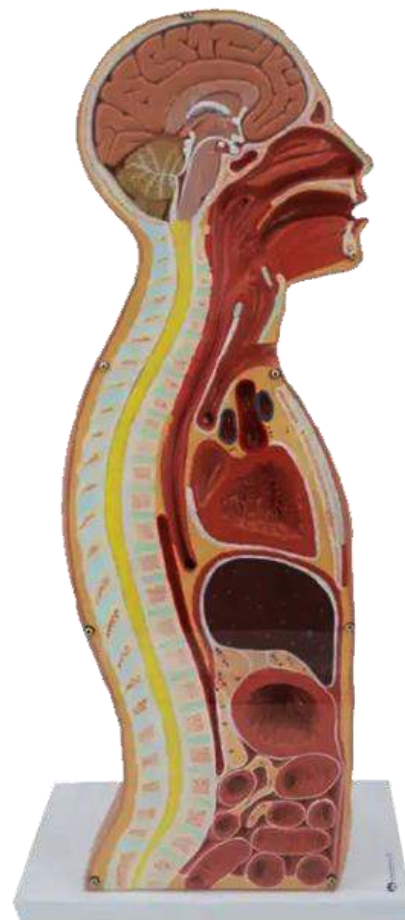
For realistic practice of the following procedures:
 NG tube insertion, irrigation, monitoring and removal
 Gastric lavage and gavage
 Tracheostomy care and suctioning.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 92*42*30 cm

Weight : 6000 g

ESB51627





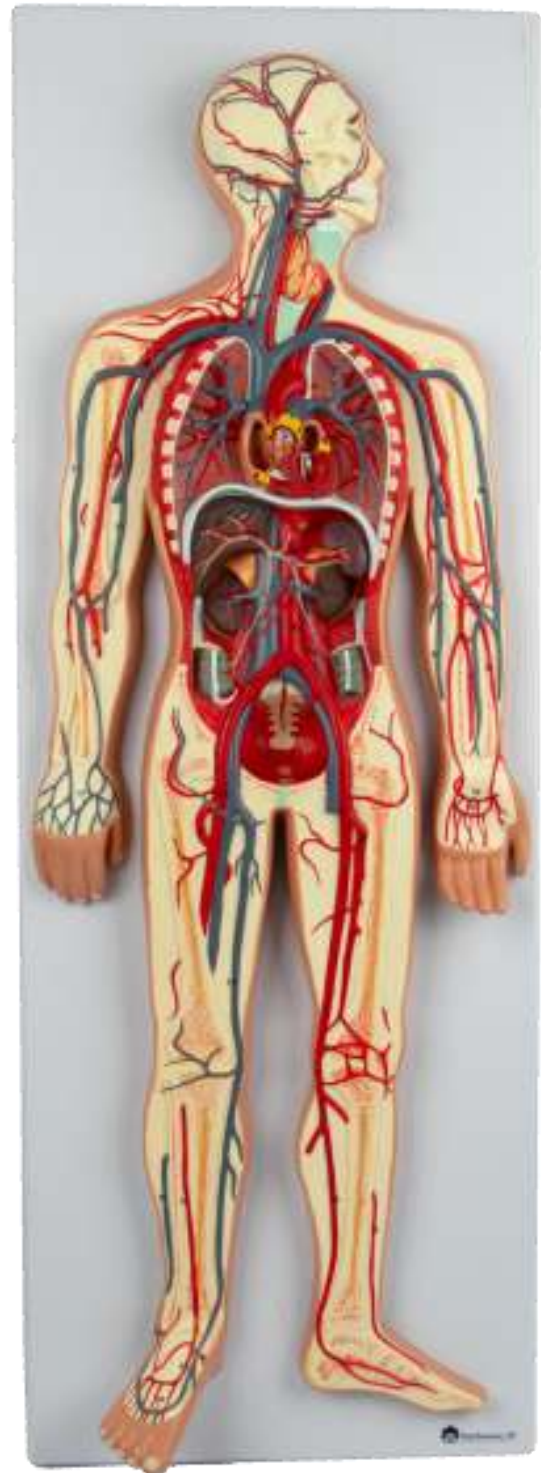
Autonomic Nerves System

This model shows the outlook of automatic nervous system, including sympathetic nervous system and parasympathetic nervous system.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 75*35*15 cm
Weight: 4000 g

ESB51212



Human Circulatory System Model - 2 Parts

The model represents a general view of the human circulation. It includes the heart (2 parts), lungs, liver, spleen, kidneys and relevant connections with the pulmonary and systematic circulatory pathways.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 93*33*14 cm
Weight : 5000 g

ESB51083



Nervouse System Model

This 1/2 life-size relief model shows a general view of the peripheral and central human nervous system: the head is open to reveal the brain and the cerebellum; the pathway of the main nerves is well illustrated in relation to the skeleton.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 89*29*1 cm
Weight : 5000 g

ESB51143



**Heart Model,Life Size**

This life size model shows the compensatory hypertrophy heart disease. This pathology is characterized by the myocardium thickening of the muscular fibres of the left ventricle. Hypertrophy heart disease is the complication of a chronic hypertension. The model is divided in 2 parts and mounted on base with stand.

Size : 26*11*12cm

Net weight : 380g

ESB51084

**Heart Model,2 Times Enlarged**

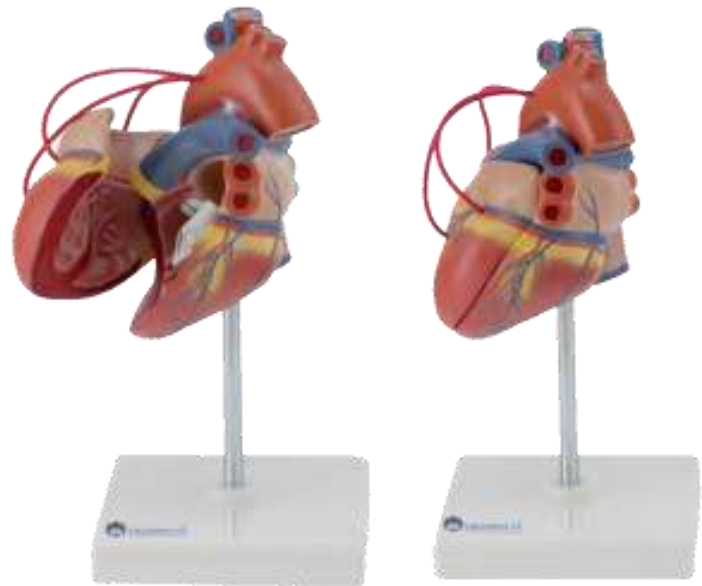
This model, magnified to twice its life size, provides an in-depth depiction of all the primary structures of the human heart with exceptional detail. The right portion is detachable, allowing for a clear view of the inner chambers and valves. Furthermore, the wall of the left auricle and ventricle can be removed, revealing the atrium, the mitral valve, the ventricle, and the papillary muscles.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 17*15*18cm,

Weight : 1000g,

ESB51086

**Heart Pass Model,Life Size**

This life-size two-part model provides an extremely detailed illustration of the anatomy of the human heart with three coronary bypasses. The anterior wall can be detached to expose the inner chamber and valves. **Size :** 26*11*12cm

Net weight : 380g

ESB51085

**Heart Model Giant 3 Times Enlarged**

This life-sized model is sectioned along the anterior plane, revealing internal structures such as the cardiac valves and providing a comparative view of the morphology of the right and left ventricles. Additionally, the right atrium is removable, offering a closer examination of its features.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 26*29*31cm

Weight : 3000g

ESB51087



NEW



Transparent Heart Model, Life Size

This life-sized transparent model offers a detailed view of the anatomy of the human heart. The front portion of the heart can be easily detached, enabling a closer inspection of its internal structures.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51084/T



Heart, 3 Times Enlarged, With Base

Enlarged three times its life size, this model is sectioned along the anterior plane to showcase internal structures, notably the cardiac valves, and offer a comparative analysis of the morphology between the right and left ventricles. Additionally, the right atrium can be detached for further exploration. Enhanced with a base, this model provides stability for educational or display purposes.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 25*24*29cm

Weight: approx. 3520 g

ESB51087/B

NEW



Heart Model, With Thymus, Life Size

This life-sized heart model consists of three parts, revealing the intricate anatomy of the human heart in conjunction with the thymus gland. The thymus and the front portion of the heart can be detached, allowing for a detailed examination of internal structures such as the left and right atria, ventricles, valves, and papillary muscles.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 11*11*22cm

Weight : 250g

ESB51238



Heart With Vessel

This is a life-size model of the normal human heart. The anterior heart wall can be removed for internal examination. Additionally, there are four staged vessels on the base.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 18*14*23cm

Weight : 450g

ESB51240





Structure Of Artery And Vein Model

This single-piece model provides crucial insight into differentiating between artery and vein histology. It meticulously showcases one artery and two veins, offering detailed representations. One vein is longitudinally sectioned, revealing both closed and open venous valves. Meanwhile, the artery and the right vein are cross-sectioned, facilitating the clear recognition of distinct layers such as tunica media, elastic membrane, and tunica adventitia. Enlarged to 20 times life size, The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 20*30*27 cm

Weight: 800 g

ESB51090



Blood Cell Model, 2000 Times Enlarged

This model, enlarged 2000 times, accurately depicts the different types of blood cells, encompassing red blood cells, white blood cells (such as lymphocytes, monocytes, neutrophils, eosinophils, and basophils), and blood platelets.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 55*39*8 cm

Net weight : 3300 g

ESB51089



Lung Demo Model

This simple, yet effective apparatus consists of two sacks which represent the lungs, a rubber membrane which serves as the diaphragm and a clear plastic enclosure which models the chest cavity. By making the diaphragm relax and contract the students can see how the lungs are emptied and filled with air.

ESB51096

NEW



Pulmonary Alveoli Model

This enlarged alveolus model showcases the alveolus, alveolar epithelium, alveolar sacs, alveolar ducts, and alveolar capillaries in detail.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51299

NEW

Lobuli Pulmonum Model

This magnified lobule exhibits the terminal bronchiole, respiratory bronchiole, alveolar epithelium, and other associated structures.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 23*18*40 cm

Weight : 1130 g

ESB51300



Larynx ,Heart And Lung Model

This life-sized replica of the human respiratory system is meticulously crafted, comprising seven parts for comprehensive understanding. It includes the larynx dissected along the sagittal plane, providing detailed insight. Additionally, the lungs are dissected along the frontal plane, allowing for thorough examination. Furthermore, a two-part heart is incorporated into the model, enhancing its educational value.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions :: 33*23*31 cm

Weight: 1200 g

ESB51092



Human Respiratory System With Magnified Alveolus

This relief model of the respiratory system offers a detailed representation, encompassing the oronasal cavity, larynx, trachea, primary bronchi, and bronchial tree. The upper respiratory tract is sectioned along the medial sagittal plane, providing a clear view. Additionally, an enlarged alveolus with blood vessels, approximately 150 times life size, is depicted with exceptional internal detail, enhancing understanding of respiratory anatomy.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions :55*39*5 cm

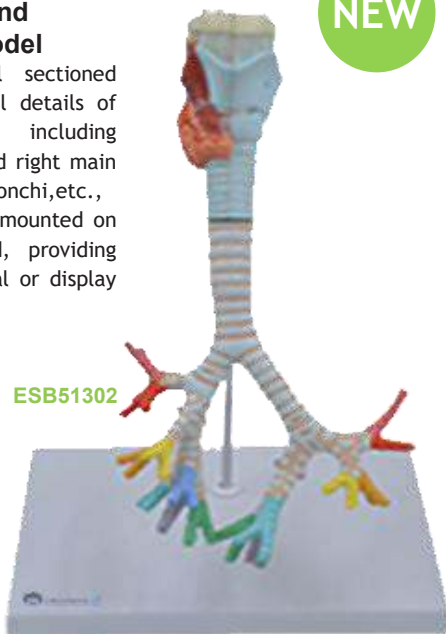
Net weight : 2500 g

ESB51094

Larynx, Trachea and Bronchial Tree model

This life size model sectioned longitudinally to reveal details of internal structures, including larynx, trachea, left and right main bronchus, segmental bronchi, etc., The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51302



NEW

Segmental Bronchi Model

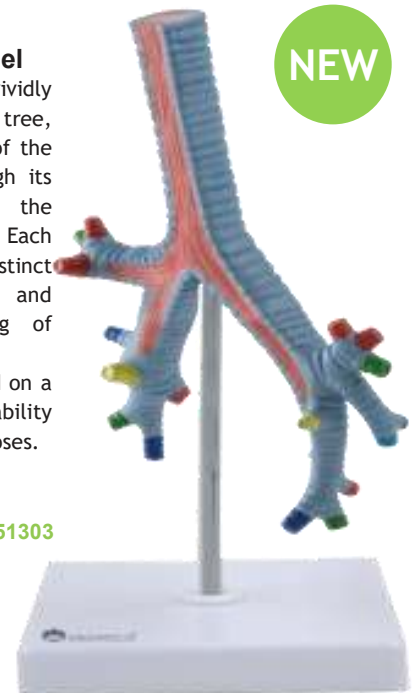
This life-sized model vividly illustrates the bronchial tree, starting from the bifurcation of the trachea and continuing through its various subdivisions to the bronchopulmonary segments. Each segment is depicted in distinct colors, enhancing visibility and aiding in the understanding of respiratory anatomy.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions :15*22*26 cm

Weight : 160 g

ESB51303



NEW



NEW

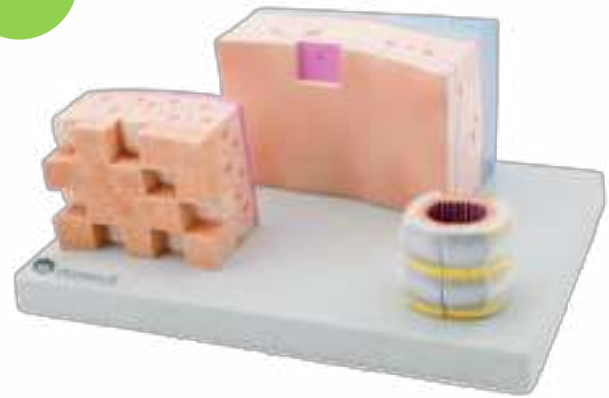


Trachea & Bronchial Tree Model

This model shows trachea, left and right main bronchi, lobular bronchi and segmental bronchi. Life size
The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51304

NEW



Trachea Section Model

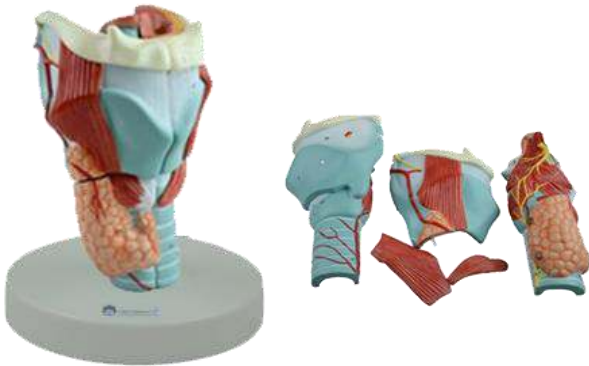
This item consists of three distinct models mounted on a single base. The first model replicates a cross-section of the human trachea enlarged to three times life-size. It can be longitudinally divided into two parts, providing a detailed view of the inner anatomy. The second model features an enlarged cross-section of the anterior tracheal wall, displaying all layers from the tracheal cartilage to the epithelium. Lastly, the third model showcases a magnified view of the pseudostratified ciliated epithelium, offering intricate detail of the typical ciliated cells and mucous cells.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 33*23*13 cm

Weight: 1100 g

ESB51305



Larynx Model, 2 Times Enlarged

This 5-part model is sectioned longitudinally to reveal intimate details of internal structures, including the hyoid bone, cartilages, ligaments, muscles, vessels, nerves and thyroid gland.
The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 24*14*16 cm

Weight : 800 g

ESB51091



Larynx Model, Life Size

This life size model can be opened into 2 parts to show the anatomy of the human larynx and related structures: hyoid bone, cartilages, ligaments, muscles, vessels, nerves and thyroid gland.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 10*5.5*5 cm

Weight : 170 g

ESB51093

Cartilages Laryngis

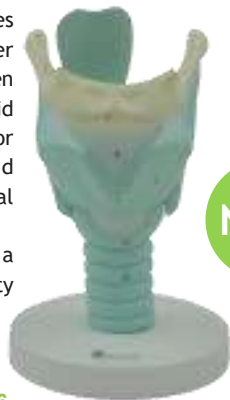
The model is enlarged three times its actual size to provide a clearer view of the relationship between laryngeal cartilage and the hyoid bone. This enlargement allows for better visualization and understanding of the anatomical structures involved.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 15*15*24 cm

Weight : 800 g

ESB51306



NEW





Nasal Cavity Model ,Life Size

This life-sized model vividly depicts the bronchial tree, starting from the bifurcation of the trachea and continuing through its subsequent subdivisions to the bronchopulmonary segments. Each segment is presented in distinct colors, facilitating clear visualization and comprehension of the respiratory system.

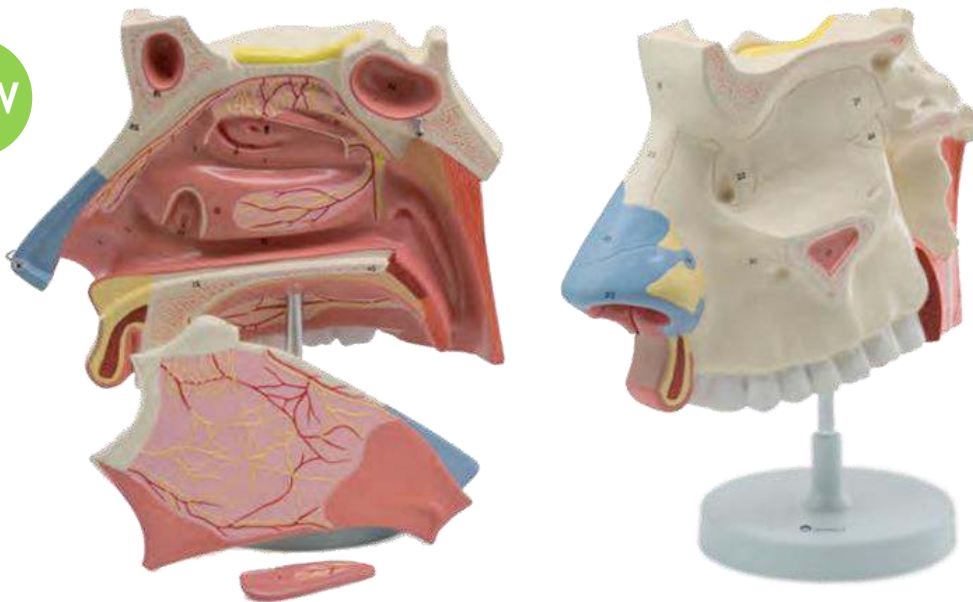
The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 15*25*11 cm

weight : 600 g

ESB51098

NEW



Nasal Cavity,3 Parts

Enlarged to three times life size, this model displays a medial section of the nasal cavity. The nasal septum and a portion of the olfactory epithelium are detachable, allowing for a clear view of the deep internal structures.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 15*20*30 cm

Weight: 1000 g

ESB51098/3



NEW

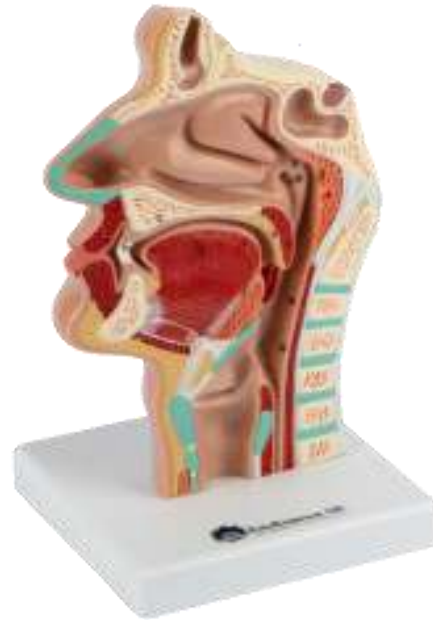


Nasal cavity Model

Full size cut-away normal model depicts a near median section through the nose and nasal passages. Details include nasal cavity, soft and hard palate, uvula, Eustachian tube and pharyngeal tonsil. Reverse side shows ethmoid and maxillary sinus cavities. " The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 11*11*18.5 cm
Net weight : 240 g

ESB51310



Nasal Cavity , Oral Cavity ,Throat ,Larynx Model

This life size model shows a section of the nasal cavity. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 12*13*26 cm
Weight : 450 g

ESB51097



Larynx With Tongue, 5 Parts

This model consists of 5 parts and shows the anatomical structure of laryngeal cartilages, laryngeal muscles, and laryngeal cavity. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 11*11*19.7cm
Weight: 500 g

ESB51308



Head With Larynx Muscles Model

This life size head model is dissociated along the sagittal plane into 2 halves. Details of the oronasal cavity and larynx as well as musculature of the pharynx are exceptionally well represented.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 23*15*12.5 cm
Weight : 1000 g

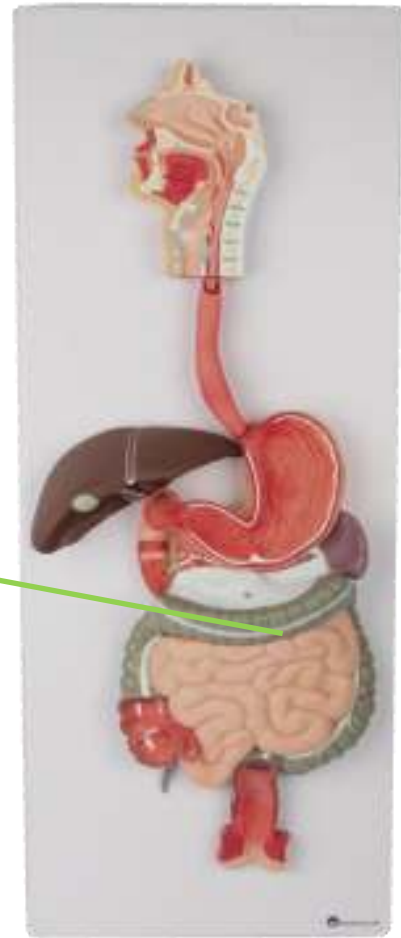
ESB51159



Human Digestive System Model

This life size model shows the human digestive tract from mouth cavity to rectum. The oral cavity, the pharynx and the first part of the esophagus are dissected along the medial sagittal plane. The liver is shown together with the gall bladder and the pancreas is dissected to expose internal features. The stomach is open along the frontal plane; the duodenum, caecum, part of the small intestine and the rectum are open to expose the interior. The transverse colon is removable. An additional relief model of the head shows the anatomy of the mouth with salivary glands. The model is securely mounted on a base , providing stability for educational or display purposes. Mounted on board. Dimensions : 91*31*11cm, Weight : 5000 g

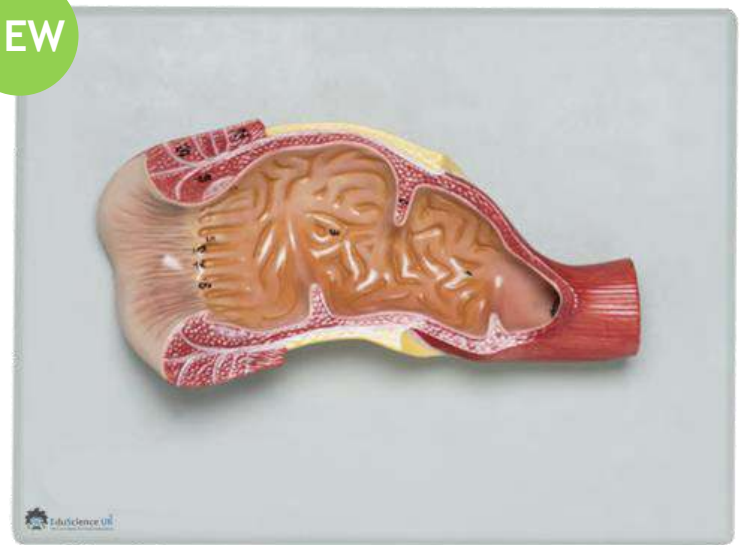
ESB51099



NEW



NEW



Appendix And Caecum Model

This model shows wall of caecum and appendix,2 parts.. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51320

Human Anus Model

This life size model shows a frontal section of the human anus. Structures of the rectum, including the internal and external sphincter muscles, mucous membrane, ampullae and anal valves are readily visible. The model is securely mounted on a base with a stand, providing stability for educational or display purposes. Dimensions : 20*15*12 cm Weight : 170 g

ESB51318



NEW

Digestive System, 3 Parts

This life size model shows the human digestive tract from mouth cavity to rectum.

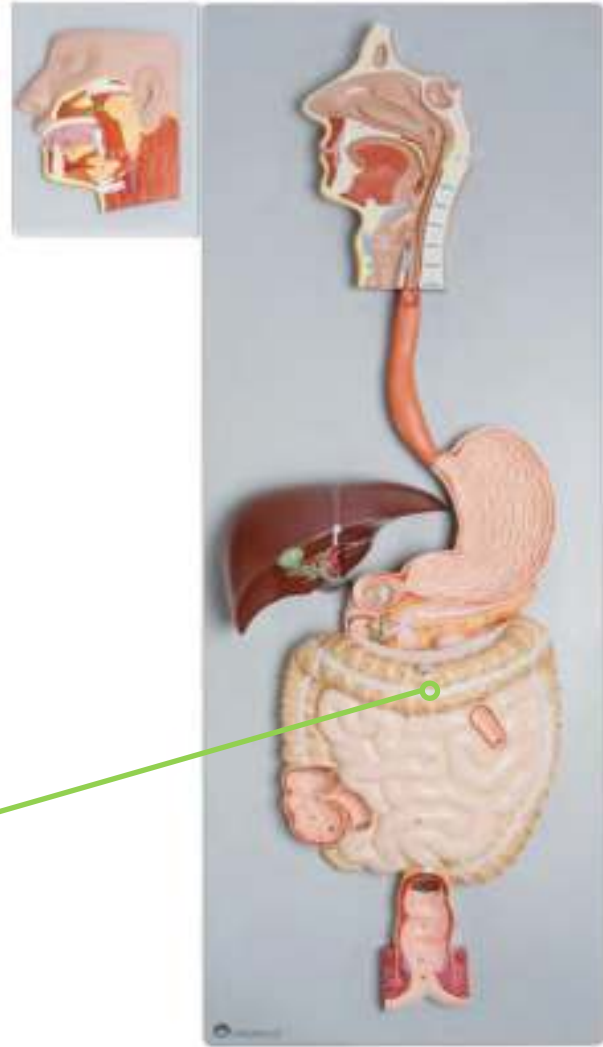
The oral cavity, the pharynx and the first part of the esophagus are dissected along the medial sagittal plane. The liver is shown together with the gall bladder and the pancreas is dissected to expose internal features. The stomach is open along the frontal plane; the duodenum, caecum, part of the small intestine and the rectum are open to expose the interior. The transverse colon is removable. An additional relief model of the head shows the anatomy of the mouth with salivary glands..

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 90*32*14 cm

Weight : 2200 g

ESB51099/3



Stomach & Associated Organs Of The Upper Abdomen, 6 Parts

This life size model has the following features, 2-part stomach along with the pancreas, spleen and duodenum (shown in open section), gallbladder with bile ducts, abdominal aorta, vena cava, mesenteric and iliac vessels. 2 sections of the liver-gallbladder are interchangeable...

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 25*15*28 cm

Weight : 2000 g

ESB51322



NEW



Liver, Pancreas & Duodenum

This life size model, 2-part model, shows the liver with gallbladder, pancreas and partly dissected duodenum. It includes inferior vena cava, abdominal aorta and pancreatic ducts. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Dimensions : 12*14*33 cm
 Weight : 600 g

ESB51317

NEW



Human Intestinal villus Model

This model shows finger-like protrusions represent villi, cavities crypts. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Mounted on board.
 Dimensions : 19*15*21 cm
 Weight : 560 g

ESB51325

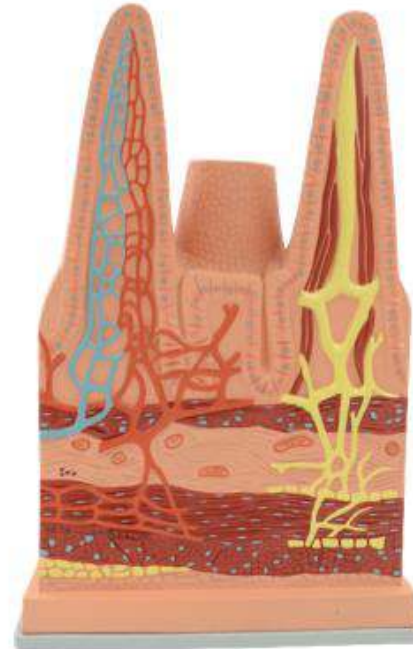


Structure Of Stomach Wall Model

This one-piece model, 150X life size, is an important tool to study the histology of the most important organ of the digestive system: the stomach. All the different layers from the epithelium to the serous coat are represented with great accuracy and detail. The principal structures, including different cellular types, capillary and lymphatic vessels are numbered and identified on the accompanying manual (included). The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Dimensions : 30*20*38cm
 Weight : 2000 g

ESB51326

NEW



Intestinal Villi

This enlarged 400 times model shows the structure of intestinal villi under a microscope. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Mounted on board.
 Dimensions : 27*11*43 cm
 Weight : 1000 g

ESB51324



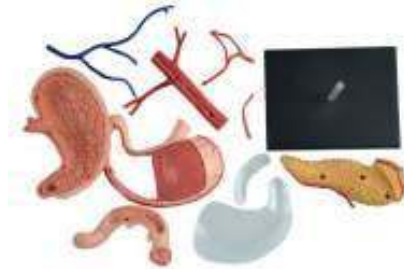
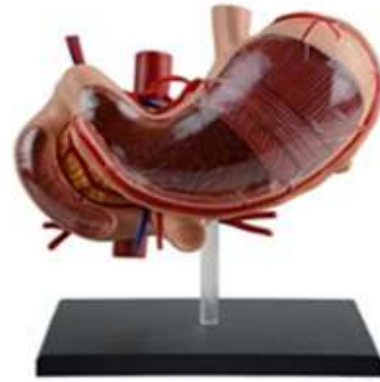


Diseased Stomach Model

This life size model is dissected and it show the internal structure of the stomach, including the mucosa, the pylorus, a section of the gastric wall. The model also shows the superficial muscular layers and the blood vessels, diseases also presented there, The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19*18*15 cm

ESB51170



Stomach Model 4d

4D Stomach model life size model showing details, Dissctable into 12 parts

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19*18*15 cm

ESB51101



Stomach Model,2 Times Enlarged

This model is dissected along the medial plane and can be opened to show the internal structure of the stomach, including the mucosa, the pylorus and a section of the gastric wall. Superficial dissections expose the longitudinal, circular and oblique muscle layers, with nerves and vascular structures.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 22*16*27 cm

Weight : 1000 g

ESB51103



Stomach Model,Life Size

This life size model is dissected along the medial plane and can be opened to show the internal structure of the stomach, including the mucosa, the pylorus, a section of the gastric wall. The model also shows the superficial muscular layers and the blood vessels.

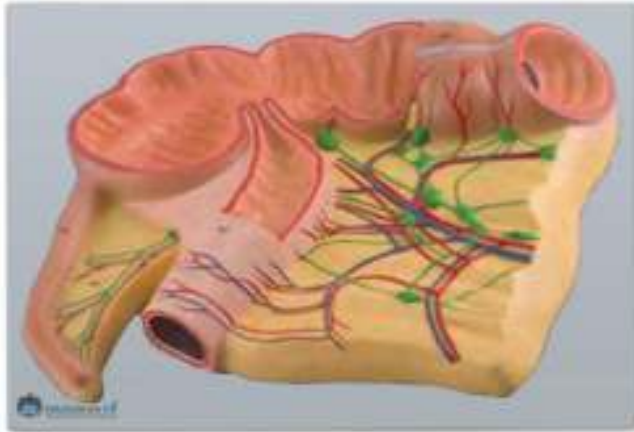
The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Size : 19*13*24 cm

Net weight : 500 g

ESB51102





Caecum And Appendix Model

This model is 2X life size; it shows the open caecum with appendix, ileum, ilocaecal orifice and valve. Blood vessels and lymph nodes are also represented.

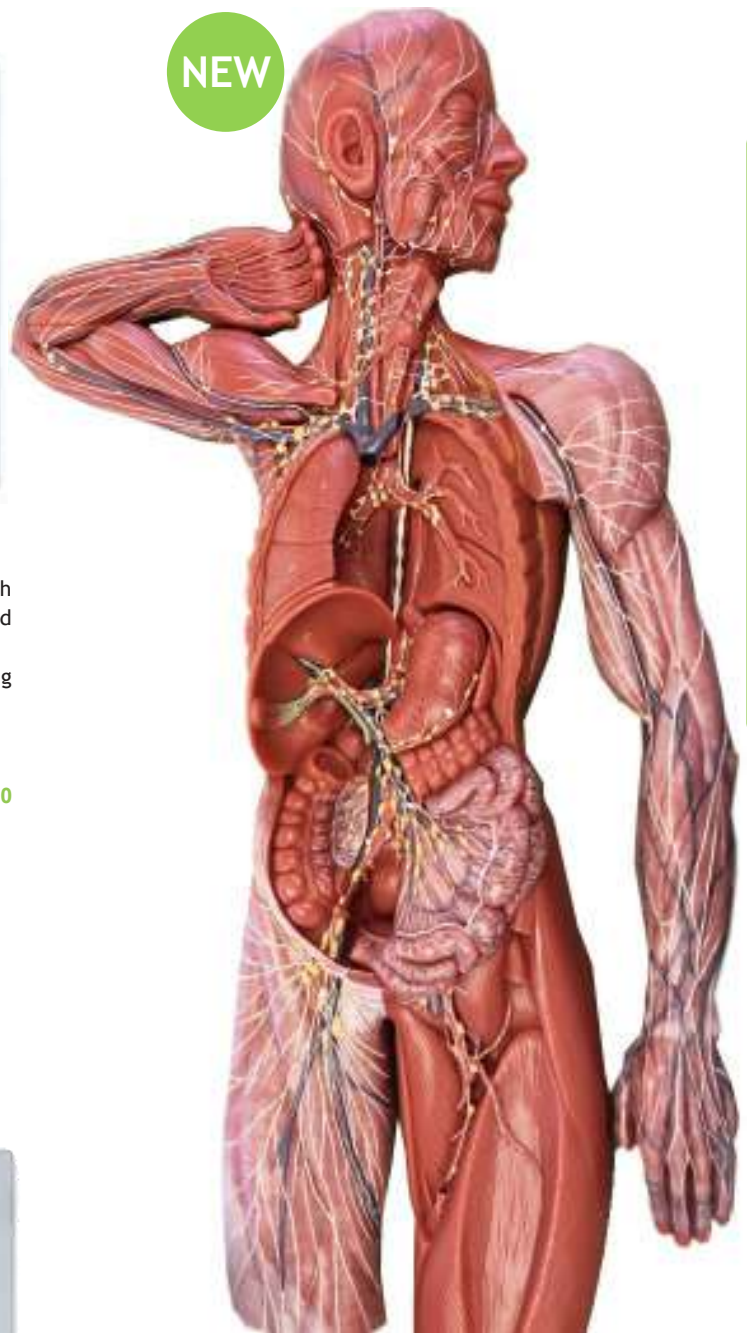
The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 26.5*19.5*5.5 cm

Weight : 900 g

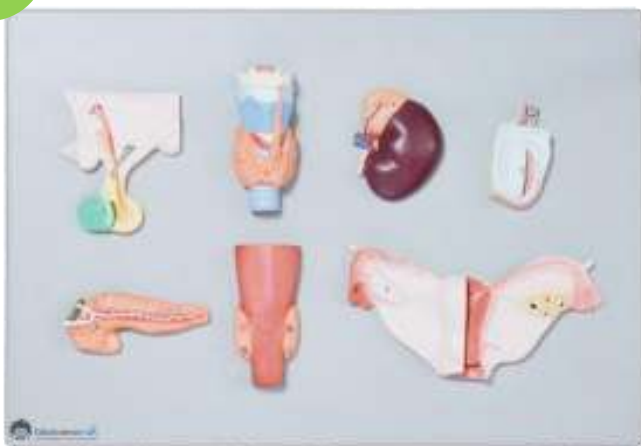
ESB51100

NEW



Biology

NEW



Organs Of The Endocrine System Model

This model shows the external structure of the following human endocrine organs: pituitary gland, thyroid gland, adrenal gland, testis, pancreas, parathyroid gland, ovary.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 53*38*7 cm

Weight : 1500 g

ESB51341

Lymphatic System Model

This model shows the structure of lymphatic system.

The model shows the composition and structural characteristics of the lymphatic system, with a total of 63 indicators.

ANATOMICALLY ACCURATE AND LIFE SIZE

Great for schools biology lessons, patient education and also a little Halloween fun!

HUMAN SKELETON SYSTEM

The anatomy of the skeleton is labeled on a realistic picture and makes for an easy study of the bones of the body.

HUMAN SYSTEM

Every part of the human body's system is labeled in this colorful detailed

ESB51340





Liver Model, Life Size

This realistic model reproduces a life size liver with the gall bladder. The hilus vessels are shown as well as the extrahepatic ducts and the main ligaments.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 21*18*15 cm

Weight : 550 g

ESB51104



Pancreas ,Duodenum And Spleen Model

This life size model is an accurate representation of the pancreas, spleen and duodenum. The pancreas is open to show the entire pancreatic duct. The duodenum is partially dissected to expose its internal structure.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 12*19*24 cm

Weight : 500 g

ESB51107



Liver With Gall Bladder And Duodenum

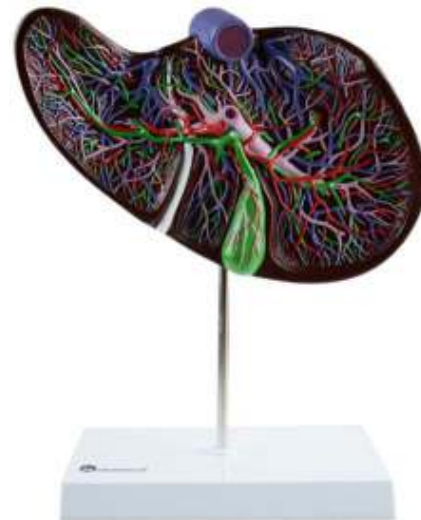
This life size model shows a section of the liver with gall bladder, pancreas and duodenum, hepatic and pancreatic ducts.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19*15*4cm

Weight : 710 g

ESB51105



Liver Section With Gall Bladder Model

The model, 1,5X life size, shows the liver and gallbladder in open section with the complex network of vessels and bile ducts, displayed in different colours for clarity of examination.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 28*17*35 cm

Net weight : 1300 g

ESB51106





Lung Model

This life size model shows the normal human lung. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51329

NEW



Left And Right Lungs Model

Life size. This 2-part model is a realistic representation of human lungs with all external features. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 33*23*31 cm

Weight : 1800 g

ESB51331



Left and right lungs,4 parts Model

This life size model shows the normal human left and right lungs,4 parts. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 33*23*31 cm

Weight : 1800 g

ESB51332



NEW

Biology



Transparent Segmental Lungs Model

This model shows 10 segments in the right lung and 8 in the left. The distributions of bronchial tree can be observed through the transparent lungs. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 28*17*32 cm
Weight : 1000 g

ESB51333

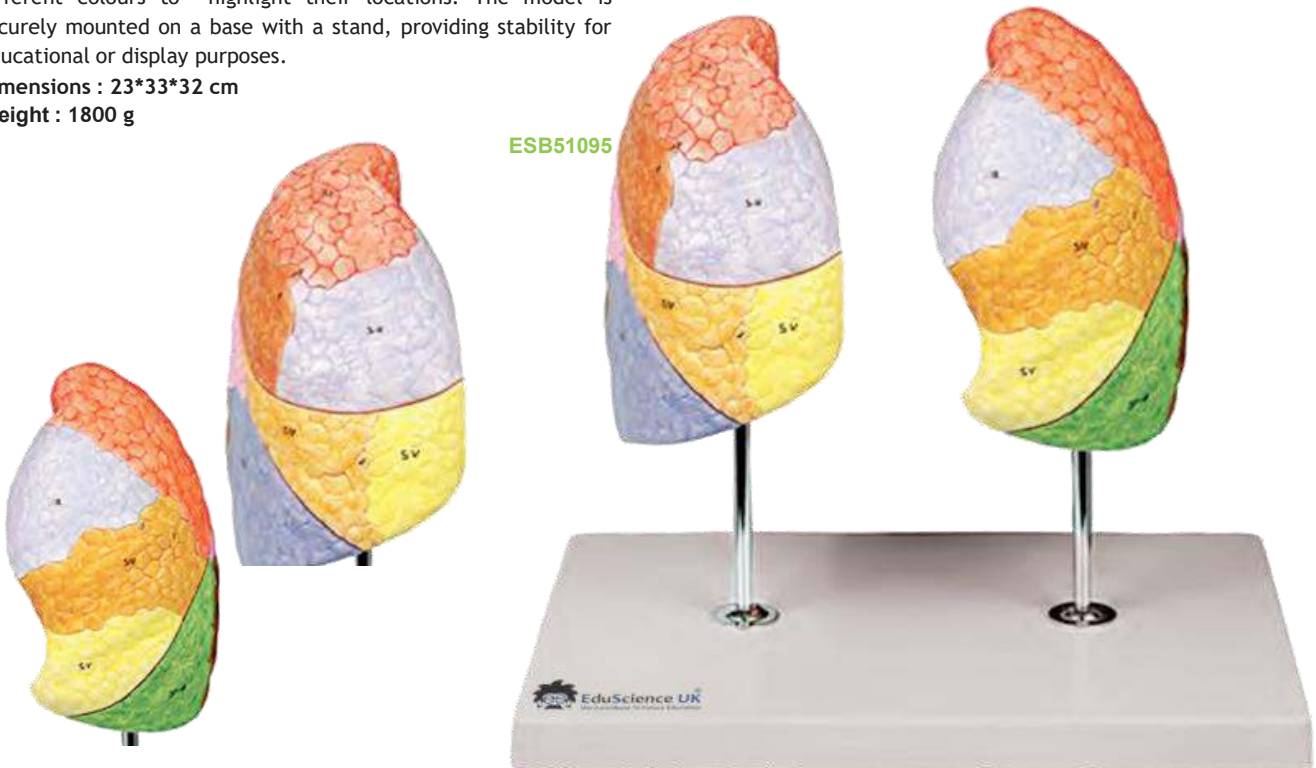


Segmented Lungs Model

This life size model shows clearly the segmental anatomy of the left and the right lungs. The various lobes are painted with different colours to highlight their locations. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 23*33*32 cm
Weight : 1800 g

ESB51095





Dental Care Model (Oral Hygiene)

A 3X life size model that is useful for teaching the correct way to brush teeth. A giant toothbrush is included. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51109

NEW



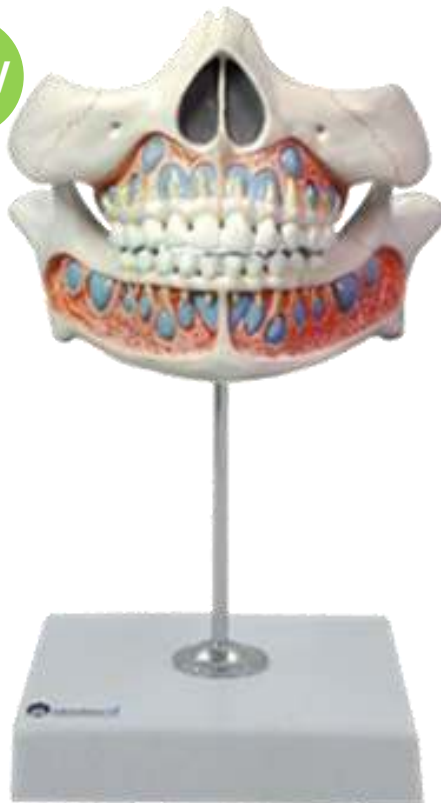
Dental Hygiene Model

This life size model shows the upper and lower dentition of an adult human. Valuable aid for teaching proper oral hygiene procedures. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 8*8*7 cm
Weight : 230 g

ESB51376

NEW



Deciduous Teeth Model

This life size model shows the upper and lower jaw of a 5 year old child. The lower jaw is movable to reproduce the natural chew. The model exposes the arrangement of the young teeth. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 12*12*21 cm
Weight : 240 g

ESB51379

NEW



Permanent Teeth Model

This life size model shows the upper and lower jaw of a 5 year old child. The lower jaw is movable to reproduce the natural chew. The model exposes the arrangement of the young teeth. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 12*12*21 cm
Weight : 170 g

ESB51377





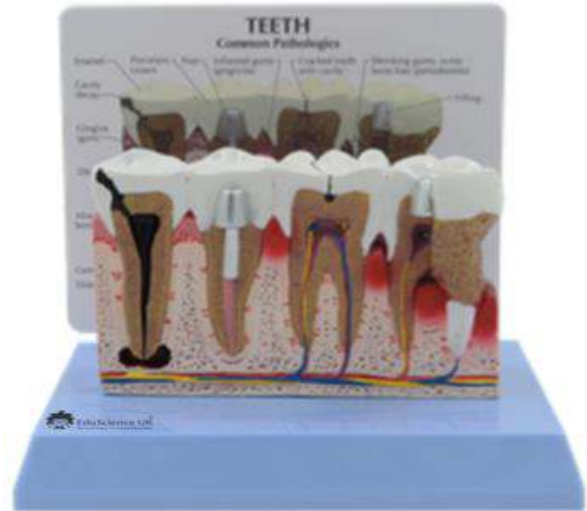
Enlarged Mouth, Nose And Throat Cavity Model

This model shows the oral, nasal cavities, pharynx and larynx. The upper respiratory tract is dissected into two pieces along the medial sagittal plane. 2 times enlarged. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 45*27*28 cm

Weight : 4000 g

ESB51383



Diseased Teeth Model

Oversized model of premolars and molars featuring many common dental problems, some of which are: abscess, advanced periodontitis, cavity, crown, decay, filling, gingivitis, plaque, and severe bone loss

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19*15*15 cm

Weight : 700 g

ESB51380



Permanent Teeth, Set of 16 Pieces

This set model, composed of 16 pieces, shows in great detail the morphology of the permanent teeth. Maxillary and mandibular tooth types (incisors, canines, premolars and molars) are represented, enlarged to 4X life size. .

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

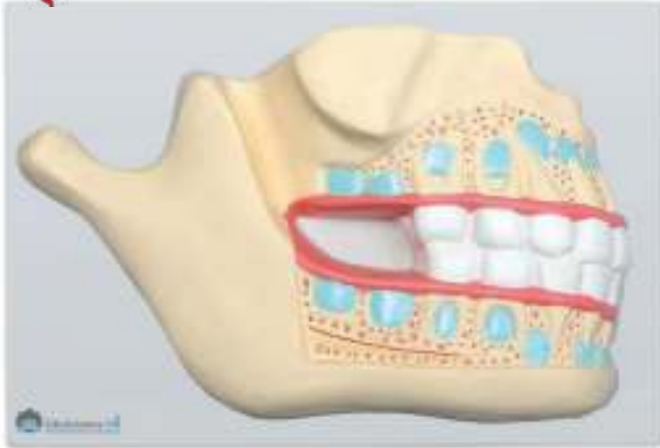
Dimensions : 5*5*14.5 cm

Weight : 200g

ESB51378



NEW



Relief Model Of Deciduous Teeth

This is relief model of deciduous teeth
The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51382



Deciduous Teeth Model -10 Pcs

This 10-piece model is a useful tool to study the morphology of primary tooth types (incisors, canines and molars). Enlarged to 10X life-size.
The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
53x38x15cm/1400g
Dimensions : 53*38*15 cm
Weight : 1400 g

ESB51381



Incisor, Canine, Molar

These are enlarged Incisor, Canine, Molar.

ESB51375



Enlarged Lower Jaw

This 3X life size model is divisible into 6 parts to show all the characteristics of an adult half mandible. A portion of the jaw can be removed to show the roots of the teeth and the internal structure of the bone.
Canine and molar teeth can be removed and dissected longitudinally to observe the tooth roots, pulp and nerves.
The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
Dimensions : 35*18*35.5 cm
Weight : 1130 g

ESB51384



Incisor

This is enlarged human incisor, 1 parts

ESB51373



Incisor - 2 Prats

This is enlarged human Incisor, 2 parts

ESB51373/2



Molar- 2 Parts

This is enlarged human Molar , 2 parts

ESB51374/2





Staged Model Of Decaying Tooth

This model, composed of 7 parts, is 4X life size. It consists of 3 teeth, seated in their sockets, that shows the progressive deterioration of tooth structure by dental caries. The first tooth shows the caries in the enamel. In the second tooth, the caries invades the dentine. In the third tooth, the pathology affects the pulp, jeopardizing the vitality of the tooth.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 20*11*16 cm

Weight : 700 g

ESB51110



Diseased Tooth Model

This 4X life size model shows the process of dental caries in its progressive stages. The tissues forming the tooth (enamel, dentine and pulp) are shown, along with the way in which they are affected by the caries process.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51168

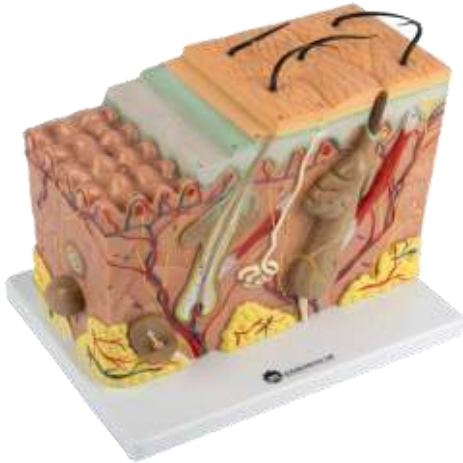
Diseased Tooth Model

This 4X life size model shows the process of dental caries in its progressive stages. The tissues forming the tooth (enamel, dentine and pulp) are shown, along with the way in which they are affected by the caries process.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51169





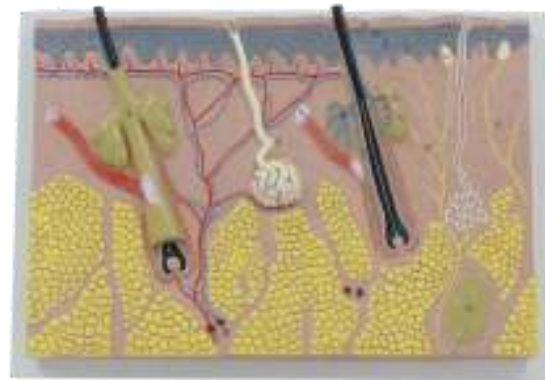
Skin Model,70 Times Enlarged

This 70X relief model compares a section of hairy skin . All structures, including sensitive corpuscles, hair follicles, sebaceous and sweat glands, are shown in great detail. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19*26*26cm

Weight : 1600g

ESB51111



Skin Section Model

This 70X relief model shows the main structures through 3 layers of the hairy skin: hair follicles, sebaceous and sweat glands, erector muscles, sensitive corpuscles, nerves and blood vessels are well defined.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 33.5*23*7 cm

Weight : 1000g

ESB51113



Skin Model,50 Times Enlarged

This 50X relief model compares a section of hairy skin . All structures, including sensitive corpuscles, hair follicles, sebaceous and sweat glands, are shown in great detail. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 13*24*24cm

Weight : 1000g

ESB51112



Skin Model,35X,2 Parts

This two-part model provides a three-dimensional representation of the human skin, showcasing detailed anatomical structures such as hair follicles, sebaceous glands, sweat glands, erector muscles, Pacinian corpuscles, nerves, and blood vessels. The various layers of the skin are clearly delineated, allowing for comprehensive study. Additionally, a portion of a hair shaft can be removed to reveal internal details.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 54*39*8 cm

Weight : 800g

ESB51197



NEW



Skin Relief Model

This two-part model, enlarged 70 times, illustrates the fundamental structure of the skin with and without hair.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 54*39*8 cm

Weight : 1600 g

ESB51337



Skin Model 3 Layers

This enlarged model illustrates the three layers of the skin.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 18*14*2.5 cm

Weight : 400 g

ESB51336



Hair Model 700 Times Enlarged

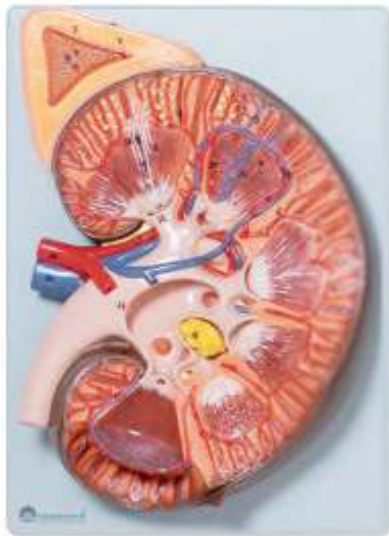
This four-part model, enlarged 700 times, provides a detailed depiction of hair anatomy. It includes representations of the shape of hair, hair follicles, longitudinal sections of hair roots, sections of hair shafts, cross-sections of hair roots, and hair bulbs.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 53*38*12 cm

Weight : 1950 g

ESB51338



Deluxe Kidney With Adrenal Gland Model, 3 Times Enlarged

This model shows a frontal section of the human kidney enlarged 3 times. The kidney is shown with the renal capsule. Additional structures include: the cortex, medulla, pyramids with papillae, partially dissected renal pelvis, renal calices, ureter, blood vessels, supra-renal gland with cortex and medulla. A schematic representation of the renal corpuscle with the system of collecting tubules is included.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 28*21*10 cm

Weight : 1100 g

ESB51116



Kidney Model Section, 3 Times Enlarged

This model shows a frontal section of the human kidney enlarged 3 times. The kidney is shown with the renal capsule. Additional structures include: the cortex, medulla, pyramids with papillae, partially dissected renal pelvis, renal calices, ureter, blood vessels, supra-renal gland with cortex and medulla.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

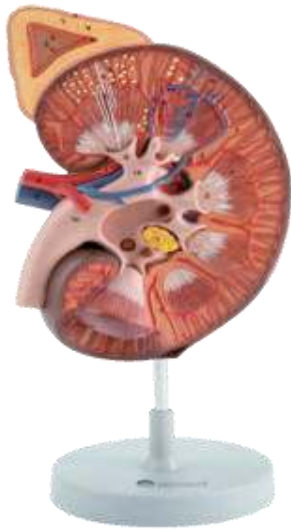
Dimensions : 28*21*10 cm

Weight : 1100 g

ESB51120



NEW



Kidney Model On Stand 3 Times Enlarged

This solid model showcases the human kidney, enlarged three times its natural size, providing a detailed view of its structures. Included are the renal capsule, cortex, medulla, pyramids with papillae, partially dissected renal pelvis, renal calices, ureter, blood vessels, suprarenal gland with cortex and medulla. Additionally, a schematic representation of the renal corpuscle with the system of collecting tubules is featured for educational purposes. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 15*17*33 cm
Weight : 1000 g

ESB51121/S



Kidney With Adrenal Gland Model , 1,5 Times Enlarged

This 2-part model, 1.5X life size, shows the human kidney in frontal region. Internal structures are clearly revealed, including cortex, medulla, pyramids, calyces, renal pelvis (partially opened), ureter and origins of the renal artery and vein. The front of the model is removable for inner examination.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
Dimensions : 11*11*23 cm
Weight : 200 g

ESB51115



Kidney Model, Life Size

A life size model of the kidney with the adrenal gland. The model is sectioned along the front plane; it can be divided in 2 parts to show internal structures, including the cortex, medulla, pyramids with papillae, partially opened renal pelvis, ureter, blood vessels.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Size : 10.5*10.5*21 cm
Net weight : 220 g

ESB51114



Kidney Model Section ,3 Times Enlarged

This model shows a frontal section of the human kidney enlarged 3 times. The kidney is shown with the renal capsule. Additional structures include: the cortex, medulla, pyramids with papillae, partially dissected renal pelvis, renal calices, ureter, blood vessels, suprarenal gland with cortex and medulla

Dimensions : 28*21*10 cm
Weight : 1100 g

ESB51121





Kidney,Nephron And Glomerulus Model

Right Kidney, Nephron and Glomerulus combined on one base plate. Model in one piece.

Right Kidney

Enlarged approx. 3 times, . Frontal section seen from behind; pyramids of the kidney with their papillae entering the partly open pelvis. Schematic Presentation of a nephron with its loop of Henle. Model in one piece. On a green board.

Nephron

Enlarged approx. 120 times. The model shows two nephrons with little knots of kidney, renal tubules and collecting tube system. Model in one piece. On a green base plate.

Glomerulus

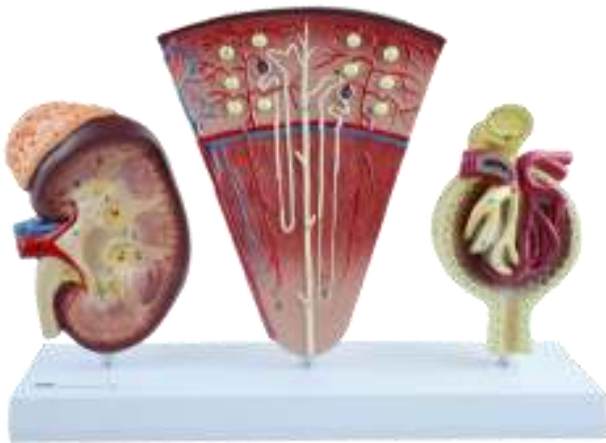
Enlarged approx. 700 times, The model shows the arteriola afferens and the arteriola efferens, the capillaries of the glomerulus, urinary pole and Bowman's capsule.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 30*65*9 cm

Weight : 3000 g

ESB51117



Kidney,Nephron And Glomerulus Model Solid

This 3 models set shows the basic structure of the kidney. We can find as a first model a kidney, illustrates adrenal gland, cortex, medulla, pyramids with papillae, renal pelvis and blood vessels. The second model, representing a nephron enlarged 120 times, shows a renal tubules, a collecting tube system and Henle's loop. The third one illustrates Malpighian corpuscle with the Bowman's capsule, 700 times life size. All these models are a great instrument to understand the kidney anatomy in all the inner details.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 31.5*9.5*22 cm

Weight : 510 g

ESB51118



Deluxe Kidney,Nephron And Glomerulus Model

This 3 model set shows the basic structure of the kidney. The first model shows a frontal section of the kidney enlarged 3 times. It presents the adrenal gland, cortex, medulla, pyramids with papillae, renal pelvis and blood vessels.

The second model, representing a nephron enlarged 120 times, shows a renal tubule,a collecting tube system, and Henle's loop.

The third model illustrates Malpighian corpuscle with the Bowman's capsule at a scale of 700x life size.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 70*29*12 cm

Weight : 4100 g

All these models are an excellent way to understand the inner details of human kidney anatomy.

ESB51119



Urinary System Relief Model

This model features sections of the urinary bladder, urethra, the inferior vena cava with tributaries, the abdominal aorta with branches, ureters, the kidneys with adrenal glands, a section showing internal renal structures (cortex, medulla, pyramids with papillae, vessels)

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 42*31*5 cm

Weight : 1000 g

ESB51124

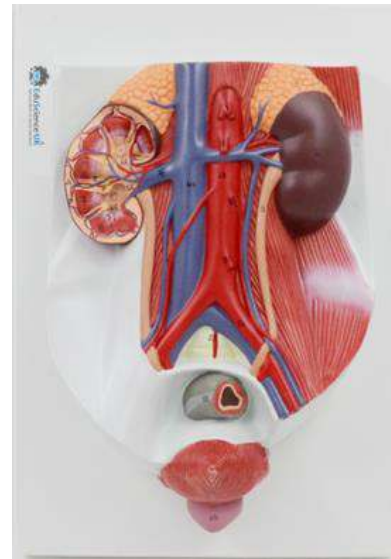




Urinary System, Dual Sex Model

This all-in-one-model shows:
 Structures of retroperitoneal cavity Large and small pelvis with bones and muscles Inferior vena cava Aorta with its branches including iliacal vessels Upper urinary tract Rectum Kidney with adrenal gland
 The front half of the right kidney is removable. With easy-to-change male insert (bladder and prostate, front and rear half) and female insert (bladder, womb and ovaries, two lateral halves)
 The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Dimensions : 42*23*10.5 cm
 Weight : 3000 g

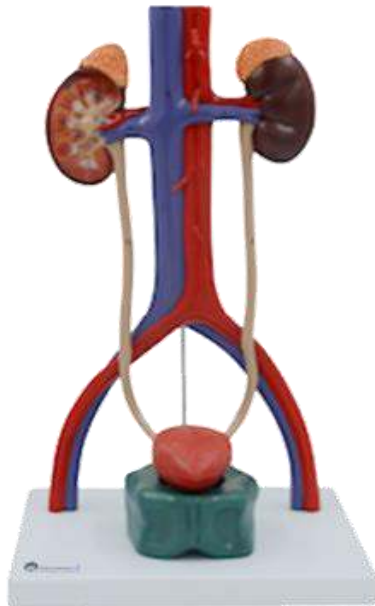
ESB51125



Urinary System Model

This model depicts the urinary system, featuring the bladder, prostate, and kidney.
 The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51312



Urinary System Model

Free-standing model comes with four parts and represents the major components of the urinary system. The right kidney is dissected to show the cortex, medulla, pyramids, calyces - PELvis, and origins of the renal artery and vein. The bladder can also be removed and opened for more detailed learning. Durable and a great learning tool in all classrooms and laboratories.
 The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Dimensions : 26 *18.8 cm
 Weight : 850 g

ESB51123



URINARY SYSTEM LIFE-SIZE, 5 PARTS

This life-sized model of the urinary system consists of five parts, providing a detailed depiction of its basic structure. The model allows for the bladder and kidneys to be opened, offering a closer examination of their internal anatomy.
 The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Dimensions : 25*18*30 cm
 Weight : 800 g

ESB51123/5



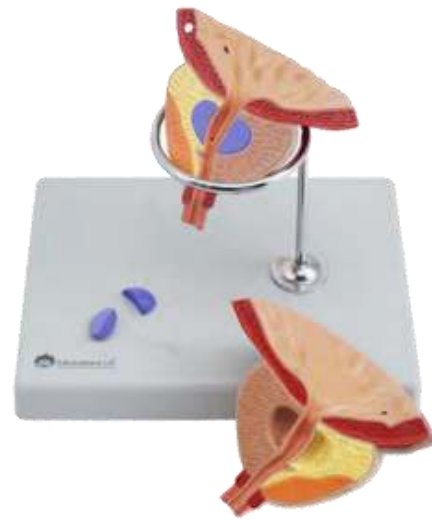


Bladder Model

This model, enlarged 3 times, shows the male urinary bladder with the prostate gland surrounding the urethra. The model is dissected medially to expose both internal and external structures of the bladder and prostate, including the urethric and urethral orifices, ductus deferens, seminal gland, ejaculatory duct.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51126



Prostate Model 2 Times Enlarged 4 Parts

This four-part model, enlarged to twice life-size, provides a comprehensive view of the complete anatomy of the prostate. Additionally, the basal part of the urinary bladder is included, and thanks to the longitudinal section, all the different lobes of the prostate can be easily identified.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 16.5*13*20 cm

Weight : 1100 g

ESB51315



Enlarged Bladder Model

This model, enlarged three times its natural size and composed of two parts, illustrates the internal and external structure of the bladder, internal urethra, prostate, and a portion of the vas deferens.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 22*14.9*27 cm

Weight : 1230 g

ESB51118



Male Pelvis Model ,Life Size

This life size model, composed of 4 parts, presents an open view through a median sagittal section of the pelvis. Internal structures of the male urogenital system are represented in fine detail. The removable parts include a half penis divided into medial and transverse sections, and half of the male reproductive system with an open dissection of a testis showing details of the internal structure.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 28*24*29 cm

Weight : 2000 g

ESB51127



NEW

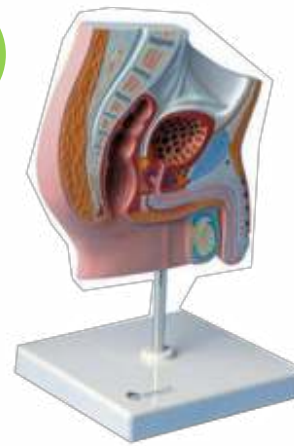


Male Pelvis, 1/2 Life Size

This half-life-sized model presents an open view through a median sagittal section of the male pelvis. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51127/0.5

NEW



Male Pelvis On Stand

This model, displayed on a stand, depicts a reduced-size mid-sagittal section showcasing the anatomy of the pelvis and testis. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51128/N



Male Genital Organ Model, Life Size

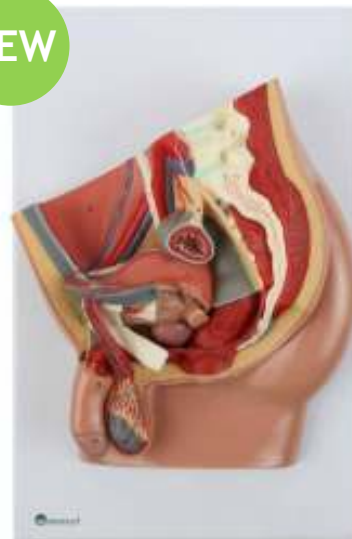
This life size model, composed of 4 parts, is dissected through the median sagittal plane to provide excellent views of external and internal structures. The removable parts include two halves of the penis, showing medial and transverse cuts and 2 halves of the male reproductive system with excellent detailing of internal structures.

Dimensions: 20*13*12.5 cm

Weight :820 g

ESB51129

NEW



Median Section Of Male Pelvis

This model displays a median section of the male pelvis, presenting the rectum, bladder with prostate, testicular duct, and external genital organs. It consists of four parts for detailed study.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51316/M



Male Pelvis Model

Male-half scale Midle-sagittal cross-section which shows the anatomy of the pelvis and testis.

ESB51128



NEW



Male Genital Organ, Life Size, With Base

This life-sized model, consisting of four parts, is dissected along the median sagittal plane to offer detailed views of both external and internal structures of the male genital organ. The removable parts include two halves of the penis, displaying medial and transverse cuts, as well as two halves of the male reproductive system, featuring excellent detailing of internal structures. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51129/B



Testis Model ,10 Times Enlarged

This model shows the medial and sagittal section of the human testis including epididymis, ductus deferens, seminiferous tubules and rete testis
Size : 11x11x26 cm
Net weight : 260 g

ESB51130

NEW



Male Reproductive System Model

This model depicts all the organs of the male reproductive system in natural size. The penis, prostate, and urinary bladder are longitudinally sectioned to reveal their inner anatomy, while the testicle is partially cut away to expose all internal structures. Additionally, the model features a detailed cross-section of the testicle, significantly enlarged, showcasing the septula testis, rete testis, straight and contorted seminiferous tubules with great accuracy. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
Dimensions: 40*26*10 cm
Weight: 500 g

ESB51311

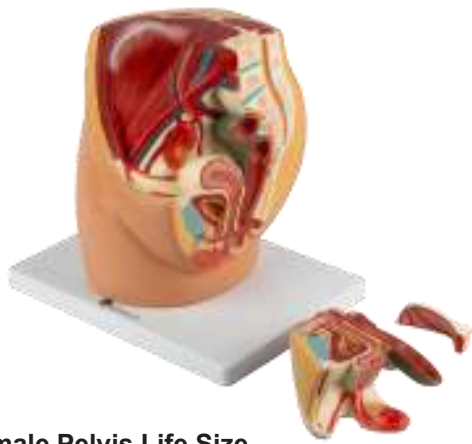


Spermiogenesis Model,10000 Times Enlarged

This model shows the process of spermatogenesis from spermatid to the mature spermatozoon. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
Base Dimensions : 26*40 cm

ESB51131





Female Pelvis, Life Size

This life size model, composed of 3 parts, shows an open dissection through the median sagittal section of the pelvis. Internal structures of the female urogenital system are portrayed in great detail. Removable parts include half of the female reproductive system with the uterus opened to reveal medial and transverse sectional views.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 28*24*29cm

Weight 2100g

ESB51132

NEW



Median Section Of Female Pelvis

This model displays a median section of the female pelvis, showcasing the female genital organs along with the bladder and rectum.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Base Dimensions : 26*40 cm

ESB51316/F

NEW



Female Pelvis, 1/2 Life Size

This half-life-sized model presents an open view through a median sagittal section of the female pelvis.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51132/0.5

NEW



Female pelvis

This model depicts a reduced-size mid-sagittal cross-section of the female pelvis, showcasing the anatomy of the female reproductive system.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51133/N

Female Pelvis Model

this half scale mid-sagittal cross-section of the pelvis showing female anatomy, including the ovary and fallopian tube.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 14*14.5*2 cm

Weight : 300 g

ESB51133





Deluxe Pregnancy Pelvis Model

This life size model depicts the female human pelvis in median section with a foetus in the 40th week of pregnancy. The foetus is in the normal position prior to birth, showing the anatomical relationship between various structures of the maternal pelvis and the fetus. Fetus is detachable for closer examination.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 24*40*38 cm
Weight : 4000g

ESB51140



Pregnancy Pelvis With Mature Foetus Model

This life-size model, foetus in uterus with closed and opened uteri, the beginning of the emergence of the head.

ESB51141



Female Internal Genital Organ Model

1.5X life size model shows dissected view of the vagina, cervix, uterus and ovary with follicles at various stages of development.

Dimensions :20*17.5*9 cm
Weight :350g

ESB51136



Female Genital Organ Model ,4 Parts

This life size model, composed of 4 parts, is a detailed representation of the female reproductive system as viewed through a median sagittal dissection. Removable parts include a 2-part uterus and 2 halves of the female reproductive apparatus with details of the internal structure.

Dimensions : 14.5*13*12 cm
Weight : 500 g

ESB51135

NEW



Female Pelvis With 8-Week Embryo, 3 Parts

This life-sized model, composed of three parts, provides an internal view through the median sagittal section of the pelvis. It displays the internal organs of the female urinary and reproductive systems, along with an 8-week embryo in utero.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions: 30*22*28 cm
Weight: 1750 g

ESB51342



Female Internal Genital Organ Model

1.5X life size model shows a dissected view of the vagina, cervix, uterus and ovary with follicles at various stages of development.

Dimensions : 20*17.5*9 cm
Weight : 350 g

ESB51137

NEW



Female Genital Organ, Model, 4 Parts, with Base

This life size model, composed of 4 parts, is a detailed representation of the female reproductive system as viewed through a median sagittal dissection. Removable parts include a 2-part uterus and 2 halves of the female reproductive apparatus with details of the internal structure.

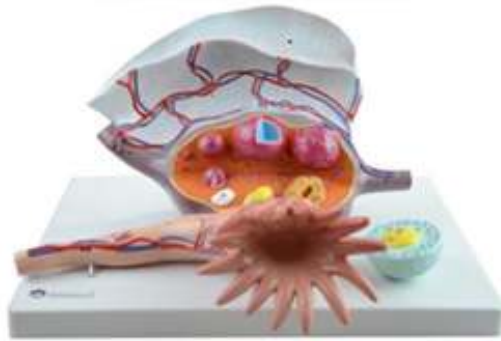
The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 29*17*20 cm
Weight : 1200 g

ESB51135/B





Ovary Structure Model

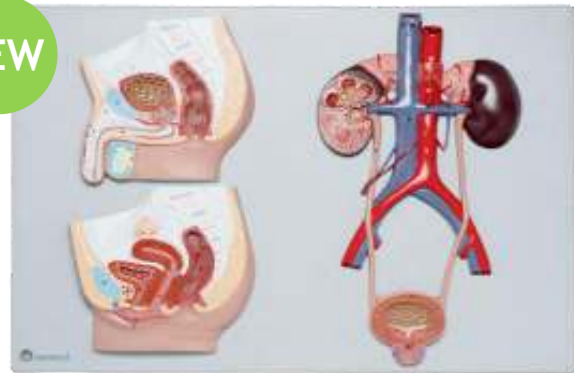
This 2-part, 5X life-size model shows the anatomy of the human fallopian tube and ovary. The follicles are shown at different stages of maturation. From the primary ovarian follicle to the corpus albicans. A primary follicle is cross-sectioned, to illustrate the inner structure, the oocyte, zona pellucida and granulosa cells.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 35*25*25cm

Weight : 2000 g

ESB51138



Relief Model Of Male And Female Urinary System

This relief model showcases sections of both male and female pelvises, along with the urinary bladder, urethra, the inferior vena cava with tributaries, the abdominal aorta with branches, ureters, and the kidneys with adrenal glands. Additionally, it includes a section illustrating internal renal structures such as the cortex, medulla, pyramids with papillae, and vessels.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 53*38*5 cm

Weight : 1000 g

ESB51313



Uterus Model, 2 Parts

Full-size cross-section model illustrates multiple pathologies, dissected into 2 parts

Dimensions : 23*17.5*9.5 cm

Weight : 550 g

ESB51139



Fertilization Process Model

This model illustrates two frontal sections through female genital organs, depicting the fertilization process.

ESB51343



Enlarged Ovary Model

This enlarged ovary model is composed of eight parts, illustrating the various stages of ovum development. These parts include the ovary itself, primary ovarian follicles, secondary ovarian follicles, the ovum, ovulation, corpus luteum, and corpus albicans. The model effectively demonstrates the process of ovum development from its initial stages to maturation.

ESB51349



Female Pelvis Cavity With 2 Lumbar Vertebra's

This single-piece life-size model is a very useful tool to study the female pelvic anatomy and to understand the relationship between pelvic bones, muscles and female genital organs. It shows a complete skeleton of a female human pelvis associated with ligaments, muscles, internal and external female urogenital organs. Both the urinary bladder and the uterus can be opened along the longitudinal plane to show their inner anatomy. All the structures are reproduced with great detail and accuracy.

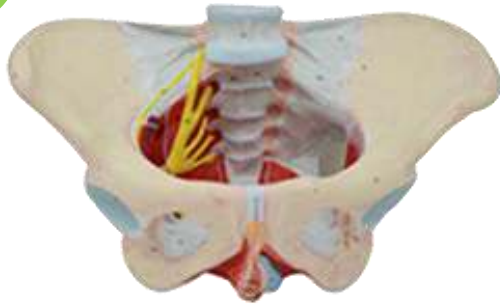
Dimensions : 25*24*13 cm

Weight : 1130 g

ESB51134



NEW

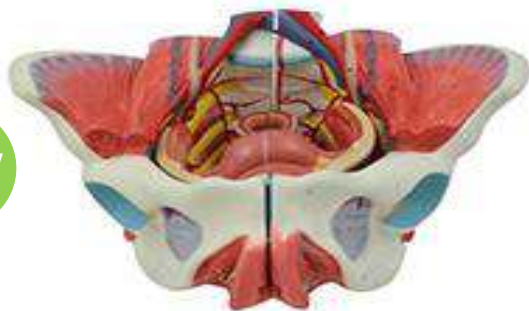


Pelvic Floor Muscle 1 Part

This single-part model displays the pelvis along with its ligaments, nerves, perineum, and other relevant structures, focusing on the pelvic floor muscles.

ESB51348

NEW



Pelvic Floor Muscle 4 Parts

This four part model provides a representation of the external and internal genital organs along with the pelvic floor, including a network of nerves and vessels.

Dimensions : 30*18*20 cm

Weight : 2000 g

ESB51348/4



3 Stages Of Fetus Delivery Model, Life Size

This life-sized model illustrates the three stages of the fetus delivery procedure. It includes representations of the uterus, fetus, placenta, pelvis, birth canal, and umbilical cord.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51350

NEW



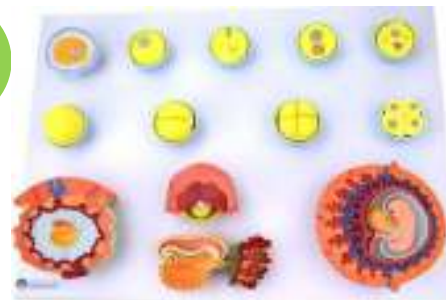
Placenta Model

This model displays the structure of the placenta and illustrates the relationship between the placenta and the umbilical cord.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51346

NEW



Human Fertilization & Internal Embryogeny

This model illustrates two frontal sections through female genital organs, depicting the fertilization process.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Weight : 2800 g

ESB51344

NEW



Human Fertilization And Early Embryogenic

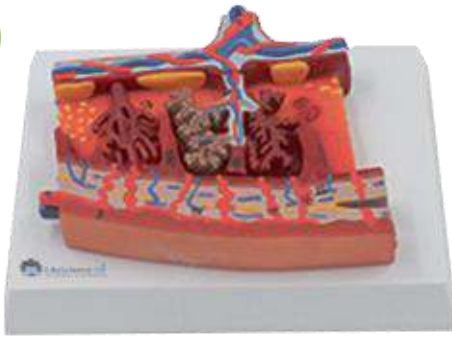
This set of 16 different models illustrates human fertilization and early embryogenic, depicting the development of the human ovum up to the third month.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51345



NEW



Enlarged Model Of Placenta

This enlarged model depicts the cross-section structure of the human placenta.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 35*25*25 cm

Weight : 2000 g

ESB51347

NEW



Fetal Blood Circulation System

This model shows thoracic, abdominal cavity, heart, umbilical cord and placenta, venous and arterial ducts.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51592

Foetus Development Model, Life Size

Set of eight model illustrates the detailed stages of pregnancy development. Includes a first-month embryo, second-month embryo, third-month embryo, fourth-month foetus in transverse lie position, fifth-month foetus in breech position, fifth-month foetus in transverse lie position, fifth-month twin foetuses, and seventh-month foetus.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 51*21*20 cm

Weight : 4000 g

ESB51142



NEW



Fetal Development

This model shows the process of fetal development from the unfertilized ovum to the 9th month of gestation. The model consists of five parts. The

first shows the developmental stages: ovulation; fertilization, zygote formation and uterine implantation that take place in ovary, fallopian tube and uterus. The other parts show the fetus at 2 weeks, 8 weeks, 12 weeks and 9 months of development.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 55*40*10 cm

Weight : 3000 g

ESB51589

NEW



Fetus With Viscus and Placenta, 11 Parts, Natural Size

This model shows a term fetus with placenta, umbilical cord and internal organs.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 56*40*20 cm

Weight : 4000 g

ESB51593



NEW



Fetal Membrane And Uterus

This section model shows the anatomical structure of the fetus, placenta, uterus, and umbilical cord. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Dimensions : 53*38*17 cm
 Weight : 4000 g

ESB51351

NEW

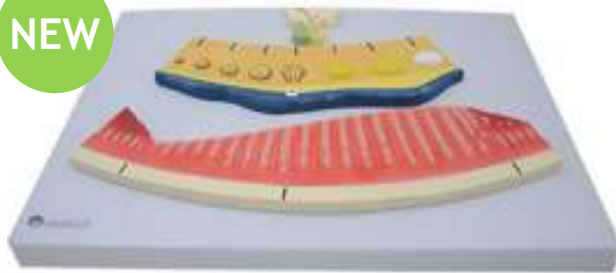


Human Embryo 50 Times Life Size ,4th Week

This model, 50X life size, shows structural details of a human embryo at 4 weeks of development. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Dimensions : 26*24*15 cm
 Weight : 1700 g

ESB51590

NEW



Periodic Changes Of Female Hormones And Internal Layer of Uterus

This model shows the relationship between female hormone levels and changes in the uterine lining throughout the menstrual cycle. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Dimensions : 54*39*10 cm
 Weight : 3000 g

ESB51352

Breast Model

Full size cross-section model depicts common pathologies ,Medially divided into 2 halves, Model also shows breast structures such a suspensory ligaments, fat tissue, muscles, and ribs. The model is securely mounted on a base, providing stability for educational or display purposes.
 Dimensions : 14.5*12*10 cm,
 Weight : 650 g



ESBc

NEW



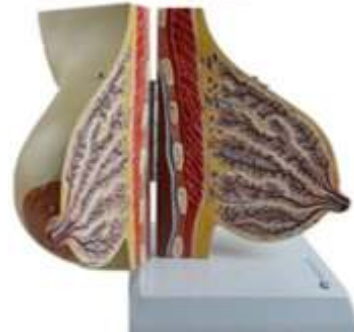
Breast Model Basic On Base

This model shows the basic shape and structure of human breast. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.
 Dimensions : 40*26*13 cm
 Weight : 950 g

ESB51598

Lactation Breast Model

Life size Breast model Medially divided into 2 halves Healthy lactating breast tissue on the cut surface of the external half Breast gland inflammation (mastitis) on the cut surface of the inner half The model is securely mounted on a base, providing stability for educational or display purposes.
 Dimensions : 20*20*25 cm,
 Weight : 1500 g



ESB51177





Human Head Cranial with Autonomic Nerves 2-Part Mode

This model, enlarged 2.5 times life-size, features a dissection of a human half head, showcasing the 12 cranial nerves along with their collateral branches and autonomic nerves. A median section reveals the upper respiratory tract and pharynx. Additionally, the eyeball is removable for close examination. The model is securely mounted on a base and stand, providing stability for educational or display purposes.

Dimensions : 20*26*41.5 cm
Weight : 2000 g

ESB51208



Head With Muscles

This model consists of 10 parts and displays the cranium, eye, cerebral falx, right and left brain, and cervical vein. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51204



Head And Neck Musculature

This model provides a comprehensive depiction of the muscles in the head, neck, and superior thoracic region. It accurately represents both the superficial and deep musculature, along with illustrating the pathways of the subclavian and carotid arteries. The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 33*22*48 cm,
Weight : 3000 g

ESB51199



Arteries Of Head

This model illustrates the pathway of the left external carotid artery, encompassing its collateral and terminal branches. The model is securely mounted on a base, providing stability for educational or display purposes.

20x15x20cm/600g
Dimensions : 20*15*20 cm
Weight : 600 g

ESB51205





Head With Brain Model

Life size head model is composed of 4 parts, as follows: half brain, features the internal structure of the cerebrum, including blood vessels half of the cerebellum eye with optic nerve. The right side of the face is dissected in sagittal and horizontal section, showing many significant internal features of the skull and brain, as well as the entire oronasal cavity. The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 24*22*19 cm

Weight : 1500 g

ESB51147



Muscles Of Head And Neck

The product demonstrates the neck anatomy, the superficial structure of the neck, the anterior neck area and the sternocleidomastoid area, the lateral neck area, the base of the neck, the fascia and the fascial space.

Also shows the anatomy of brain and face.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 42*29*45 cm

Weight : 3500 g

ESB51201



Nerves Of Neck Region Model

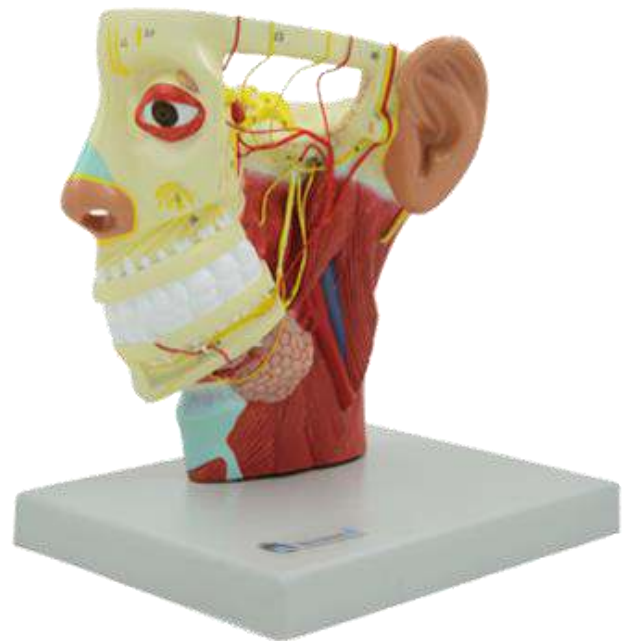
This life size model shows the distribution of superficial branches of the cervical plexus.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 40*11*28 cm

Weight : 2100 g

ESB51144



Diseased Prostate Glands

This model illustrates the pathway of the left external carotid artery, encompassing its collateral and terminal branches.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 20*15*20 cm

Weight : 600 g

ESB51206





Disc Head Model

This life-size head model is sliced horizontally into 12 pieces, simulating the process of computer tomography and magnetic resonance imaging. Each slice is rotatable and removable, allowing for detailed examination of anatomical structures with high accuracy. All structures, including muscles, nerves, brain gyri, and sulci, are numbered and identified in the accompanying manual. The model is securely mounted on a base and stand, providing stability for educational or display purposes.
Dimensions : 25*18*24 cm
Weight : 3000 g

ESB51209



Frontal And Median Section Of Head (Relief Model)

This life-size representation offers a detailed view of both the superficial and internal structures of the head and neck. Through a comparison between frontal and median sections, it provides a comprehensive understanding of the anatomical features of the head and neck region. The model is securely mounted on a base, providing stability for educational or display purposes.
Dimensions : 53*38*6.5 cm
Weight: 1600 g,

ESB51211



Sagittal Section Of Human Head

This life-size representation is a relief model showcasing both superficial and internal structures of the head and neck. It offers a comprehensive view of all relevant anatomical features with intricate detail. The model is securely mounted on a base, providing stability for educational or display purposes.

ESB51210



Half Head Model

Life size model shows the right half of the human head and neck, sectioned along the sagittal plane. A superficial dissection exposes the facial muscles, the superficial blood vessels and nerve branches of the face and scalp, the parotid and submandibular glands. A median dissection expose the brain with its internal structure, the pharynx and upper respiratory tract, a section of the cervical vertebrae. The model is securely mounted on a base, providing stability for educational or display purposes.
Dimensions : 23*18*27.5 cm
Weight : 850 g

ESB51146





Brain Model With Artery ,Life Size

This extremely realistic life size brain model can be divided into 9 parts showing the temporal and occipital lobes, the frontal and parietal lobes, the cerebellum, the brain stem and the basilar artery. All structures, including blood vessels, are shown in great detail

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19*16*17 cm

Weight : 2000 g

ESB51149/2



Brain Model With Artery ,Life Size

This extremely realistic life size brain model can be divided into 9 parts

showing the temporal and occipital lobes, the frontal and parietal lobes,

the cerebellum, the brain stem and the basilar artery. All structures,

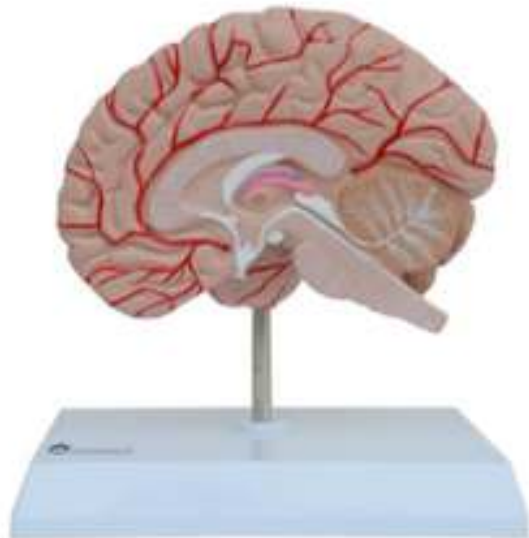
including blood vessels, are shown in great detail

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19*16*17 cm

Weight : 2000 g

ESB51149



Right Brain Model

A life size half brain model along the sagittal plane. It shows the right cerebrum, cerebellum section, brain stem section and blood vessels.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 18*14*16.5 cm

Weight : 370 g

ESB51148



Brain Model With Functional Region Painted

Life size brain with distinct colour coding for the following regions: frontal lobe, parietal lobe, occipital lobe, temporal lobe .motor cortex,

somatosensory cortex, limbic cortex, cerebellum, brain stem.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19.8*16.5*14.5 cm

Weight : 1400 g

ESB51150





Right Brain Model With Functional Region Painted

A life size half brain model with distinct colour coding for the following

regions: frontal lobe, parietal lobe, occipital lobe, temporal lobe, motor

cortex, somatosensory cortex, limbic cortex, cerebellum, and brain stem

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 18*14*16.5cm

Weight : 370g

ESB51151



Deluxe Brain Model, 1.5 Times Enlarged

A life size half brain model with distinct color coding for the following regions: frontal lobe, parietal lobe, occipital lobe, temporal lobe, motor cortex, somatosensory cortex, limbic cortex, cerebellum, and brain stem

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 36*23*20cm

Weight : 2500g

ESB51153



Brain Model 4d

A life size half brain model with Artery with distinct color coding for the following regions: frontal lobe, parietal lobe, occipital lobe, temporal lobe, motor cortex, somatosensory cortex, limbic cortex, cerebellum, and brain stem .

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 9*9*8cm

Weight : 200g

ESB51152



Brain Model, 9 Parts, Life Size

This extremely realistic life size brain model can be divided into 9 parts showing the temporal and occipital lobes, the frontal and parietal lobes, the cerebellum, the brain stem and the basilar artery. All structures are shown in great detail.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19*16*17cm

ESB51154



**Reflex ARC**

This model illustrates the sensory, neural, and motor elements of a somatic reflex arc.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 53*38*5.5 cm

Weight : 450 g

ESB51270

**Basal Nuclei And Internal Capsule**

This model serves as a fundamental aid for studying human deep neuroanatomy. Enlarged significantly and composed of two parts, it provides clear visualization of key anatomical structures such as the caudate nucleus, the lentiform nucleus, and the genu of the internal capsule. False colors are used to enhance differentiation. Additionally, the main structures are numbered and correspond to an accompanying manual for easy reference and study.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 12*12*12 cm

Weight : 170 g

ESB51271

**Brainstem Enlarged 3 Times Model**

This single-piece model serves as a crucial aid for comprehending the deeper anatomy of the brain. Enlarged three times its natural size, it provides a detailed representation of all neurological tracts, exiting cranial, and peripheral nerves. The principal anatomical structures are numbered and identified on the accompanying manual, facilitating easy reference and study.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 25.5*18*15 cm

Weight : 800 g

ESB51272

**Brainstem, Cerebellum And Fourth Ventricle**

This life-size model can be separated into three parts: the Cerebellum and Brainstem, which are longitudinally sectioned to reveal the insertions of the cranial nerves and inner anatomy. Each structure is numbered and identified on the accompanying manual for easy reference and understanding.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 21.5*13*13.5 cm

Weight : 380 g

ESB51273





Transparent Cerebral Ventricles With Base

Transparent model would allow for clear visualization of the ventricles, facilitating educational purposes or medical discussions. Such models can be used in various settings including medical schools, neuroscience research labs, hospitals, and patient education.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51267



Spinal Cord And Nerve Model

These models are commonly used in medical schools, anatomy labs, and healthcare settings to aid in the teaching and learning of spinal cord and nerve anatomy, as well as for patient education purposes. They can help students and healthcare professionals better understand the complexities of the nervous system and its role in the body.

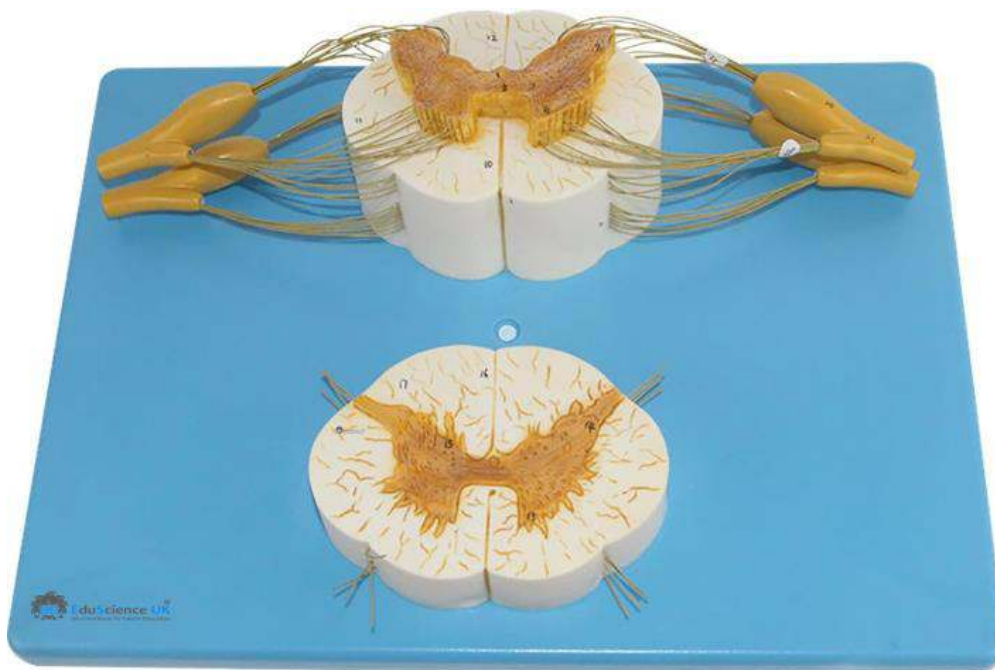
This is enlarged spinal cord and nerve model. With a manual on the base.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 0 8*23*19 cm

Weight : 1000 g

ESB51268



Spinal Cord With Nerve Branches

This model depicts the anatomy of the spinal cord and nerves, enlarged to five times their natural size. The model is securely mounted on a base, providing stability for educational or display purposes.

ESB51269





Ventricles and Basal Nuclei Model

This life-size model is an important tool to study the topography of the cerebral ventricles related to the basal nuclei. All the different structures are reproduced in great detail

Dimensions : 9.5*9*7.5 cm

Weight : 130 g

ESB51156



Cerebellum

4X life size. Human cerebellum is dissected to show details of internal organization including the spinal ganglion and the blood vessels.

Dimensions : 18*14*16.5 cm

Weight : 370 g

ESB51148

NEW



5th Cervical Vertebrae, 7 Times Enlarged

7X life size. This model shows in great detail the structure of the 5th cervical vertebra; a transverse section of the spinal cord with grey and white matter, the nerve branches, the spinal ganglion and the blood vessels.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 40*26*9 cm

Weight : 710 g

ESB51158



Diencephalon Model

This 4-part model, 5X life-size, shows the human diencephalon: all the main parts of thalamus, epithalamus, metathalamus and hypothalamus are represented in great detail. The hypothalamic nuclei are displayed in different colours; the thalamus is removable and divisible into two parts to show the inner anatomy

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 25*18*24.5 cm

Weight : 1600 g

ESB51155





Brainstem And Nuclei Of The Hypothalamus

This 4-part model, enlarged to 2 times life size, provides a detailed representation of the human brainstem and hypothalamus. The brainstem is sectioned to reveal the hypothalamic nuclei, while the thalamus is removable and can be divided into two parts for inner examination. Additionally, the insertions of the cranial nerves are clearly recognizable on the surface of the brainstem.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 21.5*13*13 cm

Weight : 420 g

ESB51277



Thalamus 7 Parts

This 7-part model, enlarged to 5 times life size, showcases the various functional areas of the thalamus in distinct colors. This color differentiation ensures a clear distinction between the different nuclei of each structure, aiding in the study and understanding of thalamic anatomy and function.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 18*13*13 cm

Weight : 720 g

ESB51276



Thalamus 5 Parts

This model, enlarged to 5 times life size, is dissected into 5 parts. Each part delineates various functional areas with separate colors, allowing for a clear distinction between the different nuclei of each structure.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 18*13*13 cm

Weight : 720 g

ESB51275



Thalamus 2 Parts

This 2-part model, enlarged to 5 times life size, showcases the various functional areas of the thalamus in distinct colors. This color differentiation allows for a clear distinction between the different nuclei of each structure, aiding in the understanding of thalamic anatomy and function.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 18*13*13 cm

Weight : 720 g

ESB51274





Cranial Layers

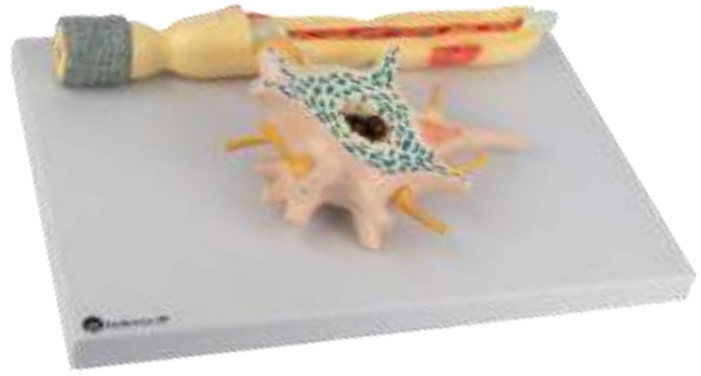
Enlarged several times, this model depicts the stratification of the human cranium, revealing intricate details of internal structures from the skin to the cerebral white matter.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 40*26*2.5 cm

Weight : 1750 g

ESB51278



Neuron Model, 2500 Times Enlarged

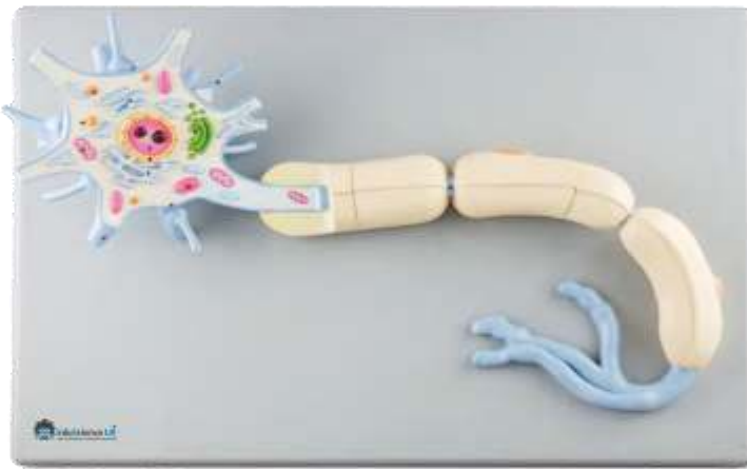
Magnified to 2,500 times life size, this typical myelinated neuron shows all the internal cellular structures. The neuron model displays the cell body, and the myelin sheath with nodes of Ranvier and Schwann cells can be revealed by removing a part of the dendrite.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 42*32*12 cm

Weight : 1500 g

ESB51157



Neuron, 2 Parts

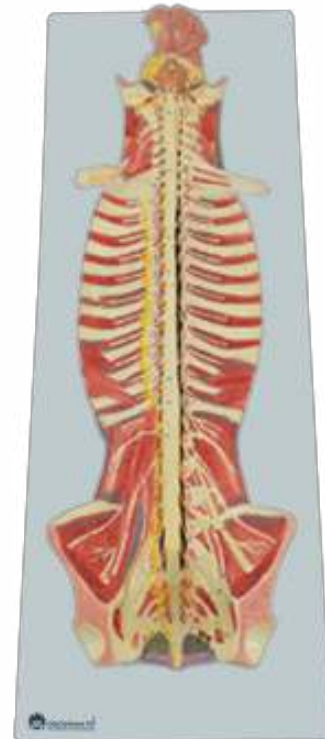
This item, magnified 2,500 times, provides a detailed display of the structure of a typical neuron. The sectioned soma reveals all internal cellular organs, including the nucleus, Golgi complex, smooth and rough endoplasmic reticulum. Additionally, the dendrite can be opened into two parts to reveal internal structures such as the Schwann cell and myelin sheath.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 53*38*6 cm

Weight : 1100 g

ESB51264



Spinal Cord In The Spinal Canal Model

This model displays the brain, cerebral nerves, spinal cord, and spinal nerves.

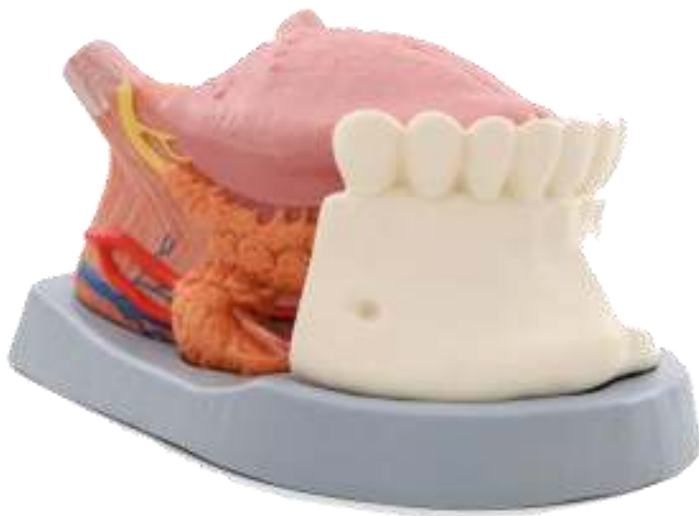
The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 190*32*10 cm

Weight : 5000 g

ESB51265





Half Tongue, 2.5 Times Life Size , 3 Parts

This model is a 2.5 times enlarged representation of the human tongue, consisting of three parts. The model is securely mounted on a base, providing stability for educational or display purposes.

ESB51196

Tongue And Tongue Tissue

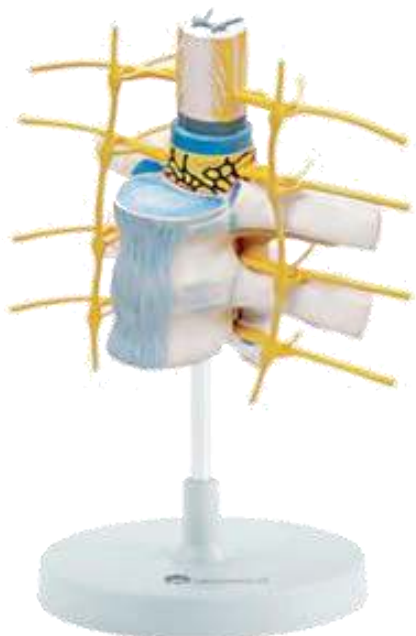
This 4-part model, enlarged to 2 times life size, provides a detailed representation of the human brainstem and hypothalamus. The brainstem is sectioned to reveal the hypothalamic nuclei, while the thalamus is removable and can be divided into two parts for inner examination. Additionally, the insertions of the cranial nerves are clearly recognizable on the surface of the brainstem.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 33*23*15 cm

Weight : 750 g

ESB51195



Thalamus 2 Parts

This 2-part model, enlarged to 5 times life size, showcases the various functional areas of the thalamus in distinct colors. This color differentiation allows for a clear distinction between the different nuclei of each structure, aiding in the understanding of thalamic anatomy and function.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 18*13*13 cm

Weight : 720 g

ESB51266



**Eye Model,6 Times Enlarged**

6Time life size. The model can be dissected on the horizontal plane to show internal details. Cornea, iris, lens, and vitreous body can be removed. Muscular attachments on the sclera and part of the choroid are also shown.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 18*16*26 cm,

Weight : 1400 g

ESB51161

**Eye Model,3 Times Enlarged**

3 time life size. The model can be dissected on the horizontal plane to show internal details. Cornea, iris, lens, and vitreous body can be removed. Muscular attachments on the sclera and part of the choroid are also shown.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Size : 12*13*13 cm

Net weight : 400 g

ESB51160

**Eye Model,6 Times Enlarged**

This is a 6-part model of the human eye, enlarged 6 times its natural size.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 18.5*18*16.5cm

Weight : 675 g

ESB51214

**Eye With Orbit,4 Parts**

This model, enlarged to 5 times life size, depicts the eyeball with optic nerves and muscles positioned naturally within the bony orbit. The removable parts include:

Rectus lateralis muscle

Levator palpebrae superioris muscle together with the lacrimal gland

Eyeball with extrinsic eye muscles

Base of the bony orbit

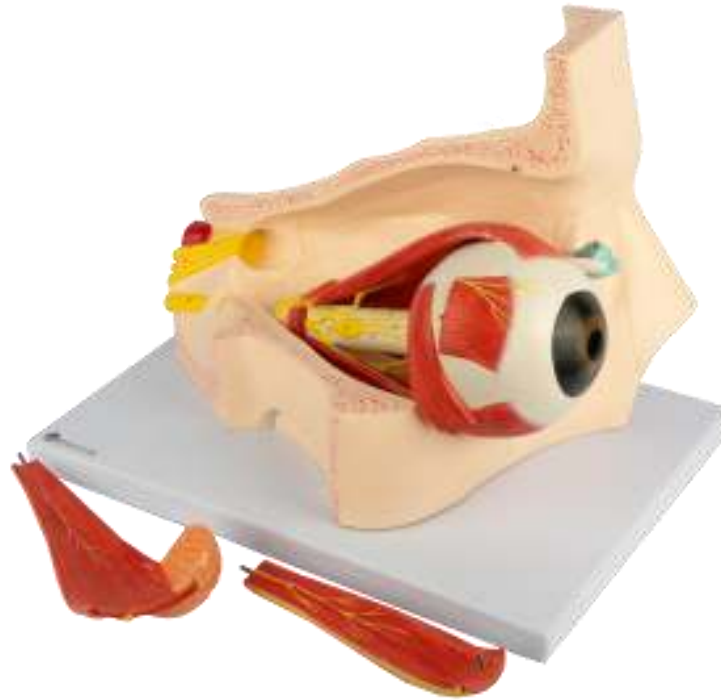
The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 10*26*31.5 cm

Weight : 2850 g

ESB51215





Eye With Orbit, 11 Parts

This 5X life-sized model depicts the eyeball with optic nerves and muscles positioned naturally within the bony orbit. The eyeball is dissected into two removable halves, allowing for full exposure of internal structures. The removable parts include:

Ornea, iris, lens, and vitreous body (4 parts) ; Three different muscles: rectus bulbi ; Levator palpebrae superioris muscle together with the lacrimal gland
 Eyeball with extraocular muscles (2 parts) Base of the bony orbit

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 40*26*31.5 cm

Weight : 1300 g

ESB51216



Eye With Orbit, 13 Parts

This 13-part model, enlarged approximately 2.5 times life-size, illustrates the anatomy of the human eye. The orbit can be opened into three parts to reveal internal structures, including: Eyelid with lacrimal gland and duct ; Muscles (4 parts) ; Eyeball dissected into two removable halves ; Cornea, iris, lens, and vitreous body (3 parts)

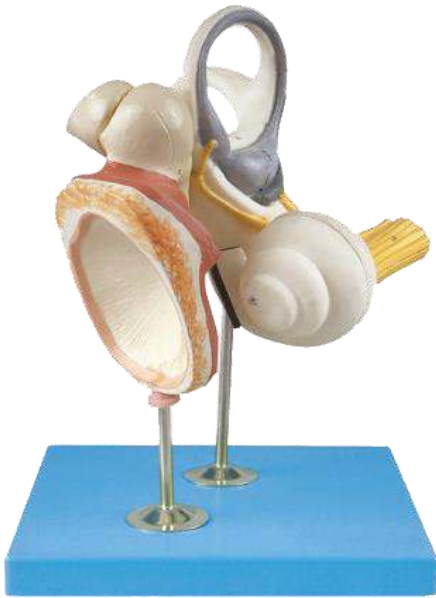
The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 21*20*24 cm

Weight : 2000 g

ESB51217





Enlarged Auditory Bone, Tympanic Membrane, Cochlea, 3 Parts

This model, comprising three parts, includes representations of the inner ear, auditory ossicles, and tympanic membrane. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51221



Labyrinth, 2 Parts

This labyrinth model, enlarged about 18 times, consists of 2 parts. The superior semicircular canal and vestibule are open, revealing the saccule and utricle.

Dimensions : 32*21.5*14.5 cm

Weight : 1000 g

ESB51223



Labyrinth Model

This labyrinth model features an open superior semicircular canal and vestibule, providing a view of the saccule and utricle. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Weight : g

ESB51222



Organum Spirale

The Organum Spirale model, enlarged to 350 times life size and composed of 5 parts, showcases a three-dimensional section of the cochlear duct, tectorial membrane, basilar membrane, and vestibular membrane. It accurately represents the organ of Corti, including the cellular acoustic receptors responsible for transforming sound vibrations into electric signals.

Dimensions : 10*26*31.5 cm

Weight : 2850 g

ESB51224





Cochlea And Corgi's Organ

This model is designed for studying the mechanism of sound propagation. It displays magnified sections of the cochlea and the organ of Corti, which includes detailed representations of hair cells, the tectorial membrane, and the basement membrane. The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 40*26*2.5 cm
Weight : 1250 g

ESB51225



Ear Model,3 Parts, 3 Times Enlarged

3X life size. The model shows details of the external, middle and inner ear. The eardrum with malleus, incus and stapes are removable. The other removable part is composed of the cochlea and labyrinth with vestibular and cochlear nerves. The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 23*23*34 cm
Weight : 1300 g

ESB51162



Ear Ossicles

This model depicts the malleus, incus, and stapes, which are the ear ossicles, enlarged approximately 20 times their natural size.

Dimensions : 21*14.5*31 cm
Weight : 480 g

ESB51226



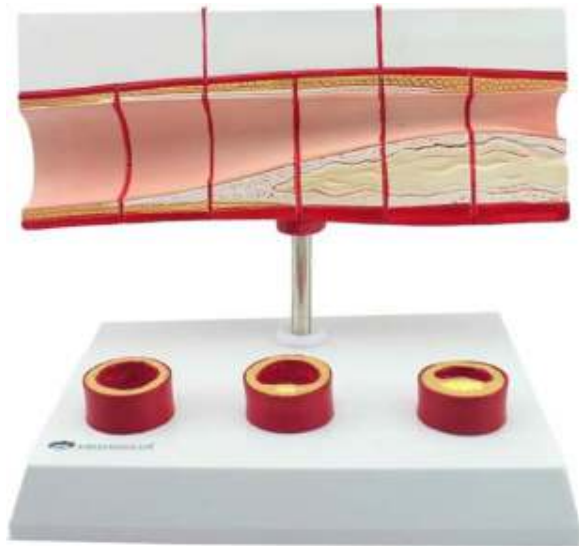
Ear Model,5 Parts, 3 Times Enlarged

3X life size. Te model shows the external, middle and inner ear. The eardrum with malleus, incus and stapes are removable. The other removable parts are composed of: cochlea and labyrinth with vestibular and cochlear nerves, 2 bone sections that define the middle and inner ear. The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 23*23*34 cm
Weight : 1300 g

ESB51163





Arteriosclerosis Model with Thrombus

This model demonstrates the process of vascular disease. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51230



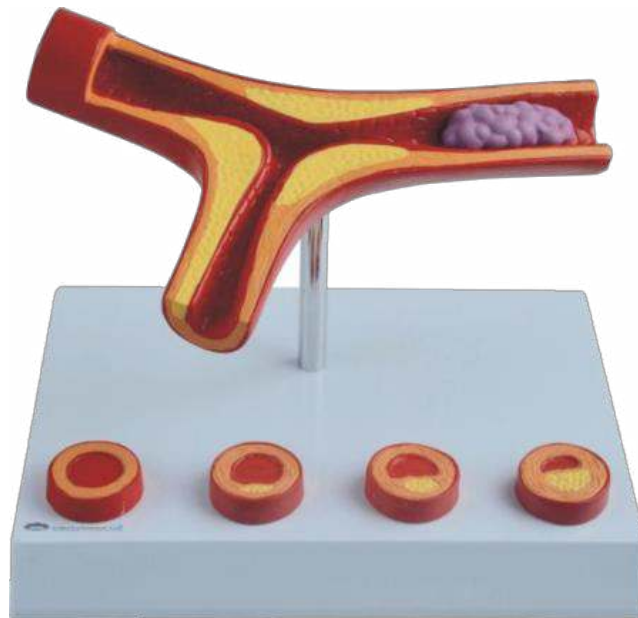
Indirect Inguinal Hernia

This half-life size model depicts the medial and sagittal section of the male human pelvis with an indirect inguinal hernia. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 11*9*12.5cm

Weight : 220 g

ESB51236



Arteriosclerosis Model With Thrombus

Atherosclerosis is the most common acquired disease of arteries in developed countries. This pathology. Characterized by thickening of the arterial walls with subsequent loss of elasticity, is associated with the build up of plaque (mainly cholesterol) in the arterial lumen. This model, approximately 10X life size, shows the atheromatous plaque in various pathological stages along with local intra vascular clotting (thrombosis) due to the arterial narrowing.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 6.5*12.5*16.5 cm

Weight : 300 g

ESB51164



Heart With Vessel 4 Stages

This is a life-size model of the normal human heart. The anterior heart wall can be removed for internal examination. Additionally, there are four staged vessels on the base.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 18*14*23 cm

Weight : 450 g

ESB51240





Pathological Model Of The Lung

This 1-part, 2/3 life size model illustrates some of pathologies of the pulmonary stem caused by microbial infections (lung abscess, pneumonia and tuberculosis). The surface of the model is black to show the visible effect of smoking. A cancerous tumour is also shown with excellent detail. All pathologies are showed separately in the model with a realistic representation of their morphology.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 11*11*20 cm,

Weight : 290 g

ESB51179



Pathological Model Of Renal Calculus

This model represents a pathological condition known as renal calculus, commonly referred to as a kidney stone.

The model is securely mounted on a base, providing stability for educational or display purposes.

ESB51237



Pancreas , Gallbladder,Spleen Model

Full size model shows pancreatic cancer, the gallbladder with stones, a ruptured spleen and duodenal ulcer.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 12*19*24 cm

Weight : 500 g

ESB51108



Four Staged Vessels Model

Four-stage cross-section of an artery demonstrating progressive atherosclerosis in which the narrowing of the artery is due to a build up of fatty tissue (cholesterol) and plaque shown in. Shown in four stages: normal artery, fatty streak, fibrous plaque, and blockage. The stages cause a decrease in blood flow, which can lead to a blood clot or thrombus. All stages rotate on hinge pin.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 18*14*5 cm

Weight : 400 g

ESB51165





Diseased Nose And Throat (Quinsy)

This pathological model depicts the human nose and throat, focusing on the condition known as quinsy. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51241



Pathological Model Of Renal Calculus

This is a pathological model depicting renal calculus, commonly known as a kidney stone. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 32*21.5*14.5 cm

Weight : 1000 g

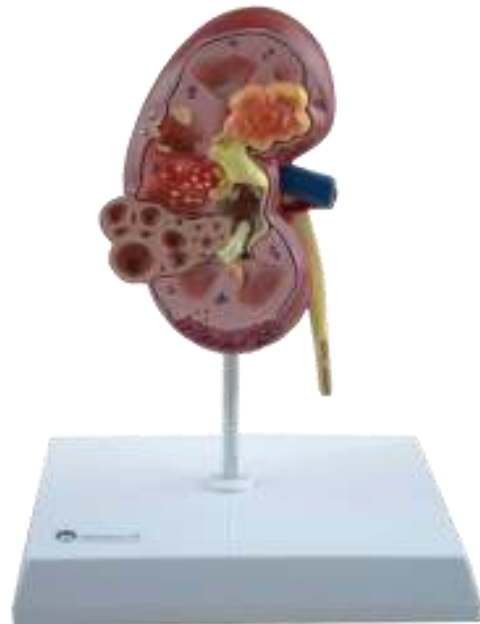
ESB51238



Diseased Nose And Throat (Rhinitis)

This labyrinth model features an open superior semicircular canal and vestibule, providing a view of the saccule and utricle. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51242



Diseased Kidney Model

This oversized two-sided kidney model has a normal anatomy cutaway on one side and a diseased anatomy cutaway on the other side depicting: infection, scarring, atrophy, urinary (kidney) stones, tumor, polycystic disease, hypertension effects. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions :16.5*13*21 cm

Weight : 370 g

ESB51171





Diseased Breast

This is a pathological model representing the human breast.
 Dimensions : 20*12*14 cm,
 Weight : 700 g

ESB51244



Diseased Uterus

This life-size model, sectioned along the frontal plane and divided into two pieces, displays the most significant pathologies of the female reproductive system. It features four types of fibroid tumors (intramural, subserous, submucous, and broad ligament myoma) in their appropriate locations. Additionally, it shows endometrial carcinoma and carcinoma of the cervix. Other pathologies depicted include uterine polyps, salpingitis, oophorocystosis, endometriosis, and candidal vaginitis. The model is securely mounted on a base and stand, providing stability for educational or display purposes.

Dimensions : 25*12*14 cm
 Weight: 700 g

ESB51247



Diseased Breast Model

Full size cross-section model depicts common pathologies such as adenocarcinoma, cysts, fibroadenoma, and infiltrating scirrhous carcinoma.

Model also shows breast structures such as suspensory ligaments, fat tissue, lymph nodes, muscles, and ribs.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 21*15*10 cm
 Weight : 500 g

ESB51172



Pathological Model Of The Male Urogenital System

This life-size 2-part model depicts the internal structure of the male urogenital system, showcasing specific pathologies. These include gallstones, diverticulum, cancer of the urinary bladder, and sexually transmitted diseases such as condyloma acuminatum and gonorrhoea. Additionally, the model features the rectum and anus, exhibiting mixed hemorrhoids and carcinomas.

model is securely mounted on a base and stand , providing stability for educational or display purposes.

Dimensions : 15*18*8 cm
 Weight : 800 g

ESB51248



Diseased Uterus / Uterus-Ovary Model

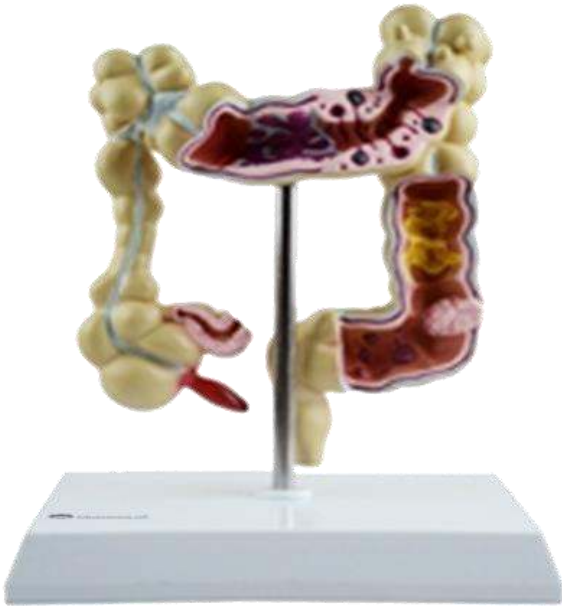
Full size cross-section model illustrates multiple pathologies, some of which include: adhesions, carcinoma in four common areas, cysts, endometriosis, fibroids - PEduculated fibroid tumour, polyps and salpingitis,

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 24*12*20 cm
 Weight : 600 g

ESB51173





Diseased Large Intestines Model

Cut-away view model with the following common pathologies: adhesions, appendicitis, bacterial infection, cancer, Crohn's disease, diverticulitis, diverticulosis, polyps, spastic colon, and ulcerative colitis.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 19*15*23 cm

Weight : 700 g

ESB51174



Pathological Model Of Colon And Rectum

This half-life size model depicts various pathologies of the colon and rectum. In the descending colon region, adhesion and cancer are accurately represented, while other pathological conditions include inflamed appendix, intussusception, Crohn's disease, ulcerative colitis, and adenocarcinoma. The rectum exhibits an ulcerative form of rectal cancer.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 18*15.5*29 cm

Weight : 480 g

ESB51249



Diseased Stomach, Model

This one-piece life-size model illustrates the most common pathologies of the stomach, including ulcerated gastric cancer, pyloric stenosis, gastric ulcer, chronic atrophic gastritis, hiatal hernia, bleeding gastritis, and carcinoma. All pathologies are represented in high detail for comprehensive study and understanding.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51231



Pathological Model Of The Rectum

This 1-piece model, approximately 5X life size, shows various pathologies of the rectum and anus. Common anorectal conditions, including haemorrhoids, anal fistula and fissures and 2 types of abscesses are shown in great detail. The model also illustrates ulcerative colitis, polyps and rectal carcinoma.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 11*12*24 cm

Weight : 200 g

ESB51185



Pathological Model Of Esophagus

This model, enlarged to 5 times life size, displays the esophagus in longitudinal section, revealing common pathologies. These pathologies include ulcers (two types), erosions caused by acid reflux, diverticula, varicosities, and esophageal cancer.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 11*11*25 cm

Weight : 160 g

ESB51250





Diseased Brain

This is a pathological model representing the human brain. The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 21*15*10 cm

Weight : 500 g

ESB51251



Pathological Model Of The Liver

This 1/3 life size model is divided into 2 parts; the following diseases are represented with great detail and realism: - Viral hepatitis - Liver abscess

- Fatty liver - Cirrhosis - Liver cancer - Gallstones All the pathologies are showed separately in the model with a realistic representation of their morphology.

The model is securely mounted on a base and stand, providing stability for educational or display purposes.

Dimensions : 11*11*16 cm

Weight : 240 g

ESB51181



Pathological Model Of Bronchial

This 10X life size, 1-part model, shows 2 pathologies of the bronchi (bronchitis and bronchitics), referring to an inflammation and an abnormal chronic dilatation of one or more of the bronchi, respectively.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 11*11*20.5 cm

Weight : 240 g

ESB51180



Pathological Model Of The Pancreas ,Duodenum And Gallbladder

This life size model is a representation of the most important diseases of the gallbladder, pancreas and duodenum.

The gallbladder, partially opened, shows the stones located in various locations, cholecystitis, polyposis and carcinoma. Diseases of the pancreas include pancreatitis in the pancreas tail and cancer in the pancreas head. Also included is a section of the duodenum with a duodenal ulcer.

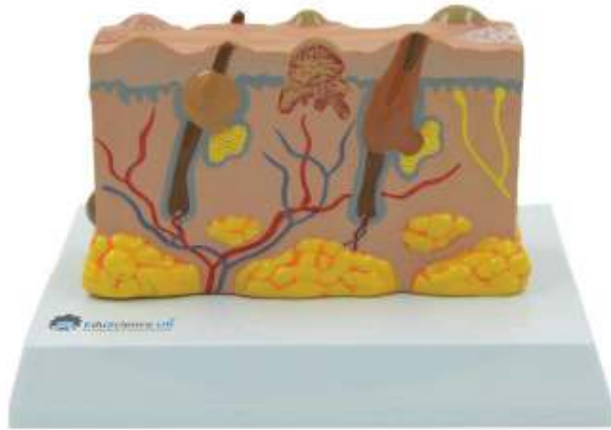
The model is securely mounted on a base and stand, providing stability for educational or display purposes.

Dimensions : 17*11*11 cm

Weight : 280 g

ESB51182





Pathological Model Of Burned Skin

This model, approx. 30 times enlarged, compares normal skin with first, second and third degree burnt skin, showing also the subsequent pathological changes. The first level of injury shows scarf skin hurt and erythema; the second one includes hypodermic skin hurt and vesicles, the third one reveals a subcutaneous damage.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 18*14*7.5 cm

Weight : 360 g

ESB51183



Normal and Diseased Prostate Gland

This is an excellent educational tool for studying common prostate pathologies. The model consists of three prostate sections, including the rectum and urinary bladder. The first model shows the internal and external structures of a normal prostate. The second one illustrates benign prostatic hyperplasia, characterized by variable fibromuscular and epithelial predominance. The third model illustrates prostatic adenocarcinoma.

The model is securely mounted on a base with a stand , providing stability for educational or display purposes.

Dimensions : 20*15*17 cm

Weight : 580 g

ESB51175



Pathological Model Of The Skin

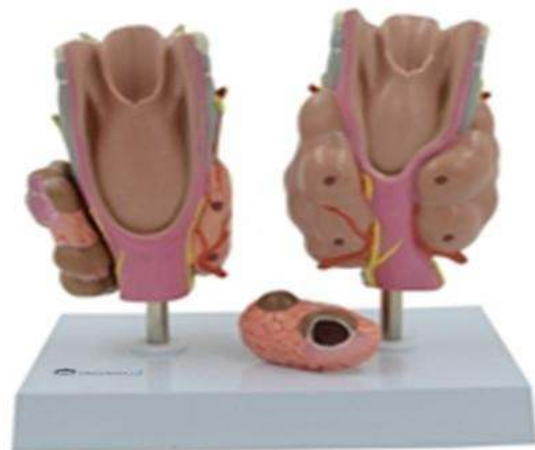
This model approximately 30X life size, features, on the one side, detailed and realistic depictions of closed and open acne lesions, 2 primary lesions (papule and macule), 1 deeper lesion (nodule) and an abrasion. On the other side the model shows cyst, fissure, pustule, ulcer, scale and blister. All the pathologies are showed separately in the model with a realistic representation of their morphology.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 18*14*11.5 cm

Weight : 340 g

ESB51184



Thyroid Diseases Model - 4 Parts

This model is composed by 2 thyroid models divided four ways. The first thyroid illustrates the Graves autoimmune disease, the most common cause of hyperthyroidism. The other model shows thyroid adenoma and carcinoma as compared to the normal right side of the thyroid.

The model is securely mounted on a base with a stand , providing stability for educational or display purposes.

Dimensions : 20*18*12 cm

Weight : 1000 g

ESB51176





Diabetes Model

This model shows the effects of diabetes on eye, heart, kidney and foot. The organs can be rotated for a detailed examination. The model is securely mounted on a base and stand, providing stability for educational or display purposes.

Dimensions : 18*14*35 cm

ESB51186



Hypertension

This model demonstrates the effects of hypertension on various organs including the brain, eye, heart, kidney, and artery. The organs are designed to be rotatable for detailed examination. It is mounted on a base with a stand.

The model is securely mounted on a base and stand, providing stability for educational or display purposes.

Dimensions : 33*24*10 cm

Weight: 1000 g

ESB51256



Diabetes

These miniature models depict various organs and structures including the brain, eye, heart, kidney, artery, pancreas, neuron, and foot. They are used to illustrate different pathological conditions associated with diabetes, including stroke, ocular pathology, hypertensive heart disease, hardening of the kidney, hardening of the arteries, insulin resistance, neuropathy, and foot ulcerations.

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

ESB51255



Nephron Diseases

This 300X life-size model comprises two renal corpuscle sections: the first illustrates the anatomy of a healthy glomerulus, while the second highlights the significant glomerular pathologies associated with hypertension. These pathologies include afferent arteriole arteriosclerosis, changes in vascular caliber, endothelial cell alterations, and the consequent increase of plasma proteins in the urine. All details are represented in high detail for comprehensive study.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 20.5*15*6.5 cm,

Weight : 110g

ESB51257





Ear Diseased 1.5 Life Size

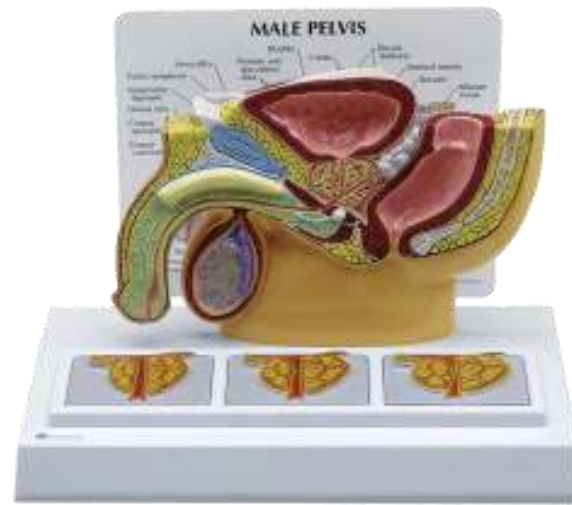
This 1.5X life-size model illustrates the most common pathologies affecting the outer, middle, and inner ear. It features representations of mucus and secretory otitis media at the level of the Eustachian tube, along with detailed depictions of cholesteatoma and eczema. Additionally, the model includes additional reliefs showcasing a comparison of three different eardrums: a healthy eardrum, one exhibiting a perforation, and another displaying bullous meningitis.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 14*10.5*17 cm,

Weight : 188 g

ESB51258



Male Pelvis With 3D Prostate Frame

This model is a reduced-size representation, featuring a mid-sagittal section of the male pelvis. The base of the model includes three 3-dimensional cross-sections of the prostate gland. These sections illustrate different stages (normal, moderate, advanced) of BPH (Benign Prostatic Hyperplasia/Enlarged Prostate).

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 22.5*16*14 cm

Weight : 660 g

ESB51260



Osteoporosis Model Life-size

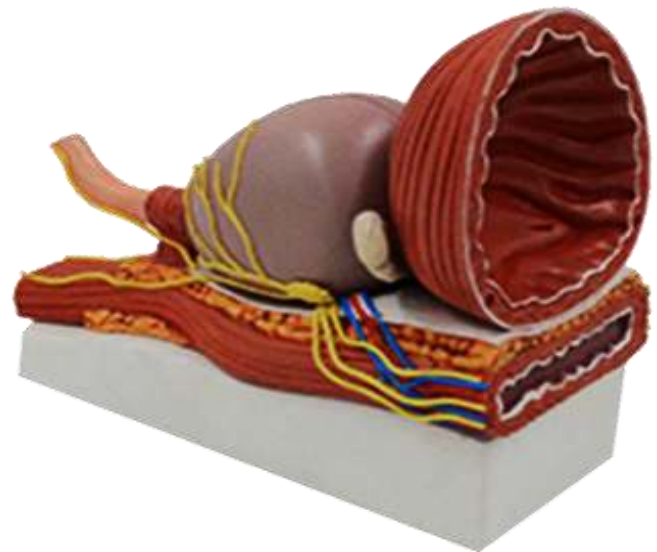
This life-size model features three vertebrae: one healthy vertebra, one vertebra with pathological changes at the first stage, and another vertebra with pathological changes at an advanced stage.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 12*12*11 cm

Weight : 1000 g

ESB51259



Diseased Prostate Glands

This model is composed by 2 thyroid models divided four ways. The first thyroid illustrates the Graves autoimmune disease, the most common cause of hyperthyroidism. The other model shows thyroid adenoma and carcinoma as compared to the normal right side of the thyroid.

The model is securely mounted on a base, providing stability for educational or display purposes.

ESB51261





3 Lumbar Vertebra With Hernia

This life-size model displays three lumbar vertebrae accompanied by spinal nerves, dura mater, and two intervertebral discs affected by lateral and medial herniation. It provides a detailed view of the two pathological intervertebral discs, showcasing the correct positioning of both types of hernias. Mounted on a base with a stand,

Dimensions : 20*17*21 cm

Weight : 600 g

ESB51363



2 Lumbar Vertebra With Hernia

This life size model shows 2 lumbar vertebrae with spinal nerves, dura mater and an inter-vertebral disc affected by medial hernia. On the base you can see in high detail 2 pathological inter-vertebral discs with the correct position of medial and lateral hernia.

Dimensions : 12*12*14 cm

Weight : 300 g

ESB51066



4-Stage Vertebrae Model

Set of four, full size two-piece vertebrae models - one each of the following conditions: normal, (bulging) herniated disc, bone and disc degeneration, and advanced osteoporosis with marked bone compression and bone spurs.

Dimensions : 18*15*14 cm,

Weight : 800 g

ESB51167



4-Stage Diseased Vertebra Model

4-Stage Vertebrae Model Set of four, full size two-piece vertebrae models one each of the following conditions: normal, herniated disc, bone and disc degeneration, and advanced osteoporosis with marked bone compression and bone spurs.

Dimensions : 28*16*10 cm,

Weight : 1000 g

ESB51166

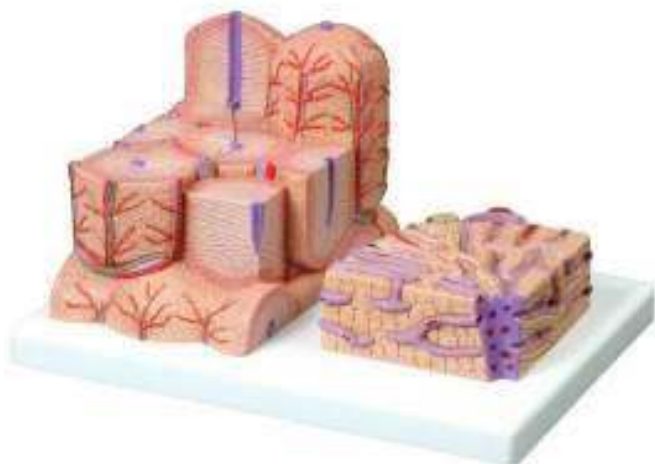




Micro Anatomy Of Artery & Veins

The model shows a medium-sized muscular artery with two adjacent veins from the ante-bronchial area with adjoining fat tissue and muscle enlarged 14 times. The model illustrates the reciprocal anatomical relationship of artery and vein and the basic functional techniques of the venous valves (“valve function” and “muscle pump”). The left vein and the middle artery are fenestrated in the upper anterior segment, revealing the various layers of the wall structure in a cross and longitudinal section and in top view. The right vein is opened throughout in the anterior segment, revealing the orifice of a feeder vein and two venous valves, i.e. “flap valves” formed by a duplication of the tunica intima. On the rear of the model, the relief of two veins is shown to illustrate the functional aspect of the venous valves. This model mounted on a base.

ESB51191



Micro Anatomy Of Liver

This two part model shows a highly magnified diagrammatic view of a section of the liver. It illustrates the structure of the functional and structural components of the liver in two different enlargements. The left part of the model shows a section of the liver that comprises several liver lobules. The right part of the model is a highly magnified view of the sectional liver lobule on the left.

ESB51192



Micro Anatomy Of Eye

The model illustrates the microscopic structure of the retina with choroid and sclera. The left block-like, layered side of the model side shows the complete structure of the retina including the supplying vascular layer and parts of the sclera from a light microscopic view. The right part of the model is a sectional enlargement. It shows the microscopic structure of the photoreceptors and the cells of the pigmented layer.

ESB51190



Taste Discrimination

Can you taste it? Students explore their ability to taste four sensations: sweet, sour, salt, and bitter in a blind taste test. Students examine PTC inheritance, as well as their tendency to eat certain types of foods. An ideal biology lab for learning about genetic inheritance or for studying human anatomy. This kit features two lab experiments which can be completed in one hour or separated into two thirty minute activities. Required, but not included: dedicated lab-ware for measuring taste test substances, which may be consumed. Designed for 24 students working in groups of two. Grades 9-12

ESB51187

Taste Discrimination Refill

ESB51188



Cell Mitosis Model 8 Stages

This item is composed of 8 different pieces showing the main stages of the cell mitosis (prophase, metaphase, anaphase and telophase) at an enlargement of approx. 10000 times. During all stages you can observe the different characteristics of the cellular structures such as chromosomes, centrioles, spindle and nucleus. Every single piece is numbered to indicate the correct sequence of steps. The model is securely mounted on a base , providing stability for educational or display purposes.

ESB51391



Mitosis, Mounted Model-9 Stages

The eight separate stages of ESB51392 numbered , with key. 9 parts.

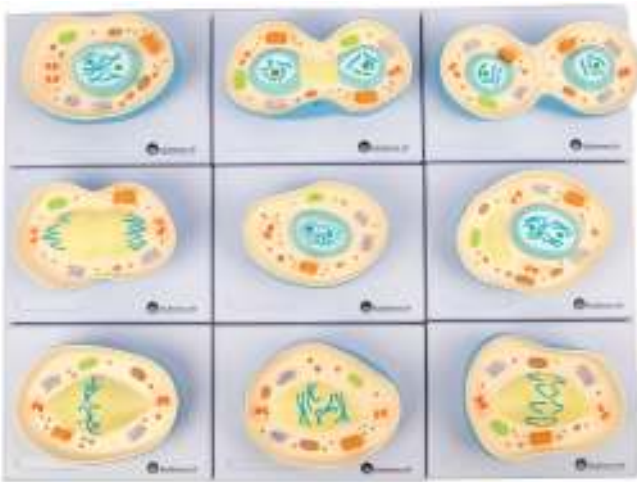
ESB51393



Mitosis (Mitotic Cell Division)

A robust plastic model showing eight stages of mitosis. The model is carefully coloured for maximum clarity and teaching value. Each stage is numbered and a key is attached. Base size 33*39cm.

ESB51392



Cell Mitosis Model

This item is composed of 9 different pieces showing the main stages of the mammal cell mitosis (prophase, metaphase, anaphase and telophase) at an enlargement of approx. 10000 times. During all stages you can observe the different characteristics of the cellular structures such as chromosomes, centrioles, spindle and nucleus. Every single piece is numbered to indicate the correct sequence of steps.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 33.5*23.5*29 (Each Piece)

Weight : 2050g

ESB51394



Meiosis (Reduction Division) Model

This unique and high-quality model illustrates the 10 stages of the process of Meiosis. Each stage is meticulously hand-painted and mounted on a perspex base for clear viewing and educational purposes

ESB51389



Meiosis,Unmounted Model

Showing the same ESB51389 ten distinct stages, each meticulously numbered and accompanied by a corresponding key for easy identification. This model comprises a total of 13 parts, providing a comprehensive understanding of the depicted process.

ESB51390

Cell Meiosis Model

This item is composed of 12 different pieces showing the main stages of the mammal cell meiosis (prophase I, metaphase I, anaphase I, telophase I, cytokinesis I, prophase II, metaphase II, anaphase II, telophase II and cytokinesis II) at an enlargement of approx. 10000 times. During all stages you can see the different characteristics of the cellular structures such as chromosomes, centrioles, spindle and nucleus. Every single piece is numbered to indicate the correct sequence of steps.

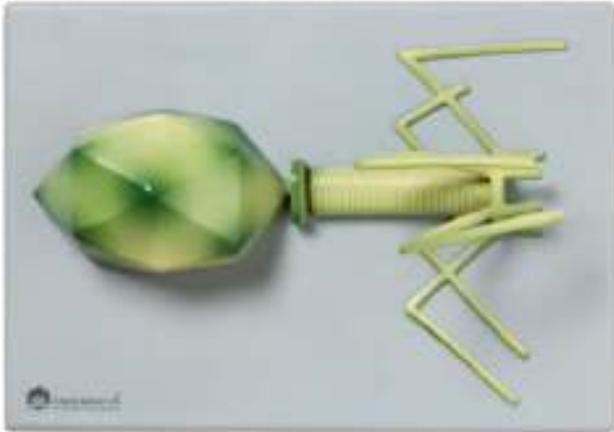
The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 41*32*21cm (Each Piece)

Weight : 2400g

ESB51388





Bacteriophage T4 Model

The structure of bacteriophage T4, a virus that attaches to the surface of the much larger bacterium *Escherichia coli*, is shown millions of times enlarged life size.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 28*28*28 cm

Weight : 2000 g

ESB51478



Aids Virus Model

An enormously magnified model of the HIV virus, showing the outer lipid membrane with protein structures and the internal RNA. The internal structure is removable. **Dimensions :** 18*13*13 cm

ESB51469



Tobacco Mosaic Virus Model

This model, enlarged millions of times, shows the capsid structure of the tobacco mosaic virus, including the viral genome (RNA).

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 20*15*9 cm

Weight : 80 g

ESB51476



HIV Virus Model

This model, enlarged millions of times, shows the structure of the HIV retrovirus, including the outer lipid membrane with protein structures and the internal nucleus containing the viral genome (RNA).

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 43*30*18 cm

Weight : 800 g

ESB51470



Adenovirus Model

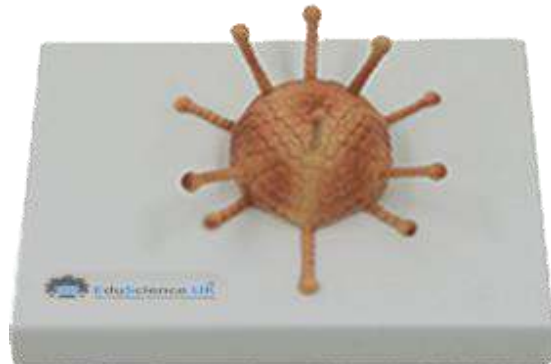
This model shows the capsid structure of the adenovirus, enlarged millions of times. .

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 20*15*9 cm

Weight : 90 g

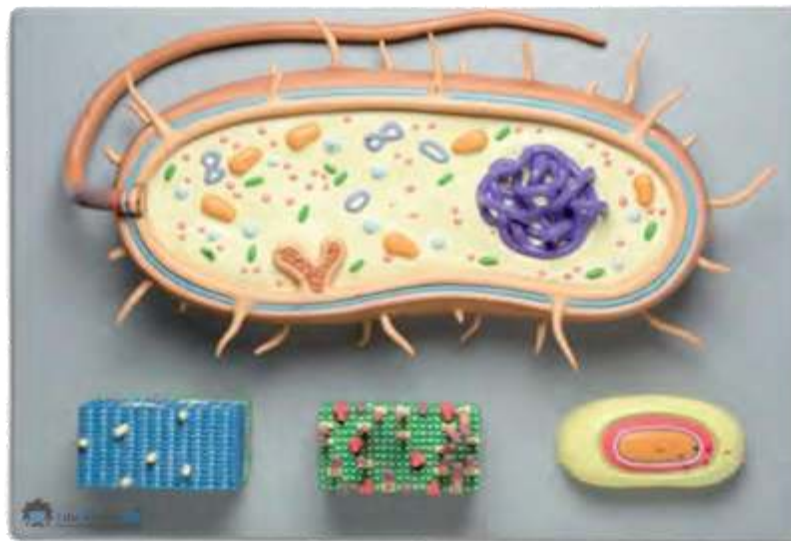
ESB51477

**Bacteriophage , Adenovirus Phage Virus HIV Virus Model**

This model features a design magnified up to 1 million times, providing intricate details of the typical anatomical structure and image characteristics of Bacteriophage, adenovirus, phage virus, and HIV. It serves as a rare and invaluable resource for microbiology learning and teaching. Crafted from durable PVC through meticulous handmade techniques, this model ensures longevity and robustness, making it highly suitable for in-depth research in human virology.

Weight : 3000 g

ESB5147ST

**Bacterium Model**

A complete tool for understanding the structure of the prokaryotic cell. This item, greatly enlarged, is composed of four models on the same base:

A cross-section of a general prokaryotic cell, illustrating typical structures as pili, flagella, inclusion body, plasmids and chromosome

Two schematic representations of the cell wall of Gram-negative and Gram-positive bacteria

A model of spore, partially cut away to show all its different layers, from the exosporium to the cytoplasmic membrane.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 55*38*15 cm

Weight : 3500 g

ESB51475





Dietary Chemical Assessment

The purpose of this kit is to provide students with the necessary tools for evaluating their own dietary requirements in a very scientific way. Students learn about sources of energy, proteins, vitamins, and minerals; and the functions of these nutrients within their bodies. They record their food intake over a three-day period. By using the food charts provided and internet resources, they determine their average daily caloric intake. Then they determine their basal metabolic rates and average energy expenditures over the three-day period. They also determine the number of calories they should obtain from carbohydrate, lipid, and protein sources to satisfy their energy expenditures based on the percentage of the total energy requirement each nutrient should supply. Finally, students compare their intake of vitamins and minerals to the recommended dietary allowances. From this information, students may identify and correct any dietary imbalances that occur and restructure their food intake. Grades 6-12

ESB51468



Food Calorimeter

The food calorimeter allows students to determine the amount of energy released through the burning of food. This easy to use method involves the measuring of the change in temperature of a sample of water from the combustion of a small amount of food. The included experiment introduces concepts in thermodynamics and leads to an understanding of energy and its relation to food consumption.

Supplied with instruction manual Kit includes: -125 ml Erlenmeyer flask - Cylindrical metal stand -Metal suspension-late - Cork and nail food sample holder - Rubber stopper

ESB51472

Skin Fold Calliper

Body fat tester designed to measure the thickness of a fold of skin with its underlying layer of fat. Convenient trigger operation with pistol- grip handle. Direct reading scale measures 0 to 85 mm and is accurate to 0.5 mm. Durable, accurate, and easily used by students. Complete instructions included.



ESB51467



Respirometer, Simple

The Simple Respirometer BFS 74 is an apparatus which is used to determine how much O₂ which consumed by insect or plants. Consisting of two main parts, viz.: a glass capillary pipe and a glass bottle. The capillary pipe has scale printed clearly, not easy fade. One end of the pipe is bigger and finely grinded, used as the connector to the bottle. The glass bottle is sized 40 ml, made of borosilicate glass which is used as the specimen container. The bottle neck is also finely grinded, so it makes strong connection and free of leakage when it is attached to the capillary pipe. The main part is mounted using clamps made of steel spring on a plastic base sized 400 x 50 cm.

ESB51433



Respirometer Simple

The apparatus consists of two stoppered boiling tube connected by three-way taps to either limb of graduated manometer. Complete with wire baskets for supporting organisms. Comprising rates of absorption or evolution of gases by small organisms, during respiration. The apparatus consists of two stoppered boiling tube connected by three-way taps to either limb of graduated manometer. One tube holds the organisms and has syringe for altering the level of liquid in the manometer during setting up. The other tube acts as a control thermo barometer. CO₂ given off by the respiring organism is absorbed by potassium hydroxide in the experimental chamber resulting in a change in the level of liquid in the manometer tube. Complete with wire baskets for supporting organisms.

ESB51434



Grip Dynamometer

Hand Dynamometer Grip Strength Meter!! Handy and reliable!!

Handy dynamometer is ideal for routine screening of hand grip strength at home or in school.

Dynamometer measures isometric grip force from 0 - 130 Kg **Size** : Approx. 10.5cm x 14cm x 2cm / 4.13" x 5.51" x 0.79" Unit : Kg

Package includes : 1 x Hand Dynamometer Grip Strength Meter

ESB51471



Food Calorimeter II

Open at both ends (205 x 100) mm (height x diameter). A circular metallic disc of diameter 100 mm with a boss head for mounting on a 13 mm retort rod used as the floor of the combustion chamber. The whole assembly is fitted on a (200 x 130) mm rectangular base with a rod of 13 mm diameter.

ESB51473



Spirometer

The Spirometer can be used for investigating tidal volumes, respiratory rate, pulmonary ventilation, reserve volumes and vital capacity. Oxygen consumption can also be measured which is useful in metabolic studies. A simple lever control enables the subject to be connected either to atmosphere or to the float for recording. A container for soda-lime crystals is fitted which can be used to absorb carbon dioxide. The spirometer is designed to offer minimum resistance to air flow. This means greater comfort for the subject and more realistic results. The tank is one piece stainless steel pressing housed in a durable painted outer case. The float is constructed from lightweight plastic. The float is calibrated 0 to 7 x 0.5 litres and has a metal counterpoise. The pen arm corresponds to approximately 0.5 litres. Supplied with a mouth piece that fits into the corrugated breathing hoses which snugly connects into Spirometer Also included a nose clip and pen arm for fitting data logger sensors.

Notes : 1. Soda lime crystals are not supplied. Dimensions External : 720w x 320d x 230h mm Packed : 800 x 430x 330mm.



ESB51430

**Spirometer Digital Hand Held**

Digital Spirometer duplicates the performance of professional instruments by quickly and accurately measuring lung volume. Digital spirometer includes 50 disposable mouth pieces and is a nice addition to physiology, anatomy and health classes. Ideal to use with the included AC adapter or with two AA batteries for the field. The large digital display gives instant volume readouts, without having to see anymore lengthy calculations.

ESB51431

Respiration Apparatus

For inhaled and exhaled air test. Comprises two boiling tube each with stopper and two lengths, one short and one long of 5 mm glass tubing, connected by PVC tubing and plastic T.

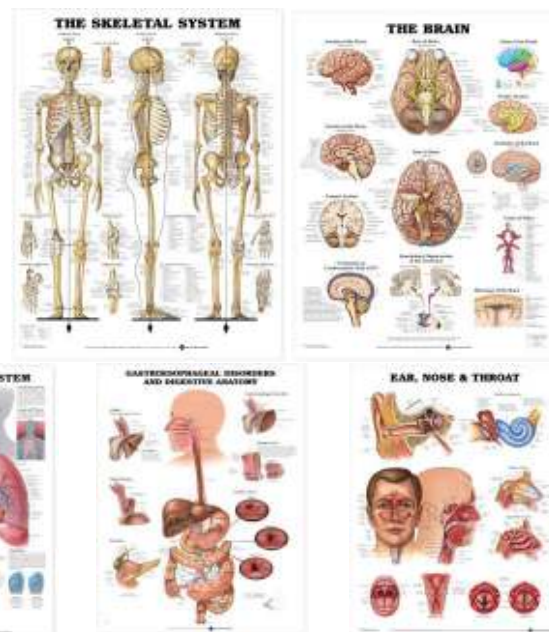
ESB51432

**Charts****Human Anatomy Chart Set**

Set of 11 chart covering different topic of human anatomy includes: Skeleton * Circulatory System * Heart * Nervous System * Section of Brain * Muscles * Digestive System * Respiratory System * The Ear * The Eye * Human Kidneys each Laminated charts with hanger , size 50x70cm

ESB51523

- ESB51524 **Chart the human skeletal system**
- ESB51525 **Chart the human musculature system**
- ESB51526 **Chart the human urinary system**
- ESB51527 **Chart the human nervous system**
- ESB51528 **Chart the human respiratory system**
- ESB51529 **Chart the human circulation system**
- ESB51530 **Chart the human digestive system**
- ESB51531 **Chart the human skin**
- ESB51532 **Chart the human ear**
- ESB51533 **Chart the human eye**
- ESB51534 **Chart the human brain**
- ESB51535 **Chart the human heart**
- ESB51536 **Chart the human teeth**
- ESB51537 **Chart the human liver**
- ESB51538 **Chart the human stomach**

**Human Anatomy Chart Set**

Set of 11 chart covering different topic of human anatomy includes: Skeleton * Circulatory System * Heart * Nervous System * Section of Brain * Muscles * Digestive System * Respiratory System * The Ear * The Eye * Human Kidneys each Size 50x70cm

ESB51523





Photosynthesis I: The Hill Reaction

Using this kit, students carry out a partial process of photosynthesis known as the Hill Reaction, which is the proteolysis of water in isolated chloroplasts. The splitting of water with the evolution of oxygen and the release of hydrogen is measurable in the course of the reaction by the bleaching of the hydrogen acceptor using a spectrophotometer or visual examination. The Hill Reaction is run in the light and in the dark to demonstrate the light dependence of the reaction. Required, but not included: centrifuge, blender, spectrophotometer (optional), a light source, glassware, and fresh spinach or lettuce leaves. Designed for 24 students working in six groups of four.

Grades 9-14

ESB51642



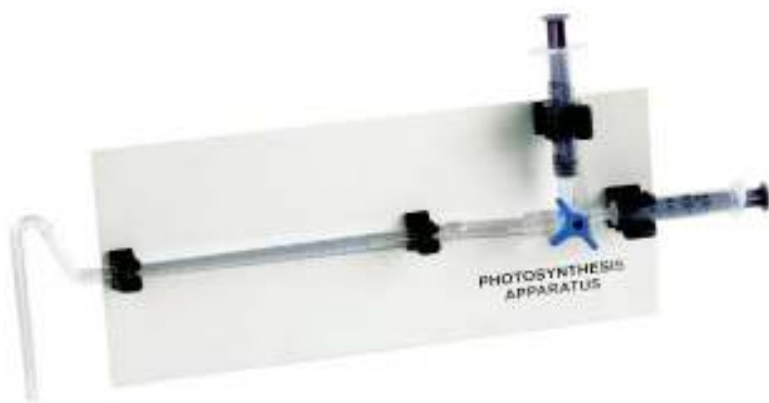
Photosynthesis II: The Synthesis Of Starch

Photosynthesis II examines the phosphorylation of glucose to produce starch in plant cells.

Students collect phosphorylase in potato extract and use it to catalyse the synthesis of starch. They learn that starch synthesis requires primer starch to which glucose residues can be added and that inorganic phosphate inhibits starch synthesis. Required, but not included: blender, fresh potatoes. Designed for 24 students working in six groups of four.

Grades 9-14

ESB51643



Photosynthesis Apparatus

For the measurement and collection of gas evolved by aquatic plants during photosynthesis. The gas evolved can be measured by the calibrated capillary tube and drawn off for analysis by the plastic syringes. Mounted on a plastic panel 190 x 150 mm approx.

ESB51644



Potometer I

deal for laboratory and field use. Allows the students to measure transpiration. The apparatus has only one glass component and is mounted on a strong backing plastic plate. It consists of Capillary tube with millimetre scale connected via three-way tap to syringe.

ESB51646





Potometer II

Use for measuring speed of water absorbed by plant.
 Overall **Size** : 350 x 65 x 150 mm
 Material : Borosilicate glass
 Scaling capillary tube 0.9 x 0.01 ml
 Mounted on metal plate base
 Dimension : (L) 35.00 x (W) 6.50 x (H) 15.00 cm
 Weight : 0.350 kg.

ESB51647



Potometer Ganong's

Comprises a graduated, narrow bore, horizontal glass measuring tube with a vessel for a plant shoot at one end and having a vertical limb with a stopcock and a funnel fitted by a ground glass joint. Mounted on a plastic stand.

ESB51648



Porous Pot

Size : 150 x 60mm height x dia.

ESB51650



Potometer H Type

Suitable for individual student use, the cut shoot is attached to the side arm with tubing and the wide glass tube acts as the reservoir. Glass tube 160 x 20 mm with side arm 8 mm diameter. Capillary tube length 140 mm with 1 mm Bore..

ESB51649



Clinostate - Electrical

For demonstration of heliotropism and geotropism. Germinating seedlings are pinned to the cork table which is rotated by an electric motor at 4 revolutions per hour. The motor is spindle mounted and may be clamped so that the place of the table can be set at any angle between horizontal and vertical. An epoxy resin cover is provided for the cork table to shield the seedlings from droughts. Diameter of cork disc 100 mm

ESB51645





Mode Transmission Of Seed - PE

This real different Mode of seed transmissions has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped..
Block Size : 140*64*18 (±2)

ESB51664



Specimen Of Inflorescence Types - PE

This real different type of Inflorescence Includes : an ear, raceme, catkin, compound ear, panicle, head and corymb. has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.
Block Size : 164*78*20 (±2)

ESB51665



Specimen Of Corolla Types - PE

This real different type of Corolla Includes : (pink, cross, butterfly, ligulate, whorled, bell-shaped, labial) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped.
Block Size : 164*78*20 (±2)

ESB51666



Specimen Of Rhodophyta - PE

This real Rhodophyta Includes : (Undari Pinnatifida-Cosars Root Vegetable - Sea Wormwood-Kelp) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles.
Epoxy resin block will not break even if it is accidentally dropped.
Block Size : 140*64*10 (±2) X 4

ESB51667



Specimen Of Phaeophyta - PE

This real Phaeophyta, s Includes : (Gelidium Amansi-Centipede Algae-Cartilage Algae-Laver)has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles.
Epoxy resin block will not break even if it is accidentally dropped.
Block Size : 140*64*10 (±2) X 4

ESB51668

NEW



Specimen Of Algae Phaeophyta and Chlorophyta and Rhodophyta - PE

This real Algae Phaeophyta and Chlorophyta and Rhodophyta has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles.
Epoxy resin block will not break even if it is accidentally dropped
Block Size : 164*78*20 (±2)

ESB51671



Specimen Of Law Of Gene Isolation - PE

This Corn Gene Isolation includes : (a separate variety of corn (paternal), a separate variety of corn (mother), first generation after crossbreeding, second generation created by self-pollination (1 example), second generation produced by self-pollination (2nd example))has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.
Block Size : 164*78*20 (±2)

ESB51669

NEW

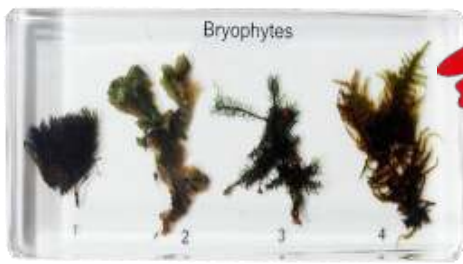


Specimen Types Of Algae- PE

This real different type of Algae has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20(±2)

ESB51672





Specimen Types Of Bryophytes- PE

This real different type of Bryophytes has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.. Block Size : 140*64*20 (±2)

ESB51674

Specimen Types Of Angiosperm- PE

This real different type of Angiosperm includes : (gossypium Spp - Soybeen - Wheat -Corn) (has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped..Block Size : 140*64*24(±2)X4

ESB51673



Specimen Types Of Fern- PE

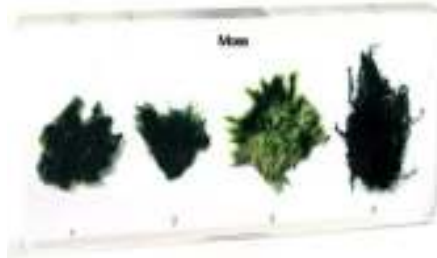
This real different type of Fern includes : (Nephrolepis-Dicranopteris-Adiantum-Dryopteris) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20 (±2) X4

ESB51676

Specimen Types of Leaf- PE

This real different type of Leaf Includes : (Mulberry leaf - Bamboo leaf - Fern leaf - Rose leaf -. Floating flow - Four-leaf Marseille - Schefflera) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20(±2)

ESB51675



Specimen Types Of Gymnosperm- PE

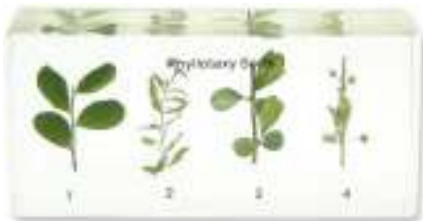
This real different type of Gymnosperm Includes : (Masson - platycladus orientalis - podocarpus - Ginkgo) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 140*64*20 (±2)X4

ESB51677

Specimen Types Of Moss I- PE

This real different type of Moss has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20(±2)

ESB51679/I



Specimen Types Of Phyllotaxy Sorts- PE

This real different type of Phyllotaxy Sorts has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 140*64*24(±2)

ESB51678

Specimen Types Of Moss II- PE

This real different type of Moss has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20 (±2)

ESB51679/II



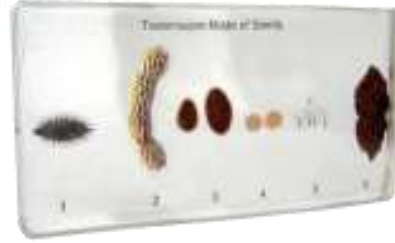


Specimen Types Of Lichen- PE

This real different Mode of Lichen has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 88*58*18 (±2)

ESB51681



Specimen Transmission Mode of Seeds- PE

This real different Mode of Lichen has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 140*64*20 (±2)

ESB51680



Specimen Types Of Spore Plant- PE

This real different Mode of Spore Plant has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 88*58*18 (±2)

ESB51683



Specimen Types Marchantiaceae- PE

This real Marchantiaceae has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 73*41*20 (±1)

ESB51682



Comparison of monocotyledons and Dicotyledons- PE

This real different type of monocotyledons and dicotyledons has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles..Epoxy resin block will not break even if it is accidentally dropped.

Set/10

ESB51694



Specimen Types Fruit- PE

This real different type of Fruit has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped

Block Size : 135*90*35 (±1)

ESB51684

Specimen Types Fibrous Root System- PE

This real different Mode of Fibrous Root System has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 110*43*20 (±1)

ESB51685





Different Roots System - PE

This real different type of plant roots includes : (taproot, adventitious root, aerial root, bundle root) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

Block Size : 88*58*24 (±2)

ESB51670



Specimen Of Roots

This real different type of Roots has been placed on board for observation and study. Durable, .

ESB51689

NEW



Specimen Types Taproot-PE

This real Taproot has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Block Size : 73*41*20 (±1)

ESB51686



Seed Germination

This seed germination model shows the process of seed germination. Mounted on board. Made by environmental pvc and paint.

ESB51702



Germination Model

This germination model is 5 times enlarged and for 10 times enlarged & showing beans, the rye seeds pushes up from the soil a green shoot, the bean first appears as a two leaved shoot and the shoots of the first appear from the earth first throwing out their star-shaped leaves. Mounted on base. Numbered with English Key Card

ESB51701

Germination Model Activity Set

3-D Monocot and dicot plant germination is shown on this markable 60*45cm model. The included activities support the teaching of seed development. Includes a Teacher's Guide with an overhead transparency black line master, student activities, key and glossary.

ESB51700



Fern Life Cycle Model

A series of eight models displaying the alternation of generations in the life cycle of the fern. The series is: sori on pinnule; sori after dehiscence; vertical section of sorus; structure of dehiscing sporangium; prothallus with antheridia and archegonia; section through mature archegonium; section through antheridium; gametophyte with young sporophyte. With key card, on base , **Size** : 40.5*23.5cm.

ESB51698





Paddy Rice Germination - PE

This real Paddy Rice Germination embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20 (±2)

ESB51717



Wheat Germination - PE

This real Wheat Germination Includes: (wheat grain, development of the embryonic root, germination, development of the root system, leaf sheath development, stem development, a young plant with a developed spike leaf, ear) embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20 (±2)

ESB51718



Life Cycle Of Funariaceae - PE

This real Funariaceae life cycle embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 88*58*18 (±2)

ESB51709



Sorghum Germination - PE

This real Sorghum Germination embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20 (±2)

ESB51716



Life Cycle Of Pine - PE

This real Pine life cycle embedded in block for observation and study. Includes : (male pine cone, young female cone (in the first year), mature female cone (in the second year), pine seed, pine needle) Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 164*78*20 (±2)

ESB51711



Life Cycle Of Fern - PE

This real Fern life cycle embedded in block for observation and study. Includes : sporadic ear, spores, progrowth (gametophyte), young sporophyte, mature sporophyte. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 88*58*18 (±2)

ESB51710



Life Cycle Of Cotton - PE

This real Cotton life cycle embedded in block for observation and study. Includes : (leaf, flower bud, cotton flower before pollination, cotton flower after pollination, bag, broken purse, seeds) Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size : 135*90*35 (±2)

ESB51712



Peanut Germination - PE

This real Peanut Germination Includes : (Seed - Germinate - Sprout - Taproot & Lateral Roots - Young Stem - Leaves) embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size :164*78*20 (±2)



ESB51715/R

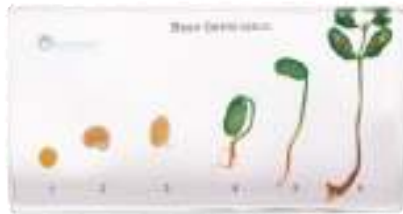


ESB51715

ESB51715

Peanut Germination Round - PE

ESB51715/R



ESB51713



ESB51713/R

Specimen Of Bean Germination - PE

This real Bean Germination Includes : (bean seed, seed germination, development of the root system, stem and leaves, young beans) embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size :164*78*20 (±2)

ESB51713

Specimen Of Bean Germination Round- PE

ESB51713/R

Specimen Of Bean Germination - PE

This real Bean Germination embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped.

ESB51713ST



ESB51714



ESB51714/R

Specimen Of Corn Germination - PE

This real Corn Germination embedded in block for observation and study corn grain, germination - development of an embryonic root, germination - development of the primary root and coleoptile, further growth of roots and leaf sheath (coleoptile), seedling with leaf and root, a young plant with a developed root system and leaves) . Durable, clear epoxy resin allows close up viewing from all angles; Epoxy resin block will not break even if it is accidentally dropped. Block Size :164*78*20 (±2)

ESB51714

Specimen Of Corn Germination Round - PE

ESB51714/R

Specimen Of Corn Germination Set- PE

This real Corn Germination embedded in 6 blocks for observation and study. Durable, clear epoxy resin allows close up viewing from all angles; Epoxy resin block will not break even if it is accidentally dropped.

ESB51714ST



NEW

Specimen Of Pea Germination - PE

This real Pea Germination Includes : (Pea seed, seed germination, development of the root system, stem and leaves, young Pea) embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped. Block Size :164*78*20 (±2)

ESB51720



Plant Germination Set - PE

This real 10 different type of plants Germination includes : (Funariaceae, fern, bean, corn, peanut, pine, cotton, sorghum, rice and wheat) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles..Epoxy resin block will not break even if it is accidentally dropped.

ESB51731



Soy bean and Corn Growth Process

This real of Soy bean and corn growth stages has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped.

ESB51719



Specimen Of Leaves Set - PE

This real 11 different Leaves includes : (cinnamon tree, bauhinia, eastern biota, maple, centella asiatica, pine, bamboo, silverwort, rose hip, desmodium) embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally

ESB51687



Specimen Of Flowers Set - PE

This real 8 different Flowers includes : (butterfly, daisy, pyrethrum, pyrethrum maruna, cosmos doubly pinnate, spherical gomphrena, Chinese carnation, rose) embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally

ESB51688



Specimen Conformation of Plant Set - PE

This real 4 different Conformation of Plant Includes : (Loaf - Stem - Root - Seeds - Flower) embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally

ESB51659



Specimen Of Mushrooms Set - PE

This real 8 different Flowers embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally

ESB51691



Plant Kingdom Set I - PE

This real 9 different type of plants includes : (Sea Grape , Ulva , Agar, Red algae - Mushroom, Agaric, Hericum -Liverwort, Funariaceae - Pteris , Adiantum -Cedrus (male cone) , Pinus (female cone) - Life Cycle of Funeriacaea - Life cycle of fern - Root of paddy rice ,Stem of paddy rice ,Bamboo leaf, Viola herb, Corn -Root of bean , Stem of bean ,Maple leaf ,Pink ,Kidney bean) has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. Epoxy resin block will not break even if it is accidentally dropped.

ESB51661

Plant Kingdom Set II - PE

This real different type of plants has been embedded in block for observation and study. Durable, clear epoxy resin allows close up viewing from all angles. .Epoxy resin block will not break even if it is accidentally dropped. Set includes 20 pcs

ESB51662





Mechanisms Of Herbicides

This exercise is designed to demonstrate the effectiveness of different categories of chemical herbicides. Students transplant grasses and weeds into flats or pots and investigate how and why different plants are killed by different chemical herbicides. A simultaneous microbiological proof with inoculated agar plates is run to reinforce the results, further categorize herbicides, and determine possible effects of the herbicides on soil micro-organisms. Each group will choose two natural products and design a simple experiment to compare chemical vs. natural weed killers. A round table discussion including experimental designs, results, comparisons, and possible environmental impact culminates the exercise. Requires five class periods, plus research time. Required, but not included: heat source, flower pots or nursery flats, grass and weeds for transplanting. Designed for 24 students working in four groups of six. For Grades 9-14.

ESB51696

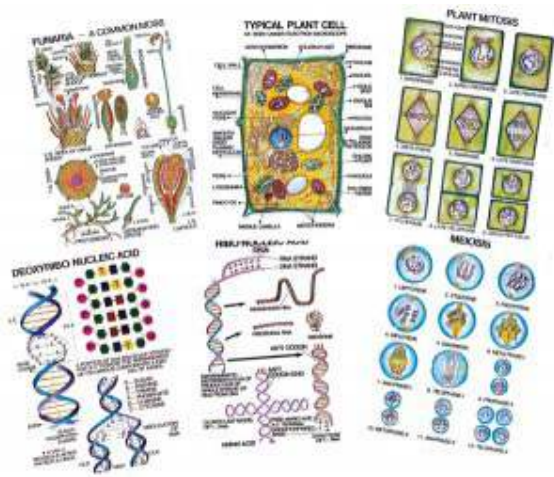


Air Fern

Did you know that air ferns do not need soil or water to grow? How can such claims be true? Students will experiment, observe, and grow air ferns in six experiments as they develop questions, make predictions, and employ the scientific method to test hypotheses. Students learn to design experiments, use proper controls, limit variables, take proper measurements, and explain the data they collect. They will finally discover that the air fern is not what they have expected and conclude that the air fern is not a plant at all. Stereo microscope recommended. Designed for 24 students working in six groups of four. For Grades 5-8.

ESB51697





General Botany Chart I Set

Set of 8 charts covering different topics General Botany - each Size 50x70cm
Includes : Typical Plant Cell * Plant Mitosis * Meiosis * D.N.A. * R.N.A. * Bacteria * Spirogyra * Funaria.

ESB51775

General Botany Chart Ii Set

Set of 8 charts covering different topics of General Botany . Size each 50x70cm
Includes : * Plant Kingdom * Germination of Sunflower & Maize * Germination of Bean & Pea * Yeast * Rhizopus & Mucor * Fern * Insectivorous Plants

ESB51776

Individual Botany Charts

- | | | |
|----------|-------------------------------------|--------------------------------|
| ESB51777 | Chart the plant cell | Laminated charts size 50x70 cm |
| ESB51778 | Chart the plant mitosis | Laminated charts size 50x70 cm |
| ESB51779 | Chart the plant meiosis | Laminated charts size 50x70 cm |
| ESB51780 | Chart the dna | Laminated charts size 50x70 cm |
| ESB51781 | Chart the rna | Laminated charts size 50x70 cm |
| ESB51782 | Chart the bacteria | Laminated charts size 50x70 cm |
| ESB51783 | Chart the spirogyra | Laminated charts size 50x70 cm |
| ESB51784 | Chart the funaria | Laminated charts size 50x70 cm |
| ESB51785 | Chart the germination of sunflower | Laminated charts size 50x70 cm |
| ESB51786 | Chart the fern | Laminated charts size 50x70 cm |
| ESB51787 | Chart the plant kingdom | Laminated charts size 50x70 cm |
| ESB51788 | Chart the flower | Laminated charts size 50x70 cm |
| ESB51789 | Chart the stem | Laminated charts size 50x70 cm |
| ESB51790 | Chart the root | Laminated charts size 50x70 cm |
| ESB51791 | Chart the leaf | Laminated charts size 50x70 cm |
| ESB51792 | Chart the germination of bean & pea | Laminated charts size 50x70 cm |
| ESB51793 | Chart the yeast | Laminated charts size 50x70 cm |
| ESB51794 | Chart the rhizopus & mucor | Laminated charts size 50x70 cm |



Living Plants

Pond Weed

- | | | |
|----------|------------------------|---|
| ESB51853 | Egeria Densa | Oxygenator. Approx 10 strands - PEr bunch |
| ESB51854 | Myriophyllum Scabratum | Oxygenator. Approx 10 strands - PEr bunch |
| ESB51855 | Duckweed | "Lemna. Fast growing & free floating. Over 100 plants per pack" |

Plants

- | | | |
|----------|-----------|--|
| ESB51856 | Liverwort | Named species - PEr pack |
| ESB51857 | Fern | Fertile fronds - PEr pack |
| ESB51858 | Moss | Sexual stage. Named species - PEr pack |
| ESB51859 | Moss | Ideal for the vivarium , 250g |

Carnivorous Plants

- | | | |
|----------|----------------|-------------------|
| ESB51860 | Pitcher Plant | Sarracenia , each |
| ESB51861 | Venus Fly Trap | Dionea , each |
| ESB51862 | Sundew | Drosera , each |

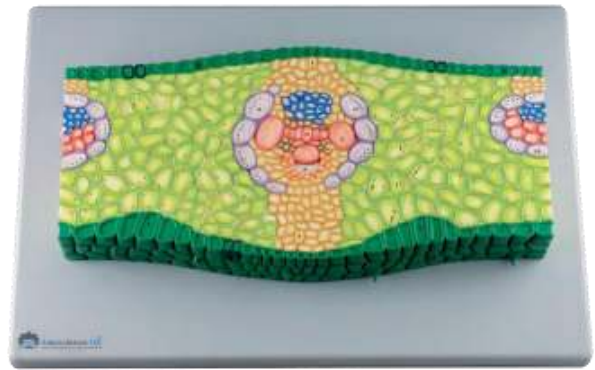




Dicot Leaf

The structure of a dicot leaf is well represented in this 600X life-size model; the cross and the longitudinal section describes all the main structures and the different cellular types through the upper page, mesophyll and lower page. The model is securely mounted on a base, providing stability for educational or display purposes.
Dimensions : 33*23*36 cm
Weight : 3500 g

ESB51947



Monocot Leaf Section(Zea Mays)

This model, enlarged 500X life size, shows the cross and longitudinal section of a monocot leaf. Significant structures include dorsal and ventral page, xylem, phloem and mesophyll. The model is securely mounted on a base, providing stability for educational or display purposes.
Dimensions : 53*38*9.5 cm
Weight : 2500 g

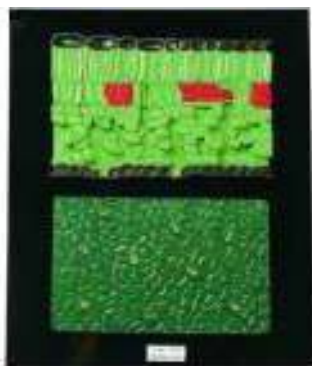
ESB51948



Dicotyledon Leaf Model

The leaf boasts an 8x magnification and displays a cross-section depicting the epidermis, palisade and spongy mesophyll layers, vascular bundle, and stomata. It comes with a key card for identification.
Dimensions : 42 x 30.0x 11.2 cm
Weight : 2800 g

ESB51929SP



Leaf Lilac (Stringa Sp) Model

A vertical section shows epidermis, palisade and spongy mesophyll, stomata and a small vein. A separate underside view of the leaf surface shows stomata. Both models are approx x700. Supplied with key card, mounted on base
Dimensions : 27*21 cm.

ESB51928



Dicotyledon Leaf Model

A section through a typical leaf, showing epidermis, palisade and spongy mesophyll, vascular bundle and stomata. Supplied with key card.
Dimensions : 15*10*6 cm.

ESB51929





Dicotyledon Stem (Helianthus S)

The top surface of the model represents a transverse section of a wedge shaped sector of the stem and includes all the tissues from epidermis to pith. One entire vascular bundle is shown and half an adjacent one. The interfascicular tissues and vascular bundle are shown in longitudinal section. The outer surface represents a view of the epidermis with stomata. Supplied with a key card.

Dimensions : 38*30*8 cm.

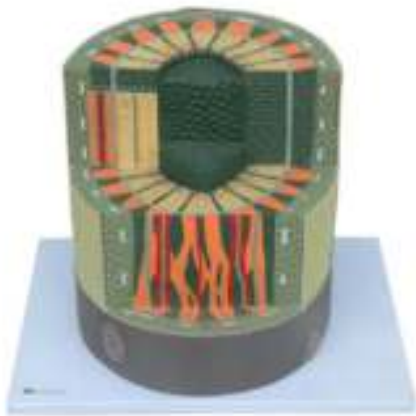
ESB51934



Dicot Stem Anatomy Model T.S. & L.S.

Model shows the transverse and longitudinal section of a dicotyledonous stem in which case the cambium ring has been formed but no secondary growth has yet taken place. Very useful model for study of epidermis, cork layer, cork cambium, cortical parenchyma, starch sheath medullary rays, phloem, sieve plate, sieve tube, phloem parenchyma and inter fascicular cambium, xylem, pitted vessels pith etc. Mounted on base. Numbered With English key card.

ESB51935



Dicotyledonous Stem

This is enlarged dicotyledonous stem model, with manual.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 70*30*58 cm

Weight : 2200 g

ESB51951



Monocot Stem Anatomy Model T.S. Or L.S.

Exhibits the various tissues and scattered closed and collateral vascular bundles in transverse and longitudinal sections in maize. The large pitted vessels, spiral and annular vessels show the anatomy of monocot stem. On base. Supplied with English Key Card.

ESB51936



Woody Dicot Stem (TILIA) Model

A sector of a two-year-old stem with transverse, longitudinal and tangential sections. Shows development of annual growth rings. With key card,

Dimensions : 35.5*25*6 cm.

ESB51945



Monocotyledon Stem (Zea Mais)

Transverse and longitudinal sections of all tissues from epidermis to pith are included on this model. Two entire vascular bundles are shown, one entering into the stem from a leaf trace. Another two vascular bundles are shown in section, with longitudinal detail of the cells. Supplied with key card.

Dimensions : 40.5*23*5 cm.

ESB51937





Dicotyledon Stem Model (Helianthus S)

The top surface of the model represents a transverse section of a wedge shaped sector of the stem and includes all the tissues from epidermis to pith. One entire vascular bundle is shown and half an adjacent one. The interfascicular tissues and vascular bundle are shown in longitudinal section. The outer surface represents a view of the epidermis with stomata. Supplied with a key card.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 38*30*8 cm.

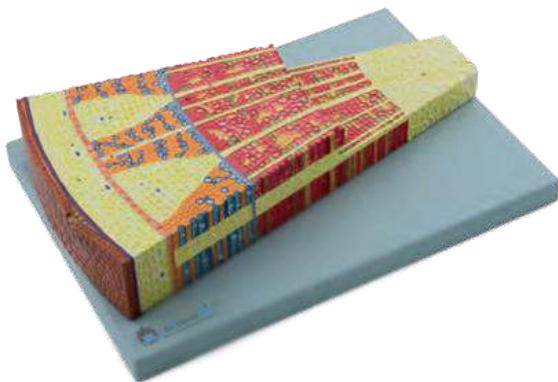
ESB51934N

Open Collateral Conducting Bundle Of a Dicotyle stem

This model shows the open collateral conducting bundle of a dicotyle stem

The model is securely mounted on a base , providing stability for educational or display purposes.

ESB51927



Dicotyledon Stem Model (Helianthus S)

This model, enlarged 300X life size, shows the structure of a dicot wooden stem. Longitudinally and cross sectioned, it shows significant elements of the cortex and central vascular cylinder.

All different structures are displayed in different color.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 42*30*11.5 cm.

Weight : 1600 g

ESB51945N



Monocot Stem Section Model (Zea Mays)

This model, enlarged 400X life size, shows a cross and longitudinal section through a monocot stem. Epidermis, cortex, central vascular cylinder and all the significant internal structures are well represented.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 33*23*7.5 cm

Weight : 1000 g

ESB51937N



Gymnosperm Stem Model (Pinus silvestris)

This 350X life size model shows in great detail the section of a pinus silvestris 3- year old stem. It describes all basic structures of the gymnosperm stem, including epidermis and vascular cylinder.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 30*38*9.5 cm

Weight : 1600 g

ESB51946





Dicot Root Section(Leguminosae).

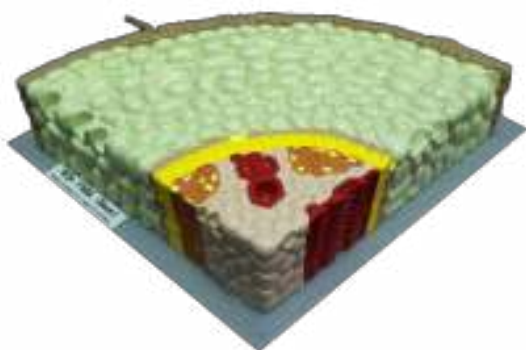
This 3-part model, enlarged 400X life size, shows the structure of a dicot root in a cross and longitudinal section. All significant structures are well represented in great detail. The model is divided in 3 segments including the following: the first part describes the root tip with cap, the second one illustrates the distension zone and the last one part shows the meristematic mature region.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 33*23*7.5 cm

Weight : 1000 g

ESB51949



Dicotyledon Root (Vicia Fabia)

A section through a typical dicotyledon root in the region of the root hairs. One side shows a longitudinal section through phloem and the other through xylem together with adjacent tissues.

Radius of section 17cm, thickness 6 cm. Supplied with a key card.

ESB51932



Monocot Root (Zea Mays)

This 200X life-size model shows the structure of a typical monocot root in a cross and longitudinal section. This model is divided into 3 segments, including the following: zone of primary structure, zone of distention cells and meristematic zone.

All the different structures and cellular types are numbered and identified on the accompanying manual

The model is securely mounted on a base with a stand, providing stability for educational or display purposes.

Dimensions : 33*23*158 cm

Weight : 2800 g

ESB51950



Monocot Root (Iris) Model

A wedge shaped sector through a typical monocotyledon root, giving transverse and longitudinal sections. Longitudinal section of phloem and xylem tissues are shown. Supplied with key card.

Dimensions : 34*21.5*5 cm.

ESB51933





Dicot Root Model T.S.

The Molded Dicot Root Model, painted vibrantly and greatly magnified, is accompanied by a key card that highlights its key anatomical features. This 3D model vividly showcases the intricate inner anatomy and vasculature of a dicot root. Its sturdy construction offers an excellent resource for visually and kinaesthetically effective study of the structure and function of dicot roots.

Dimensions: 32.5x 25x 2.5 cm

ESB51930

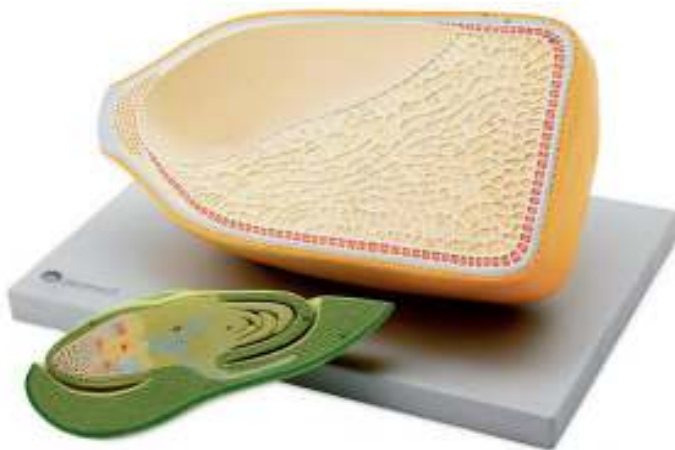


Monocot Root Model T.S.

Introducing the Large Monocot Root Model, offering an expansive 3D depiction of a monocot root. This model showcases meticulously hand-painted details, with each part labeled by number for easy identification using the included key card. Key labeled parts include Root Hair, Epiblema, Exodermis, Cortex-Parenchymatous, Inter-Cellular Space, Endodermis, Starch Grain, Pericycle, Protoxylem Vessel, Metaxylem Vessel, Conjunctive Tissue, Phloem Bundle, and Pith.

Dimensions: 32.5x 25x 2.5 cm

ESB51931



Corn Seed Model, 2 Parts

This item is composed of 9 different pieces showing the main stages of the mammal cell mitosis (prophase, metaphase, anaphase and telophase) at an enlargement of approx. 10000 times. During all stages you can observe the different characteristics of the cellular structures such as chromosomes, centrioles, spindle and nucleus. Every single piece is numbered to indicate the correct sequence of steps.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 42*17*10 cm

Weight : 1300 g

ESB51924



Pollination And Fertilisation Model

The primary model depicts a vertical section illustrating the stigma, style, and ovary, showcasing the progression of pollen tubes towards the ovules. Additionally, separate models are provided to display the anther, anther dehiscing, and various types of ovary in both transverse and longitudinal sections.

Dimensions : 50*33 cm

ESB51944





Flower Model

A greatly enlarged (10x) model to demonstrate the floral components and reproductive function of the flower. Each of the eight parts of the flower model represents one of the unique structural components such as the petals, sepals, stamens and pistil. Fertilisation is shown, with pollen grains on the stigma; one pollen tube is shown penetrating the micropyle. The anthers are sectioned and the ovary is dissected to show the female gametophyte. The model also depicts the scenario for double fertilisation. Mounted on a base and supplied with key card.

ESB51939



Dicot Flower Model

Dicot Flower model Representing a greatly enlarged, complete flower, made of non-breakable vinyl plastic model teaches the reproductive function of flowers, angiosperm pollination and fertilization. Three petals, four sepals and four stamens are detachable. Two anthers are sectioned open to expose pollen grains. The ovary is dissected to reveal the seven-celled female gametophyte. Pollination is demonstrated by pollen grains that have adhered to the stigma. One of them has generated a pollen tube that has penetrated the micropyle. Depicting the condition just prior to fertilization, the tube nucleus, closely followed by the two sperm cells, can be observed near the apex of the pollen tube.

Dimensions : 36*14*12cm ,

Weight : 500g

ESB51938



Hermaphrodite Dicot Flower

This three-piece model, enlarged to 14X life size, describes with great accuracy and detail the anatomy of a typical hermaphrodite dicotyledonous flower. Thanks to the cross-section, the anatomy of the internal

structures, such as stamens, stigma, style and ovary with eggs can be easily studied.

External structures, including petals and sepals, are also well represented. The main structures are numbered and referenced on the accompanying manual.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 33*23*40cm

Weight : 515g

ESB51952



Dicot Flower Model 5 Times Life size

High pretty handwriting, enlarged about 5 times, shows all features of typical dicot flower(peach flower).

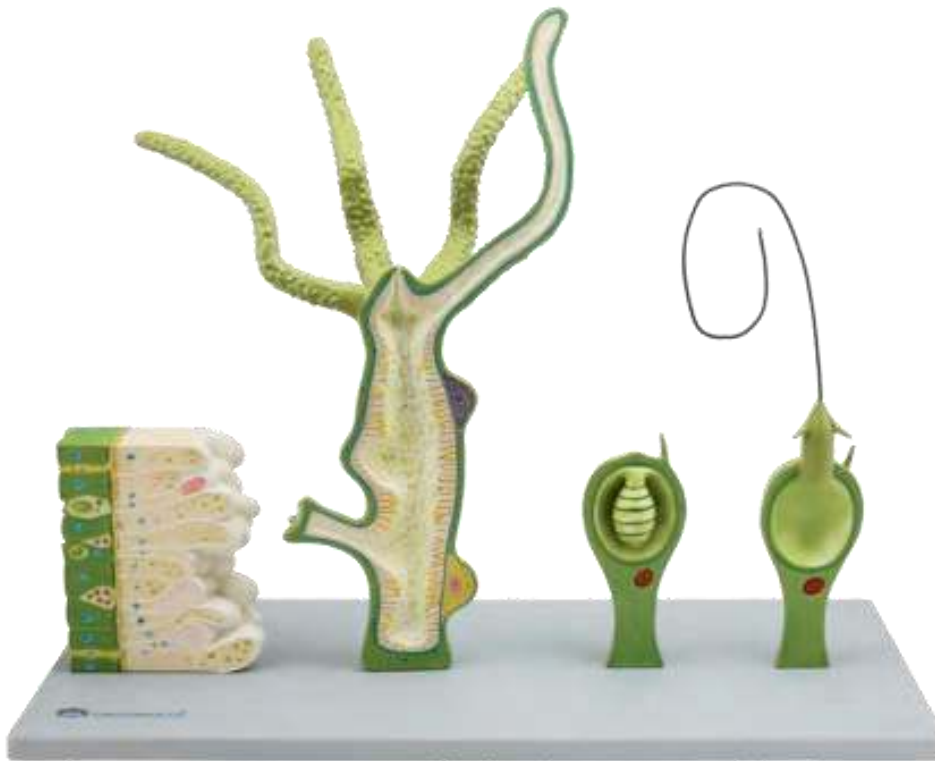
The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 40*26*16cm

Weight : 1660g

ESB51938/5X





Hydra Model,4 parts

This 4-part model shows longitudinal and cross sectional views of the hydra, highlighting significant anatomical features, including the ectoderm, mesoglea, coelenteron, male and female egg cells, buds and mouth opening.

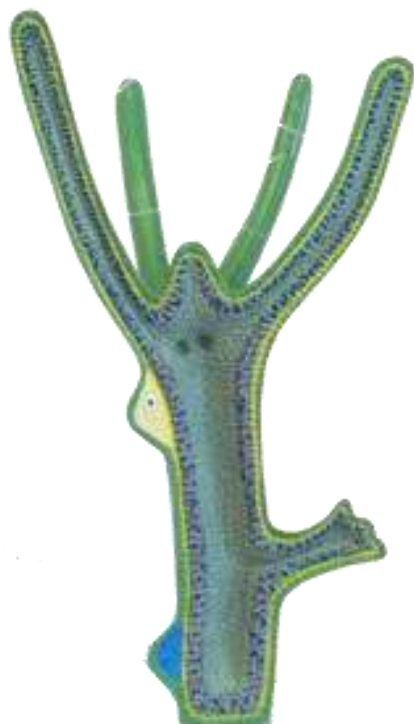
The cross sectional block model, about 250X life size, shows various cellular structures, including nematoblasts, epithelial cells, sensory cells, interstitial cells and the nerve network an additional block model shows the anatomy of a highly enlarged cnidoblast cell.

The model is securely mounted on a base , providing stability for educational or display purposes.

Dimensions : 70*30*58 cm

Weight : 2200 g

ESB51388



Hydra Model

A median longitudinal section of a green hydra, showing external and internal structure, budding, testis and ovary.

On base approx 56 cm high.Supplied with keycard.

ESB51940





Plant Cell Model

Plant Cell Model (3D- Dimension): The model is durable plastic, shows both microscopic & ultramicroscopic colored details : cell wall, plasma cytoplasm, nucleus, vacuoles, plastids, lysosomes, golgi apparatus, ribosomes, mitochondria, rough & smooth ER. Mounted vertically on a base. Catalogue or Hardcover key card of the numbered structures all labeled in Arabic & English printed nicely and pastes on the top surface of the base)

ESB51941



Plant Cell Model

This model, enlarged 20,000 times, shows the significant structures of a plant cell, including the wall, nucleus, vacuole, Golgi apparatus, mitochondria, chloroplast, chromoplast, leucoplast, endoplasmic reticulum. Mounted on board.

Dimensions : 42*30*10 cm,

Weight : 2100 g

ESB51942



Plant Cell Model

The two piece plant cell model shows the structures of a typical plant cell with cytoplasm and cell organelles, as viewed by an electron microscope. all important organelles of the plant cell are in raised relief and displayed in colour. Features included are:

Cell wall, Cell membrane, Nucleus, Smooth Endoplasmic Reticulum, Rough Endoplasmic Reticulum, Ribosome's, Chloroplasts, Mitochondria, Dictyosomes/Golgi apparatus,

The plant cell model is magnified 500,000 to 1,000,000 times.

Dimensions : 20*11.5*32 cm

ESB51943



Chloroplas

This model represents an important tool to study one of the most important organelles of the plant cell. The chloroplast, greatly enlarged, is cross and longitudinally sectioned to show in great detail the internal microscopical structure such as inner and outer membrane, granum, stroma, starch granules and osmiophile globule.

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 40*26*20 cm

Weight : 2530 g

ESB51923



Plant Cancer

Now cancer can be investigated in the lab, not just discussed in your classroom. Students safely study the various aspects of cancer cell growth with this totally self-contained kit. (A fresh carrot will be required.) Students explore various aspects of cancerous cell growth and learn to explain the differences between a normal cell and a cancer cell, describe similarities and differences between animal and plant cancers, identify cancer cells, identify a plant cancer or gall, and research current theories on the causes of cancer. Students grow their own sunflower plants; then induce crown gall by inoculating plant tissue with *Agrobacterium tumefaciens* (reply card item ships upon request and only in Continental US) which is required for inducing the cancerous growth. Students then do a Koch's Postulates Experiment: Inducing Cancer in Carrot Tissue. Grades 9-12



ESB52046



Plant Cloning I (Introduction To)

Plant propagation by cloning is becoming increasingly important in food and flower production. Generating a plant by cloning its tissue is an exciting and challenging experience which teaches the importance of sterile laboratory methods. Students will germinate carrot seeds to provide plant material from which to establish a culture, use sterile technique to grow seedlings and establish a callus culture, and induce the development of multiple shoots (plantlets) from the callus tissue. The process takes approximately four months. No hood or incubator required. Includes an instruction manual, assessment questions, and a Power Point presentation with images of plant material at various stages of the experiment. Perishable reply card items ship separately upon request and only in the continental US. Grades 9-12

ESB52047

Blood Typing Simutype (RH)

Blood typing for Rh factor is a medically important procedure. Rh genetics can be of concern during pregnancy and blood transfusions. Learn why under certain circumstances when the mother is Rh negative and the embryo is Rh positive, the baby can be at risk of attack by the mother's immune system. By determining blood types and taking appropriate medical precautions, the incidence of Rh-induced haemolytic disease of the newborn (erythroblastosis fetalis) fatalities have been substantially reduced in the United States. This kit features the safety of simulated bloods and antisera and the convenience of self-adhesive Hema-Tags. Includes an enhanced instructor's manual with background information, reproducible student worksheets, and comprehensive answer keys. Contains 5mL of anti-Rh and 2mL of each blood sample type. Materials provided are sufficient for up to 50 tests. Meets national standards for grades 9-12.



ESB52148



Aids Simutest Kit

Students become biotech- technicians while using this AIDS test kit, running eight samples in a simulated ELISA to determine which patient(s) may have contracted the HIV virus. Kit includes simulated patient serums, conjugate, chromagen, and reusable pre-treated ELISA microtiter plates. The kit may be used many times; just add distilled water. The kit is totally safe for student use. It does not contain blood serum or infectious agents. Students experience the world of biotechnology while learning the biology of the HIV virus in a one hour lab investigation. Designed for six groups of four students. This kit is appropriate for college level coursework, college prep, or advanced biology courses. Grades 11-14.

ESB5215

Plant Cloning II

Plant propagation by cloning is common in flower production. Generating a plant by cloning its tissue is an exciting and challenging experience which teaches the importance of sterile laboratory methods. Using this kit, students will establish a shoot multiplication culture using an African violet as a model, use sterile technique to develop African violet cloned cultures and induce the development of multiple shoots (clones) from the leaf tissue. Resulting plantlets may be started in soil. The complete process takes approximately three months. No hood or incubator required. Includes an instruction manual and a Power Point presentation with images of plant material at various stages of the experiment. Perishable reply card items ship separately upon request and only in the continental US. Grades 9-12



ESB52048





Genetics I

Students identify some of their own genetic traits, such as whether or not they are able to taste the bitterness of PTC or roll their tongues. Then they model homologous chromosomes to demonstrate how reproduction results in the inheritance of genetic variation. Punnett Squares are used to apply concepts of statistics and probability to predict the distribution and variation of expressed traits in examples from humans, plants, and animals. Students use a randomized selection process to model the observed occurrence of allele frequency to compare to statistically expected outcomes of crosses. Phenotypes, genotypes, monohybrid and dihybrid crosses, test crosses, dominance, incomplete dominance, codominance, and recessives are discussed. Includes worksheets, data sheets, and complete answer keys. Designed for 24 students working in six groups of four. Grades 6-10

Urinalysis

The analysis of urine is a valuable procedure for evaluating a person's health. Using simulated urine samples, students are introduced to biomedical urinalysis procedures similar to those utilized in medical laboratories to determine the general characteristics of urine, observe sediments found in urine, and test for glucose, albumin, pH, specific gravity, and lead. No real urine or human products are used in this kit. Required, but not included: a Bunsen burner, balance, microscope, lab glassware, urine hydrometers (optional), and a centrifuge (1500 rpm, optional). Designed for 24 students working in six groups of four. Grades 9-12

ESB52131



ESB52132

Genetics II

This hands-on approach to genetics gives students an opportunity to study the inheritance of multiple alleles, examine karyotypes, and study pedigrees. Students observe the antigen-antibody reaction for ABO blood groups using simulated blood. Then, they identify the blood types of four people and apply the concept of codominance to determine possible genotypes and phenotypes of future generations. Students learn how nondisjunction can cause autosomal and sex chromosome disorders during meiosis while studying karyotypes. They learn to construct pedigree charts and use them to show how genotypes of genetic traits may be followed through a number of generations. Then, students create pedigrees for tongue rolling and ability of their family to taste bitter with PTC paper. Includes all materials for ABO blood typing and karyotyping, PTC paper, worksheets, data sheets, and complete answer keys. Designed for 24 students working in groups of four. Grades 6-10



ESB52133

Introduction To Chromosomes Kit

EduSciences Introduction to Chromosomes Kit is designed for advanced biology students who are interested in the microscopic examination of chromosomes from peripheral blood leukocytes. The kit uses freshly drawn blood cells and a micro technique which can be adapted for chromosome studies from cells of bone marrow or other tissues. Reply card items include: chromosome media, arresting fluid, rinsing solution, and Hank's Balanced Salt Solution. Required, but not included: centrifuge (800 rpm), oil immersion microscope, water bath or incubator (37°C), alcohol or Bunsen burner, staining jars, xylene, glacial acetic acid, and methanol. Designed for 24 students working in six groups of four. Grades 10-14



ESB52134

Biotechnology: Electrophoresis

Finally, a safer, much more affordable way to do gel electrophoresis in the classroom! Now anyone can learn the essentials of this classic molecular biology technique which plays such a central role in biotechnology research. Students isolate DNA samples from live organisms and run the samples on agarose gels they pour themselves. Then they stain the DNA with methylene blue to visualize their samples. A wonderful classroom tested option for those who do not own pricey biotechnology equipment. Kit includes all materials, supplies, and instructions for isolating DNA, making running buffers, creating tracking dyes, pouring gels, and running and staining DNA...including the power sources. Materials and supplies for 100s of DNA sample isolations and making up to 50 agarose gels. Designed with six gel running stations. Grades 8-12

ESB52135



DNA Model Kit (Without Paint)

Students construct this DNA model from six different molecular pieces, collectively depicting sixteen nucleotide pairs worth of DNA (8 AT and 8 GC pairs). The base pairs and the sugar and phosphate units are each manufactured as single plastic units. Because there are only nine molecular parts per nucleotide pair, which snap together by means of a pop-it bead mechanism, the model can be easily assembled. The model may be disassembled and reassembled like a puzzle, enabling extended use. The model is unpainted and individual molecules may be painted by students either prior to or after assembly. Model does not include paint or paint brushes. (EduScience kit 9-102 includes paint.) A laboratory exercise and problem set accompany the model. After completing the building exercise and problem set, students will have a better understanding of the double helical structure and the function and properties of DNA. Contains instruction manual, 144 plastic DNA building pieces, rod, spacers, and wooden base. Building and painting project ideal for six students., Grades 7-14



ESB52136

Blood Typing Kit (With Red Blood Cells)

This kit provides both the red blood cells and the antisera for demonstrating ABO blood typing agglutination reactions. Students will use the red blood cells provided, eliminating the need to draw blood samples. Includes instructions for two blood typing methods, and both slide and test tube blood typing are performed, compared, and contrasted. Includes enhanced instructor's manual with student worksheets. This kit is drop ship only, and the blood cells included have a life expectancy of at least 20 days after arrival, but should be kept under refrigeration for best shelf life. Allow two weeks for delivery. Materials provided are sufficient for up to 36 students. Meets national standards for Grades 9-12. Also appropriate for college level. Must be Drop shipped from supplier.

ESB52138

Dna Model Kit (With Paint)

Students construct this DNA model from six different molecular pieces, collectively depicting sixteen nucleotide pairs worth of DNA (8 AT and 8 GC pairs). The base pairs and the sugar and phosphate units are each manufactured as single plastic units. Because there are only nine molecular parts per nucleotide pair, which snap together by means of a pop-it bead mechanism, the model can be easily assembled. The model may be disassembled and reassembled like a puzzle, enabling extended use. The model is unpainted and individual molecules may be painted by students either prior to or after assembly. Model with paint includes six paint colours, paint thinner, and six brushes. A laboratory exercise and problem set accompany the model. After completing the building exercise and problem set, students will have a better understanding of the double helical structure and the function and properties of DNA. Contains instruction manual, 144 plastic DNA building pieces, rod, spacers, and wooden base. Building and painting project ideal for six students. Grades 7-14



ESB52137

Blood Typing Kit (ABO)

Provide an exciting personal experience? this kit allows students to determine their own blood type, while learning the basics of ABO blood typing. Includes the antisera for demonstrating real ABO blood typing agglutination reactions. The specially designed Hema-Tag on which the blood typing identification is performed is self-adhesive and can be affixed in a student notebook for a permanent record. Includes enhanced instructor's manual with background material and student worksheets complete with answer keys. Antisera are perishable. Refrigerate to prolong shelf life. Materials provided are sufficient for up to 50 tests. Meets national standards for Grades 9-12. Also appropriate for college level.

ESB52139





Blood Typing Kit (ABO & RH)

Provide an exciting personal experience? this kit allows students to determine their own blood type, while learning the basics of ABO and Rh blood typing. Includes the antisera for demonstrating real ABO and Rh blood typing agglutination reactions. The specially designed Hema-Tags on which the blood typing identification is performed are self-adhesive and can be affixed in a student notebook for a permanent record. Includes an enhanced instructor's manual with background information, reproducible student worksheets, and complete answer keys. Antisera are perishable. Refrigerate to prolong shelf life. Materials provided are sufficient for up to 50 tests. Meets national standards for Grades 9-12. Also appropriate for college use.

ESB52140

Anti-A, Anti-B Serum Set

These highly specific monoclonal antisera are tested for Hbs Ag and HTLV-III (AIDS). Standard laboratory practices should be used, however, and all biological products should be treated as if capable of transmitting disease. Supplied in dropper vials of 5 mL for approximately 36 tests. Product is perishable and requires special shipping. Refrigerate for prolonged shelf life. Grades 9-14.

ESB52143



Blood Typing Kit (ABO & RH Lyophilized)

Provide an exciting personal experience, This kit allows students to determine their own blood type, while learning the basics of ABO and Rh blood typing. Includes

Lyophilized antisera for demonstrating real ABO and Rh blood typing agglutination reactions. The specially designed Hema-Tags on which the blood typing identification is performed are self-adhesive and can be affixed in a student notebook for a permanent record. Includes an enhanced instructor's manual with background material, student worksheets, and complete answer keys. Lyophilized antisera provides the product with an extremely long and stable shelf life. Refrigerate antisera after reconstituting to prolong shelf life. Materials provided are sufficient for up to 50 tests. Meets national standards for Grades 9-12. Also appropriate for college use.

ESB52141

ABO/RH Synthetic Blood Typing Kit

The ability to type blood is imperative in medicine and criminology. In this kit students test four synthetic blood samples to identify their ABO and Rh blood types. For 30 students.

ESB52162

ABO/RH Synthetic Blood Typing Refill Kit

The ability to type blood is imperative in medicine and criminology. In this kit students test four synthetic blood samples to identify their ABO and Rh blood types. For 30 students..

ESB52163

Blood Typing Kit (Saliva)

Provide a truly unique and exciting personal experience this kit allows students to determine their own blood type without drawing blood. Students use their own saliva, from which secretors (80% of students) will be able to determine their ABO blood type. This kit provides real antisera for demonstrating true ABO blood typing agglutination reactions. Ideal for students in advanced biology, physiology, or biochemistry. Includes an enhanced instructor's manual with background information, reproducible student worksheets, and complete answer keys. Antisera and Blood Cells are perishable. Refrigeration prolongs shelf life. Reply card included for blood cells and lectin; materials must ship 2nd day air on ice in summer months. Reply card items are only shipped within the continental United States. Cells must be refrigerated and used within 20 days. Materials provided are sufficient for up to 50 tests. Requires a centrifuge or prolonged settling. Meets national standards for Grades 9-12. Also appropriate for college level.

ESB52142



Blood Typing Kit (Saliva)

Provide a truly unique and exciting personal experience this kit allows students to determine their own blood type without drawing blood. Students use their own saliva, from which secretors (80% of students) will be able to determine their ABO blood type. This kit provides real antisera for demonstrating true ABO blood typing agglutination reactions. Ideal for students in advanced biology, physiology, or biochemistry. Includes an enhanced instructor's manual with background information, reproducible student worksheets, and complete answer keys. Antisera and Blood Cells are perishable. Refrigeration prolongs shelf life. Reply card included for blood cells and lectin; materials must ship 2nd day air on ice in summer months. Reply card items are only shipped within the continental United States. Cells must be refrigerated and used within 20 days. Materials provided are sufficient for up to 50 tests. Requires a centrifuge or prolonged settling. Meets national standards for Grades 9-12. Also appropriate for college level.

ESB52142



Anti-RH Serum

This highly specific monoclonal antiserum to Rh factor is tested for HbsAg and HTLV-III (AIDS). Standard laboratory practices should be used, however, and all biological Products should be treated as if capable of transmitting disease. Supplied in dropper vials of 5 mL for approximately 36 tests. Product is perishable and requires special shipping. Refrigerate to prolong shelf life. Grades 9-14

ESB52144

Nucleic Acids Kit

This nucleic acids kit provides students with the opportunity to demonstrate differences between DNA and RNA in terms of chemical composition and internucleotide bonding. Experiments include: (1) reacting DNA, RNA, and nucleosides in the Bial's test for penthouses and the Dische diphenylamine test for deoxyribose; (2) the acid and alkaline hydrolysis of DNA and RNA. Required, but not included: fume hood, concentrated hydrochloric acid, concentrated sulfuric acid, and glacial acetic acid. Designed for 24 students working in six groups of four. Grades 10-14

ESB52151



Anti-A, Anti-B Lyophilized Serum Set

Lyophilized sera allow prolonged, stable storage and shelf life. Each set reconstitutes to 5 ml Anti-A serum and 5 ml Anti-B serum with addition of sterile or distilled water. Sera are tested for HbsAg and HTLV-III (AIDS), however, standard laboratory practices should be used when handling and all biological products should be treated as if capable of transmitting disease. Refrigerate after reconstituting to extend shelf life.

ESB52145

Anti-RH Lyophilized Serum

Lyophilized sera allow prolonged, stable storage and shelf life. Each vial reconstitutes to 5 ml Anti-Rh serum with addition of sterile or distilled water. Sera are tested for Hbs Ag and HTLV-III (AIDS), however, standard laboratory practices should be used when handling and all biological products should be treated as if capable of transmitting disease. Refrigerate after reconstituting to extend shelf life. Grades 9-14

ESB52146



Simutype (ABO)

These four orphans are trying to find their blood brothers or sisters from whom they were separated while very young. Is it possible that they are related? Learn the genetics, immunology, and medical implications of blood typing in the context of this fun and totally safe simulated blood typing activity. Includes complete 16 page instructor's manual, 72 reusable glass microscope slides, 50 Hema-tags for adhering results to lab books, mixing sticks, and 15 ml bottles simulated antisera and blood regents. Meets national standards for grades 9-12.

ESB52147





Electrophoresis Apparatus

is a durable and seamless injection- moulded horizontal agarose electrophoresis unit designed for ease of use and safety. It balances hands-on student participation with economy. Included with the unit are a six-tooth comb and a double 8/10-tooth comb. The 7 cm x 10 cm gel casting tray has an embossing gel ruler and includes rubber end caps which seal the tray. Both the electrophoresis chamber and the gel casting trays are UV transparent.

ESB52155

Electrophoresis Power Supply

Our most popular electrophoresis power supply and runs gels quickly - in only 20-30 minutes at 150 V!

Features:

- Max Voltage: 150 Volts
- Voltage Steps: 75 or 150 Volts
- Max Current: 300 Milliamps
- Output Type: Constant Voltage
- Lead Inputs: 2 Sets, Recessed, Color Coded
- Fuse: 1.0 Amp 250V Glass Fuse



ESB52156



Electrophoresis System

- Ultra compact system
- 360° real-time and high-resolution vision
- Dimensions: 150 x 145 x 100 mm
- Agarose gel dimension: 61 x 42 mm
- Agarose gel volume: 15 mL
- Buffer volume: 150 mL
- LED trans illuminator 470 nm
- 2 lighting intensities
- LED optimal level indicator
- Equipped cover with safety cut-off
- Cover with safety circuit cut-off
- Power block compatible 100 - 240V AC

ESB52162

Dual Gel Electrophoresis Complete Kit

The latest in versatile electrophoresis design! Our newly Complete™ Electrophoresis Package supports up to two groups of students in two standard length gel trays for experiments that require less separation, or one long gel tray for experiments that require more. Produces excellent results in 30-40 minutes and includes a lifetime warranty.

New Features:

- Sleek New Design Speeds Electrophoresis
- Versatile Electrophoresis Accessories Included
- Contoured Lid for Enhanced Gel Visualization
- Large Color Coded Push Tabs for Easy Lid Insertion & Removal
- Pour Spout for Buffer Disposal
- Improved Ventilation Reduces Lid Condensation
- User Replaceable Electrodes Electrophoresis

Package Includes:

- (2) 7 x 7 cm Gel Trays
- (1) 7 x 14 cm Gel Tray
- (2) 6 Tooth Combs
- (2) 8/10 Tooth Combs
- (4) Rubber End Caps



ESB52154



Micro Pipette

Robust, accurate, easy to use, color coded, fun & cost effective micropipettes which use standard micropipette tips. No need to calibrate and impossible to measure the wrong volume! , Fixed Volume 5 or 10 or 20 or 24 or 30 µl (please select your suitable size)

ESB52157

Tallquist Haemoglobin Scale

The Tallquist Haemoglobin scale allows a quick assessment of a patient's haemoglobin levels. Allow blood to absorb into one of the test papers and compare the blood to the Colour scale to determine the concentration of haemoglobin in blood under normal and anaemic conditions. Includes a color chart and 150 test papers. Grades 9-14



ESB52149



Orbit Preview DNA Model

A great whole-class DNA project.

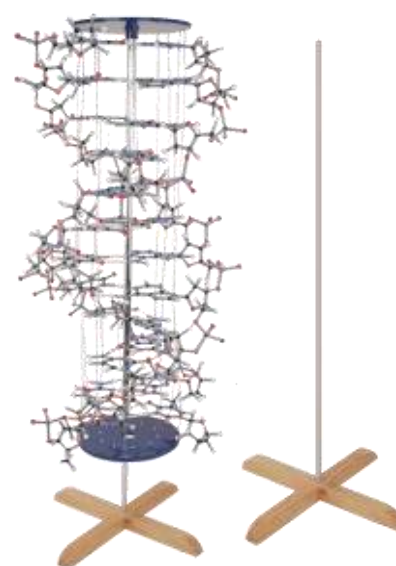
This detailed and large-scale 3d model helps pupils to understand the chemistry and structure of DNA.

Building the double helix model engages and educates students. Pupils work together to make up the sub assemblies - the Thymine-Adenine and Cytosine-Guanine base pairs, sugar rings and phosphate groups - which are joined together to make an impressive display and teaching resource. 12 base pairs show more than one turn of the double helix and the major and minor grooves of the protein lysozyme. Each atom is shown and coloured bonds indicate covalent or hydrogen bonding. The finished model is 85cm high and 40cm wide and can set on a suitable stand (eg 90cm laboratory stand) or hung from a hook.

The kit contains 750 atoms and 850 bonding straws from the Orbit molecular modelling system, a set of wooden plates for hanging the model plus assembly instructions and a worksheet examining the structure of DNA and process of transcription.

Part and fully assembled versions are also available. Please note the kit version comes with unpainted wooden plates and does not include a display stand and this can be purchased separately

ESB52152



Stand For Orbit Preview DNA Model

A purpose-built display stand for the Orbit Preview DNA model with a wooden base and metal central support. The stand comes supplied in three sections for easy self-assembly and provides an elegant solution for displaying the completed model.

ESB52153



DNA & RNA Kit

The small DNA-RNA model shows the double helix and how the molecules split at the centre of the base pairs.

The DNA-RNA Model includes:

- 30 coloured tubes (Guanine red, Cytosine green, Thymine blue, Adenine gray, Uracil white)
- 12 white two prong centre, which represents the hydrogen bond between the base pairs
- 28 black trigonal atom centres which represent sugar
- 25 red two prong atom centres, which represent phosphate groups
- 50 yellow tubes that link the phosphate groups to the sugar rings
- Wooden base with support rod are included in the kit, Height 50 cm.

ESB52158



Mini DNA 22 Layers

These Mini DNA Molecular Kits provide an easy to understand introduction to DNA structure. Comprises abstract shaped, colour coded parts to represent the nitrogenous bases - Pentagonal sugar and pyramidal phosphate component parts present in the DNA double helix. Each component is designed so that it can only be attached in its correct position, e.g. Thymine will only pair Adenine. Can be constructed on the stand or without the separators provided. The model can also be uncoiled and 'unzipped' to produce two strands. Scale 1cm = 2 angostroms. Each kit contains all the necessary components, including stand, support rod and easy to follow instructions. Available as an 12 layer or 22 layer model kit.

ESB52160



Mini DNA 12 Layers

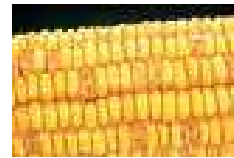
These Mini DNA Molecular Kits provide an easy to understand introduction to DNA structure. Comprises abstract shaped, colour coded parts to represent the nitrogenous bases - Pentagonal sugar and pyramidal phosphate component parts present in the DNA double helix. Each component is designed so that it can only be attached in its correct position, e.g. Thymine will only pair Adenine. Can be constructed on the stand or without the separators provided. The model can also be uncoiled and 'unzipped' to produce two strands. Scale 1cm = 2 angostroms. Each kit contains all the necessary components, including stand, support rod and easy to follow instructions. Available as an 12 layer or 22 layer model kit.

ESB52161

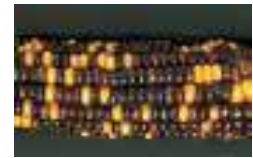




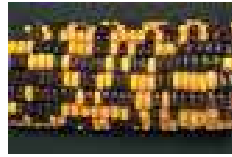
ESB52194



ESB52195



ESB52198



ESB52193



ESB52196



ESB52197

ESB52189 Soy-bean Seeds

"Green: Yellow Green:

Yellow (1:2:1), F2 seeds giving a 1:2:1, seedling ratio, showing incomplete dominance. These seeds will produce, seedlings in which the heterozygous plants show a clear phenotypic difference from homozygous green and yellow. pk/100"

Genetic Corn Ears

Corn ears are an excellent choice for studying Mendelian inheritance. The crosses have been done for you and a selection of F2 corn ears are available. There are numerous contrasting phenotypes expressed in corn seed. These phenotypes are easy to recognize and score. The corn ears are lacquer treated to improve appearance and increase their durability.

ESB52190 Purple starchy

ESB52191 Yellow starchy

ESB52192 Yellow sweet

Segregating Corn Ears

The corn ears are used to demonstrate several patterns of Mendelian genetics. Despatched with an explanatory guide.

ESB52193 R Colour Alleles 1:1

Purple:Yellow. The result of test crossing the F1 hybrid with the recessive parent (R/r x r/r)

ESB52194 Wax Endosperm Alleles 3:1

Starchy : Waxy. Demonstrates segregation of the recessive endosperm character, waxy. Iodine solution is used to distinguish the phenotypes.

ESB52195 Su Endosperm Alleles 3:1

Starchy : Sweet. An F2 ear from a cross between a starchy (Su/Su) and a sweet (su/su) parent. The sweet seeds are wrinkled and the starchy seeds are smooth.

ESB52196 R and Su Alleles 1:1:1:1

Purple Starchy:Purple

Sweet:Yellow Starchy:Yellow

Sweet. The result of test crossing the F1 hybrid with the recessive parent. (R/r Su/su x r/r su/su)

ESB52197 R and Su Alleles 9:3:3:1

For studying dihybrid inheritance. This corn ear allows you to show students organisms that differ their inheritance patterns in 2 traits: Purple Starchy: Purple Sweet: Yellow Starchy :Yellow Sweet. An F2 ear resulting from a P1 generation having the genotypes. (R/R Su/Su and r/r su/su)

ESB52198 R Colour Alleles 3:1

Shows the relationship between genotypes and phenotypes. Perfect for demonstrations. What's the fastest way to explain the relationship between genotypes and phenotypes? Use this one ear of corn. Purple: Yellow. An F2 ear resulting from a P1 generation having the genotypes R/R and r/r.

ESB52199 Mendelian Genetics of Corn Kit

"Kit contains:

8 Segregating ears (Purple : Yellow) 8 Corn Parental Cross Cards A 8 Segregating ears (Starchy: Sweet) 16 Transparency markers 8 Segregating ears (Purple: Yellow :Starchy:Sweet) 8 Corn parental cross cards B Storage Box, Teachers manual For 32 students working in groups of 4. Topics include segregation and the independent assortment of alleles, dominance, genotype and phenotype. Expected ratios, mono-hybrid and dihybrid crosses and chi-square."



Seeds & Accessories

ESB52209	Barley Seeds	250g
ESB52210	Broad Beans	Quick growing , 250g
ESB52211	Clover Seeds	25g
ESB52212	Grass Seeds	25g
ESB52213	Sunflower Seeds	250g
ESB52214	Cress Seeds	100g
ESB52215	Potting Compost	2kg
ESB52216	Peat seeds	2kg
ESB52217	Lettuce Seeds	Grand rapids light sensitive Approx 10,000 per pack ,10g
ESB52218	Mustard Seeds	White , 250g
ESB52219	Lettuce Seeds	Approx 10,000 per pack ,10g
ESB52220	Oat Seeds	250g
ESB52221	Tomato Seeds	1g
ESB52222	Mung Beans seeds	250g
ESB52223	Pea Seeds	250g
ESB52224	Wheat Seeds	250g
ESB52225	Wild Type Brassica Seeds	pack of 200
ESB52226	Radish Seeds	50g



ESB52255

Liquid Fertiliser 1ltr

Plant Grow Lighting System Propagation Lighting

The PL4 propagation light has a 2 metre lead and hanging locations with rope supplied. The unit comes with four double 55 watt white lights for 'fast plant' growing and four Sylvania 55 watt colour 86 daylight bulbs for a maximum blue output. These bulbs are useful when growing a multitude of seeds/plants. The unit measures 60cmx32cmx10cm.

ESB52256

Replacement bulbs for lighting unit White

ESB52257

Replacement bulbs for lighting unit Blue/Colour

ESB52258





Kits

Osmosis & Diffusion Kit

Osmosis and diffusion are essential concepts in understanding how cells survive. The exchange between water and solutes is visually observed in this three part lab that takes no more than two class periods to complete. Students will utilize starch and glucose solutions with dialysis tubing to model the cell membrane and observe the processes of osmosis & diffusion. This laboratory activity is ideal for high school biology classes of all levels. Designed for 24 students working in six groups of four. Grades 9-12

ESB52287

**Coliform Test Kit**

A dramatic way to demonstrate the presence of coliform in water samples to students with a limited laboratory background. Eliminates the need for expensive laboratory equipment for teaching bacteriology, and includes all necessary materials alleviating extensive lab preparation. Great for leading into discussions about water pollution or environmental contamination. May be used in a multitude of science applications. Kit includes instructor's manual with background information, and enough materials for 24 students working individually, in pairs, or in groups. Includes 25 tubes for testing water for presence of Escherichia coli indicative of the presence of animal waste. Requires incubator (37C). Meets national standards for Grades 8-12.

ESB52288

**Mechanisms Of Herbicides**

This exercise is designed to demonstrate the effectiveness of different categories of chemical herbicides. Students transplant grasses and weeds into flats or pots and investigate how and why different plants are killed by different chemical herbicides. A simultaneous microbiological proof with inoculated agar plates is run to reinforce the results, further categorize herbicides, and determine possible effects of the herbicides on soil micro-organisms. Each group will choose two natural products and design a simple experiment to compare chemical vs. natural weed killers. A round table discussion including experimental designs, results, comparisons, and possible environmental impact culminates the exercise. Requires five class periods, plus research time. Required, but not included: heat source, flower pots or nursery flats, grass and weeds for transplanting. Designed for 24 students working in four groups of six. Grades 9-14

ESB52289

**Introduction Microbiology Kit**

Introductory Microbiology Kit

This kit is designed to give an introduction to Microbiology Studies. A workbook is included. The kit allows for 10 groups of students working individually or in groups.

Activities included are: Making broth cultures, effects of temperature, Making plate cultures, Antibiotics and their effects on cultures, Staining, Pasteurisation, Living bacteria study, Study of fungi, Life cycle of Mucor and many other activities and applications. The kit has been developed to give a thorough understanding of all the practical Activities that would be conducted in a 'real life' microbiology laboratory thus introducing students to the importance of this critical field of study.

ESB52290



Cultures

Our cultures are supplied on agar slopes in screw top vials. Each one is identified as gram + or -.

- ESB52305** Agrobacterium tumefaciens - Nutrient Agar
- ESB52306** Bacillus megaterium + Nutrient Agar
- ESB52307** Bacillus stearothermophilus + Nutrient Agar
- ESB52308** Bacillus subtilis + Nutrient Agar
- ESB52309** Erwinia carotovora - Nutrient Agar
- ESB52310** Escherichia coli K 12 Strain - Nutrient Agar
- ESB52311** Escherichia coli B Strain - Nutrient Agar. Susceptible to T4 Bacteriophage
- ESB52312** Lactobacillus bulgaricus + G.Y.L.A
- ESB52313** Lactobacillus casei + G.Y.L.A
- ESB52314** Micrococcus luteus + Nutrient Agar
- ESB52315** "Pseudomonas fluorescens - Nutrient Agar"
- ESB52316** Staphylococcus albus + Nutrient Agar
- ESB52317** "Streptococcus lactis + Lactococcus lactus. G.Y.L.A"
- ESB52318** Aspergillus oryzae Potato dextrose agar
- ESB52319** Fusarium solani Potato dextrose agar
- ESB52320** Mucor hiemalis + Ve Strain Malt extract agar
- ESB52321** Penicillium chrysogenum Malt extract agar
- ESB52322** Penicillium expansum Malt extract agar
- ESB52323** Penicillium roqueforti Malt extract agar
- ESB52324** Rhizopus stolonifer Potato dextrose agar
- ESB52325** Saccharomyces cerevisiae Normal, diploid strain. Malt extract agar
- ESB52326** Sordaria fimicola Black Spored Sordaria agar
- ESB52327** Sordaria fimicola White Spored Sordaria agar



Counter

Hand held mechanical counter. Single lever action counts 0 to 9,999.

ESB52344



Inoculating Loop Holder

Metal handles with chuck to take inoculating wires and loops, lockable by a screw collar. Length: 150mm.

Pack of 5.

ESB52342



Inoculating Loop St. Steel

Nichrome wire with 2mm diameter loop formed at one end. For use with the Inoculating Loop Holder. Length: 50mm. Pack of 5.

ESB52341



Inoculating Loop Disposable

10µl loop at one end with a needle for stab culture or picking off colonies at the other. Sterile.

Pack of 20.

ESB52343





Colony Counter

Four digital displays

4 digit display offers convenience of showing the present and previous three count values.

Multi-counting average : can make average count from multiple counting.

Exclusive BACK button : The BACK button offers the convenience of deducting data when over counting. Suitable for Petri-dishes in various diameters : adjustable dish holder can accept most Petri-dishes in a wide range of diameters from 90 to 150 mm or 60 mm.

Pressure sensor design : Pressure sensor design can allow user to operate with any marking pens. No worry about sample spoiled or contaminated.

ESB52345

Colony Counter With Software

Four digital displays : 4 digit display offers convenience of showing the present and previous three count values.

Multi-counting average : can make average count from multiple counting.

Exclusive BACK button : The BACK button offers the convenience of deducting data when over counting.

Suitable for Petri-dishes in various diameters : adjustable dish holder can accept most Petri-dishes in a wide range of diameters from 90 to 150 mm or 60 mm.

Pressure sensor design : Pressure sensor design can allow user to operate with any marking pens. No worry about sample spoiled or contaminated.

ESB52346

Colony Counter Marking Pen

Marking pen for colony counter

ESB52347

Colony Counter Background Plate

Background plate for colony counting

ESB52348



Nichrome Wire Inoculating Loop

Pack of 5

ESB52352



Gram Stain Kit

Gram Stain Kit is for qualitative procedures to differentiate gram-positive from gram-negative micro-organism.

Include 4 x 250 mL bottles : Crystal Violet; Decolonize; Iodine; Safranin

ESB52351



Bacteria Spreader

Stainless steel rod bent to facilitate spreading bacterial dispersions evenly over an agar plate

ESB52354





Glass Vials

30ml tubular glass vial with fitted polypropylene cap pack of 30

ESB52355



Petri Dishes

9 cm plastic triple vent pack of 20

ESB52356

- ESB52404 Anti Human Ig A Serum Two millilitres
- ESB52405 Antibiotic Assay Discs - Box of 100 Pack of one hundred
- ESB52406 Antibiotic Assay Discs - Box of 1000 Pack of one thousand
- ESB52407 Penicillin G Sensitivity Discs - 1.5 units, Pack of 250
- ESB52408 Penicillin G Sensitivity Discs - 1.5 units, Pack of 50 Pack of fifty
- ESB52409 Penicillin G Sensitivity Discs - 10 units, Pack of 250
- ESB52410 Penicillin G Sensitivity Discs - 10 units, Pack of 50 Pack of fifty
- ESB52411 Penicillin G Sensitivity Discs - 5 units, Pack of 250
- ESB52412 Penicillin G Sensitivity Discs - 5 units, Pack of 50 Pack of fifty



Living Culture

- ESB52463 Paramecium caudatum
- ESB52464 Amoeba
- ESB52465 Aquaspirillum serpens
- ESB52466 Bacillus megaterium
- ESB52467 - Bacillus subtilis
- ESB52468 Chlamydomonas pulsatilla
- ESB52469 Chlorella Medium Millilitre
- ESB52470 Chlorella pyrenoidosa
- ESB52471 Escherichia B strain
- ESB52472 Escherichia coli K12 strain
- ESB52473 Euglena spirogyra
- ESB52474 Immunodiffusion (Buffered Agar) Medium
- ESB52475 L shaped spreaders Pack of twenty five

- ESB52476 Lactobacillus casei
- ESB52477 Pseudomonas fluorescens
- ESB52478 Rhizobium leguminarosum
- ESB52479 Spyrogira varians
- ESB52480 Staphylococcus epidermidis
- ESB52481 Streptococcus Faecalis
- ESB52482 Streptomycin Sensitivity Discs - 25g, Pack of 250
- ESB52483 Streptomycin Sensitivity Discs - 25g, Pack of 50 Pack
- ESB52484 Vibrio natriegens





EduScience UK



MICROSCOPIES



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www.eduscienceuk.com

MICROSCOPIES

- Monocular

- Binocular

- Digital

- Stereo

- Slides



Order Code: DinoScope



Order Code: MonsterScope



Microscopes

Childlike hand painted graphic box



Reassuring materials for kids



1000x High-definition Imaging



It's better to give your child a "Microscope"



Adjustable LED brightness, battery powered



Able to be equipped with mobile phone holder



Simple operation, easy for children to learn





Microscope Biological Monocular HM-1

H-1 Series microscopes are economic, practical and easy to operate. These microscopes adopt LED illumination, which save energy and have long working life. It is also very comfortable for observation. These microscopes are widely used in educational, academic, and agricultural & study field. H-1 series microscopes are ideally suited for school biological education and medical analyses area to observe all kinds of slides. They can be widely used in clinics, hospitals, schools, academic labs and scientific research department.

Monocular Head, Inclined at 30 °, 360 °

Rotatable Wide Field Eyepiece WE 1 OX/1R

Achromatic Objective 4X, 10X, 40X,

100X Quadruple Nose-piece

Double Layers Mechanical Stage 125

X125min/60x40min NA 1.25 Abbé Condenser with

Iris Diaphragm

Coaxial Coarse and Fine Adjustment, Fine Division 0.002mm, Coarse Stroke 37.7mm per Rotation, Fine

Stroke 0.2mm per Rotation, Moving Range 14mm

1W LED Illumination, Brightness

Adjustment Blue Filter / Green Filter /

Yellow Filter

ESB52672

Microscope Student Monocular HM-Basic

HM-Basic is our most popular elementary student microscopes!

This microscope is slightly smaller in size for young scientists without sacrificing high quality glass optics. The student elementary microscope includes Up and Down LED illumination, rugged metal components and has been built with student proofing features to eliminate damage to microscope and loss of parts.

Monocular

Head, Inclined at 45 °

Wide Field Eyepiece WF10XJ16

Wide Field Eyepiece WF25

Achromatic Objective : 4X, 10X,

40X Triple Nose-piece

Plain Stage with Slide Clip 95X95mm

NA 0.65 Condenser with Iris

Diaphragm Coaxial Coarse and fine

adjustment

Up and Down LED Il

lumination, Brightness Adjustment for down illumination



ESB52673

Microscope Monocular HM-2

HM-2 microscopes are economic, practical and easy to operate. These microscopes adopt LED illumination, which save energy and have long working life. It is also very comfortable for observation. These microscopes are widely used in educational, academic, and agricultural & study field. These microscopes are ideally suited for school biological education and medical analyses area to observe all kinds of slides. They can be widely used in clinics, hospitals, schools, academic labs and scientific research department-

Viewing Head: Monocular Head

Eyepiece : Wide Field Eyepiece WF10X/18

2 Objective : Achromatic Objective 4X,

10X, 40X Nose-piece : Quadruple Nose-

piece

Stage : Double Layers Mechanical Stage

132X142mm/75x40mm

Condenser : NA 1.20 Abbé Condenser with Iris Diaphragm and

filter Focusing System Coaxial Coarse and Fine Adjustment,

Fine Division 0.004mm, Coarse Stroke, 32.7mm per Rotation,

Fine Stroke 0.4mm per Rotation, Moving Range 24mm

Illumination : S-LED Illumination, Brightness Adjustment

ESB52674



Microscope Monocular HM-3

HM-3 microscopes are economic, practical and easy to operate. These microscopes adopt LED illumination, which save energy and have long working life. It is also very comfortable for observation. These microscopes are widely used in educational, academic, and agricultural & study field. These microscopes are ideally suited for school biological education and medical analyses area to observe all kinds of slides. They can be widely used in clinics, hospitals, schools, academic labs and scientific research department-

- Viewing Head: Monocular Head
- Eyepiece: Wide Field Eyepiece WF10X/18 2
- Objective : Achromatic Objective 4X, 10X, 40X; Achromatic Objective 100X Nose-piece : Quadruple Nose-piece
- Stage :Double Layers Mechanical Stage
- 132X142mm/75x40mm Condenser : NA 1.20 Abbé Condenser with Iris Diaphragm and filter
- Focusing System Coaxial Coarse and Fine Adjustment, Fine Division 0.004mm, Coarse Stroke, 32.7mm per Rotation, Fine Stroke 0.4mm per Rotation, Moving Range 24mm
- Illumination : S-LED Illumination, Brightness Adjustment

ESB52675



Microscope Monocular Advance

- Viewing head: Monocular Head
- Eyepiece : 2x Wide Field Eyepiece WF 10X/18
- Objective : Achromatic Objective 4X, 10X, 40X, 100X Nose-piece : Quadruple Nose-piece
- Stage : double Layers Mechanical Stage
- 140X140mm/75x50mm Condenser : NA 1.25 Abbé Condenser with his Diaphragm
- Focusing System : Coaxial Coarse and Fine Adjustment. Fine Division 0.002mm, Coarse Stroke 37.7mm per Rotation, Fine Stroke 0.2mm per Rotation, Moving Range 20mm
- Illumination : Single LED Illumination, Brightness Adjustment
- Filter: Blue Filter, Green Filter

ESB52676

Microscope Monocular Digital

- Monocular head, Inclined at 45°, 360° rotatable , 1280x1024(1.3M Pixel) , USB2.0 output mode. Objective : Achromatic Objective (DIN) 4X,10X,40X,100X
- Eyepiece : WF10X/ 18
- Stage : Double Layers Mechanical Stage
- 115X125mm/70X20mm Operation system: WINDOWS 2000/XP/VISTA 32 Bit or 64 Bit
- Illumination : 1W Powerful LED Illumination, brightness adjustable
- Focusing: Coaxial coarse and fine adjustment

ESB52720



Biological Microscope Digital ESB-22

Viewing head : Monocular viewing head inclined at 45°, 360° rotation
 Digital parts : Equipped with a integrated 1.3 MP 1/2.5" CMOS sensor with 1272 x 952 pixel resolution USB 2.0 camera Software included, RJ-45-Network Connection, the operating net system covers 8 microscopes, RCA-Composite video, come with USB wire connection
 Eyepiece : 1pc of WF10x/18mm eyepiece
 Nosepiece : Reversed quadruple ball bearings revolving Objectives: nosepiece All with anti-fungus treatment.
 Achromatic objective 4x/0.10 Achromatic objective 10x/0.25
 Achromatic objective 40x/0.65, spring loaded Achromatic objective 100x/1.25, spring loaded, oil
 Stage : Double layer mechanical stage 115 x 100 mm stage with integrated 55 x 20 mm X-Y travel range Focusing : Coaxial coarse and fine adjustments with 200 graduations. Precision 15 µm per graduation, 0.3 mm per rotation, total travel approximately 15mm, supplied with an adjustable rack stop to prevent damage to sample and objectives. The coarse adjustment is equipped with friction control
 Condenser : Height adjustable Abbe condenser N.A. 1.25 with iris diaphragm and filter holder
 Illumination : High brightness energy-saving LED illumination for long life, brightness adjustable
 Power : Supplied with rechargeable AA batteries and integrated 100-240 V power supply for cordless operation
 Others : Dust cover, spare fuse, white filter, slim and easy to carry, AA batteries, user manual and immersion oil
 Accessories : Brought with it selection of tools below:
 2 packet Lens cleaner tissue in each packet (100pcs) screw (2 types in each type one small and one bigger) Faine hair blower brush .
 Oil dropper with high grade light lubricating oil (25 ml). Selveyt cloth for cleaning lenses
 Slide Stage micrometer (0.01 - 0.1mm).
 Warranty : Three years warranty Opened software included

ESB52724

NEW



Optional Accessories

Cat. Number	Descriptions	Cat. Number	Descriptions
BM 2201001	Monocular viewing head inclined at 45°, 360° rotation	BM 2201021	Plain stage, size: 105 x 105 mm with two non-removable clamps
BM 2201002	Siedentop binocular models have 45° inclined tubes, interpapillary distance is adjustable between 48 and 75mm, equipped with a ±5 diopter adjustment on the left tube	BM 2201022	Double layer mechanical stage 115 x 100 mm stage with integrated 55 x 20 mm X-Y travel range
BM 2201003	Siedentop Trinocular models have 30° inclined tubes, interpapillary distance is adjustable between 48 and 75mm, equipped with a ±5 diopter adjustment on the left tube, with a fixed light path beam splitter 50:50	BM 2201023	N.A. 0.65 condenser with built-in iris diaphragm
BM 2201004	Digital monocular head with integrated camera 1.3MP CMOS, USB 2.0 port	BM 2201024	Abbe condenser N.A. 1.25 with iris diaphragm and filter holder
BM 2201005	Digital monocular head, with integrated camera 5.0MP CMOS, USB 2.0 port	BM 2201025	
BM 2201006	IPS screen head, 7" IPS full view screen, screen size 1024x600mm, built-in 5mp color CMOS, size: 5345(H)x3003(V)um, pixel: 2.75x2.75um, resolution: 1920x1080, with a USB interface, HDMI interface & SD card, to facilitate data presentation	BM 2201026	Green filter, 32 mm diameter
BM 2201007	WF10x/18mm eyepiece	BM 2201027	Yellow filter, 32 mm diameter
BM 2201008	WF10x/18mm micrometric eyepiece	BM 2201028	Neutral grey filter, 32 mm diameter
BM 2201009	WF10x/18mm eyepiece, with pointer	BM 2201029	1 W LED replacement unit
BM 2201010	WF15x eyepiece	BM 2201030	0.35x C-Mount projection lens
BM 2201011	WF20x eyepiece	BM 2201031	0.5x C-Mount projection lens
BM 2201012	A pair of eyecups	BM 2201032	0.75x C-Mount projection lens
BM 2201013	Triple nosepiece	BM 2201033	AAA Rechargeable batteries (3pcs)
BM 2201014	Quadruple nosepiece	BM 2201034	Anti-theft slot: At the back of the microscope a Kensington Security Slot is placed, which can be used to secure the instrument from theft
BM 2201015	Achromatic objective 4x/0.10	BM 2201035	Carry bag
BM 2201016	Achromatic objective 10x/0.25	BM 2201036	Aluminum case
BM 2201017	Achromatic objective 20x/0.40	DETECO5A	Digital eyepiece TECO-5A, 5.1MP, USB port
BM 2201018	Achromatic objective 40x/0.65, spring loaded	DCKOTI5A	Digital camera KOTI-5A, 5.1MP, CMOS USB 2.0
BM 2201019	Achromatic objective 60x/0.85, spring loaded	DTX195L2	Digital tablet DX1, 9.5" LCD display, 2MP, CMOS, 3 x USB 2.0 ports, 1 x HDMI port, with image process software
BM 2201020	Achromatic objective 100x/1.25, spring loaded, oil	DP1105L8	Digital tablet DP1-Pro, 10.5 tablet with touch screen, 8MP, CMOS, 4K. with 2 x USB 3.0 ports, 1 x USB 2.0 port, 1 x HDMI port, 1 x Gigabit Lan port, 2.4GHz/5GHz dual-band WIFI, support WIFI6, support blue tooth, with image process software
		***	More digital cameras are available and optional, please refer to the brochure of ICOE digital cameras



Microscope Biological, Binocular Digital HB-2D

HB-2 series microscopes are economic, practical and easy to operate. These microscopes adopt LED illumination, which save energy and have long working life, it is also very comfortable for observation. These microscopes are widely used in educational, academic, agricultural and study field. With a microscope adaptor, a digital camera (or digital eyepiece) can be plug into the Trinocular tube or the eyepiece tube. Built-in rechargeable battery is optional for outdoors operation or places that power supply is not stable.

Description

New machining facility and advanced alignment technology Complete functions and outfit of binocular microscope Comfortable operation with updated and ergonomic design Specimen images are taken with HB-2

Achromatic objective supply the sharp image after adjusting Iris diaphragm. You can get high resolution and contrast ratio image at low or high magnification. 3W Single LED illumination supplies bright background. According to different demands. It also can install 6V/20W halogen bulb, then the lighting effect is the same

High-powered single LED cold light illumination

It maintains constant colour temperature and closes to sun light. It can apply bright white back-ground without filter that is the best choice of observation for bright-field and photography by CCD. The illumination supplies stable brightness and temperature difference never occurred even long time worked. Comparing with halogen lamp, LED has lower power dissipation. Brightness is adjustable freely by the rotatable key at lower right side.

Siedentop Binocular Head, Inclined at 30°, Inter popularize distance is adjustable from 55mm to 75mm. The left eyepiece tube is 75 diopter adjustable.

Double Layers Mechanical Stage 140X140mm/75x50mm Coaxial Coarse & Fine Adjustment, Moving Range 24mm, Fine Division 0.004mm

With quadruple nose-piece, it is equipped with Achromatic Objectives:4X,10X,40X(S),100X(S, Oil) (Plan Achromatic Objectives 4X, 10X, 40X, 100X are optional). NA 1.20 (NA 1.25 is optional) Abbe Condenser with Iris Diaphragm is able to acquire light brighter.

Viewing Head: Compensation Free Trinocular Head, Inclined at 45°, Inter popularize Distance 55-75mm Eyepiece : 2X WF10°/18

Objective : chromatic Objective 4X-10X-40X-100X Backward Quadruple Nose-piece

Double Layer Mechanical Stage 132-142mm/ 75x40mm

Coaxial Coarse & Fine Adjustment, Moving Range 24mm, Fine Division 0.004mm Abbe NA 1.20 with Iris Diaphragm & Filter S-LED, Brightness Adjustable



ESB52719



Microscope Digital With Built In Screen 2.4 Inch

This LCD HDMI microscope integrating LCD/HDMI/TV/USB functions is highly useful for students, teachers, collectors, hobbyists, and testers etc. to explore the microscopic world. Display: 2.4-inch LCD

Magnification Ratio: 10x to

220x Image sensor: 3 Mega

Pixels Photo size: 3M, 5M,

8M, 12M Video size: 1080P,

720P, VGA Video output :

HDMI/TV/USB

Focus Range : Manual focus from 10mm to

50mm Storage : Micro-SD card, up to 32G

Measurement : Yes, when working as a USB

microscope Light source : 6 LED (adjustable by

control wheel) Power source : Built-in Li-ion

Battery or 5V DC-in

Size : 110mm (H) x 80mm (L) x 55mm (W)

ESB52742





Microscope Digital With Built In Screen 3.5 Inch

3.5-inch Standalone 1200x 5M LCD Digital Microscope with Photo/Video Measurement

- * 3.5" LCD Display
- * 5M pixels image sensor
- * Professional microscopic lens
- * 300x magnification, up to 1200x by digital
- * 8 LEDs with brightness adjustable
- * Battery powered, Portable and Standalone
- * Measurement function
- * TV-out to any monitor with TV-in
- * Image Sensor : 5 Mega Pixels (true resolution)
- * LCD Panel : 3.5inches
- * Still capture resolution : 12M, 9M, 5M, 3M, 1.3M, VGA
- * Video capture resolution : 12M, 9M, 5M, 3M, 1.3M, VGA
- * Focus Range : Manual focus from 10mm to 50mm
- * Frame Rate : Max 30f/s under 600 Lux Brightness
- * Magnification Ratio : up to 1200x
- * TV output : Available (to any monitor with TV in)
- * Card Slot : Support Micro-SD Card slot up to 32GB SDHC
- * Light source : 8 LED (adjustable by control wheel)
- * Battery : Rechargeable lithium battery (recharged by adaptor or USB)
- * Measurement : By software (Portable Capture with OSD language: English, German, Spanish, French, Russian)
- * OSD language : English, German, Spanish, French, Russian
- * Bundle software : Portable Capture with measurement
- * Product Size : L149 * W104 * H227 mm
- * Weight : 1100g
- * Certificates : With CE, FCC approval, ROHS compliance

ESB52743

Microscope USB Digital 200X With 8 LED

USB Digital Microscope is a high-tech while easy to use Digital Microscope. 8 LEDs with brightness adjustable are good for any inspection environment.

It is applicable in many fields such as visual inspection on electronic components, and materials in a full range of uses, beauty shop and education.

Its 2M image sensor presents vivid and sharp amazing image. The measurement software can help you to measure tiny objects easily and precisely (as small as 0.001mm). With this unit you may see a unique & "bigger" world. Image sensor : 2 Mega Pixels

- * Focus Range: Manual focus from 10mm to 500mm
- * Frame Rate: Max 30f/s under 600 Lux Brightness
- * Magnification Ratio : 10x to 200x
- * Light source : 8 LED (adjustable by control wheel)
- * Still capture resolution : 1920x1080, 1280x720, 640x480
- * Video capture resolution : 1920x1080, 1280x720, 640x480
- * Frame Rate : Max 30f/s under 600 Lux Brightness
- * Video format : AVI
- * Photo format : JPEG or BMP
- * PC interface : USB2.0
- * Power source : 5V DC from USB port
- * Operation system : Windows 7/8/10, Mac OS X 10.10 or above
- * OSD language : English, German, Spanish, Korean, French, Russian
- * Bundle software : Micro Capture with measurement & calibration function
- * Working temperature: -20^o,f ~ +60^o,f
- * Size: 110mm (L) x 33mm (R)



ESB52744



Microscope USB Digital 400X With 8 LED

The 400 X digital microscope is a high-tech while easy to use USB Digital Microscope. It is applicable in many fields such as visual inspection on electronic components, and materials in a full range of uses, beauty shop and education. 400x magnification bring you with tremendous details. With this unit you may see a unique & "bigger" world. Its 1.3M image sensor presents vivid and sharp amazing image. 8 LEDs with brightness adjustable are good for any inspection environment.

The measurement software can help you to measure tiny objects easily and precisely (as small as 0.001mm).

All the excellent features make it a good aid for your daily inspection on tiny objects.* Image sensor: 1.3 Mega Pixels

* Focus Range: Manual focus from 10mm to 500mm

* Frame Rate: Max 30f/s under 600 Lux Brightness

* Magnification Ratio: 10x to 400x

* Light source : 8 LED (adjustable by control wheel)

* Still capture resolution : 1280x960, 1280x720, 640x480

* Video capture resolution : 1280x960, 1280x720, 640x480

* Frame Rate : Max 30f/s under 600 Lux Brightness

* Video format : AVI

* Photo format : JPEG or BMP

* PC interface : USB2.0

* Power source : 5V DC from USB port

* Operation system : Windows2000/XP/Vista/Win7/Win8, Mac OS X 10.6 or above

* OSD language : English, German, Spanish, Korean, French, Russian

* Bundle software : Micro Capture with measurement & calibration function

* Working temperature : -20^o,f - +60^o,f

* Size : 130mm (L) x 33mm (R)



ESB52745

Microscope USB Digital With HDMI Output

This high-tech while easy to use microscope provides video crystal output directly. It adopts top quality image sensor and corresponding glass microscopic lens, ensuring the best image quality in the digital microscope field. User can share full HD image with others easily, especially useful for school teachers to share microscopic image with students.

It support photo capture; Micro-SD card storage. Image sensor: 3 Mega Pixels

* Video output: 1080P

* Video format: HDMI-H.264; USB-MJPEG

* Photo format: JPEG

* Photo resolution: 14M, 8M, 5M, 3M, 2M, WVGA

* Focus Range : Manual focus from 10mm to 500mm

* Frame Rate : Max 30f/s under 600 Lux Brightness

* Magnification Ratio: 10x to 220x

* Video-output Interface : HDMI

* Storage : Micro-SD card, up to 32G

* Light source : 6 LED (adjustable by control wheel)

* Operation Temperature : 0-55 degree

* Power source : 5V DC

* Size : 185mm (L) x 33mm (R)

ESB52747



Microscope USB Digital

USB Digital Microscope

Image sensor : 5 Mega Pixels (true resolution)

Still capture resolution : 5M, 3M, 1.3M, VGA,

QVGA Video capture resolution : 5M, 3M, 1.3M,

VGA, QVGA Focus range : Manual focus from

10mm to 500mm Frame rate : Max 30f/s under

600 Lux Brightness Magnification ratio : 20x and

300x

Light source : 8 LED (adjustable by control

wheel) PC interface : USB2.0

Operation system : Windows XP/Vista/Win7, Mac OS X 10.6 or

above Product size : 110mm (L) x 33mm (R), Weight : 90g

ESB52746





Binocular Student Microscopes Basic

Model: IT10ED

• Viewing head: Sliding Binocular Head, Inclined at 30°, Interpupillary 55-75mm, 360° Rotatable

with integrated camera system 1.3mp (1280x1024), USB2.0

output, Advance software, OS for WINDOWS

• Nosepiece: Quadruple revolving nosepiece

• Eyepiece: Eyepiece WF 10X/18 mm wide field

• Objectives: Achromatic DIN objective 4x/0.10

Achromatic DIN objective 10x/0.25

Achromatic DIN objective 40x/0.65, spring loaded

Achromatic DIN objective 100x/1.25, spring loaded, oil

• Stage: Double layers mechanical stage 110x120mm/70x20mm

• Focusing: Coaxial coarse and fine adjustment, range 10 mm

• Condenser: Abbe NA 1.20 with iris diaphragm & blue filter,

rack and pinion adjustment for condenser

• Illumination: 1W LED, brightness adjustable

• Supplied with: Dust cover, spare fuse

• Power: 100-220V, 50/60Hz, output DC 7.5V

• Dimensions: 180x130x340mm, net weight 2.3 kgs

• Packing: Styrofoam shelve in a cardboard box

ESB52774

Optional Accessories

Cat. Number	Descriptions
M11031001	Eyepiece WF5x
M11031002	Eyepiece P16x
M11031003	Eyepiece WF20x
M11031004	Eyepiece WF10x with pointer
M11031005	Quadruple nosepiece
M11031006	Achromatic DIN objective 20x
M11031007	Achromatic DIN objective 60x
M11031008	Achromatic DIN objective 100x
M11031009	Stage: Plain stage with slide clips 110x120mm
M11031010	Stage: Plain stage with attachable mechanical stage 110x120mm/60x30mm
M11031011	Stage: Double layers mechanical stage 110x120mm/70x20mm
M11031012	Condenser: Abbe NA 1.2 with iris diaphragm & blue filter, rack and pinion adjustment for condenser
M11031013	Reflecting mirror



Binocular Biological Microscope ESB-BM30

with Dark Field Attachment and Phase Contrast Kit (Anti-Fungus)

Optical system :Finite optical system

Viewing head : Sliding binocular viewing head inclined at 45°, interpupillary 55-75mm, 360° rotation, Anti-Fungus.

Eyeiece :A pair of WF10x/18mm eyepiece, with diopter adjustment.

Nosepiece :Reversed quadruple ball bearings revolving nosepiece

Objectives :

All with anti-fungus treatment.

Achromatic objective 4x/0.10

Achromatic objective 10x/0.25

Achromatic objective 40x/0.65, spring loaded

Achromatic objective 100x/1.25, spring loaded, oil

Stage :Double layer mechanical stage, with size : 140x140mm, 75x50mm X-Y movement range. Vernier scale on the two axes, accuracy : 0.1mm

Focusing :Integrated design, coaxial focus system with upper limited and tension adjustment, coarse stroke 37.7mm per

rotation, fine precision: 0.002mm, moving range: 28mm, provided with an adjustable tightness device to prevent slipping and a mechanical upper limit device

Condenser :Abbe N.A. 1.25 condenser with aperture diaphragm

Illumination: High brightness 3W LED illumination for long life, brightness adjustable

Plan-concave Mirror

Kohler illumination (optional)

Power :Multi-plug 100-240Vac, 50/60Hz external power supply

Others :Dust cover, green filter, immersion oil and user manual

Phase Contrast kit :Simple phase contrast kit

Dark Field Attachment : Dry Dark field attachment

ESB52775

**Optional Accessories**

Cat. Number	Descriptions	Cat. Number	Descriptions
BM 2201001	Monocular viewing head inclined at 45°, 360° rotation	BM 2201021	Plain stage, size: 105 x 105 mm with two non-removable clamps
BM 2201002	Siedentop binocular models have 45° inclined tubes, interpupillary distance is adjustable between 48 and 75mm, equipped with a ±5 diopter adjustment on the left tube	BM 2201022	Double layer mechanical stage 115 x 100 mm stage with integrated 55 x 20 mm X-Y travel range
BM 2201003	Siedentop Trinocular models have 30° inclined tubes, interpupillary distance is adjustable between 48 and 75mm, equipped with a ±5 diopter adjustment on the left tube, with a fixed light path beam splitter 50:50	BM 2201023	N.A. 0.65 condenser with built-in iris diaphragm
BM 2201004	Digital monocular head with integrated camera 1.3MP CMOS, USB 2.0 port	BM 2201024	Abbe condenser N.A. 1.25 with iris diaphragm and filter holder
BM 2201005	Digital monocular head, with integrated camera 5.0MP CMOS, USB 2.0 port	BM 2201025	
BM 2201006	IPS screen head, 7" IPS full view screen, screen size 1024x600mm, built-in 5mp color CMOS, size: 5345(H)x3003(V)um, pixel: 2.75x2.75um, resolution: 1920x1080, with a USB interface, HDMI interface & SD card, to facilitate data presentation	BM 2201026	Green filter, 32 mm diameter
BM 2201007	WF10x/18mm eyepiece	BM 2201027	Yellow filter, 32 mm diameter
BM 2201008	WF10x/18mm micrometric eyepiece	BM 2201028	Neutral grey filter, 32 mm diameter
BM 2201009	WF10x/18mm eyepiece, with pointer	BM 2201030	0.35x C-Mount projection lens
BM 2201010	WF15x eyepiece	BM 2201031	0.5x C-Mount projection lens
BM 2201011	WF20x eyepiece	BM 2201032	0.75x C-Mount projection lens
BM 2201012	A pair of eyecups	BM 2201033	AAA Rechargeable batteries (3pcs)
BM 2201013	Triple nosepiece	BM 2201034	Anti-theft slot: At the back of the microscope a Kensington Security Slot is placed, which can be used to secure the instrument from theft
BM 2201014	Quadruple nosepiece	BM 2201035	Carry bage
BM 2201015	Achromatic objective 4x/0.10	BM 2201036	Aluminum case
BM 2201016	Achromatic objective 10x/0.25	DETECO5A	Digital eyepiece TECO-5A, 5.1MP, USB port
BM 2201017	Achromatic objective 20x/0.40	DCKOT15A	Digital camera KOTI-5A, 5.1MP, CMOS USB 2.0
BM 2201018	Achromatic objective 40x/0.65, spring loaded	DTX195L2	Digital tablet DX1, 9.5" LCD display, 2MP, CMOS, 3 x USB 2.0 ports, 1 x HDMI port, with image process software
BM 2201019	Achromatic objective 60x/0.85, spring loaded	DP1105L8	Digital tablet DP1-Pro, 10.5 tablet with touch screen, 8MP, CMOS, 4K. with 2 x USB 3.0 ports, 1 x USB 2.0 port, 1 x HDMI port, 1 x Gigabit Lan port, 2.4GHz/5GHz dual-band WIFI, support WIFI6, support blue tooth, with image process software
BM 2201020	Achromatic objective 100x/1.25, spring loaded, oil	***	More digital cameras are available and optional, please refer to the brochure of ICOE digital cameras





Biological Microscope Advance ESB-BM30WB

with Advanced Alignment, LED Illumination

Viewing head :Sliding binocular viewing head inclined at 45°, interpupillary 55-75mm, 360° rotation, Anti-Fungus.

Eyeiece: A pair of WF10x/18mm eyepiece, with diopter adjustment.

Nosepiece :Reversed quadruple ball bearings revolving nosepiece

Objectives :All with anti-fungus treatment.

Achromatic objective 4x/0.10

Achromatic objective 10x/0.25

Achromatic objective 40x/0.65, spring loaded

Achromatic objective 100x/1.25, spring loaded, oil

Stage : Double layer mechanical stage, with size: 140x140mm, 75x50mm X-Y movement range.

Vernier scale

on the two axes, accuracy: 0.1mm

Focusing : Integrated design, coaxial focus system with upper limited and tension adjustment, coarse stroke 37.7mm per

rotation, fine precision: 0.002mm, moving range: 28mm, provided with an adjustable tightness device to prevent

slipping and a mechanical upper limit device

Condenser : Abbe N.A. 1.25 condenser with aperture diaphragm

Illumination : High brightness 3W LED illumination for long life, brightness adjustable

Plan-concave Mirror Kohler illumination (optional)

Power :Multi-plug 100-240Vac, 50/60Hz external power supply

Others :Dust cover, green filter, immersion oil and user manual

ESB52776

Optional Accessories

Cat. Number	Descriptions	Cat. Number	Descriptions
M 11BM 3001	Binocular head	M 11BM 3030	Plan darkfield objective 100x with iris diaphragm for oil dark field condenser
M 11BM 3002	Trinocular head	M 11BM 3031	Plan phase contrast achromatic objective 10x/0.25
M 11BM 3003	Sliding binocular head	M 11BM 3032	Plan phase contrast achromatic objective 20x/0.40
M 11BM 3004	Sliding trinocular head	M 11BM 3033	Plan phase contrast achromatic objective 40x/0.65
M 11BM 3005	Eyeiece WF10x/18mm	M 11BM 3034	Plan phase contrast achromatic objective 100x/1.25
M 11BM 3006	Eyeiece WF10x/20mm	M 11BM 3029	Plan achromatic objective 100x/1.25, spring loaded, oil
M 11BM 3007	Eyeiece P16x	M 11BM 3035	N.A. 1.25 Abbe Condenser
M 11BM 3008	Eyeiece WF20x	M 11BM 3036	Dark Field Condenser NA0.7-0.9 (Dry)
M 11BM 3009	Eyeiece WF10x/18mm with micrometer	M 11BM 3037	Dark Field Condenser NA1.25-1.36 (Oil)
M 11BM 3010	Eyeiece WF10x/20mm with micrometer	M 11BM 3038	Simple Polarization Set: Polarizer & Analyzer
M 11BM 3011	Backward quadruple revolving nosepiece	M 11BM 3039	Turret phase contrast set, including turret phase contrast condenser, plan phase contrast objectives 4x, 20x, 40x & 100x, with centering telescope & green filter
M 11BM 3012	Achromatic objective 4x/0.10	M 11BM 3040	Turret phase contrast set, including turret phase contrast condenser, phase contrast achromatic objectives 4x, 20x, 40x & 100x, with centering telescope & green filter
M 11BM 3013	Achromatic objective 10x/0.25	EFLAYX2	Epi-Fluorescent Attachment "XY-2": Including filter block system, fluorescent filter block B & G excitation filter block included; 100W HBO ultra hi-voltage spherical mercury lamp; power supplier NFP-1, 220V/110V interchangeable, digital display and timer; protection barrier to resist the ultraviolet light; fluorescent oil
M 11BM 3014	Achromatic objective 20x/0.40	EFLAYX2BG	B&G fluorescent block set, including two filters: (used for XY-2) BLUE Filter Block: Excitation BP460~490 - Dichroic Mirror DM 500 - Barrier Filter BA520 GREEN Filter Block: Excitation BP510~550 - Dichroic Mirror DM 570 - Barrier Filter BA590
M 11BM 3015	Achromatic objective 40x/0.65, spring loaded	EFLAYX2UV	U&V fluorescent block set, including two filters: (used for XY-2) ULTRAVIOLET Filter Block: excitation BP330~385 - DM 400 - Barrier Filter BA420 VIOLET Filter Block: excitation BP400~410 - DM 455 - Barrier Filter BA455
M 11BM 3016	Achromatic objective 60x/0.85, spring loaded	IPFO004X	Fluorescent objective 4x/0.10
M 11BM 3017	Achromatic objective 100x/1.25, spring loaded, oil	IPFO010X	Fluorescent objective 10x/0.25
M 11BM 3018	Semi-plan achromatic objective 4x/0.10	IPFO040X	Fluorescent objective 40x/0.65
M 11BM 3019	Semi-plan achromatic objective 10x/0.25	IPFO100X	Fluorescent objective 100x/1.25
M 11BM 3020	Semi-plan achromatic objective 20x/0.40	M 12BM 3041	1X C mount
M 11BM 3021	Semi-plan achromatic objective 40x/0.65, spring loaded	M 12BM 3042	0.5X C mount
M 11BM 3022	Semi-plan achromatic objective 60x/0.85, spring loaded	M 12BM 3043	LED Illumination bulb replacement unit
M 11BM 3023	Semi-plan achromatic objective 100x/1.25, spring loaded, oil	M 12BM 3044	Recharagable device
M 11BM 3024	Plan achromatic objective 4x/0.10	M 12BM 3045	Kohler illumination
M 11BM 3025	Plan achromatic objective 10x/0.25	YTCSRT50	Temperature Control System: Temperature Controlling Range: Room Temperature to 50°C, with digital control box
M 11BM 3026	Plan achromatic objective 20x/0.40	DITA001	DP1 tablet with 10.5" touchscreen, integrated with 4K 8MP camera, 1/2" sensor, 2.0x2.0um, CMOS chip, with 1 x HDMI port, Image: 30@3840*2160, support 1080 video, with Android OS system, built-in image process software
M 11BM 3027	Plan achromatic objective 40x/0.65, spring loaded	DITA002	DP2 tablet with 10.5" touchscreen, integrated with 16MP camera, 1/2.33" sensor, 1.85x1.85um, CMOS chip, with 1 x HDMI port, 2x USB 2.0 port, 1TF card port, 2.4GHz/5GHz dual-band WIFI, support WiFi6, Support Bluetooth 5.0, Image: 30@4632x3488, support 1080 video, with windows 10 OS system, built-in image process software
M 11BM 3028	Plan achromatic objective 60x/0.85, spring loaded	***	Various digital camera optional (please refer to ICOE digital camera brochure)



Microscope Biological Binocular HB-2

New machining facility and advanced alignment technology Complete functions and outfit of binocular microscope Comfortable operation with updated and ergonomic design Specimen images are taken with HB-2

Achromatic objective supply the sharp image after adjusting Iris diaphragm. You can get high resolution and contrast ratio image at low or high magnification. 3W Single LED illumination supplies bright background. According to different demands. it also can install 6V/20W halogen bulb, then the lighting effect is the same High-powered single LED cold light illumination

It maintains constant colour temperature and closes to sun light. It can apply bright white back- ground without filter that is the best choice of observation for bright-field and photography by CCD. The illumination supplies stable brightness and temperature difference never occurred even long time worked. Comparing with halogen lamp, LED has lower power dissipation. Brightness is adjustable freely by the rotatable key at lower right side.

Siedentopf Binocular Head, Inclined at 30°, Interpupillary distance is adjustable from 55mm to 75mm. The left eyepiece tube is 5 dioptre adjustable.

Double Layers Mechanical Stage 140X140mm/75x50mm

Coaxial Coarse & Fine Adjustment, Moving Range 24mm, Fine Division 0.004mm

With quadruple nose-piece, it is equipped with Achromatic Objectives :

4X, 10X, 40X(S), 100X(S, Oil) (Plan Achromatic Objectives 4X, 10X, 40X, 100X are optional). NA 1.20 (NA 1.25 is optional) Abbé Condenser with Iris Diaphragm is able to acquire light brighter.

Viewing Head: Compensation Free Binocular Head, Inclined at 45°, Interpupillary Distance 48-75mm Eyepiece : 2 X WF10X/18

Achromatic Objective : 4X-10X-40X-100X

Backward Quadruple Nose-piece, Double Layer Mechanical Stage 132X142mm/75X40mm

Coaxial Coarse & Fine Adjustment, Moving Range 24mm, Fine Division 0.004mm, Abbé NA 1.20 with Iris Diaphragm & Filter S-LED, Brightness Adjustable

ESB52780

**Microscope Biological Binocular HB-1**

Siedentopf Binocular Head, Inclined at 30°, Interpupillary 55-75mm Wide Field Eyepiece WF 10X/18

Achromatic Objective 4X, 10X, 40X,

100X Quadruple Nose-piece

Double Layers Mechanical Stage 125

X125mm/60x40mm NA 1.25 Abbé Condenser with

Iris Diaphragm

Coaxial Coarse and Fine Adjustment, Fine Division 0.002mm,

Coarse Stroke 37.7mm per Rotation, Fine Stroke 0.2mm per

Rotation, Moving Range 14mm

1W LED Illumination, Brightness

Adjustment Blue Filter | Green Filter |

Yellow Filter

ESB52781

**Microscope Biological Binocular HB-ADV**

Viewing head: Siedentopf Trinocular Head, Inclined at 30°, Interpupillary 55-75mm

Eyepiece: 2x Wide Field Eyepiece WF 10X/18

Objective: Achromatic Objective 4X, 10X, 40X,

100X Nose-piece: Quadruple Nose-piece

Stage : double Layers Mechanical Stage

140X140mm/75x50mm Condenser : NA 1.25 Abbé

Condenser with his Diaphragm

Focusing System : Coaxial Coarse and Fine Adjustment. Fine

Division 0.002mm, Coarse Stroke 37.7mm per Rotation, Fine

Stroke 0.2mm per Rotation, Moving Range 20mm

Illumination : Single LED Illumination, Brightness

Adjustment Filter : Blue Filter, Green Filter

ESB52782





Series Biological Microscopes

Model: ESB-BM38B

Viewing head : Seidentopf Binocular Head, Inclined at 30° , Interpupillary 47-75mm, 360° Rotatable

Nosepiece : Quadruple revolving nosepiece

Eye-piece : Wide Field Eyepiece WF10X/20

Objectives:

Achromatic objective 4x/0.10

Achromatic objective 10x/0.25

Achromatic objective 40x/0.65, spring loaded

Achromatic objective 100x/1.25, spring loaded, oil

Stage : Double Layers Mechanical Stage

150x139mm/75x52mm

Focusing: Coaxial Coarse and Fine Adjustment, Fine

Division 0.002mm,

Coarse Stroke 37.7mm per Rotation, Fine Stroke 0.2mm per Rotation, Moving Range 30mm

Condenser: NA 1.25 Abbe Condenser with Aperture Diaphragm

Illumination: LED illumination for long life, brightness adjustable

Supplied with: Dust cover, spare fuse, blue & green filters

Power: 100-240V, 50/60Hz

ESB52777

Optional Accessories

Cat. Number	Descriptions	Cat. Number	Descriptions
M11121001	Monocular head	M11121022	Plan Achromatic objective 10x
M11121002	Digital Viewing Head Inclined at 30° , 5M pixels, Support Wi-Fi	M11121023	Plan Achromatic objective 20x
M11121003	Digital Viewing Head Inclined at 30° , 5M pixels, 8" LCD, Android OS	M11121024	Plan Achromatic objective 40x
M11121004	Eyepiece P16x/11	M11121025	Plan Achromatic objective 60x
M11121005	Eyepiece WF10x with pointer	M11121026	Plan Achromatic objective 100x
M11121006	Eyepiece WF10x/20	M11121027	Halogen Lamp 6V/20W, Brightness Adjustable
M11121007	Micrometer for eyepiece	M11121028	S-LED Illumination with Recharger
M11121008	Eyecups	M11121029	Kohler Illumination
M11121009	Achromatic objective 4x	M11121030	ECO Function
M11121010	Achromatic objective 10x	M11121031	Plane-concave Mirror
M11121011	Achromatic objective 20x	M11121032	Dark Field Condenser NA0.7-0.9 (Dry)
M11121012	Achromatic objective 40x	M11121033	Dark Field Condenser NA1.25-1.36 (Oil)
M11121013	Achromatic objective 60x	M11121034	Single Phase Contrast Kit
M11121014	Achromatic objective 100x	M11121035	Sliding Phase Contrast Kit
M11121015	Semi-Plan Achromatic objective 4x	M11121036	Turret Phase Contrast Kit
M11121016	Semi-Plan Achromatic objective 10x	M11121037	Simple Polarization Set: Polarizer & Analyzer
M11121017	Semi-Plan Achromatic objective 20x	M11121038	LED Epi-fluorescent Attachment FL-LED
M11121018	Semi-Plan Achromatic objective 40x	M11121039	Epi-fluorescent Attachment XY-2
M11121019	Semi-Plan Achromatic objective 60x	M11121040	1X C mount
M11121020	Semi-Plan Achromatic objective 100x	M11121041	0.5X C mount
M11121021	Plan Achromatic objective 4x		



Series Biological Microscopes

Model: ESB38BN

Viewing head: Seidentopf Binocular Head, Inclined at 30°, Interpupillary 47-75mm, 360° Rotatable

Nosepiece : Quadruple revolving nosepiece

Eyepiece: 2pcs of Wide Field Eyepiece WF10X/20 FOV, 1 eyepiece with pointer

Objectives :

Plan achromatic objective 4x/0.10

Plan achromatic objective 10x/0.25

Plan achromatic objective 40x/0.65, spring loaded

Plan achromatic objective 100x/1.25, spring loaded, oil

Stage : Double Layers Mechanical Stage

150x139mm/75x52mm

Graticule 1-100um division plate

Focusing: Coaxial Coarse and Fine Adjustment, Fine Division 0.002mm,

Coarse Stroke 37.7mm per Rotation, Fine Stroke 0.2mm per

Rotation, Moving Range 25mm Limit stop to prevent

accidental damage to slides

Condenser: NA 1.25 Abbe Condenser with Aperture

Diaphragm

Illumination: LED illumination for long life, brightness adjustable

Supplied with: Dust cover, spare fuse, blue & green filters

Power : 100-240V, 50/60Hz

Warranty : 5 Year Mechanical & 1 Year Electrical



ESB52777BN

Optional Accessories

Cat. Number	Descriptions	Cat. Number	Descriptions
M11121001	Monocular head	M11121019	Plan Achromatic objective 60x
M11121002	Digital Viewing Head Inclined at 30°, 5M pixels, Support Wifi	M11121020	Plan Achromatic objective 100x
M11121003	Digital Viewing Head Inclined at 30°, 5M pixels, 8" LCD, Android OS	M11121021	Halogen Lamp 6V/20W, Brightness Adjustable
M11121004	Eyepiece P16x/11	M11121022	S-LED Illumination with Recharger
M11121005	Eyepiece WF10x with pointer	M11121023	Kohler Illumination
M11121006	Eyepiece EW10x/20	M11121024	ECO Function
M11121007	Achromatic objective 20x	M11121025	Plane-concave Mirror
M11121008	Achromatic objective 60x	M11121026	Dark Field Condenser NA0.7-0.9 (Dry)
M11121009	E-Plan Achromatic objective 4x	M11121027	Dark Field Condenser NA1.25-1.36 (Oil)
M11121010	E-Plan Achromatic objective 10x	M11121028	Single Phase Contrast Kit
M11121011	E-Plan Achromatic objective 20x	M11121029	Sliding Phase Contrast Kit
M11121012	E-Plan Achromatic objective 40x	M11121030	Turret Phase Contrast Kit
M11121013	E-Plan Achromatic objective 60x	M11121031	Simple Polarization Set: Polarizer & Analyzer
M11121014	E-Plan Achromatic objective 100x	M11121032	LED Epi-fluorescent Attachment FL-LED
M11121015	Plan Achromatic objective 4x	M11121033	Epi-fluorescent Attachment XY-2
M11121016	Plan Achromatic objective 10x	M11121034	1X C mount
M11121017	Plan Achromatic objective 20x	M11121035	0.5X C mount
M11121018	Plan Achromatic objective 40x		





Infinite Biological Microscopes

Model : ESB38UIB Infinite Biological Microscope
Viewing head: Seidentopf Binocular Head, Inclined at 30°, Interpupillary 47-75mm, 360° Rotatable
Nosepiece : Quadruple revolving nosepiece
Eyepiece: 2pcs of Wide Field Eyepiece WF10X/20 FOV

Objectives:

Infinite Plan Achromatic objective 4x/0.10
Infinite Plan Achromatic objective 10x/0.25
Infinite Plan Achromatic objective 40x/0.65, spring loaded
Infinite Plan Achromatic 100x/1.25, spring loaded, oil
Stage : Rackless Double Layer Mechanical Stage 150X140mm, Moving Range 76X52mm
Focusing : Coaxial Coarse and Fine Adjustment, Fine Division 0.002mm,
Coarse Stroke 37.7mm per Rotation, Fine Stroke 0.2mm per Rotation, Moving Range 25mm Limit stop to prevent accidental damage to slides
Condenser : NA 1.25 Abbe Condenser with Aperture Diaphragm
Illumination : LED illumination for long life, brightness adjustable, with cord holder
Supplied with : Dust cover, spare fuse, blue & green filters
Power: 100-240V, 50/60Hz
Warranty: 5 Year Mechanical & 1 Year Electrical

ESB52777UIB

Optional Accessories

Cat. Number	Descriptions	Cat. Number	Descriptions
M11121001	Monocular head	M11121019	Plan Achromatic objective 60x
M11121002	Digital Viewing Head Inclined at 30°, 5M pixels, Support Wifi	M11121020	Plan Achromatic objective 100x
M11121003	Digital Viewing Head Inclined at 30°, 5M pixels, 8" LCD, Android OS	M11121021	Halogen Lamp 6V/20W, Brightness Adjustable
M11121004	Eyepiece P16x/11	M11121022	S-LED Illumination with Recharger
M11121005	Eyepiece WF10x with pointer	M11121023	Kohler Illumination
M11121006	Eyepiece EW10x/20	M11121024	ECO Function
M11121007	Achromatic objective 20x	M11121025	Plane-concave Mirror
M11121008	Achromatic objective 60x	M11121026	Dark Field Condenser NA0.7-0.9 (Dry)
M11121009	E-Plan Achromatic objective 4x	M11121027	Dark Field Condenser NA1.25-1.36 (Oil)
M11121010	E-Plan Achromatic objective 10x	M11121028	Single Phase Contrast Kit
M11121011	E-Plan Achromatic objective 20x	M11121029	Sliding Phase Contrast Kit
M11121012	E-Plan Achromatic objective 40x	M11121030	Turret Phase Contrast Kit
M11121013	E-Plan Achromatic objective 60x	M11121031	Simple Polarization Set: Polarizer & Analyzer
M11121014	E-Plan Achromatic objective 100x	M11121032	LED Epi-fluorescent Attachment FL-LED
M11121015	Plan Achromatic objective 4x	M11121033	Epi-fluorescent Attachment XY-2
M11121016	Plan Achromatic objective 10x	M11121034	1X C mount
M11121017	Plan Achromatic objective 20x	M11121035	0.5X C mount
M11121018	Plan Achromatic objective 40x		



LCD Microscope ESB52777LCD

Model		ESB52777 LCD	
Viewing Head	Siedentop Binocular Viewing Head Inclined at 30°, interpapillary 47-77mm Siedentop Trinocular Viewing Head Inclined at 30°, interpapillary 47-78mm	•	
LCD Attachment	CPU	RK3288 Quad-core 1.8Hz	•
	Display	9.7" screen, High resolution (2048*1536) color LCD with touch screen	
	Storage	RAM 2GB DDR3, ROM 8GB, 32GB extension storage	
	Camera	5MP color cameras	
	Network Interface	WI-FI, Bluetooth	
		USB2.0 (OTG) *2. Support USB keyboard mouse	
		TF card	
		DC12V power input Audio Mibi HDMI output	
Built-in cameras	Sensor Size	1/2.5-inch (4:3)	•
	Effective imaging size	5.70mm (H) x4.28mm (V) 7.13mm(diagonal)	
	Effective pixel	2592H x 1944V	
	Pixel size	2.2um x 2.2um	
	Dynamic range	66.5dB	
	SNR (maximum)	40.5dB	
	A/D conversion resolution	12-bit, on-chip	
	Sensitivity	0.53V/lux-sec (550nm)	
	Frame rate	2048*1536@15 fps 1024*768@30 fps	
	Exposure range and manner	Electronic shutter shutter (ERS), automatic	
white balance	Manual/automatic		
Eyepiece	WF10X/18	••	
Nosepiece	Backward Quadruple Nosepiece	•	
Objective	Achromatic Objective	4x	•
		10x	•
		40x	•
		100x	•
	Plan Achromatic Objective	4x	○
		10x	○
		20x	○
		40x	○
		60x	○
		100x	○
Condenser	NA1.25 Abbe Condenser	•	
Focusing System	Coaxial Coarse and Fine Adjustment, Fine Division 0.002mm, Moving Range 25mm	•	
Stage	Double Layers Mechanical Stage 140X140mm, Moving Range 75X50mm	•	
Illumination	Halogen Lamp 6V/20W	○	
	S-LED Illumination	•	
	Kohler Illumination	○	
	ECO Function	○	
	Plane-concave Mirror	○	
Accessories	Photo Attachment	○	
	Video Adapter	C mount 1X	•
		C mount 0.5X	○
	Polarization Set	Simple Polarization Set	○
	Phase Contrast Kit		○
	Dark Field Attachment	Dark Field Condenser (Dry)	○
		Dark Field Condenser (Oil)	○
	Epi-Fluorescent Illumination FL-LED		○
Epi-Fluorescent Illumination YX-2		○	

"•"=Included with delivery "○"=Option





Microscope Biological Binocular

EB2900 Series Biological Microscope features the same infinity corrected optical system used in EduScience research microscopes.

The microscope is a built-to-last, top-quality biological microscope ideal for diagnostic analysis of medical purpose, basic laboratory use or as a student microscope

for educational purposes. It meets all lab needs of today's student. With the newly developed LED illumination system, these microscopes produce brighter, Sharper, clearer images for a noticeably enhanced view. The advanced ergonomics and durable design ensure years of comfortable and stable use.

Best of all, EB2900 maintains the same operational ease and rigidity common to all EduScience microscopes and is compatible with many accessories for higher-grade EB2900 series microscopes. Newly designed accessories for phase contrast, dark field and simple polarization are available.

Optical System : Finite Optical System

Viewing head : Siedentopf Trinocular Head, Inclined at 30°, Interpupillary 46-75mm

Eye-piece : High Eye point Eye-piece PL10x/23mm, Dioptre Adjustment i5, Tube Diameter 30mm

Nose-piece : Backward Quadruple Nose-piece

Objectives : Plan Achromatic Objective 4X, 10X, 40X, 100X

Stage: New-Designed large graphite coating double layer mechanical stage: 216X150mm, travel range: 55X76mm, verniers for X/Y coordinate, precision 0.1mm, damped double slide clamp

Condenser : NA 1.25 Abbé Condenser with Iris Diaphragm

Focusing System: Coaxial Coarse and Fine Adjustment Knob, Fine Division 0.002mm, Coarse Stroke 37.7mm per Rotation, Fine Stroke 0.1mm per Rotation, Fine Focus Graduation of 1um. Focus Range 16mm

Illumination : 3W LED Illumination with Kohler illumination system, Brightness Adjustment

Filter: Blue Filter, Green Filter

ESB52783

Microscope Biological Binocular Infinity Lenses

EB2900 Series Biological Microscope features the same infinity corrected optical system used in EduScience research microscopes.

The microscope is a built-to-last, top-quality biological microscope ideal for diagnostic analysis of medical purpose, basic laboratory use or as a student microscope

For educational purposes. It meets all lab needs of today's student. With the newly developed LED illumination system, these microscopes produce brighter, Sharper, clearer images for a noticeably enhanced view. The advanced ergonomics and durable design ensure years of comfortable and stable use.

Best of all, EB2900 maintains the same operational ease and rigidity common to all EduScience microscopes and is compatible with many accessories for higher-grade EB2900 series microscopes. Newly designed accessories for phase contrast, dark field and simple polarization are available.

Optical System : Infinity corrected optical system

Viewing head : Siedentopf Binocular Head, Inclined at 30°, 360° Rotatable,

Interpupillary 48-75mm

Eye-piece : High Eye point Eye-piece PL10x/23mm, Dioptre Adjustment i5, Tube Diameter 30mm

Nose-piece : Backward Quadruple Nose-piece

Objectives : Infinity Plan Achromatic Objective 4X, 10X, 40X, 100X

Stage: New-Designed large graphite coating double layer mechanical stage: 216X150mm, travel range : 55X76mm, verniers for X/Y coordinate, precision 0.1mm, damped double slide clamp

Condenser : NA 1.25 Abbé Condenser with Iris Diaphragm

Focusing System: Coaxial Coarse and Fine Adjustment Knob, Fine Division 0.002mm, Coarse Stroke 37.7mm per Rotation, Fine Stroke 0.1mm per Rotation, Fine Focus Graduation of 1um. Focus Range 16mm

Illumination : 3W LED Illumination with Kohler illumination system, Brightness Adjustment

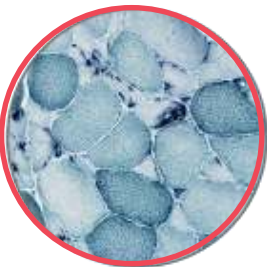
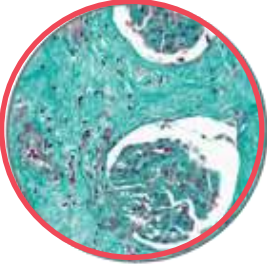
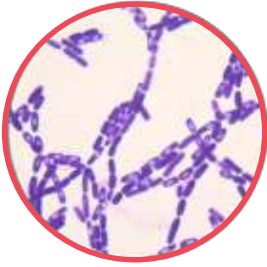
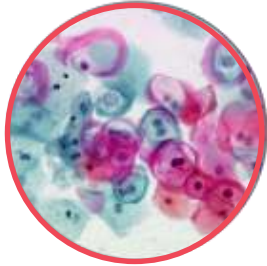
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ESB52784



UPRIGHT LABORATORY LEVEL MICROSCOPES

Comfortable and Efficient, Various Observations, Intelligent, Environmentally Friendly



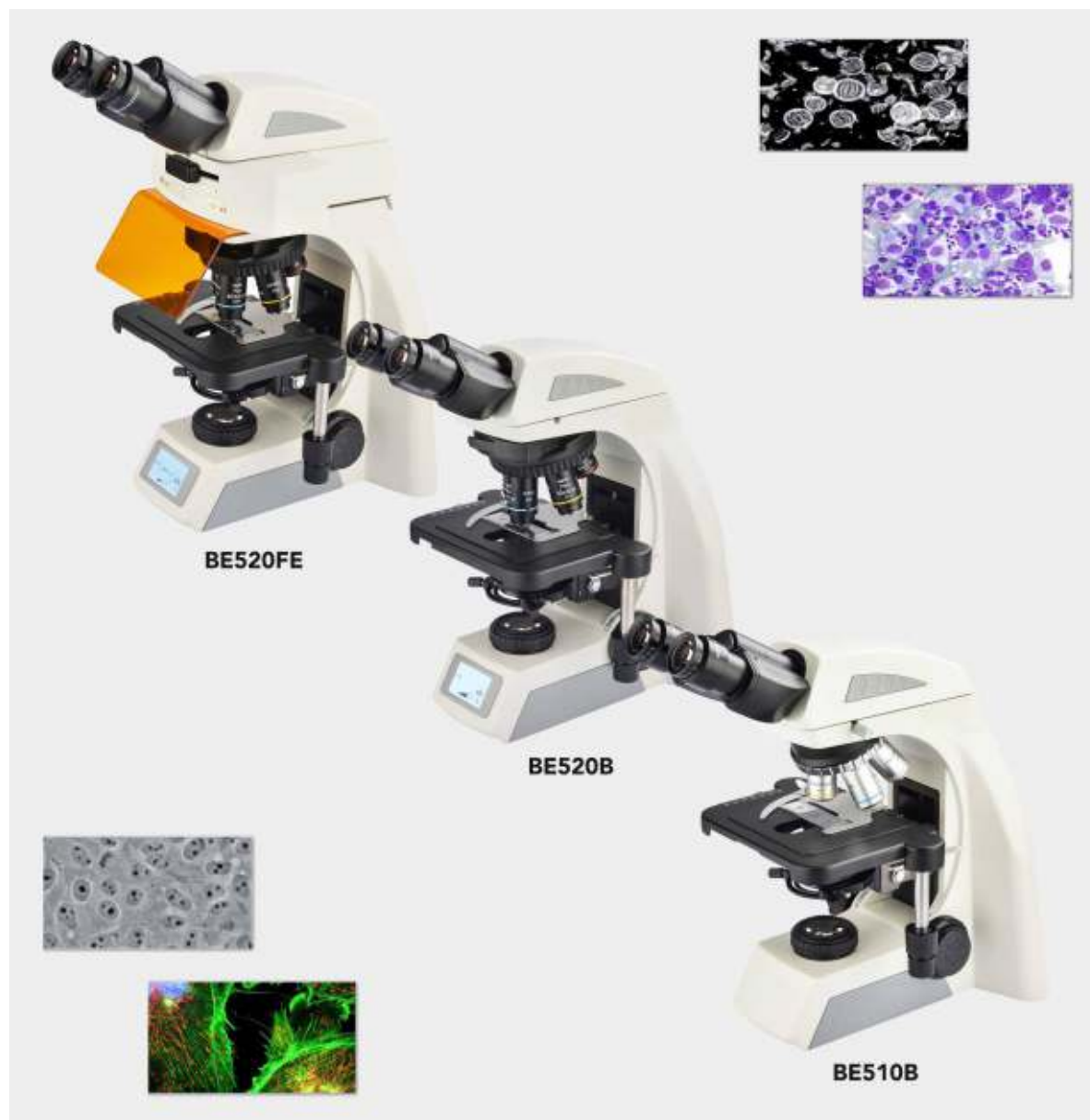
Microscopes

MICROSCOPE EXPERT, DESIGN FOR SATISFYING USER



ESB-500 Series Compound Microscopes, Designed for Satisfying Needs of Modern Laboratories, Clinics and Universities.

The BE500 series is available in various configurations suitable for Life and Biomedical Sciences, high schools, universities but also for routine medical applications. Besides the brightfield contrast method, configurations for phase contrast, darkfield, basic polarization and several epi-illumination sources for fluorescence applications can be used. BE500 series models with multi-heads are also available for teaching purposes



- Wide range to fulfil specific lab requirements
- Valuable solutions for life and material sciences
- Compliant with several observation methods

- Full planarity optics on FN 22mm
- Koehler illumination for crisp and contrasted images
- Rounded edge, rackless stage to prevent scratches



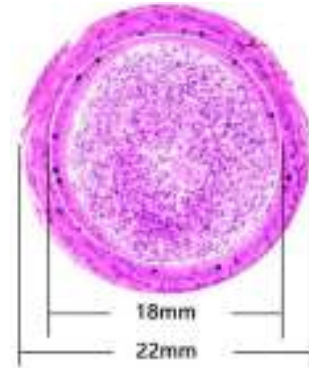
EXCELLENT OPTICAL DESIGN

NIS Infinity Optical System

NIS Infinity plan objectives can provide high contrast and very flat image up to FN22. With FN22 wide field eyepieces, the system always brings you sharp, excellent resolution and high signal to noise ratio image.

22mm Wide Field of View

The BE500 series microscope achieves the wide field of 22mm view with 10x eyepieces for a more comprehensive observation content and faster sample observation. The eyepieces adopts a flat field distortion-free design to prevent the edge of the field from being imaginary and stray light.



Various Observation Methods

With the deepening of research in various field, a single observation mode can no longer meet the daily scientific research work. As a continually upgradable microscope, BE500 can be extended on basic models to show a variety of observation capabilities.

Observation Methods

- Bright Field
- Dark Field
- Phase Contrast
- Fluorescent
- Simple Polarizing

Multifunctional Universal Condenser

BE500 offers universal condensers for bright field, dark field and phase contrast. The observation methods could be quickly switched by switching the slider. The phase contrast and bright field slider is universal for 4x-100x objectives also, simple and fast to use. The N.A. value index on the aperture diaphragm of the condenser is easily set to get exact size of diaphragm to correspond with the different objectives.

A slider with a simple dark stop for darkfield up to 400x magnification is also available



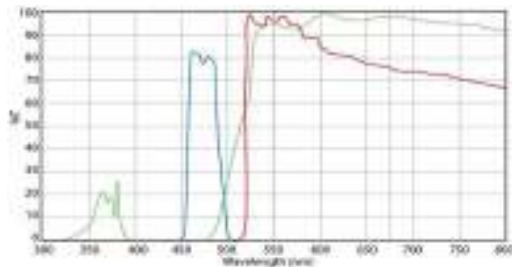
“FE” LED EPI-Fluorescent Illumination

Our “FE” LED EPI- Fluorescent illumination is safety and convenient. You don’t need time to warm up or cool down. You don’t need to align the bulb, and the long lifetime of LED bulb is up to 5000 hours. There are two filters position available and switching is fast and easy.



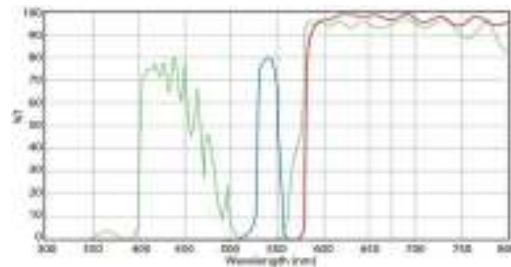
The excellent optics and mechanical components make the BE500 a state-of-the art microscope that is suitable for fluorescence applications

in life science and biotechnical fields



Blue excitation filter set

EX: 460-490nm bandpass, DM:520nm, EM:500nm longpass



Green excitation filter set

EX: 510-550nm bandpass, DM:580nm, EM:570nm longpass

Excellent Infinity Optics Objectives

BE500 is suitable for all kinds of microscopic using, especially for beginners and the users with long time micro-operation.

The BE500 series of microscopes are fully optimized for the needs of such users. In terms of the objectives, the image quality and ease of use are achieved.



Plan Objective

By using infinity plan objectives, flat image with higher imaging reduction degree over the entire field of view could be achieved.

100x Water-immersion Objective

Ordinary 100X oil-immersion objective needs to use cedar oil as the observation medium. After use, it needs to be cleaned with ether alcohol or xylene, which is easy to cause air pollution and improper cleaning. The water-immersion objective uses water as a medium to solve the above problems perfectly, reducing the damage to the body and environmental pollution.



Two 100x water immersion objectives are available: suitable for all brands of microscopes, for a

wide range of applications:

The left one: 100x NA=1.1 WD=0.2, aluminum color, parfocal distance 45, objective thread 4/5". The right one: 100x NA=1.1 WD=0.2, aluminum black shell, parfocal distance 60, objective lens M25



40x LWD Objective

The working distance of 40x objective can be up to 1.5mm, avoiding the erosion from residual immersion oil and water when converted from 100x to 40x objective.



Intelligent Operating System

Coded Nosepiece

It can memorize the illumination brightness when using each objective. When different objectives are converted to each other, the light intensity is automatically adjusted to reduce visual fatigue and improve work efficiency.



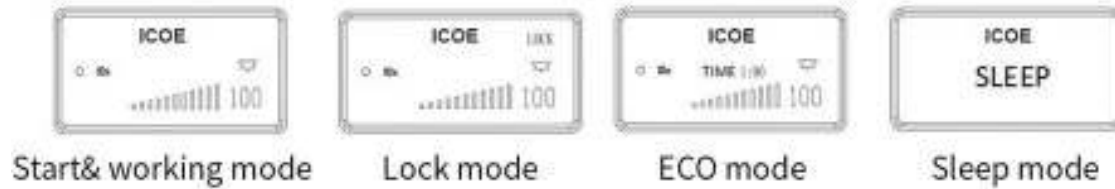
Multiple functions is achievable by simply using a dimming knob

- * One Click: Enter standby status
- * Double Clicks: Light lock or unlock
- * Rotation: Adjust brightness
- * Press + Up-spin: Switch to the upper light source
- * Press + Down-spin: Switch to the under light source
- * Press 3 seconds: Set the time of turning off the light after leaving



The display of microscope use state

The LCD on the front of the microscope can display the using status of the microscope, including magnification, light intensity, sleepy model, and so on.



This is an unbounded microscope

Green has the multifunctional digital head, the user does not have to be confined in front of the microscope. Instead, it can be used for mobile microscope teaching and outdoor field observation through mobile terminals and external mobile power. The objective, eyepiece, and observation tube are effectively anti-mold treated, so you can ensure a consistently clear image and extend the life of the microscope, even when working in hot and humid environments.



Multifunctional Digital Head

Built-in camera, supporting Android, IOS, Windows operating system, wired and Wifi modes The image under the microscope can be output to the external device in real time, and there is no data line connection, and the operator can move more freely.

Professional microscopic imaging software

Microscopic imaging observation, analysis and processing can be performed on external devices, including photographing, measurement, image adjustment, storage, synthesis, etc.



Mobile devices perform image browsing and processing by scanning code

By scanning the QR code on the microscope, installing the APP and identifying the microscope, you can view the microscopic image on your phone and tablet.



External rechargeable battery

A USB charging port is reserved on the body, which can be used as a microscope power source. This microscope can also be used outside and during power outages to get rid of the microscope's dependence on the power outlet.



Easier to store & transport

The microscope is compact and can be placed in an ordinary classroom closet. It has a special carrying handle, and is also lightweight and stable. The microscope back plate is designed with a hub device to effectively store the long power cord, improve the cleanliness of the laboratory, and reduce the tripping accident caused by the long power cord during the carrying process. The wooden storage box is an optional accessory that is very convenient for storage and carrying.

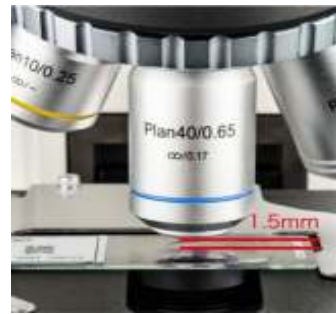


Ergonomic Design

In daily scientific research teaching and pathological diagnosis, working in front of the microscope for a long time has become the norm, and the consequent use fatigue often leads to physical discomfort, thereby reducing work efficiency and effectiveness. This Green microscope uses an ergonomic design, high eye-point, low-hand focus mechanism, low-hand stage and other ergonomic designs to ensure the user can perform microscope operation in the most comfortable situation. The focus knob, illumination control knob and stage handle are all in close proximity. The user can put both hands on the table while working, and can operate Green with minimal movement.



Objective				
NIS45 Series Infinite Plan Objective	4x	0.10	0.17	20.6
	10x	0.25	0.17	18.0
	40x	0.65	0.17	1.50
	100x (Oil)	1.25	0.17	0.20
	100x (Water)	1.10	0.17	0.16
NIS45 Series Infinite Phase Contrast Objective	10x	0.10	0.17	18.0
	20x	0.40	0.17	6.40
	40x	0.65	0.17	1.50
	100x	1.25	0.17	0.16



100x water immersion objectives

Two 100x water immersion objectives are available: suitable for all brands of microscopes, for a wide range of applications: 1). Left one: 100x NA=1.1 WD=0.2, aluminum color, parfocal distance 45, objective thread 4/5"

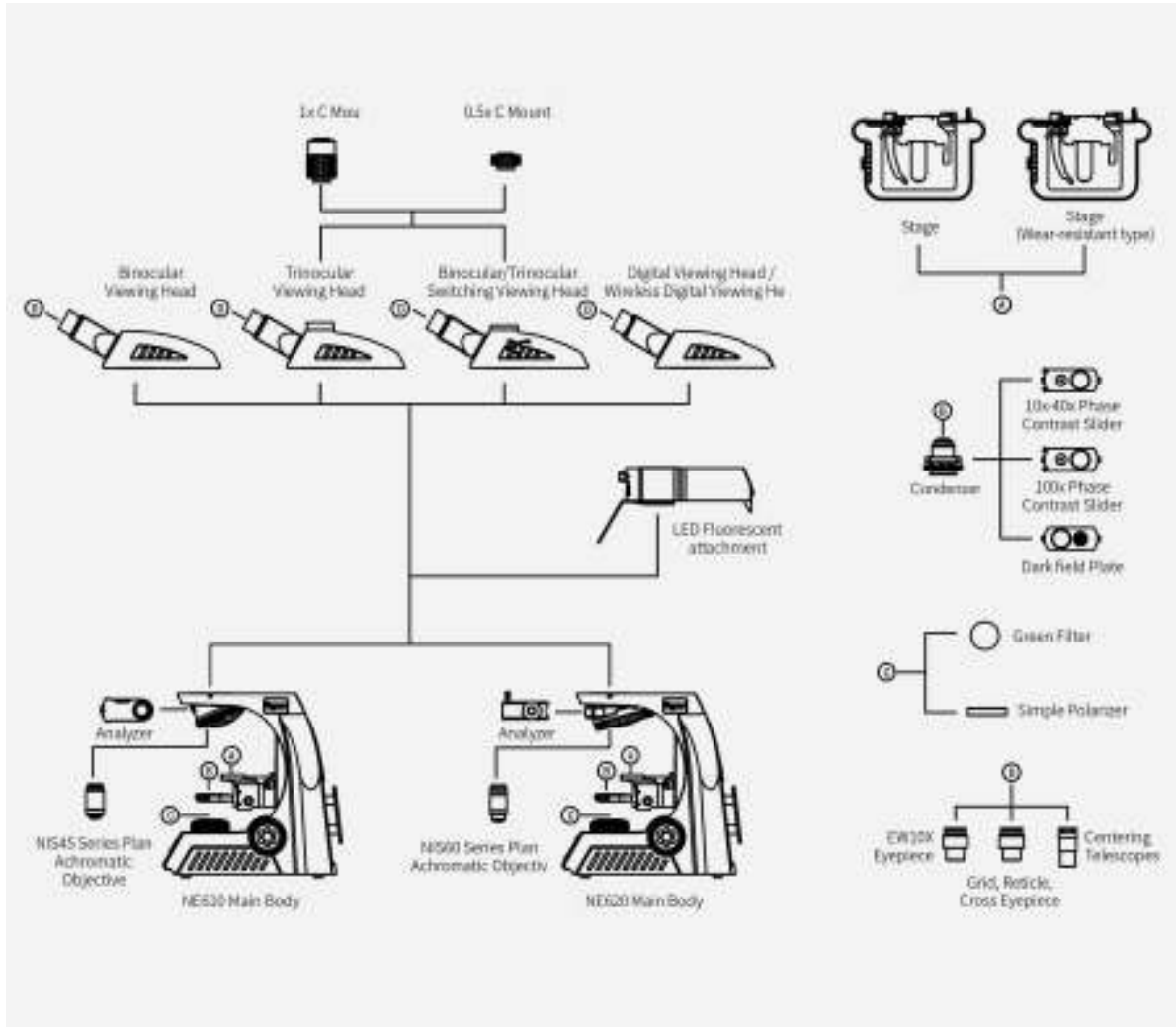
2). Right one: 100x NA=1.1 WD=0.2, aluminum black shell, parfocal distance 60, objective lens M25

40x long working distance objective

The working distance of 40x objective can be up to 1.5mm, avoiding the erosion from residual immersion oil and water when converted from 100x to 40x objective.



ESB-500 Series System Diagram

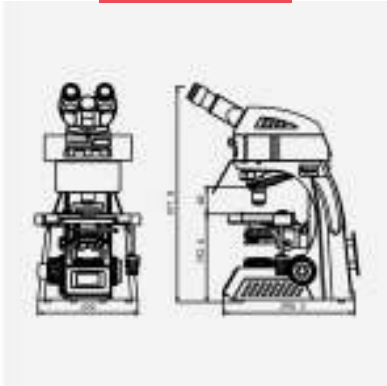
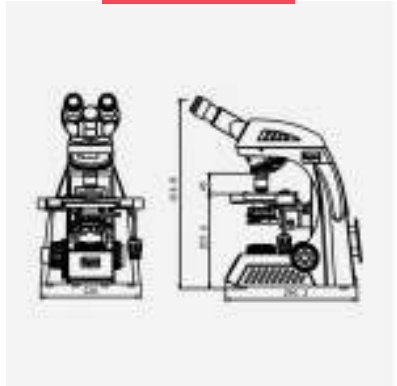


Microscopes

ESB510

ESB520

ESB520F



ESB-500 Series' Models and Specifications

Model	Descriptions	ESB510B	ESB520B	ESB520FE
Optical System	Infinity Optical System	•	•	•
Viewing Head	Seidentopf Binocular Head, Inclined at 45°, Interpupillary 47-78mm, 360. Rotation	•	•	•
	Seidentopf Trinocular Viewing Head, Inclined at 30°, Interpupillary 47-78mm, Splitting ratio 5:5	○	○	○
	Wireless Digital Head with Built-in 5 Million Pixels	○	○	○
	Inclinable Binocular Viewing Head	-	○	○
Eyepiece	Wide field eyepiece WF10x/22mm	••	••	••
Nosepiece	Backward Quintuple Nosepiece (Non-coding)	•	-	-
	Backward Quintuple Nosepiece (Coding)	-	•	•
Objective	NIS45 Infinite Plan Objective 4x	•	-	-
	NIS45 Infinite Plan Objective 10x	•	-	-
	NIS45 Infinite Plan Objective 20x	○	-	-
	NIS45 Infinite Plan Objective 40x (S)	•	-	-
	NIS45 Infinite Plan Objective 60x (S)	○	-	-
	NIS45 Infinite Plan Objective 100x (S, Oil)	•	-	-
	NIS45 Infinite Plan Objective 100x (S, Water)	○	-	-
	NIS60 Infinite Plan Objective 4x	-	•	•
	NIS60 Infinite Plan Objective 10x	-	•	•
	NIS60 Infinite Plan Objective 20x	-	○	○
	NIS60 Infinite Plan Objective 40x (S)	-	•	•
	NIS60 Infinite Plan Objective 60x (S)	-	○	○
NIS60 Infinite Plan Objective 100x (S, Oil)	-	•	•	
NIS60 Infinite Plan Objective 100x (S, Water)	-	○	○	
Stage	Synchronous belt stage 230x150mm, moving range 78x54mm	•	•	•
Focusing System	Coaxial coarse & fine adjustment, coarse stroke 37.7mm per rotation, fine stroke 0.2mm per rotation, fine division 0.002mm, moving range 30mm	•	•	•
Condenser	NA 1.25 inserted abbe condenser (including empty plate for bright filed)	•	•	•
	Brightfield / Phase contrast plate (4x-100x universal)		○	○
	Brightfield / Dark field plate	○	○	○
Illumination	1W S-LED illumination for long life, brightness adjustable	•	-	-
	3W S-LED illumination for long life, brightness adjustable (LCD display magnification, timing sleep, brightness indication and lock, etc.)	-	•	•
Fluorescence Attachment	The 3-positions slider fluorescence attachments (2 positions for fluorescence cubes and 1 position for bright field) are supplied with 3W LED light source for broad powerful light spectrum. Supplied with standard fluorescence filters sets for blue and green excitation and a UV protection shield	○	○	•
	Blue Cube: Excitation: BP460-490, Dichroic Mirror DM: 505, Barrier Filter: BA515	○	○	•
	Green Cube: Excitation: BP510-550, Dichroic Mirror DM: 570, Barrier Filter: BA590 (optional)	○	○	•
	Ultraviolet excitation cube, excitation: BP330-385, dichroic mirror: DM400, barrier filter: BA420	○	○	○
	Violet excitation cube, excitation: BP400-410, dichroic mirror, DM455, barrier filter: BA455	○	○	○
Accessories	1x video attachment	○	○	○
	0.5x video attachment	○	○	○
	Simple polarization set	○	○	○
	Digital Camera (please refer to digital camera brochures)	○	○	○
	App software	○	○	○
Supplied with	Dust cover, spare fuse, green filter	•	•	•



Option Accessories List

Order No.	Descriptions	Order No.	Descriptions
M11261001	Siedentop Binocular Head, Inclined at 45°, Interpapillary 47-78mm, 360. Rotation	M11261032	NIS60 Series Infinite Phase Contrast Objective 20x
M11261002	Siedentop Trinocular Viewing Head, Inclined at 30°, Interpapillary 47-78mm, Splitting ratio 5:5	M11261033	NIS60 Series Infinite Phase Contrast Objective 40x
M11261003	Binocular Switching Viewing Head	M11261034	NIS60 Series Infinite Phase Contrast Objective 100x
M11261004	Trinocular Switching Viewing Head	M11261035	S-LED Illumination replacement unit for BE510
M11261005	Wireless Digital Head with Built-in 5 Million Pixels	M11261036	3W-LED illumination replacement unit for BE520
M11261006	DP1 display, 5M pixels, 9.7" LCD monitor (used for Trinocular head)	M11261037	Kohler Attachment
M11261007	Ergonomic 5 to 35° Inclinable Binocular Viewing Head	M11261038	Swing-out condenser N.A.0.9/0.25 (needed to work with 2x objective)
M11261008	Photo attachment with standard Ø 23.2 mm tube for digital camera use	M11261039	Dark Field Plate (One annulus is for dark field observation, and one is for bright filed observation)
M11261009	EWF10x/22 mm eyepiece	M11261040	Infinity plan objective 100x used for oil dark field condenser
M11261010	WF15x/16 mm eyepiece	M11261041	Infinity plan objective 100x with iris diaphragm for oil dark field condenser
M11261011	WF20x/12 mm eyepiece	M11261042	10x-40x phase contrast slider
M11261012	Grid for eyepiece	M11261043	100x phase contrast slider
M11261013	Reticle for eyepiece	M11261044	Centering Telescope
M11261014	Corssline for eyepiece	M11261045	Green filter
M11261015	Backward Quintuple Nosepiece (Non-coding)	M11261046	Simple Polarization Set: Polarizer & Analyzer
M11261016	Backward Quintuple Nosepiece (Coding)	M11261047	Synchronous belt stage 230x150mm, moving range 78x54mm
M11261017	NIS45 Infinite Plan Objective 4x	M11261048	Synchronous belt stage 230x150mm, moving range 78x54mm (Wear-resistant Type)
M11261018	NIS45 Infinite Plan Objective 10x	M11261049	Temperature Control System: 5W LED Illumination, Temperature Controlling Range: Room Temperature to 50°C
M11261019	NIS45 Infinite Plan Objective 40x (S)	M11261050	"FE-2" LED Epi-fluorescent Attachment
M11261020	NIS45 Infinite Plan Objective 100x (S, Oil)		-FL-LED Epi-fluorescent illumination device
M11261021	NIS45 Infinite Plan Objective 100X (S, Water)		Blue Cube: Excitation: BP460-490, Dichroic Mirror DM: 505, Barrier Filter: BA515
M11261022	NIS60 Infinite Plan Objective 4x		-Green Cube: Excitation: BP510-550, Dichroic Mirror DM: 570, Barrier Filter: BA590
M11261023	NIS60 Infinite Plan Objective 10x	M11261051	1X C mount
M11261024	NIS60 Infinite Plan Objective 40x (S)	M11261052	0.5X C mount
M11261025	NIS60 Infinite Plan Objective 100x (S, Oil)	M11261053	Universal SLR-adaptor with built-in 2x lens for standard 23.2mm tube (work with T2 adapter)
M11261026	NIS60 Infinite Plan Objective 100X (S, Water)	M11261054	T2 ring for Nikon D SLR-digital camera
M11261027	NIS45 Series Infinite Phase Contrast Objective 10x	M11261055	T2 ring for canon EOS SLR-digital camera
M11261028	NIS45 Series Infinite Phase Contrast Objective 20x	M11261056	Micrometric stage slide, 26x76mm, the scale 1mm/100div. for biological
M11261029	NIS45 Series Infinite Phase Contrast Objective 40x	M11261057	Lens cleaning paper, 100 sheets per pack
M11261030	NIS45 Series Infinite Phase Contrast Objective 100x	M11261058	Digital Camera (Please refer to digital cameras sheet)
M11261031	NIS60 Series Infinite Phase Contrast Objective 10x		





LED Fluorescent Biological Microscope

Biological Microscope (with B&G filter, 0.5X C-mount)

- Optical system: Color Corrected Infinity System (CCIS)
- Viewing head: Siedentop Trinocular viewing head inclined at 30°, interpapillary 48-76mm, 360° rotatable, Trinocular light distribution: 100:0/20:80
- Eyepiece: A pair of wide field WF10X/22mm, high eye point, with ± 5 diopter adjustment, eyepiece tube diameter is 30mm
- Nosepiece: Reversed quintuple ball bearings revolving nosepiece
- Objectives:
 - All with anti-fungus treatment.
 - Infinite plan achromatic objective 4x/0.10, WD: 12.10mm
 - Infinite plan achromatic objective 10x/0.25, WD: 4.64mm Infinite plan achromatic objective 20x/0.40, WD: 2.41mm
 - Infinite plan achromatic objective 40x/0.65, spring loaded, WD: 0.65mm Infinite plan achromatic objective 100x/1.25, spring loaded, oil, WD: 0.12mm
- Stage: Reckless (integrated) mechanical stage with two-slide holder, with integrated coaxial stage control in low position
- with tension adjustment stage size: 182x140mm, 77x52mm X-Y movement range. With double slide holder. Vernier scale on the two axes, accuracy: 0.1mm
- Focusing: Integrated design, coaxial focus & fine focusing system with upper limited and tension adjustment, fine focus
- accuracy: 2 μ m fine stroke, travel range: 22mm provided with an adjustable tightness device to prevent slipping and a mechanical upper limit device
- Condenser: Swing-out N.A.0.9/0.13, iris diaphragm
- Illumination: Transmitted Koehler illumination, 6 V/30W Halogen koehler illumination, wide voltage 100-240V, field diaphragm
- Filter: Dia. 45mm blue filter, green filter & yellow filter
- Fluorescent attachment: LED Epi-Fluorescent Attachment, equipped with a rotating disc. Supplied with 5W LED Fluorescent Built in Medica device single band, Chroma filter 450 455nm, Ultraviolet protection barrier
- Fluorescence Free Oil Mercury lamp (Optional)
- Video apater: 0.5x C-mount (focus adjustable, used for microscope camera)
- Power: Multi-plug 100-240Vac, 50/60Hz external power supply
- Others: Dust cover, power cord, blue filter, Allen key, immersion oil (5ml), spare fuse, thumb screws
- 1 carton/set, Packing Size: 755mmx340mmx440mm, Gross Weight: 17 kgs, Net Weight: 15 kgs

Binocular Head
Trinocular Head

ESB52757
ESB52757T



E SEARCHSeries Advanced Life Science Microscopes

Model: E SEARCH-Bio

- Optical System : NIS60 Infinite optical system
- Viewing Head : Siedentop Trinocular with 30° inclined tubes Interpapillary distance adjustable between 47 and 78mm, 3-Position beam splitter (100:0/80:20/0:100) diopter adjustment on both eyepieces
- Eyepiece : Super wide field SW10x/25 mm eyepiece, Ø30mm tube
- Objective : Plan achromatic infinity corrected objective, NIS60 Plan 4x/0.10, working distance 30 mm
: Plan achromatic infinity corrected objective, NIS60 Plan 10x/0.25, working distance 10.2 mm
: Plan achromatic infinity corrected objective, NIS60 Plan 20x/0.40, working distance 12 mm
: Plan achromatic infinity corrected objective, NIS60 Plan S40x/0.65, working distance 0.7 mm
: Plan achromatic infinity corrected objective, NIS60 Plan S100x/1.25 oil immersion, working distance 0.2 mm
- Nosepiece : Revolving sextuple reversed nosepiece on ball-bearings
- Stage : Double layer mechanical stage 190×152/78x32mm with Gorilla glass insert, with right handle
- Focusing : CCoaxial focusing system with low-postion X-Y coaxial control knob, the ergonomic design provides operators comfortable experience, fine division 1um, moving range 35mm
- Condenser : Abbe condenser 0.9/0.25 with swing-out front lens 24V/100W halogen lamp
- Illumination : The unique sensor is developed to avoid unnecessary loss of energy.
- ECO Function : The illumination of the microscope automatically switches off after users step away from their position for 30 minutes.



Microscopes

Model: E SCIENCE-Abio

- Optical System : NIS60 Infinite optical system
Siedentop Trinocular with 30° inclined tubes Interpapillary distance adjustable
- Viewing Head : between 47 and 78mm, 3-Position beam splitter (100:0/80:20/0:100) diopter adjustment on both eyepieces
- Eyepiece : Super wide field SW10x/25 mm eyepiece, Ø30mm tube
Plan achromatic infinity corrected objective, NIS60 Plan 4x/0.10, working distance 30 mm
- Objective : Plan achromatic infinity corrected objective, NIS60 Plan 10x/0.25, working distance 10.2 mm
Plan achromatic infinity corrected objective, NIS60 Plan 20x/0.40, working distance 12 mm
Plan achromatic infinity corrected objective, NIS60 Plan S40x/0.65, working distance 0.7 mm
Plan achromatic infinity corrected objective, NIS60 Plan S100x/1.25 oil immersion, working distance 0.2 mm
- Nosepiece : Revolving sextuple reversed nosepiece on ball-bearings
- Stage : Double layer mechanical stage 190×152/78x32mm with Gorilla glass insert, with right handle
- Focusing : Coaxial focusing system with low-postion X-Y coaxial control knob, the ergonomic design provides operator
- Condenser : comfortable experience, fine division 1um, moving range 35mm
- Illumination : Motorized Abbe condenser 0.9/0.25 with swing-out front lens 24V/100W halogen lamp
- ECO Function : The unique sensor is developed to avoid unnecessary loss of energy. The illumination of the microscope automatically switches off after users step away from their position for 30 minutes.
- Light Management : No need to adjustable the light intensity by hand when switch the objectives. The long-life lamp can keep
- Remote Control Pad : Objective could be switched by simply pressing the rotating buttons. User could also self-define two of the most commonly used objectives. User could swap between these two objectives by pressing the green button



The function of light intensity management (optional)



The management system can automatically adjust to the suitable light intensity according to the different setup of objectives from the low to high magnifications, and reduce the eye fatigue at the same time. The long-life LED lamp can keep the light intensity and easy for maintenance.



E SEARCH Series Advanced Life Science Microscopes

Product Comparison Table

Microscopes

Model		E SEARCH-Bio	E SEARCH-Abio
Optical System	NIS60 Infinite optical system	✓	✓
Eyepiece	Super wide field SW10x/25 mm eyepiece, Ø30mm tube	2pcs	2pcs
	Extra wide field EW10x/22mm eyepiece, Ø30mm tube	∞	∞
	Wide field WF 12.5x/17.5mm eyepiece, Ø30mm tube	∞	∞
	Wide field WF 15x/16mm eyepiece, Ø30mm tube	∞	∞
	Wide field WF 20x/12mm eyepiece, Ø30mm tube	∞	∞
Viewing Head	Siedentop Trinocular with 30° inclined tubes Interpupillary distance adjustable between 47 and 78mm, 3-Position beamsplitter (100:0/80:20/0:100) diopter adjustment on both eyepieces	✓	✓
	Siedentopf binocular with 30° inclined tubes Interpupillary distance adjustable between 47 and 78mm, diopter adjustment on both eyepieces	○	○
	Ergo tilting Trinocular head, eye tube can be adjustable from 0° to 35°, interpupillary distance 47-78mm, Trinocular tube can be connected to SLR camera and digital camera, having a 3-position beam splitter (0:100, 100:0, 80:20), the splitter bar can be assembled on the either side according to user's requirement.	○	○
Plan achromatic infinity corrected objective	NIS60 Plan 2x/0.06, working distance 7.5 mm	○	○
	NIS60 Plan 4x/0.10, working distance 30 mm	✓	✓
	NIS60 Plan 10x/0.25, working distance 10.2 mm	✓	✓
	NIS60 Plan 20x/0.40, working distance 12 mm	✓	✓
	NIS60 Plan S40x/0.65, working distance 0.7 mm	✓	✓
	NIS60 Plan S60x/0.80, working distance 0.3 mm	○	○
	NIS60 Plan S100x/1.25 oil immersion, working distance 0.2 mm	✓	✓
Plan Semi-Apochromatic infinity corrected objective	PlanF S-Apo 4x/0.13, working distance 16.5 mm	○	○
	PlanF S-Apo 10x/0.30, working distance 8.1 mm	○	○
	PlanF S-Apo 20x/0.50, working distance 2.1 mm	○	○
	PlanF S-Apo 40x/0.75, working distance 0.7 mm	○	○
	PlanF S-Apo 100x/1.30, oil immersion working distance 0.15 mm	○	○
Plan Phase infinity corrected objective	Plan 10x/0.25 Ph, working distance 10.2 mm	○	○
	Plan 20x/0.40 Ph, working distance 12 mm	○	○
	Plan 40x/0.65 Ph, working distance 0.7 mm	○	○
	Plan 100x/1.25 Ph, oil immersion working distance 0.2 mm	○	○
Nosepiece	Revolving sextuple reversed nosepiece on ball-bearings	✓	
	Revolving Septuple reversed nosepiece on ball-bearings	○	
	Motor-driven sextuple reversed nosepiece		✓
Condenser	Abbe condenser 0.9/0.25 with swing-out front lens	✓	
	Motorized Abbe condenser 0.9/0.25 with swing-out front lens		✓
	Zernike Phase contrast Abbe condenser with 4 phase annuli	○	○
	Dark-field condenser (Dry)	○	○
	Dark-field condenser (Oil)	○	○
	Rotating DIC and BF disc condenser without DIC prisms	○	○
Illumination	24V/100W halogen lamp	✓	✓
	3W S-LED lamp with Kohler	○	○
	10W S-LED lamp with Kohler	○	○
Stage	Double layer mechanical stage 190×152/78x32mm with Gorilla glass insert, with right handle (left handle optional)	✓	✓
	Double layer mechanical stage 190×152/78x54mm with Gorilla glass insert, with right handle (left handle optional)	○	○
	Double layer mechanical stage 190×152/78x32mm with sapphire crystal glass insert, with right handle (left handle optional)	○	○
	Double layer mechanical stage 190×152/78x54mm with sapphire crystal glass insert, with right handle (left handle optional)	○	○
Focusing	Coaxial focusing system with low-position X-Y coaxial control knob, the ergonomic design provides operators comfortable experience, fine division 1um, moving range 35mm	✓	✓
ECO Function	The unique sensor is developed to avoid unnecessary loss of energy. The illumination of the microscope automatically switches off after users step away from their position for 30 minutes.	✓	✓
Light intensity Management	No need to adjustable the light intensity by hand when switch the objectives. The long-life lamp can keep the light intensity and easy for maintenance	○	✓
Video Attachment	1X C mount	○	○
	0.5X C mount	○	○
	0.35X C mount	○	○
	0.63X C mount	○	○
Other Accessories	Epi-fluorescent Attachment	○	○
	Polarization Kits	○	○
	Phase contrast attachment	○	○
	Dark field Attachment	○	○
	DIC Kits	○	○
	Attachment kits of multi-viewing microscopes for 2, 3, 5, 10 users	○	○
	Digital Camera	○	○



E SEARCH Series Advanced Life Science Microscopes

Optional Accessories

Cat. Number	Descriptions	Cat. Number	Descriptions
HEM271001	Siedentop Trinocular head, inclined at 30°, interpapillary distance 47-78mm	HEM271053	Compensator Slider
HEM271002	Siedentop binocular head, inclined at 30°, interpapillary distance 47-78mm	HEM271054	Optical compensator: 1° order red (1 lambda), (gypsum)
HEM271003	Ergo. titling Trinocular head, adjustable from 0° to 35°, interpapillary distance 47-78mm	HEM271055	Optical compensator: 1/4λ quarter-wave plate (mica)
HEM271004	E SEARCH microscope's main body	HEM271056	Optical compensator: Quartz wedge
HEM271005	E SEARCH-Auto microscope's main body	HEM271057	Simple polarization kit, consisting of reflected polarizer in slider and reflected analyzer
HEM271006	Super wide field SW10x/25 mm eyepiece, Ø30mm tube	HEM271058	Option for left-handed stage with Gorilla glass
HEM271007	Super wide field SW10x/25 mm eyepiece with cross-hair, Ø30mm tube	HEM271059	Option for right-handed stage with Gorilla glass
HEM271008	Extra wide field EW10x/22mm eyepiece, Ø30mm tube with diopter adjustment	HEM271060	Option for left-handed stage with Sapphire glass.
HEM271009	Extra wide field EW10x/22mm eyepiece with cross-hair, Ø30mm tube	HEM271061	Option for right-handed stage with Sapphire glass.
HEM271010	Wide field WF 12.5x/17.5mm eyepiece, Ø30mm tube	HEM271062	Round stage for polarization microscope, diameter Φ190mm, center adjustable, 360° scale, minimum division 1°, minimum reading 6' by means of vernier scale, 45° click stop knob
HEM271011	Wide field WF 15x/16mm eyepiece, Ø30mm tube	HEM271063	Slide clips
HEM271012	Wide field WF 20x/12mm eyepiece, Ø30mm tube	HEM271064	Adapter to lower stage position
HEM271013	Super wide field SW10x POL eyepiece, Ø30mm tube	HEM271065	Sapphire glass inserted for stage
HEM271014	Reticle plate	HEM271066	Blue filter, Ø 45 mm, fits on lamphouse
HEM271015	Short eyecup for eyepiece	HEM271067	Green filter, Ø 45 mm, fits on lamphouse
HEM271016	Long eyecup for eyepiece	HEM271068	Yellow filter, Ø 45 mm, fits on lamphouse
HEM271017	Manual sextuple reversed nosepiece	HEM271069	LED illuminator replacement unit
HEM271018	Manual septuple reversed nosepiece	HEM271070	100W /24V halogen replacement bulb
HEM271019	Motor-driven sextuple reversed nosepiece	HEM271071	100W HBO mercury vapor lamp for transmitted illumination
HEM271020	Plan achromatic infinity corrected objective, NIS60 Plan 2x/0.06, working distance 7.5 mm	HEM271072	Fuses 500 mA 250 V, 10 pieces, (For E SEARCH models with LED)
HEM271021	Plan achromatic infinity corrected objective, NIS60 Plan 4x/0.10, working distance 30 mm	HEM271073	Fuses 5 A 250 V, 10 pieces (For E SEARCH models with 100 W halogen)
HEM271022	Plan achromatic infinity corrected objective, NIS60 Plan 10x/0.25, working distance 10.2 mm	HEM271074	Epi-Fluorescent Attachment: including filter block system (max. six blocks acceptable); fluorescent filter block B & G excitation filter block included; 100W GCQ ultra hi-voltage spherical mercury lamp; power supplier NFP-1, 220V/110V interchangeable, digital display and timer; protection barrier to resist the ultraviolet light; fluorescent oil.
HEM271023	Plan achromatic infinity corrected objective, NIS60 Plan 20x/0.40, working distance 12 mm	HEM271075	Empty filter cube for 6-position fluorescence attachment
HEM271024	Plan achromatic infinity corrected objective, NIS60 Plan S40x/0.65, working distance 0.7 mm	HEM271076	Filter set for blue excitation, EX: 460-490 nm BP, DM: 500 nm, EM: 520 nm LP (needs empty filter cube)
HEM271025	Plan achromatic infinity corrected objective, NIS60 Plan S60x/0.80, working distance 0.3 mm	HEM271077	Filter set for green excitation, EX: 510-550 nm BP, DM: 570 nm, EM: 590 nm LP (needs empty filter cube)
HEM271026	Plan achromatic infinity corrected objective, NIS60 Plan S100x/1.25 oil immersion, working distance 0.2 mm	HEM271078	Filter set for violet excitation, EX: 400-410 nm BP, DM: 455 nm, EM: 460 nm LP (needs empty filter cube)
HEM271027	Plan achromatic infinity corrected objective 100x/1.25 oil immersion, with built-in iris diaphragm for darkfield applications, working distance 0.2 mm	HEM271079	Filter set for ultra-violet excitation, EX: 330-385 nm BP, DM: 400 nm, EM: 420 nm LP (needs empty filter cube)
HEM271028	Plan Semi-Apochromatic infinity corrected objective, PlanF S-Apo 4x/0.13, working distance 16.5 mm	HEM271080	Filter set for red excitation: BP620-650, Dichroic Mirror: DM660, Barrier: BA670-750 (needs empty filter cube)
HEM271029	Plan Semi-Apochromatic infinity corrected objective, PlanF S-Apo 10x/0.30, working distance 8.1 mm	HEM271081	100W HBO mercury vapor lamp for reflected illumination
HEM271030	Plan Semi-Apochromatic infinity corrected objective, PlanF S-Apo 20x/0.50, working distance 2.1 mm	HEM271082	100W power supplier NFP-1
HEM271031	Plan Semi-Apochromatic infinity corrected objective, PlanF S-Apo 40x/0.75, working distance 0.7 mm	HEM271083	FL-ND6 filter
HEM271032	Plan Semi-Apochromatic infinity corrected objective, PlanF S-Apo 100x/1.30, oil immersion, W.D.: 0.15 mm	HEM271084	FL-ND25 filter
HEM271033	Plan Phase infinity corrected objective, Plan 10x/0.25 Ph, working distance 10.2 mm	HEM271085	C-mount with 1x for C-mount camera
HEM271034	Plan Phase infinity corrected objective, Plan 20x/0.40 Ph, working distance 12 mm	HEM271086	C-mount with high resolution relay 0.50x objective for 1/2" C-mount camera
HEM271035	Plan Phase infinity corrected objective, Plan 40x/0.65 Ph, working distance 0.7 mm	HEM271087	C-mount with high resolution relay 0.35x objective for 1/3" C-mount camera
HEM271036	Plan Phase infinity corrected objective, Plan 100x/1.25 Ph, oil immersion working distance 0.2 mm	HEM271088	C-mount with high resolution relay 0.63x objective for 2/3" C-mount camera
HEM271037	Abbe condenser 0.9/0.25 with swing-out front lens	HEM271089	Universal Ø 23.2 mm tube adapter with built-in 2x lens for SLR photo camera with APS-C sensor. T2 ring
HEM271038	Abbe condenser 0.9/0.26 with swing-out front lens (for automatic model)	HEM271090	T2 ring for Nikon D SLR digital camera
HEM271039	Zernike phase contrast set, with Plan Phase 10/20/S40/S100x objectives, phase contrast condenser, telescope and green filter	HEM271091	T2 ring for Canon EOS SLR digital camera
HEM271040	Zernike Phase contrast Abbe condenser with 4 phase annuli	HEM271092	Attachment kits of multi-viewing microscopes for 5 users
HEM271041	Telescope for phase contrast alignment, Ø 30 mm tube	HEM271093	Attachment kits of multi-viewing microscopes for 2 users
HEM271042	Dark field condenser (Dry)	HEM271094	Attachment kits of multi-viewing microscopes for 2 users (face to face)
HEM271043	Dark field condenser (Oil)	HEM271095	Attachment kits of multi-viewing microscopes for 3 users
HEM271044	Turrent DIC condenser (rotating DIC and BF, without DIC prisms)	HEM271096	Attachment kits of multi-viewing microscopes for 10 users
HEM271045	DIC prism for turrent condenser (used with plan semi-apo 10x objective)	HEM271097	Eyepoint regulator
HEM271046	DIC prism for turrent condenser (used with plan semi-apo 20x objective)	HEM271098	Nosepiece deckboard
HEM271047	DIC prism for turrent condenser (used with plan semi-apo 40x objective)	HEM271099	DIC polarization filter for transmitted light
HEM271048	DIC prism for turrent condenser (used with plan semi-apo 100x objective)	***	Digital Camera (Please refer to our digital camera brochure)
HEM271049	Slider with DIC prism for nosepiece (used with plan semi-apo 10x and 20x objectives)		
HEM271050	Slider with DIC prism for nosepiece (used with plan semi-apo 40x and 100x objectives)		
HEM271051	Simple polarization kit, consisting of transmitted polarizer in slider and transmitted analyzer		
HEM271052	Bertrand lens for coroscopy observation. Swing-out type, focusable and centrable		





E SEARCH Series Infinite Compound Microscope for Life Science and Research with digital Cam

Body frame :

Manual upright microscope frame for reflected and transmitted light observations, coaxial coarse and fine focus with stage up and down mechanism,

focus stroke 25mm, coarse stroke 37.7mm rotation, fine stroke 100um/rotation, graduation on fine focus 1um. Refocusing limit stopper and torque adjustment on coarse focus, light manager with individual light intensity settings for all objectives in combination, with high bright LED light source and 5 position coded

nosepiece (6 positions or 7 positions coded nosepieces are optional), front side mounted light control screen, external power supply 5V, 2.5a. transmitted light illuminator with koehler illumination and field number 26.5mm. Including Allen wrench and AC adapter

Optical System :

UIS Infinity Corrected Optical System

Viewing head :

Siedentop Trinocular with 30° inclined Ø 30mm tubes. Interpupillary distance 47-78mm, with diopter adjustment on both eyepieces, Trinocular port with 3-positions beam splitter (0:100/ 100:0/ 80:20)

Nosepiece :

Backward Quintuple Coding Nosepiece, which remembers the illumination brightness when using each objectives. When different objectives are switched between each other, the light intensity is automatically adjusted to reduce visual fatigue and improve work efficiency.

Eyepiece:

Wide field eyepiece WF10x/22mm, diopter adjustment +/-5, tube diameter: Ø30mm

Objectives:

Infinite Plan Achromatic Objective 4x, NA 0.10, WD: 28mm

Infinite Plan Achromatic Objective 10x, NA 0.25, WD: 10mm

Infinite Plan Achromatic Objective 40x, NA 0.65, spring loaded, WD: 0.7mm

Infinite Plan Achromatic Objective 100x, NA 1.25, spring loaded, oil, WD: 0.18mm

Stage:

Synchronous belt platform stage 235mmx150mm, XY Moving Range 78mmx54mm, Metal clips for glass slides, hard oxidized platform surface, table surface can be replaced

Focusing: Low-hand position coarse and fine coaxial focusing mechanism, Coarse Stroke 37.7mm per Rotation, Fine division 0.001mm, Fine Stroke 100um per Rotation, focus stroke 25mm, With adjusting elastic device and upper limit, with platform up and down adjustment mechanism, the height of the stage bracket group is adjustable

Condenser:

Abbe 0.9/1.25 condenser with adjustable height "Full-Köhler" type for bright field

Illumination:

High bright LED module with Full-Köhler illumination, color temperature and brightness adjustable. Matrix lens for uniform field illumination. The brightness of the entire field of view is uniform. The color temperature can be adjusted to the lighting effects as LED illumination or halogen illumination according to the user needs. Identify and display the band on the LCD screen.

LCD Screen:

The LCD screen on the front of the microscope displays the use status of the microscope, including magnification, light intensity, standby status, lock etc.

ECO function:

The ECO function is able to avoid unnecessary loss of energy. The illumination of the microscope automatically switches off shortly after microscopists step away from their position for some time (the time can be pre-set as user need)

Supplied with:

Dust cover, spare fuse, green filter, manual, immersion oil

Power: 100-240V, 50/60Hz

C mount:

C mount adapter with 0.5x lense for digital camera

Digital camera

UNISON-6PB Color CMOS Digital camera, 6.4MP, USB3.1, sensor: 1/1.8" CMOS, not cooling,

pixel: 2.4x2.4um, FPS/

Resolution: 59@3072x2048, 59@1536x1024,

bining: 1x1, 2x2, exposure time: 0.02ms-15s, with image process software, suitable for various operation system:

ESB-ES580



ESB HB-1 Series Biological Microscopes

Model		HB1+5MP	
Viewing Head	Monocular Head, 30° Inclined, 360° Rotatable	•	
	Siedentop Binocular Head, Inclined at 30°, Interpapillary 55-75mm		
	Siedentop Trinocular Head, Inclined at 30°, Interpapillary 55-75mm		
	Dual Observation Head, One Tube 30° Inclined And Another Tube Vertical, 360° Rotatable		
	Digital Siedentop Binocular Head with integrated 5mp camera, Inclined at 30°, Interpapillary 55-75mm		
Eyepiece	Wide Field Eyepiece WF10X/18	••	
	Wide Field Eyepiece WF16X/11	○○	
Objective	Achromatic Objective	4X	•
		10X	•
		40X	•
		100X	○
	Plan Achromatic Objective	4X	○
		10X	○
		40X	○
		100X	○



Microscopes

Model		HB1+5MP		
Nosepiece	Quadruple Nosepiece	•		
Stage	Double Layers Mechanical Stage 125X125mm/60x40mm	•		
Condenser	NA 1.25 Abbe Condenser with Iris Diaphragm	•		
Focusing System	Coaxial Coarse and Fine Adjustment, Fine Division 0.002mm, Moving Range 14mm	•		
Illumination	Built-in Adjustable Brightness LED 1W	•		
Accessories	Video Adapter	C Mount ○		
	Filter	Blue Filter	•	
		Green Filter	•	
Digital Camera	Series	USB2.0 Digital Camera	•	
	Resolution	5MP		
	Sensor size	1/2.5"		
	Maximum resolution	2592*1944		
	Pixel size	2.2*2.2µm		
	Color	Color		
	Target size	1/2.5"		
	Exposure mode	Rolling shutter		
	Signal to noise	35dB		
	Dynamic range	64dB		
	Sensitivity	2V/Lux.S		
	Frame rateMJPG	2592*1944@25FPS		•
		1920*1080@60FPS		
		1280*720@60FPS		
		640*480@60FPS		
	Frame rateYUV422	2592*1944@25FPS		•
		1920*1080@60FPS		
		1280*720@60FPS		
640*480@60FPS				
Image output	USB3.0 UVC			
Hardware interface	USB3.0 B			
Working temperature	Environment temperature-20°C ~ 70°C			
Storage temperature	-40°C ~ 85°C			

Remark: "•"=Included with delivery "○"=Option





Infinite Biological ESB-2100T with KOTI- 5ADigital Camera

Optical system: Infinity corrected optical system
 Viewing head: Siedentop Trinocular viewing head inclined at 30 ° ,
 interpapillary 47- 75m, 360 ° rotation
 Eyepiece: Apair of WF10x/20mm eyepiece
 Nosepiece: Reversed quadruple ball bearings revolving nosepiece

Objectives:

All with ant-i fungus treatment.
 Infinite semi- plan achromatic objective 4x/0.10
 Infinite semi- plan achromatic objective 10x/0.25
 Infinite semi-plan achromatic objective 40x/0.65, spring loaded Infinite semi- plan achromatic objective 100x/1.25, spring loaded, oil
 Stage : Double layer mechanical stage, with size: 140x140mm, 75x50mm X- Y movement range. Vernier scale on the two axes, accuracy: 0.1mm
 Focusing: Integrated design, coaxial focus system with upper limited and tension adjustment, coarse stroke 37.7mm per rotation, fine precision: 0.002mm fine stroke 0.2mm per rotation, moving range: 25mm, provided with an adjustable tightness device to prevent slipping and mechanical upper limit device
 Condenser: Sliding- in center able abbe condenser 1.25 NA with objective position scales
 Illumination: High brightness energy- saving S-LED illumination for long life, brightness adjustable
 Power: Multi-plug 100 -240Vac, 50/60Hz external power supply
 Others: Dust cover, spare fuse, blue & green filters, slim and easy to carry, support to reduce the fatigue during use, with carrying handle
 Digital camera:
 KOTI- 5Adigital camera,USB2.0, CMOS, sensor: 5.1M/AR0521(C), 1/2.5 "(5.70x4.28), pixel size: 2.2x2.2um, FPS/Resolution: 30@2592x1944, 30@1280x960, 30@640x480, exposure time: 0.1- 1000ms, Support Microsoft Windows XP / Vista / 7 /8 /10(32 & 64 bit)OS X (Mac OSX), Linux with image process software9.0 software.

ESB-2100T

Infinite Biological ESB-2100NTwith KOTI -5A Digital Camera

Optical system: Infinity corrected optical system
 Viewing head: Siedentop Trinocular viewing head inclined at 30 ° ,
 interpapillary 47- 75m, 360 ° rotation
 Eyepiece: Apair of WF10x/20mm eyepiece
 Nosepiece: Reversed quadruple ball bearings revolving nosepiece

Objectives:

All with ant-i fungus treatment.
 Infinite plan achromatic objective4x/0.10
 Infinite plan achromatic objective10x/0.25
 Infinite plan achromatic objective40x/0.65, spring loaded
 Infinite plan achromatic objective100x/1.25, spring loaded, oil

Stage : Double layer mechanical stage, with size: 140x140mm, 75x50mm X- Y movement range. Vernier scale on the two axes, accuracy: 0.1mm
 Focusing: Integrated design, coaxial focus system with upper limited and tension adjustment, coarse stroke 37.7mm per rotation, fine precision: 0.002mm fine stroke 0.2mm per rotation, moving range: 25mm, provided with an adjustable tightness device to prevent slipping and mechanical upper limit device
 Condenser: Sliding- in center able abbe condenser 1.25 NA with objective position scales
 Illumination: High brightness energy- saving S-LED illumination for long life, brightness adjustable
 Power :Multi-plug 100 -240Vac, 50/60Hz external power supply
 Others :Dust cover, spare fuse, blue & green filters, slim and easy to carry, support to reduce the fatigue during use, with carrying handle
 Digital camera:
 KOTI- 5Adigital camera,USB2.0, CMOS, sensor: 5.1M/AR0521(C), 1/2.5 "(5.70x4.28), pixel size: 2.2x2.2um, FPS/Resolution: 30@2592x1944, 30@1280x960, 30@640x480, exposure time: 0.1- 1000ms, Support Microsoft Windows XP / Vista / 7 /8 /10(32 & 64 bit)OS X (Mac OSX), Linux with image process software

ESB-2100NT





Affordable Digital Compound Microscope

Medical and Educational Microscope

Viewing head: Siedentop binocular head, inclined at 30°, interpapillary 48-75mm, 360° rotatable

Nosepiece: Backward quadruple revolving nosepiece

Eyeiece: Wide field eyepiece WF10X/18mm

Objectives: Achromatic objective 4x/0.10 Achromatic objective 10x/0.25

Achromatic objective 40x/0.65, spring loaded

Achromatic objective 100x/1.25, spring loaded, oil

Stage: Double Layers Mechanical Stage 132X142mm, Moving Range 75X40mm

Focusing: Coaxial coarse and fine Adjustment, fine division 0.004mm, coarse stroke 37.7mm per rotation, fine stroke 0.4mm per rotation, moving range 24mm

Condenser: NA 1.20 abbe condenser with iris diaphragm and filter

Illumination: High brightness 3W LED illumination for long life, brightness adjustable

Kohler illumination (optional)

Supplied with: Dust cover, spare fuse, filters

Power: 100-240V, 50/60Hz

Dimension & G.W.: 39.5cm*26.5cm*50cm, 7kg

Immersion Oil: 5ml

Digital eyepiece: Spectral Range 380-650nm (with IR-cut Filter) White Balance Auto White Balance

Color Technique N/A

Capture/Control API : Native C/C++, C#/VB.NET, DirectShow, Twain and Lab view Recording System

Still Picture and Movie

Cooling System : Natural

Operating Environment

Operating Temperature : -10°C- 50°C

Storage Temperature : -20- 60°C

Operating Humidity : 30-80%RH

Storage Humidity : 10-60%RH

Power Supply : DC 5V over PC USB Port

Software Environment

Operating System: Microsoft® Windows® XP / Vista / 7 / 8 / 10 (32 & 64 bit) OSx (Mac OS X)

Linux

PC Requirements : CPU: Equal to Intel Core2 2.8GHz or Higher Memory: 2GB or More

USB Port:USB2.0 High-speed Port Display:17" or Larger

CD-ROM

Accessories : Standard Camera Packing List

Carton L:52cm W:32cm H:33cm (50pcs, 12-17Kg/carton), not shown in the photo

Gift box L:14.5cm W:9.5cm H:6.0cm (0.15-0.16Kg/box) USB2.0 eyepiece camera

High-Speed USB2.0 A male to mini B 5-pin male gold-plated connectors cable /1.5m CD (Driver & utilities software, 8cm)

Optional Accessory C-Mount Adapter Housing:108027 (HS502)

(must be purchased separately) (Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube

(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube

(Dia.23.2mm to 31.75mm Ring)/ Adapter rings for 31.75mm eyepiece tube Calibration kit 106011/TS-M1 (X=0.01mm/100Div.);

106012/TS-M2 (X,Y=0.01mm/100Div.);

106013/TS-M7 (X=0.01mm/100Div., 0.10mm/100Div.)



Infinite Digital Compound Microscopes

ESB-38 Series LCD Microscope



Model: ESB-38LCD

Viewing head with tablet : Siedentop Trinocular head, inclined at 30°, interpupillary 47-75mm, 360° rotatable 5.0Mega Pixel CMOS Chip, support WIFI and Bluetooth, 9.7" Inch TFT Touching Screen, Output: USB2.0, HDMI, Operation System : Android 4.2.2, Software: Touch Scope, SD Card: Support, Come with Mouse
Nosepiece : Backward quadruple revolving nosepiece
Eyepiece : Wide field eyepiece WF10X/18mm

Objectives:

Achromatic objective 4x/0.10
Achromatic objective 10x/0.25
Achromatic objective 40x/0.65, spring loaded
Achromatic objective 100x/1.25, spring loaded, oil
Stage: Double layer mechanical stage 140X140mm, moving range 75X50mm
Focusing : Coaxial coarse and fine Adjustment, fine division 0.002mm, coarse stroke 37.7mm per rotation, fine stroke 0.2mm per rotation, moving range 25mm
Condenser : NA 1.25 abbe condenser with aperture diaphragm
Illumination : High brightness energy-saving LED illumination for long life, brightness adjustable
Supplied with : Dust cover, spare fuse, blue & green filters
Power : 100-240V, 50/60Hz

ESB52777LCD

Model: ESB-BM38NLLCD

Viewing head with tablet : Siedentop Trinocular head, inclined at 30°, interpupillary 47-75mm, 360° rotatable 5.0Mega Pixel CMOS Chip, support WIFI and Bluetooth, 9.7" Inch TFT Touching Screen, Output: USB2.0, HDMI, Operation System: Android 4.2.2, Software: Touch Scope, SD Card: Support, Come with Mouse
Nosepiece : Backward quadruple revolving nosepiece
Eyepiece : Wide field eyepiece WF10X/18mm
Objectives:

Semi-plan achromatic objective 4x/0.10
Semi-plan achromatic objective 10x/0.25
Semi-plan achromatic objective 40x/0.65, spring loaded
Semi-plan achromatic objective 100x/1.25, spring loaded, oil
Stage : Double layer mechanical stage 140X140mm, moving range 75X50mm
Focusing : Coaxial coarse and fine Adjustment, fine division 0.002mm, coarse stroke 37.7mm per rotation, fine stroke 0.2mm per rotation, moving range 25mm
Condenser : NA 1.25 abbe condenser with aperture diaphragm
Illumination : High brightness energy-saving LED illumination for long life, brightness adjustable
Supplied with : Dust cover, spare fuse, blue & green filters
Power : 100-240V, 50/60Hz

ESB52777NLLCD



ESB-38 Series LCD Microscope

Model: ESB-38ULCD

Viewing head with tablet Siedentop Trinocular head, inclined at 30°, interpupillary 47-75mm, 360° rotatable 5.0 Mega Pixel CMOS Chip, support WIFI and Bluetooth, 9.7" Inch TFT Touching Screen, Output: USB2.0, HDMI, Operation System: Android 4.2.2, Software: Touch Scope, SD Card: Support, Come with Mouse
Nosepiece : Backward quadruple revolving nosepiece
Eyepiece :Wide field eyepiece WF10X/20mm

Objectives:

Infinite semi-plan achromatic objective 4x/0.10
Infinite semi-plan achromatic objective 10x/0.25
Infinite semi-plan achromatic objective 40x/0.65, spring loaded
Infinite semi-plan achromatic objective 100x/1.25, spring loaded, oil
Stage: Rackless double layer mechanical stage 150X140mm, moving range 75X52mm
Focusing : Coaxial coarse and fine Adjustment, fine division 0.002mm, coarse stroke 37.7mm per rotation, fine stroke 0.2mm per rotation, moving range 25mm
Condenser : NA 1.25 abbe condenser with aperture diaphragm
Illumination : High brightness energy-saving LED illumination for long life, brightness adjustable
Supplied with : Dust cover, spare fuse, blue & green filters
Power : 100-240V, 50/60Hz

ESB52777ULCD



Microscopes



Model: ESB-38UILCD

Viewing head with tablet : Siedentop Trinocular head, inclined at 30°, interpupillary 47-75mm, 360° rotatable 5.0 Mega Pixel CMOS Chip, support WIFI and Bluetooth, 9.7" Inch TFT Touching Screen, Output: USB2.0, HDMI, Operation System: Android 4.2.2, Software: Touch Scope, SD Card: Support, Come with Mouse
Nosepiece : Backward quadruple revolving nosepiece
Eyepiece :Wide field eyepiece WF10X/20mm

Objectives:

Infinite plan achromatic objective 4x/0.10
Infinite plan achromatic objective 10x/0.25
Infinite plan achromatic objective 40x/0.65, spring loaded
Infinite plan achromatic objective 100x/1.25, spring loaded, oil
Stage: Rackless double layer mechanical stage 150X140mm, moving range 75X52mm
Focusing : Coaxial coarse and fine Adjustment, fine division 0.002mm, coarse stroke 37.7mm per rotation, fine stroke 0.2mm per rotation, moving range 25mm
Condenser : NA 1.25 abbe condenser with aperture diaphragm
Illumination : High brightness energy-saving LED illumination for long life, brightness adjustable
Supplied with : Dust cover, spare fuse, blue & green filters
Power : 100-240V, 50/60Hz

ESB52777UILCD



Optional Accessories			
Cat. Number	Descriptions	Cat. Number	Descriptions
M11220001	Infinite binocular head	M11220030	Dark Field Condenser NA0.7-0.9 (Dry)
M11220002	Infinite trinocular head	M11220031	Dark Field Condenser NA1.25-1.36 (Oil)
M11220003	Digital viewing head inclined at 30°, 3M pixels, support Wi-Fi (infinite)	M11220032	Infinity plan dark field objective 100x for oil dark field condenser
M11220004	Digital viewing head inclined at 30°, 5M pixels, support Wi-Fi (infinite)	M11220033	Infinity plan dark field objective 100x with iris diaphragm for oil dark field condenser
M11220005	LCD display for adopting with viewing head, 5M pixels, 9.7" LCD, android OS	***	Digital Camera (Please refer to our digital camera brochure)
M11220006	Eyepiece WF10x/20mm	M11220034	Sliding Phase Contrast Condenser with Plug in plate 10x, 40x (Magnification of Plug-in plate can be choose from 10x 20x, 40x, 100x as users' wish)
M11220007	Eyepiece P15x	M11220035	Turret phase contrast condenser (for phase 10x, 20x/40x, 100x)
M11220008	Eyepiece WF20x	M11220036	Infinite Phase Contrast Objective PH10x/0.25
M11220009	Eyepiece WF25x	M11220037	Infinite Phase Contrast Objective PH20x/0.40
M11220010	Reticle	M11220038	Infinite Phase Contrast Objective PH40x/0.65
M11220011	Backward quadruple revolving nosepiece	M11220039	Infinite Phase Contrast Objective PH100x/1.25
M11220012	Backward quintuple revolving nosepiece	M11220040	Phase centering telescope
M11220013	Infinite semi-plan achromatic objective 4x/0.10	M11220041	Green filter
M11220014	Infinite semi-plan achromatic objective 10x/0.25	M11220042	Simple Polarization Set: Polarizer & Analyzer
M11220015	Infinite semi-plan achromatic objective 40x/0.65, spring loaded	M11220043	Temperature control system: 5W LED illumination, temperature Controlling range: room temperature to 50° C
M11220016	Infinite semi-plan achromatic objective 100x/1.25, spring loaded, oil	M11220044	LED Epi-Fluorescent Attachment "FL-LED" LED 3W BLUE 465-475nm, including LED fluorescent filter block system; fluorescent filter block B excitation filter included.
M11220017	Infinite plan achromatic objective 4x/0.10	M11220045	BLUE (B) Filter Block (used for FL-LED): Excitation BP460-490 - Dichroic Mirror DM505 -Barrier Filter BA515
M11220018	Infinite plan achromatic objective 10x/0.25	M11220046	GREEN (G) Filter Block (used for FL-LED): Excitation BP510~550 - Dichroic Mirror DM570- Barrier Filter BA590
M11220019	Infinite plan achromatic objective 20x/0.40	M11220047	Epi-Fluorescent Attachment "XY-2": Including filter block system, fluorescent filter block B & G excitation filter block included; 100W HBO ultra hi-voltage spherical mercury lamp; power supplier NFP-1, 220V/110V interchangeable, digital display and timer; protection barrier to resist the ultraviolet light; fluorescent oil
M11220020	Infinite plan achromatic objective 40x/0.65, spring loaded	M11220048	B&G fluorescent block set, including two filters: (used for XY-2) BLUE Filter Block: Excitation BP460~490 - Dichroic Mirror DM500 - Barrier Filter BA520 GREEN Filter Block: Excitation BP510~550 - Dichroic Mirror DM570 - Barrier Filter BA590
M11220021	Infinite plan achromatic objective 60x/0.80, spring loaded	M11220049	U&V fluorescent block set, including two filters: (used for XY-2) ULTRAVIOLET Filter Block: excitation BP330~385 - DM400 - Barrier Filter BA420 VIOLET Filter Block: excitation BP400~410 - DM455 - Barrier Filter BA455
M11220022	Infinite plan achromatic objective 100x/1.25, spring loaded, oil	M11220050	Infinite plan fluorescent objective 4x/0.13, WD 16.3mm
M11220023	Halogen Bulb (used for replacement for BM38U halogen model)	M11220051	Infinite plan fluorescent objective 10x/0.3, WD 12.4mm
M11220024	S-LED Illumination	M11220052	Infinite plan fluorescent objective 20x/0.5, WD 1.5mm
M11220025	S-LED Illumination with Recharger	M11220053	Infinite plan fluorescent objective 40x/0.75, WD 0.35mm
M11220026	Kohler Illumination	M11220054	Infinite plan fluorescent objective 100x/1.30, WD 0.13mm
M11220027	ECO Function	M11220055	1X C mount
M11220028	Plane-concave Mirror	M11220056	0.5X C mount
M11220029	N.A. 1.25 Abbe Condenser		

Product Comparison Table

*	Model	BM38L	BM38NL	BM38UL	BM38UIL
Optical system:	Finite optical system Infinite optical system	✓	✓		✓
Viewing head with Tablet	Siedentop Trinocular head, inclined at 30°, interpapillary 47-75mm, 360° rotatable 5.0mega Pixel CMOS Chip, support WIFI and Bluetooth, 8" Inch TFT Touching Screen, Output: USB2.0, Mini, Operation System: Android 4.2.2, Software: Touch Scope, SD Card: Support, Come with Mouse	✓	✓	✓	✓
Eyepiece	WF10x/18mm eyepiece WF10x/20mm eyepiece	2pcs	2pcs	2pcs	2pcs
Nosepiece	Backward quadruple revolving nosepiece	✓	✓	✓	✓
Objectives	Achromatic objective 4x, 10x, 40x, 100x Semi-plan achromatic objective 4x, 10x, 40x, 100x Plan achromatic objective 4x, 10x, 40x, 100x Infinite achromatic objective 4x, 10x, 40x, 100x Infinite semi-plan achromatic objective 4x, 10x, 40x, 100x Infinite plan achromatic objective 4x, 10x, 40x, 100x	✓	✓	✓	✓
Stage	Double layer mechanical stage 140X140mm, moving range 75X50mm Rackless double layer mechanical stage 150X140mm, moving range 75X52mm	✓	✓	✓	✓
Focusing	Coaxial coarse and fine Adjustment, fine division 0.002mm, coarse stroke 37.7mm per rotation, fine stroke 0.2mm per rotation, moving range 25mm	✓	✓	✓	✓
Condenser	NA 1.25 abbe condenser with aperture diaphragm	✓	✓	✓	✓
Illumination	High brightness energy-saving LED illumination for long life, brightness adjustable	✓	✓	✓	✓
ECO function	The transmitted light would be off automatically after 30 minutes from operators leae. It can not only save energy, but also keep the lamp life	○	○	○	○
Other Accessories	Simple polarization attachment, dark field kits, phase contrast attachment, epi-fluorescence Remark: "✓" means standard configuration; "○" means optional item	○	○	○	○



Product Comparison Table

	Model	ESB-38L	ESB-38NL	ESB-38UL	ESB-38UIL
Optical system:	Finite optical system	✓	✓		
	Infinite optical system			✓	✓
Viewing head	Siedentop Trinocular head, inclined at 30°, interpapillary 47-75mm, 360° rotatable				
with Tablet	5.0Omega Pixel CMOS Chip, support WIFI and Bluetooth, 8" Inch TFT Touching Screen, Output: USB2.0, Mini, Operation System: Android 4.2.2, Software: Touch Scope, SD Card: Support, Come with Mouse	✓	✓	✓	✓
Eyepiece	WF10x/18mm eyepiece	2pcs	2pcs		
	WF10x/20mm eyepiece			2pcs	2pcs
Nosepiece	Backward quadruple revolving nosepiece	✓	✓	✓	✓
Objectives	Achromatic objective 4x, 10x, 40x, 100x	✓			
	Semi-plan achromatic objective 4x, 10x, 40x, 100x		✓		
	Plan achromatic objective 4x, 10x, 40x, 100x				
	Infinite achromatic objective 4x, 10x, 40x, 100x				
	Infinite semi-plan achromatic objective 4x, 10x, 40x, 100x			✓	
	Infinite plan achromatic objective 4x, 10x, 40x, 100x				✓
Stage	Double layer mechanical stage 140X140mm, moving range 75X50mm	✓	✓		
	Rackless double layer mechanical stage 150X140mm, moving range 75X52mm			✓	✓
Focusing	Coaxial coarse and fine Adjustment, fine division 0.002mm, coarse stroke 37.7mm per rotation, fine stroke 0.2mm per rotation, moving range 25mm	✓	✓	✓	✓
Condenser	NA 1.25 abbe condenser with aperture diaphragm	✓	✓	✓	✓
Illumination	High brightness energy-saving LED illumination for long life, brightness adjustable	✓	✓	✓	✓
ECO function	The transmitted light would be off automatically after 30 minutes from operators leave. It can not only save energy, but also keep the lamp life	○	○	○	○
Other	Accessories Simple polarization attachment, dark field kits, phase contrast attachment, epi-fluorescence	○	○	○	○

Optional Accessories

Cat. Number	Descriptions	Cat. Number	Descriptions
M11220001	Infinite binocular head	M11220035	Turret phase contrast condenser (for phase 10x, 20x/40x, 100x)
M11220002	Infinite Trinocular head	M11220036	Infinite Phase Contrast Objective PH10x/0.25
M11220003	Digital viewing head inclined at 30°, 3M pixels, support Wi-Fi (infinite)	M11220037	Infinite Phase Contrast Objective PH20x/0.40
M11220004	Digital viewing head inclined at 30°, 5M pixels, support Wi-Fi (infinite)	M11220038	Infinite Phase Contrast Objective PH40x/0.65
M11220005	LCD display for adopting with viewing head, 5M pixels, 9.7" LCD, android OS	M11220039	Infinite Phase Contrast Objective PH100x/1.25
M11220006	Eyepiece WF10x/20mm	M11220040	Phase centering telescope
M11220007	Eyepiece P15x	M11220041	Green filter
M11220008	Eyepiece WF20x	M11220042	Simple Polarization Set: Polarizer & Analyzer
M11220009	Eyepiece WF25x	M11220043	Temperature control system: 5W LED illumination, temperature Controlling range: room temperature to 50°C
M11220010	Reticle		
M11220011	Backward quadruple revolving nosepiece	M11220044	LED Epi-Fluorescent Attachment "FL-LED" LED 3W BLUE 465-475nm, including LED
M11220012	Backward quintuple revolving nosepiece		fluorescent filter block system; fluorescent filter block B excitation filter included.
M11220013	Infinite semi-plan achromatic objective 4x/0.10	M11220045	BLUE (B) Filter Block (used for FL-LED): Excitation BP460-490 - Dichroic Mirror DM505 -
M11220014	Infinite semi-plan achromatic objective 10x/0.25		Barrier Filter BA515
M11220015	Infinite semi-plan achromatic objective 40x/0.65, spring loaded	M11220046	GREEN (G) Filter Block (used for FL-LED): Excitation BP510~550 - Dichroic Mirror DM570-
M11220016	Infinite semi-plan achromatic objective 100x/1.25, spring loaded, oil		Barrier Filter BA590
M11220017	Infinite plan achromatic objective 4x/0.10	M11220047	Epi-Fluorescent Attachment "XY-2": Including filter block system, fluorescent filter block
M11220018	Infinite plan achromatic objective 10x/0.25		B & G excitation filter block included; 100W HBO ultra hi-voltage spherical mercury lamp;
M11220019	Infinite plan achromatic objective 20x/0.40		power supplier NFP-1, 220V/110V interchangeable, digital display and timer; protection
M11220020	Infinite plan achromatic objective 40x/0.65, spring loaded		barrier to resist the ultraviolet light; fluorescent oil
M11220021	Infinite plan achromatic objective 60x/0.80, spring loaded	M11220048	B&G fluorescent block set, including two filters: (used for XY-2)
M11220022	Infinite plan achromatic objective 100x/1.25, spring loaded, oil		BLUE Filter Block: Excitation BP460~490 - Dichroic Mirror DM500 - Barrier Filter BA520
M11220023	Halogen Bulb (used for replacement for BM38U halogen model)		GREEN Filter Block: Excitation BP510~550 - Dichroic Mirror DM570 - Barrier Filter BA590
M11220024	S-LED Illumination	M11220049	U&V fluorescent block set, including two filters: (used for XY-2)
M11220025	S-LED Illumination with Recharger		ULTRAVIOLET Filter Block: excitation BP330~385 - DM400 - Barrier Filter BA420
M11220026	Kohler Illumination		VIOLET Filter Block: excitation BP400~410 - DM455 - Barrier Filter BA455
M11220027	ECO Function	M11220050	Infinite plan fluorescent objective 4x/0.13, WD 16.3mm
M11220028	Plane-concave Mirror	M11220051	Infinite plan fluorescent objective 10x/0.3, WD 12.4mm
M11220029	N.A. 1.25 Abbe Condenser	M11220052	Infinite plan fluorescent objective 20x/0.5, WD 1.5mm
M11220030	Dark Field Condenser NA0.7-0.9 (Dry)	M11220053	Infinite plan fluorescent objective 40x/0.75, WD 0.35mm
M11220031	Dark Field Condenser NA1.25-1.36 (Oil)	M11220054	Infinite plan fluorescent objective 100x/1.30, WD 0.13mm
M11220032	Infinity plan darkfield objective 100x for oil dark field condenser	M11220055	1X C mount
M11220033	Infinity plan darkfield objective 100x with iris diaphragm for oil dark field condenser	M11220056	0.5X C mount
M11220034	Sliding Phase Contrast Condenser with Plug in plate 10x, 40x (Magnification of Plug-in plate can be choose from 10x 20x, 40x, 100x as users' wish)	***	Digital Camera (Please refer to our digital camera brochure)





ESB52817



ESB52821

Basic Series includes a wide selection of stereomicroscopes designed to satisfy every need in both teaching and amateur fields. The whole range is assembled according to the best technical standards. The optical system, thanks to its transparency, quality and depth, is at the top of its category. The series is composed of 15 models, each one designed to satisfy multiple needs.

Features

1. Interpupillary distance: 55-75mm
2. One tube with diopter adjustment: +/-5 Dio
3. Illumination: 110V or 220V/12V 10W, CE approval
4. Optional accessories:
 - (1). Inserted Objective 1X, 3X, 4X, 6X
 - (2). Rotated Objective 1X&2X, 1X&3X
 - (3) Eyepiece WF5X, WF15X, WF20X



ESB52825



ESB52828



ESB52829

Model	Illumination	Head and Body	Objective	W.D.	Eyepiece
ESB52817	No Light	Straight Viewing	2X	80MM	WF10X/20
ESB52818	Incident Light				
ESB52819	Incident/Transmitted Light				
ESB52820	No Light	Inclined Viewing Un-rotatable Body	Inserted	76MM	
ESB52821	Incident Light				
ESB52822	Incident Transmitted Light				
ESB52823	No Light		2X&4X	57MM	
ESB52824	Incident Light				
ESB52825	Incident Transmitted Light				
ESB52826	No Light	Inclined Viewing Body 360° rotatable	360° Rotated	76MM	
ESB52827	Incident Light				
ESB52828	Incident Transmitted Light				
ESB52829	Incident Transmitted Light				





ESB52830



ESB52831

Specifications		ESB52830	ESB52831
Eyepiece	WF10X / Φ 20	<input type="checkbox"/>	<input type="checkbox"/>
	WF5X,WF15X,WF20X	Optional	
Working Distance/Objective	2X & 4X/ 72mm	<input type="checkbox"/>	<input type="checkbox"/>
	1X & 2X/72mm , 1X & 3X/72mm	Optional	
Auxiliary Objective	0.5X,0.75X,1.5X,2X	Optional	
Illumination	No Light	<input type="checkbox"/>	
	Transmitted and Incident Light 110V or 220V/6V12W T-H Lamp		<input type="checkbox"/>

Long Working Distance Stereo Microscope



ESB52832

Specification

1. Long Arm for Microscope Body
2. Inclined Binocular Head Interpupillary Distance 55-75mm, Diopter Adjustment on Left Tube+/-5 Dio
3. Eyepiece WF 10X
4. Inserted Objective 1X
5. Working Distance of Objective 230mm
6. Illumination 110V or 220V/12V 10W Incandescent Lamp
7. Optional Accessories:
 - (1) Objective 0.5X, Working Distance 250mm
 - (2) Eyepiece WF 5X/ Φ 22, WF15X/ Φ 15, WF20X/ Φ 10



SUPERIOR STERIOSCOPIC MICROSCOPES

Features

- High quality, high function and excellent cost performance
- Best choice with ergonomic design, sharp image display and wide viewing field
- Providing a wide viewing field of $\Phi 20\text{mm}$ with the zoom ratio of 1:4.5
- Ideal instrument in academic, medical and industrial field



Diopter adjustable



Zoom objective 0.7 \times -3 \times / 1 \times -4.5 \times ,
Zoom ratio 1:4.3/ 1:4.5



High resolution, Wide viewing field,
Long working distance



Binocular head inclined at 45°
Interpupillary 55-75mm

Model		ESB52841	
Viewing Head	Binocular head, inclined at 45°	1	
	Trinocular head, inclined at 45°		
	Binocular head, inclined at 60°		
Eyepiece	Wide field eyepiece 10 \times / $\Phi 20$	2	
	15 \times /16		
	20 \times /12		
	10 \times Eyepiece with cross hair		
Objective	Zoom objective	0.7~3 \times	1
		1~4.5 \times	
	Auxiliary Objective	2 \times , 0.75 \times , 0.63 \times , 0.5 \times	
Zoom Ratio	1:4.3		
	1:4.5		1
Working Distance	97mm		1
Illumination	LED Reflection Illumination		1
	LED transmission Illumination		1
Photo Attachment			
Video Attachment			



Stereo Microscope MS25 Series

Viewing head: Trinocular Head Inclined at 30°, Interpapillary Model: MS25B

- Viewing Heads: Binocular heads, 360° rotating and 45° inclined
- Interpapillary distance: Adjustable between 54 and 76 mm
- Eyepieces: WF10x/23 mm
- Specimen stage: Fitted with a transparent disc for transmitted light with specimen
- Objectives: 2x/4x objectives. (Any two objectives of 1x, 2x, 3x, 4x are optional).. Working distance: 97 mm.
- Stand: Fixed arm type with focusing mechanism.
- Stand: FSpecimen stage: Black-white Reversible Stage Plate and Frosted Glass Stage Plate
- Focusing: Rack and opinion controlled by a pair of knobs placed on both sides of the stand
- Illumination: Double adjustable illuminator for incident and transmitted light fitted with two high-efficiency LED light sources, brightness adjustable
- The angle of the incident illuminator is adjustable, voltage: 110/240V AC



ESB-MS25

Optional Accessories

Cat. Number	Descriptions
M21041001	Binocular heads, 360° rotating and 45° inclined
M21041002	Binocular heads, 360° rotating and 60° inclined
M21041003	Trinocular heads, 360° rotating and 45° inclined
M21041004	Eyepiece WF 10x/23
M21041005	Eyepiece WF 10x/20
M21041006	Eyepiece WF 10x/22
M21041007	Eyepiece WF15x/16
M21041008	High-point Eyepiece WF20x/12
M21041009	Low-point Eyepiece WF20x/12
M21041010	Eyepiece WF30x/8
M21041011	Eyepiece WF10x with cross hair
M21041012	Objective 1x / 3x
M21041013	Objective 1x / 4x
M21041014	Objective 1x / 2x
M21041015	Objective 2x / 3x
M21041016	Objective 2x / 4x
M21041017	Eye shields
M21041018	Auxiliary lens 0.5x, WD 180mm
M21041019	Auxiliary lens 0.63x, WD 137mm
M21041020	Auxiliary lens 0.75x; WD 137mm
M21041021	Auxiliary lens 2x; WD 30mm
M21041022	1X C TV mount
M21041023	0.5X C TV mount
M21041024	LED Ring Light
M21041025	Polarization Set
M21041026	Dark field Set
M21041027	Moveable Stage
M21041028	Boom stand
M21041029	Dual arm boom stand
M21041030	Articulated Arm
M21041031	Rechargeable battery



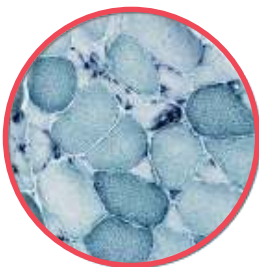
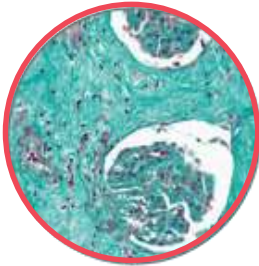
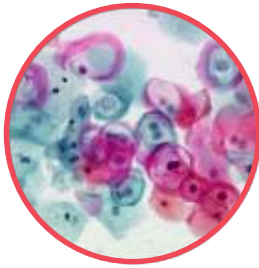
Stereo

ESB52856/7/8 Inverted Series

Comfortable and Efficient, Various Observations, Intelligent, Environmentally Friendly

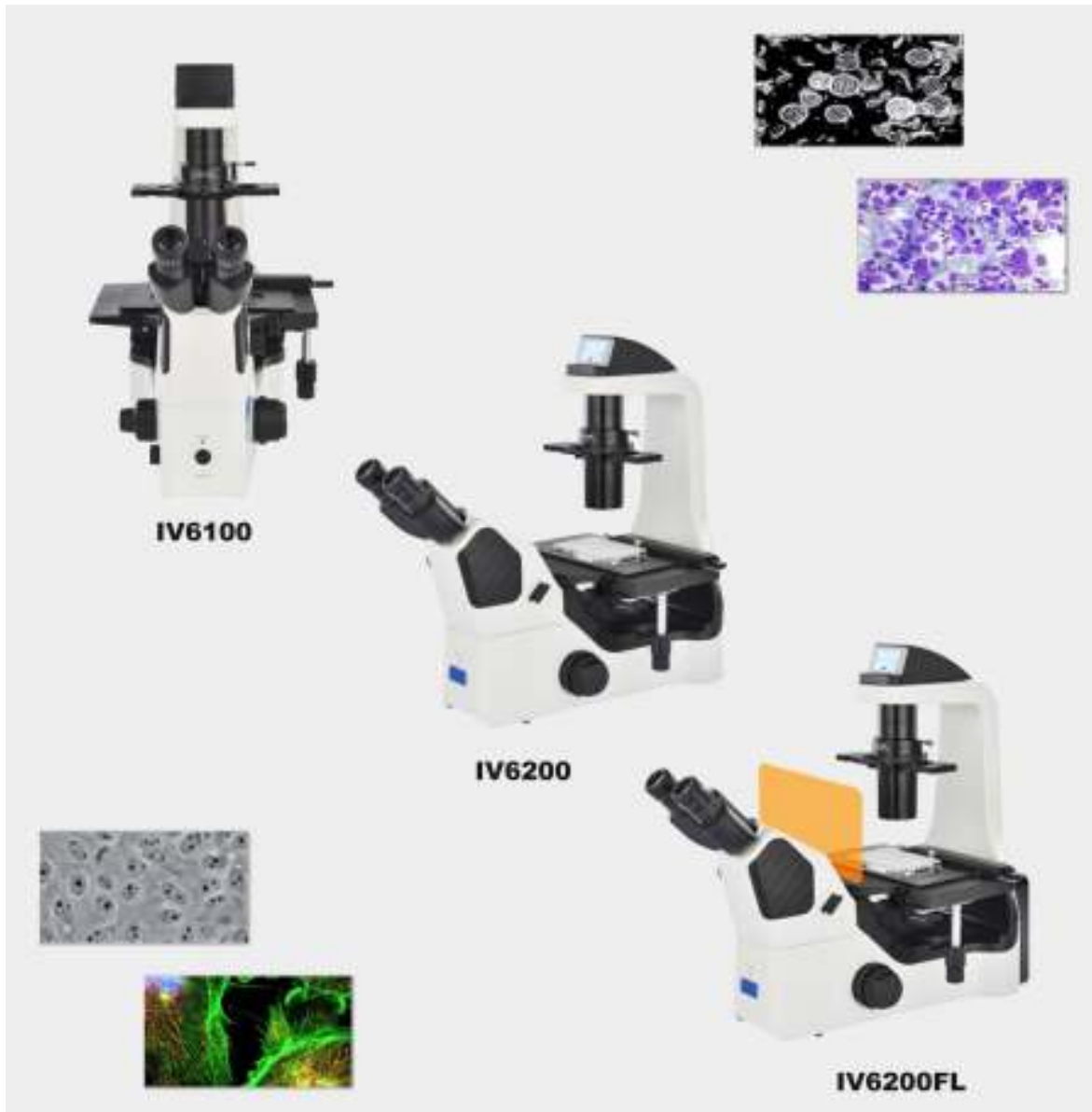
Microscopes

MICROSCOPE EXPERT, DESIGN FOR SATISFYING USER



ESB52856/7/8 Series Inverted Microscopes, Designed for Satisfying Needs of Modern Laboratories, Clinics and Universities.

ESB52858 Series inverted microscope makes reasonable improvement on basis of scientific research microscope. More suitable for laboratory observation of cells.



ROUTINE IN UNIVERSITIES, LABS & INDUSTRIES

- Adopt long life LED light source and infinity optical system, easy to obtain high-definition and high contrast wide viewing images.
- The body is compact and stable, and the operation buttons are well arranged, the cells can be observed, sampled and processed in the super clean bench freely.

THE OPTIMAL PARTNER FOR ROUTINE TASKS

- Using 3 different color filter, it widely enlarges selectivity for dye. LED illumination with large intensity and even brightness provides support for high quality fluorescence observation.
- With standard camera port, ICOE camera and image processing software, providing low noise, high sensitivity and resolution imageity and resolution image.





Inverted Fluorescence Microscope

Viewing head: Trinocular Head Inclined at 30°, Interpupillary Distance 48-75mm
 Nosepiece: 5 positions, with bidirectional rotation on ball bearings and click stop
 Eyepiece: High-point, Extra Wide Field Eyepiece EW10×/22mm LWD (Long working Distance)
 Infinite Plan Objective 4×/0.1, WD 17.3mm LWD (Long working Distance)
 Infinite Plan Objective 10×/0.25, WD 10mm LWD (Long working Distance)
 Infinite Plan Objective 20×/0.4, WD 5.1mm LWD (Long working Distance)
 Infinite Plan Phase Objective PH10×/0.25, WD10mm LWD (Long working Distance)
 Infinite Plan Phase Objective PH20×/0.4, LWD5.1mm WD 2.1mm
 Stage : Plain Stage 160×250mm, Glass Insert
 Focusing : Coaxial Coarse and Fine Adjustment, Vertical Objective Movement, Coarse Stroke 37.7mm per Rotation, Fine Stroke 0.2mm per Rotation
 Condenser : Long working distance condenser, numerical aperture 0.30, working distance 72 mm. The condenser can be removed in order to increase the working distance to 150 mm
 Centering: Centering Telescope (Φ30MM)
 Illumination: Halogen Lamp 6V/30W
 Supplied with: Dust cover, spare fuse, Diameter 45mm, Blue, Green and Ground Glass
 Epi-Fluorescent Attachment: Epi-Fluorescent attachment FL-100 standard configuration
 Blue Excitation Cube, Excitation: BP460~490, Dichroic Mirror: DM500, Barrier Filter: BA520
 Green Excitation Cube, Excitation: BP510~550, Dichroic Mirror: DM570, Barrier Filter: BA590
 100W HBO Ultra Hi-voltage Spherical Mercury Lamp
 Barrier Resist the Ultraviolet Light
 Power Supplier NFP-1, 220V/110V interchangeable, Digital Display Fluorescence Free Oil

ESB52856

Optional Accessories

Cat. Number	Descriptions
1	Stage: Attachable Mechanical Stage 250x230mm, Translator with lowered ergonomic coaxial controls. X-Y 120x78mm.
2	Ultraviolet Excitation Cube, Excitation: BP330~385, Dichroic Mirror: DM400, Barrier Filter: BA420
3	Violet Excitation Cube, Excitation: BP400~410, Dichroic Mirror: DM455, Barrier Filter: BA455
4	Interchangeable metallic inserts holder for Φ38mm Petri Dish
5	Interchangeable metallic inserts holder for Terasaki & petri dia.54mm
6	Interchangeable metallic inserts holder for Φ54mm Slide Glass
7	Auxiliary Stages70×180mm, Load bearing side extension for IV5100
8	Infinite Plan Phase Objective PH4×/0.13
9	Infinite Plan Phase Objective PH10×/0.25
10	Infinite Plan Phase Objective PH20×/0.4
11	Infinite Plan Phase Objective PH40×/0.65
12	Phase Annulus: 10×-20×, 40× Phase Annulus Plate
13	"Mlchrome 6" USB3.0 CMOS Digital Camera, 6MP
14	Focusable C-Mount Adapter 1X C mount



Ergonomic design, comfortable operation

· 45° Inclined Viewing Head

Inclined viewing head makes the user to operate microscope in a comfortable position. Minimize muscle tension and discomfort caused by long working hours.

· Long-handle mechanical stage

The user can make comfortable and smooth movement during the operation, thereby improving work efficiency and comfort.



High brightness, long lifetime LED Illumination

·LED illuminator, suitable for various observation

With a high brightness and long lifetime LED illumination system for both transmission and fluorescent lighting, proving even brightness and cool lighting.

Model	ESB52856/ESB52857	ESB52856FL/ESB52857FL
Transmitted	Bright field, Phase contrast, Emboss contrast	
Fluorescent	/	Epi-Fluorescence

Intelligent operating system

· Objective coding converter

It can memorize the illumination brightness when using each objective. When different objectives are converted to each other, the light intensity is automatically adjusted to reduce visual fatigue and improve work efficiency.



· Use a dimming knob to achieve multiple functions

Click: Enter standby status Double

click: light lock or unlock Rotation:

Adjust brightness

Press + up-spin: Switch to the upper light source Press

+ down-spin: Switch to the under light source

Press 3 seconds: Set the time of turning off the light after leaving





Fluorescence Microscope ESB-ES800FL

Optical system: Infinite optical system

Viewing head: Compensation free Trinocular head inclined at 30°, 360° rotation Interpupillary distance 48-75mm, diopter adjustment +/-5

Video adapter C mount 1X for digital camera

Eyepiece: Extra wide field eyepiece EW10x/22, eyepiece tube 30mm

Objective:

Infinite Plan Fluorescent Objective 4x

Infinite Plan Fluorescent Objective 10x

Infinite Plan Fluorescent Objective 40x

Infinite Plan Fluorescent Objective 100x

Nosepiece : Backward Quintuple Nosepiece

Focusing system : Coaxial coarse & fine adjustment

Fine division 0.001mm, coarse stroke 37.7mm per rotation Fine stroke 0.1mm per rotation, moving range 24mm

Stage: Double Layers Mechanical Stage 185x142, moving range 75x55mm

Condenser: swing-out achromatic Condenser NA 0.9/0.25

Transmitted illumination: Kohler illumination, aspherical collector, halogen lamp 6V/30W house100W

Reflected illumination : 100W HBO ultra hi-voltage spherical mercury lamp

Epi-Fluorescent Attachment: Epi-Fluorescent attachment FL-800 standard configuration

Blue Excitation Cube, Excitation: BP460~490, Dichroic Mirror: DM500, Barrier Filter: BA520 Green Excitation Cube, Excitation:

BP510~550, Dichroic Mirror: DM570, Barrier Filter: BA590 Red

Excitation Cube, Excitation : BP620-650, Dichroic Mirror: DM660,

Barrier: BA670-750 100W HBO Ultra Hi-voltage Spherical Mercury

Lamp

Barrier Resist the Ultraviolet Light

Power Supplier NFP-1, 220V/110V interchangeable, Digital Display

Fluorescence Free Oil

Digital Camera: HDCE-90D, 9MP digital camera with image scope 9.0

software.

ESB52855

Optional Accessories

Cat. Number	Descriptions	Cat. Number	Descriptions
M13161001	Digital Viewing Head Inclined at 30°, 5M pixels, 8" LCD, Android OS	M13161017	Turret Phase Contrast Kit
M13161002	Ergonomic Tilttable Binocular head 5-35° (white)	M13161018	Simple Polarization Set: Polarizer & Analyzer
M13161003	Ergonomic Tilttable Binocular head 5-35° (white) with Trinocular adapter	M13161019	Temperature Control System: 5W LED Illumination, Temperature Controlling Range: Room Temperature to 50°C
M13161004	Eyepiece WF10x with pointer	M13161020	Ultraviolet Excitation Cube, Excitation: BP330~385, Dichroic Mirror: DM400, Barrier Filter: BA420
M13161005	Eyepiece WF20x/12	M13161021	Violet Excitation Cube, Excitation: BP400~410, Dichroic Mirror: DM455, Barrier Filter: BA455
M13161006	Eyepiece WF15x/16	M13161022	Infinite Plan Fluorescent Objective 4x
M13161007	Backward Sextuple Nosepiece	M13161023	Infinite Plan Fluorescent Objective 10x
M13161008	Infinite Plan Achromatic objective 20x	M13161024	Infinite Plan Fluorescent Objective 20x
M13161009	Infinite Plan Achromatic objective 60x	M13161025	Infinite Plan Fluorescent Objective 40x
M13161010	242x158mm X-Y axis Low Hand Position Double Mechanical Stage, 76x50mm, Precision 0.1mm, Damped Double Slide Clamp	M13161026	Infinite Plan Fluorescent Objective 100x
M13161011	230x150mm X-Yaxis Low Hand Position, Graphite Coating Double Mechanical Stage, 76x50mm, Precision 0.1mm, Damped Double Slide Clamp	M13161027	Neutral Filter: ND25 Filter
M13161012	External illumination, Aspherical Collector, Halogen Lamp 24V/100W	M13161028	Centering Plate
M13161013	3W LED Illumination	M13161029	Filament Adjuster
M13161014	5W LED Illumination	M13161030	1X C mount
M13161015	Dark Field Condenser NA0.7-0.9 (Dry)	M13161031	0.5X C mount
M13161016	Dark Field Condenser NA1.25-1.36 (Oil)		



Various holders for different culture containers

Various holders are available for different culture containers, such as Petri dishes, well plates, and culture flasks. As well as available for different size Petri dishes.



Slide Glass Holder
Φ65mm



Universal Holder



Terasaki Holder



Petri Dish Holder
Φ54mm



Petri Dish Holder
Φ90mm

Detachable condenser

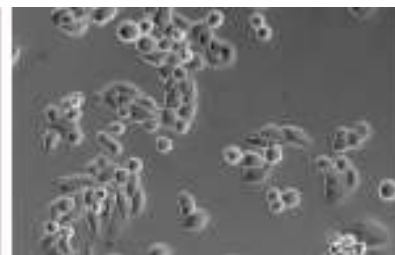
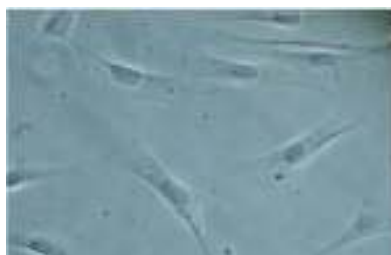
When culture flask is used, the condenser can be removed to increase working distance. It is also suitable for multilayer culture flask.



Transmission

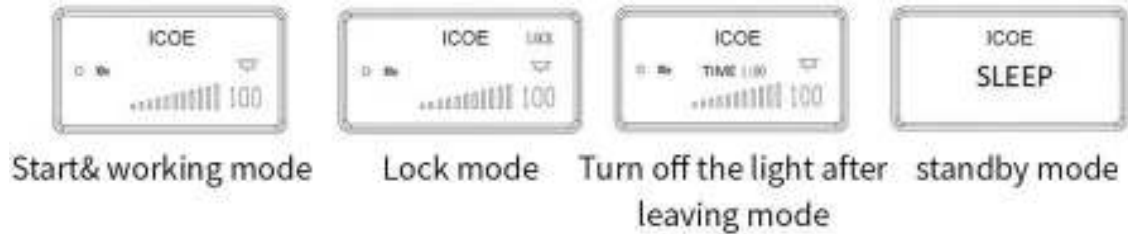
Phase Contrast

By using changes in the refractive index, high contrast microscopic images of transparent samples can be obtained with phase contrast observation technique. The advantage is that the details of live cell imaging can be obtained without staining and fluorescent dyes. Application range: Living cells in culture, Microorganism, Tissue slide, Subcellular grains (including cell nuclei and organelles).



· **The display of microscope use state**

The liquid crystal screen on the front of the microscope can display the using state of the microscope, including magnification, light intensity, standby status, and so on.



More convenient for cell sampling and aseptic manipulation

The microscope control mechanism is reasonable in layout and easy to operate

The frequently used control mechanisms are close to the user and in low-hand position. This kind of design makes operation more quickly and conveniently, and reduce the fatigue caused by the long observation. On the other hand, it reduces the airflow and dust caused by large amplitude operation, and it is very effective to reduce the probability of sample pollution. It is a strong guarantee for the accuracy and repeatability of the experimental results.



The body is compact, stable and suitable for clean bench

· **Can be sterilized in the clean bench**

On the premise of ensuring the effect of imaging, ESB52858 is with relative compact design. The volume and weight of the body is reduced as much as possible in principle of stability. The compact body is with anti-UV coating and can be placed into the clean bench for sterilization under UV lamp.

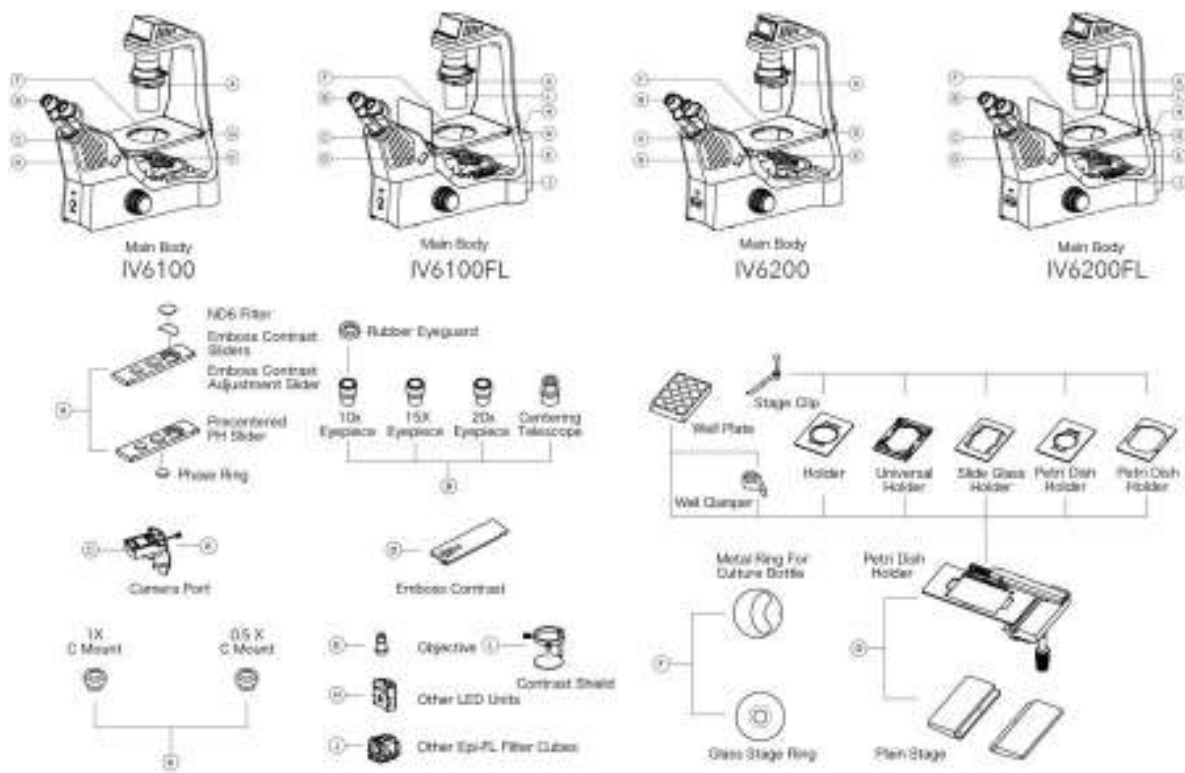


· **Cell sampling and operation can be performed in clean bench**

The distance between the eye point to the operation button and the focusing knob of the ESB52858 is relatively short, and the distance from the stage is far away. It is available to make the viewing head and operating mechanism outside, and stage, objectives and sample inside. So realize cell sampling and operation inside and observing comfortably outside.

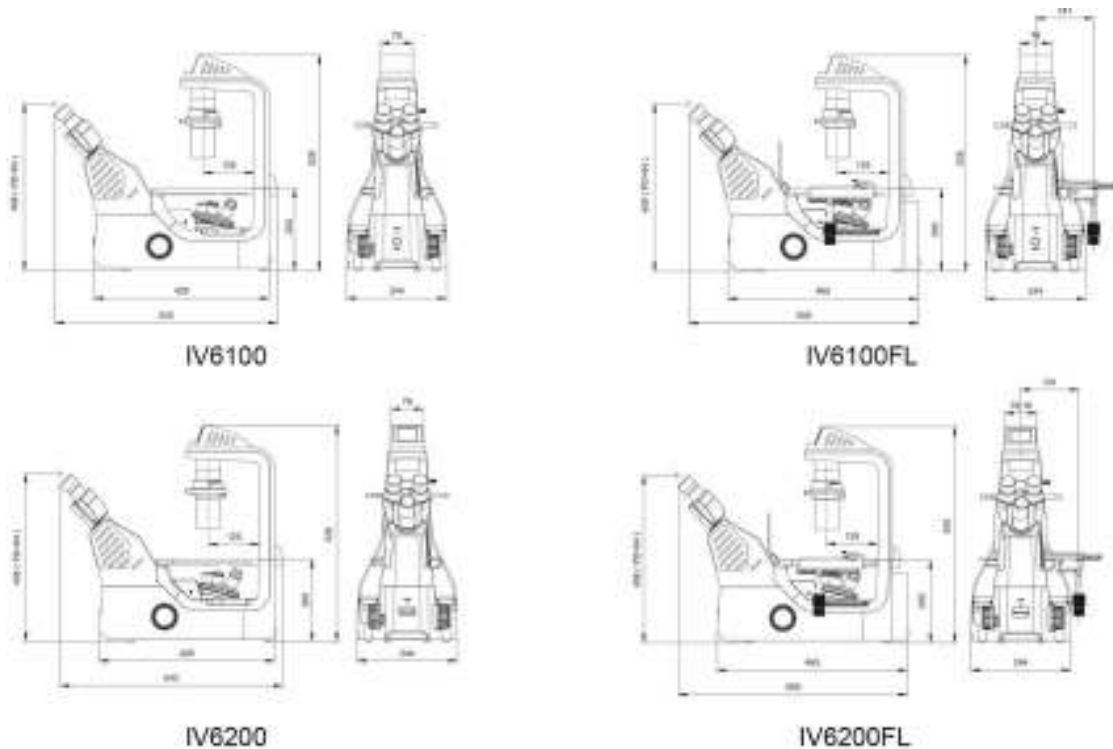


ESB52857/8 Series System Diagram



Microscopes

ESB52857/8 Series Dimensions Figure



Hoffman Modulation Phase Contrast

With slant light, changing phase gradient into light intensity variety, it can be used to observe unstained cells and living cells.



3D Emboss Contrast

Even without extra optical components, no glare 3D image can be obtained just through adding adjustment slider. Both glass and plastic petri dishes are available.

Fluorescent Observation

LED light makes fluorescent observation easier

·Uniform brightness

Matching with Kohler illumination, the Fly-eye lens delivers uniform brightness to the entire field of view, whether through the eyepiece or through CCD camera.

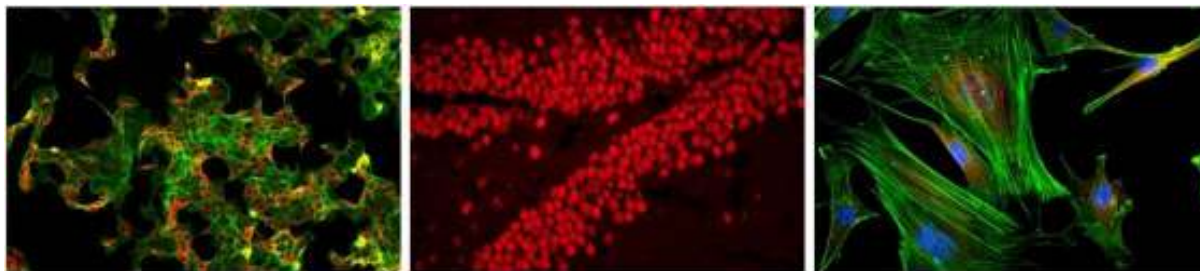


·LED Easy to use

Compared with the traditional mercury bulb, the LED eliminate frequent bulb replacements, saving time and money. Also the problems of preheating, cooling and high temperature is solved.

Suitable for a variety of fluorescent dyes

Equipped with 3 fluorescent filter blocks, it provides a wide range of choice of dyes and capture clear high contrast fluorescence images.



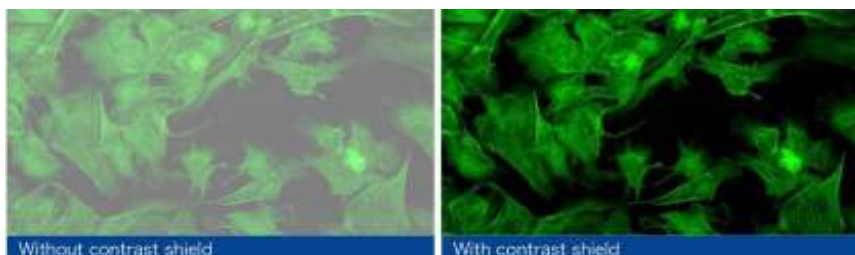
Breast cancer

Hippocampus

HC3T3 mouse brain nerve cells

Contrast Shield

The Contrast Shield can effectively block the interference of the external light, increase the contrast of the fluorescent image, and provide a high signal-to-noise ratio fluorescent image. When need phase contrast observation, the Contrast Shield is very convenient to be removed from the light path, avoiding influence on the quality of phase contrast.



Without contrast shield

With contrast shield



ESB52857/8 Series' Models and Specifications

Model		ESB52857	ESB52857 FL	ESB52858	ESB52858 FL
Optical system	Infinity optical system	•	•	•	•
Eyepiece	Extra wide field eyepiece 10x/22mm	••	••	••	••
	Wide field eyepiece 15x/16mm	oo	oo	oo	oo
	Wide field eyepiece 20x/12mm	oo	oo	oo	oo
Observation head	Seidentopf viewing head, inclined at 45°, interpupillary 48-75mm; additional	•	•	•	•
	camera port eyepiece /port 100/0 : 0/100n				
Objective	Infinity plan objective 4x	•	o	•	o
	Infinity plan objective 10x	o	o	o	o
	Infinity plan objective 20x	o	o	o	o
	Infinity plan objective 40x	o	o	o	o
	Infinity phase contrast objective 4x	o	o	o	o
	Infinity phase contrast objective 10x	•	o	•	o
	Infinity phase contrast objective 20x	•	o	•	o
	Infinity phase contrast objective 40x	•	o	•	o
	Infinity plan semi-apochromatic objective 10x	o	•	o	•
	Infinity plan semi-apochromatic objective 20x	o	•	o	•
	Infinity plan semi-apochromatic objective 40x	o	•	o	•
	Infinity plan semi-apochromatic objective 60x	o	o	o	o
	Infinity plan semi-apochromatic contrast objective 4x	o	o	o	o
	Infinity plan semi-apochromatic contrast objective 10x	o	o	o	o
	Infinity plan semi-apochromatic contrast objective 20x	o	o	o	o
	Infinity plan semi-apochromatic contrast objective 40x	o	o	o	o
Infinity plan semi-apochromatic contrast objective 60x	o	o	o	o	
Nosepiece	Quintuple nosepiece	•	•	/	/
	Quintuple intelligent nosepiece	/	/	•	•
Focusing mechanism	Up 7mm, down 1.5mm, to limit up to 18.5mm	•	•	•	•
Centering telescope	Lens tube ϕ 30	•	o	o	•
Stage	250x170mm	•	•	•	•
Moving stage	Y: 80mm; X: 128mm	•	•	•	•
Plain stage	Two plain stage	o	o	o	o
Condenser	NA=0.3, WD=75	•	•	•	•
Illumination	Transmitted illumination: 3W LED	•	•	•	•
	Fluorescent illumination: (B, G, U fluorescent filter) 3W LED	/	•	/	•
	Fluorescent illumination: (V fluorescent filter) 3W LED	/	o	/	o
Universal phase contrast slider	4x, 10x/20x/40x (for phase contrast)	•	•	•	•
	4x, 10x/20x, 40x, 60x (for semi- apochromatic contrast)	o	o	o	o
Emboss contrast slider		o	o	o	o
ECO		o	/	/	/
Camera mount	1x C-mount	•	•	•	•



	0.5x C-mount	o	o	o	o
LCD		/	/	•	•
Note: "•" Standard component; "o" Optional component; "/" Inapplicability					

Option Accessories List

Order No.	Descriptions	Order No.	Descriptions
M11303001	Seidentopf viewing head, inclined at 45°, interpupillary 48-75mm; additional camera port eyepiece /port 100/0 : 0/100n	M11303021	Infinity plan semi-apochromatic contrast objective 40x
		M11303022	Infinity plan semi-apochromatic contrast objective 60x
M11303002	Extra wide field eyepiece 10x/22mm	M11303023	Universal phase contrast slider 4x, 10x/20x/40x (for phase contrast)
M11303003	Wide field eyepiece 15x/16mm	M11303024	Universal phase contrast slider 4x, 10x/20x, 40x, 60x (for semi- apochromatic contrast)
M11303004	Wide field eyepiece 20x/12mm	M11303025	Centering telescope (kens tube φ30)
M11303005	Rubber Eyeguard	M11303026	Emboss contrast slider
M11303006	Infinity plan objective 4x	M11303027	Contrast shield
M11303007	Infinity plan objective 10x	M11303028	Two plain stage
M11303008	Infinity plan objective 20x	M11303029	Fluorescent illumination: (B, G, U flourscent filter) 3W LED
M11303009	Infinity plan objective 40x	M11303030	Fluorescent illumination: (V fluorescent filter) 3W LED
M11303010	Infinity phase contrast objective 4x	M11303031	Metal Ring for culture bottle
M11303011	Infinity phase contrast objective 10x	M11303032	Glass stage ring
M11303012	Infinity phase contrast objective 20x	M11303033	Moving stage
M11303013	Infinity phase contrast objective 40x	M11303034	Holder
M11303014	Infinity plan semi-apochromatic objective 10x	M11303035	Universal holder
M11303015	Infinity plan semi-apochromatic objective 20x	M11303036	Slide glass holder
M11303016	Infinity plan semi-apochromatic objective 40x	M11303037	Petri dish holder type 1
M11303017	Infinity plan semi-apochromatic objective 60x	M11303038	Petri dish holder type 2
M11303018	Infinity plan semi-apochromatic contrast objective 4x	M11303039	Stage clip
M11303019	Infinity plan semi-apochromatic contrast objective 10x	M11303040	1X C mouont
M11303020	Infinity plan semi-apochromatic contrast objective 20x	M11303041	0.5X C mount



Infinity Metallurgical Microscopes ESB-ES800MR

Infinity Metallurgical Microscope + ESDC-90D (9MP) Digital Camera
 Optical System: Infinite optical system
 Viewing Head : Siedentop Trinocular viewing head, inclined at 30°, interpapillary distance 48mm-75mm
 Nosepiece : Backward quintuple nosepiece
 Eyepiece : Φ30 Extra wide field eyepiece EW10×/22
Objectives:
 Infinite Plan Achromatic Objective 10×/ 0.25/ ∞/ - (BF/DF) WD 10.0mm,
 Infinite Plan Achromatic Objective 20×/ 0.4/ ∞/ 0 (BF/DF) WD 4.3mm,
 Infinite Plan Achromatic Objective 40×/ 0.65/ ∞/ 0.17 WD 0.54mm,
 Infinite Plan Achromatic Objective 100×/ 1.25/ ∞/ 0.17 WD 0.13mm,
 Infinite Plan Achromatic Objective 5×/ 0.12/ ∞/ - (BF/DF) WD 12mm,
 Infinite Plan Achromatic Objective 50×/ 0.75/ ∞/ 0 (BF/DF) WD 0.32mm,
 Infinite Plan Achromatic Objective 100×/ 0.8/ ∞/ 0 (BF/DF) WD 2mm
 Maximum Sample Height: 30mm
 Stage: Double layer mechanical stage 186×138mm/ 74mm×50mm, specimen preparation plate, slide glass
 Focusing: Coaxial coarse and fine adjustment, fine division 1μm, moving range 30mm
 Reflected Illumination: 24V/100W Halogen light, lightness adjustable Kohler illumination and aspherical condenser
 Blue, Green, Yellow and Ground glass
 Transmitted Light: 24V/ 100W Halogen light and aspherical condenser, blue filter
 Condenser : Swing-out condenser NA0.9/0.25
 ESDC-90D, 9MP Digital Camera

ESB52852



Microscopes

Optional Accessories

Cat. Number	Descriptions
ES402001	2.5×/ 0.08/ ∞/ -(BF) WD 11.7mm
ES402002	2.5×/ 0.08/ ∞/ -(BF) WD 10.7 (λglass side)
ES402003	40×/ 0.6/ ∞/ 0 (BF/DF) WD 2.90mm
ES402004	DIC 20×, 100×
ES402005	Polarizer and analyzer
ES402006	An integrate device foe polarizer and analyzer
ES402007	Filter ND25
ES402008	Filter ND6
ES402009	Glass specimen preparation plate
ES402010	Specimen Presser
ES402011	0.5x C mount
ES402012	1x C mount



Digital Cooling Camera Model ESFL-20

20mp USB 3.0

meets professional color fluorescence imaging needs

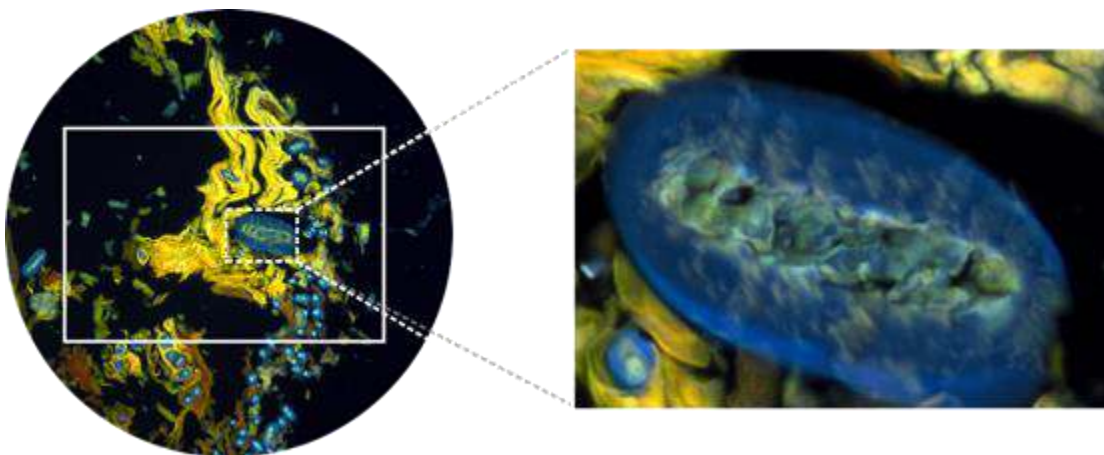


ESFL-20 Digital Camera



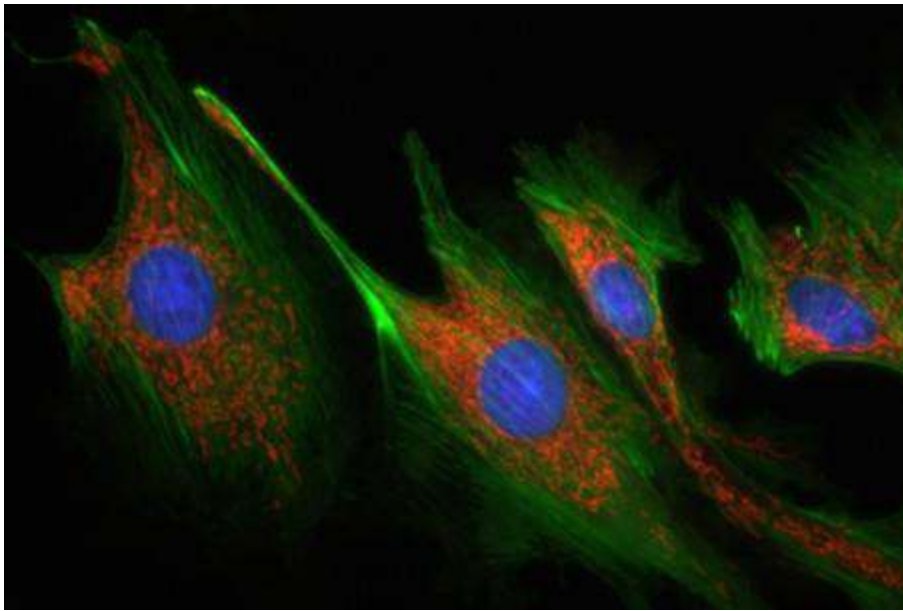
1). 20 megapixels, capturing high-definition detailed images in one shot

The ESFL 20's 1-inch sensor image can cover the most uniform central area of the image plane, with a resolution of up to 20 megapixels, you can capture the high-definition details of your samples in one shot.



2). ESFL-20' s Thermoelectric cooling noise reduction technology to meet more professional color fluorescence imaging needs

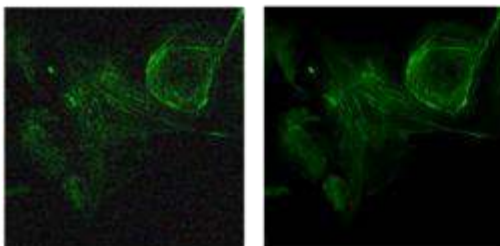
As with the top-level sCMOS camera technology from EduScience the ESFL-20 cooled camera operates at -15 °C and can ensure long-term reliable operation, significantly reducing the hot pixels caused by the accumulation of dark current, and obtaining a purer fluorescent background image. More than twice the sensitivity of a CCD, to meet the needs of professional fluorescence imaging.



3). Real-time intelligent image processing, focused on improving image quality

Without sacrificing speed and image information, the ESFL-20 offers a variety of real-time intelligent image processing capabilities that allow you to view and capture flawless sample images in real time with the push of a button.

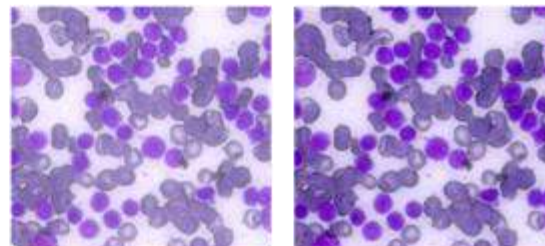
○ Real-time 3D noise reduction, effectively eliminating random background noise



Before

After

○ Real-time sharpening, enhanced detail, and more transparent



Before

After



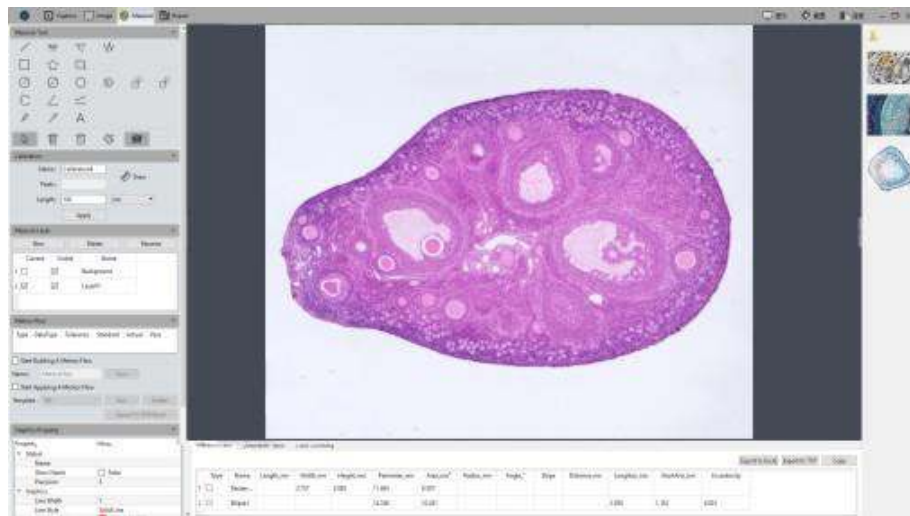
4). >50 frames per second high speed video

With a guaranteed field of view, the ESFL 20 offers a variety of high-speed imaging modes that can be adjusted for fast focus and positioning for an efficient image capture experience.

Resolution	FL 20BW	CCD
20MP	15fps	<1fps
5MP	53fps	4fps

5). Revolutionary PC Computing Imaging Software Capture V2.1

Unique from the cumbersome process of traditional technology to obtain images after processing, the Capture V2.1 provides real-time image stitching and real-time depth of field fusion. This can automatically complete the image while the operator moves the stage - productivity at its best.



Product Specifications

Model	ESFL-20
Color/mono	Color
Sensor model	Sony
Quantum efficiency	84%@535nm
Resolution	5472(H)x3648(V)
Pixel size	2.40µm x 2.40µm
Sensor size	15.86mm; 1inch
Shutter mode	Rolling
Read noise	<1e-
Cooling	Forced air(Ambient at +25°C): -15 °C
Frame rate	14fps @5472x3648 53fps @2736x1824 67fps @1824x1216
Binning	2x2, 3x3, 4x4
Exposure setting	Auto/Manual
Exposure time 18us-1hour	Manual/Auto
Picture format	JPG/PNG/TIFF/DICOM
Data interface	USB3.0
Bit depth	16bit/8bit
Camera size	85mmx85mmx109mm
PC software	Capture 2.1





Infinite Multi-viewing Microscope

Optical system: Infinity corrected optical system

Viewing head: 1pc of Siedentop Trinocular Head, Inclined at 30°, 360° Rotatable, Interpapillary Distance 48-75mm 1pc of Siedentop Binocular Head, Inclined at 30°, 360° Rotatable, Interpapillary Distance 48-75mm

Eyepiece: 4pcs of Extra wide field eyepiece EW10x/20, eyepiece tube 30mm

Nosepiece: Reversed quintuple ball bearings revolving nosepiece

Objectives:

All with anti-fungus treatment.

Infinite plan achromatic objective 4x/0.10

Infinite plan achromatic objective 10x/0.25

Infinite plan achromatic objective 40x/0.65, spring loaded

Infinite plan achromatic objective 100x/1.25, spring loaded, oil

Stage: Double layer mechanical stage, with size: 185x142mm, 75x55mm X-Y movement range. Vernier scale on the two axes

Focusing: Integrated design, coaxial focus system with upper limited and tension adjustment, coarse stroke 37.7mm per rotation, fine precision: 0.001mm, fine stroke 0.2mm per rotation, moving range: 25mm, provided with an adjustable tightness device to prevent slipping and a mechanical upper limit device

Condenser: Achromatic condenser with swing out top lens N.A.0.90/0.25. The diaphragm settings are clearly marked for numerical aperture calculations. Accommodates objective magnifications from 2x to 100x (flip out the top lens for 2x). Easily installs into the condenser carrier with a thumb screw, center able for Köhler illumination

Illumination: Kohler illumination, aspherical collector, external halogen lamp 12V/100W house, with brightness adjustable

Pointer: Green LED pointer, brightness adjustable

Dual Color LED Pointer, Brightness Adjustable (optional)

Power: 100-240V, 50/60Hz

Others: Dust cover, spare fuse, blue & green filters, support to reduce the fatigue during use, with carrying handle

ESB-CB8204FB



Vernier Microscope - Travelling

Horizontal and vertical scales of stainless steel. The cast iron base is fitted with levelling screws with the top duly machined over which slides a metal carriage. Slide can be clamped at any position by means of clamping screw. Fine adjustment for final reading is with a micrometer screw. A vertical slide operating in a similar way is fitted on the horizontal carriage. The microscope with rack and pinion is fitted on this vertical carriage and can be clamped in a vertical or horizontal position. Stage for placing objects for measurement is fitted with Perspex plate. Achromatic lenses have been used.

Slides travel 165mm horizontally and 140mm vertically. Scales are accurately divided. Vernier reading 0.02 or 0.01mm. The unit packed in wooden polished case.

ESB52860



Microscopic Slide , 76/26 , Plain, (Pk/50)

Microscopic slides , 76/26 , plain, (pack of 50)

ESB52871



Microscopic Cover Slip 18 X 18

Mm ESB52872 Size: 18 X 18 MM come in PK/100

ESB52873 Size: 20 X 20 MM come in PK/100



Haemocytometer Set

Complete set including double chamber, 2 cover glass, each one red and white diluting pipette with tubing and mouth piece

ESB52874



Haemometer Set

Haemometers are used for the determination of blood's content of haemoglobin's. our haemometer according to Sahli is supplied as complete set consisting of:

- polystyrene support with 2 coloured rods and opal glass plate comparator tube
- haemoglobin's pipette 20 µl acc. to Sahli
- silicone tubing of approx. 16 cm length
- white mouthpiece
- dropping pipette with rubber teat
- stirring rod
- acid vial
- cleaning brush

ESB52875



Slide Box Plastic

This polystyrene slide box is durable, compact and provides protection to 75mm x 25mm slides. The heavy walls will not warp, splinter or crack under normal use.

ESB52876



Slides

Microslides

Microscopes



- | | | | |
|-----------------|--|-----------------|--|
| ESB52878 | MICROSLIDE ADAPTATION | ESB52881 | MICROSLIDE Amphibians |
| ESB52879 | MICROSLIDE Air Pollution & Human Health | ESB52882 | MICROSLIDE Animal Mitosis |
| ESB52880 | MICROSLIDE Air Pollution and Plant Health | ESB52883 | MICROSLIDE Aurelia-The Life Cycle |
| ESB52881 | MICROSLIDE Amphibians | ESB52884 | MICROSLIDE Basic Human Histology |
| ESB52882 | MICROSLIDE Animal Mitosis | ESB52885 | MICROSLIDE Body Defenses Against Infection |
| ESB52883 | MICROSLIDE Aurelia-The Life Cycle | ESB52886 | MICROSLIDE Cell Of Plants |
| ESB52884 | MICROSLIDE Basic Human Histology | ESB52887 | MICROSLIDE Cell Structure |
| ESB52885 | MICROSLIDE Body Defenses Against Infection | ESB52888 | MICROSLIDE Cells Of Plants and Animals |
| ESB52886 | MICROSLIDE Cell Of Plants | ESB52889 | MICROSLIDE Cells Of Your Body |
| ESB52887 | MICROSLIDE Cell Structure | ESB52890 | MICROSLIDE Chromosomes and Genes In Action |
| ESB52888 | MICROSLIDE Cells Of Plants and Animals | ESB52891 | MICROSLIDE Comparative Circulatory Systems |
| ESB52889 | MICROSLIDE Cells Of Your Body | ESB52892 | MICROSLIDE Comparative Digestive Systems |
| ESB52890 | MICROSLIDE Chromosomes and Genes In Action | ESB52893 | MICROSLIDE Comparative Nervous Systems |
| ESB52891 | MICROSLIDE Comparative Circulatory Systems | ESB52894 | MICROSLIDE Comparative Respiratory Systems |
| ESB52892 | MICROSLIDE Comparative Digestive Systems | ESB52895 | MICROSLIDE Dissection Set - Cat |
| ESB52893 | MICROSLIDE Comparative Nervous Systems | ESB52896 | MICROSLIDE Dissection Set - Earthworm |
| ESB52894 | MICROSLIDE Comparative Respiratory Systems | ESB52897 | MICROSLIDE Dissection Set - Frog |
| ESB52895 | MICROSLIDE Dissection Set - Cat | ESB52898 | MICROSLIDE Drug Abuse |
| ESB52896 | MICROSLIDE Dissection Set - Earthworm | ESB52899 | MICROSLIDE Ecology Under The Microscope |
| ESB52897 | MICROSLIDE Dissection Set - Frog | ESB52900 | MICROSLIDE Egg To Tadpole To Frog |
| ESB52898 | MICROSLIDE Drug Abuse | ESB52901 | MICROSLIDE Fighting Infections |
| ESB52899 | MICROSLIDE Ecology Under The Microscope | ESB52902 | MICROSLIDE Fossils |
| ESB52900 | MICROSLIDE Egg To Tadpole To Frog | ESB52903 | MICROSLIDE Fossils and Evolution |
| ESB52901 | MICROSLIDE Fighting Infections | ESB52904 | MICROSLIDE From Flower To Fruit |
| ESB52902 | MICROSLIDE Fossils | ESB52905 | MICROSLIDE Fur, Feathers, Skin & Scales |
| ESB52878 | MICROSLIDE ADAPTATION | ESB52906 | MICROSLIDE Galaxies and Nebulae |
| ESB52879 | MICROSLIDE Air Pollution & Human Health | ESB52907 | MICROSLIDE Harmful and Helpful Bacteria |
| ESB52880 | MICROSLIDE Air Pollution and Plant Health | ESB52908 | MICROSLIDE Harmful Bacteria |



ESB52909	MICROSLIDE Helpful Bacteria	ESB52934	MICROSLIDE Measuring The Big Bang
ESB52910	MICROSLIDE Heterotrophic Nutrition	ESB52935	MICROSLIDE Mechanisms For Survival
ESB52911	MICROSLIDE Honey Bee	ESB52936	MICROSLIDE Your Body
ESB52912	MICROSLIDE How A One-Celled Animal Divides	ESB52937	MICROSLIDE Algae
ESB52913	MICROSLIDE How Living Things Breathe	ESB52938	MICROSLIDE Monocots & Diocots
ESB52914	MICROSLIDE How Rocks Are Formed	ESB52939	MICROSLIDE Moss-The Life Cycle
ESB52915	MICROSLIDE How Things Breathe	ESB52940	MICROSLIDE Nerve and Muscle Action
ESB52916	MICROSLIDE How We Begin	ESB52941	MICROSLIDE Nutrition
ESB52917	MICROSLIDE Human Blood	ESB52942	MICROSLIDE Obelia-The Life Cycle
ESB52918	MICROSLIDE Human Diseases	ESB52943	MICROSLIDE Omnivores
ESB52919	MICROSLIDE Immunity	ESB52944	MICROSLIDE Parts Of An Insect
ESB52920	MICROSLIDE Ingestion (Amoeba)	ESB52945	MICROSLIDE Plants That are not Green
ESB52921	MICROSLIDE Insect Parts	ESB52946	MICROSLIDE Plants Without Flowers
ESB52922	MICROSLIDE Life Functions (Paramecia)	ESB52947	MICROSLIDE Porifera (Sponges)
ESB52923	MICROSLIDE Life In The Boreal Forest	ESB52948	MICROSLIDE Predators
ESB52924	MICROSLIDE Life In The Desert	ESB52949	MICROSLIDE Probing The Sun's Secrets
ESB52925	MICROSLIDE Life In The Grasslands	ESB52950	MICROSLIDE Protozoa
ESB52926	MICROSLIDE Life In The Rain Forest	ESB52951	MICROSLIDE Spectroscopy In The Sky
ESB52927	MICROSLIDE Life In The Soil	ESB52952	MICROSLIDE Survival By Camouflage (Hide and Seek)
ESB52903	MICROSLIDE Fossils and Evolution	ESB52953	MICROSLIDE Taxonomy
ESB52904	MICROSLIDE From Flower To Fruit	ESB52954	MICROSLIDE Teeth and Gums
ESB52905	MICROSLIDE Fur, Feathers, Skin & Scales	ESB52955	MICROSLIDE The Animal Kingdom
ESB52906	MICROSLIDE Galaxies and Nebulae	ESB52956	MICROSLIDE The Arachnids
ESB52907	MICROSLIDE Harmful and Helpful Bacteria	ESB52957	MICROSLIDE The Bee
ESB52908	MICROSLIDE Harmful Bacteria	ESB52958	MICROSLIDE The Birth and Death Of Stars
ESB52909	MICROSLIDE Helpful Bacteria	ESB52959	MICROSLIDE The Cytoplasm
ESB52910	MICROSLIDE Heterotrophic Nutrition	ESB52960	MICROSLIDE The Drosophila
ESB52911	MICROSLIDE Honey Bee	ESB52961	MICROSLIDE The Five Kingdoms Of Life
ESB52912	MICROSLIDE How A One-Celled Animal Divides	ESB52962	MICROSLIDE The Flower Of A Flowering Plant
ESB52913	MICROSLIDE How Living Things Breathe	ESB52963	MICROSLIDE The Frog
ESB52914	MICROSLIDE How Rocks Are Formed	ESB52964	MICROSLIDE The Human Brain (1994)
ESB52915	MICROSLIDE How Things Breathe	ESB52965	MICROSLIDE The Hydra
ESB52916	MICROSLIDE How We Begin	ESB52966	MICROSLIDE The Kingdom Fungi (1982)
ESB52917	MICROSLIDE Human Blood	ESB52967	MICROSLIDE The Kingdom Monera
ESB52918	MICROSLIDE Human Diseases	ESB52968	MICROSLIDE The Kingdom Protista
ESB52919	MICROSLIDE Immunity	ESB52969	MICROSLIDE The Leaf Of A Flowering Plant
ESB52920	MICROSLIDE Ingestion (Amoeba)	ESB52970	MICROSLIDE The Life Cycle Of Malaria
ESB52921	MICROSLIDE Insect Parts	ESB52971	MICROSLIDE The Microscope-A Tool For Learning
ESB52922	MICROSLIDE Life Functions (Paramecia)	ESB52972	MICROSLIDE The Monarch Butterfly
ESB52923	MICROSLIDE Life In The Boreal Forest	ESB52973	MICROSLIDE The Plant Kingdom
ESB52924	MICROSLIDE Life In The Desert	ESB52974	MICROSLIDE The Root Of A Flowering Plant
ESB52925	MICROSLIDE Life In The Grasslands	ESB52975	MICROSLIDE The Stem Of A Flowering Plant
ESB52926	MICROSLIDE Life In The Rain Forest	ESB52976	MICROSLIDE The Tidepool
ESB52927	MICROSLIDE Life In The Soil	ESB52977	MICROSLIDE Vegetative Propagation
ESB52928	MICROSLIDE Life On The Tundra	ESB52978	MICROSLIDE Your Brain
ESB52929	MICROSLIDE Locomotion	ESB52979	MICROSLIDE Your Life and Breath
ESB52930	MICROSLIDE Mapping The Stars	ESB52980	MICROSLIDE Your Teeth and Gums
ESB52931	MICROSLIDE Marchantia - The Life Cycle (1969)	ESB52981	MICROSLIDE Yours Glands
ESB52932	MICROSLIDE Marine Biology		
ESB52933	MICROSLIDE Marine Plankton		





Prepared Slide Set Basic Biology

Set of 25 different slides covers the major requirements for a basic course in biology. Selected slides from the zoology, histology and botany sections make up this useful set. Supplied in Box.

Paramecium, E Paramecium, conjugation, E Hydra, TS Hydra, with testis, TS Hydra, with ovary, TS Taenia (tapeworm), scolex, LS Taenia, proglottid, E Compact bone, TS Striated muscle, LS Cardiac muscle, LS Spinal cord, TS Nerve cells, smear Skin, VS Kidney, VS Lycopodium strobilus, LS Spirogyra, conjugation, Yeast, E Liliium (lily), anther, TS Dryopteris, pinnule with sori, TS Stigma with pollen tube Liliium (lily), anther, TS Dryopteris, pinnule with sori, TS Stigma with pollen tube Cucurbita (marrow), stem, TS Liliium, ovary, TS Tilia (lima), young and old stem, TS Lumbricus (earthworm), TS, typhlosole Helianthus, stem, secondary thickening, TS.

ESB52983



Prepared Silde Set Basic Botany

Set of 25 different slides covers the major requirements for a basic botanical specimens representing the major plant groups. Supplied in Box. Chlamydomonas, E, Spirogyra, vegetative filaments, ESpirogyra, conjugation, EFucus, dioecious, antheridial and oogonial Mucor, conjugation Conceptacles on one slide, VSSaccharomyces (yeast), budding, EPenicillium, mycelium and conidia, EMarchantia (liverwort), thallus, antheridia, VSMarchantia thallus, archegonia, VSMnium (moss), antheridial head, VSMarchantia developing sporogonium, VS Mnium, archegonial head, VSDryopteris (fern), prothallus with antheridia, Dryopteris, pinnule with sori, TS and archegonia, E Pinus (pine), leaf, TS, Allium (onion), root apex, mitosis, LS Zea, (maize), leaf, TS, Helianthus (sunflower), young root, TS Zea, stem, TS, Helianthus, stem, TS Cucurbita (marrow), stem LS for sieve tubes Tilia (lime), young and old stem, TSRanunculus (buttercup), flower bud, LS Prunus (cherry), leaf, TSPollen grains, wind and insect distribution, E

ESB52984



Prepared Silde Set Bacteria Set/12

Set of 12 different slides of bacteria supplied in plastic box includes: Mixed bacteria, bacilli, cocci and spirillum Mycobacterium tuberculosis, in tissue Cocci, Gram positive and negative Rhizobium, in root nodule Bacilli, Gram positive and negative, Vibrio Escherichia coil, Spirillum, Bacillus subtilis Staphylococcus epidermidis, Bacillus megaterium Streptococcus lactis

ESB52985



Prepared Silde Set General

Set of 50 Slides Bacteria-3 types-SMR, Hydra-WM Amoeba-WM, Obelia colony-WM Paramecium-WM, Dugesia (Planaria)-WM Euglena-WM, Fluke (Clonorchis)-WM Volvox-WM, Hookworm, Spirogyra-WM Earthworm-CS, Bread mold Sexual-WM Insect Spiracle-WM, Penicillium-WM Fly wing and leg-WM, Mushroom gill-CS Honeybee sting-WM, Moss antheridia-CS Grasshopper testis-CS, Moss archegonia-CS Ascaris female gonads-CS, Fern prothallia-WM Frog egg-CS, Fern rhizome-CS, Frog egg blastula-CS Polypodium sori-CS Mammal skin-CS, Onion root tip-LS, Frog blood-SMR Dicot root-CS, Mammal intestine-CS Monocot/dicot stem-CS, Amphiuma liver-CS Woody stem-CS, Chick-33-hour-WM Dicot leaf-CS, Chick-96-hour-CS Columnar epithelium, Onion epidermis-WM Squamous epithelium-SMR, Lily bud-CS Corn seed embryo-CS, Bone-CS Mixed pollen-WM, Mammal ovary-CS Sponge-CS grantia, Mammal Testis-CS Sponge spicules-WM, Human sperm-SMR.

ESB52986



Prepared Silde Set Human Histology

Set of 25. Supplied in Box. Cerebellum, Section Ileum, section Spinal cord, TS, Duodenum, TS Nerve, TS and LS, Appendix, TS Artery and vein, TS, Colon, VSCardiac muscle, section, Pancreas, section Lymph node, section Liver, section, Spleen, section Kidney, section Scalp, VS, Ovary, section Skin, heavily pigmented, section Uterus, section Striated muscle, section Cervix, section Mammary gland, section Testis, section Oesophagus, section Thyroid gland, section Stomach, fundic portion, section

ESB52987

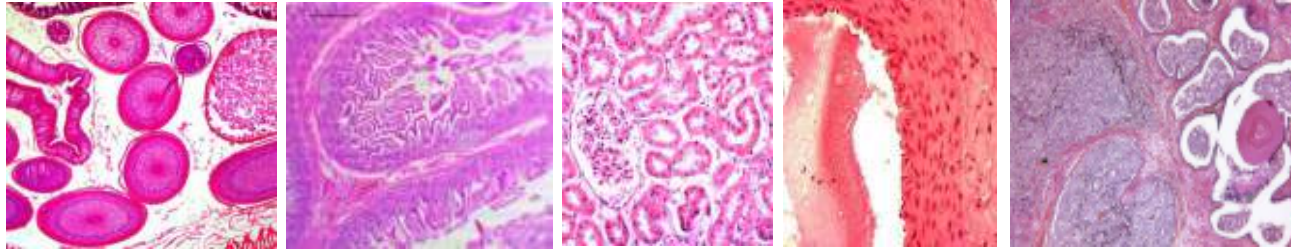


Biological Science Set Of 50 Kit

Biological Science Set of 50 KIT

ESB52988





Cells, Tissues And Organs Set

Pack Of Thirteen

Cells, Tissues and Organs Microscope Slide Set Pack of thirteen

ESB52989

Connective Tissues System Of Movement Set

pack Of Fifteen

Connective Tissues System of Movement Microscope Slides Pack of fifteen

ESB52990

Environmental Adaptations Of Plants Set

Environmental Adaptations of Plants Pack Set of 3

ESB52991

Genetics, Reproduction And Embryology Set

Genetics, Reproduction and Embryology Microscope Slide Set Pack of nineteen

ESB52992

Human Anatomy Set 1

Contain 25 different slide for human anatomy basic study 1 Pack

ESB52993

Human Anatomy Set 2

Contain 25 different slide for human anatomy advance study 1 Pack

ESB52994

Human Scalp And Hair Set

Human Scalp and Hair Microscope Slides Pack of twelve

ESB52995

Meiosis And Mitosis Slide Set

Meiosis and Mitosis Slide Set Pack

ESB52996

Mitosis And Meiosis Set 1

Mitosis and Meiosis Set 1 Pack of six

ESB52997

Mitosis And Meiosis Set 2

Mitosis and Meiosis Set 2 Pack of five

ESB52998

Plant Structure I - Angiosperms

Plant Structure I - Angiosperms Pack - Set of 3

ESB52999

Prokaryotes Slide Set

Prokaryotes Slide Set Pack

ESB53000

Respiratory And Circulatory System Set

Respiratory and Circulatory System Microscope Slides Pack of ten

ESB53001

Textile Fibres And Fabric Set

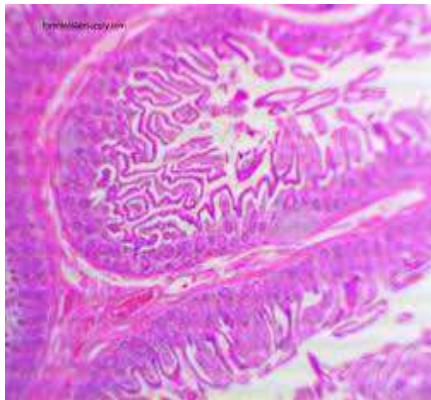
Textile Fibres and Fabric Microscope Slides Pack of twenty five

ESB53002



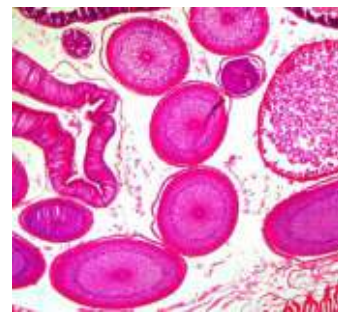
Zoology Slides

- ESB53096** Tendon L.S. white fibrous connective tissue
- ESB53097** Thyroid gland, sec.
- ESB53098** Thyroid and parathyroid T.S.
- ESB53099** Tongue V.S.
- ESB53100** Trachea (triple stain)
- ESB53101** Trachea T.S. thin sec. (h & e stain, plastic embedded)
- ESB53102** Transitional epithelium sec. bladder sec.
- ESB53103** Vertebral column (entire) T.S.
- ESB53104** White fibro-cartilage l.s. intervertebral disc.
- ESB53105** Yellow elastic connective tissue l.s.



Bacteria Slides

- ESB53106** Anabaena w.M. Filaments
- ESB53107** Bacillus cereus W.M.
- ESB53108** Bacillus megatherium W.M.
- ESB53109** Bacillus,
- ESB53110** Coccus and
- ESB53111** Spirillum W.M. (Gram stain)
- ESB53112** Escherichia coli W.M.
- ESB53113** Gram +VE and -VE bacilli W.M..
- ESB53114** Mycobacterium tuberculosis in sputum smear
- ESB53115** Nostoc filament
- ESB53116** Oscillatoria W.M.
- ESB53117** Rhizobium leguminosarum sec.
- ESB53118** Streptococcus lactic - microscope slide



Plant Slides

- ESB53119** Allium root tip
- ESB53120** Allium root tip
- ESB53121** Beech (fagus) sun shade leaf sec.
- ESB53122** Broad bean (vicia) L.S. root tip
- ESB53123** Broad bean (vicia) T.S. young root hair region
- ESB53124** Buttercup (ranunculus repens) T.S. stem
- ESB53125** Buttercup (ranunculus) L.S. flower
- ESB53126** Buttercup (ranunculus) T.S. mature root
- ESB53127** Buttercup (ranunculus) T.S. root
- ESB53128** Buttercup (ranunculus) T.S. root, young (protoxylem only)
- ESB53129** Buxus (or alt. dicot) W.M. lower epidermis with stomata
- ESB53130** C3 and C4 leaf T.S.
- ESB53131** Capsella L.S. ovule - cotyledon stage
- ESB53132** Capsella L.S. ovule - early embryo, short serial
- ESB53133** Cherry laurel (prunus lauro-cerasus) T.S. leaf
- ESB53134** Club moss (mniium) L.S. archegonial head
- ESB53135** Club moss (mniium) L.S. capsule
- ESB53136** Crassulacean acid metabolism T.S. leaf
- ESB53137** Crowberry (empetrum nigrum) t.s. xerophytic leaf
- ESB53138** Cucurbita L.S. stem, sieve tubes
- ESB53139** Cucurbita T.S. stem, sieve tubes
- ESB53140** Cucurbita T.S. and l.s. stem
- ESB53141** Deadnettle (lamium) T.S. stem
- ESB53142** Drosera, sundew - microscope slide
- ESB53143** Elderberry (sambucus) t.s bark with lenticel
- ESB53144** Fern (dryopteris filix-mas) t.s. pinnule with sori.
- ESB53145** Fern w.m. prothallus (developing sporophyte, first leaf emerged)
- ESB53146** Fern W.M. prothallus (developing sporophyte, young stage)
- ESB53147** Fern w.m. prothallus (immature, archegonia only)
- ESB53148** Fig (ficus) T.S. leaf - multiple epidermis with sunken stomata cystoliths
- ESB53149** french bean (phaseolus) T.S. leaf
- ESB53150** Heather (erica) T.S. xerophytic leaf
- ESB53151** helianthus L.S. stem
- ESB53152** helianthus T.S. and L.S. stem
- ESB53153** Impatiens T.S. and h.L.S.leaf
- ESB53154** Lily (lilium regale)T.S. anthers - first meiotic division, early prophase
- ESB53155** Lily (lilium regale) T.S. anthers - first meiotic division, late prophase
- ESB53156** Lily (lilium regale) t.s. anthers - first meiotic division, metaphase
- ESB53157** Lily (lilium regale) T.S. anthers - second meiotic division
- ESB53158** Lily (lilium) germinating pollen



Zoology Slides

- ESB53003** Adipose tissue, sec.
- ESB53004** Adrenal gland T.S.
- ESB53005** Cortex and medulla
- ESB53006** Aorta
- ESB53007** Vein, T.S.
- ESB53008** Areolar connective tissue
- ESB53009** Artery and vein, thin sec.
- ESB53010** Vein, thin sec.
- ESB53011** Bed bug (*Cimex lectarius*) w.m.
- ESB53012** Bronchus T.S. (plastic embedded)
- ESB53013** Cardiac muscle L.S.. intercalated discs.
- ESB53014** Cardiac stomach T.S.
- ESB53015** Catshark (*Scyliorhinus*) h.s. gill arch of late embryo
- ESB53016** Ciliated epithelium T.S. oviduct (plastic embedded)
- ESB53017** Cockroach (*periplaneta*), head entire.
- ESB53018** Colon T.S. large intestine
- ESB53019** Compact bone L.S.
- ESB53020** Compact bone T.S.
- ESB53021** Compact bone T.S. decalcified femur
- ESB53022** cuboidal epithelium sec.
- ESB53023** Kidney tubules
- ESB53024** Earthworm (*lumbricus*) T.S. Intestinal region
- ESB53025** Earthworm (*lumbricus*) T.S. Intestinal region (for insertion of chaetae)
- ESB53026** Effector nerve endings (intercostal muscle)
- ESB53027** Frog blood smear
- ESB53028** Fruit fly (*Drosophila melanogaster*) salivary gland
- ESB53029** fundic stomach T.S.
- ESB53030** Housefly (*Musca domestica* imago) head and proboscis entire
- ESB53031** Human blood smear, giemsa stained
- ESB53032** Human cardiac muscle, sec.
- ESB53033** Human molar or canine tooth L.S.
- ESB53034** Human pacinian corpuscle V.S. (skin or pancreas)
- ESB53035** Human plantar skin V.S. (triple stain)
- ESB53036** Human scalp V.S. (triple stain)
- ESB53037** Human thyroid, sec.
- ESB53038** Hydra L.s. general structure
- ESB53039** Hydra t.s. for endoderm and ectoderm structure
- ESB53040** Hydra w.m. budding
- ESB53041** Hydra w.m. carefully extended and stained.
- ESB53042** Insect trachea (cockroach or locust)
- ESB53043** Liver (human) V.S.
- ESB53044** Liver (pig) V.S.
- ESB53045** Liver fluke (*Fasciola hepatica*) w.m. carefully extended specimen
- ESB53046** Liver, injected, sec.
- ESB53047** Locust embryo squash (acetic orcein and feulgen stain)
- ESB53048** Locust, v.s. Head and eye (triple stain)
- ESB53049** Lung t.s. Stained for elastic and collagen fibres of alveolar walls.
- ESB53050** Lung, injected, thick sec.
- ESB53051** Lung, t.s. thin sec. (plastic embedded)
- ESB53052** Lymph node t.s. cortex and medulla (plastic embedded)
- ESB53053** Mammal duodenum, sec. (brunners glands)
- ESB53054** Mammal hyaline cartilage, sec.
- ESB53055** Mammal ileum, sec.
- ESB53056** Mammal small intestine t.s.
- ESB53057** Mammal yellow elastic cartilage, sec.
- ESB53058** Medulla oblongata t.s.
- ESB53059** Mites w.m.
- ESB53060** Mosquito (*Anopheles*) w.m. female adult, mouthparts
- ESB53061** Nematode (*Trichinella spiralis*) encysted larvae in muscle sec.
- ESB53062** Nerve cells (spinal cord smear)
- ESB53063** Non-striated (smooth) muscle, intestinal wall
- ESB53064** Pancreas for islets of Langerhans
- ESB53065** Peripheral nerve l.s.
- ESB53066** Peripheral nerve t.s.
- ESB53067** Peripheral nerve t.s. (plastic embedded)
- ESB53068** Pituitary v.l.s.
- ESB53069** Planarian worm t.s. (triple stain)
- ESB53070** Polychaete worm (*Nereis*) w.m. parapodium.
- ESB53071** Pseudostratified ciliated columnar epithelium t.s. trachea/bronchus
- ESB53072** Rabbit oesophagus t.s.
- ESB53073** Rat cerebellum sec.
- ESB53074** Rat cerebral cortex, sec.
- ESB53075** Red bone marrow smear
- ESB53076** Respiratory system
- ESB53077** Scabies mite (*Sarcoptes*) w.m. isolated adults
- ESB53078** Simple columnar epithelium of intestine
- ESB53079** Simple squamous epithelium - pavement tissue (frog skin)
- ESB53080** Small intestine l.s.
- ESB53081** Small mammal entire heart, l.s.
- ESB53082** Small intestine
- ESB53083** Snail (*Helix*) w.m. radula
- ESB53084** Spinal cord c.s.
- ESB53085** Squamous epithelium - buccal smear
- ESB53086** Stomach for mucous, parietal and chief cells
- ESB53087** Stratified squamous epithelium t.s. oesophagus
- ESB53088** Striated muscle t.s. selected for muscle spindles
- ESB53089** Striated muscle, cardiac L.S.
- ESB53090** Striated muscle, skeletal, sec.
- ESB53091** *Taenia pisiformis* w.m. scolex
- ESB53092** Tapeworm (*Echinococcus granulosus*) w.m. Complete
- ESB53093** Tapeworm (*Taenia pisiformis*) ova in faeces
- ESB53094** Tapeworm (*Taenia pisiformis*) W.M. cysticercus, scolex
- ESB53095** Tapeworm (*Taenia*) T.S. proglottid (triple stain)



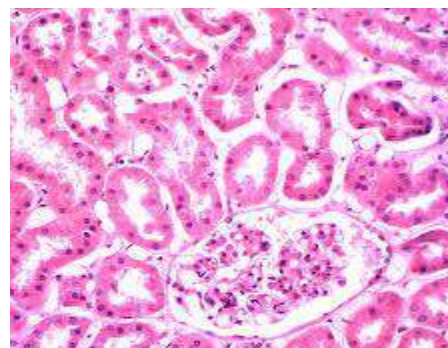
Plant Slides

- ESB53159** Lily (lilium) mature embryo sac
ESB53160 Lily (lilium) T.S. young flower bud.
ESB53161 Lime (tilia) T.S. old stem
ESB53162 Lycopodium T.S. stem.
ESB53163 Maize (zea mays) T.S. leaf
ESB53164 Maize (zea mays) T.S. root
ESB53165 Maize (zea) T.S. and L.S. stem
ESB53166 marchantia polymorpha v.s. antheriophore
ESB53167 with antheridia
ESB53168 Marchantia polymorpha v.s. sporogonium
ESB53169 Marram grass (ammophila arenaria) t.s. xerophyte
ESB53170 Mesophytic, hydrophytic and xerophytic leaf.
ESB53171 Monocot leaf T.S.
ESB53172 Dicot leaf T.S.
ESB53173 Monocot and dicot root C.S. comparison
ESB53174 Monocot stem T.S.
ESB53175 Dicot stem T.S.
ESB53176 Moss L.S. of antherridial head
ESB53177 Moss leaf W.M.
ESB53178 Nettle (urtica dioica) T.S. stem for stinging cells
ESB53179 Onion (allium) L.S. root tip (stained for mitosis, all stages) - set of 5
ESB53180 Onion (allium) root tip squash (feulgen acetic-orcein stain)
ESB53181 Onion (allium) root tip squash (stained for mitosis, metaphase)
ESB53182 Onion (allium) W.M. epidermis with stomata
ESB53183 Pine (pinus) T.S.. leaf
ESB53184 Pine (pinus) T.S. older stem plus annual rings
ESB53185 Pine (pinus) T.S. young root
ESB53186 Pine (pinus) w.m. stem to show xylem tubes.
ESB53187 Pinus l.s. whole female cone (1st year)
ESB53188 Pinus w.m. pollen
ESB53189 Pondweed (potamogeton) T.S. stem, hydrophyte
ESB53190 Potato (solanum) T.S. stem, tuber for starch
ESB53191 Privet (ligustrum) T.S. leaf
ESB53192 Privet (ligustrum) T.S. leaf
ESB53193 Rice T.S. root
ESB53194 Sorghum T.S. leaf
ESB53195 Sunflower (helianthus) T.S. root, young
ESB53196 Sunflower (helianthus) T.S. leaf
ESB53197 Sunflower (helianthus) T.S. root, old
ESB53198 Sunflower (helianthus) T.S. stem, old (secondary thickening)
ESB53199 Sunflower (helianthus) T.S. stem, old primary
ESB53200 Sunflower (helianthus) T.S. stem, young
ESB53201 Sunflower (helianthus) T.S. stem, young primary (pericycle fibres unthickened)
ESB53202 Sunflower (helianthus) T.S. stem, interfascicular cambium
ESB53203 Water lily (nymphaea) T.S. floating leaf



Extra

- ESB53204** Agaricus campestris V.S. Pileus, gills with basidiospores
ESB53205 Amoeba proteus w.M. Selected specimens
ESB53206 Aspergillus on substrate with conidiospores
ESB53207 Chlamydomonas W.M. Vegetative stages
ESB53208 Chlorella W.M.
ESB53209 Ectotrophic mycorrhiza W.M.
ESB53210 Endotrophic mycorrhiza C.S.
ESB53211 Euglena viridis (careful differential haematoxylin staining)
ESB53212 Lycopodium L.S. Strobilus
ESB53213 Mixed marine diatoms W.M. Protoplasts stained
ESB53214 Mixed protozoa W.M.. Common forms
ESB53215 Paramecium caudatum W.M. in conjunction
ESB53216 Paramecium caudatum W.M. (Careful differential staining)
ESB53217 Penicillium on substrate with hyphae and conidiospores.
ESB53218 Plasmodium falciparum smear
ESB53219 Puccinia (wheat rusts) T.S. Host with uredospores
ESB53220 Rhizopus stolonifer W.M. With sporangia
ESB53221 Rhizopus stolonifer W.M. With zygospores
ESB53222 Saccharomyces cerevisiae W.M. Budding cells
ESB53223 Sordaria fimicola W.M.
ESB53224 Spirogyra vegetative filaments
ESB53225 Trypanosoma brucei in rat blood smear (giemsa stain)
ESB53226 Volvox W.M. Daughter colonies, sexual stages, zygotes





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Analysis Of Hair

The Hair Analysis Kit provides students with the opportunity to use scientific methods and basic laboratory skills to study the morphology of hair samples from various species. Includes a discussion of hair used as evidence in forensic science, directions for mounting hair samples and visualizing scale patterns, and illustrated descriptions of hair structures. Students conduct two forensic examinations using the standard procedures used by forensic examiners. Includes instructional manuals and student worksheets. Required, but not included: microscopes, hair brushes, forceps, and plastic sandwich bags. Designed for 24 students working in six groups of four. Meets national standards for grade levels 9-12.

Kit Contains:

Instructor Manual, Student Manual, MSDS, Student Diagram Charts, #1 Examination Worksheets, #2 Examination Worksheets, Microscope Slides, Cover Slips, CD, Hair Sample A, Hair Sample B, Hair Sample C, Mounting Media, Fingernail Polish

ESF53502



Analysis Of Documents

Analysis of Documents includes a series of lab investigations in which types of paper, ink, pencil marks, typewriting, and handwriting are analysed using microscopic observation, UV light, chromatography, replicating techniques, and wet chemistry to determine forgery of checks and alteration of notes and messages. Culminates in the analysis of secret messages. Includes instructional manuals and reproducible student worksheets. Required, but not included: Microscope, UV light, hot plate (or heat lamp or oven), lemon juice or milk, erasers, cotton balls, clear tape, small jars, watch glasses or beakers. Designed for 24 students working in six groups of four. Meets national standards for grade levels 6-12.

Kit Contains:

Instructor Manual, Student Manual, MSDS, Chromatography Paper, Jars w/ Lids, Black Felt Tipped Pens, Pencils, Blue Pens, Typed Notes, Crime Scene Note, Magnifying Lenses, Brushes, Clay, Disposable Gloves, Shell Vials, Forceps, Different Types of Paper, Ethanol
Acetone, Butanol, Sodium Hydroxide Solution, Phenolphthalein Solution, Iron Sulphate Solution, Potassium Ferro-cyanide Solution
Ink Eradicator, Iodine, Fluorescent Ink

ESF53503



Analysis Of Drugs & Poisons

Students are introduced to qualitative analysis in the intriguing context of criminal investigation. Chemical analytical techniques are used to identify over-the-counter drugs, test for controlled substances using simulated drugs, simulate presumptive drug testing, and detect evidence of heavy metal poisoning through the analysis of amino acids in urine. Includes materials for six groups (24 students) and an instructors manual with reproducible student instructions, data sheets, and complete answer keys. Meets national standards for grade level 9-12. Required but not included: UV light, microscope, oven, lamp, or hot plate, scale, glassware and lab supplies.

Kit Contains:

Instructor I453s Manual w/ Reproducible Student Data Sheet
MSDS, Simulated Urine Alanine, Simulated Urine Glycine, Simulated Urine Unknown, Crime Scene Unknown, Unknown A, Unknown B, Unknown Powder X, Unknown Powder Y, Aspirin, Tylenol, Alka- Seltzer, Butanol, Simulated LSD, Simulated Marijuana
Acetic Acid, Acidified Ferric Nitrate Solution, Acetone, Sodium Bicarbonate, Hydrochloric Acid, Ninhydrin (powder), Empty Plastic Bottles W/Dropper Caps, Universal Indicator and pH Colour Chart, Chromatography Paper, Capillary Tubes, Depression Plates, Pipettes
Q-tips, Toothpicks, Scott Reagent, Unknown Drug Sample, Quinine Mono-hydrochloride, Glass Sample Vials, Pasture Pipits

ESF53504



Analysis Of Fingerprints Class-pack (For 24 Students)

This kit provides students with the opportunity to learn standard techniques for dusting for fingerprints using a variety of powders and for developing latent fingerprints from a variety of surfaces. Students lift fingerprints from slides, develop prints on paper using both the Ninhydrin method and the Lugol Iodine method, use the cyanoacrylate fuming method to visualize a fingerprint on a metal spoon, and learn to identify direct prints. Each investigative group prepares fingerprint evidence for another class group to analyse and with the aid of Modus Operandi sheets, the group identifies the fingerprints of the suspects with the aid of fingerprint standards developed by the FBI. Includes instructional manuals and student worksheets. Required, but not included: fume hood, (6) one-quart jars or one -litre beakers. Designed for 24 students working in six groups of four. Meets national standards for grade levels 10-12.

Kit Contains:

Instructor Manual, Student Data Sheets, MSDS, "FBI" Fingerprint Classification Sheets, Bond Paper, Filter Paper, Gloves, Pipette, Fingerprint Brushes, Magnifying Glasses, Forceps, Jars w/ Caps, Metal Spoons, Aluminium Foil, Super-glue, Ink Pads, Scotch Tape

String, Microscope Slides, Index Cards, Modus Operandi Sheets, Aluminium Powder, Carbon Black, Ninhydrin, Acetone, Iodine

ESF53505

**Analysis Of Finger prints Mini Kit (Ideal For 1 To 4 Students)**

This kit provides students with the opportunity to learn standard techniques for dusting for fingerprints using a variety of powders and for developing latent fingerprints from a variety of surfaces. Students lift fingerprints from slides, develop prints on paper using both the Ninhydrin method and the Lugol Iodine method, use the cyanoacrylate fuming method to visualize a fingerprint on a metal spoon, and learn to identify direct prints. Each investigative group prepares fingerprint evidence for another class group to analyse and with the aid of Modus Operandi sheets, the group identifies the fingerprints of the suspects with the aid of fingerprint standards developed by the FBI. Includes instructional manuals and student worksheets. Required, but not included: fume hood, (6) one-quart jars or one -litre beakers. Designed for 24 students working in six groups of four. Meets national standards for grade levels 10-12.

Kit Contains:

Instructor Manual, Student Data Sheets, MSDS, "FBI" Fingerprint Classification Sheets, Bond Paper, Filter Paper, Gloves, Pipette, Fingerprint Brushes, Magnifying Glasses, Forceps, Jars w/ Caps, Metal Spoons, Aluminium Foil, Super-glue, Ink Pads, Scotch Tape

String, Microscope Slides, Index Cards, Modus Operandi Sheets, Aluminium Powder, Carbon Black, Ninhydrin, Acetone, Iodine

ESF53506

**Dusting For Finger prints Class Kit**

Students learn to prepare fingerprint evidence and to stabilize, dust, and lift latent fingerprints, then identify the prints by comparison to the minutia of inked prints. Includes advanced techniques using carbon, aluminium, magnetic, and fluorescent powders, magnetic applicators, fibreglass brushes, and camel fingerprinting brushes. Students apply their new expertise to determine the best methodologies for collecting prints from unusual surfaces and analyse print evidence to solve a crime at the Museum of the Modern Detective. Includes supplies for 24 students working in teams, complete instruction manual, reproducible student procedures, and assessment materials. Hood, UV light source, and goggles required. Requires special permit for international sales.

Kit Contains:

Instructor Manual, Student Manuals, MSDS, Tape, Ink Pad, Super Glue, Brushes, Aluminium Foil Sheet, Spoons, Charcoal, Aluminium Powder, Index Cards, Magnifying Glasses, Plastic Containers, Powder, Magnetic, Black, Powder, Magnetic, Fluoresc Pink, Magnetic Applicator, w/ 2 Sleeves, Vinyl Flooring Piece, Hardwood Flooring Sample

ESF53509





Dustless Fingerprints

Investigate alternate methods for lifting fingerprints while practicing the scientific method. Students gather data using fingerprint evidence as they observe, compare, contrast, and hypothesize their way through four different experimental procedures. They will learn how to make impressions in clay and pour a mould, lift fingerprints from soda cans using super glue fuming, and use both iodine and ninhydrin fuming to lift fingerprints from paper. The activity includes an instructor's manual, and student data sheets. Note: This lab should be performed in a chemical fume hood. Designed for 24 students working in six groups of four. Meets national standards for grade levels 5-10.

Kit Contains:

Instructor Manual, Student Manuals, MSDS, Fingerprint Identification Sheets, Scotch Tape, Super Glue, Petri Dishes, Forceps, Tongue Depressors, Paint Brushes, Empty Jars w/ Caps, Paper Cups, Modelling Clay, Plastic Gloves, Magnifying Glasses, Aluminium Foil, White Paper, Plaster of Paris, Iodine, Products

ESF53514



Analysis Of Minerals & Soils

Analysis of Minerals & Soils kit now extends the students experience to not only investigate the physical and chemical properties of trace evidence from a crime scene, but to learn to characterize soil texture. Ideal for Forensic Science, Agriculture, and Environmental Science Courses. Experiments include: Characterizing Soil Appearance, Acidity of Soil, Soil Comparison by Particle Size Analysis, Forensic Density Distribution of Soil Particles, Chemical Reactions of Substances in Soil, and Analysis of Glass Samples. Now includes Hands-On Soil Classification Extension Activities for Determining Soil Texture by Sedimentation and by Using the Feel Method with instructions at differentiated learning levels.

Required not included: fume hood, UV light, balance, microscope, oven/lamp or hot plate, glassware, and general lab supplies.

Contains lead nitrate. Meets national standards for grades 9-12. Note: Soil sample A contains lead nitrate; avoid direct contact with this soil and wash hands after handling.

Kit Contains:

Instructor Manual
 Student Data Sheets
 Soil Sample A
 Soil Sample B

Soil Sample C
 Soil Sample D
 Soil Sample "Crime Scene"
 Suspect A (Glass Beads)
 Suspect B (Glass Beads)
 Crime Scene (Glass Beads)
 Density Gradient Tubes
 Medicine Droppers
 Microscope Slides
 Polarizing Film
 Magnifying Glasses
 Plastic Forceps
 Plastic Spoons
 Aluminum Pans
 Sets of Sieves
 Universal Indicator Chart
 Labels
 Bromoform
 Bromobenzene
 Universal Indicator
 Hydrochloric Acid Solution T

ESF53507





Art Forgery

Add excitement to art, chemistry, or general science classrooms. Students use scientific observation and reasoning as they master the techniques used to distinguish original paintings from forgeries. They are presented with "real" and (forged) Paintings in the styles of Monet, Van Gogh, and Pollack and asked to determine which are original. To determine this, they test for lead in the paint, check for fluorescence under UV light, and analyse paint colours to determine if they are mixed or layered. Required, but not included: UV lamp, 30 small test tubes with stoppers, distilled water, spatulas and match books. Contains lead nitrate and potassium chromate. Designed for 24 students working in six groups of four. Meets national standards for grades 6-12.

Kit Contains:

Instructor Manual, Student Data Sheets, MSDS, Single Edge Razor Blades, Magnifying Lenses, Paraffin Cubes, Pipets, 6 Pairs of Paintings, Empty Dropper Bottles w/ Caps, Lead Nitrate Solution, Potassium Chromate Solution

ESF53508



Criminalization Kit

This murder mystery provides inquiry based learning with an intriguing twist. Students apply many CSI techniques including blood typing, fingerprinting (dusting with carbon powder, dusting with aluminium powder, cyanoacrylate, iodine fuming, and ninhydrin), hair analysis, and analysing and identifying drugs, poisons and other chemicals. Using microscopes, measurement, chemical analysis, observation, and deductive reasoning, students examine the clues necessary to solve the murder of Mr. Paul Dudden. Includes Searching for Clues Forensics Manual, Murder Mystery CD, Analysis of Hair Identification Unit, Analysis of Fingerprinting Unit, and Analysing Drugs and Poisons Unit. Required, but not included: microscope, UV light, beakers, three test tubes with corks or stoppers, large jar, nails, scissors, distilled water, newspaper, pencils, and scrap paper. Designed for 24 students working in six groups of four. Meets national standards for Grades 7-12.

Kit Contains:

Instructor Manual, Student Manual, MSDS, MO Sheets, "Searching for Clues" Book, CD, Evidence Collection (A, B, C, D), Microscope Slides, Cover slips, Gloves, Forceps, Magnifying Glasses, Spoons, Index Cards, Filter Paper, Scrap Paper, Tape, Paint Brushes, Ink Pads
Pipettes, Depression Plates, Super Glue, String, Toothpicks, Empty Jars w/ Lids, Foil, Acetone, "Unknown" Heavy Metal, Carbon Powder
Aluminium Powder, Ninhydrin, Iodine, Clear Nail Polish, Hair Samples (A, B, C), Mounting Media, Universal Indicator & Chart, Hydrochloric Acid, Dille-Koppanyi A Reagent, Dille-Koppanyi B Reagent, Scott Reagent, Van Urk's Reagent, Drug "Unknown A"
Drug "Unknown B", Drug "Unknown Z", Simulated Marijuana, Simulated LSD, Acidified Ferric Nitrate, Mercury Compound, Lead Compound, Potassium Chromate, Aspirin, Tylenol, Alka Seltzer

ESF53510





Crime Scene

This kit takes students through six exercises using reasoning, common sense, math skills, biology, and chemistry to identify a crime scene: Scene Mapping, Hair Analysis, Soil Analysis, Rope Analysis, Analysis of Crime Scene Trash, and Interpretation of Police Evidence. When suspects and victims enter and/or leave a crime scene they bring with them and carry away useful pieces of evidence. Students learn to conduct a proper search, like real crime scene technicians, to avoid destroying evidence. They also learn to properly gather and document evidence and make factual interpretations of a crime scene. Required, but not included: microscopes, graduated cylinders, test tubes, rulers, markers, notebook paper, white paper, and water. Designed for 24 students working in six groups of four. Meets national standards for grades 5-8.

Kit Contains:

Instructor Manual, Student Investigation Packets, MSDS, Graph Paper, Glass Slides, Cover Slips, Mounting Media, Universal Indicator Solution, Sifting Screen, Soil Samples, Hair Samples, Rope Samples, Moulding Clay, Trash Evidence (including 9 trace evidence samples), Plastic Spoons, Magnifying Glasses

ESF53511



Blood Spatter Detective

The Blood Spatter Analysis Kit includes in depth experiments which help students become aware of how physics plays a role in criminal investigation. Students learn how gravity, distance, and angles affect a blood stain pattern. Includes the use of a build it yourself blood spatter chamber. Experiments include Distance Effect on Blood Spatter, Identifying Distance and Angle of Travel with Blood Spatter, and Investigating Blood Spatter with Luminol. Experimentation uses totally safe synthetic blood. Teaches students the sixteen general rules of blood spatter interpretation and extensive investigative technology. Now includes directions and student worksheets for calculating angle of impact, area of convergence, and point of origin from blood spatter patterns. Cross-curricular use of science and writing skills are applied in creating a crime scene scenario. Includes materials for 24 students working in six groups. Meets national standards for grade 9-12. Also appropriate for college level. Black Light required, but not included.

Kit Contains:

Instruction manual, Reproducible Student Worksheets, Simulated Blood, Simulated Haemoglobin, Luminol, Sodium Perborate, Sodium Carbonate, Spray Bottles, Complete Blood Spatter Chamber with Platform and Hammer, Paper for Spatter Chamber Protractors, Retractable Measuring Tape, Filter Paper, Pipette, Rulers, Paper Clips, Clip Boards.

ESF53512



Designing Investigations In Blood Spatter

Guide students through the investigative process of a blood spatter detective using this inquiry based activity. Just like the detective, they will design and conduct a simple experiment to model how blood reacts and how blood spatter patterns change in response to variables. They may choose to investigate the effects of angle, force, distance, surface texture, rate of movement, velocity at impact, number of blows, or location of the victim. They may investigate the difference in spatter due to cast-off, blunt force trauma or projectile trauma. They might compare patterns due to impact spatter, passive spatter, transfer spatter, or projected spatter. Just like the detective, students will analyse and present their results as evidence to support their case. This kit includes an instructor's manual with reproducible student pages, simulated blood, butcher paper, claw hammer, two screwdrivers, scissors, plastic knives, protractors, measuring tapes, and plastic pipettes. The kit may be used independently or as an introduction or companion to the analysis activities provided in EduScience Blood Spatter Kit # ESF53516.

Kit Contains:

Instructors Manual, Simulated Blood, Butcher Paper, Roll, Claw Hammer, Screwdrivers, Retractable Tape Measures, Protractors, Scissors, Plastic Knives, Plastic Pipette

ESF53516





Master Forensics

EduScience Master Forensics Kit presents the ultimate Crime Scene Investigation problem solving and deductive reasoning activity. This kit includes our slightly modified Fingerprint Analysis, Soil and Mineral Analysis, Hair Analysis, Document Analysis, and Analysis of Drugs and Poisons kits. Following training, your CSI investigators watch the included CD setting the scene for the crime and collect the clues to solve one of the four case scenarios. Includes all materials for training activities, a faculty cast list, and materials for preparing the evidence box. Complete with an updated, bound instructor's Manual, CDs, reproducible student instructions, and reproducible worksheets. Allow the equivalent of 12-14 one-hour lab periods. Not included: Microscopes, Chemical Splash Goggles, UV light, Oven or Heat Lamp, balance, (36) large test tubes, (6) graduated cylinders, 10 ml, (6) evaporating dishes, gloves and lab aprons. Designed for 24 students working in groups of four.

Kit Contains:

Instructor Manual, Student Manual, MSDS, CD	
Components of Fingerprint Analysis Kit	(ESF53505)
Components of Soil and Mineral Analysis Kit	(ESF53507)
Components of Hair Analysis Kit	(ESF53502)
Components of Document Analysis Kit	(ESF53503)
Components of Analysis of Drugs and Poisons Kit	(ESF53504)

ESF53513



Toxicology

This kit simulates authentic drug screening. Students extract drugs from simulated urine using columns, elute the drugs, run them on chromatographic gels, and use visualization techniques to identify the drugs. The lab may be done in four standard lab periods or two three hour lab periods and is easily separated into drug isolation and chromatography sections. Approximately fifty minutes is required for completing the thin layer chromatography and visualization process, which must be done all at one time. Required, but not included: fume hood, water bath 65-70C, hair dryer, UV light (356 nm; black light, strong sunlight, plant lights, or a goggle cabinet), UV light short wave (254 nm), and ring stands. Designed for 24 students working in six groups of four. Meets national standards for grade levels 10-12.

Kit Contains:

Instructor Manual, Student Manual, MSDS, Note on Phenylpropanolamine, Rf Value Cards Large, Rf Value Cards Small, Tox Elute Columns, Dropper Bottles, Silica Plates, Capillary Tubes, Pipette, Acetone, Methanol, Simulated Urine, Eluent, Ethyl Acetate, Ammonium Hydroxide, Potassium Iodide Solution, Methanol, Chloroplastic Solution, Ninhydrin, Diphenylcarbozone, Mercuric Oxide, Contac (Mucinex), Sudafed, Caffeine, Dexatrim, Quinine, Sulphuric Acid Solution

ESF53515





Forensic Impressions

Footprints, shoe prints, tire tracks, and other impressions embedded in soft material, if properly identified, preserved, and evaluated, may provide the crime scene investigator with valuable class evidence. Students become the CSI detectives and learn to properly collect, record, and avoid destroying crime scene evidence as they photograph and cast six types of impressions using various methods in this investigation. Includes writing impressions, plastic prints, rope and binding impressions, key impressions, tire impressions and shoe impressions using carbon powder, plaster, clay, and ink. Materials provided for 24 students working in groups of two or four, depending upon the activity. Required, but not included: an old tire, an old gym shoe, mixing containers, a spray bottle, and newspaper. Meets national standards for grades 8-12.

Kit Contains:

Instructor's Manual, Students Manual, MSDS, Carbon Powder, Paint Brushes, Plain Paper, Modelling Clay, Plaster of Paris, Spoons
5 Different Rope Samples, Magnifying Glass, Tongue Depressors, Tire Impressions Pictures, Ink Roller, Ink, Cups, Soil, Sifting Screen
Tooth Brushes, Pans, Petri Dishes

ESF53518



Odontology- One Bite Out Of Crime Class-pack (For 24 Students)

Dental records, like fingerprints, offer a form of positive identification. Not only do they differ in detail from person to person, but they last longer than other physical evidence and may be the only identifiable body characteristic following catastrophic accidents, explosions, burning, or decomposition. Changes in dental records are minor as a person ages, so records compiled years earlier may provide positive identification. Kit includes seven experiments: Making a Patient Dental Chart, Identifying a Body with Dental Charts, Casting Teeth, Evidence Analysis of Bite Mark Injury, Collecting Evidence (Bite Marks in Wax Moulds), Identifying Suspects from Bite Marks, and Identifying Suspects (Matching Teeth Cast to Wax Bite Planes). Designed for 24 students working in six groups of four. Meets national standards for grades 9-12.

Kit Contains:

Instructor's Manual, Experiment #1, Student Data Sheet (SDS) Patient Chart, Dentist Worksheet (SDS), Experiment #1, Student Data Sheet, Assistants Worksheet, Experiment #2, Identifying a Body with Dental Charts, Experiment #3, SDS, Working Teeth Model
Experiment #4, SDS, Metric Analysis of Bite Mark, Experiment #5, SDS, Making Bite Mark Evidence In Wax, Experiment # 6, SDS, Identifying bite Marks in Wax , Experiment # 7, SDS, Identifying Suspect by Matching Teeth Cast to Teeth Bite Tray (Small & Medium)
Tooth Development Diagram SDS, Figure 1, Tooth Eruption at 5 Years SDS, Figure 2, Gloves, Magic Marker, Mould Material, Plaster Paris, Tongue Depressors, Plastic Cups, Measuring Cups, Seal-able Bags, Metric Rulers, Wax Bite Plates, Wax Bite Plane, Products
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ESF53517





Odontology- One Bite Out Of Crime Mini Kit (Ideal For 1 To 4 Students)

Dental records, like fingerprints, offer a form of positive identification. Not only do they differ in detail from person to person, but they last longer than other physical evidence and may be the only identifiable body characteristic following catastrophic accidents, explosions, burning, or decomposition. Changes in dental records are minor as a person ages, so records compiled years earlier may provide positive identification. Kit includes seven experiments: Making a Patient Dental Chart, Identifying a Body with Dental Charts, Casting Teeth, Evidence Analysis of Bite Mark Injury, Collecting Evidence (Bite Marks in Wax Moulds), Identifying Suspects from Bite Marks, and Identifying Suspects (Matching Teeth Cast to Wax Bite Planes). Designed for 24 students working in six groups of four. Meets national standards for grades 9-12.

Kit Contains:

Instructor's Manual,
 Experiment #1, Student Data Sheet (SDS) Patient Chart, Dentist Worksheet (SDS)
 Experiment #1, Student Data Sheet, Assistants Worksheet
 Experiment #2, Identifying a Body with Dental Charts
 Experiment #3, SDS, Working Teeth Model
 Experiment #4, SDS, Metric Analysis of Bite Mark
 Experiment #5, SDS, Making Bite Mark Evidence In Wax
 Experiment #6, SDS, Identifying bite Marks in Wax
 Experiment #7, SDS, Identifying Suspect by Matching Teeth Cast to, Teeth Bite Tray (Small & Medium), Tooth Development Diagram SDS, Figure 1, Tooth Eruption at 5 Years SDS, Figure 2, Gloves Magic Marker, Mould Material, Plaster Paris, Tongue Depressors, Plastic Cups, Measuring Cups, Seal-able Bags, Metric Rulers, Wax Bite Plates, Wax Bite Plane

ESF53519



Fabrics and Fibre Kit

Students perform four experiments analysing fabric and fibre types to learn to characterize them. First, students determine if each sample is animal, vegetable, mineral, or synthetic in origin by subjecting fibres to a burn test and evaluating fibres for protein and for the presence of sulphur. Then, students observe fibre samples to identify general microscopic characteristics and subject them to chemical solubility and stress and strain tests. After learning techniques for proper collection of fibre evidence, students test three unknowns to determine their identity. Includes instructional manuals and student worksheets. Required, but not included: microscopes, alcohol or Bunsen burners, matches, test tubes, 1-hole stopper, test tube clamp, and distilled water. Designed for 24 students working in groups of four. Meets national standards for grade levels 10-12.

Kit Contains:

Instructor's Manual, Student Manual, MSDS, Cotton Sample, Wool Sample, Carpet Sample, Glass Wool Sample, Nylon Sample, Rayon Sample, Acetate Sample, Unknown Sample #1, Unknown Sample #2, Unknown Sample #3, Wax Pencils, Metal Forceps
 Plastic Forceps, Slides, Cover Slips, Toothpicks, Empty Dropper Bottles, Red Litmus Paper, Lead Acetate Paper, Hydrochloric Acid
 Sodium Hydroxide, Sodium Hypochlorite, Dry-Cleaning Solution, Acetone, Mounting Media

ESF53520





Paper Trail

Introduce middle school students to the excitement of forensics with this age appropriate crime scene related document analysis kit. Students perform physical and chemical analyses of a variety of papers and inks using a number of techniques including chromatography, microscopy, and an alignment tool to analyse documents and handwriting. Students produce and retrieve hidden messages, and prepare forged and authenticated documents. Requires four to five class periods. Required, but not included: microscopes, 100 Watt desk lamps and/or hot plates, fresh lemon juice, spray starch, newspaper, scissors, water, white paper, and paper-clips. Designed for 24 students working in six groups of four. Meets national standards for grades 5-8.

Kit Contains:

Instructor Manual, Student Manual, MSDS, Alignment Tools, Paper Samples, Magnifying Glasses, Cotton Swabs, Chromatography Tubes, Chromatography Paper, Spray Bottles, Pencils, Pens, Ethanol Solution, Iodine Solution

ESF53521



Science Detective

This kit is designed to help younger students understand the scientific method through investigation, and to develop observation, interpretation, and organizational skills. Includes instructor's manual, transparencies, student data sheets, card game, "what's different" activity, and bread mould and plant growth project materials for a class of 24 students. Required, but not included: scented candle, scented spray, spray bottle, candy, ribbon, soil, bread, marker, masking tape, and paper. Extension activities provided in the Instructor's Manual. Meets national standards for grades 2-6.

Instructor Manual, Student Data Sheets, Lima Bean Seeds, Plastic Cups, Plastic Bags, Plant Fertilizer, Sodium Chloride, Washing Powder #1, Vinegar, Graph Paper

ESF53523





Robbery At Any Town Mall

Various types of trace evidence allow students to solve the crime presented in this hands-on CSI activity.

Using observation, experimentation, and interpretation, students will employ the scientific method to analyse hair, fibre, fabric, blood, fingerprints, and handwriting.

Both evidence and personal profiles intermingle to enable students to crack the case using deductive reasoning.

Includes instructional manual and reproducible student worksheets.

Required, but not included: microscopes, water bath, and glass test tubes with stoppers or caps.

Designed for 24 students working in six groups of four. Meets national standards for grade levels 7-11.

Kit Contains:

Instructor Manual, Student Manuals, MSDS, Silk Sample, Cotton Sample, Linen Sample, Polyester Sample, Wool Sample, Cat Hair

Human Hair, Dog Hair, Police Envelope, Suspect Envelope Randy, Suspect Envelope Martha, Suspect Envelope Paul, Suspect Envelope John, Signature Cards, Hand Lens, Cover Slips, Microscope Slides, Wooden Sticks, Red Litmus Paper, Tweezers, Toothpicks

Hema-Tag Label A&B, Hema-Tag Label Rh, Mounting Media, Anti A Serum, Simulated, Anti B Serum, Simulated, Anti Rh Serum, Simulated, Simulated Blood, Type A, Simulated Blood, Type B, Simulated Blood, Type O, Simulated Blood, Type AB

ESF53522



Ballistics : The Sacco & Vanzetti Case

Can your aspiring ballistics experts determine once and for all whether Sacco and Vanzetti committed this crime? Students reconstruct the shootings of the infamous Sacco and Vanzetti case and calculate projectile trajectories using a map of the gunshot evidence, ballistics blocks, and trajectory rods. Then, they recreate the crime scene using string and laser techniques. Using inactive dummy cartridges, fired bullets and casings, students learn to characterize ammunition. They use gunshot residue analysis to determine which suspects fired guns during the crime. Finally, each scenario is presented with evidence for students to argue their unique case in court. Includes complete instructor's manual, reproducible ballistics training handbook, reproducible lab experiments, instructions and documents for holding a mock trial, and six additional extension activities addressing the social and political issues surrounding the case. Designed for 24 students working in small groups. Recommended: stereo-microscope and a balance. Warning: Danger, kit contains lasers, avoid eye exposure. Product intentionally contains lead bullets and lead nitrate. Grades 7-12

ESF53524





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CMES Data Logger

is a modern advanced graphic data-logger. It is a handheld Linux device equipped with two processors and 8 GB memory. Works standalone and with Windows and MAC computers.

Display: 5" high-resolution capacitive colour touch screen

Resolution: 12-bit

Maximum sampling rate: 1 MHz

Sensor inputs: Four analogue BT inputs, two digital BT inputs

Built-in: Sound sensor, 3-axis

Accelerometer (2g, 4g, 8 g)

Wireless connectivity: Wi-Fi and Blue-tooth®

Computer connection: USB mini port

USB port: Full USB for USB peripherals

Power: Rechargeable battery, charging via USB from computer or via power adapter

Software on board: Coach Linux

Software on computer: Coach (Windows and MAC)

Includes: Power adapter, USB cable and User's Guide.

The dedicated desktop applications, installed on CMES, offer tools for collecting data, managing user files, setting up the device and its wireless connection, browsing the web, watching video files, playing audio files, etc. All applications can be easily updated via the CMES Update server available via a Wi-Fi connection.

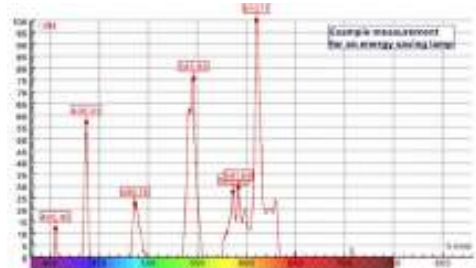
The powerful Coach Application, installed on CMES, offers live sensor data displays, real-time graphing, tools for data processing and possibilities to create new or open ready-to-go student activities, enriched with texts, images and web-pages. Coach 7 and Coach 7 Lite support measurements with CMES.

During such measurement CMES is connected to the computer via a USB port or communicates via a Wi-Fi connection, and is controlled by Coach running on the computer. The collected data are transferred in real-time to the computer and the measurement

can be followed directly on the computer screen. By using wireless connectivity and the VNC protocol the CMES screen can be remotely viewed and controlled from any computer or mobile device connected to the same network.



ESD50000



Coach 7 Desktop

Our Coach software is the most versatile and complete software for STEM Education.

Coach integrates ICT tools, which resemble technologies used by professional scientists and facilitate an inquiry-based approach to education. By collecting high-quality, real-time data, constructing and using models, using simulations and visualizations, comparing results from experiments and models, students can be actively involved in authentic learning activities.

Coach 7 is the successor of Coach 6 and offers new features and enhancements of our unique and powerful environment.

5-years Single User License

ESD50013



Colorimeter Sensor

The Colorimeter BT29i measures the amount of light transmitted through a sample solution. It has four LED light sources emitting light of different wavelengths:

Violet 430 nm, blue 470 nm, green 565 nm and red 635 nm.

Range: 90 .. 10 %T Resolution (12-bit): 0.025 %T Includes: 10 plastic cuvette with caps.

Can be used to:

- Investigate application of Beer's law e.g.-crystal violet or Copper Sulphate,
- Determine unknown concentrations,
- Measure reaction rate, reaction
- Order or reaction equilibrium,
- Determine biological molecules e.g. sugars, protein, vitamins..

ESD50078





Conductivity Sensor

The Conductivity sensor BT27i measures the ability of a solution to conduct an electric current between two electrodes. The Conductivity sensor consists of a conductivity electrode and an amplifier. The sensor has three measurement ranges, which can be selected using a switch.

Ranges: 0 .. 200 μ S, 0 .. 2000 μ S, 0 .. 20000 μ S Resolution (12-bit): 0.082 μ S, 0.82 μ S, 8.2 μ S

Can be used to:

- Monitor the rate of reaction in chemical reactions,
- Monitor changes in conductivity in aquatic systems,
- Perform conductivity titration,
- Find the rate at which ionic species diffuse through membranes..

ESD50079



Light Sensor *

The Light sensor 0142i measures light intensities in the range between 0 and 200 lux. It consists of a photo-transistor, which receives light through a glass fibre. Because of its range the sensor is suitable for measurements in normal indoor situations. The sensor can also be used as a light gate.

Range: 0 .. 200 lux Resolution (12-bit): 0.05 lux

Can be used to:

- Verify inverse square law,
- Monitor changes in light caused by a chemical reaction,
- Investigate light reflection and absorption,
- Investigate light interference patterns..

ESD50080



Light Sensor *

The low-cost Light sensor 0513 measures light intensity and is sensitive to the visible light spectrum and also infrared. Because

of its range the sensor is suitable for measurements in normal indoor situations. Range: 0.1 .. 10 W/ m²

Can be used to:

- Verify inverse square law,
- Monitor change in light caused by a chemical reaction,
- Measure the rapid changes of the light intensity.

ESD50081



Light Sensor with three ranges

The Light sensor BT50i measures light intensity and has three measurement ranges, which can be selected using a switch. Because of its ranges the sensor is suitable as well for indoor as for outdoor measurements. Full sun illumination is within the range of the sensor. The spectral response of the sensor approximates the response of the human eye.

Ranges: 0 .. 1500 lux, 0 .. 15000 lux, and 0 .. 150000 lux

Resolution (12-bit): 0.37 lux, 3.7 lux, 37 lux

Can be used to:

- Verify inverse square law,
- Investigate light reflection and absorption,
- Study solar energy,
- Monitor monitoring sunrise and sunset times.

ESD50082



ORP Sensor

The ORP sensor BT57i measures the ability of a solution to act as an oxidizing or reducing agent. The sensor consists of an ORP electrode and an amplifier.

Range: -450 mV .. 1100 mV

Resolution (12-bit): 0.5 mV

ORB electrode: sealed, gel-filled, epoxy body,

Ag/AgCl reference

Temperature range: 0 - 600C

Can be used to:

- Measure the oxidizing ability of chlorine in swimming pools,
- Investigate red-ox titration to determine the equivalence point in an oxidation reduction reactions.

ESD50083

NOTE : all * Marked sensors need a sensor cable (IEEE1394-BT)ESP50250, which has to be purchased separate.



**Thermocouple ***

The Thermocouple sensor 0135i measures temperatures in two ranges, which can be selected using the switch. The sensor uses a thermocouple type K, which consists of Chromega and Alomega wires that are welded together to form a measuring junction.

Range: -200.. 1300 °C , -20 .. 110 °C

Resolution (12-bit): 0.39 °C, 0.035 °C

Can be used to:

- Measure the temperature inside a Bunsen burner flame or candles,
- Determine the melting point of copper, bismuth, or other solids,
- Measure temperature in specific heat experiments.

ESD50039

**Temperature Sensor ***

This Temperature sensor BT01 is a low-cost, general-purpose temperature sensor that can be used to measure temperature in the range of -40°C to 140°C, in liquids (water, mild acidic solutions) and air. The sensing element of the sensor is an NTC thermistor, which is positioned in a stainless steel tube. The thermistor is a variable resistor whose resistance decreases non-linearly with increasing temperature.

Range: -20 °C .. 140 °C

Accuracy: 2°C at -40°C, 0.6 at 30°C, 1.8°C at 140°C

Can be used to:

- Monitor indoor and outdoor temperatures,
- Monitor freezing and boiling water,
- Investigate the temperature during endothermic and exothermic reactions,
- Investigate evaporation

ESD50036

**Temperature Sensor**

The Temperature sensor BT84i measures temperature and temperature differences in the range between -18 °C to 110 °C. This sensor uses the solid-state temperature transducer, whose output is linearly proportional to the temperature. The transducer is positioned in the point of a stainless steel tube. In liquids the response of the temperature sensor is quite fast (in between 1.3 and 2.0 s).

Range: -20 °C to 110 °C

Resolution (12-bit): 0.07 °C

Can be used to:

- Monitor indoor and outdoor temperatures,
- Monitor freezing and boiling water,
- Investigate the temperature during endothermic and exothermic reactions,
- Investigate evaporation.

ESD50086

**Salinity Sensor**

The Salinity sensor BT78i measures the salinity of a solution, which indicates the amount of all the salts dissolved in water. The sensor consists of a Salinity electrode and an amplifier.

Range: 0 .. 50 ppt

Resolution (12-bit): 0.02 ppt

Can be used to:

- Measure of salinity of water sources,
- Measure the change in salinity of salt-water as the water evaporates,
- Monitor the rate of reaction in a chemical reaction.

ESD50089

**Turbidity sensor**

The Turbidity sensor BT88i measures the turbidity of water samples in the range between 0 ... 200 NTU. Range: 0 .. 200 NTU

Resolution (12-bit): 0.2 NTU

Includes: one empty cuvette and one cuvette containing 100 NTU Stabl Cal Formalin Standard, which is used to calibrate the sensor.

Can be used to:

- Measure turbidity of a water sample from various locations,
- Determine the rate of settling of a sample,
- Measure the formation of a precipitate.

ESD50090

NOTE : all * Marked sensors need a sensor cable (IEEE1394-BT)ESP50250, which has to be purchased separate.





PH sensor

The pH sensor BT61i is a general-purpose pH measurement system that allows measuring the degree of acidity/pH value. The sensor consists of a pH amplifier and pH electrode. The pH Electrode is not delivered with the pH sensor and has to be purchased separately (Order Code 031).

Range: 0.. 14 pH

Resolution (12-bit): 0.005 pH

Can be used to:

- Measure pH values of different acids and bases,
- Monitor pH in acid-base titration experiments,
- Monitor pH during chemical reactions,
- Investigate of water quality in streams and lakes.

ESD50038



Pressure Sensor

The Pressure sensor BT66i is designed to measure absolute gas pressure. The pressure is measured via a pressure valve, which is located on the side of the box. The sensor has two measurement ranges, which can be selected using a switch.

Range: 0 .. 700 k Pa, 0 .. 130 k Pa

Resolution (12-bit): 0.2 k Pa, 0.04 k Pa Includes: a plastic 20-ml syringe with Lu-er lock, two plastic tubes (5 cm and 45 cm long), a three-way valve with Lu er-lock connectors, two Lu er-lock connectors.

Can be used to:

- Measure pressure changes in gas-law experiments, Boyle's and Gay-Lussac's laws,
- Measure vapour pressure of liquids,
- Measure air pressure for weather studies.

ESD50088



Photo-gate

The Photo-gate BT63i is a traditional photo-gate, which consists of a light gate allowing detecting objects passing between the photo-gate arms. In this light gate, a narrow infrared beam is directed to a fast infrared detector, which produces very accurate signals for timing. The external (laser) gate mode allows detecting objects passing outside the photo gate arms. Includes: a pulley attachment and a steel support rod.

The EduScience Drop counter can be attached to the photo gate for titration experiments (not supplied has to be purchased separately Order Code 0662drop). Up to five photo gates can be chained in a daisy-chain configuration and connected to a single interface input (IEEE1394 cable not supplied, this cable has to be ordered separately Order Code 07662).

Can be used to:

- Count events,
- Measure the speed of a moving (rolling) object (with the pulley attachment),
- Measure volume in titration experiments (with the drop counter attachment),
- Study pendulum periods,
- Measure the acceleration due to gravity (e.g. by using a picket fence).

ESD50091



Drop Counter Attachment for photo-gate

Drop Counter can be attached to photo-gates 0662i, BT63i and ML54f and can be used to record volume (counting drops) in titration experiments. Includes: a drop dispenser, two valves and a tip.

ESD50092



Angle Sensor *

The Angle sensor 013i is a potentiometer, which has a pulley to attach a string to. The sensor is suitable for detecting angle changes and (small) displacements.

Range: 270° (turn), 140 mm (displacement) Resolution (12-bit): 0.07°, 0.03 mm

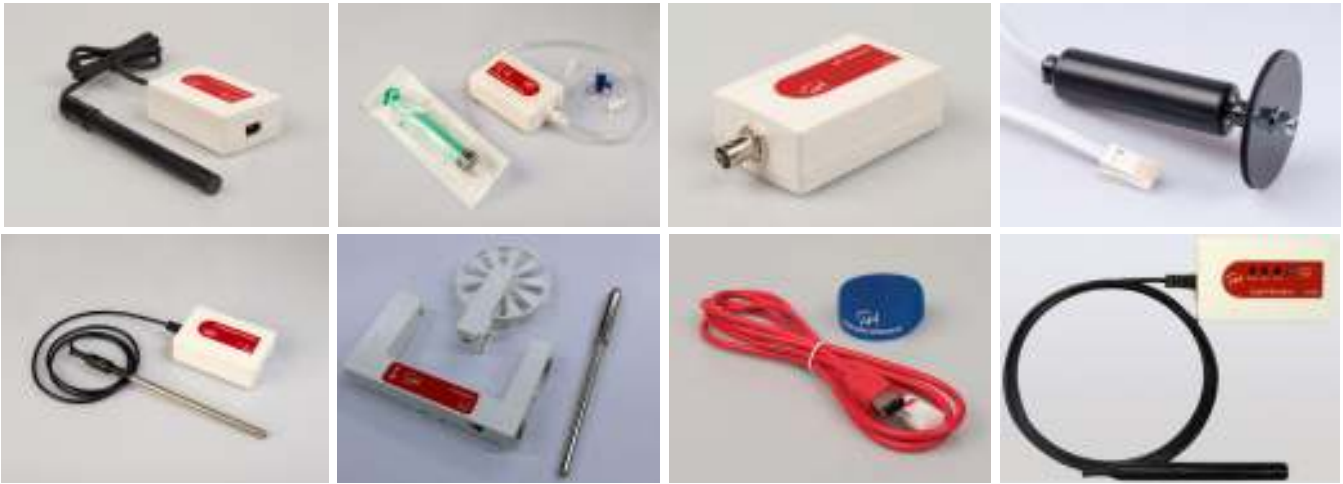
Can be used to:

- Study a pendulum period,
- Measure small displacements,
- Investigate harmonic motion.

ESD50077

NOTE : all * Marked sensors need a sensor cable (IEEE1394-BT)ESP50250, which has to be purchased separate.





Basic Chemistry Sensors Bundle Kit

- Angle (position) Sensor 013i
- Conductivity Sensor BT27i
- Light Sensor BT50i
- pH Sensor BT61i and Electrode 031
- Photo-gate BT63i with Drop Counter 0662drop or Step-motor Burette 061 (suitable only for CoachLab II+)
- Pressure Sensor BT66i
- Salinity Sensor BT78i
- 2 x Temperature Sensor BT01
- 4 Sensor Cables BTsc_4

ESD50093



Chemistry Sensors Extension Bundle Kit

- Colorimeter BT29i
- ORP sensor BT57i
- Thermocouple 0135i
- Turbidity sensor BT88i

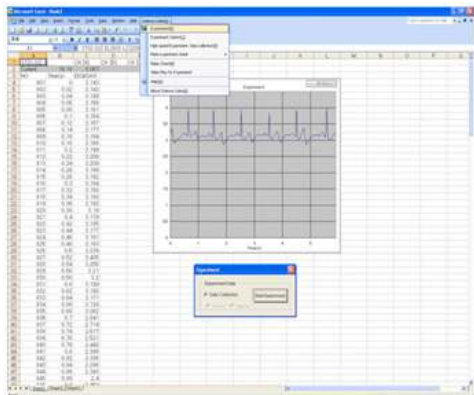
ESD50094



Xlogger system introduction

Xlogger is an innovative new data logging system using direct USB sensors & Excel* for data capture and analysis. Our sensors plug straight into USB ports on any Windows computer. No dedicated software program just Microsoft Excel*

Data is logged directly into Excel* and graphed automatically
 Simple toolbar commands control everything
 Completely intuitive - start logging straight away
 Students work in the familiar Excel* environment
 All the power of Excel* for analysing data is immediately available
 All the standard sensors with new ones being developed
 Simply plug them in and start logging (no calibration needed)
 Robust construction and encapsulated leads



ES Data-logging Software

Xlogger software is a specially designed Add-In to Excel* that recognises the sensors you have plugged in, understands the data being transmitted and allows you to manage the data entering the computer. Once it has been captured the data is 'standard' Excel* data and can be analysed as required.

For full computer software and hardware requirements please visit www.xlogger.com
 Please 'add' this item to your basket and once you checkout and we receive the order you will be emailed a copy of the software.

N.B. Purchase of new or existing Xlogger products is required.

£80.00 Free with XL Logger Sensors.

ESD50014



USB Light Sensor

USB Light Sensor, Measuring Range: 0 - 15,000 Lux

ESD50186



USB PH Sensor

Xlogger PH sensor with probe

ESD50194



USB Oxygen Sensor

Xlogger Oxygen Sensor.
 Range: 0 - 100% Oxygen

ESD50184



USB Turbidity Sensor

Xlogger Turbidity Sensor.
 Range: 0-200 NTU
 Accuracy: ± 2 NTU under 25NTU, $\pm 5\%$ over 25NTU

ESD50189





USB Barometer Sensor

Xlogger Barometer.
Range: 0 to +2068 hPa (Mbar)
Resolution: 0.6 hPa

ESD50188



USB Temperature Sensor

USB Temperature Sensor

ESD50185



PH electrode

The pH electrode 031 is a gel-filled Ag-AgCl combination-electrode in a plastic tube. It has a coax cable, with a BNC connector. It is supplied in a bottle filled with a protective solution. The electrode cannot be refilled.

ESD50242



BT-BT Extension cable (analogue)

A 5-m long cable for extending the length of analogue BT sensor cables.

ESD50247



Adapter 4mm - BT

For connecting sensors with 4-mm plugs to interfaces with BT inputs such as CMES,

ESD50248



Data-Logger stand

Plastic stand for the CMES data-logger.

ESD50249



BT - IEEE1394 cable

The BT - IEEE1394 sensor cable (1.5 m length) is used for BT sensors, which are equipped with the IEEE1394 socket. These sensor cables are sold per piece (BTsc_1) and in packages of four (BTsc_4).

ESD50250



NEW

EduScience Wireless Sensors can be used to measure without an interface. They are simple, user-friendly, and offer more mobility and flexibility. They can be used anywhere without the need for power or wired connections and are suitable for a wide range of student experiments.

Connectivity: The sensors operate wirelessly via Bluetooth or wired via USB and can be used with a variety of

Devices: computers, Chromebooks and mobile devices.

Display: The sensors are equipped with a color OLED screen which displays the battery level and the measured sensor value. This unique feature makes the sensors suitable for use as independent measuring devices.

Battery: The sensors have a large battery capacity and a smart way to save power by automatically turning off when they're not used. They can be used an average of 12 hours without needing to be charged.

work with all platforms on which the ES Data logging Coach software works.

Wireless Temperature Sensor

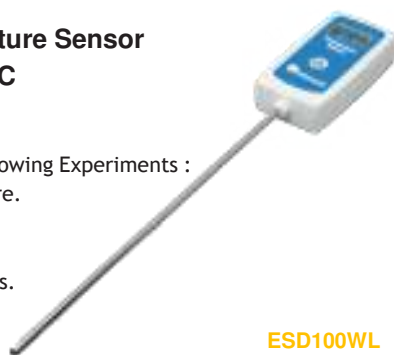
Range:- 40 to 125 C

Range : -40 to 125 C

Resolution : 0.06 C

can be used for the Following Experiments :

- Principle of the mixture.
- Cooling.
- Thermal equilibrium.
- Specific Heat Of Metals.
- Radiation equilibrium



ESD100WL

Wireless Voltage Sensor

Range:- 5v to + 15 v

Measuring Range : - 15 v to + 15 v

can be used for the Following

Experiments :

Ohm's law (Relationship between voltage and current)

Battery charge And discharge

Series/Parallel connection of resistance

The voltage of a solar cell



ESD101VWL



Wireless Current Sensor

Range: - 3.0~+3.0 A

Resolution: 0.5mA The measuring principle of this "Wireless Current Sensor" is that a wire with a unique resistance value is measured using a voltage proportional to the current according to Ohm's law. It can be used for Ohm's law experiment with voltage sensor or for magnetic resistance test of electric resistance or current and since it is a wireless sensor, no connecting cable is needed. Experiment list Ohm's law (relationship between voltage and current) Charge and discharge of battery Voltage of solar cell Making a coin battery Resistance depending on the length and cross-sectional area of the sharp core

ESD102CWL



Wireless Gas Pressure Sensor

Range: -1000~+3000hPa

Resolution: 0.244 hPa

Wireless gas pressure sensor" measures relative values to ambient pressure. When measuring pressure, it

converts to an intermediate form, such as a displacement, which converts the displacement into an electrical output, such as a voltage or current. This wireless sensor does not require a separate cable so that can be used easily in complex experiment environments. Also, it is possible to connect up to 4 sensors at same time, so you can use it with other kinds of sensors together.

Experiment list ; Boyle's Law ; Cloud creation principle

Reaction rate according to acid concentration

Solubility of Gas with Temperature

ESD103DWL



NEW



Wireless PH Sensor

Range : 0~14 pH

Resolution: 0.001 pH

Wireless pH sensor is a sensor that measures hydrogen ion concentration.

It is a principle to determine the pH value from the potential difference between the glass electrode and the reference electrode with two standard solutions that know the pH value.

The Science Cube Wireless pH Sensor does not require a separate connection cable, so it can be easily used in complex experimental environments such as monitoring pH change during neutralization of acid-base, chemical reaction and checking pH in a water tank during photosynthesis.

You can use this sensor for investigation of acid rain and water quality as well. Experiment

list Neutralization

PH measurement of various solutions

ESD104PHWL



Wireless pH with Glass Body (100°C)

Range : 0~14 pH

Resolution: 0.001 pH

Wireless pH sensor is a sensor that measures hydrogen ion concentration.

It is a principle to determine the pH value from the potential difference between the glass electrode and the reference electrode with two standard solutions that know the pH value.

The Science Cube Wireless pH Sensor does not require a separate connection cable, so it can be easily used in complex experimental environments such as monitoring pH change during neutralization of acid-base, chemical reaction and checking pH in a water tank during photosynthesis.

You can use this sensor for investigation of acid rain and water quality as well. Experiment

list Neutralization

PH measurement of various solutions

ESD104PHGLWL



Wireless Force & Acceleration

Sensor Range : -80 to 80 N

can be used for the Following

Experiments :

- Hook's Law
- Frictional force
- The synthesis of two forces
- Action and reaction , - The law of Inertia The principle of a lever
- Impact and momentum ,
- Weight in the water (Buoyant force)

ESD101VWL



Wireless Conductivity Sensor

Range: 0~4 20:000 uS/cm

Resolution: 0.3 uS/cm

The wireless conductivity sensor can measure the conductivity of a solution or the total ion concentration of an aqueous sample.

Conductivity measurement can directly infer the super ion concentration of the sample, even if the specific ion is unknown during the environmental test of the aqueous sample.

Experiment list

Significance of cell division

Electrolytes and non-electrolytes

Neutralization reaction

ESD107ECWL



NEW



Wireless CO2 Gas Sensor

Range: 0~5.000 ppm

Resolution: 2.44 ppm

The wireless CO sensor can measure carbon dioxide in the air or in confined spaces such as botanical gardens and animal kennels. In addition, it is a sensor that can measure the amount of carbon dioxide produced by respiration of small creatures such as crickets by using an experimental tool such as an Erlenmeyer flask. Experiment list Yeast respiration photosynthesis Respiratory rate as a function of temperature Metabolic rate of insects according to temperature Changes in citric acid and sodium bicarbonate

ESD111C02WL



Wireless Oxygen Gas Sensor

Range: 0 ~ 25%

Resolution: 0.01%

The wireless oxygen sensor is a sensor that accurately measures the amount of oxygen in the air or in an enclosed space, The wide range enables any experiment or measurement, and can measure atmospheric air along with carbon dioxide, Experiment list Photosynthesis Plant oxygen

ESD11302WL



Wireless ORP

(Oxygen Reduction Probe) Sensor

Range: -450 ~41,000mV

Resolution: 0.5mV

Wireless ORP sensor ORP sensor is a test device that measures the ratio of oxidation (loss of electrons) and reduction (gain of electrons) of dissolved substances in solution.

The unit is m, and it can be measured together with the pH value of a solution.

Experiment list :Measurement of redox degree Transformation of Coke

ESDORPWL



Wireless Fine Particles Sensor

Range :0~ 500 min

Resolution: 1 am

The wireless fine dust sensor can measure fine dust in the air and simultaneously measure fine dust (10um) and ultrafine dust (2.5um).

Experiment list

Measure whether fine dust is generated when using a gas stove

Measurement of fine dust in the air

Measuring the effect of air purifying plants

Measurement of fine dust according to location

ESD115PMWL



Wireless Electrode Amplifier Sensor

ESD114EWL





Wireless B-Differential Gas Pressure Sensor
Range: -650 ~ 4650 hPa

Resolution: 0.355 hPa

Wireless pressure sensor B has a narrower range than pressure sensor A.

It can measure pressure more accurately, has excellent resolution and is used in chemical experiments where a small amount of gas is generated.

Experiment list

Decomposition of hydrogen peroxide

How clouds are formed

Reaction rate according to surface area

Experiment list

Decomposition of hydrogen peroxide

How clouds are formed

Reaction rate according to surface area

ESD116PWL



Wireless Temperature / Humidity Sensor

Range: 0~100%

Resolution: 2%

Wireless temperature-humidity sensor is a sensor that can measure relative humidity and temperature at the same time. It outputs a voltage according to the relative humidity in the air and detects humidity by air circulation.

Experiment list

Measurement of evaporation rate according to humidity

Observation of optimal growth conditions by relative humidity in greenhouses, etc.

Comparison of static electricity generation according to humidity

ESD117HWL



Wireless Dissolved Oxygen Sensor

Range : 0~50 mg/L

Resolution: 1%

The wireless DO sensor is an optical dissolved oxygen sensor and is a wireless DO sensor for measuring dissolved oxygen in aqueous solution.

Measured values are automatically compensated for temperature, barometric pressure and salinity

Experiment list

Photosynthesis of aquatic plants

Water quality measurement

ESD118DOWL



Wireless Salinity Sensor

Range: 0~ 50 pot

Resolution: 0.02 pot

Experiment list Measuring sea salt level Measuring salinity by season

ESD119SWL



Wireless Thermocouple Sensor

Range: -200 ~ 1200°C

Resolution: 0.6 °C

Experiment list

Flash point measurement

Temperature measurement for inner flame, outer flame and flame core

ESD123TCWL

NEW

Wireless Colorimeter/ Turbidity Sensor

ESD128CTWL





Actuator Set

The Actuator Set 062 can be used to introduce the students to the basics of control technology. The set consists of the following elements: 3 red and 3 black 4-mm wires, 12-V switch, lamp holder with 3 coloured 12-V bulbs, 12-V buzzer, 12-V direct current motor, and propeller to connect to motor. All elements make use of the 4-mm buses.

ESD50258



Switch Module

The Switch Module 063 is a solid-state-relay (SSR) that allows you to control 110 – 230 V devices by a voltage of 3 V DC or more up to 25 V). The relay is connected to the mains (110 V up to 230 V) via a Euro-connector at the rear of the module. The relay can supply devices up to 1150 W.

ESD50259



Heating Coil

The Heating Coil 018 can be used as an actuator in control systems. The coil has 4 mm plugs for easy connection. The Heating Coil has to be supplied with 24 volt or less.

ESD50260



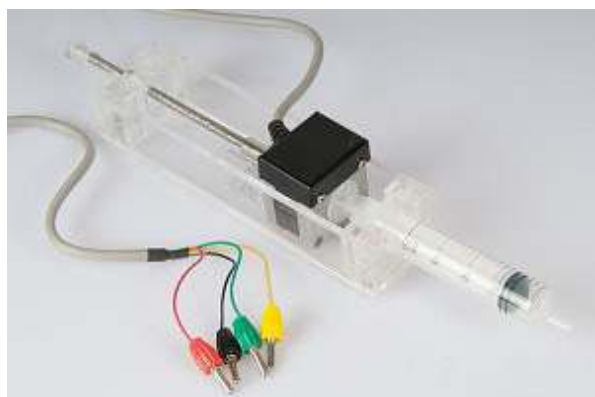
Cuvette for Colorimeter BT29i

ESD50261



Cuvette holder for Colorimeter BT29i

ESD50262



Titrator - Step - Motor Burette

ESD50263





Matter And Its Changes Kit 1

Consist of :

1. Watch Glass Ø 80 mm 1 pc
2. Glass Funnel 75 mm 1 pc
3. Stirring Rod Ø 5 x 150 mm, Glass 2 pcs
4. Measuring Pipette 10 ml 1 pc
5. Measuring Cylinder 10 ml, Glass 1 pc
6. Measuring Cylinder 25 ml, Glass 1 pc
7. Beaker 100 ml 3 pcs
8. Beaker 250 ml 1 pc
9. Volumetric Flask 100 ml 2 pcs
10. Test Tube Ø 25 x 150 mm 1 pc
11. Test Tube Ø 25 x 150 mm with Side Pipe 1 pc
12. Mortar and Pestle, OD Ø 80 1 set
13. Wire Gauze 14 x 14 cm without Ceramic 1 pc
14. Tripod Stand Ø 100 x 80 mm 1 pc
15. Spirit Burner 60 ml, Stainless 1 pc
16. Universal Clamp Ø 70 mm 1 pc
17. Boss head Clamp 1 pc
18. Stand Base with 3 Clamps 1 pc
19. Stand Foot 1 pc
20. Stand Rod Ø10 x 250 mm 1 pc
21. Stand Rod Ø10 x 500 mm 1 pc
22. Alcohol Thermometer -10°C - 110°C 1 pc
23. Analogue Stopwatch 1 pc
24. Dropping Pipette 10.5 cm 2 pcs
25. Pipette Filler 1 pc
26. Rubber Stopper with One Hole, Ø 21/27 mm 2 pcs
27. Wash Bottle 250 ml 1 pc
28. Spatula, Stainless Steel 1 pc
29. Experiment Manual Book 1 exp

Complete with 2 tool holder tray and packed in a firm plastic box

Support Tools (sold separately) :

Balance 311 g 1 set

Dimension : (L) 61.00 x (W) 26.00 x (H) 17.00 cm

Weight : 3.820 kg

ESC54137



Matter And Its Changes Kit 3

Consist of :

1. Watch Glass Ø 80 mm 1 pc
2. Glass Funnel Ø 75 mm 1 pc
3. Glass Stirring Rod Ø 5 x 150 mm 2 pcs
4. Measuring Pipette 10 ml 1 pc
5. Beaker 100 ml 4 pcs
6. Glass Measuring Cylinder 10 ml 1 pc
7. Glass Measuring Cylinder 25 ml 1 pc
8. Volumetric Flask 100 ml 2 pcs
9. Test Tube Ø 16 x 150 mm 6 pcs
10. Mortar and Pestle 1 set
11. Evaporating Basin 75 ml 1 pc
12. Spot Plate 1 pc
13. Wire Gauze 14 x 14 cm without Ceramic 1 pc
14. Tripod Stand, Circular 1 pc
15. Spirit Burner 60 ml, Stainless 1 pc
16. Thermometer Alcohol -10°C - 110°C 1 pc
17. Analogue Stopwatch 1 pc
18. Dropping Pipette 10.5 cm 2 pcs
19. Pipette Filler 1 pc
20. Wash Bottle 250 ml 1 pc
21. Spatula, Stainless Steel 1 pc
22. Test Tube Holder 1 pc
23. Test Tube Brush ? 24 mm 1 pc
24. Test Tube Rack, Plastic 1 pc
25. Experiment Manual Book 1 exp

Complete with 2 tool holder tray and packed in a firm plastic box, Additional tool (sold separately) : Balance 311 g (KNE 23)

Dimension : (L) 61.00 x (W) 26.00 x (H) 17.00 cm

Weight : 3.180 kg

ESC54139



Matter And Its Changes Kit 2

Consist of :

- 1 Watch Glass Ø 80 mm 1 pc
- 2 Glass Funnel Ø 75 mm 1 pc
- 3 Glass Stirring Rod Ø 5 x 150 mm 2 pcs
- 4 Measuring Pipette 10 ml 1 pc
- 5 Beaker 100 ml 3 pcs
- 6 Glass Measuring Cylinder 10 ml 1 pc
- 7 Glass Measuring Cylinder 25 ml 1 pc
- 8 Volumetric Flask 100 ml 2 pcs
- 9 Evaporating Basin 75 ml 2 pcs
- 10 Wire Gauze 14 x 14 cm without Ceramic 1 pc
- 11 Tripod Stand, Circular 1 pc
- 12 Spirit Burner 60 ml, Stainless 1 pc
- 13 Universal Clamp Ø 70 mm 1 pc
- 14 Boss-head Clamp 1 pc
- 15 Ring with Stem, Ø 65 mm 1 pc
- 16 Stand Base with 3 Clamps 1 pc
- 17 Stand Foot 1 pc
- 18 Stand Rod Ø 10 x 250 mm 1 pc
- 19 Stand Rod Ø 10 x 500 mm 1 pc
- 20 Thermometer Alcohol -10 °C - 110 °C 1 pc
- 21 Dropping Pipette 10.5 cm 2 pcs
- 22 Pipette Filler 1 pc
- 23 Wash Bottle 250 ml 1 pc
- 24 Spatula, Stainless Steel 1 pc
- 25 Crucible Tong 250 mm 1 pc
- 26 Magnet Bar 1 pc
- 27 Iron Metal 1 pc
- 28 Copper Metal 1 pc
- 29 Zinc Metal 1 pc
- 30 Ion Compounds Nomenclature Card 1 pack
- 31 Nylon Thread 1 pc
- 32 Experiment Manual Book 1 exp

Complete with 2 tool holder tray and packed in a firm plastic box
Support Tools (sold separately) :

1. Balance 311 g 1 set

2. Periodic System of Elements, 111 Elements 1 pc

3. Distillation Kit 1 set

4. Water Filter Apparatus, Simple 1 set

Dimension : (L) 61.00 x (W) 26.00 x (H) 17.00 cm

Weight : 3.780 kg

ESC54138





Physical Properties Kit

This kit introduces students to the physical properties of a variety of substances, including solid chemicals and solutions. In experiment one, students observe the colour, state of matter, odour, texture, and pH of substances. In experiment two, students determine the solubility and density of the same substances. Includes all required chemicals and substances, vocabulary and symbols worksheets, experiment worksheets, and reproducible laboratory procedures. Chemical symbols for elements and chemical formulas for compounds are introduced. Required, but not included: balance and general laboratory supplies. Designed for 24 students working in six groups of four. Grades 6-11

ESC54140



Characteristics Of Matter

Ten experiments exploring the Characteristics of Matter include: Properties of Matter, States of Matter, Physical Properties of Solids, Physical Properties of Liquids, Melting Point, Boiling Point, Solubility of Solids, Density, Chemical Properties, and Identification of Unknown Solutions. Includes reproducible student labs, reproducible assessment materials for each lab, vocabulary, and complete answer keys. Required, not included: balance, ice, (24) small test tubes, test tube racks, 10 ml graduated cylinders, (6) beakers or clear cups, chemical splash goggles. Allow three one hour lab periods. Designed for 24 students working in groups of four. Meets national standards for grades 5-9.

ESC54136



Chemical Properties Kit

Students test the chemical properties of seven different solutions by mixing them in each possible combination and observing their reactions. Evidence of chemical reactions observed include gas production, colour changes, and formation of precipitates. After becoming familiar with the chemical properties of the solutions, students use this information to identify any of the four unknown solutions. The kit includes all required chemicals, reaction plates, additional bottles for making student group chemical sets, reproducible student procedures, reproducible worksheets, and complete answer keys. Designed for 24 students working in six groups of four. Meets national standards for grades 9-12.

ESC54141

Chemical Properties Refill

ESC54142



Physical And Chemical Properties Kit

This very extensive kit includes chemicals and micro well plates for examining physical properties including the density and specific gravity of solids and liquids, the melting points of solids, the boiling points of liquids, and the colligative properties of mixtures as well as chemical properties including the percent composition of various compounds and properties of transition elements on a micro scale. This kit is all you will need for a complete lab experience on matter; physical and chemical properties for your students. Includes two lab quizzes. Kit contains lead shot. Required, but not included: balance, Bunsen burner, water bath, and standard laboratory supplies. Designed for 24 students working in six groups of four. Grades 9-12

ESC54143





Chemical Equations I Kit

Introduce students to chemical equations as they perform and observe two different single replacement reactions and two different double replacement reactions. Colour changes, precipitate formation, and gas production are observed. The kit includes all required chemicals, a vocabulary exercise, and reproducible worksheets and laboratory procedures. Worksheets give students practice with chemical symbols, naming compounds, valence, and chemical formulas for compounds and radicals (polyatomic ions). Written laboratory exercises give students practice in identifying properties and completing and balancing single replacement and double replacement reactions. All chemicals included, additional laboratory supplies required. Designed for 24 students working in six groups of four. Addresses national standards for grade levels 8-12.

ESC54144



Chemical Equations II Kit

Introduce students to chemical equations as they perform and observe decomposition and synthesis reactions. Changes in chemical and physical properties are observed and the concept that some reactions require heat to proceed is introduced. The kit includes all required chemicals, reproducible procedures, a vocabulary exercise, and reproducible worksheets emphasizing balancing equations, valence, writing chemical formulas, and identifying reactants and products. Required, but not included: Bunsen burner (optional) and general laboratory supplies. Designed for 24 students working in six groups of four. Grades 8-12

ESC54145



Chemical Formulas I Kit

Students experiment to determine the correct chemical formulas for compounds by combining chemicals in various ratios, and observing the combination that produces the greatest amount of precipitate. Using the ratio of the combination, they determine the chemical formulas for the newly formed substances. Includes all required chemicals, vocabulary and chemical formula writing and naming worksheets, data sheets, reproducible procedures, and answer keys. Designed for 24 students working in six groups of four. Grades 7-12

ESC54146

Chemical Formulas I Refill

ESC54147



Chemical Formulas II Kit

Students experimentally determine the correct chemical formulas for compounds by combining chemicals in various ratios and observing the combination that produces the greatest amount of precipitate. Using the ratio of the combination, students determine the chemical formula for the newly formed substances. Includes more challenging stoichiometry than Chemical Formulas I and contains inquiry components. Includes all required chemicals, vocabulary, chemical formula writing and naming worksheets, data sheets, reproducible procedures, and answer keys. Designed for 24 students working in six groups of four. Grades 9-12

ESC54148





Ionic Interaction Kit

This kit provides an introduction to ionic interactions. It gives students exposure to a large number of reactions, allowing maximal observation for a limited amount of time and effort. Includes precipitate forming, gas forming, and non-ionized product forming reactions. The investigation may be extended to teach students a number of additional basic chemical principles: including writing ionic formulas for the products formed; writing ionic interaction equations; relating placement of elements in the periodic table to their reactivity; and developing solubility principles from empirical evidence. Ideal for high school chemistry or physical sciences courses. Follow-up activities are suggested at the end of the instruction manual. Designed for 24 students working in groups of four. Contains cadmium nitrate and lead nitrate. Grade level 9-12.

ESC54149

Ionic Interaction Refill

ESC54150



Water Test (Qualitative Ion) Kit

Learn to test for chloride, nitrate, phosphate, mercury, magnesium, chromate, lead, and carbonate ions, which are indicators of water pollution. The kit includes test solutions containing each of the ions for establishing controls and Universal Indicator solution and a Universal Indicator pH Chart, which may be used for determining water pH. This kit may be used for detecting the presence of polluting ions in any fresh water supply. Required, but not included: sulphuric acid, deionized water, and glassware. Contains lead nitrates. Designed for 24 students working in six groups of four. Grades 9-14

ESC54151



Fluorescent Dye Kit

Here is an attention grabbing method for introducing discussions about the electromagnetic spectrum and light. The set contains blue, green, orange and red fluorescent dyes suitable for colouring water for demonstrations, particularly those performed under black light (ultraviolet radiation of wavelength 320-400nm). The observed colour of conventional pigments and dyes results from their selective absorption and reflection of various wavelengths of light in the visible portion of the spectrum. The appearance of colour is absent when no light source is present. Certain materials have the property of absorbing radiant energy of wavelengths not visible to the human eye (usually 320 to 400 nm), converting them into energy of longer wavelengths, and emitting them as visible light. Materials possessing this property are said to be luminescent. Grades 8-12

ESC54152



Molarity I Kit

Students determine Molarity experimentally using a simple titration method with an indicator solution. This kit includes two experiments, one in which students determine different molarities of an acid and one in which students determine different molarities of a base. Includes reproducible student worksheets for learning to write chemical formulas and to calculate formula mass, concentration, molarity, and molar mass. Kit includes all required chemicals, reproducible procedures for laboratory experiments, worksheets, assessment, and answer keys. Required but not included: goggles, evaporating dishes, and stirring rods. Designed for 24 students working in groups of four.

ESC54153

Molarity I Refill

ESC54154





Reaction Rate Factors I Kit

Four experiments expose students to factors which affect the rate of chemical reactions; heat, concentration, catalysts, and surface area. Using a variety of reactions, including neutralization reactions, and acid base indicators, students are able to time the chemical reactions by observing specific colour changes. The indicators used in these kits provide colourful results which are user friendly for students. The included worksheets focus on factors which affect reaction rates and their commercial significance. Includes all required chemicals, worksheets, reproducible laboratory procedures, and answer keys. Required, but not included: hot water bath, ice bath, and common laboratory supplies. Designed for 24 students working in six groups of four. Grades 9-12

ESC54155



Acids And Bases I Kit

Students are introduced to acids, bases, and the pH scale through lab experiments using indicator solutions and papers commonly used in acid base titration's. In the first experiment, students compare eight test substances using red litmus paper, blue litmus paper, phenolphthalein, methyl orange, bromothymol blue, and phenol red. Then they compare the pH of common substances using Universal indicator solution, Universal indicator paper, and wide range pH paper. Students are asked to compare and contrast the results of these methods. Students observe the relationship between pH, ion concentrations, and the strengths of acids and bases. Students may continue to investigate by testing additional substances with the indicators. Lab activities are written in easy-to-understand, step-by-step format, and include worksheets, assessment materials, and answer keys. Includes small bottles for setting up group stations, and all required chemicals and supplies except goggles, gloves, and distilled water. Designed for 24 students working in groups of four. Meets national standards for grades 7-12.

ESC54156





Ice Melting Kit

This elegantly simple kit challenges student's preconceived notions on concepts of heat and thermodynamics. The melting plates display quizzical properties when an ice cube melts on each plate. The aluminium plate that is cold to the touch melts the ice faster than the plastic foam plate, even though both have equivalent temperatures. A great demonstration for conductivity and heat transfer.

Supplied with instruction manual.

Kit includes:

- 1 aluminium plate (9x9x1 cm)
- 1 plastic foam plate (9x9x1 cm)

ESC54159



Smoke Cell - Whitley Bay

For observation of 'Brownian Motion' in smoke particles. Consists of box with plastic lid as well as flanges that allow easy attachment to standard microscopes. The box contains a smoke cell, cylindrical condensing lens and a 12 volts 3W festoon bulb. Apparatus pre-set to focus the light at correct height. The set is supplied with detailed instructions and a squeeze bottle type smoke generator. Dimensions 90 x 46 x 20 mm

ESC54161



Heat Absorption Radiation Comparator

This apparatus allows demonstration for comparing heat absorption & radiation between dull and black bodies. Comprises of 12 V bulb which acts as a heat source and 2 parabolic metal bodies one finished in black and one in shiny metal. These bodies have 2 thermometer holders attached for temperature readings. Instructions included.

ESC54162



Solids Materials Kit- In Gragnell Storage Tray

It comprises two each of seventeen blocks of different materials.

A variety of materials in the form of rectangular blocks, intended to familiarize students with appearance, 'feel', texture, hardness and density of a range of common substances. Kit comprises two each of seventeen blocks as detailed below.

Blocks, 50 x 40 x 30 mm. Softwood, hardwood, paraffin wax, aluminium, Iron, foamed polystyrene.

Blocks, 20 x 20 x 100 mm. Perspex, glass, slate, aluminium, softwood, Marble

Blocks other sizes: Lead 50 x 50 x 20 mm

Aluminium 50 x 50 x 80 mm

Hardwood 50 x 50 x 200 mm

Brass 20 x 20 x 50 mm

Iron 40 x 40 x 20 mm

ESC54160



Charls Law Apparatus Single

A clear simple way of demonstrating that the volume of a fixed mass of gas is proportional to its absolute temperature. It comprises a Jolly's apparatus on an anodised stand. A scale is marked in mm. Spring clips secure an air reservoir and adjustment is made using a vertical clamping rod. Comes complete with a mercury levelling tube and Jolly air thermometer. The whole is supplied in a strong polished wooden storage box.

Our Charles Law apparatus does not use mercury as this is now deemed as a highly dangerous substance. Supplied with oil bead and ready to use.

0-5N x 0.1, 0-10N x 1 & 200g x 1g

Height 33.5cm x Width 40cm x Depth 1.5cm

Capillary tube 0-20cm reading

Thermometer -10 - 100 degrees centigrade

ESC54158

Charls Law Apparatus Pk Of 10

ESC54157





Statistics: Precision and Accuracy

Use a variety of basic volumetric measuring techniques to distinguish between precision and accuracy, while identifying an unknown liquid by its density. Students work as analytical chemists to learn the importance of measurement reproducibility. Lessons include statistical analysis calculations of mean, standard deviation, and relative error. Students address the Inquiry Question: How is a physical constant used to verify the precision of a measuring tool Ideal for AP Chemistry, Chemistry I or II, or Honours Chemistry. Glassware is included in the Enhanced Kit (16-101B). Kit designed to exceed 2013 AP Next Generation National Standards. State of the Art instructor's Manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Recommended: analytical balance; not included. Meets AP Science Practice 2. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54235



Statistics: Precision and Accuracy With Glass Ware

Use a variety of basic volumetric measuring techniques to distinguish between precision and accuracy, while identifying an unknown liquid by its density. Students work as (analytical chemists) to learn the importance of measurement reproducibility. Lessons include statistical analysis calculations of mean, standard deviation, and relative error. Students address the Inquiry Question: How is a physical constant used to verify the precision of a measuring tool Ideal for AP Chemistry, Chemistry I or II, or Honours Chemistry. Glassware is included in the Enhanced Kit (16-101B). Kit designed to exceed 2013 AP Next Generation National Standards. State of the Art instructor's manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Recommended: analytical balance; not included. Meets AP Science Practice 2. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54236



Spectrophotometric analysis Of Copper: Beers Law

Explore the interaction of light with copper ions in solution using photons from the visible portion of the electromagnetic spectrum. Students examine the relationship between transmittance, absorbency and solution concentration using Beers Law ($A = \epsilon b \cdot C$) after determining Max. Fulfil the AP chemistry requirement for using a Spectrophotometer and learn to perform serial dilutions. Includes an inquiry based extension for determining the amount of copper in a penny (nitric acid not included). Experiments are adjustable to fit your lab period; minimal prep time. Ideal for AP or Honours Chemistry. Kit designed to exceed 2013 AP Next Generation National Standards. State of the Art instructor's manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Requires additional equipment: spectrophotometers, 10mL volumetric flasks, 1mL pipettes. Meets AP Science Practices: 2, 3 & 5. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54237



Synthesis and Gravimetric Analysis Of Cobalt Oxalate Hydrate

Students will enjoy this lab as they experience multiple techniques required for AP chemistry; synthesizing cobalt oxalate hydrate by precipitation, gravimetric analysis

by dehydration, and oxidation-reduction (red-ox) titration on a unique compound. Experiments are well delineated and can be easily adjusted to fit your lab period: minimal prep time. State of the Art instructors manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: analytical balance, burette, Bunsen burners, standard laboratory glassware. Meets AP Science Practices 2 & 7. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54238





Acid Base Titration: an Inquiry Investigation

Students standardize a sodium hydroxide titrant with a primary standard, KHP; then find the concentration of an unknown acid solution. Ideal for fulfilling the AP

Chemistry Inquiry requirements as students investigate: What is the mass percent of citric acid in a piece of candy such as a Sour Patch Kid, Warhead, Smartee, Or Sweet Tart Minimal prep time and easily adapted to shorter lab periods. Ideal for AP or Honours Chemistry. State of the Art instructor's manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: stir plates, burette, 250 & 500mL volumetric flasks, 1mL pipette, pH meter (optional). Meets AP Science Practices 2 & 3. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54239



Separating Substances by Adsorption Chromatography

Students learn the fundamentals of thin-layer chromatography (TLC), polarity, and intermolecular forces as they separate dyes on silica gels using predetermined solvent mixtures. In an inquiry exercise, students analyse their experimental results and propose unique solvent proportions to improve the chromatography system. After each lab group runs a newly designed experiment, all results are shared and analysed to determine the best solvent mixture for dye separation. Ideal for AP Chemistry, Chemistry I, Chemistry II, or Honours Chemistry courses. State of the Art Instructor's Manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations and an answer key. Additional equipment required: standard laboratory supplies. Meets AP Science Practices 1 & 5. Grades 10-14

ESC54240



Stoichiometry: Reactions With Copper Compounds

Perform four quantitatively different reactions utilizing copper compounds. Identify reaction type, determine mole ratios experimentally, identify limiting reactants, and determine percent yield. The reaction series provides experience synthesizing ionic compounds, a coordination complex, and elemental copper. Ideal for AP Chemistry or Honours Chemistry. State of the Art instructor's manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: fume hood, vacuum filtration (recommended), hot plates, balances and basic laboratory supplies. Meets AP Science Practices 2 & 6. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54241



Stoichiometry: Mole Ratio Of An Unknown

This unique, hands-on lab shows students how to treat heat as a quantitative product, using continuous variation (Jobs method). The reagent combination used provides reliable results far superior to competitor kits. State of the Art instructor's manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Minimal prep time; easily adapted to shorter lab periods. Suitable for Honors and AP chemistry. Additional equipment required: glassware, thermometers, and Styrofoam cups. Meets AP Science Practices 2, 3 & 5. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54242





Using Colligative Properties To Determine The Molar Mass Of An Unknown

Students investigate all aspects of freezing point depression including: solvent freezing constant, Vant Hoff factor, and molar mass. Fulfill the AP required inquiry component while determining important applications of freezing point depression in everyday life. Direct students to design an experiment to resolve: What is the lowest temperature at which road treatment containing calcium chloride would be effective, Includes multiple solvents and solutes, both ionic and molecular. State of the Art instructor's manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: hot plates, analytical balances, thermometers, and basic lab supplies. Meets AP Science Practices 2, 3 & 5. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54243



Determining Molar Mass Using The Ideal Gas Equation

This unique hands-on method of exploring gases allows students to compare properties of real and ideal gases (based on KMT assumptions) as they determine the molar mass of a volatile solvent. Students manipulate volume, temperature and pressure while using the ideal gas equation to compute moles of gas. Ideal for Honours or AP Chemistry. State of the Art instructor's manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: hot plates, balances, ring stands, glassware, and basic lab supplies. Meets AP Science Practices 1, 2 & 5. Designed to accommodate 24 students working in groups of two. Grades 10-14

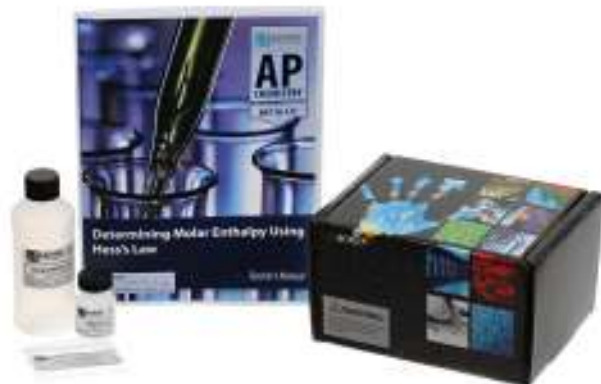
ESC54244



Reaction Rate And Order

Using this superior reagent system, students are able to generate highly reproducible results from an iodine clock reaction. Students determine factors that affect reaction rates as they vary reactant concentrations, measure rates, calculate reaction orders, and calculate reaction rate constants. Activation Energy is also determined utilizing the logarithmic form of the Arrhenius equation by plotting temperature and reaction rate. State of the Art instructor's Manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: stop watch, pipette, lab glassware. Meets AP Science Practices 1, 2 & 4. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54245



Determining Molar Enthalpy Using Hess's Law

This calorimetry lab uses reliable reactions as students measure temperature changes, determine the calorimeter constant and ultimately calculate the molar enthalpy of formation for magnesium oxide using Hess's Law. Students compare lab results to standard values. Ideal for Honours or AP Chemistry. State of the Art instructor's Manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Procedures can easily be divided or used as collaborative lessons. Additional equipment required: thermometers, balances, basic lab supplies, and Styrofoam cups. Meets AP Science Practices 2 & 7. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54246





Le Chateliers Principle

Students create and analyse four different equilibrium systems, allowing manipulation of a variety of stresses to show how systems respond by shifting in the direction that reduces stress. Students vary temperature, alter the pH of a weak acid indicator, use silver ions to draw chloride from a complex ion by precipitation, and design a set of conditions for optimum yield. Students make predictions and test their hypotheses. State of the Art instructor's Manual features background material, easy to follow stepwise protocols, assessment questions, sample data, and an answer key. Ideal for AP Chemistry, Chemistry II, or Honors Chemistry. Standard lab equipment and fume hood required. Experiments are readily adjustable to fit your lab periods. Meets AP Science Practices 6 & 7. Designed to accommodate 24 students working in groups of two.

ESC54247



Identifying Weak Acids By PKA

Students perform titration on weak acids while measuring pH, perform qualitative analysis by determining PKA values of acids, perform quantitative analysis by calculating molar masses, confirm the identities of weak acids, and derive and use the Henderson-Hasselbalch equation. Features four different weak acid solids; three monoprotic, one diprotic. Ideal for two 45 minute lab periods. State of the Art Instructors manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: pH meter, Burette, pipettes, and volumetric flasks. Meets AP Chemistry Science Practices 2, 5, and 6. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54248



Preparing Buffer Solutions And Determining Their Properties

Students utilize the Henderson-Hasselbalch equation in analysing buffers. After being assigned one of the three buffer systems, pH, and component acids, bases or conjugates, students construct a buffer and test it based on their own calculations. Students compare the pH changes of their buffer to those of distilled water and other solutions. Minimal prep time required. State of the Art instructor's Manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: pH meter, glassware. Meets AP Science Practices 4 & 7. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54249



Determining The Equilibrium Constant (and Temperatures Effect) Withbeers Law

Loaded with important concepts and techniques for the AP chemistry student; determine the equilibrium constant using Le Chatelier's Principle and Beer's Law (using spectrophotometry) to determine equilibrium concentrations of reactants and products. Addresses the inquiry question: What is the effect of temperature on the equilibrium constant? Minimal prep time; easily adapted to three shorter lab periods. State of the Art instructor's manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: spectrophotometers, glassware, and thermometers. Meets AP Science Practices 2 & 7. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54250





Electrochemical Cells Voltaic And Electrolytic

Analyse oxidation-reduction (red-ox) reactions and become familiar with the activity series of metals and its importance in predicting the products of replacement reactions. Students test both Voltaic and Electrolytic cells, and predict and measure cell voltages. Lessons include learning to separate oxidation-reduction (red-ox) reactions into half reactions, as well as identifying both anode and cathode activity. Minimal prep time required. State of the Art instructor's manual features background material, easy to follow stepwise protocols, assessment questions, sample data, modelled calculations, and an answer key. Additional equipment required: a DC VOLTMETER, glassware. Meets AP Science Practices 3 & 7. Designed to accommodate 24 students working in groups of two. Grades 10-14

ESC54251



Ap Chemistry Series (Includes Kit ESC54235)

The EduScience AP Chemistry Series includes 16 labs designed to meet the essential laboratory requirements of an AP Chemistry course. As a series, these labs address the 2013 Essential Knowledge, Science Practices, and Learning Objectives established by the AP College Board. Six labs incorporate specific Inquiry components and all labs contain instructions for optional inquiry adaptations. For planning purposes, each manual contains a complete breakdown of the AP Framework correlations for each of the 16 lab experiments. Grades 10-14

ESC54252



Ap Chemistry Series (Includes Kit ESC54236)

The EduScience AP Chemistry Series includes 16 labs designed to meet the essential laboratory requirements of an AP Chemistry course. As a series, these labs address the 2013 Essential Knowledge, Science Practices, and Learning Objectives established by the AP College Board. Six labs incorporate specific Inquiry components and all labs contain instructions for optional inquiry adaptations. For planning purposes, each manual contains a complete breakdown of the AP Framework correlations for each of the 16 lab experiments. Grades 10-14

ESC54253





Ge Filtration: Plant Pigments

This gel filtration technique allows students to take advantage of differences in molecular size and structure to separate plant pigments using chromatographic columns. Students pack their own Sephadex G-25 chromatographic columns. They observe the separation of anthocyanin, carotene, chlorophyll and xanthophyll from a mixture of these pigments. This separation is due to differences in size as well as the presence of aromatic and cyclic compounds. The greater the number of rings in the pigments, the greater the affinity of the pigments for the gel granules. Columns may be re-used. Required, but not included: beet, spinach, and coleus leaves, balance, lab glassware and supplies. Designed for 24 students working in six groups of four. Grades 10-14

ESC54310



Chromatography Paper Roll G N 1

High-quality paper suitable for general analytical separations, electrophoresis, or chromatography requirements for educational use.

- 10 mm ESC54311
- 20 mm ESC54312
- 50 mm ESC54313
- 100 mm ESC54314
- 150 mm ESC54315



Chromatography Paper Sheet G N 1

No. 1, Chromatography Filter Paper sheet, Pack of 100.

- Size 25x25cm ESC54316
- Size 10x30cm ESC54317
- Size 20x20cm ESC54318
- Size 46x57cm ESC54319



Chromatography Tank With Lid

Transparent rectangular jars Size 22.5x20x20 cm. For chromatography purpose use. Supplied with glass lid

ESC54324



Simple Chromatography Kit

This exceptional introduction to paper chromatography, students learn how chromatography can identify the makeup of organic and inorganic substances. Students perform experiments to compare the effects of different solvents on the separation of chlorophyll extract and dyes into their constituent components.

ESC54325





Drop Neutralization Kit

A great way to teach the principles of acid base titration to students with a limited laboratory background. Eliminates the need for expensive laboratory equipment for teaching titration, and includes all necessary materials alleviating extensive lab preparation. Ideal for leading into discussions about titration, acids, bases, pH, buffers, or environmental or physiological buffering systems in a range of science applications from Biology to Environmental Sciences to Physiology. Kit includes instructor's manual with background information, assessment materials, an answer key, and enough materials for 24 students working in six groups of four. Meets national standards for Grades 8-12.

ESC54359



Stoichiometry Kit

Explore the types of chemical reactions, mole ratios, and stoichiometric equivalents which are central to all chemical calculations. Students perform a series of experiments including an electro-chemistry decomposition reaction, single replacement reactions, and double replacement reactions. Students are encouraged to predict possible products, as well as write and balance equations representing the reactions. Students will discover the quantitative nature of chemical equations and the experimental basis of numerically balancing coefficients. Includes a lab quiz. Kit includes all required chemicals and supplies for performing experiments on a micro-scale. Kit contains lead nitrate. Required, but not included: 9V batteries with clips and leads. Designed for 24 students working in six groups of four. Grades 9-12

ESC54360

Stoichiometry Refill

ESC54361



Acids , Bases And Salt , Micro-chem Kit

Students engage in three experiments to investigate the properties of acids, bases, and salts. First students use five solution indicators to explore the pH of acids and bases. Then they experience a micro-titration procedure for reacting acids and bases to form salts and learn the difference between strong and weak acids and bases. They also learn how a titration curve shows the endpoint or neutralization point for indicators. Finally, students apply the techniques they've learned to determine the concentration of acetic acid in household vinegar by titrating the weak acid with a strong base and using a phenolphthalein indicator. Includes all necessary chemicals and micro supplies for investigations. Required, but not included: distilled water. Designed for 24 students working in six groups of four. Grades 9-12

ESC54362

Acids , Bases And Salt , Micro-chem Refil

ESC54363



Basic Microchemistry, Single Kit

Basic Microchemistry includes all laboratory supplies required to perform the following five experiments chemistry labs in micro-scale: Mole Ratios, Catalysts, Rates of Reaction, Equilibrium, and Titration's. These sets provide an economical solution for increasing lab hour requirements with inexpensive, reusable supplies, reduced chemical costs, and easy clean up. You will need to supply small amounts of standard laboratory chemicals. Each single kit is ideal for two students. Class sets supply 24 students working in pairs. Student manuals feature stepwise protocols, clear instructional diagrams, and questions for assessment. Instructor's manuals are complete with answer keys.

ESC54364





Basic Microchemistry, Class Pack Kit

Basic Microchemistry includes all laboratory supplies required to perform the following five experiments chemistry labs in micro scale: Mole Ratios, Catalysts, Rates of Reaction, Equilibrium, and Titrations. These sets provide an economical solution for increasing lab hour requirements with inexpensive, reusable supplies, reduced chemical costs, and easy clean up. You will need to supply small amounts of standard laboratory chemicals. Each single kit is ideal for two students. Class sets supply 24 students working in pairs. Student manuals feature stepwise protocols, clear instructional diagrams, and questions for assessment. Instructor's manuals are complete with answer keys.

ESC54365



Advanced Microchemistry, Single Kit

Advanced Microchemistry includes all laboratory supplies required to perform the following ten experiments chemistry labs in micro-scale; Mole Ratios, Catalysts, Rates of Reaction, Equilibrium, Titration, Acids & Bases, Reduction of Hydrogen Sulphide, Reduction of Copper Oxide, Electrochemical Cell, and Decomposition of Water by Electrolysis. These sets provide an economical solution for increasing lab hour requirements with inexpensive, reusable supplies, reduced chemical costs, and easy clean-up. You will need to supply small amounts of standard laboratory chemicals. Each single kit is ideal for two students. Class sets supply 24 students working in pairs. Student manuals feature stepwise protocols, clear instructional diagrams, and questions for assessment. Instructor's manuals are complete with answer keys. Grades 9-12

ESC54366



Advanced Microchemistry, Class-pack

Advanced Microchemistry includes all laboratory supplies required to perform the following ten experiments chemistry labs in micro-scale; Mole Ratios, Catalysts, Rates of Reaction, Equilibrium, Titration, Acids & Bases, Reduction of Hydrogen Sulphide, Reduction of Copper Oxide, Electrochemical Cell, and Decomposition of Water by Electrolysis. These sets provide an economical solution for increasing lab hour requirements with inexpensive, reusable supplies, reduced chemical costs, and easy clean up. You will need to supply small amounts of standard laboratory chemicals. Each single kit is ideal for two students. Class sets supply 24 students working in pairs. Student manuals feature stepwise protocols, clear instructional diagrams, and questions for assessment. Instructor's manuals are complete with answer keys. Grades 9-12

ESC54367





Molecular Model

Can be used to explain elementary organic and inorganic compound structures.

Overall size : 23 x 17 x 3.5 cm, Material : Plastic

Showing different bonding types It contains different colour balls indicating different atoms, All of the parts fit neatly into plastic storage box Complete with manual instruction

Consist of :

1. Carbon Black 13 pcs
2. Hydrogen White 26 pcs
3. Sulphur Yellow 1 pc
4. Nitrogen Blue 3 pcs
5. Oxygen Red 13 pcs
6. Halogen Green 6 pcs
7. Medium connector Grey 26 pcs
8. Long flexible connector Grey 12 pcs
9. Short connector White 34 pcs

Dimension : (L) 23.00 x (W) 17.00 x (H) 3.50 cm

Weight : 0.500 kg

ESC54388



Molecular Model Diamond

Ideal for demonstrate diamond molecular structure.

Material : Plastic.

Consist of 30 plastic balls with 4 holes and 40 medium connectors, represents as carbon atoms and bonds.

All parts are packed in a plastic box for storage while not in use.

Complete with manual instruction

Dimension :(L) 23.50 x (W) 17.50 x (H) 3.50 cm

Weight :0.445 kg

ESC54389



Molecular Model, Graphite

Ideal for demonstrate diamond molecular structure.

Material : Plastic

Consist of 57 plastic balls with 5 holes, 69 medium connectors (grey), and 14 long connectors (purple) represents as carbon atoms and bonds , All parts are packed in a plastic box for storage while not in use

Complete with manual instruction

Dimension :(L) 23.20 x (W) 17.00 x (H) 3.50 cm

Weight :0.480 kg

ESC54391



Molecular Model, Fullerene C-60

Ideal for demonstrate fullerene (C-60) molecular structure.

Material : plastic.

Consist of 60 plastic balls with 4 holes and 90 medium connectors, represents as carbon atoms and bonds.

All parts are packed in a plastic box for storage while not in use.

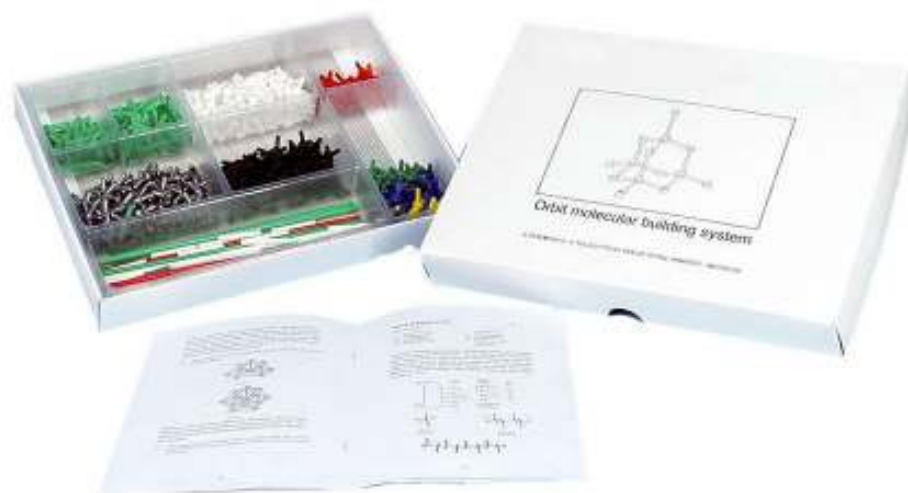
Complete with manual instruction.

Dimension :(L) 23.50 x (W) 17.00 x (H) 7.00 cm

Weight :0.700 kg

ESC54390





Molecular Model Orbit System, Basic

Showing different bonding types. Can be used to explain organic and inorganic compound structures, including crystal structures. It contains different colour balls with different quantity of legs, indicating different atoms.

Material : plastic.

All of the parts fit neatly into compartmentalized box.

Complete with manual instruction.

Set of Molecular Model Orbit System, consist of :

- | | |
|--|--|
| 1 Oxygen Type a Red 15pcs Legs 1pc | 16 Metal Type q3 Grey 80pcs Legs 3pcs |
| 2 Halogen Type a Green 15pcs Legs 1pc | 17 Bonding pegs x Translucent 10pcs Legs 1pc |
| 3 Hydrogen Type a White 120pcs Legs 1pc | 18 Plastic straw 4 x 210 mm Grey 3 |
| 4 Hydrogen Type b White 50pcs Legs 2pc | 19 Plastic straw 4 x 210 mm Green 5 |
| 5 Sulphur Type c Yellow 25pcs Legs 2pc | 20 Plastic straw 4 x 210 mm Red 3 |
| 6 Oxygen Type d Red 30pcs Legs 2 | 21 Plastic straw 4 x 210 mm White 5 |
| 7 Carbon Type j Black 50pcs Legs 3pcs | 22 Plastic straw 4 x 120 mm Clear 3 |
| 8 Nitrogen Type j Blue 15pcs Legs 3pcs | 23 Plastic straw 4 x 35 mm Green 350 |
| 9 Carbon Type k Black 78pcs Legs 4pcs | 24 Plastic straw 4 x 20 mm Green 140 |
| 10 Nitrogen Type k Blue 5pcs Legs 4pcs | 25 Plastic straw 4 x 35 mm White 45 |
| 11 Oxygen Type k Red 21pcs Legs 4pcs | 26 Plastic straw 4 x 50 mm White 30 |
| 12 Sulphur Type k Yellow 5pcs Legs 4pcs | Dimension :(L) 31.00 x (W) 22.50 x (H) 4.50 cm |
| 13 Halogen Type l Green 30pcs Legs 6pcs | Weight :0.600 kg |
| 14 Metal Type l Grey 30pcs Legs 6pcs | |
| 15 Metal Type q6 Grey 40pcs Legs 6pcs (reel shape) | |

ESC54392



Biochemistry Student Kit

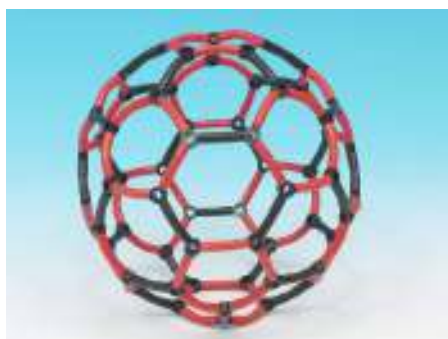
Learn about amino acids; monosaccharides, glycerol, fatty acids, steroids, purines and pyrimidines, peptides, disaccharides, lipids, nucleosides, nucleotides, proteins, polysaccharides, nucleic acids.

Advanced student set in pocket-sized plastic container.

255 atoms, 220 bonds, 44 page booklet covers the above structures.

ESC54401





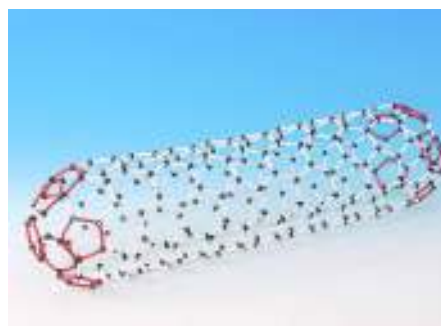
Carbon 60 Model

Carbon 60 is the nearly spherical football-shaped molecule consisting of 60 carbon atoms. It is also known as the Buckyball and is the most stable example of the fullerene.

This Colour-wave model kit shows the highly symmetrical structure of Carbon 60. It is composed of 12 pentagons and 20 hexagons with alternating double and single bonds illustrated by different colour tubes in the model.

Part of the Orbit Colour-wave series, the model is easy to assemble and robust with sufficient atoms to see the relationships between structure and physical properties. Different coloured tubes illustrate the different types of bonding

ESC54393



Carbon Nano-tube Model

Carbon nano-tubes are currently one of the most intensively studied nano-materials with their unique molecular structure resulting in several potential exciting applications in current day nano-science.

Using this kit you can make a graphite sheet, carbon nano-tube, carbon 60 (buckyball) and related structures with up to 260 carbon atoms.

Instructions show how the carbon atoms can be arranged to illustrate the different symmetries of carbon rings in the nano-tube to create the chair, zigzag and chiral structures.

The kit uses the Minit molecular building system and contains 260 atoms to make a nano-tube model 50cm long.

ESC54394



Copper Model Kit

Robust model containing sufficient atoms to see the relationships between structure and physical properties. Easy-to-build, low-cost kits, students learn as they follow the building instructions and model description.

Shape: Irregular | Height: 17cm | 38 copper atoms

ESC54395

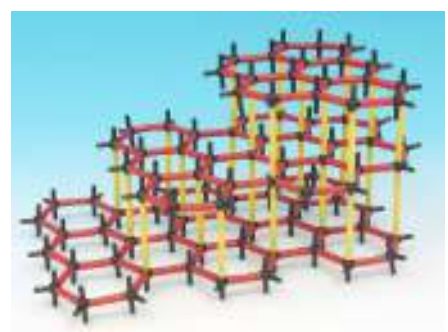


Diamond Model Kit

Robust model containing sufficient atoms to see the relationships between structure and physical properties. Easy-to-build, low-cost kits, students learn as they follow the building instructions and model description.

Shape Octahedron | Height 22cm | 84 carbon atoms

ESC54396

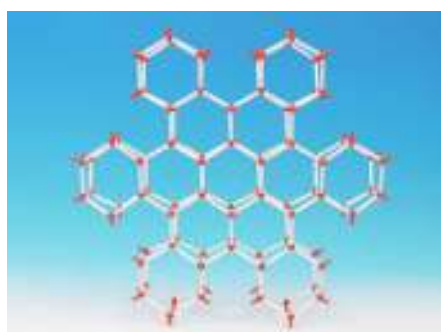


Graphite Model Kit

Robust model containing sufficient atoms to see the relationships between structure and physical properties. Easy-to-build, low-cost kits, students learn as they follow the building instructions and model description.

Shape Three layers | Height 16cm; Width 22cm | 94 carbon atoms

ESC54397



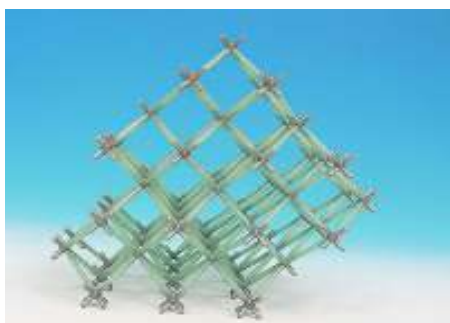
ICE Model Kit

Robust model containing sufficient atoms to see the relationships between structure and physical properties. Easy-to-build, low-cost kits, students learn as they follow the building instructions and model description.

Shape: Snowflake | Diameter: 36cm | 96 oxygen atoms

ESC54398





IRON Model Kit

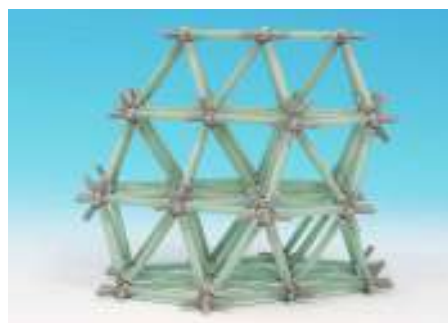
Robust model containing sufficient atoms to see the relationships between structure and physical properties. As easy-to-build, low-cost kits, students learn as they follow the building instructions and model description.

Shape: Irregular

Height: 20cm

71 iron atoms

ESC54399



Magnesium Model Kit

Robust model containing sufficient atoms to see the relationships between structure and physical properties. Easy-to-build, low-cost kits, students learn as they follow the building instructions and model description.

Shape: Irregular | Height: 14cm | 38 magnesium atoms

ESC54400



Inorganic Organic Student Kit

14 hydrogen (I), 6 carbon (IV), 7 oxygen (II, IV), 3 nitrogen (III, IV), 2 sulphur (II, VI), 2 phosphorus (III, V), 6 halogen (I), 8 metal (I, II, III, IV, VI), 4 brown (III, IV, V, VI), 3 lone pair 2D paddles (beige) Links: 20 medium (grey), 5 medium (purple), 12 long flexible (grey)

ESC54402



Vibrating Atom Kit

This vibrating atom model formally demonstrates how atoms making up a solid (e.g. a crystal) are held together by spring-like forces.

Hold the model at arm's length and shake lightly, and pupils will see the individual atoms vibrate and move independently due to the springs holding them together. They will also notice that they remain in the same formation within the model, as they do in a solid.

Best used for demonstration purposes due to the ease with which the springs can be bent or misplaced.

Comprises 9 white ball atoms arranged in a 3 x 3 x 3 lattice, connected by 54 springs. Dimensions: 185 x 185 x 185 mm

ESC54408



Organic Student Kit

20 hydrogen (I), 12 carbon (IV), 6 oxygen (II), 4 nitrogen (III, IV), 2 sulphur (IV, VI), 1 phosphorus (IV), 4 halogen (I), 1 metal (I) Links: 26 medium (grey), 12 long flexible (grey), 26 short (white), 1 short link remover tool

ESC54404



Advance Chemistry Kit

18 hydrogen (I), 8 carbon (IV), 7 oxygen (II, IV), 4 nitrogen (III, IV), 6 chlorine (I), 6 fluorine (I), 3 sulphur (II, IV, VI), 2 boron (III, IV), 4 phosphorus (III, IV, V, VI), 6 metal (II, III, IV, VI), 3 lone pair 3D lobes (beige) Links: 26 medium (grey), 5 medium (purple), 12 long flexible (grey)

ESC54406





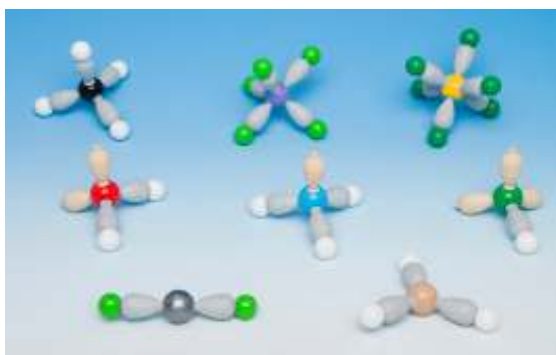
Inorganic Organic Teacher Kit

Designed to make a wide range of open type models, such as amines, inorganic acids, metal oxides and simple organic structures.

Spheres: 4 metal (1 hole), 3 metal (2 holes), 2 metal (3 holes), 4 metal (4 holes), 1 metal (6 holes), 14 carbon (4 holes), 6 carbon (5 holes), 12 hydrogen (1 holes), 2 hydrogen (2 holes), 6 nitrogen (4 holes), 4 nitrogen (3 holes), 13 oxygen (2 holes), 4 oxygen (4 holes), 5 oxygen (1 holes), 8 sulphur (2 holes), 4 sulphur (4 holes), 1 sulphur (6 holes), 4 phosphorus (4 holes), 1 phosphorus (5 holes), 2 phosphorus (3 holes) and 8 halogen (1 holes).

Links: 38 grey medium, 12 purple medium, 36 long flexible. Atomic orbitals: 6 pink unhybridised p-lobes, 6 purple unhybridised p-lobes, and 6 lone pair of electrons lobes.

ESC54403



Shapes Of Molecules Electron Repulsion Theory

This set contains sufficient parts to make eight atomic models. Each model is an example of the different orientations of the bonds and cover coordination numbers 1 to 6. Lone pairs are represented by brown spheres or brown pear shaped parts. The latter is useful as protonated models of NH_4^+ and H_3O^+ may be built thus demonstrating Acid/Base theory.

Spheres: 1 carbon (4 holes), 1 oxygen (4 holes), 1 nitrogen (4 holes), 1 sulphur (6 holes), 1 phosphorous (5 holes), 1 chlorine (4 holes), 1 boron (3 holes), 1 metal (beryllium) (2 holes), 7 chlorine (1 holes), 9 fluorine (1 holes), 13 hydrogen, 6 circular lone pair orbitals, 6 pear shaped lone pair orbitals. Links: 26 grey pear shaped sigma bonds, 6 short links (to be used with circular lone pairs).

ESC54407



Sodium Chloride Model Kit

Self-assembly kit

ESC54409



Organic Teacher Kit

The TEACHER organic set can be used to make any number of simple molecules and is designed for those needing to make many models, such as teachers and lecturers.

The atom parts are made of solid plastic spheres and are available with from 1 - 6 holes in the usual angular orientations.

The contents are contained within a sturdy plastic storage box.

The contents of the organic teacher set include;

Atoms:

- 24 carbon atoms (black, 4 hole, tetrahedral)
- 6 carbon atoms (black, 5 hole, trigonal bipyramidal)
- 2 carbon atoms (black, 2 hole, linear)
- 6 carbon atoms (black, 3 hole, trigonal)
- 12 oxygen atoms (red, 2 hole, angular)
- 40 hydrogen atoms (white, 1 hole)
- 4 nitrogen atoms (blue, 4 hole, tetrahedral)
- 1 sulphur atom (yellow, 4 holes, tetrahedral)
- 1 sulphur atom (yellow, 2 holes, angular)
- 4 phosphorus atoms (purple, 4 hole, tetrahedral)
- 8 halogen atoms (green, 1 hole)
- 2 metal atoms (grey, 1 hole)
- 1 metal atom (grey, 2 holes, angular)

Bonds:

- 55 medium links (grey, single bonds)
- 25 long flexible links (grey, double/triple bonds)
- 60 short links (white, all bond types)
- 6 pink unhybridised p-lobes, 6 purple unhybridised p-lobes and 6 lone pair of electrons lobes.

Tool:

- 1 tool (used for disassembling models containing short link bonds)

ESC54405



Zinc Sulphide Model Kit

45 atom self-assembly kit

ESC54410





Families Of Elements I Kit

Students are introduced to families (groups) within the periodic table that have the same number of electrons in their outer energy orbitals. Tests are conducted to determine if those elements have similar chemical activity. This kit includes two experiments, one in which students determine the reactivity of the non-metals in the halogen family and one in which they observe the properties of oxygen. Worksheets focus on identifying characteristics of elements within the halogen, oxygen and nitrogen families, separation methods, and the observed chemical reactions. Kit includes all required chemicals, reproducible procedures for laboratory experiments, a test, and answer keys. Required, but not included: chemical ventilation hood, general lab supplies. Includes nitric acid. Designed for 24 students working in six groups of four. Grades 9-12

ESC54446



Elements, Compounds & Mixtures I Kit

In the laboratory, students identify that a mixture can be separated using one of a variety of methods such as evaporation, distillation, filtration, or crystallization when differences in solubility exist. Experiment one is designed to separate a mixture of an element and a compound using solubility and filtration. Experiment two is designed to separate a mixture of two compounds using solubility and filtration. Experiment three is designed to separate a mixture using chromatography. Experiment four is designed to separate a mixture by evaporation. Includes all required chemicals, vocabulary exercise, and reproducible laboratory procedures and worksheets. Required, but not included: balance and laboratory supplies. Designed for 24 students working in groups of four. Meets national standards for grades 7-10.

ESC54447

Elements, Compounds & Mixtures I Kit

ESC54448



Elements, Compounds & Mixtures I I

This kit illustrates the concepts of elements, compounds, and mixtures with special emphasis on creating new compounds in chemical reactions. Students witness evidence of chemical changes identified by the formation of precipitates, colour changes, odours, or the production of gas. The kit includes enough materials to repeat the experiment twice, with vocabulary and activity worksheets focused on chemical symbols, chemical formulas, chemical names, components of common compounds, and distinguishing between chemical and physical changes. Answer keys included. Required, but not included: balance and laboratory supplies. Designed for 24 students working in six groups of four.

ESC54449

Elements, Compounds & Mixtures II Kit Refill

ESC54450





Hoffman Electrolysis Apparatus

Made of Borosilicate glass, graduated. For study of composition of water by volume and E.C.E. of hydrogen by electrolysis. H-shaped glass unit has two connected limbs, with stopcocks at the top and electrodes at the bottom. Limbs are connected to central tube and bulb reservoir at apex of outer tubes and inner tubes respectively. Outer limbs graduated 0-50 x 0.2ml.

Stable retort stand and clamps included. Includes one pair each of platinum and carbon electrodes. Supplied with Instructions.

ESC54493



Absorption Tube With Side Arm

Absorption tubes, calcium chloride, U-form with side arms and strong walls, borosilicate glass.

Height	Diameter	NO
100mm	13mm	ESC54496
150mm	15mm	ESC54497



Beehive Shelf

This porcelain Beehive Shelf is glazed inside and out. It is for use in pneumatic troughs for gas collection.

Diameter: 100mm.

ESC54498

Gas Syringe

Graduated glass syringe Gas tight Heat resistant.

Size: Outlet tube external diameter: 7mm.

Capacity: 100cm³ x 1cm³.



ESC54502



Spare Carbon Electrodes In Rubber Stoppers

Spare Carbon Electrodes in rubber stoppers, Overall length 8cm

ESC54495



Spare Platinum Electrodes In Rubber Stoppers

Spare Platinum Electrodes in rubber stoppers, Overall length 8cm

ESC54494



Gas Jar Cylindrical Boro

Borosilicate glass with heavy foot and grounded flange. Lid not included.

Height 20 cm, Diameter 5 cm

ESC54499

Height 25 cm, Diameter 5 cm

ESC54500



Gas Jar Cover Dia 6 Cm

6CM Circulars sheet glass, ground one side.

ESC54501





Kinetic Theory Model

To study the motion and behaviour of gas molecule, works on 9 to 12V DC, vibrates a small platform inside a transparent tube, which further vibrates steel balls inside the tube. Includes steel balls and two floats.

ESC54503



Simple Gas Preparation Kit

Simple gas preparation kit use for producing gasses which can be collected over water, e.g. Oxygen, hydrogen and carbon dioxide. Comprises with plastic tank with lid, test tube stand, five test tube 150x24mm and stopper, special gas chimney shelf, delivery tube and tubing connector. The tank and lid form a storage box for all components.

ESC54504



Salt Bridge

For use in experiments involving the measurement of cell EMF under conditions of forward, zero and reverse current flow. The bridge comprises an inverted "U" tube with its ends closed by sintered discs. This apparatus provides a more effective method of making reversible cells than the wet filter paper or agar gel methods. Dia. of arms 13 mm, overall width 80 mm, overall height 100 mm

ESC54510



Plate For Simple Cell Lead

Plate size 125 x 50 mm and fitted with 4 mm socket terminals.

ESC54505

Plate For Simple Cell Carbon

Plate size 125 x 50 mm and fitted with 4 mm socket terminals.

ESC54506

Plate For Simple Cell Zinc

Plate size 125 x 50 mm and fitted with 4 mm socket terminals.

ESC54507

Plate For Simple Cell Copper

Plate size 125 x 50 mm and fitted with 4 mm socket terminals.

ESC54508



Trough Pneumatic, Soda Glass

Made of soda glass. Dia 30 cm, height 12.5cm

ESC54511

Trough Pneumatic, Soda Glass

Made of soda glass. Dia 25cm, height 12.5cm

ESC54512

Trough Pneumatic, Soda Glass

Made of soda glass. Dia 20cm, height 12.5cm

ESC54513



Trough Pneumatic, Polypropylene, Dia 18cm, Height 6cm

Dia 18cm, height 6cm, Polypropylene, autoclavable, can be used for storage, sterilizing and drying lab-ware.

ESC54509





Electrolysis Cell

For quick demonstration of electrolysis. Comprises open-ended glass tube fitted with two carbon electrodes by means of a rubber stopper. Connections made by crocodile clips and an insulating strip of plastic in the bung prevents the clips being shorted accidentally. Consists of glass tubes of dia 74 x 24mm, and collecting tubes of dia 75 x 10mm.

ESC54514



Carbon Rod

With terminal, length 140 mm and dia. 15 mm

ESC54515

NEW



Distillation Set Quickfit

Set includes :

- 1 x Celsius Thermometer
- 1 x Vacuum Take Off Adapter (BORO 3.3)
- 1 x 3 Way Thermometer Adapter
- 1 x 500 ml Round Bottom Flask BORO 3.3
- 1 x 1000 ml Round Bottom Flask BORO 3.3
- 1 x 250 mm Liebig Bondenser, 10mm Hose Connection BORO 3.3
- 1 x Latex Hose

ESC54580

Organic Chemistry Glassware Kit 16Pcs

This deluxe set is designed for organic chemistry labs and is suitable for preparations up to 150g. All glassware is jointed (joint sizes available upon request). Includes a sturdy storage box with foam insert. Contents:

Still Head, (socket size 14/23, cone size 19/26) 1, Dropping Funnel (100ml) (socket size 19/26, cone size 19/26) 1, Thermometer Pocket (cone size 14/23) 1, Air Leak / Steam Inlet Tube (cone size 19/26) 1, Round Bottom Flask (250ml) (socket size 24/29) 1, Erlenmeyer Flask (250ml) (socket size 24/29) 1, Reducing Adapter (socket size 19/26, cone size 24/29) 1, Round Bottom Flask (100ml) (socket size 24/29) 1, Receiver Adapter with Vent (socket size 19/26, cone size 24/29) 1, Multiple Adapter (socket size 19/26, cone size 24/29) 1, Round Bottom Flask (50ml) (socket size 24/29) 1, Stopper, (cone size 19/26) 1, Stopper, (cone size 19/26) 1, Stopper, (cone size 24/29) 1, Receiver Delivery Adapter, Long Stem (socket size 19/26) 1.



Organic Quick fit Set - 27BU/M - 14/23 Joints

27 BU ORGANIC CHEMISTRY SET 27 ITEMS AS DESCRIBE.

INCLUDES :

For preparative chemistry up to advanced level. This set enables a number of preparations to be carried out on the 30g scale. Contents: Pear shaped flask, 50cm, Still head, Liebig condenser, Screw-cap adaptor, Receiver adaptor, Thermometer, 0 - 360 C x 2 C, Dropping funnel, 50cm with Rotaflo tap, Stopper, Air leak/steam inlet tube.

ESC54576



Organic Chemistry Glassware Kit 9Pcs

This starter set is designed for organic chemistry labs and is suitable for small-scale procedures up to 30g. All of the ground glass components in this set have a joint size of 14/23. Includes a sturdy storage box with foam insert.

Contents:

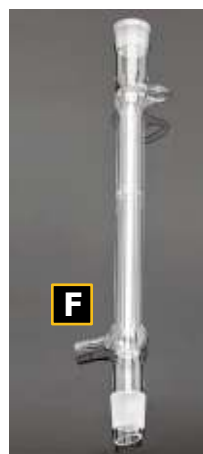
Dropping Funnel (50ml with Rotaflo Stopcock) 1, Receiver Delivery Adapter, Long Stem 1, Stopper for Dropping Funnel 1, Screw Cap Adapter 1, Air Leak / Steam Inlet Tube 1, Thermometer 1, Boiling Flask (50ml) 1, Still Head 1, Liebig Condenser 1

ESC54577



ESC54578





A Quick-fit Joint Clips Conical Joints

Conical joint clips Keck pom 14/23 yellow
 Conical joint clips keck pom 19/26 blue
 Conical joint clips keck pom 24/29 green
 Conical joint clips keck pom 29/32 Red

ESC54582
 ESC54583
 ESC54584
 ESC54585

B Quick-fit Reduction Adaptors

Hollow stopper
 14/23 flat bottom
 19/26 flat bottom

ESC54587
 ESC54588

C Quick-fit Reduction Adaptors

Reduction adaptor socket
 14/23 cone 19/26
 14/23 cone 24/29
 19/26 cone 24/29

ESC54591
 ESC54592
 ESC54593

D Quick-fit Expansion Adaptor

Expansion adaptor socket
 19/26 cone 14/23
 24/29 cone 14/23
 24/29 cone 19/26

ESC54597
 ESC54598
 ESC54599

E Quick-fit Condenser Liebigh With Screw-thread

Liebig condenser with screw thread
 160mm socket 14/23 cone 14/23
 160mm socket 19/26 cone 19/26
 400mm socket 24/29 cone 24/29

ESC54603
 ESC54604
 ESC54605

F Quick-fit Condenser Liebigh

Liebig condenser with glass connector
 160mm socket 14/23 cone 14/23
 400mm socket 24/29 cone 24/29

ESC54609
 ESC54610

H Allihin Condenser

Boro 3.3 Glass
 Available with glass and plastic screw thread connector ; Inner bulb section provides increased cooling surface and is ideal for Reflux
 160mm socket 14/23 cone 14/23
 250mm socket 14/23 cone 14/23
 300mm socket 24/29 cone 24/29
 400mm socket 24/29 cone 24/29

ESC54703
 ESC54704
 ESC54705
 ESC54706

I Condenser , Air Coil

R

ESC54612

V Quick-fit Multiple Adapter With 2 Necks

Multiple adapter 2 neck one joint at 45 degree socket
 19/26 cone 19/26

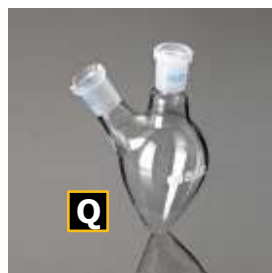
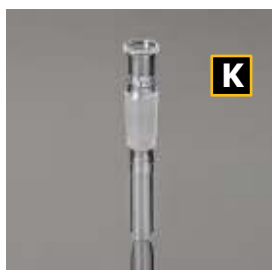
ESC54614

G Quick-fit Receiver Adaptor

Receiver delivery adaptor short stem socket
 14/23 65mm
 19/26 65mm

ESC54618
 ESC54619





H Quick-fit Receiver Adaptor

Receiver delivery adaptor long stem socket
14/23 190mm
19/26 200mm

ESC54622
ESC54623

I Quick-fit Receiver With Vented Bend

Receiver adaptor bend with vent socket
14/23 cone 14/23
9/26 cone 19/26

ESC54626
ESC54627

J Quick-fit Recovery Bend Sloping Adaptor

Recovery bend sloping cone size to fit flask
14/23 cone size to fit condenser 14/23

ESC54630

L Quick-fit Still Head

Still head plain socket 14/23 cone size to fit flask
14/23 cone size to fit condenser 14/23
14/23 cone size to fit flask 19/26

ESC54634
ESC54635

K Quick-fit Thermometer Pocket

Thermometer pocket stem length 45mm cone 14/23

ESC54638

M Quick-fit Air Leak Tube Gas Inlet Tube

Air leak tube gas inlet tube cone 14/23

ESC54641

P Quick-fit Flask Pear Shaped

Pear shape flask single neck din
50ml socket 14/23
100ml socket 14/23
250ml socket 14/23
500ml socket 14/23
1000ml socket 14/23
2000ml socket 14/23

ESC54663
ESC54664
ESC54665
ESC54666
ESC54667
ESC54668

Q Quick-fit Flask Pear Shaped With Two Necks

Pear shape flask two neck din 50ml centre socket
14/23 side socket 14/23

ESC54669

R Quick-fit Flask Conical

Conical flask din 250ml socket 19/26

ESC54673

S Quick-fit Separating Funnel Conical Squibb Shape

Separating funnel PTFE key stopcock clear glass din Squibb without graduation pp stopper

50ml 19/26
100ml 19/26
250ml 29/32
500ml 29/32
1000ml 29/32

ESC54648
ESC54649
ESC54650
ESC54651
ESC54652





N



O



T



U

NEW



V

N Quick-fit Cone- Screw-thread Adaptor

Simple glands with cap 6 mm cone 14/23

ESC54645

O Quick-fit Flask Round Bottom, Short Neck

Round bottom flask single neck din

25ml socket 14/23

ESC54648

50ml socket 14/23

ESC54649

100ml socket 14/23

ESC54650

100ml socket 19/26

ESC54651

100ml socket 24/29

ESC54652

250ml socket 14/23

ESC54653

250ml socket 19/26

ESC54654

250ml socket 24/29

ESC54655

1000ml socket 24/29

ESC54656

T Quick-fit Dropping Funnel Stem With Cone

Separating funnel PTFE key stopcock clearglass pear shape stem inside cone without graduation pp stopper

50ml socket

ESC54687

19/26 cone 19/26

ESC54688

100ml socket 14/23 cone 14/23

V Separating Funnel pear Shape PTFE

with pp stopper Rotaflow stopcock • Made from DIN ISO 3585, BORO 3.3 GLASS • Complies with DIN 4800 Standards, Available with PP Stopper

50ml socket 14/23 cone 14/23

ESC54690

100ml socket 14/23 cone 14/23

ESC54691

U Quick-fit Dropping Funnel, Open

Separating funnel (cylindrical) PTFE needle valve stopcock without graduation pp stopper

50ml socket 14/23 cone 14/23

ESC54692

100ml socket 14/23 cone 14/23

ESC54693





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- **Safety Screen**
- **Protective Gloves**
- **Protective Clothing**
- **Sharp Containers**
- **First Aid**
- **Accessories**



Safety Goggles

Safet

NEW



Safety Goggles Soft Vinyl Direct Vent

lightweight and direct ventilation sides. Clear Color with Poly Carbonate Clear Lens and elastic headband Eye protection designed to protect your eyes from flying objects
Certification : ANSI Z87.1, CE EN166

ESG58737

NEW



Safety Goggles Soft Vinyl Direct Vent

lightweight and direct ventilation sides. Clear Color with Poly Carbonate Clear Lens and elastic headband Eye protection designed to protect your eyes from flying objects
Certification : ANSI Z87.1, CE EN166

ESG58738

NEW



Safety Goggles Soft Vinyl Splash PPE - Youth Size

Eye protection with clear, flexible vinyl body 15% smaller than standard safety eyewear Indirect ventilation Splash and impact protection Protects against 100% of U.V. rays Meet ANSI Z28.1+ high-impact standards Clear uncoated polycarbonate lens and elastic headband

ESG58739



Safety Spectacle ES130

Safety Spectacle with enhanced side protection Clear Lens CE Certified

ESG58742 Each
ESG58743 PK/10



Safety Spectacle ES660

Safety Spectacle, Clear Lens Impact Resistant, UV380 No Metal Parts Including, Ventilation Glasses Temples CE, ANSI & AS/ NZS Certified

ESG58745 Each
ESG58746 PK/10



Safety Spectacle ES661

Frame-less Safety Spectacle ANSI Certified

ESG58747 Each
ESG58748 PK/10



Safety Spectacle ES802

Safety Spectacle Clear Lens, Impact Resistant, UV380 Frameless Wraparound CE, ANSI, AS / NZS Certified

ESG58749 Each
ESG58750 PK/10





Safety Spectacle ES9008

Safety Spectacle Frame-less Wraparound Adjustable Temples CE Certified

- ESG58751** Each
- ESG58752** PK/10



Safety Spectacle ESX6

Safety Spectacle/ Clear Lens Slim Style Light Weight.,CE, ANSI, AS/ NZS Certified

- ESG58754** Each
- ESG58755** PK/10



Safety Goggle Sporty ES01

Safety Goggle Sporty Style Safety Goggles-lightweight clear or blue PVC body to fit most face shapes Indirect Ventilation system Adjustable elastic strap,CE & ANSI Certified

- ESG58757** Each
- ESG58758** PK/10



Safety Goggle ES07

Safety Goggle Indirect Ventilation, Adjustable Elastic Strap,CE, ANSI, AS / NZS Certified

- ESG58759** Each
- ESG58760** PK/10



Safety Face Shield

Safety Goggle Direct Ventilation ,CE, ANSI, AS/ NZS Certified

- ESG58761** Each
- ESG58762** PK/20



Face Shield

- ESG58763** ES03 Face Shield PC Clear Visor, Light Weight CE, ANSI Certified
- ESG58764** ES03A Face Shield Clear PC 8”X12”Polycarbonate CE, ANSI Certified
- ESG58765** ES06 Face Shield PC Clear Visor, Double Bracket CE, ANSI Certified

Safety Spectacle Hanger

Can be mounted on wall, made of strong fabric hanger with pockets for up to 20 pairs of safety spectacles.

ESG58767



Lens Cleaner Spray

Capacity of 250ml,Anti-bacterial, anti-static, anti- reflective cleaning spray.

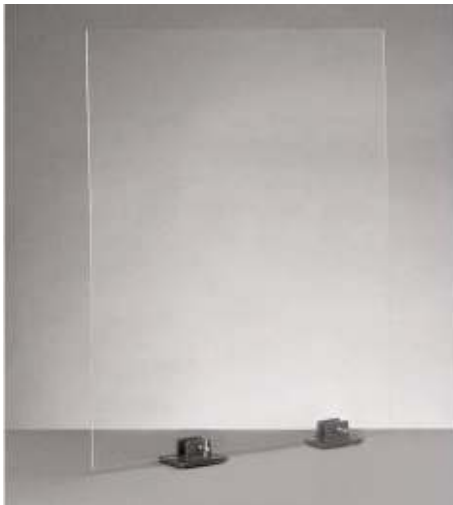
ESG58766



Ultraviolet Sterilization Goggle Cabinet - 30-Goggle Model

Designed for use in schools where reuse of laboratory safety goggles and earphones presents a health hazard. It provides dry sterilization using ultraviolet radiation. When the doors are closed and locked, the interior can be flooded with ultraviolet light. All bacteria or micro-organisms within the cabinet are killed. The door has a key lock safety closure, and the ultraviolet lamp is automatically shut off when the doors are opened. A built-in 15-minute automatic timer controls the sanitizing period desired. 24-gauge steel cabinet. Operates on a 220V AC with a 3-wire grounded cord. Special aluminium reflective interior surface available upon request to insure complete sterilization of cabinet and goggles. Dimensions: 60 x 780 x 23 cm. Supplied with a rack to hold 30 pairs of goggles. Goggles not included. White, baked enamel

ESG58773



Protective Screen

Made of clear perspex material
dimensions : 750 x 600 x 3mm. Need channel base to mount on the table

ESG58768

dimensions : 750 x 600 x 6mm. Need channel base to mount on the table

ESG58772



Fixed Safety Screen

Made of clear perspex material dimensions high 600 mm with 3 fixed angles

ESG58770

Channel Base for protection screen

To use with protective screen

ESG58769



Folding Safety Screen

Made of clear perspex material , dimensions : high 600 mm with 3adjustables angles

ESG58771





Gloves, Leather Pair

Made of leather used to protect hand against heat

ESG58774



Heat Resistance Gloves Pair

made from high-strength heat resistant & wear resistant & thickened degreased heat resistant cotton material.

Outer layer attached the non-slip temperature resistant silicone, 2 - Level system protect your hands! The highest heat resistant is available up to 1472°F/800°C.

ESG58775



Foam Rubber Matting 60x40 , Bench Mats

A laboratory mat made of silicone rubber is a commonly used accessory in many laboratory settings. It is a flat, flexible, and durable mat that provides a non-slip surface for working on laboratory benches and surfaces.

Silicone rubber laboratory mats are resistant to chemicals, heat, and physical wear and tear, making them ideal for use in scientific and experimental work. They can withstand high temperatures and are easy to clean and maintain.

ESG58776



Noise Reduction Headphones Adult & Children

Lightweight yet powerful, the headphones block out extraneous noise, but still allow kids to hear nearby conversations and participate in their surroundings. MINIMIZE NOISE. Ideal for noisy environments like lunchrooms, sporting events, airports or birthday parties which can be overwhelming for kids with auditory defensiveness. Reduces noise up to 20 decibels. MAXIMIZE CONCENTRATION. Muffle distracting noises to help improve focus and concentration while taking a test, doing homework, or block out background noise to reduce stress & anxiety in overwhelming situations. MADE FOR COMFORT. To perfectly fit all shapes and sizes, simply adjust the headband. They're lightweight and the padded earmuffs provide all day comfort. COMPACT AND PORTABLE. The headphones are also compact and easy to fold up so they can be taken anywhere., Certification ANSI S3.19, CE EN352-1, AS/NZS 1276 Rating DB : NRR 20 , SNR 26 , Class 5

ESG58776



Hand Protectors - Silicon Superior

Heat and cold resistant silicon rubber glove, with the help of this, one can easily handle heated up material like flask, bottles beakers etc. Studded surface is used for positive grip of material with a temp. of 250°C. Pockets for fingers thumb fit every hand size.

ESG58778



Hand Protectors - Silicon

Heat and cold resistant silicon rubber glove, with the help of this, one can easily handle heated up material like flask, bottles ,beakers etc. Studded surface is used for positive grip of material with a temp. of 250 °

C. Pockets for fingers thumb fit every hand size.

ESG58779



Flask Supports Cork Ring

Ring supports are made of compressed cork for supporting flasks or dishes.

ESG58777



Protective Gloves

Safety

NEW



Disinfectant Wipes

leaning surfaces, parts, instruments in labs, laboratory lenses, and medical offices, these wipes easily clean liquids, dust and small particles. Plus, the anti-static dispensing design reduces electrostatic discharge. As a wipes chooser, our delicate task wipes are an efficient choice, thanks to our waste-reducing, one-at-a-time dispensing box. 286 Sheets/Box; 30 Boxes of Kimwipes Delicate Task Wipes/Case; 8,580 Sheets/Case; White; Pop-Up Box easily wipe up liquids, dust and tiny particles and are designed for delicate tasks.; Each wipe is useful for polishing glassware, cleaning laboratory instruments and other delicate surfaces; The anti-static dispensing system reduces lint and electrostatic discharge (for sensitive environments like labs).One-at-a-time dispensing for minimized waste

ESG58931

NEW



Paper Towel

Strong, absorbent towels. 16 packages of 250 white 1-ply towels each 21x24cm. Total count of 4000 pcs

ESG58933



Lens cleaning tissue paper

Lens Cleaning Paper Wipe Camera Wipe Microscope Glasses Kit Cleaning Tissue Lens Glasses Tissue Goggles Glasses 100*150mm ; 50sheets/book

ESB52815



Gloves Disposable Blue Powder Free - Pk/ 100

Blue ,Vinyl made of 100% DINP material ,DINP is high quality , environment friendly and low toxicity plasticizers ,for sensitive skin contain low protein allergens , meet EN45 /ASTM D5250, CE approved , gloves 100% DEHP free ,Ambidextrous, non-sterile, single use , PK/100 Pcs

ESG58781	Small	ESG58783	Large
ESG58782	Medium	ESG58784	X Large

NEW



Rubber Gloves For Chemical Use

With Rough Finish for Chemical Use Size 8,9,10,11

ESG58805



Gloves Disposable Clear Powder Free - Pk/ 100

Clear natural rubber latex gloves for sensitive skin contain low protein allergens , meet ASTM D 3578 , CE standard ,beaded cuff, textured surface for improved grip, ambidextrous ,non-sterile, single use ,PK/100 Pcs

ESG58785	Small
ESG58786	Medium
ESG58787	Large
ESG58788	X Large



Gloves Disposable Clear Powdered - Pk/ 100 .

Clear ,Vinyl ,powdered with absorb-able corn starch, made of 100% DINP material ,DINP is high quality , environment friendly and low toxicity plasticizers , meet EN455 /ASTM D5250, CE approved , gloves 100% DEHP free ,Ambidextrous ,non-sterile, single use ,PK/100 Pcs

ESG58789	SMALL
ESG58790	MEDIUM
ESG58791	LARGE
ESG58792	X LARGE





Gloves Disposable White Powdered - Pk/100 . White, natural rubber latex gloves for sensitive skin contain low protein allergens, meet ASTM D 3578, CE standard, beaded cuff, textured surface for improved grip, ambidextrous, non-sterile, single use, PK/100 Pcs

- ESG58793** Small
- ESG58794** Medium
- ESG58795** Large
- ESG58796** X Large



Gloves Polythene
PE gloves, embossed for better grip, ambidextrous, non-sterile, single use ,PK/100 Pcs

- ESG58806** Small
- ESG58807** Medium
- ESG58808** Large



Gloves Neoprene
High quality natural rubber, Chloroprene coated natural rubber latex gloves with textured palm and fingers to increase grip. Cotton flock lined for increased comfort and reduced perspiration. Protection against some detergents alkalis and acids. Extra Long cuff for better arm protection. Chloroprene coated for fat and oil protection at palm. Improved abrasion resistance, Contains natural rubber latex which may cause allergic reactions including anaphylactic response.

- ESG58801** Small
- ESG58802** Medium
- ESG58803** Large
- ESG58804** X Large



Gloves General Purpose - Pair
Medium weight gloves with raised surface pattern for excellent wet grip, Medium weight, coloured rubber household gloves with a cotton flock lined interior ,Contains latex, Multi-purpose rubber gloves. Per Pair

- ESG58797** Small
- ESG58798** Medium
- ESG58799** Large
- ESG58800** X Large

Protective Clothing



Apron Disposable White Universal Size PK/100
Disposable apron ,Polythene, Size: 66 x 107cm, White pack of 100
ESG58810



Apron Disposable Blue Universal Size Pk/100
Disposable apron ,Polythene, Size: 66 x 107cm, Blue pack of 100
ESG58809





Lab Coat Blue Poly-cotton Men Small

Coat made of poly-cotton with 3 patch pockets, Centre back vent, longer to provide protection , blue colour

- ESG58835** Small
- ESG58836** Medium
- ESG58837** Large
- ESG58838** X Large



Lab Coat White Poly-cotton Men

Men lab coat made of poly-cotton with 3 patch pockets, Centre back vent, White

- ESG58816** Small
- ESG58817** Medium
- ESG58818** Large
- ESG58819** X Large



Mask Paper Play

Surgical disposable face mask, high breath-ability, nose adapter for correct and comfort face adjustments, high filter action (BEF APP 95%), Ear loop type, 2 play, PK/50 Pcs

ESG58843



Mask With Valve Pk/10

General purpose use including fine toxic particles ,nose adapter for correct and comfort face adjustments

ESG58842



Surgical Face Mask Ear Loop

Surgical disposable face mask, high breath-ability, nose adapter for correct and comfort face adjustments, high filter action (BEF APP 95%), Ear loop type, PK/50 Pcs

ESG58844



Face Mask For Dust

Provide comfortable fit, easy breathing, light weight, clear vision, latex and fibre free, Multi-purpose use.

ESG58848





Sharps Containers

Multi purpose sharp container , provide safe way to dispose contaminated and sharp instruments like blade, needle, scalpel...etc.

- ESG58853** Small Capacity 2.2 Litre
- ESG58854** Medium Capacity 6.2 Litre
- ESG58855** Large Capacity 10 Litre
- ESG58856** X Large Capacity 15 Litre



Eyewash Bottle

Eyewash is ideal for irrigating eyes and general wound washing applications• 500ml bottle• Each

ESG58864



Fixed Eyewash Station

Eyewash station comes complete with 2 x 500mL bottles of eyewash, Includes quick release wall hanging brackets

ESG58866



Fire Blanket

Hinged lid for easy extraction

- ESG58880** Size: 1.2 X 1.2M
- ESG58881** Size: 1.2 X 1.8M



Eye Emergency Signs

- ESG58857** Size : 150 x 150mm, s/a Board made of self adhesive vinylsize:150x150mm
- ESG58858** Size : 200 x 150mm, PVC Board made of PVC size: 200 x 150mm
- ESG58859** Size : 200 x 150mm, s/a Board made of self adhesive vinylsize:200 x 150mm



Eyewash Pod Station

Wall mounted eyewash pod station contents : Single use, just snap off top Size H250 x W325 x D25mm• Each

ESG58865



Emergency Burns Kit

Kit consist of Burn shield dressing 200 x 200mm , 2 x burn shield dressing 100 x 100mm , 2 x burn dressings DIN specification 60 x 80mm, 8 x burn blot sachets, 1 x 7.5cm x 4cm conforming bandage, 1 x waterjel burn dressing, Safety pins, 1 pair of tufkut scissors, 2 pairs of vinyl disposable glove

ESG58877





Eye Wash Station Cederroth

Compact eye emergency department
 Ensures eyewash is easily accessible when it's required
 Hygienic case with rubber edges protects contents from dust and dirt ; Supplied with two 500ml bottles of Cederroth Neutralising Eyewash
 Dispenser Dimensions: 56cm x 29cm x 12cm

ESG58863



First Aid Center Complete - BS 8599 Compliant

British Standard compliant comprehensive First Aid Center for managing a wide range of Laboratory accidents and emergencies

ESG58867



First Aid Kit Primary School

British Standard First Aid Kit for the classroom Ideal for dealing with common injuries for 6-12 years old Portable and durable soft case Includes children's plasters, digital oral thermometer & eyewash pod skit
 Dimensions: 23cm x 25cm x 15cm

ESG58868



First Aid Kit Secondary School

British Standard First Aid Kit for secondary schools Ideal for dealing with common school injuries Durable premium Evolution case Includes HypaCleans Eyewash Pods and HypaCool Instant Cold Pack skit
 Dimensions: 30cm x 23cm x 12cm.

ESG58869



Emergency Asthma Kit

Pack with 10 Disposable Spacers Ideal for Nurseries, Schools and Colleges Provides guidance on recognising and treating an asthma attack Pack includes an Emergency Asthma Inhaler Kit, a Emergency Asthma Inhaler Log and a Treating An Asthma Attack Poster

ESG58874



First Aid Kit Small

Made of strong ABS plastic which is shiny, smooth and easy to clean. The kit contains a neoprene seal which makes the kit dust-proof. The wall bracket is able to secure the kit on a common house wall. The internal crystal partitions permit a more flexible and scientific item arrangement. Additionally, two swivel catches are set for closing security. Recommended use: business companies, small factories, workshops, labs, and etc.

Contents:

- 01 Adhesive Tape 1 roll
- 02 Elastic Bandage 5 x 450cm 2 rolls
- 03 Elastic Bandage 7.5 x 450cm 2 rolls
- 04 Adhesive Plasters 25 pcs
- 05 Sterile Gauze (7.5 x 7.5cm) 5 pcs



- 06 Sterile Gauze (5 x 5cm) 5 pcs
- 07 Soap Sachet 3 pcs
- 08 Cleansing Wipe 3 pcs
- 09 Alcohol Wipe 4 pcs
- 10 Antiseptic Wipe 3 pcs
- 11 Safety Pins 10 pcs
- 12 Gloves 2 pairs
- 13 Scissors 1 pair
- 14 Sterile Tweezers 1 pair
- 15 Cotton Wool Pack 4 pkts
- 16 Adhesive Dressing, 10 x 6 cm 1 pkt
- 17 Haemostatic Lancet 2 pcs
- 18 Triangular Bandage 1 pc
- 19 Compress Bandage 8 x 10cm 1 roll
- 20 ABS Box 1 pc

ESG58870

First Aid Kit Medium Size

Made of strong ABS plastic which is shiny, smooth and easy to clean. The kit contains a neoprene seal which makes the kit dust-proof. The wall bracket is able to secure the kit on a common laboratory wall. The internal crystal partitions permit a more flexible and scientific item arrangement. Additionally, two swivel catches are set for closing security. Recommended use: small factories, labs, and etc.

Content List:

- 01 Soap Sachets 10pcs
- 02 Alcohol Pad 20pcs
- 03 Adhesive Plaster 100pcs
- 04 Boston 1pc
- 05 Conforming Bandage 5cm 3pcs
- 06 Conforming Bandage 7.5cm 2pcs
- 07 Elastic Bandage 2pcs
- 08 Sterile Eye Pad 5pcs
- 09 Sterile Gauze Pad 20pcs
- 10 Cotton Ball 5pkts
- 11 Safety Pin 10pcs



- 12 Triangular Bandages TNT 4pcs
- 13 Antiseptic Wipes 7pcs
- 14 Scissors 1pair
- 15 Tweezers 2pairs
- 16 Sterile Scalpel 1pc
- 17 Lancet 1pc
- 18 Syringe 1pc
- 19 Latex Gloves 6pairs
- 20 Plastic Kidney Dish 1pc
- 21 Eco Splints 22cm 1pc
- 22 Blanket 2pcs
- 23 Wound Dressing 1pc
- 24 Strap Tourniquets 1pc
- 25 Burn Sheet 2pcs
- 26 ABD Pad 2pcs
- 27 Ice Bag 1pc
- 28 CRP Mask 1pc
- 29 Adhesive Tape 3pcs
- 30 Plaster 1pc
- 31 First Aid booklet 1pc
- 32 ABS Box 1pc

ESG58871

First Aid Kit Class Room

The kit is plastic case, with handle and wall mounted , for up to 50 persons and the first aid guide. The kit includes the following :

- (1) Extra large plastic case
- (125) Adhesive plastic bandages
- (6) Fingertip fabric bandages
- (6) Knuckle fabric bandages
- (10) Elbow & knee plastic bandages
- (8) Gauze dressing pads, (4) 2-pks
- (3) Trauma pads
- (8) Non stick pads
- (3) 2" Conforming gauze roll bandages
- (2) 3" Conforming gauze roll bandages
- (1) 40" Triangular sling/bandage, w/2 safety pins
- (30) BZK antiseptic towelettes

- (1) First aid/burn cream, 0.9 gm. Packs, 10/box
- (2) Latex free elastic bandage
- (1) 1/2"x10 yd. First aid tape roll
- (2) 4"x5" Instant cold compress
- (1) 6"x9" Instant cold compress, 1/box
- (4) Sterile eye pads
- (2) Eye wash, 1/2 oz.
- (2) Exam quality vinyl gloves, 1 pair
- (1) Scissors
- (1) 4" Tweezers, plastic
- (2) Finger splints
- (1) One-way CPR face shield, 2 exam quality vinyl gloves, 3 BZK antiseptic towelettes, 1set /box

ESG58872



NEW

School First Aid Room

Comprehensive school first aid room solution
Contains 9 items to aid the delivery of first aid at school

Low level first aid couch designed for use with children

Compliant with HSE regulations

Include :

1. First Aid Room Contents
2. Low Level First Aid Couch
3. First Aid Sign
4. First Aid for Children Poster
5. Trolley, 3 Tier
6. Blanket, Scarlet Cotton
7. Polyester Filled Pillow
8. Metal Cabinet
9. Economy Couch Roll



The School First Aid Room contains the essential facilities for a school first aid room, including a first aid room sign, a first aid cabinet and a low level first aid couch designed for use with children. The package provides 10% cost savings compared to purchasing each item individually.

Furniture Dimensions:

- Low Level First Aid Couch: 183cm x 60cm x 40cm
- Trolley, 3 Tier: 50cm x 30cm x 74cm
- Metal Cabinet: 60cm x 50cm x 12.5cm

ESG59020





Chemical spill kit

Everything you need to deal with everyday spills quickly and easily. The dispenser contains 4 identical spill kits, each capable of absorbing up to 1.5L

Design allows safer clean-up - less risk of injury Fully disposable kits for hygienic and safe disposal

Kits supplied in a dispenser that can be positioned in areas where spills are likely to occur

Each Kit contains:

- 2 pieces of (chemical multi-format) Protective gloves
- 1 disposable dustpan and brush
- 1 disposal bag
- 1 hazardous waste disposal label
- 1 bag tie

ESG58915



Mercury Collector

Spilled mercury is collected by pressing the foam pad in the screw top closure against the mercury. The mercury is drawn into and encapsulated in the pad by releasing the pressure and can then be released by screwing the closure on to the jar.

ESG58912



First Aid Poster For Children

Durable laminated poster with full colour illustrations User friendly text and clear step-by-step instructions for workplace first aid Ensure your employees are ready in an emergency Compiled by qualified health and safety practitioners and updated with the latest guidance Poster

Dimensions: 60cm x 43cm (A2)

ESG58873



NEW

Chemical Spill Kit, 6 litre

Suitable for most non-aggressive chemical spills Available for spills up to 3.75 litres & up to 6 litres Durable Evolution hinged case, easy to transport to an incident Contains absorbent materials and disposal bag

ESG58914



NEW

Biohazard Kit

All in one biohazards and sharps solution Multi-use kit contains all necessary contents for cleaning up five body fluid spillages as well as two Single Sharps Disposal Packs Includes disinfectant spray absorbent granules and HypaClean Disposable Packs

ESG58875



NEW

Chemical Spills Poster

Durable laminated poster with full colour illustrations User friendly text and clear step-by-step instructions for workplace first aid Ensure your employees are ready in an emergency

Compiled by qualified health and safety practitioners and updated with the latest guidance

Poster Dimensions: 60cm x 43cm (A2)

ESG58913

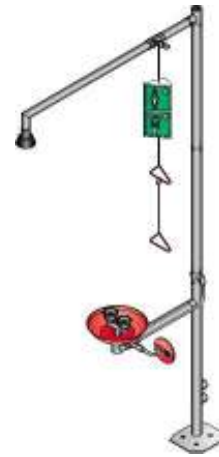




Emergency Shower Wall Mounted

Body showers are indispensable where acids, steam, dust or other harmful substances are being handled. Wall mounted straight Body shower, wall mounted with Self-draining shower head. In brass with chemical resistant Poly-coat. Min. Working pressure: 1 BA

ESG58886



Emergency Shower With Eye Face Shower

Body and eye/face showers in one installation. Body and eye shower, Body shower with eye/face shower and bowl, modular. In brass and SS with Chemical resistant red Poly-coat with self-draining shower head. Eye wash with built-in FLOWFIX for regulation of water flow (26 l/Min). Bowl in Stainless Steel with integrated outlet. Min. Working pressure: 1.5 bar

ESG58887



Eye Wash Shower Double Wall Mounted

Reliable and efficient showers for eyes and face. Which Comply to EN15154-2 and ANSI Z358.1 norms and which Provide the following IMPROVED features:

SAFETY

- Improved trigger lock
- Improved activation of the shower

OPERATION

- Stay-open dust cap
- Light weight
- Well-balanced construction
- Better spray pattern

RELIABILITY

- Easy-to-clean spray head
- Anti-lime scale design and material choice
- Improved functionality
- Longer lifetime

ESG58890

Eye Wash Shower Double Table Mounted

Reliable and efficient showers for eyes and face. Which comply to EN15154-2 and ANSI Z358.1 norms and which Provide the following IMPROVED features:

SAFETY

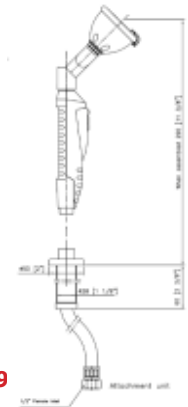
- Improved trigger lock
- Improved activation of the shower

OPERATION

- Stay-open dust cap
- Light weight
- Well-balanced construction
- Better spray pattern

RELIABILITY

- Easy-to-clean spray head
- Anti-lime scale design and material choice
- Improved functionality
- Longer lifetime

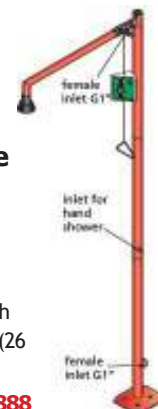


ESG58889

Emergency Shower Without Eye Face Shower

Body shower with eye/face shower and bowl, modular.

In brass and SS with chemical resistant red Poly-coat with self-draining shower head. Eye wash with built-in FLOWFIX for regulation of water flow (26 l/Min). Min. Working pressure: 1.5 bar.



ESG58888



Hazard tape :

Hazard warning tape. 66 meters long and 25mm wide

- ESG58897** Irritant tape 66m
- ESG58898** Biohazard Tape
- ESG58899** Corrosive Agents Tape
- ESG58900** Environment Tape
- ESG58901** Explosives Tape
- ESG58902** Flammable Tape
- ESG58903** Oxidising Tape
- ESG58904** Toxicity Tape CAT 1-3
- ESG58905** Toxicity Tape CAT 4
- ESG58906** Gases Tape
- ESG58907** Carcinogenic
- ESG58908** Caution Radioactive Material Tape



Biohazard Bags Pack of one hundred

Non Sterile Disposable PP Bags and Disposable PE bags for a wide variety of uses throughout the laboratory

ESG58909



Gauze Swab Non Sterile

Soft and breathable, folded edges, 19x15 mesh , , 8 Plies PK/100.

- ESG58917** Size : 5 x 5 cm
- ESG58918** Size : 7.5 X 7.5cm
- ESG58919** Size : 10 x 10 cm

NEW



Resuscitation Poster

Durable laminated poster with full colour illustrations User friendly text and clear step-by-step instructions for workplace first aid Ensure your employees are ready in an emergency Compiled by qualified health and safety practitioners and updated with the latest guidance Poster

Dimensions: 60cm x 43cm (A2)

ESG58879



Cotton Wool Absorbent

100% cotton wool, hygienic purity with high absorbent capacity

ESG58916

Cotton Wool Non Absorbent

ESG58924



NEW



First Aid Arm

Train students in the proper techniques used to control severe bleeding: direct pressure, and pressure points. The Life/form® First Aid Arm provides extremely realistic appearance and function to make your training exercise true-to-life. Looks and feels like a real arm. Synthetic blood can be made to flow from either the cut on the forearm or from the severed thumb, or from both at the same time. The severed thumb allows training in proper care and handling of separated body members. You can regulate rate of bleeding and create venous or arterial flow. Blood returns to collection tray for reuse. Pressure points function realistically at wrist and upper arm. Students will need to react just as in an actual emergency and select the appropriate method to control bleeding and treat the wound. Includes vinyl arm with wound, severed thumb, collection tray, arterial pulse bulb, venous supply bag, one quart artificial blood, teaching guide, and hard carry case

ESG58886



Child CPR Training Manikin

CPR manikin features:

1. Clear anatomic characteristic, realistic touch feeling and lifelike skin color, vivid appearance;
2. Simulate vital signs: squeeze the rubber ball to simulate carotid artery pulse;
3. Can perform artificial respiratory and extracardial compression;
4. Operation mode: CPR training, can perform compression and inflation;

CPR screen functions:

1. Indicators show inflation volume, correct inflation volume: 150ml-200ml; When the inflation volume is insufficient, proper or excessive, indicators will accordingly be yellow, green or red, and alarm will ring if there are operation mistakes.
2. Operation frequency: ≥ 100 times/ min
3. Ratio of compression and artificial respiratory: 30:2/single or 15:2/double
4. Operation cycle: after 2 valid inflation, then 5 cycles CPR operation according to the ratio of compression and inflation 30:2 or 15:2;
5. Power: 220V; 6V output powder via manostat; or use 4pcs 1 battery for field training

ESO67139



New Born CPR Training Manikin

CPR manikin features:

1. Clear anatomic characteristic, realistic touch feeling and lifelike skin color, vivid appearance;
2. Simulate vital signs: squeeze the rubber ball to simulate brachial artery pulse;
3. Can perform artificial respiratory, extracardial compression and airway open;
4. Operation mode: CPR training, can perform compression and inflation;

CPR screen functions:

1. Indicators show inflation volume, correct inflation volume: 150ml-200ml; When the inflation volume is insufficient, proper or excessive, indicators will accordingly be yellow, green or red, and alarm will ring if there are operation mistakes.
2. Indicators show compression depth: correct compression depth: approximately 4 cm
When the compression depth is insufficient, proper or excessive, indicators will accordingly be yellow, green or red, and alarm will ring if there are operation mistakes.
3. Operation frequency: ≥ 100 times/ min.
4. Ratio of compression and artificial respiratory: 30:2/single or 15:2/double
5. Operation cycle: after 2 valid inflation, then 5 cycles CPR operation according to the ratio of compression and inflation 30:2 or 15:2;
6. Power: 220V; 6V output powder via manostat; or use 4pcs 1 battery for field training

ESO67289



Half-body CPR Training Manikin

CPR manikin features:

1. Can perform airway open
2. Can perform artificial breathing and external cardiac compression
3. While performing artificial aspiration, judge inflation volume by chest rise;
4. External chest compression, correct compression depth: 5-6cm
 - 1) Correct compression site, yellow indicator
 - 2) Proper compression depth, green indicator
 - 3) Excessive compression depth, red indicator
5. Operation frequency: ≥ 100 times/min, with "tick" sound
6. Power: battery

ESO64729



NEW



Half-body CPR Training Manikin with Obstruction

The product can operate adult Heimlich maneuver. The Simulate manikin is designed according to the anatomy and physiological characteristics and fit for first aid for foreign body in the airway. Features:

1. Simulation of normal airway obstruction
2. Simulation of airway opening and chest compression
3. Simulation of the chest expansion when the airway is empty
4. Simulation of suffocation, foreign body obstruction in airway

ESO64727



AED Simulator and CPR Manikin Set

This manikin is suitable for BLS (Basic Life support) and AED (Automated External Defibrillator) training.

Features of AED Simulator

1. Opening or closing the cover will turn on AED instrument.
2. Simulate first-aid procedure; (only for training use) it has not high tension shock motion.
3. Automatically check the position of electrode pad.
4. There are 9 internal scripts, simulating different conditions.
5. Simulate: touch the patient's body when conducting AED; the position of electrode pad is wrong or right; it is need to defibrillate or not; machine has trouble; the electricity is low.
6. Electricity management function: The system automatically checks the batteries electricity. When the electricity is low, there will be sound indicating. During the interval of two times, system will enter saving power mode. If there isn't operation in 3 minutes, system will enter waiting mode.
7. Lithium battery

Features of half-body CPR manikin:

1. Simulate airway opening
2. External breast compression: sound prompting
3. Artificial respiration: observe the fluctuation of chest (Inhalation standard: 500/600ml-1000ml)
4. Operation frequency: 100 times per minute (the latest international standard)
5. Operation mode: exercise mode

ESO64728



CPR Training Manikin Half-body Basic Economy

according to 2015 international CPR standard, Implement standard: AHA (American Heart Association) 2015 guideline for CPR and ECC

CPR manikin features:

1. Can perform airway open
2. Can perform artificial breathing and external cardiac compression
3. While performing artificial aspiration, judge inflation volume by chest rise;
4. External chest compression, correct compression depth:5-6cm
 - 1) Correct compression site, prompt correct buzzing sound
 - 2) Excessive compression site, prompt alarming buzzing sound
5. Operation frequency: ≥100 times/min, with "tick" sound
6. Power: battery

ESO64733



Adult Tracheotomy Care Simulator

Features:

1. Precise anatomy: pharynx, epiglottis, trachea, esophagus, position of tracheotomy, cricoid and left, right bronchial trees
2. Tracheotomy care
3. Sputum suction
4. Suction via oral cavity
5. Clean and care of tracheal cannula

ESO65418

Safety



NEW



Multiple Casualty Simulation Kit

More versatile than the basic kit, this unit gives you more complex wounds for testing higher levels of skill in bandaging and patient care, while keeping initial expenditures low.

Contents:

- Bleeding strap-on wounds complete with reservoir bags with pump assembly
- 1 open amputation
- 1 compound fracture of tibia, lower leg
- 1 compound fracture of humerus, upper arm
- 1 sucking wound of chest
- 1 gunshot wound of palm

Makeup Accessories:

1 bottle coagulant makeup blood ; 3 spatulas ; 1 pkg. of methyl cellulose for blood thickening ; 3 wood tongue depressors ; 3 packages powder to make three gallons of simulated blood ; 1 casualty simulation wax ; 1 body adhesive for stick-on wounds ; 1 atomizer mist sprayer ; 24 assorted stick-on lacerations and open fracture wounds ; 1 pkg. broken Plexiglas® for simulating glass embedded wound ; 1 ea. grease paint colors: white, blue, brown, and red ; Size: 21 in. x 12 in. x 10 in.

ESG59015



Trauma Moulage Kit

Can be used with any Rescue manikin, the Trauma Manikin . Application of these realistic bleeding moulages to a full-body manikin facilitates quick identification, diagnosis, and dressing of wounds by trainees. Kit includes compound fractures, contusions, lacerations, evisceration, sucking chest wound, impalement, crushed foot, jaw wound, and projectile entry and exit of arm. These bleeding wounds strap on and are complete with pump assembly. Simulated blood is included. Non-bleeding strap-on wounds include 2nd and 3rd degree burns of the chest, back, forearm, and face. Manikin sold separately.

ESG59014



Basic Casualty Simulation Kit

The most economical way to get started in simulated injuries. Reusable and refillable accessories let you practice bandaging and splinting techniques repeatedly.

Contents:

- 1 compound fracture tibia complete with reservoir and pump assembly
 - 1 Bottle coagulant makeup blood
 - 1 Pkg. powder to make 1 gal. simulated blood
 - 12 Assorted stick-on lacerations and open fracture wounds
 - 1 Casualty simulation wax
 - 1 Pkg. broken Plexiglas® for simulating glass embedded wound
 - 1 ea. grease paint colors: white, blue, brown and red
 - 1 Body adhesive for stick-on wounds
 - 1 Atomizer mist sprayer
 - 3 Spatulas
 - 3 Tongue depressors
 - 1 pkg. of methyl cellulose for blood thickening
- Size: 15 in. x 10 in. x 5 in.

ESG59016

Safety



NEW

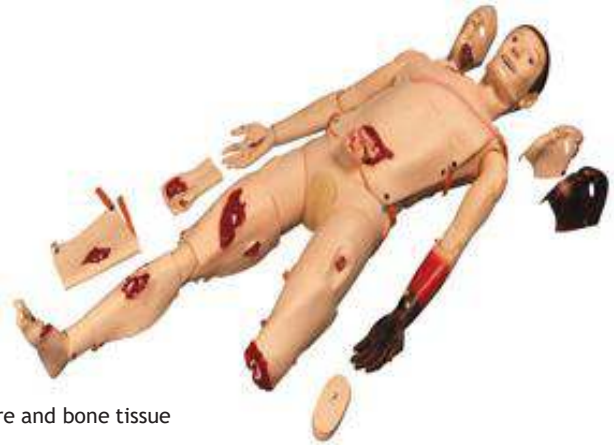
ADVANCE TRAUMA SIMULATOR

Manikin Features:

1. Washing, disinfection, hemostasia, enswathement, etc.
2. Open fracture, truncation trauma

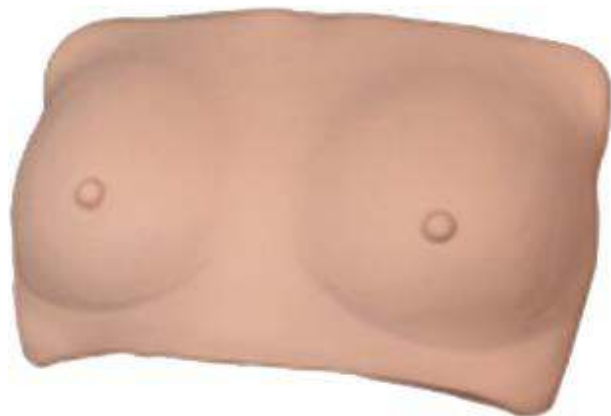
Trauma Features:

1. Facial burn: I , II , III degree
2. Laceration in forehead
3. The wound in jaw
4. Opened clavicular fracture and contusion , wound on the chest
5. The wound in abdomen with small intension evisceration ntusion wounds in left ankle and foot.
6. Opened humerus fracture of right upper arm
7. Opened fracture of right hand (including parenchyma , laceration, fracture and bone tissue
8. Gun wound in the right palm
9. Opened fracture of right thighbone
10. Compound femur fracture of left thigh
11. Metal pricking wound in right thigh
12. Opened tibia fracture of right leg
13. Opened fracture of right foot with truncating trauma on small phalanx
14. Burns in left forearm: I , II , III degree
15. Truncating trauma on left thigh
16. Closed tibia fracture of right leg and co



Safety

ESO64723



Breast Examination Simulator

Features:

Palpation of malignant tumor, benign tumor, lymphaden and lobulus accrementition.

Size: 37cm*18.5cm*29.5cm

G.W.:4kg

ESO64757

Advanced Inspection and Palpation of Breast Simulator

Features:

1. This model can be used to exercise mammary tumors palpation skill.
2. In order to facilitate training process, we implant benign tumors and malignant tumors into the mammary gland.
3. Basing on various position, size, texture, the students can identify the tumor is benign or malignant.

ESO64759





Pharmacy & Lab Refrigerator (+2/25C)

Temperature setting range +2 to +15 °C
 Gas: environmentally friendly R290 gas
 Exterior: White skinplate metal sheet
 Interior: Stainless steel AISI 304 for perfect highiene
 CE certified. Company have ISO 9001:2015 certification
 2 year warranty on parts
 Forced air cooling circulation
 Automatic defrost
 Extra probe for product temperature simulation
 Inbuilt data logger, that creates a pdf file with temperature graphics and alarms.USB for data retrieval
 Battery back up to keep controller and alarms working for at least 26 hours after power failure
 Safety thermostat to prevent temperatures to go below 2 degrees.



SKU NO	Ext.Dimn.	Int.Dimn.	NO. Shelves	Vol
ESG59027	W600 x D600 x H835 mm	W480 x D410 x H690 mm	2 + 1	122 Ltr
ESG59028	W600 x D700 x H1510 mm	W480 x D500 x H1358 mm	5	324 Ltr
ESG59029	W600 x D700 x H1865 mm	W480 x D500 x H1724 mm	5	416 Ltr
ESG59030	W720 x D840 x H2020 mm	W560 x D665 x H1440 mm	4	535 Ltr

Pharmacy & Lab Refrigerator (+2/25C)

Glass Door

Temperature setting range +2 to +15 °C
 Gas: environmentally friendly R290 gas
 Exterior: White skinplate metal sheet
 Interior: Stainless steel AISI 304 for perfect highiene
 CE certified. Company have ISO 9001:2015 certification
 2 year warranty on parts
 Forced air cooling circulation
 Automatic defrost
 Extra probe for product temperature simulation
 Inbuilt data logger, that creates a pdf file with temperature graphics and alarms.
 USB for data retrieval
 Battery back up to keep controller and alarms working for at least 26 hours after power failure
 Safety thermostat to prevent temperatures to go below 2 degrees.



SKU NO	Ext.Dimn.	Int.Dimn.	NO. Shelves	Vol
ESG59027G	W600 x D600 x H835 mm	W480 x D410 x H690 mm	2 + 1	122 Ltr
ESG59028G	W600 x D700 x H1510 mm	W480 x D500 x H1358 mm	5	324 Ltr
ESG59029G	W600 x D700 x H1865 mm	W480 x D500 x H1724 mm	5	416 Ltr
ESG59030G	W720 x D840 x H2020 mm	W560 x D665 x H1440 mm	4	535 Ltr





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CHEMICALS



EUROLAB CHEMICALS

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- Range of grades to suit all budgets & requirements
- 26 years manufacturing experience
- Own recipes for many reagents
- High quality bottles, if possible UN approved
- Safety first - bagged in case of carrier damage
- MSDS automatically emailed & online
- Clear & compliant labeling

CLP

On 20th January 2009 the CLP element of REACH, European Regulation (EC) No 1272/2008 came into force concerning Classification, Labelling and Packaging (CLP) of chemical substances. It is based upon the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and ensures worldwide uniformity.

What does this mean?

As of 1st December 2010 all substances supplied with the E.U. are now classified and labelled in accordance with the new regulations. The familiar orange hazard symbols have been replaced with the GHS Pictograms shown opposite. Risk and Safety phrases were also replaced, with Hazard and Precautionary statements, as shown on pages 423 and 424.

ADR & LQ

European Agreement concerning the international carriage of Dangerous goods by Road (ADR). If a substance is classified as hazardous for transport it will be assigned a UN number, this dictates the regulations that have to be applied when the substance is transported. Each UN number is assigned a "Limited Quantity" (LQ) which indicates the maximum pack size of a substance that can be transported without special restrictions. If the LQ is zero, or the pack size exceeds the LQ, then the substance must be transported by a specially trained and licensed courier.

What does this mean for you...?

If over the limited quantity (LQ) there is a £14.95 surcharge per order.

The cost to us can be as much as £30.00 and as such we are absorbing a large proportion of this cost. In recognition of those customers placing larger orders we will absorb the whole cost, so there is no surcharge on orders over £300.00

Chemicals are clearly marked if a surcharge is applicable. Our next day delivery service is not available when shipping ADR chemicals.

What's New?

From June 2015 the restrictions on some chemicals have changed, namely the flammable substances, e.g. IMS & Acetone. Consequently, where possible, we have changed our pack sizes to comply with the new LQ restriction of 1L to avoid the need for specialist transport and thus the £14.95 surcharge.

Permits

A permit is required by law to purchase certain chemicals. Denatured Alcohol (IDA) aka Methylated Spirit is one such chemical. You only require a permit if purchasing more than 5 litres per annum. However as part of our licencing compliance we require a declaration that no more than 5L will be purchased.

MSDS

Material Safety Data Sheets (MSDS) provide information on chemicals that help the users of those chemicals to make a risk assessment. They describe the hazards the chemical presents, and give information on handling, storage and emergency measures in case of accident.

Here at Breckland Scientific we take our responsibility very seriously so have invested in an automated system which will provide you with up-to-date Safety Data Sheets via e-mail when despatched. They are also available on our website.

POTASSIUM METAL IN LIQUID PARAFFIN (Potass m)			
1	K = 39.1g/mol		2
3	UN Class: 4.3/UN2257 PG-1		4
6	Cas No.: 7440-09-7	10	EC No.: 231-119-8
7	Hazard: H260 H314 EUH014		5
8	Precaution: P223 P231+P232 P280 P305+P351+P338		12
9	Cat No.	Type	Info.
	CHE291535	98%	SURCHARGE

1 Product Name

2 Alternative Name(s)

3 Chemical Formula

4 GHS Pictograms

These are located on the chemical bottle.

5 Flash Point

The flash point, where available, is here. The flash point of a volatile liquid is the lowest temperature at which its vapours form an ignitable mixture in air.

6 UN Class / UN Number / Packing Group

Dangerous goods are divided into 9 UN Classes and several sub-divisions UN numbers are the 4 digits that identify the substance.

Packing Group refers to the degree of danger:

PG-1 = High Danger PG-2 = Medium Danger PG-3 = Low Danger

- | | |
|-------------------------------------|-----------------------------------|
| Class 1 Explosive | Class 5.1 Oxidising Agent |
| Class 2 Gases | Class 5.2 Organic Peroxides |
| Class 3 Flammable Liquids | Class 6.1 Poisonous |
| Class 4.1 Flammable Solids | Class 7 Radioactive |
| Class 4.2 Spontaneously Combustible | Class 8 Corrosive |
| Class 4.3 Dangerous when Wet | Class 9 Misc. Dangerous Substance |

7 Cas No.

Chemical identifier as defined by the American Chemical Society

8 Hazard & Precautionary Statement Numbers

Health & safety statements for the specific chemical. Absence of any statements does NOT always mean the substance is harmless. See pages ix and x for definitions of the Hazard & Precautionary Statement numbers.

9 Molecular Weight

10 EC No.

Chemical identifier as defined by the European Chemicals Agency (ECHA)

11 Index No.

Is the identification code given to the substance in Part 3 of Annex VI of the Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No 1272/2008

12 Signal Word

If the chemical has a more severe hazard, the label includes the signal word 'Danger'; in case of less severe hazards, the signal word is 'Warning'

13 Catalogue No.

14 Type


















































15 Assay







































The Assay is the quality or purity of a product. This is often linked to the type of the chemical (above).

16 Info

If a delivery surcharge is applicable it is clearly marked.



BOX LABEL		UN CLASS	DESCRIPTION OF DANGER	CATEGORY	GHS PICTOGRAM (On Bottle)
ADR	LQ (Limited Quantity)				
no transport allowed		1	Unstable explosives		
		1	Explosives of Divisions 1.1, 1.2, 1.3, 1.4		
		1	Self reactive substances and mixtures	A, B	
		1	Organic Peroxide	A, B	
		2	Flammable gases	1	
		2	Flammable aerosols categories	1, 2	
		2	Gases under pressure		
		3	Flammable liquids	1, 2, 3	
		3	Pyrophoric liquids	1	
		4.1	Flammable solids	1, 2	
		4.1	Self-reactive substances and mixtures	B,C,D,E,F	
		4.2	Pyrophoric solids	1	
		4.2	Self-heating substances and mixtures	1, 2	
		4.3	Substances and mixtures which in contact with water emit flammable gases	1,2,3	
		5.1	Oxidising gases	1	
		5.1	Oxidising liquids	1,2,3	
		5.1	Oxidising solids	1,2,3	

BOX LABEL		UN CLASS	DESCRIPTION OF DANGER	CATEGORY	GHS PICTOGRAM (On Bottle)
ADR	LQ (Limited Quantity)				
		5.2	Organic peroxides	B,C,D,E,F	
		6.1	Acute toxicity (oral, dermal, inhalation)	1, 2, 3	
		6.1	Acute toxicity (oral, dermal, inhalation)	4	
		6.1	Skin irritation	2	
		8	Corrosive to metals	1	
		8	Skin corrosion	1A, 1B, 1C	
		8	Serious eye damage	1	
		n/a	Eye irritation	2	
		n/a	Skin sensation	1	
		n/a	Specific Target Organ Toxicity - Single exposure	3	
		n/a	Respiratory sensitisation	1	
		n/a	Germ cell mutagenicity	1A, 1B, 2	
		n/a	Carcinogenicity	1A, 1B, 2	
		n/a	Reproductive toxicity	1A, 1B, 2	
		n/a	Specific Target Organ Toxicity - Single exposure	1, 2	
		n/a	Aspiration hazard	1	
		n/a	Environmentally hazardous	1, 2, 3	



HAZARD STATEMENTS - Physical Hazards

H200	Unstable explosives.
H201	Explosive; mass explosion hazard.
H202	Explosive, severe projection hazard.
H203	Explosive; fire, blast or projection hazard.
H204	Fire or projection hazard.
H205	May mass explode in fire.
H220	Extremely flammable gas.
H221	Flammable gas.
H222	Extremely flammable aerosol.
H223	Flammable aerosol.
H224	Extremely flammable liquid and vapour.
H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H228	Flammable solid.
H240	Heating may cause an explosion.
H241	Heating may cause a fire or explosion.
H242	Heating may cause a fire.
H250	Catches fire spontaneously if exposed to air.
H251	Self-heating; may catch fire.
H252	Self-heating in large quantities; may catch fire.
H260	In contact with water releases flammable gases which may ignite spontaneously.
H261	In contact with water releases flammable gases.
H270	May cause or intensify fire; oxidiser.
H271	May cause fire or explosion; strong oxidiser.
H272	May intensify fire; oxidiser.
H280	Contains gas under pressure; may explode if heated.
H281	Contains refrigerated gas; may cause cryogenic burns or injury.
H290	May be corrosive to metals.

HAZARD STATEMENTS - Health Hazards

H300	Fatal if swallowed.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H310	Fatal in contact with skin.
H311	Toxic in contact with skin.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child <state specific effect if known.
H361	Suspected of damaging fertility or the unborn child.
H362	May cause harm to breast-fed children.
H370	Causes damage to organs.
H371	May cause damage to organs.
H372	Causes damage to organs.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
H413	May cause long lasting harmful effects to aquatic life.

Additional EU Hazard Classes

EUH001	Explosive when dry.
EUH006	Explosive with or without contact with air.
EUH014	Reacts violently with water.
EUH018	In use may form flammable/explosive vapour-air mixture.
EUH019	May form explosive peroxides.
EUH029	Contact with water liberates toxic gas.
EUH031	Contact with acids liberates toxic gas.
EUH032	Contact with acids liberates very toxic gas.
EUH044	Risk of explosion if heated under confinement.
EUH059	Hazardous to the ozone layer.
EUH066	Repeated exposure may cause skin dryness or cracking.
EUH070	Toxic by eye contact.
EUH071	Corrosive to the respiratory tract.
EUH201	Contains lead. Should not be used on surfaces liable to be chewed or sucked by children.
EUH201A	Warning! Contains lead.
EUH202	Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of the reach of children.
EUH203	Contains chromium (VI). May produce an allergic reaction.
EUH204	Contains isocyanates. May produce an allergic reaction.
EUH205	Contains epoxy constituents. May produce an allergic reaction.
EUH206	Warning! Do not use together with other products. May release dangerous gases (chlorine).
EUH207	Warning! Contains cadmium. Dangerous fumes are formed during use. See information supplied by the manufacturer. Comply with the safety instructions.
EUH208	Contains <name of sensitising substance>. May produce an allergic reaction.
EUH209	Can become highly flammable in use.
EUH209A	Can become flammable in use.
EUH210	Safety data sheet available on request.
EUH401	To avoid risks to human health and the environment, comply with the instructions for use.

PRECAUTIONARY STATEMENTS - General

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.

PRECAUTIONARY STATEMENTS - Prevention

P103	Read label before use.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P211	Do not spray on an open flame or other ignition source.
P220	Keep/Store away from clothing/.../combustible materials.
P221	Take any precaution to avoid mixing with combustibles...
P222	Do not allow contact with air.
P223	Keep away from any possible contact with water, because of violent reaction and possible flash fire.
P230	Keep wetted with...
P231	Handle under inert gas.
P231+P232	Handle under inert gas. Protect from moisture.
P232	Protect from moisture.
P233	Keep container tightly closed.
P234	Keep only in original container.
P235	Keep cool.
P235+P410	Keep cool. Protect from sunlight.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/.../equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P244	Keep reduction valves free from grease and oil.
P250	Do not subject to grinding/shock/.../friction.
P251	Pressurized container: Do not pierce or burn, even after use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.





PRECAUTIONARY STATEMENTS - Prevention	
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P262	Do not get in eyes, on skin, or on clothing.
P263	Avoid contact during pregnancy/while nursing.
P264	Wash ... thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P282	Wear cold insulating gloves/face shield/eye protection.
P283	Wear fire/flammable resistant/retardant clothing.
P284	Wear respiratory protection.
P285	In case of inadequate ventilation wear respiratory protection.





PRECAUTIONARY STATEMENTS - Response	
P301	IF SWALLOWED:
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P301+P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P301+ IF	SWALLOWED: rinse mouth. Do NOT induce vomiting.
P330+P331	
P302	IF ON SKIN:
P302+P334	IF ON SKIN: Immerse in cool water/wrap in wet bandages.
P302+P350	IF ON SKIN: Gently wash with plenty of soap and water.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P303	IF ON SKIN (or hair):
P303+	IF ON SKIN (or hair): Remove/Take off immediately all
P361+P353	contaminated clothing. Rinse skin with water/shower.
P304	IF INHALED:
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P304+P341	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305	IF IN EYES:
P305+	
P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P306	IF ON CLOTHING:
P306+P360	IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
P307	IF exposed:
P307+P311	IF exposed: Call a POISON CENTER or doctor/physician.
P308	IF exposed or concerned:
P308+P313	IF exposed or concerned: Get medical advice/attention.
P309	IF exposed or if you feel unwell:
P309+P311	IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
P310	Immediately call a POISON CENTER or doctor/physician.
P311	Call a POISON CENTER or doctor/physician.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P313	Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P315	Get immediate medical advice/attention.
P320	Specific treatment is urgent (see ... on this label).
P321	Specific treatment (see ... on this label).
P322	Specific measures (see ... on this label).
P330	Rinse mouth.
P331	Do NOT induce vomiting.
P332	If skin irritation occurs:
P332+P313	If skin irritation occurs: Get medical advice/attention.
P333	If skin irritation or rash occurs:
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P334	Immerse in cool water/wrap in wet bandages.
P335	Brush off loose particles from skin.



PRECAUTIONARY STATEMENTS - Response	
P335+P334	Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
P336	Thaw frosted parts with lukewarm water. Do not rub affected area.
P337	If eye irritation persists:
P337+P313	If eye irritation persists: Get medical advice/attention.
P338	Remove contact lenses, if present and easy to do. Continue rinsing.
P340	Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P341	If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P342	If experiencing respiratory symptoms:
P342+P311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P350	Gently wash with plenty of soap and water.
P351	Rinse cautiously with water for several minutes.
P352	Wash with plenty of soap and water.
P353	Rinse skin with water/shower.
P360	Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
P361	Remove/Take off immediately all contaminated clothing.
P362	Take off contaminated clothing and wash before reuse.
P363	Wash contaminated clothing before reuse.
P370	In case of fire:
P370+P376	In case of fire: Stop leak if safe to do so.
P370+P378	In case of fire: Use ... for extinction.
P370+P380	In case of fire: Evacuate area.
P370+	In case of fire: Evacuate area. Fight fire remotely due to the
P380+P375	risk of explosion.
P371	In case of major fire and large quantities:
P371+	In case of major fire and large quantities: Evacuate area.
P380+P375	Fight fire remotely due to the risk of explosion.
P372	Explosion risk in case of fire.
P373	DO NOT fight fire when fire reaches explosives.
P374	Fight fire with normal precautions from a reasonable distance.
P375	Fight fire remotely due to the risk of explosion.
P376	Stop leak if safe to do so.
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P378	Use ... for extinction.
P380	Evacuate area.
P381	Eliminate all ignition sources if safe to do so.
P390	Absorb spillage to prevent material damage.
P391	Collect spillage.



PRECAUTIONARY STATEMENTS - Storage	
P401	Store ...
P402	Store in a dry place.
P402+P404	Store in a dry place. Store in a closed container.
P403	Store in a well-ventilated place.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P404	Store in a closed container.
P405	Store locked up.
P406	Store in corrosive resistant/... container with a resistant inner liner.
P407	Maintain air gap between stacks/pallets.
P410	Protect from sunlight.
P410+P403	Protect from sunlight. Store in a well-ventilated place.
P410+P412	Protect from sunlight. Do not expose to temperatures exceeding 50°C/ 122°F.
P411	Store at temperatures not exceeding ...°C/...°F.
P411+P235	Store at temperatures not exceeding ...°C/...°F. Keep cool.
P412	Do not expose to temperatures exceeding 50°C/ 122°F.
P413	Store bulk masses greater than ... kg/... lbs at temperatures not exceeding ...°C/...°F.
P420	Store away from other materials.
P422	Store contents under ...
P501	Dispose of contents/container to ...







ACACIA POWDER (GUM ARABIC)					
N/A 					
UN Class: N/A		EC No.: 232-519-5		Danger	
Cas No.: 9000-01-5		Index No.: Not listed			
Hazard: H318 Precaution: P280 P305+P351+P338					
Cat No.	Grade	Assay	Info.	Per	
ESC54794		99%		100g	





ACETALDEHYDE (ETHANAL)					
CH ₃ CHO = 44.05g/mol   					
UN Class: 3 /UN1089 PG-I		EC No.: 200-836-8		Danger	
Cas No.: 75-07-0		Index No.: 605-003-00-6			
Hazard: H224 H319 H335 H351 Precaution: P210 P261 P281 P305+P351+P338					
Cat No.	Grade	Assay	Info.	Per	
ESC54795		98%	SURCHARGE	500 ml	




ACETAMIDE (ETHANAMIDE)					
CH ₃ . CO . NH ₂ = 59.07g/mol 					
UN Class: N/A		EC No.: 200-473-5		Warning	
Cas No.: 60-35-5		Index No.: 616-022-004			
Hazard: H351 Precaution: P281					
Cat No.	Grade	Assay	Info.	Per	
ESC54798		97%		100g	




ACETANILIDE (N-PHENYLACETAMIDE)					
C ₆ H ₅ . NH . CO . CH ₃ = 135.17g/mol 					
UN Class: N/A		EC No.: 203-150-7		Warning	
Cas No.: 103-84-4		Index No.: Not listed			
Hazard: H315 H319 Precaution: P305+P351+P338 P301+P312 P280					
Cat No.	Grade	Assay	Info.	Per	
ESC54801		98%		100g	




ACETIC ACID GLACIAL (ETHANOIC ACID)					
CH ₃ COOH = 60.05g/mol  					
UN Class: 8(3) /UN2789 PG-II		EC No.: 200-580-7		Danger	
Cas No.: 64-19-7		Index No.: 607-002-00-6			
Hazard: H226 H314 Precaution: P280 P305+P351+P338 P310					
Cat No.	Grade	Assay	Info.	Per	
ESC54804		99.5%		1L	

ACETIC ACID 1.0M (1.0N) (ETHANOIC ACID)					
UN Class: N/A					
EC No.: 200-580-7		Danger			
Cas No.: 64-19-7		Index No.: 607-002-00-6			
Hazard: Not considered hazardous Precaution: No additional precautions required					
Cat No.	Grade	Assay	Info.	Per	
ESC54805		98%	Std solution	2.5L	



ACETIC ANHYDRIDE (ETHANOIC ANHYDRIDE)					
(CH ₃ CO) ₂ O = 102.09g/mol    49°C					
UN Class: 8(3) /UN1715 PG-II		EC No.: 203-564-8		Danger	
Cas No.: 108-24-7		Index No.: 607-008-00-9			
Hazard: H314 H314 H226 H302 H332 Precaution: P280 P305+P351+P338 P261 P304+P340+P310 P303+P361+P353 P370+P378					
Cat No.	Grade	Assay	Info.	Per	
ESC54806		97%		500ml	


ACETONE (PROPANONE)					
(CH ₃) ₂ CO = 58.08g/mol   -18°C					
UN Class: 3 /UN1090 PG-II		EC No.: 200-662-2		Danger	
Cas No.: 67-64-1		Index No.: 606-001-00-8			
Hazard: H225 H319 H336 Precaution: P210 P305+P351+P338 P261					
Cat No.	Grade	Assay	Info.	Per	
ESC54807		99%		2.5L	



ACETONITRILE (CYANOMETHANE)					
CH ₃ CN = 41.05g/mol   -2°C					
UN Class: 3 /UN1648 PG-II		EC No.: 200-835-2		Danger	
Cas No.: 75-05-8		Index No.: 608-001-00-3			
Hazard: H225 H319 H302 H312 H332 Precaution: P210 P280 P305+P351+P338 P309+P310					
Cat No.	Grade	Assay	Info.	Per	
ESC54810		98%		2.5L	



ACETYL CHLORIDE (ETHANOYL CHLORIDE)					
CH ₃ COCl = 78.5g/mol   -4°C					
UN Class: 3(8) /UN1717 PG-II		EC No.: 200-865-6		Danger	
Cas No.: 75-36-5		Index No.: 607-011-00-5			
Hazard: H225 H314 EUH014 Precaution: P210 P280 P305+P351+P338 P310					
Cat No.	Grade	Assay	Info.	Per	
ESC54813		98%		500ml	





O-ACETYSALICYLIC ACID (2-(ACETOXY)-BENZOIC ACID)				
$C_9H_8O_4 = 180.16g/mol$				
				
UN Class: N/A		EC No.: 200-064-1		Warning
Cas No.: 50-78-2		Index No.: Not listed		
Hazard: H302 H315 H319 H335				
Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC54814		99.5%		100g


ADENOSINE-5-TRIPHOSPHORIC ACID (A.T.P.)				
$C_{10}H_{14}N_5Na_2O_{13}P_3 \cdot 3H_2O = 605.19g/mol$				
UN Class: N/A		EC No.: 213-579-1		
Cas No.: 34369-07-8		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC54815		98%		5g



ADIPIIC ACID (HEXANEDIOIC ACID)				
$HOOC(CH_2)_4COOH = 146.14g/mol$				
				
UN Class: N/A		EC No.: 204-673-3		Warning
Cas No.: 124-04-9		Index No.: 607-144-00-9		
Hazard: H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC54816		99%		250g


AGAR POWDER				
UN Class: N/A		EC No.: 232-658-1		
Cas No.: 9002-18-0		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC54818		> 97%		100g
ESC54819		> 97%		250g




DL-ALANINE ((±)-2-AMINOPROPIONIC ACID)				
$CH_3CH(NH_2)COOH = 89.09g/mol$				
UN Class: N/A		EC No.: 206-126-4		
Cas No.: 302-72-7		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55260		97%		25g

L-ALANINE ((S)-2-AMINOPROPIONIC ACID)				
$CH_3CH(NH_2)COOH = 89.09g/mol$				
UN Class: N/A		EC No.: 200-273-8		
Cas No.: 56-41-7		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55464		98%		25g

ALBUMEN EGG POWDER (EGG WHITE)				
UN Class: N/A		EC No.: 292-692-7		
Cas No.: 9006-59-1		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC54822		Protein > 80%		250g

ALIZARIN RED S C.I.58005 (1,2-DIHYDROXYANTHRAQUINONE)				
$C_{14}H_7NaO_7S = 342.3g/mol$				
				
UN Class: N/A		EC No.: 204-981-8		Warning
Cas No.: 130-22-3		Index No.: Not listed		
Hazard: H315 H319 H335				
Precaution: P261 P305+P351+P338 P280 P302+P352 P304+P340				
Notes: Yellow to orange red				
Cat No.	Grade	Assay	Info.	Per
ESC54823		> 98%	pH 4.0-6.0	100g

ALUMINIUM METAL - FOIL 0.1MM				
$Al = 26.98g/mol$				
UN Class: N/A		EC No.: 231-072-3		
Cas No.: 7429-90-5		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC54834		N/A	0.1mm	250g

ALUMINIUM METAL - POWDER				
$Al = 26.98g/mol$				
				
UN Class: 4.3 /UN1396 PG-II		EC No.: 231-072-3		Danger
Cas No.: 7429-90-5		Index No.: 013-002-00-1		
Hazard: H261 H228				
Precaution: P280 P210+P240+P241				
Cat No.	Grade	Assay	Info.	Per
ESC54835		98%	Fine	250g
ESC54836		98%	Fine	500g



ALUMINIUM AMMONIUM SULPHATE (AMMONIUM ALUM) $\text{AlNH}_4(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O} = 453.33\text{g/mol}$ 

UN Class: N/A **EC No.:** 232-055-3 **Warning**
Cas No.: 7784-26-1 **Index No.:** Not listed
Hazard: H315 H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54825		98%		500g

ALUMINIUM CHLORIDE ANHYDROUS (TRICHLOROALUMINIUM) $\text{AlCl}_3 = 133.34\text{g/mol}$ 

UN Class: 8 /UN1726 PG-II **EC No.:** 231-208-1 **Danger**
Cas No.: 7446-70-0 **Index No.:** 013-003-00-7
Hazard: H314 H372+H378
Precaution: P260 P280 P305+P351+P338 P302+P352

Cat No.	Grade	Assay	Info.	Per
ESC54831		98%		500g

ALUMINIUM CHLORIDE 6-WATER (TRICHLOROALUMANE) $\text{AlCl}_3 \cdot 6\text{H}_2\text{O} = 241.43\text{g/mol}$ 

UN Class: 8 /UN3260 PG-III **EC No.:** 231-208-1 **Danger**
Cas No.: 7784-13-6 **Index No.:** Not listed
Hazard: H314 H315 H319 H335 H412
Precaution: P273 P305+P351+P338 P261

Cat No.	Grade	Assay	Info.	Per
ESC54828		95%		100g

ALUMINIUM HYDROXIDE (ALUMINIC ACID) $\text{Al}(\text{OH})_3 = 78\text{g/mol}$ 

UN Class: N/A **EC No.:** 244-492-7 **Warning**
Cas No.: 21645-51-2 **Index No.:** Not listed
Hazard: H319
Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54833		95%		500g

ALUMINIUM NITRATE 9-WATER $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O} = 375.13\text{g/mol}$ 

UN Class: 5.1 /UN1438 PG-III **EC No.:** 236-751-8 **Warning**
Cas No.: 7784-27-2 **Index No.:** Not listed
Hazard: H272 H315 H319
Precaution: P220 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54837		95%		500g

ALUMINIUM OXIDE CALCINED (ALUMINA) $\text{Al}_2\text{O}_3 = 101.96\text{g/mol}$

UN Class: N/A **EC No.:** 215-691-6
Cas No.: 1344-28-1 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: Not considered hazardous

Cat No.	Grade	Assay	Info.	Per
ESC54839		97%		500g

ALUMINIUM POTASSIUM SULPHATE 12-WATER (POTASH ALUM) $\text{AlK}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O} = 474.39\text{g/mol}$

UN Class: N/A **EC No.:** 233-141-3
Cas No.: 7784-24-9 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC54840		99%		500g

ALUMINIUM SULPHATE 16-WATER (ALUNOGENITE) $\text{Al}_2(\text{SO}_4)_3 \cdot 16\text{H}_2\text{O} = 630.4\text{g/mol}$ 

UN Class: N/A **EC No.:** 233-135-0 **Danger**
Cas No.: 16828-11-8 **Index No.:** Not listed
Hazard: H318
Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54843		98%		500g

AMINO ACID SET

L-Alanine, L-Aginine, L-Asparagine, L-Cystine, L-Glutamic Acid, Glycine, L-Histidine, L-Leucine, L-Lysine, DL-Methionine, DL-Phenylalanine, L-Proline, L-Serine, L-Threonine, L-Tryptophan, L-Tyrosine, L-Valine - 1g of each included in set

UN Class: N/A **EC No.:** N/A
Cas No.: N/A **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC54845		N/A	17 Amino acids	SET


AMMONIA SOLUTION $\text{NH}_4\text{OH} = 35.05\text{g/mol}$ 


UN Class: 8 /UN2672 PG-III **EC No.:** 215-647-6 **Danger**
Cas No.: 1336-21-6 **Index No.:** 007-001-01-2
Hazard: H314 H400
Precaution: P273 P280 P305+P351+P338 P310


Cat No.	Grade	Assay	Info.	Per
ESC54847		33-35 NH_3		1L
ESC54848		33-35 NH_3		2.5L





AMMONIUM ACETATE (AMMONIUM ETHANOATE)				
$\text{CH}_3\text{COONH}_4 = 77.08\text{g/mol}$				
UN Class: N/A		EC No.: 211-162-9		
Cas No.: 7664-93-9		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: Not considered hazardous				
Notes: pH of solution 6.5-7.5				
Cat No.	Grade	Assay	Info.	Per
ESC54851		96%		500g


AMMONIUM BROMIDE (HYDROBROMIC ACID MONOAMMONIATE)				
$\text{NH}_4\text{Br} = 97.94\text{g/mol}$				
UN Class: N/A		EC No.: 235-183-8		
Cas No.: 12124-97-9		Index No.: Not listed		
Hazard: H319 H315				
Precaution: P305+P351+P338 P332+P313 P337+P313				
Cat No.	Grade	Assay	Info.	Per
ESC54854		99%		500g


AMMONIUM CARBONATE				
$(\text{NH}_4)_2\text{CO}_3 = 96.09\text{g/mol}$				
UN Class: N/A		EC No.: 208-058-0		
Cas No.: 506-87-6		Index No.: Not listed		
Hazard: H302				
Precaution: P301+P312				
Cat No.	Grade	Assay	Info.	Per
ESC54857		98%		500g


AMMONIUM CHLORIDE (SAL AMMONIAC)				
$\text{NH}_4\text{Cl} = 53.49\text{g/mol}$				
UN Class: N/A		EC No.: 235-186-4		
Cas No.: 12125-02-9		Index No.: Not listed		
Hazard: H302 H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC54860		99%		500g


AMMONIUM DICHROMATE				
$(\text{NH}_4)_2\text{Cr}_2\text{O}_7 = 252.06\text{g/mol}$				
UN Class: 5.1 / UN1439 PG-II		EC No.: 232-143-1		
Cas No.: 7789-09-5		Index No.: 024-003-00-1		
Hazard: H272 H350 H340 H360 H330 H301 H372 H312 H314 H334 H317 H410				
Precaution: P201 P220 P260 P273 P280 P284				
Cat No.	Grade	Assay	Info.	Per
ESC54863		33-35 NH ₃		500g

AMMONIUM HYDROGEN CARBONATE (AMMONIUM BICARBONATE)				
$\text{NH}_4\text{HCO}_3 = 79.06\text{g/mol}$				
UN Class: N/A		EC No.: 213-911-5		
Cas No.: 1066-33-7		Index No.: Not listed		
Hazard: H302				
Precaution: P301+P312				
Cat No.	Grade	Assay	Info.	Per
ESC54866		98.5%		500g

DI-AMMONIUM HYDROGEN PHOSPHATE				
$(\text{NH}_4)_2\text{HPO}_4 = 132.06\text{g/mol}$				
UN Class: N/A		EC No.: 231-987-8		
Cas No.: 7783-28-0		Index No.: Not listed		
Hazard: H315 H319 H335				
Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55236		98%		500g

AMMONIUM IRON (II) SULPHATE 6-WATER				
$(\text{NH}_4)_2\text{Fe}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O} = 392.14\text{g/mol}$				
UN Class: N/A		EC No.: 233-151-8		
Cas No.: 7783-85-9		Index No.: Not listed		
Hazard: H315 H319 H335				
Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC54869		98%		500g

AMMONIUM IRON (III) CITRATE (AMMONIUM FERRIC CITRATE)					
$\text{C}_6\text{H}_8\text{O}_7 \cdot x\text{Fe}_3 \cdot y\text{NH}_3$					
UN Class: N/A		EC No.: 214-686-6			
Cas No.: 1185-57-5		Index No.: Not listed			
Hazard: Not considered hazardous					
Precaution: No additional precautions required					
Cat No.	Grade	Assay	Info.	Price	Per
ESC54872		98%	Brown	15.95	100g

AMMONIUM IRON (III) CITRATE - GREEN					
$\text{C}_6\text{H}_8\text{O}_7 \cdot x\text{Fe}_3 \cdot y\text{NH}_3$					
UN Class: N/A		EC No.: 214-686-6			
Cas No.: 1185-57-5		Index No.: Not listed			
Hazard: Not considered hazardous					
Precaution: No additional precautions required					
Cat No.	Grade	Assay	Info.	Per	
ESC54875		98%	Green		100g



AMMONIUM IRON (III) SULPHATE 12-WATER $\text{NH}_4\text{Fe}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O} = 482.19\text{g/mol}$ 

UN Class: N/A **EC No.:** 233-382-4 **Warning**
Cas No.: 7783-83-7 **Index No.:** Not listed
Hazard: H315 H319
Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54878		98%		500g

ISO-AMYL ACETATE (ISO-PENTYL ACETATE) $\text{CH}_3\text{COOC}_5\text{H}_{11} = 130.18\text{g/mol}$ 

24°C

UN Class: 3 /UN1104 PG-III **EC No.:** 211-047-3 **Warning**
Cas No.: 628-63-7 **Index No.:** 607-130-00-2
Hazard: H226 EUH066
Precaution: P210 P243 P280

Cat No.	Grade	Assay	Info.	Per
ESC54894		95%		500ml

AMMONIUM METAVANADATE (AMMONIUM TRIOXOVANADATE) $\text{NH}_4\text{VO}_3 = 116.98\text{g/mol}$ 

UN Class: 6.1 /UN2859 PG-II **EC No.:** 232-261-3 **Danger**
Cas No.: 7803-55-6 **Index No.:** Not listed
Hazard: H301 H315 H319 H330 H335
Precaution: P260 P284 P301+P310 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Price	Per
ESC54880		98%		15.95	50g

AMMONIUM PEROXODISULPHATE (AMMONIUM PERSULPHATE) $(\text{NH}_4)_2\text{S}_2\text{O}_8 = 228.2\text{g/mol}$ 

UN Class: 5.1 /UN1444 PG-III **EC No.:** 231-786-5 **Danger**
Cas No.: 7727-54-0 **Index No.:** 016-060-00-6
Hazard: H272 H302 H315 H317 H319 H334 H335
Precaution: P280 P305+P351+P338 P210 P302+P352 P304+P340 P309+P311

Cat No.	Grade	Assay	Info.	Per
ESC54888		98%		500g

AMMONIUM MOLYBDATE (VI) 4-WATER $(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O} = 1235.86\text{g/mol}$ 

UN Class: N/A **EC No.:** 234-722-4 **Warning**
Cas No.: 12054-85-2 **Index No.:** Not listed
Hazard: H315 H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54881		98%		500g

AMMONIUM SULPHATE $(\text{NH}_4)_2\text{SO}_4 = 132.14\text{g/mol}$

UN Class: N/A **EC No.:** 231-984-1 **Danger**
Cas No.: 7783-20-2 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC54889		98.5%		500g

AMMONIUM NICKEL (II) SULPHATE 6-WATER (NICKEL AMMONIUM SULPHATE) $(\text{NH}_4)_2\text{Ni}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O} = 394.99\text{g/mol}$ 

UN Class: N/A **EC No.:** 239-793-5 **Danger**
Cas No.: 7785-20-8 **Index No.:** Not listed
Hazard: H302 H317 H332 H334 H341 H350 H360 H372 H410
Precaution: P201 P261 P273 P280 P308+P313 P501

Cat No.	Grade	Assay	Info.	Per
ESC54884		98%		500g

AMMONIUM THIOCYANATE $\text{NH}_4\text{SCN} = 76.12\text{g/mol}$ 

UN Class: N/A **EC No.:** 217-175-6 **Warning**
Cas No.: 1762-95-4 **Index No.:** 615-030-00-5
Hazard: H302 H312 H332 H410
Precaution: P273 P280 P501

Cat No.	Grade	Assay	Info.	Per
ESC54892		96%		500g

AMMONIUM NITRATE $\text{NH}_4\text{NO}_3 = 80.04\text{g/mol}$ 

UN Class: 5.1 /UN2067 PG-III **EC No.:** 229-347-8 **Warning**
Cas No.: 6484-52-2 **Index No.:** Not listed
Hazard: H272 H319 H315
Precaution: P220 P261 P305+P351+P338



Cat No.	Grade	Assay	Info.	Per
ESC54885		98%		500g



AMMONIUM OXALATE 1-WATER (OXALIC ACID DIAMMONIUM SALT) $(\text{COONH}_4)_2 \cdot \text{H}_2\text{O} = 142.11\text{g/mol}$ 



UN Class: 6.1 /UN2811 PG-III **EC No.:** 214-202-3 **Warning**
Cas No.: 6009-70-7 **Index No.:** 607-007-00-3
Hazard: H312 H302
Precaution: P261 P302+P352 P304+P340+P312


Cat No.	Grade	Assay	Info.	Per
ESC54886		99%		100g






ISO-AMYL ALCOHOL (3-METHYL BUTAN-1-OL)				
$C_5H_{11}OH = 88.15g/mol$				
				
UN Class: 3 /UN1105 PG-III		EC No.: 204-633-5		Warning
Cas No.: 123-51-3		Index No.: 603-006-00-7		
Hazard: H226 H315 H319 H332 H335				
Precaution: P210 P261 P280 P337+P313 P304+P340+P312				
Cat No.	Grade	Assay	Info.	Per
ESC55448		96%		2.5L



AQUADAG (CARBON COLLOIDAL)				
N/A				
				
UN Class: N/A		EC No.: 231-955-3		Warning
Cas No.: 7782-42-5		Index No.: Not listed		
Hazard: H319 H335				
Precaution: P261 P305+P351+P338				
Notes: 20% suspension of colloidal in graphite				
Cat No.	Grade	Assay	Info.	Per
ESC54899		N/A		100g


ANILINE (PHENYLAMINE)				
$C_6H_5NH_2 = 93.13g/mol$				
				
UN Class: 6.1 /UN1547 PG-II		EC No.: 200-539-3		Danger
Cas No.: 62-53-3		Index No.: 612-008-00-7		
Hazard: H301 H311 H317 H318 H331 H341 H351 H372 H410				
Precaution: P261 P273 P280 P301+P310 P305+P351+P338 P311				
Notes: Distillation range 182-186°C				
Cat No.	Grade	Assay	Info.	Per
ESC54895		98%		1L


L-ARGININE ((S)-2-AMINO-5-GUANIDINOPENTANOIC ACID)				
$H_2NC(=NH)NH(CH_2)_3CH(NH_2CO_2H) = 174.2g/mol$				
UN Class: N/A		EC No.: 200-811-1		
Cas No.: 74-79-3		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC54900		98%		100g


ANILINE HYDROCHLORIDE (PHENYLAMMONIUM CHLORIDE)				
$C_6H_5NH_2 \cdot HCl = 129.59g/mol$				
				
UN Class: 6.1 /UN1548 PG-III		EC No.: 205-519-8		Danger
Cas No.: 142-04-1		Index No.: 612-009-00-2		
Hazard: H301 H311 H317 H318 H331 H341 H351 H372 H400				
Precaution: P261 P273 P280 P301+P310 P305+P351+P338 P311				
Cat No.	Grade	Assay	Info.	Per
ESC54896		98%		100g

L-ASCORBIC ACID (VITAMIN C)				
$C_6H_8O_6 = 176.13g/mol$				
UN Class: N/A		EC No.: 200-066-2		
Cas No.: 50-81-7		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55468		99%		500g

ANTHRANILIC ACID (2-AMINO BENZOIC ACID)				
$2-(H_2N)C_6H_4CO_2H = 137.14g/mol$				
				
UN Class: N/A		EC No.: 204-287-5		Warning
Cas No.: 118-92-3		Index No.: Not listed		
Hazard: H319				
Precaution: P305+P351+P338 P280				
Cat No.	Grade	Assay	Info.	Per
ESC54897		97%		100g

DL - ASPARTIC ACID ((2S)-2-AMINO BUTANEDIOIC ACID)				
$HOOCCH_2CH(NH_2)COOH = 133.1g/mol$				
UN Class: N/A		EC No.: 210-513-3		
Cas No.: 617-45-8		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55469		97%		25g

ANTI-BUMPING GRANULES (REFINED ALUMINIUM OXIDE)				
$Al_2O_3 = 101.96g/mol$				
UN Class: N/A		EC No.: 215-691-6		
Cas No.: 1344-28-1		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Notes: To prevent boiling liquids from bumping				
Cat No.	Grade	Assay	Info.	Per
ESC54898		97%		250g

L-ASPARTIC ACID ((S)-AMINO BUTANEDIOIC ACID)					
$NH_2CH(COOH) \cdot CH_2 \cdot COOH = 133.1g/mol$					
UN Class: N/A		EC No.: 200-291-6			
Cas No.: 56-84-8		Index No.: Not listed			
Hazard: Not considered hazardous					
Precaution: No additional precautions required					
Cat No.	Grade	Assay	Info.	Price	Per
ESC55470		99%		15.95	25g



BARFOED'S REAGENT
 $\text{NH}_2\text{CH}(\text{COOH}) \cdot \text{CH}_2 \cdot \text{COOH} = 133.1\text{g/mol}$


UN Class: N/A EC No.: N/A Warning
 Cas No.: N/A Index No.: Not listed
 Hazard: H411
 Precaution: P273
 Notes: Reagent testing for the presence of monosaccharide

Cat No.	Grade	Assay	Info.	Per
ESC54901		N/A		500ml

BARIUM METAL IN LIQUID PARAFFIN
 $\text{Ba} = 137.34\text{g/mol}$


UN Class: 4.3 /UN1400 PG-II EC No.: 231-149-1 Danger
 Cas No.: 7440-39-3 Index No.: Not listed
 Hazard: H261 H315 H319 H335
 Precaution: P231+P232 P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54903		98%		10g

BARIUM CARBONATE
 $\text{BaCO}_2 = 197.34\text{g/mol}$


UN Class: 6.1 /UN1564 PG-III EC No.: 208-167-3 Warning
 Cas No.: 513-77-9 Index No.: 056-003-00-2
 Hazard: H302
 Precaution: P301+P312

Cat No.	Grade	Assay	Info.	Per
ESC54904		99%		500g

BARIUM CHLORIDE 2-WATER
 $\text{BaCl}_2 \cdot 2\text{H}_2\text{O} = 244.26\text{g/mol}$

UN Class: 6.1 /UN1564 PG-III EC No.: 233-788-1 Warning
 Cas No.: 10326-27-9 Index No.: 056-004-00-8
 Hazard: H301 H332
 Precaution: P261 P301+P330+P331 P310

Cat No.	Grade	Assay	Info.	Per
ESC54907		99%		250g
ESC54908		99%		500g

BARIUM HYDROXIDE 8-WATER
 $\text{Ba}(\text{OH})_2 \cdot 8\text{H}_2\text{O} = 315.46\text{g/mol}$


UN Class: 8 /UN3262 PG-II EC No.: 241-234-5 Danger
 Cas No.: 12230-71-6 Index No.: Not listed
 Hazard: H302 H314 H332
 Precaution: P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC54911		96%		500g

BARIUM PEROXIDE
 $\text{BaO}_2 = 169.34\text{g/mol}$


UN Class: 5.1(6.1) /UN1449 PG-II EC No.: 215-128-4 Danger
 Cas No.: 1304-29-6 Index No.: 056-001-00-1
 Hazard: H272 H302 H332
 Precaution: P220

Cat No.	Grade	Assay	Info.	Per
ESC54916		85-90%		100g

BARIUM NITRATE
 $\text{Ba}(\text{NO}_3)_2 = 261.34\text{g/mol}$


UN Class: 5.1(6.1) /UN1446 PG-II EC No.: 233-020-5 Danger
 Cas No.: 10022-31-8 Index No.: 056-002-00-7
 Hazard: H302 H332 H272
 Precaution: P210 P280 P304+P340 P309+P310

Cat No.	Grade	Assay	Info.	Per
ESC54914		98%		250g

BARIUM OXIDE
 $\text{BaO} = 153.33\text{g/mol}$


UN Class: 6.1 /UN1884 PG-III EC No.: 215-127-9 Danger
 Cas No.: 1304-28-5 Index No.: Not listed
 Hazard: H301 H314 H332
 Precaution: P280 P301+P310 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54915		97%		50g

BARIUM SULPHATE PRECIPITATED
 $\text{BaSO}_4 = 233.39\text{g/mol}$

UN Class: N/A EC No.: 231-784-4
 Cas No.: 7727-43-7 Index No.: Not listed
 Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC54917		97%		500g



BEEWAX (WHITE)



UN Class: N/A EC No.: 232-383-7
 Cas No.: 8012-89-3 Index No.: Not listed



Hazard: Not considered hazardous
 Precaution: No additional precautions required



Cat No.	Grade	Assay	Info.	Per
ESC54920		> 97%		500g







BENZOPHENONE (DIPHENYL KETONE)				
$C_{15}H_{12}O$ = 182.22g/mol 				
UN Class: N/A		EC No.: 204-337-6		Warning
Cas No.: 119-61-9		Index No.: Not listed		
Hazard: H410 Precaution: P273				
Cat No.	Grade	Assay	Info.	Per
ESC54931		99%		250ml

BENZOIC ACID (BENZENECARBOXYLIC ACID)				
C_6H_5COOH = 122.12g/mol 				
UN Class: N/A		EC No.: 200-618-2		Warning
Cas No.: 65-85-0		Index No.: Not listed		
Hazard: H302 H319 Precaution: P301+P312 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC54930		98.5%		500g



BENEDICT'S SOLUTION QUALITATIVE				
N/A 				
UN Class: 9 /UN3082 PG-III		EC No.: N/A		Warning
Cas No.: N/A		Index No.: Not listed		
Hazard: H412 Precaution: P273 Notes: For determination of reducing sugars				
Cat No.	Grade	Assay	Info.	Per
ESC54923		N/A		500ml



BENZOYL CHLORIDE				
C_6H_5COCl = 140.57g/mol 				
UN Class: 8 /UN1736 PG-II		EC No.: 202-710-8		Danger
Cas No.: 98-88-4		Index No.: 607-012-00-0		
Hazard: H314 H302 H312 H332 Precaution: P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC54933		99%		1L


BENZALDEHYDE				
$C_6H_5 \cdot CHO$ = 106.12g/mol 				
UN Class: 9 /UN1990 PG-III		EC No.: 202-860-4		Warning
Cas No.: 100-52-7		Index No.: 605-012-00-5		
Hazard: H302 Precaution: P301+P312 Notes: Distillation range 175-183°C				
Cat No.	Grade	Assay	Info.	Per
ESC54926		98%		500ml

BENZYL ALCOHOL (BENZENEMETHANOL)				
$C_6H_5CH_2OH$ = 108.14g/mol 				
UN Class: 9 /UN3334 PG-III		EC No.: 202-859-9		Warning
Cas No.: 100-51-6		Index No.: 603-057-00-5		
Hazard: H302 H332 Precaution: P301+P312				
Cat No.	Grade	Assay	Info.	Per
ESC54936		99%		1L

BENZENE-1,2-DICARBOXYLIC ACID SEE PHTHALIC ACID	
BENZENE-1,2-DICARBOXYLIC ANHYDRIDE	SEE PHTHALIC ANHYDRIDE
BENZENE-1,2-DIOL	SEE CATECHOL
BENZENE-1,3-DIOL	SEE RESORCINOL
BENZENE-1,4-DIOL	SEE HYDROQUINONE
BENZENE-1,2,3-TRIOL	SEE PYROGALLOL
BENZENE-1,2,5-TRIOL	SEE PHLOROGLUCINOL

BENZYL CHLORIDE (A-CHLOROTOLUENE)				
$C_6H_5CH_2Cl$ = 126.58g/mol 				
UN Class: 6.1 /UN1738 PG-II		EC No.: 202-853-6		Danger
Cas No.: 100-44-7		Index No.: 602-037-00-3		
Hazard: H350 H331 H302 H373 H335 H315 H318 Precaution: P201 P261 P280 P305+P351+P338 P308+P313 Notes: Distillation range 175-180°C				
Cat No.	Grade	Assay	Info.	Per
ESC54939		98%	SURCHARGE	500ml

BENZIL (1,2-DIPHENYLETHANE-1,2-DIONE)				
$C_{14}H_{10}O_2$ = 210.23g/mol 				
UN Class: N/A		EC No.: 205-157-0		Warning
Cas No.: 134-81-6		Index No.: Not listed		
Hazard: H315 H319 H335 Precaution: P261 P305+P351+P338 P302+P352				
Cat No.	Grade	Assay	Info.	Per
ESC54928		98%		25g


BICARBONATE INDICATOR				
UN Class: N/A		EC No.: N/A		
Cas No.: N/A		Index No.: Not listed		
Hazard: Not considered hazardous Precaution: No additional precautions required Notes: Distillation range 175-180°C				
Cat No.	Grade	Assay	Info.	Per
ESC54943		N/A		500ml




BILE SALTS (SODIUM TAUROGLYCOCHOLATE)

UN Class: N/A EC No.: 234-243-0
 Cas No.: 11006-55-6 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required
 Notes: Distillation range 175-180°C


Cat No.	Grade	Assay	Info.	Per
ESC54944		>65%		25g

BISMUTH (III) CHLORIDE (BISMUTH TRICHLORIDE)



BiCl₃ = 315.34g/mol 

UN Class: N/A EC No.: 232-123-2 Warning
 Cas No.: 7787-60-2 Index No.: Not listed

Hazard: H315 H319
 Precaution: P305+P351+P338 P302+P352


Cat No.	Grade	Assay	Info.	Per
ESC54945		98%		10g

BISMUTH NITRATE 5-WATER

Bi(NO₃)₃ · 5H₂O = 485.07g/mol  

UN Class: 5.1 /UN1477 PG-II EC No.: 233-791-8 Danger
 Cas No.: 10035-06-0 Index No.: Not listed

Hazard: H272 H315 H319 H335
 Precaution: P220 P261 P305+P351+P338


Cat No.	Grade	Assay	Info.	Per
ESC54946		98%		25g

BIURET REAGENT

N/A  

UN Class: N/A EC No.: N/A Warning
 Cas No.: N/A Index No.: Not listed


Hazard: H315 H319
 Precaution: P280 P305+P351+P338
 Notes: Working solution to test for proteins

Cat No.	Grade	Assay	Info.	Per
ESC54947		N/A		1L

BLEACHING POWDER SEE CALCIUM HYPOCHLORITE


BORAX SEE DISODIUM TETRABORATE

BORIC ACID CRYSTALS (TRIOXYBORIC (III) ACID)


H₃BO₃ = 61.83g/mol 

UN Class: N/A EC No.: 233-139-2 Danger
 Cas No.: 10043-35-3 Index No.: 005-007-00-2

Hazard: H360FD
 Precaution: P201 P308+P313


Cat No.	Grade	Assay	Info.	Per
ESC54950		99.5%		500g

BORIC ACID POWDER (TRIOXYBORIC (III) ACID)




H₃BO₃ = 61.83g/mol 

UN Class: N/A EC No.: 233-139-2 Danger
 Cas No.: 10043-35-3 Index No.: 005-007-00-2

Hazard: H360FD
 Precaution: P201 P308+P313


Cat No.	Grade	Assay	Info.	Per
ESC54951		99.5%		500g

BROMINE

Br₂ = 159.81g/mol   

UN Class: 8(6.1) /UN1744 PG-I EC No.: 231-778-1 Danger
 Cas No.: 7726-95-6 Index No.: 035-001-00-5

Hazard: H314 H330 H400
 Precaution: P260 P273 P280 P284 P305+P351+P338 P310


Cat No.	Grade	Assay	Info.	Per
ESC54953		98%	SURCHARGE	1L

BROMINE WATER 0.2M




N/A   

UN Class: 8(6.1) /UN1744 PG-I EC No.: 231-778-1 Danger
 Cas No.: 7726-95-6 Index No.: Not listed

Hazard: H314 H330 H400
 Precaution: P273 P280 P305+P351+P338 P310


Cat No.	Grade	Assay	Info.	Per
ESC54954		0.2M	SURCHARGE	1L

BROMOBENZENE

C₆H₅ · Br = 157.01g/mol   

UN Class: 3 /UN2514 PG-III EC No.: 203-623-8 Warning
 Cas No.: 108-86-1 Index No.: 602-060-00-9

Hazard: H226 H315 H411
 Precaution: P210 P273

Cat No.	Grade	Assay	Info.	Per
ESC54960		95%		100ml



1-BROMOBUTANE (N-BUTYL BROMIDE) $\text{CH}_3 \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \text{BR} = 137.02\text{g/mol}$ 

UN Class: 3 /UN1126 PG-II **EC No.:** 203-691-9 **Danger**
Cas No.: 109-65-9 **Index No.:** Not listed
Hazard: H225 H315 H319 H335 H411
Precaution: P210 P261 P273 P280 P337+P313 P391 P403+P235

Cat No.	Grade	Assay	Info.	Per
ESC54760		>97%		1L

2-BROMOBUTANE (SEC-BUTYL BROMIDE) $\text{CH}_3 \cdot \text{CHBR} \cdot \text{CH}_2 \cdot \text{CH}_3 = 137.02\text{g/mol}$ 

UN Class: 3 /UN2339 PG-II **EC No.:** 201-140-7 **Danger**
Cas No.: 78-76-2 **Index No.:** Not listed
Hazard: H226 H412
Precaution: P210 P243 P273 P280

Cat No.	Grade	Assay	Info.	Per
ESC54782		>97%		100ml

BROMOCRESOL GREEN $\text{C}_{21}\text{H}_{14}\text{Br}_4\text{O}_5\text{S} = 698.01\text{g/mol}$

UN Class: N/A **EC No.:** 200-972-8
Cas No.: 76-60-8 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required
Notes: pH 3.6-5.2

Cat No.	Grade	Assay	Info.	Per
ESC54964		>97%	Powder	25g

BROMOCRESOL PURPLE $\text{C}_{21}\text{H}_{16}\text{Br}_2\text{O}_5\text{S} = 540.22\text{g/mol}$ 

UN Class: N/A **EC No.:** 204-087-8 **Warning**
Cas No.: 115-40-2 **Index No.:** Not listed
Hazard: H315 H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54967		>97%	pH 5.2-6.8	25g

1-BROMOETHANE (ETHYL BROMIDE) $\text{C}_2\text{H}_5\text{Br} = 108.97\text{g/mol}$ 

UN Class: 6.1 /UN1891 PG-II **EC No.:** 200-825-8 **Danger**
Cas No.: 74-96-4 **Index No.:** 602-055-00-1
Hazard: H225 H351 H332 H302
Precaution: P201 P210 P281 P301+P312 P304+P340 P309+P311

Cat No.	Grade	Assay	Info.	Per
ESC54763		>97%		500ml

2-BROMO-2-METHYLPROPANE (TERT-BUTYL BROMIDE) $(\text{CH}_3)_3\text{CBr} = 137.02\text{g/mol}$ 

UN Class: 3 /UN2342 PG-II **EC No.:** 208-065-9 **Danger**
Cas No.: 507-19-7 **Index No.:** Not listed
Hazard: H225
Precaution: P210

Cat No.	Grade	Assay	Info.	Per
ESC54784		>97%		25ml

BROMO PHENOL BLUE $\text{C}_{19}\text{H}_{10}\text{Br}_4\text{O}_5\text{S} = 669.96\text{g/mol}$ 

UN Class: N/A **EC No.:** 204-086-2 **Warning**
Cas No.: 115-39-9 **Index No.:** Not listed
Hazard: H332 H312 H319
Precaution: P261 P280 P305+P351+P338 P264
Notes: pH 2.8-4.6

Cat No.	Grade	Assay	Info.	Per
ESC54957		>97%	Powder	25g

BROMOTHYMOL BLUE $\text{C}_{27}\text{H}_{28}\text{Br}_2\text{O}_5\text{S} = 624.38\text{g/mol}$

UN Class: N/A **EC No.:** 200-971-2
Cas No.: 76-59-5 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required
Notes: pH 6.0-7.6

Cat No.	Grade	Assay	Info.	Per
ESC54970		>97%	Powder	25g

BUFFER SOLUTION

UN Class: N/A **EC No.:** N/A
Cas No.: N/A **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC54978			pH2 (Citrate)	500ml
ESC54982			pH4 (Phthalate)	500ml
ESC54985			pH6 (Acetate)	500ml
ESC54988			pH7 (Phthalate)	500ml
ESC54991			pH9.2 (Phthalate)	500ml
ESC54974			pH10 (Phthalate)	500ml




COLOURED BUFFER SOLUTION

UN Class: N/A
Cas No.: N/A

EC No.: N/A
Index No.: Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC54998			pH4 Red	500ml
			pH7 Green	500ml
			pH10 Blue	500ml

BUTANAL (N-BUTYRALDEHYDE)



$\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO} = 72.11\text{g/mol}$



UN Class: 3 /UN1129 PG-II
Cas No.: 123-72-8

EC No.: 204-646-6
Index No.: 605-006-00-2

Hazard: H225
Precaution: P210

Cat No.	Grade	Assay	Info.	Per
ESC55000		98%		100ml
ESC55001		98%		500ml

BUTANEDIOIC ACID SEE SUCCINIC ACID

BUTANOIC ACID (N-BUTYRIC ACID)


$\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH} = 88.11\text{g/mol}$



UN Class: 8 /UN2820 PG-III
Cas No.: 107-92-6

EC No.: 203-532-3
Index No.: 607-135-00-X

Hazard: H314
Precaution: P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55002		99.5%		100ml

BUTAN-1-OL (N-BUTYL ALCOHOL)



$\text{CH}_3(\text{CH}_2)_3\text{OH} = 74.12\text{g/mol}$



UN Class: 3 /UN1120 PG-III
Cas No.: 71-36-3

EC No.: 200-751-6
Index No.: 603-004-00-6

Hazard: H226 H302 H335 H315 H318 H336
Precaution: P210 P280 P301+P330+P331 P304+P340 P312

Cat No.	Grade	Assay	Info.	Per
ESC55003		99.5%		500ml
ESC55004		99.5%		2.5L

BUTAN-2-OL (SEC-BUTYL ALCOHOL)


$\text{CH}_3\text{CH}_2\text{CHOHCH}_3 = 74.12\text{g/mol}$



UN Class: 3 /UN1120 PG-III
Cas No.: 78-92-2

EC No.: 201-158-5
Index No.: 603-127-00-5

Hazard: H225 H319 H335 H336
Precaution: P210 P243 P280 P304+P340 P305+P351+P338 P312

Cat No.	Grade	Assay	Info.	Per
ESC55005		99.5%		1L

BUTANONE (METHYL ETHYL KETONE)


$\text{C}_2\text{H}_5\text{COCH}_3 = 72.11\text{g/mol}$



UN Class: 3 /UN1193 PG-II
Cas No.: 78-93-3

EC No.: 201-159-0
Index No.: Not listed

Hazard: H225 H319 H336
Precaution: P210 P241 P303+P361+P353 P405 P501

Cat No.	Grade	Assay	Info.	Per
ESC55006		99%		2.5L

N-BUTYL ACETATE (BUTYL ETHANOATE)


$\text{CH}_3\text{COO}(\text{CH}_2)_3\text{CH}_3 = 116.16\text{g/mol}$



UN Class: 3 /UN1123 PG-III
Cas No.: 123-86-4

EC No.: 204-658-1
Index No.: 607-025-00-1

Hazard: H226 H336 EUH066
Precaution: P210 P243 P280 P304+P340 P312

Cat No.	Grade	Assay	Info.	Per
ESC55640		98%		1L

ISO-BUTYL ALCOHOL SEE 2-METHYLPROPAN-1-OL

N-BUTYL ALCOHOL SEE BUTAN-1-OL

SEC-BUTYL ALCOHOL SEE BUTAN-2-OL

TERT-BUTYL ALCOHOL SEE 2-METHYLPROPAN-2-OL

N-BUTYLAMINE (1-AMINOBUTANE)


$\text{CH}_3(\text{CH}_2)_3\text{NH}_2 = 73.14\text{g/mol}$



UN Class: 3(8) /UN1125 PG-II
Cas No.: 109-73-9

EC No.: 203-699-2
Index No.: 612-005-00-0


Hazard: H225 H332 H312 H302 H314
Precaution: P210 P243 P280 P301+P330+P331 P302+P352 P304+P340 P309+P311


Cat No.	Grade	Assay	Info.	Per
ESC55644		98%		1L



N-BUTYL IODIDE SEE 1-IODOBUTANE


N-BUTYRALDEHYDE SEE BUTANAL





CAESIUM CHLORIDE				
$\text{CsCl} = 168.32\text{g/mol}$				
UN Class: N/A		EC No.: 231-600-2		Danger
Cas No.: 7647-17-8		Index No.: Not listed		
Hazard: H302 H361 H373				
Precaution: P201 P301+P312+P330 P308-P313				
Cat No.	Grade	Assay	Info.	Per
ESC55007		99%		10g



CAFFEINE (1,3,7-TRIMETHYLXANTHINE)				
$\text{C}_8\text{H}_{10}\text{N}_4\text{O}_2 = 194.19\text{g/mol}$				
UN Class: 6.1 /UN1544 PG-III		EC No.: 200-362-1		Warning
Cas No.: 58-08-2		Index No.: 613-086-00-5		
Hazard: H302				
Precaution: P301+P312				
Cat No.	Grade	Assay	Info.	Per
ESC55008		98%		25g

CALCIUM METAL - GRANULAR				
$\text{Ca} = 40.08\text{g/mol}$				
UN Class: 4.3 /UN1401 PG-II		EC No.: 231-179-5		Danger
Cas No.: 7440-70-2		Index No.: 020-001-00-X		
Hazard: H261				
Precaution: P231+P232 P422				
Cat No.	Grade	Assay	Info.	Per
ESC55041		98%	2-7mm	50g
ESC55042		98%	2-7mm	100g


CALCIUM ACETATE (CALCIUM ETHANOATE)				
$(\text{CH}_3\text{COO})_2\text{Ca} = 158.17\text{g/mol}$				
UN Class: N/A		EC No.: 200-540-9		
Cas No.: 62-54-4		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55011		99%		250g


CALCIUM BROMIDE				
$\text{CaBr}_2 \cdot x\text{H}_2\text{O} = 199.89\text{g/mol}$				
UN Class: N/A		EC No.: 232-164-6		Warning
Cas No.: 71626-99-8		Index No.: Not listed		
Hazard: H315 H319 H355				
Precaution: P261 P302+p352 P305+P351+P338 P405 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55012		97%		250g

CALCIUM CARBIDE				
$\text{CaC}_2 = 64.1\text{g/mol}$				
UN Class: 4.3 /UN1402 PG-II		EC No.: 200-848-3		Danger
Cas No.: 75-20-7		Index No.: 006-004-00-9		
Hazard: H260				
Precaution: P223 P231+P232 P370+P378				
Cat No.	Grade	Assay	Info.	Per
ESC55016		97%		500g

CALCIUM CARBONATE - PRECIPITATED (PRECIPITATED)				
$\text{CaCO}_3 = 100.09\text{g/mol}$				
UN Class: N/A		EC No.: 207-439-9		
Cas No.: 471-34-1		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55020		99%		500g
ESC55021		99%		1kg

CALCIUM CARBONATE ORE SEE MARBLE CHIPS

CALCIUM CHLORIDE ANHYDROUS - GRANULAR				
$\text{CaCl}_2 = 110.99\text{g/mol}$				
UN Class: N/A		EC No.: 233-140-8		Warning
Cas No.: 10043-52-4		Index No.: 017-013-00-2		
Hazard: H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55032		90%		500g

CALCIUM CHLORIDE 2-WATER				
$\text{CaCl}_2 \cdot 2\text{H}_2\text{O} = 147.01\text{g/mol}$				
UN Class: N/A		EC No.: 233-140-8		Warning
Cas No.: 10035-04-8		Index No.: Not listed		
Hazard: H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55028		98%		500g



CALCIUM CHLORIDE 6-WATERCaCl₂ • 6H₂O = 219.08g/mol

UN Class: N/A EC No.: N/A Warning
 Cas No.: 7774-34-7 Index No.: Not listed
 Hazard: H319
 Precaution: P305+P351+P338 P230 P337+313

Cat No.	Grade	Assay	Info.	Per
ESC55030		98%		500g

CALCIUM HYDROXIDECa(OH)₂ = 74.09g/mol

UN Class: N/A EC No.: 215-137-3 Danger
 Cas No.: 1305-62-0 Index No.: Not listed
 Hazard: H318
 Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55036		95%		500g

CALCIUM HYDROXIDE SOLUTION SEE LIME WATER**CALCIUM ETHANOATE SEE CALCIUM ACETATE****CALCIUM HYPOCHLORITE (BLEACHING POWDER)**Ca(OCl)₂ = 142.98g/mol

UN Class: 5.1 /UN1748 PG-II EC No.: 231-908-7 Danger
 Cas No.: 7778-54-3 Index No.: 017-012-00-7
 Hazard: H272 H302 H314 H400
 Precaution: P220 P273 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55039		96%		500g

CALCIUM NITRATE 4-WATERCa(NO₃)₂ • 4H₂O = 236.15g/mol

UN Class: 5.1 /UN1454 PG-III EC No.: 233-332-1 Warning
 Cas No.: 13477-34-4 Index No.: Not listed
 Hazard: H272 H315 H319 H335
 Precaution: P220+P261 P280 P304+P340 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55048		98%		500g

CALCIUM OXIDE (QUICKLIME)

CaO = 56.08g/mol



UN Class: 8 /UN1910 PG-III EC No.: 215-138-9 Danger
 Cas No.: 1305-78-8 Index No.: Not listed
 Hazard: H314
 Precaution: P280 P305+P351+P338 P312

Cat No.	Grade	Assay	Info.	Per
ESC55054		96%		1kg
ESC55053		96%		500g

CALCIUM SULPHATE 2-WATER - PRECIPITATECaSO₄ • 2H₂O = 172.17g/mol

UN Class: N/A EC No.: 231-900-3
 Cas No.: 10101-41-4 Index No.: Not listed
 Hazard: H225 H319 H335 H336
 Precaution: P210 P243 P280 P304+P340 P305+P351+P338 P312

Cat No.	Grade	Assay	Info.	Per
ESC55064		99%		500g

CALCIUM SULPHATE (PLASTER OF PARIS)CaSO₄ • .H₂O = 145.15g/mol

UN Class: N/A EC No.: 231-900-3
 Cas No.: 10034-76-1 Index No.: Not listed
 Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55059		N/A		500g
ESC55060		N/A		1kg

CALCIUM TETRAHYDROGEN PHOSPHATE (CALCIUM PHOSPHATE MONOBASIC)Ca(H₂PO₄)₂ • H₂O = 252.07g/mol

UN Class: N/A EC No.: 231-837-1 Warning
 Cas No.: 10031-30-8 Index No.: Not listed
 Hazard: H315 H319 H335
 Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55068		97%		500g

DL-CAMPOR - SYNTHETIC (1,7,7-TRIMETHYLBICYCLO[2.2.1]HEPTAN-2-ONE)C₁₀H₁₆O = 152.24g/mol

UN Class: 4.1 /UN2717 PG-III EC No.: 200-945-0 Warning
 Cas No.: 76-22-2 Index No.: Not listed
 Hazard: H228 H302 H315 H319 H335
 Precaution: P210 P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55070		97%		100g

CANADA BALSAM IN XYLENE



N/A



UN Class: 3 /UN1307 PG-III EC No.: N/A Warning
 Cas No.: N/A Index No.: Not listed
 Hazard: H226 H332 H312 H315
 Precaution: P280

Cat No.	Grade	Assay	Info.	Per
ESC55072		97%		25ml




CARMINE ACETIC				
N/A				
UN Class: 8 /UN1760 PG-III		EC No.: N/A		Danger
Cas No.: N/A		Index No.: Not listed		
Hazard: H314 Precaution: P260 P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55076		98%		500ml

CARBAMIDE SEE UREA



CARBOLIC ACID SEE PHENOL



CARBON COLLOIDAL SEE AQUADAG



CARBON POWDER SEE GRAPHITE POWDER


CASEIN POWDER				
UN Class: N/A		EC No.: 234-243-0		
Cas No.: 9000-71-9		Index No.: Not listed		
Hazard: Not considered hazardous Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55080		59%		100g



CASTOR OIL SEE OIL, CASTOR



CATECHOL (BENZENE-1,2-DIOL OR PYROCATECHOL)				
$C_6H_4(OH)_2 = 110.11g/mol$				
UN Class: 6.1 /UN2811 PG-III		EC No.: 204-427-5		Warning
Cas No.: 120-80-9		Index No.: 604-016-00-4		
Hazard: H302 H312 H315 H319 Precaution: P280 P305+P351+P338 P301+P312 P302+P352				
Cat No.	Grade	Assay	Info.	Per
ESC55082		98%		100g



CERIUM (IV) SULPHATE (CERIC SULPHATE)				
$Ce(SO_4)_2 \cdot 4H_2O = 404.3g/mol$				
UN Class: N/A		EC No.: 237-029-5		Warning
Cas No.: 10294-42-5		Index No.: Not listed		
Hazard: H315 H319 H335 Precaution: P261 P305+P351+P338 P302+P352				
Cat No.	Grade	Assay	Info.	Per
ESC55083		98%		25g



CHARCOAL-ACTIVATED (FOR GAS ABSORPTION 8-24 MESH)				
UN Class: 4.2 /UN1362 PG-III		EC No.: 231-153-3		
Cas No.: 7440-44-0		Index No.: Not listed		
Hazard: Not considered hazardous Precaution: No additional precautions required Notes: For Gas Absorption 8-24 Mesh				
Cat No.	Grade	Assay	Info.	Per
ESC55086		95%		250g
ESC55087		95%		500g

CHARCOAL WOOD LUMP				
UN Class: N/A		EC No.: 231-153-3		
Cas No.: 7440-44-0		Index No.: Not listed		
Hazard: Not considered hazardous Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55089		N/A		1kg

CHLORINE WATER					
					
UN Class: 8(5.1) /UN1791 PG-II		EC No.: 231-668-3		Warning	
Cas No.: 7681-52-9		Index No.: 017-011-00-1			
Hazard: H315 H319 Precaution: No additional precautions required					
Cat No.	Grade	Assay	Info.	Price	Per
ESC55091		98%		15.95	500ml

CHLOROACETIC ACID				
$ClCH_2COOH = 94.5g/mol$				
				
UN Class: 6.1(8) /UN1751 PG-II		EC No.: 201-178-4		Danger
Cas No.: 79-11-8		Index No.: 607-003-00-1		
Hazard: H331 H311 H301 H314 H400 Precaution: P261 P273 P280 P301+P310 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55093		99%		100g

CHLOROBENZENE				
$C_6H_5Cl = 112.56g/mol$				
				
UN Class: 3 /UN1134 PG-III		EC No.: 203-628-5		Warning
Cas No.: 108-90-7		Index No.: 602-033-00-1		
Hazard: H226 H332 H411 H302 H315 Precaution: P273				
Cat No.	Grade	Assay	Info.	Per
ESC55096		99%		2.5L

1-CHLOROBUTANE (BUTYL CHLORIDE)				
$CH_3(CH_2)_3Cl = 92.57g/mol$				
				
UN Class: 3 /UN1127 PG-II		EC No.: 203-696-6		Danger
Cas No.: 109-69-3		Index No.: 602-059-00-3		
Hazard: H225 H304 H412 Precaution: P210 P273 P301+P310 P331 P403+P235				
Cat No.	Grade	Assay	Info.	Per
ESC54766		98%		1L



1-CHLOROBUTANE (BUTYL CHLORIDE) $\text{CH}_3(\text{CH}_2)_3\text{Cl} = 92.57\text{g/mol}$ 

UN Class: 3 /UN1127 PG-II **EC No.:** 203-696-6 **Danger**
Cas No.: 109-69-3 **Index No.:** 602-059-00-3
Hazard: H225 H304 H412
Precaution: P210 P273 P301+P310 P331 P403+P235

Cat No.	Grade	Assay	Info.	Per
ESC54767		98%		100mL

CHROMIUM (III) NITRATE 9-WATER $\text{Cr}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O} = 400.15\text{g/mol}$ 

UN Class: 5.1 /UN2720 PG-III **EC No.:** 236-921-1 **Warning**
Cas No.: 7789-02-8 **Index No.:** Not listed
Hazard: H272 H315 H319
Precaution: P210 P280 P305+P351+P338 P337+P313

Cat No.	Grade	Assay	Info.	Per
ESC55108		96%		500g

CHLOROFORM (TRICHLOROMETHANE) $\text{CHCl}_3 = 119.38\text{g/mol}$ 

UN Class: 6.1 /UN1888 PG-III **EC No.:** 200-663-8 **Warning**
Cas No.: 67-66-3 **Index No.:** 602-006-00-4
Hazard: H351 H302 H373 H315
Precaution: P281 P302+P352 P309+P311

Cat No.	Grade	Assay	Info.	Per
ESC55100		99.5%		2.5L

CHROMIUM (III) OXIDE $\text{Cr}_2\text{O}_3 = 151.99\text{g/mol}$

UN Class: N/A **EC No.:** 215-160-9
Cas No.: 1308-38-9 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55112		99%		500g

2-CHLORO-2-METHYLPROPANE (TERT-BUTYL CHLORIDE) $(\text{CH}_3)_3\text{CCl} = 92.57\text{g/mol}$ 

UN Class: 3 /UN1127 PG-II **EC No.:** 208-066-4 **Danger**
Cas No.: 507-20-0 **Index No.:** Not listed
Hazard: H225
Precaution: P210

Cat No.	Grade	Assay	Info.	Per
ESC55102		98%		100ml

CHROMIUM (III) POTASSIUM SULPHATE 12-WATER (ALUM CHROME) $\text{CrK}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O} = 499.39\text{g/mol}$ 

UN Class: N/A **EC No.:** 233-401-6 **Warning**
Cas No.: 7788-99-0 **Index No.:** Not listed
Hazard: H315 H319
Precaution: P280 P302+P352 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55116		99%		500g

CHOLESTEROL $\text{C}_{27}\text{H}_{46}\text{O} = 386.66\text{g/mol}$

UN Class: N/A **EC No.:** 200-353-2
Cas No.: 57-88-5 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55103		95%		25g



CINNAMIC ACID (3-PHENYLACRYLIC ACID) $\text{C}_6\text{H}_5\text{CH}=\text{CH} \cdot \text{COOH} = 148.16\text{g/mol}$ 





UN Class: N/A **EC No.:** 205-398-1 **Warning**
Cas No.: 140-10-3 **Index No.:** Not listed


Hazard: H315 H319 H335
Precaution: P261 P305+P351+P338



Cat No.	Grade	Assay	Info.	Per
ESC55118		99%		100g










CITRIC ACID ANHYDROUS				
$\text{HOC}(\text{COOH})(\text{CH}_2\text{COOH})_2 = 192.13\text{g/mol}$ 				
UN Class: N/A		EC No.: 201-069-1		Warning
Cas No.: 77-92-9		Index No.: Not listed		
Hazard: H319 Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55128		99.5%		500g





CITRIC ACID 1-WATER				
$\text{HOC}(\text{COOH})(\text{CH}_2\text{COOH})_2 \cdot \text{H}_2\text{O} = 210.14\text{g/mol}$  				
UN Class: N/A		EC No.: 201-069-1		Danger
Cas No.: 5949-29-1		Index No.: Not listed		
Hazard: H318 H335 H315 Precaution: P261 P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55122		99%		500g
ESC55123		99%		1kg




CLAY POWDER				
UN Class: N/A		EC No.: N/A		
Cas No.: N/A		Index No.: Not listed		
Hazard: Not considered hazardous Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55125		N/A		1kg





COBALT METAL - POWDER				
Co = 58.93g/mol 				
UN Class: 4.1 / UN3089 PG-II		EC No.: 231-158-0		Danger
Cas No.: 7440-48-4		Index No.: 027-001-00-9		
Hazard: H334 H317 H413 Precaution: P261 P280 P342+P311				
Cat No.	Grade	Assay	Info.	Per
ESC55130		98%		250g




COBALT (II) CARBONATE BASIC				
$\text{CoCO}_3 \cdot [\text{Co}(\text{OH})_2]_n \cdot \text{H}_2\text{O} = 516.72\text{g/mol}$  				
UN Class: N/A		EC No.: 208-169-4		Danger
Cas No.: 57454-67-8		Index No.: 027-010-00-8		
Hazard: H350i H341 H360F H334 H317 H410 Precaution: P261 P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55132		Co = 45-50%		500g

COBALT (II) CHLORIDE 6-WATER				
$\text{CoCl}_2 \cdot 6\text{H}_2\text{O} = 237.93\text{g/mol}$   				
UN Class: 9 / UN3077 PG-III		EC No.: 231-589-4		Danger
Cas No.: 7791-13-1		Index No.: 027-004-00-5		
Hazard: H350i H341 H360F H302 H334 H317 H410 Precaution: P201 P261 P273 P280 P302+P352 P308+P313 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55134		98%		250g

COBALT (II) NITRATE 6-WATER				
$\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O} = 291.03\text{g/mol}$   				
UN Class: 5.1 / UN1477 PG-II		EC No.: 233-402-1		Danger
Cas No.: 10026-22-9		Index No.: Not listed		
Hazard: H272 H302 H317 H350i H341 H360DF H334 Precaution: P201 P210 P220 P273 P261 P280 P284 P304+P340				
Cat No.	Grade	Assay	Info.	Per
ESC55136		97%		500g

COBALT (II) OXIDE - BLACK (TRICOBALT TETRAOXIDE)				
$\text{Co}_3\text{O}_4 = 240.8\text{g/mol}$  				
UN Class: N/A		EC No.: 215-157-2		Danger
Cas No.: 1308-06-1		Index No.: Not listed		
Hazard: H334 H350i H412 Precaution: P201 P261 P273 P284 P304+P340				
Cat No.	Grade	Assay	Info.	Per
ESC55142		97%		100g

COBALT (II) SULPHATE 7-WATER				
$\text{CoSO}_4 \cdot 7\text{H}_2\text{O} = 281.1\text{g/mol}$   				
UN Class: 9 / UN3077 PG-III		EC No.: 233-334-2		Danger
Cas No.: 10026-24-1		Index No.: 027-005-00-0		
Hazard: H350i H341 H360F H302 H334 H317 H410 Precaution: P201 P273 P281 P285 P302+P352 P304+P341 P309+P311				
Cat No.	Grade	Assay	Info.	Per
ESC55138		97%		100g

COPPER METAL - POWDER - FINE				
Cu = 63.55g/mol  				
UN Class: 4.1 / UN3089 PG-II		EC No.: 231-159-6		Danger
Cas No.: 7440-50-8		Index No.: 027-005-00-0		
Hazard: H228 H410 Precaution: P210 P273				
Cat No.	Grade	Assay	Info.	Per
ESC55172		99%		100g





COPPER METAL

Cu = 63.55g/mol

UN Class: N/A EC No.: 231-159-6
 Cas No.: 7440-50-8 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55176		98%	Granules	100g
ESC55177		98%	Millings	500g

COPPER METAL - FOIL 0.25 MM

Cu = 63.55g/mol

UN Class: N/A EC No.: 231-159-6
 Cas No.: 7440-50-8 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55180		99%		250g


COPPER (I) CHLORIDE (CUPROUS CHLORIDE)

CuCl = 99g/mol



UN Class: 8 / UN2802 PG-III EC No.: 231-842-9 Warning
 Cas No.: 7758-89-6 Index No.: 029-001-00-4



Hazard: H302 H315 H318 H410
 Precaution: P273 P280 P305+P351+P338 P501

Cat No.	Grade	Assay	Info.	Per
ESC55146		96%		500g

COPPER (I) OXIDE (CUPROUS OXIDE)Cu₂O = 143.09g/mol

UN Class: 9 / UN3077 PG-III EC No.: 215-270-7 Warning
 Cas No.: 1317-39-1 Index No.: 029-002-00-X


Hazard: H302 H410
 Precaution: P273 P501

Cat No.	Grade	Assay	Info.	Per
ESC55163		95%		100g
ESC55165		95%		500g

CHROMIUM (III) CHLORIDE 6-WATER (CHROMIUM TRICHLORIDE)CrCl₃ • 6H₂O = 266.45g/mol

UN Class: N/A EC No.: 233-038-3
 Cas No.: 10060-12-5 Index No.: Not listed


Hazard: H302
 Precaution: P301+P312 P310

Cat No.	Grade	Assay	Info.	Per
ESC55104		95%		500g

COPPER (II) BROMIDE (CUPRIC BROMIDE)CuBr₂ = 223.35g/mol

UN Class: 8 / UN3260 PG-III EC No.: 232-167-2 Danger
 Cas No.: 7789-45-9 Index No.: Not listed



Hazard: H302 H314 H400 H410
 Precaution: P280 P273 P301+P330+P331 P304+P340 P309+P311 P310

Cat No.	Grade	Assay	Info.	Per
ESC55144		98%		100g

COPPER (II) CARBONATE BASIC (CUPRIC CARBONATE BASIC)CuCO₃ • Cu(OH)₂ = 221.12g/mol

UN Class: N/A EC No.: 235-113-6 Warning
 Cas No.: 12069-69-1 Index No.: Not listed


Hazard: H302 H315 H319 H335 H400
 Precaution: P261 P273 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55151		Cu = 54%		250g
ESC55152		Cu = 54%		500g

COPPER (II) CHLORIDE 2-WATER (CUPRIC CHLORIDE)CuCl₂ • 2H₂O = 170.48g/mol

UN Class: 8 / UN2802 PG-III EC No.: 231-210-2 Warning
 Cas No.: 10125-13-0 Index No.: Not listed


Hazard: H302 H315 H319 H335 H400
 Precaution: P261 P273 P280 P305+P351+P338 P391

Cat No.	Grade	Assay	Info.	Per
ESC55156		96%		500g

COPPER (II) NITRATE 3-WATER (CUPRIC NITRATE)Cu(NO₃)₂ • 3H₂O = 241.6g/mol

UN Class: 5.1 / UN1477 PG-II EC No.: 221-838-5 Danger
 Cas No.: 10031-43-3 Index No.: Not listed

Hazard: H272 H302 H315 H319 H400
 Precaution: P210 P273 P280 P302+P352 P305+P351+P338 P309+P311

Cat No.	Grade	Assay	Info.	Per
ESC55160		98.5%		500g



COPPER (II) SULPHATE - ANHYDROUS (CUPRIC SULPHATE)				
CuSO ₄ = 159.61g/mol				
UN Class: 9 /UN3077 PG-III		EC No.: 231-847-6		Warning
Cas No.: 7758-98-7		Index No.: 029-004-00-0		
Hazard: H302 H319 H315 H410				
Precaution: P273 P305+P351+P338 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55184		97%		500g

COPPER (II) OXIDE (CUPRIC OXIDE)				
CuO = 79.55g/mol				
UN Class: 9 /UN3077 PG-III		EC No.: 215-269-1		Warning
Cas No.: 1317-38-0		Index No.: Not listed		
Hazard: H302 H410				
Precaution: P273 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55167		96%	Black powder	250g
ESC55168		96%	Black powder	500g

COPPER (II) SULPHATE 5-WATER (CUPRIC SULPHATE PENTAHYDRATE)				
CuSO ₄ · 5H ₂ O = 249.69g/mol				
UN Class: 9 /UN3077 PG-III		EC No.: 231-847-6		Warning
Cas No.: 7758-99-8		Index No.: 029-004-00-0		
Hazard: H302 H319 H315 H410				
Precaution: P273 P305+P351+P338 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55186		98%	Black powder	500g

CRESOL RED INDICATOR (O-CRESOLSULFONPHTHALEIN)				
C ₂₁ H ₁₈ O ₅ S = 382.43g/mol				
UN Class: N/A		EC No.: 217-064-2		Warning
Cas No.: 1733-12-6		Index No.: Not listed		
Hazard: H315 H319 H335				
Precaution: P261 P280 P302+P352 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55196		N/A	pH 0.2-1.8, pH 7.2-8.8	25g

CRESOL RED 0.02% AQUEOUS SOLUTION				
UN Class: N/A		EC No.: N/A		
Cas No.: 1733-12-6		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Notes: pH 0.2-1.8 - Red to Yellow; pH 7.2-8.8 - Yellow to Red				
Cat No.	Grade	Assay	Info.	Per
ESC55192		0.02%	Solution	500ml

CRYSTAL VIOLET C.I.42555 (BASIC VIOLET 3, GENTIAN VIOLET)				
C ₂₅ H ₃₀ N ₃ Cl = 407.98g/mol				
UN Class: 9 /UN3077 PG-III		EC No.: 208-953-6		Danger
Cas No.: 548-62-9		Index No.: 612-204-00-2		
Hazard: H351 H302 H318 H410				
Precaution: P273 P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55200		N/A		50g

CRYSTAL VIOLET AQUEOUS SOLUTION				
C ₂₅ H ₃₀ N ₃ Cl = 407.98g/mol				
UN Class: N/A		EC No.: N/A		Warning
Cas No.: N/A		Index No.: Not listed		
Hazard: H319 H351 H411				
Precaution: P273 P281 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55202		1%	Aq. Solution	100ml

CYCLOHEXANE				
C ₆ H ₁₂ = 84.16g/mol				
UN Class: 3 /UN1145 PG-II		EC No.: 203-806-2		Danger
Cas No.: 110-82-7		Index No.: 601-017-00-1		
Hazard: H225 H304 H315 H336 H410				
Precaution: P210 P261 P273 P301+P330+P331 P331 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55206		98%	Aq. Solution	500ml

CYCLOHEXANOL				
C ₆ H ₁₁ OH = 100.16g/mol				
UN Class: N/A		EC No.: 203-630-6		Warning
Cas No.: 108-93-0		Index No.: 603-009-00-3		
Hazard: H332 H302 H335 H315				
Precaution: P261				
Notes: High M.P.T Solid at Room temperature				
Cat No.	Grade	Assay	Info.	Per
ESC55210		99%		500ml

CYCLOHEXANONE				
CH ₃ (CH ₂) ₄ CO = 98.14g/mol				
UN Class: 3 /UN1915 PG-III		EC No.: 203-631-1		Warning
Cas No.: 108-94-1		Index No.: 606-010-00-7		
Hazard: H226 H332				
Precaution: P210 P243 P280 P304+P340 P313				
Cat No.	Grade	Assay	Info.	Per
ESC55213		99%		500ml



CYCLOHEXENE (TETRAHYDROBENZENE) $C_6H_{10} = 82.15g/mol$ 

UN Class: 3 /UN2256 PG-II **EC No.:** 203-807-8 **Danger**
Cas No.: 110-83-8 **Index No.:** Not listed
Hazard: H225 H302 H311 H304
Precaution: P210 P280 P304 P301+P312 P313

Cat No.	Grade	Assay	Info.	Per
ESC55215		99%		500ml
ESC55216		99%		1L

DECANE $CH_3(CH_2)_8CH_3 = 142.28g/mol$ 

UN Class: 3 /UN2247 PG-III **EC No.:** 204-686-4 **Danger**
Cas No.: 124-18-5 **Index No.:** Not listed
Hazard: H226 H304
Precaution: P301+P310 P331

Cat No.	Grade	Assay	Info.	Per
ESC55218		99%		25ml

DECANEDIOYL CHLORIDE SEE SEBACOYL CHLORIDE**1,2-DIAMINOETHANE SEE ETHYLENEDIAMINE****1,6-DIAMINOHEXANE (HEXAMETHYLENEDIAMINE)** $NH_2(CH_2)_6NH_2 = 116.21g/mol$ 

UN Class: 8 /UN2280 PG-III **EC No.:** 204-679-6 **Danger**
Cas No.: 124-09-4 **Index No.:** 612-104-00-9
Hazard: H314 H302 H312 H335
Precaution: P261 P280 P304 P305+P351+P338 P312

Cat No.	Grade	Assay	Info.	Per
ESC55219		98%		25g

1-6-DIAMINOHEXANE 5% AQUEOUS SOLUTION

N/A



UN Class: 8 /UN3267 PG-III **EC No.:** 204-679-6 **Warning**
Cas No.: 124-09-4 **Index No.:** Not listed
Hazard: H315 H319
Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55220		5%	Aq. Solution	250ml

2,4-DINITROPHENYLHYDRAZINE (DNPH) $(NO_2)_2C_6H_3NHNH_2 = 198.14g/mol$ 

UN Class: 4.1 /UN3380 PG-I **EC No.:** 204-309-3 **Danger**
Cas No.: 119-26-6 **Index No.:** Not listed
Hazard: H228 H302
Precaution: P210 P240 P280 P302 P312

Cat No.	Grade	Assay	Info.	Per
ESC54772		97%	SURCHARGE	50g

DIBUTYL PHTHALATE (N-BUTYL PHTHALATE) $C_6H_4-1,2-[CO_2(CH_2)_3CH_3]_2 = 278.35g/mol$ 

UN Class: 9 /UN3082 PG-III **EC No.:** 201-557-4 **Danger**
Cas No.: 84-74-2 **Index No.:** 607-318-00-4
Hazard: H360Df H400
Precaution: P201 P273 P308+P313

Cat No.	Grade	Assay	Info.	Per
ESC55221		99%		1L

DICHLOROACETIC ACID $Cl_2CHCOOH = 128.94g/mol$ 

UN Class: 8 /UN1764 PG-II **EC No.:** 201-207-0 **Danger**
Cas No.: 79-43-6 **Index No.:** 607-066-00-5
Hazard: H314 H400
Precaution: P273 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55223		98%		100ml

1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) $C_6H_4Cl_2 = 147g/mol$ 

UN Class: 9 /UN3077 PG-III **EC No.:** 203-400-5 **Warning**
Cas No.: 106-46-7 **Index No.:** 602-035-00-2
Hazard: H351 H319 H410
Precaution: P201 P273 P281 P305+P351+P338 P308+P313



Cat No.	Grade	Assay	Info.	Per
ESC55225		97%		250g



DICHLOROMETHANE (METHYLENE CHLORIDE) $CH_2Cl_2 = 84.93g/mol$ 



UN Class: 6.1 /UN1593 PG-III **EC No.:** 200-838-9 **Warning**
Cas No.: 75-09-2 **Index No.:** 602-004-00-3
Hazard: H351
Precaution: P260 P281 P308+P313 P501 P403+P235



Cat No.	Grade	Assay	Info.	Per
ESC55240		98%		2.5L






DIPHENYLAMINE				
$(C_6H_5)_2NH = 169.23g/mol$				
				
UN Class: 9 /UN3077 PG-III		EC No.: 204-539-4		Danger
Cas No.: 122-39-4		Index No.: 612-026-00-5		
Hazard: H331 H311 H301 H373 H410				
Precaution: P273 P280 P302+P352 P304+P340 P309 P311				
Cat No.	Grade	Assay	Info.	Per
ESC55242		99%		100g



EDTA DISODIUM SALT (ETHYLENEDIAMINETETRAACETIC ACID)				
$C_{10}H_{14}N_2Na_2O_8 \cdot 2H_2O = 372.24g/mol$				
				
UN Class: N/A		EC No.: 205-358-3		Warning
Cas No.: 6381-92-6		Index No.: Not listed		
Hazard: H332 H373				
Precaution: P260				
Cat No.	Grade	Assay	Info.	Per
ESC55268		98%		500g



2,6-DICHLOROPHENOLINDOPHENOL (DCPIP)				
UN Class: N/A		EC No.: N/A		
Cas No.: 620-45-1		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC54778		96%	Powder	1g
ESC54779		96%	Powder	5g


EOSIN C.I.45380 (ACID RED 87)				
N/A				
				
UN Class: N/A		EC No.: 241-409-6		Warning
Cas No.: 17372-87-1		Index No.: Not listed		
Hazard: H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55276		N/A	Powder	5g



DIETHYL ETHER (ETHOXYETHANE)				
$(CH_3CH_2)_2O = 74.12g/mol$				
				
UN Class: 3 /UN1155 PG-I		EC No.: 200-467-2		Danger
Cas No.: 60-29-7		Index No.: 603-022-00-4		
Hazard: H224 H302 H336 EUH019 EUH066				
Precaution: P210 P261				
Cat No.	Grade	Assay	Info.	Per
ESC55244		98%	SURCHARGE	1L

EOSIN 5% AQUEOUS SOLUTION				
UN Class: N/A		EC No.: N/A		
Cas No.: N/A		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55272		5%	Aq. Solution	100ml

DITHIZONE (1,5-DIPHENYL-3-THIOCARBAZONE)				
$C_6H_5NHNHCSN=NC_6H_5 = 256.32g/mol$				
				
UN Class: N/A		EC No.: 200-454-1		Warning
Cas No.: 60-10-6		Index No.: Not listed		
Hazard: H315 H319 H335				
Precaution: P280 P302+P352 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55246		98%		5g

ERIOCHROME BLACK T C.I.14645				
$C_2O_7H_{12}N_3NaO_7S = 461.38g/mol$				
UN Class: N/A		EC No.: 241-409-6		
Cas No.: 1787-61-7		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55280		N/A	6.2 - 11.55	50g
ESC55281		N/A	6.2 - 11.55	100g

DUTCH METAL LEAF				
UN Class: N/A		EC No.: N/A		
Cas No.: N/A		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55264		N/A	140 x 150mm	Bk25

ETHANOL (ETHYL ALCOHOL)				
$C_2H_5OH = 46.07g/mol$				
				
UN Class: 3 /UN1170 PG-II		EC No.: 200-578-6		Danger
Cas No.: 64-17-5		Index No.: 603-002-00-5		
Hazard: H225				
Precaution: P210				
Cat No.	Grade	Assay	Info.	Per
ESC55288		99.9%		2.5L



ETHANAL SEE ACETALDEHYDE

ETHANEDIOIC ACID SEE OXALIC ACID

ETHANOIC ACID SEE ACETIC ACID

ETHANOIC ANHYDRIDE SEE ACETIC ANHYDRIDE

ETHOXYETHANE SEE DIETHYL ETHER

ETHYL ACETATE (ETHYL ETHANOATE) $\text{CH}_3\text{COOC}_2\text{H}_5 = 88.11\text{g/mol}$ 

-4°C

UN Class: 3 /UN1173 PG-II EC No.: 205-500-4 Danger
Cas No.: 141-78-6 Index No.: 607-022-00-5Hazard: H225 H319 H336
Precaution: P210 P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55284		99%		2.5L

ETHYLAMINE 70% W/W SOLUTION (70% W/W IN WATER) $\text{C}_2\text{H}_5\text{NH}_2 = 45.08\text{g/mol}$ 

-20°C

UN Class: 2.1 /UN1036 PG-II EC No.: 200-834-7 Danger
Cas No.: 75-04-7 Index No.: 612-002-00-4Hazard: H225 H302 H311 H314 H335
Precaution: P210 P261 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55296		70%		1L
ESC55297		70%		2.5L

ETHYL-4-AMINO BENZOATE (BENZOCAINE) $\text{NH}_2\text{C}_6\text{H}_4\text{COOC}_2\text{H}_5 = 165.19\text{g/mol}$ UN Class: N/A EC No.: 202-303-5 Warning
Cas No.: 94-09-7 Index No.: Not listedHazard: H317
Precaution: P280 P302+P352

Cat No.	Grade	Assay	Info.	Per
ESC55291		99%		50g

ETHYL BENZOATE $\text{C}_6\text{H}_5\text{COOC}_2\text{H}_5 = 150.17\text{g/mol}$ UN Class: N/A EC No.: 202-284-3
Cas No.: 93-89-0 Index No.: Not listedHazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55292		99%		100ml

ETHYLENEDIAMINE (1,2-DIAMINOETHANE) $\text{NH}_2\text{CH}_2\text{CH}_2\text{NH}_2 = 60.1\text{g/mol}$ UN Class: 8(3) /UN1604 PG-II EC No.: 203-468-6
Cas No.: 107-15-3 Index No.: 612-006-00-6Hazard: H226 H312 H302 H314 H334 H317
Precaution: P210 P243 P261 P280 P285 P301+P330+P331 P302+P352 P304+P340 P309

Cat No.	Grade	Assay	Info.	Per
ESC55308		97%		1L

ETHYL FORMATE (FORMIC ACID ETHYL ESTER) $\text{HCOOC}_2\text{H}_5 = 74.08\text{g/mol}$ 

-20°C

UN Class: 3 /UN1190 PG-II EC No.: 203-721-0 Danger
Cas No.: 109-94-4 Index No.: 607-015-00-7Hazard: H225 H332 H302 H319 H335
Precaution: P210 P240 P280 P304+P340 P305+P351+P338 P309

Cat No.	Grade	Assay	Info.	Per
ESC55310		98%		100ml

ETHYLENE GLYCOL (ETHANE-1,2-DIOL) $\text{HOCH}_2\text{CH}_2\text{OH} = 62.07\text{g/mol}$ UN Class: N/A EC No.: 203-473-3 Warning
Cas No.: 107-21-1 Index No.: 603-027-00-1Hazard: H302
Precaution: P301+P312

Cat No.	Grade	Assay	Info.	Per
ESC55304		99%		2.5L

EVOLVE CH15 (COLD DEGREASING AGENT)

N/A

UN Class: 3 /UN3295 PG-III EC No.: N/A Danger
Cas No.: N/A Index No.: Not listedHazard: H350 H340 H304 EUH066
Precaution: P201 P281 P301+P310 P308+P313

Cat No.	Grade	Assay	Info.	Per
ESC55306		N/A		500ml



FEHLING'S SOLUTION NO.1 (COPPER SULPHATE SOLUTION)



N/A



UN Class: N/A EC No.: N/A Warning
Cas No.: N/A Index No.: Not listedHazard: H411
Precaution: P273





Cat No.	Grade	Assay	Info.	Per
ESC55312		N/A		1L






FEHLING'S SOLUTION NO.2 (ALKALINE TARTRATE)				
N/A				
UN Class: 8 /UN1824 PG-II		EC No.: N/A		Danger
Cas No.: N/A		Index No.: Not listed		
Hazard: H314				
Precaution: P260 P280 P301+P330+P331 P309+P311				
Cat No.	Grade	Assay	Info.	Per
ESC55316		N/A		1L


FERROIN INDICATOR SOLUTION (1,10-PHENANTHROLINE IRON(II) SULFATE COMPLEX)				
N/A				
UN Class: N/A		EC No.: N/A		Warning
Cas No.: N/A		Index No.: Not listed		
Hazard: H411				
Precaution: P273				
Cat No.	Grade	Assay	Info.	Per
ESC55318		N/A		100ml



FLUORESCEIN C.I.45350 (ACID YELLOW 73)				
$C_{20}H_{12}O_5 = 332.31g/mol$				
UN Class: N/A		EC No.: 219-031-8		Warning
Cas No.: 2321-07-5		Index No.: Not listed		
Hazard: H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55320		N/A		5g




FORMALDEHYDE (METHANAL)				
$HCHO = 30.03g/mol$				  
UN Class: 8 /UN2209 PG-III		EC No.: 200-001-8		Danger
Cas No.: 50-00-0		Index No.: 605-001-00-5		
Hazard: H301 H311 H314 H317 H331 H335 H341 H350 H371				
Precaution: P260 P261 P280 P281 P304+P340 P305+P351+P338 P309+P311				
Cat No.	Grade	Assay	Info.	Per
ESC55322			38-40% w/v	2.5L


FORMIC ACID (METHANOIC ACID)				
$HCOOH = 46.03g/mol$				
UN Class: 8(3) /UN1779 PG-II		EC No.: 200-579-1		Danger
Cas No.: 64-18-6		Index No.: 607-001-00-0		
Hazard: H314				
Precaution: P260 P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC55324		90%		2.5L

FRENCH CHALK (TALC)				
UN Class: N/A		EC No.: 238-87-9		
Cas No.: 14807-96-6		Index No.: Not listed		
Hazard: H332				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55326		N/A		1kg

D (-) FRUCTOSE (D-LEVULOSE)				
$C_6H_{12}O_6 = 180.16g/mol$				
UN Class: N/A		EC No.: 200-333-3		
Cas No.: 57-48-7		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55228		98%		500g

FUCHSIN ACID STAIN C.I.42685 (ACID VIOLET 19)				
$C_{20}H_{17}N_3Na_2O_9S_3 = 585.54g/mol$				
UN Class: N/A		EC No.: 221-816-5		
Cas No.: 3244-88-0		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55328		98%		50g
ESC55329		98%		100g

FUCHSIN BASIC STAIN C.I.42510 (BASIC VIOLET 14)				
N/A				 
UN Class: N/A		EC No.: 211-189-6		Danger
Cas No.: 58969-01-0		Index No.: Not listed		
Hazard: H302 H351				
Precaution: P281				
Cat No.	Grade	Assay	Info.	Per
ESC55330		N/A		5g


D (+) GALACTOSE ANHYDROUS				
$C_6H_{12}O_6 = 180.16g/mol$				
UN Class: N/A		EC No.: 200-416-4		
Cas No.: 59-23-4		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55230		98%		25g



GELATINE POWDER

UN Class: N/A EC No.: 232-554-6
 Cas No.: 9000-70-8 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55333		N/A		500g


GENTIAN VIOLET SEE CRYSTAL VIOLET**GIBBERELIC ACID**

$C_{19}H_{22}O_6 = 346.37g/mol$



UN Class: N/A EC No.: 201-001-0 Warning
 Cas No.: 77-06-5 Index No.: Not listed


Hazard: H319
 Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55334		97%		1g

GLASS WOOL

UN Class: N/A EC No.: N/A
 Cas No.: N/A Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55335		N/A		500g

D (+) GLUCOSE 1-WATER (DEXTRSE MONOHYDRATE)

$C_6H_{12}O_6 \cdot H_2O = 198.17g/mol$

UN Class: N/A EC No.: 218-914-5
 Cas No.: 14431-43-7 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55234		98%		500g

GLYCEROL TRIACETATE (TRIACETIN)

$(CH_3COO)_3C_3H_5 = 218.21g/mol$

UN Class: N/A EC No.: 203-051-9
 Cas No.: 102-76-1 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55342		98%		500ml

D (+) GLUCOSE ANHYDROUS (DEXTROSE)

$C_6H_{12}O_6 = 180.16g/mol$

UN Class: N/A EC No.: 200-075-1
 Cas No.: 50-99-7 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required



Cat No.	Grade	Assay	Info.	Per
ESC55236		98%		250g

GLUCOSE-1-PHOSPHATE DISODIUM SALT

$C_6H_{11}O_9PNa_2 \cdot xH_2O = 304.1g/mol$

UN Class: N/A EC No.: 260-154-1
 Cas No.: 56401-20-8 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55336		98%		1g
ESC55337		98%		5g

L-GLUTAMIC ACID

$HO_2CCH_2CH_2CH(NH_2)CO_2H = 147.13g/mol$

UN Class: N/A EC No.: 200-293-7
 Cas No.: 56-86-0 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55339		99%		100g



GLYCEROL (GLYCERINE OR PROPANE-1,2,3-TRIOL)

$HOCH_2CH(OH)CH_2OH = 92.09g/mol$



UN Class: N/A EC No.: 200-289-5 Warning
 Cas No.: 56-81-5 Index No.: Not listed


Hazard: H319
 Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55340		99%		1L
ESC55341		99%		2.5L




GLYCINE (AMINOACETIC ACID) $\text{NH}_2\text{CH}_2\text{COOH} = 75.07\text{g/mol}$

UN Class: N/A **EC No.:** 200-272-2
Cas No.: 56-40-6 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55344		98.5%		100g

GRAM'S IODINE SOLUTION

UN Class: N/A **EC No.:** N/A
Cas No.: N/A **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55350		N/A		1L

GRAPHITE (CARBON POWDER)

C = 12.01g/mol




UN Class: N/A **EC No.:** 231-955-3 Warning
Cas No.: 7782-42-5 **Index No.:** Not listed
Hazard: H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC553348		95%	Powder	1kg

GUM ARABIC SEE ACACIA POWDER**HEPTANE FRACTION FROM PETROLEUM** $\text{CH}_3(\text{CH}_2)_5 \cdot \text{CH}_3 = 100.21\text{g/mol}$ 

-25°C


UN Class: 3 /UN1206 PG-II **EC No.:** 205-563-8 Danger
Cas No.: 142-82-5 **Index No.:** 601-008-00-2
Hazard: H225 H304 H315 H336 H410
Precaution: P210 P241 P301+P310 P303+P361+P353 P405 P501

Cat No.	Grade	Assay	Info.	Per
ESC55648		85%		2.5L

N-HEXANE $\text{CH}_3(\text{CH}_2)_4\text{CH}_3 = 86.18\text{g/mol}$ 


-23°C

UN Class: 3 /UN1208 PG-II **EC No.:** 203-777-6 Danger
Cas No.: 110-54-3 **Index No.:** 601-037-00-0
Hazard: H225 H361f H304 H373 H315 H336 H411
Precaution: P210 P261 P273 P281 P301+P310 P331

Cat No.	Grade	Assay	Info.	Per
ESC55652		97%		2.5L

HEPTAN-1-OL (HEPTYL ALCOHOL) $\text{CH}_3(\text{CH}_2)_6\text{OH} = 116.2\text{g/mol}$ 



UN Class: N/A **EC No.:** 203-897-9 Warning
Cas No.: 111-70-6 **Index No.:** Not listed
Hazard: H302 H312 H319
Precaution: P280 P302+P352 P305+P351+P338 P309+P310

Cat No.	Grade	Assay	Info.	Per
ESC55352		>99%		100ml

HEXANE FRACTION FROM PETROLEUM $\text{CH}_3(\text{CH}_2)_4\text{CH}_3 = 86.18\text{g/mol}$ 


-23°C

UN Class: 3 /UN1208 PG-II **EC No.:** 203-777-6 Danger
Cas No.: 110-54-3 **Index No.:** 601-037-00-0
Hazard: H225 H361f H304 H373 H315 H336 H411
Precaution: P210 P261 P273 P281 P301+P310 P331

Cat No.	Grade	Assay	Info.	Per
ESC55654		85%		500ml
ESC55655		85%		2.5L

HEXANE-1,6-DIAMINE SEE 1,6-DIAMINOHEXANE**HEXANEDIOIC ACID SEE ADIPIC ACID****HEXANOIC ACID (CAPROIC ACID)** $\text{CH}_3(\text{CH}_2)_4\text{COOH} = 116.16\text{g/mol}$ 


UN Class: 8 /UN2829 PG-III **EC No.:** 205-550-7 Danger
Cas No.: 142-62-1 **Index No.:** Not listed
Hazard: H311 H314 H331
Precaution: P261 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55656		99%		100ml

HEXAN-1-OL (HEXYL ALCOHOL) $\text{CH}_3(\text{CH}_2)_5\text{OH} = 102.17\text{g/mol}$ 

59°C

UN Class: 3 /UN2282 PG-III **EC No.:** 203-852-3 Warning
Cas No.: 111-27-3 **Index No.:** 603-059-00-6
Hazard: H302
Precaution: P301+P312

Cat No.	Grade	Assay	Info.	Per
ESC55657		98%		500ml



HEX-1-ENECH₃(CH₂)₃CH=CH₂ = 84.16g/mol

UN Class: 3 /UN2370 PG-II **EC No.:** 209-753-1 **Danger**
Cas No.: 592-41-6 **Index No.:** Not listed
Hazard: H225 H304
Precaution: P210 P301+P310 P331

Cat No.	Grade	Assay	Info.	Per
ESC55658		98%		100ml

HYDROCHLORIC ACID 1.0M (1.0N)

Hcl = 36.46g/mol



UN Class: 8 /UN1789 PG-III **EC No.:** 231-595-7 **Warning**
Cas No.: 7647-01-0 **Index No.:** 017-002-01-X
Hazard: H315
Precaution: P261 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55357		1.0M		2.5L

HYDROCHLORIC ACID - 36-38%

Hcl = 36.46g/mol



UN Class: 8 /UN1789 PG-II **EC No.:** 231-595-7 **Danger**
Cas No.: 7647-01-0 **Index No.:** 017-002-01-X
Hazard: H314 H335 H290
Precaution: P261 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55367		37%		1L
ESC55368		36-38%	SURCHARGE	1L
ESC55369		36-38%		2.5L

HYDROCHLORIC ACID 2M

Hcl = 36.46g/mol



UN Class: 8 /UN1789 PG-III **EC No.:** 231-595-7 **Warning**
Cas No.: 7647-01-0 **Index No.:** 017-002-01-X
Hazard: H314 H315 H335
Precaution: P261 P302+352 P304+340 P305+P351+P338 P309+P311

Cat No.	Grade	Assay	Info.	Per
ESC55360		2.0M	Ampoule	1L

HYDROCHLORIC ACID 0.1M (0.1N)

Hcl = 36.46g/mol

UN Class: 8 /UN1789 PG-III **EC No.:** 231-595-7
Cas No.: 7647-01-0 **Index No.:** 017-002-01-X
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55355		0.1M		2.5L

HYDROCHLORIC ACID 4M (4N)

Hcl = 36.46g/mol



UN Class: 8 /UN1789 PG-III **EC No.:** 231-595-7 **Warning**
Cas No.: 7647-01-0 **Index No.:** 017-002-01-X
Hazard: H315 H319 H335
Precaution: P261 P302+P352 P304+P340 P305+P351+P338 P309+P311

Cat No.	Grade	Assay	Info.	Per
ESC55362		4.0M	Ampoule	1L

HYDROCHLORIC ACID 1.0M (1.0N) CVS

Hcl = 36.46g/mol



UN Class: 8 /UN1789 PG-III **EC No.:** 231-595-7 **Danger**
Cas No.: 7647-01-0 **Index No.:** 017-002-01-X
Hazard: H314 H335
Precaution: P261 P280 P305+P351+P338 P310
Notes: 6 x 1M 100ml ampoules, each makes 1L of 0.1M solution.
Chemical info shown for ampoule not diluted solution.



Cat No.	Grade	Assay	Info.	Per
ESC55356		0.1M	Ampoule	6



HYDROGEL (SODIUM POLYACRYLATE)(C₃H₃NaO₂)_n




UN Class: N/A **EC No.:** N/A
Cas No.: 9003-04-7 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required



Cat No.	Grade	Assay	Info.	Per
ESC55372		95%		500g






HYDROQUINONE (BENZENE-1,4-DIOL OR QUINOL)				
$C_6H_4(OH)_2 = 110.11g/mol$ 				
UN Class: 9 /UN3077 PG-III		EC No.: 204-617-8		
Cas No.: 123-31-9		Index No.: 604-005-00-4		
Hazard: H351 H341 H302 H318 H312 H400				
Precaution: P273 P280 P305+P351+P338 P301+P312				
Cat No.	Grade	Assay	Info.	Per
ESC55374		99%		100g



HYDROGEN PEROXIDE 20 VOLS (DIOXIDANE)				
$H_2O_2 = 34.01g/mol$ 				
UN Class: N/A		EC No.: 231-765-0		Warning
Cas No.: 7722-84-1		Index No.: 008-003-00-9		
Hazard: H302 H319				
Precaution: P305+P351+P338 P337+P313				
Cat No.	Grade	Assay	Info.	Per
ESC55380		6% w/v		2L


HYDROGEN PEROXIDE 100 VOLS (DIOXIDANE)				
$H_2O_2 = 34.01g/mol$ 				
UN Class: 5.1 /UN2014 PG-II		EC No.: 231-765-0		Danger
Cas No.: 7722-84-1		Index No.: 008-003-00-9		
Hazard: H302 H315 H318 H355				
Precaution: P261 P280 P301+P312 P302+P351 P304+P340 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55376		29-30%		1L
ESC55378		29-30%		500ml



HYDROXYLAMMONIUM CHLORIDE (HYDROXYLAMINE HYDROCHLORIDE)				
$NH_2OH \cdot HCl = 69.49g/mol$ 				
UN Class: 8(6.1) /UN2923 PG-II		EC No.: 226-798-2		Warning
Cas No.: 5470-11-1		Index No.: 612-123-00-2		
Hazard: H290 H351 H312 H302 H373 H319 H315 H317 H400				
Precaution: P201 P273 P281 P302+P352 P305+P351+P338 P309+P311				
Cat No.	Grade	Assay	Info.	Per
ESC55382		98%		100g

INDIGO CARMINE C.I.73015				
N/A 				
UN Class: N/A		EC No.: 212-728-8		Warning
Cas No.: 860-22-0		Index No.: Not listed		
Hazard: H302				
Precaution: P264 P270 P301+P312 P330 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55384		N/A	11.4- 13.0	5g

INDOL-3-YL-ACETIC ACID (IAA)				
$C_{10}H_9NO_2 = 175.18g/mol$				
UN Class: N/A		EC No.: 201-748-2		
Cas No.: 87-51-4		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55386		96%		1g

IODINE				
$I_2 = 253.81g/mol$ 				
UN Class: 8(6.1) /UN3495 PG-III		EC No.: 231-442-4		Warning
Cas No.: 7553-56-2		Index No.: 053-001-00-3		
Hazard: H332 H312 H400				
Precaution: P273 P280				
Cat No.	Grade	Assay	Info.	Per
ESC55395		99.5%		100g

IODINE 0.05M (0.1N) SOLUTION				
$I_2 = 253.81g/mol$				
UN Class: 8(6.1) /UN3495 PG-III		EC No.: 231-442-4		
Cas No.: 7553-56-2		Index No.: 053-001-00-3		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55389		0.05M	Solution	500ml
ESC55388		0.05M	Solution	1L

IODINE 1% SOLUTION IN KI				
UN Class: N/A		EC No.: N/A		
Cas No.: N/A		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55392		1%		500ml
ESC55393		1%		1L



1-IODOBUTANE (BUTYL IODIDE) $\text{CH}_3(\text{CH}_2)_3\text{I} = 184.02\text{g/mol}$ 

33°C

UN Class: 3 /UN1993 PG-III **EC No.:** 208-824-4 **Danger**
Cas No.: 542-69-8 **Index No.:** Not listed

Hazard: H226 H331
Precaution: P210 P405 P501

Cat No.	Grade	Assay	Info.	Per
ESC55398		99%		25ml

IDOETHANE (ETHYL IODIDE) $\text{C}_2\text{H}_5\text{I} = 155.97\text{g/mol}$ 

53°C

UN Class: 3 /UN1993 PG-III **EC No.:** 200-833-1 **Danger**
Cas No.: 75-03-6 **Index No.:** Not listed

Hazard: H302 H315 H317 H319 H334
Precaution: P261 P280 P305+P351+P338 P342+P311

Cat No.	Grade	Assay	Info.	Per
ESC55400		99%		25ml

IRON METAL - FILINGS

Fe = 55.85g/mol

UN Class: N/A **EC No.:** 231-096-4 **Warning**
Cas No.: 7439-89-6 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55402		97%	Coarse (1.0mm)	500g

IRON POWDER REDUCED BY HYDROGEN

Fe = 55.85g/mol



UN Class: 4.1 /UN3089 PG-III **EC No.:** 231-096-4 **Danger**
Cas No.: 7439-89-6 **Index No.:** Not listed

Hazard: H228
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55406		96%		500g

IRON (II) SULPHIDE LUMP (FERROUS SULPHIDE)

FeS = 87.91g/mol



UN Class: N/A **EC No.:** 215-268-6 **Warning**
Cas No.: 1317-37-9 **Index No.:** Not listed

Hazard: H400
Precaution: P273

Cat No.	Grade	Assay	Info.	Per
ESC55420		90%		500g

IRON (II) CHLORIDE 4-WATER (FERROUS CHLORIDE) $\text{FeCl}_2 \cdot 4\text{H}_2\text{O} = 198.81\text{g/mol}$ 

UN Class: 8 /UN3260 PG-III **EC No.:** 231-843-4 **Danger**
Cas No.: 13478-10-9 **Index No.:** Not listed

Hazard: H302 H315 H318
Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55409		99%		500g

IRON (II) OXALATE $\text{Fe}_2\text{CO}_4 \cdot 2\text{H}_2\text{O} = 179.89\text{g/mol}$ 

UN Class: N/A **EC No.:** N/A **Warning**
Cas No.: 6047-25-2 **Index No.:** 607-007-00-3

Hazard: H302 H312
Precaution: P280 P301+P312

Cat No.	Grade	Assay	Info.	Per
ESC55412		98%		100g

IRON (II,III) OXIDE (MAGNETITE) $\text{Fe}_3\text{O}_4 = 231.53\text{g/mol}$

UN Class: 3 /UN1294 PG-II **EC No.:** N/A **Warning**
Cas No.: N/A **Index No.:** 607-007-00-3

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55436		N/A		100g

IRON (II) SULPHATE 7-WATER (FERROUS SULPHATE) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O} = 278.01\text{g/mol}$ 

UN Class: N/A **EC No.:** 231-753-5 **Warning**
Cas No.: 7782-63-0 **Index No.:** 026-003-01-4

Hazard: H302 H319 H315
Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55416		98%		500g



IRON (III) CHLORIDE 6-WATER (FERRIC CHLORIDE)				
$\text{FeCl}_3 \cdot 6\text{H}_2\text{O} = 270.3\text{g/mol}$				
UN Class: 8 /UN3260 PG-III		EC No.: 231-729-4		
Cas No.: 10025-77-1		Index No.: Not listed		
Hazard: H302 H314				
Precaution: P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC55424		98%		500g

IRON (III) CHLORIDE ANHYDROUS (FERRIC CHLORIDE)				
$\text{FeCl}_3 = 162.2\text{g/mol}$				
UN Class: 8 /UN1773 PG-III		EC No.: 231-729-4		Danger
Cas No.: 7705-08-0		Index No.: Not listed		
Hazard: H302 H315 H318 H411				
Precaution: P273 P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55428		96%		500g

IRON (III) NITRATE 9-WATER (FERRIC NITRATE)				
$\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O} = 404\text{g/mol}$				
UN Class: 5.1 /UN1466 PG-III		EC No.: 233-899-5		Warning
Cas No.: 7782-61-8		Index No.: Not listed		
Hazard: H272 H315 H319 H335				
Precaution: P220 P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55432		98%		500g

IRON (III) OXIDE (FERRIC OXIDE)				
$\text{Fe}_2\text{O}_3 = 159.69\text{g/mol}$				
UN Class: N/A		EC No.: 215-168-2		Warning
Cas No.: 1309-37-1		Index No.: Not listed		
Hazard: H315 H319 H335				
Precaution: P261 P305+P351+P338				
Notes: Red/Brown in colour				
Cat No.	Grade	Assay	Info.	Per
ESC55438		95%		500g

IRON (III) SULPHATE HYDRATED TECH (FERRIC SULPHATE)				
$\text{Fe}_2(\text{SO}_4)_3 \cdot x\text{H}_2\text{O} = 399.88\text{g/mol}$				
UN Class: N/A		EC No.: 233-072-9		Warning
Cas No.: 15244-10-7		Index No.: Not listed		
Hazard: H302 H319 H335				
Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55440		95%		500g

JANUS GREEN STAIN C.I.11050				
UN Class: N/A		EC No.: 220-695-6		
Cas No.: 2869-83-2		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55442		N/A	Powder	1g
ESC55443		1%	Powder	100ml

KAOLIN LIGHT (ALUMINUM SILICATE HYDROXIDE)				
$\sim\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4 = 258.16\text{g/mol}$				
UN Class: N/A		EC No.: 310-194-1		
Cas No.: 1332-58-7		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55444		N/A		1kg


KEROSENE WHITE SEE PARAFFIN OIL


KINETIN				
$\text{C}_{10}\text{H}_9\text{N}_5\text{O} = 215.22\text{g/mol}$				
UN Class: N/A		EC No.: 208-382-2		
Cas No.: 525-79-1		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55445		99%		1kg

DL-LACTIC ACID (2-HYDROXYPROPIONIC ACID)				
$\text{CH}_3\text{CH}(\text{OH})\text{COOH} = 90.08\text{g/mol}$				
UN Class: N/A		EC No.: 209-954-4		Danger
Cas No.: 50-21-5		Index No.: Not listed		
Hazard: H315 H318				
Precaution: P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55459		88%		500ml


LACTOSE				
$\text{C}_{12}\text{H}_{22}\text{O}_{11} \cdot \text{H}_2\text{O} = 360.31\text{g/mol}$				
UN Class: N/A		EC No.: 200-559-2		
Cas No.: 64044-51-5		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55460		98%		500g






LATEX				
$(C_3H_5NaO_2)_n$				
UN Class: N/A		EC No.: N/A		
Cas No.: 9003-04-7		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55462		N/A		500ml


DI-LAUROYL PEROXIDE (DODECANOYL PEROXIDE)				
$[CH_3(CH_2)_{10}CO]_2O_2 = 398.62g/mol$				
UN Class: 5.2 /UN3106 PG-II		EC No.: 203-326-3		
Cas No.: 105-74-8		Index No.: 617-003-00-3		
Hazard: H242				
Precaution: P220 P280 P410 P420				
Cat No.	Grade	Assay	Info.	Per
ESC55463		98%		25g


LEAD METAL				
Pb = 207.2g/mol				
UN Class: N/A		EC No.: 231-100-4		
Cas No.: 7439-92-1		Index No.: Not listed		
Hazard: H302 H332 H360 H373 H410				
Precaution: P201 P273 P308+P313				
Cat No.	Grade	Assay	Info.	Per
ESC55474		N/A	Shot 3mm dia.	500g


LEAD (II) ACETATE 3-WATER (LEAD (II) ETHANOATE)				
$Pb(CH_3CO_2)_2 \cdot 3H_2O = 379.33g/mol$				
UN Class: 6.1 /UN1616 PG-III		EC No.: 206-104-4		
Cas No.: 6080-56-4		Index No.: 082-005-00-8		
Hazard: H360Df H373 H410				
Precaution: P201 P273 P308+P313 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55476		98%		500g


LEAD (II) BROMIDE				
$PbBr_2 = 367.01g/mol$				
UN Class: 6.1 /UN2291 PG-III		EC No.: 233-084-4		
Cas No.: 10031-22-8		Index No.: 082-001-00-6		
Hazard: H360Df H332 H302 H373 H410				
Precaution: P201 P273 P308+P313 P501				
Cat No.	Grade	Assay	Info.	Per
CHE291647		98%		100g
CHE291648		98%		250g

LEAD (II,IV) OXIDE (RED LEAD)				
$Pb_3O_4 = 685.6g/mol$				
UN Class: 5.1 /UN1479 PG-II		EC No.: 215-235-6		
Cas No.: 1314-41-6		Index No.: 082-001-00-6		
Hazard: H360Df H302 H332 H272 H373 H410				
Precaution: P201 P220 P273 P308+P313 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55488		97%		500g


LEAD (IV) OXIDE (LEAD DIOXIDE)				
$PbO_2 = 239.2g/mol$				
UN Class: 5.1(6.1) /UN1872 PG-III		EC No.: 215-174-5		
Cas No.: 1309-60-0		Index No.: 082-001-00-6		
Hazard: H360Df H302 H332 H272 H373 H410				
Precaution: P201 P220 P273 P308+P313 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55496		95%		250g


LEAD (II) SULPHATE					
$PbSO_4 = 303.26g/mol$					
UN Class: 9 /UN3077 PG-III		EC No.: 231-198-9			
Cas No.: 7446-14-2		Index No.: 082-001-00-6			
Hazard: H360Df H332 H302 H373 H410					
Precaution: P201 P273 P308+P313 P501					
Cat No.	Grade	Assay	Info.	Price	Per
ESC55492		99%		15.95	100g


LEAD (II) SULPHIDE					
$PbS = 239.27g/mol$					
UN Class: 9 /UN3077 PG-III		EC No.: 215-246-6			
Cas No.: 1314-87-0		Index No.: 082-001-00-6			
Hazard: H360Df H332 H302 H373 H410					
Precaution: P201 P273 P308+P313 P501					
Cat No.	Grade	Assay	Info.	Per	
ESC55494		98%			100g



LEISHMAN'S STAIN				
UN Class: N/A		EC No.: 235-732-1		
Cas No.: 12627-53-1		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55499		N/A		5g







DL-LEUCINE				
$(\text{CH}_3)_2\text{CHCH}_2\text{CH}(\text{NH}_2)\text{CO}_2\text{H} = 131.17\text{g/mol}$				
UN Class: N/A		EC No.: 231-729-4		
Cas No.: 328-39-2		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55501		99%		5g




L-LEUCINE				
$(\text{CH}_3)_2\text{CHCH}_2\text{CH}(\text{NH}_2)\text{CO}_2\text{H} = 131.17\text{g/mol}$				
UN Class: N/A		EC No.: 200-522-0		
Cas No.: 61-90-5		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55502		99%		25g



LIME WATER (LIMEWATER)				
$\text{Ca}(\text{OH})_2 = 74.09\text{g/mol}$				
UN Class: N/A		EC No.: 215-137-3		
Cas No.: 1305-62-0		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Notes: For detecting Carbon dioxide				
Cat No.	Grade	Assay	Info.	Per
ESC55504		N/A		500ml



LIMONENE (DIPENTENE)				
$\text{C}_{10}\text{H}_{16} = 136.24\text{g/mol}$				
				
UN Class: 3 / UN2052 PG-III		EC No.: 205-341-0		Warning
Cas No.: 138-86-3		Index No.: 601-029-00-7		
Hazard: H226 H315 H317 H410				
Precaution: P273 P280 P501				
Notes: For detecting Carbon dioxide				
Cat No.	Grade	Assay	Info.	Per
ESC55506		98%		250ml



LIMONENE (R)-(+)-				
$\text{C}_{10}\text{H}_{16} = 136.23\text{g/mol}$				
				
UN Class: 3 / UN2052 PG-III		EC No.: 227-813-5		Warning
Cas No.: 5989-27-5		Index No.: 601-029-00-7		
Hazard: H226 H315 H317 H410				
Precaution: P210 P241 P303+P361+P353				
Cat No.	Grade	Assay	Info.	Per
ESC55507		97%		25ml

LIMONENE (S)-(-)-				
$\text{C}_{10}\text{H}_{16} = 136.23\text{g/mol}$				
				
UN Class: 3 / UN2052 PG-III		EC No.: 227-815-6		Warning
Cas No.: 5989-54-8		Index No.: 601-029-00-7		
Hazard: H226 H315 H317 H410				
Precaution: P210 P241 P303+P361+P353				
Cat No.	Grade	Assay	Info.	Per
ESC55508		97%		25ml

LITHIUM METAL IN LIQUID PARAFFIN				
$\text{Li} = 6.94\text{g/mol}$				
				
UN Class: 4.3 / UN1415 PG-I		EC No.: 231-102-5		Danger
Cas No.: 7439-93-2		Index No.: 003-001-00-4		
Hazard: H260 H314				
Precaution: P223 P231+P232 P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55510		99%	SURCHARGE	10g
ESC55511		99%	SURCHARGE	25g

LITHIUM CARBONATE				
$\text{Li}_2\text{CO}_3 = 73.89\text{g/mol}$				
				
UN Class: N/A		EC No.: 209-062-5		Warning
Cas No.: 554-13-2		Index No.: Not listed		
Hazard: H302 H319 H332				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55513		99%		500g

LITHIUM CHLORIDE ANHYDROUS				
$\text{LiCl} = 42.39\text{g/mol}$				
				
UN Class: N/A		EC No.: 231-212-3		Warning
Cas No.: 7447-41-8		Index No.: Not listed		
Hazard: H302 H315 H319 H335				
Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55515		98.5%		500g

LITHIUM HYDROXIDE				
$\text{LiOH} \cdot \text{H}_2\text{O} = 41.96\text{g/mol}$				
				
UN Class: N/A		EC No.: 215-183-4		Danger
Cas No.: 1310-66-3		Index No.: Not listed		
Hazard: H302 H314				
Precaution: P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC55517		98%		500g



LITHIUM NITRATE ANHYDROUSLiNO₃ = 68.95g/mol**UN Class:** 5.1 /UN2722 PG-III
Cas No.: 7790-69-4**EC No.:** 232-218-9
Index No.: Not listed

Warning

Hazard: H272
Precaution: P220

Cat No.	Grade	Assay	Info.	Per
ESC55519		98%		100g

L-LYSINE MONOHYDROCHLORIDEH₂N(CH₂)₄CH(NH₂)CO₂H • HCl = 182.65g/mol**UN Class:** N/A**EC No.:** 211-519-9**Cas No.:** 657-27-2**Index No.:** Not listed**Hazard:** Not considered hazardous**Precaution:** No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55522		99%		100g

LITMUS**UN Class:** N/A**EC No.:** 215-739-6**Cas No.:** 1393-92-6**Index No.:** Not listed**Hazard:** Not considered hazardous**Precaution:** No additional precautions required**Notes:** pH 5.0-8.0

Cat No.	Grade	Assay	Info.	Per
ESC55520		N/A	Powder	25g

LYCOPodium POWDER

N/A

**UN Class:** 4.1 /UN1325 PG-II**EC No.:** 282-002-3**Cas No.:** 8023-70-9**Index No.:** Not listed

Danger

Hazard: H228**Precaution:** P210

Cat No.	Grade	Assay	Info.	Per
ESC55530		97%		50g

LUGOL'S IODINE SOLUTION**UN Class:** N/A**EC No.:** N/A**Cas No.:** N/A**Index No.:** Not listed**Hazard:** Not considered hazardous**Precaution:** No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55524		N/A		1L

MAGNESIUM METAL - POWDER

Mg = 24.31g/mol

**UN Class:** 4.3(4.2) /UN1418 PG-II**EC No.:** 231-104-6**Cas No.:** 7439-95-4**Index No.:** 012-001-00-3

Danger

Hazard: H260 H250**Precaution:** P222 P223 P231+P232

Cat No.	Grade	Assay	Info.	Per
ESC55534		99.5%	SURCHARGE	100g
ESC55536		99.5%	SURCHARGE	500g

LUMINOL (3-AMINOPHTHALHYDRAZIDE)Nh₂ . C₆H₃ . CO . NH . NH . CO = 177.16g/mol**UN Class:** N/A**EC No.:** 208-309-4**Cas No.:** 521-31-3**Index No.:** Not listed**Hazard:** H315 H319 H335**Precaution:** P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55527		97%		1g
ESC55528		98%		1g

MAGNESIUM METAL - TURNINGS

Mg = 24.31g/mol

**UN Class:** 4.1 /UN1869 PG-III**EC No.:** 231-104-6**Cas No.:** 7439-95-4**Index No.:** 012-002-00-9

Danger

Hazard: H228 H261 H252**Precaution:** P210 P231+P232 P235+P410


Cat No.	Grade	Assay	Info.	Per
ESC55537		99.5%		100g
ESC55538		99.5%		250g



MAGNESIUM CHLORIDE 6-WATER $MgCl_2 \cdot 6H_2O = 203.31g/mol$

UN Class: N/A EC No.: 232-094-6
 Cas No.: 7791-18-6 Index No.: Not listed



Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55544		97.5%		500g

MAGNESIUM CARBONATE BASIC - HEAVY $MgCO_3 = 84.31g/mol$

UN Class: N/A EC No.: 235-192-7
 Cas No.: 39409-82-0 Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55540		MgO = 30%	Heavy	250g
ESC55541		MgO = 30%	Heavy	500g

MAGNESIUM CARBONATE BASIC - LIGHT $MgCO_3 = 84.31g/mol$

UN Class: N/A EC No.: 235-192-7
 Cas No.: 39409-82-0 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55542		MgO = 30%	Light	500g

MAGNESIUM HYDROXIDE $Mg(OH)_2 = 58.32g/mol$ 

UN Class: N/A EC No.: 215-170-3
 Cas No.: 1309-42-8 Index No.: Not listed

Hazard: H315 H319 H335
 Precaution: P261 P305+P351+P338

Warning


Cat No.	Grade	Assay	Info.	Per
ESC55547		95%		500g

MAGNESIUM NITRATE 6-WATER $Mg(NO_3)_2 \cdot 6H_2O = 256.41g/mol$ 

UN Class: 5.1 /UN1474 PG-III EC No.: 233-826-7
 Cas No.: 13446-18-9 Index No.: Not listed

Hazard: H319
 Precaution: P305+P351+P338


Warning

Cat No.	Grade	Assay	Info.	Per
ESC55552		98%		500g

MAGNESIUM OXIDE - HEAVY $MgO = 40.3g/mol$

UN Class: N/A EC No.: 215-171-9
 Cas No.: 1309-48-4 Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55556		98%		500g

MAGNESIUM OXIDE - LIGHT $MgO = 40.3g/mol$

UN Class: N/A EC No.: 215-171-9
 Cas No.: 1309-48-4 Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55560		98%		500g

MAGNESIUM SULPHATE - DRIED (DRIED) $MgSO_4 \cdot xH_2O = 120.38g/mol$

UN Class: N/A EC No.: 231-298-2
 Cas No.: 22189-08-8 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55564		97%		500g

MAGNESIUM SULPHATE 7-WATER $MgSO_4 \cdot 7H_2O = 246.47g/mol$ 

UN Class: N/A EC No.: 231-298-2
 Cas No.: 10034-99-8 Index No.: Not listed

Hazard: H302
 Precaution: P264 P270 P301+P312 P330


Warning

Cat No.	Grade	Assay	Info.	Per
ESC55566		99%		1kg

MAGNESIUM SULPHATE ANHYDROUS $MgSO_4 = 120.37g/mol$

UN Class: N/A EC No.: 231-298-2
 Cas No.: 7487-88-9 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55568		98%		500g



MALACHITE GREEN C.I.42000 (BASIC GREEN 4)

N/A



UN Class: 6.1 /UN2811 PG-III **EC No.:** 219-441-7 **Danger**
Cas No.: 2437-29-8 **Index No.:** 602-096-00-5
Hazard: H361d H302 H318 H410
Precaution: P272 P280 P305+P351+P338 P501

Cat No.	Grade	Assay	Info.	Per
ESC55570		N/A		5g

MANGANESE (II) CARBONATE $MnCO_3 = 114.95g/mol$

UN Class: N/A **EC No.:** 209-942-9
Cas No.: 598-62-9 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55583		93%		500g

MALEIC ACID (CIS-BUTENEDIOIC ACID OR TOXILIC ACID) $CH(COOH):CH(COOH) = 116.07g/mol$ 

UN Class: N/A **EC No.:** 203-742-5 **Warning**
Cas No.: 110-16-7 **Index No.:** 607-095-00-3
Hazard: H302 H319 H335 H315 H317
Precaution: P261 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55572		99%		500g

MANGANESE (II) CHLORIDE 4-WATER $MnCl_2 \cdot 4H_2O = 197.91g/mol$ 

UN Class: N/A **EC No.:** 231-869-6 **Warning**
Cas No.: 13446-34-9 **Index No.:** Not listed
Hazard: H302
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55586		98%		500g

MALONIC ACID (PROPANEDIOIC ACID) $CH_2(COOH)_2 = 104.06g/mol$ 

UN Class: N/A **EC No.:** 205-503-0 **Warning**
Cas No.: 141-82-2 **Index No.:** Not listed
Hazard: H302 H318
Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55574		98%		500g

MANGANESE (II) SULPHATE 1-WATER $MnSO_4 \cdot H_2O = 169.02g/mol$ 

UN Class: 9 /UN3077 PG-III **EC No.:** 232-089-9 **Warning**
Cas No.: 10034-96-5 **Index No.:** 025-003-00-4
Hazard: H373 H411
Precaution: P273

Cat No.	Grade	Assay	Info.	Per
ESC55589		98%		500g

MALTOSE $C_{12}H_{22}O_{11} \cdot H_2O = 360.31g/mol$

UN Class: N/A **EC No.:** 200-716-5
Cas No.: 6363-53-7 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55576		97%		100g

MANGANESE (IV) OXIDE FOR O₂ PREPARATION $MnO_2 = 86.94g/mol$ 

UN Class: 5.1 /UN1479 PG-II **EC No.:** 215-202-6 **Warning**
Cas No.: 1313-13-9 **Index No.:** 025-001-00-3

Hazard: H332 H302
Precaution: No additional precautions required
Notes: For the preparation of Oxygen

Cat No.	Grade	Assay	Info.	Per
ESC55592		97%	Powder	250g

MANGANESE FLAKE ELECTROLYTIC $Mn = 54.94g/mol$

UN Class: N/A **EC No.:** 231-105-1
Cas No.: 7439-96-5 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55578		99%		100g


MANGANESE (IV) OXIDE $MnO_2 = 86.94g/mol$ 


UN Class: N/A **EC No.:** 215-202-6 **Warning**
Cas No.: 1313-13-9 **Index No.:** 025-001-00-3





Hazard: H332 H302
Precaution: No additional precautions required



Cat No.	Grade	Assay	Info.	Per
ESC55595		90%	Tech. Powder	500g







MANNITOL				
$C_6H_{14}O_6 = 182.17g/mol$				
UN Class: N/A		EC No.: 200-711-8		
Cas No.: 69-65-8		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55597		98%		100g

D (+) MANNOSE				
$C_6H_{12}O_6 = 180.16g/mol$				
UN Class: N/A		EC No.: 215-202-6		
Cas No.: 3458-28-4		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55232		99%		5g

MARBLE CHIPS (CALCIUM CARBONATE ORE)				
$CaCO_3 = 100.09g/mol$				
UN Class: N/A		EC No.: N/A		Warning
Cas No.: 13397-26-7		Index No.: Not listed		
Hazard: H315 H318 H335				
Precaution: P261 P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55599		97%	2-4mm	3kg
ESC55600		97%	6-9mm	3kg
ESC55601		97%	9-12mm	3kg




MENTHOL				
$C_{10}H_{20}O = 156.27g/mol$				
UN Class: N/A		EC No.: 218-690-9		Danger
Cas No.: 2216-51-5		Index No.: Not listed		
Hazard: H315 H318 H335				
Precaution: P261 P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55602		99%		100g



MERCURY (II) CHLORIDE (MERCURIC CHLORIDE)				
$HgCl_2 = 271.5g/mol$				
UN Class: 6.1 /UN1624 PG-II		EC No.: 231-299-8		Danger
Cas No.: 7487-94-7		Index No.: 080-010-00-X		
Hazard: H341 H361f H300 H372 H314 H410				
Precaution: P264 P273 P280 P305+P351+P338 P310 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55604		99%		100g



MERCURY (II) OXIDE RED (MERCURIC OXIDE RED)				
$HgO = 216.59g/mol$				
UN Class: 6.1 /UN1641 PG-II		EC No.: 244-654-7		Danger
Cas No.: 21908-53-2		Index No.: 080-002-00-6		
Hazard: H330 H310 H300 H373 H410				
Precaution: P260 P264 P273 P280 P284 P302+P350				
Cat No.	Grade	Assay	Info.	Per
ESC55607		N/A		100g



METHANAL	SEE FORMALDEHYDE
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METHANOIC ACID	SEE FORMIC ACID
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METHANOL (METHYL ALCOHOL)				
$CH_3OH = 32.04g/mol$				
UN Class: 3(6.1) /UN1230 PG-II		EC No.: 200-659-6		Danger
Cas No.: 67-56-1		Index No.: 603-001-00-X		
Hazard: H225 H331 H311 H301 H370				
Precaution: P210 P260 P280 P301+P310 P307+P317				
Cat No.	Grade	Assay	Info.	Per
ESC55609		99%	GR	1L
ESC55610		99%	HPLC	1L

METHYL ACETATE				
$CH_3COOCH_3 = 74.08g/mol$				
UN Class: 3 /UN1231 PG-II		EC No.: 201-185-2		Danger
Cas No.: 79-20-9		Index No.: 607-021-00-X		
Hazard: H225 H319 H336 EUH066				
Precaution: P210 P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55612		98.5%		1L

METHYLATED SPIRIT (INDUSTRIAL DENATURED ALCOHOL)				
$(C_2H_5OH \& CH_3OH)$				
UN Class: 3 /UN1170 PG-II		EC No.: N/A		Danger
Cas No.: N/A		Index No.: Not listed		
Hazard: H225 H371				
Precaution: P210 P260				
Cat No.	Grade	Assay	Info.	Per
ESC55614		>98%	2-4mm	5L

METHYLATED SPIRIT (MINERALISED DENATURED ALCOHOL)				
$(C_2H_5OH \& CH_3OH)$				
UN Class: 3 /UN1170 PG-II		EC No.: N/A		Danger
Cas No.: N/A		Index No.: Not listed		
Hazard: H225 H371				
Precaution: P210 P260				
Cat No.	Grade	Assay	Info.	Per
ESC55615		N/A	Mineralised	1L



METHYL BENZOATE $C_6H_5COOCH_3 = 136.15g/mol$ 

UN Class: N/A **EC No.:** 202-259-7 **Warning**
Cas No.: 93-58-3 **Index No.:** Not listed
Hazard: H302 H319
Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55617		99%	9-12mm	500ml

METHYLBENZENE SEE TOLUENE**METHYL BLUE C.I.42780**

N/A



UN Class: N/A **EC No.:** 249-352-9 **Warning**
Cas No.: 28983-56-4 **Index No.:** Not listed
Hazard: H302 H315 H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55619		N/A		25g

2-METHYLBUTANE SEE ISO-PENTANE**3-METHYL-1-BUTANOL** SEE ISO-AMYL ALCOHOL**3-METHYLBUTYL ACETATE** SEE ISO-AMYL ACETATE**METHYLENE BLUE C.I.52015**

N/A



UN Class: N/A **EC No.:** 200-515-2 **Warning**
Cas No.: 7220-79-3 **Index No.:** Not listed
Hazard: H302 H315 H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55631		N/A		50g
ESC55632		N/A		100g

METHYLENE BLUE 1% AQUEOUS SOLUTION

UN Class: N/A **EC No.:** N/A
Cas No.: N/A **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55634		1%		125ml

METHYLENE CHLORIDE SEE DICHLOROMETHANE**METHYL ETHYL KETONE** SEE 2-BUTANONE**METHYL METHACRYLATE MONOMER** $CH_2=C(CH_3)COOCH_3 = 100.12g/mol$ 

UN Class: 3 /UN1247 PG-II **EC No.:** 201-297-1 **Danger**
Cas No.: 80-62-6 **Index No.:** 607-035-00-6
Hazard: H225 H335 H315 H317
Precaution: P210 P261 P280

Cat No.	Grade	Assay	Info.	Per
ESC55636		99.5%		500ml

METHYL 4-HYDROXYBENZOATE $HOOC_6H_4CO_2CH_3 = 152.15g/mol$ 

UN Class: N/A **EC No.:** 202-785-7 **Warning**
Cas No.: 99-76-3 **Index No.:** Not listed
Hazard: H315 H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55638		98%		50g

METHYL ORANGE C.I.13025

N/A



UN Class: 6.1 /UN3143 PG-III **EC No.:** 208-925-3 **Danger**
Cas No.: 547-58-0 **Index No.:** Not listed
Hazard: H301
Precaution: P301+P310

Cat No.	Grade	Assay	Info.	Per
ESC55621		N/A	2-4mm	50g
ESC55622		N/A	9-12mm	100g

METHYL ORANGE 0.04% SOLUTION

UN Class: 3 /UN1993 PG-III **EC No.:** N/A
Cas No.: N/A **Index No.:** Not listed
Hazard: H225
Precaution: P210

Cat No.	Grade	Assay	Info.	Per
ESC55624		0.04%	pH 2.9-4.6	500ml

METHYL ORANGE - XYLENE CYANOL (SCREENED METHYL ORANGE) $HOOC_6H_4CO_2CH_3 = 152.15g/mol$ 


UN Class: 3 /UN1993 PG-III **EC No.:** N/A
Cas No.: N/A **Index No.:** Not listed
Hazard: H301 H335 H315 H319
Precaution: P261 P280 P301+P310 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55627		N/A	pH 2.9-4.6	5g



METHYL ORANGE - XYLENE CYANOL SOLUTION

UN Class: 3 /UN1993 PG-III EC No.: N/A
 Cas No.: N/A Index No.: Not listed
 Hazard: H225 H371
 Precaution: P210 P260


Cat No.	Grade	Assay	Info.	Per
ESC55628		0.36%	pH 2.9-4.6	500ml

2-METHYLPROPAN-1-OL (ISO-BUTYL ALCOHOL)

$(\text{CH}_3)_2\text{CHCH}_2\text{OH} = 74.12\text{g/mol}$



UN Class: 3 /UN1212 PG-III EC No.: 201-148-0 Danger
 Cas No.: 78-83-1 Index No.: 603-108-00-1
 Hazard: H226 H335 H315 H318 H336
 Precaution: P261 P280 P305+P351+P338


Cat No.	Grade	Assay	Info.	Per
ESC54786		98%		1L

2-METHYLPROPAN-2-OL (TERT-BUTYL ALCOHOL)

$(\text{CH}_3)_3\text{COH} = 74.12\text{g/mol}$




UN Class: 3 /UN1120 PG-II EC No.: 200-889-7 Danger
 Cas No.: 75-65-0 Index No.: 603-005-00-1
 Hazard: H225 H332 H319 H335
 Precaution: P210

Cat No.	Grade	Assay	Info.	Per
ESC54789		98.5%		1L

METHYL RED C.I.13020

UN Class: N/A EC No.: 207-776-1
 Cas No.: 493-52-7 Index No.: Not listed
 Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55626		N/A	pH 4.2-6.3	100g

METHYL SALICYLATE (METHYL 2-HYDROXYBENZOATE OR OIL OF WINTERGREEN)

$2-(\text{HO})\text{C}_6\text{H}_4\text{CO}_2\text{CH}_3 = 152.12\text{g/mol}$




UN Class: N/A EC No.: 204-317-7 Warning
 Cas No.: 119-36-8 Index No.: Not listed
 Hazard: H302 H315 H319 H335
 Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55629		99%		500ml

MINERAL WOOL

UN Class: N/A EC No.: N/A
 Cas No.: N/A Index No.: 650-016-00-2
 Hazard: H351
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55639		N/A		500g

MINERAL WOOL - SUPERWOOL 607


UN Class: N/A EC No.: N/A
 Cas No.: 436083-99-7 Index No.: Not listed
 Hazard: H351
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55640		N/A		500g

MUREXIDE (AMMONIUM PURPURATE)

$\text{C}_8\text{H}_5\text{N}_5\text{O}_6 \cdot \text{H}_3\text{N} = 284.19\text{g/mol}$

UN Class: N/A EC No.: 221-266-6
 Cas No.: 3051-09-0 Index No.: Not listed
 Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55641		97%		25g

NAPHTHALENE CRYSTALS

$\text{C}_{10}\text{H}_8 = 128.17\text{g/mol}$



UN Class: 4.1 /UN1334 PG-III EC No.: 202-049-5 Warning
 Cas No.: 91-20-3 Index No.: 601-052-00-2
 Hazard: H351 H302 H410
 Precaution: P273 P281 P501


Cat No.	Grade	Assay	Info.	Per
ESC55643		99%		500g

1-NAPHTHOL (NAPHTHALEN-1-OL)

$\text{C}_{10}\text{H}_7\text{OH} = 144.17\text{g/mol}$



UN Class: 6.1 /UN2811 PG-III EC No.: 201-969-4 Danger
 Cas No.: 90-15-3 Index No.: 604-029-00-5
 Hazard: H312 H302 H335 H315 H318
 Precaution: P261 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Price	Per
ESC54761		98%		15.95	100g



2-NAPHTHOL (NAPHTHALEN-2-OL) $C_{10}H_7OH = 144.17g/mol$ 

UN Class: 9 /UN3077 PG-III **EC No.:** 205-182-7 **Warning**
Cas No.: 135-19-3 **Index No.:** 604-007-00-5

Hazard: H332 H302 H400
Precaution: P273 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC54792		98%		100g

NEUTRAL RED C.I.50040 $C_{15}H_{17}ClN_4 = 288.78g/mol$

UN Class: N/A **EC No.:** 209-035-8
Cas No.: 553-24-2 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55659		N/A	pH 6,8-8,0	5g

NICKEL METAL - FOIL $Ni = 58.71g/mol$ 

UN Class: N/A **EC No.:** 231-111-4 **Danger**
Cas No.: 7440-02-0 **Index No.:** 028-002-00-7

Hazard: H351 H372 H317
Precaution: P280 P314

Cat No.	Grade	Assay	Info.	Per
ESC55661		>99%	Foil 0,15mm	100g

NICKEL (II) CARBONATE BASIC $\sim NiCO_3 \cdot 2Ni(OH)_2 \cdot 4H_2O = 342.1g/mol$ 

UN Class: 9 /UN3077 PG-III **EC No.:** 235-715-9 **Danger**
Cas No.: 12607-70-4 **Index No.:** 028-010-00-0

Hazard: H302 H315 H317 H332 H334 H341 H350i H360 H372 H410
Precaution: P201 P261 P273 P280 P308+P313 P501

Cat No.	Grade	Assay	Info.	Per
ESC55663		Ni = 46%		100g

NICKEL (II) CHLORIDE 6-WATER (NICKEL DICHLORIDE) $NiCl_2 \cdot 6H_2O = 237.69g/mol$ 

UN Class: 6.1 /UN3288 PG-III **EC No.:** 231-743-0 **Danger**
Cas No.: 7791-20-0 **Index No.:** 028-011-00-6

Hazard: H350i H341 H360FD H331 H301 H372 H315 H334 H317 H410
Precaution: P201 P261 P273 P280 P301+P310 P311

Cat No.	Grade	Assay	Info.	Price	Per
ESC55665		97%		15,95	500g

NICKEL (II) NITRATE 6-WATER $Ni(NO_3)_2 \cdot 6H_2O = 290.79g/mol$ 

UN Class: 5.1 /UN2725 PG-III **EC No.:** 236-068-5 **Danger**
Cas No.: 13478-00-7 **Index No.:** Not listed

Hazard: H350i H341 H360 H272 H302 H315 H317 H318 H332 H334 H372 H410
Precaution: P201 P220 P261 P273 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55676		99.5%		250g

NICKEL (II) OXIDE BLACK TECHNICAL $NiO = 74.69g/mol$ 

UN Class: N/A **EC No.:** 215-215-7 **Danger**
Cas No.: 1313-99-1 **Index No.:** 028-003-00-2

Hazard: H350i H372 H317 H413
Precaution: P201 P280 P308+P313

Cat No.	Grade	Assay	Info.	Per
ESC55668		N/A		100g

NICKEL (II) SULPHATE HYDRATED $NiSO_4 \cdot 6 \cdot 7H_2O$ 

UN Class: 9 /UN3077 PG-III **EC No.:** 232-104-9 **Danger**
Cas No.: 15244-37-8 **Index No.:** 028-009-00-5

Hazard: H350i H360 H372 H317 H302 H315 H332 H334 H341 H410
Precaution: P201 P261 P273 P280 P308+P313 P501

Cat No.	Grade	Assay	Info.	Per
ESC55672		98%		250g

NIGROSIN C.I.50420 (ACID BLACK 2)

UN Class: N/A **EC No.:** N/A
Cas No.: 8005-03-6 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55682		N/A		5g



NINHYDRIN (INDAN-1,2,3-TRIONE) $C_8H_4COC(OH)_2CO = 178.14g/mol$ 



UN Class: N/A **EC No.:** 207-618-1 **Warning**
Cas No.: 485-47-2 **Index No.:** Not listed




Hazard: H302 H315 H319 H335
Precaution: P261 P305+P351+P338


Cat No.	Grade	Assay	Info.	Per
ESC55684		98%		25g







NINHYDRIN SPRAY				
N/A				
		12°C		
UN Class: 3 /UN1219 PG-II		EC No.: N/A		Danger
Cas No.: N/A		Index No.: Not listed		
Hazard: H225 H319 H336				
Precaution: P210 P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55686		N/A		100ml



NITROBENZENE				
C ₆ H ₅ NO ₂ = 123.11g/mol				
UN Class: 6.1 /UN1662 PG-II		EC No.: 202-716-0		Danger
Cas No.: 98-95-3		Index No.: 609-003-00-7		
Hazard: H301 H311 H331 H351 H361f H372 H411				
Precaution: P273 P281 P314				
Cat No.	Grade	Assay	Info.	Per
ESC55700		99%		100ml



NITRIC ACID 69%				
HNO ₃ = 63.01g/mol				
UN Class: 8(5.1) /UN2031 PG-II		EC No.: 231-714-2		Danger
Cas No.: 7697-37-2		Index No.: 007-004-00-1		
Hazard: H272 H314				
Precaution: P220 P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC55692		65%		2.5L
ESC55696		69-70%		2.5L

NYLON 6/6 PELLETS (POLY(HEXAMETHYLENE ADIPAMIDE))				
(C ₁₂ H ₂₂ N ₂ O ₂) _n = 262.35g/mol				
UN Class: N/A		EC No.: N/A		
Cas No.: 32131-17-2		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55702		N/A		100g

NITRIC ACID 1.0M SOLUTION				
HNO ₃ = 63.01g/mol				
UN Class: 8 /UN2031 PG-II		EC No.: 231-714-2		Danger
Cas No.: 7697-37-2		Index No.: 007-004-00-1		
Hazard: H314				
Precaution: P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC55688		1.0M		1L

N-OCTANE				
CH ₃ (CH ₂) ₆ CH ₃ = 114.23g/mol				
		13°C		
UN Class: 3 /UN1262 PG-II		EC No.: 203-892-1		Danger
Cas No.: 111-65-9		Index No.: 601-009-00-8		
Hazard: H225 H304 H315 H336 H410				
Precaution: P210 P261 P273 P301+P331 P501				
Cat No.	Grade	Assay	Info.	Per
ESC55704		99%		100ml

NITRIC ACID 2.0M SOLUTION				
HNO ₃ = 63.01g/mol				
UN Class: 8 /UN2031 PG-II		EC No.: 231-714-2		Danger
Cas No.: 7697-37-2		Index No.: 007-004-00-1		
Hazard: H314				
Precaution: P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC55690		2.0M		1L

OCTAN-1-OL (OCTYL ALCOHOL)				
CH ₃ (CH ₂) ₇ OH = 130.23g/mol				
UN Class: N/A		EC No.: 203-917-6		Warning
Cas No.: 111-87-5		Index No.: Not listed		
Hazard: H315 H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55712		94-98%		1L



OCTADECANOIC ACID SEE STEARIC ACID

OCTADEC-9-ENOIC ACID SEE OLEIC ACID

ISO-OCTANE SEE 2,2,4-TRIMETHYLPENTANE

OCT-1-ENE

$\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}_2 = 112.21\text{g/mol}$



21°C

UN Class: 3 / UN3295 PG-II **EC No.:** 203-893-7 **Danger**
Cas No.: 111-66-0 **Index No.:** Not listed

Hazard: H225 H304 H315 H319 H411

Precaution: P210 P273 P301+P310 P305+P351+P338 P331

Cat No.	Grade	Assay	Info.	Per
ESC55714		97%		100ml

OIL - CASTOR

UN Class: N/A **EC No.:** 232-293-8 **Danger**
Cas No.: 8001-79-4 **Index No.:** Not listed

Hazard: Not considered hazardous

Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55716		98%		500ml

OIL - CLOVE

N/A



UN Class: N/A **EC No.:** N/A **Warning**
Cas No.: 8000-34-8 **Index No.:** Not listed

Hazard: H315 H319 H335

Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55717		95%		100ml

OIL - CRUDE (SUBSTITUTE) (C.L.E.A.P.S.E FORMULATION)

N/A



UN Class: 3 / UN1286 PG-II **EC No.:** N/A **Danger**
Cas No.: N/A **Index No.:** Not listed

Hazard: H350 H304 H319 H225

Precaution: P281 P301+P310 P331 P305+P351+P338 P210

Cat No.	Grade	Assay	Info.	Per
ESC55720		N/A		500ml

OIL - LINSEED

N/A



UN Class: N/A **EC No.:** 232-278-6 **Warning**
Cas No.: 8001-26-1 **Index No.:** Not listed

Hazard: H302 H312 H315 H317 H319 H332 H335

Precaution: P261 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55721		95%		500ml

OIL - OLIVE

UN Class: N/A **EC No.:** 232-277-0
Cas No.: 8001-25-0 **Index No.:** Not listed

Hazard: Not considered hazardous

Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55723		95%		500ml

OIL - TURPENTINE

N/A



UN Class: 3 / UN1299 PG-III **EC No.:** 232-350-7 **Danger**
Cas No.: 8006-64-2 **Index No.:** 650-002-00-6

Hazard: H226 H332 H312 H302 H304 H319 H315 H317 H411

Precaution: P273 P280 P301+P310 P305+P351+P338 P331

Cat No.	Grade	Assay	Info.	Per
ESC55724		91%		500ml

OLEIC ACID (9-OCTADECENOIC ACID)

$\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{COOH} = 282.46\text{g/mol}$



UN Class: N/A **EC No.:** 204-007-1 **Warning**
Cas No.: 112-80-1 **Index No.:** Not listed

Hazard: H315 H319

Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55725		0.8%		1L

O.N.P.G (2-NITROPHENYL-BETA-D-GALACTOPYRANOSIDE)

$\text{C}_{12}\text{H}_{15}\text{NO}_8 = 301.25\text{g/mol}$

UN Class: N/A **EC No.:** 206-716-1
Cas No.: 369-07-3 **Index No.:** Not listed

Hazard: Not considered hazardous

Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55730		98%		1g

ORANGE G (ACID ORANGE 10)

N/A = 452.37g/mol

UN Class: N/A **EC No.:** N/A
Cas No.: 1936-15-8 **Index No.:** Not listed

Hazard: Not considered hazardous

Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55731		N/A		10g



ORCEIN SYNTHETIC (NATURAL RED 28)

N/A

UN Class: N/A **EC No.:** 215-750-6 **Warning**
Cas No.: 1400-62-0 **Index No.:** Not listed
Hazard: H302
Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55732	 N/A	N/A		5g

ORCEIN ACETIC (LA COUR)

N/A



UN Class: 8 /UN2790 PG-III **EC No.:** N/A **Danger**
Cas No.: N/A **Index No.:** Not listed
Hazard: H226 H314
Precaution: P280 P305+P351+P338 P310


Cat No.	Grade	Assay	Info.	Per
ESC55733	 N/A	N/A	0.6% Solution	100ml

ORCEIN PROPIONIC

N/A





UN Class: N/A **EC No.:** N/A **Danger**
Cas No.: N/A **Index No.:** Not listed
Hazard: H314
Precaution: P260 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55734	 N/A	N/A	0.6% Solution	100ml



ORTHOPHOSPHORIC ACID (PHOSPHORIC ACID) $H_3PO_4 = 98g/mol$ 

UN Class: 8 /UN1805 PG-III **EC No.:** 231-633-2 **Danger**
Cas No.: 7664-38-2 **Index No.:** 015-011-00-6
Hazard: H314
Precaution: P260 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55735	 85%	85%		1L
ESC55736	 85%	85%		2.5L


OXALIC ACID 2-WATER (ETHANEDIOIC ACID) $(COOH)_2 \cdot 2H_2O = 126.07g/mol$ 

UN Class: 8 /UN3261 PG-III **EC No.:** 205-634-3 **Warning**
Cas No.: 6153-56-6 **Index No.:** 607-006-00-8
Hazard: H312 H302
Precaution: P280

Cat No.	Grade	Assay	Info.	Per
ESC55727	 99.5%	99.5%		500g
ESC55728	 99.5%	99.5%	PURIFIED	500g

PALMITIC ACID (HEXADECANOIC ACID) $CH_3(CH_2)_{14}COOH = 256.42g/mol$ 

UN Class: N/A **EC No.:** 200-312-9 **Warning**
Cas No.: 57-10-3 **Index No.:** Not listed
Hazard: H319
Precaution: P305+P351+P338



Cat No.	Grade	Assay	Info.	Per
ESC55737	 95%	95%		100g

PANCREATIN FROM PIG PANCREAS

N/A



UN Class: N/A **EC No.:** 232-468-9 **Danger**
Cas No.: 8049-47-6 **Index No.:** 647-014-00-9
Hazard: H319 H335 H315 H334
Precaution: P261 P305+P351+P338 P342+P311


Cat No.	Grade	Assay	Info.	Per
ESC55738	 97%	97%		25g
ESC55739	 97%	97%		100g

PARAFFIN LIQUID LIGHT

N/A



UN Class: N/A **EC No.:** 232-384-2 **Warning**
Cas No.: 8012-95-1 **Index No.:** Not listed
Hazard: H319
Precaution: P305+P351+P338


Cat No.	Grade	Assay	Info.	Per
ESC55740	 98%	98%		1L

PARAFFIN OIL (KEROSENE OIL)

N/A



UN Class: 3 /UN1223 PG-III **EC No.:** 232-366-4 **Danger**
Cas No.: 8008-20-6 **Index No.:** 649-404-00-4
Hazard: H304
Precaution: P301+P310


Cat No.	Grade	Assay	Info.	Per
ESC55742	 97%	97%		500ml



PARAFFIN WAX 56-58°C

UN Class: N/A EC No.: 232-315-6
 Cas No.: 8002-74-2 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55744		97%		500g

ISO-PENTANE (2-METHYLBUTANE)

$\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)_2 = 72.15\text{g/mol}$



UN Class: 3 / UN1265 PG- EC No.: 201-142-8 Danger
 Cas No.: 78-78-4 Index No.: 601-006-00-1

Hazard: H225 H304 H336 H411 EUH066
 Precaution: P210 P261 P273 P301+P310 P331

Cat No.	Grade	Assay	Info.	Per
ESC55452		N/A		2.5L


N-PENTANE

$\text{CH}_3(\text{CH}_2)_3\text{CH}_3 = 72.15\text{g/mol}$



UN Class: 3 / UN1265 PG-II EC No.: 203-692-4 Danger
 Cas No.: 109-66-0 Index No.: 601-006-00-1

Hazard: H225 H304 H336 H411 EUH066
 Precaution: P210 P261 P273 P301+P310 P331

Cat No.	Grade	Assay	Info.	Per
ESC55708		99%		2.5L



PENTAN-1-OL (N-AMYL ALCOHOL)

$\text{CH}_3(\text{CH}_2)_4\text{OH} = 88.15\text{g/mol}$



UN Class: 3 / UN1105 PG-III EC No.: 200-752-1 Warning
 Cas No.: 71-41-0 Index No.: 603-200-00-1

Hazard: H226 H332 H335 H315
 Precaution: P261

Cat No.	Grade	Assay	Info.	Per
ESC55748		99%		1L
ESC55749		>99%		2.5L


PENTAN-2-OL

$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}(\text{OH})\text{CH}_3 = 88.15\text{g/mol}$



UN Class: 3 / UN1105 PG-III EC No.: 227-907-6 Warning
 Cas No.: 6032-29-7 Index No.: 603-006-00-7


Hazard: H226 H332 H335 EUH066
 Precaution: P261

Cat No.	Grade	Assay	Info.	Per
ESC55751		99%		100ml

PEPTONE BACTERIOLOGICAL

UN Class: N/A EC No.: N/A
 Cas No.: 73049-73-7 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55753		N/A		100g


PETROLEUM ETHER (LIGROIN)

N/A



UN Class: 3 / UN1268 PG-II EC No.: 232-453-7 Danger
 Cas No.: 8032-32-4 Index No.: 649-263-00-9

Hazard: H225 H304 H315 H336 H361 H373 H411
 Precaution: P210 P261 P273 P281 P301+P310 P331

Cat No.	Grade	Assay	Info.	Per
ESC55755		95%		2.5L

PETROLEUM JELLY - WHITE (PARAFFIN SOFT WHITE)

UN Class: N/A EC No.: 232-373-2
 Cas No.: 8009-03-8 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55757		N/A		500g


1-10-PHENANTHROLINE HYDRATE

$\text{C}_{12}\text{H}_8\text{N}_2 \cdot \text{H}_2\text{O} = 198.22\text{g/mol}$



UN Class: 6.1 / UN2811 PG-III EC No.: 200-629-2 Danger
 Cas No.: 5144-89-8 Index No.: 613-092-00-8

Hazard: H301 H410
 Precaution: P273 P301+P310 P501

Cat No.	Grade	Assay	Info.	Per
ESC55759		98%		5g


PHENOL (CARBOLIC ACID)

$\text{C}_6\text{H}_5\text{OH} = 94.11\text{g/mol}$








UN Class: 6.1 / UN1671 PG-II EC No.: 203-632-7 Danger
 Cas No.: 108-95-2 Index No.: 604-001-00-2



Hazard: H341 H331 H311 H301 H373 H314
 Precaution: P261 P280 P301+P310 P305+P351+P338 P312


Cat No.	Grade	Assay	Info.	Per
ESC55761		98%		500g



PHENOLPHTHALEIN 1% SOLUTION				
N/A  13°C				
UN Class: 3 / UN1170 PG-II		EC No.: N/A		Danger
Cas No.: N/A		Index No.: Not listed		
Hazard: H225 H341 H350 Precaution: P201 P210 P281 P308+P313				
Cat No.	Grade	Assay	Info.	Per
ESC55768		0.01%	pH 8.3-10.0	1L

PHENOLPHTHALEIN				
OCOC ₆ H ₄ C(C ₆ H ₄ OH) ₂ = 318.33g/mol 				
UN Class: N/A		EC No.: 201-004-7		Danger
Cas No.: 77-09-8		Index No.: 604-076-00-1		
Hazard: H350 H341 H361f Precaution: P201 P281 P308+P313				
Cat No.	Grade	Assay	Info.	Per
ESC55775		N/A	pH 8.3-10.0	50g
ESC55776		N/A	pH 8.3-10.0	100g

PHENOL RED (PHENOLSULFONPHTHALEIN)				
C ₁₉ H ₁₄ O ₅ S = 354.38g/mol 				
UN Class: N/A		EC No.: 205-609-7		Warning
Cas No.: 143-74-8		Index No.: Not listed		
Hazard: H315 H319 H335 Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55764		N/A		25g




DL-PHENYLALANINE (DLPA)				
C ₆ H ₅ CH ₂ CH(NH ₂)COOH = 165.19g/mol				
UN Class: N/A		EC No.: 205-756-7		
Cas No.: 150-30-1		Index No.: Not listed		
Hazard: Not considered hazardous Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55766		99%		5g


PHENYLAMINE SEE ANILINE



PHENYLAMMONIUM CHLORIDE SEE ANILINE HYDROCHLORIDE



PHENYLETHYLENE SEE STYRENE

PHENYLMETHANOL SEE BENZYL ALCOHOL

PHENYL SALICYLATE (PHENYL-2-HYDROXYBENZOATE OR SALOL)				
C ₆ H ₄ (OH)COOC ₆ H ₅ = 214.22g/mol 				
UN Class: N/A		EC No.: 204-259-2		Warning
Cas No.: 118-55-8		Index No.: Not listed		
Hazard: H315 H319 H335 Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55771		99%		100g
ESC55772		99%		250g

PHLOROGLUCINOL 2-WATER (BENZENE-1,3,5-TRIOL)				
C ₆ H ₃ (OH) ₃ • 2H ₂ O = 162.14g/mol				
UN Class: N/A		EC No.: 203-611-2		
Cas No.: 6099-90-7		Index No.: Not listed		
Hazard: Not considered hazardous Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55779		95%		10g

PHLOROGLUCINOL 5% SOLUTION - ALCOHOLIC				
N/A  13°C				
UN Class: 3 / UN1170 PG-II		EC No.: N/A		Danger
Cas No.: N/A		Index No.: Not listed		
Hazard: H225 H371 Precaution: P210 P260				
Cat No.	Grade	Assay	Info.	Per
ESC55780		N/A		100ml

PHOSPHORUS - RED				
P = 30.97g/mol  13°C				
UN Class: 4.1 / UN1338 PG-III		EC No.: 231-768-7		Danger
Cas No.: 7723-14-0		Index No.: 015-002-00-7		
Hazard: H228 H412 Precaution: P210 P273				
Cat No.	Grade	Assay	Info.	Per
ESC55784		98%		100g

PHOSPHORIC ACID SEE ORTHOPHOSPHORIC ACID



PHOSPHOROUS PENTACHLORIDE

N/A



UN Class: 8 /UN1806 PG-II **EC No.:** N/A **Danger**
Cas No.: N/A **Index No.:** Not listed
Hazard: H330 H302 H373 H314 EUH014 EUH029
Precaution: P260 P280 P284 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55787		N/A		500g

PHOSPHORUS PENTOXIDE (PHOSPHORIC ANHYDRIDE)

P₂O₅ = 141.94g/mol

UN Class: 8 /UN1807 PG-II **EC No.:** 215-236-1 **Danger**
Cas No.: 1314-56-3 **Index No.:** 015-010-00-0
Hazard: H314
Precaution: P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55790		95%		250g

PHTHALIC ACID (BENZENE-1,2-DICARBOXYLIC ACID)

C₆H₄(COOH)₂ = 166.13g/mol

UN Class: N/A **EC No.:** 201-873-2 **Warning**
Cas No.: 88-99-3 **Index No.:** Not listed
Hazard: H315 H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55793		98%		250g

PHTHALIC ANHYDRIDE (2-BENZOFURAN-1,3-DIONE)

COC₆H₄COO = 148.12g/mol

UN Class: 8 /UN2214 PG-III **EC No.:** 201-607-5 **Danger**
Cas No.: 85-44-9 **Index No.:** 607-009-00-4
Hazard: H302 H335 H315 H318 H334 H317
Precaution: P261 P280 P305+P351+P338 P342+P311

Cat No.	Grade	Assay	Info.	Per
ESC55796		99.5%		500g

POLY(VINYL ALCOHOL) (ETHENOL)

(CH₂:CHOH)_n = 17000g/mol

UN Class: N/A **EC No.:** N/A
Cas No.: 9002-89-5 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55799		85%		250g
ESC55800		87 - 90%		500g

PEPTONE BACTERIOLOGICAL

UN Class: N/A **EC No.:** N/A
Cas No.: 73049-73-7 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55753		N/A		100g

POTASSIUM METAL IN LIQUID PARAFFIN

K = 39.1g/mol



UN Class: 4.3 /UN2257 PG-I **EC No.:** 231-119-8 **Danger**
Cas No.: 7440-09-7 **Index No.:** 019-001-00-2
Hazard: H260 H314 EUH014
Precaution: P223 P231+P232 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55805		98%	SURCHARGE	25g
ESC55806		98%	SURCHARGE	100g

POTASSIUM BROMATE

KBrO₃ = 167g/mol

UN Class: 5.1 /UN1484 PG-II **EC No.:** 231-829-8 **Danger**
Cas No.: 7758-01-2 **Index No.:** 035-003-00-6
Hazard: H271 H350 H301
Precaution: P201 P220 P301+P310 P308+P313

Cat No.	Grade	Assay	Info.	Price	Per
ESC55814		99.5%		15.95	250g

POTASSIUM BROMIDE

Kbr = 119g/mol



UN Class: N/A **EC No.:** 231-830-3 **Warning**
Cas No.: 7758-02-3 **Index No.:** Not listed
Hazard: H315 H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55818		99%		500g

POTASSIUM CARBONATE ANHYDROUS

K₂CO₃ = 138.21g/mol

UN Class: N/A **EC No.:** 209-529-3 **Warning**
Cas No.: 584-08-7 **Index No.:** Not listed
Hazard: H302 H315 H319 H335
Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55821		99.5%		500g



POTASSIUM CHLORATE				
$\text{KClO}_3 = 122.55\text{g/mol}$				
UN Class: 5.1 /UN1485 PG-II		EC No.: 223-289-7		Danger
Cas No.: 3811-04-9		Index No.: 017-004-00-3		
Hazard: H271 H332 H302 H411				
Precaution: P220 P273				
Cat No.	Grade	Assay	Info.	Per
ESC55824		98%		500g

POTASSIUM CHLORIDE				
$\text{KCl} = 74.55\text{g/mol}$				
UN Class: N/A		EC No.: 231-211-8		
Cas No.: 7447-40-7		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55828		99%		500g
ESC55829		>99%		1kg

POTASSIUM CHROMATE				
$\text{K}_2\text{CrO}_4 = 194.19\text{g/mol}$				
UN Class: 6.1 /UN3288 PG-III		EC No.: 232-140-5		Danger
Cas No.: 7789-00-6		Index No.: 024-006-00-8		
Hazard: H350i H340 H319 H335 H315 H317 H410				
Precaution: P201 P261 P273 P280 P305+P351+P338 P308+P313				
Cat No.	Grade	Assay	Info.	Per
ESC55832		99%		500g

TRI-POTASSIUM CITRATE				
$\text{C}_6\text{H}_5\text{K}_3\text{O}_7 \cdot \text{H}_2\text{O} = 324.41\text{g/mol}$				
UN Class: N/A		EC No.: N/A		
Cas No.: 6100-05-6		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55835		99%		500g

POTASSIUM DICHROMATE				
$\text{K}_2\text{Cr}_2\text{O}_7 = 294.18\text{g/mol}$				
UN Class: 6.1 /UN3087 PG-II		EC No.: 231-906-6		Danger
Cas No.: 7778-50-9		Index No.: 024-002-00-6		
Hazard: H272 H350 H340 H360FD H330 H301 H372 H312 H314 H334 H317 H410				
Precaution: P201 P220 P260 P273 P280 P284				
Cat No.	Grade	Assay	Info.	Per
ESC55838		99%	SURCHARGE	250g

POTASSIUM DIHYDROGEN PHOSPHATE				
$\text{KH}_2\text{PO}_4 = 136.09\text{g/mol}$				
UN Class: N/A		EC No.: 231-913-4		
Cas No.: 7778-77-0		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55842		98%		500g

POTASSIUM FERRICYANIDE (POTASSIUM HEXACYANOFERRATE (III))				
$\text{K}_3\text{Fe}(\text{CN})_6 = 329.24\text{g/mol}$				
UN Class: N/A		EC No.: 237-323-3		Warning
Cas No.: 13746-66-2		Index No.: Not listed		
Hazard: EUH032				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55846		99%		100g
ESC55847		99%		250g

POTASSIUM FERROCYANIDE (POTASSIUM HEXACYANOFERRATE (II))				
$\text{K}_4\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O} = 422.39\text{g/mol}$				
UN Class: N/A		EC No.: 237-722-2		Warning
Cas No.: 14459-95-1		Index No.: Not listed		
Hazard: EUH032				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55850		98.5%		250g

POTASSIUM HYDROGEN CARBONATE (POTASSIUM BICARBONATE)				
$\text{KHCO}_3 = 100.12\text{g/mol}$				
UN Class: N/A		EC No.: 206-059-0		
Cas No.: 298-14-6		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55853		99.5%		500g



DI-POTASSIUM HYDROGEN PHOSPHATE				
$\text{K}_2\text{HPO}_4 = 174.18\text{g/mol}$				
UN Class: N/A		EC No.: 231-834-5		
Cas No.: 7758-11-4		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55250		98%		500g



POTASSIUM HYDROGEN PHTHALATECOOH • C₆H₄ • COOK = 204.22g/mol

UN Class: N/A EC No.: 212-889-4
 Cas No.: 877-24-7 Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55860		99.5%		250g
ESC55861		99.5%		500g

POTASSIUM HYDROGEN SULPHATE (POTASSIUM BISULPHATE)KHSO₄ = 136.16g/mol

UN Class: 8 /UN2509 PG-II EC No.: 231-594-1 Danger
 Cas No.: 7646-93-7 Index No.: 016-056-00-4


Hazard: H314 H335
 Precaution: P261 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55865		98%		250g

POTASSIUM HYDROGEN TARTRATE (CREAM OF TARTAR)KO₂CCH(OH)CH(OH)COOH = 188.18g/mol

UN Class: N/A EC No.: 212-769-1
 Cas No.: 868-14-4 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55869		98%		250g


POTASSIUM HYDROXIDE FLAKE

KOH = 56.11g/mol



UN Class: 8 /UN1813 PG-II EC No.: 215-181-3 Danger
 Cas No.: 1310-58-3 Index No.: 019-002-00-8

Hazard: H290 H302 H314
 Precaution: P260 P280 P303+P361+P353 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55873		85%		500g



POTASSIUM HYDROXIDE PELLETS

KOH = 56.11g/mol



UN Class: 8 /UN1813 PG-II EC No.: 215-181-3 Danger
 Cas No.: 1310-58-3 Index No.: 019-002-00-8


Hazard: H290 H302 H314
 Precaution: P260 P280 P303+P361+P353 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55876		85%		250g
ESC55877		90%		500g

POTASSIUM IODATE (V)

UN Class: 5.1 /UN1479 PG-II EC No.: 231-831-9 Danger
 Cas No.: 7758-05-6 Index No.: Not listed


Hazard: H272 H315 H319 H335
 Precaution: P220 P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55881		99%		100g

POTASSIUM IODATE (VII) (POTASSIUM PERIODATE)KIO₄ = 230g/mol

UN Class: 5.1 /UN1479 PG-II EC No.: 232-196-0 Danger
 Cas No.: 7790-21-8 Index No.: Not listed

Hazard: H272 H315 H319 H335
 Precaution: P220 P261 P305+P351+P338




Cat No.	Grade	Assay	Info.	Per
ESC55885		99%		100g

POTASSIUM IODIDE

KI = 166g/mol

UN Class: N/A EC No.: 231-659-4
 Cas No.: 7681-11-0 Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55889		99%		100g
ESC55890		99%		250g
ESC55891		99%		500g


POTASSIUM MANGANATE (VII) (POTASSIUM PERMANGANATE)KMnO₄ = 158.03g/mol


UN Class: 5.1 /UN1490 PG-II EC No.: 231-760-3 Danger
 Cas No.: 7722-64-7 Index No.: 025-002-00-9


Hazard: H272 H302 H410
 Precaution: P220 P273 P501


Cat No.	Grade	Assay	Info.	Per
ESC55893		99%	Powder	500g





POTASSIUM MANGANATE SOLUTION (VII)				
$\text{KMnO}_4 = 158.03\text{g/mol}$				
UN Class: N/A		EC No.: 231-760-3		Danger
Cas No.: 7722-64-7		Index No.: 025-002-00-9		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55895		0.02M (0.1N)		1L


POTASSIUM PERSULPHATE (DIPOTASSIUM PEROXODISULPHATE)				
$\text{K}_2\text{S}_2\text{O}_8 = 270.32\text{g/mol}$				
UN Class: 5.1 / UN1492 PG-III		EC No.: 231-781-8		Danger
Cas No.: 7727-21-1		Index No.: 016-061-00-1		
Hazard: H272 H302 H319 H335 H315 H334 H317				
Precaution: P220 P261 P280 P305+P351+P338 P342+P311				
Cat No.	Grade	Assay	Info.	Per
ESC55909		98%		500g


POTASSIUM METABISULPHITE (DIPOTASSIUM DISULPHITE)				
$\text{K}_2\text{S}_2\text{O}_5 = 222.32\text{g/mol}$				
UN Class: N/A		EC No.: 240-795-3		Warning
Cas No.: 16731-55-8		Index No.: Not listed		
Hazard: H315 H319 H335				
Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55897		96%		500g


POTASSIUM SODIUM TARTRATE (ROCHELLE SALT)				
$\text{KOCOCH(OH)CH(OH)COONa} \cdot 4\text{H}_2\text{O} = 282.22\text{g/mol}$				
UN Class: N/A		EC No.: 206-156-8		
Cas No.: 6381-59-5		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55912		99%		500g


POTASSIUM NITRATE				
$\text{KNO}_3 = 101.1\text{g/mol}$				
UN Class: 5.1 / UN1486 PG-III		EC No.: 231-818-8		Warning
Cas No.: 7757-79-1		Index No.: Not listed		
Hazard: H272				
Precaution: P220				
Cat No.	Grade	Assay	Info.	Per
ESC55899		99%		500g

POTASSIUM SULPHATE				
$\text{K}_2\text{SO}_4 = 174.26\text{g/mol}$				
UN Class: N/A		EC No.: 231-915-5		Danger
Cas No.: 7778-80-5		Index No.: Not listed		
Hazard: H314				
Precaution: P280 P310 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55914		>98%		500g

POTASSIUM NITRITE				
$\text{KNO}_2 = 85.1\text{g/mol}$				
UN Class: 5.1 / UN1488 PG-II		EC No.: 231-832-4		Danger
Cas No.: 7758-09-0		Index No.: 007-011-00-X		
Hazard: H272 H301 H400				
Precaution: P220 P273 P301+P310				
Cat No.	Grade	Assay	Info.	Per
ESC55901		97%		100g

POTASSIUM THIOCYANATE				
$\text{KSCN} = 97.18\text{g/mol}$				
UN Class: N/A		EC No.: 206-370-1		Warning
Cas No.: 333-20-0		Index No.: 615-030-00-5		
Hazard: H332 H312 H302 H412				
Precaution: P273 P280				
Cat No.	Grade	Assay	Info.	Per
ESC55917		97%		500g

POTASSIUM OXALATE 1-WATER (POTASSIUM ETHANEDIOATE)				
$(\text{COOK})_2 \cdot \text{H}_2\text{O} = 184.23\text{g/mol}$				
UN Class: N/A		EC No.: 209-506-8		Warning
Cas No.: 6487-48-5		Index No.: Not listed		
Hazard: H302 H312				
Precaution: P280				
Cat No.	Grade	Assay	Info.	Per
ESC55904		98%		500g

L-PROLINE				
UN Class: N/A		EC No.: 205-702-2		
Cas No.: 147-85-3		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC55919		98%		5g



PROPANAL (PROPIONALDEHYDE)CH₃CH₂CHO = 58.08g/mol

UN Class: 3 /UN1275 PG-II **EC No.:** 204-623-0 **Danger**
Cas No.: 123-38-6 **Index No.:** 605-018-00-8

Hazard: H225 H319 H335 H315
Precaution: P210 P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55928		97%		250ml

PROPANE-1-2-DIOL (PROPYLENE GLYCOL)CH₃CH(OH)CH₂OH = 76.1g/mol

UN Class: N/A **EC No.:** 200-338-0
Cas No.: 57-55-6 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55932		99%		500ml

PROPIONIC ACID (PROPANOIC ACID)CH₃CH₂COOH = 74.08g/mol

UN Class: 8(3) /UN3463 PG-II **EC No.:** 201-176-3 **Danger**
Cas No.: 79-09-4 **Index No.:** 607-089-00-0

Hazard: H314
Precaution: P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55935		99%		250ml
ESC55936		99%		500ml

PROPAN-1-OL (N-PROPYL ALCOHOL)CH₃CH₂CH₂OH = 60.1g/mol

UN Class: 3 /UN1274 PG-II **EC No.:** 200-746-9 **Danger**
Cas No.: 71-23-8 **Index No.:** 603-003-00-0

Hazard: H225 H318 H336
Precaution: P210 P261 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55921		99%		500ml

PROPAN-2-OL (ISO-PROPYL ALCOHOL)(CH₃)₂CHOH = 60.1g/mol

UN Class: 3 /UN1219 PG-II **EC No.:** 200-661-7 **Danger**
Cas No.: 67-63-0 **Index No.:** 603-117-00-0

Hazard: H225 H319 H336
Precaution: P210 P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55924		99.5%		1L
ESC55925		99.5%		2.5L

PYRIDINEC₅H₅N = 79.1g/mol

UN Class: 3 /UN1282 PG-II **EC No.:** 203-809-9 **Danger**
Cas No.: 110-86-1 **Index No.:** 613-002-00-7

Hazard: H225 H332 H312 H302
Precaution: P210

Cat No.	Grade	Assay	Info.	Per
ESC55939		99%		500ml

PYROGALLOL (1,2,3-TRIHYDROXYBENZENE)C₆H₃(OH)₃ = 126.11g/mol

UN Class: 6.1 /UN2811 PG-III **EC No.:** 201-762-9 **Warning**
Cas No.: 87-66-1 **Index No.:** 604-009-00-6

Hazard: H341 H332 H312 H302 H412
Precaution: P273 P281

Cat No.	Grade	Assay	Info.	Per
ESC55941		99%		100g

QUININEC₂₀H₂₄N₂O₂ • 3H₂O = 378.47g/mol

UN Class: N/A **EC No.:** 205-003-2 **Warning**
Cas No.: 130-95-0 **Index No.:** Not listed

Hazard: H302 H315 H317 H319 H335
Precaution: P261 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55943		97%		1g

RENNET POWDERC₂₀H₂₄N₂O₂ • 3H₂O = 378.47g/mol

UN Class: N/A **EC No.:** 232-645-0 **Danger**
Cas No.: 9001-98-3 **Index No.:** 647-009-00-1

Hazard: H319 H335 H315 H334
Precaution: P261 P305+P351+P338 P342+P311

Cat No.	Grade	Assay	Info.	Per
ESC55945		N/A		25g

RESAZURIN TABLETS

UN Class: N/A **EC No.:** N/A
Cas No.: 5508-82-3 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55947		N/A	pH 4.2-6.3	25 pk
ESC55948		N/A	pH 4.2-6.3	100 pk



RESORCINOL (BENZENE-1,3-DIOL) $C_6H_4(OH)_2 = 110.11g/mol$ 

UN Class: 6.1 /UN2876 PG-III **EC No.:** 203-585-2 **Warning**
Cas No.: 108-46-3 **Index No.:** 604-010-00-1

Hazard: H302 H315 H319 H400
Precaution: P273 P305+P351+P338 P301+P312

Cat No.	Grade	Assay	Info.	Per
ESC55950		98%		100g

SCHIFF'S REAGENT (FOR DETECTION OF ALDEHYDES)

N/A



UN Class: N/A **EC No.:** N/A **Danger**
Cas No.: N/A **Index No.:** Not listed

Hazard: H290 H314 H350
Precaution: P201 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55967		N/A		250ml

SAFRANIN O STAIN C.I.50240 (BASIC RED 2) $C_{20}H_{12}N_2O_2 \cdot 3H_2O = 378.47g/mol$ 

UN Class: N/A **EC No.:** 207-518-8 **Danger**
Cas No.: 477-73-6 **Index No.:** Not listed

Hazard: H318
Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55956		N/A	Powder	5g

SCHULTZE'S SOLUTION (CHLOR-ZINC-IODINE SOLUTION)

N/A



UN Class: N/A **EC No.:** N/A **Danger**
Cas No.: N/A **Index No.:** Not listed

Hazard: H302 H314 H410
Precaution: P273 P280 P305+P351+P338 P310 P501

Cat No.	Grade	Assay	Info.	Per
ESC55969		N/A		100ml

SAFRANIN O 1% AQUEOUS SOLUTION

UN Class: N/A **EC No.:** 207-518-8
Cas No.: 477-73-6 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55953		1%	Solution	100ml

SEBACOYL CHLORIDE

N/A



UN Class: 8 /UN3265 PG-II **EC No.:** 203-843-4 **Danger**
Cas No.: 111-19-3 **Index No.:** Not listed

Hazard: H302 H310 H314
Precaution: P280 P302+P350 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC55972		97%		25ml

SALICYLIC ACID (2-HYDROXYBENZOIC ACID) $C_6H_4(OH)COOH = 138.12g/mol$ 

UN Class: N/A **EC No.:** 200-712-3 **Danger**
Cas No.: 69-72-7 **Index No.:** Not listed

Hazard: H302 H318
Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55959		99%		100g
ESC55961		99%		500g
ESC55962		99.5%		1kg

SEBACOYL CHLORIDE 5% IN CYCLOHEXANE

N/A



UN Class: 3 /UN1145 PG-II **EC No.:** N/A **Danger**
Cas No.: N/A **Index No.:** Not listed

Hazard: H225 H304 H315 H336 H410
Precaution: P210 P273 P280 P301+P330+P331 P307+P311

Cat No.	Grade	Assay	Info.	Per
ESC55974		N/A		100ml

SILICA SAND (ACID WASHED)

UN Class: N/A **EC No.:** 231-545-4
Cas No.: 7631-86-9 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55965		N/A	pH 4.2-6.3	5kg
ESC55964		N/A	pH 4.2-6.3	1kg

L-SERINE

UN Class: N/A **EC No.:** 200-274-3
Cas No.: 56-45-1 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55976		98.5%		5g



SILICA GEL

UN Class: N/A EC No.: 231-545-4
 Cas No.: 112926-00-8 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC55983		98%		500g

SILICA GEL SELF-INDICATING (BLUE-PINK)

N/A




UN Class: N/A EC No.: 231-545-4 Danger
 Cas No.: 112926-00-8 Index No.: Not listed
 Hazard: H350i H412
 Precaution: P201 P273 P308+P313

Cat No.	Grade	Assay	Info.	Per
ESC55978		97%		500g

SILICA GEL SELF-INDICATING (ORANGE) (ORANGE TO COLOURLESS)


UN Class: N/A EC No.: 231-545-4
 Cas No.: 112926-00-8 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55981		97%		500g

SILICON (IV) OXIDE (SILICON DIOXIDE)SiO₂ = 60.08g/mol

UN Class: N/A EC No.: 231-545-4 Warning
 Cas No.: 7631-86-9 Index No.: Not listed
 Hazard: H319 H335
 Precaution: P261 P305+P351+P338


Cat No.	Grade	Assay	Info.	Per
ESC55985		97%		250g

SILVER WIRE

Ag = 107.87g/mol

UN Class: N/A EC No.: 231-131-3
 Cas No.: 7440-22-4 Index No.: Not listed




Hazard: Not considered hazardous
 Precaution: No additional precautions required
 Notes: Approximately 150mm

Cat No.	Grade	Assay	Info.	Per
ESC55987		N/A		10g

SILVER NITRATEAgNO₃ = 169.87g/mol

UN Class: 5.1 / UN1493 PG-II EC No.: 231-853-9 Danger
 Cas No.: 7761-88-8 Index No.: 047-001-00-2



Hazard: H272 H314 H410
 Precaution: P220 P273 P280 P305+P351+P338 P310 P501

Cat No.	Grade	Assay	Info.	Per
ESC55993		99.9%		10g
ESC55994		99.9%		25g
ESC55996		99.9%		100g

SILVER NITRATE 0.1M (0.1N) SOLUTIONAgNO₃ = 169.87g/mol

UN Class: 9 / UN3082 PG-III EC No.: 231-853-9 Warning
 Cas No.: 7761-88-8 Index No.: 047-001-00-2


Hazard: H315 H319 H412
 Precaution: P273 P280 P305+P351+P338 P337+P313

Cat No.	Grade	Assay	Info.	Per
ESC55989		0.1M	0.1M (0.1N)	500ml
ESC55991		0.1M	0.1M (0.1N)	2.5L

SILVER SULPHATEAg₂SO₄ = 311.8g/mol

UN Class: N/A EC No.: 233-653-7 Warning
 Cas No.: 10294-26-5 Index No.: Not listed

Hazard: H315 H319 H335 H400
 Precaution: P261 P273 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC55998		98.5%		10g



SOAP SOLUTION

N/A










UN Class: 3 / UN1170 PG-II EC No.: N/A Danger
 Cas No.: N/A Index No.: Not listed



Hazard: H225 H371
 Precaution: P210 P260



Cat No.	Grade	Assay	Info.	Per
ESC55999		N/A	Clark's	1L
ESC56000		N/A	Wanklyn's	1L








SODA LIME				
N/A				
UN Class: 8 /UN1907 PG-III		EC No.: N/A		Danger
Cas No.: 8006-28-8		Index No.: Not listed		
Hazard: H314				
Precaution: P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC56001		98%	Granulated	500g
ESC56002		98%	Self-Indicating	1kg

SODIUM METAL IN LIQUID PARAFFIN				
Na = 22.99g/mol				 
UN Class: 4.3 /UN1428 PG-I		EC No.: 231-132-9		Danger
Cas No.: 7440-23-5		Index No.: 011-001-00-0		
Hazard: H260 H314				
Precaution: P223 P231+P232 P280 P301+P310				
Cat No.	Grade	Assay	Info.	Per
ESC56005		99%	SURCHARGE	50g
ESC56006		99%	SURCHARGE	100g

SODIUM ACETATE ANHYDROUS (SODIUM ETHANOATE)				
CH ₃ COONa = 82.03g/mol				
UN Class: N/A		EC No.: 204-823-8		Warning
Cas No.: 127-09-3		Index No.: Not listed		
Hazard: H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56014		98%		500g





SODIUM ALGINATE				
UN Class: N/A		EC No.: N/A		
Cas No.: 9005-38-3		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC56018		97%		100g
ESC56020		97%		500g





SODIUM AZIDE				
NaN ₃ = 65.01g/mol				 
UN Class: 6.1 /UN1687 PG-II		EC No.: 247-852-1		Danger
Cas No.: 26628-22-8		Index No.: 011-004-00-7		
Hazard: H300 H400 H410 EUH032				
Precaution: P273 P501				
Cat No.	Grade	Assay	Info.	Per
ESC56022		99%		100g



SODIUM BENZOATE				
C ₆ H ₅ COONa = 144.1g/mol				
UN Class: N/A		EC No.: 208-534-8		Warning
Cas No.: 532-32-1		Index No.: Not listed		
Hazard: H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56025		99%		500g

SODIUM BICARBONATE SEE SODIUM HYDROGEN CARBONATE

SODIUM BISULPHATE SEE SODIUM HYDROGEN SULPHATE

SODIUM BOROHYDRIDE (SODIUM TETRAHYDRIDOBORATE)				
NaBH ₄ = 37.83g/mol				  
UN Class: 4.3 /UN1426 PG-I		EC No.: 241-004-4		Danger
Cas No.: 16940-66-2		Index No.: Not listed		
Hazard: H260 H301 H311 H314				
Precaution: P223 P231+P232 P280 P301+P310				
Cat No.	Grade	Assay	Info.	Per
ESC56027		99%	SURCHARGE	100g

SODIUM BROMATE				
NaBrO ₃ = 150.89g/mol				  
UN Class: 5.1 /UN1494 PG-II		EC No.: 232-160-4		Danger
Cas No.: 7789-38-0		Index No.: Not listed		
Hazard: H272 H302 H315 H319 H335				
Precaution: P220 P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56030		99%		500g

SODIUM BROMIDE				
NaBr = 102.89g/mol				
UN Class: N/A		EC No.: 231-599-9		Warning
Cas No.: 7647-15-6		Index No.: Not listed		
Hazard: H319				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56034		99%		500g



SODIUM CARBONATE 10-WATER $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O} = 286.14\text{g/mol}$ 

UN Class: N/A **EC No.:** 207-838-8 **Warning**
Cas No.: 6132-02-1 **Index No.:** 011-005-00-2
Hazard: H319
Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56037		98%	Clark's	1kg

SODIUM CARBONATE ANHYDROUS $\text{Na}_2\text{CO}_3 = 105.99\text{g/mol}$ 

UN Class: N/A **EC No.:** 207-838-8 **Warning**
Cas No.: 497-19-8 **Index No.:** 011-005-00-2
Hazard: H319
Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56044		99%		500g
ESC56045		99%		1kg

SODIUM CHLORATE (V) $\text{NaClO}_3 = 106.44\text{g/mol}$ 

UN Class: 5.1 /UN1495 PG-II **EC No.:** 231-887-4 **Danger**
Cas No.: 7775-09-9 **Index No.:** 017-005-00-9
Hazard: H271 H302 H411
Precaution: P220 P273

Cat No.	Grade	Assay	Info.	Per
ESC56049		99%		500g

SODIUM CHLORIDE $\text{NaCl} = 58.44\text{g/mol}$

UN Class: N/A **EC No.:** 231-598-3
Cas No.: 7647-14-5 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56053		99%		500g
ESC56054		99%		1kg

MANGANESE (II) CARBONATE $\text{MnCO}_3 = 114.95\text{g/mol}$

UN Class: N/A **EC No.:** 209-942-9
Cas No.: 598-62-9 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
CHE291774		93%		500g

SODIUM CHLORIDE - GRANULAR $\text{NaCl} = 58.44\text{g/mol}$

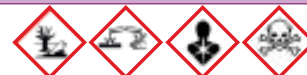
UN Class: N/A **EC No.:** 231-598-3
Cas No.: 7647-14-5 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required
Notes: Large Granules - 0.5-2cm grains
 Not suitable for human consumption

Cat No.	Grade	Assay	Info.	Per
ESC56056		98%	Granular	1kg

SODIUM CHLORIDE - ROCK SALT (SODIUM CHLORIDE TECHNICAL)

UN Class: N/A **EC No.:** 231-598-3
Cas No.: 7647-17-5 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required
Notes: Not suitable for human consumption

Cat No.	Grade	Assay	Info.	Per
ESC56058		97%		1kg
ESC56059		97%		500g

SODIUM CHROMATE 4-WATER $\text{Na}_2\text{CrO}_4 \cdot 4\text{H}_2\text{O} = 234.03\text{g/mol}$ 

UN Class: 6.1 /UN3288 PG-II **EC No.:** 231-889-5 **Danger**
Cas No.: 10034-82-9 **Index No.:** 024-018-00-3
Hazard: H350 H340 H360FD H330 H301 H372 H312 H314 H334 H317 H410
Precaution: P201 P260 P273 P280 P284 P301+P310

Cat No.	Grade	Assay	Info.	Per
ESC56061		96%		250g

TRI-SODIUM CITRATE 2-WATER $\text{HOC}(\text{COONa})(\text{CH}_2\text{COONa})_2 \cdot 2\text{H}_2\text{O} = 294.1\text{g/mol}$

UN Class: N/A **EC No.:** 200-675-3
Cas No.: 6132-04-3 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56244		99%		500g



SODIUM DICHROMATE (VI) ANHYDROUS $\text{Na}_2\text{Cr}_2\text{O}_7 = 268\text{g/mol}$ 

UN Class: 6.1(5.1)/UN3086 PG-II **EC No.:** 234-190-3 **Danger**
Cas No.: 10588-01-9 **Index No.:** 024-004-00-7
Hazard: H272 H350 H340 H360FD H330 H301 H312 H372 H314 H334 H317 H410
Precaution: P201 P220 P260 P273 P280 P284

Cat No.	Grade	Assay	Info.	Per
ESC56065		99%		500g

SODIUM DIHYDROGEN PHOSPHATE 2-WATER $\text{NaH}_2\text{PO}_4 \cdot 2\text{H}_2\text{O} = 156.01\text{g/mol}$

UN Class: N/A **EC No.:** 231-449-2
Cas No.: 13472-35-0 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56068		98%		500g

SODIUM DIHYDROGEN PHOSPHATE ANHYDROUS $\text{NaH}_2\text{PO}_4 = 119.98\text{g/mol}$ 

UN Class: N/A **EC No.:** 231-449-2 **Warning**
Cas No.: 7558-80-7 **Index No.:** Not listed
Hazard: H319
Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56070		98%		1kg

SODIUM DODECYL SULPHATE (SODIUM LAURYL SULPHATE) $\text{CH}_3(\text{CH}_2)_{11}\text{OSO}_3\text{Na} = 288.38\text{g/mol}$ 

UN Class: 4.1 /UN2926 PG-II **EC No.:** 205-788-1 **Danger**
Cas No.: 151-21-3 **Index No.:** Not listed
Hazard: H228 H302 H311 H315 H319 H335
Precaution: P210 P261 P280 P305+P351+P338 P312

Cat No.	Grade	Assay	Info.	Per
ESC56072		98%		500g

SODIUM FLORIDE $\text{NaF} = 41.99\text{g/mol}$ 

UN Class: 6.1 /UN1690 PG-III **EC No.:** 231-667-8 **Danger**
Cas No.: 7681-49-4 **Index No.:** 009-004-00-7
Hazard: H301 H319 H315
Precaution: P301+P310 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56075		98%		500g

SODIUM FORMATE $\text{HCOONa} = 68.01\text{g/mol}$

UN Class: N/A **EC No.:** 205-488-0
Cas No.: 141-53-7 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56078		98%		500g

SODIUM HYDROGEN CARBONATE (SODIUM BICARBONATE) $\text{NaHCO}_3 = 84.01\text{g/mol}$

UN Class: N/A **EC No.:** 205-633-8
Cas No.: 144-55-8 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56085		99%		500g
ESC56086		99%		1kg

DI-SODIUM HYDROGEN PHOSPHATE 2-WATER $\text{Na}_2\text{HPO}_4 \cdot 2\text{H}_2\text{O} = 177.99\text{g/mol}$

UN Class: N/A **EC No.:** 231-448-7
Cas No.: 10028-24-7 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55254		98%		500g

DI-SODIUM HYDROGEN PHOSPHATE 12-WATER $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O} = 358.14\text{g/mol}$

UN Class: N/A **EC No.:** 231-448-7
Cas No.: 10039-32-4 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55256		98%		1kg

DI-SODIUM HYDROGEN PHOSPHATE ANHYDROUS $\text{Na}_2\text{HPO}_4 = 141.96\text{g/mol}$

UN Class: N/A **EC No.:** 231-448-7
Cas No.: 7558-79-4 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC55252		98%		500g



SODIUM HYDROGEN SULPHATE (SODIUM BISULPHATE)NaHSO₄ = 120.06g/mol

UN Class: N/A **EC No.:** 231-665-7 **Danger**
Cas No.: 7681-38-1 **Index No.:** 016-046-00-X
Hazard: H318
Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56082		98%		500g

SODIUM HYDROXIDE - PEARL POWDER (CAUSTIC SODA)

NaOH = 40g/mol



UN Class: 8 /UN1823 PG-II **EC No.:** 215-185-5 **Danger**
Cas No.: 1310-73-2 **Index No.:** 011-002-00-6
Hazard: H314
Precaution: P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56095		96%	Pearl powder	500g

SODIUM HYDROXIDE - PELLETS (CAUSTIC SODA)

NaOH = 40g/mol



UN Class: 8 /UN1823 PG-II **EC No.:** 215-185-5 **Danger**
Cas No.: 1310-73-2 **Index No.:** 011-002-00-6
Hazard: H314
Precaution: P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56093		97%		500g

SODIUM HYDROXIDE 0.1M (0.1N)

NaOH = 40g/mol

UN Class: 8 /UN1824 PG-III **EC No.:** 215-185-5
Cas No.: 1310-73-2 **Index No.:** 011-002-00-6
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56088		0.1M		1L

SODIUM HYDROXIDE 0.1M (0.1N) CVS

NaOH = 40g/mol



UN Class: 8 /UN1824 PG-III **EC No.:** 215-185-5 **Danger**
Cas No.: 1310-73-2 **Index No.:** 011-002-00-6
Hazard: H314
Precaution: P280 P305+P351+P338 P310
Notes: 6 x 1M 100ml ampoules, each makes 1L of 0.1M solution.
Chemical info shown for ampoule not diluted solution.

Cat No.	Grade	Assay	Info.	Price	Per
ESC56089		0.1M	Ampoule	15.95	6

SODIUM HYDROXIDE 1.0M (1.0N) CVS

NaOH = 40g/mol



UN Class: 8 /UN1824 PG-II **EC No.:** 215-185-5 **Danger**
Cas No.: 1310-73-2 **Index No.:** 011-002-00-6
Hazard: H314
Precaution: P280 P305+P351+P338 P310
Notes: 6 x 1M 100ml ampoules, each makes 1L of 0.1M solution.
Chemical info shown for ampoule not diluted solution.

Cat No.	Grade	Assay	Info.	Per
ESC56090		1.0M	Ampoule	6

SODIUM HYDROXIDE 2.0M (2.0N)

NaOH = 40g/mol



UN Class: 8 /UN1824 PG-II **EC No.:** 215-185-5 **Danger**
Cas No.: 1310-73-2 **Index No.:** 011-002-00-6
Hazard: H314
Precaution: P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56091		2.0M		1L

SODIUM HYDROXIDE 40% SOLUTION

NaOH = 40g/mol



UN Class: 8 /UN1824 PG-II **EC No.:** 215-185-5 **Danger**
Cas No.: 1310-73-2 **Index No.:** 011-002-00-6
Hazard: H314
Precaution: P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56097		0.4%		1L

SODIUM HYPOCHLORITE SOLUTION



NaClO = 74.44g/mol







UN Class: 8 /UN1791 PG-III **EC No.:** 231-668-3 **Danger**
Cas No.: 7681-52-9 **Index No.:** 017-011-00-1
Hazard: H314 H400 EUH031
Precaution: P260 P273 P280 P301+P330+P331 P303+P361+P353 P305+P351+P338



Cat No.	Grade	Assay	Info.	Per
ESC56099		10 - 15%		2.5L







SODIUM IODATE				
$\text{NaIO}_3 \cdot \text{H}_2\text{O} = 215.91\text{g/mol}$				
				
UN Class: 5.1 / UN1479 PG-II		EC No.: 231-672-5		Danger
Cas No.: 7681-55-2		Index No.: Not listed		
Hazard: H272 H302 H334 H317				
Precaution: P220 P261 P342+P311				
Cat No.	Grade	Assay	Info.	Per
ESC56101		99.5%		100g



SODIUM NITRITE				
$\text{NaNO}_2 = 69\text{g/mol}$				
				
UN Class: 5.1 / UN1500 PG-III		EC No.: 231-555-9		Danger
Cas No.: 7632-00-0		Index No.: 007-010-00-4		
Hazard: H272 H301 H400				
Precaution: P220 P273				
Cat No.	Grade	Assay	Info.	Per
ESC56112		98%		500g



SODIUM IODIDE				
$\text{NaI} = 149.89\text{g/mol}$				
				
UN Class: N/A		EC No.: 231-679-3		Warning
Cas No.: 7681-82-5		Index No.: Not listed		
Hazard: H315 H319 H400				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56103		99%		100g



SODIUM OXALATE (SODIUM ETHANEDIOATE)				
$\text{NaOCCOONa} = 134\text{g/mol}$				
				
UN Class: 6.1 / UN3467 PG-III		EC No.: 200-550-3		Warning
Cas No.: 62-76-0		Index No.: 607-007-00-3		
Hazard: H312 H302				
Precaution: P280				
Cat No.	Grade	Assay	Info.	Per
ESC56114		99.5%		500g

SODIUM METABISULPHITE (SODIUM DISULPHITE)				
$\text{Na}_2\text{S}_2\text{O}_5 = 190.11\text{g/mol}$				
				
UN Class: N/A		EC No.: 231-673-0		Danger
Cas No.: 7681-57-4		Index No.: 016-063-00-2		
Hazard: H302 H318				
Precaution: P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56108		98.5%		500g

SODIUM PERSULPHATE (SODIUM PEROXODISULPHATE)				
$\text{Na}_2\text{S}_2\text{O}_8 = 238.1\text{g/mol}$				
				
UN Class: 5.1 / UN1505 PG-III		EC No.: 231-892-1		Danger
Cas No.: 7775-27-1		Index No.: Not listed		
Hazard: H272 H302 H315 H317 H319 H334 H335				
Precaution: P220 P261 P280 P305+P351+P338 P342+P311				
Cat No.	Grade	Assay	Info.	Per
ESC56117		96%		500g

SODIUM NITRATE				
$\text{NaNO}_3 = 84.99\text{g/mol}$				
				
UN Class: 5.1 / UN1498 PG-III		EC No.: 231-554-3		Warning
Cas No.: 7631-99-4		Index No.: Not listed		
Hazard: H272 H302 H315 H319 H335				
Precaution: P220 P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56110		98%		500g

TRI-SODIUM PHOSPHATE 12-WATER				
$\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O} = 380.12\text{g/mol}$				
				
UN Class: N/A		EC No.: 231-509-8		Warning
Cas No.: 10101-89-0		Index No.: Not listed		
Hazard: H315 H319 H335				
Precaution: P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56248		98%		500g

SODIUM SALICYLATE (SODIUM 2-HYDROXYBENZOATE)				
$\text{HOC}_6\text{H}_4\text{COONa} = 160.1\text{g/mol}$				
				
UN Class: N/A		EC No.: 200-198-0		Danger
Cas No.: 54-21-7		Index No.: Not listed		
Hazard: H302 H315 H318 H335				
Precaution: P261 P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56127		99%		250g



SODIUM SILICATE SOLUTION (SODIUM TRISILICATE) $\text{Na}_2\text{O} \cdot 3\text{SiO}_2 = 242.33\text{g/mol}$ 

UN Class: N/A **EC No.:** 215-687-4 **Danger**
Cas No.: 1344-09-8 **Index No.:** Not listed

Hazard: H314 H335
Precaution: P261 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56130		98%		2.5L

SODIUM SILICATE POWDER (SODIUM METASILICATE) $\text{Na}_2\text{SiO}_2 = 122.06\text{g/mol}$ 

UN Class: 8 /UN3253 PG-III **EC No.:** 229-912-9 **Danger**
Cas No.: 6834-92-0 **Index No.:** Not listed

Hazard: H314 H335
Precaution: P261 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56132		98%		500g

SODIUM SULPHATE ANHYDROUS $\text{Na}_2\text{SO}_4 = 142.04\text{g/mol}$

UN Class: N/A **EC No.:** 231-820-9
Cas No.: 7757-82-6 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56134		99%		500g

SODIUM SULPHIDE 9-WATER $\text{Na}_2\text{S} \cdot 9\text{H}_2\text{O} = 240.18\text{g/mol}$ 

UN Class: 8 /UN1849 PG-II **EC No.:** 215-211-5 **Danger**
Cas No.: 1313-84-4 **Index No.:** 016-009-00-8

Hazard: H314 H400
Precaution: P273 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56136		95%		500g

SODIUM SULPHITE ANHYDROUS (SODIUM SULPHITE (IV)) $\text{Na}_2\text{SO}_3 = 126.04\text{g/mol}$ 

UN Class: N/A **EC No.:** 231-821-4 **Warning**
Cas No.: 7757-83-7 **Index No.:** Not listed

Hazard: EUH031
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56138		96%		500g

SODIUM TAUROGLYCOCHOLATE**SEE BILE SALTS****DI-SODIUM TETRABORATE 10-WATER (BORAX POWDER)** $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O} = 381.37\text{g/mol}$ 

UN Class: N/A **EC No.:** 215-540-4 **Danger**
Cas No.: 1303-96-4 **Index No.:** 005-011-01-1

Hazard: H360FD
Precaution: P201 P308+P313

Cat No.	Grade	Assay	Info.	Per
ESC55258		98%		500g

SODIUM THIOSULPHATE 5-WATER $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O} = 248.18\text{g/mol}$

UN Class: N/A **EC No.:** 231-867-5
Cas No.: 10102-17-7 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56143		99%		500g
ESC56144		99%		1kg

SODIUM THIOSULPHATE ANHYDROUS $\text{Na}_2\text{S}_2\text{O}_3 = 158.11\text{g/mol}$

UN Class: N/A **EC No.:** 231-867-5
Cas No.: 7772-98-7 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56146		97%		500g

SODIUM THIOSULPHATE 0.1M (0.1N) $\text{Na}_2\text{S}_2\text{O}_3 = 158.11\text{g/mol}$

UN Class: N/A **EC No.:** 231-867-5
Cas No.: 10102-17-7 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56140		0.1M		1L

SODIUM THIOSULPHATE 1M (1N) $\text{Na}_2\text{S}_2\text{O}_3 = 158.11\text{g/mol}$

UN Class: N/A **EC No.:** 231-867-5
Cas No.: 10102-17-7 **Index No.:** Not listed


Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56142		1M		2.5L



SOIL INDICATOR - PH 4.0-8.0

UN Class: N/A **EC No.:** 216-643-7
Cas No.: 1633-05-2 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56148		97%		500ml

SOLOCHROME BLACK **SEE ERIOCHROME BLACK T**



STANNIC **SEE TIN (IV)**

STANNOUS **SEE TIN (II)**

STARCH


$(C_6H_{10}O_5)_n$

UN Class: N/A **EC No.:** 232-679-6
Cas No.: 9005-25-8 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56149		N/A		100g
ESC56151		N/A		500g

STARCH - SOLUBLE

UN Class: N/A **EC No.:** 232-679-6
Cas No.: 9005-25-8 **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required



Cat No.	Grade	Assay	Info.	Per
ESC56153		N/A	Soluble	500g

SASTEARIC ACID (OCTADECANOIC ACID)TARCH

$CH_3(CH_2)_{16}COOH = 284.48g/mol$




UN Class: N/A **EC No.:** 200-313-4 **Warning**
Cas No.: 57-11-4 **Index No.:** Not listed
Hazard: H315
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56158		93%		500g
ESC56159		93%		1kg

STEEL WOOL

UN Class: N/A **EC No.:** N/A
Cas No.: N/A **Index No.:** Not listed
Hazard: Not considered hazardous
Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC56161		N/A		450g

STRONTIUM CARBONATE

$SrCO_3 = 147.63g/mol$

UN Class: N/A **EC No.:** 216-643-7
Cas No.: 1633-05-2 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56163		97%		100g


STRONTIUM CHLORIDE 6-WATER

$SrCl_2 \cdot 6H_2O = 266.62g/mol$



UN Class: N/A **EC No.:** 233-971-6 **Danger**
Cas No.: 10025-70-4 **Index No.:** Not listed

Hazard: H318
Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56166		95%		100g


STRONTIUM NITRATE

$Sr(NO_3)_2 = 211.63g/mol$



UN Class: 5.1 /UN1507 PG-III **EC No.:** 233-131-9 **Warning**
Cas No.: 10042-76-9 **Index No.:** Not listed

Hazard: H272 H302 H315 H319 H335
Precaution: P220 P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56169		99%		100g


STYRENE MONOMER (PHENYLETHYLENE)

$C_6H_5CH=CH_2 = 104.15g/mol$



UN Class: 3 /UN2055 PG-III **EC No.:** 202-851-5 **Warning**
Cas No.: 100-42-5 **Index No.:** 601-026-00-0

Hazard: H226 H332 H319 H315
Precaution: P305+P351+P338



Cat No.	Grade	Assay	Info.	Per
ESC56171		99%		250ml

SUCROSE (CANE SUGAR)

$C_{12}H_{22}O_{11} = 342.3g/mol$

UN Class: N/A **EC No.:** 200-334-9
Cas No.: 57-50-1 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56173		N/A		1kg
ESC56174		N/A		5kg



SUCCINIC ACID (BUTANEDIOIC ACID)HOOCCH₂CH₂COOH = 118.09g/mol

UN Class: N/A **EC No.:** 203-740-4 **Danger**
Cas No.: 110-15-6 **Index No.:** Not listed

Hazard: H315 H318 H335
Precaution: P261 P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56176		99%		100g

SULPHANILIC ACID (4-AMINO BENZENE SULPHONIC ACID)4-(H₂N)C₆H₄SO₃H = 173.19g/mol

UN Class: N/A **EC No.:** 204-482-5 **Warning**
Cas No.: 121-57-3 **Index No.:** 612-014-00-X

Hazard: H319 H315 H317
Precaution: P280 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56186		99 %		500g

SUDAN (III) C.I.26100C₂₂H₁₆N₄O = 352.39g/mol

UN Class: N/A **EC No.:** 201-638-4
Cas No.: 85-86-9 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56178		N/A		100g

SULPHUR FINE POWDER

S = 32.07g/mol



UN Class: 4.1 /UN1350 PG-III **EC No.:** 231-722-6 **Warning**
Cas No.: 7704-34-9 **Index No.:** 016-094-00-1

Hazard: H228 H315
Precaution: P210 P302+P352

Cat No.	Grade	Assay	Info.	Per
ESC56188		N/A		500g

SUDAN III ALCOHOLIC SOLUTIONC₂₂H₁₆N₄O = 352.39g/mol

UN Class: 3 /UN1170 PG-II **EC No.:** N/A **Danger**
Cas No.: N/A **Index No.:** Not listed

Hazard: H225 H302 H371
Precaution: P210 P280 P260 P301+P312

Cat No.	Grade	Assay	Info.	Per
ESC56180		N/A		100ml

SULPHURIC ACID 98%H₂SO₄ = 98g/mol

UN Class: 8 /UN1830 PG-II **EC No.:** 231-639-5 **Danger**
Cas No.: 7664-93-9 **Index No.:** 016-020-00-8

Hazard: H314
Precaution: P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56199		98%		2.5L

SUDAN IV C.I.26105C₂₄H₂₀N₄O = 380.44g/mol

UN Class: N/A **EC No.:** 201-635-8
Cas No.: 85-83-6 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56182		N/A		100g

SULPHURIC ACID 0.05M (0.1N)H₂SO₄ = 98.08g/mol

UN Class: N/A **EC No.:** 231-639-5
Cas No.: 7664-93-9 **Index No.:** 016-020-00-8

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56193		0.05M		2.5L

SULPHAMIC ACID (AMIDOSULPHONIC ACID)NH₂SO₃H = 97.09g/mol

UN Class: 8 /UN2967 PG-III **EC No.:** 226-218-8 **Warning**
Cas No.: 5329-14-6 **Index No.:** 016-026-00-0

Hazard: H319 H315 H412
Precaution: P273 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56184		99%		500g



SULPHURIC ACID 0.05M (0.1N) CVSH₂SO₄ = 98.08g/mol



UN Class: 8 /UN2796 PG-II **EC No.:** 231-639-5 **Warning**
Cas No.: 7664-93-9 **Index No.:** 016-020-00-8



Hazard: H315 H319
Precaution: P280 P305+P351+P338
Notes: 6 x 1M 100ml ampoules, each makes 1L of 0.1M solution.
Chemical info shown for ampoule not diluted solution.



Cat No.	Grade	Assay	Info.	Per
ESC56192		0.05M	Ampoule	6






SULPHURIC ACID 0.5M (1.0N)				
$H_2SO_4 = 98.08g/mol$ 				
UN Class: 8 /UN2796 PG-II		EC No.: 231-639-5		Warning
Cas No.: 7664-93-9		Index No.: 016-020-00-8		
Hazard: H315 H319 Precaution: P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56190		0.5M		2.5L




SULPHURIC ACID 0.5M (1.0N) CVS				
$H_2SO_4 = 98.08g/mol$ 				
UN Class: 8 /UN2796 PG-II		EC No.: 231-639-5		Warning
Cas No.: 7664-93-9		Index No.: 016-020-00-8		
Hazard: H314 Precaution: P280 P305+P351+P338 P310 Notes: 6 x 1M 100ml ampoules, each makes 1L of 0.1M solution. Chemical info shown for ampoule not diluted solution.				
Cat No.	Grade	Assay	Info.	Per
ESC56195		0.5M	Ampoule	6




SULPHURIC ACID 1M (2N)				
$H_2SO_4 = 98.08g/mol$ 				
UN Class: 8 /UN2796 PG-II		EC No.: 231-639-5		Warning
Cas No.: 7664-93-9		Index No.: 016-020-00-8		
Hazard: H315 H319 Precaution: P280 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56196		1.0M		500ml



SULPHURIC ACID 2M (4N)				
$H_2SO_4 = 98.08g/mol$ 				
UN Class: 8 /UN2796 PG-II		EC No.: 231-639-5		Danger
Cas No.: 7664-93-9		Index No.: 016-020-00-8		
Hazard: H314 Precaution: P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC56198		2.0M		500ml





TANNIC ACID				
$C_76H_{52}O_{46} = 1701.2g/mol$				
UN Class: N/A		EC No.: 215-753-2		
Cas No.: 1401-55-4		Index No.: Not listed		
Hazard: Not considered hazardous Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC56201		98%		100g

L-(-)-TARTARIC ACID (2,3-DIHYDROXYBUTANEDIOIC ACID)				
$HO_2CCH(OH)CH(OH)CO_2H = 150.09g/mol$ 				
UN Class: N/A		EC No.: 201-766-0		Warning
Cas No.: 87-69-4		Index No.: Not listed		
Hazard: H315 H319 H335 Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC55456		99%		500g

TETRACHLOROETHYLENE				
$CCl_2=CCl_2 = 165.83g/mol$  				
UN Class: 6.1 /UN1897 PG-III		EC No.: 204-825-9		Warning
Cas No.: 127-18-4		Index No.: 602-028-00-4		
Hazard: H351 H411 Precaution: P273 P281				
Cat No.	Grade	Assay	Info.	Per
ESC56203		98%		1L

TETRAHYDROFURAN (OXOLANE)				
$C_4H_8O = 72.11g/mol$   -17°C				
UN Class: 3 /UN2056 PG-II		EC No.: 203-726-8		Danger
Cas No.: 109-99-9		Index No.: 603-025-00-0		
Hazard: H225 H319 H335 EUH019 Precaution: P210 P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56205		99%		1L

TETRAZOLIUM SALT (2,3,5-TRIPHENYLTETRAZOLIUM CHLORIDE)				
$[C_{26}H_{15}CN(N(C_6H_5)_2)_2N]Cl \cdot H_2O = 334.8g/mol$ 				
UN Class: N/A		EC No.: 206-071-6		Warning
Cas No.: 298-96-4		Index No.: Not listed		
Hazard: H315 H319 H335 Precaution: P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56207		98%		25g


THIOUREA (THIOCARBAMIDE)				
$NH_2CSNH_2 = 76.12g/mol$   				
UN Class: 6.1 /UN2811 PG-III		EC No.: 200-543-5		Warning
Cas No.: 62-56-6		Index No.: 612-082-00-0		
Hazard: H351 H361d H302 H411 Precaution: P273 P281				
Cat No.	Grade	Assay	Info.	Per
ESC56209		98%		100g



L-THREONINE $\text{CH}_3\text{CH}(\text{OH})\text{CH}(\text{NH}_2)\text{CO}_2\text{H} = 119.12\text{g/mol}$

UN Class: N/A EC No.: 200-774-1
 Cas No.: 72-19-5 Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56211		N/A		25g

THYMOL $2[(\text{CH}_3)_2\text{CH}]_2\text{C}_6\text{H}_3-5-(\text{CH}_3)\text{OH} = 150.22\text{g/mol}$ 

UN Class: 8 /UN3261 PG-III EC No.: 201-944-8 Danger
 Cas No.: 89-83-8 Index No.: 604-032-00-1


Hazard: H302 H314 H411
 Precaution: P260 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56217		99.5%		100g

THYMOL BLUE $\text{C}_{27}\text{H}_{30}\text{O}_5\text{S} = 466.59\text{g/mol}$

UN Class: N/A EC No.: 200-973-3
 Cas No.: 76-61-9 Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56215		N/A		25g

THYMOL BLUE 0.04% INDICATOR SOLUTION

UN Class: N/A EC No.: N/A
 Cas No.: N/A Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56213		0.04%	Solution	500ml

THYMOLPHTHALEIN $\text{C}_{28}\text{H}_{30}\text{O}_4 = 430.54\text{g/mol}$

UN Class: N/A EC No.: 204-729-7
 Cas No.: 125-20-2 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC56219		N/A		25g

TIN METAL - FOIL

Sn = 118.71g/mol

UN Class: N/A EC No.: 231-141-8
 Cas No.: 7440-31-5 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC56222		99.5%	Foil 0.035mm	100g

TIN METAL - GRANULATED

Sn = 118.71g/mol

UN Class: N/A EC No.: 231-141-8
 Cas No.: 7440-31-5 Index No.: Not listed

Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56225		99.5%	Granulated	100g


TIN METAL - POWDER

Sn = 118.71g/mol



UN Class: N/A EC No.: 231-141-8 Warning
 Cas No.: 7440-31-5 Index No.: Not listed


Hazard: H319 H335
 Precaution: P261 P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56227		99%	Powder	1g

TITANIUM (IV) OXIDE (TITANIUM DIOXIDE) $\text{TiO}_2 = 79.87\text{g/mol}$

UN Class: N/A EC No.: 236-675-5
 Cas No.: 13463-67-7 Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56228		98%		500g

TOLUENE (METHYL BENZENE) $\text{C}_6\text{H}_5\text{CH}_3 = 92.14\text{g/mol}$ 

UN Class: 3 /UN1294 PG-II EC No.: 203-625-9 Danger
 Cas No.: 108-88-3 Index No.: 601-021-00-3

Hazard: H225 H361d H304 H373 H315 H336
 Precaution: P210 P261 P281 P301+P310 P331


Cat No.	Grade	Assay	Info.	Per
ESC56230		98%		1L



TOLUIDINE BLUE O C.I.52040

 $C_{15}H_{16}ClN_3S = 305.83g/mol$


UN Class: N/A EC No.: 202-146-2
 Cas No.: 92-31-9 Index No.: Not listed
 Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56233		N/A		25g

TRIETHYLAMINE

 $(C_2H_5)_3N = 101.19g/mol$ 


UN Class: 3 /UN1296 PG-II EC No.: 204-469-4 Danger
 Cas No.: 121-44-8 Index No.: 612-004-00-5
 Hazard: H225 H332 H312 H302 H314
 Precaution: P210 P280 P305+P351+P338 P310

Cat No.	Grade	Assay	Info.	Per
ESC56252		97%		500ml

2-2-4-TRIMETHYLPENTANE (ISO-OCTANE)

 $(CH_3)_2CHCH_2C(CH_3)_3 = 114.23g/mol$ 


UN Class: 3 /UN1262 PG-II EC No.: 203-892-1 Danger
 Cas No.: 111-65-9 Index No.: 601-009-00-8
 Hazard: H225 H304 H315 H336 H410
 Precaution: P210 P261 P273 P301+P331 P501

Cat No.	Grade	Assay	Info.	Per
ESC54775		99%		1L

TRICHLOROACETIC ACID

 $CCl_3COOH = 163.39g/mol$ 


UN Class: 8 /UN1839 PG-II EC No.: 200-927-2 Danger
 Cas No.: 76-03-9 Index No.: 607-004-00-7
 Hazard: H314 H410
 Precaution: P273 P280 P305+P351+P338 P310 P501

Cat No.	Grade	Assay	Info.	Per
ESC56236		98%		100g

L-TRYPTOPHAN

UN Class: N/A EC No.: 200-795-6
 Cas No.: 73-22-3 Index No.: Not listed


Hazard: Not considered hazardous
 Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56225		99%		25g

TRICHLOROETHYLENE (TCE)

 $ClCH=CCl_2 = 131.39g/mol$ 

UN Class: 6.1 /UN1710 PG-III EC No.: 201-167-4 Danger
 Cas No.: 79-01-6 Index No.: 602-027-00-9
 Hazard: H350 H341 H319 H315 H336 H412
 Precaution: P201 P261 P273 P281 P305+P351+P338 P308+P313

Cat No.	Grade	Assay	Info.	Per
ESC56239		97%		1L


L-TYROSINE

N/A



UN Class: N/A EC No.: 200-460-4 Warning
 Cas No.: 60-18-4 Index No.: Not listed

Hazard: H315 H319 H335
 Precaution: P261 P305+P351+P338


Cat No.	Grade	Assay	Info.	Per
ESC56258		98.5%		25g

TRIETHANOLAMINE (TRIS(2-HYDROXYETHYL)AMINE)

 $N(CH_2CH_2OH)_3 = 149.19g/mol$ 

UN Class: N/A EC No.: 203-049-8 Warning
 Cas No.: 102-71-6 Index No.: Not listed

Hazard: H319
 Precaution: P305+P351+P338

Cat No.	Grade	Assay	Info.	Per
ESC56251		97%		1L



UNIVERSAL INDICATOR SOLUTION PH 4 - 11

N/A



UN Class: 3 /UN1170 PG-II EC No.: N/A Danger
 Cas No.: N/A Index No.: Not listed


Hazard: H371
 Precaution: P260

Cat No.	Grade	Info.	Per
ESC56261		pH 4-11 Indicator Solution	500ml
ESC56262		pH 4-11 Indicator Solution	1L





URANYL NITRATE

$UO_2(NO_3)_2 \cdot 6H_2O = 502.13g/mol$



UN Class: 5.1 /UN1477 PG-II **EC No.:** 233-266-3 **Danger**
Cas No.: 13520-83-7 **Index No.:** 092-002-00-3

Hazard: H330 H300 H373 H411
Precaution: P260 P280 P270 P301+P310 P501


Cat No.	Grade	Assay	Info.	Per
ESC562664		98%		1g
ESC562665		98%		5g

UREA (CARBAMIDE)

$NH_2CONH_2 = 60.06g/mol$

UN Class: N/A **EC No.:** 200-315-5
Cas No.: 57-13-6 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC56267		99%		500g

L-VALINE

$(CH_3)_2CHCH(NH_2)COOH = 117.15g/mol$


UN Class: N/A **EC No.:** 200-773-6
Cas No.: 72-18-4 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56269		99%		25g


VANILLIN (4-HYDROXY-3-METHOXYBENZALDEHYDE)

$C_8H_8O_3 = 152.15g/mol$



UN Class: N/A **EC No.:** 204-465-2 **Warning**
Cas No.: 121-33-5 **Index No.:** Not listed

Hazard: H319
Precaution: P305+P351+P338


Cat No.	Grade	Assay	Info.	Per
ESC56270		N/A		100g

WATER DEIONISED

$H_2O = 18.02g/mol$


UN Class: N/A **EC No.:** N/A
Cas No.: 7732-18-6 **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required

Cat No.	Grade	Assay	Info.	Per
ESC56271		N/A		20L

WHITE SPIRIT



N/A



UN Class: 3 /UN1300 PG-III **EC No.:** 265-185-4 **Danger**
Cas No.: 64742-82-1 **Index No.:** 649-330-00-2


Hazard: H226 H304 H336 H411
Precaution: P261 P273 P301+P310 P331

39°C

Cat No.	Grade	Assay	Info.	Per
ESC56272		N/A		1L
ESC56273		N/A		2.5L

XYLENE (DIMETHYLBENZENE)



$C_6H_4(CH_3)_2 = 106.17g/mol$



UN Class: 3 /UN1307 PG-III **EC No.:** 215-535-7 **Danger**
Cas No.: 1330-20-7 **Index No.:** 601-022-00-9

Hazard: H226 H332 H312 H315
Precaution: P280



33°C

Cat No.	Grade	Assay	Info.	Per
ESC56277		98%		1L
ESC56278		98%		5L

YEAST - DRIED

UN Class: N/A **EC No.:** N/A
Cas No.: N/A **Index No.:** Not listed

Hazard: Not considered hazardous
Precaution: No additional precautions required


Cat No.	Grade	Assay	Info.	Per
ESC56280		N/A		100g
ESC56282		N/A		500g

ZINC METAL - FOIL


$Zn = 65.39g/mol$




UN Class: N/A **EC No.:** 231-175-3
Cas No.: 7440-66-6 **Index No.:** Not listed




Hazard: Not considered hazardous
Precaution: No additional precautions required




Cat No.	Grade	Assay	Info.	Per
ESC56290		99%	Foil 0.38mm	250g








ZINC METAL - GRANULATED				
$Zn = 65.39g/mol$				
UN Class: N/A		EC No.: 231-175-3		
Cas No.: 7440-66-6		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC56285		99.9%	Granules	500g




ZINC METAL - POWDER				
$Zn = 65.39g/mol$				
 				
UN Class: 4.3(4.2) / UN1436 PG-II		EC No.: 231-175-3		Warning
Cas No.: 7440-66-6		Index No.: 030-001-00-1		
Hazard: H260 H250 H410				
Precaution: P222 P223				
Cat No.	Grade	Assay	Info.	Per
ESC56288		99%	SURCHARGE	100g



ZINC ACETATE (ZINC ETHANOATE)				
$Zn(CH_3COO)_2 \cdot 2H_2O = 219.5g/mol$				
  ^{33°C}				
UN Class: 9 / UN3077 PG-III		EC No.: 209-170-2		Warning
Cas No.: 5970-45-6		Index No.: Not listed		
Hazard: H302 H319 H400				
Precaution: P273 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56293		98.5%		500g





ZINC BROMIDE				
$ZnBr_2 = 225.2g/mol$				
 				
UN Class: 8 / UN3260 PG-III		EC No.: 231-718-4		Danger
Cas No.: 7699-45-8		Index No.: Not listed		
Hazard: H314 H400				
Precaution: P273 P280 P305+P351+P338 P310				
Cat No.	Grade	Assay	Info.	Per
ESC56297		98%		500ml



ZINC CARBONATE BASIC (ZINC HYDROXIDE CARBONATE)				
$(ZnCO_3)_2 \cdot (Zn(OH)_2)_3 = 350.2g/mol$				
UN Class: N/A		EC No.: 226-076-7		
Cas No.: 5263-02-5		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC56301		54%		500g

ZINC CHLORIDE				
$ZnCl_2 = 136.3g/mol$				
  				
UN Class: 8 / UN2331 PG-III		EC No.: 231-592-0		Danger
Cas No.: 7646-85-7		Index No.: 030-003-00-2		
Hazard: H302 H314 H410				
Precaution: P273 P280 P305+P351+P338 P310 P501				
Cat No.	Grade	Assay	Info.	Per
ESC56305		97.5%		500g

ZINC NITRATE 6-WATER				
$Zn(NO_3)_2 \cdot 6H_2O = 297.49g/mol$				
 				
UN Class: 5.1 / UN1514 PG-II		EC No.: 231-943-8		Danger
Cas No.: 10196-18-6		Index No.: Not listed		
Hazard: H272 H302 H315 H319 H335				
Precaution: P220 P261 P305+P351+P338				
Cat No.	Grade	Assay	Info.	Per
ESC56308		98%		500g

ZINC OXIDE				
$ZnO = 81.39g/mol$				
				
UN Class: 9 / UN3077 PG-III		EC No.: 215-222-5		Warning
Cas No.: 1314-13-2		Index No.: 030-013-00-7		
Hazard: H410				
Precaution: P271 P501				
Cat No.	Grade	Assay	Info.	Per
ESC563112		99.8%		500g

ZINC SULPHATE 7-WATER				
$ZnSO_4 \cdot 7H_2O = 287.54g/mol$				
  				
UN Class: 9 / UN3077 PG-III		EC No.: 231-793-3		Danger
Cas No.: 7446-20-0		Index No.: 030-006-00-9		
Hazard: H302 H318 H410				
Precaution: P273 P280 P305+P351+P338 P501				
Cat No.	Grade	Assay	Info.	Per
ESC56316		98%		500g

ZINC SULPHIDE				
$ZnS = 97.46g/mol$				
				
UN Class: N/A		EC No.: 215-251-3		Warning
Cas No.: 1314-98-3		Index No.: Not listed		
Hazard: Not considered hazardous				
Precaution: No additional precautions required				
Cat No.	Grade	Assay	Info.	Per
ESC56320		N/A		500g





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Environmental Extremes Kit

Train students to think like scientists and engineers using this complete introductory environmental studies unit. Eight experimental protocols lead students through 4-6 weeks of hands-on, scientifically sound experimentation demonstrating current environmental concerns using live plants and erosion models. Includes reusable supplies and instructions to simulate the conditions of acid rain, saline soils, drought, and erosion. Students actively learn proper scientific method, cost analysis, and the iterative cycle of engineering before they design and complete individualized projects. Ideal for biology, environmental studies, or agriculture courses. May be purchased with or without pH meters and digital scales. Includes a complete instructor's manual with reproducible student materials. Designed for 24 students. Targets Grades: 6-12. Acids are not included.

Kit Contains:
 Instructor's Manual w/ Reproducible Student Data Sheets, Stirring Rods, Weigh Dishes, Markers, Graduated Cylinders, Flasks, Gloves, Parafilm, Rulers, Cups, Deli Containers, Potting Soil, Petri Dishes, Seeds, Sodium Chloride, Construction Paper, Masking Tape, Paper Towel Roll, Forceps, Magnifiers, Spoons, Write-N-Wipe Boards, Spray Bottle, 16 oz, Alcohol Wipe, 70%, Scoop, Stainless Steel.

ESE53627



Environmental Extremes Plus

Train students to think like scientists and engineers using this complete introductory environmental studies unit. Eight experimental protocols lead students through 4-6 weeks of hands-on, scientifically sound experimentation demonstrating current environmental concerns using live plants and erosion models. Includes reusable supplies and instructions to simulate the conditions of acid rain, saline soils, drought, and erosion. Students actively learn proper scientific method, cost analysis, and the iterative cycle of engineering before they design and complete individualized projects. Ideal for biology, environmental studies, or agriculture courses. May be purchased with or without pH meters and digital scales. Includes a complete instructor's manual with reproducible student materials. Designed for 24 students. Targets Grades: 6-12. Acids are not included.

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ESE53626



Volcanic Eruptions

A hands-on volcano model building project complete with safe, simulated lava eruptions. Learn all about types of volcanoes, parts of a volcano, how volcanoes function, and precious gems volcanoes may produce. Building materials are appropriate for elementary and middle school classrooms. Also investigate underwater volcanoes with the included demonstration. Baking soda and vinegar required but not included. Kit includes enough materials for 24 students working in six groups of four. Meets national standards for Grades 3-8.

ESE53628



Ocean Trash Can

This exercise examines various types of pollutants, their sources, and their effects on the ocean, its inhabitants and the surrounding coastline. Students classify ocean pollution into five basic categories; debris, toxins, dissolved nutrients, particulates, and oil. They model the effects of ocean pollution with activities examining a variety of topics: the effect of the pH of various liquids on calcium carbonate; the effects of dilution, buffering capacity, salt and acid runoff; acid rain; the ability of water to purify itself; and oil spill clean-up. As a final project, students design and write a newsletter containing articles with pertinent pollution topics such as current laws, pollution, effects, bioaccumulation, and prevention. Requires four class periods plus research time. Required, but not included: six 1 gallon milk containers. Designed for 24 students working in six groups of four.

Kit Contains:

Instructor Manual, Student Data Sheets, Plastic Cups, Cupcake Liners, Sand, Tums, pH Strips, Radish Seeds, Sea Salt, Styrofoam Peanuts, Feathers, Yarn, Plastic Bags, Cotton Balls, Animal Fur, Wire

ESE53625



Seawater Analysis

By volumetric titration, students analyse the chloride content of seawater samples from the Atlantic Ocean, the Pacific Ocean, and the Gulf of Mexico. The constant ratio of dissolved substances in sea water allows the concentration of salt and other elements to be extrapolated from the chlorine concentration. Student may obtain additional water samples for analysis, as the materials included are sufficient for the titration's to be repeated three times. Designed for 24 students working in six groups of four. Required, but not included: 25 ml burette. Contains silver nitrate. Grades 10-12

ESE53629



Amazing Waves

Seven activities take students through the examination and observation of waves, wave properties, and their influence on the coastline. Includes three demonstrations (types of waves, wave creation, and wave action) two hands on activities (regarding wave motion, sediments, and beach erosion), a research and presentation project applying science and engineering to societal issues, and a written assignment with art connections. Special emphasis on Influence of Engineering, Technology, and Science on Society and the Natural World; Human Impacts on Earth Systems; Ecosystem Dynamics, Functioning, and Resilience; The Roles of Water in Earth's Surface Processes; and Problem Solving. Requires computers with internet connections for research projects and a document projector (optional). Designed for 24 students working in 6 groups of 4. Grades 5-9

ESE53630



Make An Ocean

This project allows students to model four ocean ecology scenarios as they investigate the effect of farm and industrial waste on marine life. Brine shrimp populations, water pH and water density are monitored throughout the progression of ecological contamination, water treatment, and recovery. During the study, students learn about life cycles and representative sampling. The kit makes an ideal class project or can be completed in small groups. Materials included allow the experiment to be repeated up to five times. Required, but not included: five 1 gallon containers, balance or scale, and a flashlight. Grades 4-6

ESE53633





Ocean Science

The purpose of this exercise is to examine the physical and chemical properties of seawater and learn how these properties affect the ocean currents and environments. Students visualize convection currents as they track the effects of density, temperature, pressure, and salinity. They learn the effects of heat from the sun, precipitation, evaporation, freezing and thawing of sea ice and the inflow of fresh water from rivers. Students extrapolate what they learn and further research to determine the effects of three scenarios on the surrounding water and land environments and inhabitants: 1) a new dam being built on a large river that flows into a bay, 2) melting of the polar ice cap, and 3) a global temperature drop to 0°C. Then they present their conclusions in a panel discussion. Required, but not included: refrigerator or freezer, ice, Thermometers, and 18 large beakers or jars. Designed for 24 students working in six groups of four. Grades 5-9

ESE53631



The Physical & Chemical Resources Of The Ocean

This kit is designed to examine salt, not only as the most obvious property of seawater, but also as one of its most valuable chemical resources and a critical component in the creation of ocean currents. Students learn about the varying salt concentrations of seawater and its amazingly uniform composition. They also learn how salt can be removed from seawater. Experiments include: Determining Salinity by Evaporation, Determining Salinity Using a Hydrometer, Desalination by Freezing, and Desalination Using a Solar Still. Allow five class periods. Required, not included: refrigerator or freezer, hot plate, balance (x .01g), chloride/salinity test kit, and laboratory glassware. Designed for 24 students work in groups of four. Grades: 9-12.

ESE53632



Human Activity & Environment

Students study food web relationships and how natural and human induced changes in the environment such as severe storms, drought, floods, housing developments, road salt, fertilizer runoff, and fire upset the balance of ecosystems. Nature's ability to restore balance between the number of different types of organisms, such as predators and prey, in natural habits of the community are demonstrated. Activities include, The Salted Roads, The Runoff, Flooded Farms, and The Forest Community. Conservation is discussed in terms of using natural resources wisely to help keep the natural balance. Required, but not included: fresh celery, dominoes, recycled milk jugs or flower pots, beakers or jars, yeast, salt, and sugar. Designed for 24 students working in six groups of four. Grades 5-8

ESE53634



The Reef Restaurant

The purpose of this exercise is to study the effects of certain environmental conditions on the coral reef and its associated food web. The lab teaches the students about natural resources, environmental quality, and natural and human induced hazards (including specific sources of pollution). Includes two activities, allow three class periods. Required, but not included: clear plastic 2L bottles, liquid fertilizer, and small light sources. Designed for 24 students working in six groups of four. Grades 5-9

ESE53635





Soil Analysis Kit

Students gain hands on experience identifying, characterizing, and describing Earth Materials through seven different experiments determining texture, composition, particle size range, density, permeability, porosity, and pH. They learn how soils are formed, assess properties important in determining agricultural and commercial use, and discover characteristics important in assessing soil drainage, erosion, and fertility. The kit includes loam, silt, clay, sandy soil, topsoil, fine sand, coarse sand, and gravel so that classic comparisons may be made. Includes sieve sets and all required supplies for testing, complete instructor's manual with worksheets, assessment materials, and answer keys. Packaged in a reusable plastic tote. Balance recommended. Grades 7-12

ESE53636



Soil Analysis Refill

Soil Analysis Refill. Grades 7-12

ESE53637

Soil Test Apparatus

Use to measure soil pH.

Consist of :

- Test Tube Ø 16 x 150 mm 4 pcs
- Test Tube Ø13 x 100 mm 6 pcs
- Dropping Pipette 15 cm, Red Bulb 2 pcs
- Barium Sulphate (100 g/bottle) 1 pc
- Aquadest (200 ml/bottle) 1 pc
- Spoon, Stainless Steel 1 pc
- Universal Indicator (10 booklet/pack) 1 pc
- Test Tube Brush Ø 24 mm 1 pc
- Manual Book Soil Test Apparatus 1 pc
- Wooden Box 1 pc

Dimension : (L) 20.00 x (W) 19.00 x (H) 19.00 cm

Weight :1.330 kg



ESE53641





Igneous Basic Collection Set/10

This Igneous Rocks Collection includes a set of 10 specimens enclosed in a handy, plastic storage container. The included rock identification chart, complete with images and a brief description will help kids better understand how Igneous rocks were created. A perfect starter set for the young budding geologist! (Actual dimensions: 8x4.68x1, 1 lb.)

ESE53660



Igneous Rock Collection

Contains 15 representative specimens of intrusive and extrusive igneous rocks, each approximately 1-1/2" x 1-1/2". Includes key and chart.

ESE53671



Rock Collection Igneous Rock

The rocks /minerals were placed in a box and given a cover. Each rock / minerals sample is placed on the bulkhead so that no scattered rocks in the box

Size :

- Rocks/Minerals : ? 3 x 3 x 3 cm
- Storage box : 230 x 170 x 37 mm
- Material : Storage box made from plastic
- Equipment with a map collection of minerals / mining ores for ease in identifying

Consist of 8 samples Igneous Rock :

1. Basalt
2. Granite
3. Pegmatite
4. Obsidian
5. Dacite
6. Diorite
7. Peridotite
8. Pumice

Dimension :(L) 23.00 x (W) 17.00 x (H) 4.00 cm

Weight :0.355 kg

ESE53638



Metamorphic Basic Collection Set/10

This Metamorphic Collection includes a set of 10 specimens enclosed in a handy, plastic storage container. The included rock identification chart, complete with images and a brief description will help kids better understand how metamorphic rocks were created. A perfect starter set for the young budding geologist!(Actual dimensions: 8x4.68x1, 1 lb.)

ESE53659



Metamorphic Rock Collection

Contains 15 representative metamorphic rock specimens, each approximately 1-1/2" x 1-1/2", number-coded in a compartmented container. Includes key and chart.

ESE53672





Rock Collection Metamorphic Rock

The rocks /minerals were placed in a box and given a cover. Each rock / minerals sample is placed on the bulkhead so that no scattered rocks in the box.

Size :

Rocks/Minerals : 3 x 3 x 3 cm

Storage box : 230 x 170 x 37 mm

Material : Storage box made from plastic

Equipped with a map collection of minerals / mining ores for ease in identifying

Consist of 10 specimens of metamorphic rock:

- | | |
|----------------------|-----------------|
| 1. Home blend Schist | 6. Slate |
| 2. Black Marble | 7. Gneiss |
| 3. Red Marble | 8. Micca Schist |
| 4. Phylite | 9. Serpentinite |
| 5. Quartzite | 10. Pure Marble |

Dimension :(L) 23.00 x (W) 17.00 x (H) 4.00 cm

Weight :0.370 kg

ESE53640



Rock Collection Sedimentary Rock

The rocks /minerals were placed in a box and given a cover. Each rock / minerals sample is placed on the bulkhead so that no scattered rocks in the box.

Size :

Rocks/Minerals : 3 x 3 x 3 cm

Storage box : 230 x 170 x 37 mm

Material : Storage box made from plastic

Equipped with a map collection of minerals / mining ores for ease in identifying

Consist of 10 specimens of sedimentary rocks:

1. Limestone
2. Clay
3. Gypsum
4. Sandstone
5. Limonite
6. Breccia
7. Shale
8. Tufa
9. Travertine
10. Conglomerate

ESE53639



Sedimentary Basic Collection Set/10

This Sedimentary Collection includes a set of 10 specimens enclosed in a handy, plastic storage container. The included rock identification chart, complete with images and a brief description will help kids better understand how sedimentary rocks were created. A perfect starter set for the young budding geologist!(Actual dimensions: 8x4.68x1, 1 lb.

ESE53661



Rocks & Minerals Basic Collection Set

This Rocks & Minerals Collection includes a set of 24 specimens (6 each of Metamorphic, Sedimentary, Igneous, and Minerals) enclosed in a handy, plastic storage container. A rock identification chart, complete with images, is included to help kids categorize their collection. A perfect starter set for the young budding geologist! (Actual dimensions: 6.25x4.75x.63; .32 lbs.)

ESE53663



Sedimentary Rock Collection

Contains 15 representative sedimentary rock specimens, each approximately 1-1/2" x 1-1/2". Includes key and chart.

ESE53673





Mineral Kit, Eduscience Prim (Set Of 1)

A collection of 12 specimens to represent igneous, sedimentary, metamorphic rocks and minerals. Designed for the basic earth science studies, earth materials and characteristics, and properties of various types of rocks.

Each specimen is glued on 30 x 40 mm plastic sheet and equipped with number and identification label

There are 3 extra compartments and plastic sheets in the box for rocks locally collected rocks by the students.

Dimension : (L) 22.70 x (W) 17.30 x (H) 5.50 cm Weight : 0.780 kg

ESE53642



Fracture Collection

The important types of fracture are demonstrated with this collection. Six specimens approximately 1-1/2" x 1-1/2", number coded.

ESE53668



Lustre Collection

Recognition of the kind and degree of lustre of some minerals is an aid to identification. This collection provides examples of both metallic and non-metallic types of lustre. 15 specimens, approximately 1-1/2 " x 1-1/2", number-coded. Includes insert.

ESE53670



Mineral Study Kit Basic

Students learn to identify these 15 common minerals by observing and testing their physical properties. Activity guide, magnifying glass, streak plate, and nail included.

ESE53667

NEW



Basic Rock Collection Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen Includes granite, sandstone, shale, limestone, marble, basalt, gabbro, amphibolite, metamorphic shale. ; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size : 140*64*20 (±2)

ESE53797



Crystal Collection Basic Collection Set/9

This set of 9 specimens illustrating isometric, hexagonal, tetragonal, orthorhombic and monoclinic crystal systems.

ESE53664



NEW



Metallic Mineral Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen Includes CHALCOPYRITE (Copper source) , MAGNETITE (Iron source) , BAUXITE (aluminium source) , SZELET (tungsten source) ,CASTERIDE (tin source) ; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size :140*64*20 (±2)

ESE53797



Minerals Basic Collection Set/10

This Minerals Collection includes a set of 10 specimens enclosed in a handy, plastic storage container. The included rock identification chart, complete with images and a brief description will help kids better understand how minerals were created. A perfect starter set for the young budding geologist! (Actual dimensions: 8x4.68x1, 1 lb.)

ESE53662

NEW



Metal Minerals, Metals and Alloy Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen includes several different plates of metals and their alloys: magnetite, hematite, zinc, bauxite, chalcopyrite, titanium ore, pig iron, iron alloy, galvanized sheet, aluminum alloy, copper alloy, titanium alloy; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size :164*78*20 (±2)

ESE53794

NEW



Mineral Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen Includes Limonite, Tungsten Ore, Cinnabar, Aluminum Ore, Cassiterite, Copper Ore, Dolomite, Feldspar And Hematite; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size :140*64*20 (±2)

ESE53797

NEW



Rock Tumbler

12-lb. capacity tumbler with rubber hexagon barrel for quiet operation. Overload protected, fan-cooled motor. 220V/115V, .67 amps, 1/75-hp motor.

ESE53805



Geology

Soil & Humidity



Granite Specimen

Granite Specimen 45x30mm

ESE53700B



Diorite Specimen

Diorite Specimen 45x30mm

ESE53700A



Basalt Specimen

Basalt Specimen 45x30mm

ESE53700F



Rhyolite Specimen

Rhyolite Specimen 45x30mm

ESE53700E



Glaucophane Specimen

Glaucophane Specimen 45x30mm

ESE53700D



Hornblende Specimen

Hornblende Specimen 45x30mm

ESE53700C



Natural Material Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen Includes Animal Paperweight Real Seed Root Fiber Paper Embedded Specimen Mineral Rock Flower Specimen Desk Paperweight Science Educational

Artificial Materials, Natural Materials, Seed Spraying Method, Root Types, Fiber, Paper, Minerals, Rocks, Metallic Minerals, Soil, Florescence, Garland Durable, clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size :140*64*20 (±2) Weight : 1300 g

ESE53795



Artificial Material Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study. Specimen Includes In a transparent plastic block, 8 samples of plastic materials are sunk, produced or processed by human activity:

ceramics , metal , glass , MDF, plastic , paper , fabric , cement
clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size :140*64*20 (±2)

ESE53796



Coal and Carbonization Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen Includes lignite , hard coal , anthracite ,gas , carbon fiber ,rubber , coke , ammonia , naphthalene, fertilizer,pesticides, medicine, dye, coal tar; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size :180*140*24 (±5)

ESE53800



Petroleum and Fractionation Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen Includes Petroleum, liquid gas, gas, kerosene, light diesel oil, heavy diesel oil, atmospheric distillation furnace, medium diesel, light technological oil, heavy technological oil, paraffin, petrolatum, asphalt, vacuum distillation furnace; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped. Block Size :180*140*24 (±5)

ESE53799



Paper Samples Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen Includes copperplate, wrapping paper, corrugated paper, copying paper, newsprint, bristol, writing paper, book paper; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size :164*78*10 (±2)

ESE53798



Textile Samples Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen Includes silkworm cocoon and silk, cotton and cotton fabric,

linen and linen cloth, wool and woolen fabric, chemical fiber and synthetic fabric; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped. Block Size :164*78*20 (±2)

ESE53797





Cleavage Collection

Cleavage is a readily recognizable property of some minerals and follows the internal crystal structure of that mineral. Terms used in crystallography apply to the cleavage plans. 6 specimens approximately 1 1/2" x 1 1/2". Includes insert.

ESE53669



Tenacity Collection

Various terms such as brittleness, elasticity, flexibility, malleability and selectivity are used to describe the particular property of some minerals. Six specimens 1-1/2" x 1-1/2".

ESE53678



Moh's Scale Of Hardness W/ Diamond

The Moh's Hardness Scale collection is set of 10 specimens in their order from the softest (#1 Talc) to the hardest (#10 Diamond included). There are indicators on the card which instruct the students what will affect the surface of each of these specimens. This economy version of the Hardness Collection has specimens measuring 1/2" to 3/4" in size.

ESE53666



Moh's Scaled Of Hardness Mounted

The Moh's Hardness Scale collection is mounted on a 5 1/2" X 7 1/8" full colour card-stock which holds 9 specimens in their order from the softest (#1 Talc) to the hardest (#10 Diamond - not included). There are indicators on the card which instruct the students what will affect the surface of each of these specimens. This economy version of the Hardness Collection has specimens measuring 1/2" to 3/4" in size. The card is packaged in a resalable zip lock bag.

ESE53665



The Rock Cycle Chart Only

This hands-on project enables students to examine and identify individual rock specimens as a study unit in earth science. A graphic representation of how the major families of rocks form the dynamic process called the rock cycle. Igneous, sedimentary and metamorphic rock specimens are mounted on this enlarged 18" x 24" multi-color chart that comes complete with a wood frame

ESE53676





General Fossil Collection

A selection of 15 fossils to illustrate the major life forms present throughout geologic history. A descriptive key sheet and geologic time chart introduces students to basic fossils and match the fossil to the era

ESE53679



Basic Fossil Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped.

Block Size :140*64*20 (±2)

ESE53760



Geological Time And Fossils Chart

This completely revised multicolours chart depicts the entire geologic time scale with most current geologic dating information. Representative fossils from the corresponding geologic periods are mounted on the chart. Chart size, 18" x 24" and comes with a wood frame.

ESE53674



Life On Earth - A Fossil History Model

Life on Earth - A Fossil History is an exciting product designed to help students understand how life has changed over vast periods of geologic time. Constructed of durable vinyl, the 23.5" X 24.5" colourful 3-D model allows students to correlate 21 replica "fossils" to realistic looking rock layers. Illustrations and "fossil" include both marine and terrestrial life forms from the Pre-Cambrian through the present. Eons, eras, periods, epoch sand years are clearly shown on the chart. The Teacher's Guide includes: classroom activities, pre/post tests, reference materials, and glossary.

ESE53675

Geology Models, Set/8

Discover the complexities of geological facts with this series of eight fully detailed geology models. In addition to surface formations, cross-sectioning depicts subsurface structures. Models are accompanied by a Teacher's Guide, numerically keyed to each individual model, allowing focused study of specific features. Each model is 14"x 12" and is sturdy enough for student handling or wall display.

- 8 Models Included:
- Coastline of Submergence
- Volcanism
- Fault Block Mountains
- Alpine Glaciation
- Dome Mountains
- Continental Glaciation
- Folded Mountains
- Coastal Plain

ESE53652





Geology Models, Set/4 I

Dispel the puzzling complexity of geological facts with this series of Four detailed geology models. In addition to surface formations, cross-sectioning depicts subsurface structures. Accompanying Teacher's Guide is numerically keyed to each individual model, allowing focused study of specific features. Each model is 14" x 12" and is sturdy enough for student handling or wall display. Models 1-4.

ESE53653



Geology Models, Set/4 II

Dispel the puzzling complexity of geological facts with this series of four detailed geology models. In addition to surface formations, cross-sectioning depicts subsurface structures. Accompanying Teacher's Guide is numerically keyed to each individual model, allowing focused study of specific features. Each model is 14" x 12" and is sturdy enough for student handling or wall display. Models 8-5.

ESE53654



Landforms Discovery Pack W/ CD

Use this kit for the entire class or set up a self-directed activity centre. Eight 3-D models form a landscape showing geologic and geographic details. The accompanying CD's or tapes provide detailed scientific and cultural information in a field trip format. The CD's are keyed to numbered features on the various models. Discovery pack includes 8 models, 7 tapes or 2 CD's, student workbook, Teacher's Guide and convenient storage unit.

ESE53655

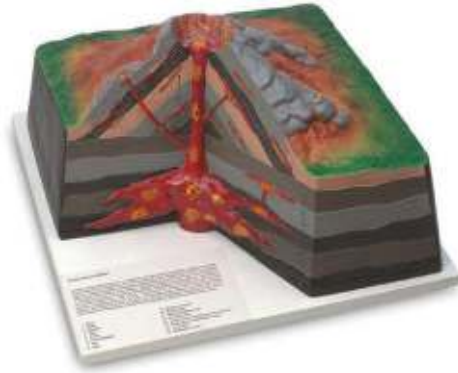


Alpine Glacier Model

These models will give students the opportunity to observe the effects of glacial movement without having to endure glacial time. First model depicts a glacier in its active stage, while the second model shows post-glacial conditions. Using the second model, students can create their own glacier using ice and sand to observe glacial melting and deposition of glacial till. Each model is 18" x 24", formed in high impact plastic. Teacher's Guide included.

ESE53656

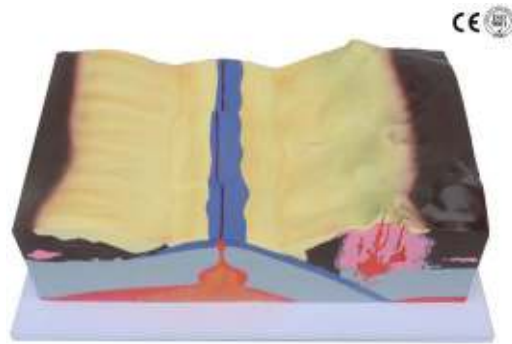




Volcano Model

Beautifully detailed stratovolcano and composite volcano model. Illustrates the various crusts, lava tube, volcano formation, and step sided formation of cone shape. Section showing flow of magma. Made of unbreakable material, coloured. Showing vertical section for students to view the path that magma takes on its upward course the volcano. Mounted on base. Measures 410mm. L x 410mm. W x 20mm. H.

ESE53643



Volcano Model

Model of an underwater volcano that forms a new seabed. The model shows how new seabed is made and what happens when earthquake collides. It also shows folds and fakes. The model is made of strong, soft plastic (PVC). Dimensions: 53 x 38 x 25 cm

ESE53644

VOLCANO MODEL WITH CROSS SECTION

There's nothing like an erupting volcanic eruption to get your child fired up about science! Create your very own erupting volcano with this unique no assembly required model. Includes an easy-to-prepare lava recipe, a 13" clear plastic tray and a removable tube that allows for quick clean up. Detailed cross-section shows the inside of the volcano. Includes a fact-filled Activity Guide, with all the information kids want to know about volcanoes

ESE53680



Fold and Fault-age Model

Students at all levels can visualize the causes and forces that shape the earth's surface. In case of compression or stretching of stone layers, there may be folding. In case of multiple fences or breakages, blocks can be moved up (Horst) or down (grab). The model illustrates this in an excellent way. You can also show how oil traps are formed.

The model is made of strong, soft plastic (PVC). Size: 53 x 38 x 30 cm

ESE53645



Stream Table Kit

Basic and smaller version of the Hydro-Geology Stream Table, this kit includes a plastic tray, drain trough, tray support and siphon tube. This economical stream table provides students the chance to create their own landforms and follow the changes in the stream as it ages. Includes 4 page Teacher's Guide including 3 activities. Great for use in the classroom or as an outdoor activity. Also is used with the ESCP program. Sand not included. One, 50lb. pail of sand is sufficient. 14 x 46 x 2.5

ESE53657





Fold,8 Sets Model

This Eight-piece plastics model is useful for illustrating the basic geologic concepts of folds and faults found in Earth's crust. The perfect classroom tool for introducing students to structural geology Hand-painted with easily distinguished colors

The model is securely mounted on a base, providing stability for educational or display purposes.

Dimensions : 55*38*15cm
Weight : 3500g

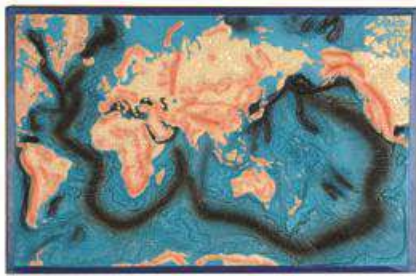
ESE53682



Earth Model Cross Section 30Cm

an be divided into 9 parts. Suitable for intuitive teaching aids for teaching the internal structure of the earth in the school's physical geography teaching, which is conducive to students' understanding of the knowledge of the earth. diameter of 30cm, it shows that the internal structure of the earth is a concentric circle structure, which differentiates into core, mantle, and crust from the center of the earth to the surface. Made Of PVC , Weight: 7KG.

ESE53681



World Map Model

A model of the world map typically represents the Earth's surface in a scaled-down and tangible form.

ESE00000



Earth Model Cross Section

Bring the deep layers of our world to light with this unique foam model. The outside surface illustrates both continents and oceans with raised features. Once separated, children discover facts of planet Earth's core. Each brightly colored hemisphere shows its layers, temperatures and depths. Activity and fact guide included.

ESE53683



Globe LED Illuminated Cartography

The classic educational globe.Detailed political cartography: the countries are marked by different colors.Classical educational globe. Detailed political map:each country depicted in a different color.Geographical globe suitable for teaching.Cartographies politique: les pays sont marqués parof different coloursDiameter 30 cmIlluminated with led light , 220V

ESM61991



NEW



Soil Type Basic Specimen

It has been embedded in Transparent Epoxy Resin Block for observation and study.

Specimen Includes Red soil, black calcium soil ,cement soil , brick red soil , purple soil ; clear Epoxy allows close up viewing from all angles. Epoxy block will Not break even if it is accidentally dropped. Block Size :140*64*20 (±2)

ESE53696



Soil Types Kit

kit of 12 reference samples, for teaching geography, forensics, science and agriculture.

Includes :

- Brown Earth , Silt Soil , Clay Soil ,
- Peat soil) , Calcareous Clay , chalk soil , illuviated sandy horizon , Calcareous Soil , Man made loam ,Tundra Soil , Sandy Soil , Mountain Soil

ESE53694

Soil Tester

Soil tester can test the humidity, pH value and light level of plants, provide accurate plant soil information, quickly help you master professionally when to water plants, control the pH value in the soil and whether Need to extend the sunshine time and irradiation intensity.

Advanced double-needle detection technology greatly improves the speed and accuracy of detecting and analyzing soil moisture and pH, passing detailed information to the conductor to display accurate values. It can more accurately select a suitable growth environment for plants.

Our tester does not require batteries or power, so you can use it anytime indoors and outdoors. To use, simply insert the tester into the soil to read the value. Please note: This soil tester cannot be used to test the pH of any other liquids (pure water and other liquids such as vinegar, fruit juice). Compact and Portable

If the soil is too dry and the soil pointer won't move, water before testing.

Dimensions: 26.5*4*6.5 cm.

Weight : 105 g



ESE53693

NEW



Hydro-Geology Stream Table With Cart & Accessories

Capture students' attention as they learn first hand the impact of water on the development of land formations. This stream table allows the class to create actual streams, lakes and related landforms. Stream cut-offs, piracy, deltas, beaches, land erosion and many other phenomena can be created. High impact, 26"W x 66"L x 6"D plastic stream table is virtually unbreakable and easy to clean. Once water and sand are added, the unit is completely self-contained. Two separate stream flows provide for simultaneous study of separate streams. Flow rates and water levels are easily controlled.

ESE53658





Seismograph Model

Our Seismograph Model gives students a better understanding of how earthquakes are measured and calculated to determine intensity. This small table top unit will captivate your students as they try to top the Richter Scale. Simulate your own earthquakes and the seismograph will accurately record their intensity. The kit comes complete with a detailed Teacher's Guide

ESE53677



Telescope
Telescope

ESI61415



Telescope
Telescope

ESI61417



Telescope
Telescope

ESI61414



Telescope
Telescope

ESE53651



Telescope
Telescope

ESI61418



Telescope
Telescope

ESI61419





Environmental Engineering Oil Spill Management

Students simulate deep-ocean and beach crude oil spills as they engage in the work of an environmental engineering team using models to learn the physical and chemical properties of oil and experience how scientists approach oil spill disasters. This comprehensive kit not only teaches environmental impact, basic oil biology, micelles structures, and chemistry concepts such as hydrophobic and hydrophilic interactions, but has students simulating basic oil containment and removal techniques using their own oil spill models. Includes a quantitative analysis of absorbent materials, hands on skimming and dispersant activities, and an experimental introduction to the concept of bioremediation. Students work as a team to research and systematically design an oil spill solution, use the iterative cycle to improve their solutions, and learn to argue their points of view. Great for applying knowledge and teaching higher order thinking skills including creative thinking, reasoning, decision making, and problem solving. Designed to accommodate 24 students working in groups of two. Plan to spend several weeks on the unit.

Kit Contains:

Instructor Manual w/ Reproducible Student Data Sheets
 , Test Tubes/Stoppers, Vegetable Oil, Stopwatch, Test Tube Rack, Graduated Cylinders, Corn Syrup, Food Colouring, Empty Bottles w/ Caps, Potting Soil, Aluminium Pan, Sand, Gravel, Pipettes, Spoons, Paper Towel Strips, Tubing, Fabric (Cotton, Polyester), Deli Container, Thermometer, Sugar Packet, Scale, Digital, 500g, Yeast Packet, Strainer, Dish-washing Liquid, Cocoa Powder, Scoop, Stainless Steel, Gloves, Nylon Stocking, Cotton Balls, Beaker, Copy Paper, Shredded, Scissors, Weigh Dish, Mixed Seashells,

ESE53812

Water Testing Saddlebag

Our unique water testing saddlebag is perfect for those who are interested in environmental sciences. It may be used to test for the effects of water pollution in fresh bodies of water. This saddlebag is ideal for outdoor use as it is designed to be worn over the shoulder, on the side of the body for safety and easy access. Each test kit has enough materials to perform over 100 tests and can be used for a class of 30 students or more. Step-by-step laminated picture instructions, an instructor's manual with background information, reproducible student data sheets, and colour-coded reagents are included.

Kit Contains:

Instructor Manual,
 Total Alkalinity Test Kit 1 drop=10ppm as CaCO₃
 Acidity Test Kit 1 drop=2 or 10ppm as CaCO₃
 Total Hardness Test Kit 1 drop=10ppm as CaCO₃
 Dissolved Oxygen Test Kit (0-10ppm)
 25 Nitrate Test Strips (0-50ppm)
 100 pH Test Strips (2-9 range)
 10 pH Colour Cards

ESE53813

Water Kit (Set Of 10)

The water kit is ideal for use by Primary School students, aged 6-12 years. The student will be able to understand the basic properties of water.

Versatility of the kit enable the students to perform experiments using their own ideas.

Consist of :

Beaker Plastic 10 pcs
 TRANSPARENT Plastic Hose OD = 10, ID = 7 mm, p = 1200 mm 10 pcs
 Metal Sheet # 0.2 x 60 x 60 mm 10 pcs
 Metal Vessel # 0.2 x 60 x 60 mm 10 pcs
 Plasticine 25 mm 10 pcs
 Dropping Pipette ? 6 x 75 mm 10 pcs
 Bottle 330 ml (Clear Plastic, Narrow Mouth and Cap) 10 pcs
 Board # 5 x 150 x 200 mm 10 pcs
 Box Corrugated Plastic 410 x 280 x 191 mm (# 3 mm, Green colour) 1 p

Experiment topics :

Basic concept of horizontal plane
 Water balance
 Flow of water
 Condition of an object in water : floating, sinking and to be suspended
 Dimension :(L) 42.00 x (W) 30.00 x (H) 20.00 cm
 Weight :2.505 kg

ESE53814





Weather Model

Combination with a detailed Teacher's Guide, this 16" x 12" x 3" 3-D model will help students understand weather fronts and other meteorological concepts. Students can conduct detailed studies of air mass structures, cloud types, precipitation, temperatures, pressure and warm and cold fronts. Building upon this base of information, direction and speed of fronts can be measured, giving students the option of forecasting weather conditions for specific times and locations.

ESE53817

Cloud Model Activity Set

Our 3-D model promotes basic understanding of cloud types in the classroom or outdoors, in addition to science and math skills. Removable labels let students identify cloud structures and altitudes on 24" x 18" model. Includes 3-ring binder with glossary, key, black-line master and a full-colour overhead transparency



ESE53815



Water Cycle Model (Includes Lesson Plan)

Make it rain in your classroom! Students can duplicate the individual processes of the water cycle (evaporation, condensation and precipitation) with this ingenious model.

ESE53818



Evaporation Kit

The Evaporation Kit is designed to show the variability of evaporation rates and the factors which cause these variations. The kit enables students to draw conclusions as to how temperature, humidity, air movement, and surface area affect evaporation.

ESE53820

Wind Van

A simple device for determining the direction of flow of wind. Comprises a large arrow mounted on a metal rod with bearing. Mounted on top of steel pivot and aligns itself along the wind. Complete assembly mounted on a metal pillar that carries four arms terminating in the compass cardinal point with symbols marked N E W S

ESE53829



Air Pollution Kit

Using a controlled environment and a common air pollutant, your students will observe the direct effect sulphur dioxide has on plants. Squash and marigold plants are germinated and then placed in an SO₂ saturated environment where growth is monitored and recorded. This kit includes one activity that is conducted for 5 days. Teacher's guide and reproducible student worksheets are also included.

ESE53821

Anemometer Simple

This small anemometer is perfect for younger students to use in determination of wind speed. Cups are mounted on horizontal arms extending from the axis with one red cup being used to determine the number of rotations. Made of corrosive resistant materials, the unit is perfect for prolonged outdoor use.

ESE53825



Teaching Tornado Model

Every classroom needs a Teaching Tornado! Finally, weather related phenomenon comes right into the classroom. Your students will love this demonstration model that teaches the principles of how tornadoes form. Students will learn about how a strong up draft is important, about convergence and rotation, funnel speed and how it is related to funnel width, and many more exciting tornado facts! Guide includes 7 fascinating experiments. Dry ice is not necessary to complete this experiment. Assembly time is approximately 30 minutes.

ESE53816



Water Cycle Study Cards, Set/10

Water is not only the most significant liquid on Earth, it is also one of the most unusual. Help your students understand the properties of water with this set of 10, 8 1/2" x 11" study cards.

ESE53819



NEW



Weather Station Basic

weather station right in your classroom with these durable meteorological instruments. Students can measure and record barometric pressure, relative humidity, and air temperature on a daily or hourly basis, and record the trends, averages, and highs and lows. The sturdy carrying case holds a barometer, hygrometer, and Celsius and Fahrenheit thermometer, as well as three stands for use of the instruments individually. The activity guide explains in detail how to use each 3 in. dia. instrument.

ESE53832

Ecology and weather kit - Standard Kit

Selection of weather watcher equipment

- Complete with weather register to record measurements
- Supplied in robust carry case with full operating instructions

- Contents:**
- Mason's hygrometer
 - Gilt dial barometer
 - Digital max min thermometer
 - 150mm wood wall thermometer
 - Rainfall sprinkler measure
 - Weather register

Weight: 954g (including 505g case)
Dimensions: 320mm x 280mm x 119mm



ESE53833

Wall Thermometer

Sustainable wood wall thermometers sourced from forests managed to strict environmental, social and economic standards

Temperature range: -20 to +50°C / -10 to +120°F
Divisions: 1°C / 2°F - Accuracy: +/- 1.0°C @ 10°C
Product material: Wooden mounting with kerosene filled glass tube
Dimensions : 150 x 35 x 8mm - Weight: 29.5g



ESE53863

Wall Room Thermometer Plastic

Plastic wall thermometer with clear, black printed scale on white moulding. Suitable for indoor and outdoor use, this thermometer is ideal for use in the home or garden.

Ideal for customer's own branding - click enquire now to submit a request

Suitable for indoor and outdoor use
Range: -20 to +50°C&F



ESE53860

Rain Gauge Plastic

100mm diameter rain gauge - Measuring in inches & mm

Rainfall capacity up to 400ml - Supplied with rainfall charts - Replacements available

Range: 0 to 50mm / 0 to 2in
Divisions: 0.5mm / 0.05in
Product Material: Crystal Styrene



ESE53836

Anemometer Digital

type J/K Temp.

Air velocity and air Temp. measurement. ; 0.4 to 25.0 m/s, ft/min., km/h. knots, mile/h. ;Type K thermometer : -200 to 1300 oC.;Type J thermometer : -200 to 1100 oC.

Low friction ball-bearing vane.;Separate probe, high reliability.

DC 9V battery (006P).;Meter size : 135 x 60 x 33 mm



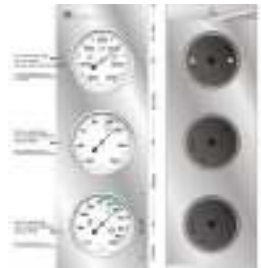
NEW

ESE53826

Weather Station Set

weather station right in your classroom with these durable meteorological instruments. Students can measure and record barometric pressure, relative humidity, and air temperature on a daily or hourly basis, and record the trends, averages, and highs and lows. The sturdy carrying case

holds a barometer, hygrometer, and Celsius and Fahrenheit thermometer, as well as three stands for use of the instruments individually. The activity guide explains in detail how to use each 3 in. dia. instrument.



ESE53831

Hygrometer Masons

Simple form of psychrometer

Easy to measure the amount of water vapour
Measures difference between wet & dry temperature - Supplied complete with chart and instructions to determine %RH

Case: Polypropylene
Scale: Polystyrene
Reservoir: Polyethylene
Glass Tube: Kerosene filled



NEW

ESE53838

Whirling Hygrometer with folding handle

Uses the 'wet' and 'dry' principle to measure Relative Humidity (%RH)

Hygrometer designed to be rotated by hand
Environmentally friendly, blue spirit filled thermometer Tubes Comes with protective pouch, calculator chart and 2pcs replacement wicks
Temperature range :

-5 to +50°C Accuracy: +/-1°C Divisions: 0.5°C



NEW

ESE53840

Soil Thermometer

This type of soil thermometer is frequently used in the agriculture and horticulture industries to check temperatures of soil and compost. The soil thermometer has a green knob at the top to assist with the location of the thermometer after placement.

210mm thermometer to check temperature of soil and compost

Green knob at top of aluminum case to assist with location
For use in agriculture and horticulture industries



ESE53870



Wireless Weather Station System

ESE2000



Environmental Science

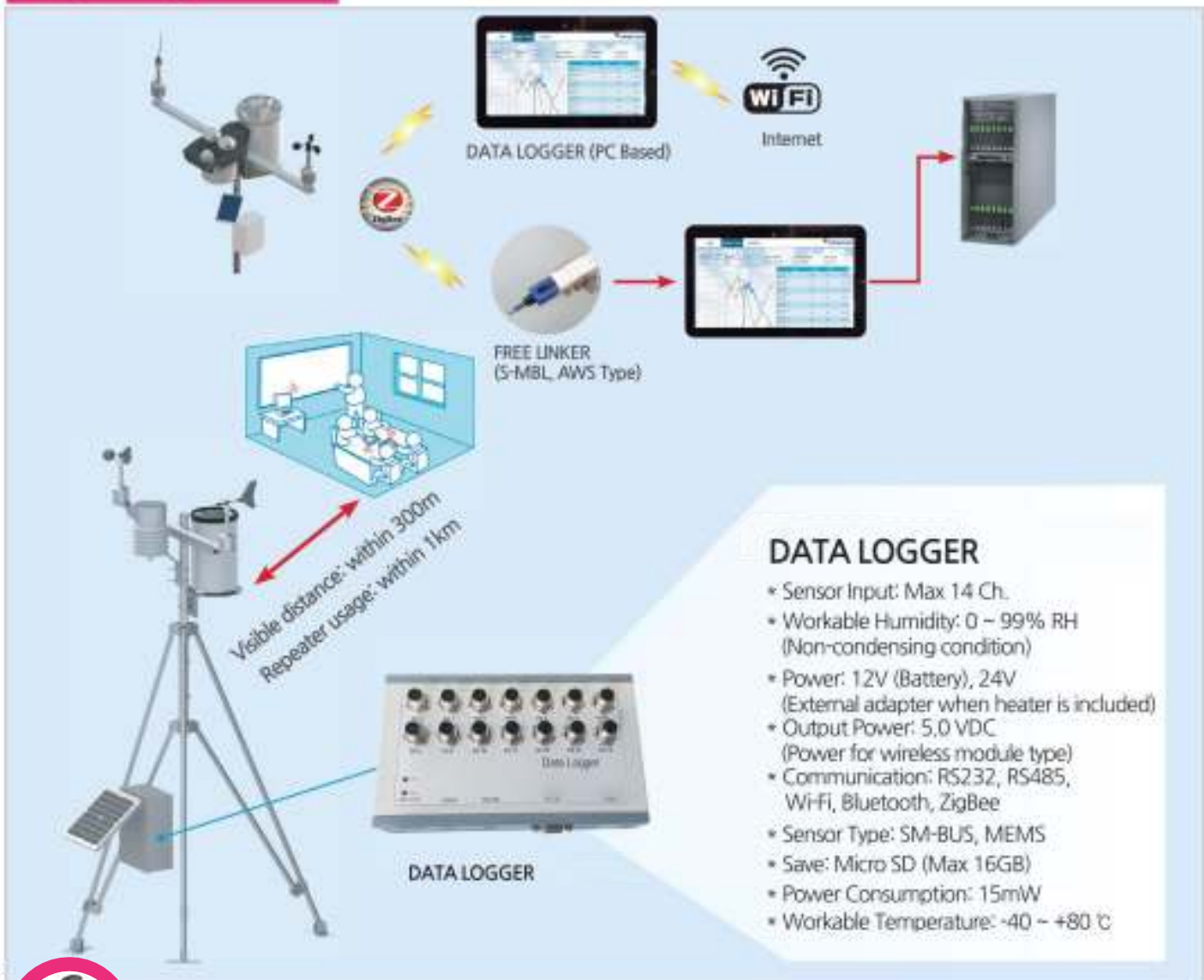
Current Weather Screen



Data Analysis Screen



System Organization





Wireless Weather Station System

AWS ESE2000

Automatic Weather Station uses its multi-channel in real time with integrated Smart Digital Sensors. Measurement, Data collection, Equation & Calibration analysis tools with icon-based UI and data viewers are utilized to share the weather data through the local meteorological observation GPS system.



Meteorological Observation & Monitoring System

- For Education
- For Local Weather Monitoring
- For Agriculture
- For Industry

Data Logger



Wireless Weather Station System

ESE2000

Features and Benefits

- Electronics Enclosure
- Low Power Consumption
- Main or Solar Powering
- Internet Monitoring System
- Local and Remote Communication
- Mounting Accessories
- Data Collection and Software Display
- Low Total Life Cycle Cost
- Simple Plug-and-Play Interface
- Easy to Install and Expand



Mounting Tripod

Height : 1.5 - 2m
(Adjustable at installation)
Material : Stainless Steel



Basic

Rain Detector
Range : Rain On/Off
Interval : 1 minute
Sensor : Impedance Detect

Temperature / Humidity
Temp. Range : -40 ~ +60 °C
Temp. Accuracy : ± 0.1 °C
Temp. Resolution : 0.1 °C
Sensor : Integrated band gap PTAT

Rain Gauge
Range : 0 - 300 mm/h
Accuracy : ±5%
Bucket Size : Ø 5 mm
Sensor : Tipping Bucket

Anemometer
Wind Speed Range : 0 - 70 m/s
Accuracy : ±5% @ 10-70 m/s
Resolution : 0.1 m/s
Sensor : Optical Disk (8 CPR)

Wind Vane
Range : 0 - 360 °
Accuracy : ±5 °
Resolution : 1 °
Sensor : Magnetic Rotary Encoder

Barometer
Range : 700 - 1100 hPa
Accuracy : ±1.5 hPa
Resolution : 0.1 hPa
Sensor : Piezo-Resistive

Solar power Pack & Charger
Solar Cell Module : 10W, 18.8V Max
Battery : 12V 7Ah (Lead-acid Type)
Charge Controller : 12V 5A, PWM Type

Embedded GPS System

Extended

Sunshine Duration
Spectrum : 400 - 1,100 nm
View angle : 180 °
Sensor : Si-Photodiode

Solar Radiation
Range : 0 - 2,000 W/m²
Spectrum : 400 - 1,100nm
Resolution : 1 W/m²
Sensor : Si-Photodiode

UV-B
Range : 0 - 10 W/m²
Spectrum : 280 - 320 nm
Sensor : AlGaIn Photodiode

CO₂ Gas
Range : 300 - 1,000 ppm
Accuracy : ±3% @ 25 °C
Resolution : 1 ppm
Sensor : NDIR Dual Wavelength

Soil Temperature
Range : -40 ~ +60 °C
Accuracy : ± 0.3 °C
Resolution : 0.1 °C
Sensor : Si-integrate band gap PTAT

Soil Moisture
Range : 0 - 300 mS/cm
Accuracy : ±5%
Resolution : 1 cm
Sensor : Granular Matrix

Environmental Science



Quake Sensor

MEMS Seismic Sensor for STEM Education

NEW

Wireless Weather Station System

ESE2000

✓ Triaxial MEMS earthquake sensor for OSS

- Earthquake laboratory curriculum with gently-guided inquiry for students to learn about STEM, and teachers in contributing to classroom application of it.
- OSS(Open-Source STEM learning and teaching) demonstration in a classroom laboratory with modeling seismic earthquake detection or acoustic quake event.

✓ Optimized programmable sensor for seismic data archival and exchange through wireless or flexible connectivity

- Designed to monitor quake event and vibration using your desktop, laptop computer, open-source hardware or mobile device for Android.
- Programmable DAQ (data acquisition) interfacing to process waveform and analyze seismic spectrum using LabVIEW.
- Configuring user-defined TRIGGER parameters to demonstrate how to detect earthquake vibrations over a very wide of frequencies from as low as DC response to 100Hz.

✓ Technical Specification of Quake Sensor

Measurement range	±2g *Optional programmable range
Bandwidth SPS	DC to 200SPS* *Depends on data formats and connectivity
ADC (Analog to digital conversion)	24bits depth (Simultaneous 3-axis sampling for time synchronization)
Overload limit	10,000g
Connectivity	Bluetooth, RS-232, USB CDC or UART* *For programmable device
Data formats	TRIGGER mode (For seismic quake detection using STA/LTA triggering algorithm) DAQ mode (For waveform processing and analyzing using LabVIEW)
Applications (Educational software for use in laboratory demonstrations)	QuakeCube Demo for Microsoft Windows or Android OS QuakeCube LabVIEW for open-source hardware or other instruments



Planetarium Without Lamp

Used to simulate the position, rotation and revolution of the earth and moon, and for demonstrate some natural event the system earth-moon- sun.

Size : -Sun : 150 mm - -Earth : 70 mm - -Moon : 18 mm

Material : Sun, Earth, and Moon : Plastic

Colour : -Sun : Yellow - -Moon : Pearl white

-Earth : Maps of the earth Holder equipped with a scale showing the 4 seasons Model rotation of the earth around the sun made by rotating the shaft with a gear system

Dimension : (L) 49.50 x (W) 21.00 x (H)

34.50 cm **Weight :** 1.300 kg

ESE53950



Planetarium With Lamp

Showing between position and motion of the sun, earth and moon. System can be played by hand, so that automatically rotate the earth around the

Earth to the sun, and make the moon circulating around the earth. Complete with manual book.

Dimension : (L) 55.00 x (W) 26.00 x (H) 45.00 cm

Weight : 4.000 kg

ESE53951



NEW

Solar System Model Motorised

Motorized Solar System turns any room into a planetarium. Ideal for STEM learning, this model solar system encourages a love of science and astronomy. Helps children observe how the planets rotate around the Sun. Inner and outer planets rotate at different speeds for more realistic motion.

Motorised model includes a brightly lit LED Sun. The Sun doubles as a nightlight and includes an auto shut-off function after 20 minutes. Turn the Sun into a star show! Cover the Sun with the star dome and project constellations onto the walls and ceiling of a darkened room.

Features multilingual packaging and Activity Guide packed with interesting solar system facts.

Requires 4 AA batteries (not included).Note: Model not to scale.

ESE53947

Solar System Model

Model of the solar system was created for show the position of the solar system, on these props the sun is modelled with the a big yellow ball at the

Centre of the solar system which surrounded by the composition of the planet.

Size : -Sun : 150 mm - -Base : 210 mm

Material :

-Sun and base : Plastic

-Rod sleeve : Steel, black

Solar model and the 9 planets, all planets can rotate smoothly around the solar

Dimension : (L) 59.00 x (W) 21.00 x (H)

34.50 cm **Weight :** 1.000 kg

ESE53948



Orbit Tellurium 1

A model of the Sun, which lights up, and the planets as far as Neptune. The Earth has a moon. The planets can be moved around the Sun by hand, and the Moon around the Earth. For demonstrating the shape and motions of the solar system. Batteries are not supplied.

Height: 10cm; Diameter of largest orbit (Neptune): 38cm

ESE53956



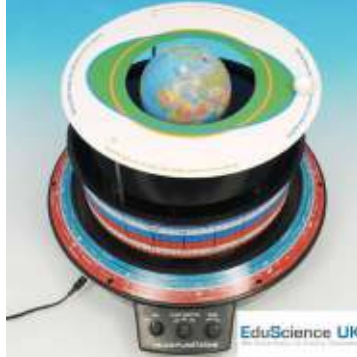
Pooter Glass

For collecting flies, spiders, and other small arthropods. A glass specimen tube, Size: © Tube : @ 26 x 102 mm © Glass pipe L shape : OD 5 mm, length 73 mm and 35 mm © Rubber stopper : Upper @ 25 mm, ;bottom @ 23 mm, height 11 mm © Plastic hose : Length 50 cm Material : Glass Two holes rubber stopper Pipe mouth inside the tube is covered with gauze The other pipe is connected with transparent plastic hose "



ESE53849

NEW



Helios Planetarium

The Helios Planetarium gives a clear visualisation of the six classical planets (Mercury - Saturn) orbiting at their correct relative speed and stars remaining in their positions in the sky.

All versions of the model (0142, 0150 and 0151) include the electric geared orrery and star dome and enable you to study the following topics: The Planets in their orbits (length of a year, inferior and superior planets)

The phases of Venus

The Moon and its phases (external light source required) Eclipse basics

Time - solar, sidereal and G.M.T.

The ecliptic and the Zodiacal constellations

How the planets appear to move against the night sky

Use of the Helios outside at night - where should the stars appear in the sky?

With the large Earth and Moon accessories that are included in versions 0150 and 0151 you can also watch as the Earth rotates on its axis while the Moon orbits it every 29.5 'days'. Using an external light source (torch, projector), the larger size of Earth and Moon enables you to demonstrate the following events much more clearly:

Day and night

Shadows and the seasons

The Moon's month, phases and eclipses

The Pole Star, circumpolar stars and a nocturnal

The Moon and stars from different positions on

Earth The tides

Space travel

Items 0142 and 0150 are supplied with a star dome for the northern hemisphere. Product reference 0151 is supplied with a star dome for the southern hemisphere.

Helios Orrery & Northern Star Dome

ESE53952

Helios Planetarium Northern Stars (With Large Earth And Moon Access)

ESE53953

Helios Planetarium Southern Stars (With Large Earth And Moon Access)

ESE53954

Extra Dome For Southern Hemisphere

ESE53955



Solar System Posters

A set of laminated posters of the Sun and 9 planets printed to scale. Includes physical data about the planets and distances between them at the scale printed, giving a real feel for the scale of the universe. Poster sizes: heights - planets 30cm, Sun 49cm; widths - various

ESE53958





Orbit Tellurium 2

The new flexible design instantly engages pupils and illustrates complex relationships more easily.

Rotate the model and watch as the Earth orbits the Sun, the moon orbits the Earth and the Earth spins on its axis.

Shine the light from the sun onto the Earth to model night and day, the seasons and eclipses and create shadows.

Use the small-scale Earth and Moon on an inclined orbit to give an accurate demonstration of the phases of the moon and show why eclipses do not happen every month.

Subjects to study: Day and night. Seasons of the year. The sun's movement across the sky. Changing length of daylight. Shadows. The phases of the Moon. The crescent moon from different latitudes. Eclipses of the Moon and Sun. Use of sundials and shadow sticks. Lunar months and festivals linked to the Moon.

Contains: Tellurium model with accessory tidy, two sizes of Earth and Moon, stick-on model person, sundial, date, eclipse and phase of the moon indicator cards plus teacher guide with suggested activities. Power transformer included.

Size: 65 cm long, 25 cm high

ESE53957



Celestial Globe, Transparent

Globes inside celestial sky TRANSPARENT described the location of stars, including nebulae, constellations, galaxies, binary star.

Size :

- Globe dia. 70 mm

- Celestial sky TRANSPARENT dia. ? 170 mm

Complete with the horizon as well as coordinate and equatorial system

Complete with number of latitude, longitude and name of the country

Complete with manual book

Dimension : (L) 32.00 x (W) 32.00 x (H) 36.00 cm

Weight : 2.200 kg

ESE53949

ECONOMY CELESTIAL GLOBE



Celestial Globe Economy

The Economy Celestial Globe measures 8" in diameter and illustrates many of the same astronomical concepts as the larger versions. The globe can be disassembled for easier storage. Constellations, right ascension and declination lines, and the ecliptic cover the globe. A moveable Earth and Sun complete the kit. A Teacher's Guide with assembly instructions and activities are included.

ESE53959



Biogas Kit

Create your own bio-renewable energy using readily available organic waste materials with this biogas kit. Biogas is now used to power engines, generate electricity, cook food, and heat homes. This kit includes a biogas digester, a one gallon biogas collection bag, all necessary fittings and tubing, a check valve, a combustion nozzle assembly, and safety equipment for one person (goggles, gloves, and apron). Supply approximately 7 gallon of antibiotic-free manure as your biomass. Expect significant gas production in about three to five days. Simply vary the biomass source and/or digestion temperature and you have a variety of comparative experiments to analyse. Rabbit manure works well.

Kit Contains:

Instructions, Fitting, Brass, Check Valve, Elbow Barb, Drainage Bag, Jar w/ Screw Cap, Goggles, Impact, Lab Apron, Gloves, O-Ring, Vinyl Repair Patches

ESE54019

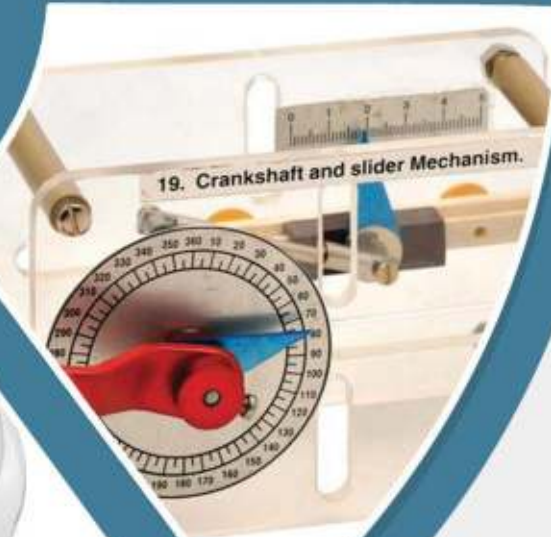




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- Atomic Physics
- Power Supply Units



CMES Data Logger

Is a modern advanced graphic data-logger. It is a hand-held Linux device equipped with two processors and 8 GB memory. Works standalone and with Windows and MAC computers.

Display: 5" high-resolution capacitive color touch screen Resolution: 12-bit

Maximum sampling rate: 1 MHz

Sensor inputs: Four analogue BT inputs, two digital BT inputs Built-in: Sound sensor, 3-axis

Accelerometer (2g, 4g, 8 g)

Wireless connectivity: Wi-Fi and Bluetooth® Computer connection: USB mini port

USB port: Full USB for USB peripherals

Power: Rechargeable battery, charging via USB from computer or via power adapter Software on board: Coach Linux

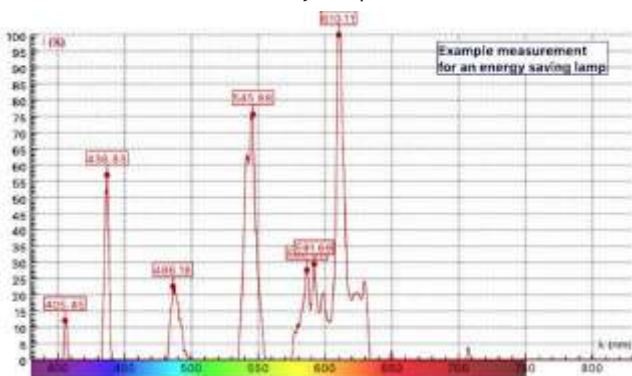
Software on computer: Coach (Windows and MAC)

Includes: Power adapter, USB cable and User's Guide.

The dedicated desktop applications, installed on CMES, offer tools for collecting data, managing user files, setting up the device and its wireless connection, browsing the web, watching video files, playing audio files, etc. All applications can be easily updated via the CMES Update server available via a Wi-Fi connection.

The powerful Coach Application, installed on CMES, offers live sensor data displays, real-time graphing, tools for data processing and possibilities to create new or open ready-to-go student activities, enriched with texts, images and web-pages. Coach 7 and Coach 7 Lite support measurements with CMES.

During such measurement CMES is connected to the computer via a USB port or communicates via a Wi-Fi connection, and is controlled by Coach running on the computer. The collected data are transferred in real-time to the computer and the measurement can be followed directly on the computer screen. By using wireless connectivity and the VNC protocol the CMES's screen can be remotely viewed and controlled from any computer or mobile device connected to the same network.



ESD50000

Data Logger Software , Desktop 5years Single User License

Our Coach software is the most versatile and complete software for STEM Education.

Coach integrates ICT tools, which resemble technologies used by professional scientists and facilitate an inquiry-based approach to education. By collecting high-quality, real-time data, constructing and using models, using simulations and visualizations, comparing results from experiments and models, students can be actively involved in authentic learning activities.

Coach 7 is the successor of Coach 6 and offers new features and enhancements of our unique and powerful environment.

ESD50013



Accelerometer Low-g

The Low-g Accelerometer BT10i can be used to study accelerations in one-dimensional motions. The sensing element of the sensor is located inside the small round box, which can be mounted on a moving object. This is the best choice for most experiments.

Range: -5 g .. 5 g Accuracy: 0.05 g

Can be used to:

- Measure acceleration of a moving car, in elevators, on playground apparatus, during amusement park rides,
- Determine the tilt of an object,
- Investigate accelerations during body movements.

ESD50130

Accelerometer High-g

The High-g Accelerometer BT11i can be used to study larger accelerations in onedimensional motions. The sensing element of the sensor is located inside the small round box, which can be mounted on a moving object. Range: -25 g .. 25 g - Accuracy: 0.2g

Can be used to:

- measure acceleration during collisions,
- investigate larger accelerations.

ESD50131





Angle Sensor *

The Angle sensor 013i is a potentiometer, which has a pulley to attach a string to. The sensor is suitable for detecting angle changes and (small) displacements.

Range : 270° (turn), 140 mm (displacement) Resolution

Can be used to:

- Study a pendulum period,
- Measure small displacements,
- Investigate harmonic motion.

ESD50132



Charge Sensor

The Charge sensor BT19i measures electrostatic charges. It can replace a traditional electroscope by showing not only the polarity of the charge but also performing quantitative measurements. The sensor has three operating ranges, which can be selected using a switch.

Range: -5 .. 5 nC, - 25 .. 25 nC , - 100 .. 100 C - Resolution (12-bits): 0.0025

nC , 0.013 nC, 0.05 nC

Can be used to:

- Measure magnitude and sign of the charge on different objects,
- Investigate electrostatic phenomena,
- Charging by induction, friction and by contact.

ESD50133



Current Sensor High-Range

The Current sensor BT21i is a general-purpose sensor to measure currents in the range between -5 and 5 A. It has two banana (4-mm) plugs for easy connection. The sensing element is a 0.04 Ω resistor connected between the red and black terminals.

Range: -5 .. +5 A

Resolution (12-bit): 3.8

mA **Can be used to:**

- Investigate relationships between voltage and current,
- Verify Ohm's law,
- Measure currents in series and parallel electrical circuits.

ESD50134



Current Sensor Low-Range *

The Current sensor 0222i can be used to measure currents in the range between -500 and 500 A. It has two banana (4-mm) plugs for easy connection. The sensing element is a 0.4 Ω resistor connected between the red and black terminals.

Range: -500 .. +500 mA

Resolution (12-bit): 0.38

mA **Can be used to:**

- Investigate relationships between voltage and current, verify Ohm's law,
- Measure currents in series and parallel electrical circuits.

ESD50135



Oxygen Gas Sensor *

The Oxygen Gas sensor BT59i measures the gaseous oxygen concentration. The wide measurement range allows it to be used in study of human and cellular respiration.

Range: 0 .. 100 % - Resolution (12-bit): 0.03 % Lifetime: 5 years in open air **Can be used to:**

- Monitor changes in oxygen concentration during photosynthesis and respiration of plants,
- Monitor respiration of animals, insects, or germinating seeds,
- Measure the oxygen levels during human respiration.

ESD50033



Force Sensor

The Force sensor BT42i measures pushing and pulling forces. It uses strain gauge technology. The sensor has two measurement ranges, which can be selected using a switch.

Range: -5 .. 5N, -50 .. 50 N. Resolution (12-bit): 0.003 N, 0.03 N Includes: a thumbscrew, a utility handle, a bumper and a hook.

Can be used to:

- Replace a hand-held spring scale, can be
- Mounted on a ring stand or on a dynamics cart to study collisions.
- Measure of centripetal or frictional forces, study Newton's laws, investigate static and kinetic friction.

ESD50136

NOTE All * Marked sensors need a sensor cable (IEEE1394-BT) ESD50250, which has to be purchased separate.





Relative Humidity Sensor

Relative Humidity Sensor The Relative Humidity sensor BT72i measures relative humidity. The sensor consists of an integrated circuit, which uses a capacitive polymer to sense humidity. The holes in the sensor box provide air circulation.

Range: 0 to 100 %

Resolution (12-bit): 0.04 % RH

Can be used to:

- Study transpiration rates of plants,
- Optimize conditions in a greenhouse or terrarium,
- Determine good days for static electric demonstration.

ESD50034



Thermocouple *

The Thermocouple sensor 0135i measures temperatures in two ranges, which can be selected using the switch. The sensor uses a thermocouple type K, which consists of Chromega and Alomega wires that are welded together to form a measuring junction.

Range: -200.. 1300 °C , -20 .. 110 °C

Resolution (12-bit): 0.39 °C, 0.035 °C

Can be used to:

- Measure the temperature inside a Bunsen burner flame or candles,
- Determine the melting point of copper, bismuth, or other solids,
- Measure temperature in specific heat experiments.

ESD50039



Temperature Sensor *

This Temperature sensor BT01 is a low-cost, general-purpose temperature sensor that can be used to measure temperature in the range of -40°C to 140°C, in liquids (water, mild acidic solutions) and air. The sensing element of the sensor is an NTC thermistor, which is positioned in a stainless steel tube. The thermistor is a variable resistor whose resistance decreases non-linearly with increasing temperature.

Range: -20 °C .. 140 °C, Accuracy: 2°C at -40°C, 0.6 at 30°C, 1.8°C at 140°C

Can be used to:

- Monitor indoor and outdoor temperatures.
- Monitor freezing and boiling water,
- Investigate the temperature during endothermic and exothermic reactions.
- Investigate evaporation

ESD50036



Temperature Sensor

The Temperature sensor BT84i measures temperature and temperature differences in the range between -18 °C to 110 °C. This sensor uses the solid-state temperature transducer, whose output is linearly proportional to the temperature. The transducer is sitioned in the point of a stainless steel tube. In liquids the response of the temperature sensor is quite fast (in between 1.3 and 2.0 s).

Range: -20 °C to 110 °C, Resolution (12-bit): 0.07 °C

Can be used to:

- Monitor indoor and outdoor temperatures.
- Monitor freezing and boiling water,
- Investigate the temperature during endothermic and exothermic reactions.
- Investigate evaporation.

ESD50141



Light Sensor with three ranges

The Light sensor BT50i measures light intensity and has three measurement ranges, which can be selected using a switch. Because of its ranges the sensor is suitable as well for indoor as for outdoor measurements. Full sun illumination is within the range of the sensor. The spectral response of the sensor approximates the response of the human eye.

Ranges: 0 .. 1500 lux, 0 .. 15000 lux, and 0 .. 150000 lux Resolution (12-bit):

0.37 lx, 3.7 lx, 37 lx

Can be used to:

- Verify inverse square law.
- Investigate light reflection and absorption,
- Study solar energy.
- Monitor monitoring sunrise and sunset times.

ESD50082

NOTE All * Marked sensors need a sensor cable (IEEE1394-BT) ESD50250, which has to be purchased separate.





Light Sensor *

The Light sensor 0142i measures light intensities in the range between 0 and 200 lux. It consists of a photo-transistor, which receives light through a glass fiber. Because of its range the sensor is suitable for measurements in normal indoor situations. The sensor can also be used as a light gate. Range: 0 .. 200 lx - Resolution (12-bit): 0.05 lx

Can be used to:

- Verify inverse square law,
- monitor changes in light caused by a chemical reaction,
- Investigate light reflection and absorption,
- investigate light interference patterns.

ESD50143



Pressure Sensor

The Pressure sensor BT66i is designed to measure absolute gas pressure. The pressure is measured via a pressure valve, which is located on the side of the box. The sensor has two measurement ranges, which can be selected using a switch.

Range: 0 .. 700 kPa, 0 .. 130 kPa

Resolution (12-bit): 0.2 kPa, 0.04 kPa

Includes: a plastic 20-ml syringe with Luer-lock, two plastic tubes (5 cm and 45 cm long), a three-way valve with Luer-lock connectors, two Luer-lock connectors.

Can be used to:

- Measure pressure changes in gas-law experiments, Boyle's and Gay-Lussac's laws,
- Measure vapour pressure of liquids.
- Measure air pressure for weather studies.

ESD50088



Magnetic Field Sensor *

The Magnetic field sensor 024i contains a Hall-element, which is sensitive to a magnetic field. It has two measurement Ranges, which can be selected using a switch. The sensor is suitable for measuring the magnetic field inside coils, or near permanent magnets.

Ranges: -10 .. +50 mT, -100 .. +500 mT - Resolution (12-bit): 0.024 mT, 0.24 mT

Can be used to:

- Measure the magnetic field near a (strong) permanent magnet,
- Investigate the magnetic field near a current-carrying wire,
- Measure the magnetic field near or inside a coil or solenoid.

ESD50146



Light Sensor *

The low-cost Light sensor 0513 measures light intensity and is sensitive to the visible light spectrum and also infrared. Because of its range the sensor is suitable for measurements in normal indoor situations.

Range: 0.1 .. 10 W/m²

Can be used to:

- Verify inverse square law.
- Monitor change in light caused by a chemical reaction,
- Measure the rapid changes of the light intensity.

ESD50144



Motion Detector * (digital BT)

The Motion Detector 0664 uses ultrasound to measure the distance between the sensor and an object. This Motion Detector has a digital BT connector and can be connected to digital inputs of CMES Data logger Range: 0.2 .. 6 to 12 m (depending on an

Object's shape, size and surface) Frequency of ultrasound: 50 kHz - Typical accuracy: ± 1 mm Includes: a steel rod.

Can be used to:

- Record motions during walking towards and away from the sensor,
- Investigate simple harmonic motion.
- Record motions of objects dropped or tossed upward.

ESD50147

NOTE All * Marked sensors need a sensor cable (IEEE1394-BT) ESD50250, which has to be purchased separate.





Photo-gate with Pulley

The Photo-gate BT63i is a traditional photo-gate, which consists of a light gate allowing detecting objects passing between the photo-gate arms. In this light gate, a narrow infrared beam is directed to a fast infrared detector, which produces very accurate signals for timing. The external (laser) gate mode allows detecting objects passing outside the photo-gate arms.

Includes: a pulley attachment and a steel support rod. The EduScience Drop counter can be attached to the photo-gate for titration experiments (not supplied has to be purchased separately Order Code 0662drop). Up to five photo-gates can be chained in a daisy-chain configuration and connected to a single interface input (IEEE1394 cable not supplied, this cable has to be ordered separately Order Code 07662).

Can be used to:

- Count events,
- Measure the speed of a moving (rolling) object (with the pulley attachment),
- Measure volume in titration experiments (with the drop counter attachment),
- Study pendulum periods,
- Measure the acceleration due to gravity (e.g. by using a picket fence).

ESD50149



Radiation Sensor *

The Radiation sensor BT70i detects alpha, beta and gamma ionizing radiation. The sensor outputs a pulse when decay is detected. Also, a clicking sound is emitted and a LED light flashes. The sensor is suitable to detect low-level radiation, emitted by e.g. potassium fertilizers or gas lantern mantles. Range: 0 .. 1000 cps (counts per second)

Can be used to:

- Monitor background radiation,
- Record radioactive decay and determine half-life,
- Investigate radiation versus shielding.

ESD50150



UVB Sensor *

The UVB sensor 0389 measures the intensity of ultraviolet radiation. This sensor consists of a broadband UV sensitive silicon photo-diode and responds primarily to UVB radiation.

Range: 290 to 320 nm Resolution (12-bit): 0.25 mW/m² Can be used to:

- Measure the UVB transmittance of various sunglasses and regular glasses,
- Measure the UVB intensity as a function of time throughout the day,
- Measure the UVB transmittance of fabrics, both wet and dry.

ESD50153



Motion Detector * (analogue BT)

The Motion Detector BT55i uses ultrasound to measure the distance between the sensor and an object. This Motion Detector has an analogue BT connector and can be connected only to CMES Range: 0.2 .. 6 to 12 m (depending on an object's shape, size and surface) Frequency of ultrasound: 50 kHz Typical accuracy: ± 1 mm Includes: a steel rod.

Can be used to:

- Record motions during walking towards and away from the sensor,
- Investigate simple harmonic motion,
- Record motions of objects dropped or tossed upward

ESD50148



Sound Sensor

The Sound sensor BT80i consists of a microphone followed by an internal amplifier. It measures variations in air pressure caused by sound waves. Because of the high sensitivity, the sensor is very much suited to detect pressure pulses. The dB-calibration in the Coach software allows using this sensor for dB-measurements (up to 124 dB).

Range: -45 .. 45 Pa, Resolution (12-bit): 22 MPa Can be used to:

- Measure sound waveforms and beat patterns,
- Investigate human voice and sounds from various musical instruments,
- Measure the speed of sound through air and other materials

ESD50151

NOTE All * Marked sensors need a sensor cable (IEEE1394-BT) ESD50250, which has to be purchased separate.





UVA Sensor *

The UVA sensor 0388 measures the intensity of ultraviolet radiation. This sensor consists of a broadband UV sensitive silicon photo-diode and responds primarily to UVA radiation. Range: 320 .. 390 nm Resolution (12-bit): 5 mW/m²

Can be used to:

- Measure the UVA transmittance of various sunglasses and regular glasses,
- Measure the UVA intensity as a function of time throughout the day,
- Measure the UVA transmittance of fabrics, both wet and dry

ESD50152



Voltage Sensor (Differential) *

This Voltage sensor 0210i is designed for measuring voltages between 10 .. +10 V. The sensor has differential inputs; measurements can be done directly across circuit elements without the constraints of common grounding. It has two 4-mm plugs for easy connection. Range: -10 .. +10V Resolution (12-bit): 6.5 mV

Can be used to:

- Measure voltages in AC and DC circuits
- record characteristics of a light bulb or a diode,
- Measure voltages in series and parallel electrical circuits.

ESD50154



Voltage Sensor (Differential)

This Voltage sensor BT32i is designed for measuring voltages between -500 and +500 mV. The sensor has differential inputs; measurements can be done directly across circuit elements without the constraints of common grounding. It has two 4-mm plugs for easy connection.

Range: -500 .. +500 mV - Resolution (12-bit): 338 μ V

Can be used to:

- Measure small voltages in AC and DC circuits.
- Record characteristics of a light bulb or a diode
- Measure voltages in series and parallel electrical circuits.

ESD50155



Voltage Sensor *

This Voltage sensor BT02 is a low-cost, generic sensor that measures voltage. This sensor has a direct connection to the inputs of a measurement interface. It has two banana (4-mm) plugs for easy connection.

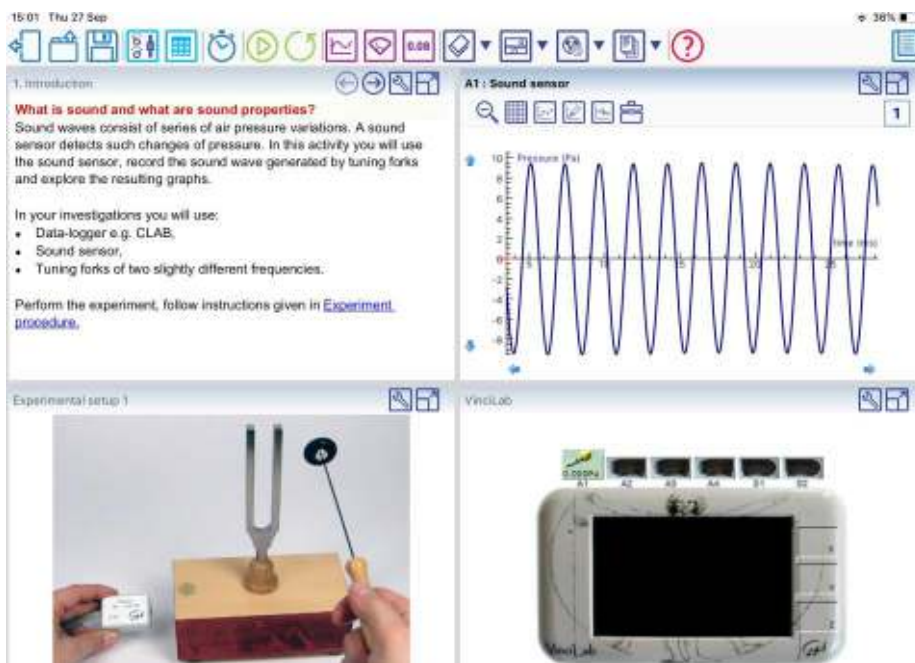
Range: -10 .. +10 V. - Resolution (12-bit):

4.9 mV Can be used to:

- Measure voltage during discharging of a capacitor
- Investigate battery life
- Record electromagnetic induction.

ESD50156

NOTE All * Marked sensors need a sensor cable (IEEE1394-BT) ESD50250, which has to be purchased separate.





Basic Physics Sensors Bundle Kit

• Current Sensor BT21i • Voltage Sensor 0210i • Force Sensor BT42i • Motion Detector 0664 • Light Sensor BT50i • Pressure Sensor BT66i • Sound Sensor BT80i • 2 x Temperature Sensors BT01 • 2 x Photo-gates with Smart Pulley BT63i • 4 Sensor Cables BTsc_4

ESD50157



Physics Sensors Extension Bundle Kit

• Accelerometer BT10i • Charge sensor BT19i • Current sensor 0222i • Voltage Sensor BT32i • Magnetic Field Sensor 024i • Radiation Sensor BT70i

ESD50158



Wireless Basic Physics Sensors Bundle Kit

Wireless pH Sensor 1x Wireless Temperature Sensor 1x Wireless Pressure Sensor 1x Wireless Voltage Sensor 1x Wireless Light Sensor 1x Wireless Force Acceleration Sensor 1x Wireless Motion Sensor

ESD50157W



Wireless Physics Sensors Extension Bundle Kit

1x Wireless Electrostatic Sensor , 1x Wireless Magnetic Field Sensor ,1x Wireless Current Sensor , 1x Wireless Sound Sensor 1x Wireless Smart Gate

ESD50158W





BT-BT Extension cable (analogue)

A 5-m long cable for extending the length of analogue BT sensor cables.

ESD50247



Adapter 4mm – BT

For connecting sensors with 4-mm plugs to interfaces with BT inputs such as CMES Data-logger.

ESD50248



Data-logger stand

Plastic stand for the CMES data-logger.

ESD50249



BT - IEEE1394 cable

The BT - IEEE1394 sensor cable (1.5 m length) is used for BT sensors, which are equipped with the IEEE1394 socket. These sensor cables are sold per piece (BTsc_1) and in packages of four (BTsc_4).

ESD50250

Xlogger system introduction

Xlogger is an innovative new data logging system using direct USB sensors & Excel* for data capture and analysis. Our sensors plug straight into USB ports on any Windows computer. No dedicated software program just Microsoft Excel*

Data is logged directly into Excel* and graphed automatically Simple toolbar commands control everything

Completely intuitive - start logging straight away Students work in the familiar Excel* environment

All the power of Excel* for analysing data is immediately available All the standard sensors with new ones being developed

Simply plug them in and start logging (no calibration needed) Robust construction and encapsulated leads

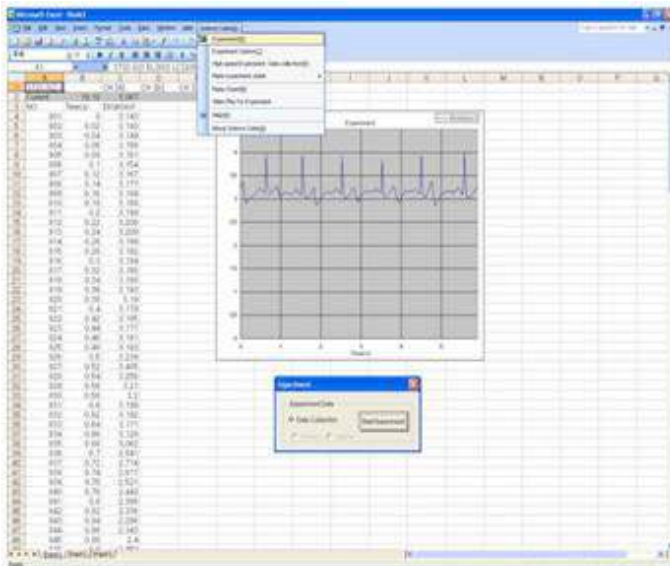


ES Data-logging Software

Xlogger is an innovative new data logging system using direct USB sensors & Excel* for data capture and analysis. Our sensors plug straight into USB ports on any Windows computer. No dedicated software program just Microsoft Excel*

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ESD50014





USB Accelerometer 5G Sensor

Xilogger Accelerometer 5G.

ESD50199



USB Relative Humidity Sensor

Xilogger Relative Humidity Sensor.
Range: 0 to 100% - Resolution: $\pm 0.4\%$ - Accuracy: $\pm 2\%$ at 25°C

ESD50187



USB Light Gate Sensor

Xilogger Light Gate Set (pair).

ESD50201



USB Magnetic Field Sensor.

Xilogger Magnetic Field Sensor.
Range: -50 to +50 G Linear Hall Effect Sensor

ESD50200



USB Sound Sensor.

Xilogger Sound Sensor.

ESD50202



USB Voltage Sensor.

Xilogger Voltage Sensor.
Range: ± 12.0 V - Resolution: ± 3.1 mV

ESD50203



**USB Current Sensor**

Xlogger Current Sensor.
Range: DC ± 1.0 A - Resolution: ± 6.0 Ma

ESD50204

**USB Motion Sensor**

Xlogger Distance (Motion) Sensor.
Range: 0.4 - 6.0 m - Resolution: App 1.5 mm - Beam: cone, $\sim 15^\circ$

ESD50205

**USB Barometer Sensor**

Xlogger Barometer.
Range: 0 to +2068 hPa (mbar) - Resolution: 0.6 hPa

ESD50188

**USB Force Sensor**

USB Force Sensor

ESD50206

**USB Temperature Sensor**

USB Temperature Sensor

ESD50185

**USB Light Sensor**

USB Light Sensor

ESD50186

**Dynamics System**

The Dynamics system is designed for use in physics enabling more accurate and precise experiments by minimizing friction. It can be used independently or with EduScience Software and sensors, such as the Light gates, motion sensor, force and accelerometer.

Typical experiments include:

Newtons Law Conservation of Energy Uniform Motion Spring Constant Motion under constant acceleration Inelastic collisions & Elastic collisions

ESD50241





EduScience Wireless Sensors can be used to measure without an interface. They are simple, user-friendly, and offer more mobility and flexibility. They can be used anywhere without the need for power or wired connections and are suitable for a wide range of student experiments.

Connectivity: The sensors operate wirelessly via Bluetooth or wired via USB and can be used with a variety of

Devices: computers, Chromebooks and mobile devices.

Display: The sensors are equipped with a color OLED screen which displays the battery level and the measured sensor value. This unique feature makes the sensors suitable for use as independent measuring devices.

Battery: The sensors have a large battery capacity and a smart way to save power by automatically turning off when they're not used. They can be used an average of 12 hours without needing to be charged.

work with all platforms on which the ES Data logging Coach software works.

Wireless Temperature Sensor

Range:- 40 to 125 C

Range : -40 to 125 C

Resolution : 0.06 C

can be used for the Following Experiments :

Principle of the mixture.

Cooling.

Thermal equilibrium.

Specific Heat Of Metals.

Radiation equilibrium



ESD50046

Wireless Drop Counter

Measuring Range: 10 drops/sec

Sensing size: 11.5 mm,

sensor diameter: 4 mm, 13 mm

Display: 0.96"

Battery: Li-polymer (700mAh)

Wireless: BLE 4.2

Wired: USB-C

Experiment list : Acid/base titration experiment

Electrical conductivity titration experiment



ESD50106

Wireless Electrostatic Sensor

Range ± 0.5 V, ± 2 V, ± 10 V

Measurement range: ± 0.5 V, ± 2 V, ± 10 V

Display: 0.96"

Battery: Li-polymer (700mAh)

Wireless: BLE 4.2

Wired: USB-C

Experiment list: Charging measurement by induction and frictional contact



ESD50165

Wireless Drop Count

Wireless Voltage Sensor

Range:- 5v to + 15 v

Measuring Range : - 15 v to + 15 v

can be used for the Following Experiments :

Ohm's law (Relationship between voltage and current)

Battery charge And discharge

Series/Parallel connection of resistance

The voltage of a solar cell



ESD50162

Wireless Motion Sensor

Range: 0.15~6.0m

Resolution: 0.001 m. The

wireless motion sensor uses

ultrasonic waves to measure

the distance between

objects. Experiment list

Momentum and energy

Free Fall Experiment Constant

velocity linear motion Laws of conservation of mechanical energy

Pendulum movement



ESD50171



Wireless Electrode Amplifier Sensor

ESD50166





Wireless Force & Acceleration Sensor Range : -80 to 80 N

can be used for the Following Experiments :

- Hook's Law
- Frictional force
- The synthesis of two forces
- Action and reaction , - The law of Inertia The principle of a lever
- Impact and momentum ,
- Weight in the water (Buoyant force)

ESD50170



Wireless Magnetic Field Sensor Range : 50~+50 gauss

Range : 50~+50 gauss

Resolution: 0.244 gauss

The wireless magnetic field sensor measures the strength of the magnetic field at the front of the sensor.

The strength of the magnetic field in the solenoid coil, the Helmholtz coil, the experiment to prove Fleming's and Lorentz's law, etc., and the X, Y, Z axis measurement range (50G, 2,000G) can be easily changed.

Experiment list

Magnitude of magnetic field according to distance

Find the N and S poles of a magnet

Magnetic field caused by electric current

Magnetic field according to the number of turns of the coil

ESD50167



Wireless Current Sensor Range: - 3.0~+3.0 A

Resolution: 0.5mA The measuring principle of this "Wireless Current Sensor" is that a wire with a unique resistance value is measured using a voltage proportional to the current according to Ohm's law. It can be used for Ohm's law experiment with voltage sensor or for magnetic resistance test of electric resistance or current and since it is a wireless sensor, no connecting cable is needed. Experiment list Ohm's law (relationship between voltage and current) Charge and discharge of battery Voltage of solar cell Making a coin battery Resistance depending on the length and cross-sectional area of the sharp core

ESD50163



Wireless Gas Pressure Sensor Range: -1000~+3000hPa

Resolution: 0.244 hPa

Wireless gas pressure sensor" measures relative values to ambient pressure. When measuring pressure, it

converts to an intermediate form, such as a displacement, which converts the displacement into an electrical output, such as a voltage or current. This wireless sensor does not require a separate cable so that can be used easily in complex experiment environments. Also, it is possible to connect up to 4 sensors at same time, so you can use it with other kinds of sensors together.

Experiment list ; Boyle's Law ; Cloud creation principle

Reaction rate according to acid concentration

Solubility of Gas with Temperature

ESD50102



NEW



Wireless B-Differential Gas Pressure Sensor
Range: -650 ~ 4650 hPa

Resolution: 0.355 hPa
 Wireless pressure sensor B has a narrower range than pressure sensor A.

It can measure pressure more accurately, has excellent resolution and is used in chemical experiments where a small amount of gas is generated.

- Experiment list
- Decomposition of hydrogen peroxide
- How clouds are formed
- Reaction rate according to surface area
- Experiment list
- Decomposition of hydrogen peroxide
- How clouds are formed
- Reaction rate according to surface are

ESD50103



Wireless Smart Cart
Range: Force: +20N

Range: Force: +20N / Distance: +3,000mm/ Speed: #3 mS
 Acceleration: 16g / Gyro: 2,000%
 Resolution: Force: 0.01N. 0.1N / Distance: 0.1mm /
 Speed: Maximum sampling 200 Hz / Gyro: 0.6%

The wireless cart is a product specialized for dynamics-related experiments and the cart has built in sensors such as distants, speed, acceleration, angular velocity and force, so you can perform various dynamics experiments.

- Experiment list
- Momentum and energy
- Impulse and momentum
- The acceleration of the cart due to the fall of the weight.
- Law of conservation of mechanical energy
- Constant velocity linear motion
- Constant acceleration motion

ESD50172



Wireless Light/Color/UV Sensor
Range : -12.5 ~+12.5 mA

Range: - Illuminance: 1 ~199,000
 lux Chromaticity: 1 to 65,535 counts
 UV: 0-11 UV index
 Resolution - Illuminance: 0.1 lux
 Chromaticity: 1 count
 UV: 0.1 UV index

The wireless Light/Color/UV sensor is a sensor that measures wavelengths from the visible light range to the ultraviolet range so that optics-related experiments can be carried out.

- Experiment list
- Light intensity according to distance photosynthesis
- The brightness of the light bulb depending on the battery light synthesis Principle of sunscreen

ESD50169



Wireless Galvanometer Sensor
Range : -12.5 ~+12.5 mA

Resolution: 0.002 mA

It is a sensor that can measure minute currents and has better resolution than wireless current sensors.

- Experiment list
- Bio current experiment
- Faraday's Law
- Electrolyte and non-electrolyte experiments electromagnetic induction

ESD50164





Wireless Thermocouple Sensor

Range: -200 ~ 1200°C

Resolution: 0.6 °C

Experiment list

Flash point measurement

Temperature measurement for inner flame, outer flame and flame core

ESD50047



Wireless Photogate

Experiment list

Measuring the speed and acceleration of an object

Period measurement of simple pendulum motion

Time interval measurement of a moving object

Measurement of gravitational acceleration in free fall motion

Utilization of droplet coefficient in neutralization titration experiment

ESD50173



Wireless Sound Sensor

Range: 30 ~ 130 dB A

30 - 130dB B

Resolution: 0. 1dB

Experiment list

Decibel measurement

Sound barrier effect measurement

Why are the antennas round?

ESD50168



Wireless Radiation Sensor

Range: 0 ~20 mR/hr

Range: 0 -20 mR/hr 0 - 20,000 CPM Resolution: 1 CPM

Experiment list Decibel measurement Radioactivity measurement

ESD50104



Electrode Support

1 13 mm (diameter) holder for electrodes

2 temperature holder 4 mm (diameter)

ESD50268



Vacuum Chamber for Sensors

Vacuum test equipment - storage case

You may use the chamber with different sensors like Temperature , Humidity , Pressure to perform several Experiment as below :

Choco Pie is getting bigger

Why rice is undercooked in the mountains

What does it sound like?

How can an airplane fly

What happens when the air gets warmer?

ESD50269

Mechanics experiment device kit II

product Include : wireless cart - line - weight set - spring set

- Neodymium magnet(8)

Mechanical experiment equipment accessories

Experiment list

measuring the weight of an object

spring pendulum

conservation of mechanical energy

hooke's law

Newton's second law of motion

constant velocity linear motion

movement on a slope

Momentum and impulse

ESD50267





Resonance kit

The Resonance Kit 060 is a set for measurement and control activities around the concept of Resonance. The kit consists of an adjustable base, a plastic tube, a movable coil, a movable force sensor holder, a spring, a spring holder and a magnet. Instead of a metal rod, a Force sensor (not included in the kit) for measuring spring oscillations can be used. The measurements of induced EMF due to the periodic motion of a magnet can be done. The current carried through the coil can be controlled (turning on and off) through outputs of the interface and the way this influences the magnet, hanging on the spring, can be observed.

ESD50255



Actuator Set

The Actuator Set 062 can be used to introduce the students to the basics of control technology. The set consists of the following elements: 3 red and 3 black 4-mm wires, 12-V switch, lamp holder with 3 coloured 12-V bulbs, 12-V buzzer, 12-V direct current motor, and propeller to connect to motor. All elements make use of the 4-mm buses.

ESD50258



Switch Module

The Switch Module 063 is a solid-state-relay (SSR) that allows you to control 110 - 230 V devices by a voltage of 3 V DC or more up to 25 V). The relay is connected to the mains (110 V up to 230 V) via a Euro-connector at the rear of the module. The relay can supply devices up to 1150 W.

ESD50259



System Board

The System Board 0020 is designed for logic, measurement, control and automation experiments. The sections of the System Board: The Input block gathers data from the environment and conditions the signal for processing. The signal comes from a sensor in case of a measuring or control system, or a keyboard in case of a computer system. The Processing block processes the signal to achieve a specific system goal. The Output block presents the processed data in a form useful for the user (measurement system) or on the basis of the signal, carries out an action (control system). The Extra components block consists of a 4-bit AD converter and connection to the computer.

ESD50256



Heating Coil

The Heating Coil 018 can be used as an actuator in control systems. The coil has 4 mm plugs for easy connection. The Heating Coil has to be supplied with 24 volt or less.

ESD50260

Mains adapter 9 V for System Board

ESD50257



Dip Needle, 200 mm, Demo

To determine the angle of inclination of the field lines of the earth's magnetic field against the horizontal; very sensitive, fine-moued magnetic needle, dark end pointing towards north (the needle is not painted as this would result in an uneven mass distribution and thus an inaccurate result); solid white back plate made of acrylic glass, with semi-circular scale (2 x 0 - 90° in 1° increments); transparent, semi-circular front plate to protect the needle; with direction template and installation base; with handle: L = 30 mm, D = 10 mm; shock-proof packaging using a sturdy cardboard box; Length of magnetic needle: 200 mm Digit height on scale: 12 mm Dimensions (L x W x H) 284 x 21 x 312 mm



ESP59046



ESP59045



MAGNETIC Needle on Stand

To demonstrate the mutual acting of the magnetic poles & determinate the direction of magnetic field
Length app 100 mm

Compass

PLOTTING COMPASS, Different Diameter In aluminium or plastic case, with card dial/ Scale graduated in degree 0-360



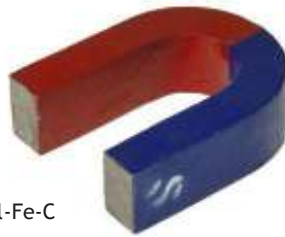
ESP59038	DIA. 25MM	In aluminium case with card dial
ESP59039	DIA. 38MM	In aluminium case with card dial
ESP59040	DIA. 42MM	In Plastic Case with point of the compass and needle locking device
ESP59041	DIA. 50MM	In aluminium case with card dial
ESP59042	DIA. 75MM	In aluminium case with card dia
ESP59043	DIA. 100MM	In aluminium case with card dial

Magnet , U Shape Magnet

Used in some physics experiment in the laboratory

Dimensions :

- Overall: Dia 20 x 61 x 80mm
- Sectional **Dimensions** : 10 x 20mm
- Space between poles: 41mm Material: Al-Fe-C
Painted Red for North and Blue for South



ESP59049



Magnet , U Shape Magnet, ALNICO

U SHAPE MAGNET, ALNICO, 37 x 6 x 10mm Centre Gap 9mm. With Keepers.

ESP59050



Horseshoe Magnet

chrome steel horseshoe magnets with keepers

ESP59076	Dimintions : 75MM
ESP59077	Dimintions : 100 MM
ESP59078	Dimintions : 125 MM
ESP59079	SET OF 3 DIFFERENT SIZES

U Shape Magnet , Alnico

U SHAPE MAGNET, MADE OF ALNICO , With Keepers.

ESP59051	Dimintions : 37 X 6 X 10 Mm	Centre Gap 9Mm
ESP59052	Dimintions : 50 X 15 X 10Mm	Centre Gap 20Mm
ESP59053	Dimintions : 75 X 15 X 10Mm	Centre Gap 20Mm

Cylindrical Magnet

Cylindrical magnet , Supplied In pair, with keeper.



ESP59054	Dimintions : 37 X 10MM (LENGTH X DIA.)	ALNICO
ESP59055	Dimintions : 50 X 10MM (LENGTH X DIA.)	ALNICO
ESP59056	Dimintions : 75 X 10MM (LENGTH X DIA.)	ALNICO
ESP59057	Dimintions : 100 X 10MM (LENGTH X DIA.)	ALNICO
ESP59058	Dimintions : 37 X 12MM (LENGTH X DIA.)	Chrome steel
ESP59059	Dimintions : 50 X 12MM (LENGTH X DIA.)	Chrome steel
ESP59060	Dimintions : 75 X 12MM (LENGTH X DIA.)	Chrome steel
ESP59061	Dimintions : 100 X 12MM (LENGTH X DIA.)	Chrome steel



Bar Magnet Rectangular 6 X 19 X 70mm, Red-Blue

Rectangular Bar Magnet 6 x 19 x 70mm, Red-Blue

Dimensions : Overall 6 x 19 x

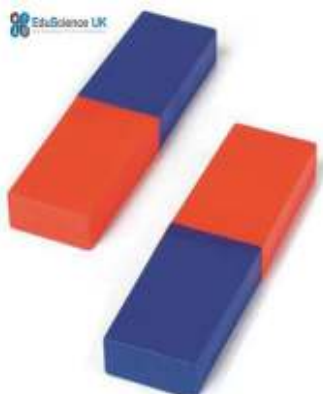
70mm Material: ALNICO LNG12

Poles of magnet is painted red for North and Blue for South With hole in the centre

ESP59062

rectangular bar magnet made of ALNICO,,Powerful and permanent, in pair, with keepers. Supplied in Cardboard box.

- ESP59063 **Dimentions :** 50 X 15 X 10 MM ALNICO
- ESP59064 **Dimentions :** 75 X 15 X 10 MM ALNICO
- ESP59065 **Dimentions :** 100 X 15 X 10 MM ALNICO
- ESP59066 **Dimentions :** 150 X 15 X 10 MM ALNICO
- ESP59067 **Dimentions :** 50 X 15 X 15 MM ALNICO



Magnetic Disc Neodymium

Neodymium magnets have the greatest pulling force of all permanent magnets. We can supply various shapes and sizes of Neodymium magnets. Please contact us for further details.

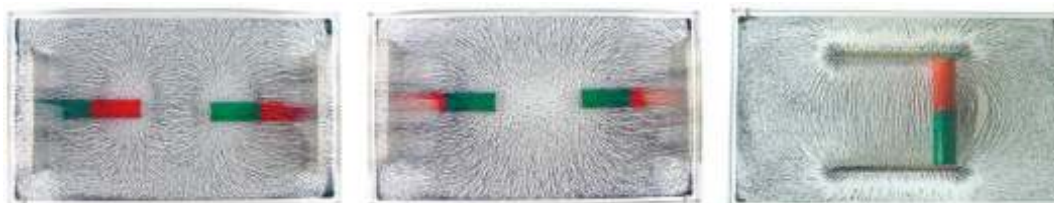
Dimentions : 10 x 4mm. Pk10.

- ESP59070 **Dimentions :** 10 x 4 MM PK 10
- ESP59071 **Dimentions :** 15 x 4 MM PK 4
- ESP59072 **Dimentions :** 20 x 10 MM PK 4

Magnet, Bar Magnet, Plastic

Overall size 80 x 12 x 15mm, per pair with plastic cover.

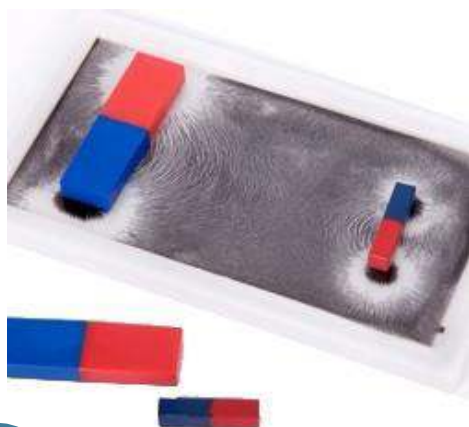
ESP59068



Magnetic Field Demo Set

Set Including : 1 no Magnetic field plate , 1 no Supporting plate for bar magnets, 2nos Bar Magnet, Alnico, D=10 mm, L=50 mm , 2 nos Pole lamination , 60 x 25 mm

ESP59083



Magnetic Field Frame ,Field Pattern Window- Transparent

A white frame with transparent window containing magnetic powder in a water based solution for showing magnetic field patterns. When a magnet is present the particles of iron inside become slightly magnetised, so they attract each other and cluster into the lines that show the magnetic field patterns. Includes a pair of small ferrite block magnets and a pair of plastic cased bar magnets and teachers leaflet.

Dimensions : 225 x 130 x 15mm.

ESP59084





Student Magnetism Kit

Kit consisting of:

2x Bar Magnet, 1x Iron filings in box, 1x Pocket compass, 1x Earth-model for magnetic field of earth globe, 1x Magnetic field sensor, 1x Plug pin with needle, 2x Supporting plate for bar magnets, 4x Threaded bolt steel, L=40 mm, 1x Insulating block with socket, 1x Bearing bush for cylindrical magnets, 1x Magnetic field plate, 2x Pole lamination SE, 60 x 25 mm, 1x Paper clip in container, set of 10, 1x Paper clip with string, 1x Test tube 16x150 mm, plastics, 1x Magnetic field sheet, 1x Magnetic rubber bar, 1x Soft iron ring, 1x Iron nails in box

Storage:

1x Box insert Magnetism, SE
1x Storage box II small, with cover,
Box -insert plan with 2 labels



ESP59080



Magnet Kit

Selection of magnets and materials, assembled in plastic tray with cardboard sleeve. Includes Alnico bars, Alnico button magnets, ferrite blocks & rings, chrome steel horseshoe magnet, Alnico horseshoe magnet, coloured squares of magnetic rubber, plotting compasses 19mm, compasses 14.5mm, chrome rods and Lodestone piece.

ESP59081



Magnet Kit Deluxe

A comprehensive selection of magnets and materials packed in a robust storage case. Includes alnico bars, alnico button magnets, round and square coaxial bars, ferrite blocks and rings, chrome steel horseshoe magnet, alnico horseshoe magnet, iron filings bubble, pair of plastic cased bar magnets, coloured squares of magnetic rubber, chrome steel bars, a metal disc set and plotting compasses.

Dimensions of case : 320mm x 220mm x 50mm..

ESP59082





ESS Magnetism Kit

Kit include the following :

- (01) Magnetic line simulation device Rubber hammer
- (02) Earth model base Copper rod,d= 4mm,l=80mm Iron rod,d=4mm,l=80mm Fiber rod,d= 4mm,l=80mm Stainless steel rod,d=4mm,l=80mm Acrylic stick,d= 4mm,l=80mm Pin,4 bars Iron nail,20 bars Foam ball,2 bars
- (03) Magnet,50*15*5mm
- (04) Earth globe model
- (05) compass,d= 60mm
- (06) Iron powder
- (07) Magnetic field sensor
- (08) Rotating body
- (09) Rotating body base
- (10) Magnetic field demonstration disk
- (11) Iron wire,l=40cm,10 bars
- (12) Magnet,100*20*6mm
- (13) Magnet,d= 10mm,l=100mm

ESP59080C



Metal Strips Set

A set of 12 metal strips for magnetism work. Each stamped with a key letter for identification. Ideal for experiments to demonstrate magnetic properties and classifications of metals. Size 50x25mm

The metal strips consist of:

Soft Aluminium, Brass, Copper, Mild Steel, Magnetic Stainless Steel, Non-magnetic Stainless Steel, Galvanised Steel, Hard Aluminium, Phosphor Bronze, Nickel Silver, Zinc Plated Mild Steel, Zinc

ESP59087

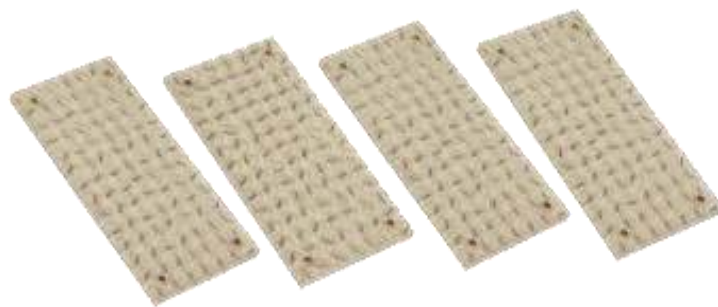


Iron Fine Powder 500g

ESP59108

Iron Filling In Bubble

ESP59109



Magnetic Field Demonstrator

Set of 4 plates

4 transparent plates to demonstrate magnet fields
Each plate is 15.3cm x 7.6cm x 0.6cm - 98 chambers
Comprises a set of four transparent plastic plates 153 x 76 x 6 mm, each plate has a matrix of 98 (14 x 7) small circular chambers, each chamber containing an iron rod and functioning effectively as a plotting compass. The plates may be arranged in various ways, e.g. as a single large two dimensional surface, as faces of a cube etc., and in this way may be used to show configuration of a magnetic field in one or two dimensions. The transparent nature of the plates also makes them suitable for use on an overhead projector.

ESP59087

Force on Conductor App

comprising a strong U-shaped magnet and a pair of brass rails with 4 mm socket terminals. A brass axle with plastic discs is free to roll along the rails and completes the electrical contact between them. When the axle is placed on the rails between the poles of the magnet and power supply unit is connected, the axle is repelled and rolls along the rails away from the center of magnetic field. Dimensions 175 x 60 x 58 mm



ESP59105

Iron Filings in Sprinkling Bottle

A Used to investigate pattern of magnetic field.
Size : Sprinkler bottle : Ø 45 × 83 mm
Weight Iron powder : 100 g -
Weight approx. : 150 g
Material : Sprinkler bottle : Plastic
Powder : Iron



ESP59107





Magnetic Field Demonstrator -3D

Allows students to observe magnetic fields in three as well as two dimensions. This unique device consists of two half hexagonal acrylic containers with metal filings. The two parts, connected with hinges, can be swung open or closed. A strong bar magnet is placed between the containers to reveal the cross section of a magnetic field.

Dimensions : 5 in. x 5 in. x 5 in.

ESP59085



Magnetic Field Demonstrator -Set Of 3

A conductor models in straight, loop and coil shape, embedded into temperature resistant nylon profiles, iron fillings in viscous medium in sealed acrylic cuvette

Dimensions of the cuvette : 107 x 96 mm

ESP59086



Magnaprobe

This small magnet suspended in a gimbal mount shows forces between magnetic poles; induced magnetism; shapes of magnetic fields; direction of magnetic fields; and properties of a field produced by an electric current.

Dimensions : 118*37*3mm

ESP59088



Magnaprobe, Big Demo

Magnetic field sensor, large This Large magnet suspended in a gimbal mount shows forces between magnetic poles; induced magnetism; shapes of magnetic fields; direction of magnetic fields; and properties of a field produced by an electric current

ESP59089



Electromagnet U Form

Iron, U core, circular section, with flat ends, has one bobbin in each limb wound with enameled copper wire, with armature.

ESP59090



Magnet, Floating Ring Magnets

Demonstrate laws of magnetic attraction and repulsion. Consists of a stand with 5 magnetic rings sealed in plastic case to reduce wear and breakage.

ESP59093



Globe For Magnaprobe, Big Demo , 200 mm

An illustration of the magnetic field around the earth as well as demonstrating inclination.

Coloured globe, made of robust plastic, labelled in English, pivoted appropriate slope, with sleeve for mounting a magnet 15x80mm; D=200 mm; (Delivered without magnet) Including Bar magnet, Alnico, 80x15 mm.

ESP59091





Magnetiser

- Devices that can penetrate strong magnetic fields to carbon steel's dense steel and insert or remove magnetic force
- It is magnetized by DC current and can be demagnetized by AC current. Experimental method
- When you want to insert magnetic force, put the sample into the bobbin of the magnetiser and place the switch in the magnetization position and push it 2-3 times at intervals of 0.5 - 1 second.
- In case of de-matching, put the switch in the demagnetizing position, push the push button as in the case of magnetization and take out the object slowly. Power AC220V, 2 magnetized balls

ESP59094



Lenz'S Law - Loop

To demonstrate Lenz's laws. The apparatus moves when a magnet passes through the closed loop and does not move the loop is open, proving Lenz's Law. Magnet not included.

ESP59098



Oersted's Apparatus

To show action of electric current on a magnet. A 75mm cobalt steel needle supported on a pivot is mounted on base and is surrounded by a copper strip rectangle with two terminals.

ESP59103



Metal Discs Set

For demonstrating that some metals are magnetic whilst others are not and for general 'Metal Identification' exercises. Comprises sixteen discs, 25mm dia. 2 each of Mild steel, Stainless Steel, Brass, Zinc, Nickel, Bronze, Aluminium and Copper. One of each is stamped with the name of metal, the other is unmarked.

ESP59096



Tangent Galvanometer

Used to demonstrate how a current loop generates a magnetic field. Consists of an acrylic hoop 12.7 cm in diameter wrapped with 2 coils of copper wire - one coil has 5 turns and the other 10, 3 binding posts which allow connections to 5, 10 or 15 turns and a compass.

ESP59100



Search Coil

Designed to comply with the new A Level curriculum in mind this new search coil consists of a 3300 turn bobbin mounted at the end of a 200mm long tube and allows the investigation of magnetic field strength. Two 4mm leads connect to any standard VOLTMETER (mV range required) or Oscilloscope to give an indication of the field strength.

ESP59106



NEW**Not
Included****ESS Electricity Kit 2**

Kit consist of the following :

- 1 pc Connection plate plug in
- 1 pc Galvanometer (0+/-30) plug in
- 1 pc Ammeter (0-3/0.6A) Plug in
- 1 pc Mini motor mounted plug in
- 1 pc connection straight plug in
- 1 pc connection angle plug in
- 1 pc t connection plug in
- 2 pcs 2 mm sockets red plug in
- 2 pcs 2 mm sockets black plug in
- 1 pc LED plug in
- 1 pc switch plug in
- 1 pc 1.5 K ohm plug in
- 1 pc Simple Motor kit
- 1 pc Dynamo Model kit
- 1 set primary and secondary coil
- 2 pcs coils
- 1 pc stand alone Rheostat 20 Ohm
- 6 pcs connection wire with 2 mm plug red
- 4 pcs connection wire with 2 mm plug black
- 2 pc connection wire 2 mm plug / crocodile clip
- 4 pcs connection wire 2 mm plug / c connector
- 3 pc small lamp 0.8 V
- 3 Pcs iron rod
- 1 pc copper rod
- 20 pcs nails
- 1 pc Coil wire on transparent base
- 1 pc wire on base
- 1 set Electric bell model
- 1 Knife switch on base with 2 mm sockets
- 1 pc Battery holder AA Double 2 pcs mounted on one base 2 mm sockets
- Press bottom switch mounted on base with 2 x 2mm sockets
- 1 pc Mini motor with 2 mm sockets
- 1 pc wire with base and 2 mm sockets
- 1 pc NS on base with 2 mm sockets

ESS Electricity Kit PC

This Kit Consist of the Following :

- 2 pcs Connection Board
- 5 pcs plug in connecting wire straight
- 5 pcs Plug In connecting wire angled
- 3 pcs Plug in T connection
- 2 pcs plug in 4 mm connection terminals (black and red) 1 2 mm plug in connection terminals (Black and red)
- 3 pcs 4mm connection terminal red
- 3 pcs 4mm connection terminal black
- 1 pc Single switch 2 pcs 3 way switch
- 1 pc NS Plug in
- 1 pc LDR Plug in 2 pcs lamp holder plug in
- 1 pc NTS Plug in box
- 1 pc PTC plug in box
- 1 pc 50 Ohm Resistor plug in
- 1 pc 100 Ohm Resistor plug in
- 1 pc 10 K Ohm Resistor plug in
- 1 pc 47 K Ohm Resistor plug in
- 1 pc Electric bell mounted
- 2 pcs battery holder
- 1 pc double battery holder mounted
- 2 pcs Multimeter
- 1 pc plug in Rheostat switch 200 ohm
- 1 pc plug in fuse holder
- 1 pc plug in mini Motor with fan
- 1 Pc Earthing model
- 100 pcs 0.1 A Fuses 100 pc 0.5 A Fuses
- 1 pc Electrolysis cell with plate
- 5 pcs crocodile clip red 5 pcs crocodile clip black
- 2 pcs 25 cm connection wire with 4 mm plug red
- 2 pcs 25 cm connection wire with 4 mm plug Black
- 3 pcs small lamp 6 V 0.7 A 3 pcs small lamp 2.5 V 0.3A
- 3 pcs small lamp 3.8 V 0.3 A 10 pcs fuses

ESP59111

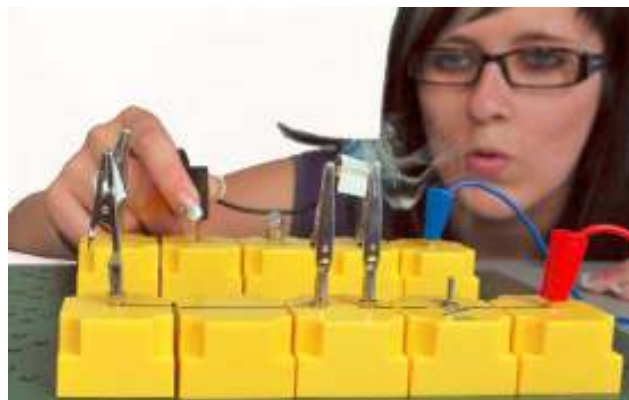
ESP59110C





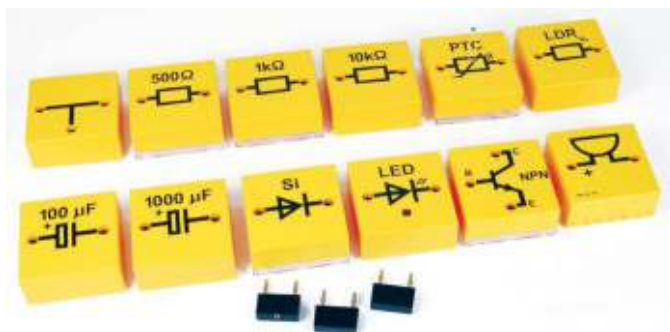
Student Electricity Kit

- Kit consisting of:
- 1x Plug-in panel, small
 - 2x Connecting lead, 25 cm, black
 - 1x Connecting lead, 50 cm, red
 - 1x Connecting lead, 50 cm, blue
 - 1x Connecting lead, 75 cm, red
 - 1x Connecting lead, 75 cm, blue
 - 4x PIB connector
 - 5x PIB wire, straight
 - 2x PIB wire, straight, with socket
 - 1x PIB wire, T-shaped, with socket
 - 4x PIB wire, T-shaped
 - 4x PIB wire, angled, with socket
 - 2x PIB wire, angled
 - 1x PIB wire, interrupted, with sockets
 - 1x PIB switch, ON/OFF
 - 2x PIB two-way switch
 - 1x PIB resistor 100 Ohm
 - 1x PIB resistor 500 Ohm
 - 1x PIB resistor 1 kOhm
 - 2x PIB battery (accu) 1.2V



- 2x PIB with adapter bush
 - 2x PIB lamp socket E 10
 - 1x Electrolysis tank
 - 1x Conductors and non-conductors, set of
 - 1x Electrodes, set of
 - 2x Light bulb, 2.5 V/0.2 A, E10
 - 2x Light bulb, 10 V/50 mA, E10
 - 1x Fuse wire, D = 0.1 mm, bobbin red
 - 1x Resistance wire, D = 0.2 mm, bobbin blue
 - 1x Copper wire, D = 0.2 mm, bobbin black
 - 4x Crocodile clip with plug
 - 2x Holder with slit and hole, SE
- Storage:
- 1x Box-insert Electricity 1, SE
 - 1x Storage box II small, with cover,
 - Box -insert plan with 2 labels

ESP59110



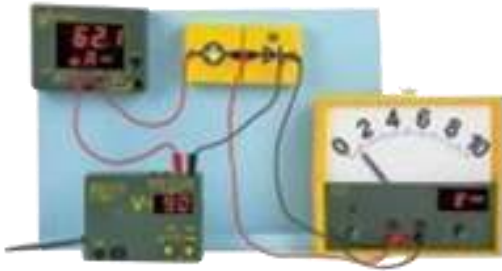
Electronics Basic Set «compact» (MBC)

- consisting of:
- 1x MBC (Magnetic block) Lead., T-shaped
 - 1x MBC Resistor 500 Ohm
 - 1x MBC Resistor 1 kOhm
 - 1x MBC Resistor 10 kOhm
 - 1x MBC PTC-Resistor

- 1x MBC LDR-Resistor
 - 1x MBC Capacitor 100 µF
 - 1x MBC Capacitor 1000 µF
 - 1x MBC Si-Diode
 - 1x MBC LED red
 - 1x MBC Transistor NPN, base left
 - 1x MBC Buzzer
 - 2x Jumper plug MBC, black
 - 1x Jumper plug with connector terminal
 - 1x Storage box II small, with cover
- Including manual for more than 20 experiments to the topics:
- Semiconductors
 - Diodes
 - Transistors
 - Capacitors

ESP59113





Electricity Basic Set «compact» (MBC)

Robust plastic housing (ABS) with transparent bottom plate

- Circuit symbol (silkscreen printing)
- Suitable sockets for 4-mm safety plug
- Base plate with neodymium magnets
- **Dimensions** : 84 x 84 x 39 mm

consisting of:

- 2x MBC (Magnetic block) Lamp socket E10
- 1x MBC ON /OFF switch
- 1x MBC Resistor 5 Ohm
- 1x MBC Resistor 10 Ohm
- 4x Battery-Holder with outlets, magnetic
- 3x Clamp socket, magnetic, small
- 1x Fuse wire, D = 0.1 mm, L = 50 m, bobbin red
- 1x Constantan Wire, D = 0,2 mm, blue
- 1x Copper Wire, D = 0,2 mm, black
- 1x Conductors and non-conductors, set of 7 Stk.
- 3x Light bulb, 2.5 V / 70 mA (1.5 V / 50 mA), E10
- 3x Light bulb, 4 - 12 V / 40 - 70 mA, E10
- 2x Crocodile clip, plain metal
- 1x Tray for electrolysis
- 3x Connecting lead, 25 cm, red
- 3x Connecting lead, 25 cm, black



- 1x Connecting lead, 50 cm, red
- 1x Connecting lead, 50 cm, black
- 1x Storage box II small, with cover
- Box-insert plan with 2 labels

Including manual for more than 20 experiments such as:

- Basics of electricity
- Electrical resistance
- Thermal energy derived from electrical energy
- Work and power

ESP59112



Bottom-shelf for MBC system

Powder-coated metal plate for experiments in electricity or electronics as a “compact” system

Free experimental area: approx. 50 x 33 cm

ESP59114

Ohm’s Law Experiment Kit ESP59457

- Ohm’s Law states that the current through a conductor between two points is directly proportional to the voltage across the two points. This proportionality between voltage and current is known as resistance.
- This kit is designed to tangibly observe Ohm’s Law by observing the correlation between current magnitude and voltage between two points in a few types of conductor.
- This experiment also reveals that different type of conductors with equal dimension will have different resistance value.



Senior High School

Component List

Consisting of 4 components, packed in a plastic injection moulding box. Dimension: 62 x 30x 9 cm. Weight: 2.880 kg.

Cat. code	Component	Description	Qty
ESP 150	Ohm’s Law Model	Can be used to show data on the relationship between current and voltage. There are three wire resistance and shear resistance with a total resistance of 300 Ohms. Equipped with 6V internal power source.	1 pc
ESP 000314	Connecting Lead DC 50 cm, Blue	Cable with a total length of 500 mm and maximum current of 8 A. Color: blue.	2 pcs
ESP57915	Connecting Lead DC 50 cm, Black	Cable with a total length of 500 mm and maximum current of 8 A. Color: black.	2 pcs
ESP57914	Connecting Lead DC 50 cm, Red	Cable with a total length of 500 mm and maximum current of 8 A. Color: red.	2 pcs





Electricity and Magnetism Kit ESP59115

- The guide book consists of 27 experiments
- The experiments are related to the basic circuit, electrical resistances, electrical energy and power, magnetism and electromagnetism.
- The electronic components are mounted inside transparent box section, completed with corresponding symbols. The boxes are equipped with standard 4 mm banana plugs in 19 mm distance.

Component List

Consists of 39 components, packed in a plastic injection moulding box.
Dimensions: 61 x 26 x 17 cm. Weight: 4.7 kg.

Cat. code	Component	Qty	Cat. code	Component	Qty
FLS 20.01/096	Assembly Board 120 Holes	1 pc	FLS 20.18/116	Zinc Electrode	1 pc
FLS 20.02/097	Bridge Connector	10 pcs	FLS 20.19/117	Steel Electrode	1 pc
FLS 20.03/300	Alligator Clip, Red and Black	2 pcs	FLS 20.20/118	Lead Electrode	1 pc
FLS 20.05/102	Change Switch	2 pcs	PEO 341 04	Resistor 4.7 Ohm, 2W	1 pc
FEM 21.00	U and I Core	1 pc	FLS 20.22/047	Resistor 47 Ohm, 2W	2 pcs
FEM 21.01/250	Coil 250 Turns	1 pc	PEO 341 07	Resistor 56 Ohm, 2W	2 pcs
FEM 21.01/500	Coil 500 Turns	1 pc	FLS 20.22/100	Resistor 100 Ohm, 2W	2 pcs
FEM 21.01/102	Coil 1000 Turns	1 pc	PEO 372 01	LED, Red	2 pcs
FLS 20.11/109	Clamp Plug	1 pc	FLS 20.04/101	Single Polar Switch	1 pc
FLS 20.12/110	Spring Plug	4 pcs	FLS 20.07/104	Lamp Bulb E 10, 6V/3W	1 pc
FLS 20.14/114	Rectangular Bar Magnet 6 x 19 x 70 mm, Red-Black	2 pcs	FLS 20.07/103	Lamp Holder E 10, Lateral	2 pcs



Physics Experiment Kit

Cat. code	Component	Qty
FLS 20.30/125	Iron Powder	1 roll
PEF 320	Plotting Compasses, Plastic	1 bottle
ESL57901	Battery Holder	4 pcs
ESP57914	Connecting Lead DC 50 cm, Red	2 pcs
ESP57915	Connecting Lead DC 50 cm, Black	2 pcs
ESP 20.40/141	PVC Rod	2 pcs
ESP 316	PVC Rod with Metal Axle	2 pcs
ESP 20.41/142	Plexiglass Rod	1 pc
ESP 317	Plexiglass Rod with Metal Axle	1 pc
ESP 241 01	Wool 200 x 200 mm	10 pcs
ESP 241 02	Silk 200 x 200 mm	1 set
ESP 200 05	Electrical Motor/Generator DC	1 set

Experiment Topics

LP 1	Closed Circuit I
LP 2	Closed Circuit II
LP 3	Closed Circuit III
LP 4	Conductor and Non Conductor Resistance
LP 5	Serial and Parallel Battery Configurations
LP 6	Current Measurement-Voltage Measurement I
LP 7	Current Measurement-Voltage Measurement II
LP 8	Kirchoff Law I
LP 9	Ohm's Law
LP 10	Resistance of Wires
LP 11	Serial Connection Resistance
LP 12	Parallel Connection Resistance
LP 13	Electric Energy Changes Being Heat
LP 14	Fuse Model
LP 15	Electrical Power
LP 16	Magnetism
LP 17	Strength and Magnetic Interactions
LP 18	Combined Magnet
LP 19	Magnetic Field I
LP 20	Magnetic Field II
LP 21	Magnetics Field of Current Flow
LP 22	The Magnetics Field of a Coil
LP 23	Electromagnet
LP 24	Lorentz Force
LP 25	Electric Motor
LP 26	Electromagnetic Induction
LP 27	Electrics Generator

Supporting Components

Available in the Mechanic kit PMS 107.

Cat. code	Component	Qty
ESP 180	Stand Base with 3 Clamps	2 pcs
ESP 51.02/02	Stand Foot	2 pcs
ESP 30/250	Stand Rod \varnothing 10 x 250 mm, Stainless Steel	2 pcs
ESP 30/500	Stand Rod \varnothing 10 x 500 mm, Stainless Steel	2 pcs
FME 51.08/09	Nylon Thread	1 roll
PS000 5218.1 17/26	Plastic Pole with \varnothing P 11u0g0 mm, Red	2 pcs 1 pc
ESP 51.18/28	Coupling Rod	2 pcs

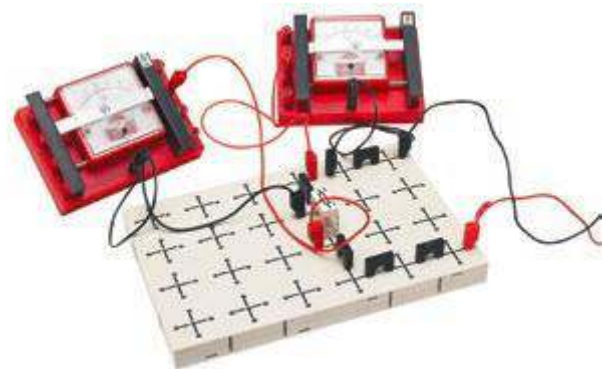
Available in Hydrostatics and Heat Kit PHK 107.

Cat. code	Component	Qty
ESL57103	Universal Clamp With Bosshead \varnothing 70 mm	2 pcs
ESL57578	Alcohol Thermometer -10°C - 110°C	1 pc

Supporting Tools

For detailed information, please refer to page 70 - 73.

Cat. code	Component	Qty
ESP60751	Power Supply	1 pc
ESP 45	Analog Multimeter	1 pc
ESP59449	Ammeter/Voltmetre 2-1	2 pcs



LP 10 Ohm's Law



LP 28 Electric Generator





Electricity and Magnetism Kit ESP59118

- The apparatuses are precisely designed for easier experiment setup and successful result.
- The guide book consists of 45 experiments.

Component List

Consists of 47 components, packed in a plastic injection moulding box.
Dimensions: 61 × 44 × 16 cm. Weight : 7.95 kg.

Cat. code	Component	Qty	Cat. code	Component	Qty
ESP332559 01 01	Potentiometer, 5r, W50 Resistor	1 pc	PS 000314	Connecting Leads, 500 mm, Blue	2 pcs
ESP 359 02	100 Ohm, 5 W Resistor	1 pc	PS 000316	Connecting Leads, 500 mm, Yellow	2 pcs
ESP 351 07	500 Ohm, 5 W Resistor	1 pc	PEF 331	U and I core	1 pc
ESP 403 01	5 μF, 50 V Capacitor	1 pc	PEF 355	Coil with 150 turns	1 pc
ESP 403 02	10 μF, 50 V Capacitor	1 pc	PEF 356	Coil with 500 turns	1 pc
ESP 504	Lamp Holder	3 pcs	PEF 357	Coil with 1000 turns	1 pc
ESP 502	SPST Switch	1 pc	PEF 333 01	Base for Aluminum disc	2 pcs
ESP 502	SPST Switch	2 pcs	PEF 332	Solid Iron Core	1 pc
ESP 501	Connector Box	1 pc	PEF 333 02	Aluminum Disc and Axle	1 pc
ESP60750	Power Supply 5 A, 12 V	1 pc	PEF 331 04	U-Core Foot	1 pc
ESP 221 01	Cell Holder	2 pcs	GME 240 03	Digital Multimeter, DT 9205A	3 pcs
ESP 000306	Connecting Leads, 250 mm, Yellow	3 pcs	FLS 20.14/113	Bar Magnet, ALNICO, Red-Blue	1 pc
ESP 000303	Connecting Leads, 250 mm, Blue	3 pcs	PEF 291	Circular Conductor	1 pc
ESP57915	Connecting Leads, 500 mm, Black	1 pc	PEF 290	Straight Conductor	1 pc
ESP57914	Connecting Leads, 500 mm, Red	1 pc	PEF 292	Solenoid Conductor	1 pc
			FLS 20.30/125	Sprinkler Iron Filling	1 pc



Physics Experiment Kit

Cat. code	Component	Qty
PEF 320	Plotting Compasses, Plastic	10 pcs
KAL 70/025-05	2.5 V, 0.5 A E10 Lamp Bulb E10	1 pack
KAL 70/120-50	12 V, 3 W E10 Lamp Bulb	10 pcs
PEO 483 04	Copper Wire, \varnothing 0.35mm	1 pc
PEO 481 04	Constantan Wire, \varnothing 0.35 mm	1 pc
KAL 92/200	Fuse Wire	1 pc
GLA 015	Pin	4 pcs
GLA 016	Paper Clips	2 pcs
PEO 460 02	Alligator Clips with Plug, Black & Red	4 pcs
PEO 460 01	Alligator Clips with Socket, Black & Red	4 pcs
PED 135 02	Copper Electrode	1 pc
PED 130 02	Zinc Electrode	1 pc
PED 132 02	Conductivity Plate	2 pcs
PEF 333 03	Thompson's Ring	1 pc
FMA 58	Compass	1 pc

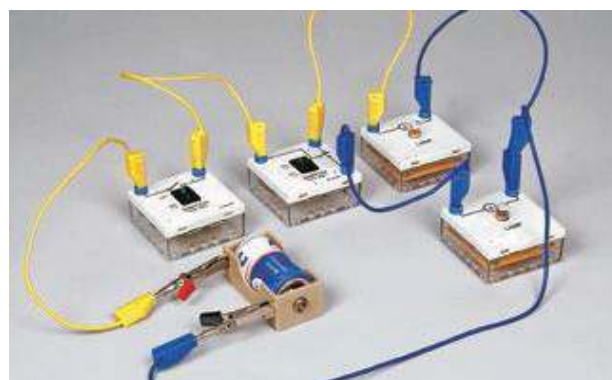
Experiment Topics

Fundamental Principle

- LU-1 Simple Circuit
- LU-2 One Way and Two Way Single Pole Switches
- LU-3 Circuit to Turn on a Lamp From Two
- LU-4 Switches Measuring Voltage. The Voltmeter
- LU-5 I Measuring Voltage. The Voltmeter II
- LU-6 Measuring Current. The Ammeter
- LU-7 Conductor and Non Conductors Conducting
- LU-8 and Non Conducting Liquids I Conducting
- LU-9 and Non Conducting Liquids II

Electric Resistance

- LU-10 Ohm's Law
- LU-11 Using Ohm's Law to Determine Resistances The
- LU-12 Resistances of a Lamp
- LU-13 Lamps in Series and Short Circuit
- LU-14 Resistors in Series
- LU-14a Resistors in Series II Lamps
- LU-15 in Parallel Resistors In
- LU-16 Parallel
- LU-17 Combined Series and Parallel Connection of Resistors
- LU-18 Internal Resistance of Dry Cell
- LU-19 The Voltage Divider
- LU-20 The Potentiometer as Voltage Divider
- LU-21 Rheostat (Variable Resistor)



LU-2 One Way and Two Way Single Pole Switches



LU-16 Resistors In Parallel



LU-33 Electromagnets



LU-43 Thompson's Ring



Physics Experiment Kit /

Electrical Energy and Power

- LU-22 Heat Energy from Electric Energy
- LU-23 Light Energy from Electric Energy
- LU-24 Making a Fuse
- LU-25 Power in Electric Circuit
- LU-26 Heater
- LU-27 Electric Energy Consumed by a Water Heater

Electrochemistry and Capacitor

- LU-28 Voltage Generator by Metals Immersed in Electrolyte Solution
- LU-29 Capacitors

Electromagnet

- LU-30 Magnetic Field Around a Straight Wire
- LU-31 Wire Magnetic Field Around a Circular Wire
- LU-32 Circular Wire Magnetic Field Around a Solenoid
- LU-33 Electromagnets

Electromagnetic Induction

- LU-34 Electromagnetic Induction
- LU-35 Electromagnetic Induction II
- LU-36 Laminated and Not Laminated Iron Core
- LU-37 Useful Eddy Current
- LU-38 The Transformer

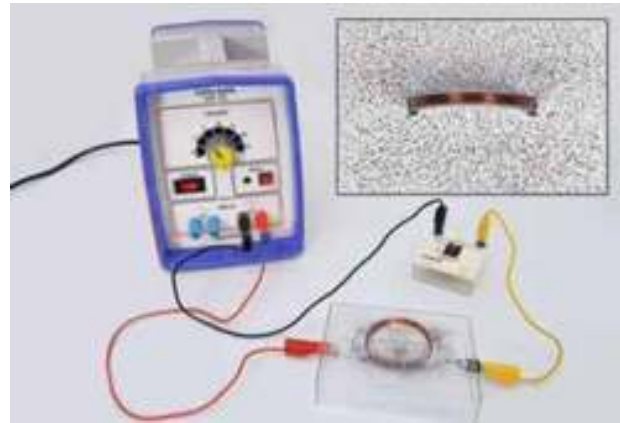
AC Circuit

- LU-39 Alternating Voltage and Current
- LU-40 Capacitive Reactance
- LU-41 Inductive Reactance
- LU-42 AC Magnetizing Current
- LU-43 Thompson's Ring
- LU-44 RC and RL Series in AC Circuit. Phase Difference

Component Details

Core and Coil

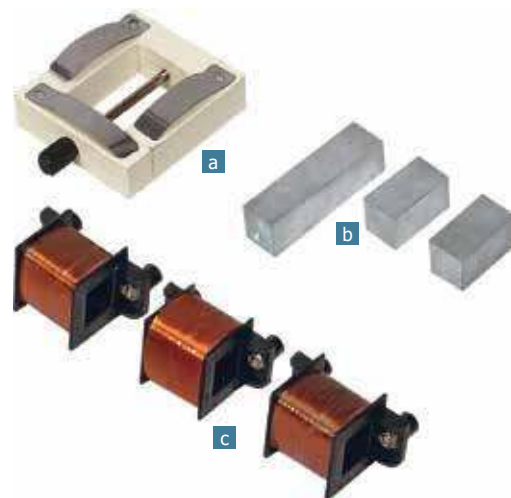
- a. Set of I and U core (ESP 331) is laminated iron core, completed with lock bolt and spring plate to lock the coil.
- b. Set of solid iron core (ESP 332) is non laminated solid iron core, consisting of 1 long I core and 2 short I cores.
- c. The 150 turns (ESP 355), 500 turns (ESP 356), and 1000 turns (ESP 357) coils can be combined to produce a model of step-up and step-down transformer.



LU-31 Magnetic Field Around a Circular Wire



LU-28 Voltage Generator by Metals Immersed in Electrolyte Solution



Section Box Component

The components are mounted on a plastic house with 4 mm socket. These are connected using a Connecting Leads to form a circuit.

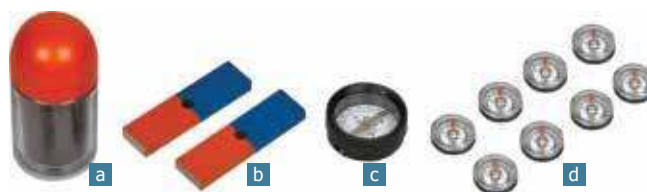
Plastic house: 64 × 64 × 28 mm

- Potentiometer, 50 Ω (PEO 325 01)
- Resistor, 50 Ω (PEO 359 01)
- Resistor 100 Ω (PEO 359 02)
- Resistor 500 Ω (PEO 351 07)
- Capacitor 5 micro F (PEO 403 01)
- Capacitor 10 micro F (PEO 403 02)
- Lamp holder (PEO 504)
- Switch, SPST (PEO 502)
- Switch, SPDT (PEO 503)
- Connecting box (PEO 501)



Magnetic Field Observation Tools

- Iron powder (ESP 20.30/125).
- Alnico bar magnet (ESP 20.14/113).
- Compass (ESP 58).
- Plotting compass (ESP 320).



Battery Holder (ESL57901)

This is the holder for D sized battery, designed to build series and parallel connection.



Conductor and Solenoid

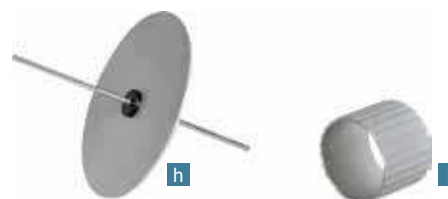
These are to observe the magnetic field on powered conductor. These tools are mounted on transparent box to put on an overhead projector to get enlarged view of the produced magnetic field pattern.

- Straight conductor (PEF 290).
- Circular conductor (PEF 291).
- Solenoid (PEF 292).



Aluminum Disc with Axle and Thompson Ring

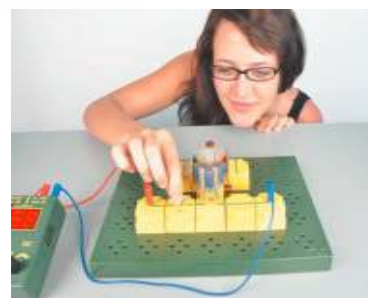
- Aluminum disc with axle (PEF 333 02): disc diameter is 70 mm, 100 mm axle length, used for Eddy current concept experiment.
- Thompson ring (PEF 333 03): 32 mm diameter, 25 mm long, used for Lenz's Law concept experiment.



Connecting Cable

- Fibrous cables with 4 mm banana plugs.
- Red and black colored cables are used for power supply connection. Yellow and blue colored cables are used for component connection in a circuit.
- Available in the length of 250 and 500 mm.





Student Electromagnetism Kit

Kit consisting of:

- 1x PIB (Plug in Board) with heating coil
- 1x PIB glow lamp
- 1x PIB pushbutton
- 1x Iron core solid, L=50 mm
- 1x Contact pin SE
- 2x Pole lamination SE, 60 x 25 mm
- 2x Commutator brush
- 1x Magnet holder
- 1x Commutator disc
- 1x Collecting ring
- disc 1x Bimetallic strip
- 1x Flat spring steel, 0.2 mm
- 1x Flat spring brass
- 1x PIB motor
- 1x PIB for coil 800 turns
- 1x PIB for coil with 27800 turns
- 1x Coil with 800 turns, blue
- 1x Coil 2 x 800 turns, red
- 1x Iron core laminated
- 2x Bearing pin

Storage:

- 1x Box insert
- Electromagnetism 1x Storage box II mini, with cover, Box - insert plan with 2 labels

Experiments :

3. THERMAL ENERGY FROM ELECTRICAL ENERGY ELS
 - 3.6 Bimetal fuse
 - ELS 3.7 Bimetallic thermostat
 - ELS 3.8 Bimetallic fire alarm
4. WORK AND POWER ELS
 - 4.1.1 The power of an electric motor
6. ELECTROMAGNETISM ELS
 - 6.1 Electrical current generates a magnetic field
 - ELS 6.2 The magnetic field of a coil
 - ELS 6.3 A magnetically manipulated switch
 - ELS 6.4 A relay
 - ELS 6.5 Relay with operating point and normal contact
 - ELS 6.6 Self-opening switches
 - ELS 6.7 An AC buzzer
 - ELS 6.8 Model of a magnetic fuse
7. KINETIC ENERGY FROM ELECTRIC ENERGY ELS
 - 7.1 Electricity used to generate motion
 - ELS 7.1.1 Lorentz force
 - 7.2 Principle of the electric motor
 - 7.3 Model of the electric motor
 - ELS 7.3.1 Direct current motor
 - ELS 7.6 Model of a moving iron measuring instrument

8. ELECTROMAGNETIC INDUCTION

- ELS 8.1 Induction
 - ELS 8.1.1 Induced electromotive force
- ELS 8.2 Principle of a generator
 - ELS 8.3 The AC generator (internal pole generator)
 - ELS 8.4 The AC generator (external pole generator)
 - ELS 8.5 The DC generator
 - ELS 8.6 Generators with electromagnets
 - ELS 8.6.1 Internal pole generator with electromagnet
 - ELS 8.7 Induction by DC
 - ELS 8.8 Transformer
 - ELS 8.9 Transformer 1:1
 - ELS 8.10 Transformer not under load
 - ELS 8.11 Current intensity is also transformed
 - ELS 8.12 Coils under DC
 - ELS 8.13 Cut-out peaks due to self-induction
 - ELS 8.13.1 Lenz's Law
 - ELS 8.13.2 Braking effect due to self-induction
 - ELS 8.14 Coils under AC
 - ELS 8.15 AC resistance of a coil
 - ELS 8.16 Resistance and inductance in AC

Important Note :

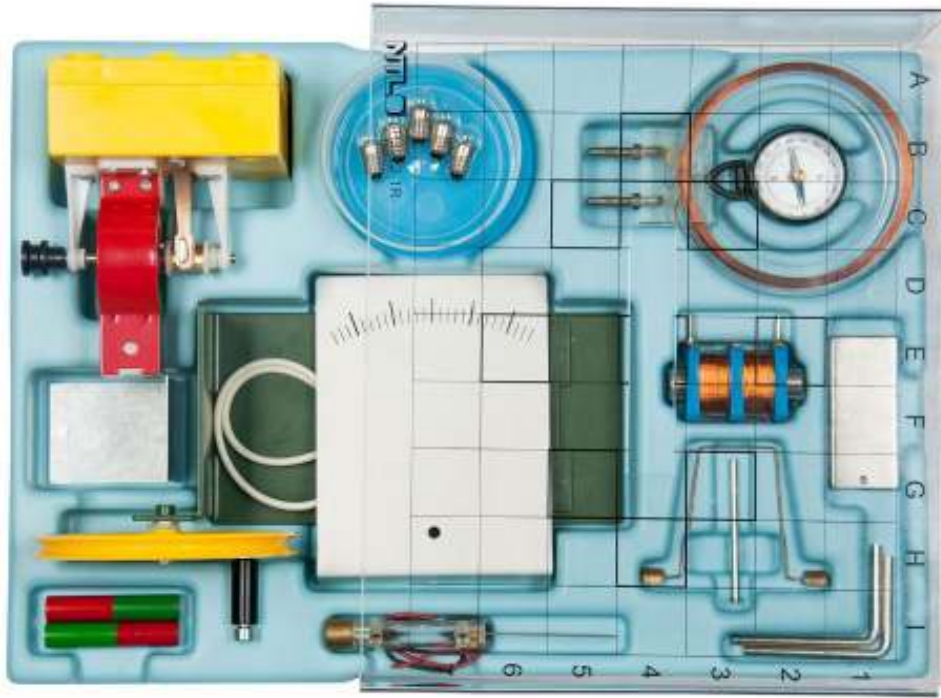
to do the above written experiments you will need to order Accessories and 2 additional kits :

Student Magnetism kit # ESP59080

And the Student Electricity kit # ESP59110

ESP59119





Student Electrodynamics Kit

Kit consisting of:

- 1x Axis for moving coil
- 1x Pointer for moving coil
- 1x Pole lamination , 60 x 25 mm
- 1x Motor /Generator

Model

- 2x Bar Magnet, AlNiCo, D=10 mm, L=50 mm
- 5x Light bulb, 4 V/40 mA, E10

- 1x Moving coil with hole, blue
- 1x Iron core solid, L=50 mm

Electromagnetic swing

- 2x Electrode, right angled
- 1x Holder for pocket compass
- 1x Induction coil
- 1x Pocket compass
- 1x Scale for moving coil

Storage

- 1x Box insert Electrodynamics
- 1x Storage box II small, with cover, Box -insert plan with 2 labels

Experiments :

MAGNETIC FIELD OF A COIL

- EMS 1.1 The magnetic field and its field lines around a powered coil
- EMS 1.2 The influence of the coil current on the direction

of the magnetic field

- EMS 1.3 Relation between amperage and the tangent

of the deflection angle

THE MAGNETIC FIELD OF THE EARTH EMS

- 2.1 Determining the magnetic field force of a coil and defining the horizontal component of the earth's magnetic field

KINETIC ENERGY FROM ELECTRIC ENERGY

- EMS 3.1 The basis for electric motor and generator as an interaction
- EMS 3.2 Current flow and deflection of a current-carrying conductor

in a magnetic field ("right-hand rule")

- EMS 3.3 Coil in a magnetic field (rotating-coil device)

MOTOR / GENERATOR (COMPACT MODEL)

- EMS 4.1 Simple DC motor
- EMS 4.2 Series motor
- EMS 4.3 Shunt-wound motor
- EMS 4.4 DC generator - external pole generator

ESP59120

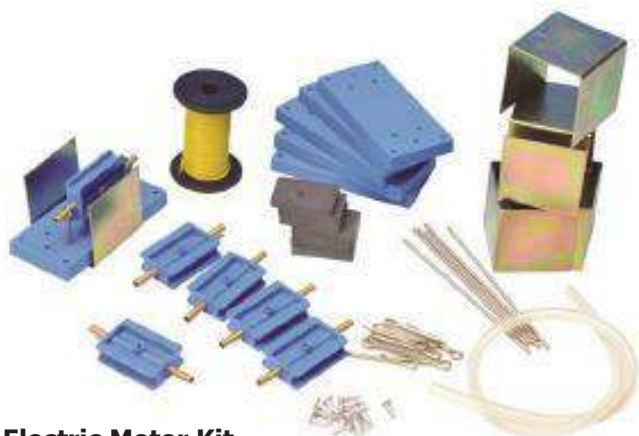




Electromagnetic Kit Simple

Comprises of 8 ticonal magnets, 8 magnadur magnets, 4 steel yokes, 4 plotting compasses, 4 formers of compasses, 1 bottle fine iron filling (approx. 500g), 4 each double C-cores, 4 clips for C-cores, 2 aluminium rings, 2 split aluminium rings, 4 support bases, 4 armature with axle rods, 8 split pins, 24 rivets, 1 length rubber tubing, 4 formers for coils, 2 rolls of cello tapes, 4 reel of copper wire, 4 sheets plain postcards, 1 reel white cotton, 4 each carbon resistors of 10 ohm & 10 ohms, 8 flash lamp bulbs, 5 neon bulbs, 8 M.E.S. bulb holders, 1 wooden clamp and 4 wooden rods

ESP59092



Electric Motor Kit

the kit comprises all the part required to build 6 model motors as in the electromagnetic kit. Each kit contains 12 pieces of magnets, 6 pieces of armatures, 6 pieces of mild steel yokes, 6 pieces of support bases, 6 pieces of shaft, 24 pieces of rivets, 12 pieces of split pins, 1 reel of 26 s.w.g. PVC tinned copper wire, 2 reels of cello tape, 300 mm rubber tubing of 3 mm bore.

ESP59126

Chart for Electromagnetism

ESP59121

NEW



Audio Frequency Amplifier

Amplifier one channel which is equipped with microphone amplifier and major output regulator.

- Mode/power output : Mono/10 W
- Input impedance (IN) : 600 ohm
- Output impedance : 8 ohm
- Working voltage amplifier : ± 18 VDC/220 VAC
- Features : Microphone mode (Condensator/Dynamic), MIC Input, Volume Control, Power switch, Fuse 0.75 A, Connecting cable AC, AC connector selector, and Output
- Size : Overall 185 x 130 x 75 mm.

ESP60298

NEW



Power, Work and Efficiency Kit

Experiments

- Electric energy transfer
- Power consumption of light bulbs
- Power of light bulbs
- Power of a motor
- Parallel connection of electrical loads
- Series connection of electrical loads
- Model of a small electric stove
- Model of a small cooling plate
- Heating or cooling by electrical work
- Mechanical work
- Mechanical work by electrical power
- Comparing mechanical work with electrical work
- A special electrical brake
- Hand generator with controller
- Gear wheel for hand generator (spare) 1
- Hand motor with controller and pulley 3
- Connecting lead, 25 cm, black, SE 4
- Connecting lead, 10 cm, black, SE 1
- BC Lamp socket E 10, triple 2
- Filament light bulb, 6 V/0.1 A, E10 2
- Sample box with lid, plastics, 30 ml, 35x35x33mm 5
- Filament light bulb, 6 V/0.3 A, E10 1
- Double socket, insulated, black 1
- Double socket, insulated, red 1
- Sample box with lid, plastics, 80 ml, 50x50x40mm 2
- Filament light bulb, 6 V/0.5 A, E10 1
- Cord, 150 cm, with loop 5
- Weight on hook 100 g, plated 1
- Heating spiral, SE
- Peltier element with 2 plugs
- Dynamometer 2 N, transparent 1
- Labels adhesive, pack
- Storage: 1 - Box insert Power, Work and Efficiency 1
- Storage box II small, with cover
- Box insert plan with 2 labels"



ESP59127

Bridge Rectifier



Bridge Rectifier consists of four diodes connected in a bridge circuit. The most common application of this circuit is the conversion of alternating current (AC) input into direct current (DC) output. Available in three current ratings

The unit has a circuit diagram printed so that student may gain an appreciation of the importance of diodes and how they can rectify alternating current to direct current.

Current : 5 Amp / 100 V

ESP59122





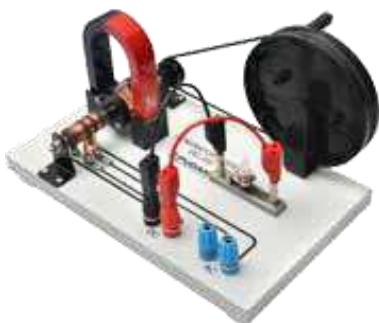
Electrical Motor

Part of Electricity Kit. Dimension 6.5cm (L) x 2.80cm (W) x 8.20cm (H). Weight 0.118kg

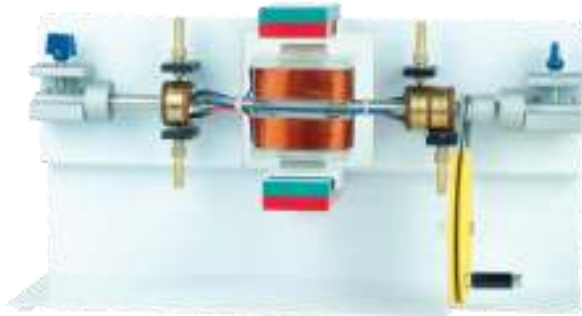
ESP59123

Generator Model

This generator model can be used to show the motion of energy transferred into electrical power or vice versa. This AC / DC generator model is hand operated. Exposed construction to show the working mechanism. Magnetic field comes from removable U magnet. Terminals are 4mm screwed sockets. The whole components are mounted on wooden base, dimension 25 x 25 cm.



ESP59132



Motor - Generator unit, Demonstrator

Large, ready-to-use working model of a motor / generator. Thanks to the open front design, students can clearly see how the parts of the model work even from a large distance. Power is supplied by elastic carbon brushes on the commutator or slip rings. The removable rotor (length: 356 mm) runs on two ball bearings. On the bottom there is a large drive pulley with a crank and belt. Comes with two plastic-coated plate magnets, 82 x 42 x 18 mm.

Dimensions : 360 x 110 x 180 mm

ESP59131



Electric Motor Simple

This simple motor kit is easy to build, and demonstrates the basic principles of electromagnetism. The directions are complete, easy-to-follow, and include a short explanation of the working of the motor. Battery not included. Product contains a small magnet. Magnets and metal objects sticking together inside a body can cause serious damage. Seek medical help if a magnet is swallowed. Grades 3+

ESP59125



Electric Motor

An electric motor model with commutator. All parts are visible including the magnet. It runs on 1.5 - 6 V DC supply. Complete with 4mm socket terminals.

Dimensions : (L) 11.5 x (W) 7.5 x (H) 3.00cm

Weight : 0.058 kg

ESP59124

Spare Belt for Motor

ESP59133



Mini Motor DC

This little yet powerful motor is ideal for hundreds of electrical experiments and projects.

ESP59128 Voltage requirements : 1.5V ~ 4.5V, 0.2A

ESP59129 Voltage requirements : 3V ~ 6V, 0.2A

ESP59130 Voltage requirements : 6V ~ 12V, 0.2A



Demo Transformer Basic Set

ESP59134



Demo Transformer Student Set

These high-quality coils and laminated iron cores provide an effective introduction to electromagnetic theory. Purchase them individually or as a complete set. The coils are color-coded and each coil is labeled with the number of turns and the direction of the winding. Use them to investigate: Electromagnetism: Show how the magnetic field can be increased by increasing the current, by adding an iron core, or by using a coil with more turns.

ESP59134ST





U And I Core

Used for assembly of electromagnetic model for several applications such as transformer, generator, motor, relay, counter, etc.

Dimensions : 76 x 18 x 115 mm (assembled), Material: Dynamo lamination sheet, Consists of U and I core, completed with clamping screw, **Dimensions** : (L) 10.50 x (W) 7.00 x (H) 2.00cm

ESP59135

**COIL Size : Overall
56 x 48 x 38mm**

Hole: 34 x 23mm

Used to basic principles transformer alternating current (AC) and various experiments in both electromagnetic current (DC). It has smaller electrical currents
Material: Coil holder made of plastic



ESP59139 1200 TURNS **Dimensions** : (L) 6.10 x (W) 5.00 x (H) 4.00cm, **Weight** : 0.160kg

ESP59140 3600 TURNS **Dimensions** : (L) 5.40 x (W) 4.30 x (H) 3.30cm, **Weight** : 0.045kg

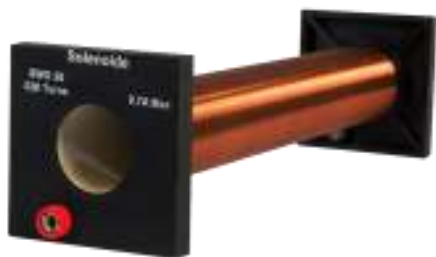
Core Clamp, Demountable

This clamp is used to clamp together the I and U cores and the coils. Overall

Dimensions : 200 x 190 x 160mm
Material: - Body : Cast iron, - Locking bolts: Brass plated
EduScience, High clamping jaws can be adjusted as needed, Used with U and I Core, Demountable and Coils Demountable ,
Dimensions : (L) 19.00 x (W) 20.00 x (H) 15.50cm



ESP59152



Solenoid

Diameter 50 mm 270 turns wire 1.25 mm in diameter. Max. Current : 6A Power Supply on 2 safety sockets. Length 370 mm

ESP59153/270



COIL Size: 64 x 53x 40mm

Copper wire coil on hard plastic base with 4mm plug terminals to mounted on Assembly Board

Can be mounted on U-core and I-core

Can be installed on the assembly board and assembly with U-I core built trafo with voltage comparator same with winding ratio

Plastic base is marked with coil turn direction and number of turns

Dimensions : (L) 6.50 x (W) 4.00 x (H) 6.00

ESP59136 1000 TURNS Copper wire Dia 0.5mm, **Weight** : 0.190 kg

ESP59137 250 TURNS Copper wire Dia 0.9mm , **Weight** : 0.116 kg

ESP59138 500 TURNS Copper wire Dia 0.5mm , **Weight** : 0.116 kg

Coil , Demountable Size approx. 108 x 71 x 81mm

Used to basic principles transformer alternating current (AC) and various experiments in both electromagnetic direct current (DC). The body coil using plastic Complete with 4mm socket terminal used in conjunction with the Core Clamp (ESP59152) and The Cores



	Turns, Demountable	Wire: Dia	Weight wire
ESP59141	120	1.8mm	450gr
ESP59142	300	1.2mm	500gr
ESP59143	1000	0.8mm	760gr
ESP59144	2400	0.5mm	700gr
ESP59145	3600	0.4mm	850gr
ESP59146	60-0-60	1.8mm	450gr
ESP59147	120-0-120	1.2mm	395gr
ESP59148	500-0-125	1.0mm	750gr
ESP59149	1200-0-1200	0.5mm	700gr
ESP59150	1500-0-500	0.6mm	880gr
ESP59151	5000-0-250	0.35mm	750gr



Solenoid Multi Turns

made of Two rollings Ø 50mm of copper wire Ø1mm enameled 200 turns isolated on the same support. Intermediate outputs (blue sockets) 5, 10, 20, 30, 50, 70 and 100 turns. ;Max. intensity: 7A.- ;can be used to Perform the following experiments :

- Measures of magnetic fields according to different parameters
- Magnetic field formula

ESP59153



Faradays coil

To show electromagnetic induction generated secondary coil by variation of current in a primary coil
The primary coil

Dimensions : dia 24 x 60mm

The primary coil has 43 windings of copper wire which can carry a current of up to 5A and has a resistance of 0.15 ohm

The second coils has 1300 windings of copper wire which can carry a current of 0.2A and has resistance of 75 ohm

Provided with a soft iron core measuring 120 x dia 11mm

Dimension: (L) 10.00 x (W) 10.00 x (H) 14.00cm

Weight: 0.349 kg



ESP59154

Current Balance Apparatus

Very clear, robust and compact model of a current balance for determining the force of a current-carrying straight conductor in a homogeneous magnetic field (Lorentz force), as a function of the conductor length and the current intensity;

electrical conductors with single and double cross-section, mounted on three

safety sockets, fixed in a transparent retaining bracket.

Conductor cross-section: 8x2 mm, Conductor length: 35 mm each

Strong block magnet (80x40x15 mm) with two pairs of pole plates to generate different

homogeneous magnetic fields, embedded in a hard foam plate.

Dimensions: 110x100x135 mm, Mass: approx. 600 g

Additionally required: ESL57662

digital balance 06, 500/0,01 g



NEW

ESP59155

Induction Coil, Superior

This induction coil is capable of producing a spark with an input of 6 to 12 V DC and is therefore ideal for use with vacuum tubes, audiometers etc. A fully adjustable vibrator system is incorporated and spark suppression capacitors are housed

in the base. A pair of pointer electrodes are supplied with the instrument. Pointer electrode have an insulating handle for adjustment of the spark gap. Low voltage input is via a pair of mounted 4 mm Sockets. Spark 25mm.



ESP59158

Induction Coil 500 Turns

Coil 500 Turns, Use to connect with connecting lead, Overall Dimensions : 64 x 53 x 40mm, Copper wire dia. 0.5mm coil on hard plastic base with 4mm socket, Plastic base is marked with coil turn direction and number of turns Can be mounted on U-core and I-core

Dimensions : 6.50cm (L) x 4.00cm (W) x 6.00cm (H)



ESP59159

Copper Wire Od 0.6 mm, 15 m

Copper Wire OD 0.6 mm, 15 m, Wire

Dimensions : 0.6mm length 15m, Wire spool: size 47 x 40 mm, Material: Enamelled copper wire ;Wire spool: Plastic, Wire wrapped around at spool



ESP59161

Primary And Secondary Coil

This primary-secondary coil is ideal for studying electricity and magnetism in the physics classroom. It is also an excellent demonstration induction coil that is remarkably easy to use. Consisting of two wire coils and one soft iron core, it features a primary (inner) coil heavy wire and a secondary (outer) coil of fine wire. Both coils



feature binding posts attached to sturdy plastic mountings which are non-metallic for maximum efficiency, Use requires battery, galvanometer, and switch. Grades 6-12.

ESP59156

Induction Coil (100 mm)

This is a device that uses a DC current as a power source and boosts the voltage induced by a contact-less oscillator to a high voltage by a high- voltage coil.

- The +, - polarity of the second high voltage can be changed and the frequency can be adjusted.



- Can be used as a power source for spectral tube, vacuum discharge tube creek tube, etc., and can prevent damage to pipes used as stable voltage discharge of DC. Type B: AC220V, DC12V, detector (discharge rod) included

Function: Frequency control, polarity switching, discharge distance Max. 100 mm ; Size 300*300*160mm 4.8Kg

ESP59157

NEW



Helmholtz coils

Consist of Two flat mobile coils NOf 100 copper turns (5layers of 20 turns) on steady metallic support graduated. Variable gap of coils until 240 mm. Movable device for teslometric probe.

Max. intensity : 5A. ·Used for following experiments:

- Magnetic fields measures- Ampere's theorem-··Determination terrestrial magnetic fieldol

ESP59160

NEW



Helmholtz coils on Base

Helmholtz coils 400 turns of copper wire are mounted on former of about 150 mm diameter , 4 mm terminals , the max current in the coil is 1A to avoid overheating , min max distance coil can be a part 1.75" to 12" , direction of current marked on each coi

ESP59164





Student Electrostatic Kit

Kit consisting of:

- 2x Electroscope 1x Acrylic bar 1x Plastics bar
- 1x Plastics bar, with drilling 1x Polyethylene rubber pad 1x Aluminium bar
- 1x Acrylic bar, with drilling 1x Fluorescent lamp
- 2x Insulating block with socket 1x Plug pin with needle
- 2x Aluminium-stripe 1x Faraday beaker 1x Beaker glass

Storage:

- 1x Box insert Electrostatics,
- 1x Storage box II, mini, with cover, Box - insert plan with 2 labels

ESP59177



Junior High School

Senior High School



Advantages

- Electroscope is using aluminium sheet. The frame is constructed with aluminium material which is mounted on isolated plastic, there are open-able glass windows. There also 4 mm socket for grounding. There is a 0 - 90 degree graduation.
- There are two detachable electrodes (electroscope head), in different shapes.
- Equipped with components which can be used for electric charges, electric charge interaction, electroscope, electrostatic induction, electrophorus, and many other experiments.

**Electrostatics Kit
ESP59457**

- Electrostatics kit is a set of tools which can be used to do experiment concerning the electrostatic. Electrostatic is produced by rubbing acetate cellulose or polietilen strip with existing wool. This kit is completed with electroscope to test the electric charges.

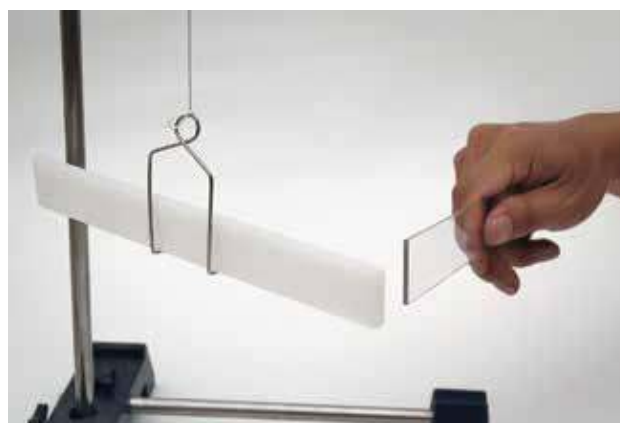


Component List

Cat. code	Component	Description	Qty
a FES 15/01	Electroscope	Size: 110 × 90 × 50 mm; Framework made of aluminum mounted on a plastic base; 4 mm socket for grounding; the scale of 0 - 90 × 10 ° to show the deflection of elektroskop leaves; glass windows can be opened; has two pcs electrodes in the shapes of disc andhook that can be changed.	1 Set
b PES 325	Aluminium Cup	Size: Ø 30 × 55 mm, used to indicate the electrical charge which is located on the outer surface of the conductor.	2 pcs
c PES 160	Politin Bar	Size: 200 × 30 mm, as producer of static electric charges, used in conjunction with woolen cloth.	2 pcs
d PES 180	Cellulose Acetate Bar	Size: 200 × 30 mm, as producer of static electric charges, used in conjunction with woolen cloth.	2 pcs
e PES 310	Switching Charge	Metal disc Ø 13 mm with insulated handle to retrieve or transfer of static electrical charges.	1 pc
f PES 280	Polystyrene Balls, Metal Coat	Ø 19 mm, is used to demonstrate the interaction of electric charge and can be used as elektroskop "pith ball".	4 pcs
g PES 200	Electrophorus	Disc-shaped Ø 45 mm with insulated handle; as a producer of continuous static electric charges; used with polyethylene board.	1 pc
h PES 315	Stirrup	Used to hang the polyethylene blade or acetate cellulose; used together with nylon cord	1 pc
i PES 300	Soft Nylon Cord	To hang polystyrene balls or stirrups	1 pc
j PES 251	Aluminium Sheet	Used for electroscope leaf and the spare.	2 pcs
k PES 160 01	Polytin Board	Size: 75 × 75 × 3 mm; used in conjunction with the electrophorus as the producer of continuous charges	2 pcs
l PES 241 01	Wool Fabric	Size: 200 × 200 mm; used to rub the polyethylene blade and cellulose acetate to produce a static electric charges.	1 pc

Experiment Topics

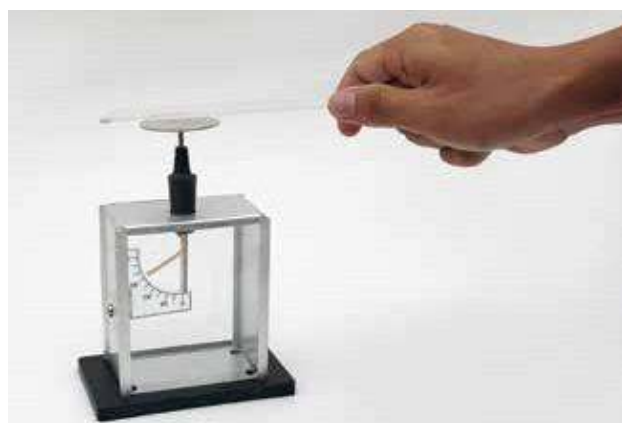
- E1 Plastic Loading Bar
- E2 Electricity Charge Interactions
- E3 Electroscope
- E4 Electrostatic Induction
- E5 Electrophorus
- E6 Electroscope "Pith Ball"
- E7 Charge Distribution



Electricity Charge Interactions



Electrostatic Induction



Electroscope





Electrostatic Experiments Kit

This module enables experiments on electrostatics in combination with a Wimshurst machine or a Van de Graaff generator.

- robustly designed equipment,
- the equipment is stored in predefined places,
- in impact-resistant plastic casing, with lid,

delivery includes experiment manual

Set consisting of:

- 1x Round base with stand
- tube 1x Insulating support
- 1x Paper bush
- 1x Needle on a plug
- 1x Pointed wheel
- 02 1x Flash-board
- 1x Set of chimes
- 1x Capacitor plates with cylinder
- 1x Sphere with metal surface

- 1x Grains for copier-principle
- 1x Connecting leads SE, 50 cm, black
- 1x Connecting leads SE, 75 cm, red
- 1x Pad of paper for copier-principle
- 1x Liquid glue

Storage:

1x Box insert electrostatics Demo, foam

1x Storage box II large, with cover

Experiments:

- Spark discharge
- Point discharge
- Paper bush
- Flash-board
- Set of chimes
- Bouncing ball
- Principle of a copier
- Electrostatic filter

ESP59173

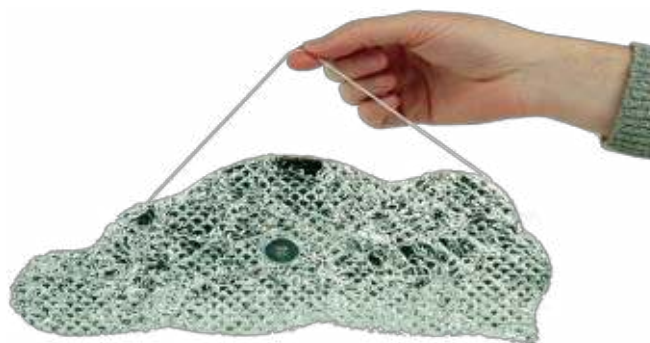


House With Lightning Conductor

To describe the effect and function of a lightning conductor on a house; model of a house with translucent front; fluorescent tube on the inside for indication of the charges and it's derivation; fluorescent tube on the outside with conductor-adapter for demonstrating the conduction of a lightning bolt; placed upright on isolated "meadow" with grounding plug socket.

Dimensions : 200 x 90 x 310 mm

ESP59174



Thundercloud

For demonstrating the discharge of a thundercloud on a house (with lightning conductors); large cloud-model; with 4-mm jack and carrying strap.

Dimensions : approx.. 320 x 150 mm

ESP59175





Laplace Law

To demonstrate the electromagnetism. A pair of powerful magnets in U shape holder. A pair of brass rail with 4mm socket is used for demonstration. A brass axle with two plastic discs is free to roll along the rails and complete the circuit between rails. As the axle placed on the rails near the poles of magnets and power supplied to the rails, the axle repelled and rolls away from the centre of magnetic field along the rails.

ESP59163



High-Voltage Power Supply, 18 KV

Continuously variable high-voltage power supply for experiments in electrostatics. This instrument is easy to transport and can be mounted magnetically; the 20-mm LED display allows readings to be taken even from a distance.

TECHNICAL DATA :

Output: 0 ... + 18 kV, continuously variable, Max. 0.5 mA
Voltage indicator: 7-segment LED display, digit height: 20 mm
Power supply: 4 x 1.5 V Mignon cells (included) or

5.5-mm hollow DC jack for 6 V / 500 mA external power supply P3120-6N
The green ABS plastic case is labelled in yellow, and 10 strong neodymium magnets are inset in the rear panel for mounting the device magnetically.

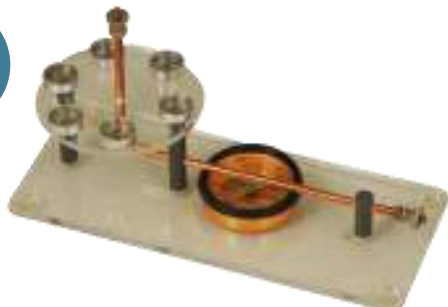
Recommended accessory :

Mains transformer 6V DC / 500 mA
S-shaped assembly platform

Dimensions : approx. 160 x 120 x 45 mm

Weight : approx. 970 g

ESP59166



Ampere Rule Apparatus

Includes: (1) Apparatus, (1) 45mm compass, (6) 16mm compasses
This apparatus allows student to study the magnetic field around a wire. Heavy brass wire with terminals is arranged on a clear plastic base. Also included are 1 each 45 mm compass and 6 each 16 mm compasses. Dimensions 17.5 x 7.5 x 10 cm approximately

ESP59165

Insulating Mat

Rubber mat for insulating persons and apparatus from the ground;

Dimensions : 400 x 400 mm

ESP59169



Paper Bush

For demonstrating how charges of the same polarity repel each other, bush consisting of strips of paper (L = 210 mm, B = 10 mm), mounted on a 4-mm plug

ESP59167

Line Of Streamers

For displaying an electrical field, a number of strips of paper (L = 200 mm, B = 10 mm) attached to a rubber band (L = 200 mm), clasp at the ends of the

band, may be mounted on conducting sphere with a diameter of 200 - 300 mm



ESP59168



Faraday Cage

Metal mesh cage with a hook, used to shield objects from electrical fields

Diameter: 242 mm, height: 320 mm

ESP59188



Pointed Wheel 02

ESP59170





Electroscope student

For electrostatics experiments and for displaying potential;
Aluminium strip with a notch for balancing the robust pointer
(L = 140 mm) made from aluminium; mounted with very little friction;
height: approx. 160 mm

Insulating Block With Socket To be used as "insulated" base, plastic block with 4-mm bush



ESP59171



Electroscope Digital Demo Unit

Demonstration meter for measuring high electrostatic voltages, unlike mechanical electroscopes, this instrument delivers exact and clear quantitative readings as well as the polarity of the charge, the value measured can be frozen using the hold switch, this instrument is easy to transport and can be mounted magnetically, the 26-mm LED display allows readings to be taken from a distance

TECHNICAL DATA :

Display: 2 1/2-digit LED display, digit height 26 mm
Measurement input provided by means of specially insulated 4-mm safety jacks

4-mm safety jack for ground connection
Measuring range: 0 ... 18.0 kV

Reset button for resetting instrument to zero
Accuracy: better than 2 % for 0 ... 10 kV
Throw switch: ON/OFF

Throw switch: measure sample - freeze measured value (hold)
Power supply: 4 x 1.5 V Mignon cells (included) or 5.5-mm hollow DC jack for 6 V/500 mA external power supply (not included)

Case: green ABS plastic with yellow labelling
Dimensions : approx. 160x120x45 mm, **Weight :** approx. 483g

ESP60262

Electroscope, Demo, with Carbon Pointer

For experiments on electrostatics, for displaying and measuring electrical charges and voltages, and for demonstrating influence; large and robust pointer made of carbon fibre, exceptionally well visible, very low-friction tip bearing, mounting bracket of robust sheet steel, with 4-mm special socket for laboratory or safety cable, large scale with 30 graduations (2° each) for quantitative reading of pointer deflection, large plastic base.
Pointer: D=5 mm, L=200 mm - Scale: 120x110 mm
Dimensions: 160x120x285 mm - Mass: approx. 271 g



ESP59181



Electroscope Pointer Type

With a pivoted aluminium pointer moving over the graduated scale. Eliminates problem of breaking of leaves and their re-fixing.

ESP59182



Gold Leaf Electroscope

In sheet metal case, with glass window and fitted with 4 mm earthing socket. A metal disc passes through an insulating polythene bush and ends in a flat support for gold leaf. With a transparent graduated scale to show quantum of deflection. With a supply of leaves and instructions.

ESP59179



Pith Ball Electroscope

With the Pith Ball Electroscope, see pith balls be repulsed and attracted during your electrostatic study

- ESP59185 Type 1
- ESP59186 Type 2



Wimshurt Machine ESP59205

Wimshurst machine is an electrostatic generator using electrostatic induction to multiply the electric charges continuously.

Wimshurst machine can produce ± 300 kV static electricity.

Static electricity is produced by two disc which are rotating in contrary direction, each disc has metal sectors. Two quadrants have different electric charges and two other quadrants have identical electric charges.

A pair of Leyden jars, each has ± 140 or a total of 70 pF capacity, are used to store the produced static electric charges.

Advantages

- Transparent plexiglass material frame, allow exposing the apparatus mechanism.
- Discharging rod can be easily adjusted to change the charge quadrant.
- Run with hand, no electric power required. The crank shaft is supported by ball bearing for smoother rotation.
- Two pieces of electrodes in ball shape equipped with plastic handles to adjust the spark distance.
- There are 4 mm sockets which can be used to connect to other high voltage source if necessary

Weight 1,5 kgs

Specification

Disc 2 pcs plexiglass disc, \varnothing 300 mm with 28 sectors.

Electricity arc distance 100 mm (maximum)

Dimension 390 x 300 x 200 mm

Weight 1,5 kgs



Electrostatic Cloth Rubber

Electrostatic cloth, used for generating static charges for the teaching and the demonstration of electrostatics. **Dimensions** : 250 mm square.

ESP59199 Silk (Viscose)

ESP59201 Woollen

ESP59203 Flannel



Electrostatic arc



Electrostatic Rods

ELECTROSTATIC RODS, are used for generating static charges for the teaching and the demonstration of electrostatics.

Dimensions : 30 0x 10 mm. (Length x Diameter)

ESP59189 Polythene

ESP59191 Nylon

ESP59193 Ebonite

ESP59195 Glass

ESP59197 Perspex



Van de Graaff Generator

ESP59210

ESP59212 & ESP59214

Senior High School

Junior High School

Van de Graaff generator is a static electric machine which produces very high DC voltage by collecting and storing electric charge on the hollowed spherical surface.

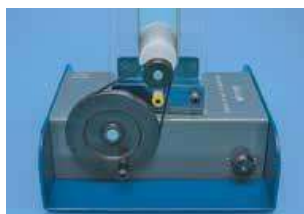
This apparatus can be operated in two ways. First is using a 220 volt AC electric motor which has speed adjuster. Second is directly run by hand. Changing the running method is easily done by displacing the rubber belt from the motor to hand pulley or vice versa.

Advantages

- Hollowed spherical is made of stainless steel in 220 mm diameter.
The upper part can be uninstalled to show the generator work mechanism.
- Hollow spherical capacitance ± 12 pF as the electric charge collector.
- Static electric voltage can reach ± 330 kV. Electric spark can reach 50 - 100 mm distance, depends on the environment humidity.
- On the lower brush there is 4 mm socket which can be used to connect to other high voltage source if necessary.

Specification

Charge collecting sphere diameter	: 220 mm
Spark gap length	: 50 - 100 mm (maximum)
Mains voltage to run motor	: 220V
Dimension	: 630 × 195 × 195 mm
Weight	: 5,3 kgs



Can be manually operated by hand by moving the driving belt position.



Use the additional comb to optimize the electric charge on the Van de Graaff sphere.



50 - 100 mm length of spark, depending on ambient conditions.



When the Electric Whirl is charged, the discharge repulsion at the point can make the wheel rotates freely on the axle.

Component List

All accessories are provided with plug 4 mm system, mounting on dome with 4 mm socket system.

Cat. code	Component	Description	Qty
a ESP59212	Van de Graaff Generator	Static electricity producing machines	1 pc
b ESP 400.01	Conductor Sphere on Rod	Mounted on a 410 mm long, $\varnothing 10$ mm rod with 4 mm safety terminal. The rod is mounted on a base.	1 Set
c ESP 400.02	Perspex Pillar with Metalised Sphere	With suspended metalised sphere, Plexiglas material, $\varnothing 10 \times 150$ mm. This unit can be plugged into the top of the Van de Graaff sphere as a simple "pith ball" electroscope.	1 pc
d ESP 400.03	Faraday's Pail	Aluminum material, $\varnothing 72 \times 100$ mm, complete with 4 mm banana plug.	1 pc
e ESP 400.04	Metalised Spheres in Transparent Cylinder	Plexiglas material, $\varnothing 56 \times 150$ mm with cap and bottom made of aluminum. Fitted with banana plug and 3 pieces of metalised spheres	1 pc



Cat. code	Component	Description	Qty	
f	ESP 400.05	Hair Mode	Several nylon cord, $\varnothing 0,5 \times 200$ mm, bunched at one end on one end of a metal rod with a banana plug at the other end. When plugged into the hole of the charged Van de Graaff sphere, the "hairs" stand up in several direction	1 pc
g	ESP 400.06	Electric Whirl	Aluminum material, $\varnothing 50 \times 0,5$ mm, completed with brass axle, $\varnothing 2 \times 60$ mm, mounted on the plug.	1 pc
h	ESP 400.07	Discharge Ball	Nickel plated brass; mounted on a brass rod $\varnothing 4 \times 120$ mm; nickel plated with insulated; complete with 500 mm length of lead with 4 mm banana plug.	1 pc
i	ESP 400.08	Discharge Pointer	Brass rod nickel plated $\varnothing 3$ mm $\times 150$ mm, for deflecting or blow out a candle flame	1 pc
j	ESP 400.09	Additional Comb	The additional comb is made from aluminum, $92.9 \times 39 \times 17.7$ mm. It is used to increase the electrical charge inside the Van de Graaff sphere.	1 pc
k	ESP 400.18	Neon Lamp 60 V	Mounted on plastic tube with aluminum holder, 13 cm in length	1 pc
l	ESP 400.10	Rubber Belt	Used as the reserve of main rubber belt. Made of special rubber material which can produce static electricity	1 pc



Experiment Topics

- E1 Standing Hairs Electric
- E2 Spark Flying Ball
- E3 Electric Wheel
- E4 Jumping Ball
- E5 Electric Charge
- E6 Detecting Flame of
- E7 Fire Direction is Bend
- E8 Neon Lamp is Glowing



Standing Hairs



Jumping Ball



ESP59210



ESP59214



ESP59212





Van De Graff Generator II

An electrostatic generator using the friction between the outer cylinder and the inner belt

- By rotating the belt, static electricity generated by friction with the outer cylinder is stored in the upper accumulation ball.
- Charged electricity is discharged when it is close to the charging ball on the earth side.
- Aspiration and repulsion of static electricity, human body charging, electric power lines,

It is used in experiments such as charging in air.

- You can adjust the power generation with speed control.

- Built-in speed controller, drying heater charge ball Ø 200mm, charge ball Ø 70mm

Power: AC220V60Hz 60W

Dimensions : 270x230x550mm

ESP59223



Van De Graff Generator With Accessories Irwin

The Irwin Van de Graff generator is designed to be operated by hand (which confirms that the charge generated is independent of mains electricity) or by mains electricity from an additional power source required. This rugged unit will help you give demonstrations that will impress the socks off your students, or at least stand their hair on end. It is ideal for performing all basic electrostatic experiments on a large and spectacular scale! With sparks of 8 cm to as high as 12 to 15 cm, yet a maximum continuous current of just 10 micro-amps, it's quite safe for classroom use. The unit requires minimal assembly when shipped and is supplied with an extra transport belt.

Features

Neon indicator and a helicopter. Rubber drive belt, Silicon main belt, Discharge sphere, Head of hair

Dimensions :

Sphere Diameter 280mm, Overall height 760mm, Base length 380mm, Base depth 230mm, Weight 8kg

ESP59208

NEW



Conductors Metal Spherical

Spherical Metal Conductor, Diameter 5cm, Used for exploring the charge distribution and charge holding capacity of the different shaped conductors and demonstrate the Gauss' Law relating to distribution of charge and dependence of field strength near a conductor on its radius of curvature. Comprises a hollow brass conductors of different shapes mounted on top of insulated pillar on a base.

The conductors are interchangeable on pillars.

ESP59227

NEW



Spare Charge Collecting Belt

This item is a charge collecting belt only and does not include the Van de Graff.

ESP59221

NEW



Lightning Conductor

ESP59231



NEW



Two Plates with Metallized Pith Ball Suspended Between

Useful for exploring the principle of working of capacitance and the relationship between charge, voltage and capacitance.

ESP59235

Hair Model For Van De Graff Generator

A complementary tool in the experiment s Van de Graff. Dimensions :Brass rod with plug : 4 x 50 mm Hairs : 0.3 x 200 mm

Material : Brass and nylon Mounted on the plug Part of Van de Graff Generator, Set.(ESP59210)

Dimensions : (L) 12.00 x (W) 1.00 x (H) 1.00 cm



ESP59218

Additional Comb For Van De Graff Generator

Use for increase the electrical charge on spherical cavity of Van de Graff.

Dimentionis : 92.9 x 39 x 17.7 mm Material : aluminium

Part of Van de Graff Generator, Set (ESP59210)

Dimensions : (L) 0.00 x (W) 0.00 x (H) 0.00 cm

ESP59220



Plasma Ball 8 inches

A large, 8" diameter Plasma ball that looks fantastic in a darkened room. The unit may be used for illustrating Ehv, capacitance effects, voltage breakdown of gases, differing energy states etc. Used with our technicians' friend tester you can demonstrate electric field strength. Our plasma ball is a miniature Tesla coil. Inside the ball is a coil of wires that have electrons going through them oscillating at a very high frequency. This shakes the atoms around the wires so hard that their electrons start to fall off! Inside the glass, the globe has a partial vacuum. This just means that some of the air has been sucked out. Because there is not as much air in there, it is easier to make electric sparks that can be seen.

The electrons then travel out into the air from the glass ball. We know this because the plasma ball lights up the light bulb. If you touch the plasma ball, all of the electrons will go through you to the ground. You see only one big spark inside the ball where you put your hand. If you stand on a stool, you are insulated from the ground and get filled with electrons. This means you can light up a fluorescent light bulb!

ESP59232



Plate Condenser (Aepinus Condenser)

Steel plate capacitor used to investigate the relationship between charge, voltage and capacitance, as well as determining the dielectric and electric field constants.

It consists of a fixed and a movable plate on a guide rail. A centimeter scale is used to read the plate spacing. The device comes with four dielectric sample plates made of acrylic, Bakelite, plywood and cardboard. Plate spacing: 0 to150 mm Plate diameter: approx. 149 mm Plate area: 175 cm - Connection: Via 4-mm safety jacks

ESP59234



Electric Field Apparatus

For visual demonstration of electric fields. A transparent plastic base supports a glass dish 90 mm diam. And two 4 mm socket terminals mounted on two insulated pillars with two wire point electrodes, two circular electrodes and two T-shaped electrodes.

ESP59237

NEW



Charging & Discharging Of Capacitor

Charging and discharging of a capacitor can be easily demonstrated by using this kit. A 10000F electrolytic capacitor mounted on a plastic moulded case (140x80x36) mm approx. with a provision for connecting current meter and voltmeter across the capacitor.For selection of charging / discharging, a toggle switch is provided on the base. For precisely measurement of current and voltage across the capacitor, a series resistance is fitted in the circuit to give a time constant of 50 second. Operating voltage for the instrument is 5V DC.

ESP59239

NEW



Electrode Plates

Plates for simple cell, Each plate fitted with a 4mm socket terminal.

- | | | | |
|----------|----------|----------|--------|
| ESP59241 | Zinc | ESP59243 | Copper |
| ESP59242 | Carbon | ESP59244 | Lead |
| ESP59245 | Aluminum | | |



NEW



Carbon Electrode PK/50

LED - Length 10 cm and dia. 5 mm Pack of 50.

ESP59247



Carbon Electrode Holder

Plastic Strip of size 78 x 27 x 5 mm fitted with two crocodile clips with 4 mm sockets.

ESP59248



Galvanometer Spot Reflecting

Suitable for Industrial Kelvin Double Bridge and Senior Kelvin Double Bridge. Galvanometer Resistance 125 ohms Nominal, Sensitivity 15mm scale division ;per micro amp., Time period 2 second, critical damping resistance 1000 ohms and working voltage is 230 Volts. AC. 50 Hz.

ESP59249



Capacitance Substitution Box

Our five-decade capacitance substitution box has been specifically designed for the schools market with its clear display and ease of use. Unit will simulate capacitances from 100pF to 9.9999?F in 100pF steps, Max. Voltage 50V DC, The required capacitance is set by a counter with the value displayed in μF , nF and pF, Output is via 4mm terminals with 4mm sockets, Housed in a sturdy ABS box

Technical Details : Voltage rating 50V DC max. - Capacitance range 100pF to 9.9999?F in 100pF steps Accuracy 10% per decade Residual capacitance 40pF

ESP59278

Capacitance Substitution Box

Our Capacitance Substitution Box provides the easily selection of 12 preferred value capacitors, ranging from 100pF to 0.47 μF . The values range from: 100pF, 220pF, 470pF, 1nF, 2n2, 4n7, 10nF, 22nF, 47nF, 0.1 μF , 0.22 μF and 0.47 μF . All the capacitors offer a maximum voltage rating of 50V (AC or DC), with actual capacitance value tolerances of $\pm 5\%$ to $\pm 10\%$.



The unit is housed in a robust ABS plastic case with rotary selector switch and a pair of 4mm connection sockets. Electrical Supply : 50VAC/DC Maximum - Dimensions : 75 x 100 x 40mm - Mass : 0.15kg - Capacitance Tolerance : $\pm 5\%$ to $\pm 10\%$ - Electrical Connections : 4mm Sockets

ESP-5861-X



National Grid Kit

As this experiment is now featured in the Science curriculum as the 'AC power line at high voltage' we have developed a new, safe form of the experiment that can easily be set up within minutes and clearly shows students the relevant principles of the national grid high voltage transmission system.

Each Kit contains:

- 2 x Transmission/Receiver boxes (clear lid to enable students to investigate wiring)
 - 2 x Lamp holders
 - 2 x 12V 21 watt lamps
 - 1 x Set of "HT" leads with touch-proof connectors
 - 2 x Self-assembly fold-away pylons (display purposes only) Experiment instructions included
- Manufactured in the UK

*An additional Power supply is required to carry out this experiment capable of supplying 12V AC at 5A and 6 connection wires. Our full range of power supplies can be found here.

ESP59268



Pylons Kit

Our additional Pylons pack contains 5 thick card sheets which once cut-out produces 5 pylons to be used in conjunction with our National Grid Kit to give your pupils a clearer explanation on how the experiment works.

ESP59269



NEW



Capacitance Decade Box 10 - 100 pf

All accurate capacitors to serve as laboratory standard, very useful in resonance timing / wave shaping / oscillator experiments, $\pm 5\%$ accuracy. Voltage range 63 V.10 - 100 pf in steps of 10 pf

ESP59277A



Capacitance Decade Box 10 - 100 kpf

All accurate capacitors to serve as laboratory standard, very useful in resonance timing / wave shaping / oscillator experiments, $\pm 5\%$ accuracy. Voltage range 63 V.10 - 100 kpf in steps of 10 kpf"

ESP59277D



Capacitance Decade Box 100 - 1000 pf

All accurate capacitors to serve as laboratory standard, very useful in resonance timing / wave shaping / oscillator experiments, $\pm 5\%$ accuracy. Voltage range 63 V.100 - 1000 pf in steps of 100 pf

ESP59277B



Capacitance Decade Box 0.1 - 1 pf

All accurate capacitors to serve as laboratory standard, very useful in resonance timing / wave shaping / oscillator experiments, $\pm 5\%$ accuracy. Voltage range 63 V.0.1 - 1 pf in steps of 0.1 pf"

ESP59277E



Capacitance Decade Box 1 - 10 kpf

All accurate capacitors to serve as laboratory standard, very useful in resonance timing / wave shaping / oscillator experiments, $\pm 5\%$ accuracy. Voltage range 63 V. 1 - 10 kpf in steps of 1 kpf

ESP59277C

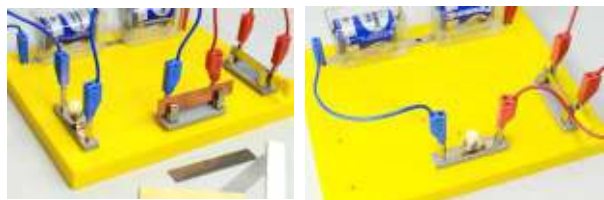


Capacitance Decade Box 1 - 10 pf

All accurate capacitors to serve as laboratory standard, very useful in resonance timing / wave shaping / oscillator experiments, $\pm 5\%$ accuracy. Voltage range 63 V. 1 - 10 pf in steps of 1 pf

ESP59277F





Electricity Simple Kit 2 ,(Set Of 1)

High quality kit, designed for teaching simple electric circuits in Primary Schools. The students will be able to acquire basic knowledge on electricity and the principle of electric power generation. They will also be able to perform experiments with their own ideas.

Experiment topics:

Simple electric circuit. Parallel circuit.

Series circuit.

Electric conductors and non-conductors. Application of electric energy.

Generation of electric energy by a dynamo. Specification:

The kit contains 1 assembly board complete, 1 Switch complete, 2 lamp sockets, 2 Bulbs E 10 2.5V, 2 battery holders Complete (without battery), 3 Cable with Sticker Red, 3 Cable with Sticker Blue, 1 Conductor Holder Complete, 1 Copper-Conductor #1x15x81mm, 1 Aluminum Conductor #1 x 15 x 81 mm, 1 Steel Conductor #1 x 15 x 81mm, 1 Plastic Non Conductor #1 x 15 x 81mm, 1 Wood Non Conductor, 1 Motor complete,

1 wheel complete, 1 wheel Axle Extension, 1 Belt and 1 Nylon Rope 1500mm (L) (no. 12)

Dimensions : (L) 25.00 x (W) 20.00 x (H) 4.50cm

Weight : 0.600kg

ESP59258



Electricity Simple Kit 2 ,(Set Of 10)

High quality kit, designed for teaching simple electric circuits in Primary Schools. The students will be able to acquire basic knowledge on electricity and the principle of electric power generation.

They will also be able to perform experiments with their own ideas.

Consist of :

1 Assembly Board Complete 10 pcs, 2 Switch Complete 10 pcs, 3 Lamp

Socket 20 pcs, 4 Bulb E 10 2.5V 20 pcs, 5 Battery Holder Complete without Battery 20 pcs, 6 Cable with Sticker, Red 30 pcs, 7 Cable with Sticker, Blue 30 pcs, 8 Conductor Holder Complete 10 pcs, 9 Copper-Conductor # 1 x

15 x 81 mm 10 pcs, 10 Aluminium-Conductor # 1 x 15 x 81 mm 10 pcs, 11

Steel-Conductor # 1 x 15 x 81 mm 10 pcs, 12 Plastic Non Conductor # 1 x

15 x 81 mm 10 pcs, 13 Wood Non Conductor 10 pcs, 14 Motor Complete

10 pcs

15 Wheel Complete 10 pcs, 16 Wheel Axle Extension 10 pcs, 17 Belt 10

pcs, 18 Nylon Rope Length 1500 mm (No.12) 10 pcs, 19 Section Box 100

mm 1 pc, 20 Section Box 40 mm 1 pc, 21 Box Corrugated Plastic 420 x 270 x 207 mm, (# 3 mm, Yellow color) 1 pc

Experiment topics :

.Simple electric circuit, Parallel circuit, Series circuit, Electric conductors and non-conductors, Application of electric energy, Generation of electric energy by a dynamo,

Dimensions : (L) 43.00 x (W) 29.00 x (H) 21.00 cm

Weight : 9.316 kg

ESP59259





Resistance Board

inexpensive equipment suitable for student exploration of resistance, length, and cross-sectional area, also serving as a bridge or potentiometer, is available. The 40cm Resistance Board facilitates quantitative investigation of resistance for students. Equipped with 4mm terminals linked by a segment of resistance wire against a scale and a 'jockey', the board enables experimentation. Samples of wire provided include diameters of 0.30mm, 0.44mm, and 0.54mm, facilitating experiments exploring the correlation between resistance and cross-sectional area.



Press Key Switch (Contact Key)

contact key with press knob comprising of plates spring arm with press knob contact stud, plated connecting strip and 2 X 4 mm sockets terminals all mounted on moulded base

Dimn : 100 X 63 X 35 mm

ESP59284



Knife Switch Double throw

Bakelite knife switches Double with easy-to-use 4mm sockets.

ESP59339

NEW



Five Lamps in and Series circuit

Five Lamps in Parallel and Series circuit demonstration is a versatile piece of equipment that can help student figure out the difference between parallel and series circuits, include heavy duty base with 5 bulbs, 8 removable metal bars, and 10 thumb screws, base size : 5"X15", Power supply is needed to energies demonstration

ESP59265



Key/Switch One Way

copper plug key switch includes two, 4mm terminals, and one removable plug (with plastic guard). Fitted on a sturdy base. Useful in classroom physics experiments, and provides an interesting way to complete a circuit in electrical demonstrations. Base measures 3" wide and 2" long. Copper blocks are approximately 0.6" tall. Entire unit stands 1.75" tall. Plug measures 0.75" wide, 0.25" long and 1" tall.

ESP59331

Key/Switch Two way

ESP59331

Key/Switch Three way

ESP59331



Resistor 1 K Ohm, 0.5W

Resistor 1 kOhm, 0.5W, Tolerance: 5%

Component mounted in plastic housing with 4mm plug which protrude downward, Electronic symbol is printed on top cover, used with Assembly board 120 holes and Assembly board 216 holes, Part of Circuit Application Trainer, basic Electricity Trainer and Power Electronic Trainer

ESP59511



Knife Switch Single throw

Knife Switch Single Throw with 2 X 5 mm connecting Sockets

ESP59337



Knife Switch Single Pole Double Throw switch

one Base with 4 mm sockets .

ESP59338

NEW



Lamp Holder with 2 x 4 mm Sockets

Lamp holder : Double contact brass bulb holder mounted on rectangular moulded base, with two 4mm socket terminals, holder for different range of mini bulbs.

ESP59263





Decade Resistance Box

This decade resistance substitution box provides 4 decade ranges as given below and total value 0 to 11110 Ohms with a resolution of 1 Ohm. Each decade is selected using rotary switch. All resistance values are of ±1% tolerance and 2 watts maximum ratings.

ESP59282



Resistance Substitution Box

A 6 decade resistance substitution box ideally suited to school or college use. The box will simulate resistances from 1 ohm to 999,999 ohms in 1 ohm steps.

ESP59280



Resistance Substitution Box

The IPC Resistance Substitution Box provides the easily selection of 11 preferred value carbon resistors, ranging from 100R to 10M.

The values (in ohms) range from: 100R, 330R, 1k, 3k3, 10k, 33k, 100k, 330k, 1M, 3M3 and 10M. All of the resistors offer a power rating of 0.5W continuous and 1W maximum for a short period of time, with an actual resistance value tolerance of ±5% . The unit is housed in a robust ABS plastic case with a rotary selector switch (this switch also has an OFF position) and a pair of 4mm connection sockets.

Electrical Supply : N/A - Dimensions : 98 x 148 x 80mm - Mass : 0.32kg - Resistor Power Rating : 0.5W continuous (1W short periods of time) - Resistance Tolerance : ±5% - Electrical Connections : 4mm Sockets

ESP-5421-X



Resistance Unit

resistance units on a high stability metal film element. Improved and less expensive resistance coil. Accuracy ±1%.

ESP59285	1 OHM	ESP59288	20 OHM
ESP59286	5 OHM	ESP59289	50 OHM
ESP59287	10 OHM	ESP59290	100 OHM

Resistor

Supplied in ABS box of size 95 x 70 x 30 mm, fitted with 4 mm sockets

ESP59294	Resistor 1	Ohms	20W
ESP59295	Resistor 2	Ohms	20W
ESP59296	Resistor 5	Ohms	20W
ESP59297	Resistor 10	Ohms	20W
ESP59298	Resistor 100	Ohms	20W
ESP59299	Resistor 1K	Ohms	20W
ESP59300	Resistor 10K	Ohms	20W



Rheostats, Protected

Rheostats, protected, Single tube, for use with high voltage upto 220V, fitted with 4mm socket terminals, with protected cover.

ESP59303	3 OHM, 12Amp
ESP59304	10 OHM, 8Amp
ESP59305	33 OHM, 4.4Amp
ESP59306	100 OHM, 2.5Amp
ESP59307	330 OHM, 1.4Amp
ESP59308	1000 OHM, 0.8Amp



Rheostats

Rheostat is wound with heavily oxidised constantan wire on a vitreous enameled steel tube. The tube is supported on robust die cast end stands and the heavy duty sliding contact is of phosphor bronze, nickel plated for corrosion resistance, 4 mm terminal post are fitted facilitating external connection conventional 4 mm plug. Resistance 8.5 Ohms, Max. Current 5 Amp.

ESP59309	RHEOSTATS, Economy Open Type 8.5 OHM, 5 Amp
ESP59310	RHEOSTATS, Economy Open Type 16 OHM, 4Amp
ESP59311	RHEOSTATS, Economy Open Type 33 OHM,
ESP59312	RHEOSTATS, Economy Open Type 55 OHM, 0.3 Amp
ESP59313	RHEOSTATS, Economy Open Type 135 OHM, 1.4Amp
ESP59315	RHEOSTATS, Economy Open Type 300 OHM, 0.9 Amp



Potentiometer Wire

A one meter long resistance wire passes over a meter scale and is firmly clamped to stout brass end-plates, on wooden base. Complete with Knife-edge Jockey. Single wire

ESP59317 Single

ESP59318 Double



Wheatstone Bridge

- Measuring device using bridge circuit.
- Built-in multi stage resistors allow proportional measurement of unknown resistance.
- If the proportion between the built-in resistor and the measuring resistor does not match, the galvanometer current will move to the + or - side.

Devices made using this principle

Configuration : Includes resistance for measurement

Measuring range : 1-11110Ωm.

Dimensions : 330x160x120mm

ESP59325



Wheatstone Bridge, One Meter

This substantial bridge had broad, heavily plated brass strips mounted on polished hardwood base. Terminals with 4mm sockets are provided. 24 SWG

Constantine wire is stretched along the top of a meter scale in mm and cm. Complete with Jockey.

ESP59321 Wheatstone Bridge, One Meter-2 Two Gap

ESP59322 Wheatstone Bridge, One Meter-4 Four Gap

ESP59323 Jockey

For Wheatstone bridge and potentiometer work, with moulded ribbed insulating handle, plated-brass contact with locating notch, and a plated-brass terminal with a 4mm socket. **Dimensions :** 95 x 15mm diameter.



Joule & Watt Meter

capable of making direct measurement of electrical energy or power supplied to a load and is therefore a valuable tool for pupil based work as well as simplifying many demonstrations (IPC-1952-M). The direct readings mean that the need for voltmeter, ammeter, stop watches and calculators is eliminated and fast and accurate results can be obtained. The science understanding can therefore be gained from scientific investigations rather than mathematical manipulation, making it ideal for pupil based investigations at GCSE, Standard Grade level and A-level in science and technology courses. Its many uses include experiments with an electrical heater, determination of energy stored in a capacitor, calculating the power supplied by a d.c. source to a resistive load and measurement of the specific latent heat of steam.

The meter is capable of measuring energies from 1mJ to 9999J or power from 1mW to 200W in a.c. or d.c. circuits. Two ranges selected by a switch labelled mJ/mW and J/W are available. The auto-ranging four digit display will give direct readings of energy or power. The maximum current input is 10A. All electrical connections are via 4mm sockets.

Electrical Supply : 220-240VAC, 50-60Hz -Dimensions : 179 x 190 x 85mm overall -Mass : 1.6kg

Max. input voltage : 20VDC, 14VAC (rms) -Input resistance : 2MΩ (No load)
Max. load currents : J/W range = 10A, mJ/mW range = 10mA - Max. energies : J range = 9999J, mJ range = 9999mJ

Max. powers : W range = 200W, mW range = 200mW - Accuracy : Typically ±5% of full scale reading

ESP59402



Joule Meter

Mounted upon wooden base fitted on stand A meter for measuring the power consumption of any mains operated appliance. Rotating disc and digital readout in Kwh., 240 Volts,13 Amp.

ESP59408

Joulemeter, Student Digital

The ES Student Joulemeter is designed specifically for student use. The unit can measure energy from 1 joule to 999,999 joules, with accuracy of 3%, but 1% accuracy is typical. Power is by means of a 9V DC mains adaptor included

ESP59412





Demonstration Meter Scale

A to be used with demonstration meter

ESP59383

0 - 300 V AC VOLTAGE

ESP59385 0 - 15 V AC Voltage

ESP59386 : 5 -0- 5 V DC Voltage

ESP59387 1 - 15 V DC Voltage

ESP59388 : 0 - 1 V DC Voltage

ESP59389 : 2.5 -0 - 2.5 MA DC Current

ESP59390 0 -10MA DC Current

ESP59391 0 - 10 MA AC Current

ESP59392 0 - 100 MA DC Current

ESP59393 0 -1A DC Current

ESP59394 0 - 1 A AC Current

ESP59395 0 - 10A DC Current

ESP59396 0 -10A AC Current



LCR Meter

Features :

32-bit core processor

5-digit 4.3-inch TFT LCD display

2 signal source output impedance: 30 Ω , 100

Ω 100 sets memories for internal storage/save

500 memories for U disk storage/save, supports FAT16 and FAT32

files Save the last parameter settings before power off

Standard interface: RS-232, HANDLER, USB HOST

Optional interface: USB DEVICE, GPIB, headset, FOOT.C foot switch

Specifications:

Test parameter: | Z |, | Y |, C, L, X, B, R, G, D, Q,

Test Signal Frequency:

100Hz, 120Hz, 1kHz, 10kHz Basic Accuracy:

0.15%

Equivalent circuit: Series, Parallel

Mathematical function: Deviation and Percent

Deviation Range mode: Auto, Hold, Manual Selection

Trigger mode: Internal, Manual, External, BUS

Measurement speed: Fast: max.30, Medium: 10, Slow: 3 (times/second) ((?1kHz))

Average times: 1-255

Delay time: 0-60s, step 1ms

Calibration function: Open circuit, Short circuit,

Load Measurement terminal: 5 terminal

Display mode: Direct, %, V/I (monitoring tested voltage and

current) Display: 5 digit 4.3-in LCD display

Meters

LCR Meter Hand Held

Measurement function

Test parameter : Main parameters: L / C / R / Z, Secondary parameters: X / D / Q / θ / ESR

Test signal frequency : 100Hz, 120Hz, 1kHz, 10kHz, 40kHz, 100kHz

Basic accuracy : 0.20%

Electrolytic capacitor measurement : Provided

DCR measurement : 0 to 20M Ω

Equivalent circuit : Series, Parallel

Ranging mode : Auto, Manual

Measurement speed :

Slow: 1 time/sec;

Medium: 2times/sec;

Fast: 4times/sec

Internal DC offset : 0-500mV adjustable, step 1mV

Test level : 0.1V, 0.3V, 0.6V, 1V

Clear function : Open circuit, Short circuit

Comparator function : Comparator limit range 1% to 50% adjustable;

Fixed points 1%, 5%, 10%, 20%

Output impedance : 100 Ω

Deviation function : Compare and display the deviation percentage between the component and the set nominal value.

Measurement display range : L 0.001 μ H - 2000H -C 0..01pF - 20.00mF

R 0.0001 Ω - 20.00M Ω

General Operating environment : 0 $^{\circ}$ C - 40 $^{\circ}$ C, \leq 80%RH

Power source : Lithium battery

Accessories : Kelvin test leads x1 set, Mini USB cable x1pc, power

adapter x1pc, short connection plate x1pc, Banana-crocodile test

leads x1 set, Software CD x1pc, Operation manual x1pc

Dimensions : 90W*188H*33D mm

ESP59404

Measurement Signal:

Output impedance: 30 Ω , 100 Ω

Test level: 0.1V, 0.3V,

1V Test level accuracy:

5%

Measurement display range:

| Z |, R, X: 0.01 M Ω - 99.999 M Ω

| Y |, G, B: 0.0001 μ S - 99.999

μ S C: 0.0001 pF - 9.9999 F

L: 0.0001 H - 999.99 H

D: 0.0001 - 9.9999

Q: 0.0001 - 9999.9

(DEG): -179.99 - 179.99

(RAD): -3.14159 - 3.14159

%: -999.99% - 999.99%

Comparator and interface

Memory: 100 sets memories for internal parameter settings storage/

save; 500 sets for U disk parameter settings storage/save

Standard interface: Standard: RS232, USB

HOST Optional interface: USB device, GPIB

General:

Operating environment: 0 $^{\circ}$ C - 40 $^{\circ}$ C, 80%RH

Power source: 110/220V \approx 10%, 47-63Hz

Power consumption: \approx 30VA

Accessories: 4-terminal Kelvin test clip leads, RS232 cable, power

cord, operation manual

Dimensions : 265W*100H*340D mm

Weight : Approx.3.5kg

ESP59405



Portable Applicant Tester & Checker

(Portable Appliance Tester and Checker). Performs electrical safety tests on portable appliances allowing compliance with EAWA regulations. The unit performs earth bond and insulation tests on both Class 1 and Class 2 appliances, extension leads, IEC and kettle leads etc. The unit is very simple to operate and gives clear, unambiguous pass/fail indications. Complete with test leads, instructions, pass and fail labels, a Tester's Certificate of Inspection and is fitted with moulded mains plug.

A simple to use PAT machine that allows the user to perform Class1 and Class 2 insulation tests, earth bond tests at two different current levels and extension lead tests. The compact unit clearly displays the results via coloured LEDs. A single push button initiates all the tests in a 5-second cycle.

Class 1 Earth Bond test -Class 1 and Class 2 Electrical Insulation test Mains switch and circuitry test -Extension Lead test IEC lead test -Results are displayed by coloured LEDs. Timed test period. -Comes complete with 100 pass labels, 50 fail labels, Earth Bond Test lead, Extension lead test lead and full instructions including sample inspection certificate.



ESP59407



ESP59409



ESP59410



ESP59411

Power Meter D.C. IRWIN

The Irwin Power Meter D.C. uses a large backlit display which displays four important parameters.

1. The Voltage across the load (V)
2. The Current flowing through the load (A)
3. The Power dissipated by the load (W)
4. The Amount of energy converted by the load (Wh)

The Power-meter is designed to be used with a low voltage power pack and can accept input voltages in Different ranges, The load (which may draw up to 20A) is connected to the load terminal. The display unit has a multi-purpose push switch which allows the backlight to be switched on or off (the unit remembers the settings when disconnected) and allows the energy reading to be reset.

The unit displays energy in Wh rather than Joules because a Joule display would quickly overflow. This can be used as a teaching aid (1Wh=3,600J) as well as allowing the pupil to time their power usage and calculate the energy converted in Joules. They can then compare their result with the Power-meter. Manufactured in the UK

ESP59409 Range 6.5-100V DC

ESP59410 Range 80-260V AC

ESP59411 TWIN - range 6.5-100V DC

**Galvanometer Moving Coil
±300μA**

DC current measuring instrument on a small scale easy to read

Dimensions : Overall 138mm*97mm*97mm Measuring scale : ±300μA

Accuracy : 2.5% on full deflection Scale length : 75mm

Material : Plastic

4mm socket terminals Complete with zero adjuster Weight : 0.4kg

ESP59414

**Digital Galvanometer DC**

• Display: 4.5 Inch with 4 segment LCD display

• Measures direct current in micro amperes. It is possible to measure micro-currents in electromagnetic induction experiments and the like. Measuring range: + -1999 -Accuracy: 0.5 class Internal 9v battery (not included).and external power input termination is via color coded 4mm socket terminals (One year warranty).

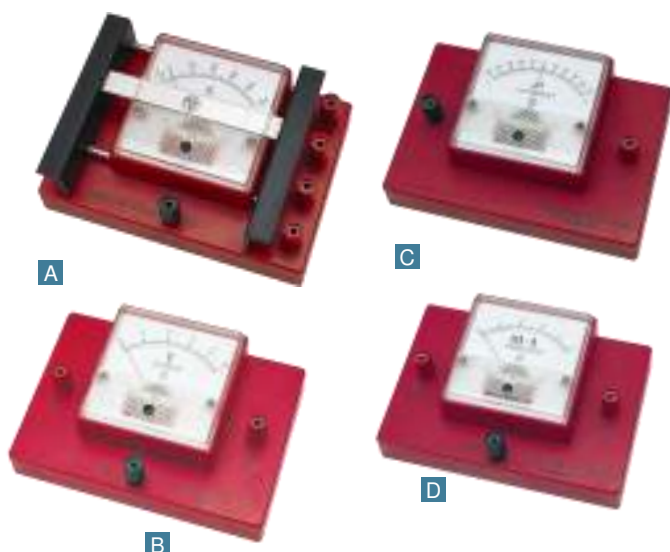
ESP59417

**Galvanometer Moving Coil
±50μA**

DC current measuring instrument on a small scale easy to read Size: Overall 138mm*97mm*97mm Measuring scale : ±50μA Accuracy: 2.5% on full deflection Scale length: 75mm Material: Plastic 4mm socket terminals Complete with zero adjuster weight: 0.4kg

ESP59415





SKU NO	ESP59447/1	ESP59447
Type	Single Scale	Dual Scale
Measuring Scale	0 - 15 V DC	0 - 15 V DC & 0 - 15 V DC

d. Ammeter | ESP59432 , ESP59419/1 & ESP59419
Ammeter option with a single scale or dual scales

SKU NO	ESP59432	ESP59419/1	ESP59419
Type	Single Scale	Single Scale	Dual Scale
Measuring Scale	0 - 500 mA DC	0 - 5 A DC	0 - 500 mA and 0 - 5 A



Ammeter Analogue (D.C)

This economical, closed-back student meter offers reliability, ruggedness, and affordability all in one unit. The meter is housed in a durable black plastic case measuring 13.8 cm x 10.0 cm x 9.8 cm. The large 9.5 cm x

8.1 cm clear plastic meter face is designed for easy viewing and has an external zero adjustment. All meter movements are diode protected against overload. Five-way versatile binding posts are simple for students of all levels to use. Accuracy $\pm 2.5\%$ of full scale. Grades 6-12.

ESP59428 Measuring Range : 0-5 A
ESP59429 Measuring Range : 0-3 A

ESP59430 Measuring Range : 0-1 A
ESP59431 Measuring Range : 0 - 10 A

Ammeter Digital (D.C)

Digital D.C. Ammeter ideal for school use! Range: 0-10A D.C. , Resolution: 0.01A, Super strong high grade ABS case Protective display window - Long battery life - Colour coded and shrouded 4mm sockets

Dimensions : 95 x 90 x 75mm

Large bold 14mm digital LCD display Power: 1 x 9v 'PP3' size battery



Digital Ammeter DC (0~1999mA)

An electronic Ammeter for measuring current , general accuracy is 0.5% 7 segment LED display Overload protection Safety socket connection Suitable for school experiment

ESP59426

Electricity Measuring Tool

Series of physics laboratory electricity measuring tools with feature:

- Rotating coil type, class accuracy 2.5%.
- Resistance is approximately 1200 ohm.
- Large scale, completed with mirror to ease of reading (anti parallax) and zero adjuster bolt.
- 4 mm screwed socket .
- Rigid ABS plastic box, dimension 160 x 110 x 55 mm.

a. Ammeter & Voltmeter 2-1 ESP59449

It is used as DC current and voltage measuring tool with shunt and multiplier installed; equipped with slide cover to switch between Ammeter (A position) and Voltmeter (V position); ammeter range: 100 μ A - 100 mA - 1 A and 5 A DC; voltmeter range: 100 mV - 1 V - 10 V and 50 V DC.

b. Galvanometer | ESP59413

A small DC current measuring tools; zero center meter type with measuring capacity of -50 μ A - +50 μ A; equipped with overload protector.

c. Voltmeter | ESP59447/1 ESP59447

Voltmeter with the options with of single scale or dual scales.



ESP59425





Microammeter 200uA DC

A digital microammeter able to measure to 199.9uA D.C. with a resolution of 0.1uA (IPC-1023-M). The 3½ digit liquid crystal display has 13mm high digits with a wide field of view unobscured by trailing leads. The display also provides indication of polarity and low battery. The unit is exceptionally easy to read. Two colour coded 4mm sockets are located on the sides for maximum convenience and anti-slip feet are fitted to the base. Low operating current gives expected battery life in excess of 500 hours. Housed in a robust ABS case. Supplied with battery.

Description : Electrical Supply : 9V - Battery, type: PP3 - Dimensions : 130 x 60 x 90mm overall - Mass : 0.18kg Range : 0 to 199.9uA

Resolution : 0.1uA - Input Resistance : 1000Ω (1kΩ) - Overload : 10 x full scale - Accuracy : ±1 digit, ±0.1% of full scale

ESP-1023-M



Digital Milliammeter 200mA D.C. 0.1mA

A digital milliammeter able to measure to 199.9mA D.C. with a resolution of 0.1mA (IPC-1001-M). The 3½ digit liquid crystal display has 13mm high digits with a wide field of view unobscured by trailing leads. The display also provides indication of polarity and low battery. The unit is exceptionally easy to read. Two colour coded 4mm sockets are located on the sides for maximum convenience and anti-slip feet are fitted to the base. The meter is protected from current overload by an automatically resettable fuse. Low operating current gives expected battery life in excess of 500 hours. Housed in a robust ABS case. Supplied with battery.

Electrical Supply : 9V - Battery, type: PP3 - Dimensions : 130 x 60 x 90mm overall - Mass : 0.18kg - Range : 0 to 199.9mA - Resolution : 0.1mA - Input Resistance : 1Ω - Overload : 1 x full scale (protected by automatically resetting fuse) - Accuracy : ±1 digit, ±0.1% of full scale

ESP59421



Digital Milliammeter

Range: 0 to 199 A

• Display : 4.5 Inch with 4 segment LCD display .

Internal 9v battery (not included).and external power input Termination is via color coded 4mm socket terminals Precision: 0.5 class (One year warranty).

ESP59422



Digital Ammeter 10 Amps AC

Digital Ammeter 10 Amps AC

A digital ammeter able to measure to 10.00A a.c. with a resolution of 0.01A (IPC-1269-M). The 3½ digit liquid crystal display has 13mm high digits with a wide field of view unobscured by trailing leads. The display also provides indication of polarity and low battery. The unit is exceptionally easy to read. Two colour coded 4mm sockets are located on the sides for maximum convenience and anti-slip feet are fitted to the base. Low operating current gives expected battery life in excess of 500 hours. Housed in a robust ABS case. Supplied with battery. Electrical Supply : 9V - Battery, type: PP3 - Dimensions : 130 x 60 x 90mm overall - Mass : 0.18kg - Range : 0 to 10.00A - Resolution : 0.01A (10mA) - Input Resistance : 0.01Ω - Overload : 1 x full scale - Accuracy : ±1 digit, ±0.1% of full scale

ESP59427

Ammeter Digital (A.C.)

Measuring range: AC 0 - 300V Display : 4.5 Inch with 4 segment LCD display . Used to measure alternating current (AC). Accuracy: 0.5 class, voltage (AC) measurement ; Internal 9v battery (not included).and external power input termination is via color coded 4mm socket terminals (One year warranty).

ESP59423



Ammeter Digital (D.C)

Digital Ammeter (D.C) , (0 - 1.999 A):

An Electronic Ammeter for measuring current Display : 4.5 Inch with 4 segment LCD display

Termination is via color coded 4mm socket terminals

, Precision: 0.5 class .(one year warranty).

ESP59424



Ammeter 10A DC

A digital ammeter able to measure to 10.00A d.c. with a resolution of 0.01A (IPC-1091-M). The 3½ digit liquid crystal display has 13mm high digits with a wide field of view unobscured by trailing leads. The display also provides indication of polarity and low battery. The unit is exceptionally easy to read. Two colour coded 4mm sockets are located on the sides for maximum convenience and anti-slip feet are fitted to the base. Low operating current gives expected battery life in excess of 500 hours. Housed in a robust ABS case. Supplied with battery.

Description : Electrical Supply : 9V - Battery, type: PP3 -

Dimensions : 130 x 60 x 90mm overall - Mass : 0.18kg - Range : 0 to 10.00A - Resolution : 0.01A (10mA) - Input Resistance : 0.01Ω - Overload : 1 x full scale - Accuracy : ±1 digit, ±0.1% of full scale

ESP-1091-M



Digital Voltmeter 20V AC

A digital voltmeter able to measure to 19.99V AC. with a resolution of 0.01V (IPC-1505-M). The 3½ digit liquid crystal display has 13mm high digits with a wide field of view unobscured by trailing leads. The display also provides indication of polarity and low battery. The unit is exceptionally easy to read. Two colour coded 4mm sockets are located on the sides for maximum convenience and anti-slip feet are fitted to the base. Low operating current gives expected battery life in excess of 500 hours. Housed in a robust ABS case. Supplied with battery. Description : Voltmeter 20V ac - Part Number : IPC-1505-M - Electrical Supply : 9V - Battery, type: PP3 - Dimensions : 130 x 60 x 90mm overall - Mass : 0.18kg - Range : 0 to 19.99V - Resolution : 0.01V (10mV) - Input Resistance : 1MΩ - Overload : 10 x full scale - Accuracy : ±1 digit, ±0.1% of full scale -

ESP59438

**Voltmeter Digital (A.C.)**

A.C. Voltmeter Range: 0 to 300 V AC

Display: 31/2 , 4 segmented LCD display

Battery: Internal 9v battery (not included).and external power input Termination is via color coded 4mm socket terminals

Accuracy: 0.5. Class

ESP59435

Voltmeter & Ammeter Digital DC 20V – 10A

A combined digital voltmeter and ammeter with large display designed for use in class demonstrations and group work and will measure DC voltages up to 20V and DC currents up to 10A.

The inputs to each meter are isolated and are easily selected by the clearly labeled 3 position switch; The 3½ digit liquid crystal display has 25mm high digits with a wide field of view unobscured by trailing leads. The display also provides indication of polarity and low battery. The unit is exceptionally easy to read; Two pairs of colour coded 4mm sockets are located on the front panel for maximum convenience. Low operating current gives expected battery life in excess of 500 hours; Housed in a robust powder coated metal case with battery compartment and fitted with anti-slip feet on the base. Supplied with battery.

Description : Electrical Supply : 9V - Battery, type: PP3 - Dimensions : 155 x 80 x 125mm overall - Mass : 0.6kg - Ammeter DC - Range/Resolution : 10Amp/0.01Amps - Ammeter Input Resistance : 0.01Ω - Ammeter Overload : 1x full scale - Ammeter Accuracy : ±1 digit, ±0.1% of full scale - Voltmeter DC Range/Resolution : 0Volts/0.01Volts - Voltmeter Input Resistance : 10MΩ - Voltmeter Overload : 10 x full scale - Voltmeter Accuracy : ±1 digit, ±0.1% of full scale

ESP-1311-M

NEW

**Multimeter Digital True RMS Bench Top**

80000 count True RMS Bench Digital Multimeter

- Large LCD, 80000 count Dual-display, Analogue bar 21 sets.

- 50 measuring functions, with basic DCV, ACV, DCA, ACA, -, CAP, Hz, etc.

- 18 types of frequency, frequency up to 8MHz, 1800 waveform

- Auto data update and refresh, auto data hold, auto peak hold.

- 36-hour dynamic record: MAG, MIN, AVG, MAX-MIN (REL-), (REL%),

- AC measuring adopts highly accurate true RMS measurement, measuring of any waveforms in AC range , -RS-232 interface

DCV : - Range: 80mV/800mV/8V/80V/800V/1000V - Accuracy:- (0.05% 5)

ACV : - Range:80mV/800mV/8V/80V/750V - Accuracy:- (0.8% 50)

DCA : - Range:80mA/800mA/8A/20A - Accuracy:- (0.2% 10)

ACA : - Range:80mA/800mA/8A/20A - Accuracy:- (0.8% 20)

Resistance: - Range:800- /8k- /80k- /800k- /8M- /80M - Accuracy:- (0.3% 5)

- Frequency: - Range: 0.5Hz-8MHz - Accuracy:- (0.03% 2)
- Capacitance: - Range:1nF/10nF/100nF/1uF/10uF/100uF - Accuracy:- (2.5% 50)
- Temperature: - Range:-50- ~1372- / -58- ~2502 - Accuracy:- (2.0% 2)
- Square Wave Output: - Range:3V / 0.5Hz-5kHz / 1%-99% - Accuracy:- 0.02%
- Special Function : - Diode test - True RMS - AC DC measuring - Continuity
- alarm - Overloading protection - Input Impedance 10MSampling rate : 4times/s; Analog bar40 times/s , AC frequency response: - 40Hz-50kHz
- Range selection : Auto range , Max. display : 80000
- Accessories : Test lead, Power cord, User manual, Software CD,
- Temperature probe
- Power source : AC110V/220V, 50Hz/60Hz , Meter
- Dimentions : 245x220x98mm
- Net Weight : 1.5kg

ESP59376



DIGITAL MULTIMETER

Function	3 1/2 Manual Range Digital Multimeter ES835	3 1/2 Auto Range Digital Multimeter ES833	3 5/6 Auto Range Digital Multimeter ES837	3 5/6 Auto Range Digital Multimeter ES86
DCV	200mV/2V/20V/200V/600V	200mV/2V/20V/200V/600V	600mV/6V/60V/600V	200mV/2V/20V/200V/1000V
ACV	200V/600V	2V/20V/200V/600V	600mV/6V/60V/600V	200mV/2V/20V/200V/750V
DCA	20uA/2mA/200mA/10A	200uA/2000uA/20mA/200mA/2A/10A	600uA/ 6000uA/ 60mA/ 600mA/ 6A/ 10A	200uA/2000uA/20mA/200mA/2A/20A
ACA	-	200uA/2000uA/20mA/200mA/2A/10A	600uA/ 6000uA/ 60mA/ 600mA/ 6A/ 10A	200uA/2000uA/20mA/200mA/2A/20A
Resistance	200Ω/2kΩ/20kΩ/2MΩ/200MΩ	200Ω/2kΩ/20kΩ/200kΩ/2MΩ/20MΩ	600Ω/ 6kΩ/ 60kΩ/ 600kΩ/ 6MΩ/ 60MΩ	200Ω/2kΩ/20kΩ/200kΩ/2MΩ/20MΩ
Capacitance	-	-	60nF/ 600nF/ 6uF/ 60uF/ 600uF/ 6mF/ 60mF	-
Frequency	-	-	10Hz/ 100Hz/ 1kHz/ 10kHz/ 100kHz/ 1MHz/ 10MHz	-
NCV	✓ -	✓ ✓	✓ ✓	✓ -
Backlight display	✓ -	✓ ✓	✓ ✓	✓ -
Diode test	0V~2V, it displays "OL" if over 2V 0~2000	0V~2V, it displays "OL" if over 2V 0~2000	0V~3.3V, it displays "OL" if over 3.3V -	✓ -
Duty cycle	-	-	1%~99%	1%~99%
Low battery indication	Less than 50Ω, it displays "OL" if over 200Ω Approx. less than 2.4 V ✓	Less than 50Ω, it displays "OL" if over 200Ω Approx. less than 2.4 V ✓	Less than 50Ω, it displays "OL" if over 610Ω Approx. less than 2.4 V ✓	Less than 50Ω, it displays "OL" if over 200Ω Approx. less than 2.4 V ✓
Function protection	✓ About 15 minutes	✓ About 15 minutes	✓ About 15 minutes	✓ About 15 minutes
Input impedance	10MΩ 3 times/s	> 44MΩ 3 times/s	> 44MΩ 3 times/s	10MΩ 3 times/s
AC frequency response	40Hz-400Hz Manual range	40Hz-2kHz Auto range	40Hz-2kHz Auto or manual range	40Hz-400Hz Auto range
Max. display	2000 61x28mm	2000 61x28mm	6000 61x28mm	1999 ⁹ 54x30mm ⁹
Battery	3V AAA×2 Quiescent current about 2mA	3V AAA×2 Quiescent current about 2mA	3V AAA×2 Quiescent current about 2mA	2x 1.5V AAA Quiescent current about 2mA
SKU No	ESP59380	ESP59379	ESP59381	ESP59377



Multimeter Analogue 20

Multimeter for measuring voltage and current, DC and AC, can also be used as a galvanometer.

As an ideal student Multimeter, it has two double scales.

All of this makes this device unique:

Electronic overload protection in all measuring ranges, with control LED display (no more fuses!)

Large, robust design with holster & robust selector switch

Good readability thanks to the inclined position

Transparent base with recessed grip for holding with one hand

1 mV final value range for measuring thermal and induction voltages without a preamplifier

All measuring ranges (including low currents!) are available in AC

Unusually good frequency behavior: typically -1.5 db at 20 kHz, which means that measurements

on all types of resonant circuits are also possible

Large, easy-to-read mirror scale with clear printing

Extremely accurate, typically 1.5%

10 A range with its own input socket

Zero point center can be selected by switch position

Voltage ranges AC and DC: 1, 100, 300 mV, 1, 3, 10, 30 V

Current ranges AC and DC: 100 μ A, 10, 30, 100, 300 mA, 1, 10 A

Internal resistance: 100 k Ω /V

Scale arc length: approx 90 mm

Power supply: 4 x 1.5 V Mignon batteries (Not included)

Dimensions: approx. 200x140x100 mm

Dimensions: approx. 675

**Universal Multimeter Demo II**

ESP60251

Durable servo-controlled measuring instrument to measure current and voltage with high precision; can be used in any position, for example vertically or horizontally for projection.

The large scale with an arc length of approx. 200 mm, the wide signal-coloured pointer and the 26 mm high digits guarantee a hassle-free reading of the measured values even from greater distances.

The LED display indicates the unit of measurement and current type and is also clearly visible from the distance. An internal electronic overload protection eliminates the annoying

and time-consuming change of fuses. The meter can also be used as a sensitive galvanometer

(measuring range 1 mV-) thanks to the built-in amplifier. Pointer setting: Zero at left or at

midpoint Four insert-able double scales: 1/3 - 10/30 - 100/300 - -5 to +5/-15 to +15 (included)

Measuring ranges:

DC voltage: 1 mV, 1 to 30 V

AC voltage: 1 to 30 V

DC and AC amperage: 100 μ A to 10 A

Rear panel with neodymium magnets for a stable magnetic mounting; Battery compartment for easy replacement of batteries.

Technical data :

Type of instrument : Moving-coil instrument Internal resistance : $R = 100 \text{ k}\Omega / \text{V}$

Working position : vertically or horizontally Measuring inputs : 4 mm safety socket

Fuses: internal electronic overload protection Power supply : four 1.5 V batteries (included) or 2.5 mm hollow DC jack for 6 V external power supply Housing : ABS plastics

Dimensions : 268 x 92 x 226 mm

Scales For Multimeter Demo II, Transparent, Set Of 8

Transparent inserting-scales; acrylic; for universal multimeter demo II ESP60249
Ranges: 0-1, 0-3, 0-10, 0-30, 0-100, 0-300, -5 to +5, -15 to +15

ESP60250

ESP60249

**Demonstration Meter II**

Housed in a ABS plastic case 300 x 150 x 300 mm with glass front and rear. Moving coil type with accuracy of $\pm 2.5\%$. Basic sensitivity of meter is 5 mA, 100 mV f.s.d. The meter can be used to demonstrate the working principle of AC or DC ammeters or voltmeters with the interchangeable plastic scales, it is supplied with extended range box which allows one case to be used for different ranges.

ESP59382

**Demonstration Meter III**

Housed in a ABS plastic case 300 x 150 x 300 mm with glass front and rear. Moving coil type with accuracy of $\pm 2.5\%$. Basic sensitivity of meter is 5 mA, 100 mV f.s.d. The meter can be used to demonstrate the working principle of AC or DC ammeters or voltmeters with the interchangeable plastic scales. DIFFERENT DIALS ARE AVAILABLE AS PER CAT. NO.

ESP59383





Digital Multimeters (DMMs)

- 5 5/6 digits, 60000 counts
- AC + DC true RMS measurement
- Auto range, 100kHz frequency response
- Graphic display
- Data record for max 20,000 groups of data
- Low pass filter
- Minimum, Maximum, Average and Peak value measurements
- Standard interface: USB Device
- Support SCPI protocol
- DCV 60mV/600mV/6V/60V/600V/1000V
- ACV 60mV/600mV/6V/60V/600V/1000V
- DCA 600µA/6000µA/60mA/600mA/20A
- ACA 600µA/6000µA/60mA/600mA/20A
- Resistance 600Ω/6KΩ/60KΩ/6MΩ/60MΩ
- Capacitance 6nF/60nF/600nF/6µF/60µF/600µF/6mF/60mF
- Frequency 10Hz-60MHz
- Conductance 60ns
- Temperature -40°C - 1000°C
- 40°F - 1832°F
- Duty cycle 10%-90%

ESPEM-8055C

Multimeter Digital, True RMS

The new generation for student experiments:
 Resilient, big, handy, attractive colour, big LC-display automatic range selection, overload protection, incl. temperature measurement, LCD back light, automatic shutdown, safety case with holder for measurement cables.
 Continuity test, Diode test, Non-contact voltage detection (NCV)
 Other functions: "Data hold", relative value, integrated flash light, battery indicator
 Way of measuring: True RMS
 Safety category: CAT IV (up to 600 V and CAT III (up to 1000 V)
 Internal resistance: $\geq 10 \text{ M}\Omega$
 Size of LCD display: 58.5 x 41 mm
 Digit height: 24.5 mm
 Included in the scope of delivery: 2 measurement cables, temperature sensor, screwdriver, technical instructions
 Power supply: 9V Battery (6F22)
 Fuse protection: 1 A (1000 V) and 15 A (1000 V)
 Dimensions: 190 x 90 x 56 mm
 Weight: approx. 320 g



ESP-P3245-1M



Multimeter Student Digital

Student Digital Multimeter
 Basic Function Range Accuracy
 DCV200m-2-20-200-1000V $\pm 0.5\%$
 ACV 200m-2-20-200-750V $\pm 1.0\%$
 DCA 2m-20m-200m-20A $\pm 1.8\%$
 ACA 2m-20m-200m-20A $\pm 2.0\%$
 Resistance : 200-2k-20k-200k-2M-20M-200MΩ $\pm 1.0\%$
 Capacitance : 20n-200n-2u-20uF-200uF $\pm 4.0\%$
 Diode test \checkmark
 hFE \checkmark
 Continuity \checkmark
 Power source 9V Battery 6F22
 Display meter 3 1/2 digits LCD display
 Max display 1999
 Standard accessories Test lead x1 set, Operation manual x1, battery x1

ESP59378

to measure	Measuring range	max. Resolution
Voltage DC (V):	60.00 mV - 1000 V	0.01 mV
Voltage AC (V):	60.00 mV - 750 V	0.01 mV
Current DC (A):	600.0 µA - 20.00 A	0.1 µA
Current AC (A):	600.0 µA - 20.00 A	0.1 µA
Resistance (Ω):	600.0 Ω - 60.00 MΩ	0.1 Ω
Capacity (F):	60.00 nF - 60.00 mF	0.01 nF
Frequency (Hz):	9.999 Hz - 9.999 MHz	0.001 Hz
Temperature (°C/°F):	-50 - +400°C	1°C
	-58 - +752°F	1°F



NEW

Electric Tester Pen Type Meter

Pen shaped tester with plastic material housing and LCD screen , used to test voltage Breakpoint ,direct current , alternating current and high voltage .

SPECIFICATIONS :

DC Voltage 200mV/2V/20V/200V/600V $\pm(0.7\%+2)$

AC Voltage

200mV/2V/20V/200V $\pm(0.8\%+3)$

600V $\pm(1.0\%+3)$

DC Current 20mA/200mA $\pm(1.5\%+3)$

AC Current 20mA/200mA $\pm(2.0\%+3)$

Resistance(Ω)

200 Ω /2k Ω /20k Ω /200k Ω /2M Ω $\pm(1.0\%+3)$

20M Ω $\pm(1.0\%+5)$

ESP59363



Physics

**Ohmmeter Demo Unit**

Demonstration meter for measuring resistance and for testing diodes, the component to be measured is connected to the two 4-mm safety jacks, this instrument is easy to transport and can be mounted magnetically, the 26-mm LED display showing the measured value and the 20-mm LED display for the measurement unit allow readings to be taken easily even at a distance

TECHNICAL DATA :

Display: 3 1/2-digit LED display, digit height 26 mm

Measuring ranges: 200 Ohms, 2, 20, 200, kOhms, 2 MOhms, 2 V (diode testing)

Accuracy: $\pm 0.2\%$ ± 1 digit for all ohmage ranges up to 200 kOhms, beyond that

ESP60253

Coulombmeter Demo Large Display

Range 0 to 1999nC. Accuracy : $\pm 10\%$ of F.S.D. Overload capability : 100V.

Frequency response, $\pm 2\%$: 0 to 10kHz.

Display : 3 1/2 digit LCD with polarity and low battery indication. Battery : Internal 9v battery PP3 or equivalent (not included).

Expected Battery life : 5000 hours.

Automatic switch off after 50 minutes of inactivity. Accuracy : $\pm 1\%$ of full scale indication typical.



ESP59453

NEW

**Coulombmeter Digital**

Useful for a wide range of experimental applications including charging by induction, Faradays ice pails, Coulomb's law and capacitance of an isolated sphere. The 3 1/2 digit liquid crystal display has 13mm high digits with a wide field of view unobscured by trailing leads. The display also provides indication of polarity and low battery. The unit is exceptionally easy to read. Two colour coded 4mm sockets are located on the sides for maximum convenience and anti-slip feet are fitted to the base. Low operating current gives expected battery life in excess of 500 hours. Housed in a robust, ABS plastic case. Supplied with charge plate, battery and instructions.

A document containing descriptions of a number of standard experiments and investigations which can be performed using this Digital Coulombmeter has been compiled by us. Description : Coulombmeter - Electrical Supply : 9V - Battery, type: PP3 - Dimensions : 130 x 60 x 90mm overall - Mass : 0.20kg - Range : 0 to 1999nC - Resolution : 1nC - Overload : 10 x full scale - Accuracy : $\pm 10\%$ of full scale - Input Resistance : 100G Ω - Leakage Current : 1pA (10pA max.) - Charge Storage : 4.7 μ F

ESP60259





Wattmeter Demo Unit

Demonstration instrument for measuring power in low-voltage circuits, very easy to transport and magnetically mountable, the 26-mm LED display showing the measured value and the 20-mm LED display for the measurement unit allow precise readings to be taken even at a distance

TECHNICAL DATA :

Display: 3 1/2-digit LED display, digit height 26 mm Input: 4-mm safety jacks (pair)

Types of measurement: true power (W), work/energy (Ws) Measurement limits: 20 Veff, 2 Aeff

ESP60256



Student Electronics supplement kit

Kit consisting of:

- 1x PIB resistor 10 kOhm
- 1x PIB resistor 47 kOhm
- 1x PIB rheostat 10 kOhm
- 2x PIB wire, straight
- 1x PIB photo resistor (LDR)
- 1x PIB varistor (VDR)
- 1x PIB NTC resistor
- 1x PIB PTC resistor
- 1x Headphone, SE
- 1x PIB capacitor 0.1 μF
- 1x PIB capacitor 1 μF
- 1x PIB capacitor 2 μF
- 1x PIB capacitor 10 μF
- 1x PIB capacitor 100 μF
- 1x PIB capacitor 1000 μF
- 1x Solar cell, in plastic housing
- 1x PIB bridge rectifier
- 1x PIB potentiometer 470 Ohm
- 1x PIB wire with jack bush
- 1x PIB buzzer
- 1x PIB Zener diode 4.7 V
- 2x PIB Si diode
- 1x PIB transistor NPN, base right
- 1x PIB



- transistor NPN, base left
- 1x PIB transistor PNP, base left
- 1x MBC microphone
- 2x PIB LED red

Storage:

- 1x Box insert Electronics, plastic
- 1x Storage box II small, with cover
- Box insert plan with 2 labels

ESP59505





Build A Crystal Radio With An Amplifier - Single Kit

Students explore wavelength, frequency and amplitude while immersed in hands-on experimentation. As students build their own old fashioned Crystal Radios, they explore the effects of coil design variations, building materials, and antennae number and length, on maximizing tuning and signal strength. Then students upgrade their crystal radio into a transistor radio. Ideal for hands on learners, as intuition plays a role in developing antenna design solutions, iterative testing, and making modifications for improvements. Great for introducing guided inquiry-based learning. Includes a complete instructor's manual with reproducible stepwise student protocols. Designed for working in groups of four. Grades 7-10

ESP59507 Single Kit
ESP59508 Class-pack



Building Simple DC Circuits

Teach simple DC circuitry using actual components so students can relate it to real world applications. Kits include solder-less breadboards for hands-on exercises. Students learn to build circuits, read circuit diagrams, and investigate the effects of resistors and LEDs in series and parallel circuits. Instructor's manual is comprehensive from lesson plans through assessment. Includes reproducible stepwise student instructions, simple circuit diagrams, and complete answer keys. Middle and high school assignments are provided. Either kit includes one digital multimeter for demonstrating how to measure voltage, current, and resistance for data collection. Designed for working in groups of four. Grades 7-10

ESP59503 Class-pack
ESP59504 Single-pack

Bread Board 94 Holes

Bread Board is an ideal tool for carrying out small Electronic /Electrical experiments. 94 hols which are useful for fixing the components such as IC'S, Transistors, Resistances, Diodes & Capacitors etc points which are useful for fixing the components such as IC'S, Transistors, Resistances, Diodes & Capacitors etc.



ESP59554



Bread Board & Jumper Wire Deluxe Set

Bread Board is an ideal tool for carrying out small Electronic /Electrical experiments. It provides the following

- 1- 1600 spring loaded points which are useful for fixing the components such as IC'S, Transistors, Resistances, Diodes & Capacitors etc.
2. Interconnecting columns for supply & common / earth points.
3. Three 4mm Sockets are mounted on PCB with additional pins for connections. These sockets are primarily used for (+ve, -ve & Common) Power Supply.
4. Set of 150 wires (Single Strands) of different lengths & 10 nos. with connector on one side (Pin on one side & Female Connector on other side.)

ESP59556





Bread Board & Jumper Wire Set

Bread Board is an ideal tool for carrying out small Electronic /Electrical experiments. It provides the following facilities.1. Spring loaded 1600 points which are useful for fixing the components such as IC'S, Transistors, Resistances, Diodes & Capacitors etc.2. Interconnecting columns for supply & common / earth points.3. Three 4mm Sockets are mounted on PCB with additional pins for connections. These sockets are primarily used for (+ve, -ve & Common) Power Supply.4. Set of 150 wires (Single Strands) of different lengths & 10 nos. With connector on one side (Pin on one side & Female Connector on other side.)

ESP59557

Resistor 10 OHM, 5W Fixed

Fixed Resistor 10 Ohm, 5W
Overall **Dimensions** : 9.9 x 9.9 x 4.7cm
Fixed resistors with power dissipation 5W
Mounted on plastic base with screw 4mm socket terminals



ESP59510

Carbon Film Resistors

1/4W Carbon Film Resistors different values PK/50 Each

ESP59513	1R	ESP59526	150R	ESP59539	22K
ESP59514	1R5	ESP59527	220R	ESP59540	33K
ESP59515	2R2	ESP59528	330R,	ESP59541	47K
ESP59516	3R3	ESP59529	470R	ESP59542	68K,
ESP59517	4R7	ESP59530	680R	ESP59543	100K
ESP59518	6R8	ESP59531	1K	ESP59544	150K
ESP59519	10R	ESP59532	1K5	ESP59545	220K
ESP59520	15R	ESP59533	2K2	ESP59546	330K
ESP59521	22R	ESP59534	3K3	ESP59547	470K
ESP59522	33R	ESP59535	4K7	ESP59548	680K
ESP59523	47R	ESP59536	6K8,	ESP59549	1M
ESP59524	68R	ESP59537	10K	ESP59550	1M5
ESP59525	100R	ESP59538	15K	ESP59551	10M.



Sequential Logic Tutor

Everything you need for a first course in flip-flops, counters and shift registers. Has four J-K flip-flops, five NAND gates and three Logic Input Switches. One switch is "de-bounced" and can be used for pulsing counters, shift registers etc.

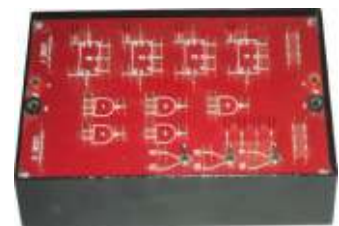
The instruction manual include R-S, J-K and D-Type flip-flops, Binary and BCD Counters, Shift Register, Ring Counter, Johnson Code Counter and Chain Code Generator.

ESP59563

Combination Logic Tutor

Lt1 has a selection of AND, OR, NOT, NAND, NOR, Ex-OR and AND-OR-NOT logic gates to cover all aspects of combinational logic and Boolean algebra. Also has four logic indicators and logic input switches, one of which is "de-bounced".

ESP59564





Logic Gate Module OR Gate

These gates have IC based design with HI / LOW output states indicated by different colored LEDs.

Housed in a sturdy sheet metal box with rubber feet, all modules have truth tables along with necessary details clearly printed on top. Input and output through 4 mm sockets in different colors for easy identification. Input of 5V DC can be connected via input sockets.

ESP59565



Logic Gate Module And Gate

these gates have IC based design with HI / LOW output states indicated by different colored LEDs.

Housed in a sturdy sheet metal box with rubber feet, all modules have truth tables along with necessary details clearly printed on top. Input and output through 4 mm sockets in different colors for easy identification .Input of 5V DC can be connected via input socket

ESP59558



Logic Gate Module Ex OR Gate

These gates have IC based design with HI / LOW output states indicated by different colored LEDs.

Housed in a sturdy sheet metal box with rubber feet, all modules have truth tables along with necessary details clearly printed on top. Input and output through 4 mm sockets in different colors for easy identification. Input of 5V DC can be connected via input sockets

ESP59559

Logic Gate Module Inverter

These gates have IC based design with HI / LOW output states indicated by different coloured LEDs.Housed in a sturdy sheet metal box with rubber feet, all modules have truth tables along with necessary details clearly printed on top.Input and output through 4 mm sockets in different colours for easy identification. Input of 5V DC can be connected via input sockets

ESP59560



Logic Gate Module NOR Gate

These gates have IC based design with HI / LOW output states indicated by different colored LEDs.

Housed in a sturdy sheet metal box with rubber feet, all modules have truth tables along with necessary details clearly printed on top. Input and output through 4 mm sockets in different colors for easy identification. Input of 5V DC can be connected via input socket

ESP59562

Logic Gate Module Ex Logic Gate Module NAND Gate

These gates have IC based design with HI / LOW output states indicated by different colored LEDs.

Housed in a sturdy sheet metal box with rubber feet, all modules have truth tables along with necessary details clearly printed on top. Input and output through 4 mm sockets in different colors for easy identification. Input of 5V DC can be connected via input sockets

ESP59561

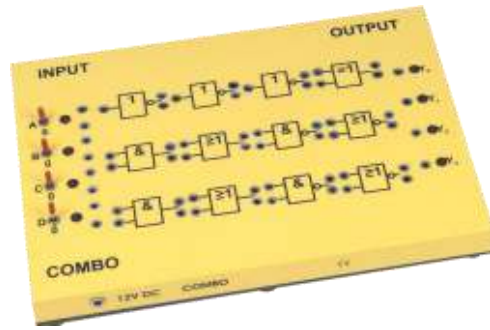




Numerical Systems

This panel is used to demonstrate the number systems used in information technology (binary and hexadecimal numbers). Range: 0 ... 255 or 8 bits Toggle switches are used to activate the displays showing the particular number entered. Input may be entered either as decimal or binary numbers with a toggle switch for mode selection. Three rotating knobs are available for selecting decimal digits, while binary numbers are entered by setting toggle switches. Numbers are shown on two displays: a three-digit, seven-segment LED display (26 mm) for decimal numbers and a two-digit alphanumeric display for hexadecimal numbers (22 mm). Eight LEDs (5 mm) display binary values.

Additionally required : ESP59571 Mains transformer 12 V DC / 2A
ESP59566



Combo

Introduction to basic logical expressions, combining logic gates, circuit design of EXOR gates, De Morgan's law, full and half adders, verifying the laws of Boolean algebra, coder and decoder circuits and RS flip flops (instructions for 30 example circuits).

This panel includes the following logic gates: 2 AND gates, 2 OR gates, 2 NAND gates, 2 NOR gates, 1 EXOR gate as well as, 3 NOT gates

Input: four toggle switches with 5-mm LED

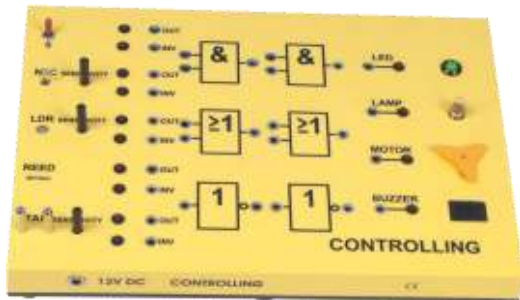
displays Output: four 5-mm LEDs with 4-mm jacks

Input and output elements as well as the individual gates are connected by means of 4-mm connecting leads.

Additional devices, such as a logic analyser, may be connected by means of the 4-mm jacks.

Additionally required : 3x Connecting leads, 25 cm, black, set of 6, 1x Mains transformer 12 V DC / 2 A - ESP59571

ESP59567



Controlling

This panel is used to demonstrate practical applications of digital technology in electronic and electromechanical control systems, such as motor control, a model of an alarm system and other circuits (instructions for 12 example circuits).

Input may be selected from five different, independent signal sources: a toggle switch; an NTC thermistor, used as a temperature sensor; an LDR, used as a light detector; a Reed relay contact (gas-filled magnetic switch); and a pressure-sensitive contact.

All output is accessible either as a direct or inverted signal and the current state is displayed in each case by an LED.

Output terminals are protected against short-circuiting and suited to being directly connected to the logic gates.

Logic gates: 2 NOT gates, 2 AND gates and 2 OR gates.

Four control elements are available for each output signal: an LED (5 mm, green), an E10 light bulb, a drive motor and an electromechanical buzzer. Current output state is displayed by LEDs.

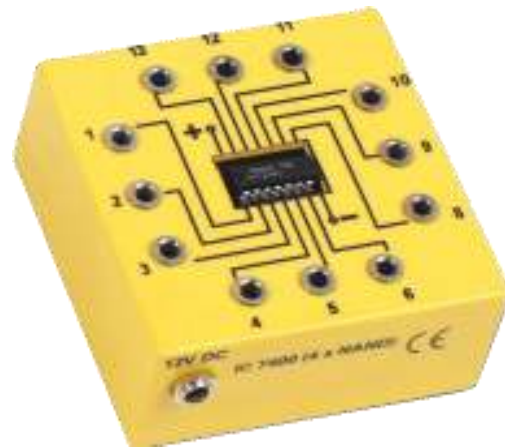
Additional devices, such as a logic analyser, may be connected by means of the 4-mm jacks.

See following for a list of possible experiments.

Additionally required :

- 1x transformer 12 V DC / 2 A ESP59571
- 2x Connecting leads, 25 cm, black, set of 6
- 1x Bar magnet, round, 10 x 50 mm
- 1x Light bulb, 10 V / 50 mA, E10

ESP59568



IC-7400 (4 x NAND)

This industry-standard IC (IC 7400) may be controlled by means of 12 4-mm jacks.

Integrated Schmitt trigger circuits allow for a variety of digital and analogue signal sources to be directly

Connected to it (ON-OFF or Reed switch, NTC, PTC, LDR etc.).

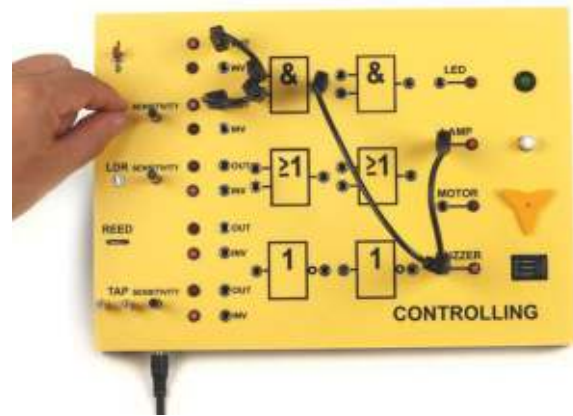
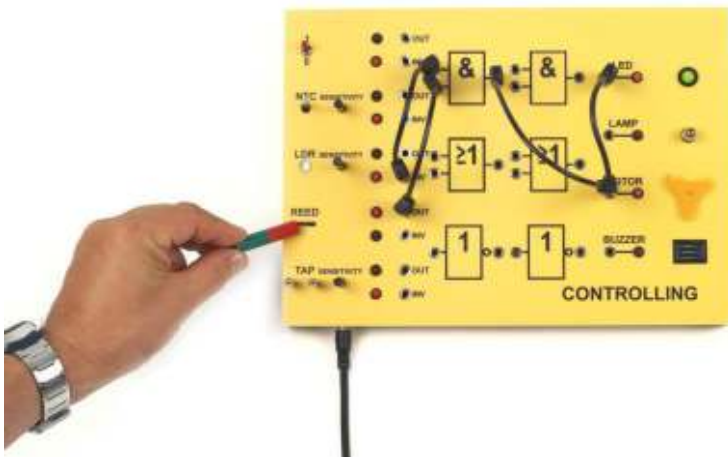
This module is designed to demonstrate the relationship between simple logic gates and industrial applications of integrated circuits.

Additionally required :

- 1x ESP59567 Combo or, 1x ESP59568 Controlling, 1x Junction cable, 4 DC plugs, 2x Connecting leads, 25 cm, black, set of 6, 1x Bar magnet, round, 10 x 50 mm, 1x Mains transformer 12 V DC / 2 A ESP59571, 1x Light bulb, 10 V / 50 mA, E10,

ESP59569





Experiment manual "Logic", b/w booklet

Experiment topics:

- Numerical Systems ESP59566 (4 experiments): Decimal number system
- Binary number system
- Hexadecimal number system
- Converting between number systems
- COMBO ESP59567 (30 experiments): NOT gate
- AND gate
- OR gate
- NAND gate
- NAND gate from AND and NOT gates
- NOR gate
- NOR gate from OR and NOT gates
- EXOR gate
- EXOR gate 1 (with AND gate)
- EXOR gate 2 (with OR gate)
- NOT gate from NAND gates
- AND gate from NAND gates
- OR gate from NAND gates
- NOT gate from NOR gates
- AND gate from NOR gates
- OR gate from NOR gates
- De Morgan 1 (NAND)
- De Morgan 2 (NOR)
- RS flip-flop from 2 NAND gates
- RS flip-flop from 2 NOR gates
- RS flip-flop (NAND) with a switch and cycle
- RS flip-flop (NOR) with a switch and cycle

- D flip-flop from NAND gates
- D flip-flop from NOR gates
- Half adder 1
- Half adder 2
- Half adder with EXOR gate
- Full adder
- Coder circuit (decimal - binary)
- Decoder circuit (binary - decimal)
- CONTROLLING ESP59568 (12 experiments): Door control
- Motor control
- Light control
- Double security circuit
- Heating control
- Thermal protection
- Fire detector
- Air conditioning control
- Alarm system 1
- Alarm system 2 (2 x NAND)
- ESP59569 (6 experiments): AND from 2 NANDs
- NOT from 2 NANDs
- Control Room
- OR from 2 NANDs
- NOR from 3 NANDs
- OR from 3 NANDs
- Fire detector (AND from 2 NANDs)
- Light control (OR from 3 NANDs)

ESP59570



Mains transformer 12V DC / 2A

Output voltage : 12 V DC / 24 VA supplied by 5.5-mm hollow DC plug
Voltage source : 100 ... 240 V AC / 50 ... 60 Hz
Dimensions : approx. 90 x 60 x 37 mm

ESP59571



Connecting leads

Connecting leads, 25 cm, black, set of 6 (Lt)

ESP59572





PNP TRANSISTOR

PNP Transistor is mounted on a specially designed transparent base for studying its characteristics in forward and reverse biasing. 4mm safety sockets are provided for connections.

ESP59552



Model Fuse - fuse wire between to croc clips

ESP59577



Semiconductor Germanium Diode Unit

Mounted on transparent base, with 4 mm colour coded sockets, with circuit diagram printed for demonstration.

ESP59612



Light Dependent Resistor Unit LDR in Block

With photo-sensitive resistor mounted on base. Shows that resistance is inversely proportional to light density. With tow 4 mm Sockets

ESP59593



Light Emitting Diode (LED)

5mm standard high quality LED indicators with diffused lens. Maximum voltage 3.0V D.C. PCB or panel mount.

- ESP59585 Red
- ESP59586 Yellow
- ESP59587 Green
- ESP59588 White



Light Emitting Diode (LED) On Base

LED mounted on transparent base , high intensity and better light emits consistently with long life , with 4 mm colour coded sockets terminals

- ESP59589 Red
- ESP59590 Yellow
- ESP59591 Green



Light Emitting Diode (LED) On Base

Set of 3 LED (Red, Yellow , Green) each mounted on base , high intensity and better light emits consistently with long life , with 4 mm sockets terminals

ESP59592



Light Dependent Resistor Unit LDR on board

These modules can be utilized for building basic circuits akin to those typically found on a Worcester Circuit Board. Their purpose is to acquaint younger students (ages 11-13) with common applications of devices and circuits, with a primary focus on elementary electrical circuitry. The modules feature 4mm plug connections.

To enhance sensitivity and regulate current in a reed relay, a grouping of three ORP12s is arranged in parallel, resulting in a resistance of around 200 ohms under room lighting conditions.

ESP59593B





Capacitors

Aluminium Electrolytic Capacitor are polarized with tolerance of 10% , Pk/10 Pcs

- ESP59594 10 μ F
- ESP59595 22 μ F
- ESP59596 47 μ F
- ESP59597 100 μ F
- ESP59598 220 μ F
- ESP59599 330 μ F
- ESP59600 470 μ F



Buzzer

These Simple Circuit modules can be used to construct simple circuits of the type normally implemented on, for example a Worcester Circuit Board. Very useful for younger pupils to learn more applications of circuits and devices. The modules are having 4mm plug connections.

On base. a low current buzzer of 7mA approx. capacity

ESP59611



Bar Magnet

Material: Alnico; poles covered with red or green plastic cap; D = 10 mm, L = 50 mm

ESP59573



Soldering Iron

With wooden / Bakelite handle, lightweight body, element tested for high insulation, with long life pencil bit

- ESP59601 25 Watts
- ESP59602 65 Watts
- ESP59603 125 Watts



Soldering Iron Stand

Soldering iron with stand

ESL57453



De-soldering Pump

High sucking power, plastic body with sturdy metal rod, easy to clean and maintain.

ESP59609



Thermistor Unit

Mounted on transparent base, with 4 mm colour coded sockets. Mounted on transparent base, with 4 mm colour coded sockets, with circuit diagram printed for demonstration

ESP59610



Circuit Breaker

ESP59576



Dry Cell 1.5V

Size : \varnothing 33 x 60 mm -Type : R20S/D Size - Voltage : 1.5 V

ESP59577



Light bulb

Light bulb, 10 V / 50 mA, E10 (Lt)

ESP59574

Fuses

With transparent glass body, quick blow type, 20mm long



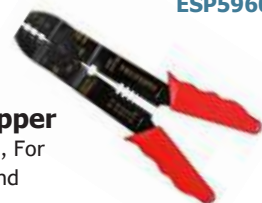
- ESP59578 500 MA
- ESP59579 1 A
- ESP59580 2 A
- ESP59581 3 A
- ESP59582 5 A



Wire Cutter & Stripper, Deluxe

Self adjusting tools for stripping the wire without damaging the inner core. Strips and cuts wire from 0.2 to 6mm. Suitable for electronics, industrial aviation automobiles and domestic use. Length 175mm.

ESP59608



Wire Cutter & Stripper

Wire Cutter Stripper Tool, For Cutting Wire, Crimping And Stripping Insulated Wire

ESP59609





Lever, Single Kit

The lever kit teaches students through hands-on design, construction, testing, and design iterations. Create the structure with the highest strength to weight ratio to win this engineering competition! A great way to teach middle school students basic engineering and to learn iteration by studying failure, or teach high school students basic statics, free body diagrams, failure modes, and member sizing calculations while complying with STEM education standards. Includes materials and tools for constructing levers; instruction manual with sample calculations, basswood members, balsa members, adhesive, adjustable cutters, and base material. An ideal training kit for Science Olympiad and other building competitions. Required: electric drill and bit.

Grades 6-12

ESP59613



Lever, Single Kit Refill

Lever, Single Kit Refill. Grades 6-12

ESP59614



Lever Test Kit

The test kit includes everything required to test your levers for competition, except for the ballast (sand), including a test stand that can fit on any table with a lip, a loading block, a boomilever scale, a ballast scale, a scoring sheet, chain, S-hook, bucket, beaker with handle, and plastic trap. Grades 6-12

ESP59615



Boomilever Class Challenge Kit

The boomilever kit teaches engineering through hands-on design, construction, testing, and design iterations. Create the structure with the highest strength to weight ratio to win this engineering competition! A great way to teach middle school students basic engineering and to learn iteration by studying failure, or teach high school students basic statics, free body diagrams, failure modes, and member sizing calculations while complying with STEM education standards. Includes materials and tools for constructing boomilevers instruction manual with sample calculations, basswood members, balsa members, adhesive, adjustable cutters, and base material. An ideal training kit for Science Olympiad and other building competitions. Required: electric drill and bit. Grades 6-12

ESP59617

Boomilever Class Challenge Kit Refill

Boomilever Class Challenge Kit Refill. Grades 6-12

ESP59618



Structure and Bridges Classroom Kit

Gain a comprehensive understanding of structural engineering and learn how engineering concepts are applied in supporting or resisting loads. The class will study different types of bridges and the STEM principles that support their designs. During the unit, students will construct six working models including a house, a suspension bridge, a cable-stayed bridge, an arch bridge and two different truss bridges. They will also be challenged to build the largest free standing tower possible using the Engino? Components included in the kit. Finally, the students will apply their new knowledge to design and build a straw bridge that spans 70 cm and will support a minimum 2 kg distributed static load using only 100 plastic straws and a limited amount of masking tape. Includes all building and testing materials, instructor's manual, lesson plans, Engino hands-on activity books, building instructions, and student worksheets. Grades 7-12

ESP59620



Heat Kit Simple

Ideal for use by Primary School students, aged 6 - 12 years. The student will be able to understand the basic knowledge on heat characteristics of materials and their conductivities with respect to heat. The experiments can be performed by the students themselves using their own ideas.

Experiment topics:

Expansion of water by heat, Expansion and contraction of air by changing temperature, Heat convection, Heat conduction, Heat conductors and insulators.

Specification:

Made with high quality standard.

The kit contains:

1 complete stand (Code # 9601410), 1 copper rod (Code # 9601421), 1 steel rod (Code # 82120284), 1 glass rod (Code # 9601423), 1 250 ml Erlenmeyer flask, 1 Rubber stopper with two holes dia 27/35 x 35mm, Grey, 1 Plastic Pipe OD=4mm, ID=3mm, P=170mm, 1 thermometer -10 - 110 C, A1.5 C, Red Spirit, 1 manometer holder (Code # 9601422), 3 plastic pipe OD=4mm, ID=3mm, P=115mm, 2 Rubber Pipe OD=4mm, ID=3mm, P=60mm, 1 spirit burner, 1 Balloon, Equipped with storage box, **Dimensions** : (L) 10.00 x (W) 11.00 x (H) 26.00cm, **Weight** : 0.470kg

ESP59648



Ignition Kit Smart case

A great way to show students the relationship between volume and temperature in real-life. Our complete kit demonstrating the principles of an internal diesel and petrol combustion engine now supplied in an easy store Gratnell Smart Case. These experiments allow the student to explore volume pressure and temperature gas laws as part of the current GCSE curriculum.

Our kit comprises of the following:

1 x Fire syringe

When the plunger in the TRANSPARENT cylinder is rapidly pushed down over a piece of cotton an ignition occurs. This is one of the most impressive demonstrations of the heat produced when a gas is rapidly compressed - the principle of the Diesel engine ignition. Safety Glasses required. Approximately 22 cm tall.

1 x Ignition cylinder

A tough strong clear acrylic tube that when the propellant is sprayed into the tube and mixed with air then sealed with our foam bung and lit underneath produces an amazing 'POP' where the air and propellant mixture creates an explosion similar to that of a petrol engine. A fantastic experiment that students love.

1 x Gratnells Smart Case, 2 x Spare Fire syringe seals, 1 x Cotton wool sample, 2 x Foam plugs, 1 x Lighter, 1 x Atomizer *(supplied empty), 1 x Pair safety goggles,

*Ignition cylinder requires cyclohexane as a recommended fuel.

ESP59650



Fire Piston

Turn on to Ideal Gas Law with this explosive demonstration! As air compresses, the temperature increases and combustible material bursts into flames. Also is great for discussing adiabatic compression (rapid compression that raises air temperature) in diesel engines, the laws of thermodynamics and the resourcefulness of ancient people. The kit includes aluminium piston, cotton, two custom O-rings, and instructions. Includes Teacher's Guide.

ESP59654



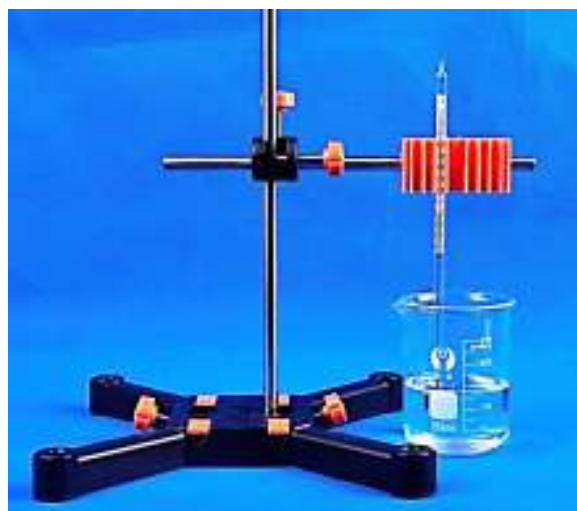


ESS HEAT 1 KIT PC

Kit consisting of :

- (01) Support base,variable
- (02) Boss head
- (03) Fishing line,l= 20m
- (04) Support rod,l=400mm,d=10mm
- Support rod,l=412mm,d=10mm
- Support rod,l=250mm,da=10mm
- (05) Electronic thermometer
- (06) Calorimeter
- (07) Glass beaker,400ml
- Glass beaker,250ml
- Plastic beaker,100ml
- Erlenmeyer flask,100ml
- (08) Erlenmeyer flask,250ml
- Rubber stopper 26/30, 2 holes 7mm
- (09) Measuring tape,l=2m
- (10) Digital stop watch,24h,1/100s &1s
- (11) Rubber stopper 26/30, 1 holes 7mm
- (12) Graduated cylinder,100ml,transparent
- Pipette with rubber bulb
- Glass tube, straight, d = 8 mm,l=80 mm Spoon, with spatula end, plastic
- Glass tube, straight
- (13) Wire Gauze with Ceramic Centre
- Connecting lead 50 cm,red,4mm
- Connecting lead 50 cm,black,4mm
- (14) Students thermometer,-20...+110° C,l=300mm
- (15) Silicone tubing, di=6mm
- (16) Universal clamp
- Iron ring
- Iron ring
- (17) Fahrenheit thermometer

ESP59649



Support Tools (sold separately) :

- Bunsen Burner
- Digital Scale
- Spatula with Spoon
- Test Tube 16x160mm
- Student Power Supply AC/DC 0-12V 5 AMP
- Spirit Burner
- Glass Tubes

List of Experiments :

You can perform the following experiments :

- 1.1 Determination of specific heat capacity of solids
- 1.2 Practice using a thermometer
- 1.3 skin heat sensitivity
- 1.4 Study the melting and solidification process of crystals
- 1.5 Exploring the main factors affecting the speed of diffusion
- 1.6 Exploring the heat absorption power of different substances
- 1.7 Gravity when the glass plate is off the water surface
- 1.8 Demonstration between the molecules
- 1.9 Demonstrate work to change internal energy
- 1.10 demonstrates the conversion of internal energy and mechanical energy



Senior
High
School

Hydrostatics and Heat Kit ESP59651

- The guide book consists of 28 experiments.
- The experiments are related to the substance (liquid) characteristic, temperature measurement, heat conduction, and pump (jack) principle work.

Component List

Consists of 37 components, packed in a plastic injection moulding box. Dimensions: 61 x 26 x 17 cm. Weight: 3.1 kg.

Cat. code	Component	Qty	Cat. code	Component	Qty
FSC 7	Overflow Vessel	1 pc	FPA 12.04/21	Copper Pipe	1 pc
ESL56548	Beaker 250 ml	1 pc	FPA 12.10/51	Silicone Tubing	1 pc
ESL56519	Measuring Cylinder 100 ml, Plastic	1 pc	TL000228	Spirit Burner 80 ml, Stainless Steel	1 pc
FSP 11.05/43	Transparent Plastic Hose 500 mm	2 pcs	MI000236	Alcohol Thermometer -10°C - 110°C	2 pcs
ESP 11.08/47	Plastic Funnel 70 mm	1 pc	MI000234	Alcohol Thermometer 0°F - 250°F	1 pc
FSP 11.09/48	Support Clamp	1 pc	MI000237	Alcohol Thermometer without Scale	1 pc
ESP 11.10/49	Hose Connector	2 pcs	GW000175	Test Tube Ø 12 x 100 mm KTA 40/100.012	2 pcs
PMF 125	Pressure Probe	2 pcs	KSM 13/17-22	Rubber Stopper with One Hole, Ø 17/22 mm	2 pcs
ESP 11.13/55	Plastic Tube with Hanger	1 pc	KSM 14/29-35	Rubber Stopper with Two Holes, Ø 29/35 mm	2 pcs
FSP 11.14/57	Plastic Tube with Load 120 gr	1 pc	KSM 13/29-35	Rubber Stopper with One Hole, Ø 29/35 mm	3 pcs
ESL56413	Erlenmeyer Flask 100 ml	3 pcs	KSM 12/17-22	Rubber Stopper without Hole, Ø 17/22 mm	2 pcs
BFS 63/07-250	Capillary Pipe with Scale Ø 7 x 250 mm	1 pc	FSP 11.16/135	Multipurpose Glass Body Length 10 cm and marble	2 pcs
PHE 241	Plastic Basin	1 pc	FPA 12.04/21	Copper Pipe	1 pc
FPA 13	Special Pointer	1 pc	FPA 12.10/51	Silicone Tubing	1 pc
FPA 12.02/19	Steel Pipe	1 pc	TL000228	Spirit Burner 80 ml, Stainless Steel	1 pc
FPA 12.03/20	Aluminum Pipe	1 pc	MI000236	Alcohol Thermometer -10°C - 110°C	2 pcs



Physics Experiment Kit

Cat. code	Component	Qty
TL000121	Boshead Clamp	2 pcs
FSP 11.17/137	Marble	2 pcs
FPA 12.05/22	Heat-Air and Liquid Circulation System	1 pc
FPA 12.09/41	Propeller	1 pc
FPA 12.08/40	Steel Needle for Propeller	1 pc
FPA 12.07/30	Radiation detector	1 pc

Supporting Components

Available in the Mechanic kit PMS 107.

Cat. code	Component	Qty
GSN 180	Stand Base with 3 Clamps	2 pcs
FME 51.02	Stand Foot	2 pcs
KST 30/250	Stand Rod 0 10x 250 mm, Stainless Steel	2 pcs
KST 30/500	Stand Rod 0 10 x 500 mm, Stainless Steel	2 pcs
FME 51.05/05	Support Block	2 pcs
FME 51.07/07	Dynamometer 1.5 N	1 pc
FME 51.14/23	Holding Clamp	3 pcs
FME 51.08/09	Nylon Thread	1 pc
FME 51.09/10	Load 50 gr	6 pcs
ESL57745	Analog Stopwatch	1 pc
KMS 15/305	Ruler 50 cm, Stainless steel	1 pc

Supporting Tools

For detailed information, please refer to page 70 - 73.

Cat. code	Component	Qty
ESP 23	Balance 311 g	1 pc

Experiment Topics

- HP1 Cohesion and Adhesion
- HP2 Capillarity
- HP3 Hydrostatic Pressure
- HP4 Connected Vessels
- HP5 Buoyancy of Liquid
- HP6 Archimedes' Principle
- HP7 Sinking/Floating/Swimming
- HP8 Hydraulic Pump
- HP9 Water Pump
- HP10 Filtration
- HP11 Water Purification by Filtration
- HP12 Temperature Measurement
- HP13 Comparing Celsius and Fahrenheit Thermometer
- HP14 Calibration of a Thermometer
- HP15 Temperature of a Mixture
- HP16 Heat
- HP17 Matter and It's Changes
- HP18 Relation Between Heat and Changes of Matter
- HP19 Linear Expansion of Solid Bodies
- HP20 Volume Expansion of Liquid
- HP21 The Expansion of Gas
- HP22 Physical and Chemical Changes
- HP23 Properties of the Elements, Compounds, and Mixtures
- HP24 Evaporation
- HP25 Water Purification by Distillation
- HP26 Conduction in solids
- HP27 Heat Convection in Gas and Liquids
- HP28 Thermal Radiation and Heat Absorption



HP 6 Archimedes' Principle



HP 9 Water Pump



HP 16 Heat



Communicating Vessels Experiment Kit ESP60135

Senior High School

Senior High School



- The Communicating Vessels Experiment Kit consists of a uni-body glass with four openings whom have different neck shapes and sizes.
- This experiment is designed to observe a hydrostatic phenomena between fluid and atmospheric pressure, as well the effect of non-soluble fluids (such as oil and water) to its hydrostatic state.
- This experiment kit also consists of a set of Bernoulli's Tube which can be used to demonstrate Bernoulli's principle.

Experiment Topics

- E1 Capillarity
- E2 Communicating Vessel
- E3 Fluid Pressure due to Two Different
- E4 Fluids Bernoulli's Tube

Component List

Consisting of 3 components, packed in a plastic injection moulding box. Dimension: 62 × 30× 9 cm. Weight: 2.2 kg.

Cat. code	Component	Description	Qty
ESP 6	Capillarity Apparatus	For the investigation of the relation between capillary rise of liquid and the bore diameter of the capillarity tubes constructed in the form of communicating vessels in which the liquid is contained.	1 pc
ESP 5	Communicating Vessels	To show that the surface of a liquid at rest is always horizontal independent of size or shape of vessel.	1 pc
ESP 550	Bernoulli's Tube	To demonstrate Bernoulli's principle.	1 set



Calorimeter Experiment Kit ESP59660

Senior High School

Senior High School

Calorimeter Experiment Kit is designed to perform a few basic heat experiment such as proving Black's Principle, heat capacity measurement, even the relationship between electrical power dissipation and heat system (Joule calorimeter).

Component List

Consisting of 12 components, packed in a plastic injection moulding box. Dimension: 62 × 30× 9 cm. Weight: 4.2 kg.

Cat. code	Component	Description	Qty
FPA 50	Calorimeter	Double wall, Inner vessel and Outer vessel Complete with insulating cover, aluminium stirrer and rubber stopper with hole for thermometer	1 pc
PHM 152	Joule Calorimeter	Joule Calorimeter with Nickel Heater Complete with aluminium stirrer, rubber stopper with hole for thermometer and nickel-based heater with maximum voltage of 6V	1 pc
FSP 18	Material Samples	Material : Iron, brass, copper, wood and aluminium Cube Size: 20 x 20 x 20 mm	1 set
ESL56548	Beaker Glass 250 ml	Size : Capacity 250 ml Material : Borosilicate glass Low form and with pouring lips	1 pc
FME 51.08/09	Nylon Thread	10 m nylon tread reel.	1 pc
TL000228	Spirit Burner 80 ml, Stainless Steel	Used as spirit burner at laboratorium. • Overall Size: 90 x 69 x 64 mm • Material : Stainless steel With wick and wick regulator	1 pc
KKA 55/80-100	Tripod Stand	To be used with spirit burner. • Ring Size: Ø 100 mm, Height : 80 mm • Material : Steel Ø 8 mm • Color : Black	1 pc
TL000114	Wire Gauze 14 x 14 cm without Ceramic	Used as a pedestal a glass or porcelain when processing warming. Size : 140 x 140 mm Material : Stainless steel	1 pc
MI000236	Alcohol Thermometer -10° C - 110° C	Alcohol filled thermometer. • Glass tube ± Ø 6 mm • Length ± 300 mm, with hanger ring at top end • Scale: -10° to 110°C, graduated 1°C	1 pc
ESP57915	Connecting Lead DC 50 cm, Black	Cable with a total length of 500 mm and maximum current of 8 A. Color: black.	3 pcs
ESP57914	Connecting Lead DC 50 cm, Red	Cable with a total length of 500 mm and maximum current of 8 A. Color: red.	3 pcs
KAL 41	Basic Meter 90	For use to measure voltage and current, DC only, with internal shunt and multiplier. Equipped with sliding switch to change function as voltage or current meter.	2 pcs
FPA 50	Calorimeter	Double wall, Inner vessel and Outer vessel Complete with insulating cover, aluminium stirrer and rubber stopper with hole for thermometer	1 pc

Experiment Topics

- E1 Heat Capacity of Calorimeter
- E2 Specific Heat
- E3 Latent Heat of Melting Ice
- E4 Conservation of Energy





Immersion Heater For Calorimeter Block
Specially designed for metal block calorimeters. Heating element enclosed in a metal tube with two connecting leads which are insulated with heat resistant insulation. 12V, 50W.

ESP59667



Calorimeter Block

Metal, for experiments on specific heat of different metals, cylindrical metal blocks 1kg 2%. Each block has a central hole for a special immersion heater and an offset hole for thermometer.

ESP59666

NEW



COLORIMETER JOULES ALIUMINIUM

A calorimeter with a double-walled cover will minimize heat loss. The inner and outer vessels are made of aluminum. The calorimeter has a stirrer and support for the inner vessel. Item is now interchangeable and can be used with or without electricity. Inner vessel capacity: app 300 ML Including terminal Inner and outer barrel Aluminum cup, with stirrer

ESP59661AL

Colorimeter

ESP59661	Copper joules	CALORIMETER , With $\phi 100 \times 110$ mm, Height Excluding terminal Inner and outer barrel copper cup, with stirrer.
ESP59662	Copper 75 x 50mm dia.	With parallel sides and rolled rim, without stirrer.
ESP59663	Copper 100 x 75mm dia.	With parallel sides and rolled rim, without stirrer.
ESP59664	Copper 75 x 50mm dia.	Polished Calorimeter as above, fitted with plastic lid fitted with rubber stopper and stirrer.
ESP59665	Copper 100 x 75mm dia.	Polished Calorimeter as above, fitted with plastic lid fitted with rubber stopper and stirrer.



Heating Plate

SCHOTT Ceran glass plate, with grinded edges To be used with plate holder ESP59656 **Dimensions** : 155 x 155 x 4 mm

ESP59657



Boss-head

Boss-head four straight slot. Used to clamp circular and square rod.

Dimensions : Length : 55 mm

Material : Aluminium

Part of Heat and Hydrostatic KIT for Junior High School

Dimensions :

(L) 10.00 x (W) 3.00 x (H) 5.00 cm

Weight : 0.129 kg

ESP59655



Plate Holder For Heating Plate

Steel plate support with handle;
Crimped borders ensure that the glass plate or wire gauze
Does not slide when inserted;
Handle : D = 10 mm;
Dimensions : 160 x 160 mm

ESP59656



NEW

**Insulation Jacket 75 mm dia**

Insulated Jackets made up of a thick felt sleeve and a base mat to fit 75mm diameter calorimeters. Excellent for investigations into insulation and heat loss. PK /5

ESP59668/75

Insulation Jacket 50 mm dia

Insulated Jackets made up of a thick felt sleeve and a base mat to fit 50mm diameter calorimeters. Excellent for investigations into insulation and heat loss. PK /5

ESP59668/50

**Heat Pad Irwin Low Voltage Heatproof Mat**

The Irwin low voltage versatile heat pad that allows the user to heat up beakers, conical flasks etc. The unit heats up to about 90 degrees Celsius which is great for heating water, boiling alcohol etc. Particularly useful where teaching must be performed in a classroom without a gas supply. The unit is waterproof and splash-proof and so may be used where spillage is possible.

Comes complete with leads. It is supplied bonded to a heatproof mat to protect benches and tables. If the children touch it then reflex action will remove their hand before burning can occur. Much safer than a Bunsen burner!

ESP59670

Heat Pad Irwin Mains Heatproof Mat

A versatile heat pad that allows the user to heat up beakers, conical flasks etc. The unit heats up to about 90 degrees Celsius which is great for heating water, boiling alcohol etc. Particularly useful where teaching must be performed in a classroom without a gas supply. The unit is waterproof and splash-proof and so may be used where spillage is possible. Comes complete with 1.5m of silicon cable and 13A mains plug.

It is supplied bonded to a heatproof mat to protect benches and tables. If the children touch it then reflex action will remove their hand before burning can occur.

“Much safer than a Bunsen Burner...”

ESP59671

NEW

**Demo Thermocouple**

one each wire copper and constant an ,approx .305 mm logg , twisted and brazed together

ESP59679

Leslie's Cube

Metal plate with 130mm sides. The vertical faces of the box are blackened., roughened, vanished and polished respectively.

The top opening is 75mm diameter and is fitted with a lid. The apparatus is filled with water maintained at boiling point by a low Bunsen flame. Infra red sensors maybe be used to compare the relative heat output from each of the four faces.

ESP59674

**Thermo - octagon**

For investigating the thermal radiation from a body as a function of temperature and the kind of radiation surface.

The coloured surfaces get sweep outside for heat radiation, for absorption sweep inside.

Hollow body with 8 surfaces, partially laminated in different colours; heat source mounted on the cover: light bulb 12 V / 20 W; Surfaces : white, black, blue, yellow, red, White - matt finished, nature polished, Nature - matt finished;

Dimensions : approx. 150 x 150 x 105 mm

ESP59675

**Wood And Metal Cylinder**

To show that metal has a lower specific heat than wood, constructed of wood on one end and hollow metal on the other. One way is to simply let students feel both ends of the cylinder at room temperature, enabling them to see that the metal end is cooler than the wooden end. Another easy demonstration is to wrap paper on both ends and hold the cylinder over a flame for five seconds. The metal end will be relatively unmarked while the wooden end will show scorch marks.

ESP59678

**Compound Strip (Bimetallic Strip)**

A classic experiment that never grows old. Two metals (Copper and iron) of different heat expansion coefficients welded together and mounted in wooden handle. Demonstrates unequal expansion of different metals by bending when heated.

ESP59676





Radiant Heater

The Irwin Radiant Heat source is a compact and safe heat source for school heat radiation experiments. It comprises a base and cage containing a custom made infra-red heating lamp of the dull emitter type. The lamp is like the old Griffin lamp but turned inside out. This means that it is impossible to for a pupil to get an electric shock by prodding it with a paper clip etc. Please note The unit can take up to half an hour to reach maximum temperature and so this time lag should be taken into account when planning lessons. In normal use, four thermometers, one with a blackened bulb, one with a silvered bulb, one with a white bulb and one with a nude? bulb may be situated around the unit at equal distances and a heat absorption experiment performed. The lamp does not visibly glow as almost all the energy provided is converted into heat. For this reason, a cage has been placed around the lamp to prevent pupils touching it and burning themselves. However, some experiments require more heat and so the cowl may be removed by unscrewing the four retaining screws. If this is done, the pupils should be warned of the dangers. Manufactured in the UK **Dimensions:** Height: 215mm | Width: 150mm | Depth: 150mm - **Weight :** 1.5kg

ESP59672



Ingen-Hausz Apparatus

To demonstrate different conductivities of different metals. Rods of 5 different metals, fitted along one side of a metal tank. Fitted with 2 Bakelite Handles for easy handling.

ESP59685



Thermal Conductivity Of Metal Apparatus

The apparatus consists of a wood compound ring with four pointed strips of metal attached at 90 degrees to each other around the ring. The strips are attached so that their points are in the centre of the ring. At the other end of each strip there is an indentation for holding water. Each strip is made of a different metal: Aluminium, brass, copper and iron. Depending on the conductivity of the metal the water will evaporate at different times. Dia.: 130mm

ESP59681

Thermopile "compact"

Thermopile with amplifier to convert the optical power to a voltage value. Serves as a radiation pyrometer with a measuring device 0 ... 10 V or 10 mA; ON / OFF - switch; zero point adjustment; Outputs are protected against short circuit; LED-indicator for operating state; Output voltage: Max ±14 V;



battery-driven (battery included) or External power supply 6 - 12 V DC (Not included) **Dimensions :** 84 x 84 x 39 mm

ESP59677



Thermopile

The IPC Thermopile uses a multi junction thermopile housed in a transistor type package, this element along with its amplifier are housed in a 140mm rod with a 400mm cable terminated with red, black and white 4mm connection plugs. By using a sensitive digital voltmeter capable of reading millivolts to volts the differing radiant energies from the surface of a Leslie cube can be demonstrated.

Electrical Supply: 7V to 25VDC (minimum current) - Dimensions: 140mm x 13mm dia. with 400mm leads - Mass: 0.02kg - Output Voltage Range: 1mV to 2VDC - Measuring Distance: 1cm to 20cm (depending on temperature being measured) - Temperature Range: 20deg C to 100deg C (recommended measuring range)

ESP-4652-W

Heat Conductivity Experiment

A very simple to use set of apparatus to compare the heat conductivity of four metal bars. Four bars, Aluminium, Steel, Copper and Bronze are set into a plastic holder. Each bar has attached to it a solid state thermometer strip. The unit is suspended from a clamp stand with the bar ends dipping into a beaker of very hot water. Comparison of the rate of heat progress along the four bars may be made by direct observation. An elegant solution to an otherwise messy experiment no more Vaseline, steel balls etc.



ESP59680



NEW

Heat Conductivity Experiment

A very simple to use set of apparatus to compare the heat conductivity of four metal bars. Four bars, Aluminium, Steel, Copper and Bronze are set into a plastic holder. Each bar has attached to it a solid state thermometer strip. The unit is suspended from a clamp stand with the bar ends dipping into a beaker of very hot water. Comparison of the rate of heat progress along the four bars may be made by direct observation. An elegant solution to an otherwise messy experiment no more Vaseline, steel balls etc.

ESP59684





Conductivity Of Heat Apparatus

Conduction of Heat Apparatus

4 pieces of metal strips. They have the same form and dimension. For use to show differences in conductivities of various metals.

Dimensions : 125 x 15 x 3mm, mounted on hollow circular wooden base 135mm dia.

Consists of strips of copper, iron, aluminium and brass.

An indentation is made at the outer end of each strip to place wax chips on Heating with spirit or gas burner on the circular tripod

Supplied without tripod and burner

Dimensions : 18.00 (L) x 18.00 (W) x 2.00cm (H) **Weight** : 0.200Kg

ESP59682



Ball And Ring

BALL AND RING, Gravesande's mounted in rod with handle, ball with chain. Cold ball passes through the ring but does not pass when heated.

ESP59689	DIA. 19MM
ESP59690	DIA. 22MM
ESP59691	DIA. 25MM



Bar and Gauge

To illustrate expansion of metal on heating and contraction on cooling, with steel bar of length 110 x 10 mm and plated brass gauge

with a cut- out to just

accommodate the bar and two holes through which the bar passes when cold.

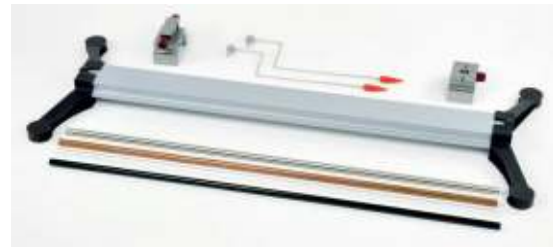
ESP59699



Bar Breaking Apparatus

A heavy cast iron stand slotted to carry a stout iron bar, with ten cast iron breaking bars

ESP59697



Thermal Conductivity Of Metal Apparatus Superior

Consisting of:

1x Stand-rail base, L = 500 mm

2x Rail claw

1x Slider with setting for heat expansion

1x Slider for pointer

1x Tube for heat expansion, aluminium

1x Tube for heat expansion, iron

1x Tube for heat expansion, copper

1x Tube for heat expansion, glass

2x Pointer for heat expansion, Demo

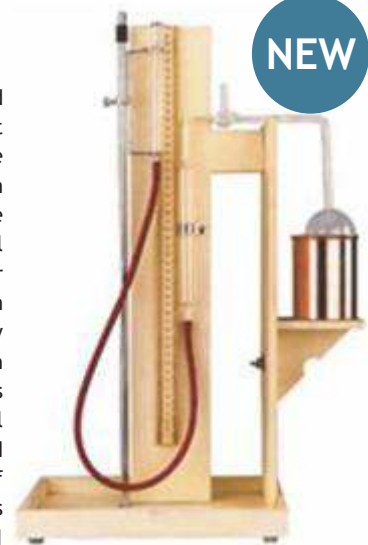
ESP59683

Constant Volume Thermometer

Consists of a polished teakwood stand approx. 750mm height fitted with a wooden scale reading from 0 to 60cm x 1mm and supporting an adjustable mercury reservoir by a metal rod. A detachable air thermometer bulb about 70mm dia, connected via three way stopcock to mercury tube with zero index lased inside its upper end. A metal vessel surrounding the bulb supported by detachable metal self mounted on insulating asbestos screen. Mounted on a teakwood

stand with a deep tray which serves to catch any mercury which has accidentally spilled from the reservoir. Supplied complete with one meter of rubber pressure tubing 10mm O.D. & 5mm bore for connecting the reservoir to the bulb (about 750gm of mercury is required) without mercury.

ESP59669



NEW



Thermostat Model

A dramatic demonstration of the thermostat principle. Consists of a bimetallic strip mounted in a base. Because of the unequal expansion of the two different metals, the bimetallic strip will bend to open or close the circuit and the light bulb lights up accordingly.

ESP59687





NEW

Thermal Conductivity Of Bar Set

Set consist of 5 Different metal bars : Aluminium Bar Dia. 3 mm Conductivity 240 Nominal , Brass Bar Dia. 1.5 & 3 mm Conductivity 128 Nominal , Coppe Bar Dia. 1.5 & 3 mm Conductivity 395 Nominal , Iron Bar , Dia. 3 mm Conductivity 0.65 Nominal , Glass Bar Dia. 1.5 & 3 mm Conductivity 72 Nominal

ESP59686

ESP59686A	THERMAL CONDUCTIVITY OF ALIUMINIUM BAR	Aluminium Bar Dia. 3 mm Conductivity 240 Nominal
ESP59686B	THERMAL CONDUCTIVITY OF BRASS BAR	Brass Bar Dia. 1.5 & 3 mm Conductivity 128 Nominal
ESP59686C	THERMAL CONDUCTIVITY OF COPPER BAR	Coppe Bar Dia. 1.5 & 3 mm Conductivity 395 Nominal
ESP59686I	THERMAL CONDUCTIVITY OF BAR IRON	Iron Bar , Dia. 3 mm Conductivity 0.65 Nominal
ESP59686G	THERMAL CONDUCTIVITY OF BAR GLASS	Glass Bar Dia. 1.5 & 3 mm Conductivity 72 Nominal

Resistance Thermometer

For showing the principles of platinum resistance thermometry and for accurate temperature measurement using a bridge method such as 'Cary-Foster' bridge. The thermometer comprises a length of fine platinum wire of about 2 ohms resistance, wound non-inductively on a mica frame and soldered to stout copper leads. A pair of compensating leads are provided, all four leads being connected to 4 mm socket terminals. Suitable for temperatures up to about 150 degree C only and for low temperature work



ESP59688

NEW

Specific Heat Cylinder Set

SPECIFIC HEAT CYLINDERS SET , Comprising Brass, Lead, Iron, Copper, Aluminium and Zinc. Supplied in Case.



- ESP59693** Equal in size , size available : 30 x 10mm.
- ESP59694** Equal in size , size available : 40 x 10mm.
- ESP59695** Equal in mass cylinders of diameter app.16Mm

Each cylinder adjusted to 100g. Cylinders vary in length from 5cm to 19cm to get the same mass and are drilled across cross- section near one end for suspension.

Metal Blocks - Pack of 12

Metal Blocks for use in density determinations. Set of twelve in assorted sizes, shapes and masses. The set comprises:2 x Brass , 2 x Iron , 2 x Aluminum , 2 x Copper ;2 x Zinc , 2 x Lead , Masses vary from 12 to 25g

ESP59696



Convection In Water Apparatus

For demonstrating the phenomenon of thermal convection in liquids caused by temperature variation. Consists of a rectangular-shaped borosilicate glass tube 18 MM with a funnel-shaped opening at the top for filling liquids. When tube is partially filled with water and heated at one corner after adding a dye, potassium permanganate crystals, sawdust, or aluminium powder, the movement of colours or particles illustrates the formation of convection currents. Includes teacher's guide.



Convection In Air Apparatus

To show the convection of heat in air. Metal box, with sliding glass front and two detachable glass chimneys. Supplied without candles.

ESP59703

Metal Rivets

- ESP59707** Iron, Pk of 500gm
- ESP59708** Copper, Pk of 500gm
- ESP59709** Aluminium, Pk of 500gm
- ESP59710** Brass, Pk of 500gm

ESP59701





Lab Table Mobile

Table for laboratory and transport purposes; thanks to the large casters high door sills are no problem; thick plastic edges serve as protection against impacts. Plastic plates in green; 2 shelves for power supplies, measuring devices or small parts; bottom plate for experiment kits or larger items. Rack made of aluminium and silver-coated; shelves and bottom plate are easily removable, and can be taken apart and rearranged.

Working space : 750 x 500 mm
 Shelf space: 750 x 244 mm and 750 x 123 mm
 Bottom plate : 750 x 385 mm
 Total height : 900 mm
 4 pulleys (D = 75 mm), two can be locked in position

ESP59715



Magnetic Base, D=43 Mm, With Tube And Pin

Rubber-encased metal base with embedded neodymium magnet; for fast assembly of round rods of Max. 10 mm in diameter; normal or parallel to a metal panel; rubber jacket prevents the table surface from scratches; this also makes the base non-slip; a newly-developed clamp set with a bearing pin enables elements to be fixed onto the plate surface at variable distances; holding force on bearing pin as a point of application; as measured parallel to the table:

Magnetic base D = 43 mm: 10 - 25 N | Magnetic base D = 66 mm: 20 - 70 N (The holding force is dependent on the strength (thickness) of the metal panel

ESP59720



Assembly For Lab Table

This assembly enables more elevated experimenting; this makes experiments easier for students to view.

Heavy power supplies or measuring devices can be placed beneath the experiment.

Two fixed special rail profiles allow fast, safe assembly of rail stand materials; can be placed on the instructor's table or portably on the lab table and fixed in position with screw clamps; cable holders are attached to the side.

Working space: 750 x 375 mm
 Total height : 305 mm (excluding rail profile)

ESP59716



Panel, Green/White, 900X610mm

One side green, one side white,
 Dimensions : approx. 90 x 62 cm

ESP59719



Screw Clamp, Jaw Width Approx. 50 mm

For mounting rails bases (special aluminium profile) or for assembly with a frame on tables with a maximum thickness of 48 mm; Aluminium profile with steel pin, sturdy screw with M10 thread and pressure plate.

ESP59717



Board Holders, Pair, Magnetic

Board holders, pair, magnetic, L = 600 mm

ESP59718





Magnetic Base, D=66 Mm, With Tube And Pin

Rubber-encased metal base with embedded neodymium magnet; for fast assembly of round rods of max. 10 mm in diameter; normal or parallel to a metal panel; rubber jacket prevents the table surface from scratches; this also makes the base non-slip; a newly-developed clamp set with a bearing pin enables elements to be fixed onto the plate surface at variable distances; holding force on bearing pin as a point of application; as measured parallel to the table:

Magnetic base D = 43 mm: 10 - 25 N
 Magnetic base D = 66 mm: 20 - 70 N

(the holding force is dependent on the strength (thickness) of the metal panel)

ESP59721



Claw Base Simple

Simple support base for quick set-ups; special aluminium profile (rail base profile); silver coated, with mounted rail claws; drill hole with screw for mounting rods of Max. D = 10 mm; surface

Dimensions : 265 x 220 mm

ESP59728



Claw Base, Magnetic

Simple magnetic support base for quick set-ups; special aluminium profile (rail base profile), with mounted rail claws including neodymium magnets; drill hole with screw for mounting round support material with a diameter of Max. 10 mm; surface

Dimensions : 265 x 220 mm

ESP59729



Rail Claw, Simple

Two rail claws attached to a special profile provide a support base or stabilise the track or optical bench; Fibre glass reinforced plastic with rubber feet;

Length = 220 mm

ESP59722



Rail Claw, Adjustable

Two rail claws attached to a special profile provide a support base or stabilise the track or optical bench;

Fibre glass reinforced plastic with rubber feet; with metal cylinders and levelling screws.

Length = 220 mm

ESP59723



Rail Claw, Magnetic

Two rail claws attached to a special profile provide a support base or stabilise the track or optical bench; Fibre glass reinforced plastic with rubber feet; with strong neodymium magnets (D = 22 mm, H = 10 mm);

Length = 220 mm

ESP59724



Stand Rail Base

Special aluminium profile; silver-coated; creates a support base with two rail claws, or for holding universal rails using clamp saddles; hole on side for optional attachment to tables using the demo table clamp

ESP59725 L=125 Mm

ESP59726 L=250 Mm

ESP59727 L=500 Mm





Round Base With Stand Tube, Uni or simple set-ups; heavy metal base with clamp socket for mounting round rods from D= 3mm up to D=14mm or square rods up to s= 12,5 mm; powder-coated; M8 fixing screw **Dimensions** : D= 84 mm, H= 58 mm
Weight : approx. 395 g

ESP59730



Sliding Saddle «Sepp», H = 40 Mm or a stable support of round or square rods on special aluminium profile, slide can be set at and moved to any position; special anodised aluminium profile with clamp socket, for supporting round rods of 3-14 mm in diameter or square rods of up to s = 12.5 mm; with M8 wing screw

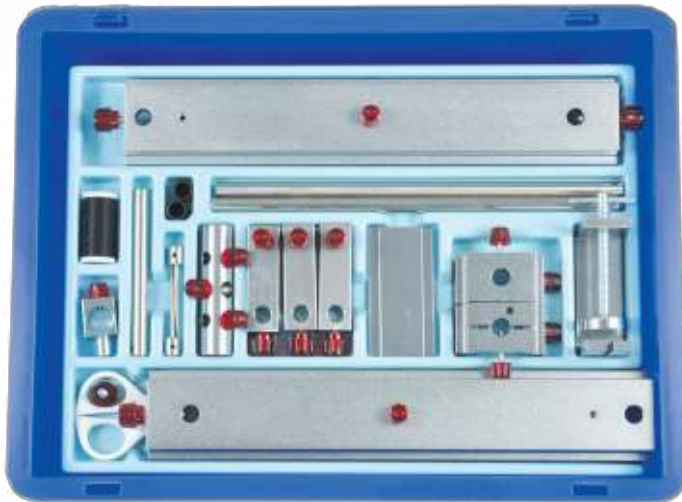
ESP59731



Claw Base «Sepp», 260 X 220 Mm

Sturdy metal stand base with large surface area; special aluminium profile anodised with clamp socket, for stable support of round or square rods and for holding sliders; laterally positioned claws made of fibre glass reinforced plastic, with rubber pads; clamp socket for holding round rods of 3-14 mm in diameter or square rods of up to s= 12.5 mm; with M8 wing screw; surface area: 265 x 220 mm (583 cm²); **Weight** : 383 g approx.

ESP59732

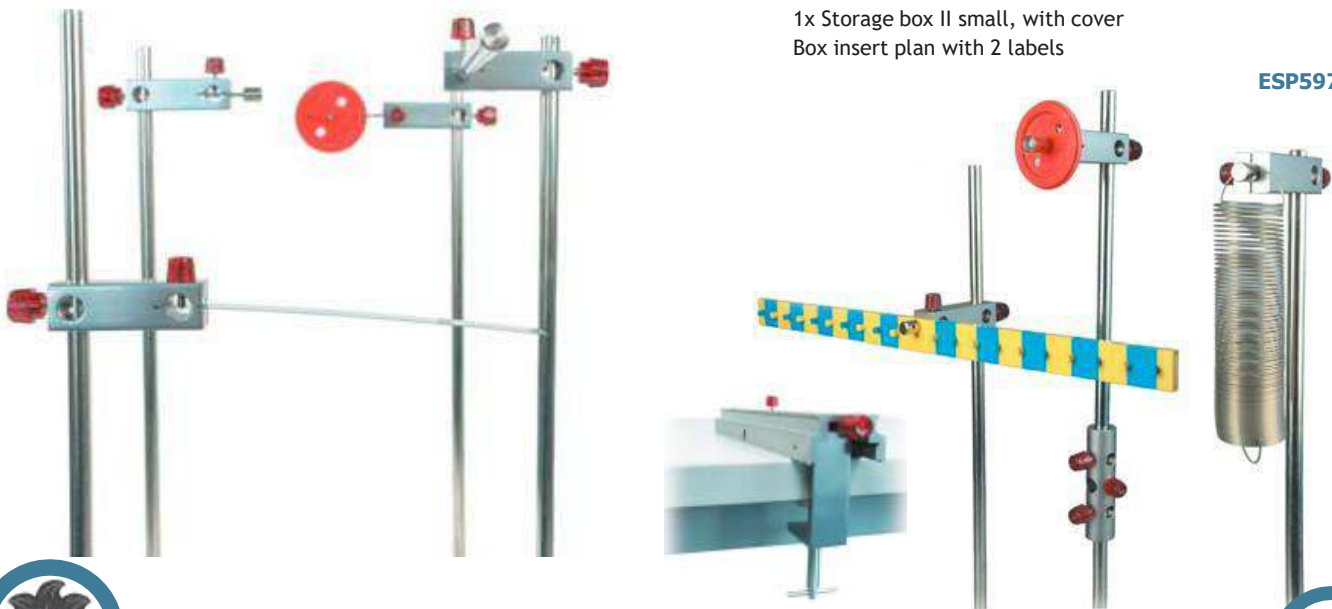


Stand Material Kit

Kit consisting of:

- 2x Bearing pin
 - 1x Holder for dynamometer and test tubes, 1x Table clamp,
 - 2x Stand rail, 300 mm, aluminium profile for use as stand base or inclined plane
 - 1x Rail connector , universal Special aluminium profile, for connecting rails
 - 3x Boss-head, universal, Rectangular aluminium profile, for mounting shafts, pins and / or springs
 - 1x Boss-head, round,
 - 1x Sliding saddle with set screw Special profile
 - 1x Slider for pointers for heat expansion Special profile
 - 2x Support rod, round, L = 250 mm, D = 10 mm
 - 2x End cap for rods, plastics Creates a stand base out of a stand rail and a support rod
 - 1x Support rod with pivot pin, L = 100 mm, D = 10 mm
 - 1x Pair of scissors, SE
 - 1x Cord, roll, 30 m, high tensile strength
- Storage:
- 1x Box insert Rail stand material
 - 1x Storage box II small, with cover
 - Box insert plan with 2 labels

ESP59733





Simple Machines Kit

Ideal for use by Primary School students. The student will understand the basic concepts of friction between different surfaces, the concept of lever and pulley system. Using this kit the student will be able to design their own experiments.

Experiment topics:

Friction between different surfaces. Function of an inclined plane.

Function of pulley system. Characteristic of a lever.

Specification:

The kit consists of : 1 friction block , 4 pulley wheels , 2 hooks, 1 rider), 1 spring balance , 1 lever , 1 hook with spring hull and 1 axlel.

Dimensions : (L) 32.00 x (W) 8.00 x (H) 5.00cm

Weight : 0.285kg



ESP59735

ESS MECHANIC 1 KIT

kit consist of :

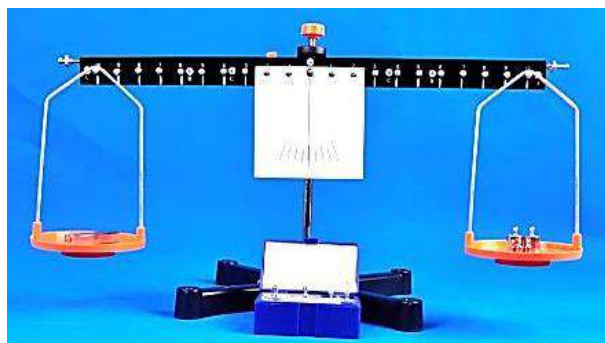
- (01) Support base, variable
- (02) Steel pellets, d=2mm,150g
- (03) Support rod, l=400mm,d=10mm
- Support rod,l=412mm,d=10mm
- Support rod,l=250mm,d=10mm
- Support rod,l=300mm,d=6mm
- (04) Beaker,250mL,Plastic
- Beaker,100mL,Plastic
- (05) Boss head
- (06) Holding pin
- Plate with scale
- Pendulum
- Fixed card
- Lever fixing rod
- Balance nut
- Fixed block length
- Fixed block short
- Butterfly screw nut
- Butterfly screw
- S-hook
- (07) Set of precision weights
- (08) Slotted weight,10g*10
- Slotted weight,50g*10
- (09) Digital stop watch,24h,1/100s &1s
- (10) Measuring tape,l=2m
- (11) Fishing line,l=20m
- (12) Spiral spring group,1N/2N/2.5N/3N/5N
- (13) Graduated cylinder,50ml,transparent
- Pipette with rubber bulb
- Test tube,d =16 mm
- (14) Pulleys,double in line,d=40mm/ 50mm
- (15) Pulley,movable,d=40mm,with hook
- (16) Pulley,movable,d=50mm,with hook
- (17) Vernier caliper,metal
- (18) Spring balance,transparent,1 N
- (19) Electronic balance
- Balance bracket
- (20) lever
- Spring balance,transparent,2.5N
- (21) Balance pan, plastic



List of Experiments

1. Mechanical movement
 - 1.1 Measuring the length with a scale
 - 1.2 Measuring time with stopwatch
2. Quality and Density.
 - 2.1 Determination of the volume of regular bodies and irregular bodies
 - 2.1 Determination of solid density
 - 2.2 Determination of liquid density
3. Force
 - 3.1 Practice using a spring dynamometer
 - 3.2 Exploring the relationship between gravity and mass
4. Exercise and strength
 - 4.1 The role of force and force
 - 4.2 Forces acting on the same line
 - 4.3 Measuring the buoyancy of an object immersed in water
 - 4.4 Measuring buoyancy to determine solid density
5. Simple Machinery
 - 5.1 Exploring the balance of leverage
 - 5.2 Leverage balance
 - 5.3 single side lever

ESP59736



Mechanics Equipment Kit

81 Pieces Student Experiments could include: Newton's Laws, Force, Momentum, Collisions, Simple Machines, Equilibrium, Measurement, Constant Motion, Velocity, Acceleration, Gravitational Constant, Inertia, Energy Transfer
 Kits include:
 2 Large plastic containers with tops to keep all pieces organized and safe.
 Endless Topics can be taught, great equipment kit to outfit a new physics classroom or boast an old one

ESP59741



Dynamic Kit

Kit consisting of:
 2x Dynamics trolley
 4x Slotted weight, 50 g 3x Slotted weight, 10 g
 1x Holder for slotted weights, 10g,
 2x Spring bumper
 1x Pulley with very low friction
 2x Car body for trolley
 1x Flat spring for collision experiments with trolleys
 1x Support rod, round, L=60 mm, D=10 mm
 1x Measuring tape, L=300 cm 1x Trolley with variable speed 1x Track and optical bench,
 2 x 50 cm, alu rail profile, anodized,
 1x Rail bond , universal
 Storage:
 1x Box-insert Dynamics
 1x Plastic box II big, with cover,
 Box -insert plan with 2 labels.

ESP59743

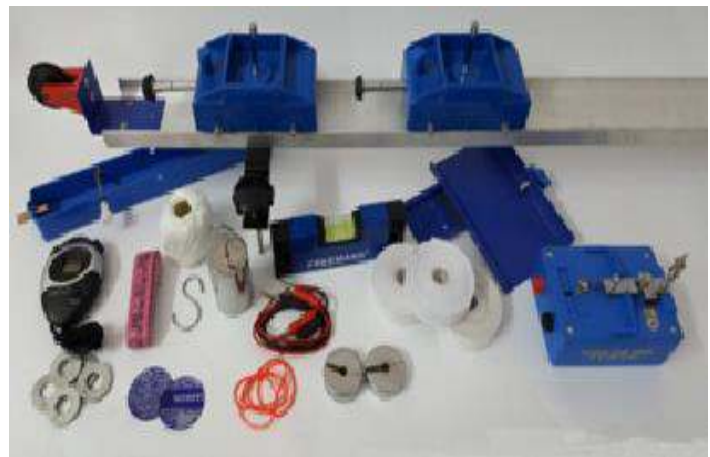


Basic Dynamic System Set

Economical way to teach dynamics including, but not limited to, position, velocity, acceleration, force, elastic and in elastic collisions, momentum, conservation of energy, and much more. If you are looking to get started teaching physics, or need to revamp your mechanics labs this is the perfect kit.

- The kits contains
- 1 - 1.2m Track with pulley,
 - 1 - Trolley Standard,
 - 1 - Trolley Spring loaded,
 - 2 - Masses, 10 x 10 g Masses,
 - 1 - Ticker tape timer, 5 - Spare tapes,
 - 1 - Pack of carbon discs, 1 - Reel of cotton,
 - 1 - Spirit level 1 - Stopwatch

ESP59744





Senior High School
Junior High School

Mechanics 1 Experiment Kit ESP59737

- The guide book consists of 31 experiments.
- The experiments are related to the basic principle of measurement,
- density measurement, simple device (lever, pulley and inclined plane), moving object, waves, sound, and solar system.

Component List

Consists of 37 components, packed in a plastic injection
Dimensions: 61 x 26 x 17 cm. Weight: 5 kg.

Cat. code	Component	Qty	Cat. code	Component	Qty
ESP 180	Stand Base with 3 Clamps	2 pcs	ESP 139	Load Hook	2 pcs
ESP 51.02/02	Stand Foot	2 pcs	ESP00280	Plastic Pulley Ø 50 mm, Yellow	1 pc
ESP 51.05/05	Support Block	2 pcs	ESP00281	Plastic Pulley Ø 100 mm, Red	2 pcs
ESP 30/250	Stand Rod Ø 10 x 250 mm	2 pcs	ESP 51.20/31	Plastic Lever	1 pc
ESP 30/500	Stand Rod Ø 10 x 500 mm	2 pcs	ESP 203	Coupling Rod	2 pcs
ESP 174	Rod Coupling	1 pc	ESP 162	Inclined Plane, 2 Measuring Scale	2 pcs
ESP 15/305	Steel Ruler 50 cm	1 pc	ESP 51.26/39	Helical Spring 0.1 N/cm	1 pc
ESP 51.08/08	Pointer	1 pc	ESP 325 03	Friction Block	1 pc
ESP 51.08/09	Nylon Thread	1 pair	ESP 213	Cubes of Matter (6 pcs)	1 pc
ESP 51.09/10	Load 50 gr	1 roll	ESL57745	Analog Stopwatch	1 set
ESP 125 01	Load 25 gr	6 pcs	ESP 320	Stepped Block	1 pc
ESP 51.10/11	Dynamometer 3.0 N	6 pcs	ESP 228	Trolley, Plastic	1 pc
ESP 45	Vernier Caliper	2 pcs	ESP 227	Trolley with Motor, Plastic	1 pc
ESP 51.13/16	Aluminum Block	1 pc	ESP 51.07/07	Dynamometer 1.5 N	1 pc
ESP 51.14/23	Holding Clamp	1 pc	ESP59810	Ticker Timer with Clamp Rider +	1 set
ESP 361	Axle with Plug	3 pcs		Paper Tape (length 150 m)	



Supporting Components

Available in Hydrostatics and Heat Kit .

Cat. code	Component	Qty
ESP60132	Overflow Vessel	1 pc
ESL56548	Beaker 250 ml	1 pc
ESL56519	Measuring Cylinder 100 ml, Plastic	1 pc
ESP 11.17	Marble	2 pcs

Available in Optics Kit ESP60392.

Cat. code	Component	Qty
ESP 16.01/65	Optic Table	1 pc
ESP 16.02/66	Precision Rail 50 cm	2 pcs
ESP 16.03/67	Rail Connector	2 pcs
ESP 16.04/68	Foot for Rail	2 pcs
ESP 16.17/87	Clamp Rider	1 pc

Available in Electricity & Magnet Kit ESP59115

Cat. code	Component	Qty
ESL57914	Connecting Lead DC 50 cm, Red	1 pc
ESL57915	Connecting Lead DC 50 cm, Black	1 pc

Supporting Tools

For detailed information, please refer to page 70 - 73.

Cat. code	Tool	Qty
ESP 23	Balance 311 g	1 set
ESP60751	Power Supply	1 pc
ESP60308	Slinky Ø 80 mm	1 pc
ESP60351	Tuning Fork on Resonance Box	1 pc

Experiment Topics

- M 1 Measurement of Length
- M 2 Measurement of Diameter
- M 3 Measurement of Area
- M 4 Measuring Volume of Regular Shaped Solid
- M 5 Measuring Volume of Irregular Shaped Solid
- M 6 Measuring Mass
- M 7 Measurement of Time
- M 8 Measuring Specific Mass: Regular shaped solid
- M 9 Measuring Specific Mass: Irregular shaped solid
- M 10 Measuring Specific Mass: Liquid
- M 11 Average Velocity
- M 12 Uniform Linear Motion
- M 13 Average Acceleration
- M 14 Uniform Accelerated Motion
- M 15 Free Fall
- M 16 Measurement of Force
- M 17 Addition of Force Vectors
- M 18 Friction Force
- M 19 Newton's First Law of Motion
- M 20 Newton's Second Law of Motion
- M 21 Two Arm Lever
- M 22 Single Arm Lever
- M 23 Fixed Pulley
- M 24 Moving pulley
- M 25 Fixed and Moving Pulley
- M 26 Pulley System
- M 27 Inclined Plane
- M 28 Simple Harmonic Motion is a Spring
- M 29 Simple Pendulum
- M 30 Mechanical Transversal Wave
- M 31 Mechanical Longitudinal Wave



M 22
Single Arm Lever



M 26
Pulley System



M 27
Inclined Plane

ESP59737





Senior High School
Junior High School

Mechanics 2 Experiment Kit ESP59738

The Cart and Ticker-Timer Experiment Kit is designed to observe a few types of linear motion. The ticker-timer that ticks a carbon mark from a carbon paper to the paper ribbon with a certain frequency can acquire the position of a cart or any object that moves along a straight line as a function of time. This acquired data can be used to observe uniform linear motion and accelerated linear motion.

Component List

Consisting of 8 components, packed in a plastic injection molding box.
Dimension: 62 × 30 × 9 cm. Weight: 3.4 kg.

Cat. code	Component	Description	Qty
ESP 16.02/66	Precision Rail 100 cm	For use in mechanics experiments as track for Trolley / trolley with motor.	2 pcs
ESP 16.03/67	Rail Connector	Used for rigid straight coupling of two Precision Rail.	1 pc
ESP 228	Dynamic Cart	Design for experiments in kinematics and dynamics. Low wheel friction and small moment of inertia. Extended plates protect the wheels and prevent trolley from rolling off the rail. Complete with holding clip for recording tape, socket for additional weight and socket for attaching spring and buffer for collision experiments.	1 pc
ESP59825	Motorized Cart	Trolley with DC motor designed for mechanical experiment, especially for linear motion. Have a clip mounted on trolley body to hold end of ticker tape. Can be run on precision rail with two kind of velocity.	1 pc
ESP59810	Ticker Timer, AC socket	For recording one dimensional motions (type motion, speed, acceleration) of a trolley or falling weight by analyzing ticks on 9.5 mm ticker tape which are produced at fixed frequency together with motion of the objects.	1 pc
ESP 69/02	Paper Ribbon for Ticker timer	Used to time record the motion of dynamic cart, using ticker-timer.	1 pc
ESP 16.04/68	Rail Footing	For height adjustment of the Precision Rail when connected.	2 pcs
ESP 51.37/72	Stepped Block	For raising one end of a Precision Rail in increments.	1 pc

Experiment Topics

- E1 Ticker-Timer
- E2 Instantaneous Speed and Instantaneous
- E3 Acceleration Uniform Linear Motion
- E4 Accelerated Linear Motion

Supporting Components

For detailed information, please refer to page 70 - 73.

Cat. code	Component	Qty
ESP60751	Power Supply AC/DC, 50 HZ	1 pc

ESP59738



Junior
High
School

Mechanics 3 Experiment Kit

ESP59739

Component List

Consists of 36 components, packed in a plastic injection molding box.
Dimensions: 61 × 44 × 16 cm. Weight: 8.5 kg.

Cat. code	Component	Qty	Cat. code	Component	Qty
ESP 180	Stand Base with 3 Clamps	1 pc	ESP 51.37/72	Stepped Block	1 pc
ESP 185	Table Clamp	1 pc	ESP 160	Flat Spring Set	1 set
ESP 16.17/87	Clamp Rider	2 pcs	ESP 160 03	Threaded Rod with Butterfly Nut	1 pc
ESP 16.03/67	Rail Connector	1 pc	ESP 100100	Helical Spring, 4.5 N/m	1 pc
ESP 16.04/68	Foot for Rail	2 pcs	ESP 51.26/39	Helical Spring, 10 N/m	1 pc
ESP 30/250	Stand Rod, 250 mm	2 pcs	ESP 51.27/40	Helical Spring, 25 N/m	1 pc
ESP 30/500	Stand Rod, 500 mm	1 pc	ESP 27.01	Slotted Load and Hanger 250 g (6 loads, 1 set 1 hanger)	1 set
ESP 162	Bosshead, Universal	2 pcs	ESP60299	Vibration Generator	1 pc
ESP 161	Bosshead, Round	1 pc	ESP 160 02	Holder for Pencil	1 pc
ESP 201	Bearing Pin	2 pcs	ESP 221	Roll Meter, 3 m	1 pc
ESP 51.02/02	Stand Foot	2 pcs	ESP 010	Rubber String	1 pc
ESP 30/010	Rod, 100 × 10 mm	1 pc	ESP 69	Paper Tape for Ticker Timer, Ø 49 mm	1 pc
ESP 51.08/09	Nylon Cord	1 roll	ESP59810	Ticker Timer with Clamp Rider	1 pc
ESP 011	Scissors	1 pcs	ESP 202	Flat Spring for Explosion Experiment	1 pc
ESP 16.02/66	Precision Rail, 50 cm	2 pcs	ESP 186	Pulley for Table Clamp	1 pc
ESP 200	Spring on Buffer for Trolley	2 pcs	ESP 51.37/72	Stepped Block	1 pc

ESP59739



Supporting Components

Available in Hydrostatics and Heat Kit .

Cat. code	Component	Qty
ESP59825	Overflow Vessel	1 pc
ESP 15/105	Ruler, 500 mm, Wood	2 pc
ESP 16 0 01	Ball for Pendulum, 35 g	1 pc
ESP 11.17	Marble	1 pcs
ESP 160 02	Ball for Pendulum, 70 g	1 pcs

For detailed information, please refer to page 70 - 73

Cat. code	Component	Qty
ESL57745	Analog Stopwatch	1 pc
ESP 26	Balance 2610 g	1 pcs
ESP60750	Power Supply, 5 A, 12 V	1 pcs
ESP60296	Audio Frequency Generator	1 pc

Experiment Topics

Kinematics And Dynamics

MU 01	The Ticker Timer
MU 02	Motion of a Trolley on a Horizontal Plane (Rail)
MU 03	Uniform Motion
MU 04	Average and Instantaneous Velocity
MU 05	Motion of a Trolley on an Inclined Rail
MU 06	Free Fall
MU 07	Newton's Law
MU 08	Collision, Linear Momentum
MU 09	Explosion
MU 10	Conservation of Mechanical Energy

Vibrations

MU 11	Simple Pendulum
MU 12	Oscillation of a Mass Suspended by a Spring
MU 13	Oscillation of a Flat Spring Loaded with Mass at its End
MU 14	Oscillation Chart
MU 15	Acceleration Due to Gravity
MU 16	Resonance of a Simple Pendulum
MU 17	Resonance of a Spring with Mass Suspended
MU 18	Hooke's Law

Mechanical Waves

MU 19	Propagation and Reflection of Transversal Wave
MU 20	Transversal Standing Wave in a String (Cord)
MU 21	Longitudinal Standing Wave in Helical Spring



MU 08 Collision, Linear Momentum



MU 09 Explosion



MU 06 Free Fall



MU 18 Hooke's Law



MU 14 Oscillation Chart



MU 20 Transversal Standing Wave in a String (Cord)



Component Detail

ESP59825 Dynamic Cart

- Dynamic cart (PSP59825) has low friction and moment of inertia wheels. A ticker timer paper clip is mounted on top of the cart. Buses are also provided to mount additional tools such as ESP 200 and ESP 201
- Motored dynamic cart (ESP59825) is use for linear motion experiment on the precision rail; two speeds switch; operated with two AA size batteries.



Precision Rail and Connector

- Precision rail (ESP16.02/66) is made of anodized aluminum extrusion; completed with millimeter and centimeter ruler on both sides.
- Rail connector (ESP 16.03/67) is used to connect two rails rigidly in straight position; 20 cm long; made of ABS plastic.
- Stepped block (ESP 51.37/72) is used to raise one of precision rail ends. It is used in the accelerated motion and friction compensation between wheel and rail experiment; made of ABS plastic.
- Rail foot (ESP 16.04/68) is mounted on the connecting precision rails; made of ABS plastic.
- Clamp rider (ESP 16.17/87) is made of ABS plastic. It is used as a movable self-clamping component holder on the rail precision. To loosen and move the clamp, press the two levers on the side.



Stand Base System

- Stand base (ESP 180), which is made of ABS plastic, is a multi purpose component. The main hole in the middle is use to hold the stand rod vertically. 5 vertical 4 mm holes are used to plug other component. 2 horizontal holes are used to hold stand rod horizontally. The bottom part is layered by rubber sheet.
- Stand foot (ESP 51.02/02) is used together with stand base and stand rod to build a rigid and stable stand. Triangular shaped is made of ABS plastic.
- Stand rod, made of stainless steel with 10 mm diameter and the length of 100 mm (KST 30/010), 250 mm (ESP 30/250), and 500 mm (ESP 30/500).
- Aluminum cylindrical bosshead (ESP 161).
- Aluminum universal bosshead (ESP 162).



ESP60299 Vibration Generator

This apparatus produces mechanical wave with the help of Audio Frequency Generator (ESP60296); input through 4 mm socket; 6 mm amplitude.



Spring and Accessories

- a. Flat spring with clamp (ESP 160): steel spring, length 300 mm, equipped with a clamp.
- b. Screwed rod with nut (ESP 160 03): 60 mm long, 4 mm diameter.
- c. The Pencil Holder (ESP 160 02) is a special designed pencil holder completed with helical spring to push the pencil towards the paper.
- d. Slotted mass with hanger, 250 g total weight (FME 27.00), consisting of 3 × 50 g, 2 × 20 g, 1 × 10 g and 1 × 50 g, made of nickel plated brass.



Helical Spring

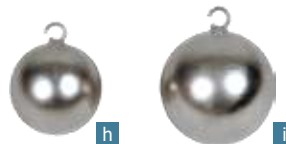
Steel helical spring with hook and ring ends, which is used for Hooke and oscillation experiments.

- a. Helical spring, 25 N/m (ESP 51.27/40).
- b. Helical spring, 10 N/m (ESP 51.26/39).
- c. Helical spring, 4.5 N/m (ESP 100 100).



Pendulum

- h. 35 g brass pendulum (ESP 160 01).
- i. 75 g brass pendulum (ESP 160 02).



Accessories for Momentum Experiment

- j. Steel crusher spring (ESP 200).
- k. Steel spring for explosion model (ESP 202).



Ticker Timer and Paper Tape

- l. Ticker Timer (ESP59810) is used to find out the type of motion, measuring the motion rate, and the velocity by analyzing dots produced by the fix frequency ticker. The dots are printed on the paper tape that moves together with the Dynamic Cart (ESP 51.34/69) or free falling object. Ticker Timer is completed with clamp rider that can be clamped to the precision rail (ESP 16.02/66).
- m. Ticker timer tape paper (ESP 69), 9.5 mm width.



Measuring and General Tools

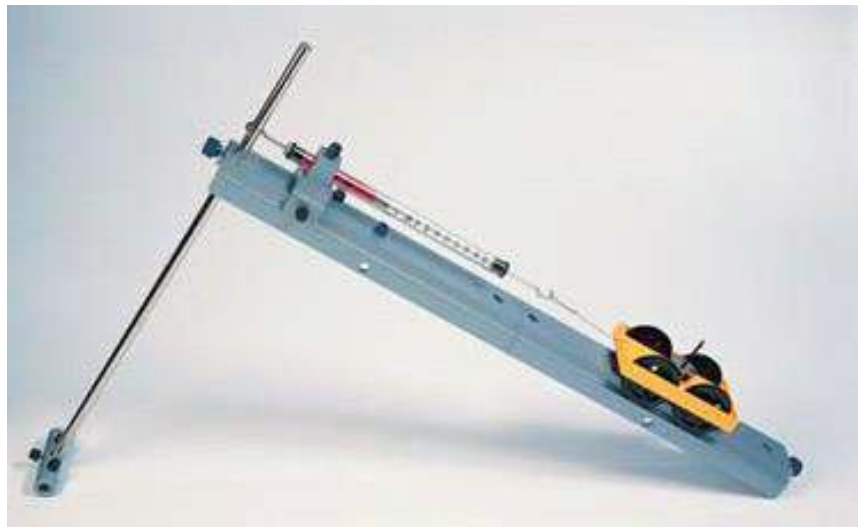
- n. Stainless steel scissors (ESP 011).
- o. Rubber thread (ESP 010): cotton and rubber, 3 m long.
- p. Nylon cord (ESP 51.08): twisted nylon, 1 mm diameter, 10 m long, max load 2.5 kg.
- q. 500 mm wooden ruler (ESP 15/105), with centimeter and millimeter units.
- r. Pulley (ESP 168): 50 mm plastic pulley with metal frame, for desk clamp mounting.
- s. Table clamp (ESP 185).
- t. Measuring tape, 3 m (ESP 211), plastic housing.
- u. Bearing pin (PESP 201), nickel plated brass.





Mechanics Kit For Grade 6-9

- Kit consisting of:
- 1x Dynamics trolley
 - 1x Measuring tape, L=300 cm
 - 2x Scale pan with suspension
 - 1x Pointer for lever rod
 - 1x Scale with graduation
 - 1x Sliding saddle for lever rod
 - 1x Lead (tare) shot, 50 g
 - 1x Vernier calliper, plastic
 - 1x Beaker plastics, 100 ml
 - 1x Graduated cylinder plastics, 100 ml
 - 1x Immersion probes, set of, SE
 - 2x Manometer-tube, acrylic, D=8 mm, L=200 mm
 - 1x Acrylic tube, D=20 mm, L=120 mm
 - 1x Stopper silicone, 12.5/18/27 mm, 1 hole
 - 1x Test tube glass 12x100 mm
 - 4x Slotted weight, 50 g
 - 4x Slotted weight, 10 g
 - 2x Holder for slotted weights, 10g
 - 1x Balance weights set, 1...50 g
 - 2x Support rod, round, L=500 mm, D=10 mm
 - 1x Acrylic tube, D=8 mm, L=80 mm
 - 1x Hollow block (Archimedes)
 - 1x Aluminium block
 - 1x Block iron with hook, big
 - 1x Block iron with hook, small
 - 1x Coil spring 3 N/m, D=35 mm approx.
 - 1x Coil spring 20 N/m, D=12 mm approx.
 - 1x Lever rod for balance SE, L=420 mm
 - 1x Flat spring steel, 0.4mm, L=165 mm
 - 1x Capillary tubes, set of 3
 - 1x Pulleys, set of (4 pieces), plastics
 - 1x Tubing plastics, 100 cm, transparent
 - 1x Tubing plastics, 16 cm, transparent
 - 2x Dynamometer 2 N, transparent
- Storage:**
- 1x Box-insert Mechanics 1, SE
 - 1x Storage box II big, with cover
 - Box -insert plan with 2 labels



ESP59742





Junior High School

Senior High School

Mechanics Kit Panel Type ESP59745

- Quick and easy to assemble with magnetic mounting system.
- Comprehensive - from vector to balance concept, and simple devices.
- 14 static mechanics experiments are designed for students in order to understand the following concepts easier:

- Force
- Object balance
- Torque moment and its application
- Simple machine
- Simple harmonic motion
- and inclined plane), moving object, waves, sound, and solar system.

Component List

Consisting of 18 components, packed in a plastic injection molding box. Dimension: 66 × 62 × 15 cm. Weight: 12 kg.

Cat. code	Component	Description	Qty
a ESP 360. 01	Experiment Board	Dual face; one with white painted metal surface and the other is functioned as a white board; the experiment board is mounted on experiment board's legs (PMK 360 13).	1 pc
b ESP 360. 02	Dynamometer 5 N	Graduation: 0 - 5 N × 0.1 N and 0 - 500 g, mounted on magnetic holder.	1 pc
c ESP 360. 09	Rolling Load	Rolling mass is mounted on a hooked frame. It is used to understand the object working force and normal force.	1 pc
d ESP 360. 07	Inclined Plane with Plumb Bob	Equipped with degree graduation and a plum-bob to indicate the plane obliqueness. It has magnetic holder	1 pc
e ESP 360. 06	Disc with Degree Scale	It is used as an angle measuring tool and as a reference of a ring-shaped object position. It has magnetic holder.	1 pc
f ESP 360. 08	Torque Wheel	A disc with 3 blades and millimeter circular graduation, equipped with ball bearing and magnetic holder. It is used to simplify the understanding of force moment concept (torque) on an equilibrium.	1 pc
g ESP 41/02	Pulley Block	40 and 60 mm diameter pulleys are mounted on a frame. It is used to understand the simple device on pulley system.	1 pc
H ESP 360. 11	Pulley 40 mm	40 mm pulley with magnet, it is used in force, force equilibrium, and simple device experiment.	2 pcs
i ESP 360. 12	Pulley 60 mm	60 mm pulley with magnet, it is used in force, force equilibrium, and simple device experiment.	1 pc
j ESP 360. 10	Plannar Object	An irregular pentagonal object which is used to understand the object's center of mass concept.	1 pc

ESP59745



Cat. code	Component	Description	Qty
j ESP 360. 10	Planar Object	An irregular pentagonal object which is used to understand the object's center of mass concept.	1 pc
k ESP 325 01	Friction Block	A block with 4 different surfaces, rubber, wood, plastic and glass. Detachable hook.	1 pc
l ESP 27.01	Slotted Load and Hanger 250 g (6 loads, 1 hanger)	Loads with gaps and nickel plated brass hanger.	2 sets
m ESP 26.01	Slotted Load and Hanger 150 g (2 loads, 1 hanger)		1 set
n ESP 51.26/39	Helical Spring	One end is ring shaped and the other end is hook shaped, material is spring steel.	1 pc
o ESP 51.08/09	Cord on Reel	Nylon twisted thread on plastic reel.	1 pc
p ESP 360. 04	Pivot Mount	Function as pivoting axle or fulcrum for the Lever Beam; with magnetic base.	1 pc
q ESP 360. 03	Lever Beam	Alumunium lever beam to function as object acted on by forces and as a lever. It is included	1 pc
s ESP 360. 05	Ring	A ring functions as an object on to which forces are applied.	3 pcs
t ESP 15/305	Steel Ruler 50 cm	Made of stainless steel; length 50 cm. Scale with centimeter and millimeter unit.	1 pc
s ESP 360. 05	Ring	A ring functions as an object on to which forces are applied.	3 pcs



Magnetic Mounting System

The dimension of the experiment panel board is 600 × 600 mm, large enough space for experiment. Components are equipped with neodymium magnet, so they can be placed onto the experiment board. This system makes component positioning easier.



Experiment Topics

- Experiment 01 Hook's Law and the Measurement of Force
- Experiment 02 Equilibrant and Resultant Forces
- Experiment 03 Resolving a Force
- Experiment 04 Torques for Parallel Forces
- Experiment 05 Torques for Non-Parallel Forces
- Experiment 06 (Part 1) Torques for Non-Parallel Forces
- Experiment 06 (Part 2) Torques for Non-Parallel Forces
- Experiment 07 Center of Gravity and Center of Mass
- Experiment 08 Equilibrium of Extended Body
- Experiment 09 Simple Machines: The Inclined Plane
- Experiment 10 Simple Machines: The Lever
- Experiment 11 Simple Machines: The Pulley
- Experiment 12 Sliding Friction
- Experiment 13 Simple Harmonic Motion: Oscillation of Mass Hanging on a Spring
- Experiment 14 Simple Harmonic Motion: The Simple Pendulum



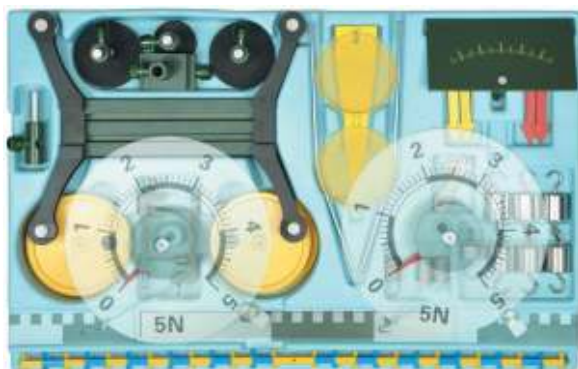
Experiment 06
Torques for Non-Parallel Forces (Part 2)



Experiment 09
Simple Machines: The Inclined Plane

ESP59745





Demo Mechanic Kit 1

Consist of:

- 1x law base, magnetic, L = 200 mm
- 2x Magnetic base, D = 66 mm, with tube and pin
- 1x Magnetic base, D = 43 mm, with tube and pin
- 1x Sliding saddle, H = 34 mm
- 1x Stand tube, H = 40 mm
- 2x Torsion dynamometer 5 N
- 6x Weight on hook, 100 g, unpainted
- 1x Weight on hook, 20 g, unpainted
- 1x Coil spring, 10 N
- 2x Coil spring, 5 N / m, D = approx. 16 mm
- 1x Flat spring steel, 0.6 mm, L = 300 mm
- 1x Lever rod demo, L = 520 mm
- 1x Pointer for lever 520, metal
- 1x Scale on support
- 2x Scale pan with handle, Demo
- 4x Pulley, plastic, D = 100 mm
- 2x Bracket for pulleys D = 100 mm
- 1x Cord, white, L = 5 m
- 1x Measuring tape with scale in blocks, magnetic
- 2x Pointer, red, magnetic
- 2x Pointer, yellow, magnetic

Storage:

- 1x Box insert Static Mechanics 1
- 1x Storage box II big, with cover

Demo Mechanic Kit 2

consisting of:

- 1x Plate for testing centre of gravity
- 1x Plumb line
- 1x Inclined plane, simple (02)
- 1x Holder for torsion dynamometer for inclined plane
- 1x Ring for force table
- 1x Rubber band, wide
- 1x Roller
- 1x Friction block, multifunctional
- 1x Wheel and axle, demo
- 1x Crank pin, L = 50 mm
- 1x Drive belts, set of 2
- 1x Gear with 20 teeth, red
- 1x Gear with 40 teeth, yellow
- 1x Gear with 60 teeth, green
- 1x Pair of scissors, SE
- 1x Dynamics trolley, demo, 50 g
- 1x Belt pulley D = 100 mm, yellow

Storage:

- 1x Box insert Static Mechanics 2
- 1x Storage box II big, with cover.

ESP59747

ESP59748





Pendulum Bobs

Pendulum Bobs, Comprising a solid sphere with a small ring for suspension. Different Diameter and Material.

ESP59768	Dia : 13 Mm	Brass	ESP59782	Dia : 13 Mm	Iron		
ESP59769	Dia : 19Mm	Brass	ESP59783	Dia : 19Mm	Iron		
ESP59770	Dia : 25Mm	Brass	ESP59784	Dia : 25Mm	Iron		
ESP59775	Dia : 13 Mm	Copper	ESP59789	Dia : 13 Mm	Lead	ESP59796	Dia : 13 Mm Aluminium
ESP59776	Dia : 19Mm	Copper	ESP59790	Dia : 19Mm	Lead	ESP59797	Dia : 19Mm Aluminium
ESP59777	Dia : 25Mm	Copper	ESP59791	Dia : 25Mm	Lead	ESP59798	Dia : 25Mm Aluminium



Pendulum Clamps

Any one of the pendulums can be adjusted without disturbing the others 28cm long clamp consists of a support arm attached to a rod clamp. Thumb screws keep suspended cords secure.

Balance 311 g

Dish balance, 4 arms with shift-able load on each arm; the arms are supported by hard steel blade resting on agate stone support; equipped with magnetic stopper on the longer arm and zero adjuster bolt on the dish hanger; facilitated with adjustable base to measure object inside water.

- Capacity: 311 grams
- Accuracy: 10 mg



ESP 23



ESP59760

Ballistic Pendulum Apparatus

Unit uses a nylon pendulum with a tapered rubber insert. Both pendulum and base have levelling screws. Spring-loaded gun has a self-locking trigger and a rubber bumper to prevent damage on impact. The scale is marked in degrees and is registered by a counter-weighted needle that remains in place at the height of the arc. Grades 9-12.

ESP59763

Center of Gravity

A simple and economical apparatus for demonstration of geometrical center of gravity of two-dimensional objects. Center of gravity of a freely suspended two dimensional object always lies along the line drawn vertically downward from its point of suspension. Comprises a clear perspex rod mounted on a base with a suspension screw at the top and four laminas of clear acrylic. One each of circular, triangular, square and trapezoidal. Each lamina has suspension holes along their periphery. The point of intersection of lines drawn from point of suspension of 2 or more holes of a lamina gives center of gravity of that 2-dimensional lamina

ESP59751





Predicting Trajectories

Students explore the vertical and horizontal components of projectile motion in this laboratory investigation using ramps, time trials, and a three man slingshot. Topics include trajectory motion, acceleration due to gravity, speed, and velocity. Includes guided calculations and encourages the use of calculation to predict apex and landing. After learning the basic concepts, students go outside and collect data using water balloons and a three man sling shot! Includes instructor's manual, student worksheets, ramps, ball bearings, stopwatches, metric tapes, paper cups, string, washers, three man slingshot, and water balloons. Appropriate for any level physics course (including AP) as well as general science courses. Designed for working in groups of four to six, with materials sufficient for up to 36 students. Meets national standards for grades 9-12.

ESP59750



Circular Motion

A simple experiment for studying centripetal force. Topics also include tangential motion and centripetal acceleration. Students record real data to calculate real forces. Includes instructor's manual, guided calculations and assessment questions, sample data, complete answer keys, and materials for all experiments. Also includes a teacher demonstration. Required, but not included: balance or scale accurate to .01 g. Appropriate for any level physics course (including AP) as well as general science courses. Designed for working in groups of four to six, with materials sufficient for up to 36 students. Meets national standards for grades 9-12.

ESP59753



Simple Pendulum

Students use simple pendulums to accurately determine the passage of time. Real data is recorded as students determine the effects of independent variables on periodicity while also learning about kinetic and potential energy. Includes instructor's manual, reproducible stepwise instructions for students, guided calculations, assessment questions, sample data, complete answer keys, and all materials for activities. Required, but not included: balance or scale accurate to .01 g. Appropriate for any level physics course (including AP) as well as general science courses. Designed for working in groups of four to six, with materials sufficient for up to 36 students. Meets national standards for grades 9-12..

ESP59757

Simple Pendulum Experiment Kit

- Consist of :
- Stand Base and Rod, Steel plate 1 pc Boss-head,
- Universal 1 pc
- Bearing Pin 1 pc Nylon Thread 1 pc Digital
- Stopwatch 1 pc
- Ball for Pendulum 35 g 1 pc Ball for Pendulum 70 g
- 1 pc Ball for Pendulum 105 g 1 pc

Dimensions :

(L) 62.00 x (W) 30.00 x (H) 9.00 cm

Weight : 3.300 kg.

ESP59756

ESP59756



Junior High School

Senior High School

Simple Pendulum Experiment Kit ESP59756SP

- Simple pendulum is one of the simplest method of measuring the magnitude of gravity's acceleration. Theoretically, the oscillation period of a small angular displacement pendulum has a mathematical correlation between the magnitude of gravity's acceleration and the length of the pendulum's string.
- In this experiment, the measurement of the oscillation period and the length of the string is conducted by using stopwatch and a ruler respectively.
- This kit also include a few bobs with different masses. Using different bobs, user will also be able to prove that the magnitude of the bob's mass does not affect the pendulum's oscillation period.



ESP59756SP

Component List

Consisting of 10 components, packed in a plastic injection moulding box. Dimension: 62 × 30× 9 cm. Weight: 3.1 kg.

Cat. code	Component	Description	Qty
ESP 25/30	Stand Base 190 mm, A-Shaped	Die cast iron, equipped with locking bolt.	1 pc
ESP 30/500	Stand Rod Ø 10 x 500 mm, Stainless Steel	Stainless steel, Ø 10 mm, length 500 mm.	2 pcs
ESP 00023	Boshead, Universal	Can be used to connect two stand rods by axial and perpendicular. Used to clamp circular stand rod.	1 pc
ESP 206	Bearing Pin		1 pc
ESP 174	Rod Coupler	Rod Coupling is used as Stand rod connector with clipped way. Material: Plastic injection	1 pc
ESP 137	Slotted Masses and Hanger 100 g (3 Loads)	Consists of 3 loads each with a mass of 100 g.	1 set
ESP 00222	Digital Stopwatch	Digital Stopwatch with accuracy of 0.01 seconds	1 pc
ESP 51.26/39	Helical Spring 10 N/m	Has a spring constant of 10 N / m with a diameter of 1 mm. Steel material.	1 pc

Experiment Topics

- E1 Swinging Pendulum
- E2 Determining Earth's Gravitational Acceleration Using a Simple Pendulum



Junior High School

Senior High School

NEW



Oscillating Spring Experiment Kit ESP60322

The Oscillating Spring Experiment Kit is designed to evaluate factors that affect the oscillation period of a spring system. Theoretically, the oscillation period of a spring system has a mathematical correlation between the magnitude of the load mass and the spring constant. Interestingly, the displacement of the spring does not affect the oscillation period. By varying these magnitudes while measuring the oscillation period using stopwatch, the theoretical model can be tangibly observed.

Component List

Consisting of 10 components, packed in a plastic injection moulding box. Dimension: 62 × 30× 9 cm. Weight: 3.1 kg.

Cat. code	Component	Description	Qty
ESP 25/30	Stand Base 190 mm, A-Shaped	Die cast iron, equipped with locking bolt.	1 pc
ESP 30/500	Stand Rod Ø 10 x 500 mm, Stainless Steel	Stainless steel, Ø 10 mm, length 500 mm.	2 pcs
ESP 00023	Bosshead, Universal	Can be used to connect two stand rods by axial and perpendicular. Used to clamp circular stand rod.	1 pc
ESP 206	Bearing Pin		1 pc
ESP 174	Rod Coupler	Rod Coupling is used as Stand rod connector with clipped way. Material: Plastic injection	1 pc
ESP 137	Slotted Masses and Hanger 100 g (3 Loads)	Consists of 3 loads each with a mass of 100 g.	1 set
ESP 00222	Digital Stopwatch	Digital Stopwatch with accuracy of 0.01 seconds	1 pc
ESP 51.26/39	Helical Spring 10 N/m	Has a spring constant of 10 N / m with a diameter of 1 mm. Steel material.	1 pc

Experiment Topics

E1 Swinging Pendulum



Reversible Pendulum ESP60648

- Reversible pendulum is a physical pendulum which has a pair of pivot points in a fixed distance. Pendulum's oscillation interval can be adjusted, therefore the interval on each pivot point is equal or nearly the same.
- The pivot point is in the form of a blade, made of hard steel, and the position can be arranged as necessary. The pendulum is supplied with 2 bobs, one is functioning as a bob in fixed position and the other can be shifted along the pendulum rod.
- In the experiment, the 'fixed bob' position is unchanged, while the 'un-fixed bob' is shifted to gain the same or nearly the same oscillation interval on both pivot points.
- Time measurement can be done manually by using a stopwatch or for better accuracy, use the Time Counter system which is consisting of photogate and Timer Counter.

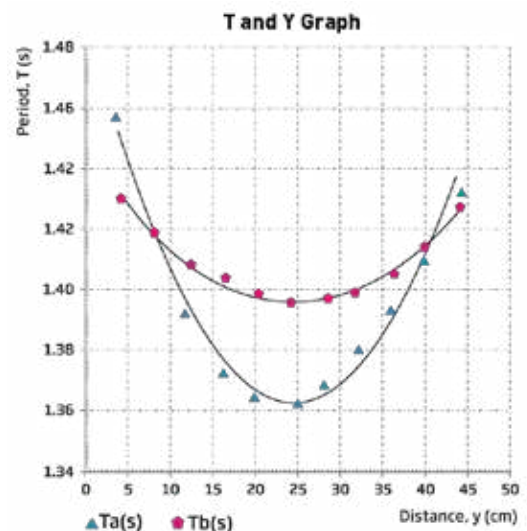


Changing the Bob Position



The bob and pivot point can be shifted along the pendulum rod; use an L wrench to loosen and tighten the socket set screw bolt.

Experiment Graphics



Component List

The components are assembled into a whole unit of Reversible Pendulum.

Cat. code	Component	Description	Qty
a ESP 125 01	Pendulum Rod	Stainless steel, \varnothing 10 × 750 mm.	1 pc
b ESP 125 02	Knife Edge Pivots	Made of hard steel; dimensions 15 mm × 20 mm × 30 mm; with fixing screw.	2 pcs
c ESP 125 03	Pendulum Bob	The pendulum has two bobs, each made of brass, dimension 38 mm × 23 mm, mass 200 g each, dilengkapi baut L.	2 pcs
d ESP 125 04	Base for Knife Edge Pivot	Equipped with holder clamp for installation on the table.	1 pc
e ESP 30/500	Stand Rod, 500 mm	Stainless steel, \varnothing 10 mm, length 500 mm.	1 pc
f ESP 25/10	Stand Base A Shape 120 mm	Made from cast iron, equipped with stative stem lock nut.	1 set
g ESP 36/04	Bosshead Clamp	Aluminum diecast, used to hold the Photogate.	1 pc
h ESP 101 02	Photogate RP	Photogate sensor unit is using a LED and infrared fotodiode, mounted on a special holder for the Reversible Pendulum.	1 pc
i ESP 100	Timer Counter	It is used to measure time. Display : 4 digits LED Time range : 0 - 999,9 second Power input : 220 V ±10% AC Photogate input : 2 Function : 7 functions Measurement unit : ms, s Electromagnetic output : 12 V	



Experiment Topics

- P 12 05 Reversible Pendulum
- P 12 08 Reversible Compound
- P 12 09 Reversible Owen

P 12 05 Reversible Pendulum





Circular Motion Student Kit

With this set the following experiments can be performed:
 Centrifugal force
 Centrifugal force - suspended balls
 Regulator for centrifugal force
 Centrifugal force - earth flattening rings
 Rotating liquied
 Rotating pendulum (Foucault pendulum)

Kit consisting of:

- 1x Centrifugal hoops "compact"
- 1x Watt's governor "compact"
- 1x Foucault's pendulum "compact"

- 1x Floating disk "compact"
- 1x Locking screw M3, small
- 1x Steel balls 1/2" (12.7 mm), set of 2
- 1x Rotational dynamics
- 1x Pivot bearing with transmission gear
- 1x Magnetic base for drive pulley "compact"
- 1x Drive pulley "compact", D = 100 mm
- 1x Drive belt "compact"
- 1x Assembly platform for MBCs
- Storage:
- 1x Box insert Circular motion, SE
- 1x Storage box II small, with cover
- Box insert plan with 2 labels.

ESP59752



Centrifugal Force Demonstrator

Use to show the effect of mass, radius, and velocity on the centripetal force of a rotating thread length 100cm , rod length : 17 cm , Pendant 10g X 7.

ESP59755



Centripetal Force Apparatus

- Set includes the following :
- 1 Centripetal force apparatus with motor
 - 1 Sliding saddle, H=40 mm
 - 1 Slider with gate for centripetal force apparatus
 - 2 Slotted weight, 50 g.
 - 4 Slotted weight, 10 g.
 - 1 Dynamometer 2 N, transparent
 - 1 Hand-held stopwatch, digital, 1/100 s
 - 1 Stand rail, 300 mm
 - 2 Rail claw, simple.

ESP59754





Rotary pendulum kit

This apparatus is used to investigate oscillation as damping is varied. Free, forced and chaotic oscillation may be generated. The resonator consists of a wheel with spokes, made of sheet copper and mounted on ball bearings, with a flat spiral spring. The resonator is excited by means of lever mechanics, using a drive motor connected to a cam. Rough or fine adjustment of motor speed is possible. Damping is provided by an eddy current brake. Surrounding the resonator is a scale shaped like a ring. Slits in the scale and pointers on the resonator and exciter lever can be used to project shadows for better visualising how the experiment works. Apparatus mounted on a base plate. Motor power supply: 24 V DC, min. 600 mA

Damping unit power supply : 0 - 12 V DC, continually variable - **Dimensions** : 400 x 140 x 270 mm

ESP59765

Timer Scaler & Frequency / Meter

A multi-purpose instrument which is invaluable in the physics laboratory, combining the functions of a multi-purpose timer, a ratemeter and a frequency meter in one compact and economical unit. Its uses are many and varied covering a wide area of the physics syllabus.

Electrical Supply : 220-240VAC, 50-60Hz

Dimensions : 255 x 220 x 110mm overall

Mass : 2.6kg

TIMER (Four Auto Ranges) : 0 to 9.999s, 10 to 99.99s, 100 to 999.9s & 1000 to 9999s

FREQUENCY METER (Three Auto Ranges) : 0 to 9.999kHz, 10 to 99.99kHz, 100 to 999.9kHzMax.

Input Signal : 20V (rms)

Sensitivity : 250mV (rms)

Range : 10Hz to 1MHz (Accuracy: $\pm 0.01\%$)

SCALER (Three Auto Ranges) : 0 to 9.999 x 1000 counts, 10 to 99.99 x 1000 counts & 100 to 999.9 x 1000 counts

RATEMETER (Three Auto Ranges) : 0 to 9.999 x 1000/s, 10 to 99.99 x 1000/s & 100 to 999.9x1000/s

Sensitivity : Scaler & Ratemeter: 160mV (peak)

Connections : GM Tube: TNC Socket, SS Tube: BNC Socket, Timer & Frequency Meter: 4mm Sockets



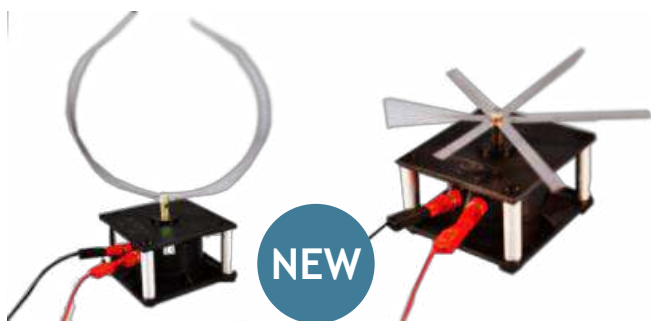
ESP59759



Photo Gate (Photo Timing Gate)

For use as a light operated timing gate (IPC-3210-T). Comprises photodetector and light source each housed in a robust ABS case spaced 40mm apart on a plastic rod. Light source housing has battery compartment and on/off switch. Photodetector housing is fitted with a pair of 4mm sockets to allow connection to electronic timers. When the timing gate is switched on it creates a short circuit between the two output sockets, this then becomes an open circuit each time the light beam is interrupted. Consequently the timing gate can be used as a remote switching device in a wide range of dynamics experiments. A document containing descriptions and diagrams of how to set up the 'g' by freefall experiment using the Photo Timing Gate with either the Millisecond Timer (IPC-3834-T) or the Timer Scaler & Frequency Meter (IPC-3342-T) has been compiled by us. Electrical Supply: 9V Battery, type: PP3 Dimensions: Each case: 55 x 110 x 25, Rod: 120 x 12 (dia)-Mass: 0.25kg

ESP-3210-T



Resonance at Loop and Strip

Consisting of blade and looped sheet metal. Blades can resonance on unique frequency according to the length. The loop resonances on its harmonic frequency by forming nodes and antinodes around it.

Additional apparatus

- Audio Generator (ESP60296).
- Vibration Generator (ESP60299).

ESP60301/2



Photo Gate With Timer Basic Set

Robust, handy counter with LCD display, digit height 12.5 mm, measuring accuracy 10 ms, battery-operated,

operating modes: - stopwatch - start / stop - gate - 2 pieces of fork light barriers, fork width: 78 mm - 2 pieces of connecting cable, L = each ; approx. 135 cm

ESP59758





Accelerated Motion

Students investigate accelerated motion using a totally reusable system with six foot tubular ramps, toy cars, bearings, and other required materials. This simple apparatus allows students to use timed trials to measure gravitational acceleration and the car's/ball's Coefficient of friction. High school curriculum includes kinetic and static coefficients of friction as well as bodies on inclined planes. Includes instructor's manual, reproducible stepwise student instructions, guided calculations including graphing of data and calculation of error, assessment questions, sample data, and complete answer keys. Appropriate for any level Physics course (including AP) as well as general science courses. Includes separate problem sets for general science and higher level Physics courses. Designed for working in groups of four to six, with materials included sufficient for up to 36 students. Meets national standards for grades 9-12.

ESP59800



Friction Block, Multifunctional, 40X40x160mm

For experiments on static, dynamic and rolling friction Surfaces: Wood, rubber, leather and abrasive paper Wooden area can be doubled when opening the body. **Dimensions** : 40 x 40 x 160 mm | Mass: approx. 200 g.

ESP59911

Friction Block

Aluminum block with 2 socket 4 mm for attaching plug-in components. Use with the dynamometer for frictional forces in static and sliding friction. 2 Surface are rubber coated. Overall Dimensions : 50 x 40 x 20 mm Material : Aluminum and rubber Part of Mechanic Kit for Junior High School (ESP59740). Dimensions : (L) 5.00 x (W) 4.00 x (H) 2.00 cm



ESP59802

Ticker Tape Timer 1

This is a modern version of a Ticker Timer, enclosed in a plastic moulded case with a provision of 20/S and 50/S striking rates to determine the velocity and acceleration of a dynamic cart. Operates on 6volt AC.

ESP59804

Ticker Tape Paper Roll 50 Mtr

50mtr of paper tape roll

ESP59805



Ticker Tape Timer Carbon Disc, 50Mm Dia

Carbon paper disc, 50mm dia, cut from carbon paper pasted on hard paper sheet for long life durability and reusable. Box of 50.

ESP59806





Ticker Tape Timer, Superior

Two Crystal-controlled, Calibrated Frequencies: (10 Hz and 50 Hz), accurate to 0.1%. The 50-Hz frequency is ideal for free fall experiments. The slower 10-Hz frequency is best for most dynamics track experiments. Includes an Internal 9-V Battery, or Use an Optional External 9-V AC Adapter/ Power Supply. Carbon Paper Discs: Used for printing. The adjustable disc holder allows the printing point to be adjusted, giving a long life to the discs.

ESP59807



Ticker Tape Timer 2

For recording one dimensional motions (type motion, speed, acceleration) of a trolley or falling weight by analysing ticks on 9.5 mm ticker tape which are produce at fixed frequency together with motion of the objects.

Dimensions :

-140 x 70 x 60 mm

-Weight : 140 gr

Supply Voltage: 3-6 V, AC /

DC Time marker: 50 Hz

Pulse width : 0.02 second

Dimensions : (L) 14.00 x (W) 7.00 x (H) 6.00 cm

Weight : 0.140 kg

ESP59808



Ticker Tape Timer 2 With Electronic Synch.

For recording one dimensional motions (type motion, speed, acceleration) of a trolley or falling weight by analysing ticks on 9.5 mm ticker tape which are produce at fixed frequency together with motion of the objects.

Dimensions :

-Overall 140 x 70 x 65 mm

-Weight : 154 g

Supply Voltage : 3-6 V, AC /

DC Time marker : 50 Hz

Pulse width : 0.02 second

Used neodymium magnetic on the bat plate

Complete with electronic circuits for synchronizing vibration

Dimensions : (L) 15.32 x (W) 8.32 x (H) 8.14 cm

Weight : 0.185 kg

ESP59809



Ticker Tape Timer 2 With Clamp Rider

For recording one dimensional motions (type motion, speed, acceleration) of a trolley or falling weight by analysing ticks on 9.5 mm ticker tape which are produce at fixed frequency together with motion of the objects.

Overall **Dimentions :** 140 x 70 x 86

mm Supply Voltage : 3-6 V, AC/DC

Time marker : 50 Hz

Pulse width : 0.02

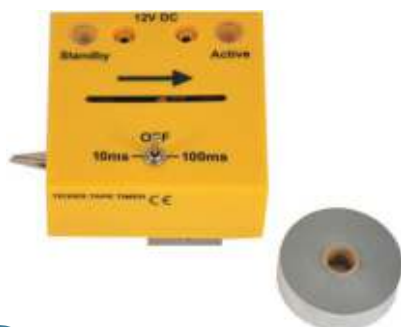
second

Use with Trolley and Precision Rail. For the paper tape spare can be used Paper Tape, for Ticker Timer.

Dimensions : (L) 14.00 x (W) 7.00 x (H) 8.60 cm

Weight : 0.154 kg

ESP59810



Ticker Tape Timer Electronic For Dynamic Kit

For recording sequences of linear motion on a track or during free-fall experiments by means of markings on metallic paper ESP59812

Selection switch: 10ms - off -

100ms Voltage source: 12 V DC

Dimensions : 84x84x66 mm

ESP59811





Metallic Paper, Roll For Ticker Tape Timer Esp59811

Recording paper for ticker tape timer ESP59811, Length: approx. 30 mm, W=15 mm

ESP59812



Dynamics Trolley, Demo, 120X68 mm

Trolley body and wheels of ABS plastic, runs with very little friction, 4 mm holes at the ends for attaching devices with 4 mm plugs, 2 mm hole for attaching string with plug two holes on the side for fastening weights, one centred, tapped hole for screwing in turret .

Dimensions of trolley body: 120x66 mm.

ESP59814



Car Body For Trolley ESP59814

Can be attached to ESP59814 Dynamics trolley

ESP59815



Adapter For Inelastic Collision For Trolleys ESP59814

ESP59818



Flat Spring For Collision Experiments With Trolleys ESP59814

For demonstrating the law of conservation of momentum
Elliptically shaped steel flat spring with 4 mm plug pin, may be inserted into dynamics trolley demo ESP59814
Spring width: 10 mm

ESP59816



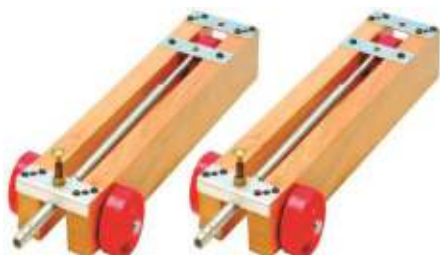
Spring Bumper For Trolleys ESP59814

For demonstrating the law of conservation of momentum;
elliptically-shaped steel flat spring with 4 mm plug pin, may be inserted into dynamics trolley demo ESP59814

Spring width: 10 mm

Weight : 10g

ESP59817



Dynamic Trolley, Wooden

This pair of identical wooden trolleys 300mm long mounted on three wheels. A spring loaded rod is fitted to give impulse when released. Supplied complete with 3 elastic rings, 3 springs, 8 pins (for stacking), 2 rubber corks, 2 needles and 1 releasing pin.

ESP59819





Dynamic Trolley Set, Superior

This pair of identical wooden trolleys 300mm long mounted on three wheels with ball bearings and a spring loaded plunger is fitted to give impulse when released. Another trolley mounted on four wheels with ball bearings to give friction-less experiments. Supplied complete with 3 elastic rings, 3 springs, 4 pins (for stacking), 2 rubber corks. Supplied with 2 Masses and 2 Height Adjustable Pulleys.

ESP59821



Hall's Car Single

Study the relationship between work and energy with this virtually frictionless plastic-wheeled car. Plastic-moulded body has a deep central well for weights and covered wheels that snap back into place if dropped. High-tech partially recessed sleeve bearings never need adjustment. Instructions. Hole at one end for attaching strings.

ESP59827



Dynamic Trolley For Mechanic Kit With Motor

Trolley with DC motor designed for mechanical experiment, especially for linear motion. Have a clip mounted on trolley body to hold end of ticker tape.

Can be run on precision rail with two kind of velocity. Equipped with 2 pcs 1.5V AA battery.

Dimentions : 98 x 52 x 56 mm

Material :

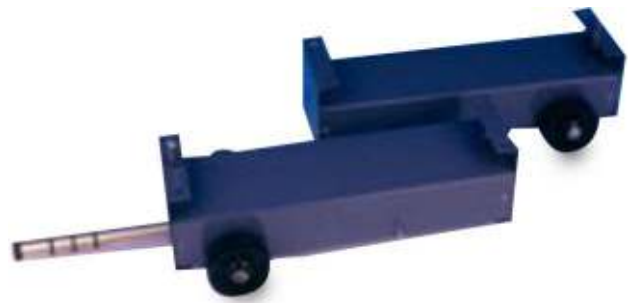
- Cart : Aluminium -Wheel : Plastic ;Equipped with speed control switch and socket 4 mm Mass approx. : 200 g

Part of : Mechanic Kit for Junior High School (37 items), Mechanic Kit for Junior High School, Mechanic Kit for Junior High School, Mechanics Kit for Senior High School (37 items), Physics Experiment Tools Package for Senior High School

Dimensions : (L) 12.00 x (W) 6.00 x (H) 7.00 cm

Weight : 0.200 kg

ESP59825



Dynamic Trolley (Cart), 1 Kg

A pair of trolleys (carts) the body of which is made of metal plate, with wheels made of plastic on ball bearings so that it move with very small friction. One of the cart is provided with clamps bands and three level spring loaded plunger.

Overall **Dimentions :** 41 x 14 x 17.5 cm

Material :

- Cart : Steel

- Wheel : Plastic

The mass of each cart is 1000 g (1% accuracy)

Dimensions : (L) 41.00 x (W) 14.00 x (H)

17.50 cm **Weight :** 1.980 kg

ESP59823



NEW

Trolley Runway 1.5x0.3 mts

Trolley Runway 1.5x0.3mts

Designed to provide a smooth, flat, easily inclinable surface for dynamics experiments using trolleys. With metal side rails and plastic fee

ESP59832



Dynamic Trolley With Variable Speed

Battery powered, for experiments on uniform movement, Potentiometer for stage-less adjusting of the speed. Mode switch: Ahead/Off/Back, sockets for external power supplying(non - uniform movement), Battery (9V) can be changed without opening the housing

ESP59830



NEW



Trolley With Motor

Trolley with DC motor designed for mechanical experiment, especially for linear motion. Have a clip mounted on trolley body to hold end of ticker tape. Can be run on precision rail with two kind of velocity. Equipped with 2 pcs 1.5V AA battery.

Dimentions : 98 x 52 x 56 mm

Material :

- Cart : Aluminium
- Wheel : Plastic

Equipped with speed control switch and socket 4 mm Mass approx. : 200 g

Part of :

Mechanic Kit for Junior High School (37 items), Mechanic Kit for Junior High School, Mechanic Kit for Junior High School, Mechanics Kit for Senior High School (37 items), Physics Experiment Tools Package for Senior High School,

Dimensions : (L) 12.00 x (W) 6.00 x (H) 7.00 cm,

Weight : 0.200 kg

ESP59829



Stand Rod 10 X 100 Mm, Stainless Steel

inUsed as pillars in some experiments.

Dimentions : 10 x 100 mm

Material : Stainless steel solid Part of Mechanics Kit for Senior High School.

Dimensions : (L) 10.00 x (W) 1.00 x (H) 1.00 cm

ESP59834

Stand Rod 10 X 1000 Mm, Stainless Steel

Dimentions : 10 x 1000 mm

Material : Stainless steel solid Part of Free Fall

Apparatus. **Dimensions :** (L) 100.00 x (W) 1.00 x (H)

1.00 cm **Weight :** 0.000 kg

ESP59835



Meter Ruler

Meter Ruler Wooden , 1 meter length graduated in CM/DCM

ESP59847

Physics

<G> By Free Fall Apparatus – Superior

This easy to operate system is designed to demonstrate uniform acceleration due to gravity and its determination and to demonstrate conservation of mechanical energy.

Components:

- Support (1.80 m height)
- Electromagnet to hold the ball
- highly sensitive photoelectric sensors
- Graduated ruler (1.50m length)
- Ball receptacle
- Stable cast base
- screws to adjust the support in the vertical plane

Principle:

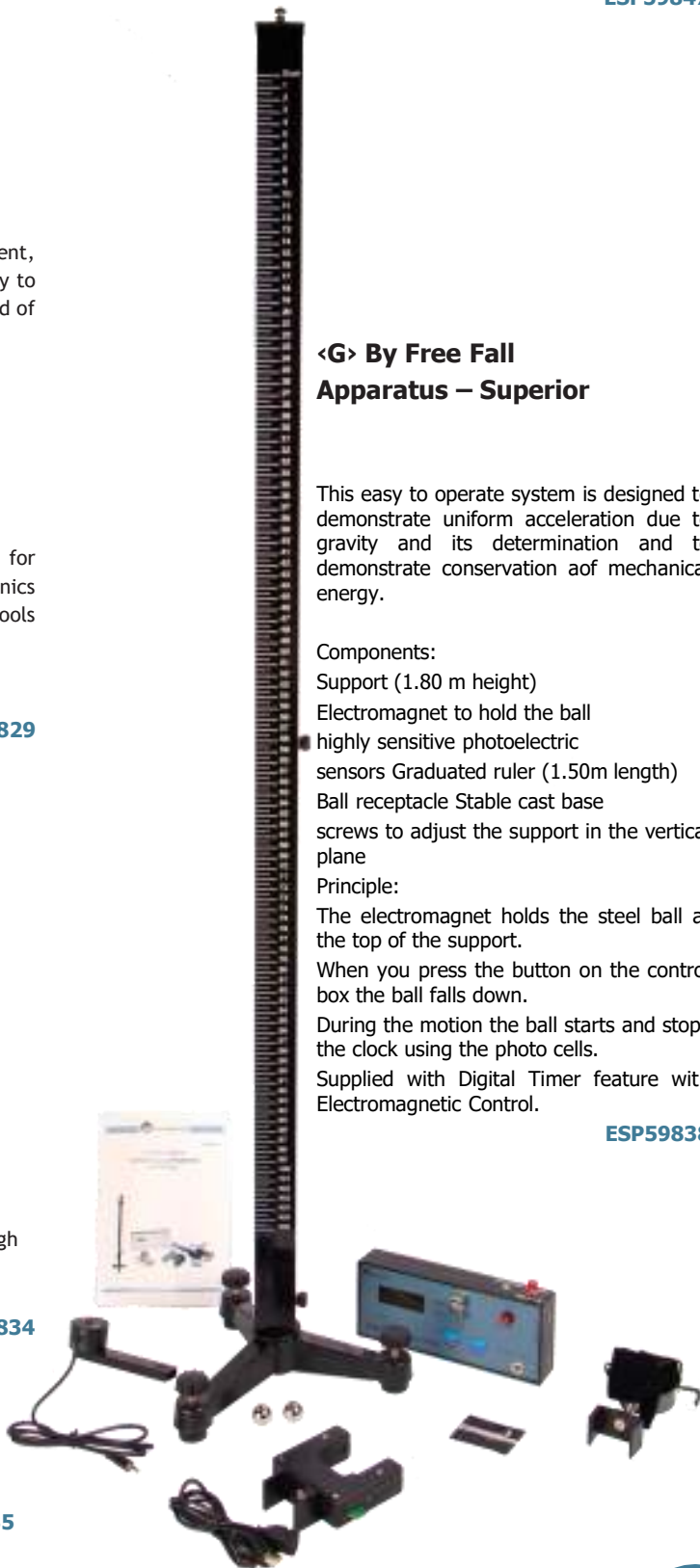
The electromagnet holds the steel ball at the top of the support.

When you press the button on the control box the ball falls down.

During the motion the ball starts and stops the clock using the photo cells.

Supplied with Digital Timer feature with Electromagnetic Control.

ESP59838





Freefall Apparatus

ESP59840

- This apparatus is designed for help the student in understanding the free fall, viz.: falling steel ball time measurement, inspecting the relationship between the altitude and the time taken, and measuring the gravity acceleration.
- Timer counter ESP-100 usage makes it possible to measure the free fall time accurately up to 100 micro second graduation. Free fall time is measured by using two photogates. When the ball is released, the Timer Counter is automatically start counting the time. The Timer Counter will read the time of the ball from the magnetic holder through each of photogates. When the ball has passed the second photogate then the Timer Counter will automatically stop measuring.

Component List

The components are assembled into a whole unit of Freefall Apparatus.

Cat. code	Component	Description	Qty
a ESP 25/30	Experiment Board	Die cast iron, equipped with locking bolt.	1 pc
b ESP 30/100	Stand Rod \varnothing 10 × 1000 mm	Stainless steel, 10 mm, length 1000 mm.	1 pc
C ESP 102	Electromagnet Steel Ball Holder	Electromagnetic unit to hold and release steel ball, triggered by Timer counter ESP-100. 12 volt DC. Max. current 0.2 A.	1 pc
d ESP101 03	Photogate FA	Sensor unit for photogate, using LED and infra red photo diode, mounted on special bracket specifically designed for the Free Fall apparatus.	2 pcs
e ESP 161 01	Steel Ball \varnothing 19 mm	Steel ball, 19 mm diameter.	1 pc
f ESP 160	Plumb Bob	To adjust photogates and magnet releaser in vertical position.	1 pc
g ESP 36/04	Bosshhead Clamp	Die cast aluminum; used to hold the Magnetic holder and Photogate.	3 pcs
h ESP 221	Measuring Tape 3M	Length is 3 m.	1 pc
i ESP 230 14	Connecting Lead for Electromagnet	For connecting of the voltage source to the Magnet Ball Releaser. Cable with 4 mm connector plug is to connect the magnetic holder to the Timer counter, length 1.5 m.	1 pc



Mechanics

Cat. code	Component	Description	Qty
j ESP-100	Timer Counter time	It is used to measure	1 pc
	Display	: 4 digits LED	
	Time range	: 0 - 999,9 second	
	Power input	: 220 V \pm 10% AC	
	Photogate input	: 2	
	Function	: 7 functions	
	Measurement unit	: ms, s	
	Electromagnetic output	: 12 V	

Freefall Apparatus Setup

The diagram illustrates the freefall apparatus setup. It features a vertical stand with a magnetic holder at the top. Two photogates, labeled Photogate 1 and Photogate 2, are positioned at different heights. The distance from the magnetic holder to Photogate 1 is labeled h_1 , the distance between Photogate 1 and Photogate 2 is labeled h_2 , and the total distance from the magnetic holder to Photogate 2 is labeled h . A ball is shown falling from the magnetic holder. The photographs (a-j) show the following components: (a) stand base, (b) vertical rod, (c) magnetic holder, (d) photogate sensor, (e) ball, (f) photogate cable, (g) clamp, (h) tape measure, (i) cables, and (j) timer counter.





Timer Counter

This apparatus is designed to be used together with Air track, but it can be use with Atwood machine, Free fall apparatus, Reversible pendulum, Moment of inertia apparatus and other that needs high accuracy automatic measurement.

This apparatus has two main function, as a timer and as a counter.

Timer counter is used together with 2 or 4 photo gates as the sensors. Photogate has the ability to sense the transition between dark and light and vice versa which is caused by an object passing through the gate.

Description	ESP-100	ESP-105
Display mode	4 digits LED	4 digits LED
Timer Range	0 ~ 999,9 second	0 ~ 999,9 second
Voltage Input	220 V ±10% AC	220 V ±10% AC
Photogate input	2	4
Speed metrical range	-	0,01 cm/s ~ 999 cm/s
Acceleration metrical range	-	0,01 cm/s ~ 999 cm/s ²
Signal Source output	-	0,1 ms, 1 ms, 10 ms, 100 ms, 1000 ms.
Function	7	8
Measuring Unit	ms, s.	ms, s, cm/s, cm/s ²
Electromagnet output	1	1

Free Fall Apparatus Superior

This apparatus is used for acceleration experiment by gravity and energy conservation law Attaching a steel ball to the upper part of the support for experiment and pressing the switch of the controller causes the ball to fall off.

• The steel ball can be measured with a stopwatch using an optical sensor.

Configuration: 1 / 1000sec with stopwatch, electromagnet, cylindrical support, optical sensor with 2 tape measure

Dimensions : 220x160x1500mm

ESP59842



Free Fall Demo Kit

KIT Includes : Falling body apparatus “Jumbo” Timer for falling body apparatus Support base, large, L=500 mm, Boss-head cross-pattern, demo 03, Support rod, squared, L=750 mm

ESP59843

Free Fall Tube

Students may expect that lighter objects experience a lesser acceleration than heavier objects. That idea is supported by observing that when a piece of paper and a pencil are dropped simultaneously from the same height, the pencil reaches the ground first. What the students overlook is the action of aerodynamic force on the paper, which counteracts the gravitational influence. By evacuating air from the Free Fall Tube, the aerodynamic forces can be virtually eliminated as a variable in the demonstration. As a result, objects will fall with the same acceleration and reach the bottom of the tube at the same time. Consists of a plastic tube that is closed at each end by a vacuum-tight cap. The bottom cap is fitted with a stopcock for air evacuation.

ESP59845



Atwood Machine

ESP59849

Senior High School
Junior High School

- Uniform acceleration.
- Uniform motion.
- Verification of Newton II law about motion.
- Measuring gravity acceleration.

The name of Atwood machine was discovered by an English scientist, George Atwood (1746-1807). This apparatus is consisting of two equal loads which are connected with a small mass thread. The thread is passed through with small mass pulley and almost friction free. At first this apparatus is used to learn the motion concept and to measure the earth gravitation acceleration, g.

When doing physics experiment using Atwood machine, the object motion is relatively slow, the load motion is accelerated. This machine is used to understand the Newton law II about motion.

The increasing velocity on Atwood machine depends on two transformers (force is F and mass is M, where $a=F/M$). One transformer is kept in fix value, while the other value is changed.

By making various unbalance load weight, object should move accelerated, one load moves upward and the other, which is given an additional load, moves downward. Increasing velocity resultant is measured from experiment data and the result is compared using Newton law II about motion calculation.

The time in the experiment by using the atwood machine can be measured by using a stopwatch or for better accuracy, it is suggested to use time system measuring unit which consists of Photogate and Timer Counter.



Component List

The components are assembled into a whole unit of Atwood Machine.

Cat. code	Component	Description	Qty
a ESP 135 01	Pillars with Scale	Consist of two aluminums square pillars with scale in centimeter; dimension 32 × 32 × 1500 mm; mounted on metal base 250 × 250 × 10 mm with adjustable leveling foot.	1 Set
b ESP 135 02	Pulley Ø 120 mm, Flexiglass	Light Plexiglas Ø 120 mm; made from plexiglass materials with diameter 120 mm; using conus bearing system to minimize the friction.	1 Set
C ESP 135 03	Cylinder Mass with Cord	Two masses made from brass, nickel plated, 100 g Ø 48 mm, each other is tied by using the 1700 mm nylon cord.	1 Set
d ESP 135 04	Slotted Mass	Made of aluminum, 5 g × 5, Ø 48 mm	1 Set
e ESP 135 05	Catcher Platform	Made of steel and painted, is used to stop the Slotted Mass (PMK 135 04), can be shifted upward or downward along the pillar.	1 pc
f ESP 135 06	Stopper Platform	Made of steel and painted, is used to stop the mass (PMK 135 03), can be shifted upward or downward along the pillar	1 pc
g ESP 135 07	Mass Holder with Release Mechanism	Made of steel and painted, with spring knob which is used to hold and release the mass, can be shifted upward or downward along the pillar.	1 Set

Supporting Tools

For detailed information, please refer to page 70 - 73.

Cat. code	Tool	Qty
ESL57745	Stopwatch, Analog	1 pc
ESP 101 04	Photogate AM	2 pcs
ESP-100	Timer Counter	1 Set



Senior High School

Moment of Inertia Apparatus

ESP59858

Moment of inertia apparatus is designed to determine the moment of inertia of many kind of objects by oscillation method. Oscillation is initiated by torque which is applied to the spiral spring mounted on the axis of this device. The moment of inertia of an observed object can be discovered by measuring and calculating the oscillation interval. Prior to experiment, spring constant should be determined.

NEW



Object holder

Transparent graduated disc

Axle

Photogate (optional)

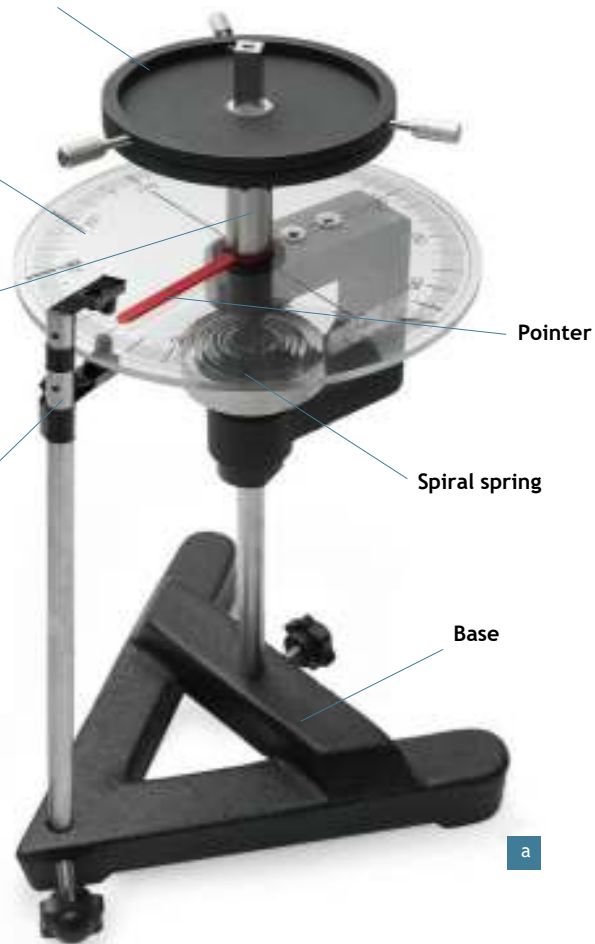
Pointer

Spiral spring

Base

Advantages

- This is a complete set for an easier experiment execution.
- Simple design; using a high quality spring and ball bearings to lessen the friction.
- Pointer and degree graduated transparent disc for an easier measurement.
- Experiment objects can be rigidly mounted on the object holder for an accurate experiment result.
- Oscillation interval measurement can be done manually by using a stopwatch or Timer Counter ESP - 100 and photogate for a more accurate, which can record up to 20 measurement data



Moment of Inertia Apparatus



Component List

The system consists of the moment of inertia apparatus, completed with 8 pieces of test objects.

Cat. code	Component	Description	Qty
a ESP 380.00	Moment of Inertia Apparatus	Dimension: 180 × 190 × 300 mm, completed with pointer deflection and transparent scale in degree, 0-360°. This scale will assist in determining spring constant of moment of inertia apparatus. In addition, this apparatus is completed with photogate to measure the period accurately when it is connected with Timer Counter ESP-100	1 Set
b ESP 380.01	Solid Ball	Wood, Ø 110.9 mm, nominal mass 500 g	1 pc
c ESP 380.02	Solid Cylinder	Wood, Ø 80 mm × 143 mm, nominal mass 500 g.	1 pc
d ESP 380.03	Hollow Cylinder	Steel, Ø 80 mm × 100 mm, nominal mass 500 g	1 pc
e ESP 380.08	Disc with Holes	Aluminum disc, Ø 250 mm and 2 mm thick, mass 260 g; especially used for verification of the Steiner's theorem.	1 pc
f ESP 380.04	Disc Ø 213 mm	Wood, Ø 213 mm × 20 mm, nominal mass 500 g.	1 pc
g ESP 380.05	Disc Ø 174 mm	Wood, Ø 174 mm × 30 mm, nominal mass 500 g	1 pc
H ESP 380.06	Solid Cone	Wood, Ø 146 mm × 130 mm, nominal mass 500 g.	1 pc
i ESP 380.07	Dumbbell	2 pcs adjustable brass weight, cylindrical form Ø 26 x 25 mm, mass 100 g; mounted on aluminum tubing, Ø 8 mm x 500 mm, mass 32 g.	1 Set



Supporting Tools

For detailed information, please refer to page 70 - 73.

Cat. code	Tool	Qty
ESP 101 05	Photogate MI	1 pc
ESP 100	Timer Counter	1 pc
ESL57745	Analog Stopwatch	1 pc

Experiment Topics

- M 01 Spiral Spring Constant of Moment of Inertia Apparatus
- M 02 Moment of Inertia of Body
- M 03 Steiner's Theorem
- M 04 Moment of Inertia of Bar
- M 05 Inertial mass of Dumbbell



MI-01 Spiral Spring Constant of Moment of Inertia Apparatus



MI-02 Moment of Inertia of Body



Air Track System ESP59860EC/XXX



Air Track And Accessories Set

Here’s a great value in a student air track. Study one-dimensional motion, collisions, and the conservation of momentum at low friction. Our sturdy triangular aluminium extrusion track is lightweight yet durable and can be used without a support stand , Available in 3 different Length :1500 mm , 2000 mm , 2400 mm

The air track is also used to study collisions, both elastic and inelastic. Since there is very little energy lost through friction it is easy to demonstrate how momentum is conserved before and after a collision. The track can be used to calculate the force of gravity when placed at an angle .

Overall Available sizes : 1600*300*150 mm , 2100*300*150 mm , 2500 * 300 * 150 mm

Weight : 7kg

SKU NO : ESP59860EC/150 ESP59860EC/200 ESP59860EC/240

Air Track Accessories Set, includes the following:

(2) 100g Aluminum sliders	(2) low friction pulleys
(4) spring bumpers	(2) Velcro bumpers
(10) thumbscrews.	(2) 50 g masses
(1) spool of thread	(4) 25g masses
(2) end brackets	(4) end bumper assemblies
(4) springs (2 pairs)	(2) holders for photo gates
(1) bucket	(10) 5g Slotted Weight
(4) rubber bands	(4) flags
(3) connecting brackets	(4) gaskets ,thickness 10mm



Smart Timer & Photo Gate Set:

Smart Timer:

The purpose of this device is to allow precise timing of physics motion experiments with Air Tracks. The Escience Smart Timer has seven separate functions and may be used to count time, measure acceleration when used with air track and collision devices. It has a six digit LCD Display and a timer range up to 9999 milliseconds, with an accuracy of 1/100th of a millisecond. The timer conveniently displays its functions with a large graphical user interface ,Supplied with 2 photogates .
Overall size : 250*145*110mm Product Weight : 0.8KG



Photo Gates:

2 Photo Gates can measure the time interval between two photo-gates, measure the time in takes to pass through one photo-gates ,measure acceleration of a released ball ,determine the acceleration due to gravity(with a picket fence).determine elastic and inelastic collision times, calculate cycles ,determine the frequency of a rotating object ,determine the period of a pendulum ,and count time with great accuracy.
Size: 90*80*25MM



ESP59860EC/Timer

Air Source

Variable High-output air source and min power air source are designed with noise-reduced technology. it's powerful enough to float fully-loaded gliders or pucks. Supplied with 1.5 meter long air hose suitable for all our air tables and air track.
Size:φ300*380mm
Weight : 3kg



ESP59860EC/Air

Air Trak System

ESP59860SP/XXX

following :

ESP59860EC/150	Air Track And Accessories	1 Set
ESP59860EC/Timer	Smart Timer With Photo Gate	1 Set
ESP59860EC/Air	Air Source	1 Set



Millisecond Timer

This timer (IPC-3834-T) is most suited for an investigational approach for students to gain a sound understanding of the concepts of time and motion. Two pairs of sockets alternately start and stop the timer, one pair operating in make mode, the other in break mode. The start/stop switches can be either mechanical or electronic. The timer is auto ranging for ease of use and has a clear 13mm LED digital display. We recommend using the IPC Photo Timing Gate (IPC-3210-T) for all start/stop timing applications due to its ease of use, accuracy and repeatability.

Built into a robust metal case with a durable powder coat finish. An illuminated on/off switch is mounted on the rear panel adjacent to a fused appliance inlet. A document containing descriptions and diagrams of how to set up the 'g' by Freefall apparatus and connect it to the Millisecond Timer has been compiled by us.
Electrical Supply: 220-240VAC, 50-60Hz - Dimensions: 179 x 190 x 85mm overall - Mass: 1.6kg - Ranges: 0 to 9.999s, 10 to 99.99s, 100 to 999.9s & 1000 to 9999s - Accuracy: ±0.01%

ESP-3834-T



Air Track

ESP59860 & ESP59865

Senior High School
Junior High School

- Very ideal for kinematic and dynamic experiment which need friction free state, so that the experiment result will be quantitatively better.
- Air track is equipped with photogate and timer counter which are specially designed to study the basic law of motions, such as:
 - Uniform motion
 - Uniform acceleration
 - Instantaneous and average velocity
 - Newton's law of motion
 - Conservation of momentum
 - Conservation of energy
 - Simple harmonic motion



Component List

Cat. code	Component	Description	Quantity	
			Air Track 1,5 m ESP59860	Air Track 2,0 m ESP59865
Track				
ESP 140 01	a Air Track 1.5 m	Made of extrusion aluminum, the surface is straight and flat.	1 pc	-
ESP 145 01	Air Track 2 m	Made of extrusion aluminum, the surface is straight and flat.	-	1 pc
Blower				
ESP 140 05	b Blower, 250W	Has soft sound.	1 pc	1 pc
ESP 030 05	c Hose 2 m	Elastic hose, 2 m in length.	1 pc	1 pc
Timer				
ESP-100	d Timer Counter	Has seven functions.	1 pc	-
ESP-105	Timer Counter	Has seven functions and able to measure the velocity and the acceleration automatically.	-	1 pc
ESP 101 01	e Photogate	Sensor is connected to timer counter. It detects the glider in certain positions.	2 pcs	2 pcs
Accessories				
ESP 145 04	f Glider 120 mm	Made of aluminum, easy to move on the track without friction due to the air layer below the glider.	2 pcs	2 pcs
ESP 145 04	g Glider 240 mm	Made of aluminum, easy to move on the track without friction due to the air layer below the glider.	-	2 pcs
ESP 140 26	h Additional Load 12.5 g	Mounted on glider using the screw.	4 pcs	4 pcs
ESP 140 27	i Additional Load 25 g	Mounted on glider using the screw.	4 pcs	4 pcs
ESP140 08	j Light Barrier Double Strip	There are 4 sizes of double strip light barrier: 1 cm, 3 cm, 5 cm, and 10 cm.	1 set	1 set
ESP 140 09	k Light Barrier Single Strip	Used in Simple Harmonic Motion experiment.	1 pc	1 pc
ESP 140 12	l Launching Cradle	Mounted on the end of track to launch the glider and prevent the collision between glider and end of track.	1 pc	1pc



Cat. code	Component	Description	Quantity	
			Air Track 1,5 m ESP59860	Air Track 2,0 m ESP59865
ESP 140 13	m Spring Buffer	Made of lithe metal, involute. Used in perfectly elastic collision experiment.	3 pcs	4 pcs
ESP 140 14	n Velcro	Used in inelastic collision experiment, makes the gliders sticking together.	1 set	1 set
ESP 140 15	o Pulley	Mounted on the end of air track for placing the cord.	1 pc	1 pc
ESP 140 16	p Slotted Hanger	Can be tied on the glider to provide a constant force.	1 pc	1 pc
ESP 140 17	q Slotted Mass, 5 g	Hanged on the slotted hanger.	4 pcs	4 pcs
ESP 140 18	r Small Block, 10 mm	For adjusting the tilt of air track.	2 pcs	4 pcs
ESP 140 19	s Heel	For sustaining the foot of air track so it will be easier to set the track.	2 pcs	3 pcs
ESP 140 28	t Vibrator Spring \varnothing 9 x 48 mm	Used in simple harmonic motion experiment	2 pcs	2 pcs
ESP 140 29	Vibrator spring \varnothing 9 x 98 mm	Used in simple harmonic motion experiment		2 pcs
ESP 140 21	u Photogate Holder	For installing the photogate on the track.	2 pcs	2 pcs
ESP 140 22	v Rubber Strip	Mounted on spring buffer to prevent the collision between the end of air track and the glider.	5 pcs	5 pcs
ESP 140 23	w Cord with Hook	For hanging the slotted hanger and hook it to the glider.	1 roll	6 pcs
ESP 140 25	x Screw	To hook the cord and the vibration spring on glider.	3 pcs	1 roll
ESP 140 24	y Hoop	For mounting accessories on glider.	12 pcs	14 pcs
ESP 145 06	z Adjustable End Stop for Air Track, 2 m	For hooking the spring on the hoop that mounted on stopper.	1 pc	1 pc
ESP 20.14/112 aa	Bar Magnet	For collision experiment.	2 pcs	2 pcs
ESP 140 13	m Spring Buffer	Made of lithe metal, involute. Used in perfectly elastic collision experiment.	3 pcs	4 pcs
ESP 140 14	n Velcro	Used in inelastic collision experiment, makes the gliders sticking together.	1 set	1 set



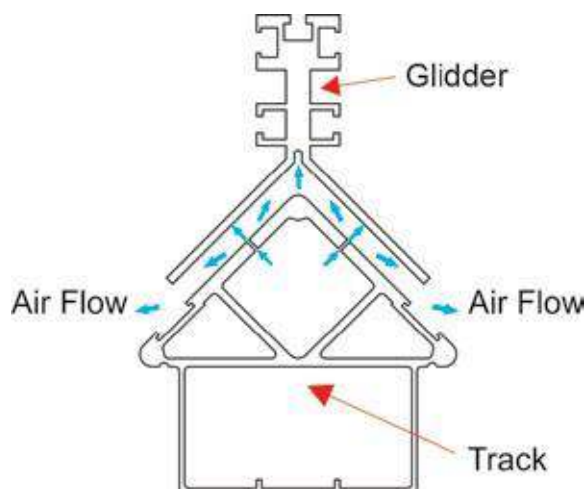
How Does Air Track Work?

Air track is made of extruded aluminum triangle pipe. Pressured air is pumped from a blower to one end of the pipe, the air then comes out from small holes which are existed in along the track.

The air flow which comes out will form a layer between the track and the glider causing the glider to fly on top of the track in friction free state.

This will decrease error that is caused by friction in motion experiment, therefore the acquired experiment data will be close to the theoretical calculation.

Flying glider, the glider floats 0.1 mm from the rail surface.



The float of glider in the picture is not to scale, actual float ± 0.10 mm.



Timer Counter System

This apparatus consists of photogates and a timer counter which is able to accurately determine the time interval when the glider passes through the photogates. Timer counter system makes it possible to do all of time measuring in an experiment such as time measuring in two different places on the track and time measuring on events which are nearly at the same time like in a collision experiment.

● Air Track

There are two size choices, the 1.5 m track in one part construction, which is used in basic experiment and the 2 m track in two parts construction, which has better stiffness and longer to gain better experiment result.

Those tracks are constructed from aluminum extrusion and have the fine straightness and flatness grade. Track faces are anodized for durability.

- millimeter and centimeter graduation in one side of the track.
- Collision bumper on the end of the track.
- Three points foot adjuster for track unit leveling.



Air Track 1,5 m & Air Track 2,0 m

Mechanics

● Photogate and Timer Counter

Timer counter available choices: ESP-100 and ESP-105.

Timer counter has 100 micro second resolution. 2 - 4 photogates can be directly connected at the same time to the timer counter.

There are 7 functions on ESP-100, viz.: timing I, timing II, collision, acceleration, cycles, count, and gravity acceleration.

With ESP-105 velocity and acceleration can be calculated automatically, it also has electronic signal output with time interval: 0.1, 1, 10, 100 and 1000 ms.



Photogate



Timer Counter ESP T-02

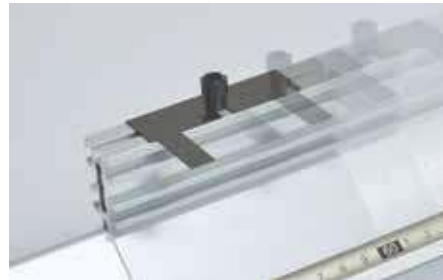




● **Blower** A low noise blower specially designed for EduScience Air track, equipped with 2 m elastic hose.

Experiment Topics

- Uniform Motion
- Uniform Acceleration
- Instantaneous and Average
- Velocity
- Newton's Laws of Motion
- Conservation of Momentum
- Conservation of Energy
- Simple Harmonic Motion
- Inertial and Gravitational Mass
- Explosion
- 'g' Measurement
- Friction Force Along the Track



Uniform Motion



Newton's Laws of Motion



Simple Harmonic Motion



Collision

Air Track 2 meter With Air Blower

The air track is a device to study a body in translation on a rail with two rows with holes Ø1mm. A compressed air hose, a manual launcher and two supports for optical sensors are also included in the equipment. A batch of different accessories (trolleys, pulley accelerometer, inclined plane, etc.)

is also included, in a storage suitcase. The suitcase is designed to store also the electronic launcher for air track.

Total weight: 4kg
 Rail dimensions: 85x71x1950mm

Features:

- 1 aluminium shaped rail 1850mm graduated
- Adjustment feet included
- 1 compressed air hose (1.80m)
- 2 trolleys of 90mm
- 2 supports for optical sensors
- Pulley accelerometer and inclined plane

Accessories batch can be used to perform the following



Main Features:

- Box in sheet metal and aluminum
- Power supply: 230V AC
- Switch for power supply
- Air flow variator
- Connection for air hose
- Air intakes and transportation handles

Experiments:

- Newton's laws.
- Uniform and accelerated movements.
- Inclined plan.
- Elasticity & in-elasticity.
- Kinetic energy.
- AIR BLOWER FOR AIR TRACK

Advantages :

Not loud motor thanks to turbine with tangential exit. - Air input adjustable with the variator. - Powerful motor: can power supply 2 air tracks at the same time. - Easy to carry thanks to handle

ESP59867





Timer With 2 Photo Gate For Air Track 2

White metallic box with 4 rubber feet
 Board with seconds, 1/10, 1/100, 1/1000
 START and STOP manual or with sensors
 USB port
 Power supply: 12V (included)
 Dimensions: 170 x 110 x 50 mm
 Weight: 550 g
 Pair of optical sensors:
 H-shape supports with clamping screw and optical cell
 Dimensions: 100 x 85 x 20 mm
 Weight: 230 g
 Packaging: individual box (chroNometer + optical sensors)
 Advantages:
 Mechanics experiments optimised with the optical sensors and USB port.
 ErgoNomic product: easy reading thanks to the board inclination.
 Stability with the 4 rubber feet.
 Useful compactness for storage.
 can be used with Air track ESP59867 , Free fall , Circular motions ...et

ESP59870



Air Track 1.5 M Complete Set II

- High-pressure compressed air is discharged into a small hole on the track to move the glider (on the track) Equipment.
- You can make frictionless movement by adjusting the air on the top of the slide.
- Experiments without friction losses such as momentum conservation, equivalent speed motion, and one-dimensional collision can be performed.
- Optional: Photo gate timer Sliding track: aluminium tube 45x45mmx1.5m, 4 levelling screws Track cart: 200mm 2 pieces (with elastic plate) pulley unit: Includes weights, threads, springs, etc. Blower : AC220V 60Hz 1000W | Optional : 1. Track cart (100mm) - 2. Photo gate timer

Timer For Air Track Set II

ESP59861



• Used to measure short (fast) times in velocity, acceleration or gravity acceleration experiments of falling motion. • It can measure from 0.001 second to 60 minutes and can start, stop, mid-time (LAP), and resume (RESET). • By using a separate optical sensor, you can measure the movement time of a moving Object. PLUS 2 sets Photo Gate wit clamp for fixing and 1 meter wire • Ancillary equipment for stopwatch • It is a sort of electronic switch that electrically activates the start and stop switches of the stopwatch by detecting objects moving at high speed. • The section speed of falling motion, constant velocity, acceleration, etc. can be measured with an error range of 15us. • Mounting can be installed at all angles of vertical and horizontal, and upper and lower sections of falling motion can be installed.

ESP59871

Kinetic Theory Model I

To study the motion and behaviour of gas molecule, works on 9 to 12V DC, vibrates a small platform inside a transparent tube, which further vibrates steel balls inside the tube. Includes steel balls and two floats.

ESP59872



Kinetic Theory Model II

To study the motion and behaviour of gas molecule, works on 9 to 12V DC, vibrates a small platform inside a transparent tube, which further vibrates steel balls inside the tube. Includes steel balls and two floats.

ESP59874



Pellets For Kinetic Theory Model II

ESP59875



Force Table

ESP59878

Junior High School

Senior High School



- The force table is a circular table equipped with an angle scale of 0o - 360o on it. As a force component, three sets of slotted and suspended loads and three table pulleys are used to facilitate the displacement of the force. The load is attached to the thread connected by a lightweight plastic ring so that it does not overload the system and is easy to adjust.
- With force table, teachers can demonstrate that force is a vector quantity, which has a value and a direction. It also can be used to show the summation of forces quantitatively (resultant force).

Component List

Cat. code	Component	Description	Qty
ESP00848	Force Table	Used as a force resultant observation table. Equipped with a scale of 0o - 360o.	1 pc
ESP00849	Table Pulley	Used as a load bearing and force direction control. The slope of the pulley can be adjusted as needed. Pulley diameter: 5 cm Material: plastic	3 sets
ESP00850	Slotted Masses and Hanger	Used as force/load source. The total mass of the loads: 250 g Consist of 6 weights: 1 x 10 g, 2 x 20 g, 3 x 50 g, 1 x hanger 50 g.	3 sets
ESP00851	Nylon Thread with hook	Used as a load hanger, attached to a plastic ring. Length: 30 cm.	3 sets
ESP00852	Plastic ring	Used as a load bearing. Diameter: 5 cm Material: plastic	1 pc



Force Table

For verifying laws of composition and resolution of forces, comprising machined aluminium table 40cm dia., Scale graduated 360°, on heavy vertical support rod and tripod base. Complete with one ring, 4 sliding clamp pulleys. Supplied with four cords with rings at one end, with set of slotted masses.

ESP59876



Force Table Deluxe

The classic table for studying a combination of forces! A steel support tube, cast legs, levelling screws, and a laminated table top make this unit very stable and highly functional for the study of equilibrium of force. Table Diameter 400 mm It is supplied with 4 sets slotted weights: 50g x1, 20g x9, 10g x1, 5g x2 | 4pcs pulley with clamps 4pcs wires | 1pc transparent protractor, and instructions.

ESP59877





Pulley Multi-purpose

Aluminium pulley, 70mm dia. In metal bracket with two clamping screws for bench and rod support respectively. The bracket may be clamped to a board or bench edge up to 38mm thick, screwed to a flat surface or held in a 13mm diameter support rod.

ESP59885



Pulley With Clamp Super

Upgrade your force table and inclined plane experiments. The Super Pulley, with its integral clamp, makes set-up and alignment easy. The pulley height is fully adjustable, so you can skim the top of a force table for parallax-free readings, yet keep the force parallel to the track on an inclined plane as shown in the photo. Fits tables from 0 to 2.0 cm thick.

ESP59889



Pulley With Table Clamp

5cm dia., Plastic pulley mounted on a 23.5cm long metal shaft with a table clamp. Pulley shaft is held in table clamp with a clamping screw.

ESP59883



Pulley Table Clamp

Smooth running, ball bearing clamp pulley, can be clamped to surfaces up to 50mm thick and the 45mm diameter sheave is made of nylon.

ESP59887

NEW



Pulley Single With 2 Hook

DIA 50 mm

This Aluminium Pulley Single with 2 Hook (Pulley contains a pulley with a bracket and a hook at each end) You can use pulleys as helper devices, with easy lifting force. It minimizes the force required to lift a very heavy object. Both frames and sheaves are rigid aluminium, which will stand up well to student use. A great item to have in the lab or physics classroom.

ESP59880

NEW



Pulley Double In Line

DIA 40 mm

Double pulley in one line made of Aluminium, different diameter Φ 50,40 mm, with Hooks from both side You can use pulleys as helper devices, with easy lifting force. It minimizes the force required to lift a very heavy object. Both frames and sheaves are rigid aluminium, which will stand up well to student use. A great item to have in the lab or physics classroom

ESP59881

NEW



Pulley Triply In line Aluminium

DIA 50,40,30 mm

Triply pulley in one line made of Aluminium, different diameter Φ 50,40,30 mm, with Hooks from both side You can use pulleys as helper devices, with easy lifting force. It minimizes the force required to lift a very heavy object. Both frames and sheaves are rigid aluminium, which will stand up well to student use. A great item to have in the lab or physics classroom

ESP59882





Pulley Demonstration Set Advanced

The Pulley Demonstration Set is designed to illustrate the working principle of simple machines. From the wheels on a bicycle to the gears in a car, the Pulley Demonstration System helps explain how things work. It helps student to understand the concepts of the mechanical advantage, the efficiency of fixed and moveable pulleys etc. Students perform quantitative experiments on fixed and moveable pulleys, trains of fixed and moveable pulleys, the wheel and axle and the capstan etc. **The set includes :**

Wooden base includes Size 81 x 20cm capstans, sockets (2) and an eye hook.

Rods 3 (Dia. 12.5mm x L 81cm), Collars with Hook 8, Right Angled Clamps 3, Wheel and Axle 1, Bar for tightening 1, Vertical Rods, Masses Slotted Weights. 2x10gm, 2x20gm, 2x50gm, 4x100gm, 4x200gm, 1x500gm Total 15 weights.

Weight Hangers. 5x50gm, 1x20gm, 1x10gm.

ESP59892



Pulley Demonstration Set Student's

Used to demonstrate the concepts of force and mechanical equilibrium. Contains a polished wooden base with a capstan mounted at one end and screw eye for hanging pulleys at the other, 24 degree vertical support rod, 8 degree crossbar with clamp, 8 single pulleys, 2 double pulleys, wheel and axle, 6 pulley clamps, 90 degree clamp, 9 hooked masses ranging from 10 to 1,000 g, pulley cord, and instructions.

ESP59893



Falling Bodies Apparatus

Ball shooter for illustrating the principle of independent spaces horizontal and vertical motion: The throwing motion can be seen as composed of free-fall and horizontal motion. The shooter fires one ball horizontally and the other is released in free-fall. The supplied 19 mm steel balls are stored in the device. **Dimensions :** 180 x 170 x 50 mm

ESP59895



Projectile Launcher

Projectile launcher is used for investigating the motion of projectile at different angle of projection (0-900). The angle is read by means of a plumb line that is attached to the unit. A spring loaded rod is used to project a ball (Projectile). This set up can be easily mounted on the edge of laboratory table.

ESP59898



Collision In Two Dimensions

This inexpensive apparatus provides data for investigating conservation of momentum and kinetic energy in collisions. It can also be used to compare elastic and inelastic collisions. A curved aluminium track and adjustable target support form the core of the unit. The kit provides two steel balls, a glass ball, a hollow wooden ball, and a plumb bob.

ESP59900





Projectile launcher 2

May be used as launcher allowing consecutive launching with the same force, for dynamics experiments involving a track; Long pin with 3 striations for adjusting and setting different speeds of launching, with tension spring, easily trigger-able trigger cylinder as well as a finger grip for tensioning the spring; may be fastened to special aluminium rail profile;

Dimensions : 240 x 60 x 50 mm

ESP59855



Projectile Launcher

A spring loaded gun hold two plastic balls on firing the gun, One ball falls straight down while the other is projected horizontally. The audible clicks when they strike the floor are simultaneous.

Size **Pipe :** -175 x 60 x 350 mm - ID 16 mm - OD 20 mm **Plastics ball :** Hole centre 2 mm - Ball 15.5 mm **Material :** Plastic

ESP59854



Inertia Apparatus

The plastic ball rests on the card - when you pull back the spring, the card shoots forward, but the ball returns to its perch on the post. This device illustrates the effect of inertia. To the observer, the ball seems not to have moved at all. Kit contains: plastic ball, stiff card, acrylic base, support post with cone-shaped depression, hardware to attach post and spring to base, and instructions. Grade 6 and up.

ESP59857

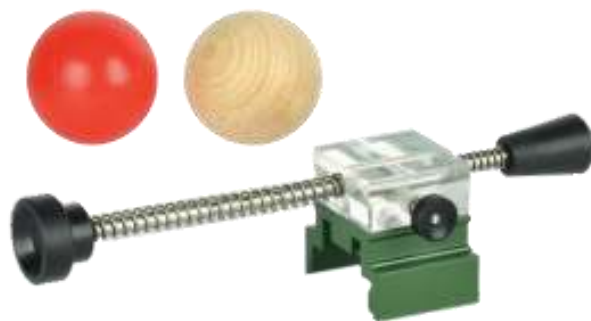


Ballistics Base Unit, Demo

For demonstrating ballistics using solid bodies or liquids; large metal scale with a coloured pointer, easily adjustable and lockable in position; hence readings can be taken from large distances; with the mounted table clamp and stand rail base profile the apparatus can be fixed to tables with a thickness of 48 mm; metal bracket for holding the launching ball;

digit height on scale : 26 mm; **Dimensions :** 260 x 210 x 35 mm Please note: To perform the experiments, either a water throwing unit or a ball throwing unit is required!!

ESP59852



Ball Gun, Unit For Ballistics Base Unit ESP59852

For demonstrating ballistics using a large ball, long pin with three striations for setting different launch speeds with tension spring, easily ;-triggerable trigger cylinder with finger grip for easy tensioning of the spring; may be fastened to the ballistics apparatus or ES rail profiles; incl. Wooden ball and hollow plastic sphere, D = 60 mm each; Please note : Ballistics apparatus (ESP59852) required to perform the experiments!

Dimensions : 180 x 54 x 60 mm

ESP59853



Magnetic Gun 3 Stage

gun demonstrates projectile acceleration by using a magnetic chain reaction. Each time a ball bearing impacts the magnet, the following projectile moves faster.

Track Length: 1000mm. Contents include: 3 x Magnets 2 x 16mm ball bearings 8 x 20mm ball bearings Spare rail for the smaller ball bearings

ESP59850



Gauss Gun

Gauss gun project : Explore the wonders of magnetism with our Gauss gun project. gauss gun project Tested By The Experts, 100% working guaranteed best project components and kits by Santosh Project Maker Pvt Ltd. For motivating and helping students in improving their skillsets and academic projects

ESP59851



Inclined plane, Experiments Kit

ESP59909

Junior High School

Senior High School

NEW

- Inclined Plane Experiment Kit is designed to show the correlation between the inclination of a plane and the required force for a body on top of that plane to stay still. Apart from the inclination angle, the smoothness of the contacting surface between the body and the plane also affects that required force.
- This kit consists of a plane with variably measurable inclination angle due to a protractor that is integrated to the system.
- This plane can be inclined up to 60°.
- The body that was mentioned in this kit is a friction block with four different sides that have different smoothness. The force that is required to make to body staying still is measured by using 3 N spring balance that is connected to nylon string, a pulley system, and the body itself.



Physics

Component List

Consisting of 7 components Weight: 1.760 kg.

Cat. code	Component	Description	Qty
ESP 250	Inclined Plane with Protractor	Equipped with a protractor and tilt regulator. At the end of the track there is a pulley with a diameter of 2 cm. Inclined plane board size: 550 x 190 x 30 mm. Material: Wood.	1 pc
ESP 250.01	Sliding Block I (Coated Wood and Sandpaper laminated)	Sliding block with one face covered with sandpaper and equipped with a hook at one end.	1 pc
ESP 250.02	Sliding Block II (Melamine and Glass)	Sliding block with one face covered with melamine, one face covered with glass, and have a	1 pc
ESP 51.08/09	Nylon Thread	10 m nylon thread reel.	1 pc
ESP11.14/57	Plastic Tube with Load 120 g	Plastic tube containing granules of lead bullets. Weight : 120 g.	1 pc
ESP 49/01	Balance Pan	Weight compartment that can be attached to the pulley system.	1 pc
ESP 51.10/11	Dynamometer 3.0 N	Used to measure force. The scale printed on a transparent tube. Scale : 0 - 3 N x 0.1 N Equipped with hangers on the top and hooks at the bottom for the pull load.	1 pc

NEW



Compact Ramp Kit

Dynamics on a small scale; ideal for bench top investigations with multiple groups. The kit contains 5 ramps, 5 stands, 5 blocks, 5 cars and a pack of 5 different surfaces. The ramps are 650 x 60mm and the ingenious stands give simple height adjustment from zero to 250mm in 10 steps. The blocks have a central pin to take slotted masses for varying the load. Use for investigations into motion and friction. Replacement surfaces are also available, as a pack of 5 assorted surfaces.

ESP59903

Friction Apparatus

This set includes a friction block and a friction board, both made of smoothly finished pine wood. The friction block has a hook for spring scale and two compartments for additional weights. It can be placed face-up or sideways. Students can vary the weight or area of contact to see their impact on the friction force. Comes with three 50 g weights and a 100 g spring scale. Size of board: 20 in. x 2 in. **Size of block** : 4 in. x 1-1/2 in. x 1 in. Grade 6-college.



ESP59904

Friction Board Apparatus

To demonstrate conversion of energy, conservation of momentum projectile motion. Consists of a metal ball track to drop a steel ball. Includes two steel balls. Approx. 50cm Having provision for adjustable height which can measure degree on graduated metal scale with plumb line on metal base.

ESP59906





Inclined Plan and Friction Board

Use this device to study the friction between two surfaces and the forces on an inclined plane. The inclined board can be set at any angle between 0° and 45°. A hanging pan is provided to hold the desired weight. Three different-sized boards with eye hooks and a metal plate are included. Students can determine the coefficient of static friction and the coefficient of sliding friction and verify the normal and frictional components of the force exerted by the plane. Activity manual included. 26 in. x 15 in. x 4 in.

ESP59908



Inclined Plane, Complete Set Demonstration

For experiments on static, dynamic and rolling friction; Surfaces: Wood, rubber, leather and abrasive paper Wooden area can be doubled when opening the body. Dimensions : 40 x 40 x 160 mm Mass: approx. 200 g

ESP59910



Collision Balls (Newton's Cradle)

This economy apparatus demonstrates elastic collision well. Features a steel frame supporting five steel supporting five steel balls on tough nylon mono-filament. Completely assembled.

ESP59902



Impact Testing Apparatus

An experimental device that measures the distance the wooden block moves by hitting a steel ball against a wooden block depending on the height of the rail. Investigating potential energy experiments (objects at heights have energy). One-touch height adjustment function (8 levels). The rail is made of Al and has a smooth slope, so reproducibility is good and precise practice is possible.

Dimensions: 1000100*250mm

*Exercise weight : 1 each large and small, 2-stage adjustable

ESP59916



Friction Block, Multifunctional, 40X40X160 mm

For experiments on static, dynamic and rolling friction Surfaces: Wood, rubber, leather and abrasive paper Wooden area can be doubled when opening the body.

Dimensions : 40 x 40 x 160 mm - Mass: approx. 200 g.

ESP59911

NEW



Wooden Block

Polished surface on all sides Dimensions : 40 X 70 X 150 mm.

ESP59912

Loop The Loop Apparatus

This unit demonstrates the transformation between kinetic and potential energies when a steel ball runs on the 52 in. Looped aluminium track. 8 in. dia. loop. Track is

mounted on a 11-1/2 in. x 4 in. Sturdy wood base. Attached basket safely catches ball. Includes two chrome plated steel balls. One-year warranty. Grade 12 and up.

ESP59913



Loop The Loop, Advanced

To demonstrate conversion of energy, conservation of momentum projectile motion. Consists of a metal ball track to drop a steel ball. Includes two steel balls. Approx. 50cm Having provision for adjustable height which can measure degree on graduated metal scale with plumb line on metal base.

ESP59914





Steam Engine With Boiler

Working model, with boiler, safety valve, whistle, steam chamber and flywheel, on base, to drive dynamo models etc.

ESP59936

Steam Generator

Seamless, III-aluminum construction Will not collapse even if boiled dry Durable walls are 1.5mm Thick All parts are of the same alloy, keeping corrosion to a minimum Boiler with cap, nipple, sample cup with wooden handle, two no. 8 rubber stoppers (one with hole for thermometer), tripod stand and ring, instructions



ESP59938

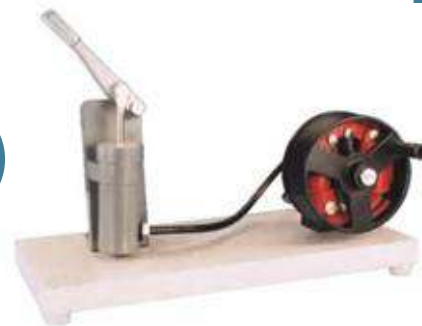


Thermoelectric Generator

This thermo electric generator demonstrates how heat energy can be converted directly into electrical energy , by placing one of the leg into hot water and the other one into cold water then enough electrical energy is generated to power the electric motor and turn the propeller.

ESP59942

NEW



Hydraulic Brake Model

Hydraulic Brake : Bench mounted Particularly suitable for motor vehicle teaching Comparison of leading and trailing shoes Determination of coefficient of friction Simulates real brake drum

ESP59921

NEW



Energy Transfer Apparatus Line Shaft

Comprises a steel shaft which carries a clock spring with a free-wheel device and winding ratchet, also an Aluminium 'V' pulley 56 mm dia. One end of the shaft overhangs the base for use as a line shaft when winding up a weight. For showing potential energy in a wound-up spring and its conversion to electrical energy by driving a dynamo and lighting a lamp. May also be used to wind up a weight on a cord showing the change from potential energy to kinetic and back to potential in the raised weight. The steel shaft carries a clock spring with a free wheel device and winding ratchet, also an aluminium 'V' pulley 56 mm diameter. One end of the shaft overhangs the base for use as line shaft when winding up a weight. Dimensions 220 x 100 x 100 mm high. Size 10 x 20 cm

ESP59928

Stirling Engine Generator

This Stirling Engine Model is a unique heat engine to show students how thermal expansion and cold shrinkage can create energy. The compact, easy-to-use engine model uses a closed-cycle thermodynamic system in which air is compressed and expanded at different temperatures to create heat energy. You see it working as the generator gains speed and begins to power LED lights.

ESP59940



Flywheel Unit

Steel fly wheel 100 mm diam. with pulley 20 mm diam. on shaft held in brackets, mounted on base.

ESP59935

Stirling Engine Model Transparent

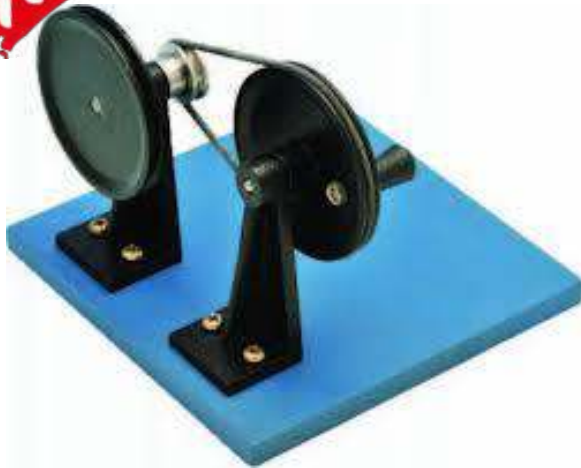
Overhead functioning models (OFM)

For demonstrating the movements involved in heat engines and explaining how they work using an overhead projector, acrylic model with coloured parts, including drive shaft,

Base panel : 248x248 mm.

ESP59941





Energy Transfer Apparatus Hand wheel Driving Unit

75 mm dia. Driving and output pulleys with 20 mm dia. Intermediate pulley is fitted on 16 x 16 cm base. For use in driving dynamos, line shafts, flywheels, pumps etc. The driving and output pulleys are both 75 mm diameter and the intermediate pulley is 20 mm diameter giving a step-up ratio of 3.75 Size 16 x 16 cm

ESP59933



Energy Transfer Apparatus Spring Unit

Comprises a steel shaft which carries a clock spring with a free-wheel device and winding ratchet, also an Aluminium 'V' pulley 56 mm dia. One end of the shaft overhangs the base for use as a line shaft when winding up a weight. For showing potential energy in a wound-up spring and its conversion to electrical energy by driving a dynamo and lighting a lamp. May also be used to wind up a weight on a cord showing the change from potential energy to kinetic and back to potential in the raised weight. The steel shaft carries a clock spring with a free wheel device and winding ratchet, also an aluminium 'V' pulley 56 mm diameter. One end of the shaft overhangs the base for use as line shaft when winding up a weight. Dimensions 220 x 100 x 100 mm high. Size 10 x 20 cm

ESP59934



Small Motor

1.5 - 4.5V D.C. motor provided with 15 mm diameter 'V' pulley. Mounted on base with 4mm socket terminals. Use in conjunction with motot , Base size is 4x6" The Malvern Energy Transfer Kit is comprised of a number of separately available units which enable the user to qualitatively show energy conversion from one form to another in a variety of different ways. All units are carried on a base and provided with 4 mm socket terminals where appropriate. For use as a driving unit /dynamo. Comprises 1.5 - 4.5V D.C. motor provided with 15 mm diameter 'V' pulley.

ESP59929



Energy Transfer Apparatus Large Motor

Mounted driving unit or dynamo - 6V DC motor and 15mm V pulley ; Mounted on base with 4mm terminal socket Great for use as a tool for studying the input/output of larger motors on a comparative level Base size is 15X10cm

ESP59930



Energy Transfer Apparatus Mounted Lamp

includes 12v-24w bulb mounted to baes , pair of 4 mm sockets to tie into solar cell

ESP59931



Energy Transfer Apparatus Lamp unit set

consists of three bulb holders connected in parallel with two 4mm sockets, mounted on a standard base. Complete with bulbs. For use with motor / generators to give an indication of their output when used as dynamos. The lamp holders are connected in parallel. Supplied with three lamps 3.5 V, 0.25 Amps. M.E.S

ESP59932





Energy Transfer Apparatus Turbine

Comprises a rotor housed chamber and a clear perspex front. Two inlet tubules (one each for turbine and pump operation) and one outlet are provided. The shaft has 20 mm diameter pulley. For use as a water turbine to drive a generator producing electricity or for use as a pump driven by a motor and raising a head of water to produce potential energy. The rotor has eight 'bucket' blades and is housed in a block turbine chamber 50 x 50 x 25 mm with a clear perspex front. Two inlet tubules (for turbine and pump operation respectively) and one outlet tubule are provided, and the shaft carries a 15mm diameter pulley.

Size: 15 x 10 cm

ESP59949



Energy transfer Apparatus Eddy Current Unit

Eddy current unit Eddy Current Unit for the demonstration of eddy current braking when used in conjunction with the hand wheel driving unit.

Aluminum disc has a 4.5" diameter and has a 20mm driving pulley. The powerful circular magnets are mounted on a pivoted arm so that they may; be moved over or away from the disc as required. The apparatus is mounted on a secure wooden base. The base has rubber ; stoppers underneath to prevent the apparatus from moving or sliding on the surface while in use.

The apparatus stands 6.5" tall, 7" long, and 4.6" wide weight. Dimensions 220 x 100 x 100 mm high. Size 10 x 20 cm

ESP59951



Energy Transfer Apparatus Water Unit

"Unit consists of two basins and shaped glass tubes as shown in figure. Supplied on stand and used with turbine/pump unit. For use with turbine pump unit to provide an open or closed system in demonstrating the conversion from electrical to kinetic energy in the pump and potential energy in the head of water. Supplied complete with two basins 80 mm diameter and shaped glass tubes. The upper platform has 38 mm diameter hole to allow use as a simple recirculation system with a single reservoir."

ESP59954



Eddy current (Waltenhof) pendulum

For demonstrating eddy currents and Lenz's rule, simple, fast and safe; the slotted pendulum plate swings unbraked by the magnetic field, where as the full pendulum plate is strongly decelerated; Boom made of robust steel, powder-coated, axle bearing for the pendulum plates at the top, strong magnetic field at the bottom due to two neodymium magnets. 3 pendulum plates made of aluminium, 1 x solid, 1 x perforated, 1 x slotted
Pendulum plates: 290 x 80 x 3 mm Boom: 120 x 100 x 310 mm
Total weight: approx. 1683 g

ESP59956

Hydro Electric Power Station

This Hydro-electric power generator is composed of a well made turbine with transparent cover connected to a small motor to generate electricity. Ideal for classroom demonstrations, students can directly observe the process of conversion of water flow to electrical energy that occurs in hydro-electric power plants.

ESP59953



NEW



Pelton turbine demo, with generator

To demonstrate the conversion of mechanical energy into electrical energy; Low friction blade wheel in acrylic glass housing, Axle with large drive wheel and drive belt to a fixed housing with generator and two 4 mm safety jacks, Side inlet opening for a water hose, Base plate with outlet opening, can be mounted on the tank using drain connector. Blade wheel diameter = approx. 145 mm; dimensions: approx. 200 x 80 x 235 mm

ESP59945

Wind Turbine

"Large working model of a wind turbine, to demonstrate the conversion of wind power into electrical energy; DC generator with hub to accommodate up to 6 rotor blades, 3, 4 or 6 rotor blades can be attached, stable stand base with metal inlay, voltage is taken from two 2 mm sockets, 2 cables L=25 cm, each with a 2 mm and a 4 mm plug, rotor blade: 160 x 30 mm blade-L= 160 mm height incl. rotor blades=430 mm Base plate D=130 mm hub height=260 mm weight=335 g"



NEW

ESP59945



Thermal generator with clamp

For conversion of thermal energy into electrical energy or vice versa; acrylic housing with centrally arranged Peltier element between two cubic aluminium containers, fixed upright section with 2 safety jacks and holders for thermometers, clamp for fastening the aluminium containers to the Peltier element,

Peltier element : Max. 15 V / 3.5 A ; Aluminium container : 50 ml each Dimensions : 85 x 55 x 80 mm

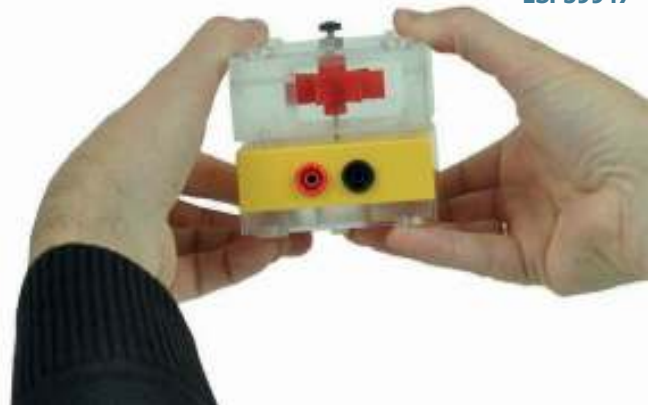
ESP59943



Turbine Model

To show conversion of mechanical energy into electrical energy. Turbine with transparent cover, inlet and outlet tubes directly connected to a dynamo. Fitted on base.

ESP59947



Turbine Model With Motor / Generator

Easy-to-turn motor (solar motor) with long shaft for attaching a Pelton turbine, supplied with transparent Pelton Turbine unit 4 holes on top for locking the Pelton turbine; two 4 mm safety jacks on side; ready to go at just 200 mV / 20 - 30 mA; Magnetic housing with transparent base plate;

Dimensions : 84 x 84 x 39 mm.

ESP59948

Eddy Current Apparatus

Effective device for demonstrating Lenz's law using eddy currents induced in the wall of a copper tube by a falling magnet. Two identical metal slugs with rubber ends caps, one is made of plain steel, and the other is a strong neodymium magnet. Kit also includes an activity guide.

ESP59950



Wind Generator

Renewable energy is all around us. Learn about wind power, how to harness, young scientists will be excited about wind energy.

ESP59944





Motor Generator AC/DC Demo. Activity Model

An excellent activity model for study of the generation of electric current. The generator produces AC/DC current simultaneously when the hand wheel is turned. The generation of the AC/DC voltage is represented by

bulbs. Output is through 4 mm sockets and a low voltage bulb is also provided as a simple output indicator.

ESP59955



Solar Powered Car

Explore green energy on a small scale! This solar car operates on sunlight or a rechargeable AA battery. A four-position switch allows you to choose between running the car on the solar cell or battery, recharging the battery from the solar cell, or off. The car can also operate using a strong lamp. Measures 4-3/4 in. L x 2-3/4 in. W x 3 in. H.

ESP59965

Solar Energy Kit, Wooden Box

To demonstrate the effect of solar power in various devices, Each component in this kit connects to the solar cell. The kit includes a mounted solar cell with terminals, a motor, a LED, a rechargeable battery and an ammeter mounted on a base. Housed in a fine Wooden box. With instructions.

ESP59958



Solar Combination Unit

Mounted on a Plastic base size 350 x 90 x 20mm approx. A mains 60W bulb fitted on Screw type holder. Supplied with compatible Solar Cell which further gives energy together to a Low Voltage Speaker and Low Voltage Motor fitted with Color Newton Disc.

ESP59961



Hand Generator (Flashlight)

This generator can be utilized with almost any experiment requiring up to 12V DC current. Housed in tough clear plastic, this unit is not only functional, but costs about half that of similar models. Can also be used as a hand-generated flashlight due to the mounted lamp on the end or use the binding post to connect an outside electrical circuit. Pistol-grip handle. Grades K-12.

ESP59952



Solar Energy Kit Combined

Apply knowledge of solar energy in a practical experiment with this Solar Energy Kit. A solar panel housed in a metal stand, a low consumption motor with fan, a buzzer and an LED are all included for conducting a series of solar powered activities.

ESP59957



Motor Mounted For Solar Cell

This is a small low consumption electric motor on a base specially designed to run directly from the output of the solar cell and to illustrate the direct conversion of light energy to electrical and hence to mechanical.

ESP59962

Solar Cell Mounted

For use with the motor to demonstrate the production of electrical energy directly from light energy. The apparatus comprises a selenium photo-voltaic cell.

ESP59963





Solar Cell

This apparatus is design for observation on solar energy become motion, sound and light energy

Complete with a VOLT METER to measure the voltage value from the solar cell and ammeter to measure the current value from the solar cell

Dimensions : 32.50 (L) x 26.50 (W) x 14.00cm (H)

ESP59964

NEW



Solar Hydrogen Education Kit Economy

consist of the Following :1.Drainage and gas storage device: two 70ml cups, with a transparent cup with a "0" scale of 35ml above and below, clamped on a 150mm*105mm*15mm base, marked with H₂ and O₂ respectively2.Platinum-Carbon Proton Exchange membrane hydroelectricity generation dual-use module (renewable battery) two-sided diamond reaction window, 2.5*2.5cm, base size:89mm*64mm*12mm3.LED & Fans can choose by a switch4.Solar Panel size : 87mm*127.5mm

ESP59967SP



Solar Hydrogen Education Kit

Explore series and parallel circuits and other physics concepts with renewable energy power from a fuel cell and solar panel. Use the power of the sun to split water and generate hydrogen gas while learning about chemistry concepts.

ESP59967



Student Hot Water Kit

Complete working model of a solar unit; the water circulation is very clearly shown and is therefore easy to understand; temperatures measured in the collector, the heat exchanger and the flow system. t consisting of:

- 1x Solar collector ES, 1x Heat exchanger ES,
- 1x Pyrometry chamber
- 1x Circulating membrane pump
- Self-absorbing
- Low noise level
- Minimal power consumption
- Low weight
- Small housing
- Less vibrating
- Supply voltage: 2 ... 12 V DC Max.
- Power input: 20 ... 150 mA Free
- flow rate: 150 ml / min Max.
- Pressure: 6.0 m (water)
- Max. Static suction lift: - 3.0 m (water) 2
- tube connectors dia. (Ext.) = 4.8 mm
- Installed in magnetic housing: 84 x 84 x 39 mm
- 3x Laboratory thermometer -10 ... +110 / 1 °C 4x
- Tubing silicone, D = 3 / 6 mm, L = 24 cm
- 1x Syringe 120 ml, plastic
- Storage:
- 1x Box insert Hot water
- 1x Storage box II small, with cover
- Box-insert plan with 2 label

ESP59968



Fuel Cell Science Kit

Investigate the science behind salt water fuel cell technology, either by powering the included mini-turbine or creating your own power applications. Features a magnesium salt-water fuel cell, teaching students how solution concentration can affect reaction rates using electricity and a salt-water electrochemical cell. Experiment with the electro-chemistry process and measure the output of your generator.

ESP59969





Alternative Energy - Conversion, KIT

With the module Alternative energy-conversion experiments to the Following topics can be performed:

1. Making energy feelable (9 Experiments)
2. Wind Power (3 Experiments)
3. Thermal Power (3 Experiments)
4. Hydro Power (2 Experiments)
5. Energy and temperature (2 Experiments)
6. Sun - Photovoltaic (4 Experiments)
7. Fuel cell (3 Experiments)
8. Energy storage (3 Experiments)

Alternative Energy - conversion student kit

Kit consisting of:

- 1x Fire piston, 1x Ignition cylinder, 1x MBC double solar cell, 1x Clinometer for double solar cell, 1x Electric car, model, 1x Turbine in casing, 1x Motor/ generator, 1x Propeller, 1x Hand generator , 1x Energy storage, 1x lamp socket E 10, 5x Light bulb, 1.5 V/50 mA, E10, 1x Set of 6 cables, ES Storage:
- 1x Box insert Alternative energy - conversion 1x Storage box II big, with cover,
- Box -insert plan with 2 labels

9.ESP59972

ESP59970



Renewable Energy Eduction Kit

Full PBL unit on clean power generation includes an exploration of the environmental effects of atmospheric carbon dioxide. Hands-on activities centre on complementary attributes of different renewable energy sources. Complete student and teacher materials for up to 10 class periods of activities. For 3-4 students.

Renewable Energy Education Kit Economy

Consist of the Following : 1.Battery Holder, base size : 9mm*64mm*12mm2.Drainage and Gas Storage device: two 70ml cups, with a transparent cup with a "0" scale of 35ml above and below, clamped on a 50mm*105mm*15mm base, marked with H2 and O2 respectively3.Platinum-Carbon Proton Exchange Membrane hydroelectricity generation dual-use module (renewable battery) two-sided diamond reaction window, 2.5*2.5cm,base Size:89mm*64mm*12mm4.LED & Fans can choose by a switch5.Solar Plate size : 87mm*127.5mm6.Wind Generation Model : overall height 275mm, with 6 pcs fan blades.

ESP59971

ESP59971SP





Petrol Engine Model Two Stroke

Showing internal structure and operating principles of a simple piston air cooled two stroke engine, Mounted on a metal base with schematic diagram.
Overall Height 360 mm approx.

ESP59973

Petrol Engine Model Four Stroke

Air cooled, four stroke, with operation of valves clearly shown. Mounted on a metal base with schematic diagram
Overall Height 450 mm approx.

ESP59975



Diesel Engine Model Two Stroke

A model of two stroke diesel engine made in aluminium and unbreakable plastic. Ignition is shown by means of a miniature bulb. Fuel supply is also sectioned. With hand crack, provided for manual operation.

ESP59977

Diesel Engine Model Four Stroke

Four stroke water cooled diesel engine, shows functioning of fuel injection system together with hot coil starting device.

ESP59979



Diesel Engine Model Four Stroke Transparent

Overhead functioning model (OFM) For demonstrating the movements involved in heat engines and

explaining, how they work using an overhead projector; acrylic model with coloured parts, including drive shaft;

Base Panel : 248 x 248 mm

ESP59980

Four-Stroke Engine, Transparent Model

Overhead functioning model (OFM) For demonstrating the movements involved in heat engines and explaining, how they work using an overhead projector;

acrylic model with coloured parts, including drive shaft;

Base Panel : 248 x 248 mm

ESP59976



Two-Stroke Engine, Transparent Model

Overhead functioning model (OFM)

For demonstrating the movements involved in heat engines and explaining.

how they work using an overhead projector;

acrylic model with coloured parts, including drive shaft.

Base Panel : 248 x 248 mm

ESP59974



Steam engine, Transparent model

Overhead functioning model (OFM) For demonstrating the movements involved in heat engines and explaining, how they work using an overhead projector; acrylic model with coloured parts, including drive shaft.

Base Panel : 248 x 248 mm

ESP59982



Gas Turbine / Turbojet Engine Model

Constructed by light but strong metal, fixed on a plastic base. All major parts like intake, double stage compressor, fuel supply, axial flow, combustion chamber, turbine rotor, exhaust and jet thrust etc. are shown in the model. Cross sectional view with key card is printed on the base.

ESP59981



GEAR & DRIVE KIT 3D

SET / 11 DIFFERENT TYPE INCLUDES : Crank slider drive Worm gear drive Cam mechanism Gear drive Double crank mechanism Chain drive Crank rocker drive Gear drive Bevel gear drive Rack and pinion drive Crank rocker drive Belt drive

Set contain 11 different models that can be disassembled all details are showing in 3 dimension , all components made of sturdy plastic

ESP60041

**NEW****GEAR & DRIVE KIT 2D**

SET / 8 DIFFERENT TYPE

The experiment box is equipped with a device list, and the equipment is taken according to the list number. The high quality PP material is used. Non-toxic and tasteless.

Piston drive model , Worm gear drive model , Timing belt drive model

Rack and pinion drive model , Straight gear transmission model

Friction wheel drive model , Belt drive model , Sprocket drive model

ESP60042

**Mechanical Training Modules**

- | | | | |
|-----------------|--|-----------------|---|
| ESP59983 | Single stage spur gear | ESP60011 | Belt drive toothed |
| ESP59984 | Single stage spur gear with intermediate gear | ESP60012 | Belt drive single speed |
| ESP59985 | Tow stage spur gear | ESP60013 | Belt drive tow stage |
| ESP59986 | Three stage spur gear | ESP60014 | Belt drive (contra rotation) |
| ESP59987 | Three speed and reverse gear | ESP60015 | Belt drive multi speed |
| ESP59988 | Worm gear | ESP60016 | Chain drive with tensioner |
| ESP59989 | Bevel gear | ESP60017 | Geneva drive (Maltese cross) output |
| ESP59990 | Rack and quadrant gear drive | ESP60018 | Sliding wedge gear with straight line & accurate |
| ESP59991 | Reversing gear, tumbler type | ESP60019 | Cam with straight line and lever follower |
| ESP59992 | Epicyclical gear (sun and planet) | ESP60020 | Face cam drive (free follower) |
| ESP59993 | Cycloidal motion | ESP60021 | Mechanical training modules -face cam drive (double sided trapped f) |
| ESP59994 | Internal rolling gear drive | ESP60022 | Oldham coupling |
| ESP59995 | Internal gear and pinion drive | ESP60023 | Differential gear |
| ESP59996 | Helical gear | ESP60024 | Lathe screw cutting |
| ESP59997 | Spiral gear 90 degree | ESP60025 | Shaper model |
| ESP59998 | Spiral gear single stage with intermediate gear | ESP60026 | Crank and connecting rod |
| ESP59999 | Herringbone gear | ESP60027 | Four bar link mechanism |
| ESP60000 | Crank drive to oscillating link | ESP60028 | Bevel gear type reversing mechanism |
| ESP60001 | Crank shaft & slider mechanism | ESP60029 | Scotch yoke mechanism |
| ESP60002 | Tow crank and linkage drive (variable velocity) | ESP60030 | Ellipse tracer |
| ESP60003 | Crank and slotted link drive (oscillator) | ESP60031 | Watt mechanism |
| ESP60004 | Crank and slotted link drive (variable velocity) | ESP60032 | Peaucellier linkage drive |
| ESP60005 | Friction wheel drive circumference | ESP60033 | Pantograph mechanism |
| ESP60006 | Cone clutch drive (single sided) | ESP60034 | Allen link motion |
| ESP60007 | Cone clutch drive (tow speed) | ESP60035 | Hobbing |
| ESP60008 | Dog clutch drive (single sided) | ESP60036 | Centrifugal mechanism and clutch drive |
| ESP60009 | Dog clutch drive (tow speed) | ESP60037 | Friction wheel drive (variable speed) |
| ESP60010 | Flat belt drive (with tensioners) | ESP60038 | Crank and slotted link drive - oscillator |





Dynamometer 2 N, With Round Dial

Thanks to a very precise torsion spring, this dynamometer shows the correct value in all pull directions, not only vertically; due to the large scale, the displayed value can be seen from a distance, making this device is highly recommendable as a demonstration measuring device; torsion spring dynamometer with a rotatable pulley with a deep notch; easily visible red metal pointer; thanks to the rotatable metal scale the zero point can be quickly and easily adjusted; hooked cord for suspending objects; with support rod D = 10 mm, L = 30 mm;

Measuring Accuracy : approx. ±3%; **Digit height on Scale :** 15 mm; **Diameter of scale :** 200 mm

ESP60044

Dynamometer 5 N, With Round Dial

Thanks to a very precise torsion spring, this dynamometer shows the correct value in all pull directions, not only vertically; due to the large scale, the displayed value can be seen from a distance, making this device is highly recommendable as a demonstration measuring device; torsion spring dynamometer with a rotatable pulley with a deep notch; easily visible red metal pointer; thanks to the rotatable metal scale the zero point can be quickly and easily adjusted; hooked cord for suspending objects; with support rod D = 10 mm, L = 30 mm;

Measuring Accuracy : approx. ±3%; **Digit Height On Scale :** 15 mm; **Diameter of scale :** 200 mm

ESP60045

Dynamometer 10 N, With Round Dial

Thanks to a very precise torsion spring, this dynamometer shows the correct value in all pull directions, not only vertically; due to the large scale, the displayed value can be seen from a distance, making this device is highly recommendable as a demonstration measuring device; torsion spring dynamometer with a rotatable pulley with a deep notch; easily visible red metal pointer; thanks to the rotatable metal scale the zero point can be quickly and easily adjusted; hooked cord for suspending objects; with support rod D = 10 mm, L = 30 mm;

Measuring Accuracy : approx. ±3%; **Digit Height On Scale :** 15 mm; **Diameter of scale :** 200 mm

ESP60046



Dynamometer 1 N, With Round Dial

Thanks to a very precise torsion spring, this dynamometer shows the correct value in all pull directions, not only vertically; due to the large scale, the displayed value can be seen from a distance, making this device is highly recommendable as a demonstration measuring device; torsion spring dynamometer with a rotatable pulley with a deep notch; easily visible red metal pointer; thanks to the rotatable metal scale the zero point can be quickly and easily adjusted; hooked cord for suspending objects; with support rod D = 10 mm, L = 30 mm;

Measuring Accuracy : approx. ±3%; **Digit height on Scale :** 15 mm; **Diameter Of Scale :** 200 mm

ESP60043



Lever Demonstration

Comprises of Approximately 50cm metal rule drilled every 4cm approx. or supplied with a movable rider. A set of suitable weights with hooks. A metallic base and stand to fix the liver in a fulcrum. 2 adjustable screws on the rule to adjust a fulcrum. Two pans to be able to change the lever to a simple balance. Supplied with weights packed in Plastic case.

ESP60078



Kitchen Scale

Capacity : 5000 G / 200 OZ , Sensitivity : 1 G, Display Mode : G & OZ , Key Function : ON / OFF , TAR,MODE , 1.1 LTR Container (Optional), Low Battery Indicator , Overload Indication , Auto / Manual Shut-Off , Powered by 2 X CR2032 Lithium Battery

ESP60072





Newton Meter

Newton meters, in robust plastic transparent body, overall length 285mm approx. With upper and lower suspension hooks, with zero adjustment, scales are both in grams and newtons.

- ESP60047** Newton Meter, 100Gm/1N, 1Gm
- ESP60048** Newton Meter, 250Gm/2.5N, 5Gm
- ESP60049** Newton Meter, 500Gm/5N, 10Gm
- ESP60050** Newton Meter, 1Kg/10N, 20Gm
- ESP60051** Newton Meter, 2Kg/20N, 40Gm
- ESP60052** Newton Meter, 3Kg/30N, 60Gm
- ESP60053** Newton Meter, 5Kg/50N, 100Gm



Precision Dynamometer

The Precision Dynamometer is available in range of weight capacities and scales. They are incredible precise and are suitable for measuring weights, masses and forces. Each different weight capacity is color coded for ease of identification. As well as offering a high level of precision, these dynamometer are also easy to read enabling accurate readings to be taken quickly and precisely.

- ESP60060** Precision dynamometer, 100gm/1n, 2gm
- ESP60061** Precision dynamometer, 250gm/2.5N, 5gm
- ESP60062** Precision dynamometer, 500gm/5n, 10gm
- ESP60063** Precision dynamometer, 1kg/10n, 20gm
- ESP60064** Precision dynamometer, 2kg/20n, 40gm
- ESP60065** Precision dynamometer, 3kg/30n, 60gm
- ESP60066** Spring balance precision dynamometer, 5kg/50n, 100gm



force Meter

Force meter, designed to work for mass and force activity. Dual calibrated in grams and newtons.

- ESP60054** Force meter, 250gm/2.5N, 5gm
- ESP60055** Force meter, 500gm/5n, 10gm
- ESP60056** Force meter, 1kg/10n, 20gm
- ESP60057** Force meter, 2kg/20n, 40gm
- ESP60058** Force meter, 3kg/30n, 60gm
- ESP60059** Force meter, 5kg/50n, 100gm



Precision Dynamometer, 0,1 N

The most economic way to measure drag forces, therefore perfectly suitable for student use; accurate dynamometer with long and clearly visible Newton scale; zero-point correction; guard to prevent over- extension of the spring; the transparent case allows the functioning of the coil spring to be observed; with hooks for mounting the device and suspending weights.

- Measuring Accuracy** : ± 2%
- Length of scale : 100 mm
- Dynamometer case : L = 215
- mm Reading : 0,001 N
- blue coloured
- Dimensions** : D = 16 mm, total L = approx. 285 mm

ESP60069

Precision Dynamometer, 0,2N

The most economic way to measure drag forces, therefore perfectly suitable for student use; accurate dynamometer with long and clearly visible Newton scale; zero-point correction; guard to prevent over- extension of the spring; the transparent case allows the functioning of the coil spring to be observed; with hooks for mounting the device and suspending weights.

- Measuring Accuracy** : ± 2%
- Length of scale : 100 mm
- Dynamometer case : L = 215
- mm Reading: 0,002 N
- grey coloured
- Dimensions** : D = 16 mm, total L = approx. 285 mm

ESP60070





Springs Large Compression - Compression Springs
Large compression springs. 50 Mm approx. Long, dia 10 mm and wire of 19 SWG.

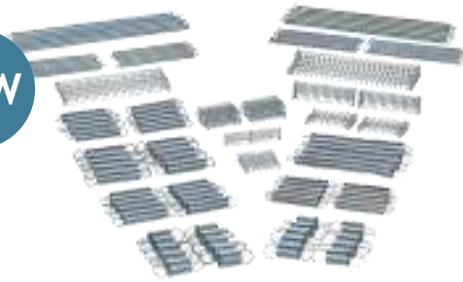
ESP60067



Springs Large Compression- Extension Springs
Extension springs. 50 Mm approx. Long, dia 10 mm and wire of 19 SWG.

ESP60068

NEW

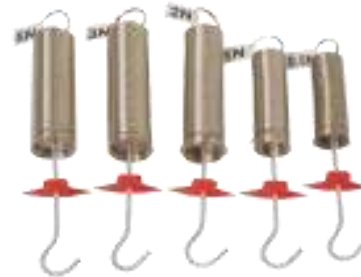


Spring Set of 150

Compression and Extension Springs; Range in Length from 15mm to 300mm ; Range in diameter from 4mm to 18mm ;Range in wire thickness from 16 s.w.g. to 32 s.w.g. The sturdy, variable sized, compression and extension springs provide the perfect tools for studying motion of mass on a spring, Hooke's Law, potential energy, etc. They provide a visually and kinesthetically effective method for studying the physics of springs

ESP60071

NEW



Spring set of 5(0.5N,1N,2N,3N,5N)
set of 5 Spring 0.5N,1N,2N,3N,5N

ESP60071/5



ESP60073



ESP60074



ESP60076



ESP60075

Hook's law

ESP60073	Hook's law apparatus	Consists of a mirror scale, 12cm long and support, a spring, a weight holder and 9 slotted weights.
ESP60074	Hook's law apparatus super	Consists of scale, 12cm long and support, a spring, a weight holder and 9 slotted weights.
ESP60075	Hooks law experiment kit	Consist of : Stand Base 190mm, A-shaped 1pc, Stand Rod dia. 10 c 1000mm, with thread and tap 1 set, Universal Boss-head with Short Bearing Pin 1 pc, Scale on Stand Rod 1pc, Pointer on Spring 3 pcs, Helical Spring 10 N/m 1 pc, Helical Spring 25 N/m 1 pc, Helical Spring 4.5 N/m 1 , pc, Slotted Load and Hanger 300 g (5 Loads) 1 set, Experiment Manual Book, Part of Physics Experiment Tools Package for Senior High School/Vocational School Dimensions : (L) 62.00 x (W) 30.00 x (H) 9.00 cm Weight : 4.200 kg
ESP60076	Hooks law experiment kit	Consist of : Stand Base and Rod, Steel plate 1 pc, Boss-head, Universal 1 pc, Bearing Pin 1 pc, Helical Spring 10 N/m 1 pc, Helical Spring 25 N/m 1 pc, Helical Spring 4.5 N/m 1 pc, Slotted Load and Hanger 250 g (6 Loads) 1 set Dimensions : (L) 62.00 x (W) 30.00 x (H) 9.00 cm Weight : 3.250 kg



Senior
High
SchoolJunior
High
School

Hooke's Law Experiment Kit

ESP60075

- Hooke Experiment Kit is designed to perform a spring constant measurement of a spiral spring. This
- measurement is possible by measuring the length difference between the unloaded and force-loaded spiral spring.
- In this kit, the mentioned force is the weight force of a known hang-able mass. Moreover, this kit also consists of special pointers that can be attached to the provided stand to simplify the spiral spring's extension.



Component List

Consisting of 9 components, packed in a plastic injection moulding box.
Dimension: 62 × 30 × 9 cm. Weight: 4.2 kg.

Cat. code	Component	Description	Qty
ESP 25/30	Stand Base 190 mm, A-Shaped	Die cast iron, equipped with locking bolt.	1 pc
ESP 30/500-02	Stand Rod \varnothing 10 x 1000 mm, with Thread and Tap	Stainless steel, \varnothing 10 mm, length 1000 mm.	1 Set
ESP 162 02	Universal Bosshead with Short Bearing Pin	Made of aluminum with a shaft length of 2 mm.	1 pc
ESP 020	Rod-Attachable Ruler	50 cm ruler that can be attached to the stand rod.	1 pc
ESP 025	Spring Pointer	Ruler pointer that can be attached to the spring.	3 pcs
ESP 51.26/39	Helical Spring 10 N/m	Has a spring constant of 10 N / m with a diameter of 1 mm. Steel material.	1 pc
ESP 51.27/40	Helical Spring 25 N/m	Has a spring constant of 25 N / m with a diameter of 1 mm. Steel material.	1 pc
ESP 100 100	Helical Spring 4.5 N/m	Has a spring constant of 4.5 N / m with a diameter of 1 mm. Steel material.	1 pc
ESP 138	Slotted Load and Hanger 300 g (5 loads)	Consists of 3 loads each with a mass of 300 g.	1 Set

Experiment Topics

E1 Hooke's Law



NEW



Demo Balance Support

The sturdy notched support is available for use the lab. materials you already have to complete the apparatus. You will need a meter stick, mass hangers and masses and several knife edge clamps, available separately. Support is 18.5 cm in height and weight is 280 g approx.



ESP60077

Balance Weight Physical

Made of Polished Brass, supplied with Wooden block, as illustrated.

ESP60079	Capacity 500gm	Comprising 1 x 200gm, 2 x 100gm, 1 x 50gm, 1 x 20gm, 2 x 10gm, 1 x 5gm, 2 x 2gm, 1 x 1gm.
ESP60080	Capacity 1000gm	Comprising 1 x 500gm, 1 x 200gm, 2 x 100gm, 1 x 50gm, 1 x 20gm, 2 x 10gm, 1 x 5gm, 2 x 2gm, 1 x 1gm.
ESP60081	Capacity 2000gm	Comprising 1 x 1000gm, 1 x 500gm, 1 x 200gm, 2 x 100gm, 1 x 50gm, 1 x 20gm, 2 x 10gm, 1 x 5gm, 2 x 2gm, 1 x 1gm.

ESL57662



NEW

Economy Digital Balance 500 x 0.01g

Easy to use with 4 buttons. Fast operation thanks to quick self-calibration after switching on. Tare and reset function. Switch between grams, ounces, grains (measure of weight) and carats. Unit counter function. Automatic shutdown. Easy-to-read display with backlight, digit size: 10 mm. Works with batteries (2 x AAA) Contains two transparent measuring cups (can also be used as a protective cover). Specifications: Measuring plate: 100 x 100 mm



Weight Set Hooked Weight

Brass with hooks on both sides. Recessed bottoms to enable the weights to be hooked together. The bottom is flat when placed on a flat surface. Set of 9 weights. 10 - 1000g in wooden block.

ESP60082



Weight Set Primary Weight

These weights are polished and lacquered Brass weight sets fitted in a durable hardwood storage box as illustrated. 1 each of 1gm, 5gm, 20gm, 100gm and two each of 2gm and 10gm

ESP60083

Slotted Masses And Hanger

Slotted Masses and Hanger , EduScience Nickel plated Brass ,mass in disc shape
Material: EduScience Plated Brass **Consists of:** 1 x Masses hanger - 9 x Slotted Load

ESP60085	Total Weight 100 GR	9 x 10 g + hanger
ESP60086	Total Weight 200 GR	9 x 20 g + hanger
ESP60087	Total Weight 500 GR	9 x 50 g + hanger
ESP60088	Total Weight 1000 GR	9 x 100 g + hanger
ESP60085B	Total Weight 100 GR	9 x 10 g + hanger
ESP60086B	Total Weight 200 GR	9 x 20 g + hanger
ESP60087B	Total Weight 500 GR	9 x 50 g + hanger
ESP60088B	Total Weight 1000 GR	9 x 100 g + hanger



Slotted Masses And Hanger 12 pc 200 GR BRASS

Slotted Masses and Hanger , EduScience Brass ,mass in disc shape
Material: EduScience Brass
Consists of:
5g to 20g Mixed Masses and Hanger
Set of 12 brass nicked plated slotted masses with hanger 50g hanger, nine masses of 20g, one of 10g and two of 5g.

NEW



ESP60086B12

Slotted Weight Set Of Masses And Hanger,

Set of 9 slotted masses, one hanger This improved set comprises masses of Brass with slots, brass hangers with hook. The design of the slots ensures that the masses may be easily removed and replaced but will not fall of accidentally.



ESP60089	Total 100gm	Each of 10gm
ESP60090	Total 250gm	Each of 25gm
ESP60091	Total 1000gm	Each of 100gm
ESP60092	Total 250gm	Each of 50gm
ESP60093	Total 100gm	Set of one hanger 20gm, three slotted masses 20g one mass 10gm and two masses 5gm , Total 100gm
ESP60094	Total 250gm.	“Set of one hanger 50gm, nine slotted masses 20gm, one mass of 10gm and two masses of 5gm Total 250gm.





Hooked Masses Cylindrical

HOOKED MASSES CYLINDRICAL, Chromium plated with cylindrical weight with long hook. Loose or in wooden box.

- ESP60095 10Gm each weight
- ESP60096 20Gm each weight
- ESP60097 50Gm each weight
- ESP60098 100Gm each weight
- ESP60099 500Gm each weight
- ESP60100 1000Gm each weight
- ESP60101 200Gm each weight



Weights Hooked Flat

Weights, Brass, with hooks on both sides. Set of 9 Pcs ,Capacity 500 gm ,comprises of 1 x 200gm, 2 x 100gm, 1 x 50gm, 1 x 20gm, 2 x 10gm and 2 x 5gm

ESP60106



Density Ball Specimen Set

Balls, metal with hook, 25 mm diameter, set of 6, comprising Aluminium, Brass, Copper, Steel, Lead and Zinc. Packed in Plastic Box.

ESP60113

Metal Cubes Set Of 6

CUBES Set of 6 comprising Brass, Lead, Iron, Copper, Aluminium and Zinc. Supplied in Plastic Case.

- ESP60110 Side Size 10 Mm
- ESP60111 Side Size 20 Mm



Weight Masses Hexagonal With Lifting Ring

Hexagonal with lifting ring. Within international tolerance. Set of 6 (50gm, 100gm, 200gm, 500gm, 1kg 2kg)

ESP60103

Young's Modulus Apparatus

Consist of :
Stand Base and Rod, Steel plate
1 pc, Boss-head, Universal
1 pc, Bearing Pin
1 pc, Helical Spring
10 N/m 1 pc
Comprises a scale plate carrying a 0 to 30mm scale, and a moveable



vernier readable to 0.1mm. Both have bars with clamping screws for the wires and hooks for the tension weight and loading masses. A ceiling clamp is provided for the upper ends of the wires, together with a pair of large wood screws for attaching it to a convenient overhead beam, door frame etc.

A tension weight, mass 1.3kg approx, for the comparison wire is also included. Supplied WITHOUT load masses or wires.

ESP60108



Rubber Ball Small

ESP60121



Rubber Ball Big

ESP60122



Wooden Ball Small

ESP60123



Wooden Ball big

ESP60124



Cartesian Devil Diver

for demonstrating liquid pressure. The figure is immersed in a container of liquid and sinks when the pressure in the container is increased. Hollow glass figurine measuring approx. 45mm tall

ESP60125





Specific Gravity Metal Cylinder Set With Hooks

For specific gravity determinations. Each cylinder is 5 cm long and 13 mm diameter with hook at top. Metals included are of Aluminium, Steel, Brass and Copper.

Available in set or individually.

ESP60116



Density Cube Set Specimen

Cubes for density investigation, 25 mm side. Set of 9 comprising brass, iron, copper, aluminium, hardwood, softwood, nylon, PVC and acrylic. Supplied in plastic box.

ESP60114



Pendulum Ball Drilled Ball Set, St/6

Set of 6 One each of Steel, Brass, Aluminium, Lead, Copper, Wood. These 1" (25mm) drilled physics balls are great for doing Newtonian physics experiments such as collisions or for use in mass/volume experiments. A 3mm hole has been exactly drilled in the centre of each sphere in such a way as to allow for the recessing of a knot. This allows the set to also be used as pendulums. These crafted balls come in pairs which makes them ideal for comparing how different materials affect your experiment. Packed in Plastic Case.

ESP60119



Specific Gravity Metal Cylinder Set Equal in Mass

Consisting of six cylinders with a diameter of approximately 16mm, each cylinder weighing 100g and varying in length from 5cm to 19cm. The set comprises one cylinder each made of copper, lead, brass, zinc, iron, and aluminium. These cylinders are drilled across their cross-sections for suspension purposes and are placed in cylindrical recesses drilled into a wooden block. Each cylinder is stamped with its identification. Additionally, these cylinders can be utilized in experiments concerning specific gravity or density to compare their relative densities.

ESP60117



Pendulum Ball Drilled Ball Set, St/12

Set of 12 Two each of Steel, Brass, Aluminium, Lead, Copper, Wood. These 1" (25mm) drilled physics balls are great for doing Newtonian physics experiments such as collisions or for use in mass/volume experiments. A 3mm hole has been exactly drilled in the centre of each sphere in such a way as to allow for the recessing of a knot. This allows the set to also be used as pendulums. These crafted balls come in pairs which makes them ideal for comparing how different materials affect your experiment. Packed in Plastic Case.

ESP60120



Displacement Vessel (Overflow Can)

Designed to determine the volume of a body to calculate density, specific gravity, or for proving Archimedes' Principle

ESP60131 Aluminium

75 mm dia. With flared top edge and angled spout.



ESP60132 Clear Acrylic

For determining the volume of the solid bodies and experiments on Archimedes principle.

Dimentions : 60 X 160 mm, Material : TRANSPARENT plastic (SAN)
Used with Measuring Cylinder 100 ml, Plastic for measures the spilled water volume in Archimedes experiment.

Part of :

Hydrostatics and Heat Kit for Junior High School - Hydrostatics and Heat Kit for Junior High School with Aluminium Case - Hydrostatics and Heat Kit for Junior High School (35 items) - Hydrostatics and Heat Kit for Junior High School - Archimedes Apparatus

Dimensions : (L) 8.00 x (W) 6.00 x (H) 16.00 cm

Weight : 0.060 kg





Archimedes Law Apparatus

Kit consist of Dynamometer , Overflow Vessel , and Cylindrical vessel with Archimedes Bucket and Cylinder , it enables teacher to demonstrate the value of Buoyancy force which act on the object is equal to the weight of the liquid displaced by this object

ESP60127



Vacuum Pump Hand Operated

Experiment with air pressure and atmosphere, vacuum filtering and check for leaks. This economical pump features a gauge in cm and inches, Hg displaces 725ml of air. Pump rate of 15ml. Clear tubing is 60cm with 6mm inner diameter.

ESP60143

NEW



Barometer Siphon without Mercury

simple barometer yet having sufficient accuracy. The whole column of mercury is clearly visible in the glass tube. Barometer scale is graduated in both English and Metric systems. Vertical sliding zero point adjustment is carried by a screw clamp attached to the glass tube. Complete apparatus mounted on a polished wooden board. Supplied without mercury

ESP60144



Magdeburg Hemisphere Rubber

To demonstrate pressure of atmosphere fitted with handle. Made of rubber .

ESP60150

Bourdon Gauge

Comprises a circular gauge on a pillar fitted on a heavy base, with a tubule to provide connection to the pressure system.

ESP60147



Capillary Apparatus

For demonstrating the relationship between capillary pressure and the bore diameter of the capillary tube. The apparatus comprises of a metal frame arrangement whose base is like a trough and the upper part of the frame supports six capillary tubes of different box. The trough is filled with water and the difference in heights of the resulting columns of water in the tubes is readily apparent. Overall height of frame 90 mm length of capillary tubes 150 mm

ESP60134

NEW



Charle's Law Apparatus

Comprising of a U-shaped glass 15 mm in dia. with one plain limb 220 mm long ; one graduated limb, overall length 120 mm Limb graduated 25 to 35 x 0.2 ml ;terminating in a bulb 37 mm diameter with third limb 185 x 6 mm length x ;bore, jointed at right angles to the plain of the other two. Short length of the rubber tubing with two pinch clips on short length of glass tubing mounted atend of wide-bore plain limb with rubber bung. With tall farm beaker 1000 ml capacity and stirrer. All glass parts made from Borosilicate glas

ESP60146

Venturi's Tube

To demonstrate Venturi effect. Made of glass with three side tubes for attaching an included three-leg manometer. The manometer is filled with coloured water to show the relative pressure at significant points of the tube when gas is flowing through it.

ESP60145



Magdeburg Hemisphere Brass

To demonstrate pressure of atmosphere fitted with stopcock and handle. Made of brass and diameter 75mm.

ESP60149





ESP60136



ESP60137



ESP60138



ESP60139



ESP60140

Boyle's Law Apparatus

Use this apparatus to experiment with the elastic properties of a measured quantity of gas. This unit makes the understanding of Boyle's Gas Law easy and helps to show the relationship between the pressure, temperature, and volume of a gas that is constant

ESP60136	Simple form	Consists an air tight plastic syringe supported between two wood blocks. Placing various weights on the upper block ; compresses the gas, allowing pressure and volume measurements to be made to verify Boyle's Law.
ESP60137	Boyle-Marriott	A 50ml plastic syringe is connected to a pressure gauge with a connecting tube to measure the pressure. Mounted on a plastic base.
ESP60138	With temp .Gauge	Simply twist the handles to compress the air and read the volume, temperature, and pressure from the scales. Repeat the process to confirm that the relationship stays the same. Requires one AA battery (not included). Grades 9-12.
ESP60139	Standard	For the investigation of the relation between capillary rise of liquid and the bore diameter of the capillarity tubes constructed in the form of communicating vessels in which the liquid is contained. Overall Dimentions : 135 x 60 x 110 mm ; Material : Borosilicate glass, Tube mounted on a metal plate holder Dimensions : (L) 17.50 x (W) 6.00 x (H) 13.00 cm, Weight : 0.105 kg
ESP60140	Demonstration type	For demonstration of Boyle's Law to group of students. With glass tube protected by a safety screen, Volume of air is read from a scale visible behind the tube and pressure is measured by a bourdon gauge. Mounted on a metal base. Supplied with oil.

ESP60140ACES BOYLE'S LAW Pump And Attachment Set Spare pump and attachment for the Boyle's Law Apparatus





Boyle's Law Apparatus Advance

It is a device that can test the Boyle's law that the pressure of a gas at a certain temperature and its volume are inversely proportional to each other.

A piston with a graduated cylinder mounted on it and a low friction piston mounted on it. It is designed to increase the weight one by one on the plate and to measure the volume of the cylinder.

the valve used to set the cylinder volume and the auxiliary valve used to measure the cylinder pressure in the external device are installed.

Dimensions : 160x110x215mm

Configuration : Body (cylinder, piston, twin valve),
Weight 250g6, open valve 2, Cylinder capacity 20 ml, piston mass 41g

ESP60141



Barometer Demo Set

For a simple and fast explanation of air pressure and the movement of the pointer on a barometer. The barometer is placed in an air-tight, transparent plastic container. The air pressure changes by compressing and expanding the container, and the pointer indicates these changes. Barometer 980 - 1040 hPa and plastic container with lid and suction pad.

ESP60142



Absolute Zero Apparatus (Gay Lussac - Apparatus, Complete)

For determining the relationship between pressure and temperature in a gas at a constant volume as well as determining the point of absolute zero.

Hollow metal ball with attached high-quality manometer; the metal adapter piece enables it to be mounted on the lid via 4 holes .

Metal ball: D = 60 mm Manometer
range: 840 - 1240 hPa

ESP60148



Bell Jar Plastic With Vacuum Plate. Supplied With Buzzer And Foam

Made of high-impact plastic with rubber gasket for sealing the vacuum and measures about 35cm high and 20cm in diameter at the base. Hand operated vacuum pump manometer mounted on bell jar to show the degree of vacuum inside the jar. The apparatus also has vacuum release valve built into the handle of the pump.

ESP60152



Pascal's Law Apparatus Superior

For demonstrating the hydrostatic paradox, by means of a membrane deforming under pressure, downward hydrostatic pressure in the vessel is transferred to a 200 mm lever and displayed on a large scale, 4 glass vessels of various shapes, height: 220 mm each, internal Diameter at mouth = 23 mm, adjustable pointer for marking height to which filled,

Dimensions : 260x100x100(360) mm

ESP60158





Air Pressure Student Kit

Kit consisting of:

- 1x Signaler
- 1x Sound-absorbing pad
- 1x Magdeburg circle
- 1x Balloons, set of 2
- 1x Clamp for balloons
- 1x Bubble burster,
- 1x Plastic film for bubble burster
- 1x Capsule plastics with cover, D=75 mm

- 1x Free fall tube SE, L=35 cm,
- 1x Vacuum chamber complete, 1000 ml, with manometer
- 1x Syringe plastics, 120 ml, for vacuum-experiments
- 1x Vacuum hose plastics, 300 x 6 mm
- 1x Manometer ES, for Boyle-Mariotte experiment

Storage:

- 1x Box insert Air pressure
- 1x Storage box II small, with cover
- Box -insert plan with 2 labels

ESP60153



Spouting Cylinder

To show liquid pressure increases with depth. A sheet metal cylinder with three orifices of same size but at different heights.

ESP60155



Spouting Cylinder Perspex

This new spouting cylinder is made of Perspex which gives a clear view of variation of level of liquid and pressure. Spouting cylinder is 16" tall with a 1.75" diameter mouth mounted on a 4" x 4" base. There are no graduations on the spouting cylinder.

ESP60157



Pascal's Law Apparatus -

New Pascal's Apparatus has been designed to easily demonstrate that the pressure in a vessel is the same in every direction. The apparatus is mounted in a strong shock resistant plastic base.

ESP60159





Liquid Level Apparatus

Four glass tubes of different shapes and cross sectional areas are connected to a common horizontal tube.

- ESP60160 Standard
- ESP60161 On wooden stand
- ESP60162 On plastic base

Manometer
ESP60164



ESP60165



For the use at moderate pressures, fabricated from glass tubing 6mm bore, 8mm outside diameter. The apparatus is open at both ends and is supplied unfilled.

ESP60164 Student type

ESP60165 Demonstration type

Glass manometer with built-in stopcock mounted on back plate. Scale 80-0-80 with 2mm subdivisions. Back plate dimension 40x8cm.



Lift Pump

Lift Pump, mounted on Stand, Glass working model with visible valves, fitted on wooden stand

ESP60169

Hydraulic Press, Working Model With Round Tank

Acrylic model for demonstrating how hydraulic force is transferred, this model can be used not only to show the movement of the pressure and press pistons and the valve clearance, even practical examples of use in real life can be demonstrated. The ratio of the surface areas of the two pistons is 1:12, while the sturdy manner in which the press is built allows it to exert up to 500 N of press force!

Piston D=16 mm and 56 mm

Free working height: 60 mm

Dimensions : 200x70x285 mm

Accessories included:

Metal bracket with notches, **Dimensions :**

40x40x20 mm Iron nails,

L=80 mm, set of 20

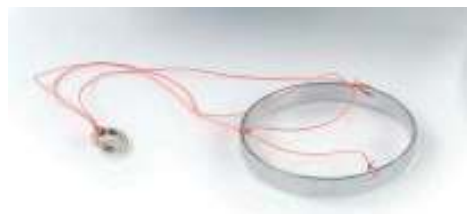
Styrofoam ball, D=30 mm

Vat with drain connector

Acrylic, D=200 mm, H=65 mm



ESP60168



Surface Tension Apparatus

Ring for measuring surface tension

ESP60179

Surface Tension Apparatus Superior

Ring for measuring surface tension, Newton meter sensitive Digital 20 N / 2000 g

ESP60180





NEW

Bifilar Suspension Apparatus

Height rugged steel frame 1200 m Stop Watch Digital Type ; Overall weight approx 25 kg Product Description Features:10mm size Drill chuck with Allen Keys to suspend the mass - 3 nos. to be used

ESP60225

Gyroscope Model Metal

For demonstrating the characteristics of a freely moving gyroscope as well as its processional motion;

ESP60184



Gyroscope Model

For demonstrating the characteristics of a freely moving gyroscope as well as its processional motion; massive, cylindrical gyroscope suspended from gimbals; long duration of rotation due to beryllium-bronze axis bearings; supplied with permanently mounted fork on small H-shaped base with levelling screws (for mounting when spun with cord); flexible metal fork on support rod with double ball bearings; round base; support rod with bearing cup and cone; cord for spinning with handle; **Gyroscope** : 100 x 30 mm,

Approx. Weight : 1400g;

Total Dimensions : 195 x 140 x 210 mm

ESP60183



Osmometer - Mem- brane 5 Pcs. (Spare)

Set of 5 semi-permeable membranes; can be clamped to the osmometer

Demo; Dimensions : D = 100 mm

ESP60188

Spheres Steel

Spheres steel (Pk of 100). High quality steel ball bearings.



- ESP60170 Dia 3mm
- ESP60171 Dia 6mm
- ESP60172 Dia 10mm
- ESP60173 Dia 13mm
- ESP60174 Dia 16mm
- ESP60175 Dia 19mm
- ESP60176 Dia 25mm

NEW



Steel Ball

- ESP60231 Steel Ball Bearing 3mm (Pack of 50)
- ESP60232 Steel Ball Bearing 6mm (Pack of 50)
- ESP60233 Steel Ball Bearing 10mm (Pack of 10)
- ESP60234 Steel Ball Bearing 25mm (Pack of 5)



Hydraulic Press

To show transmissibility of pressure. Two graduated syringes 20ml and 5ml are joined at bottom through a 3-way stopcock, the upper ends having strong platforms. On metal stand.

ESP60167



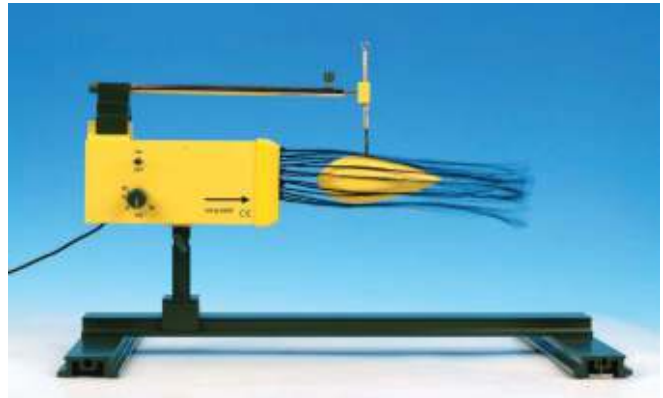
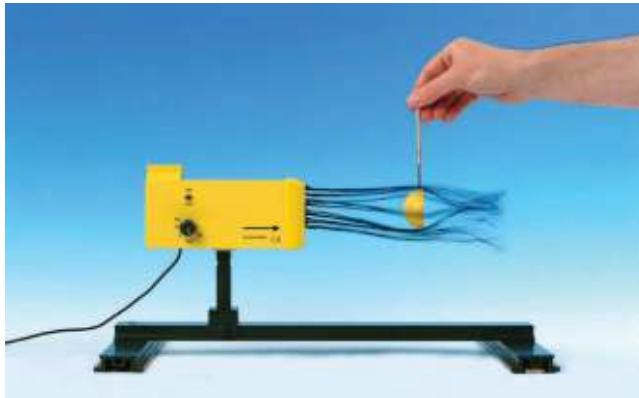
Osmometer

For measuring osmotic pressure; capillary tube with measuring scale mounted on an acrylic panel; two glass bulbs mounted on the capillary tube; one of the bulbs fitted with removable pig-bladder membrane and rubber ring.

Total height : 480 mm

ESP60187





Aerodynamics Kit

The following experiments can be run Using the aerodynamics set:

Dynamic pressure in an air stream, Pressure in a flow - Venturi tube, Aerodynamic paradox, Aerodynamic paradox - examples, Lift in an air stream, Aerodynamic experiments on various objects, Air resistance and cross-sectional area, Air resistance, shape and cross-section of a model car, Air resistance and the shape of an object, Air resistance and type of surface, Flow patterns over a house roof, Blowing the roof off a house



Fixed Voltage Transformer

12V DC/10 A This transformer used for the air blower in the aerodynamic kit only.

ESP60194



ESP60193

Bases For Aerodynamics Kit

Sturdy metal stand base with large surface area; special aluminium profile anodised with clamp socket, for stable support of round or square rods and for holding sliders; laterally positioned claws made of fibre glass reinforced plastic, with rubber pads; clamp socket for holding round rods of 3-14 mm in diameter or square rods of up to $s = 12.5$ mm; with M8 wing screw; surface area: 265 x 220 mm (583 cm^2); Weight : 383 g approx.

Hair Dryer Electric

ESP60200



NEW



Manometer Sensitive, Krell Type

For Aerodynamics Kit

For displaying very fine differences in pressure; inclined tube glass manometer; angle of inclination of vessel and riser pipe can be adjusted; metallic base plate; powder-coated; with scale; pressure-hose connection: $D = 5$ mm;

riser pipe: $L = 250$ mm;

Dimensions : 385 x 50 x 90 mm

ESP60196

NEW



Cantilever Apparatus

Material Stainless Steel - Weight set 100 gm to 1 kg -Horizontal arm 75 cm - Vertical arm 20 cm - Display Analog

ESP60195

ESP60222





Lever, Single Kit

The lever kit teaches students through hands-on design, construction, testing, and design iterations. Create the structure with the highest strength to weight ratio to win this engineering competition! A great way to teach middle school students basic engineering and to learn iteration by studying failure, or teach high school students basic statics, free body diagrams, failure modes, and member sizing calculations while complying with STEM education standards. Includes materials and tools for constructing levers; instruction manual with sample calculations, basswood members, balsa members, adhesive, adjustable cutters, and base material. An ideal training kit for Science Olympiad and other building competitions. Required: electric drill and bit. Grades 6-12

ESP59613



Boomilever Class Challenge Kit

The boomilever kit teaches engineering through hands-on design, construction, testing, and design iterations. Create the structure with the highest strength to weight ratio to win this engineering competition! A great way to teach middle school students basic engineering and to learn iteration by studying failure, or teach high school students basic statics, free body diagrams, failure modes, and member sizing calculations while complying with STEM education standards. Includes materials and tools for constructing boomilevers; instruction manual with sample calculations, basswood members, balsa members, adhesive, adjustable cutters, and base material. An ideal training kit for Science Olympiad and other building competitions. Required: electric drill and bit. Grades 6-12

ESP59617



Lever, Single Kit Refill

ESP59614



Lever Test Kit

The test kit includes everything required to test your levers for competition, except for the ballast (sand), including a test stand that can fit on any table with a lip, a loading block, a boomilever scale, a ballast scale, a scoring sheet, chain, S-hook, bucket, beaker with handle, and plastic trap. Grades 6-12

ESP59615



Boomilever Class Challenge Kit Refill

ESP59618

Structure And Bridges Classroom Kit

Gain a comprehensive understanding of structural engineering and learn how engineering concepts are applied in supporting or resisting loads. The class will study different types of bridges and the STEM principles that support their designs. During the unit, students will construct six working models including a house, a suspension bridge, a cable-stayed bridge, an arch bridge and two different truss bridges. They will also be challenged to build the largest free standing tower possible using the Engino Components included in the kit. Finally, the students will apply their new knowledge to design and build a straw bridge that spans 70 cm and will support a minimum 2 kg distributed static load using only 100 plastic straws and a limited amount of masking tape. Includes all building and testing materials, instructor's manual, lesson plans, Engino hands-on activity books, building instructions, and student worksheets. Grades 7-12

ESP59620





Luxmeter

Display: 3 inches digits, big LCD, Max display 1999. Wide Range: from 0.1 Lux to 200,000 Lux, Accurate test, fast response, and auto zero-adjustment.

Data hold : hold the current test result. Symbol and unit display, easy to read.

Low battery indicator and auto power off. Range : 0-200,000 Lux

Basic Accuracy : app 4%

Repeatability : app 2%

Temp characteristic :

0.1%/C Max. Display : 1999

LCD Dimentions : 67x40mm

Battery : 9V (6F22)

Dimensions : 130x95x30mm

ESP60238



Micrometer Digital

Measuring range : 0-25mm , Readability : 0.001mm

ESL57786



Vernier Calliper - Model Transparent

Overhead functioning model (OFM), consisting of an acrylic plate and a sliding vernier scale

Dimensions : 200x100 mm

ESP60246



Vernier Calliper Digital

Measuring range : 0-150mm , Readability : 0.01mm

ESL5778
1



Newtonmeter Demo Digital 20 N / 2000 g

Featuring force measurement over a minimum of distance, yet with a high degree of precision, and a 26 mm digital display, making this device especially “simple, easy and safe” to use. Demonstration instrument with magnetic holder for measuring force (in newtons) or mass (in grams). The easy-to-read LED display (H = 26 mm) and the external sensor in a rugged case of rectangular tubing make it an ideal instrument for mechanics experiments, particularly when used with a magnetic panel. Both tension and pressure can be measured. By means of a support rod (D = 10 mm) the sensor can be fastened to common stands.

TECHNICAL DATA :

Measuring range „N“: ± 20 N, resolution: 0,01 N

Measuring range „mN“: ± 2000 mN, resolution: 1 mN

Measuring range „kg“: ± 2 kg, resolution: 1 g

Measuring range „g“: ± 200 g, resolution: 0,1 g

Zero compensation (tare): manual, by means of adjustment knob

Accuracy: better than 0.5 %

Power supply: 4 x 1.5 V Mignon cells (included) or external power supply 6 V / 500 mA

Dimensions : approx. 160 x 120 mm

ESP60240



Hygrometer Demo Unit

For a simple and fast explanation of humidity and pointer deflection in a hygrometer.

The hygrometer is placed in an air-tight, transparent plastic box, with a small container of hot water.

Once the box is closed the humidity increases, as is indicated by the pointer deflection.

Hygrometer (0 - 100%) plus large and small plastic boxes

Hygrometer (0 - 100%) plus large and small plastic boxes

ESP60267





Universal Multimeter Demo II

Durable servo-controlled measuring instrument to measure current and voltage with high precision; can be used in any position, for example vertically or horizontally for projection.

The large scale with an arc length of approx. 200 mm, the wide signal-coloured pointer and the 26 mm high digits guarantee a hassle-free reading of the measured values even from greater distances. The LED display indicates the unit of measurement and current type and is also clearly visible from the distance. An internal electronic overload protection eliminates the annoying

and time-consuming change of fuses. The meter can also be used as a sensitive galvanometer (measuring range 1 mV-) thanks to the built-in amplifier. Pointer setting: Zero at left or at midpoint Four insertable double scales: 1/3 - 10/30 - 100/300 - -5 to +5/-15 to +15 (included) Measuring ranges:

DC voltage: 1 mV, 1 to 30 V

AC voltage: 1 to 30 V

DC and AC amperage: 100 µA to 10 A

Rear panel with neodymium magnets for a stable magnetic mounting;

Battery compartment for easy replacement of batteries.

Technical data :

Type of instrument : Moving-coil instrument

Internal resistance : $R = 100 \text{ k}\Omega / V$ Working

position : vertically or horizontally Measuring

inputs : 4 mm safety socket

Fuses: internal electronic overload protection

Power supply : four 1.5 V batteries (included)

or 2.5 mm hollow DC jack for 6 V external power supply

Housing : ABS plastics

Dimensions : 268 x 92 x 226 mm

ESP60249

Multimeter Analogue

Electronic overload protection with indicator light in all measuring ranges (no more melting fuses!) Large, robust design with holster Easy- to-read thanks to being inclined Transparent base with recessed handle to hold the device with one hand

Portable measuring device for voltage and current, DC and AC; also usable as a galvanometer.

AC/DC voltage ranges: 1 mV, 100 mV - 30 V

AC/DC current ranges: 100 µA - 3 A and 10 A Arc

scale length approx. 90 mm

- 1 mV upper value range for measuring thermal voltage or induction without a pre-amplifier

- All measuring ranges (even low current) available in AC

- Exceptional frequency response (typically -1.5 db at 20 kHz) allowing direct measurement of resonant circuits

- Large, easy-to-read mirrored scale with clear marking

- Extremely accurate, typically 1.5 %

- Durable selection switch

- 10 A range with separate input socket

- Zero at midpoint may be selected by switch

Dimensions : approx. 200 x 140 x 100 mm

Weight : approx. 675 g



ESP60251



Scales For Multimeter Demo II, Transparent,

Set Of 8

Transparent inserting-scales; acrylic;

For universal multimeter demo II ESP60249

Ranges: 0-1, 0-3, 0-10, 0-30, 0-100, 0-300, -5 to +5, -15 to +15

ESP60250





Ohmmeter Demo Unit

Demonstration meter for measuring resistance and for testing diodes, the component to be measured is connected to the two 4-mm safety jacks, this instrument is easy to transport and can be mounted magnetically, the 26-mm LED display showing the measured value and the 20-mm LED display for the measurement unit allow readings to be taken easily even at a distance

Technical data : Display: 3 1/2-digit LED display, digit height 26 mm -Measuring ranges: 200 Ohms, 2, 20, 200, kOhms, 2 MOhms, 2 V (diode testing) -Accuracy: $\pm 0.2\%$ ± 1 digit for all ohmage ranges up to 200 kOhms, beyond that

ESP60253



Ohm Law Apparatus :

This apparatus is designed to demonstrate Ohms Law. Consisting of a sheet metal enclosure with milliammeter, voltmeter, rheostat, push key and terminal posts..

Simply connect an external battery and a suitable resistance to the terminal posts, then press the push key. Readings are taken from the milliammeter and voltmeter and the resistance is calculated using Ohms Law.

Current flow controlled through circuit by rheostat

Colour coded connection terminals

Scratch resistant enclosure

Circuit diagram printed on enclosure to aid understanding

ESP59456



Coulomb Meter Demo Unit

Demonstration meter used in electrostatics for measuring charges, this instrument is easy to transport and can be mounted magnetically, the 26-mm LED display allows readings to be taken even from a distance Display: 3 1/2-digit LED display, digit height 26 mm -4-mm safety jacks: measurement input (IN) and common ground (COM) Measuring range: +/-1999 nC, reset button for resetting instrument to zero -Accuracy: better than 1 %, droop rate: better than 5 digits/min Throw switch: ON/OFF

Power supply: 4 x 1.5 V Mignon cells (included) or 5.5-mm hollow DC jack for 6 V/500 mA external power supply (Not included)

Case: green ABS plastic with yellow labelling

ESP60259



Wattmeter Demo Unit

Demonstration instrument for measuring power in low-voltage circuits, very easy to transport and magnetically mountable, the 26-mm LED display showing the measured value and the 20-mm LED display for the measurement unit allow precise readings to be taken even at a distance **TECHNICAL DATA :**

Display: 3 1/2-digit LED display, digit height 26 mm

Input: 4-mm safety jacks (pair)

Types of measurement: true power (W), work/energy

(Ws) Measurement limits: 20 Veff, 2 Aeff

ESP60256



Electroscope Digital Demo Unit

Demonstration meter for measuring high electrostatic voltages, unlike mechanical electroscopes, this instrument delivers exact and clear quantitative readings as well as the polarity of the charge, the value measured can be frozen using the hold switch, this instrument is easy to transport and can be mounted magnetically, the 26-mm LED display allows readings to be taken from a distance

TECHNICAL DATA:

Display: 2 1/2-digit LED display, digit height 26 mm

Measurement input provided by means of specially insulated 4-mm safety jacks

4-mm safety jack for ground

connection Measuring range: 0 ...

18.0 kV

Reset button for resetting instrument to zero Accuracy: better than 2 % for 0 ... 10

kV Throw switch: ON/OFF

Throw switch: measure sample - freeze measured value (hold)

Power supply: 4 x 1.5 V Mignon cells (included) or 5.5-mm hollow

DC jack for 6 V/500 mA external power supply (not included)

Case: green ABS plastic with yellow labelling

ESP60262



NEW



Sound Kit Acoustics 1

Equipment set for carrying out 22 experiments on the topic Acoustics 1. You can see the exact contents of the equipment and the experiment topics in the attached "Appendices". If you only want to carry out individual experiments, you are welcome to select them in the Xperimente Configurator

ESP60269

Experiments

SOUND GENERATION

- 1.1 Sound generation with the ruler
- 1.2 Sound production with the drum
- 1.3 Vibrations at the tuning fork
- 1.4 Sound generation and amplification

ANALYSIS OF SOUND

- 2.1 Sound - harmonic Oscillation
- 2.3 Tones are vibrations
- 2.4 Tone, sound, noise, bang
- 2.5 Pitch and loudness
- 2.6a Sound level and volume
- 2.6b Sound level - recording
- 2.6c Sound level of several sound sources
- 2.7 Frequency determination

SOUND PROPAGATION

- 3.1 Propagation of sound waves - Slinky
- 3.2 Sound propagation in air
- 3.3 Sound propagation in solids
- 3.4a Sound propagation in liquids - 1
- 3.5 Sound insulation - Sound attenuation

SOUND AND OUR BODY

- 4.1a Sound and body - directional hearing - 1
- 4.2 Sound and body - bone conduction

RESONANCE AND REFLECTION

- 6.1 Reflection of sound, echo

WAVE PHENOMENA

- 7.1 Interference on a tuning fork



NEW

Sound Kit Acoustics 2, Supplement to Acoustics 1

Equipment set for carrying out 9 experiments on the topic Acoustics 2. You can see the exact contents of the equipment and the experiment topics in the attached "Appendices". If you only want to carry out individual experiments, you are welcome to select them in the Xperimente Configurator

ESP60270



Kit consisting of :

- Ruler, plastics, 300 mm 1
- Tuning fork 440 Hz with resonance box 1
- Drumstick with rubber ball 1
- Beaker plastics, transparent 1
- Slinky spring, plastics 1
- Pendulum bob, steel, D=1" 1
- Loudspeaker for mobile, with base plate Set, consisting of:
 - Loudspeaker for mobile
 - Base plate for loudspeaker 1
 - Charger 5 V
 - Sound source for experiments on acoustics; compact loudspeaker for a mobile phone, tablet, or PC/Notebook (also iPhone, iPad, iPod) as well as for MP3 Control buttons for play/pause, volume, track forward/backward On/off switch Robust grille protection for the speaker membrane Aluminium housing, metallic colour Cable for connection to a mobile device and for charging the battery Device-shaped plastic base plate 120x90x25 mm 1
 - Sound level meter "mini For electronic measurement of the sound level; Sound level: 30 ... 130 dBA (± 1.5 dB) Measurable frequency: 31.5 Hz ... 8 kHz Measured value acquisition: fast (125 ms) / slow (1 s) LCD display, display height: 17 mm Condenser microphone: D=12 mm with windscreen MAX/MIN/AVG measurement Data hold function Overrange and underrange display Backlight Automatic switch-off after 5 minutes Incl. 3 x 1.5 V batteries (AAA) 1
 - Drum, D=200 mm, with rod
 - Drumstick, wooden 1
 - Styrofoam beads in a plastic box
 - Funnel plastics, D=70 mm 2
 - Tubing plastics, 7/10 mm, L=100 cm, transp. 1
 - Pendulum ball, hard plastics, D=40 mm Storage: Box-insert "soft" Acoustics Storage box - bottom, II, big Storage box - lid, II, with fleece Box insert plan with 2 labels



Sound Kit Acoustics 2, Supplement to Acoustics 1

NEW



Experiments

- SOUND PROPAGATION
- 3.4b Sound propagation in liquids - 2
- 3.6 Sound insulation - for our hearing
- SOUND AND OUR BODY
- 4.1b Sound and Body - Directional Hearing - 2
- STANDING WAVES
- 5.1 Standing waves
- 5.2 Standing waves - speed of sound
- RESONANCE AND REFLECTION
- 6.2 Resonance at two tuning forks
- WAVE PHENOMENA
- 7.2a Interference - Beat (2 tuning forks)
- 7.2b Interference - Beat (1 tuning fork, 1 loudspeaker)
- 7.3 Doppler effect - Acoustics



Kit consisting of :

- Tuning fork 440 Hz with resonance box 1
- Tuning fork rider 1
- Labels adhesive, coloured, set of 100 pcs.
- Case for mobile, waterproof 2 pcs
- Microphone for mobile 1
- Earmuffs For experiments on sound protection of the hearing;ear pads: PVC
- Resonance tube "compact" For demonstrating "standing waves" and to determine the speed of sound, in combination with two holders and the piston
- Holder for resonance tube 2 Pcs
- Piston for resonance tube 1
- Box-insert "soft" Acoustics
- Storage box II big, with cover Box storage plan and 2 stickers

Physics



Wave Reflection on Flat Field



Wave Diffraction I



Wave Diffraction II



Wave Interference

Thermodynamics And Wave Kit 1

Experiment Topics :

- GU 1 Wave Reflection on Flat Field, GU 2 Wave Reflection on Curves Field, GU 3 Wave Refraction, GU 4 Wave Diffraction I
- GU 5 Wave Diffraction II, GU 6 Wave Interference, GU 7 Wave on a String, Part I, GU 8 Wave on a String, Part II
- PU 1 Heat Capacity, PU 2 Specific Heat, PU 3 Heat of Fusion
- Corrugated Box Thermodynamics Kit ESP60268 (English) 1 pc Experiment Manual Book 1

Additional tool (sold separately) :

- Audio Frequency Generator (ESP60296)
- Power Supply 3A, 36W (ESP60751)
- G Clamp 4 inch
- Balance 311 gr
- Steel Ruler 50 cm

Dimensions : (L) 66.00 x (W) 38.00 x (H) 32.00 cm

Weight : 13.400 kg

ESP60268





Ripple Tank Kit

Specifically designed by Irwin to demonstrate wave theory to secondary and tertiary education. The Irwin Ripple Tank is a shallow perspex tank of water used in school and colleges to demonstrate the basic properties of waves. It is illuminated from above; the light transmits through the water. The water's ripples show up as shadows on the screen underneath the tank, providing a visual depiction of all the basic properties of waves: Light, electromagnetic, sound, reflection, refraction, interference and diffraction are clearly observed and enhance the students understanding of the phenomenon.

The Irwin Ripple Tank comprises the following individual parts:

- 1 x Water Tank
- 3 x Detachable legs 2 x
- Angular holders
- 1 x Plate fitting
- 2 x Fixing rods for Strobe-unit and vibration Generator 1 x
- Perspex Mirror
- 1 x Frosted glass plate 1 x
- Strobe-unit
- 1 x Vibration-Generator
- 1 x Frequency Controlling-Unit 1 x
- Single dipper
- 1 x Double dipper 1 x
- Triple dipper
- 1 x Dipper for parallel waves 1 x
- Acrylic block, concave
- 1 x Acrylic block, rectangle Semi circle 1 x
- Connection wire for Strobe unit

- 1 x Connection wire for Vibration-Generator
- 1 x TRANSPARENT Ruler for measuring
- 1 x Set of instructions
- 1 x Aluminium carry case

ESP60271



Ripple Tank 1

Dimensions :

- Height : 35 cm
- Base : 30 x 20 cm

Material :

- Tank : Plastic
- Base : Glass, TRANSPARENT

Consist of :

- Digital Ripple Generator 1 pc
- Tank 1 pc
- LED lamp 1 pc

- Mechanical Vibrator 1 pc
- Plane Wave Generator 1 pc
- Circular Wave Generator ripple tank 1 pc
- Circular Wave Generator ripple tank 1 pc
- Long Barrier 2 pcs
- Short Barrier 1 pc
- Curved Barrier 1 pc
- Glass/plastic Trapezoid for refraction experiment 1 pc
- Manual Book of Wave Tank 1 exp

ESP60273



Ripple Tank 2

For use in demonstration or experiment on basic properties of waves in general such as reflection, refraction, diffraction and interference, by simulation with water surface waves. The water surface waves are generated in a ripple tank. The system has a reflector and translucent screen on which the waves shadow can be observed. The ripples are produced by Ripple Generator (ESP60277 11) producing periodic variation of air pressure the Plane Wave Generator (ESP60277 13) or Circular Wave Generator ESP60277 17).

Dimensions :

Overall : 500 x 320 x 355 mm Wave field : 450 x 270 mm Projection screen : 480 x 285
Supported by a demountable four-leg frame, height 300 mm Material : Plastic, glass, aluminium and steel

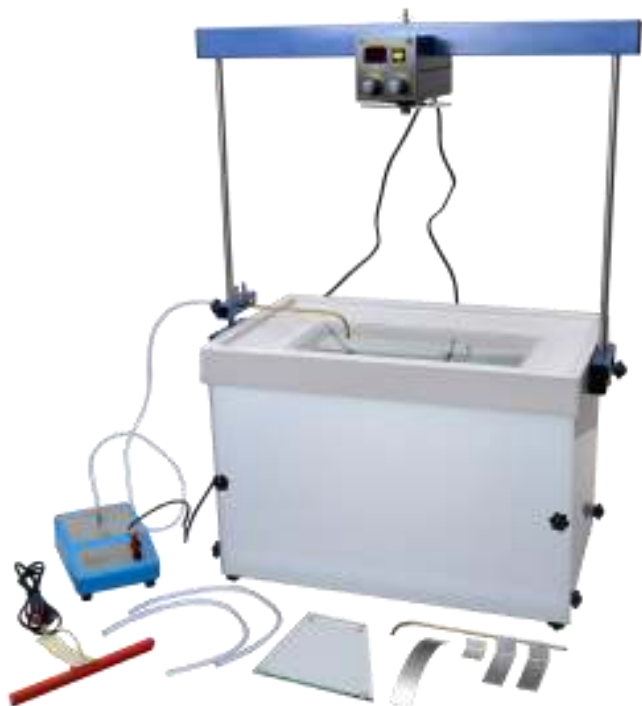
Consist of :

Wave Tray 1pc
Foot for Ripple Tank 1set, Side Bar 2pcs, Mirror Rod Holder 1pc, Support Rod 2pcs, Side Cover 2pcs, Refraction Plate 1pc, Ripple Generator 1pc, T Joint 1 pc, Plane Wave Generator 1pc, Short Barrier 1pc, Long Barrier 2pcs, Curved Barrier 1pc, Circular Wave Generator 1pc, Ripple Pipe Holder 1pc, Lamp Rod 1pc, Lamp Housing 1set, Lamp Bulb SBC 12V, 24W 1pc, Reflection Mirror 1pc, Translucent Screen 1pc, Multi-angle Clamp 1pc, Multifunction Bolt M6 x 15 mm 6pcs, Multifunction Bolt M8 x 35 mm 2pcs, Plastic Hose 40 cm 2pcs, Plastic Hose 100 cm 1pc, Disposal Hose 40 cm 1pc, Rubber Stopper without Hole, 6/9 mm 1pc, Manual Book 1exp, Additional tool (sold separately) : Power Supply 3A, (ESP60751), Part of Thermodynamics and Wave Kit for Senior High School (ESP60268).

Dimensions : (L) 85.00 x (W) 39.00 x (H) 20.00 cm
Weight : 8.800 kg

ESP60277





Ripple Tank with Digital Stroboscope ESP60279

- Ripple tank can be used to demonstrate wave motion concepts and principles such as traveling waves, reflections, refractions, and interference, laws of reflection and refraction, wave diffraction and the Doppler's effect.
- By observing the phenomena directly using a ripple tank, student can learn and understanding the phenomena easier.
- FGE 13 Ripple Tank is equipped with a stroboscopic illuminator unit, so the traveling waves generated in the wave tray could be made to appear at rest, thus facilitating observation and wavelength measurement.

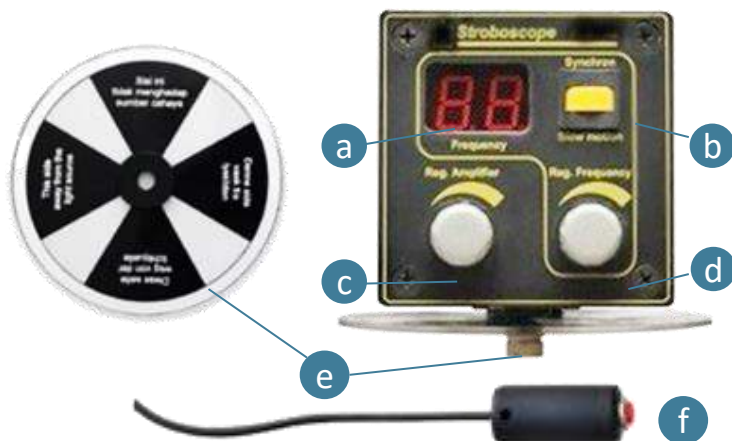
Features

- Equipped with digital stroboscope technology for easier wave observation.
- Capable of displaying the benefits of the wave of impressions on Translucent screen mounted upright that can be observed directly by the students with easy.
- Stroboscope uses halogen lamps making clear images on the display. Can generate progressive and standing wave.
- Generated waves can be identified directly from the stroboscope's frequency. Stroboscope's halogen lamps produces clear images on the display.

Digital Stroboscope ESP60275

Stroboscope Unit (PWM 145) has some features:

- Digital indicator (a) displays wave frequency.
- Light and wave synchronization mode (b).
- In synchronous mode, the frequency of strob light and the water ripple are synchronized so that it seems still; in unsynchronized mode, the wave moves.
- Wave frequency (c) and wave amplitude adjuster (d).
- Stroboscope disc.
- Manual trigger function (f) to produce wave one by one.
- Halogen light source 12 V 5 A.
- Input voltage 12 V 5 A.



Stroboscope Digital ESP-2816-L

This stroboscope has a wide range of applications, having high accuracy and a digital readout of selected flash rate (IPC-2816-L). Applications include dynamics experiments, vibration modes in wires and sheets, measuring speeds and frequencies and demonstrating persistence of vision. Triggering is by internal switching or by an externally applied waveform. Built into a robust metal case with a durable powder coat finish. An illuminated on/off switch is mounted on the rear panel adjacent to a fused appliance inlet.



The rear panel also carries the flash rate control and 4mm sockets and switch for external synchronization. Accessories : Spare Xenon Tubel
 Description : Xenon Stroboscope ;Electrical Supply : 220-240VAC, 50-60Hz - Dimensions : 255 x 220 x 110mm overall - Mass : 3.4kg - Flash Rate : 1 to 10 flashes/sec, 10 to 100 flashes/sec & 100 to 250 flashes/sec - Display : 13mm, 3 x digit, Red LED - Flash Power : 5W (mean) - Accuracy : $\pm 2\%$ on each range -Flash Duration : 12 μ s



Component List

Cat. code	Component	Qty	Cat. code	Component	Qty
FGE 12 01	Wave Tray	1 pc	FGE 12 14	Short Barrier	1 pc
ESP 12 02	Footing for Ripple Tank	4 pcs	FGE 12 15	Long Barrier	2 pcs
FGE 12 03	Side Bar	2 pcs	FGE 12 16	Curve Barrier	1 pc
FGE 12 04	Mirror Rod Holder	1 pc	FGE 12 17	Circular Wave Generator	2 pc
FGE 12 05	Support Rod	2 pcs	KPP 41/004-100	Plastic Hose 100 cm	1 pc
GLA 203 02	Reflector Mirror	1 pc	KPP 41/004-040	Plastic Hose 40 cm	2 pcs
GLA 204	Translucent Screen	1 pc	KPP 41/006-040	Disposal Hose 40 cm	1 pc
FGE 12 08	Side Cover	2 pcs		Ring Plate	10 pcs
FGE 12 09	Supporting Bolts	4 pcs		Butterfly Nut	6 pcs
FGE 12 10	Refraction Plate	1 pc		Support Rubber	4 pcs
FGE 12 12	T Joint	1 pc	KSM 12/06-09	Rubber Stopper Without Hole, \varnothing 6/9 mm	1 pc
FGE 12 13	Plane Wave Generator	1 pc	FGE 12 14	Short Barrier	1 pc

Supporting Tools

For detailed information, please refer to page 70 - 73.

Cat. code	Tool	Qty
ESP60751	Power Supply	1 pc

Experiment Topics

Experiment 01	Introducing Wave Motion on a Water Surface
Experiment 02	Generating Continuous Circular Waves
Experiment 03	Generating Straight Waves
Experiment 04	Reflection of straight waves
Experiment 05	Reflection of Straight Waves on Curved Wave Barrier
Experiment 06	Generating Two Coherent Point Wave Sources and Observing an Example of Interference
Experiment 07	Depth of Media Changes Propagation Speed
Experiment 08	Wave Diffraction by a Single Slit



Mechanical Shear for Doppler effect experiment



Ripple Tank FGE 13 performing Doppler effect experiments.





Ripple Tank - Simple

This economy Ripple Tank System comes as a ready-to-use unit with no external power source required. Comprised of a tough, moulded frame with a large transparent viewing surface. The Ripple Tank light source is a 6V halogen lamp which gives excellent illumination. The tank has sloping sides which minimise noise. This Ripple Tank System comes complete with :

- A. Ripple tank
- B. 4 Push-fit legs
- C. Ripple motor, eccentric cam mounted on ripple bar
- D. 3 Support pillars for supporting the light source and ripplier bar
- E. 2 Motor support springs
- F. Lamp unit with adjustable arm
- G. 2 Ripplier bar hanging hooks
- H. Power source for ripple tank
- I. Hand stroboscope
- J. Concave perspex plate
- K. Rectangular perspex plate
- L. Curved reflector
- M. 2 Barriers
- N. Roller Bar
- O. Neatly compartmentalized box

ESP60280



Ripple Tank Standard

Metal uprights are provided to carry a horizontal ripplier support and which can be adjusted in height with the help of screws, easily and precisely. The ripplier Assembly elastically suspended from the horizontal support rod, consists of a low voltage DC motor mounted on a wooden

/ plastic beam. The motor is fitted with an Eccentric mass, which causes beam to oscillate. Additional point contact sources are provided by two plastic spheres each mounted on a right angled metal shafts which when fitted to the beam, may be adjusted to required separation.

An adjustable rod fixes centrally into a socket in one side of the Frame and affords support for the illuminant.

- A. Ripple Tank
- B. Ripple Generator
- C. Plane Wave Actuator Bar
- D. Light Source and Cord
- E. Ripple Tank Optics: Large and 2 small rectangular barriers of Glass
- F. 1 each of Concave Lens, Convex Lens, Triangular Prism and Curve Stainless Steel
- G. 1 Hand Stroboscope, black disc with plastic handle.
- H. Power supply for Ripple Motor and Light Source
- I. 1 sets of Metallic Rods and side screws for suspension of wave generator
- J. Roll for production of straight vibrators
- K. 20pcs of Rubber Bands
- L. 1 Foam piece.

ESP60284



Ripple Tank Controller

The unit provides two fully independent, continuously variable DC outputs 0 to 5V for the ripple tank motor, together with a fixed AC output to operate 6V, 20W bulb. Supplied with a detachable 1.5m main lead.

ESP60282





Ripple Tank Small Led

- This instrument provides a method to prove the basic phenomenon of wave, reflection, diffraction and refraction. LED strobes are installed at the lower part, and a 13x13cm rectangular water tank installed in the middle causes a water wave. It can be projected on the installed screen to clearly see the surface wave.
 - To overcome the small size limit, increase the SYNC frequency by four times and you will not notice a difference between the normal ripple tank and the visual effect.
- The LED strobe uses a high-power 3W class to provide a sharp image of the surface wave projection.
- The power supply is provided with a power supply with an input of 220V AC and an output of 12VDC. It is provided with single-wave, double-wave, and vibrator causing interference and reflection.

Dimensions : 150x200x160mm
 Configuration: Body (SYNC Strobe, Wave source generator, Built-in screen) Power supply, single-wave double-wave source - Linear wave vibrator, Interference refraction object 4 pieces, Reflective object 1 piece 1 water tank 130x130mm

ESP60285



Digital Stroboscope Integrated Type

- It is used for proportional observation of fast movements such as falling motion and constant velocity motion, and for measuring the speed of a still picture or rotating body.
- It is classified as a combined type of light source and main body and a separated type. B type light source Integrated specification: External synchronization 4 ~ 10Vpp, output 20W, 60 ~ 15,120rpm AC220V **Dimensions :** 330*330*210mm **Weight :** 4Kg.

ESP60288



Stroboscope - Motorised

Motorised Stroboscope is a useful device for the teaching of the stroboscopic. The hand driven discs and are difficult to keep at a constant speed. The motor driven stroboscope has an inbuilt speed control and maintains constant speed reasonably well. Supplied with a set of 3x discs with 4, 8 and 12 slots. A blank disc permits the creation of a disc in the classroom. The unit can be supported on a retort stand with a boss head. Runs from either AC or DC up to 12V. Maximum.

ESP60286



Stroboscope Digital , Xenon, Hand Held

- Operating Temperature : 0 to 50 deg C
- Accuracy : 100 to 5,000 (FPM/RPM) +/- 1 digit
- Display 0.3" LED, 4 digits.
- Stroboscopic Falsh rate : 100 to 10,000 flashes per minute (FPM).
- Resolution : Less than 10,000 FPM/RPM
- Sampling Time 1 second.
- Range Select Automation.
- Circuit : This stroboscope/tachometer employs a custom one-chip of microcomputer LSI circuit & crystal control time base which results in extraordinary accuracy over a wide, dynamic range.
- Power Supply 110 Vac 10%, 50/60 Hz. or 220 Vac 10%, 50/60 Hz. or 230 Vac 10%, 50/60 Hz.
- Power Consumption : Less than 30 Watt.
- Operating Humidity : Less than 80% R.H.
- Housing : Compact and impact plastic injection case with plastic mirror type reflector.
- Calibration : Crystal time base and microprocessor circuit, don't necessary take any external calibration process.
- Accessories included : Operation manual.

ESP60287





Signal Generator & Amplifier

Provides sine, square or triangular waveforms . Frequency selection is by a switched range and continuously variable fine adjustment control. The frequency is displayed on an LED display. All connections are via pairs of labelled 4mm sockets with one of each pair connected to earth. An illuminated on/off switch is mounted on the rear panel adjacent to a fused IEC mains inlet. Enclosed in a robust metal case with a durable powder coated finish.

Electrical Supply: 220-240VAC, 50-60Hz - Dimensions: 255 x 220 x 110mm overall - Mass: 3.2kg

Sig. Gen. Mode > : Waveforms: Sine, Square & Triangular, sinewave distortion 1% on all ranges, square wave rise time 1µs approx.

Frequency Range: 0.1Hz to 100kHz in six ranges, accuracy ±5% on all ranges

Voltage Output: 0 to 10V (peak to peak), continuously variable across all ranges & waveforms ; 4Ω Output: Power output of 4W over entire frequency & waveforms, will drive loudspeaker or other suitable devices ;

600Ω Output: Provides attenuation settings: x1,x0.1 & x 0.01,all ±5% Amplifier Mode > : Performance: Voltage gain 0 to 100, Input impedance 1MΩ, Max. input 200mV (pk to pk), Output spec. same as above ;Frequency Response: Frequency response 1Hz to 100kHz (-3dB bandwidth)

ESP60295



Vibration Generator

Generates the mechanical vibrations with alternating voltage input max. 3V AC, 10KHz from Audio Frequency Generator (ESP60296).

Dimensions :

110x110x65mm.
Displacement:6mm
Power: 3 watt
Impedance: 8 ohm
Input terminal: 4mm socket screw

ESP60299



Signal Generator

Sine and square wave generator . Frequency range 5Hz to 50kHz in four switched ranges plus a fine control. Accuracy typically ±10%. The output amplitude is continuously variable from zero to maximum 8V peak to peak with maximum output power 1W into 8 ohms. The output is taken from two 4mm sockets mounted on the front panel. An illuminated on/off switch is mounted on the rear panel adjacent to a fused IEC mains inlet. Enclosed in a robust metal case with a durable powder coated finish.

Electrical Supply: 220-240VAC, 50-60Hz

Dimensions: 179 x 190 x 85mm overall

Mass: 1.65kg

ESP60294



Vibration And Audio Frequency Generator

An apparatus that generates various wave signal in audio frequency definition. It can produce 5 kinds of wave shapes: square, sinusoidal, triangle, saw and pulse. Output impedance is 8 Ω with enough power to drive a loud speaker; 600 Ω output for audio amplifier input.

- Frequency range 0.1 Hz - 110 kHz.
- Sinus wave distortion less than 2% (1 kHz).
- Maximum power 3 W, 8 Ω.
- Input source 110/220 V with fuse.

ESP60296





Function Generator DDS

Features:

Max. Output frequency 5MHz 2 output channels
 Direct Digital Synthesis technology (DDS)
 Sampling rate 100MSa/s, vertical resolution 8 bits, waveform length 1024 points
 Min. 1mV (50) Waveform output with good stability
 32 built-in waveforms
 40 sets panel setting save recall
 Modulations: FM, FSK, ASK, PSK
 Frequency sweep, amplitude sweep, burst and TTL output functions
 Over voltage protection, over current protection, short circuit protection, reverse voltage protection
 Standard parts: 200MHz frequency counter
 Optional parts: RS-232 interface, power amplifier

Specifications:

Frequency range: 1μHz-5MHz, Waveform (CHA), Type: 32 built-in waveforms, including Sine, Square, Triangle, Ramp, Pulse, etc.
 Length : 1024 points, Vertical resolution : 8 bits, Sampling rate: 100MSa/s, Harmonic distortion of sine: 40dBc (1MHz); 35dBc (1MHz-20MHz) Total distortion of sine: 1% (20Hz-200kHz) Rise/fall time of square: 35ns Overshoot of square: 10% Duty cycle of square: 1%-99% Frequency (CHA) Range Sine: 1Hz-5MHz Range Square: 1Hz-5MHz Range Other: 1Hz-1MHz Resolution: 1Hz Accuracy : 5x10⁻⁵ Stability : 5x10⁻⁶/3hours Amplitude (CHA) Range: 2mVpp-20Vpp, 1Hz-10MHz (high impedance) 2mVpp-15Vpp, 10MHz-15MHz (high impedance) 2mVpp-8Vpp, 15MHz-20MHz (high impedance) Resolution: 20mVpp (2Vpp); 2mVpp (2Vpp), Accuracy : (1% 2mVrms)(high impedance, RMS, frequency 1kHz), Stability: 0.5% /3hours, Flatness: 5% (frequency 10MHz); -10% (frequency 10MHz), Output impedance: 50, DC Offset (CHA), Range: 10V (high impedance, attenuation 0 dB), Resolution: 20mVdc, Accuracy: (1% 20mVdc), TTL output, Waveform : Square, rise/fall time 20ns, Frequency: 10MHz-1MHz, Amplitude: TTL, CMOS compatible, low $\lt; 0.3V$, high $\gt; 4V$, Frequency counter, Testing frequency range : 1Hz-200MHz, Input signal amplitude: 100mVpp-20Vpp,

Common characteristics

Operation characteristics : Key operation for all functions, Menu display, Rotary dial adjustment
 Display : Mono LCD
 Language : English, Chinese (simplified), Chinese (traditional)
 Power source: AC110V/220V 10% selectable, 50/60Hz, Max. 45VA Environmental condition: 0-40°C, $\lt; 80\%RH$
 Standard accessories : Power cord x1, Operation manual x1, BNC-BNC cable x1, Test lead x1

Dimensions : 385x260x110mm

Weight : 3.5kg

ESP60290



Function Generator Arbitrary Wave Form

Features:

Frequency range 1Hz-25MHz
 2 independent output channels at same frequency range for main waveforms
 4.5-inch TFT LCD display
 Min. Output amplitude 1mVpp (50%), Total distortion 0.2%
 Sampling rate 150MSa/s, vertical resolution 14 bits, waveform length 16k points
 6 standard waveforms, 50 built-in wave forms and 12 user-defined arbitrary waveforms
 10 sets save recall for operating parameters
 Modulations: AM, DSSC AM, FM, PM, ASK, FSK, BPSK
 Synchronous output, external modulation input, trigger input, external reference input and count input
 Linearity/Logarithmic sweep signal and Burst signal
 Channel coupling, parameter (frequency, amplitude, offset, phase) coupling, point frequency replication tracking
 Strong arbitrary waveform building software, support SCPI commands
 Over voltage, over current, short circuit and reverse voltage protections
 Standard interface: RS232, USB device, USB Host
 250MHz external frequency counter
 Optional power amplifier

Specifications:

Output frequency range:
 Sine: 1 μHz ~ 25MHz
 Square: 1 μHz ~ 5MHz
 Ramp: 1 μHz ~ 500kHz
 Pulse: 1 μHz ~ 5MHz
 Noise: 30MHz white noise (-3dBm) Arbitrary: 1 μHz ~ 6.5MHz
 Resolution: 1 μHz
 Accuracy: app 5 to 10⁻⁵
 Output waveform : Sine, Square, Ramp, Pulse, Noise, Arb, DC
 Waveform length : 8-16384 points (CHA), 8-2048 point (CHB)
 Vertical resolution: 14 bits
 Sampling rate: 150MSa/s
 Interface: USB Device, USB Host, RS232
 Power source: AC100-240V, 47-63Hz, Max. 30VA
 Accessories; Power cord x1, Operation manual x1, Software CD x1, USB cable x1, RS-232 cable x1, BNC-BNC cable x1, Test lead x1

Dimensions :

Chassis : 260Wx110Hx385D mm

Instrument : 295Wx195Hx415D mm

Weight : 4kg

ESP60291





Vibration Generator Accessories

A vibration generator for exciting oscillating and waves mechanically, e.g. in coil springs, a rubber cord, a wire ring or a Chladni plate. In robust plastic housing including mounting pin with 4mm socket for attaching accessories (Chladni plates, resonance wire, rubber band etc.). Including holder for stand rod (up to 8 mm diam.) on the rear side of the apparatus for the demonstration of standing waves in a coil spring. The generator is equipped with overload protection and is driven by a loudspeaker for smooth oscillations and fine travel stepping.

Spring and Resonance strips can be found here

Specifications: Connection: via 4-mm safety -sockets Impedance: 8 ohm -Maximum amplitude: 5 mm Frequency range: 0 up to 20 kHz Minimum operating current: 10 mA Overload protection: 1 A fuse Required : Function Generator FG - Dimensions : approx. 200x160x70 mm? - Weight : approx. 1.4 kg

ESP60301

Vibration Generator Spring Kit

Steel strips giving six vibrating lengths. For use with our vibration generator. Fundamental frequencies at 11, 15, 21, 36 and 50 Hz can be readily observed. Interesting standing waves can be seen up to 300 Hz and heard up to 900 Hz.



Also supplied is a quality steel spring ideal for producing longitudinal waves with a vibration generator connected to a signal generator. Spring constant 4.7 N/m. **Dimensions :** (L x Dia.): 155mm x 27mm.

ESP60302



Melds Apparatus

Apparatus for Meld's Experiment

Used to demonstrate the phenomena of wave standing on the rope and learn quantities that affects the speed of a wave on a rope

Consists of:

- Vibration generator 1pc - Table clamp with plastic pulley 1pc - Slotted Masses and Hanger - Ruler 50cm, stainless steel 1 pc - G Clamp 2 inch - Stand Base 1 pc - Stand Foot 1 pc - Stand Rod 500mm 2 pc - Stand Rod 250mm 1 pc - Universal Boss-head 1 pc - Bearing Pin 1 pc - Nylon Thread 1 roll - Connecting lead 50cm, Red 1pc ; Connecting Lead 50cm, Black 1pc - Rod coupling 1pc
- Additional tool (not included, sold separately): Audio frequency Generator

ESP60310



Melds' Apparatus Demo Magnetic

Magnetic panel assembly - equipment set for generating transverse standing waves, Allowing nodes and anti-nodes as well as changes in their number at different excitation frequencies to be easily recognised. Consisting of:

- 1x Motor with toggle for oscillation test , 1x Magnetic base, D = 43 mm, with tube and pin, 1x Magnetic base, D = 66 mm, with tube and pin, 1x Elastic string, white, L = 300 cm, 1x Rubber string, red, L = 300 cm

ESP60311



NEW

Melds' Apparatus Econ Kit

Kit consists of:

- * Vibration Generator and Frequency Generator
- * Retort Stand With Rod and Clamp & Boss Head
- * Weight Pan With Weight Set and Pulley With Bench Clamp
- * Cotton Thread, etc.

ESP60309



Chladni Plate

Consisting of square and circular plate, Chladni plate is used to observe the influence of object geometry on mechanical vibration resonance pattern on two dimensional object. The center of the plate is vibrated by vibration generator. When fine salt is scattered on the plate surface and it is vibrated, it will generate the antinode pattern and concentrating on the node point. The patterns assembled by the salt are standing wave patterns which is related to one Chladni plate harmonic frequency.

- Anodized aluminum plate material.
- Square Chladni plate, dimension 20 x 20 cm.
- Circular Chladni plate, diameter 20 cm.

Additional apparatus

- Audio Generator (ESP60296).
- Vibration Generator (ESP60299).

ESP60301/1





Slinky Spring 80 mm

Slinky Dia 80mm Used for teaching the concept of wave motion and its properties Diameter : 80mm ;Length : Approx 120mm Material : Steel with the helix ;Dimensions : 8.70cm (L) x 8.70 (W) x 13.50cm (H) ; Weight : 0.500 Kg

ESP60308

Slinky Spring Helix

Steel wire close-wounded helix 20 mm diameter, closed length 3 meters extending to approx. 9 meters extended, with looped ends

ESP60304



NEW

Slinky Spring With Stand

wave form helix is used to study wave behavior. The helix is a metal slinky spring that stretches for demonstrating wave forms, and can be used on stairs with a tall step height for further experimentation. The helix measures 20.0cm (H) when compressed, and has a wooden stand for display and storage. (H is height, the vertical distance from the lowest to highest point.) The helix is suitable for high school or college students, or ages 14 to 21. Helix will extend up to 65ft before distorting

ESP60306



NEW

Slinky Spring 70 mm

Slinky Dia 70mm Used for teaching the concept of wave motion and its properties Diameter: 80mm ;Length: Approx 200mm ;Material: Steel with the helix

ESP60304



NEW

Loud Speaker

Loudspeaker Amplifier

A recently upgraded audio amplifier with a minimum voltage gain of 40 (32dB), this amplifier operates from power supply voltages of 9V to 12VDC smoothed and regulated. Power supply polarity.

Electrical Supply: 9 to 12VDC smoothed and regulated - Dimensions: 98 x 148 x 80mm overall - Mass: 0.35kg - Voltage Gain: 32dB minimum
Frequency Range: 15Hz to 300kHz (at 32dB Gain) - Signal to Noise Ratio: 23dB minimum - Maximum Input Signal: 100mV (pk to pk) - Input Impedance: 500k ohms (approx.)

ESP-4619-W



Loudspeaker

This loudspeakers designed for a range of audio experiments and can be used in conjunction with a number of IPC products. It has a standard impedance of 8 ohms and is rated up to 0.5W in power, the loudspeaker itself is mounted in plastic case with two 4mm sockets for connection. Electrical Supply: N/A - Dimensions: 55 x 110 x 22mm overall - Mass: 0.11kg

ESP-4678-W



Loudspeaker Unit

The Irwin compact loudspeaker unit is fitted with a 10 watt, 8 Ω Driver. Connection is via colour coded 4mm sockets. Fitted into a durable ABS case.

ESP60305

Viscosity Tube

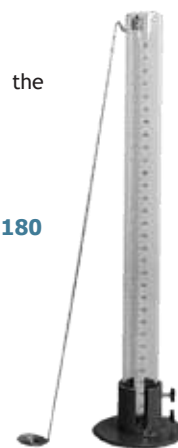
This apparatus is used to determine the fluid viscosity.

Flexiglass tube diameter 56 × 680 mm.

Graduation: 0 - 64 cm.

Tube seat, diameter 140 mm.

ESP 180



NEW



Ultrasonic Student Budget Kit

KIT Consist of the following :

Ultrasonic control unit, Ultrasonic transmitter, Ultrasonic receiver, Ultrasonic apertures, set of, with angle bracket, Kit of material

ESP60316



Ultrasonic Student Kit

Kit consisting of: 1x Ultrasonic control unit, 2x Ultrasonic transmitter, 1x Ultrasonic receiver, 1x Ultrasonic goniometer, 3x Slider with clamping post 40 mm, 1x Ultrasonic apertures, set of, with angle bracket, 1x Ultrasonic frame aperture for absorption experiments, 1x Ultrasonic parabolic mirror

Storage: 1x Box insert Ultrasonic, 1x Storage box II big, with cover, Box -insert plan with 2 labels

ESP60315





Oscillation Module 1 With Brake

21 double pendulums, 21.5 cm long each, mounted on a special aluminium profile.
 The aluminium pendulum weights are cylindrical and mounted 1.8 cm apart so as to be able to rotate horizontally.
 Adjacent pendulums are joined using two coil springs, allowing waves to be propagated.
 Built-in brake pads allow the wave motion to be stopped immediately, so that, for example, wavelength may be measured.
 Supplied with two padded aluminium feet and a clamp for creating a fixed end.

Total length : approx. 41.5 cm

ESP60317



Drive Unit For Wave Demonstrator

While waves or pulses can be generated manually, an electric motor produces constant motion, Generating waves that are easier to observe and compare.
 A DC motor, attached to a cam, controls the speed of the exciter plate, which in turn causes the pendulum motion.
 Increasing or decreasing the amount of DC input voltage likewise affects the pendulum frequency of the exciter plate.
 Aluminium case, 14 cm long, mounted on special aluminium profile with two 4-mm safety jacks,
 Supplied with two coupling springs

Required accessories:

Power supply able to set variably from 0 to 6 V DC, 0.5 A min.

ESP60318



Oscillation Module 2A With Brake

Used to extend module 1, resulting in a unit with 42 double pendulums, which allows experiments to be observed more easily;
 technical data similar to model no ESP60316;
 Supplied with a rail connector and two coupling springs;

Total length : approx. 41.5 cm

ESP60319



Damping Unit

This unit is mounted at the end of the wave demonstrator and serves by means of a damping plate submerged in water to prevent undesired reflection of waves.

The unit consists of one pendulum mounted rotatably, a water tub and two coupling springs.

ESP60320



Oscillation Module 2B With Brake

Used to extend modules 1. Technical data similar to modules 1 and 2a, except that the pendulums are lighter (made of plastic), making it possible to achieve other wave velocities.
 Supplied with a rail connector and two coupling springs; Total length: approx. 41.5 cm

ESP60321



Wave Apparatus Plastic

Made of plastic. The rotating handle is fitted with a circular scale marked in degrees to indicate the indication. The plastic highlighted tips make easy observation of wave motion.

ESP60314





Vibrations And Waves Student Kit

Kit consisting of:
 1x Rubber string, 3 m
 1x Flat spring steel, 0.6mm, L=300 mm 1x
 Holder for pencil
 1x Threaded rod with butterfly nut
 2x Pendulum ball with hook, wooden, 1x
 Pendulum ball with hook, plastics,
 1x Motor with toggle for oscillation tests,
 Storage:
 1x Box insert Vibrations and waves, SE 1x
 Storage box II mini with cover,
 Box -insert plan with 2 labels

ESP60323



Bell Jar Kit

Vacuum chamber complete, 1000 ml, with manometer, Syringe plastics, 120 ml, for vacuum-experiments, Vacuum hose plastics, SE, 300 x 6 mm, Signaller (alarm annunciator), Alarm with LED, Hand Pump

ESP60326

NEW



Bell Jar Knobbed 8x4"

Made of Soda glass, with a knob at the top, and ground flange. Size : 20 X 10cm (height x diameter)

ESP60324

Bell Jar With stopper

NEW



ESP60325

NEW



Bell Jar Knob bed With Base and Electric Bell

Diameter is 19cm,height is 29cm Bell Material: glass It's usually in combination with pump.

To demonstrate that non-transmission of sound in a vacuum

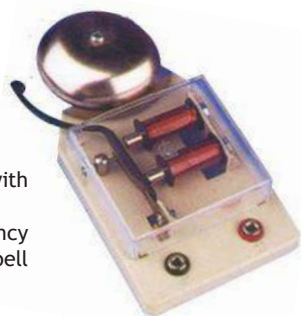
ESP60324



Electric Bell

- Electromagnetic bell with plastic base, for 3-6 V DC
- Complete with transparency cover to observe the way bell worked
- Terminal 4mm socket

Dimensions : (L) 16.00 x (W) 8.00 x (H) 4.00cm
Weight : 0.211 kg



ESP60329

Electric Bell Kit

Teach students how circuits work with this fully exposed bell! This device rings out when an electrical circuit is completed. Includes: wood stand, banana plug jacks, adjustable hammer, and instructions.

Requires an energy source such as a hand generator or a 6V battery kit. Grade 6 and up.



ESP60330

NEW

Electric Bell

ESP60328

NEW

Electric Bell Demo

Mounted on panel, large size parts and visible wiring. used for Demonstration Operates on 4-6 Volts.

ESP60331



Sonometer 30 Cm

Ideal for use by Primary School students aged 6-12 years. The student will be able to understand the basic concepts of sound and the vibration of an objects that produce sound.

Experiment topics: Generation of sound. Strong and weak sound.

ESP60332



Sonometer 1 M

Used to demonstrates the relationship between the frequency of the sound produced by a plucked string, and the tension, length and mass per unit length of the string.

Dimensions : Overall sonometer : 1200 x 130 x 80 mm, with bridges at 1000 mm ;
Scale : 0-100 cm (1 m), on both sides ;String : 0.5 and 0.7 mm

Material : Sonometer box : Wood - String : Brass and Stainless Steel

On the surface of the box can be stretched three strings wire

Complete with 2 stress string regulator, pulley for drape the load

three removable bridges and 1 set of strings ;Used with Slotted Masses and Hanger 6

Steel that are sold separately. **Dimensions :** (L) 115.00 x (W) 12.00 x (H) 9.00 cm ;**Weight :** 3.000 kg

Sonometer Spare String (Wires)

1M These strings are used together with

Sonometer. **Dimensions :**

Brass string : 0.5 mm, ,Stainless steel string : 0.7 mm, Length : 1.5 m, Material : Brass and stainless steel, Set consist of 2 brass string and 2 stainless steel string, Part of Sonometer 1 m (ESP60334)., **Dimensions :** (L) 9.00 x (W) 9.00 x (H) 0.50 cm ;**Weight :** 0.025 kg

ESP60334



ESP60335

NEW

Resonance Tube Simple

Comprising two brass tubes telescoping into each other so that the column of air within the tube may be altered from 30 cm to 53 cm, outer tube fits into a bas

ESP60337

NEW

Weight for Sonometer

A set of slotted iron masses suitable for use with sonometers or other applications where a large load is required. The masses and hanger are finished in black color. Weights slots are stackable. Five-piece set consists of one each 1/2 kg. Cap. total 2.5kg. SUPERIOR (Steel)

ESP60335/W



NEW

Rubens Resonance tube

For an impressive illustration of standing waves and for calculating the speed of sound in gases;In contrast to the Kundt tube, the density differences in the gas are clearly visible from afar through different flame heights;Robust metal tube, with 70 openings at a distance of 10 mm for gas outlet;A loudspeaker is mounted on one end of the pipe, a regulating valve for valve cartridges on the opposite end,the pipe is mounted on a black base and back plate so that the flame heights can be seen in high contrast ;Speaker: 2 W, 8 Ohm ; Dimensions (tube): D=50 mm, L=approx. 860 mm ;Dimensions (total): 86x14x23 cm ; Mass: 4250 g ;Additionally required: valve cartridge function generator

ESP60336



Junior High School

Senior High School

NEW

Sound Resonance Experiment Kit ESP60346

- The Sound Resonance Experiment Kit is designed to observe the phenomena that happens between sound waves and closed tube. If the magnitude of the sound wavelength, speed of sound wave, and the length of the closed tube is fitting, sound resonance will occur. Moreover, this kit have all the required component to measure the speed of sound.
- This kit consists of tuning fork, and 'electronic' tuning fork (frequency generator) that can produce four frequency values so that the experiment can be conducted more easily.



Physics

Component List

Weight: 8.160 kg.

Cat. code	Component	Description	Qty
PWS 161	Resonance Apparatus	Consists of a glass tube attached to a vertical rod, hose, and reservoir. Glass tube size: \varnothing 40 x 1200 mm. Tube material: Borosilicate glass	1 pc
FGE 21	Tuning Fork	Used as a sound source. One set consists of 4 tuning forks with the following frequencies: C: 512 Hz A: 426.6 Hz F: 341.3 Hz D: 288 Hz The tuning fork is stored in a wooden box.	1 set
FGE 22.01	Tuning Fork Hammer	Used to hit the tuning fork to produce a sound.	1 pc
PWV 170	'Electronic Tuning Fork / Frequency Generator	Produces a sound with the same frequency as an ordinary tuning fork, which is 288 Hz; 341.3 Hz; 426,6 Hz; 512 Hz. 3 V voltage source, operated using a push switch.	1 pc

Experiment Topics : E1 Sound Resonance





Resonance Apparatus 1

Consists of a chrome plated metal resonance tube 100 cm long, metal reservoir 250 ml and a meter scale mounted on a metallic stand. With rubber tubing.

ESP60338



Resonance Apparatus 2

The main part of the apparatus is a borosilicate glass tube which is connected to a bulb using a hose to enable to length of the air column in the tube to be varied.

The apparatus is mounted on a stand. It is used to determine the velocity of sound in air by resonance method.

Dimensions :

Tube **Dimensions :** dia. 30 X 850 mm

Tendon volume : 500 ml

Dimensions : (L) 123.00 x (W) 15.00 x (H) 18.00 cm

Weight : 9.000 kg

ESP60339



Resonance Tube, Set

Resonance tube gives the easy of experiment about sound. Loudspeaker which is connected to the audio generator produces stable wave pattern with changeable sound frequency.

Dimensions : Overall 1185 x 100 x 150 mm

Material : Flexiglass

Consist of :

Resonance Tube 1 pc, Microphone 1 pc, Sound Level Meter 1 pc

Additional tools (sold separately) :

- Audio Frequency Generator (ESP60296) - Oscilloscope

Dimensions : (L) 122.00 x (W) 16.00 x (H) 14.50 cm

Weight : 2.475 kg

ESP60340



Resonance Tube Set With Aluminium Case

Resonance tube gives the easy of experiment about sound. Loudspeaker which is connected to the audio generator produces stable wave pattern with changeable sound frequency.

Dimensions : Overall 1185 x 100 x 150 mm

Material : Flexiglass

Consist of :

Resonance Tube 1 pc

Microphone 1 pc Sound

Level Meter 1 pc

Aluminium Case 1 pc

Additional tools (sold separately) :

Audio Frequency Generator (ESP60296)

Oscilloscope

Dimensions :(L) 0.00 x (W) 0.00 x (H) 0.00 cm

Weight : 0.000 kg

ESP60341



Audio Frequency Amplifier

Amplifier one channel which is equipped with microphone amplifier and major output regulator.

- Mode/power output : Mono/10 W
- Input impedance (IN) : 600 ohm
- Output impedance : 8 ohm
- Working voltage amplifier : ± 18 VDC/220 VAC
- Features : Microphone mode (Condensor/Dynamic), MIC Input, Volume Control, Power switch, Fuse 0.75 A, Connecting cable AC, AC connector selector, and Output
- Size : Overall 185 x 130 x 75 mm.

ESP60298



Sound Level Meter

Hand Held small Sound meter analogue type to be used for resonance tube.

ESP60347



Sound Level Meter Mini

Mini Analogue sound level meter range up to 130 dp

ESP60348



Senior High School
Junior High School



Resonance Tube ESP60342

- Resonance tube provides an easy experiment of sounds.
- @@ Loudspeaker which is connected to the audio generator produces stable wave pattern with changeable sound frequency.
- @@ Equipped with Sound level meter (SLM) to observe the wave node and antinode position in the resonance state.
- @@ By connecting the microphone to the oscillator, wave pattern is better and easily determinable.
- @@ This apparatus is used to find out sound wave on both opened and closed tube, and to observe the stationer sound wave pattern inside the tube by the oscilloscope.

Component List

Cat. code	Description	Qty
A PWS 160 01 161	Resonance Tube	1 set

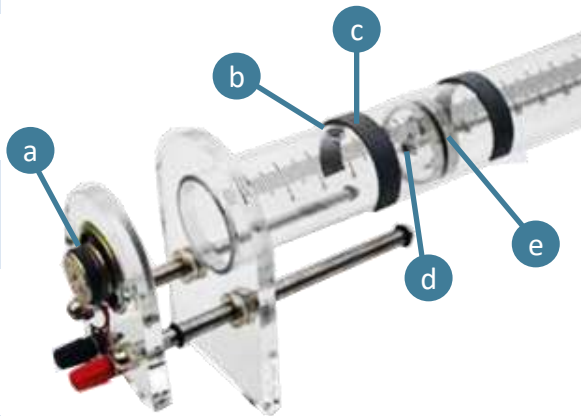
a Loudspeaker
Loudspeaker is mounted on plexiglass foot; movable around the open end of the tube

b Wind Musical Instrument Hole
There is a pair of holes to observe the influence of the opened and closed hole on the wind musical instrument. These holes can be shut by its shutter when the hole is not in use.

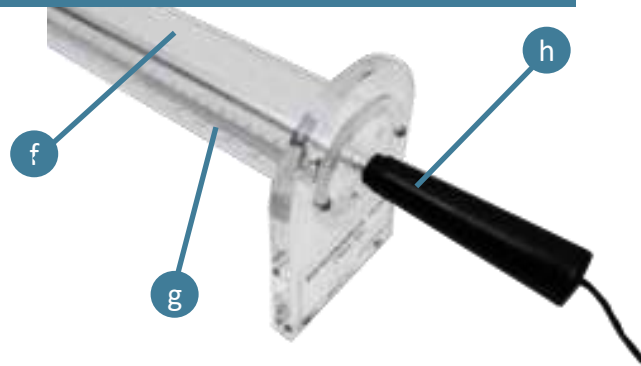
c Hole Ring Cover
Two slip ring covers are provided to close the hole for performing other experiments.

d Microphone
Mounted on the end of position adjuster rod to make it easier when finding the position of the node and antinode inside the tube; microphone is connected to an oscilloscope

e Piston
Piston is used to adjust the length of the tube. It can be easily moved inside the tube by the position adjuster rod.

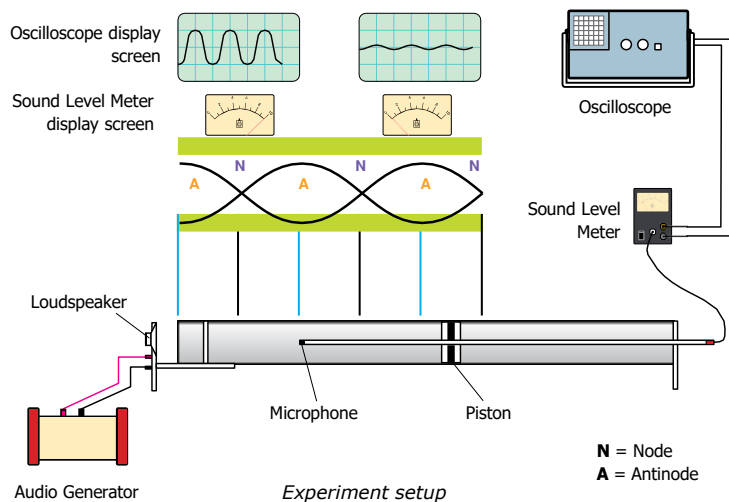


Cat. code	Description	Qty
f	Tube Fine quality plexiglass tube, equipped with millimeter graduation to make it easy to find out the length of the tube and the microphone position	
g	Graduated Tube To easily facilitate the tube measurement length and to determine stationer wave nodes and antinodes inside the tube.	
h	Position Adjuster Rod This rod is used to adjust the position of the piston and the microphone.	
B PWS 160 02	Microphone Microphone is mounted on the end of the position adjuster rod to make it easy to find the position of standing wave node and antinode inside the tube. Microphone is connected to an oscilloscope through an amplifier unit.	1 pc



C PWS 160 03	Sound Level Meter Consisting of analog meter to show the sound strength (amplitude) in 0 - 10 scale. Equipped with microphone amplifier to make it visible on the oscilloscope; battery operated, 9 volt.	1 pc
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Node and Antinode on the Resonance State



Supporting Tools

For detailed information, please refer to page 70 - 73.

Cat. Code	Tool	Qty
ESP60296	Audio Frequency Generator	1 pc
GME 236	Oscilloscope 30 MHz, Eduscope 3000	1 pc

Experiment Topics

- Experiment 01 Resonant Frequencies of a Tube
- Experiment 02 Standing Wave in a Tube
- Experiment 03 Speed of Sound in Air Wind Instrument
- Experiment 04



Experiment 02 Standing Wave in a Tube



Resonance Tube And Complements, Set

Resonance Tube and Complements, Set

Consists of:

- (ESP60340) Resonance Tube Set 1 pc
- (ESP60296) Audio Frequency Generator 1 pc
- Oscilloscope 1 pc
- Connecting Lead DC 50 cm, Black 2 pcs
- Connecting Lead DC 50 cm, Red 2 pcs
- Manual Book 1 exp

RESONANCE TUBE SET (ESP60340)

Resonance tube gives the easy of experiment about sound. Loudspeaker which is connected to the audio generator produces stable wave pattern with changeable sound frequency.

Dimentions : Overall 1185 x 100 x 150 mm, Material : Flexiglass

Set Consist of : Resonance Tube 1 pc, Microphone 1 pc, Sound Level Meter 1 pc

Dimensions : (L) 122.00 x (W) 16.00 x (H) 14.50 cm, **Weight :** 2.475 kg **AUDIO FREQUENCY GENERATOR**

ESP60296

A tool wave signal generator, which produces a square wave, sinusoidal, triangle, saw, and pulse. 8 output impedance with enough power to drive the Vibration Generator (ESP60299) and Loudspeaker with Wood Holder, output to input to the Audio Frequency Amplifiers. Frequency Range : 0.1 Hz - 110 kHz, Distortion sinus wave is less than 2% (1kHz), Maximum output power : 3 watts at 8 load, Input Voltage 110/220 VAC, Protection fuse (fuse) : 0.5 A (him. 5 x 20 mm),

OSCILLOSCOPE 30 MHZ

Measuring limit : 30 MHz, The number of canals : 2, The rate of footage : 250 MS/s and 10.000 point recording data, Screen : Coloured TFT LCD 8 inch, Resolution : 800 x 600 pixels, Operating X-Y, Input voltage : 220V, Equipped with VGA terminal to connect oscilloscope with a projector as well as USB terminal communication and LAN to be connected to a computer Result of measurement/waveform can be stored in internal memory or flash disk Oscilloscope can also record the signals and replay the record. There are auto-scale function, FFT function, mathematical function to operate a signal of the two canals and 20 variable automatic measurements function Equipped with guidelines on menu "Help" Complete with probe intensity and manual book



Sound Velocity Meter

For measuring sound velocity through solids, liquids or gases; 4-digit, 26- mm LED display; signal is launched manually; stop signal detected by encapsulated electric microphone with waterproof membrane.

TECHNICAL DATA : Measuring range: 99.99 ms, Accuracy: 10 μs, Dial for adjusting sensitivity, Reset switch, Power supply: 4 x 1.5 V Mignon cells (included), rechargeable cells or external power supply 6 V / 500 mA, P3120-6N, Case: plastic, ABS, Case **Dimensions :** approx. 160 x 120 x 45 mm, Length of probe leads: approx. 150 cm each

ESP60345

Speed of Sound Kit

A transmitter and receiver for measurement of the velocity of sound by a modification of Hebb's method. The kit consists of a loudspeaker and a microphone, each mounted in a plastic case and fitted with 4mm sockets. The loudspeaker can be driven directly by a signal generator; the output of the microphone can be fed directly into an oscilloscope. Supplied with instructions.

Electrical Supply: N/A - Dimensions: 55 x 110 x 22mm each unit - Mass: 0.22kg total

ESP60344



NEW



ESP60343

Tuning Fork Pair With Resonance Box

The forks have threaded shanks and will screw in the box tops. Frequency of each is A (426). One fork is fitted with a sliding mass to alter its frequency. On sounding both forks, a clear 'beat' is produced. Supplied with one hammer. Size of box 180 x 88 x 53 mm approx.



ESP60350

Tuning Fork On Resonance Box

pair of tuning forks with frequency of 426.6 Hz, mounted on resonance box in the dimension of 180 x 90 x 50 mm. One of the tuning forks has an frequency adjuster on one of its leg which can be shifted up and down. It is equipped with a rubber club.

ESP60351



Senior High School



Microwave Apparatus with Goniometer ESP60312

- Microwave apparatus with goniometer is a set of tools which are used to learn the electromagnetic wave.
- Diffraction and interference experiment on the electromagnetic wave are very difficult to perform on the visible light wave length. With this apparatus, those characteristics can be easily observed.
- Reflection law experiment, diffraction on single slit, interference on double slits, polarization and Michelson interferometer can be performed by this apparatus.
- With goniometer, the setting of experiments that require a certain angle can be done easily.

Component List

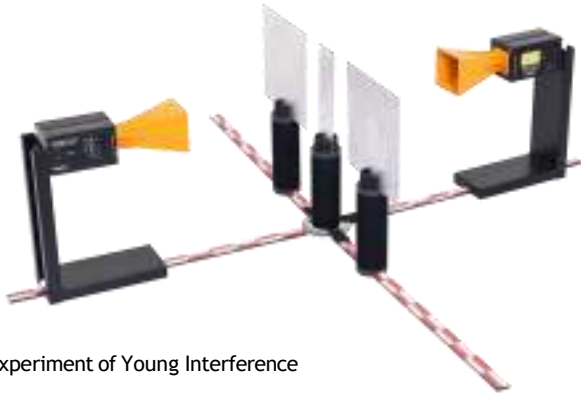
Cat. code	Component	Description	Qty
a PS000397	Transmitter	The 3 cm micro wave transmitter is a device that transmit radio wave (electromagnetic wave) at wavelength 3 cm. The wave characteristic is made in such way to make it resemble the characteristic of the light beam, thus this radio wave propagates in straight line.	1 pc
b PS000398	Receiver	The 3 cm micro wave receiver is a device that able to detect the presence of radio wave's shape which is transmitted by a transmitter. It is equipped with amplify mode to detect the weak wave.	1 pc
c TL000413	Transmitter and Receiver Stand Base	These are used as the transmitter and receiver seats. The bases are made of L-shape aluminum. There is a gap in the bottom side to slide the gonimometer.	2 pcs
d ESP 50/04	Aluminum Sheet 210 x 210 mm	This is used as micro wave reflector	2 pcs
e ESP 50/05	Aluminum Sheet 60 x 210 mm	This is used as a barrier in double slits interference (Young) experiment.	1 pc
f ESP 50/06	Plastic Sheet	This is used as half mirror reflector	1 pc
g ESP 50/07	Wire-grid Polarizer	This is used in polarization experiment	1 pc
H ESP 50/08	Plastic Stand Base	This is used to support the aluminum sheet, plastic sheet, and wire-grid polarization	3 pcs
I ESP 00085	Goniometer	Goniometer is an instrument to measure the angle of an object that being rotated to a precise angular position. The center part of goniometer keeps steady when the arm is rotated. It consists of one arm with protractor and one rotation arm	1 pc
J ESP 00414	Additional Arms of Goniometer	These are used as the additional rotation arm to make four angles in goniometer. These arms are used in one slit diffraction experiment, two slits diffraction experiment, and Michelson interference	2 pcs



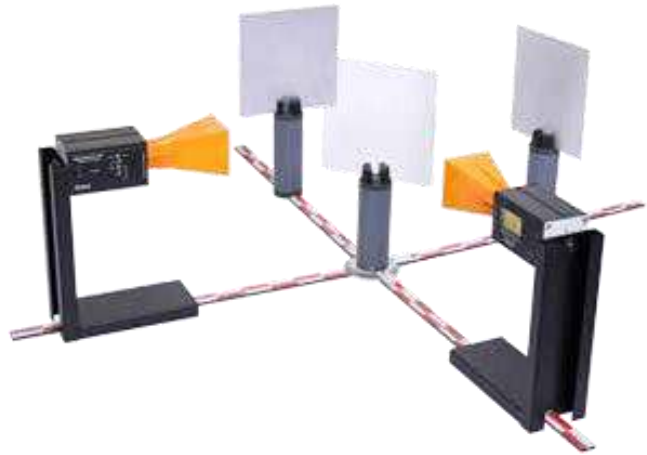
Cat. code	Component	Description	Qty
k ESP 00411	Extension of Plastic Stand Base -Center Part	This is used to support the plastic stand base, so that the center part of aluminum sheet, plastic sheet, or polarizer is parallel with the transmitter and receiver. Extension of plastic stand base in center part is placed in the center part of angular scale pointer.	1 pc
l ESP 000412	Extension of Plastic Stand Base -Side Part	This is used to support plastic stand base for aluminum sheet in one slit diffraction and Young interference experiment, so that the height of sheet is parallel with the transmitter and receiver. There is a gap in the bottom of extension so it can be placed in additional arm of goniometer.	2 pc
m ESP 000415	Plastic Head Bolt	This is used to install transmitter and receiver in the stand base	2 pcs
N ESP 00399	DC Power Supply Adapter for the Transmitter	This is the adapter cable to power the transmitter. This adapter uses voltage 12 V and current 1,2 A.	1 pc
o ESP 00326	Charger USB Cable for the Receiver	This is used to charge the receiver battery	1 pc

Experiment Topics

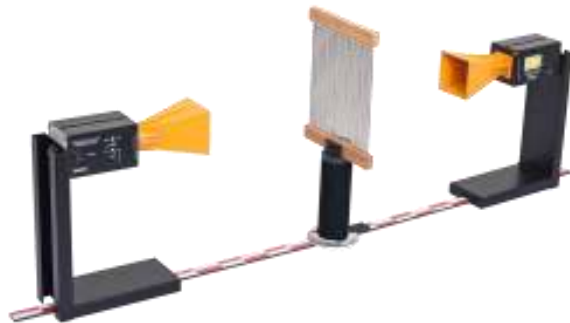
- E1 Reflection
- E2 Interference
- E3 Diffraction
- E4 Polarization



Experiment of Young Interference



Experiment of Michelson Interference



Experiment of Polarization



NEW



Tuning Fork Pair With Resonance Box 256 HZ

The forks have threaded shanks and will screw in the box tops. Frequency of each is 256 HZ. One fork is fitted with a sliding mass to alter its frequency. On sounding both forks, a clear 'beat' is produced. Supplied with one hammer. Size of box 180 x 88 x 53 mm approx.

ESP60349



Tuning Fork (4 Pcs/Set)

Turning Fork (4 pcs/set) Used in some experiments about sound, waves or other physical experiments Overall **Dimensions** : 160 x 95 x 25mm Material: Steel Equipped with a wooden box for storage of tuning fork **The set consists of:** C 512 Hz - A 426.6 Hz - F 341.3 Hz - D 288 Hz - **Dimension:** 18.00 (L) x 17.00 (W) x 5.00cm (H) - **Weight:** 0.500kg

ESP60352



Tuning Forks (5 PCS/SET)

Turning Fork (5 pcs/set) Used in some experiments about sound, waves or other physical experiments Overall size: 160 x 95 x 25mm Material: Steel Equipped with a wooden box for storage of tuning fork and rubber mallet The set consists of different frequencies : 128HZ,256HZ,320HZ,384HZ,512HZ

ESP60353

Tuning Forks (8 PCS/SET)

Set of 8Tuning Forks, in Wooden Case Aluminum alloy With rubber mallet
256Hz, 288Hz, 320Hz, 341Hz, 384Hz, 426Hz, 480 Hz, 512Hz

ESP60353/8

NEW



Tuning Forks (13 PCS/SET)

Set of 13 Tuning Forks, in Wooden Case Made of Steel (+ / -) 5% of stated frequency Designed for Physics Experimentation Perfect for sound study

ESP60354

Colour Mixing Apparatus

This self contained unit ideal for demonstration color mixing with the addition of the three primary colours : red, blue, and green. The brightness of the three colours can be controlled by individual switches. Hundred of

color combinations are possible, 3 inch screen , require AA batteries (not included)or connect to power supply.

ESP60357

Colour Mixing Demonstration Projection

A low voltage projection colour mixing apparatus. The unit comprises three individually moveable light heads, red, blue and green, which use individual lenses to project three coloured spots of light. By adjusting the heads the spots may be overlapped to produce the classic colour mixing pattern or superimposed to give a white disc that may be used for colour shadow work and secondary colour mixing determination. All three colours may be individually adjusted from 0% to 100% giving an almost limitless number of possible colours. Comes supplied with low voltage power supply.

ESP60359



NEW

Microphone

Piezo - electric crystal microphone, frequency response 60 to 10,000 Hz. Complete with 1.4 m screened lead, terminals and jack plug. General purpose piezo - electric crystal microphone, frequency response 60 to 10,000 Hz. Complete with 1.4 m screened lead, terminals and jack plug

ESP60355

NEW



Microphone

This multi-purpose microphone has been designed for a number of applications and experiments requiring the use and demonstration of audio input, including voice and music waveforms.

The electret condenser type microphone is mounted in a moulded plastic box with two standard 4mm output connectors, an on/off switch and power indicator. The microphone has an output impedance of 2.2Kohm and comes supplied with a battery. Velocity of Sound Switches (IPC-4269-W) - Electrical Supply: 9V Battery, type: PP3 - Dimensions: 68 x 120 x 36mm overall - Mass: 0.15kg - Sensitivity: -42db - Frequency Response: 20Hz to 20kHz - Output Impedance: 2.2kohm

ESP-4220-W

Colour Mixing Apparatus Demo

The Irwin Colour Mixing kit is designed to demonstrate primary and secondary colour mixing.

The kit comprises, essentially, a scaled up version of our small colour mixing apparatus. A robust, upright case contains



three, high powered accurately colour matched LEDs, each of which has infinitely adjustable brightness. Also supplied is a large, free-standing, primary colour shadow mask, a hand held secondary colour mask and a 12V plug top power supply.

The system allows the teacher to project large primary and secondary colour mixing disks onto any vertical surface and to adjust the colour saturation to mix virtually any colour (How do you produce brown?). Unlike other systems the purity of the resulting white is outstanding. The unit is extremely easy to use, is easily transportable and comes with full instructions. The only other requirements are a white wall and a darkened/blacked out room. The system may be used to demonstrate both secondary and primary colour mixing, colour shadows and colour reflection/absorption.

ESP60358





Newton Colour Disc With Motor

,Demonstration. Large size, mounted on moulded ABS base. Operates on 4 to 6 Volts DC with Newton's Color Disc.

ESP60362



Newton's Colour Disc Motor Driven

Newton disc 75mm dia. Mounted on the axle of the small motor, which is fitted on a plastic base-plate with connection sockets. Operates on 4-6 Volts DC.

ESP60361

Coloured Filters (Pk6)

mounted in plastic frames 50mm x 50mm. Suitable for use in optical boxes etc. While not suitable for photographic Work

ESP60364



Newton Colour Disc

To show that mixing of spectrum colours produces (nearly) white colour.

Dimensions : Colour Disc: 250mm dia - Pulley: 25mm dia and 108mm dia

Material: Disc and Pulley: Plastic - Support Rod: Steel Disc divided into 2 sector each with 7 different colours Mounted on a rotator and stand base A-shaped Producing nearly white colour when the disc is rotated Used with Pulley 100mm dia, Plastic

ESP60363



Optics Kit, Eduscience Prim (Set Of 1)

Ideal for use by Primary School students. The students can design their own experiments. This kit is used in learning the basic concepts and characteristics of prism and magnifying effect of a magnifying glass. Experiment topics: Decomposition of light., Magnifying effect of glasses. Prism behaviour.

Specification: The kit contains 1pc x prism and 1pc x magnifying glass. **Dimensions :** (L) 5.50 x 9W) 14.00 x (H) 1.50cm

ESP60391



Spectrum Tube Power Supply I

Specially designed box holds the tube firmly and prevents the student from touching the electrodes. A black panel behind the Spectrum tube eliminates distracting ambient light and protects the tube from breakage. Operates on 220V A/C at 50Hz and is suitable for 20/26 cm tubes.

ESP60377

NEW

Halogen Light Source

Equipped with 12 V, 21W Halogen bulb on stand, a rod including a luf, ensure the positioning of the light source on the base including stand and power unit

ESP60382



NEW



Camera Obscura Pin Hole

To illustrate the principle of image formation due to light rays passing through small apertures. Comprising a polished wooden box with a ground glass screen at the rear end and an adjustable sliding front with a hole. Made of steam beach.

ESP60386

NEW



Pin Hole Camera Kit

Includes: (8) 15x10x10cm cardboard boxes with hole, (1) Filament lamp, (50) sheets of black paper 20x25cm, (1) Mounter lamp holder with flex, (1) Packet of pins, (1) Set of Instructions

This is a physics experiment kit that is used to show the

principles of a pinhole camera. Uses cardboard boxes with light sources, lens, and paper to demonstrate a pinhole camera. Contains (8) Cardboard boxes 150 x 100 x 100 mm with hole, screen and lid, filament lamp, 50 sheets of black paper 200 x 250 mm, one 60 watts lamp, one mounted lamp holder with flex, one packet of pins

ESP60385

Spectrum Tube Power Supply II

High voltage power supply for spectrum tube. Equipped with spectrum tube holder,

Input voltage: 110/220VAC

Voltage output: 3 kV, 5mA (The output is continuously variable and is properly insulated)

Dimensions : 24.00 (L) x 18.00 (W) x 31.00 (H) cm

Weight : 3 kg

ESP60379





Spectrum Tubes

Made of glass, 26cm long overall, narrowed to capillary width for 8.5 to 10cm of the length. Metal wires holding the electrodes are sealed through the ends and welded to metal caps, which have loops for connecting wires.

ESP60366	Oxygen	ESP60370	Argon	ESP60374	Sulphur
ESP60367	Neon	ESP60371	Carbon Di Oxide	ESP60375	Xenon
ESP60368	Helium	ESP60372	Hydrogen	ESP60376	Krypton
ESP60369	Nitrogen	ESP60373	Iodine Vapour		



**Optics Kit
ESP60392**

- The guide book consists of 23 experiments.
- The experiments are related to the principle of propagation, reflection, refraction, object image, microscope, and other optic experiment

Component List

Consists of 51 components, packed in a plastic injection moulding box. Dimensions: 61 × 44 × 16 cm. Weight: 5.64 kg.

Cat. code	Component	Qty	Cat. code	Component	Qty
FPT 16.01/65	Optic Table	1 pc	FPT 16.16/86	Concave Lens with Holder, f = -100 mm	1 pc
FPT 16.02/66	Precision Rail 50 cm	3 pcs	FPT 16.17/87	Clamp Rider	4 pcs
FPT 16.03/67	Rail Connector	2 pcs	FPT 16.18/88	Semi Circular Lens Ø 60 mm	1 pc
FPT 16.04/68	Foot for Rail	2 pcs	FPT 16.19/89	Prism Right Angle 30 x 30 x 40 mm	1 pc
FPT 16.06/76	Lamp Housing with Festoon Bulb	1 pc	FPT 16.22/92	Biconvex Lens, Glass	1 pc
FPT 16.06/76-272	Festoon Bulb 12V, 18W	2 pcs	FPT 16.23/93	Combination Mirror	1 pc
FPT 16.07/77	Diaphragm Slide Holder	1 pc	FPT 16.24/94	Biconcave Lens, Glass	1 pc
FPT 16.08/78	Diaphragm 5 Slit	1 pc	FPT 16.26/98	Glass Block 60 x 40 x 20 mm	1 pc
FPT 16.09/79	Diaphragm 1 Slit	1 pc	FPT 16.11/81	Candle Holder	1 pc
FPT 16.25/95	Diaphragm Arrow	1 pc	MGE 100 03	Rectangel Plastic Tank	1 pc
FPT 16.12/82	Translucent Screen, 110 x 100 mm	1 pc	MGE 100 04	Square Plastic Tank	1 pc
FPT 16.13/83	Convex Lens with Holder, f = +50 mm	1 pc	POG 100 03	Mirror Concave with Holder, f = +100 mm	1 pc
FPT 16.14/84	Convex Lens with Holder, f = +100 mm	1 pc	POG 120 03	Mirror Convex with Holder, f = -100 mm	1 pc
FPT 16.15/85	Convex Lens with Holder, f = +200 mm	1 pc	FPT 16.07	Slide Cover	2 pcs



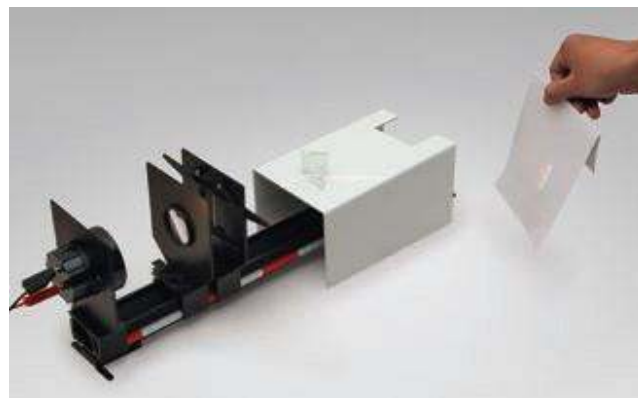
Supporting Tools

For detailed information, please refer to page 70 - 73.

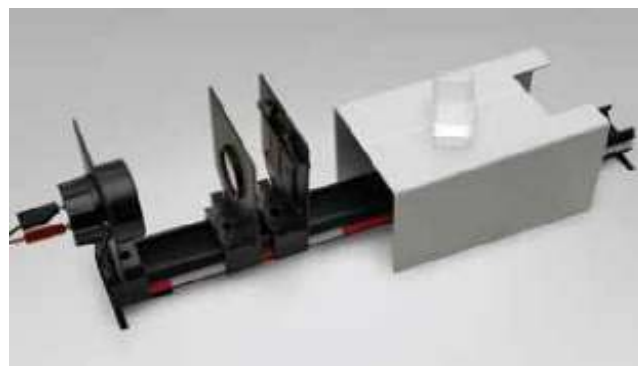
Cat. code	Tool	Qty
ESP60751	Power Supply	1 pc
ESP 203 03	Folding Flat Mirror	1 pc

Experiment Topics

- 01 Propagation of Light
- 02 Reflection of Light on a Plain Mirror
- 03 Reflection of Light on a Folding Plain Mirror
- 04 Reflection of Light on a Concave Mirror
- 05 Image on a Concave Mirror
- 06 Reflection of Light on a Convex Mirror
- 07 Image on a Convex Mirror
- 08 Refraction of Light on a Semicircular Glass
- 09 Total Reflection
- 010 Refraction of Light on a Plan-Parallel Glass
- 011 Refraction on Liquid Substances 012
- 014 Refraction of Light on a Combination Lens
- 015 Image by Convex Lens
- 016 Object Distance, Image Distance and Focal Length
- 017 Dispersion of Light
- 018 The Eye
- 019 Eye Defects
- 020 Magnifying Glass
- 021 Astronomical Telescope
- 022 Microscope
- 023 Optical Illusions



08 Refraction of Light on a Semicircular Glass



011 Refraction on Liquid Substances



013 Refraction on Concave Lens



016 Object Distance, Image Distance and Focal Length



NEW



Simple Optics Set

Simple Optics Set consist of 3 V-shape Wooden lens holder , white screens,2 plan mirrors , glass sheet , plastic beaker , 2 prims , 2 lenses / mirror support , flashlight , candle , set of 5 color filters , 2 convex lens and concave lens , Pla NO convex lens

ESP60388

OPTICS & EYE KIT

kit consisting of :

- (01) Square sink with Magnetic Frosted glass
- (02) Rectangular glass brick
- (03) Triangular prism
- (04) Optical experiment device
- Round sink with Magnetic Transflectoscope
- (05) Color filter set
- (06) Battery case with Magnetic
- (07) Single line laser source with Magnetic
- (08) Three-wire laser source with Magnetic
- (09) Curved receiving screen, magnetic
- (10) Semicircular lens, magnetic
- (11) Double convex lens, $f=+50\text{mm}$,magnetic
- (12) Double concave lens, $f=-75\text{mm}$,magnetic
- (13) Double convex lens, $f=+75\text{mm}$,magnetic
- (14) Double concave lens, $f=-300\text{mm}$,magnetic

NEW



- (15) Double convex Lens, $f=+100\text{mm}$,magnetic
- (16) Plane mirror, C-shaped,magnetic
- (17) Plane mirror, magnetic
- (18) Plano convex lens, $F=+300\text{mm}$,magnetic
- (19) Double convex lens, $f=+300\text{mm}$,magnetic
- (20) Double convex lens, $f=+150\text{mm}$,magnetic
- (21) Cross slot
- (22) Flat mirror base
- (23) Laser pointer
- (24) Rectangular triangle

ESP60396C

NEW



ESS OPTICS KIT 1 PC

Propagation of light

- OP-1 Light propagation rectilinearly
- OP-2 Shadow
- OP-3 Core shadow and half shadow
- OP-5 Solar and lunar eclipses

Mirrors

- OM-1B Reflection of light
- OM-1 Reflection of light on a plane mirror
- OM-2 Object and image on a plane mirror
- OM-3 Reflection parallel rays on a concave mirror
- OM-4 Image of a point object formed by a concave mirror
- OM-7 Reflection of parallel rays on a convex mirror
- OM-8 Image of a point object formed by convex mirror

Refraction

- OR-3 Refraction of light
- OR-3A Determining the refractive index of glass
- OR-2 Refraction at the transition from air into water
- OR-2A Refraction at the boundary between two liquids
- OR-2B Refraction at the glass-air boundary
- OR-4 Total reflection
- OR-1 Refraction of light on plain parallel surface
- OR-5 Refraction trough a prism
- OR-5A Deviating prisms
- OR-5B Reversing prisms

Lenses

- OL-1 Refraction at convex lenses
- OL-2 Construction of image formed by a convex lens
- OL-6 Refraction at concave lenses
- OL-7 Construction of concave lens image
- OL-7A The three "special rays" on concave lens
- OL-10 Focal length of lens combinations
- OL-3 Spherical aberrations
- OL-11 Chromatic aberration

Colour

- OC-5 Colour dispersion with a prism
- OC-6 Reunification of spectral colours
- OC-7 Complementary colours
- OC-2 Colour mixing
- OC-8 Subtractive colour mixing
- OC-3 Colours of object

The human eye

- OE-1 The eye OE-2 Short sightedness
- OE-3 Long sightedness
- OE-4 Optical illusions
- OE-5 Defective accommodation in old age and its correction

ESP60390





Optics Kit 5 ESP60396

- The apparatuses are precisely designed for easier experiment setup and successful result.
- The guide book consists of 49 experiments.

Component List

Consists of 51 components, packed in a plastic injection moulding box.
Dimensions: 61 × 44 × 16 cm. Weight: 5.64 kg.

Cat. code	Component	Qty	Cat. code	Component	Qty
POG 460 01	Ray Box with Halogen Lamp, 12 V, 20 W	1 pc	FPT 16.12/82	Translucent Screen	1 pc
POG 460 02	Ray Box Holder	1 pc	POG 550 04	Slide Model	1 pc
POG 250	Semi Circular Lens, Ø 76 mm	1 pc	POG 550 03	Slide with Hole set of 4	1 pc
POG 310 02	Prism, Trapezoid	1 pc	FPT 16.25/95	Diaphragm Arrow	1 pc
POG 310 01	Prism, Right Angle	1 pc	FPT 16.07	Slide Cover	2 pcs
POG 240 01	Plano-Convex Lens	2 pcs	FPT 16.09/79	Diaphragm 1 Slit	1 pc
POG 260 01	Plano-Concave Lens	1 pc	POF 310	Slide for Polarization	1 pc
POG 400 01	Optical Disc with Graduation POG 700	1 pc	POF 180 01	Diffraction Grating	1 pc
POG 700	White Screen, 100 × 110 mm	1 pc	POF 550	Cuvette Plastic	1 pc
FPT 16.23/93	Combination Mirror	1 pc	POF 600	Photoelastic Solid	1 pc
POG 460 03	Diaphragm, 1 and 3 Slits	1 pc	POF 225	Colour Filter, RGB-CMY	1 pc
POG 460 04	Diaphragm, 1 Wide and 5 Slits	1 pc	FPT 16.03/67	Rail Connector	1 pc
POG 350	Hollow Plastic Tank	1 pc	FPT 16.04/68	Foot for Rail	2 pcs
POG 320	Prism, 10°	1 pc	FPT 16.02/66	Precision Rail	2 pcs
FPT 16.06/76	Lamp Housing with Festoon Bulb	2 pcs	POG 100 01	Concave Mirror with Holder, $f = + 75$ mm	1 pc
POG 050	Earth Moon Model	1 pc	POG 120 02	Convex Mirror with Holder, $f = - 150$ mm	1 pc
FPT 16.07/77	Diaphragm Slide Holder	2 pcs	POG 120 01	Convex Mirror with Holder, $f = - 75$ mm	1 pc
FPT 55/20	Prism, Equilateral Triangular	1 pc	POG 120 02	Convex Mirror with Holder, $f = - 150$ mm	1 pc
POG 550 02	Circular Disc in Mount	1 pc	FPT 16.13/83	Convex Lens with Holder, $f = +50$ mm	1 pc



Cat. code	Component	Qty
FPT 16.14/84	Convex Lens with Holder, $f = +100$ mm	1 pc
POG 200 01	Convex Lens with Holder, $f = +300$ mm	1 pc
FPT 16.16/86	Concave Lens with Holder, $f = -100$ mm	1 pc
POG 220 01	Concave Lens with Holder, $f = -300$ mm	1 pc
POG 680	Prism Table	1 pc
FPT 16.17/87	Clamp Rider	6 pcs
FCA 40	Polarizing Filter with Holder	2 pcs
POG 550 01	Diaphragm Single Hole	1 pc
POG 400 02	Optical Disc with Axle	1 pc
POF 265	Colour Stripe	1 pc
POF 265	Colour Filter RGB	1 pc
POF 265	Colour Filter CMY	1 pc
POF 265	Plain Mirror for Colour Mixing	3 pcs

Supporting Tools

For detailed information, please refer to page 70 - 73.

Cat. code	Tool	Qty
ESP60750	Power Supply 5 A, 12 V	1 pc

Experiment Topics

Propagation of Light

- OP-1 Light Propagates
- OP-2 Rectilinearly Shadow
- OP-3 Core Shadow and Half
- OP-4 Shadow Lunar Phases
- OP-5 Solar and Lunar
- OP-6 Eclipses Pinhole Camera

Mirrors

- OM-1 Reflection of Light on a Plane Mirror
- OM-1A Reflection of Light on a Curved Mirror
- OM-2 Object and Image on a Plane Mirror
- OM-3 Reflection of Parallel Rays on a Concave Mirror
- OM-4 Image of a Point Object Formed by a Concave Mirror
- OM-5 Three "Special" Rays for Image Construction in a Concave Mirror
- OM-6 Locating the image of an object formed by concave mirror
- OM-7 Reflection of Parallel Rays on a Convex Mirror
- OM-8 Image of a Point Object Formed by Convex Mirror
- OM-9 Three "Special" Rays for Image Construction in a Convex Mirror
- OM-10 Image on a Convex Mirror

Refraction

- OR-1 Refraction of Light
- OR-2 Refraction from Lens into the Air and Total
- OR-3 Reflection Refraction of Light on Plain
- OR-4 Parallel Surface Refraction at the Transition
- OR-5 from Air into Water Refraction trough a Prism

Lenses

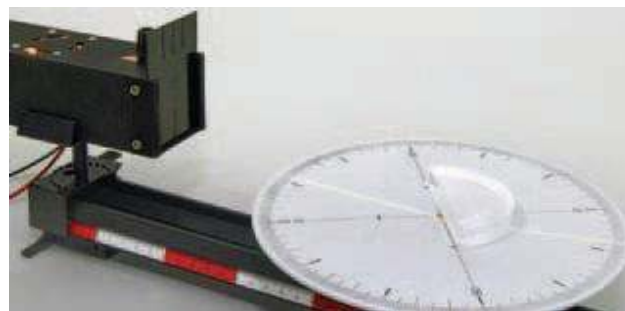
- OL-1 Refraction at Convex Lenses
- OL-2 Construction of Image Formed by a Convex
- OL-3 Lens Spherical Aberrations
- OL-4 Images by a Convex Lens
- OL-5 Object Distance, Image Distance and Focal
- OL-6 Length Refraction at Concave Lenses
- OL-7 Construction of Image formed by a Concave
- OL-8 Lens Image Formed by a Concave Lens

Colors

- OC-1 Dispersion of Light
- OC-2 Color Mixing
- OC-3 Colors of Object
- OC-4 Color of an Object when Viewed through Color Filter

The Eye

- OE-1 The Eye
- OE-2 Shortsighted
- OE-3 Longsighted
- OE-4 Optical Illusions



OR-1 Refraction of Light



OL-4 Images by a Convex Lens



Optical Instruments

OI-1	Magnifying
OI-2	Glass Slide
OI-3	Projector
OI-4	Microscope
OI-5	Astronomical Telescope Camera



OW-1 Diffraction by Grating

Wave Optics

OW-1	Diffraction by Grating
OW-2	Determination of the Wave Length of Light
OW-3	Polarization of Light
OW-4	Rotating of the Plane of Polarization by Inserting Solid Materials
OW-5	Model of a Saccharimeter
OW-6	Photoelasticity

Component Details**Precision Rail and Connector**

- Precision rail (FPT 16.02/66): 50 cm rail length made of anodized extrusion aluminum, completed with cm and mm graduation label.
- Rail connector (FPT 16.03/67): for connecting two rails to make it straight and rigid, made of ABS plastic, 20 cm long.
- Rail foot (FPT 16.04/68). It is mount on the ends of the connected rail, made of ABS plastic.
- Clamp rider (FPT 16.17/87) is made of ABS plastic. It is used as a movable self-clamping component holder on the rail precision. To loosen and move the clamp, press the two levers on the side.

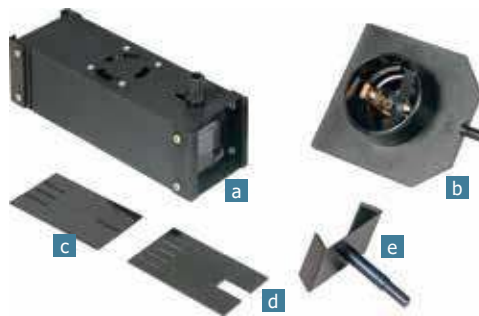
**Geometric Optic Experiment Tools**

- Handled lenses: concave and convex lenses, mounted on ABS plastic frames.
- Handled mirror: concave and convex mirrors, mounted on ABS plastic frames.
- Diaphragm slide holder (FPT 16.07/77): plastic frame with spring clamp on both faces, used to hold diaphragm, filter and grating slide.
- Translucent screen (FPT 16.12/82).
- White screen (POG 700).
- Prism table (POG 680), used to put the prism on the precision rail.
- Cover chips (FPT 16.07), used to adjust the diaphragm opening.
- Earth-Moon model (POG 050).



Light Source

- a. Raybox (POG 460 01): aluminum box completed with cooler fan, halogen bulb 12 volt, 20 watt with condenser lens.
- b. Lamp house (FPT 16 06/76). 12 volt, 18 watt bulb is mounted on rotatable holder to adjust the bulb filament position.
- c. Diaphragm, 1 slit and 3 slits (POG 460 03).
- d. Diaphragm, wide slit and 5 slits (POG 460 04).
- e. Raybox holder (POG 460 02) is used to mount the raybox on the precision rail.



Lens, Prism and Mirror

- f. Lens and prisms, made of polished acrylic.
- g. Combination mirror, made of chromed plastic.
- h. Flat mirror (POG 099).
- i. Plastic tank (POG 350).



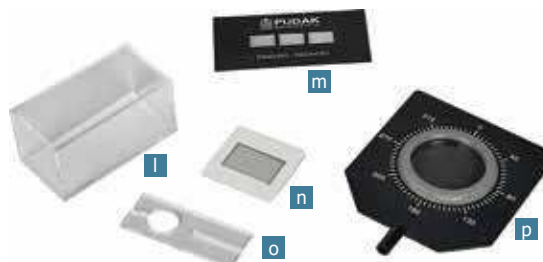
Optical Disc

- j. Optical disc with axle (POG 400 02), the disc is rotatable at its axis to show incoming ray angle, refraction angle or to observe the Snell's Law.
- k. Graduated optical disc without axle (POG 400 01).



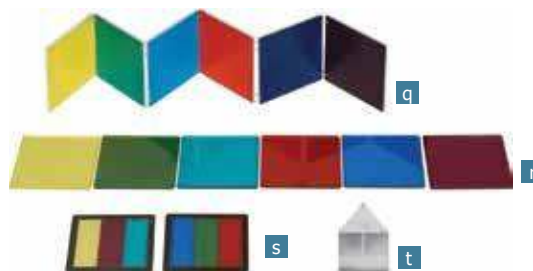
Wave Optics

- l. Plastic box (POF 550) is used to observe liquid polarization plane rotation.
- m. Diffraction grating (POF 180 01).
- n. Polarization slide (POF 310).
- o. Polarization filter (FCA 40) is used to produce polarization ray which can be used to observe the polarization symptom.
- p. Photo-elastic object (POF 600) is used to observe the double refraction on pushed or pulled transparent elastic object.



Color Experiment Tools

- q. Color chips (POF 265).
- r. Color filter, RGB-CMY (POF 225): red, green, blue, cyan, magenta, yellow; made of molded color plastic, dimension 5 × 5 cm.
- s. Color filter RGB (POF 210) and CMY (POF 215) are three colors slide RGB and CMY, used in color mixing.
- t. Triangular prism (FPT 55/20), dimension 30 × 30 mm.



Slides and Diaphragms

- u. Model slide set (POG 550 04).
- v. Ray blocker circle (POG 550 02).
- w. 4 holes diaphragm (POG 550 03).
- x. 1 hole diaphragm (POG 550 01).
- y. Arrow diaphragm (FPT 16 25/95).
- z. 1 slit diaphragm (FPT 16 09/79), 1 mm slit width.



Senior
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Physics

Optics Kit Panel Type ESP60398

- Magnetic mounting system for an easy and fast setup.
- ⑩ Experiment board dimension is 900 × 600 mm, large enough space for the experiment. Components are equipped with neodymium magnet. This system result is an easier component arrangement and positioning onto the board, such as light source and other optic tools .
- ⑩ Large optic component gives an optimum geometric visual.
- ⑩ Xenon lamp produces white and sharp light and lower power consumption rather than halogen.

Component List

Consists of 27 items.
Weight: 23.4 kg.

Cat. code	Component	Qty	Cat. code	Component	Qty
POG 465	Ray Box with Magnet	1 pc	POG 240 03	Lens Model, C-Shaped	1 pc
POG 461	Diaphragm, 1 and 2 slits	3 pcs	POG 245	Fiber Optic Model	4 pcs
POG 462	Diaphragm, 3 and 5 slits	2 pcs	POG 110	Plane Mirror	1 pc
POG 260 02	Lens Model, Plano-Concave	2 pcs	POG 099 01	Plane Mirror for color mixing	1 pc
POG 240 02	Lens Model, Plano-Convex	1 pc	POG 101	Flexible mirror	1 pc
POG 251	Lens Model, Semi Circular	2 pcs	POG 355 01	Object for shadowing, Hemisphere	1 pc
POG 310 03	Prism Model, Right Angle	1 pc	POG 355 02	Object for shadowing, Cylinder	1 pc
POG 311	Prism Model, Trapezoid	1 pc	POG 480 02	Arrow, 80 mm	1 pc
POG 312	Prism Model, Equilateral	1 pc	POG 480 01	Arrow, 40 mm	1 pc



code	Component	Qty
POG 465	Ray Box with Magnet	1 set
POG 461	Diaphragm, 1 and 2 slits	2 pcs
POG 462	Diaphragm, 3 and 5 slits	2 pcs
POG 260 02	Lens Model, Plano-Concave	1 pc
POG 240 02	Lens Model, Plano-Convex	2 pcs
POG 251	Lens Model, Semi Circular	1 pc
POG 310 03	Prism Model, Right Angle	1 pc
POG 311	Prism Model, Trapezoid	1 pc
POG 312	Prism Model, Equilateral	1 pc
POG 240 03	Lens Model, C-Shaped	1 pc
POG 245	Fiber Optic Model	1 pc
POG 110	Plane Mirror	1 pc
POG 099 01	Plane Mirror for color mixing	3 pcs
POG 101	Flexible mirror	1 pc
POG 355 01	Object for shadowing, Hemisphere	1 pc
POG 355 02	Object for shadowing, Cylinder	1 pc
POG 480 0 02	Arrow, 80 mm	2 pcs
POG 480	Arrow, 40 mm	2 pcs
POF 215 01	Color filter disc, Subtractive (CMY)	1 set
POF 210	Color Filter, RGB	1 pc
POF 220 01	Color filter, Red	2 pcs
POF 220 02	Color filter, Blue	2 pcs
POG 400 03	Optical Disc with Degree Scale, Magnetic	1 pc
POG 490	Projection Wedge	1 pc
POG 351	Cuvette with magnet	1 pc
GSN 245	TPS Frame, 1200 mm	1 pc
GSN 246	Adhesive Magnetic Board	1 pc

Experiment Topics

Diffusion of Light

- P 31 01 Propagation of Light
- P 31 02 Shadow
- P 31 03 Lunar Eclipse (Model)
- P 31 04 Solar Eclipse (Model)

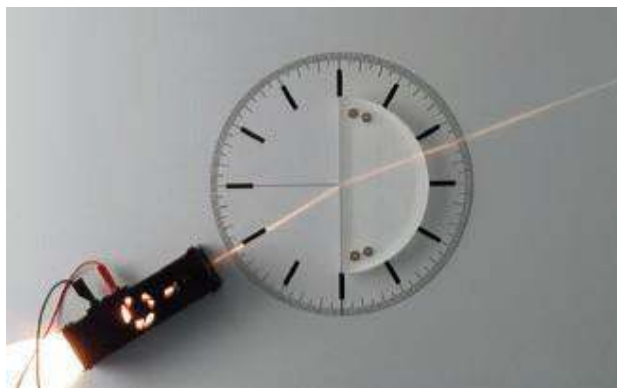
Reflection

- P 32 01 The Law of Reflection
- P 32 02 Rotating Mirror Regular
- P 32 03 Reflection Diffuse
- P 32 04 Reflection
- P 32 05 Image Point on a Plane Mirror
- P 32 06 Virtual Image on a Smooth Mirror
- P 32 07 Concave Mirror

Supporting Tools

For detailed information, please refer to page 70 - 73.

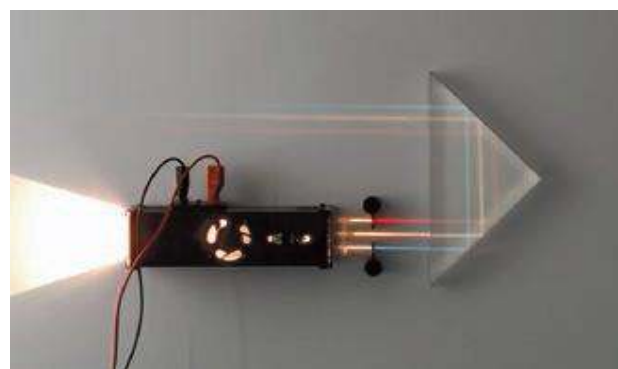
Cat. code	Tool	Qty
ESP60751	Power Supply 5 A, 12 V	1 pc
ESP57916	Cocnnecting Lead, 100 cm, Black	2 pcs
ESP57917	Connecting Lead, 100 cm, Red	2 pcs



P 33 01 Refraction of Light



P 33 06 Basic Principle of a Photoconductor



P 33 11 Inverting Prism



Lenses

- P 34 01 Refraction at Convex Lens
- P 34 02 Refraction at Concave Lens
- P 34 03 Position of The Focal Point of a Biconvex Lens
- P 34 04 Position of The Focal Point of a Thin Planoconvex Lens
- P 34 05 Position of The Focal Point of a Thick Planoconvex Lens
- P 34 06 Refractive Effect of Convergent and Divergent Lenses on Diverging
- P 34 07 Lens Systems
- P 34 08 Special Rays on a Convergent Lens Special
- P 34 09 Ray Paths on a Plano-Convex Lens Special
- P 34 10 Ray Paths on a Concave Lens
- P 34 11 Path of Rays When Forming an Image on a Convergent Lens
- P 34 12 Path of Rays When Forming an Image on a Divergent Lens

The Eye

- P 35 01 Ocular Accommodation
- P 35 02 Faulty Vision and Its Correction - Near-Sightedness
- P 35 03 Faulty Vision and Its Correction - Far-Sightedness

Optical Instruments

- P 36 01 Path of Rays in a Single Lens Reflex
- P 36 02 Camera Path of Rays in a Slide Projector
- P 36 03 Model of a Microscope
- P 36 04 Model of an Astronomical Telescope
- P 36 05 Model of a Galilean Telescope

Color

- P 38 01 Dispersion of Color
- P 38 02 Spectral Colors Cannot Be Further Dispersed
- P 38 03 Converging Spectral Colors To Make White
- P 38 04 Mixed Color of a Partial Spectrum
- P 38 05 Complementary Colors - Color Theory
- P 38 06 Subtractive Mixing Colors
- P 38 07 Additive Mixing Colors

Component Details**Panel Board**

- a. Adhesive magnetic board (GSN 246), white laminated metal panel, dimension of 900 × 600 mm.
- b. TPS frame system 1200 mm (GSN 245), aluminum extrusion frame with powder coating paint steel foot.



P 34 05 Position of The Focal Point of a Thick Planoconvex Lens

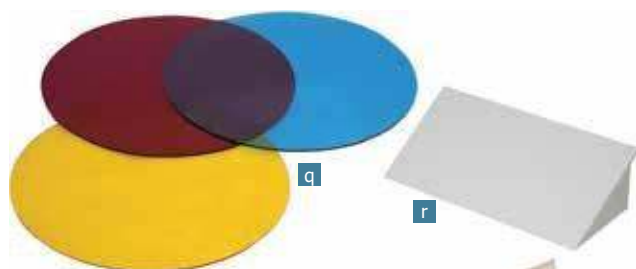
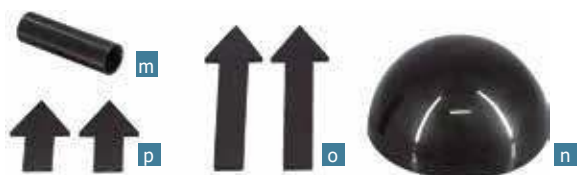


P 38 06 Subtractive Mixing Colors



P 38 07 Additive Mixing Colors





Light Source, Magnetic

Consisting of 2 light sources.

- a. Raybox with xenon lamp 6 volt, 20 watt; aluminum box completed with cooling fan (POG 465).
- b. Diaphragm, 3 and 5 slits (POG 462).
- c. Diaphragm, 1 and 2 slits (POG 461).

Lenses and Prism, Magnetic

Made of shaped and polished acrylic; dimension is large with 20 mm thickness and 200 mm long.

- d. Plan concave lens model (POG 260 02).
- e. Plan convex lens model (POG 240 02).
- f. Half circular lens (POG 251).
- g. Square prism (POG 310 03).
- h. Trapezoid prism (POG 311).
- i. C shape lens (POG 240 03), photo conductor model.

Mirror, Magnetic

- j. Flexible mirror (POG 101); made of stainless steel, adjustable focus according to the shaped curvature.
- k. Flat mirror (POG 110).
- l. Flat mirror for color mixing (POG 099 01).

Pointer and Obstruction Object, Magnetic

- m. Cylindrical object for moon model (POG 355 02).
- n. Half ball object for earth model (POG 355 01).
- o. Pointer arrow, 80 mm long (POG 480 02).
- p. Pointer arrow, 40 mm long (POG 480 01).

Color Experiment Tools

- q. Color filter disc; subtractive; CMY (POF 215 01); set of filter colored disc cyan, magenta and yellow.
- r. Inclined plane screen, magnetic (POG 490).
- s. Red color filter, magnetic (POF 220 01).
- t. Blue color filter, magnetic (POF 220 02).
- u. Additive color filter; RGB (POF 210); three colored slide for color mixing.
- v. Equilateral triangle prism (POG 312); flint prism holder with lock bolt and magnetic mounting.

Accessories

- w. Cuvette with magnet (ESP 351).
- x. Optic fiber model (ESP 245).
- y. Magnetic optic disc, with scales (ESP 400 03).



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Optics Experiment Kit ESP60400

- The Optical Experiment Kit is designed to perform a few basic optical experiments such as the measurement of lens' focal point, images that is generated by convex and concave lens and mirrors, and even the proof of concept of a telescope.
- This kit has been designed and manufactured with wit and precision so that the optical experiment that requires moving objects by means of sliding can be done seamlessly.

Component List

Consisting of 23 components, packed in a plastic injection moulding box. Dimension: 62 × 30 × 9 cm. Weight: 3.8 kg.

Cat. code	Component	Qty	Cat. code	Component	Qty
POF 100	Precision Rail 100 cm	2 pcs	POG 220 01	Concave Lens with Holder, f = -300 mm	1 pc
FPT 16.17/87	Rail Clamped Holder	5 pcs	POG 120 04	Mirror Convex with Holder, f = -35 mm	1 pc
FPT 16.04/68	Rail Footing	2 pcs	POG 120 01	Mirror Convex with Holder, f = -75 mm	1 pc
PT 16.03/67	Rail Connector	1 pc	POG 120 02	Mirror Convex with Holder, f = -150 mm	1 pc
FPT 16.06/76	Lamp Housing with Festoon Bulb	1 set	POG 100 04	Mirror Concave with Holder, f = 35 mm	1 pc
FPT 16.07/77	Diaphragm Slide Holder	1 pc	POG 100 01	Mirror Concave with Holder, f = +75 mm	1 pc
FPT 16.11/81	Candle Holder	1 pc	POG 100 02	Mirror Concave with Holder, f = 150 mm	1 pc
FPT 16.13/83	Convex Lens with Holder, f = +50 mm	1 pc	POG 550 07	Slide Model Signs	1 pc
FPT 16.14/84	Convex Lens with Holder, f = +100 mm	1 pc	FPT 16.25/95	Diaphragm Arrow	1 pc
POG 200 02	Convex Lens with Holder, f = +150 mm	1 pc	FPT 16.12/52	Translucent Screen	1 pc
FPT 16.16/86	Concave Lens with Holder, f = -100 mm	1 pc	POG 700	White Screen	1 pc
POG 220 02	Concave Lens with Holder, f = -150 mm	1 pc			

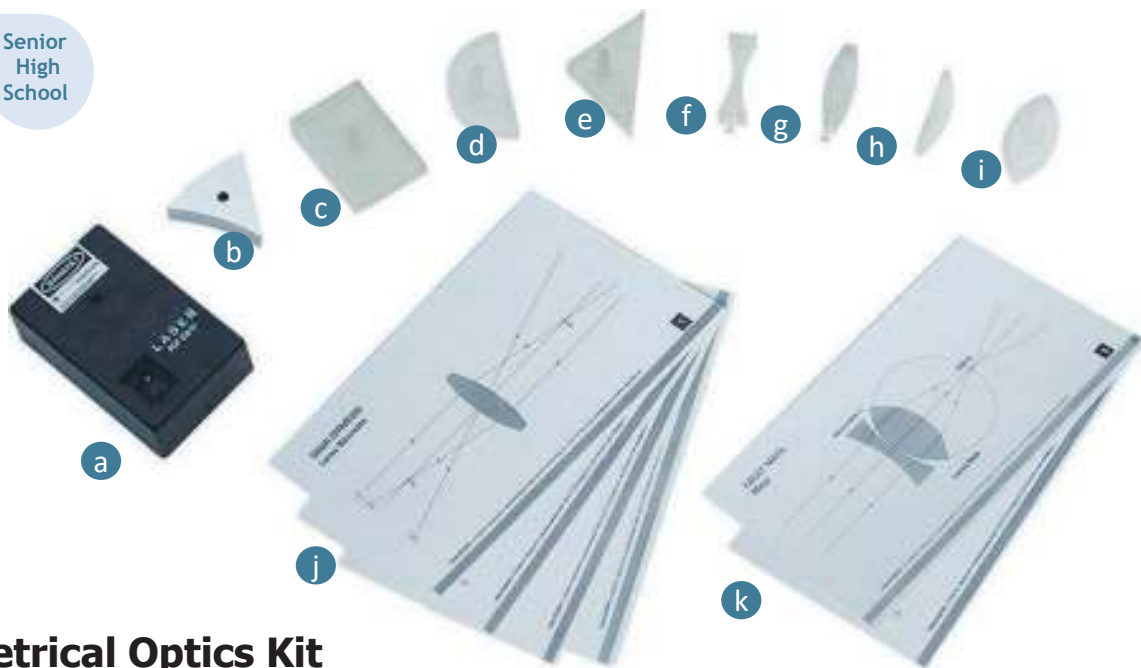
Experiment Topics

- | | | | |
|----|--|----|---------------------------------|
| E1 | Convex Lens Focal Point | E4 | Telescope |
| E2 | Real Images Formed by Convex Lens (Object Distance, Image Distance, and Lens Focal Length) | E5 | Images Formed by Concave Lens |
| E3 | Virtual Images Formed by a Convex Lens | E6 | Images Formed by Convex Mirror |
| | | E7 | Images Formed by Concave Mirror |



Junior High School

Senior High School



Geometrical Optics Kit ESP60399

- Easy to use.
- Using a sharper and brighter laser beam.
- Optical objects are made of durable acrylic.
- Battery operated light source.
- Geometrical optics kit can be used to do simple observations and experiments concerning the geometrical optics. Light reflection and refraction can be observed easily, especially with the presence of the special light print out on a mirror or lens.
- Consisting of laser box with accessories and several transparent objects in several shapes (square, semi circular, prism, and lens models), and combination mirror.

Component List

Cat. code	Component	Description	Qty
a POF 320 01	Laser with 3 Beams	3 diode lasers produce sharp and bright parallel beams.	1 pc
b FPT 16.23/93	Combination Mirror	Made of plastic, laminated with mirror material, side length 60 mm, height 15 mm.	1 pc
c FPT 19.08	Rectangular Prism with Holder	Made of injected acrylic.	1 pc
d FPT 19.12	Semi Circular Lens with Holder	Made of injected acrylic.	1 pc
e FPT 19.13	Prism, Right Angle with Holder	Made of injected acrylic.	1 pc
f FPT 19.10	Biconvex Lens with Holder	Made of injected acrylic.	1 pc
g POG 240 01	Plan-Convex Lens with Holder	Made of injected acrylic, white painted at one side.	1 pc
H FPT 19.09	Biconvex Lens, Thick with Holder	Made of injected acrylic.	1 pc
I POK 200 01	Special Ray Template	Describing the course of three special rays on the mirror or lens.	1 pc
J POK 200 02	Eye Defect Template	Describing the way of light at myopia and hipermetropi eye defects.	1 pc
K POF 320 01	Laser with 3 Beams	3 diode lasers produce sharp and bright parallel beams.	1 pc



Experiment Topics

Reflection

- Experiment 2.1** Reflection of a Ray Image
Experiment 2.2 Reflection on Curved Mirror
 Reflection on a Concave Mirror
 Reflection on a Convex Mirror

Refraction

- Experiment 3.1** Refraction and Law of Light Refraction Ray
Experiment 3.2 Index of Material
Experiment 3.3 Perfect Reflection 1
Experiment 3.4 Refraction by Alignment Surface Measuring of
Experiment 3.5 Ray Index Using Square Block Perfect
Experiment 3.6 Reflection 2
Experiment 3.7 Refraction by a Convex Lens 1
Experiment 3.8 Refraction by a Convex Lens 2
Experiment 3.9 Refraction by a Concave Lens

Eye Defects

- Experiment 4.1** Eye Defects - Myopia
Experiment 4.2 Eye Defects - Hypermetropia



LED Light Box & Optical Set

Comprehensive light and optics set for the advanced study of light and optics, with experiments to show refraction and reflection through various shaped prisms and lenses, the splitting of light into the rainbow colours, how internal reflection is used in fibre optic cables and the appropriate lenses to use to correct long and short sightedness. Includes a 3-beam ray box (each beam available in dual colours - white or red), 12 crystal-clear acrylic lenses and prisms, teachers' notes and 9 pupil work cards.



Light Kit (Set Of 1)

Ideal for use by Primary School students aged 6 - 12 years. Designed for teaching the basic concepts of light. The student will be able to understand the characteristics of light and they can perform experiments with their own ideas. Manufactured with high quality standard. **Dimension:** 12.50 (L) x 8.00(W) x 4.50(H) cm **The kit contains:** 1pc x Right Angle Prism 90° 12x21.2x42.4mm 1pc x Mirror - 1pc x Light Box Complete

ESP60406

ESP60402



Experiment 2.2 Reflection on Curved Mirror



Experiment 3.7 Refraction by a Convex Lens 1



Experiment 4.2 Eye Defects - Hypermetropia



Light Box And Optical Set

A Robust light box in matt black finish with a 12 V 24 W axial filament lamp with flexible leads. One end of the box takes a cylindrical convex lens in an adjustable sliding mount to enable production of convergent, parallel or divergent beams. Complete with accessories which consist of: 5 Plastic blocks, one rectangular, one semicircular, one equilateral prism 60 x 60 x 60, one right angle prism 90 x 60 x 30 and one right angle prism 90 x 45 x 45. 3 Cylindrical acrylic lenses: one double convex, one double concave, both having the same radius of curvature and one thick convex lens. 3 Mirrors, one plane glass, one curved parabolic and one curved semi-circular. 2 Slit plates, one with three narrow and one narrow slits, the other with four narrow and one wide slits 1 Set of eight colour filters, Red, Green, Blue, Cyan, Violet, Yellow, Orange and Magenta. 1 Set of coloured cards, Red, Green, Blue, Violet, Orange, Cyan, Yellow and Pink. Complete with one spare lamp, in Styrofoam box.

ESP60405



Junior High School

Senior High School



Ray Box Kit ESP60407

- Easy to use.
- Can perform 27 basic optic experiments.
- Optical objects are made of durable acrylic.

Ray box is a set of component which can be used to do simple observations and experiments concerning the basic characteristic of light, when it strikes a surface or propagates through transparent objects such as glass, water or plastic.

Component List

Consisting of 14 items, packed in a corrugated plastic box. Dimension: 46 × 27 × 11 cm. Weight: 1.15 kg.

Cat. code	Component	Description	Qty
a ESP 19.01	Raybox	The front end of the box produces wide, narrow, parallel, convergent, divergent beams. The rear end of the box produces light source for color mixing.	1 pc
b FPT 19.07	Lamp Bulb SBC 12 V, 24 W	Light bulb, SBC 12V / 24W, with straight filament	1 pc
c FPT 19.02	Semi Circular Mirror with Holder	Made of plastic, laminated with mirror material, diameter 69 mm, height 13 mm, can be used as a concave or a convex mirror.	1 pc
d FPT 19.03	Parabolic Mirror with Mirror	Made of plastic, laminated with mirror material, diameter 120 mm, height 13 mm, can be used as a concave or a convex mirror.	1 pc
e POG 460 03	Diaphragm 1 and 3 Slits	Size 50 x 77 mm, it has 1 and 3 slits.	1 pc
f FPT 19.05	Wide Slit and 4 Slits Diaphragm	Size 50 x 77, it has wide slit and 4 slits.	1 pc
g POF 225	Colour Filter, RGB-CMY	Size 50 x 77, consisting of 5 colors, blue, red, green cyan and yellow.	1 set
H FPT 19.10	Biconvex Lens with Holder	Made of injected acrylic with holder.	1 pc
I FPT 19.09	Biconvex Lens, Thick with Holder	Made of injected acrylic with holder.	1 pc
J FPT 19.11	Biconcave Lens with Holder	Made of injected acrylic with holder.	1 pc
K FPT 19.13	Prism, Right Angle with Holder	Made of injected acrylic with holder.	1 pc
L FPT 19.14	Prism, Equilateral with Holder	Made of injected acrylic with holder.	1 pc
M FPT 19.12	Semi Circular Lens with Holder	Made of injected acrylic with holder.	1 pc
n FPT 19.08	Rectangular Prism with Holder	Made of injected acrylic with holder.	1 pc



Experiment Topics

Reflection

- Experiment 2.1 Reflection of a Ray Image
- Experiment 2.2 Reflection of Image Ray
- Experiment 2.3 Convergent, Divergent, Parallel
- Experiment 2.4 The Distance of Object and Shadow to the Flat Mirror
- Experiment 2.5 Double Reflection
- Experiment 2.6 Rotation Effect of Flat Mirror to the Ray Reflection
- Experiment 2.7 Lateral and Vertical Inversion on Flat Mirror Reflection on Curved Mirror
- Experiment 2.8 Reflection of Light by Curves Shaped Ball Mirror (Spherical)
- Experiment 2.9 Spherical Aberration

Refraction

- Experiment 3.1 Refraction and Law of Light Refraction
- Experiment 3.2 Ray Index of Material
- Experiment 3.3 Perfect Reflection 1
- Experiment 3.4 Refraction by Alignment Surface
- Experiment 3.5 Measuring of Ray Index Using Square Block
- Experiment 3.6 Double Refraction by a Prism
- Experiment 3.7 Minimum Deviation Angle
- Experiment 3.8 Perfect Reflection 2
- Experiment 3.9 Refraction on Two Prisms
- Experiment 3.10 Refraction by a Convex Lens 1
- Experiment 3.11 Refraction by a Convex Lens 2
- Experiment 3.12 Refraction by a Concave Lens
- Experiment 3.13 Dispersion of Light by Prisms
- Experiment 3.14 Merging back the White Light Spectrum



Experiment 2.7
Reflection on
Curved Mirror



Experiment 3.12
Refraction by a
Concave Lens



Experiment 4.4
Color Addition

Color

- Experiment 4.1 Opaque Object Colors
- Experiment 4.2 Color It When Viewed Using Color Filters
- Experiment 4.3 What Color Can Past the Color Filter?
- Experiment 4.4 Color Addition



Ray Box

The front end of the box produce wide, narrow, parallel, convergent, divergent beams. The rear end of the box produce light source for colour mixing. **Overall Dimensions** : 17 x 9 x 9 cm **Material** : Plastic; This component is part of Ray box Kit. **Dimensions** : (L) 17.00 x (W) 9.00 x (H) 9.00 cm **Weight** : 0.280 kg

ESP60410

Ray Box With Magnetic Base

Ray box with magnetic base, variable focus. Designed to be placed on a metal support like table, board, bench. Equipped with 12V 21W bulb. Supplied with two slits.



ESP60409



Ray Box Raymond

An inexpensive ray box designed specifically for primary and lower secondary use. The raybox is housed in an ABS case with fixed slits - one single slit and one set of triple slits allowing two groups to work simultaneously. Raymond also has in-built primary colour filters which, with the use of two plane mirrors, allow the overlapping colour mixing discs to be projected. Operates on 6 V AC or DC Comes complete with two plane mirrors and a spare lamp.

ESP60408

Laser Ray Box Red Laser

The Battery Laser Ray Box has many advantages over a standard ray box. These include: Battery operated - technicians do not need to move power supplies from lab to lab No more broken (and expensive) ray box lamps No more burned fingers - the laser ray box runs cold No need to blackout the lab - just switch off the lights Class II laser - safe for class use ; Push switch operated (latching). Batteries last about a year and are easily replaced (2 x AAA) Pk of 10



ESP60413



Laser Optical Bench

Three carriers, one mirror, three brown observations, one prism fixture Two slit mirror holders, two concave / convex lenses One wrist and triangular prism, three film mounts (laser generator sold separately) ,Size 480*310*140mm 4.5Kg• Diffraction experiments with a single slit. Experiment of diffraction interference by double slit. Diffusion of light by convex and concave lenses - Refraction experiment by prism - Reflection of light by mirrors. 3 carriers, 1 mirror, 1 prism fixture Two slit mirror fixtures, two concave / convex lenses One wrist and triangular prism, here film mounts 1 optical bench (laser generator optional selling).

ESP60415





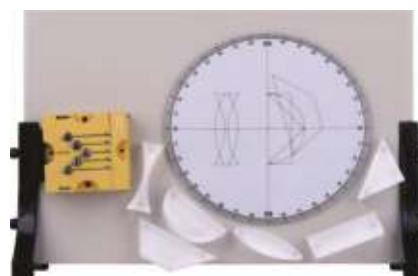
Laser Source Semiconductor 630nm

This laser (ESP-2588-L) emits an intense monochromatic red beam of wavelength 630nm at 0.9mW (Class II operation). Typical beam divergence is approximately 1 millirad. The laser is ideal for the demonstration of the behaviour of light in a visually effective way, reinforcing the practical work carried out by pupils using white light. It is an essential tool to develop basic understanding of the passage of light through different media, slits etc. The laser beam can be modulated by applying an external digital or analogue waveform to the 3.5mm jack socket on the rear panel. Alternatively the beam can be modulated by the internal generator which produces 0.1µs pulses at approximately 1MHz. This allows speed of light experiments to be easily performed. The passage of light through light guides and optical fibres can be demonstrated by filling a glass or plastic tube or U-tube with very dilute milk. The laser is powered by a 6LR61 (PP3) battery or external smoothed and regulated supply, has adjustable focus, no warm up time and has a key operated safety switch. Housed in a robust anodized aluminum case. Description: Electrical Supply : 9V Battery (type: PP3) or external 8-12VDC supply (2.1mm plug). - Dimensions : 55 x 150 x 65mm overall - Mass : 0.35kg - Laser Output Wavelength : 630nm -Laser Output Power : 0.9mW Typical (0.95mW Max.) Laser Beam Divergence : 1 millirad approx. - Laser Modulation Frequency : 1MHz (Internal Operation)

ESP-2588-L

Laser Optic Set

- 1) Metal Board 40x28x2cm, with 2 Black side stands
- 2) 5 Line Laser Light Source, each line has a switch, operated with 2pcs of battery. The laser light source is attached with magnets. So it can be attached to the metal board.
- 3) White Graduated Turn Table, Diameter 21cm, printed with 4 quadrants and the angle.
- 4) Plexiglass Lens: Double Concave, Double Convex, Trapezoid, Right Angle Isosceles, Rectangle, Semicircle, total 6pcs.



ESP60414



Laser Source Single 02, Magnetic

Class 2 teaching laser for use as a high intensity light source especially for experiments in interference, diffraction and holography as well as interferometry; laser diode in magnetic module "compact"; wavelength: 635 nm; optical output power: ≤ 1 mW; for tripod mounting the holder for MBCs "compact" power supply is required; operating voltage: 3 V (plug-in power supply unit included in delivery) housing dimensions: 84 x 84 x 39 mm

ESP60418

Laser Source , Triple Beam

For experiments in geometric optics, for use on tables or magnetic on metallic boards in combination with optical model objects; a diode laser uses an in-built cylindrical lens to produce a long-range light beam, clearly visible on light coated metal panels even in daylight; by means of a prefixed beam splitter one, two or three laser beams can be set parallel or divergent; Technical data: diode laser, 635 nm (red) Pmax less Than 1 mW, class II ON/OFF switch

Operating voltage : 3 V (plug-in power supply included in the scope of delivery)

Dimensions: 84 x 84 x 39 mm (without beam splitter)



ESP60420



Transmitting Sound Via Laser Kit

kit consist of the following :

Laser 0.2/1.0 mW, linearly polarized, modulate, magnetic, Laser receiver unit, set Mains transformer 12V DC / 2A, Connecting cable for modulation, Round base with stand tube, uni, Holder for "compact" components, L-shaped assembly platform.

ESP60422

Laser Source 2 MW

- laser beam generation using He-Ne gas.
- A device that generates a laser beam for training purposes.
- Straightness, refraction, reflection experiment of light, diffraction interference experiment of monochromatic light. Type A: 2mW He-Ne Laser

ESP60417

Laser Source 0.5 MW

- It is a device that generates laser beam for educational purpose.
- Experiment of diffracted light of direct light, refraction, reflection experiment of monochromatic light Type B: 0.5 mW semiconductor laser

ESP60419



NEW



Doppler Ball

The buzzer is 92 dB while standing still, when spun a student can easily hear the shift in frequency
Buzzer housing has a simple on/off switch and is constructed of rugged ABS plastic
Nylon cord is 2'8" attached to a rugged ABS handle 8.5in long, 1in diameter)
Battery not included

ESP60421

Lamp Brightness Experiment

Students often think that the brightness of a lamp is only dependent on the current flowing through it. The unit allows the teacher to safely switch a 12V lamp in series with a mains lamp and study the current flow through them.

This includes kit includes the use of a safety mains lamp socket, which has a built in a switching system that only allows it to be switched on when a lamp is inserted. We have also included two switches, which must be pressed simultaneously to route the mains current through the low voltage lamp. Furthermore, the switches are sited at opposite ends of the case



, requiring two hands to operate them. However, it must be appreciated that you are working with potentially lethal voltages and currents and therefore extra care should be taken.
Supplied with 1 x 240V 100W lamp and 1 x 12V 5W lamp and mains power lead.

ESP60427



Prism - Equilateral

Prism - equilateral, glass, polished faces, edges slightly bevelled, 60 x 60 x 60 degree.

- ESP60437 25mm x 25mm (length x face)
- ESP60438 38mm x 38mm (length x face)
- ESP60439 50mm x 50mm (length x face)
- ESP60440 38mm x 38mm (length x face)
- ESP60441 50mm x 50mm (length x face)
- ESP60446 60mm x 60mm (length x face)



Prism, Glass, Hollow

Prism, glass, hollow, from glass plates properly cemented, with hole and stopper at top.

- ESP60443 **Dimensions** : 38 X 38Mm (Hollow Prism Only)
- ESP60444 **Dimensions** : 50 X 50Mm (Hollow Prism Only)
- ESP60445 **Dimensions** : 50 X 50 X 50Mm (Cube Only)



Reflection Of Light Kit

Have you ever looked at your reflection in a mirror and been confused which side of your body you were looking at? Have you wondered how a periscope works? Using this kit, students will study how light rays are reflected to give images back to our eyes. Rectilinear propagation of light, formation of images by plane mirrors, reflected image, virtual image, angle of incidence, and angle of reflection are all investigated using protractors, mirrors, diagramming, measurement, and construction of a simple periscope. Kit includes instructor's manual, student guides, assessment questions and all required materials. Appropriate for any level physics course (including AP) as well as general science courses. Designed for 12 students working in groups of two. Meets national standards for grades 9-12.

ESP60424

Blocks Set Of 7 Acrylic Blocks

Made of Polished Acrylic 15mm thick, the set is provided in a convenient storage box. Set consists of:

- Rectangle 75 x 50mm Semi Circular 75mm dia.
- Triangle 60 x 60 x 60 Degree, 58mm side
- Triangle 90 x 45 x 45 Degree, 75mm hypotenuse
- Triangle 90 x 60 x 30 Degree, 75mm hypotenuse
- Bi-Convex 75mm long, curved faces 100mm radius Bi-Concave 75mm long, curved faces 100mm radius.



ESP60447



Glass Block, Rectangular

Block, rectangular, clear glass, free from air bubbles, all sides polished.

ESP60431	75 x 50 x 12mm	Block, rectangular, size 75 x 50 x 12mm. Clear glass, free from air bubbles, all sides polished.
ESP60432	75 x 50 x 18mm	Block, rectangular, size 75 x 50 x 18mm. Clear glass, free from air bubbles, all sides polished.
ESP60433	100 x 50 x 18mm	Block, rectangular, size 100 x 50 x 18mm. Clear glass, free from air bubbles, all sides polished.
ESP60434	100 x 60 x 18mm	Block, rectangular, size 100 x 60 x 18mm. Clear glass, free from air bubbles, all sides polished.
ESP60435	115 x 65 x 18mm	Block, rectangular, size 115 x 65 x 18mm. Clear glass, free from air bubbles, all sides polished.





NEW

Fiber Optic System

Set of one Transmitter and Receiver each housed in a small plastic case. The system comes complete with 5m and 10m sheathed polymer optical fiber coils terminated with clip housings to mate with the transmitter and receiver units

ESP60449



Spectrometer Precision

Vernier reading to 30 seconds of arc. The 175 mm diam. scale is fixed. The table and telescope movements are completely independent of each other and read to 30 seconds of arc by means of double ended verniers and magnifiers. Both rotations have fine adjustment screws. Coarse adjustments can also be made by release of clamping screw. Collimator is mounted on a fixed pillar and is fitted with 175 mm fl. Achromatic objective with 32 mm clear aperture and a laterally adjustable slit 6 mm long. Telescope is mounted on a movable pillar fitted with 175 mm fl. Achromatic objective of 32 mm clear aperture and x 10 Ramsden eye- piece with a glass cross line graticule. Both the telescope and collimator have rack and pinion focusing and can be adjusted for levelling the axes of both units as well as for adjusting to the axis of rotation. Prism table is marked with lines to assist prism placement and has three table levelling screws. It also has an interchangeable clamping unit for the prism and diffraction grating. Complete with prism clamp, diffraction grating holder and a Tommy bar for adjusting optical axis. In case.

ESP60450



Spectroscope Simple Hand Held

Plastic lens cone size 100 length x 25 mm Diameter , it can be used to demonstrate the phenomenon of the chromatic dispersion of white light by qualitative analysis

ESP60449



NEW

Spectrometer For Spectral Analysis

Spectrometer to effectively examine the visual part of the spectrum (from 360 nm to 940 nm). A high-quality transmission grating and the precise input slit guarantee good resolution and the resulting high accuracy of the results. Optical signal enters the device through the open area or flexible optic fiber. Data side is connected to the PC by USB 2.0 interface. It comes preconfigured and ready to use. The software is available in several languages and is compatible with Windows from XP. Scope of delivery: with USB cable, optical fiber (software and Instruction manual for download) Technical data: Spectral range: 360 - 940 nm, resolution: lees than 1.5 nm FWHM, pixel resolution: lees than 0.5 nm, measurement frequency: up to 15 spectra per second (1280x1024).

Dimensions: 128 x 80 x 40 mm, weight: approx. 367 g

ESP60459



Light source for spectrometer

For analyzing spectra in combination with the spectrometer. Two light sources in housing, white halogen lamp and UV LED (365 nm). Cuvette holder for small solid materials and cuvettes for analyzing spectra of liquid samples. Scope of delivery:

1 x housing with 2 light sources (halogen and UV), 20 x cuvette, power supply unit: 9 V DC (100 ... 240 V AC).

Dimensions: approx. 70 x 80 x 55 mm, weight: approx. 256g

ESP60459AC

NEW



Spectroscope

.Quantitative spectroscope for measuring light, wavelengths, and colors from light sources , Holds diffraction grating and scale securely for legible readings Measures wavelengths from 400.0-700.0nm

ESP60448



NEW



Hollow Cells For Refraction Studies

For refraction, reflection and wave demonstrations. Dia. 200 mm

ESP60430

NEW



Semi Circular PERSPEX

Clear acrylic, all faces fully polished. Clear glass, all faces fully polished. Dia 100 x 18 mm thickness

ESP60428



Magic illusion

Diameter 24 cm

ESP60429



ESP60462

Optical Bench

1.5 Meter Complete With Accessories ;On wooden base, with 1.5 meter scale, with six sliding bases. Each sliding base is with an index mark, a pillar and locking screw, with following accessories: One lamp house with 230 V lamp. One object screen, metal, white. One lens holder for 38 mm diam. Lenses. One receiving screen, metal, white, with slot for squared paper on reverse. One object needle. One plane mirror in metal frame. Each of these accessories is mounted on a 6 mm rod which fits into the pillars and is adjustable for height.

ESP60465



Plan Mirror Circular - Ø 80 mm

Plan Mirror Circular - Ø 80 mm

ESP60495



Mirror Strip Holder

Wooden Cube with slot to hold mirror strip,

ESP60576



Mirror Plane Un Mounted -100 X 100MM PK/10

MIRROR, PLANE - UNMOUNTED -100 x 100mm. Rectangular, glass, back silvered, with protective coating, Pack of 10.

ESP60496



Lens Set (6Pcs)

Set of 6 pcs lenses Diameter of 5 CM each , different Focal length : FL : 200 MM 4 PC -FL : 150 MM 2 PCS

ESP60569





Interferometer

Very compact precision device for measuring e.g. wavelengths of light, refractive indexes of glass or gases; Base plate: stable metal plate, surface mirror with three adjusting screws, surface mirror adjustable by means of a worm gear (1:50 ratio) and micrometer screw (division 1/100 mm), semi-transparent mirror, lens +20 mm in side-sliding holder, lens - 30 mm in sideways relocatable holder, adjustment plate for NTL laser, thread and bore for mounting the swivel unit and the vacuum cell, 4 sturdy metal bolts at the corners serve as impact protection, Dimensions: 28.5 x 17 cm Working area: Made of foam for absorbing vibrations or other shocks Dimensions: 36.5 x 26.5 x 2.5 cm Screen, red: Metal bracket with red foil for colorful reproduction of the interference pattern, dimensions: 11 x 8 x 11 cm

ESP60455

Required for Interferometer



Laser Single 02, Magnetic

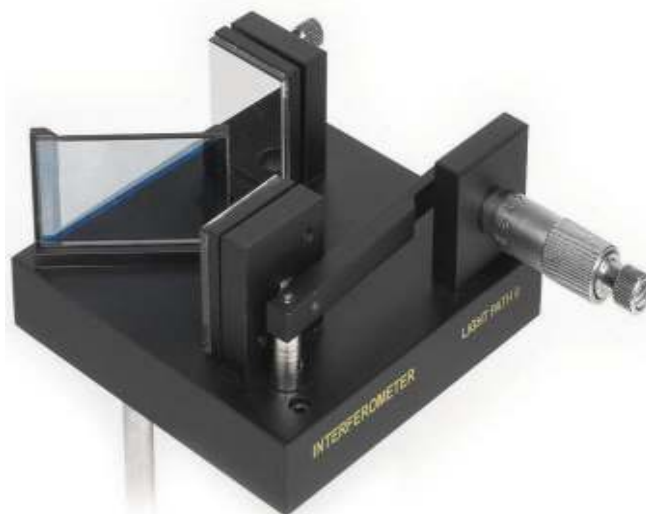
Class 2 teaching laser for use as a high intensity light source especially for experiments in interference, diffraction and holography as well as interferometry; laser diode in magnetic module "compact"; wavelength: 635 nm; optical output power: ≤ 1 mW; for tripod mounting the holder for MBCs "compact" power supply is required; operating voltage: 3 V (plug-in power supply unit included in delivery) housing dimensions: 84 x 84 x 39 mm

ESP60418

Diffraction Grating Educational 3 In One Slide

For demonstrating the principle of the diffraction grating and the way in which its properties are dependent upon the number of lines per unit length. Comprises a card mount 90x40mm approximately with three 16x 9mm apertures, each containing a diffraction grating replica. The gratings are of 100lines/ mm, 300lines/ mm and 600lines/ mm, respectively and are protected by cover glasses.

ESP60456



Michelson interferometer

Precision device for measuring

phenomena such as light wavelength, index of refraction etc. Apparatus consists of a metal base plate (120 x 120 mm, 2 cm thick) with two full mirrors (30 x 30 mm each) and a half-silvered mirror (50 x 30 mm) mounted on it

according to the Michelson configuration.

The position of one of the full mirrors can be adjusted by means of a micrometer screw (micrometer 0 - 10 mm, vernier 1 / 100 mm) and a lever arm (step-down gear ratio of 1:10), while the other full mirror, which is fixed, can be inclined by means of two screws; the half-silvered mirror is fixed in place; the base plate has a hole for mounting round cell DL408- 3K in order to measure the index of refraction of gases. The underside of the base plate has a tapped hole taking a 10-mm threaded support for mounting the device on the optics bench; supplied with a solid plastic hood in order to protect all optical parts.

ESP60475



Diffraction Grating

Diffraction grating, transmission type, 30 x 25 mm. With protective glass cover.

- ESP60452 100 lines/mm
- ESP60453 600 lines/mm
- ESP60454 1000 lines/mm





Glass sheet 8"x4", 5mm thickness

Glass sheet Rectangular 200 x100 , 5mm thickness

ESP60587



Model of Astronomical Telescope

Complete with lenses fitted, mounted on metal base.
Complete with lenses fitted, mounted on metal base with diagram of rays shown for demonstration.

ESP60469



Mirror Universal

Universal Mirror - Stainless Steel - Length: 3.5 in - Height: 0.75 in One side flat and one side curved

ESP60494



Periscope

Diameter 30 mm Length of canister : 210 mm , total length 300 mm.

ESP60460



Oscilloscope Digital

dual-channel universal digital oscilloscope band width 50 MHz It includes a 2 Mpts memory depth that helps to ensure accurate waveform resolution and to capture longer signal lengths. With its 7 inch TFT-LCD (800*480) screen, there is adequate screen space to help better see and analyze waveform Sampling Rate (Max.) 500 MSa/s 1 GSa/s

Channels 2+EXT

Memory Depth (Max.) 32 Kpts 2 Mpts

Trigger Types Edge, Pulse, Video, Slope, Alternate I/O USB Host, USB Device, LAN, Pass/Fail

Probe (Std) 2 pcs passive probe, 2 pcs passive probe, 2 pcs passive probe, Display 7 inch TFT LCD (800x480)

Net Weight 2.5 Kg

details. Along with a 1 GSa/s sampling rate, It supports 32 parameters measurements and common mathematical operations to speed up complex / repetitive measurements. Multiple interfaces: USB Host, USB Device (USBTMC), LAN (VXI- 11), Pass / Fail

ESP60611

Band width -50 MHz

ESP60613

Band width -100 MHz

ESP60612

Band width -70 MHz

ESP60614

Band width -150 MHz



OSCILLOSCOPE ANALOG DUAL CHANNEL, 50MHZ



Model	ESP60600	ESP60601	ESP60602
vertical system			
Sensitivity	5mV-5V/DIV, 10 steps in 1-2-5 sequence		
Sensitivity accuracy	≤3%		
Vernier sensitivity	1/2.5 or less than panel indicated value		
Bandwidth	DC (AC 10Hz)-20MHz	DC (AC 10Hz)-40MHz	DC (AC 10Hz)-50MHz
AC coupling			
Rise time	Approx. 17.5ns	Approx. 8.75ns	Approx. 7ns
Input impedance	Approx. 1MΩ//Approx. 25pF		
DC balance shift	5mV-5V/DIV: ±0.5DIV		
Vertical mode	CH1, CH2, DUAL (ALT/CHOP), ADD, CH2 INV		
Chopping repetition frequency	Approx. 250kHz		
Input coupling	AC, GND, DC		
Max. Input voltage	400V peak-peak, AC frequency≤1kHz		
Common mode rejection ratio	>50:1 at 50kHz sine wave (set CH1 and CH2 at same sensitivity)		
CH2 INV BAL	Balanced point variation≤1DIV (referred to graticule center)		
Horizontal system			
Sweep time base	0.2us-0.5s/DIV, 20 steps in 1-2-5 sequence		
Sweep time base accuracy	±3%, X10MAG: ±5% (20ns-50ns/DIV uncalibrated)		
Vernier sweep timebase	≤1/2.5 of panel indicated value		
Sweep magnification	X10 (Max. sweep time base 20ns/DIV)		
Position shift caused by X10MAG	Within 2DIV at CRT screen center		
Linearity	±5%, X10MAG: ±10% (0.2s-1us)		



Trigger system			
Trigger mode	AUTO, NORM, TV-V, TV-H		
Trigger level lock	Not provided		
Trigger source	CH1, CH2, LINE, EXT		
Trigger coupling	AC: 20Hz to full bandwidth		
Polarity	“+” or “-” polarity		
Sensitivity	Frequency	20Hz-2MHz	2MHz-20MHz
	CH1, CH2	1DIV	1.5DIV
	ALT	2DIV	3DIV
	EXT	200mV	800mV
	TV: Sync pulse > 1DIV (EXT: 1V)		
External trigger input	Input impedance: Approx. 1M Ω / Approx. 25pF		
	Max. input voltage: 400V (DC+AC peak), AC frequency \leq 1kHz		
X-Y mode			
Sensitivity	5mV-5V/DIV, \pm 3%		
X-axis bandwidth	DC-500kHz (-3dB)		
X-Y phase error	\leq 3 $^\circ$ at DC-50kHz		
Output signal			
Calibration signal	Waveform	Positive-going square wave	
	Frequency	Approx. 1kHz	
	Duty ratio	<48:52	
	Output voltage	2Vpp \pm 2%	
	Output impedance	Approx. 1k Ω	
CRT			
Display	6" rectangle, internal graticule, 8x10DIV (1DIV=1cm)		
Phosphor	P31		
Accelerating voltage	Approx. 2kV (20MHz); Approx. 12kV (40MHz)		
Trace rotation	Adjustable at front panel		
General			
Power source	AC110V/220V \pm 10% selectable, 50/60Hz, Max. 35VA		
Accessories	Power cord x1, Operation manual x1, Probe x2		
	Component test lead x1 (only for TOS-2020CT, TOS-2040CT, TOS-2050CT)		
Dimension	310x150x455mm		
Weight	Approx. 8kg		
General			
Power source	AC110V/220V \pm 10% selectable, 50/60Hz, Max. 35VA		
Accessories	Power cord x1, Operation manual x1, Probe x2		
	Component test lead x1 (only for TOS-2020CT, TOS-2040CT, TOS-2050CT)		
Dimension	310x150x455mm		
Weight	Approx. 8kg		





Mirror, Plane - Unmounted

Mirror, Plane - Unmounted - Rectangular, Glass, Back Silvered, With Protective Coating, Pack Of 10.

- ESP60497** **Dimensions :** 75 x 25mm.
- ESP60498** **Dimensions :** 75 x 50mm.
- ESP60499** **Dimensions :** 75 x 75mm.
- ESP60500** **Dimensions :** 100 x 25mm.
- ESP60501** **Dimensions :** 100 x 50mm.
- ESP60502** **Dimensions :** 100 x 75mm.
- ESP60503** **Dimensions :** 150 x 25mm.
- ESP60504** **Dimensions :** 150 x 50mm.



Lens Holder - Wooden

Wooden, with V shaped slot to take spherical lens or mirror up to 75mm dia., with index mark.

ESP60577



Concave Mirror, Spherical

Concave mirror, spherical - optically worked, back silvered, with protective coating.

- | | | |
|-----------------|-----------|--------------|
| ESP60505 | FL 5 CM | Dia. 50mm |
| ESP60506 | FL 7.5 CM | Dia. 50mm |
| ESP60507 | FL 10 CM | Dia. 50mm |
| ESP60508 | FL 15 CM | Dia. 50mm |
| ESP60509 | FL 20 CM | Dia. 50mm |
| ESP60510 | FL 30 CM | Dia. 50mm |
| ESP60511 | FL 7.5 CM | Dia. 75mm |
| ESP60512 | FL 10 CM | Dia. 75mm |
| ESP60513 | FL 15 CM | Dia. 75mm |
| ESP60514 | FL 20 CM | Dia. 75mm |
| ESP60515 | FL 30 CM | Dia. 75mm |
| ESP60516 | FL 10 CM | Dia. 100mm . |
| ESP60517 | FL 15 CM | Dia. 100mm . |
| ESP60518 | FL 15 CM | Dia. 150mm |
| ESP60519 | FL 30 CM | Dia. 150mm |



Convex Mirror, Spherical

Convex mirror, spherical - optically worked, back silvered, with protective coating.

- | | | |
|-----------------|-----------|--------------|
| ESP60520 | FL 5 CM | Dia. 50mm |
| ESP60521 | FL 7.5 CM | Dia. 50mm |
| ESP60522 | FL 10 CM | Dia. 50mm |
| ESP60523 | FL 15 CM | Dia. 50mm |
| ESP60524 | FL 20 CM | Dia. 50mm |
| ESP60525 | FL 30 CM | Dia. 50mm |
| ESP60526 | FL 7.5 CM | Dia. 75mm |
| ESP60527 | FL 10 CM | Dia. 75mm |
| ESP60528 | FL 15 CM | Dia. 75mm |
| ESP60529 | FL 20 CM | Dia. 75mm |
| ESP60530 | FL 30 CM | Dia. 75mm |
| ESP60531 | FL 10 CM | Dia. 100mm . |
| ESP60532 | FL 15 CM | Dia. 100mm . |
| ESP60533 | FL 15 CM | Dia. 150mm |
| ESP60534 | FL 30 CM | Dia. 150mm |



**Biconvex Lens, Spherical,**

Lens, double convex spherical, optically worked glass, with ground edges, highly polished.

ESP60535	FL 5CM	Dia. 38mm
ESP60536	FL 10CM	Dia. 38mm
ESP60537	FL 15CM	Dia. 38mm
ESP60538	FL 20CM	Dia. 38mm
ESP60539	FL 25CM	Dia. 38mm
ESP60540	FL 30CM	Dia. 38mm
ESP60541	FL 5CM	Dia. 50mm
ESP60542	FL 10CM	Dia. 50mm
ESP60543	FL 15CM	Dia. 50mm
ESP60544	FL 20CM	Dia. 50mm
ESP60545	FL 25CM	Dia. 50mm
ESP60546	FL 30CM	Dia. 50mm
ESP60547	FL 10CM	Dia. 75mm.
ESP60548	FL 15CM	Dia. 75mm.
ESP60549	FL 20CM	Dia. 75mm.
ESP60550	FL 25CM	Dia. 75mm.
ESP60551	FL 30CM	Dia. 75mm.

**Biconcave Lens, Spherical,**

Lens, double concave spherical, optically worked glass, with ground edges, highly polished.

ESP60552	FL 5CM	Dia. 38mm
ESP60553	FL 10CM	Dia. 38mm
ESP60554	FL 15CM	Dia. 38mm
ESP60555	FL 20CM	Dia. 38mm
ESP60556	FL 25CM	Dia. 38mm
ESP60557	FL 30CM	Dia. 38mm
ESP60558	FL 5CM	Dia. 50mm
ESP60559	FL 10CM	Dia. 50mm
ESP60560	FL 15CM	Dia. 50mm
ESP60561	FL 20CM	Dia. 50mm
ESP60562	FL 25CM	Dia. 50mm
ESP60563	FL 30CM	Dia. 50mm
ESP60564	FL 10CM	Dia. 75mm.
ESP60565	FL 15CM	Dia. 75mm.
ESP60566	FL 20CM	Dia. 75mm.
ESP60567	FL 25CM	Dia. 75mm.
ESP60568	FL 30CM	Dia. 75mm.

**Magnifier, Linen Tester**

These are collapsible pocket magnifiers. The optical system is a single element, glass Double Convex Lens. The housing is of machined, black high grade plastic for a high finish look. These magnifier fold flat to fit in your pocket. Scales are etched on the inner faces of the viewers base.

ESP60584**Magnifier, Reading Glass,**

Magnifier, reading glass, in unbreakable plastic mount with handle.

ESP60580	Dia. 50Mm
ESP60581	Dia. 75Mm
ESP60582	Dia. 100Mm
ESP60583	Dia. 63Mm





Geiger Muller Counter

Demonstration instrument for measuring ionizing radiation; very easy to transport and magnetically mountable; the 26-mm LED display allows precise readings to be taken even at a great distance

Technical Data:

Display: 4-digit LED display; digit height 26 mm Switch: ON / OFF

MODE switch:

- IMP setting: manual start and manual stop
- MAN setting: manual start, one measurement is taken during the interval set on the TIME switch
- AUTO setting: measurement cycle is repeated for the interval set on the TIME switch

TIME switch: for the MAN and AUTO modes a valid measurement interval of 1, 10 or 100 seconds may be selected
SPEAKER switch: switches the speaker on or off
START switch: starts and stops measurement in IMP mode and starts it in MAN mode

GATE LED: indicates counter gate state

Analogue output through a 3.5 mm phone jack (10 mV / Hz) BNC jack for connecting tube DR291-1Z

Power supply: 4 x 1.5 V Mignon cells (included) or 5.5-mm hollow DC jack for 6 V / 500 mA

external power supply

Case: green ABS plastic with yellow labelling

Dimensions : approx. 160 x 120 x 45 mm; **Weight** : approx. 475 g

Geiger-Muller tube specs: For registering the presence of alpha, beta and gamma rays;

tube in a red acrylic case (28 x 28 x 60 mm) and mounted on a support rod with a magnetic base (60 x 30 mm);

line marking centre; cord with BNC plug permanently attached; plastic lid to protect the end window.

Gas filling: Ne & halogen

End window made of mica, 9.1 mm in diameter Plateau voltage: approx. 500 V

Dimensions : 30 x 60 x 49 mm

Axis height : 35 mm

ESP60663



GM Tube Test Source

This Standard Radiation Test Source allows school laboratories to perform their own GM Tube (eg. ZP1481) and Scaler operating efficiency testing. The test source comprises of a transparent acrylic slide with a 13mm diameter disc containing 300mg of Potassium Chloride, which is a naturally occurring radioactive compound due to the presence of 0.0117% of Potassium-40 (K-40). Due to the extremely low activity of Potassium compounds means that the test source is not legally defined as a radioactive source, for comprehensive information on how to use this test source please download the instructions below. Electrical Supply: N/A - Dimensions: 50mm x 50mm x 2mm - Mass: 750mg - Test Source Size: 13mm Dia. - Radioactive Source Materiel: Potassium-40 (K-40) - Quantity of Source Material: 300mg - Mean Beta Energy : 560.2 keV

ESP-6225-R

Spark Counter

The Irwin Spark counter is a versatile unit designed to detect the presence of alpha particles or other ionising radiations or events, such as cosmic rays. The unit comes supplied with an Americium



241 alpha source (0.9 micro Curies, 33.3KBq) mounted on a Perspex rod, which may be held in the hand or in a retort stand, supplied with full instructions for use.

A power supply is needed to operate this unit.

ESP60664



Planck's Constant Led Threshold

A multi-purpose unit that allows the user to easily calculate Plank's constant, to measure the wavelength of coloured light demonstrate colour light transmission through colour filters and show the diffraction patterns for various wavelengths of coloured light.

ESP60667

Radiation Dose Meter (Dosimeter)

For monitoring X-rays, beta and gamma rays, with alarm to protect people from radiation; TFT color screen for easy operation and audible and visual alarms, alarm thresholds can be set;

Measures dose rates in real time and records total doses Calibration function

Adjustable alarm thresholds

Display of the current total dose

Time-controlled measurement: 0 - 999

Alarm when limit values are exceeded

Saves the recordings of the last

10 measurements Display of the batter;

Status Warning in the event of sensor e

Included in delivery:

carrying case, data cable, hand strap

and manual Display: TFT 2.0 color screen

Sensor: GM counter tube

Detected rays: X-ray, beta and gamma

Range: 0.05 μ Sv ... 50 mSv

Accuracy: -17% ... + 25%

Alarm response time: <10 sec

Alarm modes: audible and visual alarm

Battery: 3.7 V / 1800 mAh

Battery life: 20 days (continuous measurement, sound off)

Weight: 127 g

Dimensions: 120 x 65 x 25 mm

NEW



ESP60665



NEW



Geiger Muller (GM) Tube and Holder

The GM Tube contained within this stand-alone holder is the industry standard type: ZP1481, as recommended in the Cleapss document GL:138 (Choosing a Geiger Muller Tube). The ZP1481 has a large area detection window making it suitable for all practical demonstrations and investigations as well as having an efficiency level suitable for detecting alpha, beta and gamma radiation, it is also robust and has a long life. The holder containing the GM Tube not only provides both protection and a choice of connections to the Tube but also the option to attach the holder to a retort stand using the supplied fixing rod. Also contained within the Holder is a high ohmic value (4M7) series resistor required by most Counter and Ratemeter (Scaler) units. If required the protection grill covering the detection window can be removed should you want to detect low levels of contamination. The standard connection provided by the GM Tube & Holder is via a flying lead fitted with a TNC plug connection suitable for connect to the IPC Timer Scaler & Frequency

ESP60666

NEW



Digital Timer Scaler & Frequency Meter

It is perfect for use with the GM Tube & Holder, it is exceptional value as a multifunction unit which can be used for a vast array of physics experiment

ESP60737



Po-210 Preparation (Alpha Radiation)

Radioactive substance for investigating the properties of alpha radiation Emits alpha radiation (polonium-210) with activity (A) = 3.7 kBq; half-life:138.40 days;emits alpha particles with a maximum energy level of 5.305 MeV

ESP60674



Co-60 Preparation (Gamma Radiation)

Radioactive substance for investigating the properties of gamma radiation; Emits gamma and beta radiation (cobalt-60) with activity (A) = 37 kBq; half-life: 5.258 years;in addition to beta radiation, which is absorbed by the radiation window, it emits gamma rays with an energy level of 1.17 and 1.33 MeV; this source is supplied with two lead-cylinders for protection of gamma radiation.

ESP60676



Photo Electric Effect Apparatus

A photoelectric device can be used to test the photoelectric effect, and a three-colour filter is built-in that can detect the light transmittance by the color filter.

Dimensions : 330x160x180mm Power: AC220V 0.5A

Configuration: Photoelectric element, Galvanometer, Incandescent light source, Tricolour filter, Photoelectric amplifier, Visible light band,

ESP60668



Planck's Constant Compact Apparatus

With this device, Plank's constant can be easily determined to an error level around or better than 5 %.

Electron affinity can be calculated as well. The phenomenon is termed the outer photoelectric. effect Electromagnetic radiation results in the release of electrons from a metal surface.

ESP60669



Storage - Case For Radioactive Sources, Metal

Steel cabinet for safe storage of radioactive preparations in the lab storage room Steel cabinet, painted yellow, with a cylinder lock,one (fixed) shelf,labelled with the warning symbol.

Dimensions : 215 x 85 x 287 mm

ESP60677



Sr-90 Preparation (Beta Radiation)

Radioactive substance for investigating the properties of beta radiation Emits beta radiation (strontium-90) with activity (A) = 3.7 kBq;nuclide decays to its daughter particle yttrium-90, which emits beta particles with a maximum energy level of 2.27 MeV; the half-life of Sr-90 is 28.9 years, and the Sr-90-Y-90 system also decays at this rate

ESP60675



NEW

Half Life Analogue Kit

Several topics in atomic physics lend themselves well to student-led exploration. This equipment facilitates hands-on engagement with the concept of 'half-life' and radioactive decay in a safe manner. It includes a tub containing 500 plastic cubes, representing atomic nuclei, each with one face marked for identification. Students actively participate by 'throwing' the cubes to observe how many 'decay' during each throw, i.e., land with their decay face upwards. After each throw, decayed nuclei are removed before the next round. This method yields highly accurate results resembling an exponential decay curve, all without the risks associated with using radioactive materials. The equipment comes with comprehensive instructions, worksheets, sample results, and spare materials



ESP60679

**Millikan Apparatus Compact**

Compact device for demonstrating the quantum nature of the electric charge q and for determining the elementary charge e . All sensors and measuring devices are integrated - no additional external devices are required!

The compact experimental setup allows, on the one hand, to demonstrate the quantum nature of the electrical charge q and also to determine the elementary electrical charge e . Basic device with attached experimental chamber. A plate capacitor with a central opening for the entry of the oil droplets; that can be generated with the atomizer unit is integrated. The oil droplets are illuminated by green LEDs, the intensity of which can be continuously adjusted. To ensure clean work, the experimental chamber is protected by a cover.

The oil droplets are observed using a measuring microscope with a special eyepiece, which allows the oil droplets to be tracked across the entire field of view. It is operated via switches and rotary controls on the base device and on the display unit with touch screen.

All sensors and measuring devices necessary for the evaluation are already integrated -

no external measuring devices are required: voltage U , rise and fall times t_S and t_F as well as temperature T , pressure p and viscosity η are displayed on the screen for each measurement in real time. The measurements can be evaluated using either the float-sink method or the rise-sink method. The integrated time circuit starts and stops the respective time measurements automatically when the capacitor voltage is switched on and off.

Technical data:

Dimensions: 32 x 41 x 24 cm

Weight : approx. 4.2 kg (including power supply)

Scope of delivery:

1x basic device, including experiment chamber -

1x measuring microscope

1x oil atomizer - 50 ml oil for Millikan apparatus

1x plug-in power supply, 12 V (AC) / 0.5 A

ESP60701



Balmer Series and Rydberg Constant

Hydrogen atoms in a discharge lamp emit a series of lines in the visible part of the spectrum. This series is called the Balmer series which continues into the ultraviolet range. Rydberg generalized the Balmer's formula in terms of wave numbers to describe wavelengths of spectral lines of many chemical elements. For hydrogen the Balmer's formula becomes a special case of Rydberg's formula and is given by $1/\lambda = R(1/2^2 - 1/n^2)$

where n are integers, 3, 4, 5, ... up to infinity and R is Rydberg constant ($R = 4/B$ where B is the Balmer's constant). In the present setup, the spectral lines of hydrogen is observed by means of diffraction grating. The wavelength of the visible lines of Balmer series of hydrogen are measured by spectrometry.

Specifications :

Scale : Brass, Dia. 175mm.

Objective: Achromatic lens, $f = 178\text{mm}$, Aperture 32mm

Slit: German silver with knurled screw

Reticle: 900 cross etched on glass

Least count: 20 seconds

Eyepiece: 15X, Ramsden eyepiece

Vernier : 4 Vernier's (Telescope & Prism table)

Base: 220mm dia., Aluminum Casting

Special features: Spindle & other critical component manufactured on CNC machine. Supplied in wooden box.



ESP60705



Cathode Ray Tube Mechanical Effect (With Fan)

For demonstrating of the mechanical effect of cathode ray tubes with 2 electrode and meta van , plastic bases

ESP60713



Cathode Ray Tube With Shadow Cross

For demonstrating the linear propagation of cathode rays, tube with electrodes mounted on metal caps, metal cross may be folded down, plastic base

Length: approx. 200 mm, diameter: approx. 80 mm

ESP60715



Alpha Scattering Apparatus

This Alpha Scattering Apparatus is for demonstrating Rutherford scattering by means of a gravitational analogue of inverse square law repulsion. The apparatus comprises a spun aluminium hill, a 12.5mm steel ball and a wooden launching ramp. The shape has been determined by varying its height above the base line by an amount Based upon the reciprocal of the radius.

The launching ramp has a guide groove

ESP60742



Cathode Ray Tube With Screen

For demonstrating deflection of cathode rays in a magnetic field, electrodes mounted on metal caps, plastic base

Length: approx. 300 mm, diameter: approx. 50 mm

ESP60717





Radioactivity, Set

Box with device - shaped storage, consisting of:

1) Potassium chloride, 250 g

The naturally occurring substance is the primordial radionuclide ^{40}K , which is available to 0.0117 atomic percent in the element potassium; specific activity of 16.2 Bq / g at ^{40}K ; 250 g in plastic box with screw cap

2) Columbit

Naturally occurring, slightly radioactive solid solution, also called Niobit, contains the elements niobium and tantalum; is NOT notifiable in accordance with the Radiation Protection Ordinance! **Dimensions** : L = 20 mm

3) Radiation absorption plates, set

Plates of various materials to the absorption of radiation; materials: 10 x lead, 5 x steel, 5 x aluminum, 5 x acrylic; plate **Dimensions** : each 80 x 50 x 2 mm

4) Holder for absorption panels, magnetic

For vertical mounting of up to 10 absorption panels, magnetic to metal panels or directly on the laboratory bench; robust, variable clamping metal holder with 4 clamping springs, max. wingspan: 23 mm; bottom side 4 built-in neodymium magnets; window opening : 50 x 50 mm;

Dimensions : width = 94 mm, height = 70 mm, depth = 54 mm

5) Radioactive preparation mount, magnetic

For vertical mounting of the radiation sources

aluminum bracket with magnets and steel bolt in axle height; H (total) = 50 mm, axle height = 35 mm

6) Reagent tube, graduated

For tests for level measurement with a radiation source and lead shot; thick-walled test tube with graduation, for clamping it into holder content: 25 ml; D (outer) = 20 mm, H = 160 mm

7) Lead (tare) shot, 250 g

Lead shot used as absorption or as weights for taring; ball D = 2 mm; in plastic bottle; capacity 250 g

8) Adapter for deflection in radioactive substances To examine the behavior of radioactive magnetic field; metal holder for positioning the button magnets in front of sources the holder is on the cover of preparations plugged directly; **Dimensions** : D = 35 mm, L =

9) Magnets, button type, pair of

Material: Neodymium; embedded in plastic trays; D = 13 mm, H = 5 mm

10) Container with lid, 80 ml, plastics, 50 x 50 x 40 mm

Transparent, impact-resistant plastic container with lockable lid firmly

11) Knife for laboratory use, steel

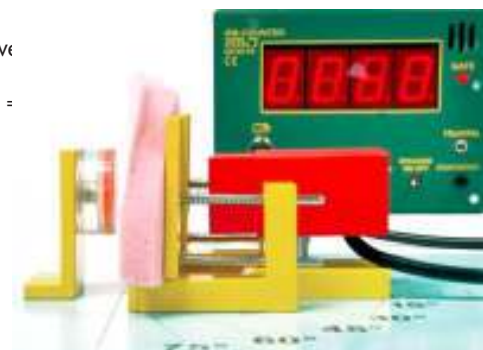
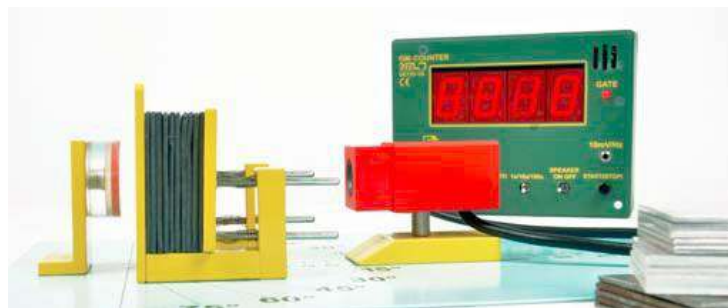
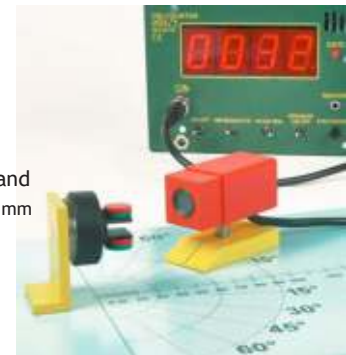
To cut off meat or meat slices as a substitute for human soft tissue; for determining the surface dose; handy stainless blade with plastic handle, L = 150 mm

12) Crucible tong

For low-contamination handling of radioactive sources curved forceps made of steel and nickel-plated; L = 200 mm

Box-insert Radioactivity, plastics

Storage box II small, with cover



ESP60672





Deflection E/M Tube

For determining e/m by balanced electrostatic deflections or by magnetic deflection using the Helmholtz coils.

Simple electrostatic and magnetic deflection may be demonstrated and the relationships shown between the plate potentials or coil currents and the degree of deflection. The 'electron mirror' effect producing trochoidal spirals is easily shown and also the magnetic focusing at points along the trochoid.

The tube is the standard glass sphere with cylindrical neck and has a diode electron gun with filament and cylindrical anode. In the centre of the sphere and angled at 15° across the axis is a mica screen 90mm long x 60mm high approximately, divided 2 to 10cm along its horizontal axis and 2-0-2cm vertically. The undivided side is coated with phosphor and produces a clear fluorescent trace when irradiated by the electron beam. The top and bottom edges of the mica plate are supported by horizontal metal plates which are connected to 4mm plugs in the side caps and provide the electrostatic deflection field when connected to an E.H.T. supply.

- Maximum filament voltage: 7.5V.
- Anode voltage: 1500 to 5000V.
- Typical operation: 2000 to 4500V.
- Anode current: 1mA.

Supplied complete with instructions.

ESP60680



Electron Diffraction Tube

The tube uses an electron gun with an indirectly heated cathode to project a narrow converging beam of electrons through a thin layer of graphiticised carbon, supported on a fine mesh grid over the exit aperture of the gun. The cathode rays are diffracted in passing through the carbon layer and produce a ring pattern on the phosphor coated end of the tube. Study of the ring pattern and its variation with different anode voltages permits the study and verification of the de Broglie hypothesis, shows the dual nature of the electron, permits the calculation of the spacing of diffracting planes and suggests the probable arrangement of carbon atoms.

- Filament voltage: Nominal 6.3V a.c./ d.c, Maximum 9V a.c./ d.c.
- Anode voltage: 500 to 5000V d.c.
- Anode current: 0.2 to 0.4mA.

Supplied complete with instructions.

The tube uses an electron gun with an indirectly heated cathode to project a narrow converging beam of electrons through a thin layer of graphiticised carbon, supported on a fine mesh grid over the exit aperture of the gun. The cathode rays are diffracted in passing through the carbon layer and produce a ring pattern on the phosphor coated end of the tube. Study of the ring pattern and its variation with different anode voltages permits the study and verification of the de Broglie hypothesis, shows the dual nature of the electron, permits the calculation of the spacing of diffracting planes and suggests the probable arrangement of carbon atoms.

- Filament voltage: Nominal 6.3V a.c./ d.c, Maximum 9V a.c./ d.c.
- Anode voltage: 500 to 5000V d.c.
- Anode current: 0.2 to 0.4mA.

Supplied complete with instructions.

ESP60686

Helmholtz Coil Pair

When connected to a suitable d.c. Supply, the coils provide a substantially uniform field in the central space. Each coil has a moulded plastic former 152mm diameter with 320 turns of 22 s.w.g. enamelled wire giving a mean diameter of 136mm. The former is mounted on a boss provided with two 4mm sockets and is fitted with a support rod. The rod has a sliding boss which locks into the tapered hole in the base of the Universal Stand.

Dimensions of coil and support rod 305mm x 152mm x 25mm. Supplied as a pack of 2, complete with instructions. PAIR

ESP60682





Perrin Tube

The Perrin tube may be used to show that charge can be accumulated in the Faraday pail incorporated, that the charge does not disappear when the filament is switched off and therefore that the cathode rays must consist of charged particles. Electron deflection sensitivity may be measured using Helmholtz coils to deflect the beam.

Cathode ray tube operation may also be demonstrated, using a 'secondary coil' for the transverse field. The tube comprises a standard spherical glass body with a cylindrical neck containing a diode electron gun with filament and cylindrical anode, and a Faraday's pail in the sphere, at 45° to the axis. Connections to the diode electron gun are via 4mm sockets in the moulded cap and the Faraday's pail connection is via a 4mm plug in one of the side caps. The end of the sphere has an internal phosphor coating providing a luminescent screen.

- Maximum filament voltage: 7.5V.
- Anode voltage: 2000 to 5000V.
- Typical operation at 4000V: anode current 1.8mA beam current 4μA. Supplied complete with instructions.

ESP60688



Maltese Cross Tube

For showing the linear propagation of cathode rays, magnetic deflection of cathode rays, image distortion due to electrostatic charging, comparison of cathodic stream and electromagnetic radiation and an introduction to electron optics using a single Helmholtz coil. The tube comprises the standard spherical glass body with cylindrical neck, a diode electron gun with a filament and cylindrical anode connected to 4mm sockets in the plastic cap, a metal Maltese cross mounted in the centre of the sphere, (connected via a 4mm plug in one of the side caps) and a phosphor coated screen.

- Maximum filament voltage: 7.5V
 - Anode voltage: 2000 to 5000V
 - Anode current: 4000V 1.8mA
- Supplied complete with instructions.

ESP60684



Double Fine Beam Tube

Helium filled, partly evacuated electron tube with axial and perpendicular electron guns. The electron beam may be observed as a fine, green beam appearing due to the the impact excitation of the helium/electron collisions. The tangential beam can be deflected by use of Helmholtz coils to produce a completely circular path permitting e/m measurements to be made. Clear free path studies may be made and phenomena such as screen blanking due to charge build up on the screen may be observed. Within the tube are mounted two electron guns perpendicular to one another, with indirectly heated oxide cathodes. The angle of projection from the guns is adjustable by means of miniature deflection plates near the gun outlets, a small potential being applied via 4mm connections at the side of the cylindrical neck. The end of the body has a phosphor coated screen for use with the axial gun. Supplied complete with instructions.

- Anode voltage: max. 100V DC
- Anode current: max. 30mA
- Filament voltage: 7.5V AC/DC
- Deflector voltage: max. 50V DC
- Total length: 260mm approx.
- Glass bulb: 130mm diameter approx.
- Gas filling: Helium at 0.1 torr pressure

ESP60690



Heat Radiometer

Ball dia 90 mm , hight 215 mm

ESP60731



Experiment Lead Safety Plug And Socket

Safety lead for use with EHT and HT power supplies ending in a 4mm safety-plug. Length: 750mm , Wire cross-section: 1 mm² , Continuous current: max. 19 A

ESP60691





Planar Diode

The diode is used to show the basic thermionic effects in vacuum tubes, including:

Current flow between an incandescent filament and a cold electrode (the Edison effect). Determination of e/m by the displacement method using Helmholtz coils.

Characteristic anode current/anode voltage curves for different filament temperatures.

Application of a diode as a rectifier.

The diode consists of a basic glass spherical body with a cylindrical neck, containing a tungsten filament with 4mm connections sockets in the plastic cap on the neck and a circular anode plate connected to a 4mm plug connection on the sphere.

- Optimum anode voltage: 500V.
- Maximum anode current: 5mA.
- Maximum filament voltage: 7.5V

ESP60692



Universal Stand

Designed to accommodate the whole range of Teltron tubes and accessories. The base, 240mm x 180mm x 50mm, and a vertical arm of the stand, 280mm high, are cast in light alloy and stove enamelled. The three rubber feet ensure maximum stability.

Tube mounting jaws are provided, moulded in a material with very high electrical insulation properties. The jaws are split lengthways to admit the side caps of the tubes, and clamps sliding on the jaws lock them securely in position. The jaws, 160mm long x 140mm separation, have an integral hollow boss which is secured in the stand by a rubber 'O' ring at a centre height of 263mm, permitting a full 360° rotation so that the tube may be displayed to the best advantage.

Sockets in the base accommodate the Helmholtz coil supports and locate the coils accurately either side of the tubes.

A 4mm earthing socket is drilled into the pillar base. Supplied complete with instructions.

ESP60694



Tel - X - Ometer

The Tel-X-Ometer enables investigations to be carried out in the normal school laboratory. Extensive safety precautions are built into the apparatus, which conforms completely to the recommendations of the International Commission on Radiological Protection, 1968.

Schools should check CLEAPSS guide L93 Ionising Radiations and Radioactive Substances before purchase.

The radiation level at 50mm from any part of the surface of the instrument does not exceed 0.5mR per hour. Also, in accordance with the recommendations laid down, a warning card is supplied with each instrument for affixing to the door of the room where the experiments are to be conducted. The apparatus is in effect an X-ray spectrometer which, by means of simple adaptations, will fulfil a range of requirements as follows:

- A broad beam of X-rays for analysis of their general properties
- Single crystal Bragg Diffractometer having a scale accuracy of 5 minutes of arc
- Powder Camera for Debye/Scherrer experiments to an accuracy of 30 minutes of arc
- Fluorescent radiation emitter for a study of the Moseley Theory
- An experimental region for the mounting of innovative studies of the teachers choice.

Specification:

A specially designed miniature X-ray tube is used which protrudes through the cast aluminium base of the spectrometer table and is enclosed within a thick walled lead glass dome.

The apparatus is supplied with the X-ray tube installed and aligned for immediate use. Every instrument is carefully checked under working conditions before dispatch, in addition to thorough testing of the X-ray tube itself.

Mains power is supplied via 2m of 3-core cable and a sector enables the instrument to operate on voltages between 110 and 240, at 50 to 60Hz. A detailed instruction book is provided giving set-up details, notes for twenty-five experiments (using the accessory set) and teacher's notes.

Height 250mm, diameter 370mm. Mass 9kg. Supplied complete with X-ray tube.

ESP60698





Power Supply

- Electronic protection against over load or short circuit; automatic electric fuse with reset button and over load indicator LED.
- Screwed 4 mm socket terminals; main power switch with indicator lamp.
- Input voltage 100/220 volt equipped with main fuse.
- Dimension: 26.5 x 15.5 x 21.4 cm

Description	ESP60750	ESP60751
Max. power	3 A, 36 W	5 A, 60 W
Output AC/DC with voltage selector	0 - 3 - 6 - 9 - 12 V	0 - 2 - 4 - 6 - 8 - 10 - 12 V

Power Supply AC/DC, 50 Hz

Dimensions :

- Overall 265 x 155 x 214 mm - Input Voltage : 110/220 VAC, 50 HZ - Output voltage : 3/6/9/12 V

Materials entire frame (body) : Plastic Complete with manual book

Part of :

Physics Laboratory Package for Senior High School/Vocational School - Physics Laboratory Package for Senior High School/Vocational School - Ohm Law Experiment Kit

Dimensions : (L) 28.00 x (W) 18.00 x (H) 23.50 cm

Weight : 4.000 kg

ESP60749



Power Supply 2A, 5V & 15V, Regulated

Regulated variable power supply. Serves to provide / supply a stable voltage to the circuit or device must be operated with a certain power supply.

Dimensions :

- 297 x 114 mm, thickness 5 mm

- Back cover 267 x 113 x 100 mm

Material : Panel phenolic

Line voltage : 220V AC / 50 Hz

Output voltage : Variable voltage 0-15 V DC and 0-5 V DC with panel meter display

Voltage control : Adjustable Fine and Coarse tuning

Maximum current 2A

2 pairs of 4 mm output

Equipped with safety fuse

ESP60754



Power Supply 3A, 12V, Regulated

Dimensions : 234 x 170 x 134 mm

Low-voltage power supply with AC/DC output. Complete with automatic safety fuse.

DC Regulated

4 mm socket terminal, spacing 19 mm between terminals. Main switch equipped with indicator lamp.

Input voltage 100V/220V, with safety fuse and 2 cables and plug with grounding (DIN 49441/CEE7 10A).

Maximum load capacity : 3

A Power consumption : 36

W

Output voltage : 0 - 3 - 6 - 9 - 12V. Can be choose by the rotating switch. With bilingual manual book and circuit schematic diagram.

Dimensions : (L) 22.00 x (W) 26.00 x (H) 18.00 cm

ESP60752





Power Switch

A compact power supply offering 2, 4, 6, 8, 10, and 12 volts at currents of up to 5A. Both dc and ac outputs may be used simultaneously up to the rated output. The output is protected by a push button cut-out. The unit is 2A fused on the back panel and comes complete with a moulded mains lead and plug. 4 units are designed to fit in a shallow Gratnell tray. **Specification**

Input Supply voltage 230V

dc Supply frequency 50Hz

Mains fuse Rear panel 2A, 20mm quick blow Mains plug 3A

Output Voltage 2, 4, 6, 8, 10, 12V ac nominal 1, 3, 5, 7, 9, 11V full wave rectified dc nominal

Maximum output current 5A ac or

dc Manufactured in the UK

ESP60756 Single Unit

ESP60757 Best Value Pk Of 4 In Gratnells Tray



Powerbase V8 With V/I Meter Blue Case

Essentially the same as the Irwin Powerbase V8 but with an ammeter and VOLTMETER digital display. The unit supplies 0-20V smoothed dc and 0-16V AC at 8 amps. The output is continuously variable and protected by a panel mounted thermal cut out. An output limiter is fitted which allows the user to preset the maximum voltage available.

ESP60767



Powerbase V8

The updated version of the Irwin Powerbase 32. Essentially it is the same as the 32 but has a higher power rotary transformer and a high specification toroid transformer replaces the original chassis transformer. The unit supplies 0-20V smoothed dc and 0-16V AC at 8 amps. The output is continuously variable and protected by a panel mounted thermal cut out. An output limiter is fitted which allows the user to preset the

maximum voltage available.

ESP60760 Blue casing

ESP60761 Clear casing



Powerbase S8

The Irwin Powerbase S8 offers 0 to 12V at 8 amps via a relay switching system that provides the voltages in 1V steps. ac and dc are available simultaneously in any combination up to a combined output of 8 amps. Output is protected by a panel mounted thermal cut out. An output limiter is fitted which allows the user to preset the maximum voltage available. 0 to 12V AC/DC in 1V steps 8A combined simultaneous output Re-settable Thermal Trip Switch Protection Voltage Lockable via an Allen Key. Relay switching means that the output voltage may be changed at full loading.

ESP60764 Blue casing

ESP60765 Clear casing

Powerbase S5

Irwin Powerbase S5 switched 5A Bench PSU. A heavy duty power supply for powering laboratory experiments.

DC Output Voltages 3, 7, 10, 13, 17, 20V (capacitor smoothed)

AC Output Voltages 3, 6, 8, 11,

13, 15V Output Current 5A

Output limited via Allen key operated voltage

lock Push button thermal cut-out protection

Mains Input 230/240V AC,

50Hz PDF

ESP60769 Blue casing

ESP60770 Clear casing





Powerbase S10

Irwin Powerbase S10 2-12V AC/DC switched 5A Bench PSU. A heavy duty power supply for powering laboratory experiments. DC and AC Output Voltages 2, 4, 6, 8, 10, 12V.

Specification:

AC DC Output: Voltages

2,4,6,8,10,12 voltage range in AC and DC Current 5A

Supplied with Allen key to control

output Voltage type - Stepped

Output type - Full wave rectified, non-

regulated Push button trip reset

Mains input 230/240V AC, 50Hz

ESP60772 Blue casing

ESP60773 Clear casing



High Voltage Ej0127 2.5Kv Eht Unit

An EHT power unit supplying up to 5KV for experiments with Teltron tubes. The 5KV voltage allows the user to demonstrate high voltage experiments such as the shuttling ball. The outputs are arranged as 2.5KV 0 - 2.5KV The outputs are terminated through colour coded shrouded 4mm sockets. The EHT output is current limited to 2mA for safety. A separate heater output of approx. 6.3V @ 2A is also available as well as an earth terminal to allow any of the EHT outputs to be grounded for extra safety.

ESP60775 Blue casing

ESP60776 Clear casing



High Voltage Blue Case

The Irwin Powerbase HT unit supplies a constantly variable 0-300V d.c. at 60mA and a separate constantly, variable 0-30V d.c. Also at 60mA. In addition, it has a heater supply of 6.3V a.c at 2A to power up Teltron tube heater filaments. Both variable outputs are fully smoothed.

Useful for powering valves, Teltron diodes, Millikan's oil drop experiment etc.

All outputs are short circuit protected.

ESP60778



Electrosound Powerbase

The Electrosound Powerbase is our alternative to the popular Irwin Powerbase 32. This Powerbase is ideal for use in Physics, Biology and Chemistry experiments in secondary and sixth form schools. It has the same electrical specifications as the old Irwin model but comes with a sturdy, powder-coated steel case with fold flat carry handle making it easily stackable.

A very popular power supply that has proven to last the rigours of daily use within schools with its tough construction and tamper proof fixings. 0-15V a.c. and 0-20V smoothed d.c. at up to 8A, Combined Continuously variable output, Maximum voltage lock Push button reset

Short circuit protection, Designed and manufactured in the UK, 5 Year Warranty, Tough steel powder coated casing, Stackable

Supplied with power lead, Heavy-duty screw-in rubber feet

ESP60782 Single Unit

ESP60783 Best Value Pack 15



Power Supply Spider 1.5 3 4.5 6V 1A DC

The Spider power supply has been specifically designed for Primary, Middle and Lower Secondary school use. Offering 1.5, 3, 4.5 or 6V smoothed and regulated DC at up to 1A, it is the ideal next step from using cells and batteries.

Four sets of terminals mean it can be used by four groups simultaneously enabling children to connect a multitude of low voltage electrical devices with the spider's bright LED's act as power output monitors. Manufactured in the UK

No batteries needed, 4 x 4mm output terminals, Compact and safe design Fun to use

ESP60792



NEW

Power Supply AC / DC 0-12 V 5 Amp. Economy

A compact power supply, With Short circuit protection ,
Over load protection , Over temperature protection , Stable voltage
Output :

Voltage DC : 2V, 4V, 6V, 8V, 10V, 12V

AC : 2V, 4V, 6V, 8V, 10V, 12V

Current DC : 0-5A

AC Max. : 5A

Voltage accuracy : $\pm 0.3V$

Line regulation : $\leq 0.3V$

Voltage ripple : $\leq 0.3\%rms$

Protection Short circuit, Over load protection, Over temperature
protection

Power source AC220V $\pm 10\%$, 50/60Hz $\pm 5\%$

Cooling method Natural air cooling

Operating environment -10°C-40°C, 20%RH -85%RH

Accessories Power cord $\times 1$, Operation manual

Dimension 200W $\times 90H \times 195Dmm$,Weight 3kg



ESP60664

**Power Supply Digital (0-24 V) AC& DC 0-5 A**

Used for general purpose supply provides the voltages most
commonly needed with plenty of current for almost any
experiments , AC& DC voltage.

3 Digits LED display

Current limit protection for DC output

Short-circuit protection for AC output

Over temperature protection

MTBF (e) : ≥ 2000 hours

Voltage DC : 0-24V

Voltage AC : 3V, 6V, 9V, 12V, 15V, 18V, 21V, 24V

Current DC : 0-5A

Current AC : Max.5A

Protection DC Current limit, short circuit and over temperature
protections :

AC Short circuit and over temperature protections

Power source AC220V $\pm 10\%$, 50/60Hz $\pm 5\%$

Cooling method Natural air cooling

Operating environment -10°C-40°C, 20%RH -85%RH

Accessories Power cord $\times 1$, Operation manual

Dimension 160W $\times 175H \times 260Dmm$

Weight 6.5k

ESP60839/5

**Power Supply Digital (0-24 V) AC& DC 0-10 A**

Used for general purpose supply provides the voltages most
commonly needed with plenty of current for almost any
experiments , AC& DC voltage.

3 Digits LED display

Current limit protection for DC output

Short-circuit protection for AC output

Over temperature protection

MTBF (e) : ≥ 2000 hours

Voltage DC : 0-24V

Voltage AC : 3V, 6V, 9V, 12V, 15V, 18V, 21V, 24V

Current DC : 0-10A

Current AC : Max.10A

Protection DC Current limit, short circuit and over temperature
protections :

AC Short circuit and over temperature protections

Power source AC220V $\pm 10\%$, 50/60Hz $\pm 5\%$

Cooling method Natural air cooling

Operating environment -10°C-40°C, 20%RH -85%RH

Accessories Power cord $\times 1$, Operation manual

Dimension 160W $\times 175H \times 260Dmm$

Weight 6.5kg

ESP60839/10





Battery Eliminator DC 0-6 V , 1 A

A low cost alternative to dry cell batteries. Housed in a robust ABS plastic case (IPC-0577-P). Ideally suited as a replacement in applications where batteries are normally used. Smoothed and regulated DC is available over those ranges selected by rotary switch. Output is via 4mm red and black sockets. The DC output voltage available are 1.5, 3, 4.5 and 6VDC at a maximum current of 1A.

Electrical Supply: 220-240VAC, 50-60Hz

Dimensions: 150 x 100 x 80mm overall

Mass: 0.85kg

DC Output Voltage Range: 1.5, 3, 4.5 and 6VDC

Maximum DC Output Current: 1A

ESP60841



Power Supply Variable AC/DC, 0 - 24V , 6 A

Technical data:

Output voltage: 0 ... 24 V AC or DC, continuously adjustable, max. 6 A

Digital display: LED 7 segment display, three-digit, digit height: 26 mm;

large selector switch to display direct or alternating voltage;

Output voltages can be taken from 4 mm safety sockets;

LED - indicator to display the active output socket pair;

galvanic isolation from the network;

On/off switch on the back;

DC voltage ripple: < 1 Vrms at rated load

Fuses: 3 circuit breakers, 1 fuse for display, 1 fuse for the mains input

Plastic housing made of ABS with 2 handle shells;

Connection voltage: 230 V AC/50 ... 60 Hz (200 VA);

Dimensions: 260x217x150 mm, mass: approx. 6,860 g

ESP60840



Regulated Power Supply

This single rail regulated power supply (IPC-0201-P) provides a smoothed and regulated DC output voltage over four ranges, each selected by a single rotary switch.

The power supply is housed in a robust ABS plastic case and is ideally suited for all electronic tasks and experiments requiring a consistent and reliable voltage supply or voltage reference.

The output voltage is via 4mm red and black sockets and ranges from 5, 9, 12 and 15VDC, all capable of supplying a maximum output current of 600mA.

Description: Single Regulated PSU

Electrical Supply: 220-240VAC, 50-60Hz

Dimensions: 150 x 100 x 80mm overall

Mass: 0.85kg

DC Output Voltage Range: 5, 9, 12 and 15VDC

Maximum DC Output Current: 600mA)

ESP-0201-P



Power supply unit Dual Regulated

DC 0-15 V / 1 A

Designed for use with electronic modules, transistors, amplifiers etc. where the current required is not more than 1A, this power supply provides a smoothed and regulated DC output voltage with a ripple typically less than 50mV. Output up to 15VDC positive and negative (with respect to zero) in 5 stepped ranges: 5, 6, 9, 12 and 15VDC. The outputs are from three 4mm sockets: positive, zero and negative, colour coded red, blue and black respectively. The outputs are switched by means of a rotating knob. Overload and short circuit protection is built in. An illuminated on/off switch is mounted on the rear panel adjacent to a fused appliance inlet. Housed in a robust metal case with a durable powder coated finish.

Electrical Supply: 220-240VAC, 50-60Hz

Dimensions: 179 x 190 x 85mm overall

Mass: 2.3kg

DC Output Voltage Range: 5, 6, 9, 12 and 15VDC (both negative and positive)

Maximum DC Output Current: 1A

ESP60842





Power Supply AC/DC 0-12V 8A

Continuously variable 0-12VAC and full-wave rectified DC at maximum 6A continuously or 8A for short periods (IPC-0074-P). Resettable thermal cut-out. Outputs from two pairs of colour coded 4mm sockets. Output voltage is indicated by means of a calibrated scale. An illuminated on/off switch is mounted on the rear panel adjacent to a fused IEC mains inlet. Enclosed in a robust metal case with a durable powder coated finish.

Description: Varivolt 12V PSU - Electrical Supply: 220-240VAC, 50-60Hz

Dimensions: 255 x 220 x 110mm overall - Mass: 4.75kg

AC Output Voltage Range: 0 to 12VAC

Maximum AC Output Current: 6A (8A short period of time)

DC Output Voltage Range: 0 to 12VDC

Maximum DC Output Current: 6A (8A short period of time)

ESP-0074-P



Power Supply AC/DC Varivolt 0-20V / 6 A

Continuously variable 0-20VAC and full-wave rectified DC at maximum 6A continuously or 8A for short periods. Resettable thermal cut-out. Outputs from two pairs of colour coded 4mm sockets. Output voltage is indicated by means of a calibrated scale. An illuminated on/off switch is mounted on the rear panel adjacent to a fused IEC mains inlet. Enclosed in a robust metal case with a durable powder coated finish.

Electrical Supply: 220-240VAC, 50-60Hz

Dimensions: 255 x 220 x 110mm overall

Mass: 4.75kg

AC Output Voltage Range: 0 to 20VAC

Maximum AC Output Current: 6A (8A short period of time)

DC Output Voltage Range: 0 to 20VDC

Maximum DC Output Current: 6A (8A short period of time)

ESP60843



Power Supply LoVolt 2 -14V

Class set of 15 LoVolt Power Supplies. Voltage 2, 4, 6, 9, 12 or 14VAC or full-wave rectified DC at 4A continuously, or up to 5A for periods of 1 hour (IPC-0234-P). Voltages are selected by means of a rotating switch on the front panel. In any incidence of overload, including direct short, a current sensing circuit breaker mounted on the front panel will operate and disconnect the output voltage. Outputs are taken from colour coded 4mm sockets mounted on the front panel. An illuminated on/off switch is mounted on the rear panel adjacent to a fused appliance inlet. Housed in a robust metal case with a durable powder coated finish. Supplied with mains lead and instructions.

Electrical Supply: 220-240VAC, 50-60Hz

Dimensions: 179 x 190 x 85mm overall - Mass: 2.8kg

AC Output Voltage Range: 2, 4, 6, 9, 12 and 14VAC

Maximum AC Output Current: 4A (5A upto 1 hour)

DC Output Voltage Range: 2, 4, 6, 9, 12 and 14VDC

Maximum DC Output Current: 4A (5A upto 1 hour)

ESP-0234-P



Power Supply High Voltage

Voltages of 0 to 30VDC and 0 to 300VDC at up to 60mA (IPC-0294-P). Outputs are fully floating to provide negative voltages if required and are taken from pairs of colour coded 4mm sockets on the front panel. Each output has a continuously variable voltage control, with electronic current limiting circuitry. An indication of the output voltage is given by a graduated scale on each voltage control. A pair of 4mm sockets on the front panel provide 6.3VAC at up to 2A for filament heating. An illuminated on/off switch is mounted on the rear panel adjacent to a fused appliance inlet. Housed in a robust metal case with a durable powder coated finish.

Description: High Tension PSU

Electrical Supply: 220-240VAC, 50-60Hz

Dimensions: 179 x 190 x 85mm overall - Mass: 2.4kg

DC Output Voltage Range No1: 0 to 30VDC

DC Output Voltage Range No2: 0 to 300VDC

Maximum DC Output Current: 60mA (both ranges)

AC Output Voltage: 6.3VAC

Maximum AC Output Current: 2A

ESP-0294-P





Power Supply Dual Output AC/DC 12VAC/24VDC

This instrument is designed as a general purpose laboratory power supply (IPC-0978-P). It has two isolated outputs which operate independently of each other. The AC output is selected by means of a 4-position switch on the front panel. Selected voltages are 2, 4, 6 and 12V at 4A continuously, or up to 5A for periods of 1 hour. The output is supplied via a pair of 4mm sockets on the front panel colour coded white. The output is protected from overload or short circuit by a current sensing circuit breaker mounted on the front panel.

The DC output is smoothed and regulated and is continuously variable from 0V to 24V at currents up to 3A. Voltage ripple typically less than 50mV. The output is supplied via a pair of 4mm sockets on the front panel colour coded red (positive) and black (negative).

The output is protected from short circuit or overload by an electronic regulator. The outputs may be used simultaneously as long as the combined load does not exceed 3A. Power on is indicated on the front panel by a green LED. An illuminated on/off switch is mounted on the rear panel adjacent to a fused IEC mains inlet. Enclosed in a robust metal case with a durable powder coated finish. Supplied with detachable mains lead and instructions. A pair of graphs showing how the output voltage of this power supply varies as the current supplied is increased is included in the instruction leaflet for this instrument.

Description: Electrical Supply: 220-240VAC, 50-60Hz - Dimensions: 179 x 190 x 85mm overall - Mass: 2.9kg

AC Output Voltage Range: 2, 4, 6 and 12VAC - Maximum AC Output Current: 4A (5A upto 1 hour)

DC Output Voltage Range: 0 to 24VDC - Maximum DC Output Current: 3A - POWER SUPPLY DUAL OUTPUT AC/DC - 12VAC/24VDC

ESP-0978-P



Power Lock

The Powerlock power supply has both a lockable AC and DC outputs ranges by a simple key making it impossible for students to change the voltage. The Powerlock offers 2,4,6,8,10 and 12 in both DC and AC. Outputs may also be used simultaneously up to the rated output required. For safety, the output is also protected by a simple push button cut-out. Each unit is supplied with 2 that can be used on all Powerlock units if needed. Supplied with 2 keys.

Output voltages AC DC, 2,4,6,8,10,12 voltage range in AC and DC, Current 5A, Voltage type - Stepped, Output type - Full wave rectified, non-regulated, Push button trip reset, Mains input 230/240V AC, 50Hz, Supplied with mains plug and lead, Manufactured in the UK.

Case Repair Kit

If you damage your case on one of our Irwin Power Supplies this can easily be repaired quite easily with our simple to install replacement cover kits available in a choice of 3 colour options. The kit comprises of Original Irwin blue, gloss black or crystal clear case

Three "mushrooms", which fit on the back of the case and act as a cable tidy, New cable clamp and fitting instructions. Strain relief bush If you have difficulties removing the old cable clamp and cable, a specially designed tool to make the job easier is also available. PDF

Westminster

A very popular and compact Westminster power supply is ideal for school use with its tough steel case protected by a tough powder coated finish that will last years of use. The unit will deliver up to 16A AC or DC through its colour coded terminal posts. This power supply is very popular for use in electromagnet experiments.

AC DC Output: Voltages 1-2V, Current 16A, Voltage type - Fixed, Output type - Full wave rectified DC AC, Mains input 230/240V AC, 50Hz, Supplied with mains plug and lead, Manufactured in the UK.

- ESP60789 Single unit
- ESP60790 Best value pk of 4 in gratnells tray
- ESP60786 Single Unit
- ESP60787 Best Value Pk Of 4 In Gratnells Tray



ESP60801

Blue Case



ESP60802

Clear Case



Cable Clamp Tool

Specifically designed for aiding the removal of the cable gland on Irwin casing.

ESP60803



Power Supply Single Output Linear DC

Single Output Linear DC Power Supply

Features:

Constant voltage and constant current operations
Auto CV/CC switch
Coarse and Fine control for voltage and current
Over current protection (OCP) and Over temperature protection (OTP) Intelligent cooling fan

Constant voltage operation

Line regulation 0.01% 5mV
Load regulation 0.01% 5mV
Noise 10mVrms

Constant current operation

Line regulation 0.01% 5mA
Load regulation 0.01% 5mA
Noise 10mA rms

Display

VOLTMETER 3 digits LED display

Ammeter 3 digits LED display

Accuracy (1% reading 1 digit)

Protection: Over current protection, OCP limit is adjustable from 0 to rated current. Over temperature protection: when internal temperature reaches 100 ° 10 °, OTP is activated and the output will be shut down.

Operating environment : 0 ° -40 °, 80%RH

Storage environment : -10 ° -70 °, 70%RH

Power source : AC115V/230V 10% Selectable, 50/60Hz

Accessories : Power cord x1, Operation manual x1, Short circuit plate x1

Dimensions : 125Wx155Hx170D mm**ESP60805** Range : 0-15V 0-2A Voltage display:0.00-9.99-10.0-16.0V, Current display: 000.-999.mA 1.00-2.10A, W: 2.6 KG**ESP60806** Range : 0-15V 0-3A Voltage display:0.00-9.99-10.0-16.0V, Current display: 000.-999.mA 1.00-3.10A, W : 2.6 KG**ESP60807** Range : 0-30V 0-1A Voltage display:0.00-9.99-10.0-32.0V, Current display: 000.-999.mA 1.00-3.10A, W : 2.6 KG**Power Supply Single Output Switching DC**

Single Output Switching DC Power Supply

Features:

Adopts PWM pre-regulation and linear adjustment
Constant voltage and constant current operations
Auto CV/CC switch
Coarse and Fine control for voltage and current
Over current protection, Over voltage protection and Over temperature protection Intelligent cooling fan

Specifications :

Constant voltage operation, Line regulation 0.05% 1mV, Load regulation 0.1% 5mV, Ripple Noise 10mVrms, Constant current operation, Line regulation 0.05% 10mA, Load regulation 0.1% 10mA, Ripple Noise 20mArms

Display

VOLTMETER 3 digits LED display, Ammeter 3 digits LED display, Resolution 100mV/10mA, Accuracy (1% reading 1 digit)

Protection

Over current protection, OCP limit is adjustable from 0 to rated current. Over voltage protection

Over temperature protection: when internal temperature reaches 65, OTP is Activated and the output will be shut down.

Operating environment 0 -40 , 80%RH

Storage environment -10 -70 , 70%RH

Power source AC115V/230V 10% selectable,
50/60Hz Accessories Power cord x1, Operation manual x1

Dimensions : 125Wx160Hx260D mm**ESP60808** Range : 0-15V 0-5A Voltage display: 0.00-9.99-10.0-16.0V, , Current display: 000.-999.mA 1.00-5.10A W : 2 KG**ESP60809** Range : 0-15V 0-10A Voltage display: 0.00-9.99-10.0-16.0V, Current display: 000.-999.mA 1.00-10.1A W : 2 KG



Power Supply Multiple Output Linear DC

Multiple Output Linear DC Power Supply

Features:

Two independent adjustable outputs 0-30V/0-3A x2, 0-30V/0-5A x2, one fixed output 5V/3A x1, Constant voltage and constant current operations, auto CV and CC switch, Low ripple and noise, low temperature drift, Auto Series and Parallel tracking operations, Output ON/OFF control, High efficiency, high power density, Over load and reverse polarity protections, Dual- colour four digital panel meters

Specifications:

Constant voltage operation, Line regulation 0.01% 3mV, load regulation 0.01% 3mV (I?3A); 0.02% 5mV (I>3A), Ripple Noise (5Hz-1MHz) 1mVrms (I3A); 2 I806Vrms (I>3A), Constant current operation, Line regulation 0.2% 3mA, Load regulation 0.2% 3mA (I?3A); 0.2% 5mA (I>3A), Ripple Noise 3mArms (I?3A); 6mArms (I>3A)

Tracking operation

Parallel Line regulation: 0.01% 3mV, Parallel Load regulation:0.01% 3mV (I3A); 0.02% 5mV (I>3A), Series Line regulation:0.01% 5mV, Series Load regulation:300mV, Series Tracking error: 0.5% 10mV of the master, no load (with load, add load regulation 300mV)

Auxiliary output (fixed), Output voltage 5V 0.25V, Output current 3A, Load regulation 25mV @110/220VAC rated input, Ripple noise (5Hz-1MHz) 2mVrm

Display

VOLTMETER 3 digits LED display, Ammeter 3 digits LED display, Resolution 100mV/10mA

Accuracy Real voltage and current output: (1% reading 2 digits); Preset voltage and current: (1% reading 8 digits)

Insulation

Between base and output terminal: 20M/500VDC, Between base and AC power cord: 300M/500VDC, Operating environment 0-40, 80%RH, Storage environment -10-70, 70%RH, Power source AC110V/220V10%, 50/60Hz, Accessories Power cord x1, Operation manual x1, Test lead x1

ESP60811	Range : 0-30V X2, 0-3A X2	Output watt: 195 watt, Output voltage: 0-30V x2, Output current: 0-3A x2, Fixed output: 5V/3A, Output On/Off: Yes, Tracking Operation: Yes, Dimension (WxHxD): 255x155x370mm, Weight : 8kg
ESP60812	Range : 0-30V X2, 0-5A X2	Output watt: 315 watt, Output voltage: 0-30V x2, Output current: 0-5A x2, Fixed output: 5V/3A, Output On/Off: Yes, Tracking Operation: Yes, Dimension (WxHxD): 255x155x370mm, Weight : 10kg
ESP60813	Range : 0-30V X2, 0-3A X2	Output watt: 195 watt, Output voltage: 0-30V x2, Output current: 0-3A x2, Fixed output: 5V/3A, Output On/Off: Yes, Tracking Operation: Yes, Dimension (WxHxD): 260x160x330mm, Weight : 7kg
ESP60814	Range : 0-30V X2, 0-5A X2	Output watt: 195 watt, Output voltage: 0-30V x2, Output current: 0-5A x2, Fixed output: 5V/3A, Output On/Off: Yes, Tracking Operation: Yes, Dimension (WxHxD): 260x160x330mm, Weight : 9kg
ESP60815	Range : 0-30V X2, 0-3A X2	





EduScience UK



LAB WARE



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- **Measuring Instruments**
- **Electronic & Electrical
Equipment**
- **Appliances**





Test Tube

Manufactured from boro 3.3 glass with fire polished Rim (pack of 100)

- ESL56324 Size : 10 X 75MM
- ESL56325 Size : 12 X 75MM
- ESL56326 Size : 15 X 125MM
- ESL56327 Size : 18 X 150MM
- ESL56328 Size : 25 X 150MM
- ESL56330 Size : 16 X 160MM
- ESL56330EU Size : 16 X 160MM



Test Tube

Manufactured from boro 3.3 glass with Rim (pack of 100)

- ESL56332 Size : 10 X 75MM
- ESL56333 Size : 12 X 75MM
- ESL56334 Size : 16 X 125MM
- ESL56335 Size : 18 X 150MM
- ESL56336 Size : 25 X 150MM



Test Tube Without Rim

Manufactured from boro 3.3 glass without Rim (pack of 100)

- ESL56339 Size : 10 X 75MM
- ESL56340 Size : 12 X 75MM
- ESL56341 Size : 16 X 125MM
- ESL56342 Size : 18 X 150MM
- ESL56343 Size : 25 X 150MM



Culture Tube Round Bottom With Screw Cap

NEW

- Tubes Round Bottom With Screw Thread And Teflon Line
- Made from ASTM E-438 Type-1 Class A, Boro 3.3 glass
- With Screw Thread and Teflon Liner
- Leakproof
- Comes with PP Screw Cap

- ESL56998 Size : 12 X 100MM 5 ml
- ESL56999 Size : 16 X 100MM 10 ml
- ESL57000 Size : 16 X 125MM 15ml
- ESL57001 Size : 12 X 160MM 20ml



Burette Class AS With PTFE Key Stopcock

Clear glass ,with lot. Certificate ,tolerance: 0.05(ML) division: 0.1

- ESL56348 Capacity: 25 ML
- ESL56349 Capacity: 50 ML



Culture Tube Round Bottom With Aluminum Stopper GL Thread

NEW

W/ Aluminum Stopper GL Thread

ESL56345



Burette Class B With PTFE Key Stopcock

With amber graduation (economy model) with detachable PTFE key stopcock

- ESL56346 Capacity: 25 ML
- ESL56347 Capacity: 50 ML



Burette Class B With Detachable PTFE Key Stopcock

With Amber graduation DIN ISO 385.

- ESL56351 Capacity: 25 ML
- ESL56352 Capacity: 50 ML





Burette Class B

With Glass Key Stopcock
Clear glass with amber graduation din ISO 385.

- ESL56359 Capacity: 25 ML
- ESL56360 Capacity: 50 ML



Burette 50 ml Class B DIN ISO 385 ,BORO 3.3 with Pinch Clip 0.10 ml

BORO 3.3 with Pinch Clip 0.10 ml

ESL56350



Burette Class B

With Needle Valve PTFE Stopcock With amber graduation DIN ISO 385.

- ESL56353 Capacity: 25 ML
- ESL56354 Capacity: 50 ML
- ESL56355 Capacity: 100 ML



Burette Class As

With PTFE Key Stopcock
Un serialized, graduation interval 0.2ML, tolerance +/- 0.1ML

- ESL56361 Capacity: 10 ML
- ESL56362 Capacity: 25 ML
- ESL56363 Capacity: 50 ML
- ESL56364 Capacity: 100ML



Burette Class As

With Glass Key Stopcock
Clear glass with amber graduation , with lot certificate , division 0.1, Tolerance 0.05(ML)

- ESL56357 Capacity: 25 ML
- ESL56358 Capacity: 50 ML



Pipette Volumetric Class AS

One mark,with Lot. Certificate

- ESL56365 Capacity : 5 ML
- ESL56366 Capacity : 10 ML
- ESL56367 Capacity : 20 ML
- ESL56368 Capacity : 25 ML
- ESL56369 Capacity : 50 ML



Pipette Volumetric

Pipette bulb small, 5ml, (pack of 10)

ESL56371



Pipette Graduated (Serological), Class B

	Capacity	Subdivision	Tolerance	colour
ESL56372	1 ML,	0.1ML,	- 0.02ML	green
ESL56373	2 ML,	0.1ML,	- 0.02ML	green
ESL56374	5 ML,	0.1ML,	- 0.02ML	Blue
ESL56375	10 ML,	0.1ML,	- 0.02ML	orange
ESL56376	25 ML,	0.1ML,	- 0.01ML	white
ESL56377	50 ML,	0.1ML,	- 0.01ML	white



NEW



Pipette Graduated, Class AS Capacity 0.1 ML

Made of Borosilicate Glass AS , Color Coded , Amber Printing , Zero at the Top , Division 0.01 ML,

CAT NO	Capacity	CAT NO	Capacity
ESL56907	0.1ML,(0.01 ML)	ESL56914	5ML,(0.05 ML)
ESL56908	0.2ML,(0.01 ML)	ESL56915	5ML,(0.1 ML)
ESL56909	0.5ML,(0.01 ML)	ESL56916	10ML,(0.1 ML)
ESL56910	1ML,(0.01 ML)	ESL56917	20ML,(0.1 ML)
ESL56911	1ML,(0.1 ML)	ESL56918	25ML,(0.1 ML)
ESL56912	2ML,(0.01 ML)	ESL56919	25ML,(0.2 ML)
ESL56913	2ML,(0.10 ML)	ESL56920	50ML,(0.1 ML)

Pipette Transfer

Disposable Graduated Transfer Pipette Non Sterile



- ESL56378 Capacity : 1 ML,
- ESL56379 Capacity : 2 ML,
- ESL56380 Capacity : 3 ML,

Pipette Transfer

Disposable Graduated Transfer Pipette Individually Wrapped in a peel off pouch-Sterile.



- ESL56383 Capacity : 1 ML,
- ESL56384 Capacity : 2 ML,
- ESL56385 Capacity : 3 ML,

Dropping Pipette With Rubber Teat

Single glass dropping pipette ,made of neutral glass Supplied with latex teat Dropping Pipette measures 125 mm length Useful for dispensing liquid from test tubes



NEW

ESL56389



Pipette Aid

Pipette aid mad of polypropylene and silicon

- ESL56390 Capacity : 2 ML,
- ESL56391 Capacity : 5 ML,
- ESL56392 Capacity : 10 ML,
- ESL56393 Capacity : 25 ML,



Pipette Stand Rotary Vertical

Pipette stand rotary vertical pp, 94 places

ESL56395



Pipette Washer PP

Pipette washer PP

ESL56398



Flask Erlenmeyer Narrow Neck

Flask Erlenmeyer, Narrow neck These flasks are made from thick wall and have reinforced thick beaded rim. The flasks are produced to meet ASTM E 1404 TYPE 1 specifications. All the flasks are printed in white enamel.

	Capacity	Subdivision	graduation Range
ESL56420	50 ML	10ML	20-50ML
ESL56421	100 ML	0M	20-100ML
ESL56422	250 ML	5ML	50-225ML
ESL56423	500 ML	50ML	100-500ML
ESL56424	1000 ML	50ML	250-1000ML

Flask Erlenmeyer Narrow Neck

Erlenmeyer Flasks, Narrow Neck with graduation DIN ISO 1773 with Reinforced thick Rim to reduce chipping & breakage.

- ESL56412 Capacity : 50 ML
- ESL56413 Capacity : 100 ML
- ESL56414 Capacity : 250 ML
- ESL56415 Capacity : 500 ML
- ESL56416 Capacity : 1000 ML



NEW

Flask Erlenmeyer Narrow Neck 250ML With Rubber Stopper

Erlenmeyer Flasks, Narrow Neck with graduation DIN ISO 1773 with Reinforced thick Rim to reduce chipping & breakage, Capacity 250ML

ESL56414SP



NEW



Erlenmeyer Flask with Screw-Cap

Erlenmeyer Flask with Screw-Cap

	Capacity	Standard joint	Red screw-cap
ESL56411/100	100 ML	(NS) : 25	heat resistance up to 180°C
ESL56411/250	250 ML	(NS) : 32	heat resistance up to 180°C
ESL56411/500	500 ML	(NS) : 32	heat resistance up to 180°C
ESL56411/1L	1000ML	(NS) : 32	heat resistance up to 180°C

NEW



Flask Erlenmeyer PMP, PP, with screw cap

Flask Erlenmeyer PMP, PP, with screw cap

	Capacity	Subdivision	GL
ESL56410/50	50 ML	10ML	40 IN 34/35
ESL56410/100	100 ML	20ML	40 IN 34/35
ESL56410/250	250 ML	50ML	52 IN 45/40
ESL56410/500	500 ML	100ML	52 IN 45/40
ESL56410/1L	1000 ML	200ML	52 IN 45/40

NEW



Flask Erlenmeyer Round Bottom Wide Neck

Flask Round Bottom Wide neck, with beaded rim DIN 12347, DIN ISO 1773,

ESL56428W	Capacity : 100 ML
ESL56429W	Capacity : 250 ML
ESL56430W	Capacity : 500 ML
ESL56431W	Capacity : 1000 ML



Flask Erlenmeyer Wide Neck

Flask Erlenmeyer, wide neck , These flasks are made from thick wall and have reinforced thick beaded rim. The flasks are produced to meet ASTM E 1404 TYPE 1 specifications. All the flasks are printed in white enamel.

ESL56427	Capacity : 50 ML
ESL56428	Capacity : 100 ML
ESL56429	Capacity : 250 ML
ESL56430	Capacity : 500 ML
ESL56431	Capacity : 1000 ML

Flask Round Bottom Narrow Neck

Flask Round Bottom narrow neck, with beaded rim DIN 12347, DIN ISO 1773.

ESL56433	Capacity : 100 ML
ESL56434	Capacity : 250 ML
ESL56435	Capacity : 500 ML
ESL56436	Capacity : 1000 ML
ESL56437	Capacity : 2000 ML



Flask Flat Bottom Narrow Neck

Flask Flat Bottom, narrow neck, with beaded rim DIN ISO 1773.

ESL56440	Capacity : 100 ML
ESL56441	Capacity : 250 ML
ESL56442	Capacity : 500 ML
ESL56443	Capacity : 1000 ML
ESL56444	Capacity : 2000 ML



Flask Distillation With Side Arm

Distillation flask made of Boro silicate glass 3.3

ESL56455	Capacity : 100 ML
ESL56456	Capacity : 250 ML
ESL56457	Capacity : 500 ML
ESL56458	Capacity : 1000 ML
ESL56459	Capacity : 2000 ML





Flask Volumetric Class A

Volumetric Flask Borosilicate glass 3.3 Class A , With Polypropylene stopper and Lot Certificate

ESL56448	Capacity : 10 ML	NS 12/21
ESL56449	Capacity : 25 ML	NS 12/21
ESL56448	Capacity : 50 ML	NS 12/21
ESL56449	Capacity : 100 ML	NS 14/23
ESL56450	Capacity : 250 ML	NS 14/23
ESL56451	Capacity : 500 ML	NS 19/26
ESL56452	Capacity : 1000 ML	NS 24/29
ESL56453	Capacity : 2000 ML	NS 29/32



Flask Volumetric, Class B

Volumetric flask , Borosilicate glass 3.3 Class B With White Polypropylene stopper

ESL56400	Capacity : 5 ML	NS 10/19
ESL56401	Capacity : 10 ML	NS 10/19
ESL56402	Capacity : 25 ML	NS 10/19
ESL56403	Capacity : 50 ML	NS 12/21
ESL56404	Capacity : 100 ML	NS 14/23
ESL56405	Capacity : 250 ML	NS 14/23
ESL56406	Capacity : 500 ML	NS 19/26
ESL56407	Capacity : 1000 ML	NS 24/29
ESL56408	Capacity : 2000 ML	NS 29/32



Mixing Cylinder , Boro 3.3 , With Plastic Stopper

made of borosilicate glass 3.3 in compliance with DIN EN ISO 4788 , with hexagonal base and standard ground joint and poly stopper (PE)

NEW

ESL56978	Capacity : 25 ML	Class B blue graduation 25 : 0,5 ml NS 14/23
ESL56979	Capacity : 50 ML	Class B blue graduation 50 : 1 ml NS 19/26
ESL56980	Capacity : 100 ML	Class B blue graduation 100: 1 ml NS 24/29
ESL56981	Capacity : 250 ML	Class B blue graduation 250: 2 ml NS 29/32
ESL56982	Capacity : 500 ML	Class B blue graduation 500: 5 ml NS 34/35
ESL56983	Capacity : 1000 ML	Class B blue graduation 1000: 10 ml NS 45/40
ESL56984	Capacity : 2000 ML	Class B blue graduation 2000: 20 ml NS 45/40

Measuring Cylinder , Class B, Hex Base

Measuring Cylinder , Glass hexagonal base ,Class B, To contain (TC), Double metric , with protection collar.

ESL56500	Capacity : 25 ML	Graduation Interval 1ML, Tolerance +/- 0.25ML
ESL56501	Capacity : 50 ML	Graduation Interval 1ML, Tolerance +/- 0.25ML
ESL56502	Capacity : 100 ML	Graduation Interval 1ML, Tolerance +/- 0.5ML
ESL56503	Capacity : 250 ML	Graduation Interval 1ML, Tolerance +/- 1ML
ESL56504	Capacity : 500 ML	Graduation Interval 5ML, Tolerance +/- 2ML



Measuring Cylinder ,Class A, Round Base

Measuring Cylinder , Round base ,Class A ,With LOT certificate.

Class A	Class B	Capacity
ESL56480	ESL56480B	5 ML
ESL56481	ESL56481B	10 ML
ESL56482	ESL56482B	25 ML
ESL56483	ESL56483B	50 ML
ESL56484	ESL56484B	100 ML
ESL56485	ESL56485B	250 ML
ESL56486	ESL56486B	500 ML
ESL56487	ESL56487B	1000 ML



Measuring Cylinder, Class B, Hex Base

Measuring Cylinder , Hexagonal base ,Class B, To contain (TC), Single metric , Tall form .

ESL56470	Capacity : 10 ML
ESL56471	Capacity : 25 ML
ESL56472	Capacity : 50 ML
ESL56473	Capacity : 100 ML
ESL56474	Capacity : 250 ML
ESL56475	Capacity : 500 ML
ESL56476	Capacity : 1000 ML





Measuring Cylinder, , Class B, Hex Base

Measuring Cylinder Graduated Class B, Hex Base, with Double Metric Scale, Cylinders are made to meet ASTM E 1272 norms and are printed in double scale with white enamel. All the cylinders from 10ml to 2000ml comes with the bumper guard.

- ESL56492 Capacity : 10 ML
- ESL56493 Capacity : 25 ML
- ESL56494 Capacity : 50 ML
- ESL56495 Capacity : 100 ML
- ESL56496 Capacity : 250 ML
- ESL56497 Capacity : 500 ML
- ESL56498 Capacity : 1000 ML



Measuring Cylinder, Class B , Plastic Base.

Measuring Cylinder , Plastic base ,Class B, To contain (TC), Single metric , with protection collar.

- ESL56461 Capacity : 10 ML
- ESL56462 Capacity : 25 ML
- ESL56463 Capacity : 50 ML
- ESL56464 Capacity : 100 ML
- ESL56465 Capacity : 250 ML
- ESL56466 Capacity : 500 ML
- ESL56467 Capacity : 1000 ML



Measuring Cylinder PP Class B

measuring cylinders - Class B , Material : Polypropylene

- ESL56516 Capacity : 10 ML
- ESL56517 Capacity : 25 ML
- ESL56518 Capacity : 50 ML
- ESL56519 Capacity : 100 ML
- ESL56520 Capacity : 250 ML
- ESL56521 Capacity : 500 ML
- ESL56522 Capacity : 1000 ML
- ESL56523 Capacity : 2000 ML



Measuring Cylinders- PP

Measuring Cylinders - Autoclavable Graduations, Material : Polypropylene

- ESL56509 Capacity : 25 ML
- ESL56510 Capacity : 50 ML
- ESL56511 Capacity : 100 ML
- ESL56512 Capacity : 250 ML
- ESL56513 Capacity : 500 ML



Measuring Cylinder PMP, Class A

Measuring Cylinder Class A, Material : Polymethylpentene

- ESL56536 Capacity : 10 ML
- ESL56537 Capacity : 25 ML
- ESL56538 Capacity : 50 ML
- ESL56539 Capacity : 100 ML
- ESL56540 Capacity : 250 ML
- ESL56541 Capacity : 500 ML
- ESL56542 Capacity : 1000 ML
- ESL56543 Capacity : 2000 ML



Measuring Cylinder PMP, Class B

Measuring Cylinder Class B, Material : Polymethylpentene

- ESL56526 Capacity : 10 ML
- ESL56527 Capacity : 25 ML
- ESL56528 Capacity : 50 ML
- ESL56529 Capacity : 100 ML
- ESL56530 Capacity : 250 ML
- ESL56531 Capacity : 500 ML
- ESL56532 Capacity : 1000 ML
- ESL56533 Capacity : 2000 ML





Beaker Low Form

Beaker low form, With graduation and spot , Made of borosilicate glass 3.3 .

- ESL56544 Capacity : 10 ml
- ESL56545 Capacity : 25 ml
- ESL56546 Capacity : 50 ml
- ESL56547 Capacity : 100 ml
- ESL56548 Capacity : 250 ml
- ESL56549 Capacity : 400 ml
- ESL56550 Capacity : 600 ml
- ESL56551 Capacity : 1000 ml
- ESL56552 Capacity : 2000 ml
- ESL56553 Capacity : 3000 ml



Beaker Low Form ,Heavy Duty

Beaker low form, Heavy duty borosilicate glass 3.3 ,Tolled top rim , Double metric scales.

	Capacity	Graduation interval	graduation range
ESL56554	100 ml	10m	25-200ml
ESL56555	250 ml	25ml	25-200ml
ESL56556	400 ml	25ml	25-325ml
ESL56557	600 ml	50ml	50-500ml
ESL56558	1000 ml	100ml	100-1000ml
ESL56559	2000 ml	200ml	200-1400ml



Beaker Tall Form

Beaker Tall form, borosilicate glass 3.3 ,with graduation and spout.

- ESL56561 Capacity : 50 ML
- ESL56562 Capacity : 100 ML
- ESL56563 Capacity : 150 ML
- ESL56564 Capacity : 250 ML
- ESL56565 Capacity : 400 ML
- ESL56566 Capacity : 600 ML
- ESL56567 Capacity : 1000 ML



Beaker Low Form

Beaker, low form, with slightly flared beaded top, double metric scale

	Capacity	Graduation interval	graduation range
ESL56572	50 ml	10ml	10-40ml
ESL56573	100 ml	10ml	20-80ml
ESL56574	250 ml	25ml	25-200ml
ESL56575	600 ml	50ml	50-500ml
ESL56576	1000 ml	50ml	100-1000ml
ESL56577	2000 ml	50ml	100-2000ml
ESL56578	5000 ml	50ml	100-5000ml



Beaker (Euro Design) PP

Autoclavable with Graduation, Material : Polypropylene

- ESL56581 Capacity : 100 ml
- ESL56582 Capacity : 250 ml
- ESL56583 Capacity : 500 ml
- ESL56584 Capacity : 1000 ml





Beaker Griffin Low Form PMP

Beaker Griffin Low-form ,Material :Polymethylpentene sold in Packs.

ESL56593	Capacity : 50 ml	12 pcs/pack
ESL56594	Capacity : 100 ml	12 pcs/pack
ESL56595	Capacity : 250 ml	6 pcs/pack
ESL56596	Capacity : 600 ml	4 pcs/pack
ESL56597	Capacity : 1000 ml	3 pcs/pack
ESL56598	Capacity : 2000 ml	1 Pc
ESL56599	Capacity : 5000 ml	1 Pc
ESL56600	Capacity : 10 litre	1 Pc



Beaker Griffin Low Form PP

Beaker Griffin Low-form ,Polypropylene, supplied in Pk

ESL56585	Capacity : 50 ml	12 pcs/pack
ESL56586	Capacity : 100 ml	12 pcs/pack
ESL56587	Capacity : 250 ml	6 pcs/pack
ESL56588	Capacity : 600 ml	4 pcs/pack
ESL56589	Capacity : 1000 ml	3 pcs/pack
ESL56590	Capacity : 2000 ml	1 Pc
ESL56591	Capacity : 5000 ml	1 Pc
ESL56592	Capacity : 10 ltr	1 Pc



Beaker With Handle Low Form PMP,

Beaker Low-Form With Handle, Material : Polymethylpentene .

ESL56612	Capacity : 100 ML
ESL56613	Capacity : 250 ML
ESL56614	Capacity : 600 ML
ESL56615	Capacity : 1000 ML
ESL56616	Capacity : 2000 ML
ESL56617	Capacity : 5000 ML



Beaker With Handle Low Form PP

Beaker Low-Form With Handle ,Made of Polypropylene.

ESL56603	Capacity : 100 ml
ESL56604	Capacity : 250 ml
ESL56605	Capacity : 600 ml
ESL56606	Capacity : 1000 ml
ESL56607	Capacity : 2000 ml
ESL56608	Capacity : 5000 ml



Pycnometer To Gay Lussac, Calibrated, Class A

Pycnometer to gay lussac, calibrated, class a, without certificate, with Teflon stopper

ESL56630	Capacity : 5 ML
ESL56631	Capacity : 10 ML
ESL56632	Capacity : 25 ML



Winchester Bottle 2.5 Ltr

Winchester Bottle

ESL56636



Weighing Bottle Ground Squat Form Weighing

Bottles, Ground In Stopper Manufactured from ASTM 438 TYPE 1 boro 3.3 glass

ESL56634	50x35mm Capacity : 20 ml
ESL56635	65x35mm Capacity : 25 ml
ESL56636	90x40mm Capacity : 60 ml





Desiccators Vacuum With Stopcock Lid And Plate

Complies with IS 6128 Designed for use under vacuum Sturdy construction of borosilicate glass-ground glass flanges Plates are positioned on an internal ledge within the base Comes with glass stopcock at the top Generally used for drying of moist products, and for storage of moisture sensitive substances ,

- ESL56624 ID Ground Flange APP. 100 mm.
- ESL56625 ID Ground Flange APP. 150 mm.
- ESL56626 ID Ground Flange APP. 200 mm.
- ESL56627 ID Ground Flange APP. 250 mm.
- ESL56628 ID Ground Flange APP. 300 mm.



Desiccators With Lid Plain 150 Mm

Desiccator with Lid, Plain, Die pressed, Neutral Glass with Porcelain perforated plate.

- ESL56619 Diameter 100 MM
- ESL56620 Diameter 150 MM
- ESL56621 Diameter 200 MM
- ESL56622 Diameter 250 MM
- ESL56623 Diameter 300 MM



Bottle Reagent Amber , Narrow Mouth

Bottles Reagent narrow mouth, manufactured from ASTM E 438 TYPE 1 BORO 3.3 GLASS in compliance to DIN ISO 4796 - 2 standards with standard ground joint & PP stopper, EN ISO 4796,

- ESL56638 Capacity : 50 ML N/S 19/26
- ESL56639 Capacity : 100 ML N/S 19/26
- ESL56640 Capacity : 250 ML N/S 19/26,
- ESL56641 Capacity : 500 ML N/S 19/26
- ESL56642 Capacity : 1000 ML N/S 19/26



Bottle Reagent, Clear Glass

Bottles Reagent narrow mouth, manufactured from ASTM E 438 TYPE 1 boro 3.3 glass in compliance to DIN ISO 4796 - 2 standards with standard ground joint & PP stopper, EN ISO 479.

- ESL56660 Capacity : 100 ml N/S 14/23
- ESL56661 Capacity : 250 ml N/S 19/26
- ESL56662 Capacity : 500 ml N/S 24/29
- ESL56663 Capacity : 1000 ml N/S 24/29
- ESL56664 Capacity : 2000 ml N/S 24/29



Bottle Reagent Autoclavable Screw Cap And Pour- ing Ring

Bottles Reagent narrow mouth, manufactured from ASTM E 438 TYPE 1 BORO 3.3 GLASS in compliance to DIN ISO 4796 - 1 standards autoclavable screw cap and pouring ring, EN ISO 479.

- ESL56643 Capacity : 50 ML
- ESL56644 Capacity : 100 ML
- ESL56645 Capacity : 250 ML
- ESL56646 Capacity : 500 ML
- ESL56647 Capacity : 1000 ML
- ESL56648/2L Capacity : 2000 ML
- ESL56648/5 L Capacity : 5000 ML
- ESL56648/10 L Capacity : 10000 ML



Mixed Glassware - Class Pack

This mixed glassware class pack contains one each of the following: Beakers (50ml, 100ml, 250ml, 600ml, 1000ml), Measuring cylinders (10ml, 25ml, 50ml, 100ml, 250ml), Conical flasks (100ml, 250ml, 500ml), Plastic beakers (50ml, 100ml, 250ml, 500ml, 1000ml), Bulb pipettes (5ml, 10ml, 25ml), Glass funnel - 75mm diameter, Evaporating basin - 75ml Crucible - 25ml

ESL56988





Bottle Dropping Glass Pipette

Pipette dropping bottle having a three piece pipette section comprising a glass dropper, high density polythene stopper with dust-proof head and vinyl teat. Both stopper and teat are highly resistant to chemical attack by acids and alkalis.

- ESL56656 Capacity : 30 ml
- ESL56657 Capacity : 60 ml
- ESL56658 Capacity : 120 ml
- ESL56656EU Capacity : 30 ml
- ESL56657EU Capacity : 50 ml
- ESL56658EU Capacity : 100 ml



Bottle Dropping Amber

Amber glass dropping bottles with interchangeable stopper and rubber teat

- ESL56649 Capacity : 30 ML
- ESL56650 Capacity : 60 ML
- ESL56651 Capacity : 120 ML



Bottle Round Boston HDPE

Narrow-Mouth Boston Round Bottle- Made of High density Polyethylene ,sold in packs

- ESL56665 Capacity : 4 ml 12pcs/pack
- ESL56666 Capacity : 8 ml 12pcs/pack
- ESL56667 Capacity : 15 ml 12pcs/pack
- ESL56668 Capacity : 30 ml 12pcs/pack
- ESL56669 Capacity : 60 ml 12pcs/pack
- ESL56670 Capacity : 125 ml 12pcs/pack
- ESL56671 Capacity : 250 ml 12pcs/pack
- ESL56672 Capacity : 500 ml 12pcs/pack
- ESL56673 Capacity : 1000 ml 6pcs/pack



Bottle Dropping Clear

Dropping Bottles, Manufactured from ASTM E 438 TYPE 1 BORO 3.3 GLASS fitted with ground in interchangeable stopper and rubber teat.

- ESL56652 Capacity : 30 ML
- ESL56653 Capacity : 60 ML
- ESL56654 Capacity : 120 ML



Bottle Round Boston LDPE

Narrow-Mouth Boston Round Bottle-Made of low density polyethylene ,sold in packs.

- ESL56676 Capacity : 8 ml 12pcs/pack
- ESL56677 Capacity : 15 ml 12pcs/pack
- ESL56678 Capacity : 30 ml 12pcs/pack
- ESL56679 Capacity : 60 ml 12pcs/pack
- ESL56680 Capacity : 125 ml 12pcs/pack
- ESL56681 Capacity : 250 ml 12pcs/pack
- ESL56682 Capacity : 500 ml 12pcs/pack
- ESL56683 Capacity : 1000 ml 6pcs/pack

Universal Bottle With Screw Cap

Threaded glass bottle clear PP 28, with PP Screw Cap, Clear & Amber Glass

- | | | |
|--------------------|--------------------|--------------------------|
| Clear Glass | Amber Glass | |
| ESL56706W | ESL56706WA | 30 ml Wide Mouth |
| ESL56706W/10 | ESL56706W/10A | 30 ml Wide Mouth PK/10 |
| ESL56706N/10 | ESL56706N/10A | 30 ml Narrow Mouth PK/10 |
| ESL56707 | ESL56707A | 60 ml |
| ESL56708 | ESL56708A | 100 ml |
| ESL56709 | ESL56709A | 250 ml |
| ESL56716 | ESL56716A | 500 ml |
| ESL56717 | ESL56717A | 1000 ml |

Spray Bottle

Adjustable spray pattern. Pistol grip handle and bottle.

ESL56757





Bottle Round Boston Amber-HDPE

Amber Narrow-Mouth Boston Round Bottle-Made of High density Polyethylene ,sold in packs

ESL56686	Capacity : 4 ml	12pcs/pack
ESL56687	Capacity : 8 ml	12pcs/pack
ESL56688	Capacity : 15 ml	12pcs/pack
ESL56689	Capacity : 30 ml	12pcs/pack
ESL56690	Capacity : 60 ml	12pcs/pack
ESL56691	Capacity : 125 ml	12pcs/pack
ESL56692	Capacity : 250 ml	12pcs/pack
ESL56693	Capacity : 500 ml	12pcs/pack
ESL56694	Capacity : 1000 ml	6pcs/pack



Bottle Round Boston PP

Narrow-Mouth Boston Round Bottle-Made of Polypropylene , sold in packs.

ESL56697	Capacity : 4 ML	12pcs/pack
ESL56698	Capacity : 8 ML	12pcs/pack
ESL56699	Capacity : 15 ML	12pcs/pack
ESL56700	Capacity : 30 ML	12pcs/pack
ESL56701	Capacity : 60 ML	12pcs/pack
ESL56702	Capacity : 125 ML	12pcs/pack
ESL56703	Capacity : 250 ML	12pcs/pack
ESL56704	Capacity : 500 ML	12pcs/pack
ESL56705	Capacity : 1000 ML	6pcs/pack



Bottle Round Boston LDPE

Wide Mouth Boston Round Bottle-Made of High density Polyethylene ,sold in packs

ESL56710	Capacity : 30 ML	12pcs/pack
ESL56711	Capacity : 60 ML	12pcs/pack
ESL56712	Capacity : 125 ML	12pcs/pack
ESL56713	Capacity : 250 ML	12pcs/pack
ESL56714	Capacity : 500 ML	12pcs/pack
ESL56715	Capacity : 1000 ML	6pcs/pack



Bottle Round Boston HDPE

Wide-Mouth Boston Round Bottle-Made of low density polyethylene ,sold in packs.

ESL56718	Capacity : 30 ML	12pcs/pack
ESL56719	Capacity : 60 ML	12pcs/pack
ESL56720	Capacity : 125 ML	12pcs/pack
ESL56721	Capacity : 250 ML	12pcs/pack
ESL56722	Capacity : 500 ML	12pcs/pack
ESL56723	Capacity : 1000 ML	6pcs/pack



Bottle Round Boston Amber-HDPE

Amber Wide-Mouth Boston Round Bottle-Made of High density Polyethylene ,sold in packs

ESL56726	Capacity : 30 ML	12pcs/pack
ESL56727	Capacity : 60 ML	12pcs/pack
ESL56728	Capacity : 125 ML	12pcs/pack
ESL56729	Capacity : 250 ML	12pcs/pack
ESL56730	Capacity : 500 ML	12pcs/pack
ESL56731	Capacity : 1000 ML	6pcs/pack



Bottle Round Boston PP

Wide-Mouth Boston Round Bottle-Made of Polypropylene , sold in packs.

ESL56734	Capacity : 30 ML	12pcs/pack
ESL56735	Capacity : 60 ML	12pcs/pack
ESL56736	Capacity : 125 ML	12pcs/pack
ESL56737	Capacity : 250 ML	12pcs/pack
ESL56738	Capacity : 500 ML	12pcs/pack
ESL56739	Capacity : 1000 ML	6pcs/pack





Bottle Dropping Dispensing -LDPE

Drop-Dispenser Bottle Made of low density polyethylene,sold in packs

ESL56742	Capacity : 15 ML	12pcs/pack
ESL56743	Capacity : 30 ML	12pcs/pack
ESL56744	Capacity : 60 ML	12pcs/pack
ESL56745	Capacity : 125 ML	12pcs/pack
ESL56746	Capacity : 250 ML	6pcs/pack



Carboy Rectangular With Stopcock -HDPE

Rectangular Carboy with Stopcock-Made of High density Polyethylene.

ESL56754	Capacity : 5 LTR
ESL56755	Capacity : 10 LTR
ESL56756	Capacity : 20 LTR



Carboy With Spigot LDPE

Carboy with Spigot-Made of low density polyethylene.

ESL56750	Capacity : 10 LTR
ESL56751	Capacity : 20 LTR
ESL56752	Capacity : 50 LTR



Wash Bottle

Narrow-Mouth Wash Bottle-White Cap,sold in packs

ESL56760	Capacity : 125 ml	6pcs/pack
ESL56761	Capacity : 250 ml	6pcs/pack
ESL56762	Capacity : 500 ml	6pcs/pack
ESL56763	Capacity : 1000 ml	4pcs/pack



Wash Bottle 500ML

Wash bottles 500ml , Material : polyethylene

ESL56758



Wash Bottle Integral Side Spout

Wash Bottle-Integral Side Spout 1,sold in Packs.

ESL56774	Capacity : 125 ML	6pcs/pack
ESL56775	Capacity : 250 ML	4pcs/pack
ESL56776	Capacity : 500 ML	4pcs/pack
ESL56777	Capacity : 750 ML	4pcs/pack

NEW



Washing up Bowl

Material : P

ESL56992

Plastic Container

Made of Polypropylene and polyethylene Capacity 200 ML
Size : 5.5 X 7 X 9.5 cm



NEW

ESL57462



Wash Bottle WM LDPE

Wide Mouth Wash Bottle made of low density polyethylene ,Safety Labelled -Distilled Water ,sold in packs.

ESL56767	Capacity : 500 ML	6pcs/pack
ESL56769	Capacity : 1000 ML	1 Pc





Crystallizing Dishes

Dishes, Crystallizing, with Spout, DIN 12337

- ESL56779 Size : 70 X 40 MM
- ESL56780 Size: 80 X 45 MM
- ESL56781 Size : 95 X 55 MM



Evaporating Dishes Ceramic

(EURO DESIGN) 75 x 30 mm(ODXH) made of porcelain, maximum temperature up-to 1150°C

- ESL56782/10 10 ML ESL56783 70 ML
- ESL56782/15 15 ML ESL56784 100 ML
- ESL56782/25 25 ML ESL56784/125 125 ML
- ESL56782 50 ML



Petri Dish, Boro 3.3 Glass

petri dish, manufactured from boro 3.3 glass which can withstand repeated autoclaving. od 100mm, height 17mm

- ESL56785 OD 100mm, HEIGHT 17mm
- ESL56786 OD 100mm HEIGHT
- ESL56787 OD 60mm, HEIGHT 20mm



Mortar & Pestle

Pestle & Mortar made of porcelain, maximum temperature up to 1150°C

- ESL56792 Size : 100 mm x 70 mm (dxh)
- ESL56793 Size : 130 mm x 80mm (dxh)
- ESL56794 Size : 160 mm x 90mm (dxh)
- ESL56795 Size : 216 mm x 114mm (dxh)

Petri Dish

Petri dish disposable

- ESL56788 Size : 100 mm x 14 mm Polypropylene autoclavable
- ESL56789 Size : 90 mm x 14 mm Radiation sterile vent-ps, 90mmx14mm
- ESL56790 Size : 90 mm x 14 mm Radiation sterile non vented-ps, 90mmx14mm



NEW



Thistle Funnel

Thick walled glass thistle funnel 11.5" -total length, 9.5" stem length. Reservoir is 1.5" in height with a 1.5" diameter and an interior diameter of 1". The outer diameter of the stem is .5" and the inner diameter is 2/16". This is a great unit for adding liquid to a narrow necked flask or other similar piece of lab ware.

Made of Borosilicate glass has the following heat tolerances: Strain Point -515°C Annealing Point 565°C Softening Point 820°C

ESL56819



Funnel Analytical PP , 100 mm -Long Stem

Funnels- long stem 100mm, Autoclavable Material : Polypropylene

ESL56805



Separating Funnel

Separating funnel with glass stopcock and pp stopper Squibb shape

- ESL56807 Capacity : 125 ML NS : 29/32
- ESL56808 Capacity : 250 ML NS : 29/32
- ESL56809 Capacity : 500 ML NS : 29/32
- ESL56810 Capacity : 1000 ML NS : 29/32



**Funnel PP**

Funnel analytical made of polypropylene, with plain surfaces, short stem sold in packs

ESL56811	Diameter 35 mm	12 pcs/pack
ESL56812	Diameter 50 mm	13 pcs/pack
ESL56813	Diameter 55 mm	14 pcs/pack
ESL56814	Diameter 65 mm	15 pcs/pack
ESL56815	Diameter 75 mm	6 pcs/pack
ESL56816	Diameter 90 mm	7 pcs/pack
ESL56817	Diameter 100 mm	4 pcs/pack
ESL56818	Diameter 160 mm	2 pcs/pack

**Crucible Porcelain Medium Wall**

Made of porcelain with glazed medium wall supplied with lid

ESL56821	Capacity : 15 ml
ESL56822	Capacity : 25 ml
ESL56823	Capacity : 50 ml
ESL56824	Capacity : 70 ml
ESL56825	Capacity : 100 ml

**Crucible Porcelain Low Wall**

Made of porcelain with glazed low wall supplied with lid

ESL56834	Capacity : 15 ML
ESL56835	Capacity : 20 ML
ESL56836	Capacity : 25 ML
ESL56837	Capacity : 30 ML
ESL56838	Capacity : 40 ML

**Crucible Porcelain High Wall**

Made of porcelain with glazed high wall supplied with lid

ESL56827	Capacity : 15 ML
ESL56828	Capacity : 20 ML
ESL56829	Capacity : 25 ML
ESL56830	Capacity : 30 ML
ESL56831	Capacity : 40 ML

**Watch Glass**

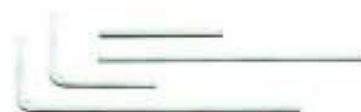
Work well as lids for flasks and beakers, or holding small samples for observation under a low-power microscope.

ESL56841	DIA 50 MM
ESL56842	DIA 60 MM
ESL56843	DIA 75 MM
ESL56844	DIA 90 MM
ESL56845	DIA 100 MM
ESL56846	DIA 125 MM

**Tube Delivery, Set Of 6**

Different shapes tubes mad of borosilicate glass, outside dia. 6 mm Set of 6.

ESL56849

**TUBE DELIVERY, SET OF 4**

Different shapes tubes mad of borosilicate glass, outside dia. 6 mm Set of 4. :1 - Short straight, 70 mm length1 - Long straight, 170 mm length1 - 90° bend arms, 60 mm and 160 mm length1 - 90° bend arms, 60 mm length

ESL56850





Tiles Porcelain With 12 Cavities

White, with 12 cavities 22mm diameter.

ESL56852

Brush Beaker

- ESL56859 Nylon 400 mm long Stainless steel wire handle. Size 150 x 85 mm
- ESL56860 Bristle Standard beaker brush on a wooden handle. 325mm total length, brush approximately 150mm x 75mm

Brush Burette

on stainless steel wire handle, for burette cap. 25ml, and 50 ML

- ESL56862 Nylon For burette cap. 25ml, head dia 16mm, length 610mm
- ESL56863 Nylon For burette cap. 50ml, head dia 19mm, length 760mm
- ESL56865 Bristle For burette cap. 25ml, head dia 16mm, length 610mm
- ESL56866 Bristle for burette cap. 50ml, head dia 19mm, length 760mm

Brush Flask

- ESL56868 Nylon For round bottom flask up-to 100 mm dia. on stainless steel wire handle. Overall length 330 mm,
- ESL56869 Bristle For round bottom flask up-to 100 mm dia. on stainless steel wire handle. Overall length 330 mm

Brush Test Tube

With fan-shaped end, on stainless steel wire handle.

- ESL56873 Nylon DIA 20 MM L 90 mm, total length 230 mm
- ESL56874 Nylon DIA 35 MM L 100 mm, total length 280 mm
- ESL56876 Bristle DIA 20 MM L 90 mm, total length 230 mm
- ESL56877 Bristle DIA 35 MM L 100 mm, total length 280 mm

Brush Pipette

for pipettes and tubes from 8 - 12 mm

- ESL56879 Nylon Head size 125 x 10 mm, overall length 650 mm
- ESL56880 Bristle Head size 125 x 10 mm, overall length 650 mm

Brush Cylinder

With fan-shaped end on stainless steel wire handle. Suitable for Erlenmeyer flasks, cylinders and beakers

- ESL56882 Nylon Total Length-300 mm, Brush length-110 mm, Brush dia.-40 mm
- ESL56883 Bristle Total Length-450 mm, Brush length-150 mm, Brush dia.-75 mm

Brushes

Glass Stirring Rod

Glass rod made of soda glass

- ESL56854 Length 150 mm dia App. 6 mm
- ESL56855 Length 200 mm dia App. 6 mm
- ESL56856 Length 250 mm dia App. 6 mm
- ESL56857 Length 3000 mm dia App. 6 mm





Flask Filtration

Reduced pressure these special flasks serve as collecting vessel for the filtrate. Made of borosilicate glass 3.3 very good chemical resistance minimal thermal expansion high resistance to thermal shocks autoclavable ••Erlenmeyer shape , with Glass gose nozzle.

- ESL57003 Capacity : 50 ml
- ESL57004 Capacity : 100 ml
- ESL57005 Capacity : 250 ml
- ESL57006 Capacity : 500 ml
- ESL57007 Capacity : 1000 ml
- ESL57008 Capacity : 2000 ml
- ESL57009 Capacity : 3000 ml



Funnel Boro Glass

Manufactured from ASTM E 438 TYPE 1 CLASS A BORO 3.3 GLASS. These funnels comply to ISO, DIN AND USP standards.

- ESL56796 Diameter 45 MM
- ESL56797 Diameter 55 MM
- ESL56798 Diameter 65 MM
- ESL56799 Diameter 70 MM
- ESL56800 Diameter 75 MM
- ESL56801 Diameter 80 MM
- ESL56802 Diameter 100 MM
- ESL56803 Diameter 150 MM



Funnel Analytical PP , 100Mm Long Stem

Funnels- long stem 100mm autoclavable material : polypropylene

ESL56805



Chlorine Test Strip

- ESL57040 5 TEST 0 - 0.5 - 1 - 3 - 5 mg/L Cl₂ 100 strips/Pk
- ESL57041 20 TEST 0 - 0.5 - 1 - 3 - 5 - 10 - 20 mg/L Cl₂ 100 strips/Pk
- ESL57042 300 TEST 0 - 25 - 50 - 100 - 200 - 300 mg/L Cl₂ 100 strips/pk
- ESL57043 1000 TEST 0 - 50 - 100 - 250 - 500 - 1000 mg/L Cl₂ 100 strips/pk



Porcelain Buchner Funnel

Made pf High-quality ceramic material, strong and corrosion-resistant. used for filtration purposes. It consists of a flat, perforated porcelain plate (known as the Büchner plate) with a cylindrical funnel-like shape attached to it

	Funnels with Perforated Filter Disc	Tube Dia	Hieght	NO of perforations
ESL57010	50 ml	14 mm	95 mm	19
ESL57011	120 ml	20 mm	120 mm	37
ESL57012	200 ml	24 mm	140 mm	61
ESL57013	400 ml	28 mm	170 mm	91
ESL57014	600 ml	32 mm	190 mm	127



Filter Paper

Quantitative Analysis filter papers Low Ash content 0.07%(Acid wash treated) High wet strength Made of 100% cotton liners GRADE NO

- ESL57031 DIA 7 CM
- ESL57032 DIA 9 CM
- ESL57033 DIA 11 CM
- ESL57034 DIA 12.5 CM
- ESL57035 DIA 15 CM
- ESL57036 DIA 18 CM



Filter Paper

Qualitative Analysis filter papers Low Ash content 0.07%(Acid wash treated) High wet strength Made of 100% cotton liners GRADE NO 1

- ESL57020 DIA 7 CM
- ESL57021 DIA 9 CM
- ESL57022 DIA 11 CM
- ESL57023 DIA 12.5 CM
- ESL57024 DIA 15 CM
- ESL57025 DIA 18 CM



Stand Base A-Shaped

Used for stand rod holder. Hole : 10 mm, without threads Material : Cast iron Part of Reversible Pendulum.

ESL57067	Side length 120 mm	Dimension : (L) 12.00 x (W) 12.00 x (H) 3.00 cm, Weight : 0.400 kg
ESL57068	Side length 140 mm	Dimension : (L) 14.00 x (W) 14.00 x (H) 3.00 cm, Weight : 0.500 kg
ESL57069	Side length 190 mm	Dimension : (L) 19.00 x (W) 19.00 x (H) 4.50 cm, Weight : 2.000 kg
ESL57070	Side length 240 mm	Dimension : (L) 24.00 x (W) 24.00 x (H) 6.00 cm, Weight : 4.000 kg
ESL57071	Side length 270 mm	Dimension : (L) 270.00 x (W) 26.00 x (H) 6.00 cm, Weight : 6.000 kg, Material : Cast iron



Stand Road

Used as pillars in some experiments. Material : Stainless steel solid Part of Mechanics Kit for Senior High School.

ESL57073	DIA 10 X 100 mm,	Dimension : (L) 10.00 x (W) 1.00 x (H) 1.00 cm, Weight : 1.000 kg
ESL57074	DIA 10 X 1500 mm	Dimension : (L) 150.00 x (W) 1.00 x (H) 1.00 cm, Weight : 0.915 kg
ESL57075	DIA 10 X 500 mm	Dimension : (L) 50.00 x (W) 1.00 x (H) 1.00 cm, Weight : 0.200 kg
ESL57076	DIA 9 X 500 mm	Dimension : M8 x 9 mm, Part of Stand Base and Rod, Steel plate
ESL57077	DIA 10 X 1500 mm	Dimension : (L) 1.00 x (W) 1.00 x (H) 150.00 cm, Weight : 0.920 kg



Base Retort

Brass dial head about 40mm dia., Divided and marked in 100 divisions, vertical scale 10-0-10mm, fitted on heavy brass disc, with 3 pointed legs, distance between legs 40mm.

ESL57079	16CM X 10CM (length x width)
ESL57080	20CM X 12.5CM (length x width)
ESL57081	25CM X 16CM (length x width)



Steel Rod

A range of Steel rods to suit all Stand bases.

ESL57082	50Cm x 11mm (length x dia.)
ESL57083	60Cm x 11mm (length x dia.)
ESL57084	75Cm x 12mm (length x dia.)
ESL57085	100Cm x 12mm (length x dia.)



Clamp Universal

Clamp for general use.

Size :
Total length : Dia 225 mm
Jaws opening : dia. 70 mm

Material : Aluminium die casting with stainless steel bar Jaws are layered with cork sheet

Completed with spiral spring, butterfly nuts and screw

Dimension : (L) 22.00 x (W) 7.00 x (H) 3.00 cm
Weight : 0.170 kg



ESL57107

Stand Set Base And Road , Steel Base

Stand Base and Rod, Steel Plate Uses as a tool for assembling laboratory equipment

Size of stand base: 210 x 140mm, thickness 4mm Stand rod: Dia. 10 x 500mm

Material: Stand base steel plate, stand rod: stainless steel Set **Consists of :** Square stand base Stand rod **Dimension :** 51.60 (L) x 22.60 (W) x 3.80cm (H) **Weight :** 1.426Kg

ESL57087

Stand Set Base & Road , Steel Base

Stand Set Base & Road , Steel Base

ESL57088



Retort Ring With Boss-head

Open ring retort support with boss-head made of Nickel chrome plated steel

ESL57109	Dia 60 mm
ESL57110	Dia 80 mm
ESL57111	Dia 100 mm





Burette Clamp

ESL57094	Single	Polypropylene .Suitable for all burette up-to 100ml.
ESL57095	Double	Polypropylene .Suitable for all burette up-to 100ml.
ESL57098	Advanced, single	Comprising a high strength alloy casting jaws. Suitable for all burettes upto 100ml.
ESL57099	Advanced, double	Comprising a high strength alloy casting jaws. Suitable for all burettes upto 100ml.



Clamp Universal, Assorted

ESL57101	4 Finger Cork Lined	Used to hold objects at stative. Size : Grip range 20 - 50 mm, Material : Steel coated with Ni/Cr and paint, Equipped with spring and bolt fasteners, Dimension : (L) 30.00 x (W) 10.00 x (H) 7.50 cm, Weight : 0.180 KG
ESL57102	4 Finger Cork Lined With Bosshead	This universal retort stand clamp is made from aluminium and has 4 jaws. The jaws allow objects from 2 - 90 mm in diameter to be clamped securely. The design of the jaws ensures a firm grip at all angles of opening. The four interlocking jaws are cork lined. Overall length is 24 cm.
ESL57103	3 Finger With Bosshead	PVC coated die-cast jaw, with clamping to my-bar screw through swivels, mounted on 13.5 cm rod of dia. 8 mm jaw. Capacity 100mm and overall length 25 cm.
ESL57104	3 Finger, Swivel	Three Finger Clamp, Swivel used to hold object at stative rod Size: Grip of 2-70mm, Material: Zinc alloy with Ni/Cr plated Without coil spring, The holder can be swivelled and fingers coated with PVC, One end is equipped with clamps and fasteners for mounting on the stative rod, Dimension : 30.00 (L) x 10.00 (W) x 7.50cm (H)''
ESL57105	2 Prong Single Adjustable Universal With Boss-Head	This clamp is ideal for use with straight sides glassware and apparatus such as burette, tubes flask necks. The jaws are coated with non slip vinyl sleeve. Can hold objects of 8-30 mm dia. Overall length 22 cm.



Boss Head

ESL57114	Cast alloy	For use with laboratory stands, this popular boss head is made of die caste alloy. It accepts rods up to 16mm in diameter at a right angle to one another. Metal thumbscrews with blue plastic heads allow for adjustment. Measures approximately 11.7 x 3 x 3 cm in size.
ESL57115	Square for rod	Threaded metal one piece clamping screws •Able to hold rods up to 15 mm in diameter •Holds rods orthogonal (90 degrees) to one another. •All metal constructions to carry heavy loads and prevent torque damage
ESL57116	Die caste	Threaded metal one piece clamping screws Able to hold rods up to 16 mm in diameter Holds rods orthogonal (90 degrees) to one another. All metal constructions to carry heavy loads and prevent torque damage
ESL57117	Heavy duty	Thicker than normal 7 mm threaded clamping screws Thicker casting to support more load Accepts up to 16 mm rods Made of high strength powder coated alloy All metal constructions to carry heavy loads and prevent torque damage





Suspension Clamps

Used to suspend a thermometer over a hot plate or a specific heat specimen. Clamp holds items at a distance of 110mm from the support rod. The hook is adjustable and locks at any angle.

ESL57090



Tong Beaker

Made of Stainless Steel with Coated Ends Rust free with superior quality Holds beakers from 50mL to 2000mL

ESL56891 Rubber lined jaw

ESL56892 Silicon lined jaw



Tong Crucible Straight

General purpose straight tongs, with corrugated jaws, used for handling of hot apparatus. Steel Chrome Plated,

ESL56885 Length : 150 MM St. Steel

ESL56886 Length : 200 MM St. Steel



Crucible Tongs With Bow

Crucible tongs with bow, General purpose tongs with bow and corrugated jaws used for handling hot apparatus.

ESL57118 Blackened steel 15CM length

ESL57119 Blackened steel 20CM length

ESL56888 St. Steel 15CM length

ESL56889 St. Steel 20CM length



Tong-Beaker,With Rubber Sleeves Cover

Jaws covered with rubber sleeves,Overall length of tong 30cm approx. Made of stainless steel

ESL56895



Tong Flask St. Steel Cork Lined Jaw

Stainless steel flask tongs with cork lined jaws. Fits flasks of any shape from 100-2000ml

ESL56894



Test Tube Stand Z Pattern - 200 X 125 X 75mm

Sturdy, corrosion-resistant (Z) pattern with three rows of holes. Stands can nest together for easy storage. Not suitable for use with solution containing mercury salts.

Size: 200 x 125 x 75mm

Five holes: 28mm

diameter Six holes:

19mm diameter

Eight holes: 13mm diameter

ESL57123



Thermometer Stand

Thermometer Stand Supports 18 mm thermometers. Metal stand with a foam rubber cushion baseplate to protect thermometer bulbs. Size 165 x 120 x 125 mm.

ESL57122



Funnel Stand

Wooden, polished, with clamping screws. Rods are approx. 460 mm Length

ESL57125 Single Rod dia 17.5 mm. Single base size 200 x 110 mm.

ESL57126 Double Rod dia 16 mm. Double base size 290 x 110 mm





Burette Stand
Made of Hardwood

burette rack made of hardwood - Stands 19.5" tall with single and Double arm to hold a burette. Base measures 7.75" (196.85 mm) x 4.25" (107.95mm)

Smallest allowable diameter burette or tube is 10 mm diameter. with a threaded hole for the wooden support dowel.

Black nylon thumb screws

Single
Double

ESL57096
ESL57097

NEW



NEW

Burette Rack Wooden

natural wood burette rack is perfect for storing and protecting burets in the lab. Dimensions: 80 x 7.5 x 57.5 CM capacity : 12 burette up to 2 cm diameter , coming with wall mounting brackets

ESL57093

NEW



TEST Tube Holder With Wooden Handel

Brass with wooden handle clamp for tubes up to 45 mm diameter.



ESL57147

Test Tube Rack Wooden, Test tube stand wooden, 2 tier, wooden support with dovetail joining and 12 holes in two rows.

ESL57144 12 X 22mm.
ESL57145 12 X 25mm.



Test Tube Holder Wooden

Made of hard wood with steel spring , the jaws will accept tubes up to 20 mm diameter.

ESL57148



Test Tube Rack Plastic

Test Tube Rack, Plastic
Used for test tube storage 10mm dia.

To 16mm dia. Material: Plastic injection, knock-down system
Consists of 12 holes 18mm dia.

Dimension : 18.00 (L) x 6.30 (W) x 10.50 cm (H)
Weight : 0.100Kg

ESL57128

Test Tube Half Rack

Poly-wire blue re-enforced nylon

ESL57130 Dia ,13 MM
ESL57131 Dia ,16 MM
ESL57132 Dia ,20 MM
ESL57133 Dia ,25 MM
ESL57134 Dia ,30 MM



Test Tube Rack

Poly-wire blue-Re-enforced nylon

ESL57135 Dia ,13 MM
ESL57136 Dia ,16 MM
ESL57137 Dia ,20 MM
ESL57138 Dia ,25 MM
ESL57139 Dia ,30 MM



Test Tube Rack

Poly-grid test tube rack
blue polypropylene

ESL57141 Dia ,16 MM
ESL57142 Dia ,20 MM
ESL57143 Dia ,25 MM



Test Tube Stand (Wire Pattern)

Test tube stand (wire pattern) - 13mm x 90 Tubes

ESL57129



Test Tube Holder-Wire Pattern

Plated spring steel wire holder with finger grip. The jaws will accept tubes up to 40 mm diameter and their alignment maintained by a wire collar. Overall length 16 cm.

ESL57149

NEW



Draining Basket

A basket with wide net like structure, useful for draining different laboratory apparatus after washing.

Repeatedly autoclaved.
Material: Polypropylene

ESL57150





Drying Rack,
Wall mounted corrosion free

- ESL57151** 20 PEGS Made of abs material
- ESL57152** 30 PEGS Made of steel / polyester
- ESL57153** 48 Pegs ,coated wire Plastic coated steel , wire tip are PVC coated size 500 x 400 mm
- ESL57154** 55 Pegs,coated wire Coated steel , wire tip are PVC coated size 650 x 360 mm



Tripod Stand

all steel welded. Finished plated and legs are bent outward for stability.

- ESL57155** Length of one side 12.5 cm Top triangular,Height 20cm.
- ESL57156** Length of one side 15 cm Top triangular, Height 20cm.
- ESL57158** dia 12.5 cm Top circular,Height 20cm.
- ESL57159** dia 15 cm Top circular,Height 20cm.



Cork Stopper Bark

Cat. No	Size	Top	Length	Bottom
ESL57166	000	6	13	4
ESL57167	00	8	13	5
ESL57168	0	10	13	7
ESL57169	1	11	16	8
ESL57170	2	13	17	9
ESL57171	3	14	19	10
ESL57172	4	16	20	11
ESL57173	5	17	22	12
ESL57174	6	19	24	13
ESL57175	7	21	25	15
ESL57176	8	22	27	17
ESL57177	9	24	29	18
ESL57178	10	25	31	20
ESL57179	11	27	31	21
ESL57180	12	29	31	22
ESL57181	13	30	31	24
ESL57182	14	32	31	25
ESL57183	15	33	31	27
ESL57184	16	35	38	27
ESL57185	17	36	38	30
ESL57186	18	38	38	31
ESL57187	19	40	38	33
ESL57188	20	41	32	34

NEW



Basic Chemistry Bundle Kit

- includes:
- 10 x Natural Gas Bunsen Burners
 - 10 x Tripod stands (130 x 200mm)
 - 10 x Bench Mats With Calcium Silicate (230 x 230mm)
 - 10 x 65mm Triangles Pipeclay
 - 10 x 150mm x 150mm Iron Gauze Mats

ESL57089



Laboratory Jack

Laboratory jack made of Aluminium

- ESL57161** 10 X 10 CM Max. Hight : 18cm
- ESL57162** 15 X 15 CM Max. Hight : 25cm
- ESL57163** 20 X 20 CM Max. Hight : 28cm

Cork Stopper Assorted PK

ESL57189





Stopper Rubber

Made of Solid, superior quality rubber resistance to acid, alkali and ammonia, suitable for schools, colleges and Universities.

Cat. No	Top	Length	Bottom
ESL57195	7	16	5
ESL57196	9	16	6
ESL57197	10.5	20	8
ESL57198	11.5	20	9
ESL57199	12.5	20	10
ESL57200	14	24	11
ESL57201	16	24	13
ESL57202	18	24	15
ESL57203	20.5	26	27
ESL57204	21	26	18
ESL57205	22.5	28	19
ESL57206	24.5	28	21
ESL57207	26.5	28	23
ESL57208	28.5	28	25
ESL57209	31	32	27
ESL57210	31	32	29
ESL57211	36	35	31
ESL57212	38.5	38.5	33
ESL57213	45.5	36.5	35
ESL57214	42.5	40.5	38
ESL57215	49.5	40.5	40



Stopper Rubber One Hole, Pk Of 50 Pcs

Assorted containing 7 pcs. Each of size 8, 9, 11, 13, 15mm bottom dia and 3 pcs. Each of 17, 21, 23, 25, 29mm bottom dia with one hole. Pack of 50 pcs. Any other sets can be supplied as per specifications.

ESL57219



Stopper Rubber Two Holes, Pk Of 50 Pcs

Assorted containing 7 pcs. Each of size 8, 9, 11, 13, 15mm bottom dia and 3 pcs. each of 17, 21, 23, 25, 29mm bottom dia. With two holes. Pack of 50 pcs. Any other sets can be supplied as per specifications.

ESL57236



Cork Borer Sharpener

Cork Borer Sharpener, Die-cast alloy. Suitable for all borers

ESL57279

Stopper Rubber, Assorted Size Pack

Assorted Size Pack

NEW

ESL57217



Cork Borer Set 6

Nickel-plated finish. Complete with cleaning rod having good grip and pipes of thick gauge. Set of 6 sizes 4-10mm

ESL57277



Cork Borer Set 12

Nickel-plated finish. Complete with cleaning rod having good grip and pipes of thick gauge. Set of 12 sizes 4-18mm

ESL57278





Stopper Rubber Silicon

Made of Solid, superior quality Silicon resistance to acid, alkali and ammonia, suitable for schools, colleges and Universities.

Cat. No	Top	Length	Bottom
ESL57253	7	16	5
ESL57254	9	16	6
ESL57255	10.5	20	8
ESL57256	11.5	20	9
ESL57257	12.5	20	10
ESL57258	14	24	11
ESL57259	16	24	13
ESL57260	18	24	15
ESL57261	20.5	26	17
ESL57262	21	26	18
ESL57263	22.5	22	19
ESL57264	24.5	28	20
ESL57265	26.5	28	23
ESL57266	28.5	28	25
ESL57267	31	32	27
ESL57268	31	32	29
ESL57269	36	35	31
ESL57270	38.5	38.5	33
ESL57271	45.5	36.5	35
ESL57272	42.5	40.5	38
ESL57273	49.5	40.5	40



Tubing Glass

Made of Borosilicate glass 3.3, light wall, length 0.5mtr approx.

ESL57283	Dia : 5mm
ESL57284	Dia : 6mm
ESL57285	Dia : 7mm
ESL57286	Dia : 8mm
ESL57287	Dia : 9mm
ESL57288	Dia : 10mm
ESL57289	Dia : 12mm
ESL57290	Dia : 14mm
ESL57291	Dia : 16mm
ESL57292	Dia : 18mm
ESL57293	Dia : 20mm
ESL57294	Dia : 25mm



Tubing Clip

Tubing clip made of spring steel plated wire according to Mohr

ESL57351	Mohr	For tube dia up to 45 mm
ESL57352	Mohr	For tube dia up to 65 mm
Nickel plated, with projecting plate to prevent damage to tubing by end of screw, with hinged bottom bar for direct fitting and removed without access to ends of tube. Max. Opening 15 mm		
ESL57353	Hoffmann	Max. Opening 15 mm
ESL57354	Hoffmann	Max. Opening 25 mm



Glass Tube Cutter

Glass tubing cutter, up to an outer diameter of 40mm.

ESL57349





Tubing Connector

Polypropylene, riffled end for rubber tubing. May be autoclaved. To fit tubing nominal bore.

- ESL57342 Y SHAPE 4 MM
- ESL57343 Y SHAPE 6 MM
- ESL57344 Y SHAPE 8 MM
- ESL57346 T SHAPE 4 MM
- ESL57347 T SHAPE 6 MM
- ESL57348 T SHAPE 8 MM



Visking Tubing

A cellulose based, selectively permeable material, in tube form, which can be used to demonstrate osmosis and dialysis separation techniques. 14mm diameter.

- ESL57356 30 Mtr
- ESL57357 5 Mtr

Tubing Silicon

Seamless, non toxic, translucent very flexible suitable for connecting to glass, Pack per meter.

- ESL57314 2mm x 1mm (Bore x Wall Thickness).
- ESL57315 3mm x 1mm (Bore x Wall Thickness).
- ESL57316 3mm x 1.5mm (Bore x Wall Thickness).
- ESL57317 4mm x 1mm (Bore x Wall Thickness).
- ESL57318 4mm x 1.5mm (Bore x Wall Thickness).
- ESL57319 5mm x 1mm (Bore x Wall Thickness).
- ESL57320 5mm x 1.5mm (Bore x Wall Thickness).
- ESL57321 6mm x 1mm (Bore x Wall Thickness).
- ESL57322 6mm x 1.5mm (Bore x Wall Thickness).
- ESL57323 6mm x 2mm (Bore x Wall Thickness).
- ESL57324 6mm x 3mm (Bore x Wall Thickness).
- ESL57325 7mm x 1.5mm (Bore x Wall Thickness).
- ESL57326 7mm x 2mm (Bore x Wall Thickness).
- ESL57327 8mm x 1.5mm (Bore x Wall Thickness).
- ESL57328 8mm x 2mm (Bore x Wall Thickness).
- ESL57329 8mm x 3mm (Bore x Wall Thickness).
- ESL57330 9mm x 2mm (Bore x Wall Thickness).
- ESL57331 10mm x 2mm (Bore x Wall Thickness).
- ESL57332 10mm x 3mm (Bore x Wall Thickness).
- ESL57333 12mm x 2mm (Bore x Wall Thickness).
- ESL57334 12mm x 3.5mm (Bore x Wall Thickness).
- ESL57335 14mm x 3mm (Bore x Wall Thickness).
- ESL57336 14mm x 3mm (Bore x Wall Thickness).
- ESL57337 16mm x 3mm (Bore x Wall Thickness).
- ESL57338 25mm x 4mm (Bore x Wall Thickness).



Tubing Connector U Shape Plastic

Polypropylene, riffled end for rubber tubing. May be autoclaved. To fit tubing nominal bore.

- ESL57340 U SHAPE 6 MM
- ESL57341 U SHAPE 8 MM

Tubing Connector U Shape Glass

Glass, riffled end for rubber tubing. To fit tubing nominal bore.

- ESL57340G U SHAPE 6 MM
- ESL57341G U SHAPE 8 MM



Viscometer Ostwald

Suitable for transparent liquids manual measurement, foaming liquids, liquid mixture with highly volatile components, and high or low temperature measurements

ESL57865



Tubing Rubber

Soft quality, resistant to acid and alkalis. Pack of 10 meters. Orange Color.

- ESL57298 3 mm x 1 mm (Bore x Wall Thickness).
- ESL57299 4 mm x 1 mm (Bore x Wall Thickness).
- ESL57300 5 mm x 1.5 mm (Bore x Wall Thickness).
- ESL57301 6 mm x 1.5 mm (Bore x Wall Thickness).
- ESL57302 7 mm x 1.5 mm (Bore x Wall Thickness).
- ESL57303 8 mm x 1.5 mm (Bore x Wall Thickness).
- ESL57304 9 mm x 2 mm (Bore x Wall Thickness).
- ESL57305 10 mm x 2 mm (Bore x Wall Thickness).
- ESL57306 12 mm x 2 mm (Bore x Wall Thickness).
- ESL57307 15 mm x 3 mm (Bore x Wall Thickness).
- ESL57308 16 mm x 3 mm (Bore x Wall Thickness).
- ESL57309 19 mm x 3 mm (Bore x Wall Thickness).
- ESL57310 20 mm x 3.5 mm (Bore x Wall Thickness).
- ESL57311 25 mm x 3.5m m (Bore x Wall Thickness).





Bunsen Burner Nickel

Nickel plated burner tube with rotatable air regulator and cylindrical connector. Mounted in pressure die costed base.

- ESL57362 For LPG gas
- ESL57363 For natural gas



Economy Bunsen Burner Adjustable

An excellent adjustable bunsen burner for use with natural gas. Heavy-duty cast iron base provides an extra measure of stability. The unit has a chrome-plated steel tube with air regulator and threaded needle valve. Junior high and high school level.

ESL57361



Bunsen Burner

Piezo ignition, Adjustable flame, Refillable butane tank, Applications: Sterilizing, Welding, Heating, Technical Specification, Max. Temperature 1300 Fuel tanker capacity 45 g, Working time 60 Min, **Dimension** : (H x W x D) mm 92 x 115 x 79

- ESL57367 PORTABLE
- ESL57368 LAB TORCH
- ESL57369 LAB PORTABLE

Heating



Spirit Lamp Glass

Reference Capacity 100 (ml)
Outside Ø 70 (mm)

ESL57370

Spirit Lamp St.

Methylated Spirit Burner

ESL57371



Bench Mats

Made of cork, ideal for use with round bottom flask,

- ESL57372 For flask capacity 50-100 ml Diameter 80 mm
- ESL57373 For flask capacity 250 ml Diameter 100 mm
- ESL57374 For flask capacity 500 ml Diameter 120 mm



Neoprene Bunsen Burner Hose,

Connect your burner to a fuel source.

- ESL57359 Length 2 FT (.6M)
- ESL57360 Length 3 FT (.9M)

Bench Mats

Made from calcium silicate, ideal for use under Bunsen burner, well finished edges

- ESL57375 Size : 150 x 150 mm
- ESL57376 Size : 200 x 200 mm
- ESL57377 Size : 230 x 230 mm
- ESL57378 Size : 300 x 300 mm



Wire Gauze With Ceramic Centre

Wire gauze with ceramic centres - high quality and extra strong

- ESL57379 Size : 125 x 125 mm
- ESL57380 Size : 150 x 150 mm



Wooden Splints

Soft dry wood for general laboratory use. Size 5 x 140 mm.

- ESL57386 Pack of 100
- ESL57387 Pack of 1000



Spatula With Spoon

One end flat and the other end spoon form, polished..

- ESL57390 Total length 12 .5 cm
- ESL57391 Total length 15 cm
- ESL57392 Total length 20 cm





Trowel

Stainless steel, double ended with trowel-shaped scoops for handling large quantities of material. Length 175 mm and mean width 15 mm

ESL57396

Pip-clay Triangle

On stout iron wire, pipe-clay stems. Pk/10

- ESL57382 One side length 55 mm
- ESL57383 One side length 65 mm
- ESL57384 One side length 75 mm



Spatula Chattaway

One end flat and the other end bent up, polished.

- ESL57388 Total length 15 cm
- ESL57389 Total length 20 cm

Nuffield Raised Centre 14 cm

Raised centre section, one end flat and bent up and other end formed into a scoop. Stainless steel, length 14 cm

ESL57395



Spatula Spoon PP

range of robust, general purpose PP spatulas - Excellent chemical resistance - Scraper plus spoon configuration - Suitable for use in food and beverage industry - Autoclavable

- ESL57404/15 Spatula Spoon PP 150MM
- ESL57404/20 Spatula Spoon PP 200MM

NEW



NEW

Measuring Scoop

EDU dual purpose scoop is designed to combine the function of a scoop, weigh boat, & funnel to make this product economically beneficial. These scoops have locking tabs that help to retain materials. These scoops can withstand powders, gels, and semi-solids

- ESL57403/2 Measuring Scoop PP 2ML
- ESL57403/5 Measuring Scoop PP 5ML
- ESL57403/10 Measuring Scoop PP 10ML
- ESL57403/25 Measuring Scoop PP 25ML
- ESL57403/50 Measuring Scoop PP 50ML
- ESL57403/100 Measuring Scoop PP 100ML
- ESL57403/250 Measuring Scoop PP 250ML
- ESL57403/500 Measuring Scoop PP 500ML
- ESL57403/1000 Measuring Scoop PP 1000ML

Magnetic Stirring Bar

PTFE coated magnetic stirrer bar a raised ring in the middle to aid string



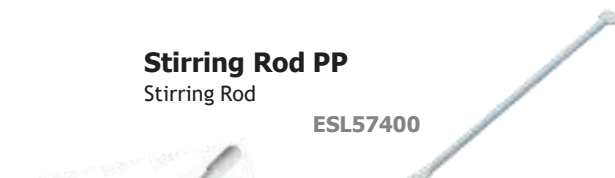
NEW

SKU	Size	Pack Size
ESL57397/138	8 x 13	10
ESL57397/168	8 x 16	10
ESL57397/198	8 x 19	10
ESL57397/228	8 x 22	10
ESL57397/258	8 x 25	10
ESL57397/308	8 x 30	10
ESL57397/388	8 x 38	10
ESL57397/418	8 x 41	10
ESL57397/518	8 x 51	5
ESL57397/648	8 x 64	5

Stirring Rod PP

Stirring Rod

ESL57400



Magnetic Retriever

Magnetic Retriever PTFE/Alnico V Magnet, 30cm, 2pcs/pack

ESL57398



Deflagrating Spoon With Cap

Steel cup and rod held by cork in aluminium cap, length 35 cm and diameter of cap 90 mm cup 18 mm

ESL57402



Wire Holder, Plastic Handle

Wire holder with plastic handle

ESL57408



Tube Combustion

Borosilicate glass, open both ends, for oxidation and reduction of chemical substances. Length 30 cm.

- ESL57410 OD 24 mm, Bore 20 mm
- ESL57411 OD 22mm, Bore 17mm
- ESL57412 OD 17mm, Bore 11mm

Tube Combustion, Borosilicate Glass

Borosilicate glass, for reduction of metal oxides with hydrogen. A small hole in the side of the lower end of the tube allows for escape of gas. Length 15 cm and dia.2.5 cm.

ESL57413

Cobalt Glass

For potassium dry reaction

- ESL57405 SIZE : 7.5 X 5 CM
- ESL57406 SIZE : 5 X 2.5 CM





Universal Indicator Paper PH 1-14

This test paper covers the range pH1 to 14. Box of 10 books each of 20 leaves, 65 x 10mm. 12 colour matches are printed on each book cover.

ESL57421



Cobalt Chloride Test Paper

Heat sensitive, colour change blue to pink with moisture. Depending upon humidity, papers may be pink on receipt and will need drying before use. Box of 10 books.

ESL57425



Litmus Paper Red

10 books each with 20 strips.

Red Pk/200 Strips: Range pH 8-5, colour change.

ESL57415

Litmus Paper Red Pk/100 strips

ESL57415/100

Blue Pk/200 Strips

Range pH 8-5, colour change

ESL57417

Blue Litmus Paper Pk/100 strips

ESL57417/100

Neutral Pk/200 Strips

Colour change to red or neutral.

ESL57419

Neutral Pk/100 Strips

ESL57419/100



Parafilm

No matter whether you wish to seal beakers, Erlenmeyer flasks, weighing bottles or graduated cylinders, the highly elastic and stretchable Parafilm® M laboratory film fits the opening of any vessel. It saves specimens from contamination or evaporating. Furthermore, it prevents fallen over flasks from spilling. Parafilm® M stretches up to 200 % of its original size and clings even around irregular shapes and surfaces.

ESL57435

Size : 100 mm x 38 mtr

ESL57436

Size : 100 mm x 75 mtr

ESL57437

Size : 50 mm x 75 mtr



Temperature Strip

A self adhesive liquid crystal thermometer with a temperature range of 10° C to 40° C. Approx size: 130mm x 20mm

ESL57426



Universal Indicator Paper PH 1-11

Range pH 1 to 11 in clear colour coded steps. Colour chart is on the side of the plastic dispenser. Box of 10 books with twenty strips. 5m of 6mm paper.

ESL57423

G Clamp

ESL57427

Drop forged. Length 250 mm

ESL57428

Drop forged. Length 200 mm

ESL57429

Drop forged. Length 150 mm

ESL57430

Drop forged. Length 125 mm

ESL57431

Drop forged. Length 100 mm

ESL57432

Drop forged. Length 75 mm

ESL57433

Drop forged. Length 50 mm



Weight Ring

Made of cast iron PVC coated ring for stabilizing Erlenmeyer flask immersed into water .

ESL57440

For flask sizes: 100 to 500 ML , Weight 0.22 KG

ESL57441

For flask sizes: 250 to 1000 ML , Weight 0.45 KG





Lab Thermometer

Product Material: Glass tube with Kerosene filling (except * - special brown filling for high range), Product Dimension :s 6.5mm dia x length

ESL57544	White bkd blue spirit	Range: -10 to 50 °C, Division: 0.5 C, Accuracy: /-0.5 C @ 35 C
ESL57545	White bkd blue spirit	Range: -30 to 120 °F, Division: 1.0 F, Accuracy: /-0.2 F @ 95F
ESL57546	White bkd blue spirit	Range: -35 to 50 °C, Division: 1.0 C, Accuracy: /-1.0 C @ 35 C
ESL57547	White bkd blue spirit	Range: -20 to 110 °C &F, Division: 1.0 C&F, Accuracy: /-1.0 C @ 35C
ESL57548	White bkd blue spirit	Range: -20 to 150 °C&F, Division: 1.0 C&F, Accuracy: /-1.0 C @ 35 C
ESL57549	White bkd blue spirit	Range: 0 to 260 C&F, Division: 1.0 C&F, Accuracy: /-2.0 C @ 90 C
ESL57550	White bkd blue spirit	Range: 0 to 230 F, Division: 2.0 F, Accuracy: /-0.2 F @ 95 F
ESL57551	White bkd blue spirit	Range: -20 to 110 °C, Division: 1.0 C, Accuracy: /-1.0 C @ 35 C
ESL57552	White bkd blue spirit	Range: -20 to 110°C, Division: 0.5 C, Accuracy: /-1.0 C @ 35 C
ESL57553	White bkd blue spirit	Range: 0 to 300 F, Division: 2.0 F, Accuracy: /-0.2 F @ 95 F
ESL57554	White bkd blue spirit	Range: -20 to 150 C, Division: 1.0 C, Accuracy: /-1.0 C @ 35 C
ESL57555	White bkd blue spirit	Range: 0 to 500 F, Division: 2.0 F, Accuracy: /-0.2 F @ 95 F
ESL57556	White bkd blue spirit	Range: -10 to 260 °C, Division: 1.0C, Accuracy: /-2.0 C @ 90 C
ESL57557	White bkd blue spirit	Range: -10 to 210 °C, Division: 1.0 C, Accuracy: /-2.0 C @ 90 C
ESL57558	White bkd brown spirit	Range: -10 to 33° C, Division: 2.0 C, Accuracy: /-2.0 C @ 90 C
ESL57559	White bkd brown spirit	Range: -10 to 300 °C, Division: 1.0 C, Accuracy: /-2.0 C @ 90 C 4
ESL57560	White bkd brown spirit	Range: -10 to 360 °C, Division: 2.0 C, Accuracy: /-2.0 C @ 90 C
ESL57561	White bkd blue spirit	Range: -1 to 51 °C, Division: 0.1 C, Accuracy: /-1.0 C @ 35 C
ESL57562	White bkd blue spirit	Range: -1 to 51 °C, Division: 0.2 C, Accuracy: /-1.0 C @ 35 C
ESL57563	White bkd blue spirit	Range: -1 to 101 °C, Division: 0.2C, Accuracy: /-1.0 C @ 35 C



Lab Thermometer

Product Material: Glass Tube: Kerosene filled

These spirit filled thermometers use specially selected filling materials covering temperatures down to -200c. Normal fillings are coloured red on a white back glass but alternative colours are available as shown. The -200 ° C range thermometers are filled with a colourless liquid. Thermometers normally supplied with the non roll cap with ring.

ESL57564	White bkd red spirit , Length 200MM	Range: -10 to 60 °C, Division: 1.0 C, Accuracy: /-1.5 C @ 35 C
ESL57565	White bkd red spirit , Length 250MM	Range: -10 to 150 °C, Division: 1.0 C, Accuracy: /-1.0 C @ 35 C
ESL57566	White bkd red spirit , Length 305 MM	Range: -10 to 110 °C, Division: 1.0 C, Accuracy: /-1.0 C @ 35 C
ESL57567	White bkd blue spirit , Length 305MM	Range: -10 to 110 °C, Division: 1.0 C, Accuracy: /-1.0 C @ 35 C
ESL57568	White bkd red spirit , Length 305MM	Range: -10 to 150 °C, Division: 1.0 C, Accuracy: /-1.0 C @ 35 C
ESL57569	White bkd blue spirit , Length 305MM	Range: -10 to 200 °C, Division: 1.0 C, Accuracy: /-2.0 C @ 90 C
ESL57570	White bkd red spirit , Length 305MM	Range: -10 to 110 °C, Division: 1.0 C, Accuracy: /-1.0 C @ 35 C
ESL57571	White bkd red spirit , Length 305MM	Range: -10 to 110 °C, Division: 0.5 C, Accuracy: /-2.0 C @ 90 C
ESL57572	White bkd red spirit , Length 205MM	Range: -10 to 150 °C, Division: 1.0 C, Accuracy: /-2.0 C @ 35 C
ESL57573	White bkd red spirit , Length 205MM	Range: -10 to 110 °C, Division: 1.0 C, Accuracy: /-1.5 C @ 35 C



Lab Thermometer

This entry level range is now available in a choice of red, green or blue spirit filling and have Tri-top, moulded glass non-roll device to help prevent breakage. These thermometers are printed with a clear, easy-to-read scale making them particularly suitable for student use. Dia 76 mm ,The initial TM Brand Thermometers are supplied as standard in protective PVC packaging in pack of 10 thermometers.



ESL57574	Red spirit , length 300 mm	Range: -10 to 50 ° C, Division: 0.5 C, Accuracy: +/-0.5 C @ 35 C
ESL57575	Red spirit , length 200 mm	Range: -10 to 110 ° C, Division: 1.0 C, Accuracy: +/-1.5 C @ 35 C
ESL57576	Red spirit , length 150 mm	Range: -10 to 110 ° C, Division: 1.0 C, Accuracy: +/-2.0 C @ 35 C
ESL57577	Blue spirit, length 300 mm	Range: -10 to 50 ° C, Division: 0.5 C, Accuracy: +/-0.5 C @ 35 C
ESL57578	Blue spirit, length 300 mm	Range: -10 to 110 ° C, Division: 1.0 C, Accuracy: +/-1.5 C @ 35 C
ESL57579	Blue spirit, length 300 mm	Range: -10 to 110 ° C, Division: 1.0 C, Accuracy: +/-1.5 C @ 35 C
ESL57580	Blue spirit, length 200 mm	Range: -10 to 110 ° C, Division: 1.0 C, Accuracy: +/-1.5 C @ 35 C
ESL57581	Blue spirit, length 150 mm	Range: -10 to 110 ° C, Division: 1.0 C, Accuracy: +/-2.0 C @ 35 C

Lab Thermometer

Product Material: Glass Tube;The EduScience break-safe range of laboratory thermometers are encapsulated in PVC to contain any glass or filling material in the event of breakage. Immersion: 76mm



ESL57582	Filling : Blue LoTox	Range : -10 to 50 ° C, Division: 0.5 C, Length: 305mm, Accuracy: +/-0.5 C @ 35 C
ESL57583	Filling : Blue LoTox	Range : -10 to 50 ° C, Division: 0.5, Length: 305mm, Accuracy: +/-0.5 C @ 35 C
ESL57584	Filling : Blue LoTox	Range : -10 to 110 ° C, Division: 0.5, Length: 155mm, Accuracy: +/-1.0 C @ 35 C
ESL57585	Filling : Blue LoTox	Range : -20 to 110 ° C, Division: 1.0 C, Length: 305mm, Accuracy: +/-1.0 C @ 35 C
ESL57586	Yellow Back with Red Spirit Filling	Range : -20 to 110 ° C, Division: 1.0 C, Length: 305mm, Accuracy: +/-1.0 C @ 35 C

Lab Thermometer Investigation Science Kit

Blue plastic case enclosing a variety of instruments and a set of investigative science notes.

- 4 x 150mm initial brand green filled thermometers
 - 4 x 200mm initial brand green filled thermometers
 - 2 x small classroom thermometers
 - 1 x dial type maximum/minimum thermometer
 - 1 x soil temperature thermometer
 - 1 x "Spot-check" clinical thermometer
- Boxed Dimensions : 334 x 232 x 50mm



ESL57588

Lab Thermometer Kit For Classroom

Blue plastic tray which fits into standard classroom storage systems.

Includes a variety of laboratory thermometers and a set of classroom notes.

- 8 x 150mm initial brand green filled thermometers
 - 7 x 300mm initial brand green filled thermometers
 - 1 x 300mm uncalibrated green filled thermometer
- Boxed Dimensions : 334 x 232 x 50mm



ESL57587

Hygrometer Masons

Simple form of psychrometer

Easy to measure the amount of water vapour

Measures difference between wet & dry temperature - Supplied complete with chart and instructions to determine %RH

Case: Polypropylene

Scale: Polystyrene

Reservoir: Polyethylene

Glass Tube: Kerosene filled



NEW

ESE53838

Thermometer Dial

For measuring temperature range -10 to 50 ° C in plastic case.



ESL57593

Lab Thermometer Classroom Wall Kit With Chart

Colourful 380mm plastic wall thermometer and chart for recording temperatures.

Boxed Dimensions : 365 x 287 x 10mm



ESL57589

Whirling Hygrometer with folding handle

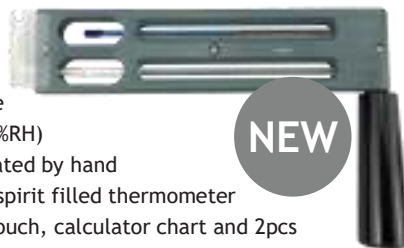
Uses the 'wet' and 'dry' principle to measure Relative Humidity (%RH)

Hygrometer designed to be rotated by hand

Environmentally friendly, blue spirit filled thermometer

Tubes Comes with protective pouch, calculator chart and 2pcs replacement wicks

Temperature range: -5 to +50°C Accuracy: +/-1°C Divisions: 0.5°C



NEW

ESE53840

Hygrometer Hair Type

For measuring of relative humidity in air 0-100 x 1% r.h. in plastic case.



ESL57590

Hygrometer Thermo Hygrometer

For measuring of relative humidity and temperature both in room and air. Range -10 to 50 ° C for thermometer and 0 to 100% for Hygrometer in plastic case.



ESL57591



Thermometers

Wall Thermometer

Sustainable wood wall thermometers sourced from forests managed to strict environmental, social and economic standards

Temperature range: -20 to +50°C / -10 to +120°F

Divisions: 1°C / 2°F - Accuracy: +/- 1.0°C @ 10°C

Product material: Wooden mounting with kerosene filled glass tube

Dimensions : 150 x 35 x 8mm - Weight: 29.5g

ESE53863



Soil Thermometer

This type of soil thermometer is frequently used in the agriculture and horticulture industries to check temperatures of soil and compost. The soil thermometer has a green knob at the top to assist with the location of the thermometer after placement.

210mm thermometer to check temperature of soil and compost

Green knob at top of aluminum case to assist with location

For use in agriculture and horticulture industries

ESE53870



Wall Room Thermometer Plastic

Plastic wall thermometer with clear, black printed scale on white moulding. Suitable for indoor and outdoor use, this thermometer is ideal for use in the home or garden.

Ideal for customer's own branding - click enquire now to submit a request

Suitable for indoor and outdoor use

Range: -20 to +50°C&F



ESE53860



Ecology and weather kit - Standard Kit

Selection of weather watcher equipment

- Complete with weather register to record measurements
- Supplied in robust carry case with full operating instructions

Contents: · Mason's hygrometer · Gilt dial barometer

· Digital max min thermometer · 150mm wood wall thermometer

· Rainfall sprinkler measure · Weather register

Weight: 954g (including 505g case)

Dimensions: 320mm x 280mm x 119mm

ESE53833



NEW

Thermometer Digital

K Type Thermometer DM6801A+ Features New type holster, anti-drop design Large LCD for easy reading Strong anti-magnetic and anti-interference performance Data hold function High resolution 0.1°C / °F High accuracy 0.2% Specifications Basic function Range Accuracy Temperature -50°C ~ 199.9°C (0.2%+1) -50°C ~ 1000°C (0.3%+2) 1000°C ~ 1300°C (0.5%+2) -50°F ~ 199.9°F (0.3%+2) -50°F ~ 1999°F(0.5%+2) -50°C ~ 199.9°C(0.2%+1) Special Function Low battery indication Approx. 7.5V Data hold Unit symbol display Function protection Anti-shock protection Input impedance 10MΩ Sampling rate 3 times/s Max. display 1999 LCD size 67x41mm Battery 9V 6F22 Power dissipation Quiescent current approx. 3.5mA General Information Meter color Body: dark grey Holster: Orange Meter weight 250g (including battery) Meter size 130x95x28mm Standard accessory Battery x1, manual x1, K type thermocouple x1

ESL57592

Rain Gauge Plastic

100mm diameter rain gauge - Measuring in inches & mm

Rainfall capacity up to 400ml - Supplied with rainfall charts - Replacements available

Range: 0 to 50mm / 0 to 2in

Divisions: 0.5mm / 0.05in

Product Material: Crystal Styrene



ESE53836

Thermometer Digital Basic with probe -50 to +150°C/°F

· Stainless steel probe thermometer- Protective case and pocket clip- Battery and full instructions included Temperature range: -50 to +150°C / °F

Ambient temperature: -10 to +50°C / °F Accuracy: -50 to -21°C: +/-4°C -20 to -1°C: +/-2°C 0 to 100°C: +/-1°C 101 to 150°C: +/-2°C Resolution: 0.1°C Sampling rate: 1 second ; Battery: LR44 x 1 pc Average battery life: Approx 1500 hours CE/ROHS/WEEE: Compliant

Hazard information (SDS): See brannan.co.uk for information LCD dimensions: 18mm x 8mm Probe dimensions: 125mm x ø3.75mm Product dimensions: Net: 195mm x 21mm x 21mm Gross: 230mm x 25mm x 25mm Product weight: Net: 21g (including battery) Display box: 10.5g Gross: 31.5g"

ESL57620B



NEW

Thermometer Digital Water resistant with Probe -40 to +200°C/°F

Stainless steel probe thermometer- Protective case and pocket clip- Water resistant to IP65- Battery and full instructions included Product specifications:

Temperature range: -40 to +200°C / °F Accuracy: -40 to -1°C: +/-2°C, 0 to 100°C: +/-1°C, 101 to 150°C: +/-2°C, 151 to 200°C: +/-3°C Resolution: 0.1°C Ingress protection: IP65 Battery: LR754 x 1 pc Average battery life: Approx. 1500 hours CE/ROHS/WEEE: Compliant Hazard information (SDS): See brannan.co.uk for information LCD dimensions: 18mm x 8mm Probe dimensions: 120mm x ø3.5mm Product dimensions: Net: 200mm x 20mm x 15mm Gross: 205mm x 26mm x 25mm Product weight: Net: 20.5g Display box: 10.5g Gross: 31g Temperature range -50°C ~ 300°C / -58°F ~ 572°F Accuracy -50°C ~ 300°C: ±1°C / ±2°F; Other range: 2°C / ±2°F Resolution 0.1° Measuring speed 0.8s Power source 1.5V AAA battery"

(including battery) Display box: 10.5g Gross: 31.5g

ESL57620WR



NEW

Thermometer - Digital Hand Held with Probe

Temperature range -50°C ~ 300°C / -58°F ~ 572°F Accuracy -50°C ~ 300°C: ±1°C / ±2°F; Other range: 2°C / ±2°F Resolution 0.1° Measuring speed 0.8s Power source 1.5V AAA battery

ESL57620



NEW



Max Min Thermometer Digital Mini Lidded

Digital Max Min thermometer in white case with roof. Suitable for outdoor or indoor use. This Max Min thermometer features a triple display which simultaneously shows minimum, maximum



and the current temperature. Easy push button to reset the Max and Min temperatures and also comes complete with batteries included.

Product Specifications :
 Temperature Range : -10 to 50 ° C&F
 Display Resolution : 0.1C
 Accuracy : /-2 ° C
 Sampling Rate : Every 10 seconds Water Resistant : To IP65
 Battery usage : 1 x AAA (Included) CE ROHS/WEEE : Approved

ESL57595

Max Min Thermometer Digital Classic Design

Large digital Max Min thermometer in a classic design with roof for indoor or outdoor use, this Max Min thermometer shows current temperatures and also maximum and minimum temperatures



reached since the previous reset. A reliable digital Max Min thermometer complete with batteries included.

Product Specifications :
 Temperature Range : -20 to 50 ° C&F
 Accuracy: /-1 ° C
 IP Rating: IP 65 Battery: 1 x AAA
 CE ,RoHS/WEE E: Compliant
 LCD Dimensions : 16 x 52mm (current temperature display)
 Product Dimensions : 203 x 100 x 30mm (when roof in horizontal position)
 Product Weight : 135g

ESL57594

Max Min Digital Heavy Duty , Green

Large Digital Max Min Thermometer Suitable for outdoor and indoor use in a green casing. Triple display shows minimum, maximum and current temperature simultaneously. This digital Max Min thermometer can be easily switched from C to F by a push button and it is also easy to reset the Max Min temperature.

Temperature Range : -10 to 40 ° C&F
 Display Resolution : 0.11C
 Accuracy : /-1C
 Sampling Rate : Every 10 seconds
 Water Resistant : To P65
 Battery usage : 1 x AA (Included) CE , ROHS/WEEE: Approved.



ESL57597

Max Min Thermometer Digital Heavy Duty , White

Large Max Min Digital Thermometer Suitable for outdoor and indoor use in shows minimum, maximum and current Temperature Range: -10 to 40 ° C&F
 Display Resolution : 0.11 ° C
 Accuracy : /-1 ° C
 Sampling Rate : Every 10 seconds
 Water Resistant : To IP65
 Battery usage : 1 x AA (Included) CE ,ROHS/WEEE : Approved.



ESL57596

Max Min Thermometer Digital Waterproof Boxed Grey

Outdoor Digital Max Min Thermometer Outdoor digital Max Min thermometer in a grey and white case with a large splash-proof display for outdoor and indoor use.

Product Specifications :
 Temperature Range : -40 to 70 ° C&F
 Divisions : 0.1 ° C
 Accuracy : /-1. ° C
 Battery : 1.5 volt (AAA) or equivalent (Included) CE,ROHS/WEEE : Approved



ESL57599

Max Min Thermo&Hygrometer Electronic Jumbo

Jumbo Digital Max Min Thermometer & Hygrometer Jumbo digital Max Min thermometer featuring large displays for indoor temperature and humidity or outdoor temperature. Complete with 2 metre cable for the outdoor probe.

Product Specifications :

Temperature Range: Indoor: -10 to 50 °C&F / Outdoor: -50 to 70 ° C&F
 Humidity Range: 20 to 99% RH (when humidity 20%, display 10%RH directly)
 Divisions: 0.1 ° C
 Accuracy: /-1 ° C
 Battery : 1.5 volt (AAA) or equivalent x 1 piece (Included) CE ,ROHS/WEEE: Approved



ESL57598

Max Min Thermometer Dial (Bimetallic)

Bimetallic Max Min Thermometer

This Bimetallic Max Min Thermometer traditional design is activated by a bi-metal temperature sensing element. The Max Min Thermometer is reset by turning the button in the centre of the dial. A simple instrument to record the highest and lowest temperatures day and night. C and F.

Product Specifications :
 Thermometer Range : -20 to 50 ° C&F
 Humidity Range : 0 to 100%RH
 Thermometer Accuracy : /- 1 ° C between 0 and 30C, otherwise /- 2 ° C
 Humidity Accuracy : /- 5%RH between 40 and 80%RH, otherwise /- 9%RH



ESL57600





Max-Min Thermometer Electronic

Digital Max Min Indoor Outdoor Thermometer
 Digital Max Min indoor outdoor thermometer with white moulded case and two displays for outdoor and indoor temperature, each display has a maximum and minimum recording facility and can be displayed in °C or °F. This Max/Min thermometer comes complete with stand and 2.5m cable for the outdoor stainless steel probe and batteries are included. Temperature Range : Indoor: 0 to 50 ° C&F / Outdoor: -50 to 70° C&F Divisions : 0.1 ° C Accuracy : /-2 ° C between -20 and 0°C /-1 ° C between 0 and 50 ° C /-2 ° C between 50 ° and 70 ° C otherwise /-3 ° C Sampling Rate : 10 second Battery : 1.5 volt (AAA) or equivalent x 2 pieces (Included) CE,ROHS/WEEE : Approved

ESL57601



Max Min Thermometer Lidded Green Push Button

Euro Lid Max Min Thermometer
 The Euro lidded Max Min thermometer has a modern design with a green scale on a white back in a moulded green plastic case and features a push button reset. A popular greenhouse Max Min thermometer which is used around the world. **Product**

Specifications :

Nominal Range : -35 to 50° C&F Accuracy : /- 2.0° C Tolerance between limbs : /- 1.5° C

ESL57602



Max Min Thermometer White Quick- Set

Quick Set Max Min thermometer
 The Quick Set Max Min thermometers are a popular design in a white casing and blue printed temperature with a push button reset C and F.

Product Specifications :

Nominal Range : -35 to 50 ° C&F Accuracy : /- 2.0 ° C Tolerance between limbs : /- 1.5 ° C

ESL57603



Max Min Thermometer White Mag- net Re-Set

The Magnet Reset Max Min Thermometer has a modern design with blue coloured scale in moulded white plastic complete with resetting magnet. These Max Min thermometers use a patented blue coloured liquid to replace the mercury but retain the ease of operation of the mercury instruments.

° C & ° F.

Product Specifications :

Nominal Range : -35 to 50 ° C&F Accuracy : /- 2.0 ° C Tolerance between limbs : /- 1.5 ° C

ESL57604



Max Min Thermometer Heavy Duty , Green

Heavy Duty Max Min Thermometer
 A classic Max Min thermometer design that has long been popular. This heavy duty Max Min thermometer has a clear and easy to read black temperature scale and is simple to reset with a push button. C and F.

Product Specifications :

Nominal Range : -40 to 50 ° C&F Accuracy : /- 2.0 ° C Tolerance between limbs : /- 1.5 ° C

ESL57605



Max Min Thermometer cream Quick-set

Quick Set Max Min thermometer
 The Quick Set Max Min thermometers have a popular design and come in a cream moulding with black printed temperature scale. Our low cost Max Min thermometer model ideal for the greenhouse which has a push button resetting device. C and F.

Product Specifications :

Nominal Range : -35 to 50 ° C&F Accuracy : /- 2.0 ° C Tolerance between limb s : /- 1.5 ° C

ESL57606





Thermometer Infrared Hand Held

Product Features

Built-in laser pointer Over range indication
Large backlit LCD Data hold and power off function

Product Specifications

Optical Resolution (D:S): 13:1
Emissivity: Fixed at 0.95
Response Time: <500ms
Response Wavelength: 8 to 14mm
Basic Accuracy: /-2%, /-2°C / 4°F
Resolution: 0.1°C/°F
Operating Conditions: 0 to 50°C <95%RH (non-condensing)
Storage Conditions: -20 to 70°C <80%RH
Diode Laser: Output <1mW, Wavelength 630 to 670, class II
Battery: 1 x 9V (included)

CE & RoHS/WEEE: Compliant
Product Dimensions : Packaged: 228 x 133 x 60mm
Unpackaged: 155.5 x 98.8 x 27.5mm

LCD Dimensions : 26.5 x 25.6mm
-50 to 550°C (-58 to 1022°F) - 38/702/0
-50 to 350°C (-58 to 662°F) - 38/701/0

ESL57612

ESL57613

Thermometer Infrared Compact Hand Held

Product Features

Built-in laser pointer Over range indication Large backlit LCD Data hold and power off function

Product Specifications :

Optical Resolution (D:S): 12:1
Emissivity: Fixed at 0.95
Response Time: <500ms
Response Wavelength: 8 to 14mm
Basic Accuracy: /-2%, /-2 C / 4 F
Resolution: 0.1 C/°F
Operating Conditions: 0 to 50 C <95%RH (non-condensing) Storage Conditions: -20 to 70 C <80%RH
Diode Laser: Output <1mW, Wavelength 630 to 670, class II Battery: 1 x 9V (included)

CE RoHS / WEEE: Compliant
LCD Dimensions : 24.5 x 25mm
Product Dimensions : Packaged: 228 x 133 x 60mm Unpackaged: 134 x 89 x 36mm

-50 to 800°C (-58 to 1472°F) ESL57608
-50 to 500°C (-58 to 932°F) ESL57609



Thermometer Infrared Dual Laser

Product Features

Precise IR and K-Type input temperature measurement
Built-in dual laser pointers REC datalogger function for 12 points Adjustable emissivity: 0.1 to 1.0 °/°F selectable
MAX/MIN/DIF/AVG record Large backlit LCD
Trigger lock Adjustable High/Low alarm
Automatic range selection, data hold and power off function Supplied in protective bag

Product Specifications

Optical Resolution (D:S): 13:1 Response Time: <250ms
Response Wavelength: 8 to 14mm
IR Basic Accuracy: -50 to 0°/°F: /-4°/7°F 0 to 500°/°F: /-1.5% /-2°/3.6°F
Above 500°/°F: /-2% /-2°/3.6°F
K-Type Basic Accuracy: -50 to 1370°/°F: /-1.5% /-1°/1.8°F Emissivity: Adjustable 0.1 to 1.0
Resolution: 0.1°/°F
Operating Conditions: 0 to 50° <95%RH (non-condensing) Storage Conditions: -20 to 70° <80%RH
Memory: Storage of 12 readings
Response Time: 1 second
Battery: 1 x 9V (included)
CE & RoHS/WEEE: Compliant

LCD Dimensions : 35 x 35mm
Product Dimensions : Packaged: 250 x 125 x 65mm Unpackaged: 192 x 97 x 59mm

-50 to 1370°C (-58 to 2498°F) ESL57610
-50 to 1050° (-58 to 1922°F) ESL57611





Thermometer Infrared Body Temperature

Body Temperature Thermometer
 Non-contact and hygienic infrared body temperature thermometer specially designed to take the body temperature of a person regardless of room temperature. The body temperature thermometer has a fast response time allowing a greater number of measurements to be taken in a short time. Designed to eliminate the chance of cross-contamination, it is ideally suited for use in schools, business and other environments where a large number of people are coming into contact with one another.

Features

- Easy and safe Selectable C or F Set alarm value
- Selectable body or surface temperature
- Memorization of the last 32 measurements
- Supplied with battery, full instructions and protective bag Laser targeting
- Trigger lock Automatic data hold Backlit LCD display

Products Specifications

Measuring Range: In Body Mode: 32 to 42.5C (90 to 108°F) - In Surface Temp Mode: 0 to 60 C (32 to 140 F)
 Operating Temp: 10 to 40°C (50 to 104°F) Storage Temp: 0 to 50°C (32 to 122°F) Accuracy: +/-0.3°C (or 0.54°F)
 Response Time: 0.5 second
 Relative Humidity: <85%
 Emissivity: 0.95 fixed value Measuring Distance: 5 - 15cm Resolution: 0.1°C (0.1°F) Battery: 2 x AA (Supplied)

ESL57614



Thermometer Infrared Forehead

Infrared Forehead Thermometer Ease of Use
 Taking measurements of forehead temperature is quick, simple and non intrusive with this infrared forehead thermometer. Can measure both forehead temperature and the surface temperature of object. Measurements can be taken while the patient is asleep. Stores up to 20 readings in the internal memory which helps track changes in the temperature of the patient. Device will warn user if the temperature of the patient is too high or too low by way of a fever alarm.
 Safe and Hygienic
 Non contact measurements avoid the accumulation of bacteria, and reduce the need for cleaning and sterilisation of the forehead thermometer during normal use. No danger from broken glass or swallowing the thermometer filling liquid (mercury or spirit). Robust ergonomic design manufactured from tough engineering plastics. More comfortable and convenient than anal and oral reading thermometers, especially for children.

Energy Efficient
 The forehead thermometer will automatically switch off after 10 seconds of inactivity.

Details

Forehead Thermometer Temp. Mode: 32 to 42.2°C (89.6 to 108°F) Milk Temp. Mode: 0 to 100°C (32 to 212°F)

Products Specifications

Temperature Measurement Range:
 Forehead Temp. Mode: 32 to 42.2°C (89.6 to 108°F) Milk Temp. Mode: 0 to 100°C (32 to 212°F) Accuracy: +/-0.2°C (/-0.4°F)
 Response Time: 1 second
 Battery: 2 x AAA (battery life approx 1000 operations) CE, ROHS/WEEE: Approved

Product Weight : 119g

Product Dimensions : 143mm x 60mm x 50mm

ESL57615





Thermometer Infrared Ear Thermometer

Infrared Digital Ear Thermometer

A quick and easy infrared ear thermometer suitable for all ages. The infrared ear thermometer with digital display and memory comes complete with protective bag and 20 X replacement probe covers. Especially suited with use with babies, young children and the elderly. Pack of 20 replacement probe covers also available.

Product Specifications :

Measuring Temperature Range : 35.5 to 42°C °F Displayed Temperature Range : 34 to 44°C °F

Operating Temperature Range : 16 to 35°C (60.8 to 95.0 ° F) Operating Relative Humidity : 80%RH

Divisions : 0.1°C °F

Accuracy: /-0.2°C Between 35 and

42°C (/-0.4°F between 95.9 and

107.6°F) Battery : 2 x AAA

(Supplied)

LCD **Dimensions :** 10mm x 20mm

Product Dimensions : 140mm x 70mm x 40mm

ESL57616



Clinical Thermometer Digital Flexi-Head

Easy to use digital flexi-head thermometer suitable for all ages especially babies, young children and the elderly. This model is the waterproof flexible probe model, suitable for oral use. Packaged in a clear plastic case with full instructions

Product Specifications :

Temperature Range: 32 to

42°C Divisions: 0.1°C

Accuracy: /-0.1°C Between 35.5°C and 42°C, otherwise

/-0.2°C Response Time:* Rectal: Approx 9 - 11 seconds

Axillary: Approx 23 - 29 seconds

Oral: 15 - 19 seconds

Battery: LR41 or equivalent x 1 piece (Included)

ESL57621



Thermometer Digital Probe With Timer

Digital hand-held test thermometer with alarm function, twin displays, 1m cable and 235mm stainless steel probe. Featuring data hold and Max Min function. Includes battery, and hanger, stand and magnetic fixtures. **Product Features:**

Dual display for temperature and timer, Programmable high/low alarm, Wide measurement range, Maximum/Minimum temperature memory, Celsius and Fahrenheit interchangeable, Data hold function, 99 hour countdown timer, Timer setting memory

Timer elapse time display, Stainless steel probe, Wall mount keyhole, Magnetic attachment, Flip out desk stand

ESL57617

Thermometer Digital Probe With Timer

Digital hand-held test thermometer with alarm function, twin displays, 1m cable and 235mm stainless steel probe. Featuring data hold and Max Min function. Includes battery, and hanger, stand and magnetic fixtures. **Product Features:**

Dual display for temperature and timer, Programmable high/low alarm, Wide measurement range, Maximum/Minimum temperature memory, Celsius and Fahrenheit interchangeable, Data hold function, 99 hour countdown timer, Timer setting memory

Timer elapse time display, Stainless steel probe, Wall mount keyhole, Magnetic attachment, Flip out desk stand

ESL57617



Thermometer Digital Oral

Easy to use digital oral thermometer suitable for all ages especially babies, young children and the elderly. This oral thermometer is the standard rigid probe model, suitable for oral use. Packaged in a clear plastic case with full instructions and battery included.

Product Specifications :

Temperature Range: 32 to 42°C

Ambient Temperature during use: 5 to 35°C (80%

RH) Storage Temperature : -25 to 55°C (95% RH)

Divisions : 0.1°C

Accuracy : /-0.1°C between 35.5 and 42°C, otherwise

/-0.2°C Battery : LR41 or equivalent x 1 piece

(Included)

ESL57619





Balance Triple Beam

Single top pan, low form, suspension. Three graduated beams with notches for positioning sliding masses. Spring loaded zero adjust and magnetic damping gives stability and accuracy. Weighing capacity 610g with accuracy of 0.1g, expandable to 2610g with the use of supplementary masses.

Stainless Steel Pan, 150mm Diameter

Supplementary Masses: 2 x 1000g

1 x 500g.

Three notched Weighing Beams: 10g x 0.1g, 100g x 10g, 500g x 100g

ESL57630



Balance Four Beam Balance 310g

The maximum capacity is 311 grams and the readability is 0.01g. It is made of a high quality aluminum alloy, the knife is made of a high quality alloy and the bearing plane is of agate, with a stainless steel weighting pan and includes a built in platform to aid density determination by weighting samples in air and in water. It is widely used for schools and educational establishments, etc QUADRUPLE BEAM BALANCE Capacity: 311g Front beam: 1x0.01g Second beam: 10x1g Third beam: 100x10g Last beam: 200x100g

ESL57631



Balance ,Physics Balance 2 Pan, Hydrostatic

Hydrostatic Balance is useful for specific gravity experiments. Similar to analytical balance without any casing, but with one additional pan suspended through smaller frame. This pan has a hook underneath for suspending items in specific gravity experiments. Balance has detachable pans and is mounted on well-polished wooden base. Capacity 250g Sensitivity 5mg.

ESL57626



Bathroom Scale Mechanical

Bath room scale mechanical measuring range 0 - 180 kg

ESL57692

Bathroom Scale Digital

Bath room scale digital measuring range 0 - 180 kg

ESL57694



Balance Table Top 2 Pan, Roberval , 2 Kg

Simple model, suitable for teaching, made of steel plate and pans are of metal. 2 kg

ESL57627



Double Beam Balance

Utilizing a two-pan configuration rooted in the traditional Roberval balance concept, this equipment is frequently employed for comparative weighing purposes. It boasts a capacity of 2000 grams and features a platform measuring 15cm in size. Additionally, it comes equipped with individual weights of 100g, 200g, 500g, and 1000g

ESL57629



Balance 2 Pan, Plastic

Designed specially for small students use. Made from not-toxic high quality plastic, with no sharp corners. The total balance comprises of only 6 components, which can be easily assembled and disassembled. Both of the weighing containers are of different colours and bucket shaped for use with either of liquids or solids and are washable. Since the buckets are pivoted, the objects can be placed even on the edge without affecting the accuracy of measurement. Includes a broad tip-resistant base sliding poise for easy zeroing and check rod for support of off-centre load. Capacity 2kg Readability 1g.

ESL57623



Height & Weight Scale Basic

Height and weight scale , measuring range 0-200 kg

ESL57689



Height & Weight Scale Advance

Height and weight scale , measuring range 0-200 kg

ESL57690





Spring Balance

Newton Meters, robust plastic transparent body, overall length 285mm approx. with upper and lower suspension hooks, with zero adjustment, scales are both in grams and Newtons.

- ESP60047 Measuring : 100gm/1n, 1gm
- ESP60048 Measuring : 250gm/2.5N, 5gm
- ESP60049 Measuring : 500gm/5n, 10gm
- ESP6005 Measuring : 1kg/10n, 20gm
- ESP60051 Measuring : 2kg/20n, 40gm
- ESP60052 Measuring : 3kg/30n, 60gm
- ESP60053 Measuring : 5kg/50n, 100gm



Spring Balance

PRECISION DYNAMOMETER, The Precision Dynamometer is available in range of weight capacities and scales. They are incredible precise and are suitable for measuring weights, masses and forces. Each different weight capacity is colour coded for ease of identification. As well as offering a high level of precision, these dynamometer are also easy to read enabling accurate readings to be taken quickly and precisely.

- ESP60060 Measuring : 100gm/1n, 2gm
- ESP60061 Measuring : 250gm/2.5N, 5gm
- ESP60062 Measuring : 500gm/5n,10gm
- ESP60063 Measuring : 1kg/10n, 20gm
- ESP60064 Measuring : 2kg/20n, 40gm
- ESP60065 Measuring : 3kg/30n, 60gm
- ESP60066 Measuring : 5kg/50n, 100gm



Spring Balance

force meter, Balance designed to work for mass and force activity. Dual calibrated in grams and Newtons.

- ESP60054 Measuring : 250gm/2.5N, 5gm
- ESP60055 Measuring : 500gm/5n, 10gm
- ESP60056 Measuring : 1kg/10n, 20gm
- ESP60057 Measuring : 2kg/20n, 40gm
- ESP60058 Measuring : 3kg/30n, 60gm
- ESP60059 Measuring : 5kg/50n, 100gm



Weighing Boats

Plastic weighing boats/trays - pack of 50
30ml capacity
DIAMOND SHAPE



ESL57659

Spring Balance

balance spring pocket size, moulded in plastic, reading both sides.

- ESL57633 Measuring : 1.5 Kg, 25gm
- ESL57634 Measuring : 3 kg, 50gm
- ESL57635 Measuring : 6 kg, 100gm
- ESL57636 Measuring : 10 kg, 250gm



Balance Digital- 600G/0.01G

Xlogger Digital Balance - 600g/0.01g
A superb digital balance for a competitive price. The XLE1054 offers multiple unit conversions, RS232 interface, parts counting, percentage weighing and dynamic weighing. The unit has two backlit digital displays, one as seen above and a second at the rear so that the whole class may see the results displayed. The XLE1054 may also be used to supplement the Xlogger data logging system. The Xlogger interface may be connected directly to the USB port of a computer running Excel and data is automatically imported and may be processed in a multitude of ways. The balance comes complete with low voltage power adapter (It also operates on 6 x AA cells), wind shield, 500.00g calibration weight and full user instructions.





Balance Digital Basic

High precision load cell. Rugged Plastic Housing. Big size Stainless Steel Platter. High contrast easy to read LCD display. Built-in rechargeable battery. Height adjustable feet. Full capacity subtraction. Stabilization time 1.5 seconds. Overload Protection. Below Balance Weighing Facility. Checking Weighing, piece counting function. Can be contain bubble level. Pan size: 143 X 192mm

ESL57664	Capacity : 500 G , Readability : 0.1 G
ESL57665	Capacity : 1000 G , Readability : 0.1 G
ESL57666	Capacity : 2000 G , Readability : 0.1 G
ESL57668	Capacity : 5000 G , Readability : 0.1 G



Balance Digital Basic

High precision load cell. Rugged Plastic Housing. Big size Stainless Steel Platter. High contrast easy to read LCD display. Built-in rechargeable battery. Height adjustable feet. Full capacity subtraction. Stabilization time 1.5 seconds. Overload Protection. Below Balance Weighing Facility. Checking Weighing, piece counting function. Can be contain bubble level. Pan size: 128 X 157mm

ESL57669	Capacity : 300 G , Readability : 0.01 G
ESL57670	Capacity : 600 G , Readability : 0.01 G
ESL57671	Capacity : 1000 G , Readability : 0.01 G
ESL57672	Capacity : 2000 G , Readability : 0.01 G



Balance Digital Precision

High precision load-cell, compact design. Full plastic housing. Stainless steel Platter. Super bright LCD display with back-light. Mains adaptor supplied as standard. Height adjustable feet. Full Capacity subtraction. Simple 5 key panel for easy operation. Stabilization time 1.5 seconds. Overload Protection. Below Balance Weighing Facility. Selectable measure units, g,oz,ct. Checking Weighing, Piece counting function. CE approvals

ESL57674	Capacity : 300 G , Readability : 0.1 G
ESL57675	Capacity : 600 G , Readability : 0.1 G
ESL57676	Capacity : 1000 G , Readability : 0.1 G
ESL57677	Capacity : 2000 G , Readability : 0.1 G
ESL57678	Capacity : 200 G , Readability : 0.01 G
ESL57679	Capacity : 600 G , Readability : 0.01 G
ESL57680	Capacity : 1000 G , Readability : 0.01 G
ESL57681	Capacity : 2000 G , Readability : 0.01 G



Balance Digital Analytical

Electromagnetic Force Compensation Technology. Aluminium Alloy die cast base and ss platter. Super Bright LCD display with back-light. RS232C Interface Clear Glass Windshield as standard. Over load protection, Bubble Level Adjustment, Under hook Full capacity Subtraction Multi Weighing unit conversation g/mg/ct/oz. Check Weighing, Parts counting, percentage weighing

Universal power adaptor supplied as standard Certificated calibration weight supplied as standard. Internal calibration system CE approval

ESL57683	Capacity : 300 G , Readability : 1 Mg
ESL57684	Capacity : 600 G , Readability : 1 Mg
ESL57685	Capacity : 1000 G , Readability : 1 Mg
ESL57686	Capacity : 220 G , Readability : 0.1 Mg
ESL57687	Capacity : 310 G , Readability : 0.1 Mg



NEW



Demo Balance Support

The sturdy notched support is available for use the lab. materials you already have to complete the apparatus. You will need a meter stick, mass hangers and masses and several knife edge clamps, available separately. Support is 18.5 cm in height and weight is 280 g approx.

ESP60077

NEW



Economy Digital Balance 500 x 0.01g

Easy to use with 4 buttons. Fast operation thanks to quick self-calibration after switching on. Tare and reset function. Switch between grams, ounces, grains (measure of weight) and carats. Unit counter function. Automatic shutdown. Easy-to-read display with backlight, digit size: 10 mm. Works with batteries (2 x AAA) Contains two transparent measuring cups (can also be used as a protective cover). Specifications: Measuring plate: 100 x 100 mm

ESL57662



Balance Weight Physical

Made of Polished Brass, supplied with Wooden block, as illustrated.

ESP60079	Capacity 500gm	Comprising 1 x 200gm, 2 x 100gm, 1 x 50gm, 1 x 20gm, 2 x 10gm, 1 x 5gm, 2 x 2gm, 1 x 1gm.
ESP60080	Capacity 1000gm	Comprising 1 x 500gm, 1 x 200gm, 2 x 100gm, 1 x 50gm, 1 x 20gm, 2 x 10gm, 1 x 5gm, 2 x 2gm, 1 x 1gm.
ESP60081	Capacity 2000gm	Comprising 1 x 1000gm, 1 x 500gm, 1 x 200gm, 2 x 100gm, 1 x 50gm, 1 x 20gm, 2 x 10gm, 1 x 5gm, 2 x 2gm, 1 x 1gm.



Weight Set Hooked Weight

Brass with hooks on both sides. Recessed bottoms to enable the weights to be hooked together. The bottom is flat when placed on a flat surface. Set of 9 weights. 10 - 1000g in wooden block.

ESP60082



Weight Set Primary Weight

These weights are polished and lacquered Brass weight sets fitted in a durable hardwood storage box as illustrated. 1 each of 1gm, 5gm, 20gm, 100gm and two each of 2gm and 10gm

ESP60083

Slotted Masses And Hanger

Slotted Masses and Hanger, EduScience Nickel plated Brass, mass in disc shape
Material: EduScience Plated Brass **Consists of:** 1 x Masses hanger - 9 x Slotted Load

ESP60085	Total Weight 100 GR	9 x 10 g + hanger
ESP60086	Total Weight 200 GR	9 x 20 g + hanger
ESP60087	Total Weight 500 GR	9 x 50 g + hanger
ESP60088	Total Weight 1000 GR	9 x 100 g + hanger
ESP60085B	Total Weight 100 GR	9 x 10 g + hanger
ESP60086B	Total Weight 200 GR	9 x 20 g + hanger
ESP60087B	Total Weight 500 GR	9 x 50 g + hanger
ESP60088B	Total Weight 1000 GR	9 x 100 g + hanger



Slotted Masses And Hanger 12 pc 200 GR BRASS

Slotted Masses and Hanger, EduScience Brass, mass in disc shape
Material: EduScience Brass

Consists of:
5g to 20g Mixed Masses and Hanger
Set of 12 brass nicked plated slotted masses with hanger 50g hanger, nine masses of 20g, one of 10g and two of 5g.

ESP60086B12



NEW

Slotted Weight Set Of Masses And Hanger,

Set of 9 slotted masses, one hanger This improved set comprises masses of Brass with slots, brass hangers with hook. The design of the slots ensures that the masses may be easily removed and replaced but will not fall off accidentally.



ESP60089	Total 100gm	Each of 10gm
ESP60090	Total 250gm	Each of 25gm
ESP60091	Total 1000gm	Each of 100gm
ESP60092	Total 250gm	Each of 50gm
ESP60093	Total 100gm	Set of one hanger 20gm, three slotted masses 20g one mass 10gm and two masses 5gm, Total 100gm
ESP60094	Total 250gm.	"Set of one hanger 50gm, nine slotted masses 20gm, one mass of 10gm and two masses of 5gm Total 250gm.





Weight Hooked Masses

Hooked masses cylindrical, Chromium plated with cylindrical weight with long hook. Loose or in wooden box.

- ESP60095 10gm each weight
- ESP60096 20gm each weight
- ESP60097 50gm each weight
- ESP60098 100gm each weight
- ESP60099 500gm each weight
- ESP60100 1000gm each weight
- ESP60101 200gm each weight



Weight Masses Hexagonal With Lifting Ring

Hexagonal with lifting ring. Within international tolerance. Set of 6 (50gm, 100gm, 200gm, 500gm, 1kg 2kg)

ESP60103



Weights Hooked Flat

Weights, Brass, with hooks on both sides. Set of 9 Pcs ,Capacity 500 gm ,comprises of 1 x 200gm, 2 x 100gm, 1 x 50gm, 1 x 20gm, 2 x 10gm and 2 x 5gm

ESP60106



Melting Point Tube (Pk/100)

Melting Point Tube

ESL57729

Melting Point Apparatus Digital

Melting point apparatus, 1°C resolution, with pack of 100 melting point tubes, closed at one end, 240V ,Digital Selection and Display of Temperature
 High Accuracy
 Easy to Operate with Plateau
 Facility Number of Samples : 2
 Temperature Range : Ambient to 300°C (572°F)
 Temperature Accuracy : ±1.0°C @ 20°C (68°F), ±2.5°C @ 300°C (572°F) Display : 3-digit LED (no display hold) | Display Resolution : 1°C

Ramp Rates : 20°C (68°F) per minute to plateau, 2°C (3.6°F) per minute to melt

Dimensions : 160 W x 220 D x 170 mm H (6.4 x 8.7 x 6.8")

Weight : 1.8 kg (4 lb) | Electrical Supply : 120/240V, 50/60 Hz, 75 W

ESL57725



Melting Point Apparatus Analogue

Melting point apparatus, with thermometer and pack of 100 melting point tubes, open both ends, 240V, NIST Certificate, UK & European Power Cords , Number of Samples: Up to 3

Temperature Range : 50 to 250°C (122 to 482°F) Heating Rate : 1 to 10°C (34 to 50°F) per minute

Dimensions : 370 W x 140 D x 110 mm H (15 x 5.5 x 4.3")

Weight : 1.7 kg (3.7 lb)

Electrical Supply : 120/240V, 50/60 Hz, 50 W IP Rating : 40

Easy to Operate—Ideal for Educational Use Supplied with Safe Spirit Filled thermometer

ESL57726





Timer , Dual Timer And Clock

The dual timer features two 24 hour countdown timers and also a 12/24 hour clock display. Counts in 1 second increments up to 24 hours. Complete with magnetic clip and stand. Batteries included.

Product Specifications :

- Timer Count: 1 second countdown/up to 24 hours
- 12/24 hour clock
- Time Accuracy Standard: /- 60 sec/month
- Key Durability: Rubber key - 500,000 times (@200g /- 20g)
- Contact switch - 200 times (vertical press)
- Battery : 1 x LR44 (Supplied)
- Battery Life : Approx 150 days
- CE , ROHS/WEEE: Approved
- Operating Temperature : 0 to 40°C (95% RH)
- Operating Voltage: 1.2V to 1.7V x 2
- Current Consumption :10?A (Stand-by current) 25mA (average alarm current)
- Electrostatic discharge ESD : /-8kV
- LCD Dimensions :** 12mm x 32mm
- Product Dimensions :** 50mm x 60mm x 12mm



Timer , Four Way Timer And Clock

This device features 4 timers in one compact unit with 24 hour countdown and count up function. It also benefits from a large easy to read display and a 12/24 hour clock. Complete with stand and magnetic clip. Batteries included.

Product Specifications :

- Timer Count: 24 hour countdown and up 12/24 hour clock
- Time Accuracy Standard: /- 60 sec/month
- Battery : 2 x LR44 (Included)
- Battery Life : Approx 150 days
- Operating Temperature : 0 to 40°C (95% RH)
- Operating Voltage : 1.2V to 1.7V x 2
- Key Durability : Rubber key - 500,000 times (@200g /- 20g)
- Contact switch - 200 times (vertical press)
- CE,ROHS/WEEE: Approved
- Current Consumption :10?A (Stand-by current) 25mA (average alarm current)
- Electrostatic discharge ESD : /- 8kV
- Alarm Sound : 70dB
- LCD Dimensions :** 22mm x 50mm
- Product Dimensions :** 62mm x 75mm x 15mm

ESL57740



Stop Clock

Two sweep hands, one indicating seconds, the other recording minutes. Start-stop lever on the left hand side, zero reset lever on right hand side. Movement housed in metal case. Diameter of dial 100mm divided 0-60 x 1. Fitted in powder coated metal case.

ESL57733

ESP59918



Stopwatch Budget

Budget Stopwatch

1/100 second stopwatch with split timer function, calendar and time. Comes complete with lanyard cord. Batteries included.

Features:

- 1/100 second stopwatch, Split timing function, Up to 23 hours, 59 minutes, 59 seconds, Clock shows hours, minutes, seconds, 12/24 hour selectable, Calendar shows day, month, year, Includes lanyard, **Product Specifications :**, Timer Count: 1/100 second
- Battery: 1 x LR44 (Included), CE, ROHS/WEEE: Approved, **LCD Dimensions :** 12mm x 27mm, **Product Dimensions :** 80mm x 55mm x 17mm



Timer Bench Top

Product Specifications :

- Timing Period : Up to 9 hours / 59 minutes / 59 seconds
- Time Accuracy Standard: Within /- 1 second
- Resolution: 1/100 second for 30 minutes then 1 second thereafter
- Product Material: ABS
- Battery : 1 x AA (supplied)
- Operating Temperature : 0 to 50°C
- Storage Temperature : -10 to 60°C
- CE,ROHS/WEEE : Approved
- LCD Dimensions :** 63.7 x 19.7mm
- Product Weight :** 197g
- Product Dimensions :** 100 x 97 x 70.5mm

ESL57739

ESL57735



Timer Triple Timer And Clock**Product Specifications :**

Timer Count: 20 Hour x 3
 Time Accuracy Standard : /- 60 sec/month
 Key Durability: Rubber key - 500,000 times (@200g /- 20g) Contact switch - 200 times
 Battery : 2 x LR44
 (Included) Battery Life :
 Approx 1 year CE ,
 ROHS/WEEE : Approved
 Operating Temperature : 0 to 40°C (95% RH)
 Operating Voltage : 1.2V to 1.7V
 Current Consumption: 15A (stand-by current) 10mA (average alarm current)
 Alarm Sound Level : 70dB Min 1ft from product Electrostatic discharge ESD : /-8kV
LCD Dimensions : 45mm x 41mm
Product Weight : 60g
Product Dimensions : 92mm x 69mm x 13mm



ESL57737

Timer , Digital Kitchen Timer And Clock

Digital timer featuring 99 minutes 59 Seconds countdown count up timer with memory function, and 12 / 24 hour clock. Comes with hanger, stand and magnetic fixing. Battery included.

Product Specifications :

Timer Count : 99 minutes / 59 seconds Battery : 1 x AAA (Supplied)
 CE , ROHS/WEEE : Approved
 Operating Temperature : 0 to 40°C (95% RH)
LCD Dimensions : 48mm x 20mm
Product Dimensions : 67mm x 77mm x 27mm



ESL57741

**Stopwatch Analogue**

Time measurement. One button have function to Start, Stop and Reset. In Stopwatch can be found freeze over round.

Size : Overall 50mm diameter Thickness : 16mm
 Scale : 0-60 x 0.2 sec., 0-30 x 1min Material : Stainless steel
 Mechanical (analogue) type timer

One button type for start button, reset and mechanic rotator spring

Dimension : 6.50 (L) x 6.50 (W) x 1.50cm (H)

Weight : 0.085 kg

ESL57745

Timer Slimline**Budget Stopwatch**

1/100 second stopwatch with split timer function, calender and time. Comes complete with lanyard cord. Batteries included.

Features :

1/100 second stopwatch Split timing function
 Up to 23 hours, 59 minutes, 59 seconds Clock shows hours, minutes, seconds 12/24 hour selectable
 Calendar shows day, month, year Includes lanyard

Product Specifications :

Timer Count : 1/100 second Battery : 1 x LR44 (Included) CE ,ROHS/WEEE: Approved
LCD Dimensions : 12mm x 27mm
Product Dimensions : 80mm x 55mm x 17mm



ESL57738

Timer , Countdown Digital Large**Large Digital Countdown Timer**

Large digital countdown timer covering 99 minutes 59 Seconds. The timer is supplied with stand, clip and magnetic fixing. All of our timers are supplied with batteries included.

Product Specifications :

Timer Count: 99 minute / 59 second
 Time Accuracy Standard: /- 60 sec/month (@ 25°C) Battery : 1 x AAA (Supplied)
 Battery Life : Approx 1 year
 Operating Temperature : 0 to 40°C (95% RH) Operating Voltage : 1.2 to 1.7V
 Slide Switch Reliability : 5000 cycles
 Key Durability: Rubber key - 500,000 times (@200g /- 20g) Contact switch - 200 times (vertical press)
 Current Consumption : 15 A (Stand-by current) 10mA (average alarm current)
 Electrostatic discharge ESD : /-8kV
 Alarm Sound : 70dB Min 1ft from product
LCD Dimensions : 38mm x 64mm
Product Dimensions : 70mm x 80mm x 20mm



ESL57742

Timer , Countdown Digital Mini

Mini digital timer featuring 99 minutes 59 Seconds countdown and memory function. Complete with stand, clip and magnetic fixing. All of our timers are supplied with batteries included.

Product Specifications :

Timer Count: 99 minute / 59 second
 countdown Time Accuracy Standard: /- 60 sec/month
 Key Durability: Rubber key - 100,000 times (@200g /- 20g) Contact switch - 5000 times (vertical press)
 Battery : 1 x AAA (Supplied) Battery Life :
 Approx 2 year
 Operating Temperature : 0 to 40°C (95% RH) Operating Voltage: 1.2 to 1.7V
 Current Consumption : 10mA (Stand-by current) & 12mA (average alarm current)
 Electrostatic discharge ESD : /-8kV

LCD Dimensions : 38mm x 64mm

Product Dimensions : 55mm x 55mm x 25mm



ESL57743



NEW



ES Pocket Meter

- Replaceable combined probe design, meeting different applications
- Multi-color backlight display, easy to read data in different modes
- Data reading indicator and automatic data locking when the reading is stable
- Low voltage indication ensures timely battery replacement
- Buffers solutions: standards are selectable
- Auto shut-off time, customized backlight display time
- Supplied with standard solution, sample vials and lanyard for convenient field test
- Dual-control mode with mobile APP connection to achieve powerful data storage
- The mobile APP provides 4 types of measurement display for different situations, including Graph, Graph mode, Table mode, Dial mode, and General mode
- Protection class: IP67

Labware

Model		ESL57748	ESL57859	ESL57756	ESL57862	ESL57748B	ESL57859B	ESL57756B	ESL57862B	
Parameter	pH/mV.°C	✓	-	-	✓	✓	-	-	✓	
	mV(ORP).°C	✓	✓	-	✓	✓	✓	-	✓	
	Cond/TDS/Sal./Res.°C	-	-	✓	✓	-	-	✓	✓	
pH	Measurement range	(-2.00-16.00) pH	✓	-	-	✓	✓	-	-	✓
	Resolution	0.1/0.01	✓	-	-	✓	✓	-	-	✓
	Accuracy	±0.01pH±1digit	✓	-	-	✓	✓	-	-	✓
	Calibration points	1-, 2-, or 3-point	✓	-	-	✓	✓	-	-	✓
	ATC range	0~50°C (32-122°F)	✓	-	-	✓	✓	-	-	✓
ORP	Measurement range	(-1000.0-+1000.0) mV	✓	✓	-	✓	✓	-	✓	
	Resolution	0.1/1	✓	✓	-	✓	✓	-	✓	
	Accuracy	±0.1%F.S±1digit	✓	✓	-	✓	✓	-	✓	
Conductivity	Measurement range	0-2000.0mS/cm, auto-ranging : 0-19.999µS/cm; 20.0-199.9µS/cm; 200-1999µS/cm; 2.00-19.99mS/cm; 20.00-199.9mS/cm; 200.0-2000mS/cm K=10) Match test range: 0-200mS/cm TDS : 0-100.0g/L (TDS factor adjustable) Resistivity:5.000Ω-cm-100.0MΩ-cm	-	-	✓	✓	-	-	✓	✓
	Resolution	0.01/0.1/1	-	-	✓	✓	-	-	✓	✓
	Accuracy	±1.0%±1digit	-	-	✓	✓	-	-	✓	✓
Temperature	Measurement range	(0.0-50.0) °C/(32.0-122.0)°F	✓	✓	✓	✓	✓	✓	✓	
	Accuracy	±0.2°C	✓	✓	✓	✓	✓	✓	✓	
APP	Calibration reminder	-	-	-	-	✓	✓	✓	✓	
	Sample ID Classification	-	-	-	-	✓	✓	✓	✓	
	Timing datalogging	-	-	-	-	✓	✓	✓	✓	
	Operation guider	-	-	-	-	✓	✓	✓	✓	
	Various display modes	-	-	-	-	✓	✓	✓	✓	
Test Kit	Meter	✓	✓	✓	✓	✓	✓	✓	✓	
	Probe(pre-installed)	ESL57748-S	ESL57859-S	ESL57756-S	ESL57862-S	ESL57748B-S	ESL57859B-S	ESL57756B-S	ESL57862B-S	
	pH buffer solution: pH4.00/7.00/10.01, 30mL, one for each	✓	-	-	-	✓	-	-	-	
	3.0 mol KCl pH/ORP soaking solution, 10mL, 1 bottle	✓	✓	-	✓	✓	✓	-	✓	
	Sample Vials: 30mL	3	1	2	4	3	1	2	4	
	Standard ORP solution 222 mV, 30mL	-	✓	-	-	-	✓	-	-	
	Standard Cond solution 1413µS/12.88mS/cm 30mL, one for each	-	-	✓	✓	-	-	✓	✓	
	pH buffer solution: pH4.00/7.00, 30mL, one for each	-	-	-	✓	-	-	-	✓	
	4x1.5V AAA alkaline batteries (pre-installed)	✓	✓	✓	✓	✓	✓	✓	✓	
	Lanyard	✓	✓	✓	✓	✓	✓	✓	✓	
	Hard carrying case (L/W/H: 28.0x23.0x8.2cm)	✓	✓	✓	✓	✓	✓	✓	✓	
	Operation manual	✓	✓	✓	✓	✓	✓	✓	✓	





PH Meter Pen Type

The most cost effective pH tester, widely applied for general precision requirement in various water analytical situations.

The smallest and thinnest shape: 148×29×14mm. The diameter of the electrode: 10mm..

The best function: automatic calibration, automatic temperature compensation, automatic power off, low voltage alarm, pH electrode invalidation display, etc.

The easiest to use : single button operation.

The reliable structure design: meet IP57 waterproof, replaceable batteries, calibration solution, electrode soaking solution and standby batteries in a portable case.

The most cost-effective pen tester.

ESL57749



PH Meter Pocket Type

Economy pH tester, meet general requirements, cost-effective. Automatic calibration, no temperature compensation.

Low voltage alarm display.

10 minutes automatic shut-down.

Replaceable electrode configuration calibration

solution. IP 57 waterproof rating.

Measuring range : 0-14.0

pH Resolution : 0.1 pH

Accuracy : ±0.1pH±1 digit

Temperature compensation :

No Automatic Calibration :

1point calibration (7.00

pH) Power :

2AAA batteries, 1.5V × 2, more than 100 hours of continuous

using Size and weight : 39×25×176 mm/95g

ESL57747

PH Meter Potable Hand-held

Portable advanced single measurement water quality meter
Smart electrode interchangeable water quality measurement with single input, multi-parameters readable. Easy operation, meter powered by six AAA batteries, receptacle device is built- in for tripod mountable enable to do long time monitoring purposes.

FEATURES :

Professional look design accurate portable meters with large LCD display, BNC connector.

All electrodes with BNC connector compatible to any other electrodes. Hold function, low battery icon indicator, automatic power off in 15 minutes and may disable.

Built-in different temperature compensation selectable: PT100, PT1000 (pH electrode only), Thermistor 30K, 10K ohm.

RFS (Recover to Factory Setting) function is included.

3 points pH calibration: 4, 7, 10 (Adjustable). Calibration buffer solution are included with soaking solution.

Conductivity calibration points: 1413uS. Calibration solution is included. Conductivity electrode may convert to TDS and Salinity concentration, adjustable conductivity to TDS conversion factor from 0.4 to 1.0. Three in one conductivity electrode (Cond. EC.TDS. Salinity measurement). Conductivity cell constant (K) selectable: 0.1, 1.0, 10 (Selectable and adjustable). DO 100% self-calibration is convenient and simple. Calibrated both Saturated DO/zero DO (Na₂SO₃) before shipment. Compact DO electrodes supplied with 3M cable and membrane cap, electrolyte. Galvanic electrodes do not require long warm up time as polarographic type electrodes. (Polarization is required about 10-215 minutes.) Tripod receptacle mountable design for long time monitoring purposes. All sensors are well calibrated before shipment. Warranty period is two years. Long life sensors

SUPPLIED : Meter - Battery-AAA x 6 pcs Operation manual Electrodes - Black carrying case - pH buffer solution x 3 pcs (pH 4 ,pH7, pH10) 1413uS buffer solution x1 - (3M) Soaking Solution x 1

Specifications :

Data Hold: Freeze the display reading.

Meter **Dimension** : 180mm x 58mm x 32mm (With BNC connector) Power supply: AAA batteries x 6 pcs / 9V AC/DC (Option)

Temperature:0-90 (PH) 0-90 (Cond/TDS/Salt/) -Temp. accuracy: 0.5 PH:

Measurement range PH: 0 to 14 pH Accuracy 1% of full scale 1 digit Resolution:0.01(pH)

ESL57751





Conductivity Meter Pen Type

The most cost effective pen conductivity tester, ability to switch among conductivity, TDS, salinity and resistivity, widely applied in surface water, sewage, drinking water, soil less, printing, wash water of plating tank, aquarium, fish pond, swimming pool, hot spring, etc. Compared with similar products: the widest measurement scope 0-50mS/cm, more measurement parameters, ability to switch among conductivity, TDS, salinity and resistivity. multinomial calculation for TDS and salinity to ensure the conversion precision of the full scale.

The smallest and thinnest shape : 148×29×14mm. The diameter of the electrode: 10mm. The best function: automatic calibration, automatic temperature compensation, automatic switch of range, automatic power off, low voltage alarm, etc.

The easiest to use : single button operation.

Meet IP57 waterproof rating, replaceable batteries, calibration solution and standby batteries in a portable case.

ESL57757

Conductivity Meter Pocket Type

Economy conductivity tester, meet general requirements, cost-effective

Long measurement range, automatic switching range.

Automatic calibration, automatic temperature compensation (without temperature display.)

Low voltage alarm display.

10 minutes automatic shut down.

Conductivity calibration solution configuration. IP57 waterproof rating.

Measuring range Divided into three sections, automatic switching range:

(0-99.9)μS/cm(100-999)μS/cm (1.00-10.00)mS/cm

Resolution : 0.1/1μS/cm:0.01 mS/cm

Accuracy ±1%FS

Temperature compensation : (0-50)°C (Auto) Automatic

Calibration 1 point calibration(1413μS/cm)

Power : 2 AAA batteries, 1.5V × 2, more than 100 hours of continuous using

Size and **Weight** : 39×25×176 mm/ 87g



ESL57755



Conductivity EC /TDS/Salinity Pocket Tester Kit

Portable Pocket EC/TDS/Salinity Meter/Tester simply tests all kinds of regular conductivity measurements in an ACCURATE, QUICK, and RELIABLE manner. The applications include hydroponics, tap/drinking water, pools& spas, education, water treatment, environmental monitoring, etc. Up to 3 points of Auto Calibration with auto buffer recognition and 0 to 50°C Auto Temperature Compensation (ATC), 0.01 mS/±1% F.S, 0.5°C accuracy with measuring range of 0-200.0 μS/cm, 0-2000 μS/cm, 0-20.00 mS/cm, 0-50.0°C.

APERA's unique BPB (Brush-Resistant Platinum Black) sensor adopts a special processing technology, which minimizes electrode polarization, expands measuring range, and increases the firmness of the electrode, hence ensuring a much higher accuracy and consistency in a wide-range conductivity measurement than traditional stainless steel electrodes, and is easy to clean. The probe is replaceable and easy to install so that you don't have to buy a whole new meter once the probe is aged.

Auto recognition and indication of stable values improves consistency, saving you the trouble of guessing when to manually hold measurement. With a large clear 180° viewing angle screen with 2 backlit colors (blue for measuring mode and green for calibration mode), it supports dual display of temp./EC value and indications of completed calibrations (where M/H indicate 2 points of calibrations) and stable readings (with a smiley face).

Easy menu setting, customizing your tester functions according to your needs (switch of temperature unit, TDS factor setting, Switch of salinity unit, auto hold on/off). Smart self-diagnosis, warning of out-of-range/preset measurement and incorrect calibrations.

Comes with a complete kit. IP67 waterproof and dustproof, floating on water. 1000 hours' continuous operation powered by AAA batteries (with low power warning and auto power off in 8 min if no operation)

ESL57758



ES Portable Meter

Features

- 3.5" TFT Color Display, user-friendly interface
- A robust POM housing and stainless-steel protective guard ensure durability when measuring in tough environments
- No membranes, no electrolyte, no warm up, minimize hassle
- Fast response (shorter than 15s), fluorescence sensor technology provides high accuracy and repeatability
- Intelligent function with Auto. timing datalogger, parameter setting, data hold
- Built-in temperature sensor, real-time temperature compensation
- Automatic barometric pressure compensation

NEW



Model		ESL57752	ESL57860	ESL57806	ESL57807P Polarography Type	ESL57807O Optical Type
Parameter	pH/mV.°C	✓	-	-	-	-
	mV(ORP).°C	✓	✓	-	-	-
	Cond/TDS/Sal./Res.°C	-	-	✓	-	-
	DO	-	-	-	✓	✓
pH	Measurement range	(-2.000-20.000) pH	✓	-	-	-
	Resolution	0.1/0.01/0.001	✓	-	-	-
	Accuracy	±0.002pH±one digit	✓	-	-	-
	Calibration points	1, 2, -3pts automatic	✓	-	-	-
	ATC range	(0.0-100.0) °C/(32.0-212.0)°F	✓	-	-	-
ORP	Measurement range	(-1999.9 - +1999.9) mV	✓	✓	-	-
	Resolution	0.1/1	✓	✓	-	-
	Accuracy	±0.03%F.S±one digit	✓	✓	-	-
Conductivity	Measurement range	0-2000.0mS/cm, auto-ranging : 0-19.999µS/cm; 20.0-199.9µS/cm; 200-1999µS/cm; 2.00-19.99mS/cm;	-	-	✓	-
	Resolution	one point	-	-	✓	-
	Accuracy	0.001/0.01/0.1/1	-	-	✓	-
DO	ATC range	(0.0-50.0) °C/(32.0-122.0)°F	-	-	✓	-
	Accuracy	±0.5 % FS±one digit	-	-	✓	-
	Measurement range	(0.00-20.00) mg/L	-	-	-	✓
	Accuracy	±0.30 mg/L	-	-	-	✓
		±0.20 mg/L	-	-	-	✓
	DO saturation	(0.0-200.0)%	-	-	-	✓
	Barometric pressure compensation	(0-200.0) kPa	-	-	-	✓
Temperature	Temperature compensation	(0.0-50.0) °C/(32.0-122.0)°F	-	-	-	✓
	Salinity compensation	0~45ppt	-	-	-	✓
	Measurement range	(0.0-100.0) °C/(32.0-212.0)°F	✓	✓	✓	✓
Others	Accuracy	±0.2°C	✓	✓	✓	✓
	Charging socket	Type-C	✓	✓	✓	✓
	Power supply	rechargeable lithium battery	✓	✓	✓	✓
Test kit	IP Rating	IP57	✓	✓	✓	✓
		Meter	✓	✓	✓	✓
		Plastic ATC pH probe D201T-H	✓	-	-	-
		Plastic ORP probe DORP301	-	✓	-	-
		Stainless-steel temperature probe DTEMP-02H	-	✓	-	-
		Plastic ATC Cond probe DCON201T, K=1.0	-	-	✓	-
		Polarographic DO probe DDO01-2M-H, cable length: 2m	-	-	-	✓
		Optical DO probe DODO01-3M, cable length: 3m	-	-	-	✓
		pH buffer solution: pH4.00/7.00/10.01, 50mL, one for each	✓	-	-	-
		Standard ORP solution: 222mV, 50mL,1btl	-	✓	-	-
		Standard Cond solution 84µS/1413µS/12.88mS/cm, 50mL, one for each	-	-	✓	-
		Membrane refill solution DDOS-01, 30mL,1btl	-	-	-	✓
		Membrane sensor caps DDOSC: 3pcs/group, 1pkg	-	-	-	✓
		Rechargeable lithium battery (pre-installed)	✓	✓	✓	✓
		Charging cable: 1pc	✓	✓	✓	✓
		Hard carrying case (L/W/H: 33.0×27.2×8.2cm): 1pc	✓	✓	✓	✓
		Operation manual	✓	✓	✓	✓



NEW



ES Desktop Meter

Features

- High-res 7" display screen with white backlight, easy to read
- Automatic calibration, ATC measurement, parameter setup
- Automatic reading stable indication, calibration indication
- Data storage: 450 readings
- Data export: Flash disk/ Wireless printer (the printer is optional)
- Equipped with a flexible probe holder and pH buffer solutions for convenient use
- Protection class: IP54

Labwar

Model		ESL57754	ESL57760	ESL57809	ESL57854	ESL57855	ESL57856	ESL57857
Parameter	pH/mV.°C	✓	-	-	✓	✓	-	✓
	mV(ORP).°C	✓	-	-	✓	✓	-	✓
	Cond/TDS/Sal./Res.°C	-	✓	-	✓	-	✓	✓
	DO	-	-	✓	-	✓	✓	✓
pH	Measurement range	(-2.00-20.00) pH	✓	-	-	✓	✓	✓
	Resolution	0.1/0.01	✓	-	-	✓	✓	-
	Accuracy	±0.01pH±one digit	✓	-	-	✓	✓	-
	Calibration points	1, 2, -3pts automatic	✓	-	-	✓	✓	-
	ATC range	(0.0-100.0) °C/(32.0-212.0) °F	✓	-	-	✓	✓	-
ORP	Measurement range	(-1999.9 - +1999.9) mV	✓	-	-	✓	✓	-
	Resolution	0.1/1	✓	-	-	✓	✓	-
	Accuracy	±0.1%F.±one digit	✓	-	-	✓	✓	-
Conductivity	Measurement range	0-200.0mS/cm, auto-ranging : 0-19.99µS/cm; 20.0-199.9µS/cm; 200-1999µS/cm; 2.00-19.99S/cm; 20.00-199.9mS/cm; TDS: 0 - 100.0g/L (TDS factor adjustable) Resistivity: 5.00Ω-cm-100.0MΩ-cm Salinity: 0-100ppt	-	✓	-	✓	-	✓
	Calibration points	one point	-	✓	-	✓	-	✓
	Resolution	0.01/0.1/1	-	✓	-	✓	-	✓
	ATC range	(0.0-50.0) °C/(32.0-122.0) °F	-	✓	-	✓	-	✓
	Accuracy	±1.0% FS±one digit	-	✓	-	✓	-	✓
DO	Measurement range	(0.00-20.00) mg/L	-	-	✓	-	✓	✓
	Accuracy	±0.30 mg/L	-	-	✓	-	✓	✓
	DO saturation	(0.0-200.0)%	-	-	✓	-	✓	✓
	Automatic barometri pressure compensation	(0-200.0) kPa	-	-	✓	-	✓	✓
	Automatic temperature compensation	(0.0-50.0) °C/(32.0-122.0) °F	-	-	✓	-	✓	✓
	Manual salinity compensation	0-45ppt	-	-	✓	-	✓	✓
Temperature	Measurement range	(0.0-100.0) °C/(32.0-212.0) °F	✓	✓	✓	✓	✓	✓
	Accuracy	±0.2°C	✓	✓	✓	✓	✓	✓
Others	Data export	Flash disk/Printer	✓	✓	✓	✓	✓	✓
	Power supply	DC12V	✓	✓	✓	✓	✓	✓
Test kit	Meter	✓	✓	✓	✓	✓	✓	✓
	Plastic ATC pH probe D201T	✓	-	-	✓	✓	-	✓
	Plastic ATC Cond probe DCON201T, K=1.0	-	✓	-	✓	-	✓	✓
	Polarographic DO probe DDO01-2M, cable length: 2m	-	-	✓	-	✓	✓	✓
	pH buffer solution: pH4.00/7.00/10.01, 50mL, one for each	✓	-	-	✓	✓	-	✓
	Standard Cond solution 84µS/1413µS/12.88mS/cm, 50mL, one for each	-	✓	-	✓	-	✓	✓
	Membrane refill solution DDOS-01, 30mL, 1btt	-	-	✓	-	✓	✓	✓
	Membrane sensor caps DDOSC: 3pcs/group, 1pkg	-	-	✓	-	✓	✓	✓
	Power adaptor: 1pc	✓	✓	✓	✓	✓	✓	✓
	Flexible probe holder DF01: 1pc	✓	✓	✓	✓	✓	✓	✓
Operation manual	✓	✓	✓	✓	✓	✓	✓	



NEW



ES Desktop Meter

Features

- High-res 7" display screen with white backlight, easy to read
- Automatic calibration, ATC measurement, parameter setup
- Automatic reading stable indication, calibration indication
- Data storage: 450 readings
- Data export: Flash disk/ Wireless printer (the printer is optional)
- Equipped with a flexible probe holder and pH buffer solutions for convenient use
- Protection class: IP54

Model		ESL57754T	ESL57760T	ESL57809T	ESL57854T	ESL57855T	ESL57856T	ESL57857T
Parameter	pH/mV.°C	✓	-	-	✓	✓	-	✓
	mV(ORP).°C	✓	-	-	✓	✓	-	✓
	Cond/TDS/Sal./Res.°C	-	✓	-	✓	-	✓	✓
	DO	-	-	✓	-	✓	✓	✓
pH	Measurement range	(-2.000-20.000) pH	✓	-	✓	✓	-	✓
	Resolution	0.01/0.001	✓	-	✓	✓	-	✓
	Accuracy	±0.002pH±one digit	✓	-	✓	✓	-	✓
	Calibration points	1, 2, -5 pts automatic	✓	-	✓	✓	-	✓
	ATC range	(0.0-100.0) °C/(32.0-212.0) °F	✓	-	✓	✓	-	✓
ORP	Measurement range	(-1999.9 - +1999.9) mV	✓	-	✓	✓	-	✓
	Resolution	0.1/1	✓	-	✓	✓	-	✓
Accuracy	±0.03%F.5±one digit	✓	-	✓	✓	✓	-	✓
	0-2000.0mS/cm, auto-ranging : 0-19.999µS/cm; 20.0-199.9µS/cm; 200-1999µS/cm; 2.00-19.99mS/cm; 20.00-199.9mS/cm; 200.0-2000mS/cm (K=10) Match test range: 0-200mS/cm TDS: 0 - 100.0g/L (TDS factor adjustable) Resistivity: 5.000Ω-cm-100.0MΩ-cm Salinity: 0-100ppt	-	✓	-	✓	-	✓	✓
Conductivity	Calibration points	one point	-	✓	✓	-	✓	✓
	Resolution	0.001/0.01/0.1/1	-	✓	✓	-	✓	✓
	ATC range	(0.0-50.0) °C/(32.0-122.0) °F	-	✓	✓	-	✓	✓
	Accuracy	±0.5 % FS±one digit	-	✓	✓	-	✓	✓
	Measurement range	(0.00-20.00) mg/L	-	-	✓	-	✓	✓
DO	Accuracy	±0.30 mg/L	-	-	✓	✓	✓	✓
	DO saturation	(0.0-200.0)%	-	-	✓	✓	✓	✓
	Automatic barometri pressure compensation	(0-200.0) kPa	-	-	✓	-	✓	✓
	Automatic temperature compensation	(0.0-50.0) °C/(32.0-122.0) °F	-	-	✓	-	✓	✓
	Manual salinity compensation	0-45ppt	-	-	✓	-	✓	✓
Temperature	Measurement range	(0.0-100.0) °C/(32.0-212.0) °F	✓	✓	✓	✓	✓	✓
	Accuracy	±0.2°C	✓	✓	✓	✓	✓	✓
Others	Data export	Flash disk/PC/Printer	✓	✓	✓	✓	✓	✓
	Power supply	DC12V	✓	✓	✓	✓	✓	✓
Test kit	Meter	✓	✓	✓	✓	✓	✓	✓
	Glass refillable combination pH probe D201G	✓	-	-	✓	✓	-	✓
	Stainless-steel temperature probe DTEMP-01	✓	-	-	✓	✓	-	✓
	Glass ATC conductivity probe DCON201TG, K=1.0	-	✓	-	✓	-	✓	✓
	Polarographic DO probe DDO01-2M	-	-	✓	-	✓	✓	✓
	pH buffer solution: pH4.00/7.00/10.01, 50mL, one for each	✓	-	-	✓	✓	-	✓
	Standard Cond solution 84µS/1413µS/12.88mS/cm, 50mL, one for each	-	✓	-	✓	-	✓	✓
	Membrane refill solution DDOS-01, 30mL,1btl	-	-	✓	-	✓	✓	✓
	Membrane sensor caps DDOSC: 3pcs/group, 1pkg	-	-	✓	-	✓	✓	✓
	PC cable: 1pc	✓	✓	✓	✓	✓	✓	✓
Flexible probe holder DF01: 1pc	✓	✓	✓	✓	✓	✓	✓	
Magnetic stirrer: 1pc	✓	✓	✓	✓	✓	✓	✓	
Power adaptor	✓	✓	✓	✓	✓	✓	✓	
Operation manual	✓	✓	✓	✓	✓	✓	✓	

Labware





NEW



Dissolved Oxygen Meter Portable (DO Meter)

Equipped with state-of-the-art Optical DO sensor: measures dissolved oxygen level in a RELIABLE and EFFORTLESS manner Intelligent functions: Auto. recognition of stable values Minimal maintenance required. Easy calibration IP57 waterproof and dust-proof structure, ideal to be used in harsh environments Powered by AAA batteries, Comes with a complete test kit, including the meter, optical probe, calibration cap, and a rugged carrying case Set Includes the Following :

1. Portable DO meter 1pc
2. Optical DO probe 1pc
3. Calibration cap 1pc
4. Carrying case
5. Manual

ESL57808



PH and Conductivity Meter Desk Top

pH + Conductivity Double-Parameter measurement meter which is suitable for general measurement in laboratory. It is suitable for measuring the pH value of moderate ionic strength aqueous solution, and conductivity values of conventional solution

- The most widely used pH + Conductivity Double-Parameter measurement meter.
 - Meter meets with the requirement of international GLP standards. Its features up to automatic calibration, automatic temperature compensation, data storage, timing measurement, clock display, RS-232 output, function setting and self-diagnose etc.
 - There are three different measurement modes: stable display mode; time measurement mode; continuous measurement mode.
 - Automatically recognize pH buffer solution. User can choose anyone from three series of standard buffer solutions: Europe & USA series, NIST series and China series.
 - Adopt advanced and original conductivity measurement technology, use 1 pc of conductivity electrode (K=1), it can meet measuring accuracy requirement for range within 0.5µS/cm ~ 200mS/cm by using only one- point calibration. Can switch Conductivity, TDS, Salinity and Resistivity. Meter has the only product serial number.
- Dust-proof and waterproof meter meets IP54 standards. All sockets are seal protected by the silica gel caps.

ESL57759

Conductivity/TDS Portable Meter Kit

Our Portable Conductivity/TDS Meter Kit is the most economical choice for a reliable portable conductivity meter. Equipped with A Instrument BPB (Brush-Resistant Platinum Black) conductivity sensor/electrode/tester, the meter tests EC, TDS, and temperature simultaneously in a quick and accurate manner (Accuracy: ±1.0% F.S, Range: 0 to 200mS, 0 to 50°C(32 to 122°F) Auto or Manual Temperature



Compensation) Intelligent Functions: Quick & Easy 1 to 3 Points Auto Calibration. The Smart Self-Diagnosis helps you conduct proper calibrations and determine the condition of your probe. Fully configurable parameter setting: solution standards, temperature unit, backlight time, auto-power off time, TDS factor, temperature coefficient, etc. The large clear LCD displays EC/Temperature simultaneously along with icons of stable readings and finished calibrations.

Reliable Structure: IP57 Waterproof and Dustproof, ideal for use in harsh environments. It comes with a complete test kit including a Portable Conductivity Meter, a Conductivity Electrode, and 3 calibration solutions in a rugged carrying case. Powered by AA Batteries.

ESL57760



PH Meter Desk Top

Lab pH Meter DESK TOP

General laboratory bench pH meter, which is suitable for measuring moderate ionic strength solutions, such as surface water, lake water and industrial wastewater. It can be used in most of the areas related to water quality analysis. Meter meets with the requirement of international GLP standards. Its features up to automatic calibration, automatic temperature compensation, data storage, timing measurement, clock display, RS-232 output, function setting and self-diagnose etc.

- There are three different measurement modes: stable display mode; time measurement mode; continuous measurement mode. Automatically recognize pH buffer solution.
- Meter has the only product serial number. Dust proof and waterproof meter meets IP54 standards. All sockets are seal protected by the silica gel caps. pH .

ESL57753



Electrode Holder Flexible

Base of holder is made up of ABS hull, cast iron counter weight and axis of rotation of stainless steel three electrodes can be put into electrode chuck (electrode capΦ16 mm)

ESL57761



Meters

Electrode



Name	Combination pH electrode
Mode	D201G
Connector type	BNC
Housing material	Glass
Measurement range	0-14.0pH
Temp. range	0-100°C
Junction	Ceramic
Electrolyte	3 mol KCl (refillable)
Reference electrode	Ag/AgCl
Cable length	1m



Name	Combination pH electrode
Mode	D201A-C
Connector type	BNC
Housing material	PC
Measurement range	0-14.0pH
Temp. range	0-60°C
Junction	Ceramic
Electrolyte	3 mol KCl Gel
Reference electrode	Ag/AgCl
Cable length	1m



Name	Combination ORP electrode
Mode	DORP301
Connector type	BNC
Housing material	PC
Measurement range	-1999-+1999mV
Temp. range	Platinum ring 0-60°C
Junction	Ceramic
Electrolyte	3 mol KCl
Reference electrode	Ag/AgCl
Cable length	1m



Name	Combination Cond electrode
Mode	DCON201TG
Connector type	4-pins
Temp thermistor	10KΩ
Housing material	Glass
Constant	$K=1.0\pm 0.02\text{cm}^{-1}$
Sensor	Platinum plate
Measurement range	0.5μS/cm-200.0mS/cm
Temp. range	0-80°C
Cable length	1m



Name	Combination Cond electrode
Mode	DCON201/DCON201T
Connector type	BNC/4-pins
Temp thermistor	--- /10KΩ
Housing material	PC
Constant	$K=1.0\pm 0.02\text{cm}^{-1}$
Sensor	Platinum rod
Measurement range	0.5μS/cm-200.0mS/cm
Temp. range	0-80°C
Cable length	1m



Name	Ultra-purified water Cond electrode
Mode	DDJS-0.01V
Connector type	4 pins
Constant	$K=0.01\pm 0.02\text{cm}^{-1}$
Sensor	Titanium
Measurement range	0-2.0μS/cm
Cable length	1m



Name	Temperature electrode
Mode	DTEMP-01/DTEMP-02H
Connector type	miniBNC/4-pins
Sensor	10KΩ
Material	Stainless steel
Temp. range	0-110°C
Cable length	1m



Name	Polarographic DO
Mode	DDO01-2M-H/DDO01-2M
Connector type	8-pins / BNC & miniBNC
Housing material	POM
Measuring type	Polarographic type
Measurement range	0-20mg/L 0-200% Saturation
Temp. range	0-50.0°C
Cable length	2m



Name	Optical DO
Mode	DODO01-3M
Connector type	8-pins
Housing material	POM and stainless-steel protection guard
Measuring type	Optical type
Measurement range	0-20mg/L; 0-200% Saturation
Temp. range	0-50.0°C
Cable length	3m



NEW



Colorimeter 2.0 Basic

Measures transmittance or absorbance of visible light at three wavelengths through a sample with a 10mm path length and displays the values on a liquid crystal display or via USB to dedicated PC software or through a wireless connection to an app on iOS or Android phones and tablets. Disclaimer The colorimeter is suitable for educational use. It is not intended for clinical, commercial or research applications. Specifications Power source: 4xAA batteries (included) or USB-A to mini B Power switch: On/Off - automatic switch off after 2 minutes unless connected to USB or app. Wireless connection: Bluetooth 4.0 (LE, Smart) Measures: Transmittance: 0-100.0% - resolution 0.1% Absorbance: 0.000-1.999 stand alone or 0.000-3.000 with PC or phone/tablet - resolution 0.001 LEDs: Red ~630nm, Green ~525nm, Blue ~465nm Sample holder: 10x10mm plastic or glass cuvette, capacity 4mls or 12mm diameter test-tube Weight: 240g Packed weight: 420g includes 10 cuvettes, 10 cuvette caps, 2 test-tubes, USB cable, laminated quick instruction card, instruction manual, 4 x AA batteries, packaging. PC Software: System requirements: Windows 2000, XP, Vista, Windows 7, 8 or 10 with the .NET Framework 2.0 or later installed. Download: Free IOS app: Name: Mystrica Colorimeter Download: Free from the App Store Use with: iPhone 4S or later (not 4) or iPad Air, Mini, 3rd & 4th generation Android app: Name: Mystrica Colorimeter Download: Free from the Google Play Store Use with: Bluetooth 4.0 enabled Android devices Compliance: CE compliance tested FCC ID: 2AC8AMYS2 Warranty: 1 year subject to normal use

ESL57771

Colorimeter 2.0 Basic Set/4

set of four Colorimeter Wireless 2.00 ESL57771 and fitted in a deep Gratnells tray with alid and polyethylene foam insert ; Apart from the colorimeters the contents are :

- a box of 40 4ml cuvettes • a box of 80 cuvette caps • a box of 25 12mm glass test-tubes • 4 cuvette racks
- 4 USB cables • 4 laminated instruction sheets • 2 user manuals

ESL57771/4



NEW



Colorimeter 1G-7

New LED technology with broad spectral coverage - Works with a 10 x 10 mm cuvette or a 14 mm test tube - Can be used as a standalone measuring device or in Data Acquisition Systems Light source: LED - Measurement on 7 wavelengths between 470 and 660 nm - Wavelengths: 470 nm - 525 nm - 570 nm - 590 nm - 605 nm - 626 nm and 660 nm - Absorbance: from -3 to +3 abs - Transmission: from 0 to 100% T - Resolution: 0.01 abs / 100.0% - Precision: ± 1.5% - Analog output: on 4 mm safety banana sockets, -3V/3V corresponding to -3 abs/3 abs of absorbance. - 0V/1V corresponding to 0/100% transmission. - Power supply: mini USB power supply (provided). - Dimensions: 160 x 120 x 70 mm.

ESL57772

Student Spectrophotometer USB and Bluetooth

Technical Specifications: Measurement Modes: - Transmittance - Absorbance - Fluorescence/Bioluminescence Resolution: 2 - 3 nm Samples: 10x10mm cuvette or 50x50mm slide Spectral Range: 360 - 1000 nm Light Sources: - White LED + selectable colors (via software) - Side excitation LEDs 395-415 nm and 500-540 nm Connection: USB or Bluetooth Software: Integrated (USB mode) - Plug & Play Application: To download (Bluetooth mode) Power Supply: Built-in battery + charger included Python Compatibility: Yes Software Compatibility: W7 and +, Mac, Android, iOS Included Accessories: Cuvette/slide cover, cord, power block Battery: - Usage: 8 hours - Maximum charging time: 4 hours Dimensions: 190 x 120 x 60 mm.

ESL57814



Student Spectrophotometer USB and Bluetooth kit & Optical Fiber

ESL578140F



Spectrophotometer UV VIS Smart

Our Smart System can grasp the quantitative characteristics such as density or purity by measuring transmittance or optical density according to wavelength of sample in the range of ultraviolet rays and visible ray. Smart can be utilized from not only a general analysis experiment to but also a specialized research field and guarantee accurate measurement and excellent reproducibility, accordingly offer reliable results in the various fields such as environment, biotechnology, chemistry, etc.

Photometrics System	: Double-beam type	Monochromator	: Czerny-Turner type with 1200 lines/nm
Spectral Bandwidth	: 1 nm (190 to 1100 nm)	blazed grating Standard	: Automatic Rotary type 8-position Multi- Cell
Wavelength Range	: 1 nm (190 to 1100 nm)	Multi-Cell Holder	: ± 0.0002 at 0.5 Abs
Wavelength Display(setting)	: 0.1 nm	Photometric Repeatability	: ± 0.0006 at 1.0 Abs ± 0.001 at 2.0 Abs
Wavelength Accuracy	: <± 0.05 nm at 486, 656.1 nm <± 0.3 nm (190 to 1100 nm)	Baseline Stability	: < 0.0003 Abs/h
Wavelength Repeatability	: <± 0.1 nm	Baseline Flatness	: <± 0.0005 Abs
Slew Rate	: About 8,800 nm/min	Lamp Interchange	: 340-410 nm (Default 370 nm)
Scan Speed	: Max 4,000 nm/min	Wavelength Display	: 8 inch color LCD with touch screen
Photometric Range	: Absorbance: -4 to 4 Abs Transmittance: 0% to 400 %	Operating System(OS)	: Windows 10 (Embedded PC);
Light Source	: Tungsten Halogen Lamp & Deuterium Lamp (Built-in light source auto interchanging motor)	Power Requirement	: Windows 10 (Embedded PC);
Stray Light	: < 0.02 % NaI at 220 nm, NaNO ₂ at 340 nm	Weight(kg)	: Windows 10 (Embedded PC);
		Dimensions(W x D x H)	: 100-240 V; 50-60 Hz

ESL57764



Spectrophotometer CCD

Native USB socket

Integrated software : no installation - Wavelength range: 380-800 nm

Easy to use, this spectrophotometer makes chemistry experiments feasible for students. Connected to the computer via a native USB socket, this spectrophotometer, with its integrated software, will be ready to acquire data whatever the workstation. New features: such as real-time spectrum observation. With 3D kinetics, the colorimetric dosage of a solution, initially transparent, can be carried out without knowing the final color of the solution. Functionalities maintained: absorbance, transmittance, Beer-Lambert, colorimetric dosage, monitoring of classic kinetics.

The acquisition duration (automatic or manual) makes it possible to adapt the measurement dynamics to the solution or filter analyzed.

Possible Experiments:

- Absorbance / Transmittance
- Beer-Lambert
- Colorimetric dosages
- Kinetic Monitoring: traditional and 3D
- Study of colored filters

Compatibility: XP/ Seven 32 & 64 bits/ Windows 8

Measurement mode: Absorbance-Transmittance

Integration time: auto or manual; 0.1ms to 5s.

Real-time spectrum

Photometric range: Abs: 0 to 2.5 / T (in %)

Power supply: supplied



ESL57765

Labware

Baseline Stability : $\leq \pm 0.001$ Abs/hBaseline Flatness : ± 0.002 Abs

Monochromator : Czerny-Turner type with 1200 lines/nm blazed grating

Light Source : Tungsten Halogen Lamp & Deuterium Lamp (Built-in light source auto interchanging motor)

Spectrophotometer Single Beam

Optical System	: Single Beam
Spectral Band Width	: 1.8 nm (190 to 1100 nm)
Wavelength Range	: 190 to 1100 nm
Wavelength Display(setting)	: 0.1 nm Wavelength
Accuracy	: $\leq \pm 0.5$ nm

Wavelength Reproducibility	: $\leq \pm 0.1$ nm
Slew Rate Scanning	: About 8,800 nm/min
Speed Photometric	: Max 4,000 nm/min
Range	: Absorbance : -3 to 3 Abs
Transmittance	: 0 % to 300 %
Photometric Accuracy	: ± 0.005 at 1.0 Abs
Photometric Reproducibility	: ± 0.003 at 1.0 Abs
Stray Light	: < 0.05 % NaI at 220 nm, NaNO ₂ at 340 nm

Standard Cell Holder	: Automatic Rotary type 8-position Multi-Cell Holder
Display	: 7 inch color LCD with touch screen
Operating System(OS)	: Windows CE
Power Requirement	: 100-240 V; 50-60 Hz
Overall Dimensions	: (W x D x H) 433 mm x 381 mm x 180 mm
Weight	: 8 Kg

ESL57763

Photometer Portable Mini

Optical System Reflectance Monochromatic with Optical LED Detector Photo-diode

Photo-diode 128x64 dot matrix graphic LCD

Printer Small label printer (Optional)

Power requirement Four 1.2V Ni-MH rechargeable batteries

DC 9V 1A Adapter

Inhibition Reproducibility $\pm 3\%$ Data save Maximum 2000

Interface Ports USB communications RS-232C serial

Data download PC S/W Provided (Optizen MiNiView)

Time setting Extraction 5min/Reaction 10min **Overall****Dimensions** : 110(W) x 48(H) x 245(D) **Weight** : 500g

ESL57767

Photometer Portable Round Cell Holder

Accessory for spectrophotometer

Photometer Portable Cell Holder Cover

Accessory for photometer portable mini

ESL57769

ESL57768





Spectrophotometer
ESL57810- ESL57811
ESL57812- ESL57813

The spectrophotometer is an indispensable instrument routinely used in colleges, universities and research institutes for quantitative analysis in fields including biotechnology and quality control of new material developed. V-Series provide high resolution, high performance and excellent stability.

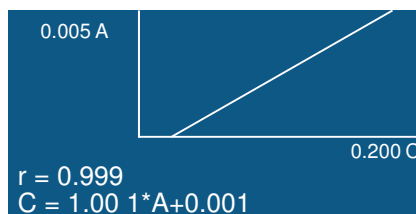
Features

- **User Friendly Operation and Information Rich LCD Display:** The large 128 x 64 dots, backlit LCD screen with adjustable brightness control displays a large array of data also in graphical format
- **On-Board Data Storage:** The System can save the test results, up to 200 group datas and 200 standard curves in the RAM memory
- Data can be restored after a sudden power failure
- **Auto setting wavelength:** Setting wavelength automatically to calibrate the system through arrow keys to avoid operation errors
- **Automatic Switching:** Tungsten & Deuterium lamps switching is automatic. Wavelength range are selectable from 190 to 1100nm
- **PC control through application software:** The spectrophotometer is fully equipped and capable of executing all functions in stand-alone mode. The optional application software 'Wave Professional' provides computer control through the built-in USB port, apart from other functions such as spectrum scan, time scan(kinetics), multiwavelength scanning & Nucleic Acid / Protein measurement. (ESL57812/ESL57813)
- **Large sample compartment:** To accommodate 5-100mm path length cuvettes with optional holders. A variety of optional accessories are available

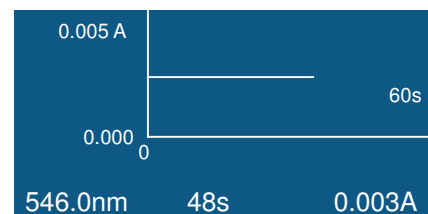
Basic Mode

546.0nm		0.001A
No.	WL.	Abs
1	230.0	0.001
2	340.0	0.000
3	450.0	0.002
4	540.0	0.000
5	620.0	0.003

Quantitative



Kinetics





Model	ESL57810	ESL57811	ESL57812	ESL57813
Optical System	Single Beam	Single Beam	Single Beam	Single Beam
Light Source	Tungsten lamp	Tungsten lamp & Deuterium lamp	Tungsten lamp	Tungsten lamp & Deuterium lamp
Spectral Bandwidth	4.0nm	4.0nm	2.0nm	2.0nm
Wavelength Range	325-1000nm	200-1000nm	320-1100nm	190-1100nm
Wavelength Accuracy	±2nm	±2nm	±0.5nm	±0.5nm
Wavelength Repeatability	≤1nm	≤1nm	≤0.3nm	≤0.3nm
Photometric Range	-0.3 - 3.0 A, 0 - 200%T	-0.3 - 3.0 A, 0 - 200 %T	-0.3 - 3.0 A, 0 - 200 %T	-0.3 - 3.0 A, 0 - 200%T
Photometric Accuracy	±0.003 A @ 0.5 A, ±0.006 A @ 1.0 A, ±0.5%T @ 100%T	±0.003 A @ 0.5 A, ±0.006 A @ 1.0 A, ±0.5%T @ 100%T	±0.003 A @ 0.5 A, ±0.006 A @ 1.0 A, ±0.5%T @ 100%T	±0.003 A @ 0.5 A, ±0.006 A @ 1.0 A, ±0.5%T @ 100%T
Photometric Repeatability	≤0.0015 A @ 0.5 A, ≤0.003 A @ 1.0 A, ≤0.25%T @ 100%T	≤0.0015 A @ 0.5 A, ≤0.003 A @ 1.0 A, ≤0.25%T @ 100%T	≤0.0015 A @ 0.5 A, ≤0.003 A @ 1.0 A, ≤0.25%T @ 100%T	≤0.0015 A @ 0.5 A, ≤0.003 A @ 1.0 A, ≤0.25%T @ 100%T
Stability	≤0.002 A/h @ 500 nm (after preheat 2 hours)	≤0.002 A/h @ 500 nm (after preheat 2 hours)	≤0.002 A/h @ 500 nm (after preheat 2 hours)	≤0.002 A/h @ 500 nm (after preheat 2 hours)
Stray Light	≤0.2%T @ 360nm	≤0.2%T @ 220&360nm	≤0.05%T @ 360nm	≤0.05%T @ 220 & 360nm
Sample Compartment	4-position, 10mm path length cuvette	4-position, 10mm path length cuvette	4-position, 10mm path length cuvette	4-position, 10mm path length cuvette
Display	LCD	LCD	LCD	LCD
Output	USB Port & Parallel Port (Printer)	USB Port & Parallel Port (Printer)	USB Port & Parallel Port (Printer)	USB Port & Parallel Port (Printer)
Power	110/220VAC, 50/60Hz, 80W	110/220VAC, 50/60Hz, 80W	110/220VAC, 50/60Hz, 80W	110/220VAC, 50/60Hz, 80W
Dimension(L×W×H)	490×360×210mm	490×360×210mm	490×360×210mm	490×360×210mm
Weight	12kg	14kg	12kg	14kg





Cat. No. 578100337
Micro Cell holder



Cat. No. 578100340
8-position auto cell changer
(for ESL57812& ESL57813)



Cat. No. 578100331
4-cell holder for 10mm sq. cuvette



Cat. No. 5781000332
4-cell holder for 10mm
to 50mm sq. cuvette



Cat. No. 578100333
4-cell holder for up to
100mm sq. cuvette



Cat. No. 578100338
Test tube holder(ø8-ø22mm)



Cat. No. 578100334
cylindrical cell holder(ø16mm)



Cat. No. 578100339
solid sample holder
(ø1.5-3mmø1 position)



Cat. No. 578100335
10mm water-jacketed 1 cell holder
(for ESL57812& ESL57813)



Cat. No. 578100336
10mm water-jacketed 4-cell holder
(for ESL57812& ESL57813)



Cat. No. 578100343
Square cuvettes glass/quartz
1-5mm/10-100mm



Cat. No. 578100341
12V20W halogen lamp



Cat. No. 578100342
Milas deuterium lamp,10V,300mA,
30W (for ESL57812& ESL57813)



Disc Polarimeter

ESL57820

Range	±180°
Scale Value	1°
Vernier	0.05°
Magnifier	3X
Light Source	Sodium lamp
Wavelength	589nm
Tube Length	50, 100, 200mm
Power	220V/50Hz
Dimensions	500(L)×135(W)×330(H)mm
Weight	5kg
Package	600(L)200(W)×400(H)mm



Labware

Options

Cat. Number	Descriptions
57820001	Polarimeter Tube 100mm
57820002	Polarimeter Tube 200mm
57820003	Sodium Lamp 589nm

ESL-R03AR Series Abbe Refractometer

ESL57822

Model “ESL57822” is a simple yet highly reliable Abbe refractometer with a digital thermometer. Liquid, solid and pasty samples can be evaluated. This refractometer is robust, accurate and easy to use.

Optionally a solid aluminium case for transport and storage is available. It measures the refractive index (nD).



The main scope of applications is:

- Sugar industry: such as cane sugar
- Pharmacy
- Beverage industry
- Food industry
- Chemical industry
- Oil industry/Refinery
- Laboratories
- Training

Industry: Monitoring of lubricants for process and quality control

Food industry: Beverages, fruits and sweets

Agriculture: Determination of the degree of ripeness of fruits for quality control in harvesting

Restaurants and large-scale catering establishment

Model	Scales	Range	Resolution	Accuracy
ESL57822	Brix	0-95%	±0.1	0.25%
	Refractive Index	1.3000-1.7000nD	±0.0002nD	0.0005nD





Vernier Calliper - Whirl, Plastic

Columbus type calliper enabling the user to read either inside, outside or depth measurements. With dual scale 0-12 cm x 0.1mm Imperial scale graduated to $5 \times \frac{1}{128}$ provided with thumb wheel for easy motion of jaws, in plastic case.

ECI E7774



Vernier Calliper - Whirl, Steel

Columbus type calliper enabling the user to read either inside, outside or depth measurements. With dual scale 0-12 cm x 0.1mm Imperial scale graduated to $5 \times \frac{1}{128}$ provided with thumb wheel for easy motion of jaws, in plastic case.

ECI E777E



Vernier Calliper Digital

Measuring range : 0-150mm , Readability : 0.01mm

ESL57781



Vernier Caliper St.Steel

Vernier calliper made of aluminium , high quality .

ESL57777 0-150 0.05 mm

ESL57778 0-125 0.05 mm



Measuring Tape

Fiber glass windup meter tape with tow sides marking sealed in cannot tear-wind up case length Deferent meter

- ESL57791 Measuring Tape 5 M
- ESL57792 Measuring Tape 10 M
- ESL57793 Measuring Tape 15 M
- ESL57794 Measuring Tape 25 M
- ESL57795 Measuring Tape 50 M



Micrometer 0-25 Mm With Lock

With ratchet top, accurately machined stainless steel rod. Range 0-25 x 0.01 mm, supplied in case. Accuracy is perfect for a hobbyist or student
-- at 10mm, accuracy is +/- .003mm.

ESL57784



Micrometer 0- 25 mm

With ratchet top, accurately machined stainless steel rod. Range 0-25 x 0.01 mm, supplied in case. Accuracy is perfect for a hobbyist or student
-- at 10mm, accuracy is +/- .003mm.

ESL57783



Micrometer Digital

Measuring range : 0-25mm , Readability : 0.001mm

ESL57786



Spherometer Superior

Brass dial head about 40mm dia., Divided and marked in 100 divisions, vertical scale 10-0-10mm, fitted on heavy brass disc, with 3 pointed legs, distance between legs 40mm.

ESL57723

Engineering Rule

Engineering Rule



ESL57806





Flexible Desk Lamp

Versatile flexible neck
 •Metal and plastic construction
 •Integral on/off switch
 •Height: 340mm approx

ESL57877

Lamp Bulbs, Round

D Battery Holder with Socket
 Terminals Used as battery holder
 size UM1 or D; Size: 120 x 70mm,
 with 4mm socket terminal Material: Plastic ;Can be mounted on
 the board Weight : 0.029kg



ESL57900

Lamp Holder Mounted SBC

Solid steel Small Bayonet Cap (SBC) lamp holder with
 a tough powder coat paint finish and a solid brass lamp
 holder with 2 x 4mm electrical sockets. Ready to use.
 Pack of 10

- ESL57880 (12V 21W lamp),PK OF 10
- ESL57881 (12V- 36W Axial lamp), PK OF 10
- ESL57882 (12V - 24W Axial lamp), PK OF 20



Lamp Bulbs, Round

M.E.S. Cap, 1.25V
 Lamp Bulb E 10, 1.5v/0.2a (10pcs/Pack)
 Lamp Bulb E 10, 1.5V/0.2A (10pcs/pack)
 Voltage: 1.5V
 Ampere: 0.2A Packaging: 10pcs/pack
 Dimension : 14.00 (L) x 9.00 (W) x 2.00cm (H)



ESL57890

ESL57889

Lamp Bulb E 10, 2.5v/0.5a (10 Pcs/Pack)

Lamp Bulb E 10, 2.5V/0.5A (10 pcs/pack)
 Voltage: 2.5V
 Ampere: 0.5A Packaging: 10pcs/pack
Dimension : 14.00 (L) x 9.00 (W) x 2.00 cm (H)
Weight : 0.013kg



ESL57888

Lamp Bulb E 10, 10V (10 PCS/Pack)

the value of the voltage should be printed clearly on the bulb.
 ESL57886

Lamp Bulb E 10, 12V (10 PCS/Pack)

the value of the voltage should be printed clearly on the bulb.
 ESL57886/12

Lamp Bulb E 10,5V (10 PCS/Pack)

the value of the voltage should be printed clearly on the bulb.
 ESL57887



Lamp Bulbs, Lens Ended
 2.2V, 0.25A, lens ended, M.E.S. Cap.

ESL57891

Buzzer Piezo

The tones is slow pulse with operating with 3V , the sound
 level SPL is 85dB and self resonant frequency about 3.7kHz.
 The dimension for external diameter is 29.5mm and external
 depth is 24.5mm with leaded process compatible



ESL57977



Battery Holders Pk Of 10

The Irwin Tapped pack of 10 battery holders hold 4 x D (R20)
 batteries with outputs at 1.5, 3, 4.5 and 6V. Batteries and leads
 not supplied. Each output has a 4mm socket. Manufactured in the
 UK from premium strong perspex.
 Manufactured in the UK

ESL57899



Battery Holder

Size: Overall : 175 x 62mm ,
 thickness 10mm for D size battery
 Material : Brass and plastic
 Positive and negative given plate
 attached to plastic base with bolts
 and given alligator clip, each
 battery with nuts and bolts of the
 base

ESL57901

Cell holder

Cell-holder Made of unbreakable plastic to hold battery, curved
 sides help prevent battery from falling out when it is upside down.

- ESL57903 Single For 'D' Size Battery
- ESL57904 Double For 'D' Size Battery
- ESL57905 Double For 'AA' Size Battery
- ESL57906 Single For 'AA Size Battery
- ESL57907 Stackable



Mini Motor DC

This little yet powerful motor is idea for hundreds of electrical
 experiments and projects. Voltage requirements are 1.5V -
 4.5V, 0.2A ,DC volts.

- ESP59128 Power requirements : 1.5V - 4.5V, 0.2 A
- ESP59129 Power requirements : 3V - 6V, 0.2A
- ESP59130 Power requirements : 6V - 12V, 0.2A

De-soldering Pump

High sucking power, plastic body
 with sturdy metal rod, easy to clean
 and maintain.

ESP59606



Soldering Iron

With wooden / Bakelite handle, lightweight body,
 element tested for high insulation, with long life
 pencil bit

- ESP59601 25 Watts
- ESP59602 65 Watts
- ESP59603 125 Watts



Soldering Iron Stand

Soldering iron with stand

ESL57453



Copper Wire

Bare copper wire roll - measured by mass, lengths Includes: 1 Spool

- ESL57928 500g roll - 14 SWG (12 AWG) - 0.08” (2.0 mm) Dia. Approximate length is 50 ft.
- ESL57929 500g roll, 16 SWG (14 AWG) - 0.064” (1.6 mm) Dia. Approximate length is 85 ft.
- ESL57930 250g roll, 18 SWG (16/17 AWG) - 0.048” (1.2 mm) Dia. Approximate length is 80 ft.
- ESL57931 250g roll, 20 SWG (19 AWG) - 0.036” (0.91 mm) Dia. Approximate length is 140 ft.
- ESL57932 250g roll, 22 SWG (21 AWG) - 0.028” (0.71 mm) Dia. Approximate length is 225 ft.
- ESL57933 250g roll, 24 SWG (23/24 AWG) - 0.022” (0.56 mm) Dia. Approximate length is 375 ft.
- ESL57934 250g roll, 26 SWG (24/25 AWG) - 0.018” (0.46 mm) Dia. Approximate length is 550 ft.
- ESL57935 250g roll, 28 SWG (29/30 AWG) - 0.0148” (0.38 mm) Dia. Approximate length is 800 ft.
- ESL57936 250g roll , 30 SWG (32/33 AWG) - 0.0124” (0.32 mm) Dia. Approximate length is 1150 ft.
- ESL57937 250g roll , 32 SWG (33/34 AWG) - 0.0108” (0.27 mm) Dia. Approximate length is 1500 ft.



Chromium Resistance

This is chromium wire that can be used in many applications in the classroom or lab. It’s functional characteristics are the same as nichrome wire. It’s makeup is 15% Cr, 4% Al, Balance Fe. Maximum operating temperature is 1150°C. Density is 6.74g/cm³ Many industrial and hobby hot wire foam cutters also use chromium wire. Chromium wire is also commonly used in ceramics, as an internal support structure to help some elements of clay sculptures hold their shape while they are still soft. Chromium wire is used because of its ability to withstand the high temperatures.

- ESL57942 REEL,SWG - 14
- ESL57943 18 GAUGE SWG - 16/17 AWG - 0.048” DIA. Includes: (1) 125g Roll
- ESL57944 20 GAUGE SWG - 19 AWG - 0.036” DIA. Includes: (1) 125g Roll
- ESL57945 22 GAUGE SWG - 21 AWG - 0.028” DIA. Includes: (1) 125g Roll
- ESL57946 24 GAUGE SWG - 23/24 AWG - 0.022” DIA.. Includes: (1) 125g Roll
- ESL57947 26 GAUGE SWG - 24/25 AWG - 0.018” DIA. Includes: (1) 125g Roll
- ESL57948 28 GAUGE SWG - 29/30 AWG - 0.0148” DIA. Includes: (1) 125g Roll
- ESL57949 30 GAUGE SWG - 32/33 AWG - 0.0124” DIA. Includes: (1) 125g Roll
- ESL57950 32 GAUGE SWG - 33/34 AWG - 0.0108” DIA. Includes: (1) 125g Roll
- ESL57951 REEL,SWG - 32
- ESL57952 REEL,SWG - 34
- ESL57953 REEL,SWG - 36



Eureka Constantan Wire

Useful for resistance coils. Wire of copper-nickel allow low having temperature coefficient. Mass (per reel) : 125g

- ESL57938 REEL , SWG 34 (33/34 AWG) -
- ESL57939 REEL , SWG 36 (33/34 AWG) -
- ESL58031 REEL , SWG 14 (12 AWG) - 0.08” (2.0 MM) DIA.
- ESL58032 REEL , SWG 16 (14 AWG) - 0.064” (1.6 MM) DIA.
- ESL58033 REEL , SWG 18 (16/17 AWG) - 0.048” (1.2 MM) DIA.
- ESL58034 REEL , SWG 20 (19 AWG) - 0.036” (0.91 MM) DIA.
- ESL58035 REEL , SWG 22 (21 AWG) - 0.028” (0.71 MM) DIA.
- ESL58036 REEL , SWG 24 (23/24 AWG) - 0.022” (0.56 MM) DIA.
- ESL58037 REEL , SWG 26 (24/25 AWG) - 0.018” (0.46 MM) DIA.
- ESL58038 REEL , SWG 28 (29/30 AWG) - 0.0148” (0.38 MM) DIA
- ESL58039 REEL , SWG 30 (32/33 AWG) - 0.0124” (0.32 MM) DIA.
- ESL58040 REEL , SWG 32 (33/34 AWG) - 0.0108” (0.27 MM) DIA.
- ESL58041 REEL , SWG 34 (33/34 AWG) -
- ESL58042 REEL , SWG 36 (33/34 AWG) -



NEW





Crocodile Clip With Plastic Sleeved Pk/10

Spring-loaded, serrated jaws, with screw to clamp end of lead held in tubular extension, both sides insulated. Length 50 mm and jaws open 9 mm, Black Colour

- ESL57957 Black
- ESL57956 Red



Safety Socket For Banana Plugs

Safety socket 4mm for Banana plugs in improved design.

- ESL57910 Black
- ESL57911 Fdc
- ESL57912 Yellow
- ESL57913 Green



Wire PVC Coated Reel (MS)

Multi-strand copper wire, flexible PVC insulated, capable of carrying current up to 5A. Supplied in rolls of 10m

ESL58029



Crocodile Clip Pk/10

Crocodile clip without sleeve Pk/10

ESL57955



Banana Plugs With wire 4mm Stackable Plug Lead

- ESL57914 Length 50 cm , Red
- ESL57915 Length 50 cm , Black
- ESL57916 Length 25 cm , Red
- ESL57917 Length 25 cm , Black
- ESL57918 Length 75 cm , Red
- ESL57919 Length 75 cm , Black
- ESL57920 Length 100 cm , Red
- ESL57921 Length 100 cm , Black



Connecting Wire With 2 Side Crocodile clips

- ESL57958/RED Wire W/2 Side Crocodile clips 25 Cm Red
- ESL57958/BLK Wire W/2 Side Crocodile clips 25 Cm Black
- ESL57959/RED Wire W/2 Side Crocodile clips 50 Cm Red
- ESL57959/BLK Wire W/2 Side Crocodile clips 50 Cm Black
- ESL57960/RED Wire W/2 Side Crocodile clips 100 Cm Red
- ESL57960/BLK Wire W/2 Side Crocodile clips 100 Cm Black



Connecting Wire With 1 Side 4mm Lead & 1 Side Crocodile clip

- ESL57968/RED Wire 1Side Lead 1 Side Crocodile clip , Cable length 25 cm Red
- ESL57968/BLK Wire 1Side Lead 1 Side Crocodile clip , Cable length 25 cm Black
- ESL57969/RED Wire 1Side Lead 1 Side Crocodile clip , Cable length 50 cm Red
- ESL57969/BLK Wire 1Side Lead 1 Side Crocodile clip p , Cable length 50 cm Black
- ESL57970/RED Wire 1Side Lead 1 Side Crocodile clip , Cable length 100 cm Red
- ESL57970/BLK Wire 1Side Lead 1 Side Crocodile clip , Cable length 100 cm Black





Lead Acid Accumulator

Battery storage, in transparent case, without acid, uncharged fitted with handle.

Capacity 20 AH. Item measures 6.5" tall, 3.5" wide and 2.75" long.

Battery Storage

Transparent case, printed with product specifications

Includes removable fitted handle

Negative and positive marked terminal

ESL57994



Battery Eliminator DC 0-6 V , 1 A

A low cost alternative to dry cell batteries. Housed in a robust ABS plastic case (IPC-0577-P). Ideally suited as a replacement in applications where batteries are normally used. Smoothed and regulated DC is available over those ranges selected by rotary switch. Output is via 4mm red and black sockets. The DC output voltage available are 1.5, 3, 4.5 and 6VDC at a maximum current of 1A.

Electrical Supply: 220-240VAC, 50-60Hz

Dimensions: 150 x 100 x 80mm overall

Mass: 0.85kg

DC Output Voltage Range: 1.5, 3, 4.5 and 6VDC

Maximum DC Output Current: 1A

ESP60841



Battery UV Unit

Battery powered Ultra

Violet light source ideally suited to demonstration use. Comes complete with on/off switch.

Requires 4 x AA batteries (not supplied).

Dimensions (L x H x W): 165 x 35 x 41mm.

ESL57898



Sandpaper Pack of 10 sheets

(sheet size in 230mm x 280mm) (grit 800)

ESL57455



Felt Tipped Pens PK/12

Versatile Felt Tipped Pens PK/12

ESL57871



Pencil

Pencil PK/144

ESL57873



Smart materials handling kit

The smart materials handling case offers a diverse range of innovative materials, making it an excellent choice for presentations or demonstrations. It includes a smart materials book along with essential accessories for material manipulation. The case dimensions are 46 x 33 x 15cm.

Contained within the case are:

Thermally responsive materials such as thermochromics pigment, thermo film, thermal paper (fax), phase change powder, and thermo cord. Smart alloys and polymers, including shape memory polymer, smart putty, rare earth magnet, shape memory wire, memory wire, 2-way memory spring, conductive polymer, and smart link tubing.

Optically responsive materials and LEDs like glow-in-the-dark film, optical fiber, UV fluid, UV beads, LEDs, smart film, and lenticular film.

Fibers and woven materials such as cocoons, Kevlar fabric, carbon fiber fabric, ripstop nylon, silk, Lycra, genuine carbon fiber sheet, and electrotextile.

Special polymers including polymorph, hydrogel, expanse, chromatic alginate, and Eco film.

'Nano' materials and others like QTC pills, chameleon nano flakes, piezo transducer, and mirror film.

ESL58091



Water Bath



Water Bath Laboratory 20L Digital

Features:

- 20 liter heating capacity
- can easily maintain a stable internal temperature
- Up to +100° C temps, shown on an LED display
- Overheating protection
- High temp accuracy and adjustment with a PID controller
- The water bath has a high temp and corrosion resistant lid, made of 304 stainless steel
- Unit has a dedicated internal magnetic circulation pump which allows it to distribute the heat evenly and prevent any water from leaking
- Even temperature spreading helps to avoid any bumping phenomenon while machine is used level warning

- Rapid heating, the temperature remains constant after reaching the set temperature
- High temperature accuracy with overheating protection
- High temperature resistant and corrosion free lid made up of 304 stainless steel
- Electronic components are easy to disassemble. Safe and easy to maintain



Labware

Specifications

ESL58218

Display	LED	Dimension[mm]	667x349x357
Temperature range [°C]	Room temp. +5-80	Housing	Q235 Plastic panel
Temperature stability at 37°C[°C]	±0.5	Parts touch water (including lid)	Stainless steel
Temperature accuracy at 37°C[°C]	±0.3	Weight[kg]	16.2
Bath volume [L]	20	Voltage[V]	220V, 50/60Hz
Circulating pump	No	Heating power[W]	1000
Overheating protection	yes	Ambient temperature[°C]	+10-40
Temperature sensor	PT1000	Ambient humidity[% RH]	<80



Water Bath 100 °C - 16 Tubes

Display, setting, and regulation precision
 Supplied with its stainless steel rack 16 tubes
 Heats up and maintains the temperature up to 100

Features:

- Tank: Transparent with minimal temperature level
- Stability: ±1 °C
- Homogeneity: ±1 °C
- Setting: Setting of the set temperature by push button within 1 °C accuracy up to 100 °C
- Heating: by W resistance with regulation at ±1 °C
- Power: 600 W
- Transparent tank with holes for 16 test tubes Ø 18 mm - Maximum heating temperature ≥ 80 °C - Bath temperature probe - Display of set temperature and actual bath temperature on digital screen - Tube rack and bottom plate provided - Rectangular shape allowing for stacking of water baths for easy storage - Safety device in case of overheating or lack of water - Fuse protection - Tanks and resistances protected to prevent burns - Power switch - Power cable provided

ESL58215





Water Bath Thermost

Digital baths are designed for general use and are economically priced without compromising quality. Simple digital controller for setting temperature in 1°C increments. Designed for immersion of flasks, bottles and racks in a highly stable temperature environment. Available in 4, 14 and 22 litre options. **High quality build and features**

Comprising of a high quality corrosion resistant stainless steel tank, with a bright clean finish housed in a durable painted outer case. Painted surfaces feature antibacterial finish with good chemical resistance. Fitted with side lifting handles for easy lifting.

High quality build and features Comprising of a high quality corrosion resistant stainless steel tank, with a bright clean finish housed in a durable painted outer case. Painted surfaces feature antibacterial finish with good chemical resistance. Fitted with side lifting handles for easy lifting.

Controls and safety

Temperatures can be easily and rapidly set with the push button, wipe clean control panel in 1°C increments. Temperature setting is retained in memory, even after 'power off'. Water baths are pre-calibrated for consistent accuracy. Thermal cut out fitted in the heater. IP rated, illuminated on/off power switch and heater indication lamp. Bath fitted with non-slip rubber feet.

Temperature

Display/resolution: Digital

LED/1°C Temp. Range: Ambient

+ 5°C - 99°C Temp. Setting:

Push button

Stability/uniformity: ± 0.2°C/±

0.1°C

Temperature memory: Retained in memory even after 'power off.'

ESL58188	Capacity : 4 Ltr	Dimensions External: 332w x 185d x 290h mm Internal: 300w x 150d x 150h mm
ESL58189	Capacity : 14 Ltr	Dimensions External: 361w x 332d x 290h mm Internal: 325w x 300d x 150h mm Water level maximum: 130mm shelf fitted working depth 115mm
ESL58190	Capacity : 22 Ltr	Dimensions External: 538w x 332d x 290h mm Internal: 500w x 300d x 150h mm Water level maximum: 130mm shelf fitted working depth 115mm

All models have 3 year warranty
Complete with perforated shelf for even heat distribution
Side lifting handles
UK manufactured
Accessory lids, racks and baskets available





Water Bath Thermostatic Unstirred Digital

Clifton digital baths provide a stable temperature environment ideal for meeting quality control requirements, featuring PID temperature control for precision.

Designed for immersion of flasks, bottles and racks for a wide variety of laboratory applications.

High quality build and features

Comprising of a high quality corrosion resistant stainless steel tank, with a bright clean finish housed in a durable painted outer case. Painted surfaces feature antibacterial finish with good chemical resistance. Fitted with side lifting handles for easy lifting.

Heaters and temperature sensor are concealed under the tank providing a clutter free working area which is easy to wipe clean. Supplied with a removable sturdy low height stainless steel perforated shelf, for even heat distribution. The shelf provides a deeper volume of water, for standing containers and accessory test tube racks in the bath. Three year warranty and comprehensive customer support. Accessory lids available. Above 60°C it is recommended that to achieve optimum performance the bath should be covered with a lid. Clifton Range®

Controls and safety

Temperatures can be easily and rapidly set with the push button, wipe clean control panel, featuring a bold LED display. The high precision PID temperature controller, ensures that accuracy and repeatability is guaranteed. Temperature is set in increments of 0.1°C and retained in memory, even after 'power off'. Water bath features a thermal safety cut out which is fitted to the heater. There is an over temperature alarm automatically set at 4°C above set temperature, including a visual indicator and safety heating cut out, to protect samples from over heating. Water baths are pre-calibrated at two separate temperatures for consistent accuracy. IP rated, illuminated on/off power switch and heater indication lamp. Bath fitted with non-slip rubber feet.

Temperature

Display / resolution: Digital LED / 0.1°C

Temp. Range: Ambient + 5°C - 99°C

Temp. Setting: push button in 0.1°C increments

Stability/uniformity: ± 0.2°C / ± 0.1°C

Temperature memory: Retained in memory even after 'power off.'

ESL58192	Capacity : 4 Ltr	Dimensions External: 332w x 185d x 290h mm Capacity Nominal Tank Capacity: 4 Litres	Internal: 300w x 150d x 150h mm Brimful Capacity: 6 litres
ESL58193	Capacity : 8 Ltr	Dimensions External: 332w x 270d x 290h mm Capacity: Nominal Tank Capacity: 8 Litre	Internal: 300w x 240d x 150h mm Brimful Capacity: 10 litres
ESL58194	Capacity : 14 Ltr	Dimensions External: 361w x 332d x 290h mm Capacity Nominal Tank Capacity: 14 Litres	Internal: 325w x 300d x 150h mm
ESL58195	Capacity : 22 Ltr	Dimensions External: 538w x 332d x 290h mm Capacity Nominal Tank Capacity: 22 Litres Drain outlet fitted, large 12mm bore for fast emptying an accessory tap can be added for convenience.	Internal: 500w x 300d x 150h mm

All models have 3 year warranty

Complete with perforated shelf for even heat distribution Side lifting handles

UK manufactured

Accessory lids, racks and baskets available





Water Bath Thermostatic Unstirred Analogue

Analogue boiling baths are designed for applications that require continuous boiling. This range has the flexibility where the controls can be regulated from a

Gentle simmer to a vigorous boil.

High quality build and features

Comprising of a high quality corrosion resistant stainless steel tank, with a bright clean finish housed in a durable painted outer case. Painted surfaces feature antibacterial finish with good chemical resistance. The bath, which is simmer-statically controlled, is ideally suited to prolonged periods of boiling. Fitted with side lifting handles for easy lifting.

Fitted with a sheathed immersion element and thermal safety cut out. The heater is directly immersed in water providing rapid boiling. Fitted with a constant level device, that maintains a fixed level of liquid which eliminates the need to regularly top up the bath. Three year warranty and comprehensive customer support. Accessory lids available. Above 60°C it is recommended that to achieve optimum performance the bath should be covered with a lid. Deep chamber option (product code: NE1B-18W) can be fitted with an accessory tray to conveniently raise or immerse items in boiling water and is suitable for immersion of tall vessels. Clifton Range®

Controls and safety

Easy to use analogue dial pointer for setting temperature in 10°C increments. The bath can control the amount of boiling from a gentle simmer to a vigorous boil. Thermal cut out fitted in the heater.

Always connect the constant level with laboratory tubing to a water supply, adjust the flow to gently top up the water level, whilst maintaining boiling. IP rated, illuminated on/off power switch and heater indication lamp. Bath fitted with non-slip rubber feet.

Temperature

Temp. Range: Simmer to boiling at 100°C

Temp. Setting: analogue dial pointer

Temp. Control: Energy regulator controls the amount of boiling from a gentle simmer to vigorous boil

ESL58196	Capacity : 14 Ltr	Dimension : s (mm) Overall - 361w x 332d x 290h / Working - 325w x 300d x 150h Electrical supply: 230v Power consumption: 2500w
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ESL58197	Capacity : 18 Ltr	Dimension : s (mm) Overall - 362w x 332d x 290h / Working - 325w x 300d x 200h Electrical supply: 230v Power consumption: 2500w Drain outlet: Drain outlet fitted, large 12mm bore for fast emptying Deep fill chamber: can be fitted with accessory tray to raise or immerse items into boiling water Accessory tray: ST-1 - Raise and lower sterilizing tray. SA01409 - Pair of guide rail assemblies for ST1 Tray and NE1B-18W
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All models have 3 year warranty

Complete with shelf for good water circulation UK manufactured

Accessory lids, racks and baskets available





Water Bath Thermostatic

Clifton digital stirred baths provide a stable temperature environment ideal for meeting quality control requirements, featuring PID temperature control for precision. Designed for immersion of flasks, bottles and racks for a wide variety of laboratory applications.

High quality build and features

Comprising of a high quality corrosion resistant stainless steel tank, with a bright clean finish housed in a durable painted outer case. Painted surfaces feature antibacterial finish with good chemical resistance. The thermostirrer is robust and entire casing is constructed from stainless steel for durability.

Supplied with a removable stainless steel shelf, ensuring good water circulation throughout the chamber. Three year warranty and comprehensive customer support. Accessory lids, racks, coolers and shelves available. Above 60°C or below ambient it is recommended that to achieve optimum performance the bath should be covered with a lid. Clifton Range®

Controls and safety

Temperatures can be easily and rapidly set with the push button, wipe clean control panel, featuring a bold LED display. The high precision PID temperature controller, ensures that accuracy and repeatability is guaranteed. Temperature is set in increments of 0.1°C and retained in memory, even after 'power off'.

When a low liquid level is detected "FILL" message automatically appears on the display and heating is suspended. Once refilled, heating is restored and temperature control resumes automatically. There is an over temperature alarm automatically set at 4°C above set temperature, including a visual indicator to protect samples from over heating.

Water baths are pre-calibrated at two separate temperatures for consistent accuracy. Illuminated on/off power switch and heater indication lamp. Bath fitted with non-slip rubber feet.

Temperature

Display / resolution: Digital LED / 0.1°C
Temp. range: Ambient + 5°C - 99°C

Ambient to -20°C with accessory immersion dip cooler (DC1-300 or DC2-300)
Temp. setting: push button in 0.1°C increments

Stability/uniformity: ± 0.05°C / ± 0.01°C

Temperature memory: Retained in memory even after 'power off.'
Timer : Variable 00:01 to 99.59 hh:mm.

Audible alarm and visual 'end' message

Safety feature: Low liquid level warning

ESL58198	Capacity : 14 Ltr	Dimension :s (mm) Overall - 361w x 332d x 170h / Working - 219w x 298d x 150h Electrical / power supply: 120v or 230v models available/ 1250w
ESL58199	Capacity : 28 Ltr	Dimension :s (mm) Overall - 537w x 332d x 240h / Working - 395w x 298d x 200h Electrical / power supply: 120v or 230v models available / 1250w

All models have 3 year warranty
Complete with shelf for good water circulation UK manufactured
Accessory lids, racks and baskets available





Water Bath Thermostatic Digital Oil Heating Circulator

Clifton® Digital Water and Oil Heating Circulator are designed for external circulation of temperature controlled water and heat transfer fluids in a closed circuit or for maintaining a stable temperature environment in the bath for the immersion of flasks, bottles and racks.

Thermocirculator can be fitted to water baths, tanks and containers using accessory Mount Bracket.

Clifton® Thermostirrer is a durable stainless steel construction, painted surfaces are powder painted with tough anti-bacterial finish with good chemical resistance. Easy to use controls that wipe clean and have an anti-bacterial finish. Immersed components are corrosion resistant. Quiet running in use and providing excellent water temperature stability. Indication of heating, over temperature alarm and timer running. When a low liquid level is detected a “Fill” message automatically appears and heating is suspended. Once refilled, heating is restored and temperature control resumes automatically.

Over and under temperature alarms automatically protect work in the water bath, providing heater cut off, visual message and indicator. A second safety device can be set just above the working temperature, protecting samples.

Thermocirculator pump comes with convenient push-fit and lock fittings on both inlet and outlet ports for secure external liquid circulation.

Controls

Featuring a bold LED display of measured temperatures in real-time and in increments of $\pm 0.1^{\circ}\text{C}$, using a precision PID temperature controller. Setting for water temperature only or combination of temperature and time. Timer setting variable in 1-minute increments from 00:01 [hh:mm] to 99:59 [hh:mm] with “end” message on completion of the timed period. Time and temperature settings are retained in the memory, even after the unit has been turned off.

Easy to use controls, utilising touch keypads for setting time and temperature values with indicators for heating, over temperature alarm and timer. The heater unit can be set to run at a set temperature or commence the timer once the water reaches set temperature.

Features auto setting over and under temperature alarm protecting your work at set temperature. Every unit undergoes a factory calibration at two temperatures for validation.

A second safety device can be set just above the working temperature, protecting samples.

ESL58200	Capacity : 14 ltr	“Dimension :s External: 361w x 332d x 170h mm Thermocirculator additional 120mm to bath height Internal: 219w x 298d x 150h mm - working area of the bath Capacity Nominal Tank Capacity: 14 Litres”
ESL58201	Capacity : 22 ltr	“Dimension :s External: 537w x 332d x 170h mm Internal: 395w x 298d x 150h mm Capacity Nominal Tank Capacity: 22 Litres”

All models have 3 year warranty
Complete with shelf for good water circulation UK manufactured
Accessory lids, racks and baskets available





Water Bath Thermostatic 2 Ltr Shallow, Comp. W. S. steel Perforated False Base

Clifton shallow Baths™ are available in digital or analogue option. Their small footprint provides a stable temperature environment for life science preparations. Perfect for heating small height samples such as micro tubes, micro plates and bottles.

High quality build and features

Comprising of a high quality corrosion resistant stainless steel tank, with a bright clean finish housed in a durable painted outer case. Painted surfaces feature antibacterial finish with good chemical resistance. The shallow chamber is perfect for heating smaller samples. Heaters and temperature sensor are concealed under the tank providing a clutter free working area which is easy to wipe clean. Supplied with a removable sturdy low height stainless steel perforated shelf, for even heat distribution. Three year warranty and comprehensive customer support. Accessory lids available. Above 60° it is recommended that to achieve optimum performance the bath should be covered with a lid. Clifton Range®

Controls and safety

Digital bath option allows temperatures to be easily and rapidly set with the push button, wipe clean control panel, featuring a bold LED display. High precision PID temperature controller that ensures accuracy and repeatability is guaranteed. Temperature setting in increments of 0.1°C and temperature setting retained in memory, even after 'power off'.

Thermostatic bath option has an easy to use analogue dial pointer for setting temperature in 5°C increments.

All Shallow Baths™ have IP rated, illuminated on/off power switch and heater indication lamp. Features a thermal safety cut out which is fitted to the heater. Digital baths feature an over temperature alarm automatically set at 4°C above set temperature, including a visual indicator and safety heating cut out, to protect samples from over heating. Shallow Bath™ fitted with non-slip rubber feet.

Temperature

Digital

Display / resolution: Digital LED /

0.1°C Temp. Range: Ambient + 5°C

- 99°C Temp. Setting: push button

Stability/uniformity: ± 0.2°C / ±

0.1°C

Temperature memory: Retained in memory even after

'power off.' Thermostatic

Temp. Range: Ambient + 5°C -

99°C Temp. Setting: analogue

dial pointer Stability/uniformity:

± 0.25°C / ± 0.1°C

ESL58202

Capacity : 2 ltr

Dimension :s (mm) Overall - 332w x 185d x 135h / Working - 300w x 150d x 65h
Electrical / power supply: 120v or 230v models available / 200w

All models have 3 year warranty

Complete with shelf for good water circulation UK manufactured

Accessory lids, racks and baskets available





Water Bath Thermostatic Triple

Clifton analogue Triple-baths™ feature three independently controlled unstirred water baths in one space saving unit. Ideal for heating samples in micro centrifuge tubes and for other molecular biology applications.

High quality build and features

Comprising of 3 high quality corrosion resistant stainless steel tanks, with a bright clean finish housed in a durable painted outer case. Each chamber can be set to a different temperature and used simultaneously. Painted surfaces feature antibacterial finish with good chemical resistance.

Triple 4 litre bath is fitted with side lifting handles for easy lifting. These shallow baths require less water and less process chemicals, so are therefore economical to use.

Heaters and temperature sensors are concealed under the tanks providing a clutter free working area which is easy to wipe clean. Supplied with 3 removable sturdy low height stainless steel perforated shelves, for even heat distribution. Triple-baths™ are available in two sizes, 3 x 2 litre and 3 x 4 litre chambers.

Accessory lids available. Above 60°C it is recommended that to achieve optimum performance the chambers should be covered with a lid. Covering the bath also reduce energy consumption and running costs. Three year warranty and comprehensive customer support.

Controls and safety

Easy to use analogue dial pointer for setting temperature, graduated in 5°C divisions for each tank. With 3 independent controllers, each chamber can be operated separately and simultaneously. The Triple-bath™ includes IP rated, illuminated on/off power switch and heater indication lamp for each tank. Water baths are pre-calibrated for consistent accuracy. Thermal cut out fitted in the heater. Bath fitted with non-slip

Rubber feet.

Temperature

Temperature control: Analogue dial pointer - graduated in 5°C divisions Temp. range: Ambient + 5°C - 99°C

Temp. setting: Turn dial pointer

Stability/uniformity: ± 0.5°C/± 0.5°C

ESL58203	Capacity : 2 Ltr	Dimension :s External : 535w x 332h x 135h mm Internal: 300w x 150d x 65h mm Capacity Nominal Tank Capacity: Triple bath tanks, 2 Litres each.
ESL58204	Capacity : 4 Ltr	Dimension :s External : 535w x 332h x 290h mm Internal: 300w x 150d x 150h mm Capacity Nominal Tank Capacity: Triple tanks, 4 Litres each

All models have 3 year warranty
Complete with shelf for good water circulation UK manufactured
Accessory lids, racks and baskets available





Water Bath Digital Triple-bath

Clifton digital Triple-baths™ feature three independently controlled unstirred water baths in one space saving unit. Ideal for heating samples in micro centrifuge tubes and for other molecular biology applications.

High quality build and features

Comprising of 3 high quality corrosion resistant stainless steel tanks, with a bright clean finish housed in a durable painted outer case. Each chamber can be set to a different temperature and used simultaneously. Painted surfaces feature antibacterial finish with good chemical resistance.

Triple 4 litre bath is fitted with side lifting handles for easy lifting. These shallow baths require less water and less process chemicals, so are therefore economical to use.

Heaters and temperature sensors are concealed under the tanks providing a clutter free working area which is easy to wipe clean. Supplied with 3 removable sturdy low height stainless steel perforated shelves, for even heat distribution. Triple baths™ are available in two sizes, 3 x 2 litre and 3 x 4 litre chambers.

Accessory lids available. Above 60°C it is recommended that to achieve optimum performance the chambers should be covered with a lid. Covering the bath also reduce energy consumption and running costs. Three year warranty and comprehensive customer support.

Controls and safety

Temperatures can be easily and rapidly set with the push button, wipe clean control panel. Temperature displayed clearly with bright LED display in 1°C increments. Temperature setting is retained in memory, even after 'power off.' With 3 independent controllers, each chamber can be operated separately and simultaneously.

The Triple-bath™ includes IP rated, illuminated on/off power switch and heater indication lamp for each tank.

Water baths are pre-calibrated at two separate temperatures for consistent accuracy. Thermal cut out fitted in the heater. Bath fitted with non-slip rubber feet.

Temperature

Display/resolution: Digital

LED/1°C Temp. Range: Ambient

+ 5°C - 99°C Temp. Setting: Push

button Stability/uniformity: ±

0.25°C/± 0.1°C

Temperature memory: Retained in memory even after 'power off.'

ESL58205	Capacity : 2 ltr	Dimension : External: 535w x 332h x 135h mm Internal: 300w x 150d x 65h mm Capacity Nominal Tank Capacity: Triple tanks, 2 Litres each
ESL58206	Capacity : 4 ltr	Dimension : External: 535w x 332h x 290h mm Internal: 300w x 150d x 150h mm Capacity Nominal Tank Capacity: Triple tanks, 4 Litres each

All models have 3 year warranty

Complete with shelf for good water circulation UK manufactured

Accessory lids, racks and baskets available





Hinged Lid Assymoulded Lid New Style Clear Plastic

Hinged lid assymoulded lid new style clear plastic

ESL58209



Stainless Steel Gabled Lid

Stainless steel gabled lid

ESL58210

Test Tube Rack Stainless Steel 18 X 19mm

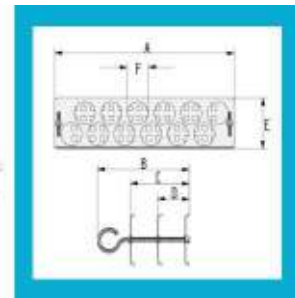
Test tube rack stainless steel 18 x 19mm

ESL58211

Test Tube Rack Stainless Steel 12 X 32mm

Test tube rack stainless steel 12 x 32mm

ESL58212



Water bath Irwin school

The Irwin water bath specifically designed for School Science Departments. It is built around a Gratnells deep tray and so can be stored in a Gratnells trolley. Water capacity is from 2 to 8 litres. Because of the shallow profile of the heating element, 3 litres of water gives the equivalent depth to 8 litres in a EduScience Bath, thus it reaches temperature much faster. Digital temperature control will maintain the water temperature within 1 degree Centigrade. Separate temperature sensor which can control the whole bath or an individual test tube. 500W silicone heating element. Particularly suitable for hard water areas as the element may be easily removed and cleaned. Gives additional bench space in the prep room. Light and easy to carry with safety cut-out sensor.

Even temperature distribution no stirrer required. Student proof temperature lock. Large capacity will take up to 4 test tube racks. Cost effective and practical solution for all your water bath needs. Comes complete with a lid and Z type test tube rack. Available in either 60 degrees centigrade or 100 degrees Centigrade options.

ESL58207

60 degrees C

ESL58208

100 degrees C



Ultrasonic Bath

- Frequency: 53KHz , • Heating: No, • Degas: Yes, • Timer (minute): 1-99, • Housing: SUS304,
- Drain : No, • Stainless steel cover: Yes
- Ultrasonic power(W): 100, • Heating power(W): No, • Degas power(W): 100,

ESL58245

Capacity : 3 Ltr

Tank size (LxWxD) cm : 24x14x10
Overall size (LxWxD) cm : 27x16x24
Tank capacity (litre): 3

ESL58246

Capacity : 6 Ltr

Tank size (LxWxD) cm : 30x15x15
Overall size (LxWxD) cm : 33x18x29
Tank capacity (litre): 6





Water Bath Ultrasonic, Thermostatic Heated And Timed ,Ultrasonic -230V

Clifton industrial strength ultrasonic baths are designed for demanding applications and suitable for continuous operation. Featuring heating and timer controls with ultrasonic boost, degas and sweep functions. Ideal for cleaning delicate or fragile components and glassware, especially where there may be a risk of breakage as a result of manual cleaning.

High quality build and features

High quality stainless steel tank and construction for durability. Fitted with side lifting handles for easy lifting. Featuring ultrasonics with sweep function for perfect and even distribution of ultrasonic activity. Features an ultrasonic boost function for 25% more power. The auto-degassing function is useful for liquid changes in the tank, de-carbonating and degassing HPLC solutions.

Three year warranty and comprehensive customer support. Accessory lids available. It is recommended that to achieve consistent heating, minimise evaporation and to prevent contamination when ultrasonic bath is not in use, it should be covered with a lid. Clifton Range®

Controls and safety

Temperature, time and activating sonic can be easily and rapidly set with the push button, wipe clean

Control panel, featuring an illuminated bold display. Splash proof controls with a drip bar above control panel, guides spills and drips away from the easy to use temperature and timer dials.

Touch keypads for boost, sweep, degas with start/stop and on/off functions. Temperature is set with analogue dial in increments of 5°C, time values in 1 minute increments with indication of time remaining as well as a permanent 'on' function. Bath will switch off after 12 hours if no keys have been activated, to prevent unintended operation.

Heating elements are controlled electronically to reduce energy demand and prevent overheating if allowed to run dry. Illuminated on/off power switch. Bath fitted with non-slip rubber feet. This range is designed for intermittent and permanent 'on' use. Do not allow items to touch base of the tank, we recommend accessory baskets.

Temperature

Display / resolution : Digital LED /

0.1°C Temp. Range : 30°C - 80°C

Temp. Setting: Analogue dial pointer in increments of 5°C

Timer: Time setting 1 minute with indication of time remaining or permanent 'on' function.

ESL58205	Capacity : 1 ltr	<p>Dimension :s (mm) Overall - 200w x 100d x 180h / Working - 190w x 85d x 60h Electrical / power supply: 120v or 230v models available / 60w Ultrasonic effective output: 30w Ultrasonic peak power / frequency: 240w / 38kHz Accessory basket: BSK-1</p>
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ESL58206	Capacity : 12 ltr	<p>Dimension :s (mm) Overall - 365w x 278d x 321h / Working - 300w x 240d x 200h Electrical / power supply: 120v or 230v models available / 800w Ultrasonic effective output: 200w Ultrasonic peak power / frequency: 800w / 38kHz Accessory basket: BSK-12</p>
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All models have 3 year warranty
 Complete with shelf for good water circulation UK manufactured
 Accessory lids, racks and baskets available

ESL58244



Drying Cabinets

Fitted with toughened glass doors.

Extras: Can be fitted with an interior fan and dial thermostat control for faster and safer drying Ideal for keeping products dry or testing electronic assemblies



SKU	Capacity Litres	Shelves Supplied	External H x W x D (mm)	Internal H x W x D (mm)
ESL58255	113	2	545 x 730 x 360	460 x 728 x 341
ESL58256	226	3	652 x 928 x 449	567 x 926 x 430
ESL58257	300	3	965 x 583 x 610	865 x 581 x 600
ESL58258	540	3	1650 x 583 x 610	1550 x 581 x 600
ESL58259	1000	4	1650 x 1110 x 585	1550 x 1108 x 580
ESL58260	1300	4	1650 x 1110 x 765	1550 x 1108 x 757

Ovens Drying Moisture Extraction

The forced air extractor is a bolt-on unit and can be retro-fitted to our other ovens if required. (OPTIONAL EXTRA).

Standard Specifications: Temperature range 40°C to 250°C - Dial thermostat (HYD)
Stainless steel interior - Fan assisted circulation* - Output vent for extraction tubing
Overheat safety with warning indicator - Fan assisted extract unit

Options Include: Digital control and readout (DIG) - Maximum temperature limiter
Programmable timers and controllers - Adjustable shelf ladders - 110v supply

SKU	Litres	Shelf Position	No of Shelve	External (mm) HxWxD	Internal (mm) HxWxD	Max Load Height (mm)	Power watts
ESL58262/50	50	3	2	625 x 590 x 422	325 x 490 x 315	240	1000
ESL58262/52*	52	5	5	845 x 590 x 300	470 x 490 x 193	385	1000
ESL58262/75	75	3	2	625 x 590 x 567	333 x 490 x 460	248	1250
ESL58262/100	100	4	3	735 x 590 x 567	445 x 490 x 460	360	1250
ESL58262/120	120	4	3	735 x 590 x 659	445 x 490 x 552	360	1500
ESL58262/150	150	5	3	845 x 590 x 659	555 x 490 x 552	470	1500
ESL58262/180	180	6	4	957 x 590 x 659	667 x 490 x 552	582	1750
ESL58262/210	210	6	4	957 x 590 x 749	667 x 490 x 642	582	2000
ESL58262/240	240	8	4	1178 x 590 x 659	888 x 490 x 552	803	2250
ESL58262/280	280	6	4	941 x 750 x 769	651 x 650 x 662	566	2250
ESL58262/350	350	7	4	1104 x 750 x 769	814 x 650 x 662	729	2500

**Ovens Incubators Dual Purpose**

Manufactured with economy and a dual function in mind. These units are ideally suited to laboratories requiring an incubator and an oven in one convenient cabinet. These can be used as a general purpose incubator, yet at the flick of a switch can be used as either a 250°C Coven or sterilizer making it the obvious cost-effective solution for many laboratories.



SKU	Litres	Shelve & Position	External mm H x W x D	Internal (mm) H x W x D	Max Load Height (mm)	Power watts
ESL58265/30	30	2/3	570 x 415 x 422	305 X 315 X 315	220	700
ESL58265/40	40	2/3	670 x 415 x 422	404 X 315 X 315	320	700
ESL58265/50	50	2/3	615 x 590 x 422	325 X 490 X 315	240	1000
ESL58265/75	75	2/3	623 x 590 x 567	333 X 490 X 460	248	1000
ESL58265/100	100	3/4	735 x 590 x 567	445 X 490 X 460	360	1000
ESL58265/120	120	3/4	735 x 590 x 659	445 X 490 X 552	360	1500
ESL58265/150	150	3/5	845 x 590 x 659	555 X 490 X 552	470	1500
ESL58265/180	180	4/6	957 x 590 x 659	667 X 490 X 552	582	1500
ESL58265/210	210	4/6	957 x 590 x 749	667 X 490 X 642	582	2000
ESL58265/240	240	4/8	1178 x 590 x 659	888 X 490 X 552	803	2000
ESL58265/280	280	4/6	941 x 750 x 769	651 X 650 X 662	566	2000
ESL58265/350	350	4/7	1104 x 750 x 769	814 X 650 X 662	729	2500

Standard voltage 230v, 50/60Hz Other voltages to order Larger models available

As part of our policy of continuous product improvement, the specifications are subject to change without notice.



Oven General Purpose

Suit most laboratory applications including drying, heating and general use.

Temperature Range: 40 C to 250 °C

Fluctuation: typically /-1 ° c

Exterior: Easy clean powder coated body

Interior: Aluminium clad steel chamber as standard (Stainless steel also available)

Controls: Calibrated dial thermostat

Safety: Independent overheat safety thermostat

Warranty: Full UK 1 year parts labour Circulation:

Internal forced air.

CE compliant.

ESL58268	Capacity : 10 LTR	Shelf positions:1, No. Of shelves: 1, External dimension (HxWxD): 415x375x350mm, Internal dimension (HxWxD): 150x275x243mm, Max load height: 105mm, Power: 350watts
ESL58269	Capacity : 20 LTR	Shelf positions: 2, No. Of shelves: 2, External dimension (HxWxD): 540x375x382mm, Internal dimension (HxWxD): 275x275x275mm, Max load height: 190mm, Power: 500 watts
ESL58270	Capacity : 30 LTR	Shelf positions: 3, No. Of shelves: 2, External dimension (HxWxD): 570x415x422mm, Internal dimension (HxWxD): 305x315x315mm, Max load height: 220mm, Power: 750 watts
ESL58271	Capacity : 40 LTR	Shelf positions: 3, No. Of shelves: 2, External dimension (HxWxD): 670x415x422, Internal dimension (HxWxD): 404x315x315, Max load height: 320mm, Power: 1000 watts
ESL58272	Capacity : 50 LTR	Shelf positions: 3, No. Of shelves: 2, External dimension (HxWxD): 625x590x422 mm, Internal dimension (HxWxD): 325x490x315 mm, Max load height: 240mm, Power: 1000 watts
ESL58273	Capacity : 75 LTR	Shelf positions: 3, No. Of shelves: 2, External dimension (HxWxD): 625 x 590 x 567mm, Internal dimension (HxWxD): 333x490x460mm, Max load height: 248mm, Power: 1250watts
ESL58274	Capacity : 100 LTR	Shelf positions: 4, No. Of shelves: 3, External dimension (HxWxD): 735x590x567mm, Internal dimension (HxWxD): 445x490x460mm, Max load height: 360mm, Power: 1250watts
ESL58275	Capacity : 120 LTR	Shelf positions: 4, No. Of shelves: 3 , External dimension (HxWxD): 735x560x659mm, Internal dimension (HxWxD): 445x490x552mm, Max load height: 360mm, Power: 1500watts
ESL58276	Capacity : 150 LT R	Shelf positions: 4, No. Of shelves: 3, Power: 1500watts



NEW

Vacuum Oven

Models: ES-1202V5

Features

- Uses for drying moisture, condensing
- Dearing, solvent removal.
- Glass door in front, showing indoor.
- Digital PID Controller.
- Auto Tuning.
- Reliable safety device.
- Simple-to-use.
- Connects nitrogen gas with Purge Valve (Option).
- 10step Programmable Controller (Option).

Model	ES-1202V5	ES-1202V6
Dimension (IN)	300 x 300 x 300(H) mm	400 x 400 x 400(H) mm
Dimension (OUT)	500 x 450 x 450(H) mm	600 x 550 x 550(H) mm
Capacity	27 Liter	64 Liter
Power	220V, 3.2A, 60Hz	220V, 4A, 60HZ

Specification

Temp. Range	Ambient +5°C to 200°C
Temp. Controller	Digital P.I.D. controller
PID Setting	Auto Tuning.
Display	LED display
Material (IN)	Stainless steel
Material (OUT)	Steel plate with powder coating
Valve	Vacuum valve, Purge valve
Vacuum gauge	Mechanical type
Door	Silicone packing door with Large window
Shelves	AL material, 2EA
Safety device	Exclusive over temp. protector, Power Breaker

Option





Incubators General Purpose

Suit most laboratory applications including drying, curing, and general use.
 Temperature Range : Ambient 10 C to 100 ° C
 Fluctuation: typically /-0.75 ° C
 Exterior: Easy clean powder coated body
 Interior: Aluminium clad steel chamber as standard (Stainless steel also available) Controls:
 Calibrated dial thermostat
 Safety: Independent overheat safety thermostat Warranty :
 Full UK 1 year parts & labour
 CE compliant.

ESL58295	Capacity : 10 LTR	Shelf positions: 1, No. Of shelves: 1, External dimension (HxWxD): 415x375x350mm, Internal dimension(HxWxD): 150x275x243mm, Max load height: 105mm, Power: 250watts
ESL58296	Capacity : 20 LTR	Shelf positions: 2, No. Of shelves: 2, External dimension (HxWxD): 540x375x382mm, Internal dimension (HxWxD): 275x275x275mm, Max load height: 190mm, Power: 350watts
ESL58297	Capacity : 30 LTR	Shelf positions: 3, No. Of shelves: 2, External dimension (HxWxD): 570x415x422mm, Internal dimension (HxWxD): 305x315x315mm, Max load height: 220mm, Power: 500 watts
ESL58298	Capacity : 40 LTR	Shelf positions: 3, No. Of shelves: 2, External dimension (HxWxD): 670x415x422mm, Internal dimension (HxWxD): 404x315x315mm, Max load height: 320mm, Power: 500 watts
ESL58299	Capacity : 50 LTR	Shelf positions: 3, No. Of shelves: 2, External dimension (HxWxD): 615x590x422mm, Internal dimension (HxWxD): 325x490x315mm, Max load height: 240mm, Power: 500 watts
ESL58300	Capacity : 75 LTR	Shelf positions: 3, No. Of shelves: 2, External dimension (HxWxD): 623x590x567mm, Internal dimension (HxWxD): 333x490x460mm, Max load height: 248mm, Power: 750 watts
ESL58301	Capacity : 100 LTR	Shelf positions: 4, No. Of shelves: 3, External dimension (HxWxD): 735x590x567mm, Internal dimension (HxWxD): 445x490x460mm, Max load height: 360mm, Power: 750 watts
ESL58302	Capacity : 120 LTR	Shelf positions: 4 , No of shelves: 3, External Dimension (HxWxD): 735x590x659mm, Internal Dimension (HxWxD): 445x490x552mm, Max load height: 360mm, Power: 1500 watts
ESL58303	Capacity : 150 LT R	Shelf positions: 4, No of shelves: 3, Max load height: 360mm, Power: 1500 watts,

Specifications :

Heating	Gravity Convection (ESL-10T) 10 Ltr. Forced Convection (ESL-30T) 30 Ltr
Temp. Range	ambient +5 °C -50 °C
Accuracy	+/- 0.2 °C at 37.0°C (ESL-10T)
Uniformity	+/-0.5 °C at 37.0°C (ESL-10T)
Control	Microprocessor PID Control Auto START/STOP Timer
Sensor	Class A Pt-100 & Sensor
Safety	Over-Temperature Cut-Off Over Current Cut-Off
Material	Body: Epoxy Powder Coated Steel Chamber: Stainless Steel 304 Inner Glass Door (ESL-30T only) Including PVC Coated Wire Shelf
Electric	220± 10% VAC 50/60Hz 1-Phase
Control Accuracy	±0.1 °C Digital PID Controller with automatic START/STOP timer max. 99min 59sec / 99hr 59min / 99 day 23hr Temperature calibration, auto-tuning function Class A Pt-100 Ω sensor

Plug config.



Timer On / Off



Heated amb.+5 °C - 50 °C



Constant Temperature Controller

Incubator Compact ESL-10T / ESL-30T

1-Series Compact Economic Incubator is suitable for personal, small food laboratory or HACCP Industry doing daily incubation of bacterial screening with Petri-Dish or Petri-Film.



General Incubator

Models:

ESL701GI-ESL702GI-ESL703GI

ESL705GI-ESL706GI-ESL707GI

Features

- Digital PID Controller
- Auto tuning function
- Safety devices
- Inner glass door to reduce Temp. change.
- Easy Temp. setting methods.

NEW



Labware

MODEL	ESL-701-GI	ESL-702-GI	ESL-703GI	ESL-705GI	ESL-706GI	ESL-707GI
Capacity	49 Liter	91 Liter	150 Liter	250 Liter	91 Liter X 2	91 Liter X 4
Dimension (In)	350 x 400 x 350	450 x 450 x 450	500 x 500 x 600	500 x 500 x 1000	(450 x 450 x 450) x 2	(450 x 450 x 450) x 4
(WxDxH) (mm)	(Out) 500 x 590 x 720	600 x 640 x 820	650 x 690 x 970	655 x 690 x 1350	610 x 740 x 1480	1220 x 740 x 1480
Heater Capacity	300W	300W	500W	500W	300W x 2	300W x 4
Shelves	2EA	2EA	3EA	3EA	4EA	8EA
Temperature Range	Ambient +5°C to 60°C					
Accuracy	+/- 0.1°C					
Temperature control	Digital PID Controller					
Timer	99hr 59Min					
Thermocouple	PT 1000 Ω					
Material (In)	Stainless steel					
(Out)	Steel plate with powder coating					
Inner door	Safety glass of thickness 5mm					
Shelves	Adjustable Type ABS Coating					
Safety Device	Over temperature, Current protection, Sensor error detection..					
Power	220V, 50/60Hz					



CO2 Incubator / CO2, O2 Incubator ESL-9170CT/9170GCT

Main Control	Touch Screen Controller
Display	7" Color LCD
Temperature Range	RT +5°C to 50°C, ±0.1°C at 37°C
CO2 Range	0 to 20%, ±0.1% at 5%
CO2 Sensor	Dual-Beam Non Dispersive Infra-red Sensor
Humidification	Up to 96% RH at 37°C
Dimension (in)	510(W) × 480 (D) × 705(H)mm
(out)	605(W) × 610(D) × 995(H)mm
Capacity	173 Liter
Water Jacket Volume	34 Liter
Materials (in)	Copper-blended Stainless Steel (SUS 304)
(out)	Steel Plate with Powder Coating
Door	Double, Silicone Magnetic Packing Door
Inner Door	Safety Glass Door with U-groove Packing
Door Heater Shelves	Silicone Heater, Independent Control
Shelves	3EA, Copper-blended Stainless Steel
Safety Device	Over Temp. Protector, Gas Monitor Alarm, Water Level Monitor, Power Breaker
Utility	Sample Port, Access Hole, Drain Port, HEFA Filter Unit, Flow Meter
Net Weight	98kg
Power	220V, 5A
CO2/O2 Incubator	ESL-9170GCT
O2 Range	0.1 to 20.9%, ± 0.1% at 5%
O2 Sensor	Industrial Oxygen Sensor
Cooling System	ESL-9170CT-R (Option)
Dimension (out)	605(W) × 610(D) × 1240(H)mm
Temperature Range	20°C to 50°C, ±0.1°C



NEW



Plate of Flask

100ml Flask	.....	36 A
250ml Flask	.....	25 A
500ml Flask	.....	16 A
1000ml Flask	.....	9 EA
2000ml Flask	.....	4 EA
Spring Rack	.....	450 x 450mm



Shaking Incubator

Model :

ESL8480SF - ESL8480S

Features

- Noiseless & Brushless DC Motor Durable & Beltless Drum type
- Stable operation in low speed of 10RPM Digital PID Controller
- Reliable safety device Simple-to-use
- Compatible for various capacity of flask & tube Light Bank ("L" Model)

Model	ESL-8480SF	ESL-8480S
Temp. Range	15C to 60°C	Ambient +5°C to 60°C
Weight	81Kg	66Kg
Power	220V, 4.5A, 60Hz	220V, 1.8A, 60Hz
Temp. Controller	Digital P.I.D. controller	
Speed Range	10-350 RPM	
Display	LED Display	
Drive system	Beltless direct drive	
Motor	Brushless D.C.Motor K-type	
Circulation Fan	3.5" convection fan x 2EA	
Dimension	(IN)	510 x 530 x 400(H)mm
	(OUT)	515 x 730 x 720(H)mm
Lid	Acrylic Blue	
Safety Device	Over temp.Protector, Door detector	
Standard plate	250ml x 25EA	
Light Bank Model	Model ESL-8480SFL	
Light Bank	40W CL x 1 Unit	
Light Control	24Hr. Photoperiod program	

Shaking Incubator

ESL-8480SR

Less Gas-Consuming & Space-saving compact INCUBATOR

Features

- Noiseless & Brushless DC Motor Durable & Beltless Drum type
- Stable operation in low speed of 10RPM Reliable safety device
- Simple-to-use
- Compatible for various capacity of flask & tube Light Bank
- (ESL-8480SR Model)

Light Bank Model

Model	VS-8480 SR-L
Light Bank	Compact FL 36W x 3 Unit
Light Control	24Hr. Photoperiod program

Plate of Flask

100ml Flask	.....	60 A
250ml Flask	.....	40 A
500ml Flask	.....	24 A
1000ml Flask	.....	15 EA
2000ml Flask	.....	8 EA
Spring Rack	.....	760 x 470 mm



NEW



Shaking Incubator ESL-8480SR

Temp. Range	10° C to 60° C	
Temp. Controller	Digital P.I.D. controller	
Speed Range	10-350 RPM	
Display	LED Display	
Drive system	Beltless direct drive	
Motor	Brushless D.C.Motor K-type	
Circulation Fan	5" convection fan x 2EA	
Dimension	(IN)	830 x 540 x 500(H)mm
	(OUT)	1060 x 725 x 895(H)mm
Lid	Silicone Packing & Shock-absorber	
Safety Device	Over temp. Protector, Door detector	
Weight	137.5 Kg	
Power	220V, 6A, 1.2 Kw, 60Hz	
Standard plate	250ml x 40EA	
Certification	ISO 9001	



Anaerobic Incubator

ESI-A1 Series

- High-precision microcomputer control system to display accurate temperature inside the incubator ESI-A10
- Siemens PLC for High-performance ESI-A11
- High-precision temperature sensor and oxygen sensor to ensure accuracy ESI-A11
- High-precision temperature control module and analog module to ensure stability ESI-A11
- UV sterilizer for effective de-contamination
- Solenoid valve switch control to adjust and input essential gas
- Cultivation and operation chamber made of stainless steel
- Impact-resistant front glass window for easier observation
- Deoxidization catalyst in operation room
- Double door for cultivation chamber to add more petri plates

NEW



- Caster wheels for easier transport
- Latex gloves, Leakage protection, Over-heating alarm for user safety
- LCD screen to view parameter and button press keypad to pre-set values ESI-A10
- LCD screen to view parameter and touch screen control panel ESI-A11
- 2 shelves and wheels for cultivation chamber
- Tube-light inside the operation chamber for better illumination
- Door handle provided for easier opening and closing
- Wires and pipes inside chamber are properly concealed for user safety
- Equipped with wax-melting disinfection device and inoculating rod sterilizer ESI-A11
- USB interface provided to transfer data ESI-A11
- Stores 6 months data ESI-A11

Labware

Anaerobic Incubator ESI-A10

Anaerobic Incubator ESI-A10 is a workstation especially designed to culture anaerobic micro-organisms for various studies. Features micro-computer control system, UV sterilizer, stainless steel chamber, latex gloves, tough front glass window, de-oxidization catalyst, leakage protection etc. to ensure anaerobic environment while working along with operator's safety. Within 5 min anaerobic environment is created in the cultivation chamber while it takes less than 1 hr. for the operation chamber. It is used in microbiology labs, oil industry, soil research etc.

Anaerobic Incubator ESI-A11

Anaerobic Incubator ESI-A11 is a workstation especially designed to culture anaerobic micro-organisms for various studies. Features Siemens Programmable Logic Controller, UV sterilizer, stainless steel chamber, latex gloves, tough front glass window, de-oxidization catalyst, leakage protection, USB interface etc. to ensure anaerobic environment while working along with operator's safety. Within 5 min anaerobic environment is created in the cultivation chamber while it takes less than 1 hr. for the operation chamber. It is used in microbiology labs, oil industry, soil research etc.

Applications

It is widely used to culture anaerobic micro-organism to perform various studies in soil research, pathology labs, oil industry etc.

Specifications

SKU	ESI-A10	ESI-A11
Control System	Microcomputer control system	Microprocessor control system + Siemens PLC
Display	LCD display with button-press keypad	LCD display with touch screen control panel
Time for creating anaerobic state in sample chamber	< 5 minutes	< 5 minutes
Time for creating anaerobic state in operation chamber	< 1hr	< 1hr
Anaerobic environment maintenance time	> 12hrs (when no supply of mixed gas)	> 12hrs (when no supply of mixed gas)
Temperature Range	RT+3 to 60°C	RT+3 to 60°C
Temperature Stability	< ±0.3°C	< ±0.3°C
Temperature Uniformity	< ±1°C	< ±1°C
Display Resolution	0.1°C	0.1°C
Timing Range	1 to 9999 min	1 to 9999 min
Power Rating	600 W	600 W
Power Supply	AC 220V, 50 Hz	AC 220 V, 50 Hz
Data Storage	No	Yes
Interface	---	USB
Interior Chamber Dimension (W×D×H)	300×190×290 mm	300×190×290 mm
Operation Chamber Dimension (W×D×H)	820×660×670 mm	820×660×670 mm
Exterior Dimension (W×D×H)	1260×730×1380 mm	1260×730×1380 mm
Package Dimension (W×D×H)	1390×920×1560 mm	1390×920×1560 mm
Net Weight	240 kg	240 kg
Gross Weight	320 kg	320 kg





Sterilizer Hot Air

Manufactured to conform with the strict requirements of hot air sterilization up to 250°C in life science laboratories.

Uses: Standard disinfection of instruments and applications is not always thorough enough in medicine and biological research. Often high temperature dry sterilization is the only acceptable method of biological cleansing.

Temperature range: 30 ° C to 250 ° C

Interior: Stainless steel with fan circulation

Timer : 120 minute mechanical run-back timer

Controls: PID digital and readout (DIG)

Safety: thermostat with warning indicator

500 C version is available for protein denaturation.

CE compliant.

ESL58324	Capacity : 50 LTR	No of shelves: 2, Shelf positions: 3, External Dimension (HxWxD): 625x590x422mm, Internal Dimension (HxWxD): 325x490x315mm, Max load height: 240mm, Power: 1000 watts.
ESL58325	Capacity : 75 LTR	No of shelves: 2, Shelf positions: 3, External Dimension (HxWxD): 625x590x567mm, Internal Dimension (HxWxD): 333x490x460mm, Max load height: 248mm, Power: 1000 watts.
ESL58326	Capacity : 100 LTR	No of shelves: 3, Shelf positions: 4, External Dimension (HxWxD): 735x590x567mm, Internal Dimension (HxWxD): 445x490x460mm, Max load height: 360mm, Power: 1000 watts
ESL58327	Capacity : 120 LTR	No of shelves: 3, Shelf positions: 4, External Dimension (HxWxD): 735x590x659mm, Internal Dimension (HxWxD): 445x490x552mm, Max load height: 360mm, Power: 1500 watts
ESL58328	Capacity : 150 LTR	No of shelves: 3, Shelf positions: 4, Power: 1500 watts

Model	ESL58478	ESL58479	ESL58480
Dimension (In)	535 x 620 x 430	620 x 710 x 520	620 x 1000 x 1290
(WXDXH) mm (Out)	D 260 x 460mm	350 x 510mm	1350 x 800mm
Capacity	25 Liter	50 Liter	80 Liter
Heater	2KW	2KW	2.5KW
Weight	48 kg	65kg	100kg
Tray Size	190 x 400 x 25mm	240 x 480 x 30mm	240 x 770 x 30mm
Tray Material	Aluminum		
Reservoir capacity	4.5 Liter	4.5 Liter	8 Liter
Klaterial (In)	Stainless steel	Stainless steel	
(Out)	Steel plate with powder coating		
Safety Device	Over temp. protector, Safety Valve		
Temp. Range	121 ° C		
Pressure Range	0-2.1kgf/ cm		
Strieber	Time 60 Min(Max)		
Control System	8 Bit Microprocessor		
Power	220V, 50/60Hz		



**Table Top Autoclave
ESL58478-ESL58479
ESL58480**

Features

- Full automation
- LED Display Safety device
- Self-test function
- Exhaustive design's gasket



Autoclave Media

Electrically heated, 12 litre capacity bench top autoclave designed specifically for the safe and effective sterilization of media.

- Dual interlocking handles prevent the lid being removed until the vessel has reached a safe pressure and temperature.
- Fully CE marked to the Medical Devices Directive 93/42/EC
- Sterilizes at 121 ° C.
- Full one year warranty
- Maximum capacity liquids 500ml
- Made in the UK

Dimensions : Height: 420mm

ESL58481	12 Litre
ESL58482	9 Litre





Hot Plate Basic I (Electric Burner) 500 W ESL58416

Hot plate, electric, with variable stage less regulation of heat and overheat control , 500 W
Input supply voltage 230 V / 50 ... 60 Hz

Hot Plate ADV LCD

ESL58420

Specifications	ESL58420
Work plate Dimension [W x D]	254x254mm (10 inch)
Work plate material	Glass ceramic
Heating position	1
Heating temperature range	Room Temp.-500°C, increment 1°C
Temperature control accuracy	±1°C (<100°C)±1%(>100°C)
Safety temperature	540°C
Temperature,time display	LCD
Timer function	1min-99h59min
Temperature display accuracy	±0.1°C
External temperature sensor	PT1000(±0.2°C)
"Hot" warning	50°C
Protection class	IP21
Power	1400W
Heating output	1350W
Voltage,Frequency	100-120/200-240V, 50/60Hz
Dimension[WxDxH]	328x424x138mm
Weight	7.2kg
Permissible Ambient temperature and humidity	5-40°C, 80%RH

NEW



Electric Burner ESL58417

able to work without gas -Multiple possibilities for use (heating containers, manual heating of test tubes, complex setups...)

Efficient : Heats 100 mL of water from 30 to 100 °C in 2 minutes 30 seconds. - Maximum temperature of 700 °C. - Temperature control through integrated electronic regulator. - Power: 500 W. - Protective casing: Cold - Power supply: 230 V (2P+T). - Weight: 2.6 kg. - - Dimensions (L x W x H): 280 x 180 x 125 mm. - Rod length: 300 mm. - Standard cord length: 1.50m - Patented.

NEW



Features

- LCD screen shows temperature, Max. temperature up to 500°C
- 10-inch glass ceramic work plate provides excellent chemical-resistant performance and most efficient heat transfer
- External temperature control is possible by connecting the temperature sensor (PT 1000) with an accuracy at ±0.2°C
- The "HOT" warning will flash if the work plate temperature is above 50°C even when the hotplate is turned off
- Heating temperature: room temperature -500°C.
- Data connector : The SD card records the instrument's running data in real time.
- Timing function: the running time of the instrument can be set.



**Features**

- Maximum heating temperature is 380 °C
- High resolution LCD displays actual temperature
- Aluminum ceramic coating work plate, allowing a immediate heat transfer
- External temperature control is possible with temperature sensor PT1000

Hot Plat Pro ESL58418

Specifications	ESL58418
Work Plate Dimensions [WnxsD]	140 X 14mm (6Inch)
Work plate material	Aluminum cover with ceramic coating
Heating position	1
Heating temperature range	Room temp. -380°C increment 1°C
Over heat Protection	420°C
Temperature, time display	LCD
Temperature display accuracy	±1°C
External temperature sensor	PT1000(±0.2°C)
Protection class	IP21
Power	510W
Heating output	500W
Voltage,Frequency	100-120/200-240V, 50/60Hz
Dimension[WxDxH]	180x320x108mm
Weight	2.2kg
Permissible Ambient temperature and humidity	5-40°C, 80%RH

Hot Plat ADV ESL58419



Specifications	ESL58419
Work plate Dimension [W x D]	184x184mm (7 inch)
Work plate material	Glass ceramic
Heating position	1
Heating temperature range	Room Temp. -550°C, increment 5°C
Control accuracy of work plate	±10°C
Safety temperature	580°C
Temperature display	LED
Temperature display accuracy	±1°C
External temperature sensor	PT1000 (accuracy±0.2°C)
Heating warning	50°C
Protection class	IP21
Power	1010W
Heating Power	1000W
Voltage,Frequency	100-120/200-240V, 50/60Hz
Dimension[WxDxH]	215x360x112mm
Weight	4.5kg
Permissible Ambient temperature and humidity	5-40°C,80%RH

**Features**

- LED screen display actual and accurate temperature
- Maximum temperature up to 550°C
- Separate safety circuits with safety temperature of 580°C
- External temperature control is possible by connecting temperature sensor (PT 1000) with an accuracy of ±0.2°C
- Work plate provides excellent chemical- resistant performance and most efficient heat transfer
- "HOT" warning flashes when the workplate temperature is above 50°C



Magnetic Stirrer Pro LCD ESL58431

- High resolution LCD displays actual stirring speed
- Brushless DC motor is maintenance free
- Aluminum covered ceramic coating, corrosion resistant and easy to clean
- Digital speed control up to 1500rpm
- Maximum stirring quantity of H2O at 5L

Magnetic Stirrer Basic ESL58430

Magnetic Stirrer Advance ESL58432

- Speed range of 0-1500rpm
- Maximum stirring quantity of H2O up to 10L
- Ceramic work plate provides excellent corrosion resistance



Magnetic Stirrer Mini ESL58429

Suitable for stirring small size items, necessary for all kinds of labs, especially education and R&D institution. ,ABS plastic case, beautiful appearance, step-less speed regulation.

Range 0-2300 R/M(No Load)Max Stirring Capacity 1000m ,stirrer

Timing range 0-2300 rpm (empty load) ,

Max. Stirring content 1000ml

Face diameter Φ 120mm

Other technical parameters Power adapter DC6V

Exterior Dimension : and weight Φ 120x49mm/500g



Specifications	ESL58432	ESL58430	ESL58431
Work Plate Dimensions [WxD]	184 X 184mm (7 Inch)	Φ 135mm (5 Inch)	140 X 140mm (5.6 Inch)
Work plate material	Glass ceramic	Stainless steel cover with ceramic	Aluminum cover with ceramic coating
Motor type	Shaded pole motor	Brushless DC motor	Brushless DC motor
Stirring positions	1	1	1
Max. stirring quantity[H ₂ O]	10L	20L	5L
Max.magnetic bar[length]	80mm	80mm	40mm
Speed range	0-1500rpm	0-1500rpm	200-1500rpm
Speed display	Scale	Scale	LCD
Protection class	IP21	IP21	IP21
Motor input Power	15W	18W	2.4W
Motor output Power	1.5W	10W	1.8W
Power	30W	30W	10W
Voltage,Frequency	100-120/200-240V, 50/60Hz	100-240V, 50/60Hz	100-240V, 50/60Hz
Dimension[WxDxH]	215x360x112mm	160x280x85mm	320x180x108mm
Weight	3.8kg	2.8kg	2.2kg
Permissible Ambient temperature and humidity	5-40°C, 80%RH	5-40°C, 80%RH	5-40°C, 80%RH



Multi Stirring Palte 10 Analoue ESL58435



Specifications	ESL58435
Work Plate Dimensions [WxHxD]	180 X 450 mm
Work plate material	Stainless steel with silicone coating
Motor type	Brushless DC motor
Stirring positions	10
Max. stirring quantity[H ₂ O]	0.4Lx10
Max.magnetic bar[length]	40mm
Speed range	0-1100rpm
Speed display	Scale
Protection class	IP20
Motor input Power	12W
Motor output Power	4W
Power	20W
Voltage,Frequency	100-120/200-240V, 50/60Hz
Dimension[WxDxH]	622x205x65mm
Weight	3.2kg
Permissible Ambient temperature and humidity	5-40°C, 80%RH

Features

- Efficient, simple and safe stirring
- High performance and space-saving design to maximize the use of benchtop space and saving time by stirring multiple solutions
- Maintenance-free brushless DC motor
- Speed range 0-1100rpm
- Stainless steel work plate covered with silicone cushion, provides excellent performance of skid resistance



Skidresistance



Multiple position

Hot Plate Magnetic Stirrer Mini ESL58438

suitable for stirring small size items, necessary for all kinds of labs, especially education and R&D institution, Power adapter DC6V
Exterior dimension and weight Φ120×49mm/500g

Stepless speed regulation.

Constant power heating, no-load surface temperature 120 °C

A thermal protection device of 150 °C.

Range 0-2300 R/M(no load) Max

Stirring Capacity 1000mL.





Hot Plate Magnetic Stirrer Basic

ESL58439

Features

- Brushless DC motor is maintenance free and explosion-proof
- Digital temperature control up to 340°C
- Digital speed control up to 1500rpm
- Maximum stirring quantity of H₂O is 20L
- Safety circuits provide overheating protection
- "HOT" warning flashes if plate temperature is above 50°C even when hotplate is turned off
- External temperature control is possible by connecting the temperature sensor (PT 1000) with accuracy at $\pm 0.2^\circ\text{C}$
- Work plate with ceramic coating provides good chemical-resistant performance
- Remote function provides PC control and data transmission
- Wide variety of accessories available to choose



Hot Plate Magnetic Stirrer Pro

ESL58440

EduScience 380°C magnetic hotplate stirrers include all leading safety standards and is chemically-resistant with white ceramic work plate. They can be used in physical, chemical, analytical and biological laboratories.

Features

- Max. heating temperature is 380°C
- High resolution LCD displays actual temperature and speed.
- Brushless DC motor is maintenance free
- Aluminum cover with ceramic work plate, allows for immediate heat transfer
- External temperature control is possible with temperature sensor PT1000
- Digital temperature control with max. temperature at 380°C
- Digital speed control with max. speed up to 1500rpm
- Max. stirring quantity of H₂O at 5L



Hot Plat Magnetic Stirrer PRO Round

ESL58440R

Features

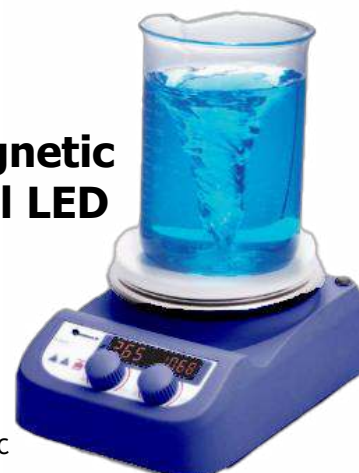
- Brushless DC motor is maintenance free and explosion-proof
- Digital temperature control up to 340°C
- Digital speed control up to 1500rpm
- Maximum stirring quantity of H₂O is 20L
- Safety circuits provide overheating protection
- "HOT" warning flashes if plate temperature is above 50°C even when hotplate is turned off
- External temperature control is possible by connecting the temperature sensor (PT 1000) with accuracy at $\pm 0.2^\circ\text{C}$
- Work plate with ceramic coating provides good chemical-resistant performance
- Remote function provides PC control and data transmission
- Wide variety of accessories available to choose
- LCD Digital Display

Hotplate Magnetic Stirrer Digital LED 280C

ESL58443

Features

- Digital temperature control with maximum temperature up to 280°C
- Digital speed control with maximum speed up to 1500rpm
- Stainless steel with ceramic coating work plate provides high chemical resistant performance
- External temperature control is possible by connecting temperature sensor (PT1000) with an accuracy at $\pm 0.2^\circ\text{C}$
- LED display shows temperature and stirring speed
- "HOT" warning flashes if work plate temperature is above 50°C





Work plate Dimension [W x D]	Ø135mm (5 inch)	140x140mm (5.6 inch)	Ø135mm (5 inch)	Ø135mm (5 inch)
Work plate material	St.Steel cover with ceramic coating	Aluminum cover with ceramic coating	St.Steel cover with ceramic coating	Aluminum with ceramic coating
Motor type	Brushless DC motor	Brushless DC motor	Brushless DC motor	Brushless DC motor
Stirring positions	1	1	1	1
Max. stirring quantity, [H ₂ O]	20L	5L	3L	20L
Max. magnetic bar[length]	80mm	50mm	50mm	80mm
Speed range	0-1500rpm	200-1500rpm	200-1500rpm	15W
Speed display	Scale	LCD	LED	100-1500rpm
Temperature display	Scale	LCD	LED	LCD
Heating temperature range	Room Temp. -340°C	Room temp.+5°C - 380°C	Room Temp-280°C	LCD
Heating liquid temperature control accuracy	-	±20rpm	±1°C (<100°C)	Room temperature ~ 340°C, increment 1°C
Temperature control accuracy	-	-	±1% (>100°C)	±1°C(<100°C), ±1%(>100°C)
Overheating temperature protection	420°C	420°C	320°C	420°C
Temperature display accuracy	-	±0.1°C	±1°C	0.1°C
External temperature sensor	-	PT1000 (accuracy ±0.5°C)	PT1000 (accuracy ±0.5°C)	PT1000 (accuracy±0.2°C)
"Hot" warning	-	-	50°C	50°C
Data connector	-	-	-	RS232
Protection class	IP21	IP21	IP42	IP21
Timer function	-	-	-	1min-99h59min
Motor rating input	18W	2.4W	5W	18W
Motor rating output	10W	1.8W	3W	10W
Power	530W	510W	515W	720W
Heating output	500W	500W	500W	600W
Voltage, Frequency	100-120/200-240V, 50/60Hz	100-120/200-240V, 50/60Hz	100-120/200-240V, 50/60Hz	100-120/200-240V, 50/60Hz
Dimension [WxDxH]	160x280x100mm	320x180x108mm	150x260x100mm	260x280x100mm
Weight	2.8kg	2.2kg	1.8kg	2.8kg



Hot Plate & Magnetic Stirrer ADV LCD ESL58444

Features

- Large volume: Up to 30L of liquid on 10-inch hot plate with powerful magnetic stirring
- Glass ceramic work plate provides excellent chemical resistant performance and most efficient heat transfer
- LCD display for precise monitoring of speed and temperature. External temperature control is possible by connecting the temperature sensor (PT1000) with an accuracy at $\pm 0.2^{\circ}\text{C}$
- Digital speed control of 100 - 1500rpm
- Max. heating plate temperature 500°C
- The "HOT" warning will flash when the work plate temperature is above 50°C even when the hotplate is turned off
- Data connector: The SD card records the instrument's running data in real time.
- Timing function: the running time of the instrument can be set.



Labware

Hot Plat Magnetic Stirrer LCD ADV ESL58441

Hot Plat Magnetic Stirrer LED ADV ESL58442

Features

- LCD displays actual temperature & speed
- Built-in PID controller ensures safe heating of the medium with overheating protection
- Maximum heating plate temperature up to
- Glass ceramic work plate is resistant to corrosion and is easy to clean
- External temperature control is possible by connecting temperature sensor (PT1000) with an accuracy of $\pm 0.2^{\circ}\text{C}$
- Digital speed control with maximum range of
- Outstanding brushless DC motor offers more stirring power
- Two knobs enable easy adjustment of speed and temperature
- "HOT" warning flashes when work plate temperature is above 50°C even when hotplate is turned off
- Remote function provides PC control and data transmission





Overheating protection



External sensor



Chemical resistance



Wide range of accessories



Specifications	ESL58444	ESL58441	ESL58442
Work plate Dimension [W x D]	254x254mm (10 inch)	184x184mm (7 inch)	184x184mm (7 inch)
Work plate material	Glass ceramic	Glass ceramic	Glass ceramic
Motor type	Brushless DC motor	Brushless DC motor	Shaded pole motor
Stirring positions	1	1	1
Max. stirring quantity, [H ₂ O]	30L	20L	10L
Max. magnetic bar[length]	80mm	80mm	80mm
Speed range	100-1500rpm, resolution±1rpm	100-1500rpm, resolution±1rpm	0-1500rpm
Speed display	LCD	LCD	Scale
Temperature display	LCD	LCD	LED
Heating temperature range	Room Temp.-500°C, increment 1°C	Room Temp.-550°C, increment 1°C	Room Temp.-550°C, increment 5°C
Temperature control accuracy	±1°C(<100°C) ±1%(>100°C)	±1°C(<100°C) ±1%(>100°C)	±10°C
Overheating protection	540°C	580°C	580°C
Temperature display accuracy	±0.1°C	±0.1°C	±1°C
External temperature sensor	PT1000(accuracy ±0.2°C)	PT1000(accuracy ±0.2°C)	PT1000(accuracy ±0.2°C)
"Hot" warning	50°C	50°C	50°C
Data connector	SD card	RS232	-
Protection class	IP21	IP21	IP21
Motor rating input	18W	18W	15W
Motor rating output	10W	10W	1.5W
Power	1400W	1050W	1030W
Heating output	1350W	1000W	1000W
Voltage,Frequency	100-120/200-240V, 50/60Hz	100-120/200-240V, 50/60Hz	100-120/200-240V, 50/60Hz
Dimension [WxDxH]	328x424x138mm	215x360x112mm	215x360x112mm
Weight	7.2kg	5.3kg	4.5kg
Timer function	1min-99h59min	-	-
Permissible ambient temperature and humidity	5-40°C,80%RH	5-40°C,80%RH	5-40°C,80%RH



Magnetic Stirrer with Heating Mantle 2 in 1

ESL58462/100/250/500/1000

ESL58463/100/250/500/1000

Advantages

- The smart magnetic stirrer can be flexibly set up with inter-changeable heating sleeves for 100mL, 250mL, 500mL, 1000mL round-bottom flask, or 100mL, 250mL, 500mL, 1000mL flat bottom beakers.
- Even more flexible configurations: as one heating magnetic stirrer, or as one heating sleeve plus one magnetic stirrer.
- Temperature self calibration function for higher temperature accuracy.
- Heating sleeve made of high-quality Aluminum silicate fiber cotton with accurate temperature control, uniform heating and corrosion resistance.
- Strengthened magnetic fields with enhanced stirring power.
- Fireproof metal outcast with higher safety level.
- Explosion-proof DC brushless motor free of maintenance and spark, and with long service life.
- The “HOT” warning will flash if the work plate temperature is above 50°C even when the hotplate is turned off, as long as the power cable is connected.
- Two independent safety circuits are designed to continuously monitor the equipment. When the sensor malfunctions and overheating occurs, an error code will be generated and the stirrer will stop heating. When the first safety circuit is shorted, the second safety circuit will cut off the power supply to ensure the safety of the operator

Applications

- Magnetic stirrer with heating sleeve is a very popular product for laboratories in scientific research, industry and mining, food processing, biochemistry, agriculture, petrochemical, pharmaceutical, and educational aspect. It is used for heating and incubation of liquids at a certain temperature. It provides fast and uniform heating with highly precise temperature control and strong stirring power. It can serve as a magnetic stirrer with heating sleeve, or as a magnetic stirrer and a heating sleeve .



Labware

Heating Mantle model	100 ML	250 ML	500 ML	1000 ML	100 ML	250 ML	500 ML	1000 ML
Picture								
Specification	Beaker	Beaker	Beaker	Beaker	Flask	Flask	Flask	Flask
Capacity	100 ml	250 ml	500 ml	1000 ml	100 ml	250 ml	500 ml	1000 ml
Heating Mantle Inner Diameter	54.75mm	72.75mm	89.75mm	118.75mm	72.75mm	89.75mm	118.75mm	144.75mm



Specification

Specifications	ESL58444	ESL58441
Motor type	Brushless DC motor	Brushless DC motor
Speed range [rpm]	200-1500rpm	200-1500rpm
Speed control accuracy [rpm]	±20rpm	±20rpm
Speed display	LCD	LCD
Temperature display	LCD	LCD
Temperature control range [°C]	25-280°C	25-280°C
“Hot” warning	50°C	50°C
Overheat protection [°C]	420°C	420°C
Temperature display accuracy [°C]	±0.1°C	±0.1°C
Heating liquid temperature control accuracy	±1°C(<100°C), ±1%(>100°C)	±1°C(<100°C), ±1%(>100°C)
External temperature sensor	PT1000 (accuracy ±0.2°C)	PT1000 (accuracy ±0.2°C)
Protection class	IP21	IP21
Motor input power [W]	1.8W	1.8W
Heating power [W]	210W/240W/380/440W	210W/240W/380/440W
Voltage, Frequency	100-120V,60Hz;200-240V,50Hz	100-120V,60Hz;200-240V,50Hz
Dimension [WxDxH]	295X160X160mm	295X160X160mm
Weight	3.7Kg	3.7Kg
Permissible ambient temperature	5-40°C	5-40°C
Permissible ambient humidity	80%	80%
Compatible containers	100mL、250mL、500mL、1000mL flat bottom beakers	100mL、250mL、500mL、1000mL round bottom flasks



Hot Plat Magnetic Stirrer Multi ESL58446



Labware

Electronic speed control for constant speed even during changes in load

Maximum speed of 1100rpm

Max. temperature 120°C (liquid temp. 70C)

All 10 positions are controlled simultaneously

High magnetic adhesion, Skid resistance

Maintenance-free brushless DC motor

Stainless steel work plate, covered with silicone cushion, provides the excellent performance of heating uniformity and skid resistance

cTUVus approved for UL and CSA

2 YEAR WARRANTY

The MS-H-S10 10-place multi-position hotplate stirrer features a powerful rotary drive providing consistent sample conditions across each position, diameter up to 3 inches, volumes up to 400mL/beaker, 250mL/Erlenmeyer flask. heat only, stir only, or heat and stir simultaneously. The stirrer surface is stainless steel with a silicone anti-slip mat which is chemical resistant and easy-to-clean.

MS-H-S10 10-Position Analog Magnetic Hotplate Stirrer

Specifications:

Work plate dimension 180x450mm

Work plate material-Stainless steel with silicone

Motor type-Brushless DC motor

Motor rating input-12W

Motor rating output-4W

Power-490W

Heating output-470W

Voltage-100-120/200-240V 50/60Hz

Stirring positions-10

Max. stirring quantity-0.4Lx10

Max. magnetic bar[length] 40mm

Speed range 0-1100rpm

Speed display Scale

Temperature display Scale

Heating temperature range Room Temp.-120°C (liquid temperature 70°C)

Overheating protection 140°C

Protection Class IP42


















Dimension[WxDxH] 182x622x65mm

Weight 3.2kg










Permissible ambient temperature and humidity 5-40°C, 80%RH



Accessories:

Cat. No.	Photo	Description	ESL58444	ESL58441 & ESL58442	ESL58439	ESL58443	ESL58440
58400001		Blue carrying plate, use with color quarter pies			■	■	
58400065		Blue Fixed ring, use with color quarter pies			■	■	
58400002		Red quarter pie, 11 holes, 4mL reaction vessel, Ø15.2 mm, 20 mm depth	■	■	■	■	■
58400003		Purple quarter pie, 4 holes, 20 mL reaction vessel, Ø28mm, 24 mm depth	■	■	■	■	■
58400004		Blue quarter pie, 4 holes, 30 mL reaction vessel, Ø28mm, 30mm depth	■	■	■	■	■
58400005		Black quarter pie, 4 holes, 40 mL reaction vessel, Ø28mm, 43mm depth	■	■	■	■	■
58400048		Green quarter pie, 6 holes, 8 mL reaction vessel, Ø17.8 mm, 26mm depth	■	■	■	■	■
58400049		Golden quarter pie, 4 holes, 16 mL reaction vessel, Ø21.6 mm, 31.7 mm depth	■	■	■	■	■
58401006		Reaction block for 50mL round bottom flask (one flask capacity)			■	■	
58401007		Reaction block for 100mL round bottom flask (one flask capacity)			■	■	
58401008		Reaction block for 250mL round bottom flask (one flask capacity)			■	■	
58401009		Reaction block for 500mL round bottom flask (one flask capacity)			■	■	
58400019		F101 protective over, temperature resistance of 135°C			■	■	
58400016		PT10000-A, length of 230mm	■	■	■	■	■
58400136		PT1000-B, temperature sensor with glass coated, length of 230mm	■	■	■	■	■
58400017		Support clamp of PT1000 Vertical bar length : 45 cm, stents length : 25 cm, Stem diameter:10 cm	■	■	■		
58400540		Support clamp of PT1000 Vertical bar length : 15 cm, stents length : 18 cm, Stem diameter:10 cm				■	■



Cat.NO.	Photo	Name of stirrer bars	Size [mm]
58400693		Stirrer bar, cross	Ø 5 X 10
58400694		Stirrer bar, cross	Ø10 X 20
58400695		Stirrer bar, cross	Ø 9 X 25
58400696		Stirrer bar, cross	Ø 10 X 30
58400697		Stirrer bar, cross	Ø 11 X 38
58400698		Stirrer bar, cross	Ø 20 X 65
58400699		Stirrer bar, Triangular prism	Ø 14 X 25
58400700		Stirrer bar, Triangular prism	Ø 14 X 50
58400701		Stirrer bar, Triangular prism	Ø 9 X 35
58400702		Stirrer bar, Triangular prism	Ø 14 X 80
58400703		Stirrer bar, Gear shape	Ø 8 X 30
58400704		Stirrer bar, Gear shape	Ø 8 X 38
58400705		Stirrer bar, Gear shape	Ø 10 X 50
58400706		Stirrer bar, ellipse	Ø 10 X 20
58400707		Stirrer bar, ellipse	Ø 12 X 25
58400708		Stirrer bar, ellipse	Ø 11 X 30
58400709		Stirrer bar, ellipse	Ø 15 X 35
58400710		Stirrer bar, ellipse	Ø 20 X 40
58400711		Stirrer bar, ellipse	Ø 20 X 50
58400712		Stirrer bar, ellipse	Ø 22 X 70
58400713		Stirrer bar, slide round	Ø 6 X 25
58400714		Stirrer bar, slide round	Ø 6 X 30
58400715		Stirrer bar, slide round	Ø 8 X 40
58400716		Stirrer bar, slide round	Ø 8 X 50
58400717		Stirrer bar, slide round	Ø 10 X 60
58400718		Stirrer bar, slide round	Ø 13 X 80
58400719		Stirrer bar, slide round	Ø 24 X 159
58400720		Stirrer bar, Eight prism	Ø 8 X 20
58400721		Stirrer bar, Eight prism	Ø 10 X 30
58400722		Stirrer bar, Eight prism	Ø 8 X 40
58400723		Stirrer bar, Eight prism	Ø 8 X 50
58400724		Stirrer bar, Eight prism	Ø 9 X 90
58400725		Stirrer bar, round	Ø 27 X 57
58400726		Stirrer bar, round	Ø 27 X 108
58400727		Stirrer bar, round	Ø 27 X 159
58400728		Stirrer bar, round	Ø 6 X 10
58400729		Stirrer bar, round	Ø 8 X 15
58400730		Stirrer bar, round	Ø 8 X 20
58400731		Stirrer bar, round	Ø 8 X 25
58400732		Stirrer bar, round	Ø 6 X 30
58400733		Stirrer bar, round	Ø 8 X 40
58400734		Stirrer bar, round	Ø 8 X 50
58400735		Stirrer bar, round	Ø 8 X 65
58400736		Stirrer bar, round	Ø 13 X 8
58400737			Stirrer bar, crown	Ø 9 X 6
58400738		Stirrer bar remover	Length 30 cm
58400739		Stirrer bar remover	Length 25 cm

Cat.NO./Picture	ES1 Set of magnetic stirring bars	Cat.NO./Picture	ES 2 Set of magnetic stirring bars
 58400740	Stirrer bar, round, Ø6X10, 2	 58400741	Stirrer bar, round, Ø8X40, 2
	Stirrer bar, round, Ø6X15, 2		Stirrer bar, Eight prism, Ø8 X 40, 2
	Stirrer bar, round, Ø8X20, 2		Stirrer bar, Gear shape, Ø8 X 30, 2
	Stirrer bar, round, Ø8X25, 2		Stirrer bar, slide round, Ø8 X 40, 2
	Stirrer bar, round, Ø6X30, 2		Stirrer bar, ellipse, Ø20 X 40, 2
	Stirrer bar, round, Ø8X40, 2		Stirrer bar, cross, Ø9 X 25, 2
	Stirrer bar, round, Ø8X50, 2		Stirrer bar, crown, Ø9X6, 2
	Stirrer bar, round, Ø10X80, 2		Stirrer bar, round, Ø8X50, 2
	Stirrer bar, Triangular prism, Ø14 X 25, 2		Stirrer bar, Triangular prism, Ø9 X 35, 2
	Stirrer bar, Triangular prism, Ø14 X 50, 2		



Heating Mantle Controlled

Heating mantle Control Method : Proportional Voltage Control.

Based on the user's need, before using, the temperature should be controlled by using a separate thermometer. As the heated part (heated object) is hand-woven using fibre glass, fire is prevented by a built-in thermal protector, which automatically shuts down, the product in case the inside temperature exceeds an appropriate temperature.

The product resumes normal operation when the inside temperature returns to normal. Thermal insulation uses non-toxic asbestos-free ceramic wool (fiber glass).

There are two kinds of heated part shape like flask type and beaker type. Products installed temperature voltage controller.

Case Construction Steel, with chemically resistant powder coating Thermal Insulation Asbestos-free ceramic wool. (Fibre glass)
Heating Element Ni-chrome wire

Mantle Woven glass fibre mat

Heating Element Temperature Up to 450 °C, Maximum

Supply Voltage & Frequency AC 110-220V (or 220-230V), 50/60Hz

Features

- Non-Asbestos
- Heater section was hand woven in use of fiber glass.
- Body case was painted by resistant power coating
- Several kinds capacity
- There are two kinds of Flask & Beaker
- Heating Mantle & Stirrer Function(End ST Series)
- Speed control from 50 RPM to 1,200 RPM

Technical Description

- Heating material : Nichrome wire
- Heating Temperature : Up to 450°C(Max)
- Mantle material : Woven glass fiber mat



MODEL	Capacity	Flask Dia	Dimension	Wattage	Depth	Weight
ESL58455	100mL	63-66mm	Ø145x 140(H)mm	80	40	1.4kg
ESL58456	250mL	83-86mm	Ø145 x 140(H)mm	150	50	1.4kg
ESL58457	500mL	102-105mm	Ø190 X 165(H)mm	230	65	1.6kg
ESL58458	1000mL	130-133mm	Ø190 X 140(H)mm	330	75	2.2kg
ESL58459	2000mL	165-169mm	Ø190 140(H)mm	470	100	3.5kg
ESL58460	3000mL	184-187mm	Ø190 x 140(H)mm	570	105	4.3kg
ESL58461	5000mL	221-237mm	Ø 325 x 140(H)mm	850	131	6kg

MODEL	Capacity	Flask Dia	Dimension	Wattage	Depth	Weight
ESL58455ST	100mL	63-66mm	Ø145x 140(H)mm	80	40	1.4kg
ESL58456ST	250mL	83-86mm	Ø145 x 140(H)mm	140	50	1.4kg
ESL58457ST	500mL	102-105mm	Ø190 X 165(H)mm	240	65	1.6kg
ESL58458ST	1000mL	130-133mm	Ø190 X 140(H)mm	350	75	2.2kg
ESL58459ST	2000mL	165-169mm	Ø190 140(H)mm	450	100	3.5kg
ESL58460ST	3000mL	184-187mm	Ø190 x 140(H)mm	550	105	4.3kg
ESL58461	5000mL	221-237mm	Ø 325 x 140(H)mm	800	131	6kg



Cat.No.	Block types	Capacity	Diameter Depth
58400459		0.2mL×30	6.4×15mm
58400410		0.5mL×20	8.2×26.4mm
58400461		1.5mL×20	11×34.7mm
58400462		2mL×20	11×34.7mm
58400412		5/15mL×12	17×48mm
58400413		50mL×4	29.8×48mm
58400522		Two-in-one block, bead bath/water bath Adapt to S1	
58400523		Two-in-one block, bead bath/water bath Adapt to S2	
58400520		Aluminum beads	



Dry Bath (Block Heater) Digital LED

ESL58448 - ESL58449
ESL58450 - ESL58451

Features

- A wide range of temperature control up to 105°C/150°C.
- Overheating protection.
- Sound reminder function.
- External temperature sensor PT1000
- Block equipped with a lid for heat preservation and prevent pollution.
- Knob adjustment is easy to operate.



Specifications	ESL58448	ESL58449	ESL58450	ESL58451
Temperature range[° C]	Room temp+5-105	Room temp+5-105	Room temp+5-150	Room temp+5-150
Temperature setting range [° C]	25-105 25-90: ±0.3	25-105 25-90: ±0.3	25-150 25-90: ±0.3	25-150 25-90: ±0.3
Temperature control accuracy [° C]	90-105: ±0.6	90-105: ±0.6	90-150: ±0.6	90-150: ±0.6
Temperature uniformity@37°C [° C]	±0.2	±0.2	±0.2	±0.2
Power [w]	100	200	100	200
Time setting range	0-99h59min	0-99h59min	0-99h59min	0-99h59min
External sensor	Yes	Yes	Yes	Yes
Display	LED	LED	LED	LED
Power supply	110/220V, 50/60Hz	110/220V, 50/60Hz	110/220V, 50/60Hz	110/220V, 50/60Hz
External dimension[mm]	290x210x120	290x210x120	290x210x120	290x210x120
Weight[kg]	3.2	3.2	3.2	3.2
Operating temperature[° C]	+10-40	+10-40	+10-40	+10-40
Operating humidity [% RH]	<80	<80	<80	<80





Water Still 4 Ltr /Hour Borosil Basic

Features : Abundant Output. The still provides, 4 litres/hr of distilled water produced through a power input of 3KW by a chromium plated heater housed in a horizontal Glass Boiler Distilled output is cool ensured by a high efficiency condenser. Temperature of distillate 25°C - 40°C tested for ambient room temperature of 30° C. CE MARKED Dimensions (W x D x H) 50 cm x 15 cm x 45cm, 50 cm x 20 cm x 55cm Weight 6 kg. Approx., Power 220/240V, 50/60 Hz. Single phase. 3KW Heater. Water Supply Min. Flow rate 1 litre/min. Min. Pressure 3 p.s.i. (0.2 x 105 NM-2) Ideal for general Laboratory use- capable of producing pyrogen free water. Output 4 lit/hr Conductivity (using raw water) 3.0 - 4.0 µS/cm Conductivity (using treated water) 1.5 - 2.0 µS/cm PH 5.5 - 6.0 Distillate quality Pyrogen free Construction The stand is powder coated for long rust free Operation. Heater is a 3KW Chromium plated heater fitted with a thermostat, which shuts off automatically in case of water supply failure. The Boiler & Condenser are designed for high efficiency and provided with threading for easy plumbing of condenser. Boiler is provided with Teflon screw cork for insitu cleaning of the boiler. All plumbing connections to the equipment are made via Screw thread connectors Our water still has following additional safety features: Gate Valve : Prevents water wastage. Flow Switch : For Boiler Safety On/Off switch with water failure indicator lamp. Packing Info: packing **Dimensions** : 50 cm x 47 cm x 46 cm. Gross - **Weight** : 12.00 kgs.

ESL58354



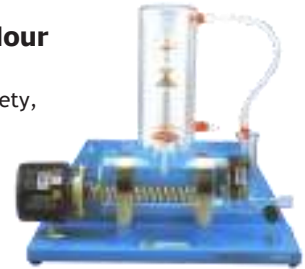
Water Still 4 Ltr /Hour Metal Element

For a continuous supply of distilled water. The evaporation unit is Simply connected to an existing water supply system. Easy to operate and clean. Versions are available for 110 V/60 Hz and 230 V/50 Hz. All connections included. Without tubing. Technical data : Distilled water per hour : 4 litres Conductivity : 1,5 - 2,5 µS Connected load : 3 kW Tubing : 10 mm - Weight : 9 kg Dimensions (H x L x W) : 600 x 190 x 190 mm

ESL58353

Water Still 4 Ltr /Hour Borosil Basic Plus

Cap: 4 ltrs / hr, Single Safety, Pressure Temperature Switch with manual reset button- with UK PLUG and ON/OFF switch on the heater. CE Certified.



ESL58355



Water Still 4 Ltr /Hour Borosil Basic Pro

Cap: 4 ltrs / hr, Dual Safety, with two Pressure - Temperature Switch with manual reset button- with UK PLUG and ON/OFF switch on the heater. - CE Certified.

ESL58356

Automatic Water Still

The optimum performance AUTOMATIC WATER STILL, WATER DISTILLER & AUTOMATIC DOUBLE WATER STILL with its proven features & stylish design This advanced Automatic Water Still, Water Distillers and Automatic Double Water Still produces and reserves distilled water on the important basis of high-effectiveness automated mechanism. With its up-to-date design and practically large-sized storage reservoir, this superior equipment offers exceptional value for end-users.



Individual Specification per Model

MODEL	Automatic Water Still (with the storage tank)			Water Distiller (without tank)		Automatic Double Water Still (with the storage tank)
	ESSWS-701	ESWS-702	ESWS-703	ESWD-501	ESWD-502	ESWS-701D
Product Water	4 Liters / hr	8 Liters / hr	12 Liters / hr	8 Liters / hr	4 Liters / hr	4 Liters / hr
Heater	3 KW	6 KW	3 KW	9 KW	6 KW	9 KW
Cooling Water	40 Liters	70 Liters	90 Liters	40 Liters	70 Liters	50-70 Liters
External Dimension (L X D X H) (mm)	750 X 395 X 640	750 X 395 X 640	750 X 395 X 640	355 X 385 X 656	520 X 520 X 730	750 X 670 X 670
Storage Tank	20 Liters	20 Liters	20 Liters			20 Liters
Supply Voltage & Frequency	230V, 50/60Hz	230V, 50/60Hz	230V, 50/60Hz	230V, 50/60Hz	230V, 50/60Hz	230V, 50/60Hz (or 380V, 50/60Hz if customer request)
Material	Interior Construction: Stainless Steel (Boiler and Storage Tank), Exterior Construction: Steel Plate with Powder Coating					
Safety Device	Over Temperature Limit/Over Current Glass Fuse, Water Float Level Sensor/Water Supply Cut Off					

Design and Specifications can be changed without notice for quality improvement.





Water Still 4 Ltr /Hour Borosil Silica Heater

Single Water Distillation Unit with 3 KW Silica Heater, Cap: 4 ltrs / hr.

Features :

Gate Valve to prevent water wastage. Flow switch for boiler safety.

Teflon drain cock for easy maintenance. High quality distillate.

Power coated stand. Safety

Built - in.

Silica Heater

Provided with a threaded Connection for easy, safe and quick assembly of Silica Heater.

Easy Cleaning

The Boiler is provided with a Teflon screw cock for easy cleaning of the boiler

Screw Thread Connectors

All plumbing connections are via screw thread connectors with silicon rubber 'o' rings. This facilitates easy fitting and removal of hose, without using excessive force, avoiding the danger of glassware breakage during assembly.

With over Heat protection : Pressure Temperature Switch (PTS): Shuts off the unit when water level in the boiler falls below the heater.

ESL58357



Water Still 4 Ltr /Hour Borosil Automatic Double Distillation

Water still borosilicate Glass, Cap: 4 ltr/hr, 4 ltr/hr, Double Distillation with automatic cabinet . it is ideal for procuring ultra high purity water for demanding applications in the laboratory / tissue culture work.

it incorporates several safety devices for optimum use in hospitals and labs and has been designed to meet the International Safety Standards IEC 61010-01. Special features include Flow Control Safety, Gate Valve, Level Sensor as well as a Reservoir Level Sensor for automatic operation of the unit.

ESL58359

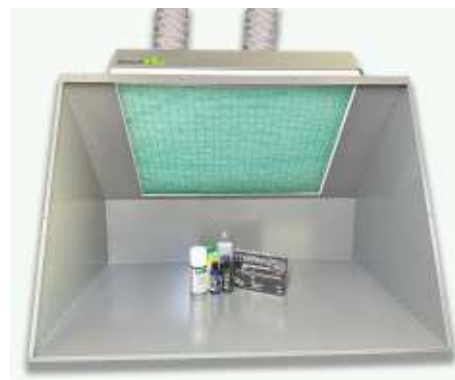


Water Still 4 Ltr /Hour Borosil Automatic Single Distillation

Water still borosilicate Glass, Cap: 4 ltr/hr, single distillation with automatic cabinet . it is ideal for procuring ultra high purity water for demanding applications in the laboratory / tissue culture work.

it incorporates several safety devices for optimum use in hospitals and labs and has been designed to meet the International Safety Standards IEC 61010-01. Special features include Flow Control Safety, Gate Valve, Level Sensor as well as a Reservoir Level Sensor for automatic operation of the unit.

ESL58358



Ducted Spray Booth

This A1 hood mounted extraction cabinet captures, filters and expels within art, graphics, design technology areas to ensure that model makers, hobbyists, students or employees can operate in a safe working environment free of particulates.

included :

Filter unit with 2 x centrifugal fans

Hood Enclosure

2 x 2mtrs Flexi-Ducts - 100mm diameter

1 x Particulate filter

Power Lead

Data/Warranty Booklet

Dimensions : 950x680x615 (wxhxd) [internal] 955x750x740 (wxhxd) [overall] - Weight : 37 kg

Description

Steel construction finished in grey - fan/filter unit mounted onto hood enclosure - particulate filter - 2 x centrifugal blowers - external rotor motor type, brushless, UL, VDE and CSA approved - sealed electrical wiring and switch, downstream of filter. 2 Flexi-ducts each 2 metres x 100mm dia.

Air Volume at Free Air : 710m³/hr

Ave. Air Velocity at Filter Face : 0.60 m/sec

Ave. Air Velocity at Hood Face : 0.27 m/sec

Fan Motor Spec : 230V 50Hz 210W, 115V 60Hz 250W

Filters : Particulate Filter: IFA2

ESL58390





Bench Top Environment Cabinet Enclosure

Sealed environment enclosure for sensitive sample handling -NO Transfer Hatch, Supplied with Nitrite glove ports, 2 x 8mm push-fit gas connections and internal power socket. Green Base

ESL58371



Ducted Fume Extractor Cabinet

flagship hood mounted extract-to-atmosphere cabinet. It's been designed to capture, contain, filter and expel harmful contaminants within electronic design & rework, dental/medical labs, pharmaceutical labs and classroom environments.

- included :
- Filter unit with centrifugal fan
- Hood Enclosure
- Hood Light
- Polycarbonate front panel
- Particulate filter
- 2mtrs x 100mm dia flexi-duct
- Power Lead

- Data/Warranty Booklet
- 2mtrs flex-duct
- Clear polycarbonate panel for protection
- Hood lighting
- Dimensions : 675x445 (wxd) [internal] 680x610x610 (wxhxd) [overall]
- 26kg Weight
- Description

Steel construction finished in grey - fan/filter unit mounted onto hood enclosure complete with clear polycarbonate panel and hood lighting - particulate filter - centrifugal blower, external rotor motor type, brushless, UL, VDE and CSA approved - sealed electrical wiring and switch, downstream of filter. Flexi-duct 2 metres x 100mm dia.

Air Volume at Free Air : 355 m3/hr
 Ave. Air Velocity at Filter Face : 0.60 m/sec
 Ave. Air Velocity at Hood Face : 0.55 m/sec
 Fan Motor Spec : 230V 50Hz 45W, 115V 60Hz 125W
 Filters : Standard Particle Filter - IFA3P
 Noise Level LAeq dB(A) : 58 db(A) **ESL58382**



Ducted Fume Extractor Cabinet 2

large ducted hood mounted local extraction cabinet designed specifically for laboratories. It is commonly used in dental & medical labs, pharmaceutical laboratories, research & development and school science laboratories.

Suitable to filter fumes, vapours and particulates from:
 Spray Adhesives - Conformal coatings (thin polymer film usually used to coat circuit boards) - Paints - Monomers - Resin - Sealants - Solders - Light Grinding - Organic Solvents - Cleaners - Hazardous powders & particulates included :

- Filter unit with 2 x centrifugal fans
- Hood Enclosure - Hood Light - Polycarbonate hinged front panel
- 2 x 2mtrs flexi-duct - 100mm diameter - Particulate filter - Power Lead - Data/Warranty Booklet - Lifetime Guarantee
- Dimensions : 950 x 640 x 615 (wxhxd) [internal] 955 x 750 x 800 (wxhxd) [overall] - 44kg weight
- Description :

Steel construction finished in grey - fan/filter unit mounted onto hood enclosure complete with clear polycarbonate panel and hood lighting - particulate filter - 2 x centrifugal blowers, external rotor motor type, brushless, UL, VDE and CSA approved - sealed electrical wiring and switch, downstream of filter. Flexi-ducts; 2 meters x 100mm dia.

Air Volume at Free Air : 710 m3/hr
 Ave. Air Velocity at Filter Face : 0.60 m/sec
 Ave. Air Velocity at Hood Face : 0.6 m/sec
 Filters : Standard Particle Filter - IFA2P. Upgraded Filters - EPA705P or HEPA705P
 Noise Level LAeq dB(A) : 60 db(A)

ESL58386



Particle Filter Ifa2p (Pack Of 6)

ack of 6 particle filters IFA2. For general spray and dust particle capture

ESL58402





Spray Booth

it is general purpose hood mounted filtration cabinet and workstation for light aerosol spray and airbrush use for fume/vapour adsorption and dilution. It designed for use within art, graphics, design technology areas, crafts and modelling. It has a big working space and can accommodate up to an A1 size artwork, as well as prototypes, scale models, ceramics, PCBs and more.

It will extract fumes and filter particles created by: Aerosol Adhesives - Lacquers - Fixatives - Airbrush Sprays - Solders - Light Grinding - Key Features - A1 drawing boards can be placed into the hoods at an angle for efficient overspray capture.

The workstation hood also accommodates prototypes, models, ceramic parts, PCB's etc, placed onto the hood base to be sprayed, soldered, cleaned, glued, moulded, sanded etc.

Included : BV100H Filter unit with 2x axial fans - Hood Enclosure
1 x Particulate filter - 1 x Charcoal Impregnated fibre filter

Power Lead - Data/Warranty Booklet

Dimensions: 950x680x615 (wxhxd) [internal] 955x740x730 (wxhxd) [overall] - 35kg Weight

Description : Steel construction finished in grey - fan/filter unit mounted onto hood enclosure - particulate filter - carbon impregnated fibre filter - 2 x axial fans, external rotor motor type brushless, UL, VDE and CSA approved - sealed electrical wiring and switch, downstream of filters.

Air Volume at Free Air: 650 m3/hr - Ave. Air Velocity at Filter Face : 0.50 m/sec - Ave. Air Velocity at Hood Face: 0.3 m/sec - Fan Motor Spec : 230V, 50Hz, 90W, 115V 60Hz 84W - Filters : Particle Filter - IFA2, Charcoal Filter -CHA2, Filter Kit - FKA2 - Noise Level LAeq dB(A): 61 db(A)

ESL58409

High Efficiency Filter Cabinet

This is a high-efficiency filter cabinet with acrylic capture shield to contain and filter fumes and Particles within dental labs, electronic design, pharmaceutical labs, and classroom environments.

Included : Filter unit with centrifugal fan - Acrylic Spray Shield - 1 x Particulate filter
1 x Activated Carbon filter - Power Lead - Data/Warranty Booklet - Folding clear Polycarbonate plastic fume shield Carry handle - Sturdy steel construction

Dimensions : 500x385x530 (wxhxd) - 25kg Weight

Description : Fan/filter casing (steel construction finished in grey) - clear PETG folding plastic fume shield particulate (Intake Filter) - 3.5kg bonded carbon filter centrifugal blower, external rotor motor type brushless, UL, VDE and CSA approved - sealed electrical wiring and switch, downstream of filters.

Air Volume at Free Air : 355m3/hr - Ave. Air Velocity at Filter Face: 0.55m/sec - Ave.

Air Velocity at Shield Face : 0.38m/sec - Filters : FA3 Particle Filter, AC200 Activated Carbon Filter. EPA Fine Particle filter available as optional extra and upgraded HEPA - Fan Motor Spec : 230V 50Hz 105W - Noise Level LAeq db(A) : 60

ESL58398



Hood Mounted Filtration Cabinet

it is large dual-speed hood mounted filtration cabinet with high-efficiency carbon filter. It is designed to offer local exhaust ventilation for large projects, and immediate operator protection when external venting isn't possible.

Applications: it is suitable to filter fumes, vapours and particulates from: Spray Adhesives

Conformal coatings (thin polymer film usually used to coat circuit boards) - Paints - Monomers - Resin

Sealants - Solders - Light Grinding - Organic Solvents - Cleaners

Other hazardous powders and particulates

Dimensions : 955x800x850mm (overall) 950x640x615 (wxhxd) [internal] 60kg Weight

Description: Steel construction finished in grey - fan/filter unit mounted onto hood enclosure complete

with clear polycarbonate panel and hood lighting - particulate (intake) filter - bonded carbon filter

2 x centrifugal blowers, external rotor motor type brushless, UL, VDE and CSA approved - sealed electricals, downstream of filters. - Air Volume at Free Air : 710m3/hr - Ave.

Air Velocity at Filter Face : 0.57m/sec (0.40m/sec slow setting) - Ave. Air

Velocity at Hood Face : 0.50m/sec (0.39m/sec slow setting) - Fan Motor Spec : 230V, 50Hz, 210W, 115V 60Hz 220W

Filters : Particle Filter: IFA2 - Carbon Filter: AC100 - Optional EPA Filter: EPA705P or HEPA Filter HEPA705PESL58394

ESL58394



Water Swan Neck Tap Cold With Lever

Swan Neck Tap - Cold with Lever

ESL58550

Water Swan Neck Tap Hot

Swan Neck Tap - Hot

ESL58551



Gas Tap 2 Way 180 Degree

Gas tap double for bench mounting

ESL58559

Water Mixer Swan Neck Tap With Lever

Swan Neck Mixer Tap with Lever

ESL58549



Gas Tap 2 Way 90 Degree

Gas tap double for bench mounting

ESL58558



Vortex Mixers



ES Vortex Mixers are ideal instruments for mixing liquid components in tubes, resuspension of cells, using an eccentric mechanism. They are widely used in biological and chemical analysis applications.

Vortex Mixer Adjustable Speed ESL58495

Vortex Mixer Fixed Speed ESL58494

Features:

- Touch operation or continuous mode
- Variable speed control from 0 to 2500rpm (ESL58495)
- Fixed Speed 2500rpm (ESL58494)
- Used for various mixing applications with optional adapters (ESL58495)
- Specially designed vacuum suction feet for body stability
- Robust aluminum-cast construction



Wide range of accessories



Standard top (Default)

for $\varnothing 30\text{mm}$ tubes and small vessels


Cat. No. ES000034




Specifications	ESL58495 (Adjustable speed)	ESL58494 (Fixed speed)
Voltage	100-120V/200-	100-120V/200-
Power	60W	60W
Mixing motion	Orbital	Orbital
Orbital diameter	4mm	4mm
Motor type	Shaded pole motor	Shaded pole motor
Motor rating input	58W	58W
Motor rating output	10W	10W
Speed range	0-2500rpm	2500rpm
Speed display	Scale	-
Run type	Touch operation/ Continuous	Touch operation/ Continuous
Dimension[W×H×D]	127×130×160mm	127×130×160mm
Weight	3.5kg	3.5kg
Permissible ambient temperature	5-40°C	5-40°C
Permissible relative humidity	80%RH	80%RH
Protection class	IP21	IP21




VT1.3.1 tube adapter Cat. No. 58490020
for 48 test tubes, Ø6mm (1mL)




VT1.3.2 tube adapter Cat. No. 58490021
for 15 test tubes, Ø10mm (1.5-2mL)




VT1.3.3 tube adapter Cat. No. 58490022
for 16 test tubes, Ø12mm (5mL)




VT1.3.4 tube adapter Cat. No. 58490023
for 8 test tubes, Ø16mm (10mL)




VT1.3.5 tube adapter Cat. No. 58490024
for 8 test tubes, Ø20mm (10-15mL)




VT1.3.6 Platform pad Cat. No. 58490043
Ø99mm, multiple small tubes and vessels




VT1.3.7 vacuum chuck Cat. No. 58490158
made of rubber




VT1.3.8 tube adapter Cat. No. 58490395
for 24 holes test tubes, Ø 10mm (1.5-2mL)




VT1.3.9 PCR tube adapter Cat. No. 58494185
for 56 test PCR tubes, strips of 8 , Ø5mm (0.1mL-0.5mL)




VT1.3.10 tube adapter Cat. No. 58490855
for 4 holes test tubes, Ø28mm (50mL)




VT1.3.11 Tube adapter Cat. No. 58490862
12XØ9.8mm+12XØ6.6mm+12XØ5mm (1.5/2.0/0.5/0.2mL)



VT1.3.12 Large Platform Multi-Specimen Test Tube Adapter Cat. No. 58490875
44 holesXØ5mm+55 holesXØ6.6mm+30 holesXØ9.8mm (1.5/2.0/0.5/0.2mL)




VT1.2 Tube holding rod Cat. No. 5849044
used with tube adapters



VT1.3 Universal top plate Cat. No. 58490505
Ø 100mm



PS1.0 Microplate clamp Cat. No. 58494342



Application of accessories

Accessories	Adjustable speed model (0-2500rpm)	
	Touch mode (High speed area)	Continuous mode (Low speed area)
VT1.1	Y	Y
VT1.2 + VT1.3.1	Y	
VT1.2 + VT1.3.2	Y	
VT1.2 + VT1.3.3	Y	
VT1.2 + VT1.3.4	Y	
VT1.2 + VT1.3.5	Y	
VT1.3 + VT1.3.6	Y	
VT1.3 + VT1.3.1		Y
VT1.3 + VT1.3.2		Y
VT1.3 + VT1.3.3		Y
VT1.3 + VT1.3.4		Y
VT1.3 + VT1.3.5		Y





ES rotators give gentle but effective mixing of biological samples held in 1.5mL to 50mL tubes, and are used in a variety of applications including immune precipitations, prevention of blood coagulation, latex diagnostics, etc.

Digital Rotator LCD ESL58490

Features

- Electronic adjustment of speed and time
- LCD display of speed and time
- Speed range from 10 to 70rpm
- Rolling action, gives gentle but effective mixing
- Adjustable mixing angle from 0 to 90°
- A wide variety of accessories are available

Economical Rotator ESL58489

Features

- Provides gentle and effective mixing of biological samples
- Adjustable speed range from 0 to 80rpm
- A wide variety of accessories are available



LCD display



Adjustable angle



Wide range of accessories



Specifications	ESL58490	ESL58489
Motor type	DC motor	DC motor
Tilt angle	0-90°	-
Speed range	10-70rpm	0-80rpm
Speed display	LCD	Scale
Timer display	LCD	Scale
Timer	1-1199min	-
Operation mode	Continuous / timer	Continuous
Voltage	100-240V, 50/60Hz	100-240V, 50/60Hz
Power	40W	20W
Dimension [D×W×H]	280×210×300mm	300×220×310mm
Permissible ambient temperature and humidity	5-40°C, 80%RH	5-40°C, 80%RH
Protection class	IP21	IP21



LCD Digital Tube Roller ESL58487

Features

- LCD displays the speed and time
- Speed range of 10-70rpm
- Six roller design for gentle rolling and easy to clean
- Continuous or timer operation



Tube Roller ESL58486

Features

- Speed range of 0-70rpm
- Six roller design for gentle rolling and easy to clean

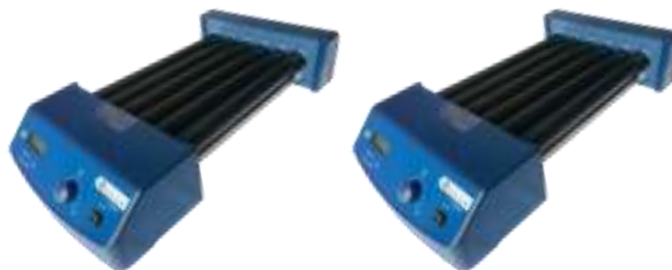
ES tube rollers provide a gentle and highly efficient rolling motions, ideal for mixing blood samples, viscous substances and liquid-solid suspensions. Used in a variety of applications, such as the prevention of blood coagulation, immune precipitation, etc.



LCD display



Timer



Specifications	ESL58487	ESL58486
Amplitude	24mm	24mm
Motor type	DC motor	DC motor
Rocking motion	Rocking and rolling	Rocking and rolling
Max. load capacity	4kg	4kg
Number of rollers	6	6
Roller size[length]	280mm	280mm
Speed range	10 -70rpm	0-70rpm
Speed display	LCD	Scale
Timer	Yes	-
Timer display	LCD	-
Time setting range	1-1199min	-
Operation mode	Continuous/timer	Continuous
Voltage	100-240V,50/60Hz	100-240V,50/60Hz
Power	30W	25W
Dimension [D×W×H]	450×260×120mm	450×260×120mm
Weight	5.1kg	4.5kg
Permissible ambient temperature and humidity	5-40°C,80%RH	5-40°C,80%RH
Protection class	IP21	IP21





ESL58497/10



ESL58497/4



Orbital Motion

LCD Digital Orbital Shaker

ESL58497/10

ESL58497/4

Features

- Independent LCD display for speed and time
- Compact footprint
- Provides smooth and uniform shaking
- Two options: 7.5 kg (O330) with platform and 2.5kg (O180) with platform speed range 100-500 rpm and 100-800 rpm
- Continuous or timer operation mode
- Maintenance- free brushless DC motor
- Over speed detection and protection
- Wide range of optional platform for flasks, and other popular vessels
- Remote function provides PC control and data transmission
- Free software for PC control & data logging

Applications

Suitable for mixing in culture dishes, flasks and beakers. Ideal for aeration and extraction applications. It can be used in

environmental chambers and CO2 incubators.

Specifications	ESL58497/10	ESL58497/4
Orbital diameter	10mm	4mm
Max. load capacity (with platform)	7.5kg	2.5kg
Motor type	Brushless DC motor	Brushless DC motor
Motor input power	28W	28W
Motor output power	15W	15W
Speed range	100-500rpm	100-800rpm
Speed display	LCD	LCD
Timer display	LCD	LCD
Time settings range	1min-99h59min	1min-99h59min
Voltage, Frequency	100-240V, 50/60Hz	100-240V, 50/60Hz
Power	30W	30W
Weight	12kg	8.1kg
Permissible ambient temperature and humidity	5-40°C, 80%RH	5-40°C, 80%RH
Dimension[WxDxH]	370x420x100mm	300x340x100mm
Protection class	IP21	IP20
Data connector	RS232	RS232



Rocking Shaker Platform Fixed ESL58499

Features

- Double-screen display for time and speed respectively
- Compact footprint
- Provides smooth and uniform shaking
- Two options :
9.8kg (O330-M) and speed range 70-400rpm, 3.1kg (O180-S) and speed range 40-200rpm
- Continuous or timer operation mode
- Maintenance- free brushless DC motor
- Over speed detection and protection



Labware

Applications

Orbital Shaker is ideal for applications like bacterial suspension, solubility studies, growth of bacteria and yeast, extraction procedures, washing procedures, diagnostics tests, hybridization, general mixing, staining & destaining, mixing, and extracting.

It is suitable for almost any vessel from micro-centrifuge tubes through petri dishes and microplates to conical flasks.

Rocking Shaker Platform LED ESL58498



Orbital Motion





**Basic Model
(fixed plate)**



**Multifunctional Model
(multiple plate are optional)**

Specifications	ESL58498	ESL58499
Orbital diameter	20mm	10mm
Max. load capacity (with platform)	2kg	3kg
Motor type	Brushless DC motor	Brushless DC motor
Motor input power	20W	20W
Motor output power	16W	15W
Speed range	40-200rpm	70-400rpm
Speed display	LED	LCD
Timer display	LED	LCD
Time settings range	1min-99h59min	1min-99h59min
Voltage,Frequency	100-240V,50/60Hz	100-240V,50/60Hz
Power	20W	25W
Weight	3.1kg	9.8kg
Permissible ambient temperature and humidity	5-40°C,80%RH	5-40°C,80%RH
Dimension[W×D×H]	294×348×123mm	420×370×100mm
Protection class	IP21	IP21
Work plate Dimension [W x D]	268x268mm	335×335mm



LCD Digital Linear Shaker

ESL58500/10

Features

- **Efficient Mixing:** Employing a linear reciprocating shaking action ensures thorough and even mixing of samples within containers, enhancing experiment reliability and precision.
- **Versatile Capacity:** Offering two choices with different load capacities, suitable for experiments of various scales and sample handling needs, catering to diverse experimental requirements.
- **User-Friendly Operation:** The device is equipped with an independent LCD display, simultaneously presenting speed and time, facilitating an intuitive operation, allowing you to effortlessly oversee the experimental process.
- **Broad Speed Range:** It encompasses a wide speed range, enabling speed adjustment based on specific experimental demands, ensuring optimal outcomes.
- **Reliability:** Utilizing a maintenance-free brushless DC motor reduces equipment maintenance needs and extends its operational lifespan.
- **Safety Measures:** Featuring over-speed detection and protection functions, guaranteeing the equipment operates safely within prescribed parameters, mitigating potential issues.
- **Diverse Selection:** Providing multiple platform options, accommodating various container types and sizes, augmenting flexibility and diversity.

Applications

Suitable for mixing in culture dishes, flasks and beakers. Ideal for aeration and extraction applications.

It can be used in environmental chambers and CO₂ incubators.



Linear Motion



Labware

Specifications	ESL58500/10
Amplitude	10mm
Max. load capacity (with platform)	7.5kg
Motor type	Brushless DC motor
Motor input power	28W
Motor output power	15W
Speed range	100-350rpm
Speed display	LCD
Timer display	LCD
Time settings range	1min-99h59min
Voltage, Frequency	100-240V, 50/60Hz
Power	30W
Weight	13.5kg
Permissible ambient temperature and humidity	5-40°C, 80%RH
Dimension[W×D×H]	370×420×100mm
Protection class	IP21
Data connector	RS232





ESL58500/4

ESL58500/
20

Linear Motion

Digital Linear Shaker LCD ESL58500/4

Digital Linear Shaker LED ESL58500/20

Features

- Ensure uniform mixing to enhance experiment reliability and accuracy.
- Provide different load capacities suitable for experiments of varying scales and sample processing, meeting diverse experimental needs.
- Independent display screen, simultaneously showing speed and time, user-friendly operation for easy control of the experiment process.
- Offer a wide range of speed settings that can be adjusted according to specific experimental requirements to ensure optimal results.
- Maintenance-free brushless DC motor for extended lifespan.
- Equipped with safety speed protection features.
- Provide various platform options to accommodate a variety of container types and sizes, increasing flexibility and versatility (SK-L180-Pro) .

Applications

Suitable for mixing in culture dishes, flasks and beakers. Ideal for aeration and extraction applications. It can be used in environmental chambers and CO2 incubators.

Specifications	ESL58500/4	ESL58500/20
Amplitude	4mm	20mm
Max. load capacity(with platform)	2.5kg	2kg
Motor type	Brushless DC motor	Brushless DC motor
Speed range	100-350rpm	40-200rpm
Speed display	LCD	LED
Timer display	LCD	LED
Time settings range	1min-99h59min	1min-99h59min
Voltage Frequency	100-240V, 50/60Hz	100-240V,50/60Hz
Power	30W	20W
Motor input power	28W	16W
Motor output power	15W	10W
Weight	8.1kg	3.4kg
Permissible ambient temperature and humidit	5-40°C, 80%RH	5-40°C, 80%RH
Dimension[W×D×H]	300X340X100mm	294X348X130mm
Protection class	IP21	IP20
Data connector	RS232	-



Digital Rocking Shaker 9" LCD ESL58501/9

Digital Rocking Shaker 7" LED ESL58501/7

Features

- Rocking motion angle 9°(R330-Pro) and 7°(R1807-S)
- Two options :
10kg (R330-Pro)and speed range 10-70rpm, 2kg (R1807-S) and speed range 10-80rpm
- Double LCDs/LEDs for independent display of time and speed
- Continuous or timer operation mode
- Electronic time switching clock: 1min-99h59min
- Wide range of platforms for use with a variety of vessels(R330-Pro)
- Fixed work plate(R1807-S)
- Simple appearance, save operating space

Applications

Designed for time-dependent and low rpm sensitive shaking

applications such as ELISA washes, enzyme immunoassays, protein synthesis, hybridization staining/destaining gels, immune precipitation and Western blots, cell culture, pharmaceutical profiling, etc.



ESL58501/9



ESL58501/7



Rocking Motion

Specifications	ESL58501/9	ESL58501/7
Tilt angle	9°	7°
Max. load capacity(with platform)	10kg	2kg
Motor type	DC motor	DC motor
Motor input power	40W	20W
Motor output power	24W	16W
Speed range	10-70rpm	10-80rpm
Speed display	LCD	LED
Timer display	LCD	LED
Time settings range	1min-99h59min	1min-99h59min
Voltage,Frequency	100-240V, 50/60Hz	100-240V, 50/60Hz
Power	50W	20W
Weight	9kg	3.1kg
Permissible ambient temperature and humidit	5-40°C,80%RH	5-40°C,80%RH
Dimension[W×D×H]	360×410×200mm	294×348×123mm
Protection class	IP21	IP21





ESL58496/9



ESL58496/10

Digital 3D Shaker LCD

ESL58496/9

ESL58496/10

Features

- Provide a gentle three-dimensional motion shaker at a fixed tilt angle
- Anti slip silicone disc surface, better anti slip effect, and better sample processing effect
- Adjustable rotational mixing speed
- Independent LCD/LED display of time and speed
- Incubator compatible
- Various platform accessories (D3309-Pro)

Applications

3D shaker used for uniform shaking mixing in flasks, culture flasks, petri dishes and tubes. Ideal for culturing a variety of cell cultures, DNA extractions, distributing of cells and gel staining & destaining of cells.
















Wide range of accessories



3D Motion











Specifications	ESL58496/9	ESL58496/10
Tilt angle	9°	10°
Max. load capacity(with platform)	5kg	3kg
Motor type	DC motor	Brushless DC motor
Motor input power	40W	16W
Motor output power	24W	10W
Speed range	10-70rpm	10-80rpm
Speed display	LCD	LED
Timer display	LCD	LED
Time settings range	1min-99h59min	1min-99h59min
Voltage,Frequency	100-240V, 50/60Hz	100-240V,50/60Hz
Power	50W	20W
Weight	9kg	3.7kg
Permissible ambient temperature and humidit	5-40°C,80%RH	5-40°C,80%RH
Dimension[W×D×H]	360×430×106mm	294X348X170mm
Protection class	IP21	IP20



Cat. No.	Description	ESL58497/10	ESL58500/10	ESL58501/9	ESL58496/9	ESL58499	ESL58497/4	ESL58500/4	ESL58500/20 Multifunctional models
 5840155	SK330.5, Dish platform with non-slip mat and fixed string (8pcs) Dimension[WxD]: 30x28.5cm	■	■	■	■				
 58402835	Silicone mattress for 16x5-15mL tubes, use with SK330.5	■	■	■	■				
 58402846	Silicone mattress for 6x 50mL tubes, use with SK330.5	■	■	■	■				
 58400185	SK180.4 Dish attachment with non-slip mat Dimension[WxD]: 24x21.5cm						■	■	■
 58400869	SK330.4 Dish platform with non-slip mat and fixed string(8 pcs), 34X34cm					■			
 58400859	SK330.6 Transparent shield, serologic test for syphilis, 41x39.5x8.3cm	■	■			■			
 58400860	SK180.5 transparent Cover for Syphilis Serum Test, 32x32x8.3cm						■	■	
 58402852	Silicone mattress for 10x 5-10mL tubes						■	■	■
 58402853	Silicone mattress for 4x 50mL tubes						■	■	■
 58400027	SK330.1, Universal attachment with 4 bars Size: 32x32cm Capacity for flask: 25mLx21pcs, 50mLx15pcs, 100mLx12pcs, 250mLx6pcs, 500x4pcs	■	■	■	■	■			
 58400040	SK330.3 Lengthways roller attachment, Mainly used for separation funnel oscillation extraction applications 500mL*3pcs 250mL*4pcs 100/125mL*4pcs 500mL*5pcs	■	■	■	■	■			
 58400025	SK180.1, Universal attachment with 3 bars Size: 25x24.5cm Capacity for flask: 25mLx10pcs, 50mLx8pcs, 100mLx6pcs, 250mLx4pcs, 500x2pcs						■	■	■
 58400038	SK180.3 Lengthways roller attachment, Mainly used for separation funnel oscillation extraction applications 500mL*2pcs 250mL*3pcs 100/125mL*3pcs 50mL*4pcs						■	■	■

Labware



Cat. No.	Description	ESL58497/10	ESL58500/10	ESL58501/9	ESL58496/9	ESL58499	ESL58497/4	ESL58500/4	ESL58500/20 <small>Multi functional models</small>
 58400036	Bar for SK330.1 universal attachment	■	■	■	■				
 58400037	Bar for SK180.1 universal attachment						■	■	■
 58400280	Connect sticks for double dishes shaker	■	■	■	■	■	■	■	■
 58400028	SK330.2, Fixing clip attachment Size: 32 x 32cm	■	■	■	■				
 58400026	SK180.2, Fixing clip attachment Size: 25 x 24cm						■	■	■
 58400029	Fixing clip for flask volume 25mL, used with SK330.2[9pcs] SK180.2[28pcs]	■	■	■	■		■	■	■
 58400030	Fixing clip for flask volume 50mL, used with SK330.2[9pcs] SK180.2[16pcs]	■	■	■	■		■	■	■
 58400031	Fixing clip for flask volume 100mL, used with SK330.2[9pcs] SK180.2 [16pcs]	■	■	■	■		■	■	■
 58400032	Fixing clip for flask volume 200/250mL, used with SK330.2[4pcs] SK180.2[9pcs]	■	■	■	■		■	■	■
 58400033	Fixing clip for flask volume 500mL, used with SK330.2[2pcs] SK180.2[9pcs]	■	■	■	■		■	■	■



Handheld Homogenizer ESL58464

Features

- Portable, lightweight with ergonomic design ideal for Manual operations
- Processing volumes from 0.1-50mL or 1-250mL
- Variable speed from 8,000 to 32,000 rpm
- 316L stainless steel shafts are fully autoclavable
- Interchangeable shafts for easy dismantling and cleaning

Applications

Designed for rapidly homogenize, emulsify, suspend and disrupt biological samples like tissue of animal, bacteria, yeast, plant samples, etc. in liquids. Ideal for samples from 0.1mL to 250mL depending on shaft chosen.



Labware

Specifications	ESL58464/5 - ESL58464/10
Speed range	8000-32000rpm
Max linear velocity	6.3m/sec or 14m/sec
Speed level	10 stage
Working volume [H2O]	0.1-50mL(Dispersing shaft ESL58464/5) 1-250mL(Dispersing shaft ESL58464/10)
Max. viscosity	5,000mPas
Material of Dispersing Shaft	SS 316L stainless steel, PTFE
Noise Level	72 dB(A)
Protection class	IP20
Voltage, Frequency	110-120V/60Hz 220-240V/50-60Hz
Power	160W
Motor Type	AC carbon brush motor
Weight	0.54 kg
Dimension [WxDxH]	45mm x 55mm x 190mm

ESL58464/5

Cat. No. 58460543

Volume 0.1-50mL
Max. Circum. Speed 6.3m/sec
Material: 316L stainless steel
Application: small amounts of solid liquid mixed
Function : dispersing tool for solid/liquid media



ESL58464/10

Cat. No. 58460815

Volume 0.1-150mL
Max. Circum. Speed 10m/sec
Material: 316L stainless steel
Application: small amounts of solid liquid mixed
Function : dispersing tool for solid/liquid media



ESL58464/10

Cat. No. 58460544

Volume 0.1-250mL
Max. Circum. Speed 14m/sec
Material: 316L stainless steel
Application: small amounts of solid liquid mixed
Function : dispersing tool for solid/liquid media



High Shear Homogenizer ESL58465

The high shear homogenizer D500 is applicable to various tasks from sample preparation to formulation study. The motor drives the rotor to rotate at high speed, and the sample is homogenized or dispersed by the gap between the rotor and stator, usually in a short period of time.

Features

- High quality 316L stainless steel with corrosion and autoclave resistance
- Rotor with simple design can be dismounted, cleaned, and sterilized conveniently
- 6 speed levels
- Applicable for sample with viscosity up to 10000mPa-s
- Replaceable rotors and stators sharing the same shaft, cost-effective
- Automatic overload protection mechanism maximizes the working life of motor.
- Smooth motor start, stable acceleration without spillage risk

Applications

Widely applied for histocyte lysis, cell homogenization, emulsion, nanometer scale dispersion process in biology, pharmaceutical, genetic and pathology study, dairy product or fruit homogenization, polymerization reaction, production of fragrance, cosmetics, textile auxiliary, food, ink, paints, asphalt, fine chemicals, agricultural chemicals, and analysis in mineral exploration, environmental protection and energy resource exploration.

- Routine homogenization, emulsion, depolymerization, dispersion application
- Disperse substance to form suspension and emulsion
- Disperse pigment and resin
- Disperse animal or human tissue into various solution
- Facilitate the dissolve of solid substances
- Sample preparation for quality control test
- Animal or plant cell lysis
- Emulsion, cream cosmetics, and food formulation study
- Extraction of active pharmaceutical ingredient from pills and tablets

Specifications	ESL58465
Speed range	10000-30000rpm
Max linear velocity	22.7-36m/sec
Speed Level	6 stage
Working volume	10-40000mL
Max. viscosity	10000mPa-s
Material of dispersing shaft	SS 316L stainless steel, PTFE
Noise Level	79dB(A)
Protection class	IP20
Voltage, frequency	110-120V/60Hz, 220-240V/50-60Hz
Power	500W
Motor type	AC carbon brush motor
Dimension [WxDxH]	75x75x280mm
Weight	1.7kg
Permissible ambient temperature and humidity	0-40°C, 85%RH



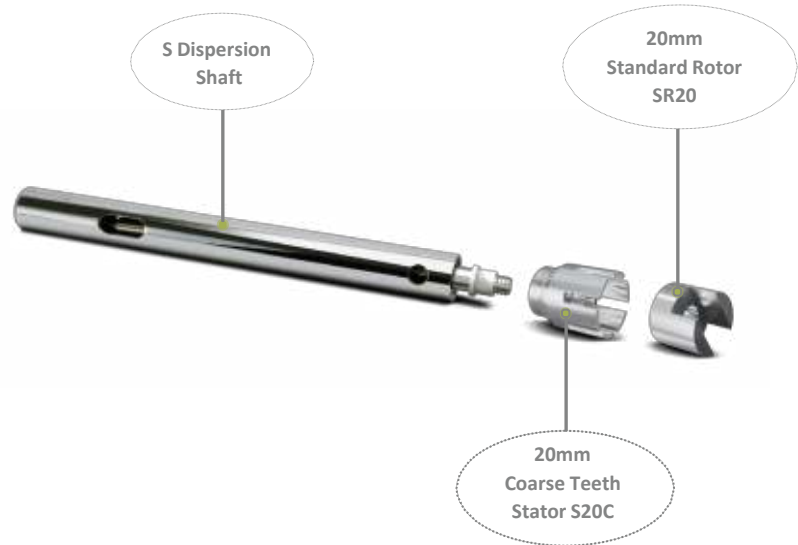
Dispersion Head Selection Guide

Material: All dispersion head components are made of high quality 316L stainless steel to ensure the mechanical performance while rotating at high speed of 30000rpm.

Bearing: Made of excellent material, the bearing is sturdy, durable and corrosion resistance. Its mechanical performance and chemical characteristics are stable.

Easy to clean: The dispersion head is designed to be easily dismantled and thus cleaned. The

components can be cleaned manually or automatically, and can be autoclaved. Even the precision components can be removed to clean.





ESL58465/1 Cat No.58461331

Solid and liquid dispersion
Volume 10-5000mL
Max. circum. Speed 22.7m/sec
General purpose
Emulsion granularity range 1-10µm
Suspension granularity range 10-50µm



ESL58465/2 Cat No. 58461332

Emulsion
Volume 10-5000mL
Max. circum. Speed 22.7m/sec
General purpose
Emulsion granularity range 1-10µm
Suspension granularity range 10-50µm



ESL58465/5 Cat No. 58460117

Small amounts of solid and liquid dispersion
Volume 1-50mL
Max. circum. Speed 5.8m/sec
Compatible with 5mm stator and 3.8mm rotor
Special design for 1-50mL tissue homogenization, mixing and suspension in Eppendorf tube, tube strip and centrifuge tubes for clinical and diagnostic application

Stator & Rotor		Purpose	Working Volume	Max. circum. Speed	Rotor Dia.	Stator Dia.	Min./Max.	Granularity (µm)		Application
Combinations								mL	m/s		mm	mm	Immersion Depth	Suspension	Emulsion
58461331	SS20CSR20	Solid-liquid mix	10-5000	23.5	15	20	40/170	10-50	1-10	P,CI,PC,SD
58460205 58460215	S20C CR20	Fiber	10-5000	23.5	15	20	40/170	10-50	1-10	SP,M,F,PT,TI
58460205 58460216	S20C MR20	Solid-liquid mix	10-5000	23.5	15	20	40/170	10-50	1-10	CI,PI
58461332	SS20FER20	Emulsion	10-5000	23.5	15	20	40/170	10-50	1-10	SP,PI,PT,P
58460206 58460215	S20F CR20	Fiber	10-5000	23.5	15	20	40/170	10-50	1-10	SP,BT,M,F,PT,TI
58460206 58460216	S20F MR20	Solid-liquid mix	10-5000	23.5	15	20	40/170	10-50	1-10	CI,C,PI,F,PT,PC
58460213 58460216	S30C MR20	As stirring paddle	250-20000	36.1	15	30	40/170	High speed mixing		CI,F,SP
58460213 58460208	S30C SR30	Solid-liquid mix	100-8000	36.1	23	30	40/170	5-25	1-5	SP,M,F,PT,P
58460213 58460209	S30C CR30	Fiber	100-8000	36.1	23	30	40/170	5-25	1-5	SP,M,F,PT,P
58460213 58460229	S30C MR30	Solid-liquid mix	100-8000	36.1	23	30	40/170	5-25	1-5	CI,PI
58460228 58460208	S30F SR30	Solid-liquid mix	100-8000	36.1	23	30	40/170	5-25	1-5	SP,PI,PT,P
58460228 58460212	S30F ER30	Emulsion	100-8000	36.1	23	30	40/170	5-25	1-5	SP,PI,PT,P
58460228 58460229	S30F MR30	Solid-liquid mix	100-8000	36.1	23	30	40/170	5-25	1-5	CI,C,P,F,DT,TI
58460214 58460229	S40C MR30	As stirring paddle	1000-40000	36.1	23	40	40/170	High speed mixing		CI,F,SP
58460117	SS5CSR5	Small amount solid-liquid mix	1-50	6.3	4	5	40/60	10-50	1-10	BT,M

Note:

BT: Biotech; F: Food; P: Pharmaceuticals; C: Cosmetics; M: Medicine Analysis; PC: Petroleum Chemistry; PT: Paper and Pulp Industry; SP: Sewage Treatment; CI: Ceramic Industry; CH: Chemical Industry; PI: Paints Industry; TI: Tobacco Industry The common combinations of rotor and stator are listed in the table above. Dispersion head can be mounted on the homogenizer main body and fixed on the holder with fixtures. All the components of dispersion head can be sterilized with all usual methods (including chemicals, autoclave, etc.)



Overhead

Appliances

Labware

LCD Digital Overhead Stirrer

ESL58466C

ESL58467C

ESL58468C

EDU Science Overhead Stirrers are competent for most demanding tasks with guaranteed safety and

performance. They are widely used in chemical synthesis, pharmaceutical synthesis, physical and chemical analysis, petrochemical industries, etc.



Specifications	ESL58466C	ESL58467C	ESL58468C
Max. stirring quantity[H ₂ O]	20 L	40 L	70 L
Speed range	50-2200rpm	50-2200rpm	50-1100rpm
Speed display accuracy	±3rpm	±3rpm	±10rpm
Time settings range	-	-	0-99h59min
Max. torque	40N·cm	60N·cm	300N·cm
Viscosity max.	10000mPa·s	50000mPa·s	100000mPa·s
Weight	2.8kg	2.8kg	3.2kg
Motor type	Brushless DC motor	Brushless DC motor	Brushless DC motor
Voltage, Frequency	100-240V, 50/60 Hz	100-240V, 50/60 Hz	100-240V, 50/60 Hz
Speed display	LCD	LCD	LCD
Torque display	LCD	LCD	LCD
Overload protection display	LCD	LCD	LCD
Chuck clamp range diameter	0.5-10mm	0.5-10mm	0.5-10mm
Motor input/output power	60W/50W	120W/100W	180W/160W
Power	70W	130W	200W
Dimension[WxHxD]	83 x 220 x 186mm	83 x 220 x 186mm	83 x 220 x 186mm
Protection class	IP21	IP21	IP21
Permissible ambient temperature and humidity	5-40°C, 80%RH	5-40°C, 80%RH	5-40°C, 80%RH
Data interface	RS232	RS232	RS232



NEW**LED Overhead Stirrer****ESL58466****ESL58467****Features**

- High reliability and outstanding performance
- Wide range of speed from 50 to 2200rpm
- Brushless DC motor for long life, maintenance free and explosion proof
- LED screen for monitoring actual speed
- Safety circuits allow for safe stop function in anti-stall or overload conditions
- Large chuck diameter for many shaft types

Set of Overhead Stirrer tools**Cat.No. 58460743**

Contains one vertical rod, six stirring blades Such as Propeller stirrer Paddle stirrer Centrifugal stirrer Flat-blade stirrer Radial-flow stirrer Anchor stirrer and Disassembling tool

Plate Stands

Universal Plate Stand
for ESL58466-ESL58467

Cat. No. 58460605

Dimension [W x D x H] :
20x31x78cm

Material: cast iron

Universal Plate Stand
(for OS20/40/70)

Cat. No.58460497

Dimension [W x D x H] :
3.5x46.3x78cm

















Material: cast iron

Specifications**ESL58466****ESL58467**

Specifications	ESL58466	ESL58467
Max. stirring quantity[H ₂ O]	20 L	40 L
Speed range	50-2200rpm	50-2200rpm
Max. torque	40N·cm	60N·cm
Viscosity max.	10000mPa·s	50000mPa·s
Motor type	Brushless DC motor	Brushless DC motor
Speed display	LED	LED
Overload protection display	LED	LED
Chuck range diameter	0.5-10mm	0.5-10mm
Motor input power	60W	120W
Motor output power	50W	100W
Power	70W	130W
Voltage, Frequency	100-240V, 50/60 Hz	100-240V, 50/60 Hz
Dimension[WxHxD]	83 x 220 x 186mm	83 x 220 x 186mm
Protection class	IP21	IP21
Weight	2.8kg	2.8kg
Permissible ambient temperature and humidity	5-40°C, 80%RH	5-40°C, 80%RH



ES Overhead Stirrer provides a variety of stirring tools, such as impellers, paddles and blades:

<p>Propeller stirrer</p> <p>Cat. No. 58460071</p> <p>Shaft length: 40cm Stirrer diameter: 5 cm Shaft diameter : Ø8 mm Material: 316L stainless steel Standard stirring applications at medium and high speed</p> 	<p>Paddle stirrer</p> <p>Cat. No. 58460073</p> <p>Shaft length: 40 cm Stirrer diameter: 6.8 cm Shaft diameter: Ø 8 mm Material: 316 L stainless steel For gentle mixing at low and medium speeds</p> 
<p>Straight stirrer</p> <p>Cat. No.58460072</p> <p>Shaft length: 40 cm Stirrer diameter: 4 cm Shaft diameter : Ø8 mm Material: 316L stainless steel Standard stirring applications at medium and high speed</p> 	<p>Centrifugal stirrer</p> <p>Cat. No. 58460074</p> <p>Shaft length: 40 cm Stirrer diameter: 9 cm Shaft diameter: Ø 8 mm Material: 316 L stainless steel Blades open while speeding. For narrow neck vessels at medium to high speed.</p> 
<p>Propeller stirrer</p> <p>Cat. No. 5846075</p> <p>Shaft length: 35 cm Stirrer diameter: 6.5 cm Shaft diameter: Ø 8 mm Material: PTFE coated Standard stirring applications at medium and high speed</p> 	<p>Paddle stirrer</p> <p>Cat. No. 58460077</p> <p>Shaft length: 35 cm Stirrer diameter: 6.8 cm Shaft diameter: Ø8 mm Material: PTFE coated For gentle mixing at low and medium speeds</p> 
<p>Straight stirrer</p> <p>Cat. No. 58460476</p> <p>Shaft length: 35 cm Stirrer diameter: 7 cm Shaft diameter : Ø8 mm Material: 316L stainless steel Standard stirring applications at medium and high speed</p> 	<p>Centrifugal stirrer</p> <p>Cat. No. 58460478</p> <p>Shaft length: 35 cm Stirrer diameter: 8.5 cm Shaft diameter: Ø8 mm Material: PTFE coated Blades open while speeding. For narrow neck vessels at medium to high speed.</p> 
<p>Grand propeller stirrer</p> <p>Cat. No. 58460478</p> <p>Shaft length: 60 cm Stirrer diameter: 10 cm Shaft diameter: Ø8 mm Material: 316 L stainless steel Standard stirring</p> 	<p>Grand paddle stirrer</p> <p>Cat. No. 58460499</p> <p>Shaft length: 60 cm Stirrer diameter: 10 cm Shaft diameter: Ø8 mm Material: 316 L stainless steel Gentle mixing for those stratify easily or sensitive to shear</p> 
<p>Grand anchor stirrer</p> <p>Cat. No. 58460698</p> <p>Shaft length: 60 cm Stirrer diameter: 10 cm Shaft diameter: Ø8 mm Material: 316 L stainless steel Standard stirring or for those easily precipitate</p> 	<p>Grand dissolving stirrer</p> <p>Cat. No. 58460500</p> <p>Shaft length: 60 cm Stirrer diameter: 10 cm Shaft diameter: Ø8 mm Material: 316 L stainless steel Breaking down granules in the mixture with strong shear</p> 
<p>Flat-blade stirrer</p> <p>Cat. No. 58460625</p> <p>Shaft length: 40 cm Stirrer diameter: 6 cm Shaft diameter : Ø8 mm Material: 316L stainless steel Suitable for medium speed stirring, low viscosity and medium viscosity materials</p> 	<p>Anchor stirrer</p> <p>Cat. No. 58460627</p> <p>Shaft length: 40 cm Stirrer diameter: 6 cm Shaft diameter : Ø8 mm Material: 316L stainless steel Suitable for low speed stirring, medium viscosity and high viscosity materials</p> 
<p>Radial-flow stirrer</p> <p>Cat. No. 58460626</p> <p>Shaft length: 40 cm Stirrer diameter: 5 cm Shaft diameter : Ø8 mm Material: 316L stainless steel Suitable for medium speed or high speed agitation, low viscosity or medium viscosity materials, recommended for the treatment of gas in liquid</p> 	<p>Spiral stirrer</p> <p>Cat. No. 58460628</p> <p>Shaft length: 40 cm Stirrer diameter: 5 cm Shaft diameter : Ø8 mm Material: 316L stainless steel Suitable for medium speed or high speed agitation, medium viscosity and high viscosity materials, recommended for liquid homogenization or suspension treatment</p> 





Micro Centrifuge ESL58503

Features

- Ideal for microfiltration and quick spin-down application
- Easy to operate. Lid close, it begin to rotate
- Max up to 7000rpm
- Compatible with 2mLx8 and PCR8x4 rotors
- Quiet running, noise level ≤45dB
- Quick-change rotor without any tool
- Accelerates and brakes in seconds
- Available in two colors i.e., green, blue
- Safe, durable and robust rotor with clamp locking design



Quiet operation



Vibration free

Specifications	ESL58503
Max. Speed	7000rpm
Max. RCF	2680xg
Rotor Capacity	0.2/0.5/1.5/2.0mLx8; 0.2mLx32 PCR strips or 0.2mLx4 PCR 8 strips
Run Time	Continuous operation
Driving Motor	DC motor
Power	AC100-240V/50Hz/60Hz 20W
Noise Level	<45dB
Dimension [DxWxH]	160x170x122mm
Weight	1.19kg
Certification	CE cTUV us FCC MCA



ESA8-2P

Max. speed:7000rpm
Max. RCF:2680xg
Rotor capacity:2mL/1.5mLx8,0.2mLx8,0.5mLx8
Rotor material:High strength plastic
Available rotor adapters:SA02P2, SA05P2



ESA04-RCR8

Max. speed:7000rpm
Max. RCF:2680xg
Rotor 0.2 mlx32 PCR strips, 0.2 mlx4 PCR 8 strips
Rotor material: High strength plastic



ESA02P2

0.2mL rotor adapter
Used with A08-2 rotor 8pcs/pk



ESA05P2

0.5mL rotor adapter
Used with A08-2 rotor 8pcs/pk



Low-speed Centrifuge ESL58507

Features

- Speed range from 300-5000rpm;
- Rotor speed can be set and displayed by RPM or G-force;
- Defined program by knob will be stored and activated when power on;
- Two programs P1/P2, easy to start the procedure by one key;
- Two deceleration speeds setting to meet different requirements;
- Easy-to-read processing display and sound alert;
- Automatic lid-lock release after running;
- Maintenance-free brushless DC motor.

Specifications	ESL58507
Speed Range	300-5000rpm, increment:10rpm
Max. RCF	2350xg, increment: 10g
Speed accuracy	+20rpm
Rotor capacity	6x15mL/10mL/7mL/1.5-5ml
Run Time	30sec-99min, HD (continuous running)
Display	LCD
Programs Memory	2
Acceleration/Deceleration	1121
Safety Devices	Door interlock, Over speed detector, Automatic internal diagnosis
Motor	Brushless DC motor
Power	Single-phase, 100V-240V, 50Hz/60Hz, 70W
Dimension(WxDxH)	300X240X180mm
Weight	5.2kg
Advanced features	Speed/RCF switch; sound-alert function



Labware

Available adapters



ES5P17

5ml adapter, Adapted to 13×75mm blood collection tube



ES2P17

1.5/2ml Cryogenic Vials/ centrifuge tube adapter

EduScience uk ESL-506 low-speed centrifuge, supplied with built in fixed angle rotor ESA6-15P which can hold up to 6 x 5mL /10mL/7mL



High Speed Mini Centrifuge ESL58508

Features

- Speed up to 15000rpm (15100×g)
- Brushless DC motor drive quickly to the target speed
- Quiet working, Low noise ≤54dB
- ESL-2012 Pro is proven by IEC/EN 61010-1
- ESL-2012 Pro passed the rigorous explosion-proof test according to IEC/ E/V 61010-2-20. It is certified with CE, cTUVus, FCC



Brushless DC motor



LCD display



CE

Specifications	ESL58508
Max. Speed	15000rpm(500-15000rpm), increment: 100rpm
Max. RCF	15100×g, increment: 100×g
Speed Accuracy	±20rpm
Rotor Capacity	0.2mL/0.5mL/1.5mL/2mL×12
Run Time	30sec-99min/Continuous
Acceleration /Braking time	11s↑/9s↓
Driving Motor	Brushless DC motor
Safety Devices	Door interlock, Over-speed detection, Over-temperature detection, Automatic internal diagnosis
Power	Single-phase, AC100V-240V, 50Hz/60Hz, 3A 100W
Noise level	≤54dB
Dimension [D×W×H]	255×245×140mm
Weight	6kg
Certification	EMC, CE, FCC, ICES, cTUVus, CB



Available Rotors



A12-2P for ESL2012Pro only

Max. speed: 15000rpm
 Max. RCF: 15100×g
 Rotor capacity: 2mL/1.5mL×12,0.2mL×12,0.5mL×12
 Rotor material: High strength plastic
 Available rotor adapters: A02P2,A05P2

Available Adapters



A02P2

0.2mL rotor adapter
 Used with A12-2, A12-2P, AS24-2 and A24-2P rotors
 24 pcs/pk

A05P2

0.5mL rotor adapter
 Used with A12-2,A12-2P, AS24-2 and A24-2P rotors
 24 pcs/pk





Centrifuge Basic

Speed range of 300-4500rpm, Individual control of speed and time, Faster acceleration and deceleration, Perfectly suitable for 15mL cell culture tubes and a full line of collection tubes, Specifications, Speed Range 300-4500rpm, increment: 100rpm, Max. RCF 2490×g, Speed accuracy ±100rpm, Rotor Capacity 1 type, Run Time 1sec-99min HOLD(Continuous operation), Motor DC motor, Display LED, Safety Devices Door interlock, Over-speed detection, Acceleration, /Braking time [Sec] 23s 23s Power Single-phase, 220V-240V, 50Hz/60Hz, 3A; 100V- 120V, 50Hz/60Hz, 3A 70W,

Dimension : [D×W×H] 301×354×217mm

Weight : 6kg, Advanced Features sound-alert function.

ESL58504



Centrifuge Basic LCD

Easy programming to achieve high accuracy of speed control, Easy operation with intuitive menu and easy-to-read display Rotor speed can be set and displayed by RPM or G-force, Maintenance-free brush-less DC motors, Quick spin function with press and hold pulse key, Lid with electric lock and automatic release function saves processing time and prevents samples overheating Automatic self-diagnosis on start up showing accumulative running time and last running parameters, Braking time 2 gears adjustable(for A6-50P rotor), A12-10P and A6-50P are not interchangeable,

Specifications

Speed Range 300-4500rpm, increment: 100rpm, Max. RCF 2490×g, Speed accuracy ±20rpm, Rotor Capacity 1 type, Run Time 30sec-99min/ Continuous, Motor Brush-less DC motor, Display LCD, Safety Devices Door interlock, Overspeed detector; Automatic internal diagnosis, Acceleration /Braking time [Sec] 20s 13s, Power Single-phase, 110V-240V, 50Hz/60Hz, 3A, 70W

Dimension : [D×W×H] 301×354×217mm

Weight : 6kg, Certification CE, UL, IVD, Advanced Features Speed/RCF switch; Short-time run function; sound-alert function

ESL58505





Hematocrit Centrifuge ESL-1224 ESL58514

Features

- Speed range of 200-12000 rpm Precise and independent control of speed and time
- Easy operation with intuitive menu and LCD display
- Maintenance-free brushless DC motor
- Pulse operation for fast and convenient quick spins
- Advance features include speed/RCF switch; short-time run function; audible alert function
- Safety features include door interlock, over speed detector; over-temperature detector; automatic internal diagnosis and automatic rotor identification

Hematocrit Centrifuge ESL-1424 ESL58515

Features

Speed range of 500-12000 rpm - Precise control of speed and time
Maintenance-free brushless DC motors -Door interlock

Applications

ES hematocrit centrifuges are used for determination of erythrocyte fractions in blood as well as micro solution separations. It provides hematocrit values (HCT) for testing in biochemistry, immunity, genetics, blood separation and for general clinical tests for diagnostic purposes and also for dope tests. They have special applications for the photometric determination of bilirubin content in neonate blood samples. They are suitable for extraction of DNA and RNA. Veterinary clinics and Vitamins testing for Infants.



Specifications	ESL58514	ESL58515
Speed Range	200-12000rpm, increment: 10rpm	500-12000rpm, increment: 100rpm
Max. RCF	13680×g	13680×g
Speed Accuracy	±20	±100
Run Time	30sec-99min/Continuous	30sec-99min/Continuous
Motor	Brushless DC motor	Brushless DC motor
Display	LCD	LCD
Safety Devices	Door interlock, Overspeed detector; Automatic internal diagnosis, Automatic rotor identification	Door interlock
Acceleration/Braking time	30s↑30s↓	40s↑40s↓
Power Requirements	Single-phase, 200V-240V, 50Hz/60Hz, 5A; 100V-120V, 50Hz/60Hz, 5A 160W	Single-phase, 200V-240V, 50Hz/60Hz, 5A 380W
Dimension(WxDxH)	280×364×274mm	280×364×213mm
Weight	10.5kg	8.5Kg
Advanced features	Speed/RCF switch; Short-time run function; sound-alert function	Speed/RCF switch; Short-time run function; sound-alert function

Available rotors

AC24

Cat. No.58510047

ESL58514 & ESL58515

Max. speed: 12000rpm

Max. RCF: 13680 ×g

Rotor capacity: capillary tubes x24

Rotor material: High strength aluminum



High Speed Micro Centrifuge

ESL58509

ESL58510

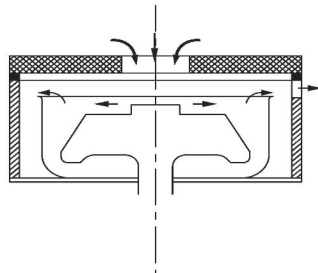
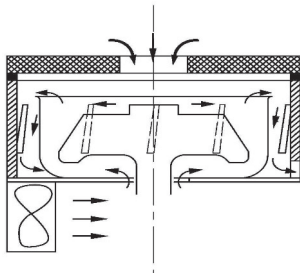
Unique Features

- Patent multi-flow air cooling design to provide air exchange to prevent chamber warming
- Three-layer seal ensure airtightness and biosafety
- High strength aluminum alloy rotor can be fully autoclaved for unlimited service life
- Four rotors are optional complete with 24 places 1.5/2.0mL tubes, bigger 5.0mL, smaller 0.2mL and 0.5mL tubes with adapters



Effective Ventilation System

Conventional design



Proprietary design of dual path ventilation enforcing air cooling from both the upper and lower side for the rotor.

Limiting ventilation on the upper side of the rotor



Brushless DC motor



Wide range of rotors

Labware





Brushless DC motor



Wide range of rotors



Specifications	ESL58509	ESL58510
Max. Speed	15000rpm(200-15000rpm), increment:10rpm	15000rpm(200-15000rpm), increment:10rpm
Max.RCF	21380xg, increment:10xg	21380xg, increment: 10xg
Speed Accuracy	+20 rpm	+20 rpm
Temperature Range	-	-20°C-40°C
Rotor Capacity	5mLx18, 5mL culture tubex12 0.2mL/0.5mL/1.5mL/ 2mLx24, 0.5mLx36,PCR8x4	5mLx18, 5mL culture tubex12 0.2mL/0.5mL/1.5mL/ 2mLx24, 0.5mLx36,PCR8x4
Run Time	30sec-99min/Continuous	30sec-99min/Continuous
Motor	Brushless DC motor	Brushless DC motor
Safety Devices	Dual door interlock, Over-speed detection, Automatic internal diagnosis	Dual door interlock, Over-speed detection, Over-temperature detection, Automatic internal diagnosis
Power	Single-phase, AC200V-400V, 50Hz/60Hz, 5A, AC100V- 120V, 50Hz/60Hz, 8A 200W	Single-phase, AC200V-240V, 50Hz/60Hz, 10A, AC100V-120V,50Hz/60Hz, 10A 400W
Acceleration /Braking time [Sec]	25s↑25s↓	25s↑25s↓
Dimension[WxDxH]	280x364x266mm	338x580x324mm
Weight	12kg	30kg
Certification	CE cTÜVus FCC MCA	CE cTÜVus FCC MCA
Advanced Features	Speed/RCF switch; Short-time run function; sound-alert function	Speed/RCF switch; Short-time run function; sound-alert function
Noise Level	≤64dB	≤56dB





Rotor Features

Fully autoclavable

High strength aluminum alloy rotors are fully autoclavable, withstanding steam sterilizing at 121 °C for 20 minutes, with unlimited service life.

Bio-safety

Aspired to be the top-of-the-line model, ES3024 & ES3024R rotors are designed to prevent sample leakage. Each and every rotor is hermetically sealed by three rubber seals.

Mechanical safety

ES centrifuges are constructed under MCA conditions according to IEC/ EN61010-2-20, causing disruption by partially cutting and overloading rotor assembly, and guarantee that no part shall be detached to cause danger to person or the environment.

ES Rotors are manufactured from military- industrial grade aluminum alloy with high mechanical strength for precise running and safety (excludes ES2012 plus rotor)

- Every rotor can reach a max. speed of 15000rpm
- Rotors are seated on a tapered shaft, concentric and self-aligning, perfect to achieve running stability at high speeds
- ES3024 & ES3024R with bio-safety rotors/ anti- sample overflow prevents accidental leakage and risk free centrifugal process
- microbial contamination. ES3024 & ES3024R rotors have passed MCA test according to IEC/EN61010-2-20, including mechanical safety and bio-safety tests
- High strength aluminum alloy rotors are fully autoclavable and provide unlimited service life (ES2012 plus rotor not included)
- Powerful cooling system minimizes rotor heating. ES3024 rotors heat up to > 10° Cand D2012 rotors less than 8° C after running an hour

Three rubber seals fitted to achieve bio-safe condition

Seals within the aluminum alloy rotor



Rotors and Adapters

**ES24-2**

for ES3024 & ES3024R

Max. speed: 15000rpm

Max. RCF: 21380×g

Rotor capacity: 2mL/1.5mL×24/0.2mL×24/0.5mL×24

Rotor material: Aluminum alloy

Bio-safe(Bio sealing): Yes

Available rotor adapters: A02P2,A05P2

**ES12-V5**

for ES3024 & ES3024R

Max. speed: 15000rpm

Max. RCF: 21380×g

Rotor capacity: 5mL×12(Eppendorf tube)

Rotor material: Aluminum alloy

Bio-safe(Bio sealing): Yes

**ES36-05**

for ES3024 & ES3024R

Max. speed: 15000rpm

Max. RCF: 21380×g

Rotor capacity: 0.5mL×36,0.2mL×36

Rotor material: Aluminum alloy

Bio-safe(Bio sealing): Yes

Available rotor adapters: A02P05

**ESS4-PCR8**

for ES3024 & ES3024R

Max. speed: 15000rpm

Max. RCF: 21380×g

Rotor capacity:0.2mL/PCR8×4

Rotor material: Aluminum alloy

Bio-safe(Bio sealing): Yes



Rotors and Adapters



ES18-5

for ES3024 & ES3024R

Max. speed : 15000rpm

Max. RCF: 21380×g

Rotor capacity: 5mL×18 (Round-Botton tube)

Rotor material: Aluminum alloy

Bio-safe(Bio sealing): Yes

Available adapters



ES02P2

0.2mL rotor adapter

Used with ES12-2, ES12-2P, ES24-2 and ES24-2P rotors
24pcs/pk



ES05P2

0.5mL rotor adapter

Used with ES12-2, ES12-2P, ES24-2 and ES24-2P rotors
24pcs/pk



ES02P05

0.2mL rotor adapter

Used with ES36-05 rotor
36pcs/pk





Multi-Purpose Low-speed Centrifuge ESL58506

Features

- Speed can be set from 300- 6000rpm
- Maximum capacity of the centrifuge: 100 mLx4
- 9 Acceleration/10 Brake speed settings to ensure optimal separation
- A wide range of rotors optional(fixed angle and swing-out bucket rotors)
- Automatic rotor identification
- Timers can be set up to 99 min or HD for continuous running
- Pulse Key for quick spin function
- 9 procedures stored in memory makes the operation much simplified
- Maintenance-free brushless DC motors

ES UK ESL58506 Multi-Purpose Low-speed Centrifuge is ideal for the centrifugation of samples in clinical chemistry, cytology, research laboratories, industrial laboratories, etc.

This centrifuge is suitable for tubes with caps, blood collection or urine tubes. Swing-out bucket rotors and adapters can be compatible with standard tubes up to 100mL at low speed.



Specifications	ESL58506
Speed range	300-6000rpm increment:10rpm
Max. RCF	4020xg
Speed accuracy	±20rpm
Max. Capacity	100mLx4
Run Time	30sec-99mins/continuous
Motor	Brushless DC
Display	LCD
Program Memory	9
Safety Devices	Door Imbalance protection Over speed & Over temperature detection
Acceleration/Deceleration	9↑/10↓ steps
Power	660W; Single-phase AC220V-240V, 50Hz/60Hz, 6.3A; AC110V-120V,50Hz/60Hz,10A
Dimension[WxDxH]	445x579x269mm
Weight	36kg
Certification	CE
Advanced features	speed/rcf switch; Rotor identification





Uncapping block

Cat. No. 58500045

for S4-100 rotor



SE4-100(Standard accessory)

Cat. No.58500041

for ESL58506

Max. speed: 4000rpm

Max. RCF: 2950×g

Rotor material: stainless steel body and adapter



A15V

Cat. No. 58500025

15ml conical tube adapter, MOQ 8 Pcs (optional)



19400045



19400044



19400043



19400042

bucket	x 4															
tube	x 36		x 16			x 8		x 4		x 4		x 8		x 20		
Nominal volume	3-7mL		10mL	12mL	15mL	50mL	100mL	85mL	50mL	15mL	3-7mL					
φ×L mm	13×75	13×100	16×100	17×105	17×120	29.5×100	38×108	38×104	29.5×100	17×120 13×100 13×75	13×100 13×75					
tube																
adapter	with plug					 A50V	 A100P80	 A100P50		 A100P15	 A100P10					
Package	36					8	4		4		8	4				
Tubes per rotor	36	36	16	16	16	8	4	4	4	4	8	8	20			
Radius(cm)	14	16.5	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.1	14.7				
Max RCF (g-force)	2500	2950	2840	2840	2840	2840	2840	2840	2840	2840	2700	2630				



Available Rotors



Cat. No. 58500062

ES2-MP

ESL58506

Max. speed: 4000rpm
 Max. RCF: 2200×g
 Rotor capacity: Micro-plates 384-PCR/96-PCR/Elisa plates×8pcs; Deep well plates×4pcs
 Rotor material: stainless steel body and aluminum buckets



Cat. No. 58500036

ES12-PCR8

ESL58506

Max. speed: 6000rpm
 Max. RCF: 4020×g
 Rotor capacity: PCR 8 trips×12
 Rotor material: aluminum
 Biosealing: Yes



Cat. No. 58500034

ES30-2

ESL58506

Max. speed: 6000rpm
 Max. RCF: 4020×g
 Rotor capacity: 2mL×30
 Rotor material: aluminum
 Biosealing: Yes



Cat. No. 58500037

ES60-2

ESL58506

Max. speed: 6000rpm
 Max. RCF: 4020×g
 Rotor capacity: 2mL×60
 Rotor material: aluminum
 Biosealing: Yes



Available rotors



ES6-50V (cone bottom) Cat. No. 58500038
 ESL58506
 Max. speed: 6000rpm
 Max. RCF: 4020×g
 Rotor capacity: 50mL×6 or 15mL×6
 Rotor material: aluminum
 Biosealing: Yes



ES18-5V (cone bottom) Cat. No. 58500035
 ESL58506
 Max. speed: 6000rpm
 Max. RCF: 4020×g
 Rotor capacity: 5mL×18
 Rotor material: stainless steel body and aluminum buckets
 Biosealing: Yes



E8-50 (round bottom) Cat. No. 58500039
 ESL58506
 Max. speed: 5000rpm
 Max. RCF: 3960×g
 Rotor capacity: 50mL×8 or 15mL×16
 Rotor material: aluminum body and stainless steel adapter
 Default adapters: SE100P31x8,SE100P17x6



E30-15 (round bottom) Cat. No.1158500040
 ESL58506
 Max. speed: 4500rpm
 Max. RCF: 3210×g
 Rotor capacity: 15mL×30
 Rotor material: aluminum body and stainless steel adapter
 Bio-safe(Biosealing): Yes
 Default adapters: SE100P17x30

Rotor	Capacity	Hole Diameter (mm)	Hole Depth (mm)	Max. Tube Height (mm)	Max. Speed (rpm)
AS30-2	2mlx30	11.2	39	43	6000
AS60-2	2mlx60	11.2	39	43	6000
AS6-50V	50mlx6	31	87.8	118	6000
AS18-5V	5mlx18	17.5	51	56	6000
A8-50	50mlx8	35	85.8	118	5000
A30-15	15mlx30	17.5	98	123	4500
S2-MP	Micro platex8/ Deep well	-	-	-	4000



Multi-Purpose Low-speed Centrifuge



Multi-Purpose low Speed Centrifuge LCD ESL58518/ LED ESL58519


Features


- Quiet, compact, and convenient with LCD display
- Maximum up to 4000rpm Speed can be set in RPM/RCF, with 3 customizable routine programs (Blood, Urine & Faecal)
- 3 acceleration level & 4 level deceleration
- Maximum capacity 50mL x4, Accommodating different sizes of blood collection tubes and centrifuge tubes suitable for swing out rotor and angle rotor
- Automatic internal diagnosis and self-detection
- Maintenance-free brushless DC motor
- Applications
- Multi-purpose low speed centrifuge are versatile and can be used in applications from clinical to biochemical for qualitative analysis of serum, plasma, blood, and urine.


Specifications	ESL58519	ESL58518
Speed Range	500 - 4000 rpm increment: 100rpm	300 - 4000 rpm increment: 100rpm
Max. RCF	2350 x g	1900 x g
Speed accuracy	±100 rpm	±100 rpm
Rotor capacity	Swing 6×15mL Swing 4×50 mL Angle 24×15mL Angle 12×10 mL/8×15mL	Angel 8×15mL(Default), Angel 12×10mL
Run Time	1-99min, HOLD	1-99min, HOLD
Motor	Brushless DC motor	Brushless DC motor
Display	LCD	LED
Program	Blood: 3200rpm,10min. Urine: 1800rpm,5min. Faecal: 1300rpm,10min.	Blood: 3200rpm,10min. Urine: 1800rpm,5min. Faecal: 1300rpm,10min.
Safety Devices	Automatic internal diagnosis	Automatic internal diagnosis
Acceleration/deceleration	3↑4↓steps	25s↑35s↓
Power Requirements	Single phase. 100-240V, 50Hz/60Hz, 110W	Single phase. 100-240V, 50Hz/60Hz, 85W
Power	364×440×268mm	286×367×227mm
Weight	14.5kg	9.2kg
Noise Level	≤62dB(A)	≤60dB(A)




Available rotors


S6-15	Cat. No. 58519082
for ESL58519	
Max. speed: 44000rpm	
Rotor capacity: 15mL×6	
Rotor material: Aluminum alloy	
Default adaptor: A15P22, A5P17	
	


A12-10P	Cat. No. 58581/9068
for ESL58519/ESL58518	
Max. speed : 4000rpm	
Rotor capacity: 8×15mL or 12×10mL	
Rotor material: High strength plastic	
	

S4-50	Cat. No. 58519100
for ESL58519	
Max. speed: 44000rpm	
Rotor capacity: 50mL×4	
Rotor material: Aluminum alloy	
Default adaptor: A15P30, A5P17	
	


Available adapters


A15P30	Cat. No. 58519024
50mL change 15mL adapter,	
Adapted to 17×120mm centrifuge	
tube, 13/16×100mm blood	
collection tube 4pcs/pk, for S4-50	
	

A24-15P	Cat. No. 58519101
for ESL58519	
Max. speed: 44000rpm	
Rotor capacity: 15mL×24	
Rotor material: High strength plastic	
Default adaptor: A15P22, A5P17	
	

A15P22	Cat. No. 58519021
15mL adapter for 17×120mm	
centrifuge tube, 13/16×100mm	
blood collection tube 24 pcs/pk,	
for S6-15, A24-15P, A8-15P	
	

A8-15P	Cat. No. 58518/9084
for ESL58519/ESL58518	
Max. speed: 44000rpm	
Rotor capacity: 15mL×8	
Rotor material: High strength plastic	
Default adaptor: A15P22	
	

A5P17	Cat. No. 58519022
5mL adapter, Adapted to 13×75mm	
blood collection tube 24 pcs/pk,	
for S4-50, S6-15, A24-15P	
	

A2P17 ^(Optional)	Cat. No. 58518/9023
1.5/2mL Cryogenic Vials/ centrifuge	
tube adapter, 24 pcs/pk, for S4-50,	
S6-15, A24-15P, A12-10P, A6-50P	
	



High-speed Refrigerated Micro Centrifuge ESL58511

Features

- Ergonomic electronic lock design, the centrifuge lid can be closed with single finger touch
- Precooling, the compressor will automatically start cooling as long as the set temperature is lower than the ambient temperature.
- Sound indicator to prompt that the upper cover is closed to maintain the temperature inside the chamber, after centrifugation.
- Advanced R290 fluorine free refrigerant, low carbon and environmental protection.
- Temp range: -20°C- 40°C, fast and powerful cooling capacity, 7 minutes cooling from room temp to 4°C. Temp can kept at max speed.
- Up to 9 program storage capacity according to experimental needs.
- Three-layer sealed rotors ensure airtightness and biosafety.
- High-strength aluminum alloy withstand numerous high temperature and high pressure sterilizations.
- Five rotors with 0.2mL, 0.5mL, 1.5mL, 2mL and 5mL centrifuge tubes/ PCR tubes capacity.
- An external condensation tank prevents water accumulation within the centrifuge chamber.
- Rotor imbalance detection alarm.



Clear LCD large display

Ergonomic electronic door lock design

Powerful cooling capacity compressor

Intuitive operation control panel

Specifications	ESL58511
Max.Speed	15,000rpm (200-15,000rpm) in 100rpm increments.
Max. RCF	21,380×g, step: 10×g
Capacity	1.5/2mL×24, 0.5mL×36, PCR8×4, 5mL×12, 5mL×18.
Temperature setting	-20°C- 40°C
Run Time	30s-99 min; HOLD (continuous running)
Acceleration and deceleration time	25s↑25s↓
Motor Type	DC brushless motor
Safety Performance	Dual door lock, over-speed detection, over-temperature detection with Internal diagnosis system.
Power Requirements	Single-phase, 200V-240V, 50Hz/60Hz, 500W 100V-120V, 50Hz/60Hz, 500W
Noise	≤56dB
Dimensions(mm) Weight	332(Width) × 553(depth) × 283(height) 30kg
Other functions	Rotation speed/RCF switchover, inching operation, running process indicator, sound alert. Acceleration/ deceleration in 9 steps, program storage capacity.



High Speed Refrigerated Centrifuge Model ESL-24SMTI

High Speed Refrigerated Centrifuge ESL-24SMTI

Max. RPM	24,000 RPM
Max. RCF	55,193 X g
Max. Capacity	4Liter, 1000ml X 4 Tubes
Display	Dual Display, LCD & FND
Operating mode	RPM, RCF & IW2d
Step mode	5 step programmable
Program memory	10 memory
Drive system	Inverter motor drive
Acceleration	10 profiles
Deceleration	10 profiles
Timer	99Hr. 59min. & Hold for long run
Pre-Condition	pre-cooling
Pre-Condition	-20°C to 40°C
Safety System	Over Speed detector, imbalance detector, Temperature Limit detector, Door detector
Dimension	645 x 960 X 1220(H)mm
Weight	Net. 230kg
Certification	CE, KGMP, ISO9001, ISO14001



Centrifuge Body	1
Fixed angle rotor, V508A	1
Rotor Extractor	1
Level	1
Instruction Manual	1

Labware



Centrifuge Body ,Swing Rotor ESL-R55S , Bucket ESL-C55 , Rack R5015-4C Power Cable , Manual



Multi-Purpose Refrigerated Centrifuge Model ESLS-550

Main Feature

Multi-Purpose Refrigerated Centrifuge: ESLS-550

Max. RPM	15,000RPM (Swing 4,500 RPM)
Max. RCF	21,130 x g (Swing 3,735 X
Max. Capacity	1000ml, 250ml X 4 Tubes
Main control	Microprocessor controller
Running mode	RPM / RCF
Programmability	10 memory
Timer	99Hr. 59min. & Hold for long run
Temperature Range	-20°C to 60°C
Drive system	Inverter Motor drive
Accel rates	Fast / Slow
Decel rates	Fast / Normal / Slow
Safety device	Over speed protect. Over load protect, Unbalance detector, Temp. protector,
Dimension	675x548 X 366(H)mm
Weight	96Kg
Power	220V, 2Kw, 60Hz
Certification	CE, KGMP, ISO9001, ISO14001



Rotor

ESL-550

Swing-out Rotor

Swing Rotor



VR-55S
4500RPM, 3755G
250ml x 4 tubes, R165mm

Sealing Bucket



VC-55
250ml
Sealing Cap available
Alluminum alloy

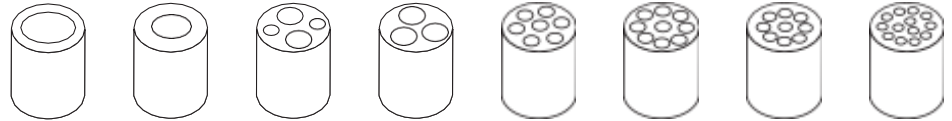
Micro-plate Rotor

Micro-plate Rotor

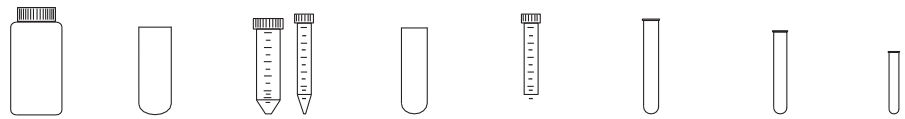


VR-02MS
2500RPM
2000G
96well Micro-plate x 2EA

Tube Rack



Model	R250-1S	R100-1S	R5015-4C	R50-3S	R15-7C	R15-9S	R10-9S	R5-13S
Tube	250ml	100ml	50 & 15 ml	50ml	15ml	15ml	10ml	5ml
Places	1	1	4	3	7	9	9	13
ø x L mm	62 x 128	39 x 106	30 x 115	29 x 104	17 x 120	16 x 114	14 x 100	10 x 75



Fixed Angle Rotor for VS-550

Micro & PCR Tube



VR-C1 combo
1.5ml x 28 tubes
0.4ml x 32 tubes
14000 RPM, 21475G

Micro Tube



V1.524A-55
1.5ml x 24tubes
15000 RPM, 20124G

Round / Oak ridge



V1012A-55
10ml x 12tubes
15000 RPM, 21,130G
V1512A-55
15ml x 12tubes
14000 RPM, 20817G
V506A-55
50ml x 6tubes
14000 RPM, 20817G

Conical Tube-15ml



V1512AC-55
conical tube
15ml x 12tubes
12000 RPM, 16035G
R99.6mm

Conical Tube-50ml



V506AC-55
50ml x 6tubes
12000 RPM, 16180G
R 100.5mm



Centrifuge Hand, 2 X 15ml

A single speed hand driven machine consisting of die-cast parts and a steel pinion and worm drive. Screw clamps the machine to the bench. Stove enamelled finish, with removable crank handle. Suitable for 15ml glass tubes.

ESL58528

Centrifuge Hand, 4 X 15ml

A single speed hand driven machine consisting of die-cast parts and a steel pinion and worm drive. Screw clamps the machine to the bench. Stove enamelled finish, with removable crank handle. Suitable for 15ml glass tubes.

ESL58529



Centrifuge Tube Sterile Bulk-Pp, 15ml

SPINNING Centrifuge Tube Sterile Bulk-PP,

ESL58537 15ml, 25/pack

ESL58538 50ml, 25/pack



Centrifuge Tube , Conical Bottom, Graduated

- Manufactured from ASTM E-438, Boro 3.3 glass.
- Ideal for collecting and separating small amounts of solids.
- Uniformly drawn high quality tubing make the tube durable and safer to use.
- Pointed center of the base collects higher density fraction.
- Uniformly drawn high quality tubing make the tube durable.
- These tube comes with conical bottom
- Provided with graduation for greater precision.
- Marking are in White or Blue enamel.

SKU #	Capacity (mL)	OD x Length (mm)	Pack (pcs)
ESL58535/5	5	13 x 100	100
ESL58535/10	10	15 x 110	100
ESL58535/15	15	17 x 120	100
ESL58535/25	25	22 x 125	100
ESL58535/50	50	28 x 140	50

Pipette Tips With Rack

- Non-sterile autoclavable thin-walled pipette tips
- Available in various packaging
- Free from RNase, DNase, and pyrogenic substances
- Material: 100% virgin polypropylene.
- Autoclavable at 121°C.
- Packaging: bulk (1,000), by rack (1x96), or by refill trays (10x96)

Capacity (µL)	SKU # Without Rack	SKU # With Rack
0.1-10µL	ESL56955	ESL56955R
10 - 200µL	ESL56956	ESL56956R
100 - 1000µL	ESL56957	ESL56957R



Eppendorf Tubes 1.5 ml Autoclavable

Alas Description Autoclavable Eppendorf Tubes
Capacity : 1.5 ml Pk/500 Pcs

ESL58541

Eppendorf Tubes 1.5 ml Autoclavable

Alas Description Autoclavable Eppendorf Tubes
Capacity : 2 ml Pk/500 Pcs

ESL58541





Vacuum Pump Hand Operated

Hand Operated Vacuum Pump

ESL58470



Vacuum Pump Electric

Vacuum pump, electric:

Single stage

Suction capacity 4,6 m³/h

Ultimate vacuum 10 Pa

Noise 46 - 50 dB(A)

Suction connector KS 6/4 mm

Motor power 120 W

Voltage source 220 - 240 V / 50 - 60 Hz

Dimension : s 28x12x21 cm

Weight : 7 kg

ESL58471

Vacuum Pump Electric Lab Use

Oil-free pump. With innovative electronic, mechanical technology and human design concept make Rocker's family quiet and low vibration, compact and light weight, clean and maintenance free, safe and comfortable.

Max. Vacuum: -680mmHg * Max. Flow: 23 l/Min * Motor rotation: 1750 RPM * Horse power: 1/8 HP * Noise level: 50.0dB

ESL58472



Bottle Top Dispenser

Excellent chemical resistance, components are made of PTFE, FEP, BSG, PP Fully autoclavable at 121 ° C Four ranges of bottle-top dispenser covering different volume range Easy for cleaning and maintenance The optional flexible discharge tube with safety handle permits fast and precise dispensing Vapour pressure Max. 500mbar, viscosity Max. 500mm²/s, Temperature Max. 40 ° C, density Max. 2.2g/cm³

ESL58590 Volume range : 0.5-5 ml
 ESL58591 Volume range : 1.0-10 ml

ESL58592 Volume range : 2.5-25 ml
 ESL58593 Volume range : 5.0-50 ml



Bottle Top Dispenser Advance

Designed for safe, sturdy & stable dispensing directly from the bottle in the range of volumes up to 5 mL O Fast, precise, and reproducible volume locking mechanism on a clear scale O Reagent recovery function reduces reagent waste and prevents dripping when not in use O Adjustable aspirating tube for different bottle heights Features High chemical compatibility with use of inert materials and glass PTFE piston

- Easy to disassemble and clean for periodic maintenance
- Fully autoclavable at 121t to ensure sterility
- Supplied with most popular adapters (540, GL32, GL38, GL25, GL28)

ESL58590ADV	Volumes 5 mL	0.5-5 Advance Graduation : 0.1 ml
ESL58591ADV	Volumes 10 mL	1.0-10 Advance Graduation : 0.2 ml
ESL58592ADV	Volumes 25 mL	2.5-25 Advance Graduation : 0.5 ml
ESL58593ADV	Volumes 50 mL	5.0-50 Advance Graduation : 1 ml
ESL58594ADV	Volumes 100 mL	10-100 Advance Graduation : 2 ml

Labware

Bottle Top Dispenser Electronic 0.1-99.9 ml

- Motor operation minimizes the grip force
- Electronic control decreases the repetitive strain injury
- Remote control panel prevents manual disturbance during operation
- Two Dispensing modes, dispenser and stepper function options

Volume Range : 0.1-99.9mL, Max piston lift is 10mL, resolution is 100µL Volume Accuracy Dispenser: R = 10mL ±30µL; CV = 10ml ±10µL Stepper: R = 1mL ±6µL; CV = 1ML ±9µL Operating Temperature Range 10oC-30oC Quality Control DIN EN ISO 8655 Control Type External control

ESL58595



Electronic Titrator, (Electronic Burette) 0.01 - 99.99 ml

Digital Burette - provides accurate, precise and convenient bottle-top titration with optimum operator safety.

It combines both magnetic stirrer and Burette functions, making it easier for the user to achieve reproducible results in the field of analytical chemistry, food industry, water analysis etc, High quality motor with excellent precision and accuracy Electronic control provides fatigue-free operation Remote control panel prevents manual disturbance during operation Built -In magnetic stirrer for a complete and easy operation Large LOD display parameter Volume Range : 0.01 ml -99.99ml., Max piston lift is 10ml, resolution is 10pl. Volume Accuracy : R=0.2% CV=0.07% Speed Level : 16 stages Operating Temperature Range : 10 ° C-30 ° C Quality Control : DIN EN ISO 8655 Control Type : External control, including the stirrer and the burette program

ESL58598

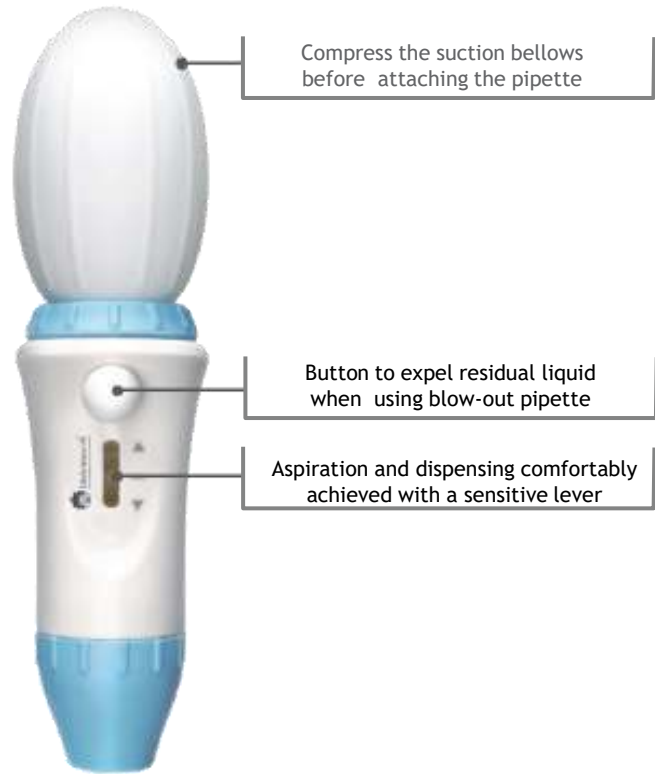


Pipettes

**Pipette Controller
ESL58568**

Features

- Ease of use
- Precise pipetting control
- Robust and light weight
- Compatible with most of the plastic and glass pipettes from 0.1 -100mL
- 3µm replaceable hydrophobic filter
- Easy for cleaning and maintenance



Compress the suction bellows before attaching the pipette

Button to expel residual liquid when using blow-out pipette

Aspiration and dispensing comfortably achieved with a sensitive lever

Pipette Pump

- ESL56391 2 ML**
- ESL56392 10 ML**
- ESL56393 25 ML**

Features

- Volume capacity 2mL, 10mL and 25mL
- Colour-coded by volume with green, blue and red
- Thumb wheel guarantees precise operation
- Resistant to acids and alkalis
- Easy for cleaning and maintenance



3µm replaceable Hydrophobic filter

Silicone adapter for 0.1-100mL pipette tip, fully autoclavable



Designed for single-handed operation, Pipette Pump identifies itself with a thumbwheel, allowing precise aspiration or dispensing. The feature of side lever enables complete liquid dispensing, without a droplet remaining.

Mini Pipette

Features

- Ergonomic design provides excellent operation experience;
- Smart body, ideal to combine with IVD reagents;
- Compatible with universal 200µl tips;
- Various volumes from 25ul to 200ul, different color for different volumes, easy to choose;
- Entire body by one-time molding, robust to use.



Volumes	Color
200ul	Gray
100ul	Blue
75ul	Red
50ul	Orange
30ul	Yellow
25ul	Dark Green
OEM	Optional



Pipette Filler Electronic Basic ESL58569

Elegant design & reliable performance, with long-life battery

Features

- Enables single-handed operation with minimum effort
- Speed adjustment simply with finger tips
- Individually set aspiration (upper button) and dispensing (lower button) speeds
- Compatible with glass or plastic serological pipettes pipettes(0.1- 100mL)
- 0.45µm replaceable hydrophobic filter
- High capacity Li-ion battery enables long operation time



Labware

Large LCD display showing low battery warning and speed settings



Select the desired coarse speed by dressing the button



Aspiration operation buttons

Operating button for motor and gravity dispensing

Pipette Filler Electronic ADV ESL58570

Features

- Compatible with most of the plastic and glass pipettes from 0.1 -100mL
- Six different speed modes for aspiration and dispensing different liquids
- Large LCD display showing low battery warning and speed settings
- Enables single-handed operation with minimum effort
- Light and ergonomic design providing easy usability
- High capacity Li-ion battery enable long runtime of operation
- Powerful pump fills a 25mL pipette in <5 seconds
- 0.45µm replaceable hydrophobic filter
- Rechargeable during use



Hydrophobic filter 0.45µm

Silicone adapter for 0.1-100mL pipette tip, fully autoclavable

Specifications	ESL58569	ESL58570
Aspiration Speed	25mL<5s (6 shift)	25mL<5s (7 shift)
Dispensing Speed		Motor/Gravity
Battery		Lithium-ion
Battery Service Life	More than 8 Hours of Intermittence Use	
Charging Time	2-3 Hours	
Pipette Types	Glass or Plastic Pipette (0.1-100mL), Pasteur Pipettes	
Filter	0.45µm Hydrophobic	
Weight	200g	





Micro-Pipette Fixed Volume Basic

Mechanical, Single-channel Fixed Volume Basic grade of mechanical pipettes from with autoclavable lower half. Each of these high quality laboratory pipettes comes with an individual test certificate, that adheres to ISO8655. Our pipette is one of the most lightweight and easy to operate pipettes on the market.

Features

- Light weight, ergonomic, low force design
- The pipettes cover volume range of 0.1µL to 10mL
- Easy to calibrate and maintain with tool supplied
- Design helps avoid repetitive strain injuries
- Calibrated in accordance with ISO8655.
- The lower section can be autoclaved

Fixed Volume Pipettes

SKU	Volume Range	Increment	Test Volume	Error limits in accordance with ISO8655-2			
				(Accuracy error)		(Precision error)	
				%	µL	%	µL
ESL58572/5UL	5µL	-	5ul	1.30%	0.065	1.20%	0.06
ESL58572/10UL	10µL	-	10µL	0.80%	0.08	0.80%	0.08
ESL58572/20UL	20µL	-	20µL	0.60%	0.12	0.50%	0.1
ESL58572/25UL	25µL	-	25µL	0.50%	0.125	0.30%	0.075
ESL58572/50UL	50µL	-	50µL	0.50%	0.25	0.30%	0.15
ESL58572/100UL	100µL	-	100µL	0.50%	0.5	0.30%	0,3
ESL58572/200UL	200µL	-	200µL	0.40%	0.8	0.20%	0.4
ESL58572/250UL	250µL	-	250µL	0.40%	1	0.20%	0.5
ESL58572/500UL	500uL	-	500µL	0.30%	1.5	0.20%	1
ESL58572/1000UL	1000µL	-	1000uL	0.30%	3	0.20%	2,0
ESL58572/2000UL	2000µL	-	2000uL	0.30%	6	0.15%	3
ESL58572/5000UL	5000µL	-	5000uL	0.30%	15	0.15%	7.5

Micro-Pipette Fixed Volume Advance

The pipette is fully autoclavable, being able to withstand temperatures of 121°C and pressure of 1ATM, and does not need to be pre-treated prior. Following the autoclave cycle, a 12 hour cooling and drying period ensures that the high performance of the Micro-Pipette Fixed Volume Advance is retained. It is recommended the piston and rubber seals be greased after every 10 cycles of autoclaving.

Features

- Streamlined shape design
- Comprehensive volume range from 0.1µL to 10mL
- Easy calibration and maintenance
- Dispensing head rotates for effortless pipetting convenience
- Individual piston and tip cone assembly
- Spring loaded tip cones for easy cleaning and maintenance
- Compound material-made tip cone secures high sealing performance

Fixed Volume Pipettes

SKU	Volume Range	Increment	Test Volume	Error limits in accordance with ISO8655-2			
				(Accuracy error)		(Precision error)	
				µL	%	µL	%
ESL58571/5UL	5µL	-	5µL	±0.065	±1.3	±0.06	±1.2
ESL58571/10UL	10µL	-	10µL	±0.08	±0.8	±0.08	±0.8
ESL58571/20UL	20µL	-	20µL	±0.12	±0.6	±0.1	±0.5
ESL58571/25UL	25µL	-	25µL	±0.125	±0.5	±0.075	±0.3
ESL58571/50UL	50µL	-	50µL	±0.25	±0.5	±0.15	±0.3
ESL58571/100UL	100µL	-	100µL	±0.5	±0.5	±0.3	±0.3
ESL58571/200UL	200µL	-	200µL	±0.8	±0.4	±0.4	±0.2
ESL58571/250UL	250µL	-	250µL	±1.0	±0.4	±0.5	±0.2
ESL58571/500UL	500uL	-	500uL	±1.5	±0.3	±1.0	±0.2
ESL58571/1000UL	1000µL	-	1000µL	±3.0	±0.3	±2.0	±0.2
ESL58571/2000UL	2000µL	-	2000µL	±6.0	±0.3	±3.0	±0.15
ESL58571/5000UL	5000µL	-	5000µL	±15	±0.3	±7.5	±0.15



Micro-pipette Variable Range Basic

Single-Channel Adjustable Mechanical Pipette

Features

The pipette cover wide of variable Volume range

- Light weight, ergonomic, low force design
- The pipettes cover volume range of 0.1 μ L to 10mL
- Easy to calibrate and maintain with tool supplied
- Design helps avoid repetitive strain injuries
- Calibrated in accordance with ISO8655.
- The lower section can be autoclaved

Single-channel Adjustable Volume Pipettes Error limits in accordance with ISO8655-2

SKU	Volume Range	Increment	Test Volume	(Accuracy error)		(Precision error)	
				%	μ L	%	μ L
ESL58573	0.1-2.5 μ L	0.05 μ L	2.5 μ L	2.50%	0.0625	2.00%	0.05
			1.25 μ L	3.00%	0.0375	3.00%	0.0375
			0.25 μ L	12.00%	0.03	6.00%	0.015
ESL58574	0.5-10 μ L	0.1 μ L	10 μ L	1.00%	0.1	0.80%	0.08
			5 μ L	1.50%	0.075	1.50%	0.075
			1 μ L	2.50%	0.025	1.50%	0.015
ESL58575	2-20 μ L	0.5 μ L	20 μ L	0.90%	0.18	0.40%	0.08
			10 μ L	1.20%	0.12	1.00%	0.1
			2 μ L	3.00%	0.06	2.00%	0.04
ESL58576	5-50 μ L	0.5 μ L	50 μ L	0.60%	0.3	0.30%	0.15
			25 μ L	0.90%	0.225	0.60%	0.15
			5 μ L	2.00%	0.1	2.00%	0.1
ESL58577	10-100 μ L	1 μ L	100 μ L	0.80%	0.8	0.15%	0.15
			50 μ L	1.00%	0.5	0.40%	0.2
			10 μ L	3.00%	0.3	1.50%	0.15
ESL58578	20-200 μ L	1 μ L	200 μ L	0.60%	1.2	0.15%	0.3
			100 μ L	0.80%	0.8	0.30%	0.3
			20 μ L	3.00%	0.6	1.00%	0.2
ESL58579	50-200 μ L	1 μ L	200 μ L	0.60%	1.2	0.15%	0.3
			100 μ L	0.80%	0.8	0.30%	0.3
			50 μ L	1.00%	0.5	0.40%	0.2
ESL58580	100-1000 μ L	5 μ L	1000 μ L	0.60%	6	0.20%	2
			500 μ L	0.70%	3.5	0.25%	1.25
			100 μ L	2.00%	2	0.70%	0.7
ESL58581	200-1000 μ L	5 μ L	1000 μ L	0.60%	6	0.20%	2
			500 μ L	0.70%	3.5	0.25%	1.25
			200 μ L	0.90%	1.8	0.30%	0.6
ESL58582	1000-5000 μ L	50 μ L	5000 μ L	0.50%	25	0.15%	7.5
			2500 μ L	0.60%	15	0.30%	7.5
			1000 μ L	0.70%	7	0.30%	3
ESL58583	2-10mL	0.1mL	10mL	0.60%	60	0.20%	20
			5mL	1.20%	60	0.30%	15
			2mL	3.00%	60	0.60%	12



Labware





Micro-Pipette Variable Volume Advance

The pipette is fully autoclavable, being able to withstand temperatures of 121°C and pressure of 1ATM, and does not need to be pre-treated prior. Following the autoclave cycle, a 12 hour cooling and drying period ensures that the high performance of the Micro-Pipette Fixed Volume Advance is retained. It is recommended the piston and rubber seals be greased after every 10 cycles of autoclaving.

Features

- Streamlined shape design
- Comprehensive volume range from 0.1µL to 10mL
- Easy calibration and maintenance
- Dispensing head rotates for effortless pipetting convenience
- Individual piston and tip cone assembly
- Spring loaded tip cones for easy cleaning and maintenance
- Compound material-made tip cone secures high sealing performance

Error limits in accordance with ISO8655-2

SKU	Volume Range	Increment	Test Volume	Systematic Error		Random Error	
				µL	%	µL	%
ESL58573A	0.1-2.5	0.05	2.5	±0.0625	±2.50	±0.05	±2.00
			1.25	±0.0375	±3.00	±0.0375	±3.00
			0.25	±0.03	±12.00	±0.015	±6.00
ESL58574A	0.5-10	0.1	10	±0.1	±1.00	±0.08	±0.80
			5	±0.075	±1.50	±0.075	±1.50
			1	±0.025	±2.50	±0.015	±1.50
ESL58575A	2 - 20	0.5	20	±0.18	±0.90	±0.08	±0.04
			10	±0.12	±1.20	±0.1	±1.00
			2	±0.06	±3.00	±0.04	±2.00
ESL58576A	5 - 50	0.5	50	±0.3	±0.60	±0.15	±0.30
			25	±0.225	±0.90	±0.15	±0.60
			5	±0.1	±2.00	±0.1	±2.00
ESL58577A	10-100	1	100	±0.8	±0.80	±0.15	±0.15
			50	±0.5	±1.00	±0.2	±0.40
			10	±0.3	±3.00	±0.15	±1.50
ESL58578A	20-200	1	200	±1.2	±0.60	±0.3	±0.15
			100	±0.8	±0.80	±0.3	±0.30
			20	±0.6	±3.00	±0.2	±1.00
ESL58579A	50-200	1	200	±1.2	±0.60	±0.3	±0.15
			100	±0.8	±0.80	±0.3	±0.30
			50	±0.5	±1.00	±0.2	±0.40
ESL58580A	100-1000	5	1000	±6	±0.60	±2	±0.20
			500	±3.5	±0.70	±1.25	±0.25
			100	±2	±2.00	±0.7	±0.70
ESL58581A	200-1000	5	1000	±6	±0.60	±2	±0.20
			500	±3.5	±0.70	±1.25	±0.25
			200	±1.8	±0.90	±0.6	±0.30
ESL58582A	1000-5000	50	5000	±25	±0.50	±7.5	±0.15
			2500	±15	±0.60	±7.5	±0.30
			1000	±7	±0.70	±3	±0.30



Micro-Pipette Variable Volume Pro

new generation fully autoclavable mechanical pipette has the best ergonomic design and ultralight weight. It has been designed keeping in mind the human form and human factors to offer smooth and effortless ergonomic pipetting experience. It is UV sterilisable and resistant to strong chemical corrosion. In addition, the volume lock helps protect from volume changing accidentally, and achieve reliable pipetting of smallest volume of liquids.

Features

- Ultra-light ergonomic design : Light weight and light pipetting force with soft range adjustment and piston movement offers effortless & fatigue-less pipetting experience.
- Accurate pipetting : Special material and the updated components & technologies effectively reduces the operating force for accuracy, precision and reliability..
- Complete sterilization : The best in class pipette material used is fully autoclavable. It gives better protection against chemical & physical corrosion, and offers enhanced UV resistance for higher durability.



Labware

Error limits in accordance with ISO8655-2

SKU	Volume Range	Increment	Test Volume	Systematic Error		Random Error	
				µL	%	µL	%
ESL58573P	0.1-2.5	0.002	2.5	±0.04	±1.4	±0.02	±0.7
			1.25	±0.03	±2.5	±0.02	±1.5
			0.25	±0.03	±12.0	±0.02	±6.0
ESL58574P	0.5-10	0.01	10	±0.10	±1.0	±0.04	±0.4
			5	±0.08	±1.5	±0.04	±0.8
			1	±0.03	±2.5	±0.02	±1.8
ESL58575P	2-20	0.02	20	±0.20	±1.0	±0.06	±0.3
			10	±0.12	±1.2	±0.06	±0.6
			2	±0.10	±5.0	±0.03	±1.5
ESL58576P	5-50	0.05	50	±0.45	±0.9	±0.15	±0.3
			25	±0.35	±1.4	±0.20	±0.8
			5	±0.15	±3.0	±0.08	±1.6
ESL58577P	10-100	0.1	100	±0.80	±0.8	±0.20	±0.2
			50	±0.50	±1.0	±0.15	±0.3
			10	±0.30	±3.0	±0.10	±1.0
ESL58578P	20-200	0.2	200	±1.20	±0.6	±0.40	±0.2
			100	±1.00	±1.0	±0.30	±0.3
			20	±0.50	±2.5	±0.14	±0.7
ESL58579P	30-300	0.2	300	±1.80	±0.6	±0.60	±0.2
			150	±1.50	±1.0	±0.45	±0.3
			30	±0.75	±2.5	±0.21	±0.7
ESL58580P	100-1000	1	1000	±6.00	±0.6	±2.00	±0.2
			500	±5.00	±1.0	±1.00	±0.2
			100	±3.00	±3.0	±0.60	±0.6
ESL58581P	1000-5000	5	5000	±30.00	±0.6	±10.00	±0.2
			2500	±15.00	±0.6	±7.50	±0.3
			1000	±12.00	±1.2	±3.00	±0.3
ESL58582P	2000-10000	10	10000	±60.00	±0.6	±20.00	±0.2
			5000	±40.00	±0.8	±10.00	±0.2
			2000	±30.00	±1.5	±6.00	±0.3



Micro-Pipette Multi Channel Variable Range Basic

Multi-channel, Mechanical, 12-channel Adjustable

Features

- Light weight, ergonomic, low force design
- The pipettes cover volume range of 0.1µL to 10mL
- Easy to calibrate and maintain with tool supplied
- Design helps avoid repetitive strain injuries
- Calibrated in accordance with ISO8655.
- The lower section can be autoclaved
- 8 and 12 channel pipettes are available for standard 96-well plate
- Dispensing head rotates for optimum pipetting convenience
- Individual piston and tip cone assemblies allow easy repair and maintenance
- Compound material tip cone design allows visual seal verification
- Can be used with universal style pipette tips



8-channel Adjustable Volume Pipettes

SKU	Volume Range	Increment	Test Volume	Error limits in accordance with ISO8655-2			
				(Accuracy error)		(Precision error)	
				%	µL	%	µL
ESL58584/0.51	0.5-10µL	0.1µL	10µL	1.50%	0.15	1.50%	0.15
			5µL	2.50%	0.125	2.50%	0.125
			1µL	4.00%	0.04	4.00%	0.04
ESL58584/55	5-50µL	0.5µL	50µL	1.00%	0.50	0.50%	0.25
			25µL	1.50%	0.375	1.00%	0.25
			5µL	3.00%	0.15	2.00%	0.1
ESL58584/503	50-300µL	5µL	300µL	0.70%	2.1	0.25%	0.75
			150µL	1.00%	1.5	0.50%	0.75
			50µL	1.50%	0.75	0.80%	0.4

12-channel Adjustable Volume Pipettes

SKU	Volume Range	Increment	Test Volume	Error limits in accordance with ISO8655-2			
				(Accuracy error)		(Precision error)	
				%	µL	%	µL
ESL58585/0.51	0.5-10µL	0.1µL	10µL	1.50%	0.15	1.50%	0.15
			5µL	2.50%	0.125	2.50%	0.125
			1µL	4.00%	0.04	4.00%	0.04
ESL58585/55	5-50µL	0.5µL	50µL	1.00%	0.5	0.50%	0.25
			25µL	1.50%	0.375	1.00%	0.25
			5µL	3.00%	0.15	2.00%	0.1
ESL58585/503	50-300µL	5µL	300µL	0.70%	2.1	0.25%	0.75
			150µL	1.00%	1.5	0.50%	0.75
			50µL	1.50%	0.75	0.80%	0.4



Micro-Pipette Multi Channel Variable Range Advance

Multi-channel, Mechanical, 12-channel Adjustable

Features

- Light weight, ergonomic, low force design
- The pipettes cover volume range of 0.1µL to 10mL
- Easy to calibrate and maintain with tool supplied
- Design helps avoid repetitive strain injuries
- Calibrated in accordance with ISO8655.
- The lower section can be autoclaved
- 8 and 12 channel pipettes are available for standard 96-well plate
- Dispensing head rotates for optimum pipetting convenience
- Individual piston and tip cone assemblies allow easy repair and maintenance
- Compound material tip cone design allows visual seal verification
- Can be used with universal style pipette tips



8-channel Adjustable Volume Pipettes

SKU	Volume Range	Increment	Test Volume	Systematic Error		Random Error	
				µL	%	µL	%
ESL58584/0.51A	0.5-10	0.1	10	±0.15	±1.50	±0.15	±1.50
			5	±0.125	±2.50	±0.125	±2.50
			1	±0.04	±4.00	±0.04	±4.00
ESL58584/55A	May-50	0.5	50	±0.5	±1.00	±0.25	±0.50
			25	±0.375	±1.50	±0.25	±1.00
			5	±0.15	±3.00	±0.1	±2.00
ESL58584/101A	10-100	1	100	±0.8	±0.80	±0.3	±0.30
			50	±0.5	±1.00	±0.4	±0.80
			10	±0.3	±3.00	±0.2	±2.00
ESL58584/503A	50-300	5	300	±2.1	±0.70	±0.75	±0.25
			150	±1.5	±1.00	±0.75	±0.50
			50	±0.75	±1.50	±0.4	±0.80
ESL58584/1010A	100-1000	10	1000	±10	±1.00	±3	±0.30
			500	±10	±2.00	±2.5	±0.50
			100	±5	±5.00	±1	±1.00

12-channel Adjustable Volume Pipettes

SKU	Volume Range	Increment	Test Volume	Systematic Error		Random Error	
				µL	%	µL	%
ESL58585/0.51A	0.5-10	0.1	10	±0.15	±1.50	±0.15	±1.50
			5	±0.125	±2.50	±0.125	±2.50
			1	±0.04	±4.00	±0.04	±4.00
ESL58585/55A	May-50	0.5	50	±0.5	±1.00	±0.25	±0.50
			25	±0.375	±1.50	±0.25	±1.00
			5	±0.15	±3.00	±0.1	±2.00
ESL58585/101A	10-100	1	100	±0.8	±0.80	±0.3	±0.30
			50	±0.5	±1.00	±0.4	±0.80
			10	±0.3	±3.00	±0.2	±2.00
ESL58585/503A	50-300	5	300	±2.1	±0.70	±0.75	±0.25
			150	±1.5	±1.00	±0.75	±0.50
			50	±0.75	±1.50	±0.4	±0.80





Electronic Pipette Plus

For Pipetting Mixing, Stepper and Dilution



Electronic E Pipette

For Pipetting and Mixing

Electronic Micropipette

Features

- Motor driven digitally control pipette with multifunction's
- Easy Operations and Handling
- intuitive menu interface settings; functions and operations
- Minimal force for pipetting operation
- High performance ensuring accuracy & repeatability
- 2 buttons for all operational settings
- Adjustable speed for aspiration and dispensing
- Li-ion battery enable longer Operative time
- Convenient and Versatile
- Self-colibrioti0n applicable

Specifications

SKU	Channels	Volume Range	Increment	Test Volume	Accuracy Error		Precision Error	
		μL	μL	μL	μL	%	μL	%
ESL58586E1	1	0.5-10	0.01	10	± 0.10	± 1.00	± 0.05	± 0.50
ESL58587EP1				1	± 0.035	± 3.50	± 0.03	± 3.00
ESL58586E5	1	5-50	0.1	50	± 0.40	± 0.80	± 0.15	± 0.30
ESL58587EP5				5	± 0.15	± 3.00	± 0.125	± 2.50
ESL58586E3	1	30-300	1	300	± 1.80	± 0.60	± 0.60	± 0.20
ESL58587EP3				30	± 0.09	± 3.00	± 0.21	± 0.70
ESL58586E10	1	100-1000	5	1000	± 6.00	± 0.60	± 2.00	± 0.20
ESL58587EP10				100	± 3.00	± 3.00	± 0.60	± 0.60

specifications are used as guidelines on the user calibration should refer to the industrial standard ISO 8655





Pipettes Stand Linear ESL58588

The universal linear pipette holder designed and manufactured by ES is compatible with our pipette series. It can stably and conveniently hold up to 8 single-channel and multi-channel pipettes simultaneously, and up to 10 pipettes. This holder is a practical tool for laboratory pipetting operations due to its stability and convenience.

Multi-Functional 8-channel Electronic Pipette

ES multi-functional high performance 8-channel electronic pipette offers productive pipetting with its easy-to-understand operations. Its uniquely lightweight streamlined design ensures an effortless transfer of multiple samples with an increased throughput and data reproducibility.

- **Easy Operation**
Intuitive interface for setting functions and parameters.
- **Ergonomic Design**
Low operation forces for complete work, which is exceptionally fatigue-free.
- **Convenient and Versatile**
360° pipetting. Double knobs for simple and versatile control. Easy loading tip cones offers smooth and leak-free operation.
- **Dual charging modes**
Use of USB charger or the charging stand to ensure uninterrupted use.

Three easy steps to operate

1

Long press the Parameter Knob for 2 seconds to Start

2

Quickly turn the Function wheel to Activate, Rotate to Switch Pipetting, Continuous Dispensing, and other Function Settings

3

After quickly turning the Parameter Knob to Unlock, Turn to Adjust the Volume, Press to Pipette, Long press to Mix



Pipettes Stand Round ESL58588R

The universal circular pipette holder designed and manufactured by ES is compatible with the Dragon pipette series - MicroPette Plus pipettes. The freely rotatable circular pipette holder can securely hold up to 6 single and multi-channel pipettes.



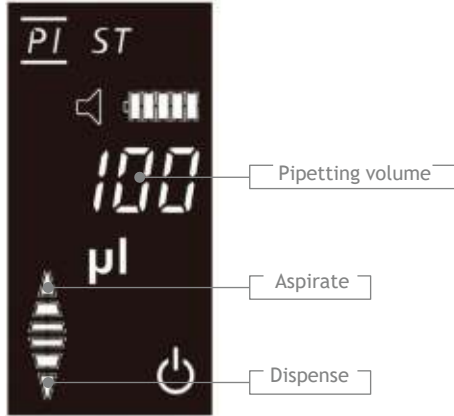
Labware



Electronic Pipette

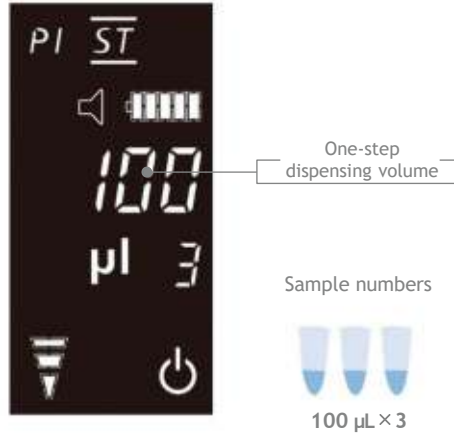
Pipetting function

Parameter Knob press → Pipetting
 Long press → Mixing



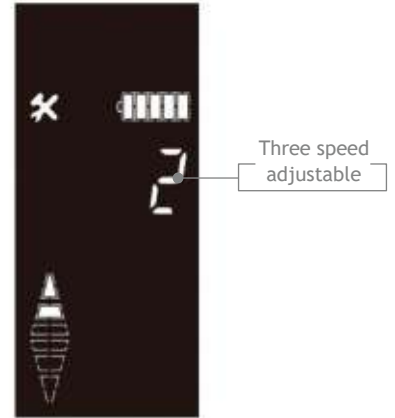
Stepper function

Maximum steps = Pipette nominal volume / One step dispensing volume



Other function

Pipetting speed adjustment
 Key tone ON/OFF



Supports dual charging mode



Complimentary Pipette Holder

Support automatic Calibration

Connect it to the computer, with the free software provided for calibration

Specifications

8-channel Adjustable Volume Pipettes							
SKU	Volume Range	Increment	Test Volume	Systematic Error		Random Error	
				µL	%	µL	%
ESL58589/8E1	8	0.5-10	0.01	10	±0.20	±2.00	±0.10
				5	±0.20	±4.00	±0.10
				1	±0.08	±8.00	±0.05
ESL58589/8E10	8	10-100	0.1	100	±0.80	±0.80	±0.30
				50	±0.50	±1.00	±0.40
				10	±0.30	±3.00	±0.20
ESL58589/8E15	8	15-300	1	300	±1.80	±0.60	±0.90
				150	±1.50	±1.00	±0.75
				15	±0.60	±4.00	±0.15
ESL58589/8E3	8	30-300	1	300	±1.80	±0.60	±0.90
				150	±1.50	±1.00	±0.75
				30	±0.90	±3.00	±0.30



PCR Thermal Cycler Basic ESL58602

Features

- 3 driving modes
- From the display screen, PC, or tablet. Modifying, creating, deleting, programming is simplified and infinitely customizable.
- From 5 °C to 100 °C in a few seconds!
- Amplification times are short (25 to 70 min) because the thermocycler benefits from a Peltier effect module. It also has a sample conservation mode at 4 °C at the end of the amplification. CE standards compliant.
- Free PCR software to download
- - Real-time monitoring (progress, cycles, duration)
- - Counter for the number of theoretical copies
- - Animation synchronized with the cycle progress
- Experiment files and educational videos available

Technical Parameters

Sample volume	0.2 mL
Maximum number of customizable programs	Unlimited
Screen	128 x 64 mm
Display accuracy	0.1 °C
Number of blocks	1
Temperature accuracy at 55 °C	±0.2 °C
Max number of programs stored	8
Dimensions (L x W x H)	225 x 140 x 100 mm
Temperature scale	1 to 99 °C
Number of samples	16
Heating rate	3 °C/s
Bluetooth data transfer,	USB cable



Thermocycler with screen and knob for displaying and programming cycles.
Supplied with control software for PC or tablet to download.



PCR Thermal Cycler Basic System Complete Package ESL58602SET

The package consists of:

- 1 didactic 16-well PCR thermocycler ref. ESL58602,
- 1 electrophoresis tank with trans illuminator ESB52162 and 1 micropipette 2/20 µl ref. ESL58575
- 1 PCR Express DNA replication kit ,
- 1 micro-centrifuge DLAB ® D1008 7000 Trm ref. ESL58503,
- 1 refrigerated rack for PCR micro tube ref. ESL56950,
- 1 rack of 96 pipette tips 0-200 µl ref. ESL556956R

Auto Pipettes Single Channel
ESL58575



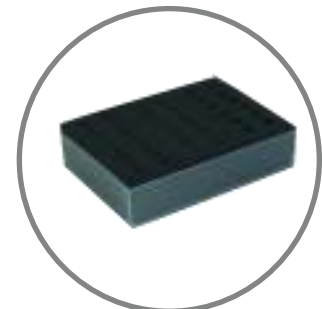
Rack of 96 Pipette Tips 0-200 µl
ESL556956R



PCR Thermal Cycler Basic
ESL58602S



Refrigerated Rack for PCR
ESL56950



Micro Centrifuge
ESL58503



Electrophoresis System
ESB52162



Thermal Cycler Regression ESL58603G

Thermal Cycler Regression Advance ESL58603GA

Thermal Cycler Standard ESL58603S

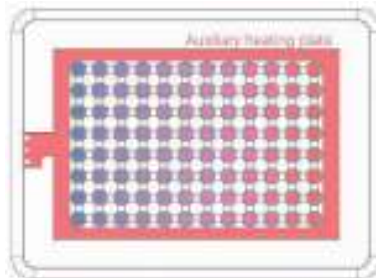
Thermal cycler is essential laboratory instrument in the field of molecular biology research such as sequencing, gene cloning, gene expression, mutagenesis applications and applied market like drug discovery, agriculture, food industry, etc.



Excellent temperature uniformity



Gradient function



Features

- High performance long life Peltier and independent control circuits for different heating segments implement accurate temperature control
- Auxiliary heating mechanism diminishes the "edge effect" and enhance the temperature uniformity
- Wide touchdown PCR temperature range (-9.9°C~+9.9°C) and Long PCR time range (-9min59s~+9min59s)
- Gradient temperature setting supported, optimizing temperature easily in the single run
- User friendly interface on 7 inch color touch screen enable you edit the program very simple
- The PCR touch screen pen improves the operation experience and reduces the cross contamination risk



More features

- Wide options of consumables common PCR tubes, 8-well PCR strips and 96-well PCR plates can be used
- File customization, multi-file storage
- Power-off protection function, automatic program recovery
- Hot lid auto-off function: If the module temperature is lower than 30°C, the hot lid function will automatically turn off



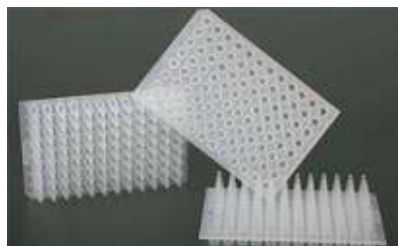
LCD touch panel



Excellent temperature accuracy



Labware



Specifications	ESL58603G	ESL58603GA	ESL58603S
Sample Capacity	96 ×0.2 mL PCR tube - 12 ×0.2 mL PCR-8 strips - 0.2 mL 96 PCR Microplate		
Heating Temperature Range /°C	4-105	4-105	0-105
Lid Temperature Range /°C	30-110	30-110	30-115
Temperature Display Accuracy /°C	±0.1	±0.1	±0.1
Temperature Display Accuracy@55°C	±0.3	±0.3	±0.1
Temperature uniformity@55°C	<0.3	<0.3	±0.2
Max. Heating/Cooling Rate	5°C/Sec	5°C/Sec	5°C/Sec
Gradient Temperature Setting Range /°C	-	30-99	30-105
Gradient Range /°C	-	1-42	1-42, enter 0 to turn off the gradient.
Temperature control method	Block/Tube	Block/Tube	Block/Tube
Adapter block material	Aluminum	Aluminum	Aluminum
Display	7"LCD 800×480	7"LCD 800×480	7"LCD 1024×600
Input	Touch panel	Touch panel	Touch panel
Computer host system	-	-	Yes
Communication interface	-	-	USB、WIFI
User defined file system	Max.30 segments 99 cycles, and storage for over 200 files		20000+ (USB FLASH)
Power off protection	Yes	Yes	Yes



Digital Rotary Evaporator ESL58609

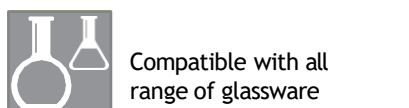
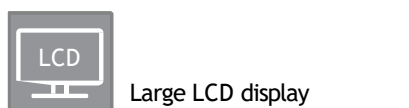
LCD Digital Rotary Evaporator is an essential instrument in chemical laboratories for the efficient and gentle removal of solvents from samples by evaporation. It offers an excellent distilling solution in a wide range of applications.



Features

- Digital display of both rotation speed and heating temperature allows for optimal control of all distillation processes
- Automatic motor lift releases the evaporating flask to a safe position in case of power failure
- 5L heating bath with wide temperature range from room temp. to 180°C, Water/oil heating mode can be changed only through a switch
- Overheating protection temperature at 220°C
- Boil-dry protection, automatically power off if heating without water/oil in the heating bath
- Speed range from 20 to 280rpm, and interval operation in clockwise and anticlockwise directions for drying process
- Patented condenser (cooling surface 1700cm²) with excellent cooling effect
- Ejection mechanism ensures easy removal of evaporating flask
- Patented double spring sealing ring made of PTFE provides an excellent sealing performance
- Remote function provides PC control and data transmission
- Optional glassware with explosion proof film available.

ESL58609



Specifications	ESL58609
Motor Type	Brushless DC motor
Speed Range	20-280rpm
Display	LCD(speed, temperature, time)
Clockwise and Anti-clockwise	Yes
Heating Temperature Range	Room temp. to 180°C
Control Accuracy	water: + 1°C oil: + :3°C
Heating Power	1300W
Stroke Displacement	automatic 150mm
Timer	Yes
Time Setting Range	1-999min
Dimension[DxWxH]	465x457x583mm
Weight	15kg
Permissible Ambient Temperature	5-40°C
Permissible Relative Humidity	80%RH
Protection Class	IP20
USB Interface	Yes
Voltage/Frequency	100-120/200-240V50/60Hz
Power	1400 W



NEW

Pharmacy & Lab Refrigerator (+2/25C)

Temperature setting range +2 to +15 °C
 Gas: environmentally friendly R290 gas
 Exterior: White skin plate metal sheet
 Interior: Stainless steel AISI 304 for perfect highiene
 CE certified. Company have ISO 9001:2015 certification
 2 year warranty on parts
 Forced air cooling circulation
 Automatic defrost
 Extra probe for product temperature simulation
 Inbuilt data logger, that creates a pdf file with temperature graphics and alarms. USB for data retrieval
 Battery back up to keep controller and alarms working for at least 26 hours after power failure
 Safety thermostat to prevent temperatures to go below 2 degrees.



SKU NO	Ext.Dimn.	Int.Dimn.	NO. Shelves	Vol
ESG59027	W600 x D600 x H835 mm	W480 x D410 x H690 mm	2 + 1	122 Ltr
ESG59028	W600 x D700 x H1510 mm	W480 x D500 x H1358 mm	5	324 Ltr
ESG59029	W600 x D700 x H1865 mm	W480 x D500 x H1724 mm	5	416 Ltr
ESG59030	W720 x D840 x H2020 mm	W560 x D665 x H1440 mm	4	535 Ltr

Pharmacy & Lab Refrigerator (+2/25C) Glass Door

Temperature setting range +2 to +15 °C
 Gas: environmentally friendly R290 gas
 Exterior: White skin plate metal sheet
 Interior: Stainless steel AISI 304 for perfect highiene
 CE certified. Company have ISO 9001:2015 certification
 2 year warranty on parts
 Forced air cooling circulation
 Automatic defrost
 Extra probe for product temperature simulation
 Inbuilt data logger, that creates a pdf file with temperature graphics and alarms.
 USB for data retrieval
 Battery back up to keep controller and alarms working for at least 26 hours after power failure
 Safety thermostat to prevent temperatures to go below 2 degrees.



SKU NO	Ext.Dimn.	Int.Dimn.	NO. Shelves	Vol
ESG59027G	W600 x D600 x H835 mm	W480 x D410 x H690 mm	2 + 1	122 Ltr
ESG59028G	W600 x D700 x H1510 mm	W480 x D500 x H1358 mm	5	324 Ltr
ESG59029G	W600 x D700 x H1865 mm	W480 x D500 x H1724 mm	5	416 Ltr
ESG59030G	W720 x D840 x H2020 mm	W560 x D665 x H1440 mm	4	535 Ltr



Flake Ice Maker

ELS-625FS
ESL-625F
ESL-625

- Flake Type Ice Maker
- Full Automation
- Screw Turbine Level



Flake Ice Maker		ESL-625FS	ESL-625F	ESL-625
Production Day		80 kg	120 Kg	180 KG
Storage Capacity		58 Liter	120 Liter	120 Liter
Compressor		1/3HP ,R404A	1/3HP ,R404A	1/2HP,R404A
Dimension	(In)	345 x 450 x 740 (H)mm	450 x 420 x 6300 (H)mm	485 x485 x510(H)mm
	(Out)	600 x 560 x 740 (H)mm	675 x 560 x 1065 (H)mm	990 x635 x1190 (H)mm
Material	(In)	Stainless Steel	Stainless Steel	Stainless Steel
	(Out)	Stainless Steel	Stainless Steel	Stainless Steel With Powder Coating
Weight		61 kg	83 kg	125 kg
Power		220 V,800,60Hz	220 V,800,60Hz	220 V,1.3KW,60Hz
Ice Type		Flake Type Ice		
Door		Front PC Door		
Safety Device		Power Circuit Beaker , , Ice Level Sensor, Water Level Sensor		
Accessory		Drain & supply Gose, , Scoop		



ESL-625FS

ESL-625F

ESL-625



Laminar Flow Clean Bench

ESL-700LV

Features

- Micro Processor Control
- Easy Controlling Verifying Operation
- High Efficiency filter minor vibration ,low noise design
- Removable Working Table For Easy Cleaning
- Inflow pre filter installed fro extending life of Hepa filter Meet bio safety level 1.2.3

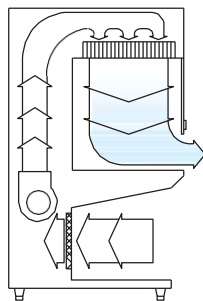


Suction Pump

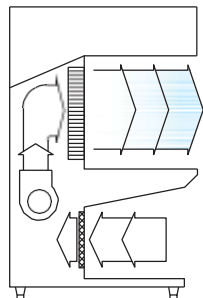
Option



Labware



Vertical air flow



Horizontal air flow

Model	ESL-700 LVN	
type	Vertical air flow type	
Main Control	Microprocessor Control with Touch pad	
Purity	Lower Than Class 100	
Main Filter	HEPA Filtrre (99.99% efficient at 0.3micron particles)	
Pre Filter	Nylon material	
Dimension (WXDXH) (mm)	(In) 1200 x 620 x 7 710	(Out) 1320 X 790 X 1920
Material	(In) Stainless Steel	(Out) Steel plate with Powder Coating
Illumination	30W.F.L X 2EA	
UV Lamp	30W.U.V x 2EA	
Door	Sliding Glass Door	
Power	220V, 3A, 60HZ	



Bio Hazard Safety Cabinet

ESL-801SC - ESL-802SC

ESL-803SC - ESL-804SC

Features

- Micro Processor Control
- Easley Controlling Verifying Operation
- High Efficiency filter minor vibration ,low noise design
- Removable Working Table For Easy Cleaning
- Inflow pre filter installed fro extending life of Hepa filter Meet bio safety level 1.2.3



Suction Pump

Option



Model	EESL-801SC	ESL-802SC	ESL-803SC	ESL-804SC
Dimension (In)	960 X 580 X 670	1160 X 580 X 670	1460 x 580 x 670	1660 x 580 x 670
(WXDXH) (mm) (Out)	1100 X 770 X 2310	1300 x 770 x 2130	1600 x 770 x 2310	1800 x 770 x 2310
type	Bio Hazard Safety Type, Glass II Type			
Main Control	Microprocessor Control with Touch pad			
Winding Velocity	0.3 - 0.5m/sec			
Purity	Lower Than Class 100			
Main Filter	HEPA Filter /0.3 micron 99.99% efficiency			
Pre Filter	Nylon material/ Internal moundted			
Working Table	Easy removable plate			
Material (In)	Working table Stainless Steel SUS 304			
(Out)	Cabinet Steel plate with Powder Coating			
Illumination	40w flurosecent lamp X 2EA			
UV Lamp	40W X 1EA			
UV Timer	15,30,60 min or Hold			
Utility	Air Cock, Gas Cock, Electric Outlets			
Door	Sliding Glass Door, Tempered Safety Glass			
Safety System	Door Limit Alarm			
Power	220V, 2.2A, 60HZ			





EduScience UK



FURNITURE



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FURNITURE

- Classroom Furnitures
- laboratory Fittings





Science Cart

This mobile system will transform any room into a science lab. The cart is fitted with sets of trays for laboratory experiment equipment and easily movable from room to room.

The EduCart is a flat packed, cost-effective mobile teaching complex and convenient storage system, which provides an integrated approach to teaching natural sciences with the use of modern technology.

The EduCart frame is made out of sturdy, acid resistant steel with doors that are fire and scratch resistant. One of the side has a heavy duty handle for easy manoeuvring and, with the help of our high quality wheels, the cart can be easily pushed over uneven ground.

The autonomous water system consists of an acid resistant polypropylene sink with a stainless steel faucet. The water flow can be easily controlled with a button that is connected to the built-in electric pump.

Size of the cart assembled : L1509 x W690 x H1073mm.

ESA62322

Mobile Science Bench

The Mobile Science Bench (MSB) has been designed by science teachers for Secondary and Tertiary school science teaching and learning. It is a self-contained mobile science laboratory enabling the teaching of science in any classroom within your school or institution. The MSB provides an ideal flexible laboratory facility for wheel in Lectures and demonstrations and as a temporary laboratory facility when schools are undergoing redevelopment and change. The bench is designed for Secondary students providing the correct working height and the width allows easy access through standard doorways.



Features:

Laboratory grade working surface: Trespa Athlon, Pull out surfaces for extra working space, Gratnells trays provide ample storage space for equipment, Lockable doors for safety, Push/pull handles for easy manoeuvrability, Lockable castors for stability, Mains plug with minimum 4 socket outlet, Double gas tap tubing for bottled gas*, Running water via clean waste water tanks. Powerful water pump and waste disposal system, Screw in sockets for standard retort stands, Computer monitor arm, Lockable computer storage

Supplied with:

12 x Blue Shallow Gratnell trays (6 on each side), 1 x Small drip cup sink, 1 x 2 way gas tap with fixed tubing, 1 x Swan neck water tap 5 x lockable doors with keys, Tubing connected to gas tap (no gas regulator supplied), Computer screen monitor arm, 2 x Screw in retort stand sockets, 2 x water containers (1 x waste-Black, 1 x fresh-Clear), 1 x smooth constant flow fully sealed IP65 rated water pump, Self- Priming pump up To 3m (10ft), Suitable For 15mm Quick Connect Plumbing, Run dry protection Strainer to protect from debris, 1 x Irwin Powerswitch PSU, 1 x Input Supply voltage 230V dc Supply frequency 50Hz, Mains fuse Rear panel 2A, 20mm quick blow Mains plug 3A, Output Voltage 2, 4, 6, 8, 10, 12V ac nominal 1, 3, 5, 7, 9, 11V full wave rectified DC nominal, Maximum output current 5A AC or DC Please note: The bench is not supplied with either a gas regulator or gas bottle. A suitable and sufficient COSHH (Control of Substances Hazardous to Health Regulations) and DSEAR (Dangerous Substances and Explosive Atmospheres Regulations) risk assessment must be performed for gas and gas equipment by the school.

Size : 1250 (Height) x 1530 (Width) x 700 (Depth)

* Gas bottle requirements are Butane gas in either 3.5kg or 4.5kg sizes.

ESA62324





Primary Science Bench

A fully functional, mobile science laboratory designed specifically for Primary Schools.

All benches are supplied with mains power, lockable castors and both cupboards contain Gratnells trays. Complete Primary Science Bench supplied fully assembled with all the below options. Options can be modified to suit your teaching environment. Please call us to discuss further.

Laboratory grade working surface - 16mm Trespa, Pull out surfaces for extra working area, Plenty of storage space, Gratnells trays for storage of science equipment, Lockable wheels, Lockable cupboard doors, Butane Gas (optional), Running water with clean and waste tanks, Monitor arm (optional)

Length : 1400mm

Depth : 700mm Height:

845mm . Weight : 210Kgs

approximately

Please note: The bench is not supplied with either a gas regulator or gas bottle. A suitable and sufficient COSHH (Control of Substances Hazardous to Health Regulations) and DSEAR (Dangerous Substances and Explosive Atmospheres Regulations) risk assessment must be performed for gas and gas equipment by the school.

Dimensions : 1200 (Height) x 1400 (Width) x 700 (Depth)

Weight : 205kg,

* Gas bottle requirements are Butane gas in either 3.5kg or 4.5kg sizes.

ESA62325



Mobile Food Technology Bench

Versatile mobile Food Technology Bench which allows the teaching of Food Technology to be performed in an ordinary classroom. The unit comes complete with running water, clean and waste water tanks, a full sized cooker/grill, a twin hob induction cooker, a silicone pastry mat and rolling pin, 5 standard Gratnells trays and additional storage. Requires 2 x Mains outlet ? 1 for the cooker/water and 1 for the induction hob.

The unit is sized to easily fit through standard doorways and is fitted with wheels (two lockable) for ease of use. **Key features:**

Food Grade working surface 16mm Trespa

Athlon Full size electric cooker with grill

Twin induction hob and large silicone pastry mat in locked storage cupboard

Running water with clean and waste tanks

Gratnells trays for storage of utensils and cooking equipment

Lockable cupboard doors

Easy push with lockable wheels for stability Only requires 2 x 13A socket for power

Dimensions :

Length : 1424

mm Depth :

700mm Height :

950 mm

ESA62327



Fume Cupboard Mobile Eduscience 1000Rs

Mobile Fume Cupboard

Product Description

The unit gives good flexibility and can be manoeuvred to different locations. An RS CMS schools filter is used to absorb the fumes generated during practical work. A pre filter is fitted to protect the filter and the filter and fan are housed in the base of the unit. A counterweighted front sash and

clear laminated safety glass sides and rear provide 360° visibility ideal for demonstrations. The unit comes complete with an integral storage cupboard

and fan failure monitoring system. The optional services are remote gas, electrical socket, and remote water service including drip cup, bottle trap and a 2m flexible drain hose.

Complies to building bulletin 88 from the Department of Education and Employment

Tested by CLEAPSS

Designed to comply to BS 7989:2001

Benefits:

Variable air volume (two speed)

Fully mobile

360° visibility

No ducting required

Sliding front sash

Fan failure monitoring

Restraining stainless steel tether

Integral storage cupboard

Specifications:

Average inflow: 0.4m/s

Minimum working aperture: 200mm high

Maximum working aperture: 365mm high

Voltage : 230V

Filter type: RS CMS schools filter, a blended filter to meet the national curriculum needs for teaching science

Please note that the appearance of the product may differ from the models shown. If in doubt please contact customer services.

Size : 1000 x 700 x 1850mm (w x d x h)

Internal **Dimensions** : 840 x 500 x 865mm (w x d x h)

Minimum working aperture : 200mm high

Maximum working aperture : 365mm high

Voltage : 230V 50Hz 1ph



ESA62329



Fume Cupboard Static Filtration

Static Filtration Fume

Cupboard Product Description

Features & Benefits:

it is ideally suited for the use in the classroom or prep-room, 22kg CMS carbon filter, Filtrate pre-filter, Polypropylene worktop and vulcathene dricup, Low airflow alarm, No ducting required, Sliding front sash, Standard services including: gas and water, Single electric socket, Plain stand, Light, Energy efficient

Specifications

External size: 1000 x 760 x 2200mm (WxDxH)

Internal size: 950 x 550 x 780mm (WxDxH)

Minimum working aperture: 200mm high

Maximum working aperture: 365mm high

Average airflow: 0.4M/s (alters with sash position)

Voltage: 230V 50Hz 1ph

Filter: CMS schools filter blended to meet the national curriculum needs for teaching science

ESA62334





Fume Cabinet Ductless

EDU Chemcap ductless fume cabinet, for bench mounting. Pre-filter and Chemcap filters (x2), MP type.

Sound Level: <50dBA, Face Velocity: >0.3m/s, Power: 96W, Air Changes: 0.59 m³

Features

Quiet operation >50dBA.

Anemometer airflow indicator.

All round visibility of cabinet interior.

Edu Chemcap exceeds the requirements of important international standards for use of recirculatory filtration cabinets in schools and colleges:

Design Note 29 and Building Bulletin 88 Ideal for teaching practical chemistry

ES EDU Chemcap fume cabinet (ductless, recirculatory filtration) is ideal for use in education, providing staff and students with a flexible system that allows excellent all round vision and ensures safety is maintained.

The use of Chemcap Carbon filtration (type MP) makes it ideal for a mixed use laboratory and removes a very wide variety of fumes and vapours. Cabinets have trapezium shaped front access and double hinged front doors which open fully to allow access to the cabinet interior for loading, setting up an experiment and for cleaning. The base tray is black which is excellent for highlighting spillages. Two services ports with covers are provided in the rear panel.

Cabinet can be placed onto an existing work surface or supplied with its own mobile bench (optional cupboard doors and services kit).

The mobile bench enables the cabinet to be fully mobile, large castors (lockable) facilitate easy movement of the cabinet from room to room over

rough floors and door sills.

The secure docking hub is an optional extra which is a wall mounted lockable cabinet providing security and protection for utility connections. Filtration technology ES is a leader in carbon filtration technology: High performance laboratory grade carbon filter media is impregnated with additives to ensure the best possible retention capacity and filtration performance.

Chemcap Enviro Filters: was one of the first companies to replace potentially toxic and carcinogenic inorganic additives with environmentally friendly and biodegradable compounds, whilst achieving excellent retention capacities that are amongst the best in the world.

Filtration used In EDU Cabinets Pre-filtration; eliminates particles at 5.0micron or larger to an efficiency of 92% as defined in BS EN ISO 779.

Carbon Filtration eliminates toxic species and compounds within the recommended occupational exposure limit for pollutant gases having molecular weight equal to or greater than 30.

Efficiency 99.9%.

Optional: HEPA filtration (H14 Standard) eliminates particles 0.3 microns or larger to an efficiency of 99.995%. Optional extras

Secure Docking Hub. Security and protection for your students and staff - enables your cabinet to be moved around safely. Wall-mounted secure utility connections cabinet.

Lockable, accessed by authorised users only.

Customizable access plate in base.

Connections secure at all times, in use or not.

Mobile Bench. Make your portable EDU Chemcap fume cabinet fully mobile with the addition of a robust epoxy coated pressed steel open stand (Part No. AT0013/01) or cupboard (Part No. AT0013/02). Large lockable castors assist when moving over rough floors and door sills. Double electrical socket included, mounted to the rear of the bench.

Mobile bench Option Services Kit Option. Gas tap and swan neck water tap with drip cup. Connectors and hoses (1.5m) are included.

ESA62331 Dimensions (mm) WxDxH: 1020x750x1130

ESA62332 Dimensions (mm) WxDxH: 1020x750x1950

ESA62333 Dimensions (mm) WxDxH: 1020x750x1950





Safety Cabinet Acid And Alkali Floor

Use of caustic materials present many hazards, particularly if acids and alkalis are stored incorrectly or with other chemicals. These storage cabinets enable secure and identifiable storage in the workplace.

Welded all steel structure for extra strength Seven lever safe lock for high security Full length heavy duty hinges with concealed fixings to prevent forced entry New regulation labels enclosed to be fitted by customer to suit regulations Powder coated with Germ Guard Active Technology anti-bacterial paint. Made from 1.5mm steel Integral liquid-tight sump encourages the correct handling of spills through the use of absorbent Reaction to Fire Classification EN 13501-1

ESA62335	W 900 x d 460 x h 700mm	Number of shelves - 1, Number of doors - 2, Dimensions : 2
ESA62336	W 1200 x d 460 x h 1800mm	Number of shelves - 3, Number of doors - 2, Dimensions : 2
ESA62337	W 350 x d 300 x h 700mm	Number of shelves - 1, Number of doors - 1, Dimensions : 1
ESA62338	W 460 x d 460 x h 900mm	Number of shelves - 3, Number of doors - 1, Dimensions : 2
ESA62339	W 900 x d 460 x h 1800mm	Number of shelves - 3, Number of doors - 2, Dimensions : 2
ESA62340	W 900 x d 460 x h 900mm	Number of shelves - 2, Number of doors - 2, Dimensions : 1





Safety Cabinet Hazardous, Floor

Hazardous Floor Cupboards enables the separate storage and transportation of hazardous substances as demanded by the COSHH regulations.

Fire tested and certified EN13501-1 'No snag' handles Adjustable spill-retaining galvanised shelves for superior spill management Integral liquid-tight sump encourages the correct handling of spills through the use of absorbent Welded integrated sump, angled lid to discourage article placement and a hasp and staple lock (padlock not supplied)

ESA62341	W 1200 x d 460 x h 1800mm	Number of shelves - 3, Number of doors - 2, Dimensions : 2
ESA62342	W 350 x d 300 x h 700 mm	Number of shelves - 1, Number of doors - 1, Dimensions : 1
ESA62343	W 900 x d 460 x h 1200 mm	Number of shelves - 2, Number of doors - 2, Dimensions : 2
ESA62344	W 900 x d 460 x h 1800 mm	Number of shelves - 3, Number of doors - 2, Dimensions : 2
ESA62345	W 900 x d 460 x h 700 mm	Number of shelves - 1, Number of doors - 2, Dimensions : 2
ESA62346	W 900 x d 460 x h 900 mm	Number of shelves - 1, Number of doors - 2, Dimensions : 2

Safety Cabinet Radioactive Storage



Radioactive Storage Cupboard Product Description

This is a stoutly built enamelled sheet-steel cupboard having a louvred, lockable door bearing a standard international red and yellow warning plate. Two keys are provided for the lock. The rear wall of the cupboard carries two narrow steel shelves which ensure that any containers placed on them are at the maximum possible distance from the door.

The dimensions of the cupboard are such that assuming a maximum stock of 30 ° Ci in the form of Co60 is kept on the shelf, the dose rate at the surface of the door would be less than 0.5 mR/hr. A rectangular plastic tray is provided to contain any spillages.

The cupboard is provided with small fixing holes so that it may be screwed to a wall. It is recommended that it is sited away from normally occupied areas and that its back is against or attached to a wall.

Dimensions : 380 x 380 x 380mm. Tray: 310 x 240 x 20mm deep.

ESA62347



Safety Cabinet Drugs and Poisons

Drugs And Poisons Cabinet Product Description

Lockable cabinet for the secure storage of scheduled drugs and poisons. Designed for wall mounting through special reinforced panels incorporated in the back.

Features include sealed hinges and three adjustable shelves. Door hinges to the right.

Dimensions : W458 x H610 x D152mm.

ESA62348





Trolley With Gratnells Tray

The Gratnells storage system is unique and designed for the organisation of all types of school equipment and the enormous range of science materials and equipment that need storing. Manufactured from square steel tubes with slots at 25mm intervals to take trays. The trolleys have 80mm castors and are ideal when transporting equipment around the room. Metal runners are required and sold separately but are adjustable and can accommodate our range of super-tough trays. Supplied flat packed for self assembly. Please note: Trays and runners are sold separately.

ESA62349	Double column tall frame	Size W710 x D420 x H1850mm. This product holds up to 34 shallow trays.
ESA62350	Double column - h725mm	Size: W710 x D420mm. This product holds up to 12 Shallow trays and comes with heavy duty castors.
ESA62351	Double column - h850mm	Size: W710 x D420mm. This product holds up to 12 Shallow trays and comes with heavy duty castors.
ESA62352	Single column - h725mm	Size: W370 x D420mm. This Products hold up to 6 shallow trays and come with heavy duty castors.
ESA62353	Single column - h850mm	Size: W370 x D420mm. This product holds up to 6 Shallow trays and comes with heavy duty castors.
ESA62354	Treble column tall frame - 1850mm	Size: W1055 x D420mm in 2 heights with adjustable feet with flat metal top.
ESA62355	Treble column - h725mm	Size: W1055 x D420mm. This product holds up to 18 Shallow trays and comes with heavy duty castors.
ESA62356	Treble column - h850mm	Size: W1055 x D420mm in 2 heights with recessed top.





Lab Trolley Three Tier Apparatus

Three Tier Apparatus Trolley
Fully welded, tubular end frame construction in stainless steel. Shelf heights 210mm, 520mm and 820mm from floor level. The shelves are fixed (i.e. not removable) for added stability and are supplied lipped edges up, (lipped edges down are available on request). Maximum weight limit is 200kg uniform distributed load. Size: L1060 x W460 x H900mm.

ESA62358



Ribbed Rubber Mat

Ribbed Rubber Mat, Rubber mat to fit the three and two tier apparatus trolleys. 3mm thick
Size: 1000 x 460mm.

ESA62362

Lab Wall Bench

Lab wall bench different sizes are available according to your lab room size.

ESA62386



Lab Student Bench Octagonal Shape With Tap & Sink

Lab student bench octagonal shape with tap & sink

ESA62378

Lab Student Bench Octagonal Shape

Lab student bench octagonal shape

ESA62379



Lab Teacher Bench

Lab teacher bench

ESA62373



Computer Teacher Table

Size: 1600x750x900mm (LxDxH)

Table top from 24mm thick melamine laminated MDF with 2mm thick PVC edging on all sides

Front panel 220mm high from 24mm thick melamine laminated MDF with 2mm thick PVC edging on all sides

Frame from 50x20x2mm thick epoxy powder coated mild steel oval tube with end cap

Front connecting frame from 40x20x1.5mm thick epoxy powder coated mild steel tube

1 no. CPU Holder from 25x2mm thick epoxy powder coated mild steel flat bar

1 no. 13Amp/220Volts Double electric outlet

1 no. Data network outlet

1 no. Cable cover 80mm dia

ESA62397

**Computer Student Table**

Size: 900x750x750mm (LxDxH)

Table top from 24mm thick melamine laminated MDF with 2mm thick PVC edging on all sides

Front panel 220mm high from 24mm thick melamine laminated MDF with 2mm thick PVC edging on all sides

Frame from 50x20x2mm thick epoxy powder coated mild steel oval tube with end cap

Front connecting frame from 40x20x1.5mm thick epoxy powder coated mild steel tube

1 no. CPU Holder from 25x2mm thick epoxy powder coated mild steel flat bar

1 no. 13Amp/220Volts Double electric outlet

1 no. Data network outlet

1 no. Cable cover 80mm dia

ESA62401

**Lab Stools Standard ES 1**

Lab stools standard ES 1 with gas left and 5 prongs.

ESA62367

**Lab Stool Stacking PP**

Stool stacking PP 685mm black

ESA62366



ESA62415

Mini Tablet Charging Trolley - 10-Bay or 12-Bay

Description

This Tablet charging cabinet is customized to secure, protect and charge the IT devices , including Mobile phone , kindle , tablet PC in school , hospital , government department , training places , etc

Above sample creates capacity for

- total 10-12 units loading , with 340mm height space for charging 1 x 10 or 1 x 12
- 34mm gap between each slot , ensure to fit IT device up to 15.6"
- 100 kgs Max. loading

Key Features

Efficiency

- Embedded handle at front side for operation
- Special-made shelf comes with cable management function Wall Mounting installation

Security

- Handle key locking system for front metal doors

Safety

- USB2.0 ; 19V 2.4A charging safe and quick
- The entire cabinet is to be tested and certified to CE,RoHS standard ON/OFF lighted switched at side for quick operation



Environment

- Cooling/Ventilation: 1 x AC continuous operation fans keep equipment cool Well-designed ventilation and continuous controlled fans keep devices cool (fans will work automatically when cabinet circuit reaches its setting value)
- Safety for children.



Warranty

Five (5) years mechanical/workmanship; two (2) years electrical components; one (1) year cables



=Ships fully assembled=

specifications	24-way
Country-specific power cord	1.5m long
Power System: input/output	220-250V~ MAX AC input
Temperature Range	operating 0° to 30°C (32° to 86°F)
storage	-40°C to 60°C (-40° to 140°F)
Parameter	Product Dimensions: 510X370x345MM(W*D*H)

Application	Laptop/Mobile IT devices/Ethernet switch/Tablet					
Interface	Country-specific standard					
Charging NO.	10-way	11-way	12-way	13-way	More	OEM
USB port	19V 2.4A -	USB-C				
Input	110V,220V,240V					
Output	110V,220Vor 19V/ SV. 2.4A					
Outlet type	UK BS1363	Germany DIN49441	French DIN49441	Australia AS/NZS311 2	IEC C13/C14 C19/C20	Other GB1002 BS546...

Standard configuration	1. Embedded handle
	2. Handle lock
Optional	3. LED indicator
	4. Operating handle
	5. Cam-key lock
	6. Earthing cable
	7. Power module - USB
Optional	1. Lights decoration
	2. Time controller
	3. Glass door
	4. Master Device shelf
	5. Other idea



[Additional design for different environments]

Different color options

Side/top panel punched with vented area (tropics)



RoHS





ESA62416

Sync & Charging Trolley

Webit SY series charging cabinet is designed to simultaneously sync and charge up to 30 mobile devices, including Mobile phone, kindle, tablet, Chromebook. The reliable, ergonomic structure designed from SPCC cold rolled steel and aluminum alloy frame, upon education application, makes the SY cabinet work safely and protect users from wound.

- The Cart creates capacity for :
- Total 30 units loading, fir devices up to 15.6”
- Maximum charge output of 2.4A per outlet
- Supports USB 2.0 data transfer rates up to 5Gbps
- Syncs any USB device using its compatible software

Outlet options

No.	Outlet	Power rate	Devices
1	USB-A 2.0	5V 2.1A	Mobile phone , Tablets ,etc
2	USB-A 3.0	19V 3.4A	Mobile phone , Tablets ,etc
3	USB-C	19V 2.4A	Mobile phone , Chromebook

Key Features

Efficiency

- Embedded handle at side without space occupied
- Special-designed shelf comes with cable management function
- Universal low-noise wheels for easily moving
- Easily synced & charged via cable to USB port
- Power cable withdrawing box built at side of the cabinet

Security

- Handle locking system for front accessing control
- Lockable back electrical compartment

Safety

- Strong alu-alloy frame body , rounded corner design to avoid accident wound.
- USB-A or USB-C outlet charging safe and quick (DC MODEL)
- The entire cabinet is to be tested and approval by to CE, RoHS,ISO standard
- RCCB to protect from overload / Leakage



Environment

- Well-designed ventilation and AC fans optional (Thermostat controlled fans will work automatically if necessary)
 - IP-20 rated
- Country-specific power cord = 1.5m long
Power System: input/output = 110-250V-MAX AC input



Warranty

Five (5) years mechanical/workmanship; two (2) years electrical components; one (1) year cables
Ships fully assembled=



specifications	10-way	20-way	30-way	Customized
Exterior Size	515x530x595 mm	515x530x865 mm	515x530x1135 mm	- mm
Exterior Size	20.2x20.8x23.4 in	20.2x20.8x34.0 in	20.2x20.8x44.7 in	- in
Weight	31kg	48kg	65kg	- kg
Weight	68 lbs	105 lbs	143lbs	- lbs
Remarks	* Above of DC series model , plz contact sales for AC model			
SKU #	ESA62416/10	ESA62416/20	ESA62416/30	ESA62416SP

Specifications are subject to change without notice

Note that the cart operating temperature range does not all apply to IT devices



RoHS



Cabinet specifications

Materials	SPCC cold rolled steel, Aluminum-alloy, PVC
Color	RAL7630 Beige ; RAL5012 Light blue; RAL9005 Black
Input power	Country specific (110V , 220V)
Output power	As per model require
Operating	Interior RCCB protector ; Side sync charging port; On/Off switch
Locking	Front and back handle lock

Divider specifications

Materials	Anti-flame plastic
Mounting Pattern	Inset
Applications	Laptop / Mobile IT devices / Ethernet switch / Tablet / Kindle
Max.	15.6 "

Electrical

Max. port	40-way , or contact sales for customization
AC Voltage	220vAC or 110vAC
Frequency	45-66 Hz
Max. Current	10-16A as per country specific
DC Voltage	5V ; 12V , 19V optional
Current	2.1A ; 2.4A, 3.4A optional

Monitoring , Control

Connecting	-
	-
	-
Visible	-
	-
ON/OFF	-
Timer setting	-
Theme	-

Others

Operating Temp	0° to 30°C (32° to 86°F);
Storage Temp	-40°C to 60°C (-40° to 140°F)

Optional kits

UV-ray light	Disinfection application, Auto on/off
Code lock	Combination lock
AC output -1	Exterior AC output socket
AC output -2	Group AC output at back of the trolley
LED screen	Digital LED screen to show inner environment



Fit devices of

LAPTOP

Fit Max. up to 15.6 "
 Support 45W, 65W
 USB-A 2.0 female outlet communicat
 USB-C female outlet (PD2.0 , PD3.0 support)



TABLETS

Fit Max. up to 14.1 "
 Support 10W (5V, 2.1A) outlet ,
 45W, 65W USB-A 2.0 female
 outlet communication
 USB-C female outlet (PD2.0 , PD3.0



MOBILES

Fit most of well-known brands mobile phones Support 10W (5V, 2.1A) outlet , 45W, 65W
 USB-A 2.0 female outlet communication
 USB-C female outlet (PD2.0 , PD3.0 support)





ESA0000WBccD30

AC power Charging Cabinet

laptop/tablet charging cabinet is customized design to secure, protect and charge the electrical devices; Including pad, phone, Laptop in school,hospital,government department, Training places etc;



- Safe charging for maximum 15.6” devices
- Easy cable management
- Compact footprint structure
- Removable and spacious slot
- Security locker
- 2 cooling fans included
- 5-year mechanical & 2-year electrical warranty
- Online service and replaced Interchangeable charging parts
- Optional smart charging solution

WB-CC-D-30 charging cart creates capacity for you :

Build for 30 devices

- Charge 30 units of Chromebook , laptop or tablets - up to a 15.6” screen



Cleverly designed dividers

- Customized dividers make placing and pull devices simple - flexible add/remove upon charging device size



Headache-free cabling system

- Experience simple device management with less slip - cutting edge cable technology from slipping out



Security

- Handle lock, for both front and rear side.
- Ensure security for users.

Smooth and seamless charging

- Optional CC-D cycle charging - Determine the best charging way without program - Devices are efficiently charged and protect from overload



Safety

- Well-designed ventilation and continuous controlled fans keep devices cool
- passivated treatment corner to avoid accident wounding
- For user and equipment safety

Perfectly compact structure

- Small footprint save room space - Provide easy storage for any classroom size - Make-to-order design available if at user necessary



=Ships fully assembled=

Device size	Bearing	Capacity	AC output	Work temp	VESA
Up to 15.6" tablet	300kg	Up to 30	110-220Vac	-15°C-65°C	-

Environment

-Cooling/Ventilation: 4 AC continuous operation fans keep equipment cool [Fan location can be adjustable.]

Country-specific power cord = 2m length

Power System: input/output = 110V-220V, 50/60 Hz or customized as different countries

IP degree : IP-20

Parameter

Product Dimensions: 610X610X1048MM(W*D*H), height including castor

Warranty: Five (5) years mechanical/workmanship; two (2) years electrical components; one (1) year cables

Device Capacity	30	Slot Size	25W*250H*155D mm
Support device	Pad/Chromebook/Ethernet switch/Mobile devices up to 15.6"	Charging type	Basic charging
LED lamp	3 units , each layer	External outlet	0
Divider type	Plastic divider with cabling system	Sliding shelves	Yes
Cart Dimension	610W*610D*1048H mm	Packing Dimension	650W*640D*1070H mm
Net Weight	61KG (134lbs)	Gross Weight	81KG (178lbs)
Power Spec	AC IN 100-120V ~ 50/60Hz , 15A 200-250V ~ 50/60Hz , 10A-16A	Cable management	Plastic divider at front Metal hook at back
Security	Front door : 3-point mechanism Back door : 3-point mechanism	Castor	4" castor x 4, 2with brake
Security hook	Yes	Fan	2 of 12038
Handle	Yes	Color	White/Black





ESA62417

Tablet Charging Trolley

This O2 series charging cabinet is customized to secure, protect and charge the IT devices , including Mobile phone , kindle , tablet , PC in school , hospital , government department , training places , etc ; Up to 300W DC load via household power system.

The reliable , ergonomic structure designed from SPCC cold rolled steel, upon education application makes the O2 cabinet works safely and protect users from wound.

Above sample creates capacity for

- Total 10/20/30 units loading , with 250mm height space for each level
- 1/2/3 x 10
- 25mm gap between each slot , ensure to fit IT device up to 14.1"
- 300 kgs Max. loading

Outlet options

No.	Outlet	Power rate	Devices
1	USB-A 2.0	5V 2.1A	Mobile phone , Tablets ,etc
2	USB-A 3.0	5V 3.4A	Mobile phone , Tablets ,etc
3	USB TYPE-C	19V 2.4A	Round pin laptops , Chromebook
4	USB TYPE-C	19V 3.4A	Latest laptops , Chromebook

Key Features

Efficiency

- Embedded handle at side without space usage
- Special-designed shelf comes with cable management function
- Universal low-noise wheels for easily moving
- Remotely monitor & control via WIFI signal
- Power cable withdrawing box built at side of the cabinet



Environment

- Well-designed ventilation and continuous controlled AC fans keep devices cool
- (Thermostat controlled fans will work automatically when cabinet circuit reaches its setting value)
- IP-20 rated
- Country-specific power cord = 1.5m long
- Power System: input/output = 220-250V-MAX AC input



Security

- Handle locking system for front accessing control
- Lockable side electrical compartment



Safety

- Strong and full SPCC steel body , rounded corner design to avoid accident wound.
- USB2.0 female connect 2.1A charging safe and quick
- The entire cabinet is to be tested and approval by to CE, RoHS,ISO standard
- RCCB to protect from overload / Leakage



Warranty

Five (5) years mechanical/workmanship; two (2) years electrical components; one (1) year cables
=Ships fully assemble=



specifications	20-way	24-way	30-way	36-way
Exterior Size	530x500x850 mm	600x500x850 mm	530x500x1163 mm	600x500x1163 mm
Exterior Size	20.9 x 19.7x33.5 in	23.6x17.7x33.5 in	21.6x19.7x45.8 in	23.6x19.7x45.8 in
Weight	47kg	51kg	69kg	76kg
Weight	103.6 lbs	112.4 lbs	152.1 lbs	167.5 lbs
Remarks	* Above of USB-A series model , plz contact sales for USB-C model			
SKU #	ESA62417/20	ESA62417/20	ESA62417/30	ESA62417/36

Specifications are subject to change without notice

Note that the cart operating temperature range does not all apply to IT devices



RoHS





Cabinet specifications

Materials	SPCC cold rolled steel, Tempered glass	
Color	RAL7630 Beige ;	RAL5012 Light blue
Input power	Country specific (110V , 220V)	
Output power	As per model require	
Operating	Front on/off switch ; Interior RCCB protector ; Mobile APP control	
Locking	Front handle lock , side cam key lock	

Divider specifications

Materials	Anti-flame ABS
Mounting Pattern	Inset
Applications	Laptop / Mobile IT devices / Ethernet switch / Tablet / Kindle
Max.	14.1 "

Electrical

Max. port	48-way , or contact sales for customization	
AC Voltage	220vAC	or 110vAC
Frequency	45-66 Hz	
Max. Current	10-16A as per country specific	
DC Voltage	5V ;	19V optional
Current	2.1A ;	3.4A optional

Monitoring , Control

Connecting	Via Mobile phone APP monitoring
	Current total consumption
	Current charging No.s
Visible	X-cart inner environment
	Each Port details (Volt , consumption , Protocol , etc..)
ON/OFF	Remotely switch on each layer
Timer setting	Weekly pattern timer setting on charging period frame
Theme	3 colored theme interface options

Others

Operating Temp	0° to 30°C (32° to 86°F);
Storage Temp	-40°C to 60°C (-40° to 140°F)

Optional kits

UV-ray light	Disinfection application, Auto on/off
Code lock	Combination lock
AC output -1	Exterior AC output socket
AC output -2	Group AC output at back of the trolley
LED screen	Digital LED screen to show inner environment

Applications

MOBILES

Fit most of well-known brands mobile phones
Support 10W (5V, 2.1A) outlet , 45W, 65W
USB-A 2.0 female outlet communication
USB-C female outlet
(PD2.0 , PD3.0 support)



TABLETS

Fit Max. up to 14.1 "
Support 10W (5V, 2.1A) outlet , 45W, 65W
USB-A 2.0 female outlet communication
USB-C female outlet (PD2.0 , PD3.0 support)



Cleaning and Maintenance

Cabinet and Equipment Electric Safety

There are specific risks associated with the use of equipment having power cables.

You must be aware of, and avoid these risks when this product is located in close proximity to children.



WARNING: Failure to observe the following Electrical Safety notices can result in fire or death by electric shock.



Electrical cables can be hazardous. Misuse can result in fire or death by electrical shock.

- Double Pole / Neutral Fusing
- Inspect power cables thoroughly before each use.
- Do not use cables that are damaged.
- Insert the plug completely into the outlet.
- Grasp the plug to remove from the outlet.
- Do not unplug by pulling on the cable.
- Do not use excessive force to make connections.
- Do not plug the cable into an extension cable.
- Do not remove, bend or modify any metal prongs or pins of cable.
- Do not drive, drag or place objects over the cable.
- Do not walk on the cable.
- Avoid overheating. Uncoil the cable and do not cover it with any material.
- Do not run cable through doorways, holes in ceilings, walls or floors.



Keep this product away from water.

- Do not use it when wet.
- Do not place this product in close proximity to flammable liquids or gases.

The power cord acts as the connect/disconnect device switching power off and on.

Cabinet Use Safety

There are specific risks associated with the use of this product when moving or stationary (for charging or storage)

You must be aware of, and avoid these risks when this product is located in close proximity to children.



WARNING: Failure to observe the following Safety notices may result in serious personal injury or equipment damage.

- Do not allow children to move this product.
- Do not allow anyone to sit, stand, or climb on this product.
- Do not block the fans and vent openings. To prevent overheating, leave at least 25.4 mm (1-inch) clearance around fans and vents.

This product is designed to be used indoors only.

- Do not use this product to transport or store equipment other than what has been noted in this guide.
- Do not use this product to store liquids or cleaning supplies.
- Do not place heavy objects on the top surface or shelf.
- The maximum weight capacity of the top surface is 25 lb (11.3 kg).
- The maximum weight capacity of the shelf is 61.2 lb (27.8 kg).



Moving This Product

Before moving this product:

1. Disconnect the power cables from the wall.
 2. Make sure the cables are wrapped and secure.
 3. Close and lock the doors.
 4. Remove notebook and other items from the top work surface.
- Two people are required to lift this product; use caution when lifting to prevent muscle strain.

Placement

Observe these safety alerts for times when this product is stationary:

- Do not place on an object or surface that cannot support its weight: 660 lbs (300 kg).
- Do not run cables through doorways, holes in ceilings, walls, or floors.
- Do not run cables across hallways, classrooms, or other areas where they will be walked on.
- Do not leave unattended in areas where children have access.
- Keep doors closed and locked whenever it is unattended or parked for charging or storage.



ESA62418

Tablet Charging Trolley

This CC-T series charging cabinet is customized to secure, protect and charge the IT devices ,including Mobile phone , kindle , tablet , PC in school , hospital , government department , training places , etc ; Up to 300W DC load via household power system.

2-3 ZONE cycle smart charging mode ensure electronic devices charging safely and fast.

Each Layer monitored by LED indicator.

- Above sample creates capacity for
- Total 10/20/30 units loading , with 250mm height space for each level 1/2/3 x 10
- 34mm gap between each slot , ensure to fit IT device up to 15.6"
- 300 kgs Max. loading

Outlet options

No.	Outlet	Power rate	Devices
1	USB-A 2.0	5V 2.1A	Mobile phone , Tablets ,etc
2	USB-A 3.0	5V 3.4A	Mobile phone , Tablets ,etc
3	USB TYPE-C	19V 2.4A	Round pin laptops , Chromebook
4	USB TYPE-C	19V 3.4A	Latest laptops , Chromebook

Key Features

Efficiency

- Embedded handle at side without space usage
- Special-designed shelf comes with cable management function
- Universal low-noise wheels for easily moving
- Flat top panel allows Master Device put onto top.
- Power cable withdrawing box built at side of the cabinet



Security

- Handle locking system for front accessing control
- Lockable side electrical compartment



Safety

- Strong and full SPCC steel body , rounded corner design to avoid accident wound.
- USB2.0 female connect 2.1A charging safe and quick
- The entire cabinet is to be tested and approval by to CE, RoHS,ISO standard
- RCCB to protect from overload / Leakage



Environment

- Well-designed ventilation and continuous controlled AC fans keep devices cool (Thermostat controlled fans will work automatically when cabinet circuit reaches its setting value)
 - IP-20 rated
- Country-specific power cord = 1.5m long
Power System: input/output = 220-250V- MAX AC input



Warranty

- Five (5) years mechanical/workmanship; two (2) years electrical components; one (1) year cables
- =Ships fully assemble=



specifications	20-way	24-way	30-way	36-way
Exterior Size	530x500x850 mm	600x500x850 mm	530x500x1163 mm	600x500x1163 mm
Exterior Size	20.9 x 19.7x33.5 in	23.6x17.7x33.5 in	21.6x19.7x45.8 in	23.6x19.7x45.8 in
Weight	47kg	51kg	69kg	76kg
Weight	103.6 lbs	112.4 lbs	152.1 lbs	167.5 lbs
Remarks	* Above of USB-A series model , plz contact sales for USB-C model			
SKU #	ESA62418 /20	ESA62418 /24	ESA62418 /30	ESA62418SP

Specifications are subject to change without notice

Note that the cart operating temperature range does not all apply to IT devices



RoHS



Cabinet specifications

Materials	SPCC cold rolled steel, Aluminum-alloy
Color	RAL7630 Beige ; RAL5012 Light blue
Input power	Country specific (110V , 220V)
Output power	As per model require
Operating	Front on/off switch ; Interior RCCB protector ; Mobile APP control
Locking	Front handle lock , side cam key lock

Divider specifications

Materials	Anti-flame ABS
Mounting Pattern	Inset
Applications	Laptop / Mobile IT devices / Ethernet switch / Tablet / Kindle
Max.	15.6 "

Electrical

Max. port	40-way , or contact sales for customization
AC Voltage	220vAC or 110vAC
Frequency	45-66 Hz
Max. Current	10-16A as per country specific
DC Voltage	5V ; 19V optional
Current	2.1A ; 3.4A optional

Monitoring , Control

Connecting	-
	LED indicator
	-
Visible	-
	-
ON/OFF	-
Timer setting	2 or 3 Zone cycle charging , user can set 30/60 mins each phase
Theme	-

Others

Operating Temp	0° to 30°C (32° to 86°F);
Storage Temp	-40°C to 60°C (-40° to 140°F)

Optional kits

UV-ray light	Disinfection application, Auto on/off
Code lock	Combination lock
AC output -1	Exterior AC output socket
AC output -2	Group AC output at back of the trolley
LED screen	Digital LED screen to show inner environment



ESA62419

Smart Charging Trolley

This CC-R series charging cabinet is contains DC & AC two models; AC model build-in with Country-Specific 110V/220V power outlet. DC model comes with USB-A or USB-C fast charging. Webit Smart Charging Cart creates a flexible and efficient working station for education field. The reliable , ergonomic structure designed from Aluminum-alloy frame upon education application makes the full cabinet works safely and protect users from wound.

Above sample creates capacity for

- Total 24/36/48 units loading , with 250mm height space for each level
- 2/3/4 x 12
- 34mm gap between each slot , ensure to fit IT device up to 15.6"
- 400 kgs Max. loading

Outlet options

No.	Outlet	Power rate	Devices
1	USB-A	5V 2.1A	Mobile phone , Tablets ,etc
2	USB-C	19V 2.4A	Tablets ,Round pin Laptops ,etc
3	USB-C	19V 3.4A	Round pin laptops , Chromebook
4	AC 110/220V	Upon Country	All kinds of electronic devices

Key Features

Efficiency

- Embedded handle at side without space usage
- Special-designed shelf comes with cable management function
- Universal low-noise wheels for easily moving
- Smart Charging in 2/3 Circuit cycle, support fast and safe charging.
- Power cable withdrawing box built at side of the cabinet



Security

- Handle locking system for front accessing control
- Lockable side electrical compartment



Safety

- Strong and assemble SPCC cold rolled steel body , Unpack to use directly.
- Rounded corner design to avoid accident wound.
- The entire cabinet is to be tested and approval by to CE, RoHS,ISO standard , optional UL.
- RCCB to protect from overload / Leakage



Environment

- Well-designed ventilation and continuous controlled AC fans keep devices cool
- (Thermostat controlled fans will work automatically when cabinet circuit reaches its setting value)
- IP-20 rated
- Country-specific power cord = 1.5m long
- Power System: input/output = 220-250V- MAX AC input



Warranty

Five (5) years mechanical/workmanship; two (2) years electrical components; one (1) year cables
=Ships fully assemble=



specifications	24-way	36-way	48-way	Customized
Exterior Size	780x650x850 mm	780x615x1127 mm	780x615x1518 mm	- mm
Exterior Size	30.7x25.6x33.5 in	30.7x25.6x44.37 in	30.7x25.5x59.7 in	- in
Weight	70kg	85kg	101kg	- kg
Weight	154 lbs	187 lbs	222 lbs	- lbs
Remarks	* Above of USB-A series model , plz contact sales for USB-C model			
SKU #	ESA62419 /24	ESA62419 /36	ESA62419 /48	ESA62419

Specifications are subject to change without notice
Note that the cart operating temperature range does not all apply to IT devices



RoHS



Cabinet specifications

Materials	Full SPCC cold rolled steel body
Color	RAL7630 Beige ; RAL5012 Light blue; RAL9005 Black
Input power	Country specific (110V , 220V)
Output power	As per model require
Operating	Front on/off switch ; Interior RCCB protector ; Mobile APP control
Locking	Front handle lock , side cam key lock

Divider specifications

Materials	Anti-flame ABS
Mounting Pattern	Inset
Applications	Chromebook/Laptop / Mobile IT devices / Ethernet switch / Tablet / Kindle
Max.	15.6 "

Electrical

Max. port	48-way , or contact sales for customization
AC Voltage	220vAC or 110vAC
Frequency	45-66 Hz
Max. Current	10-16A as per country specific
DC Voltage	5V ; 12V , 19V optional
Current	2.1A ; 3.4A optional

Monitoring , Control

Connecting	-
	-
	-
Visible	-
	-
ON/OFF	-
Timer setting	-
Theme	-

Others

Operating Temp	0° to 30°C (32° to 86°F);
Storage Temp	-40°C to 60°C (-40° to 140°F)

Optional kits

UV-ray light	Disinfection application, Auto on/off
Code lock	Combination lock
AC output -1	Exterior AC output socket
AC output -2	Group AC output at back of the trolley
LED screen	Digital LED screen to show inner environment



Fit devices of

LAPTOP

Fit Max. up to 15.6 "
 Support 45W, 65W
 USB-A 2.0 female outlet communicat
 USB-C female outlet (PD2.0 , PD3.0 support)



TABLETS

Fit Max. up to 14.1 "
 Support 10W (5V, 2.1A) outlet ,
 45W, 65W USB-A 2.0 female
 outlet communication
 USB-C female outlet (PD2.0 , PD3.0 support)



MOBILES

Fit most of well-known brands mobile phones Support 10W (5V, 2.1A) outlet , 45W, 65W
 USB-A 2.0 female outlet communication
 USB-C female outlet (PD2.0 , PD3.0 support)



ESA62420

Smart Charging Cart WB-CC-H

Webit H series charging cabinet integrated USB-A, USB-C ,110V or 220V AC outlet simultaneously in a 8-device cart room.

It aims to charge network devices like Kindle , Mobile phone , Laptop, tablet , Chromebook, Headset. External light-duty aluminum alloy frame structure works safely and protect users from wound.

The Cart creates capacity of

- up to 8 x 15.6” devices charging
- USB-A or C compliant
- 110Vac or 220Vac compliant
- Smart Locker system
- build-in LED monitor lighting

Outlet options

No.	Outlet	Power rate
1	USB-A 2.0	19V 2.4A
2	USB-C	19V 2.4A
3	AC outlet	110V or 220V



Smart Locker



Key Features

Efficiency

- 3 outlet in each layer
- Horizontal put-in (rubber mat optional)
- Universal low-noise wheels for easily moving
- LED lighting inside
- Front LED charging light , monitor charging status without door open



Security

- Smart locking system for front accessing control
- Lockable back electrical compartment



Safety

- Strong alu-alloy frame body , rounded corner design to avoid accident wound.
- USB-A or USB-C outlet charging safe and quick (DC MODEL)
- Build-in earthing system
- The entire cabinet is to be tested and approval by to CE, RoHS,ISO standard
- ON/OFF switch at back to cut off circuit



Environment

- Well-designed ventilation and AC fans optional
- (Thermostat controlled fans will work automatically if necessary)
- IP-20 rated
- Country-specific power cord = 1.5m long
- Power System: input/output = 110-250V~ MAX AC input



Warranty

Five (5) years mechanical/workmanship; two (2) years electrical components; one (1) year cables
=Ships fully assembled=



specifications	8-way	10-way	12-way	Customized
Exterior Size	583x450x906 mm	583x450x1085 mm	583x450x1264 mm	- mm
Exterior Size	23x17.7x33.7 in	23x17.7x42.7 in	23x17.7x49.7 in	- in
Weight	26 kg	31 kg	37 kg	- kg
Weight	57 lbs	68 lbs	82 lbs	- lbs
Remarks	* Above of DC series model , plz contact sales for AC model			
SKU #	ESA62420 /8	ESA62420 /10	ESA62420 /12	ESA62420 SP

Specifications are subject to change without notice

Note that the cart operating temperature range does not all apply to IT devices



RoHS



Cabinet specifications

Materials	SPCC cold rolled steel, Aluminum-alloy	
Color	RAL7630 Beige ;	RAL5012 Light blue; RAL9005 Black
Input power	Country specific (110V , 220V)	
Output power	As per model require	
Operating	On/Off switch; Smart locking system;	
Locking	RFID card , Pass-code	

Divider specifications

Materials	Metal (Rubber mat optional)	
Mounting Pattern	Welding	
Applications	Laptop / Mobile IT devices / Ethernet switch / Tablet / Kindle	
Max.	15.6 “	

Electrical

Max. port	20-way , or contact sales for customization	
AC Voltage	220vAC	or 110vAC
Frequency	45-66 Hz	
Max. Current	10-16A as per country specific	
DC Voltage	5V ; 12V , 19V optional	
Current	2.1A ; 2.4A, 3.4A optional	

Monitoring , Control

Connecting	-
	Charging status
	Door status
Visible	-
	-
ON/OFF	√
Timer setting	optional
Theme	-

Others

Operating Temp	0° to 30°C (32° to 86°F);
Storage Temp	-40°C to 60°C (-40° to 140°F)

Optional kits

UV-ray light	Disinfection application, Auto on/off
Code lock	Combination lock
Cooling system	AC cooling fan system
Timer	Timer for charging plan
UV lamp	Build-in UV lamp for each layer

Fit devices of

LAPTOP

Fit Max. up to 15.6 “
 Support 45W, 65W
 USB-A 2.0 female outlet communicat
 USB-C female outlet (PD2.0 , PD3.0 support)



TABLETS

Fit Max. up to 14.1 “
 Support 10W (5V, 2.1A) outlet ,
 45W, 65W USB-A 2.0 female
 outlet communication
 USB-C female outlet (PD2.0 , PD3.0 support)



MOBILES

Fit most of well-known brands mobile phones Support 10W (5V, 2.1A) outlet , 45W, 65W
 USB-A 2.0 female outlet communication
 USB-C female outlet (PD2.0 , PD3.0 support)



PHONES
MOBILE



Flower Table

Table top are made of 18mm thick melamine laminated MDF with PVC Edging on all sides Frame are made of 38mm dia x 1.5mm thick mild steel pipe welded to 40x20x1.5mm thick mild steel tube with epoxy powder coating

- ESA63601** Size: 1200mm x 530mm height
- ESA63602** Size: 1200mm x 590mm height
- ESA63603** Size: 1200mm x 640mm height



Half Arc Table

Table top are made of 18mm thick melamine laminated MDF with PVC Edging on all sides Frame are made of 38mm dia x 1.5mm thick mild steel pipe welded to 40x20x1.5mm thick mild steel tube with epoxy powder coating

- ESA63606** Size: 1200mm x 600mm x 530mm (LxDxH)
- ESA63607** Size: 1200mm x 600mm x 590mm (LxDxH)
- ESA63608** Size: 1200mm x 600mm x 640mm (LxDxH)

Half Round Table

Table top are made of 18mm thick melamine laminated MDF with PVC Edging on all sides ? Frame are made of 38mm dia x 1.5mm thick mild steel pipe welded to 40x20x1.5mm thick mild steel tube with epoxy powder coating

- ESA63610** Size: 1200mm x 600mm x 530mm (LxDxH)
- ESA63611** Size: 1200mm x 600mm x 590mm (LxDxH)
- ESA63612** Size: 1200mm x 600mm x 640mm (LxDxH)



Horseshoe Table

Table top are made of 18mm thick melamine laminated MDF with PVC Edging on all sides Frame are made of 38mm dia x 1.5mm thick mild steel pipe welded to 40x20x1.5mm thick mild steel tube with epoxy powder coating

- ESA63614** Size: 1800mm x 600mm x 530mm (LxDxH)
- ESA63615** Size: 1800mm x 600mm x 590mm (LxDxH)
- ESA63616** Size: 1800mm x 600mm x 640mm (LxDxH)

Rectangular Table

Table top are made of 18mm thick melamine laminated MDF with PVC Edging on all sides Frame are made of 38mm dia x 1.5mm thick mild steel pipe welded to 40x20x1.5mm thick mild steel tube with epoxy powder coating

- ESA63618** Size: 1200mm x 600mm x 530mm (LxDxH)
- ESA63619** Size: 1200mm x 600mm x 590mm (LxDxH)
- ESA63620** Size: 1200mm x 600mm x 640mm (LxDxH)





Crescent Table

Table top are made of 18mm thick melamine laminated MDF with PVC Edging on all sides
Frame are made of 38mm dia x 1.5mm thick mild steel pipe welded to 40x20x1.5mm thick mild steel tube with epoxy powder coating

- ESA63622** Size: 1200mm x 530mm height
- ESA63623** Size: 1200mm x 590mm height
- ESA63624** Size: 1200mm x 640mm height

Trapezoid Table

Table top are made of 18mm thick melamine laminated MDF with PVC Edging on all sides
Frame are made of 38mm dia x 1.5mm thick mild steel pipe welded to 40x20x1.5mm thick mild steel tube with epoxy powder coating

- ESA63626** Size: 1200mm x 600mm x 530mm (lxdxh)
- ESA63627** Size: 1200mm x 600mm x 590mm (lxdxh)
- ESA63628** Size: 1200mm x 600mm x 640mm (lxdxh)



Student Table

Table top are made of 18mm thick melamine laminated MDF with PVC Edging on all sides
Top support from epoxy powder coated mild steel angle with wired basket under the top
Skid frame from epoxy powder coated mild steel pipe epoxy powder coated with glides end cap

- ESA63630** Size: 700mm x 500mm x 710mm (lxdxh)
- ESA63631** Size: 700mm x 500mm x 760mm (lxdxh)
- ESA63632** Size: 700mm x 500mm x 820mm (lxdxh)

Student Table Free-form Kg

Free-form student table low height with melamine laminated MDF top with PVC edging for safety. With metal legs epoxy powder coated , Table top from 19mm thick melamine laminated MDF with 3mm thick PVC edging , Top support from 40x20x1.5mm thick mild steel tube with epoxy powder coating , Legs frame from 38mm dia x 1.5mm thick mild steel pipe epoxy powder coated. **Dimensions** : 1650x1150x520m (LxDxH)

ESA63635



Teacher Table

Size: 1300x600x760mm (LxDxH)
Table top from 24mm thick melamine laminated MDF with 2mm thick PVC edging on all sides
Skid frame from epoxy powder coated mild steel pipe epoxy powder coated with glides end cap
Front panel, side panel and shelf from 18mm thick melamine laminated MDF Built-in drawer from 18mm thick melamine laminated MDF

ESA63639





Laptop Table, Oval Type

Oval shape laptop table at lounge level with MDF laminated finish top with PVC edging with tubular frame with height adjustable feet , Top are made of 19mm thick melamine laminated MDF with PVC edging , Frame from 25x25x2mm thick epoxy powder coated mild steel tube with height adjustable feet.

Dimensions : 510x380x660mm (LxDxH)

ESA63643



Student Art , Science Stool

Adjustable height staff task stool with synthetic seat and back, chrome footing with aluminium star base with castor wheels , Synthetic seat shell, five-base turnstile of polished aluminium pressure casting on castors with soft running surface, height adjustable foot-ring Dia 46 cm of chromed-steel tube , Seat height infinitely adjustable through gas compression spring

Dimensions : Adjustable height from 40.5 to 53 cm

ESA63678



Chair C Frame PP Shell

Steel tube framework, chair stackable, floor gliders with felt glide surfaces exchangeable insert, seat shell with elliptic grip hole, ergonomically shaped, Synthetic seat and back stackable armless with cantilever epoxy powder coated frame

ESA63647	Shell h 31cm	Seat height 31 cm
ESA63652	Shell h 35cm	Seat height 35 cm
ESA63657	Shell h 38cm	Seat height 43 cm
ESA63662	Shell h 43cm	Seat height 46 cm
ESA63667	Shell h 46cm	Seat height 38 cm
ESA63672	Shell h 51cm	Seat height 51 cm



Open Shelf Cabinet Wooded With 25 Compart.

Storage unit with fixed back panel, top shelf, bottom shelf and middle panel dividers with 25 no. Open compartment with 25 no. Removable plastic tote containers , Cabinet panels and shelves are made of 18mm thick melamine laminated MDF with PVC edging , Cabinet back panel from 6mm thick one side melamine faced MDF.

Dimensions : 1875x450x1170mm (LxDxH)

ESA63681





Open Shelf Cabinet Wooded With 8 Totes ,

Height 1

Open shelving unit with middle vertical partition with 8 no. Compartments and 8 No. Removable plastic trays. Cabinet panels and shelves are made of 18mm thick melamine laminated MDF with PVC edging, Cabinet back panel from 6mm thick one side melamine faced MDF ,

Dimensions : 750x450x915mm (LxDxH)

ESA63682



Open Shelving Unit, 3 Shelves H 1

Open shelving unit with 3 adjustable shelves , Cabinet panels and shelves are made of 18mm thick melamine laminated MDF with PVC edging , Cabinet back panel from 6mm thick one side melamine faced MDF, Adjustable shelves by means of shelf pin.

Dimensions : 750x450x1220mm (LxDxH)

ESA63684



Open Shelf Cabinet Wooden With 12 Totes ,

Height 2

Open shelving unit with middle vertical partition with 12 no. Compartments and 12 No. Removable plastic containers trays. Cabinet panels and shelves are made of 18mm thick melamine laminated MDF with PVC edging , Cabinet back panel from 6mm thick one side melamine faced MDF ,

Dimensions : 750x450x1675mm (LxDxH)

ESA63683



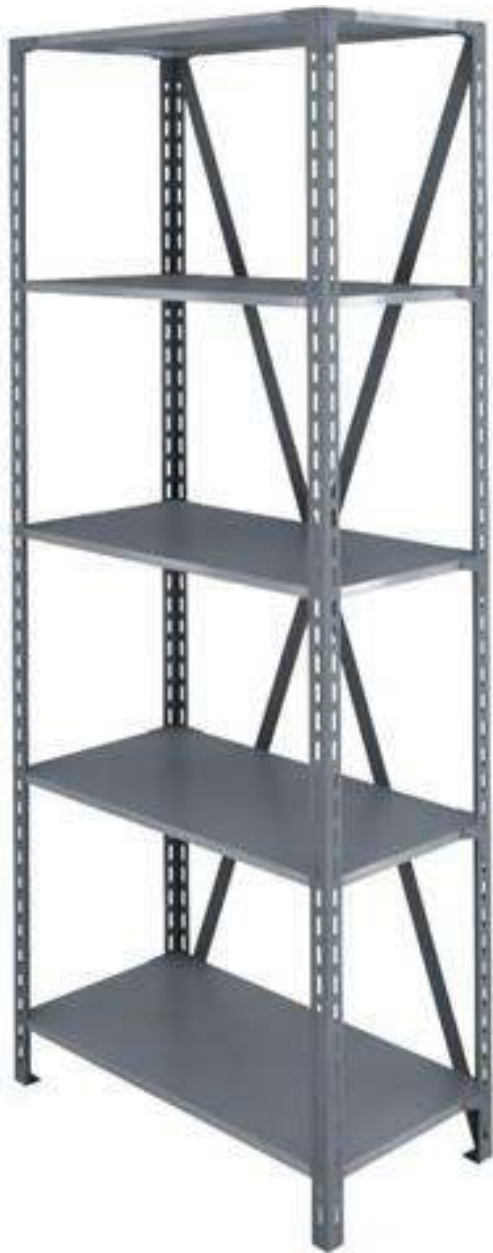
Open Shelving Unit, 5 Shelves H 2

Open shelving unit with 5 adjustable shelves , Cabinet panels and shelves are made of 18mm thick melamine laminated MDF with PVC edging , . Cabinet back panel from 6mm thick one side melamine faced MDF , Adjustable shelves by means of shelf pin.

Dimensions : 750x450x1520mm (LxDxH)

ESA63685





Open Shelving Metal, Depth 1

Heavy duty metal open shelving with 4 shelves with cross bar support , Vertical frame from 40x40x2mm thick mild steel slotted angle with epoxy powder coating , Adjustable shelves from 1.2mm thick mild steel sheet with epoxy powder coating , Cross bar support from 25x3mm thick mild steel flat bar with epoxy powder coating .

Dimensions : 900x460x2135mm (LxDxH)

ESA63686

Open Shelving Metal, Depth 2

Heavy duty metal open shelving with 4 shelves with cross bar support , Vertical frame from 40x40x2mm thick mild steel slotted angle with epoxy powder coating , Adjustable shelves from 1.2mm thick mild steel sheet with epoxy powder coating , Cross bar support from 25x3mm thick mild steel flat bar with epoxy powder coating .

Dimensions : 900x610x2135mm (LxDxH)

ESA63687



Book Display Unit,4 Sided With 5 Compartments

Free-standing mobile book display unit with total 20 no. Book display compartments. The display compartments occur on all 4 no. Sides with 5 no levels on each side of the unit , Panels composite are made of 18mm thick melamine laminated MDF with PVC edging on all exposed edges for user safety , With 100mm dia non staining castor .

Dimensions : W580mm x D580mm X H 1750mm

ESA63696



Book Browser Unit, Mobile, Open Top

Mobile book browser with 4 compartment for storage of books and magazines , Side panels, divider and base from 18mm thick melamine laminated MDF with PVC edging , With 4 no. Compartment for book and magazine storage , With 100mm dia heavy duty castor.

Dimensions : 600x600x450mm (LxDxH)

ESA63701



Classroom Furnitures

Library Furnitures



Storage Cabinet Wooden With Doors 4 Shelves

Lockable cabinet with combination wardrobe. One side unit consists of 4 adjustable shelves and other unit with chrome plated oval tube hanging rod. Both doors are lockable ,Cabinet door, panels and shelves are made of 18mm thick melamine laminated MDF with PVC edging , Cabinet back panel from 6mm thick one side melamine faced MDF ,Hanging rod from oval tube chrome plated , Adjustable shelves by means of shelf pin .

Dimensions : 900x600x2130mm (LxDxH)

ESA63706

Storage Cabinet Wooden With Doors 5 Shelves

Lockable storage cabinet with hinge door with 5 adjustable shelves ,Cabinet door, panels and shelves are made of 18mm thick melamine laminated MDF with PVC edging , Cabinet back panel from 6mm thick one side melamine faced MDF , Doors with square lock and heavy duty tower bolts , Adjustable shelves by means of shelf pin .

Dimensions : 900x600x2130mm (LxDxH)

ESA63707



DVD/CD Display Stand Unit

Double sided stand unit 1 no. Browser shelf component with divided compartments component on each side , Panes and made of 18mm thick melamine laminated MDF with PVC edging for users safety , Browser compartment from epoxy powder coated mild steel sheet with grooved matting rubber , Base with plastic glides.

Dimensions : 1200x800x1000mm (LxDxH)

ESA63715



Book Browser Unit, Mobile, Combination, Shelf, Box And Hanger Road.

Mobile book browser unit with 2 no. Horizontal shelves on each sides. 1 no. Top box compartment and top hanger rod , Browser unit panel are made of 18mm thick melamine laminated MDF with PVC edging , Frame components from mild steel epoxy powder coated , With 100mm dia castor.

Dimensions : 900x400x900mm (LxDxH)

ESA63702



Material Storage Cabinet Wooden

Material storage cabinet with 2 lockable door. With internal divider and with fixed and adjustable shelves. Including plastic tote containers and louver panels to be fixed at the door , Cabinet door, panels and shelves are made of 18mm thick melamine laminated MDF with PVC edging , Back panel from 6mm thick one side melamine faced MDF , Door are lockable and at the back of the door with louvre to hang the trays .

Dimensions : 1000x750x1830mm (LxDxH)

ESA63711





Library Search Station LH

Rectangular library table with laminated finish with PVC edging. Leg base from round mild steel, privacy frame and top frame from mild steel tube epoxy powder coated. With fixed type CPU holder, cable cover and wire management , Top from 25mm thick melamine laminated MDF with PVC edging , Privacy panel from 18mm thick melamine laminated MDF with PVC edging , Top support and privacy frame from epoxy powder coated mild steel tube **Dimensions** : 1500x750x590mm (LxDxH)

ESA63716

Library Search Station MH

Rectangular library table with laminated finish with PVC edging. Leg base from round mild steel, privacy frame and top frame from mild steel tube epoxy powder coated. With fixed type CPU holder, cable cover and wire management , Top from 25mm thick melamine laminated MDF with PVC edging , Privacy panel from 18mm thick melamine laminated MDF with PVC edging , Top support and privacy frame from epoxy powder coated mild steel tube , Fixed type CPU holder from 18mm thick melamine laminated MDF , Leg frame from epoxy powder coated round mild steel with height adjustable feet. **Dimensions** : 1500x750x640mm (LxDxH)

ESA63717

Library Search Station HH

Rectangular library table with laminated finish with PVC edging. Leg base from round mild steel, privacy frame and top frame from mild steel tube epoxy powder coated. With fixed type CPU holder, cable cover and wire management , Top from 24mm thick melamine laminated MDF with PVC edging , Privacy panel from 18mm thick melamine laminated MDF with PVC edging , Top support and privacy frame from epoxy powder coated mild steel tube , Fixed type CPU holder from 18mm thick melamine laminated MDF , Leg frame from epoxy powder coated round mild steel with height adjustable feet **Dimensions** : 1500x750x760mm (LxDxH)

ESA63718



White Board Square Type

Porcelain enamel faced marker board , Magnetic porcelain finish board sheet white , Back from 9mm thick MDF with aluminium foil tape , With aluminium profile side rail and with pen tray.

Dimensions : 1220x1220mm (LxH)

ESA63722





Art Cart Kg

Mobile Art Cart consisting with fixed divider, with 2 no shelves and anodized rod as guard rails. With bottom 2-drawer box and sides panel with bow handle , Structure are made of 18mm thick melamine laminated MDF with 3mm thick PVC edging , Anodized rod as guard rails to prevent materials from falling , castor from 75mm dia.

Dimensions : 1050x400x900mm (LxDxH).

ESA63728

Art Cart Mobile

Mobile Art Cart consisting of top supply tray with with fixed divider, 2 no of with shelves anodized rod as guard rails. With bottom 2-drawer box and sides panel with bow handle , Structure are made of 18mm thick melamine laminated MDF with 3mm thick PVC edging , Anodized rod as guard rails to prevent materials from falling , castor from 75mm dia.

Dimensions : 1050x400x900mm (LxDxH).

ESA63729



Display Board Mobile,4 Fold

4 Fold Mobile Tack Board with tubular frame epoxy powder coated. All front side tack board with fabric and back side with melamine laminate

, Double sided tack board with fabric as per manufacturer standard , Frame from 25x25x2mm thick epoxy powder coated mild steel tube , Leg frame from epoxy powder coated 21mm dia mild steel pipe , With 50mm dia castor.

Dimensions : Board Size: 1200x1500mm (LxH) Total Height 1900mm

ESA63724



Outdoor Table, Adult

Outdoor table for adult in solid Wood top with epoxy powder coated metal frame , Top from solid wood with Polyurethane Finish , Frame from epoxy powder coated mild steel tube with height adjustable feet.

Dimensions : 1500x750x750mm (LxDxH)

ESA63779



Outdoor Chair, Adult

Outdoor chair without backrest with strip solid wood seat , Seat in strip solid wood with wood shield finish , Frame from epoxy powder coated mild steel tube with height adjustable feet.

Dimensions : 1500x450x450mm (LxDxH)

ESA63778



Display Board Mobile, Double Sided White & Tack

Mobile one side tack board and one side marker board with tubular frame epoxy powder coated. With castors and 2 with breaks diagonally

, Magnetic porcelain finish board sheet white for marker board , With 6mm thick cork board with fabric with 3mm thick MDF inner base , With aluminium profile side rail and with pen tray for marker board , Metal frame from 50x25x1.5mm thick Mild steel tube with epoxy powder coating .

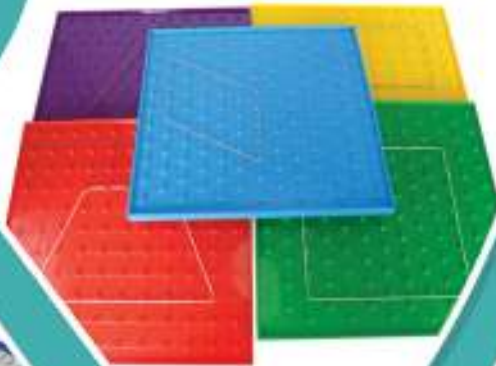
Dimensions : Board Size: 1250x1370mm (LxH) Total Dimension: 1300x500x1800mm (LxDxH)

ESA63723





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PRIMARY



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Science School Kit Complete

List of Elementary Kit Complete (21 item):
 - Balance Kit 10 set - Water Kit 10 set - Mineral Kit 3 set - Wind Chart 1 set - Sound Kit 10 set - Adaptation of Animal Chart & Card 1 set - Nutrition Card 1 set - Digestive System Chart & Card 1 set - Coal and oil Kit & Chart 2 set - Light Kit complete 10 set - Optic Kit 10 set - Simple machine Kit 10 set - Transformation of Energy Chart & Card 1 set
 - Heat Kit complete 10 set - Plant Reproduction Chart 1 set - Magnet Kit 10 set - Electric Kit complete 10 set - Solar System Chart & Apron 1 set - Sun, Earth, and Moon Apron 1 set - Cupboard for Kit 1 set - Stand 1 set

ESM61621



Science Elementary School Kit (Set Of 1)

List of Elementary, EduScience Primary Kit 1 Set , Balance Kit 1 set, Water Kit 1 set, Mineral Kit 1 set, Wind Chart 1 set, Sound Kit 1 set, Adaptation of Animal Chart & Card 1 set, Nutrition Card 1 set, Digestive System Chart & Card 1 set, Coal and oil Kit & Chart 1 set, Light Kit complete 1 set, Optic Kit 1 set, Simple machine Kit 1 set, Transformation of Energy Chart & Card 1 set, Heat Kit complete 1 set, Plant Reproduction Chart 1 set, Magnet Kit 1 set, Electric Kit complete 1 set, Solar System Chart & Apron 1 set, Sun, Earth, and Moon Apron 1 set, Experiment Manual Book 1 exp, Wood Box 1 set
 Dimension : (L) 86.00 x (W) 67.00 x (H) 31.00 cm
 Weight : 35.000 kg

ESM61622



Science Elementary School Kit (Set Of 5)

EduScience Elementary Kit 5 Set.

Consist of :

Balance Kit 5 set, Water Kit 5 set, Mineral Kit 1 set, Wind Chart 1 set, Sound Kit 5 set, Adaptation of Animal Chart & Card 1 set, Nutrition Card 1 set, Digestive System Chart & Card 1 set, Coal and oil Kit & Chart 1 set, Light Kit complete 5 set, Optic Kit 5 set, Simple machine Kit 5 set, Transformation of Energy Chart & Card 1 set, Heat Kit complete 5 set, Plant Reproduction Chart 1 set, Magnet Kit 5 set, Electric Kit complete 5 set, Solar System Chart & Apron 1 set, Sun, Earth, and Moon Apron 1 set, Cupboard for Kit 1 set, Stand 1 set

Packaging :

Kit 1 : 77 x 62 x 32 cm, 30 kg, Kit 2 : 33.5 x 17 x 81.5 cm, 7.5 kg, Kit 3 : 160 x 20 x 57 cm, 44.5 kg, Kit 4 : 160 x 12 x 37.5 cm, 33 kg

Dimension : (L) 0.00 x (W) 0.00 x (H) 0.00 cm

Weight : 125.000 kg

ESM61624



General Science Kit

Consist of :

- ESPE-S-01 Battery Holder 1 pc
- ESPE-S-02 Lamp Holder 2 pcs
- ESPE-S-03 Resonance Box 1 pc
- ESPE-S-04 Cube, Wood 1 pc
- ESPE-S-05 Cube, Aluminum 1 pc
- ESPE-S-06 Expansion Rod Holder 1 pc
- ESPE-S-07 Substance Dyes 1 pc
- ESPE-S-08 Lugol, Solution 1 pc
- ESPE-S-09 Burning Bridge 1 pc
- ESPE-S-14 Vacuum Hanger 1 pc
- ESPE-25/10 Spirit Burner 100 ml, Brass 1 pc
- ESPE-S-16 Plastic Funnel 1 pc
- ESPE-70/105-1 Dropping Pipette 10.5 cm 1 pc
- ESPE-S-18 Batang Pengatur Nada 2 pcs
- ESPE-S-19 Pengatur Tinggi Rendah Bunyi 1 pc
- ESPE-S-10 Binocular Pipe 1 pc
- ESPE-S-20 Multipurpose Vessel 1 pc
- ESPE-S-21 Card Paper 1 pc
- ESPE-14/35-40 Rubber Stopper with Two Holes, 35/40 mm 1 pc
- ESPE-S-22 Mirror 1 pc
- ESPE-S-23 Transparent Plastic Card 1 pc
- ESPE-S-24 Single Pulley 2 pcs
- ESPE-S-25 Cover for Beaker 250 ml 1 pc
- ESPE-S-28 Scale Aluminum Plate 10 pcs
- ESPE-S-29 Balance Cube 10 pcs
- ESPE-S-30 Masses 10 gr 1 pc
- ESPE-S-31 Balloon 5 pcs
- ESPE-S-32 Expansion Bolts Screws Rod Holder 2 pcs
- ESPE-S-33 Expansion Bolts Screws Rod 2 pcs
- ESPE-S-34 Compass Needle 1 pc
- ESPE-40/150.016 Test Tube ? 16 x 150 mm 3 pcs
- ESPE-S-37 Rope 1.5 m 1 pc
- ESPE-85/010 Test Tube Holder 1 pc
- ESPE-S-38 Copper Wire 1 pc
- ESPE-S-40 Blow Pipe for Balloon 1 pc

- ESPE-S-41 Tabung Pendengar, Rubber 2 pcs
- ESPE-S-42 Box Scales 1 pc
- ESPE-S-43 Glass Pipe 1 pc
- ESPE-S-45 Balance Pole 1 pc
- ESPE-S-46 Balance Plate Hanger 2 pcs
- ESPE-S-47 Plate Hanger 2 pcs
- ESPE-S-11 Nikelin Wire 1 pc
- ESPE-S-48 Spring Balance 1 pc
- ESPE-70/025 Lamp Bulb E 10, 2.5V/0.3A 2 pcs
- ESPE-S-49 Tuning Fork 1 pc
- ESPE-S-51 Arm Balance 1 pc
- ESPE-S-52 Balancing Arm 1 pc
- ESPE-S-54 Balance grooved 1 pc
- ESPE-S-56 Mini Trolley 2 pcs
- ESPE-S-57 Stand Balance grooved 1 pc
- ESPE-S-58 Turbine and Turbine House 1 pc
- ESPE-S-59 Plastic Hose 2 pcs
- ESPE-25/100 Alcohol Thermometer -10°C - 110°C 1 pc
- ESPE-S-60 Rod Thermal Expansion 1 pc
- ESPE-S-61 Basic Compass 1 pc
- ESPE-S-62 Magnet Float 2 pcs
- ESPE-S-63 Rod Thermal Expansion 1 pc
- ESPE-S-66 Rod Shadows 1 pc
- ESPE-S-67 Double Pulley 1 pc
- ESPE-45/250 Erlenmeyer Flask 250 ml 1 pc
- ESPE-11/250 Beaker 250 ml 1 pc
- FSP 11.17/137 Marble 1 pc
- ESPE-22/025-09 Cylindrical Magnet ? 9 x 25 mm (2 pcs/pack) 1 pc
- ESPE-11.19/139 Plastic Syringe 10 ml 2 pcs
- ESPE-90/011 Magnifier ? 50 mm, Magnifying 3x 1 pc
- ESPE-S-12 Expansion Rod Screw 1 pc
- ESPE-99/030 Connecting Lead DC 50 cm with Alligator Clip, Black (5 pcs/ pack) 5 pcs
- ESPE-96 Knife Type Switch 1 pc
- ESPE-28/060-1 Optical Pin 25 mm, Stainless 3 pcs
- ESPE-S-58 Compass 1 pc
- ESPE-06/20 Biologyfor Elementary School (20 items/set) 1 set
- ESPE-S-68 SD 1 set



ESM61625

Primary Electricity Kit A

The kit contains : Cell Holder (without Cells) - 6 Nos ; Bulb Holder, MES, Mounted on Base - 6 Nos ; Bulbs, MES - 6 Nos ; Push Key - 3 Nos ; 2-Way Switch 3 Nos ; Connecting Lead, 4mm, Red - 9 Nos ; Connecting Lead, 4mm, Black - 9 Nos



NEW

ESM61781/A



NEW

Primary Electricity Kit B

Primary Electricity Kit B : Contains additional items and consumables to be used along with Kit A. The kit consists of : Variable Resistance - 4 Nos. ; Motor, Mounted on Base - 3 Nos. ; Buzzer, Mounted on Base - 3 Nos. ; Universal Clips - 4 Nos. ; Electrode Holder - 2 Nos. ; Bulbs, MES - 20 Nos. ; Crocodile Clips - 8 Nos. ; Carbon Rods - 6 Nos. ; Soft Iron Rod - 6 Nos. ; Silicon Diode - 3 Nos. ; Resistance, Fixed - 3 Nos. ; Insulated Copper Wire - 1 Reel

ESM61781/B

Electricity Kit Basic

Kit comprises OF : • Cell Holder (without Cells) - 12 Nos. , • Bulb Holder, MES, Mounted on Base - 20 Nos. • Push Key - 8 Nos. • 2-Way Switch - 4 Nos. , • Universal Clip - 4 Nos. • Electrode Holder - 4 Nos. , • Variable Resistance - 4 Nos. • Bulbs, MES - 40 Nos. , • Steel Wool - 1 Pack • Connecting Lead, 4mm, 10cm, Red - 12 Nos. • Connecting Lead, 4mm, 10cm, Black - 12 Nos. • Connecting Lead, 4mm, 25cm, Red - 4 Nos. • Connecting Lead, 4mm, 25cm, Black - 4 Nos. • Crocodile Clips - 8 Nos. , • Carbon Rod - 12 Nos. • Soft Iron Rod - 8 Nos. , • Silicon Diode - 4 Nos. • Resistance, Fixed - 4 Nos. , • Copper Wire, Bare, 20SWG - 1 Reel • Copper Wire, Insulated, 50m - 1 Reel , • Eureka Wire, 34SWG 50g. , •Copper Foil Sheet, 150x150mm - 1 No. Description: 29.5x29.5x22cm - Weight: 3.15kg



NEW

ESM61781





Natural Science Kit For Elementary School (130 Items)

Consist of :

- Flat Mirror Holder 2 pcs
- Hose Clamps 4 pcs
- Dynamo Motor 1 pc
- Lamp Bulb E 10, 2.5V/0.5A 2 pcs
- Rope, 1 m 1 pcs
- Spiral Pin 20 pcs
- Short Connecting Cable 7 pcs
- Long Connecting Cable 7 pcs
- Pulley ϕ 7 cm 1 pc
- Pulley ϕ 3.5 cm 1 pcs
- Shaft Holder 2 pcs
- Connecting Lead DC 25 cm, Alligator Clip, Red 1 set
- Connecting Lead DC 25 cm, Alligator Clip, Black 1 set
- Double Pulley 1 pc
- Single Pulley 1 pc
- Battery Holder 1 pc
- Plastic Pipe 1 pc
- Ring with Three Legs 1 pc
- Button Switch On/Off 1 pc
- Multimeter 1 pc
- A-Shaped Holder 2 set
- Candle Holder 1 pc
- Translucent Screen, 110 x 100 mm 1 pc
- Screen Holder 1 pc
- Lamp Holder 2 pcs
- Multipurpose Board Holder 4 pcs
- Red Color Filter 1 pc
- Green Color Filter 1 pc
- Blue Color Filter 1 pc
- Yellow Color Filter 1 pc
- Plate Mirror 1 pc
- Test Tube ϕ 16 x 125 mm 1 pc
- Tube Clamp 1 pc
- Plastic Syringe 50 ml 1 pc
- Plastic Syringe 10 ml 2 pcs
- Magnifier ϕ 50 mm, Magnifying 3x, Plastic 1 pc
- Aluminum Pipe, Long 2 pcs
- Aluminum Pipe, Medium 1 pc
- Aluminum Pipe, Short 1 pc
- Multipurpose Board 1 pc
- Color Sheet 1 pc
- Rubber Sheet 1 pc
- Balloon 1 pc
- Large Concave Mirror 1 pc
- Prism, Right Angle with Holder 1 pc

- Alcohol Thermometer -10 °C - 110 °C 1 pc
- Plasticine, 10 g 1 pc
- Capsule Tube 1 pc
- Flashlight Cap with 1 Slit 1 pc
- Kaleidoscope Tube 1 pc
- Kaleidoscope Tube Cover 2 pcs
- Kaleidoscope Object Tube 1 pc
- Kaleidoskop Mirror 3 pcs
- Black Circular Sheet with Hole 1 pc
- Yellow Circular Sheet 1 pc
- Red Circular Sheet 1 pc
- Beads 1 set
- Balance Bowl 1 pc
- Lever with Balancer 1 pc
- Balance Bowl Hanger 1 pc
- Plastic Tub 1 pc
- Top 2 Color ϕ 5 cm 1 pc
- Top 2 Color ϕ 3 cm 1 pc
- Top 6 Color ϕ 5 cm 1 pc
- Top 6 Color ϕ 3 cm 1 pc
- Top 2 Color (Elektric) 1 pc
- Top 6 Color (Elektric) 1 pc
- Beater 1 pc
- Propeller 1 pc
- Shadow Rod I 1 pc
- Shadow Rod II 1 pc
- Scale Board 1 pc
- Tuning Fork 1 pc
- Plastic Funnel 2 pcs
- Plastic Hose, 100 cm 1 roll
- Speaker 1 pc
- Ruler 30 cm, Plastic 1 pc
- Half Circle Protractor 1 pc
- Rubber Belt, ϕ 8 cm 1 pc
- Resistor 100 Ohm 1 pc
- Resistor 200 Ohm 1 pc
- Brass Plate 1 pc
- Copper Plate 1 pc
- Zinc Plate 1 pc
- Plastic Plate 1 pc
- Aluminium Plate 1 pc
- Wood Plate 1 pc
- Rubber Plate 1 pc
- Carton Plate 1 pc
- Dynamometer 1.5 N 1 pc

- Periscope 2 pcs
- Periscope Mirror 2 pcs
- Digital Stopwatch 1 pc
- Load 4 pcs
- Rubber Band 3 pcs
- Mirror Holder 1 pc
- Candle ϕ 14 mm 1 pc
- Small Tool Box 4 pcs
- Copper Wire, 0.5 m 1 pc
- Flashlight 1 pc
- Battery, AA 4 pcs
- Clips 5 pcs
- Styrofoam 1 pc
- Cylindrical Magnet 9 x 25 mm (2 pcs/pack) 1 pair
- L-Shaped Plate 2 pcs
- Circular Plate 1 pc
- Pulley 2 cm 1 pc
- Red LED 1 pc
- Measuring Cylinder 100 ml, Plastic 1 pc
- Rectangel Plastic Tank 1 pc
- Double Tape 1 pc
- Iron Powder 100 gr
- Sandpaper 1 lbr
- Compass 1 pc
- Guitar String 1 pc
- Plastic Ring 1 pc
- Filter Paper ϕ 9 cm 1 pc
- Small Float 1 set
- Shaft Ring 2 pc
- Carton with Slit 1 pc
- Circular Wire 1 pc
- Styrofoam Ball 1 pc
- Solar Cell 1 pc
- Holder Clamp 2 pcs
- Kaleidoscope Tube Holder 1 pc
- Lever Clamp 1 pc
- Manual Book 1 eks
- Learning Guide Book 1 eks
- Container Box 1 pc
- Tray 1 s

ESM61623





A Space Farm Kit

This kit has been designed to illustrate to young students, how we might grow our food in an environment other than ours here on the earth. The Space Farm experiments permit young scientists to germinate seeds in nutrient solutions without using soil. After the initial germination occurs, students may transfer the sprouted seedlings to real soil from their own environment. Includes background information on hydroponic cultivation. Required, but not included: 1,000 mL beaker or 2 quart container and distilled water. Designed for 24 students working in pairs. Grades 4-6

ESM61626



Elementary Crime Solving Kit

Hold your entire class of student detectives spellbound with a mystery at the mall. This exercise is designed to show young students how the scientific method works in everyday life, in this instance through forensic science. The students must solve a crime (the problem) through observation, reasoning, and experimentation. Includes fibres and hairs as evidence, fingerprints, blood types, and personal profiles full of clues and circumstantial evidence. Students work as a team to reach a decision as to who they believe stole the shirt, then compare their suspect to the official police evidence. Required, but not included: microscope, water bath, distilled water, and glass test tubes with stoppers. Designed for 24 students working in six groups of four. Meets national standards for grades 2-6.

ESM61627



Science Inquiry

Mysteries for elementary aged students to solve! Gather clues to reveal the contents of the mystery boxes, discover why raisins dance, investigate mystery ink and moo milk. Students learn to use observation, classification, communication, measurement, prediction, and inference, and formulate and test hypotheses as they plan and conduct simple science investigations. You will need small mystery items, whole milk, a clear carbonated drink, tape and water. Designed for 24 students working in six groups of four. Meets national standards for grades K-4.

ESM61628



Matter For Minors

Matter for Minors is an introduction to observation and investigation. Using a discovery approach, students investigate the three states of matter (solids, liquids and gasses) and learn the properties and vocabulary related to each. Includes extensive materials for sorting and classifying solids and the required chemicals for exploring gas phases of matter and changes in matter. Includes tests with answer keys. Required, but not included: hot plate, ice cubes, and assorted containers. Designed for 24 students working in six groups of three to five. Grades K-4

ESM61629





Exploring Conductivity Of Solids Mini Kit

Students build a simple conductivity tester and use the circuit to test the conductivity of a variety of solid substances. They analyse the same substances to determine whether they are magnetic. The data collected is compared and contrasted to evaluate the properties that make an item conductive. Includes all testing materials, a manual complete with background information, and reproducible student materials. Goggles are required; one pair is included in the mini kit. Class kit is designed for 24 students working in groups of four.
Grades 3-6

ESM61630



Exploring Conductivity Of Solids Class Kit

Goggles are required. Grades 3-6

ESM61631



Lets Build Electromagnets, Single Kit

Students use the Engineering Design Process to problem solve as they build electromagnets. Inquiry based investigations explore core materials, core thickness, number of wraps per coil, magnetic field, electrical charge, and heat energy. Lessons culminate in a design the strongest electromagnet competition. Includes an extensive instructor’s manual with lesson plans, background information, reproducible stepwise student instructions, worksheets, complete answer keys, and all materials required for investigation. Available as a single kit for a small group or a class pack with materials for 24 students working in groups of four. Batteries included.
Grades 3-5

ESM61632



Lets Build Electromagnets Class-pack

Students use the Engineering Design Process to problem solve as they build electromagnets. Inquiry based investigations explore core materials, core thickness, number of wraps per coil, magnetic field, electrical charge, and heat energy. Lessons culminate in a design the strongest electromagnet competition. Includes an extensive instructor’s manual with lesson plans, background information, reproducible stepwise student instructions, worksheets, complete answer keys, and all materials required for investigation. Available as a single kit for a small group or a class pack with materials for 24 students working in groups of four. Batteries included.
Grades 3-5

ESM61633



**Measuring Beaker Set**

5 PCS Measuring beaker , Capacity:
100 ml, 200 ml, 300 ml, 500
ml, 1000 ml

ESM61634

**Measuring Beaker Set**

7 pcs, Measuring beaker, Capacity:
50 ml, 100 ml, 200 ml, 250 ml, 300
ml,
500 ml, 1000 ml

ESM61635

**Measuring Cylinder Set**

7 Kinds cylinder 7pcs/set / 10 ml
,25
ml ,50 ml ,100 ml ,250 ml ,500 ml
,1000 ml 1pcs

ESM61636

**Pan Balance**

Elementary Pan Balance 1000 CC Packed in white box. Without weights &
weight box Balance size:

Wide : 9cm Length : 28.3cm High:15.9cm

ESM61637

**Balance Kit (Set Of 10)**

It is ideal for use by Primary School student, aged 6-12 years. The student will be able
to understand the basic concept of a balance. Versatility of
the kit enable the students to perform experiments with their own ideas.

Consist of :

1. Plane 10 pcs
2. Foot Left Right 20 pcs
3. Plastic Lever 10 pcs
4. Spring Plug 10 pcs
5. Bowl 20 pcs
6. Set of Masses (1, 2, 5, 10, 20, 50 and 100 g) 10 set
7. Corrugated Box Plastic 410 x 295 x 191 mm, (# 3 mm, Green colour) 1 pc

Experiment topics :

Balance concept, Relation between weight and volume

Dimension : (L) 41.00 x (W) 31.00 x (H) 19.50 cm, **Weight :** 7.000 kg

ESM61638

**Balance Kit**

It is ideal for use by Primary School student, aged 6-12 years. The student will be able
to understand the basic concept of a balance. Versatility of the kit enable the students
to perform experiments with their own ideas.

Manufactured with high quality standard.

Experiment topics:

Balance concept. Relation between weight and volume.

Specification:

1. Plane 1 pc
2. Foot Left & Right 2 pcs
3. Plastic Lever 1 pc
4. Spring Plug 1 pc
5. Bowl 2 pcs
6. Set of Masses (1, 2, 5, 10, 20, 50 and 100 g) 1 set
7. Tools Box 1 pc

ESM61639





Characteristics Of Matter

Ten experiments exploring the Characteristics of Matter include: Properties of Matter, States of Matter, Physical Properties of Solids, Physical Properties of Liquids, Melting Point, Boiling Point, Solubility of Solids, Density, Chemical Properties, and Identification of Unknown Solutions. Includes reproducible student labs, reproducible assessment materials for each lab, vocabulary, and complete answer keys. Required, not included: balance, ice, (24) small test tubes, test tube racks, 10 ml graduated cylinders, (6) beakers or clear cups, chemical splash goggles. Allow three one hour lab periods. Designed for 24 students working in groups of four. Meets national standards for grades 5-9.

ESM61640



Changes In Matter

Ten activities acquaint students with classifying matter as elements, mixtures, or compounds and introduce them to atomic structure and nomenclature. Students are introduced to properties of common elements, compounds, and mixtures and learn how symbols are used to code for chemical elements. They separate common mixtures by evaporation and chromatography; proving that mixtures are not chemically combined. They learn that while elements are pure substances made of only one type of matter, compounds are pure substances made up of different chemically combined elements. Students observe that chemical reactions between solutions result in the formation of new compounds with different properties. They learn that colour changes, effervescence, formation of solids, and new odours are all indicators that a chemical reaction has occurred. Includes reproducible student instructions, assessment for each activity, vocabulary, and complete answer keys. Required, not included: chemical splash goggles. Designed for 24 students working in groups of four. Meets national standards for Grades 6-9.

ESM61641



Light Colour

Ten activities include Introduction to Waves, Electromagnetic Spectrum, Reflection of Light, Reflection from a Plane Mirror, Reflection from Concave and Convex Mirrors, Refraction through Concave and Convex Lenses, Separation of White Light into the Colours of the Visible Spectrum, How Reflection Determines the Colour of Objects, Mixing the Primary Colours of Light, and Mixing the Primary Colours of Pigment. Includes all materials for investigations, reproducible student data sheets, assessment questions, and answer keys. Designed for 24 students working in six groups of four.

ESM61642



Meeting Molecules

This kit is designed to help students differentiate between physical and chemical changes using extensive hands-on activities. Students model the states of matter: a solid, a liquid, and a gas; and the phase changes between them. They learn the difference between atoms and molecules. A great introduction to physical science and chemistry which bridges the use of common household ingredients and laboratory chemicals. Students investigate molecular motion in liquids, evidence of chemical change, and the effects of changing different variables within a chemical reaction. May be used as a stand-alone kit or as a companion kit to follow 1-132, Matter for Minors. Required, not included: hot plate, pot holders, glass beaker, various small containers, red and black construction paper, copy paper, citrus juices, milk, ice, matches, chemical splash goggles, and gloves. Designed for up to 30 students.

ESM61643



Investigation Indicators

Dramatic colour changes and kitchen chemistry make this kit ideal for attracting elementary scientists. Utilizing the investigative and experimental what if approach, students predict, observe, and analyse using common household items they recognize. First they test for acids using natural indicator solutions from red cabbage and black bean juice, then they are introduced to the terms acid and base as they learn to use blue and red litmus papers. Finally, the students compare the natural indicator system to Universal Indicator pH paper and use colour charts; then they make their own Universal Indicator Test Strips from Universal Indicator Solution and filter paper. Using gelatin and a choice of indicator solutions, students make a solid gelled indicator product for testing acids and bases. Includes directions for the isolation and characterization of compounds which act as indicators. Designed for 24 students working in six groups of four. Meets national standards for Grades 5-8.

ESM61644

**Recycle It**

Students are introduced to the carbon cycle and made aware of products which undergo recycling processes. They model paper recycling on a small scale using waste paper. Then, they reuse the paper product they create as part of their recycling effort. Required, but not included: hand mixer, blender, or food processor. Designed for 24 students working in six groups of four. Meets national standards for grades K-8. Meets national standards for grades 2-6.

ESM61645

**Recycling Plastics By Density Class Kit**

Students use a flow chart template and a simple sink or float methodology to determine the identity of recyclable polymers. Using small pieces of the plastics in question, students identify an item by recycle number so they know how the plastic should be recycled in their community. Younger students should be encouraged to collect plastics for testing. Great for introducing the concept of recycling at any grade level. Includes the properties of individual polymers, common sources of household plastics for items in each recycle category, and the chemical structure, description, and density range of each recyclable polymer for applications with older students. Class kit includes materials for 24 students working in groups of four and requires goggles and scissors. Grades 3-12

ESM61646

**Recycling Plastics by Density Mini Kit**

Students use a flow chart template and a simple sink or float methodology to determine the identity of recyclable polymers. Using small pieces of the plastics in question, students identify an item by recycle number so they know how the plastic should be recycled in their community. Younger students should be encouraged to collect plastics for testing. Great for introducing the concept of recycling at any grade level. Includes the properties of individual polymers, common sources of household plastics for items in each recycle category, and the chemical structure, description, and density range of each recyclable polymer for applications with older students. Class kit includes materials for 24 students working in groups of four and requires goggles and scissors. Mini kit includes one pair of goggles. Grades 3-12

ESM61647





Simple Machines Kit

An introductory kit for an entire unit exploring the basics of simple machines: inclined planes, levers, screws, wedges, axles with wheels, and gears. Ten hands-on experiments employing simple machines, most of which students build. Students culminate their studies with the ability to create their own simple machines. Includes instructor's manual, extensive student worksheets, complete answer key, extension activities, hammer, pulleys, spring scales, rulers, string, weights, nails, screws, fulcrums, nuts and bolts, paper clips, and marbles. Designed for 24 students working in six groups of four. Meets national standards for grade levels 5-8.

ESM61648



Measurments Kit

Students gain experience taking scientific measurements using metric units and become familiar with common equivalent measures. Nine real-world activities lead students through the concepts of measuring with accuracy; learning metric place values; estimating metric lengths, distances, areas, masses, and volumes; measuring volume in litres, square measure, cubic measure; identifying metric measures in our world; identifying mass vs weight; measuring by displacement; and taking temperatures in Celsius and Fahrenheit. Includes extension activity suggestions, student exercises, and assessment activities for testing understanding. Grades 5-8

ESM61649



Common Indicators

Introduce students to the colourful world of acid base indicators. Teach students when it is appropriate to use which indicator, and how different indicators are commonly used. Includes Phenolphthalein for indicating basic solutions and use in standard acid-base titration, Universal Indicator for using over a wide range of acid-base pH, and Methyl Orange for testing strongly acid solutions. The kit includes one 30 ml dropper bottle of each Phenolphthalein, Universal Indicator, and Methyl Orange, a sample reproducible lab sheet for recording results for testing common substances, and six Universal Indicator Colour Charts.

The kit has a wide variety of applications. A great kit for investigating. Utilizing an experimental approach, students can predict, observe, and analyse the pH of common household solutions, physiological fluids, environmental samples, and foods to become familiar with acid base chemistry and characterize the pH profiles of different classes of substances. Grades 5-8

ESM61650



Exploring Conductivity Of Solutions Class Kit

Students build a simple conductivity tester and use it to evaluate the conductivity of various chemicals and solutions. They evaluate the chemistry of conductivity by evaluating ionic and non-ionic substances, acidic and basic substances, solid and liquid metallic ions, and substances with different polarities. Extension activities have students exploring practical questions such as how electricity can electrocute through water, what properties make a good sports drink, and how electroplating occurs. Goggles are required; one pair is included in the mini kit. Class kit is designed for 24 students working in groups of four. Grades 7-10

ESM61651





Exploring Conductivity Of Solutions Mini Kit

13-105 Exploring Conductivity Mini Kit (ideal for one student or a small group). Goggles are required; one pair is included in the mini kit.

Grades 7-10

ESM61652



Build Your Own Simple Electric motor Single Kit

Designing simple electric motors from wire and magnets, students explore the effects of number of coils, wire thickness, and sizes, shapes, strengths, and types of magnets. They are guided through the engineering design process with four progressive experiments and a design competition. Great for introducing guided inquiry-based learning, systematic problem solving, and engineering design practices. Kits include instructor's manual with lesson plans, background information, reproducible stepwise student protocols, and guided worksheets. Safety goggles and batteries not included; single kit requires 3 D-cell batteries; class-pack requires 18 D-cell batteries. Designed for working in groups of four.

ESM61653



Build Your Own Simple Electric motor Class-pack

Designing simple electric motors from wire and magnets, students explore the effects of number of coils, wire thickness, and sizes, shapes, strengths, and types of magnets. They are guided through the engineering design process with four progressive experiments and a design competition. Great for introducing guided inquiry-based learning, systematic problem solving, and engineering design practices. Kits include instructor's manual with lesson plans, background information, reproducible stepwise student protocols, and guided worksheets. Safety goggles and batteries not included; single kit requires 3 D-cell batteries; class-pack requires 18 D-cell batteries. Designed for working in groups of four.

ESM61654



Physical changes Kit

Students investigate physical changes in size, shape and states of matter to determine whether they produce new substances. Materials are provided with four activities in which students learn to (1) identify examples of phase changes, (2) investigate examples of things that happen to matter they absorb or lose heat and (3) explore changing the sizes and shapes of substances. Includes reproducible student data sheets and assessment questions. Required, but not included: microwave, clock. Designed for 24 students working in six groups of four.

ESM61655





Oil Spill Junior Kit

Train your elementary aged students to work as an environmental engineering team. They learn physical and chemical properties of oil while experiencing how engineers and scientists approach oil spill disasters. The perfect hands-on activity to pair with your favourite elementary level oil spill book. Students create their own oil spill models and use them to simulate basic oil containment and removal techniques. They learn to measure data and compare results. Ideal for implementing scientific process, establishing problem solving skills, and introducing inquiry based learning. Includes multiple sets of worksheets for differentiated learning. Teachers manual, materials, and supplies included. Just add water. Designed to accommodate 32 students working in pairs. Plan for 4-6 hours of activities. Grades K-5

ESM61656

Oil Spill Junior Refill

Oil Spill Junior Refill. Grades K-5

ESM61657



Forces, Motion, and Simple Machines kit

this kit has been designed to incorporate a wide range of interesting hands-on investigations to enhance your existing science curriculum. Aligned with the Next Generation Science Standards, this kit covers the fundamental science concepts of forces, motion, and simple machines. Investigations include force couples involving "action and reactions, sliding and rolling friction, centrifugal and centripetal forces, velocity, simple periodic motion, periodic motion of a pendulum, uniform linear motion, accelerated motion, efficiency of machines, ideal and actual mechanical advantage, pulley systems, the pulley as a modified lever, the inclined plane, and the use of levers to multiply force and speed and change direction. Contains enough materials for six work stations and a teacher's guide. Grades 4-8

ESM61664





Mini Scope

Build your own 150X compound microscope and use it to take a look into the micro-world. Students learn about the structure and design of a microscope as they assemble their own working model. All microscope parts are provided. Includes a diagram and explanation of how microscopes project real and virtual images through lenses and directions for microscope use. Learn to prepare your own specimens using the slides included. Complete microscope including light source measures 90 x 200 mm. Makes 1 microscope. Grades K-8

ESM61658



Owl Pellet Kit

Owl pellets are a favourite at any grade level and allow for a wide range of activities from observation and data recording; to measuring, sorting, classifying, and predicting; to predator- prey relationships. Higher level students may identify skeletal parts of small mammals, study the interrelatedness of food chains, and identify habitats and ecosystem variables. AP Biology and AP Environmental Sciences students might study food webs and energy flow, population densities, and the availability and diversity of prey. Designed for 24 students working in pairs. Grades K-12

ESM61659



Owl Pellet Refill

Owl pellets are a favourite at any grade level and allow for a wide range of activities from observation and data recording; to measuring, sorting, classifying, and predicting; to predator- prey relationships. Higher level students may identify skeletal parts of small mammals, study the interrelatedness of food chains, and identify habitats and ecosystem variables. AP Biology and AP Environmental Sciences students might study food webs and energy flow, population densities, and the availability and diversity of prey. Designed for 24 students working in pairs. Grades K-12

ESM61660





Chick-U-Bator

Nothing fascinates children more than observing life! Watch the miracle of birth together through the clear plastic dome of this mini incubator. The entire hatching process may be observed in your own classroom with this easy to assemble incubator. Students engage in anticipation of the hatching process while you study what occurs inside the developing eggs. As students take the place of the mother hen, they learn the important responsibilities they must perform to keep the fertile eggs alive while they grow. May be used to hatch 1-3 chicken, 8 quail, 1-3 duck, or 4 pheasant eggs. Fertile eggs may be obtained from local hatcheries. UL approved. Grades K-5

ESM61661



The Food Chain

This kit is designed to show the intricate balance and relationships between different levels of the food chain and the importance of these levels to humans and our environment. Students study the different relationships within an environment, the importance of each organism, how energy is transferred, and the delicate balance in the environment of a food web. Producers, consumers, herbivores, carnivores, omnivores, predators, prey, decomposition, energy flow, food cycles, food chains, food webs, and food pyramids are all discussed. Differentiated to teach food chain (Grade 3 ? 5) and food web (Grade 6 ? 8) related topics. Students observe pond water food webs and soil habitat food chains, model the decomposition of plant matter, and design their own food chains and food webs. Includes instructions for games, experiments, and activities. Required but not included: outdoor soil, turnip, and moldy food. Microscopes recommended. Designed for 24 students working in groups of four.

Grades 4-7

ESM61662



Dichotomous Keys

Dichotomous keys are used to help classify and identify various objects. With this kit, you will guide students through the process of using keys with several real-world examples, just like scientists! This kit includes seven different activities, ranging from easy to challenging, basic to scientific. The culminating activities include Constructing a Tree Key to Your Own School and Using a Dichotomous Key to Identify Seashells. These activities include classification of real shells and real trees using their scientific names. Required, but not included: coloured pencils or crayons. Designed for 24 students working in six groups of four.

Grades 5-8

ESM61663





Geometric Logic Board Small Size

Rectangle: [big]-7.7 x 3.8 x 0.5 cm / 7.7 x 3.8 x 0.2 cm , [small]-4.5x2.3x0.5 cm / 4.5x2.3x0.2 cm

Square: [big]- 5.4x5.4x0.5 cm / 5.4x5.4x0.2 cm , [small] 3.2x3.2x0.5 cm / 3.2x3.2x0.2 cm

Hexagonal: [big]-diagonal: 6.6x0.5 cm / 6.6x0.2 cm , [small]-diagonal: 3.8x0.5 cm / 3.8x0.2 cm

Triangle: [big] - side length: 8.9 cm , [small] - side length: 4.6 cm

Circle: [big] - diameter: 6 cm , [small] - diameter: 3.5 cm Total: 60 pcs / set

ESM62071



3D Geo Solids Set

17 shapes 3D Geo Solids Set (10cm, 4 colour)

ESM62073

Geometric Logic Board Big Size

Rectangle: [big]-11.7x6.1x0.75 cm/ 11.7x6.1x0.25 cm , [small]-7.5x3x0.75 cm/ 7.5x3x0.25 cm

Square: [big]-8.4x8.4x0.75 / 8.4x8.4x0.25 cm , [small]-4.8x4.8x0.75 cm/ 4.8x4.8x0.25 cm

Hexagonal: [big]-diagonal: 10.5x0.75 cm / 10.5x0.25 cm , [small]-diagonal: 6.9x0.75 cm / 6.9x0.25 cm

Triangle: [big] - side length:12.6cm , [small] - side length: 7cm

Circle: [big]

- diameter:9.5 cm , [small] - diameter:5.4 cm Total: 60 pcs / set

ESM62072

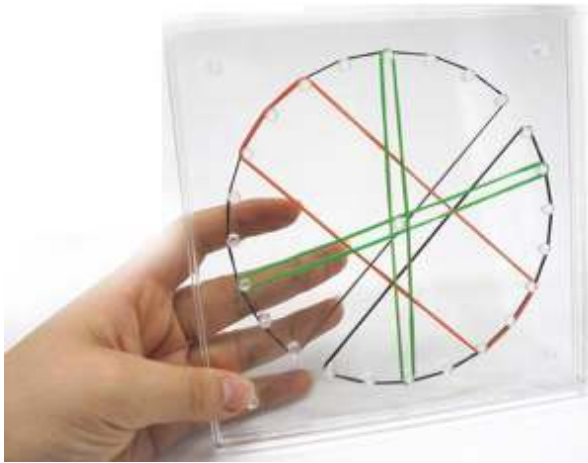


3D Expansion Geo Solids

10cm ,3D expansion Geo solids ,10 shapes fit into individual transparent acrylic containers and packed in white box. Contain triangular prism, cube, pentagonal prism,hexagonal prism, cylinder, triangular pyramid, square pyramid, hexagonal pyramid and pentagonal pyramid and cone

ESM62074

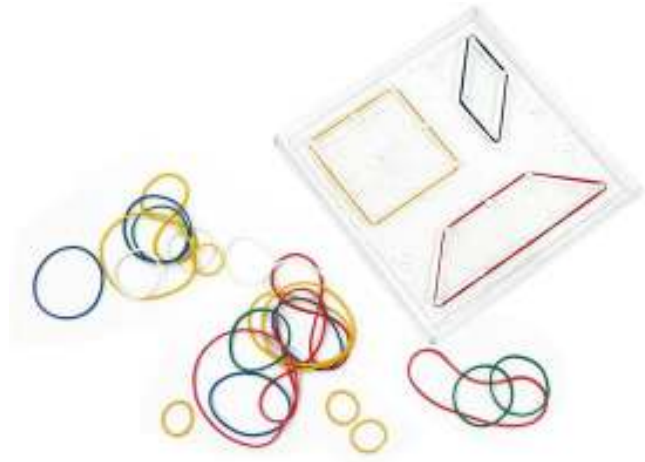




Geoboard Transparent Circle 10 cm

transparent on Single sided Geoboard , With Circular knobbed pins hold rubber bands in place. Includes rubber bands in assorted colors and sizes Side size 15 Cm

ESM62075



Geoboard Transparent Square 15 cm

transparent on Single sided Geoboard , Knobbed pins hold rubber bands in place. Includes rubber bands in assorted colors and sizes Side Size 15 CM

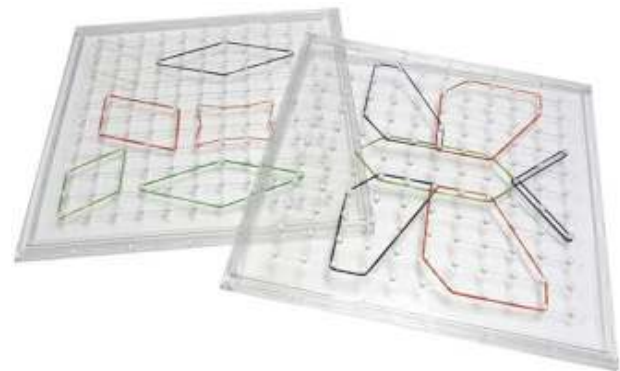
ESM62076



Geoboard Transparent Geometric 15 cm

Geoboard transparent , Single sided Knobbed pins hold rubber bands in place. Includes rubber bands in assorted colors and Sizes Side size is 15 cm

ESM62077



Geoboard Transparent Square 23 cm

Geoboard transparent , Single sided Knobbed pins hold rubber bands in place. Includes rubber bands in assorted colors and Sizes Side size is 23 CM Number of Pin is 137 Pins

ESM62078



Geoboard Transparent 23 cm

1PC 23cm transparent on Double sided Geoboard , Knobbed pins hold rubber bands in place. Includes rubber bands in assorted colors and sizes 100 pins, the other side is 137 pins (10*10 Lines, the other side 10*12 Lines)

ESM62079

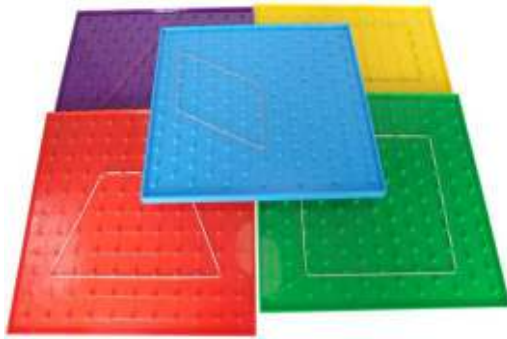


Geoboard 12.5 cm (Pk/6)

6pcs 12.5cm geoboard size:12.5x12.5x1cm 6 colour 1pcs/colour 6 rubber band bag Coloured Single sided Geoboard , Knobbed pins hold rubber bands in place. Includes rubber bands in assorted colors and sizes

ESM62081





Geoboard Coloured 23 cm

1PC 23CM
Coloured Single sided Geobaord , Knobbed pins hold rubber bands in place. Includes rubber bands in assorted colors and sizes 100 pins, the other side is 137 pins (10*10 Lines, the other side 10*12 Lines)

ESM62080



Rubber Bands (Pk/100)

Rubber Bands 100PCS / Bag

ESM62083



Geoboard 15 cm (Pk/6)

Coloured Single sided Geobaord , Knobbed pins hold rubber bands in place. Includes rubber bands in assorted colors (6 diffident Colours) side Size each is 15CM

ESM62082



Pentominoes (Pk/60)

Pentominoes Tub 60PCS/small tub -- Each shape with 5 length & widely each 2cm link 12shape packing in small hand tub

ESM62084

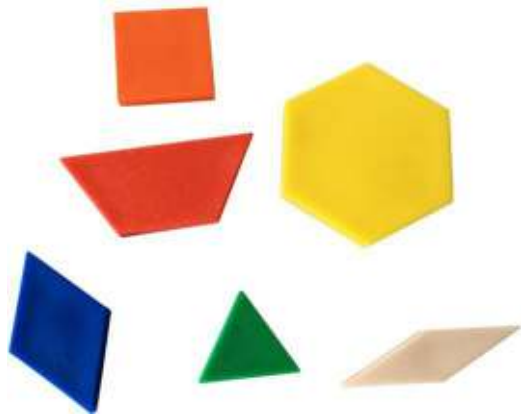


Pattern Blocks Tub (Pk/250)

This set used to explore patterns, symmetry, linear and area measurement, fractions and problem solving. set of 250PCS/in small tub Consist of : Trapezoid 50pcs,hexagon 25pcs, rhombic 50pcs,triangle 50 pcs,rhomboid50pcs,square25pcs packing in hand small round tub.

ESM62085

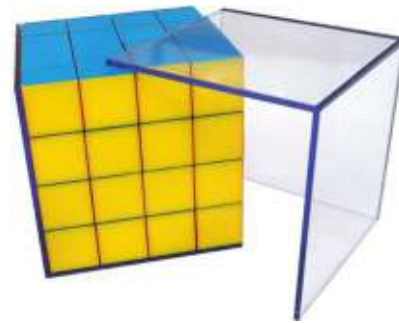




Pattern Blocks Plastic (Pk/250)

This set used to explore patterns, symmetry, linear and area measurement, fractions and problem solving.
set/250PCS of 0.5CM Double Side Flat solid blocks in 6 colours diffident shapes as following : Trapezoid 50pcs,hexagon 25pcs, rhombic 50pcs,triangle 50 pcs,rhomboid 50pcs,square 25pcs

ESM62086



Magic Cubes

Magic Cubes plastic with transparent housing

ESM62087



Beads Large (Pk/160)

160PCS Large Beads
Diameter 2.1 cm 4 shapes, red, yellow, blue, green mixed 3 colour string 3 bundle

ESM62088



Beads Large In Tub (Pk/160)

Large beads tub 160 PCS /Small tub
Contain of :2.1 CM. 4 shape with red ,yellow,blue,green 4 colours mixed & 3 colours string 2 bundle packing in small hand tub

ESM62089



Beads Small (Pk/650)

650 PCS Small Beads
Diameter 1.3 CM 4 shape, red, yellow, blue, green mixed 3 Colour string 3 bundle

ESM62090



Threading Set Animals (Pk/48)

3.6 CM 48 PCS
Big Size Beads 6Color 6 colours threading 72cm

ESM62091





Lacing Animal Set Pk/9

9 PCS Thread-Board
 Bear, dog, duck / red, yellow, green 3 colour string 9 bundle

ESM62092



Bolt and Nuts Set

These easy-to-hold, large size bolts & nuts are made from sturdy plastic, durable for classroom use. Ideal for children to develop fine motor skills, stored in Paring Screw Tub set / 32 PCS of assorted Shapes : Square, triangle, pentagon, criss cross ,4 shapes 8 Pcs Each

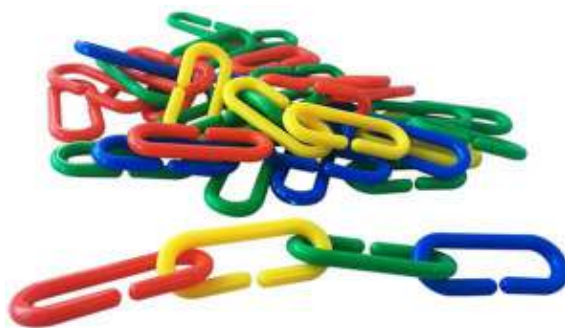
ESM62093



Links (Pk/200)

Use these 4-color links for sorting, patterning, counting, measurement, even graphing set of 200 pcs big Counting links (size L7 X W 5CM) in 4 assorted colour : red, yellow, blue, green.

ESM62094



Links Counting (Tub/500)

Use these 4-color links for sorting, patterning, counting, measurement, even graphing set of 500 pcs Small Counting links in 4 assorted colour : red, yellow, blue, green . stored in handy tube.

ESM62095





Base Plate 15 cm

Base Plate 15CM 4 Colours 4 PCS/packing Round plate, red, yellow, blue, green

ESM62096



Bear Counters 6 Colors (4,8,12G) School Bear (Pk/96)

This interesting set of plastic bears comes in three sizes, three weights (4,8 and 12 Grams) and six colors. it is used to learn size recognition, counting and sorting. Bears are also proportionally weighted and can be used on a balance for measurement discoveries , Set of 96 Pcs ,

ESM62097



Aquatic Set

84PCS, 14 shapes 6 Colours Aquatic Set / TPR

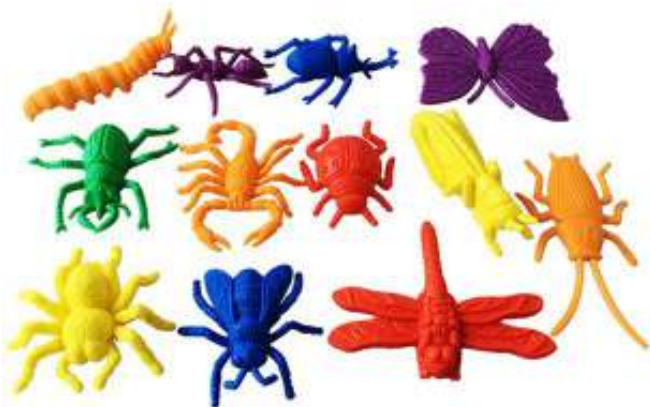
ESM62100



Bear Counters 6 Colours (4,8,12G) Darling Bear(Pk/96)

This interesting set of plastic darling bears comes in three sizes, three weights (4,8 and 12 Grams) and six colors. it is used to learn size recognition, counting and sorting. Bears are also proportionally weighted and can be used on a balance for measurement discoveries , Set of 96 Pcs ,

ESM62098



Insect Set

72 pcs Insect Set 6colors 12shapes

ESM62099



Bear Counters 4 Colours (4,8,12G) (Pk/96)

This interesting set of plastic bears comes in three sizes, three weights (4,8 and 12 Grams) and four colors. it is used to learn size recognition, counting and sorting. Bears are also proportionally weighted and can be used on a balance for measurement discoveries , Set of 96 Pcs , 12g(24pcs) 8g(24pcs) 4g (48pcs) Colors : Red, yellow, blue, green

ESM62101





Bear Counters Set (3,6,9,12G) (Pk/48)

This interesting set of plastic bears comes in three sizes, four weights (3,6,9 and 12 Grams) and six colors. it is used to learn size recognition, counting and sorting. Bears are also proportionally weighted and can be used on a balance for measurement discoveries , Set of 48 Pcs , 12g (24pcs) , 9g (8pcs) , 6g (8pcs) , 3g (24pcs) Colors : Red, yellow, blue, green Packaged in reusable storage box.

ESM62103



Cotton Reels (Tub/122)

Plastic cotton reels in 4 colors are perfect for lacing and patterning activities , set of 122 pcs Red, yellow, blue, green, each colour 30 PCS Doll head 2 pcs 3 colour string 2 bundle packed in hand tub

ESM62104



Fruit Set (Pk/96)

96PCS six kinds of fruit set mixed with pineapple , carambola, papaya,tomato, lemon,pear. Colour mixed with red,yellow, light green, green,orange. 3cm-5cm

ESM62105



Counters Wild Animal (Pk/120)

exploration into counting, sorting, color recognition , Animal figures come in 4 different colors and represent the wild animals , 10 Different animals in red,green,blue and yellow colour set of 120 Pcs

ESM62107

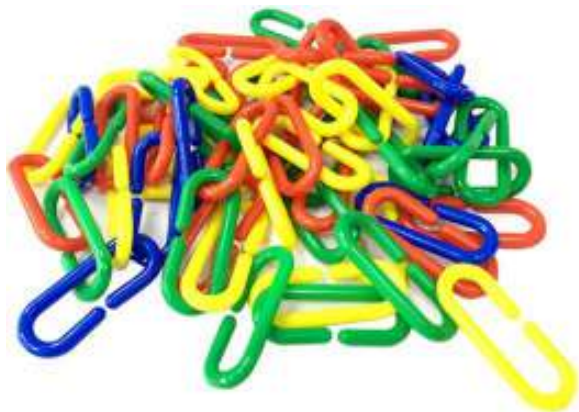


Counters Farm Animal (Pk/192)

exploration into counting, sorting, color recognition , Animal figures come in 4 different colors and represent the Farm Animals (poultry and family animals) , 12 Different animals in red,green,blue and Yellow colour set of 192 Pcs

ESM62106





Counting Links (Pk/500)

500PCS
Counting Links
With yellow, blue, green, red, 4color mixed. 4.2*1.7cm packed in polybag

ESM62108



A B.C. Blocks Tub (Pk/60)

60 PCS A B.C. Blocks supplied in plastic tube.

ESM62110



Tangram Plastic (Pk/280)

Tangram was invented in China it is used to practice problem solving with this set of 280 tangrams in four assorted colors: red, blue, yellow, green

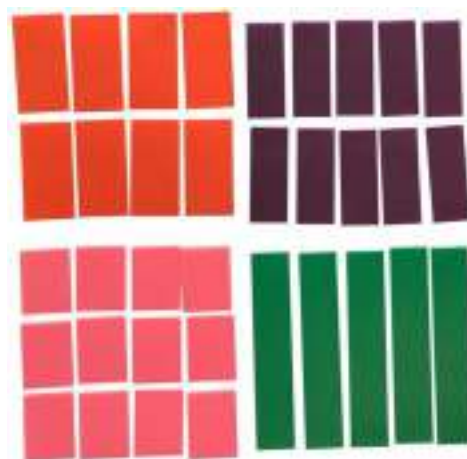
ESM62113



Hundred Pocket Chart

Hundred pocket chart
PVC and Coated Paper, 67cm x 67cm, 354.5g

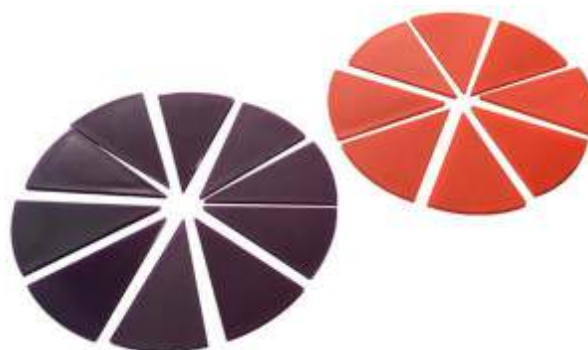
ESM62109



Fraction Tile Set Square

the squer Fraction Tiles kit help student to visualize fraction concepts . Set includes 51 pieces creating one whole, halves, thirds, fourths, fifths, sixths, eighths, tenths and twelfths.

ESM62111



Fraction Tile Set Circle

durable manipulatives make visualizing fractions a snap. used for small- group activities, the Fraction Circles Set comes with a dual-use work tray/ storage box and includes one whole circle plus eight circles divided into halves, thirds, fourths, fifths, sixths, eighths, tenths and twelfths.

ESM62112

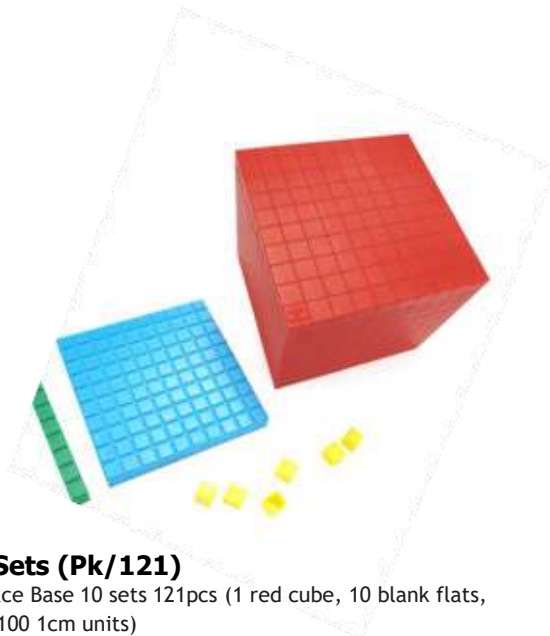




Vertex Ball And Rods (Pk/330)
330 PCS Vertex ball and rods in white box and colour label
ESM62114



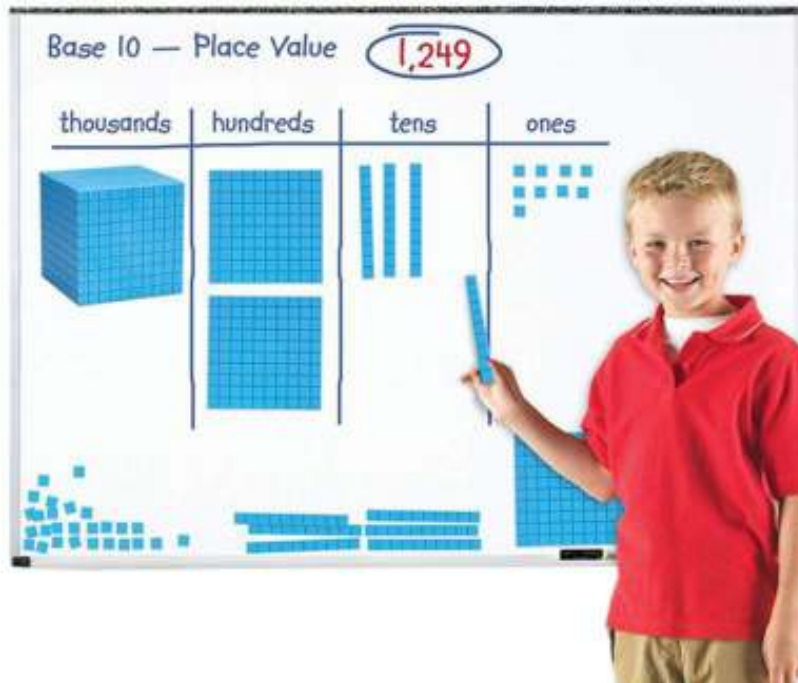
Base 10 Sets (Pk/131)
Convex surface Base 10 sets 131pcs (1 red cube, 5 number printed flats, 5 blank flats, 20 rods and 100 1cm units) The red decimetre cube : Hollow (light), can be either one unique (closed) or box-like.
ESM62117



Base 10 Sets (Pk/121)
Convex surface Base 10 sets 121pcs (1 red cube, 10 blank flats, 10 rods and 100 1cm units)
The red decimetre cube : Hollow (light), can be either one unique (closed) or box-like.
ESM62116



Sunflower Stars (Tub/80)
Sunflower Stars Tub
80PCS/big tub -
With red, yellow, blue, green, white, pink 6 colours Inked
Packing in big tub
ESM62119





Counters Coin (Pk/200)

200PCS 2 colour coin D : 2.5cm, yellow,red double coin 200 pcs/bag

ESM62120



Linking Cube (Pk/100)

100 PCS 10 colours 2 CM Link cube

ESM62122



Trundle Wheel

Trundle wheel use to measure long distances using metrics! Counting “clicker” clicks with each meter so students see and hear the measurement. it has anti slip rubber tire for accurate reading

ESM62124



Balance Junior

This balance is perfect for measuring, exploring volume, and comparing solids and liquids. it has clear buckets with removable lids hold solids or up to 500 ml of liquid and allow students to see what they have placed inside.

- Buckets remove easily for emptying and the buckets’ lids can be used as platforms.
- Child-friendly, balance is sturdy enough to withstand years of hands-on measurement.
- Build observation and estimation skills while gaining a deeper understanding of mass measurement.

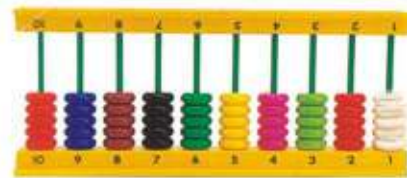
ESM62125



Bucket Balance

This durable plastic Bucket balance enable students measure and compare amounts. Transparent pans allow students to see what they are measuring and relate visual and measured observations. Each pan detaches for easy clean up and holds solids or up to 500 ml of liquid.

ESM62127

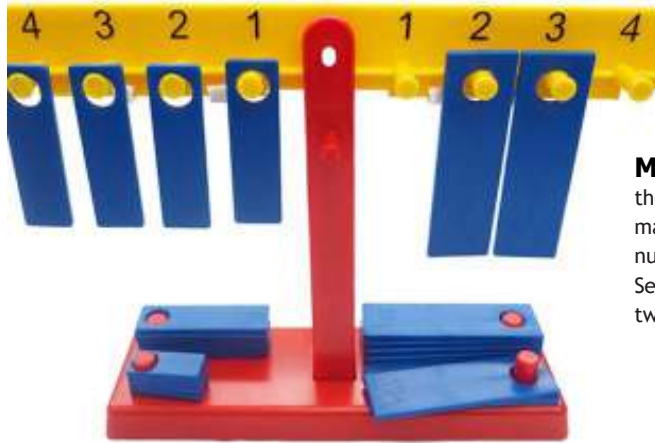


Balance Large Kit

Large Balance Kit

ESM62126





Math Balance

the Math balance use to teach number relationships . As students manipulate the balance, they gain insight into abstract concepts of number operations, algebraic equations and properties of arithmetic. Set includes 8.5" tall balance, ten 10g weights, fifteen 5g weight and twenty five Pcs of 1g weight . suitable for Grades 3-6

ESM62128



Ruler Over Head

5PCS Over head ruler sets

ESM62129



Measuring Set

Elementary level students use clay, rolling pins, crayons, and beans in these six creative, action packed activities that grab their attention. Hands-on experiences help them learn to measure length, volume, and mass; learn to measure volumes of irregularly shaped items by volumetric difference; and practice using metric measurement units in science. Students gain experience using measurement related terminology. Includes student data sheets and an answer key. Balance suggested, not included. Designed for 24 students working in six groups of four. Grades K-4

ESM62130



EduScience

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