Optics Kit 5

Senior High School

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: 68 × 44 × 18 cm. Weight: 6.5 kg.

Cat. cod	Component	Qty
ESP 460 01	Ray Box with Halogen Lamp, 12 V, 20 W	1 pc
ESP 460 02	Ray Box Holder	1 pc
ESP 250	Semi Circular Lens, Ø 76 mm	1 pc
ESP 310 02	Prism, Trapesoid	1 pc
ESP 310 01	Prism, Right Angle	1 pc
ESP 240 01	Plano-Convex Lens	2 pcs
ESP 260 01	Plano-Concave Lens	1 pc
ESP 400 01	Optical Disc with Graduation	1 pc
ESP 700	White Screen, 100 × 110 mm	1 pc
ESP 16.23/93	Combination Mirror	1 pc
ESP 460 03	Diaphragm, 1 and 3 Slits	1 pc
ESP 460 04	Diaphragm, 1 Wide and 5 Slits	1 pc
ESP 350	Hollow Plastic Tank	1 pc
ESP 320	Prism, 10°	1 pc
ESP 16.06/76	Lamp Housing with Festoon Bul	2 pcs
ESP 050	Earth Moon Model	1 pc
ESP 16.07/77	Diaphragm Slide Holder	2 pcs
ESP 55/20	Prism, Equilateral Triangular	1 pc
ESP 550 02	Circular Disc in Mount	1 pc
ESP 16.12/82	Translucent Screen	1 pc

Cat. cod	Component	Qty
ESP 550 04	Slide Model	1 pc
ESP 550 03	Slide with Hole set of 4	1 pc
ESP 16.25/95	Diaphragm Arrow	1 pc
ESP 16.07	Slide Cover	2 pcs
ESP 16.09/79	Diaphragm 1 Slit	1 pc
ESP 310	Slide for Polarization	1 pc
ESP 180 01	Diffraction Grating	1 pc
ESP 550	Cuvette Plastic	1 pc
ESP 600	Photoelastic Solid	1 pc
ESP 225	Colour Filter, RGB-CMY	1 pc
ESP 16.03/67	Rail Connector	1 pc
ESP 16.04/68	Foot for Rail	2 pcs
ESP 16.02/66	Precision Rail	2 pcs
ESP 100 01	Concave Mirror with Holder, f = + 75 mm	1 pc
ESP 100 02	Concave Mirror with Holder, f = + 150 mm	1 pc
ESP 120 01	Convex Mirror with Holder, f = - 75 mm	1 pc
ESP 120 02	Convex Mirror with Holder, f = - 150 mm	1 pc
ESP 16.13/83	Convex Lens with Holder, f = +50 mm	1 pc
ESP 16.14/84	Convex Lens with Holder, f = +100 m	1 pc

ESP60396

Cat . cod	Component	Qty
ESP 200 01	Convex Lens with Holder, f = +300 mm	1 pc
ESP 16.16/86	Concave Lens with Holder, f = -100 mm	1 pc
ESP 220 01	Concave Lens with Holder, f = -300 mm	1 pc
ESP 680	Prism Table	1 pc
ESP 16.17/87	Clamp Rider	6 pcs
ESP 4	Polarizing Filter with Holder	2 pcs
ESP 550 01	Diaphragm Single Hole	1 pc
ESP 400 02	Optical Disc with Axle	1 pc
ESP 265	Colour Stripe	1 pc
ESP 210	Colour Filter RGB	1 pc
ESP 215	Colour Filter CMY	1 pc
ESP 099	Plain Mirror for Colour Mixing	3 pcs

Supporting Tools

➔ For detailed information, please refer to the last pages.

Cat. cod	Tool	Qty
ESP60750	Power Supply 5 A. 12 V	1 pc

Experiment Topics

Propagation of Light

- OP-1 Light Propagates Rectilinearly
- OP-2 Shadow
- OP-3 Core Shadow and Half Shadow
- OP-4 Lunar Phases
- OP-5 Solar and Lunar Eclipses
- OP-6 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 Refection 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-3 Refraction of Light on Plain Parallel Surface
- OR-4 Refraction at the Transition from Air into Water
- OR-1 Refraction of Light
- OR-2 Refraction from Lens into the Air and Total Reflection
- OR-5 Refraction trough a Prism

Lenses

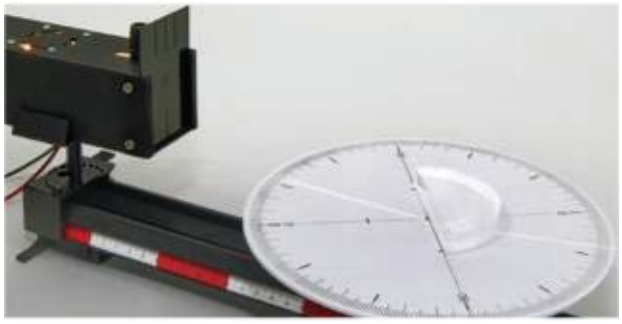
- OL-1 Refraction at Convex Lenses
- OL-2 Construction of Image Formed by a Convex Lens
- OL-3 Spherical Aberrations
- OL-4 Images by a Convex Lens
- OL-5 Object Distance, Image Distance and Focal Length
- OL-6 Refraction at Concave Lenses
- OL-7 Construction of Image formed by a Concave Lens
- OL-8 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



OR-3 Refraction of Light on Plain Parallel Surface

OL-4 Images by a Convex Lens

ESP60396

OE-4 Optical Illusions

Optical Instruments

OI-1 Magnifying Glass
OI-2 Slide Projector
OI-3 Microscope
OI-4 Astronomical Telescope
OI-5 Camera

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

OW-1 Diffraction by Grating

Optics experiment guide in English .

Component Details

Precision Rail and Connector

a. Precision rail (ESP 16.02/66): 50 cm rail length made of anodized extrusion aluminum, completed with cm and mm graduation label.

b. Rail connector (ESP 16.03/67): for connecting two rails to make it straight and rigid, made of ABS plastic, 20 cm long.

c. Rail foot (ESP 16.04/68). It is mount on the ends of the connected rail, made of ABS plastic.

d. 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.

Geometric Optic Experiment Tools

e. Handled lenses: concave and convex lenses, mounted on ABS plastic frames.

f. Handled mirror: concave and convex mirrors, mounted on ABS plastic fames.

g. Diaphragm slide holder (ESP 16.07/77): plastic frame with spring clamp on both faces, used to hold diaphragm, filter and grating slide.

h. Translucent screen (ESP 16.12/82).

i. White screen (ESP 700).

j. Prism table (ESP 680), used to put the prism on the precision rail.

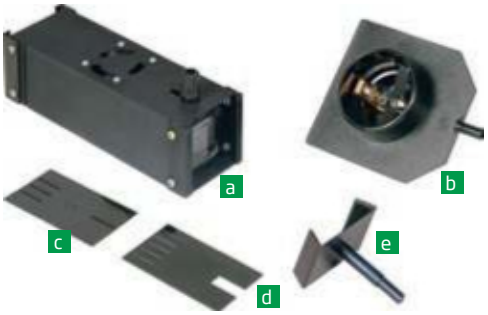
k. Cover chips (ESP 16.07), used to adjust the diaphragm opening.

l. Earth-Moon model (ESP 050).

ESP60396

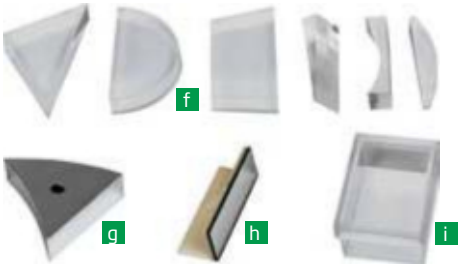
Light Source

- **a.** Raybox (ESP 460 01): aluminum box completed with cooler fan, halogen bulb 12 volt, 20 watt with condenser lens.
- **b.** Lamp house (ESP 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 (ESP 460 03).
- **d.** Diaphragm, wide slit and 5 slits (ESP 460 04).
- **e.** Raybox holder (ESP 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 (ESP 099).
- **i.** Plastic tank (ESP 350).

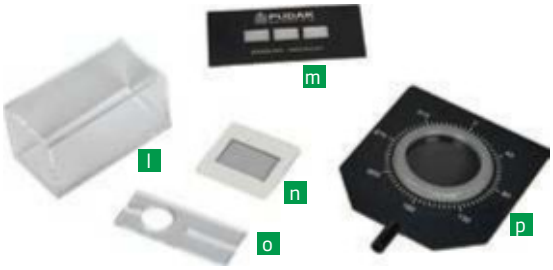


Optical Disc

- **j.** Optical disc with axle (ESP 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 (ESP 400 01).

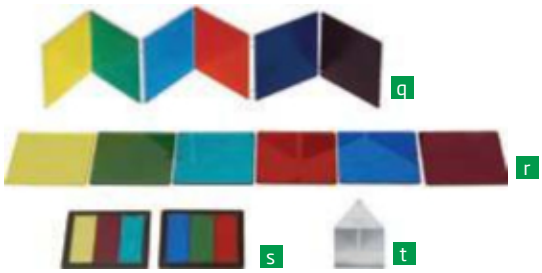
Wave Optics

- **l.** Plastic box (ESP 550) is used to observe liquid polarization plane rotation.
- **m.** Diffraction gratting (ESP 180 01).
- **n.** Polarization slide (ESP 310).
- **o.** Polarization filter (ESP 40) is used to produce polarization ray which can be used to observe the polarization symptom.
- **p.** Photo-elastic object (ESP 600) is used to observe the double refraction on pushed or pulled transparent elastic object.



Color Experiment Tools

- **q.** Color chips (ESP 265).
- **r.** Color filter, RGB-CMY (ESP 225): red, green, blue, cyan, magenta, yellow; made of molded color plastic, dimension 5 × 5 cm.
- **s.** Color filter RGB (ESP 210) and CMY (ESP 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 (ESP 55004).
- **v.** Ray blocker circle (ESP 550 02).
- **w.** 4 holes diaphragm (ESP 550 03).
- **x.** 1 hole diaphragm (ESP 550 01).
- **y.** Arrow diaphragm (ESP 16 25/95).
- **z.** 1 slit diaphragm (ESP 16 09/79), 1 mm slit width.