



# Physics

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Full range of Physics products available at:

**[www.rapidonline.com](http://www.rapidonline.com)**

## Power Supplies & Meters



### Moving Coil Ammeters, Voltmeters and Galvanometers

A range of economical, fully enclosed moving coil Ammeters and Voltmeters with square clear acrylic front covers.

- Range of scales
- Ammeters, voltmeters & galvanometers
- Ideal for the physics laboratory
- 2.5% accuracy
- Scale length 60mm
- Overall size 125 x 80 x 80mm
- Zero adjustment
- Standard terminals - take 4mm plugs or stripped wires
- Eisco PH1074, PH1080 & PH1084 series



Type	Range	Order code	1+
Ammeter	0 to 1A	52-3495	5.32
Ammeter	0 to 2A	52-3496	4.36
Ammeter	0 to 5A	52-3497	5.32
Ammeter	0 to 1A/5A	52-3498	5.67
Voltmeter	0 to 5V	52-3499	5.32
Voltmeter	0 to 6V	52-3500	5.32
Voltmeter	0 to 15V	52-3501	5.32
Voltmeter	0 to 30V	52-3502	5.32
Galvanometer	35-0-35mV	52-2644	33.54

- Two ranges available selected by switch labelled mJ/mW and J/W
- Auto-ranging 4-digit display will give direct readings of energy or power
- Maximum current input 10A
- Maximum voltage 20V DC, 14V AC
- All electrical connections via 4mm sockets

Max. power	Order code	1+
200W	52-2672	286.00

55099



### 30V, 5A DC Laboratory Dual Power Supply

This grey DC power supply from Velleman has a dual LED display showing voltage and current and is ideal for laboratory use.



- 4-digit display
- Coarse and fine adjustments
- Insulated safety terminals
- Low noise temperature controlled fan
- Setting lock function
- 10mV/1mA setting resolution
- Fuse protected
- Input voltage: 220VAC ( $\pm 10\%$ ) 50/60Hz
- Output voltage: 0 to 30VDC
- Output current: 0 to 5A
- Output power: 150W max
- Operating temperature: 0 to  $+40^\circ\text{C}$ ,
- Dimensions: 117 x 190 x 270mm
- Manufacturer's part LABPS3005N

Type	Order code	1+
DC lab. power supply	70-0768	83.45

56308



### Low Voltage Premium Joulemeter

This premium joulemeter is capable of measuring energies from 1mJ to 9999J or power from 1mW to 200W in AC or DC circuits.



We bring  
STEAM to life

### VC130-1 Digital Multimeter Class Pack of 16



A classpack of 16 Voltcraft VC130-1 Digital LCD Multimeters in a deep Grattell's Tray with lid.

See order code 55-9059 for full details of the Voltcraft VC130-1 Digital LCD Multimeter.

- Perfect storage solution for classroom multimeters
- Multimeters are held in place by a slotted foam sheet

Type	Order code	1+
VC130-1 Classpack 16	86-1090	220.93

526194

**VOLTCRAFT®**

## Science Kits



### Physics Pro Science Kit



#### Advanced Physics Kit

With this advanced physics kit, you can continue your study of statics and dynamics from previous lessons and begin your study of more advanced topics in physics, including fluid dynamics, energy, oscillation, hydraulics, and pneumatics. By adding advanced topics like fluid dynamics to your physics repertoire, you can now build some really spectacular models and devices, such as a wind tunnel, pneumatic shocks, and a hydraulic lift. You will see how physics extends far beyond the classroom, giving us an amazing set of tools that can be applied in the real world to engineer marvellous things.

The main focus of the kit is the behaviour of the two most important fluids in our world: water and air and objects immersed in them. You will investigate how air and water rest and flow, what they can carry and how they move. With experiments and models, you will find out what forces work on them and what kinds of energy they possess. You will learn how ships float and aeroplanes fly, why a streamlined shape lets a car drive faster and how power stations convert a current of water into electrical current.

- 96-page, full-colour experiment manual
- Get to know the properties of air and water and become familiar with currents and energy
- 17 experiments with smaller models
- 14 larger models of complex real-world devices
- Over 213 parts
- Ages 10 and up

Type	Order code	1+
Physics pro science	70-0361	50.34

524118



### Power House Sustainable Living Experiments



#### Sustainable Living in the 21st Century

The energy consumption of human civilization is growing. At the same time, the harmful environmental impact of our energy usage is becoming apparent. A massive global effort to adopt renewable energy and use our resources more sustainably has begun. To live sustainably, we must use Earth's resources at a rate at which they can be replenished, and thus provide for future generations to live as we have.

With this kit, you can learn about alternative energy and sustainable living by conducting 100 experiments and building energy related models. Build the Power House and then conduct experiments in and around the house. Learn about energy-efficient construction materials and passive

house design. Experiment with heating, cooling, conduction, convection and insulation. Investigate the Earth's climate, the water cycle, and that inexhaustible power plant in the sky: the sun. Test passive solar collection methods with a solar collector. Hook up a photovoltaic solar panel to generate electricity from sunlight. Build wind turbines to extract energy from wind. Construct a greenhouse and learn about the energy conservation tricks used by plants.

Power House provides a comprehensive overview of the many forms of alternative energy, and makes environmental protection and energy conservation issues tangible with hands-on models.

- 64-page, full-colour experiment manual provides instructions, scientific explanations, and energy-saving tips
- Ages 10 and up

Type	Order code	1+
Sustainable living	70-0363	51.41

524120



## Wind Power Renewable Energy Science Kit V3.0



**With this renewable energy science kit you can build a realistic wind turbine that creates power out of thin air.**

Wind is one of the most promising sources of clean, renewable energy available today and has been used for centuries to pump water and crush grain in windmills, and is increasingly being used to generate electricity to power our modern world.

The wind turbine is supplied complete with electric generator and adjustable rotor blades, designed with complex aerodynamic curves to look and work like modern-day wind turbine blades.

- Conduct experiments to optimize performance by adjusting the angle of the blades
- Use the wind turbine to light up an LED and charge a rechargeable battery
- Convert the wind turbine into an electric fan by using the electric generator as a motor
- Build three additional models with the parts included
- During the experiments, you will learn the physics of force and motion as it applies to wind power technology
- Learn how to measure and calculate the different forces acting on the rotor blades by breaking them down into vectors
- Discover how the sun makes the wind, providing us with an endless source of energy
- Read about different types of wind turbines and windmills, and how wind energy can be used to power homes and electric cars
- The full-colour, 32-page illustrated manual includes instructions and a wealth of scientific information
- Suitable for age 8 and above
- **Thames & Kosmos type 627928**

Type	Order code	1+
Wind/renewable energy	70-0367	34.43

562973

## Order online

Save time, and place your order at:  
**www.rapidonline.com**  
 24 hours a day



## Air & Water Power



**Build your own models powered by air and water pressure to learn about the laws of physics.**

This unique kit allows you to build two different air-and-water-powered systems: water-jet propelled cars and hydro-pneumo (which simply means air pressure and water pressure) powered engines. The hydro-pneumo system uses a self-contained air-and-water turbine system as a motor.

Construct 15 models including a truck, excavator, radar car, tank, antique car, helicopter, motorbike, digger, rocket car, forklift, roadster, propeller plane, grinder and cutting machine. The water-jet propelled cars are a fun outdoor activity, while the self-contained hydro-pneumo powered models are fun both indoors and out. Compete with your friends to see whose water-jet propelled car and hydro-pneumo car goes the fastest!

A 48-page colour instruction book illustrates the step-by-step assembly of each model and related principles so that children learn through playing.

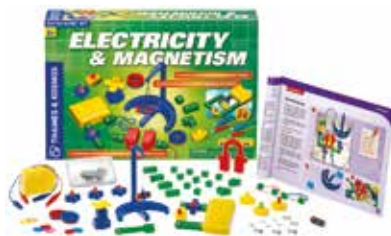
- Build your own models powered by air and water pressure
- Build two different air-and-water-powered systems: water-jet propelled cars and hydro-pneumo
- Construct 15 models including a truck, excavator, radar car, tank, antique car, helicopter, motorbike, digger, rocket car, forklift, roadster, propeller plane, grinder and cutting machine
- Compete with your friends to see whose water-jet propelled car and hydro-pneumo car goes the fastest!
- 48-page colour instruction book
- 165 building pieces

Type	Order code	1+
Air & water power	70-0357	31.99

524114



## Experiment Kit - Electricity & Magnetism



**Understanding the Force of Electromagnetism!**

Conduct more than 60 electrifying experiments with circuits and magnetic contraptions to learn about electricity and magnetism, and how these two fundamental properties are closely related. Children of eight years and up can safely and easily experiment with electric current and magnetic fields using the colourful snap-together blocks and components in this hands-on kit.

Build series and parallel circuits to light up a light bulb. Experiment with push buttons and on-off switches. Assemble circuits that include a spinning motor, two switches, and up to three light bulbs.

Conduct tests to see which materials are magnetic. Learn about the force of magnetism and magnetic poles. Magnetize a metal object. Use iron fillings to make invisible magnetic fields visible. Investigate magnetic force and direction with a magnetic pendulum device. Learn how a compass works and about Earth's magnetic fields. Conduct a series of experiments with a sturdy electromagnet.

Finally, put everything you have learned to good use by constructing a loudspeaker, an electromagnetic relay switch, and a Morse code telegraph key. The components are specially designed to make learning fun and accessible. The electrical blocks fit together with simple plug and socket connectors. Because the blocks are brightly coloured and have unique shapes, it is easy to follow the assembly diagrams to construct functional devices.

The 64-page, full-colour experiment manual guides you through experiments with easy-to follow diagrams.

- Conduct more than 60 electrifying experiments
- Build series and parallel circuits to light up a light bulb
- Experiment with push buttons and on-off switches
- Assemble circuits that include a spinning motor, switches and light bulbs
- Conduct tests to see which materials are magnetic
- Magnetize a metal object
- Use iron fillings to make invisible magnetic fields visible
- Investigate magnetic force and direction with a magnetic pendulum device
- Learn how a compass works and about Earth's magnetic fields
- Construct a loudspeaker, an electromagnetic relay switch and a Morse code telegraph key
- 64-page, full-colour experiment manual guides you through experiments with easy-to follow diagrams

Type	Order code	1+
Electricity & magnets	70-0354	42.99

524111



## Experiment Kit - Motors & Generators



**Build Your Own Electric Motor!**

Electric motors and generators can be found in countless devices, appliances, and vehicles we use every day. They are an essential technology in our modern world. With this kit, you can conduct 25 experiments to learn how an electric motor converts electricity into motion, and how an electric generator does just the opposite, converting motion into electricity.

The electric motor is made of transparent plastic to show how the inside components work. Set up the motor to run on battery power and learn how a motor works. Then reconfigure the device to work in reverse as a hand-cranked electric generator. Experiment with magnets to learn about the forces of magnetism, and how magnetic fields relate to electric current. Build simple circuits consisting of the motor or generator, wires, and a light bulb to learn about the flow of electricity. Learn about gears and drive-trains and how they work to effectively convert kinetic energy into electrical energy and back again.

- 25 experiments
- Full-colour, 48-page manual guides your experiments
- Step-by-step instructions
- Ages 8 and up

Type	Order code	1+
Motors & generators	70-0342	21.99

524099



Rapid

## Education LED Pack



A considerable range of LEDs and LED related products are neatly packaged in this classroom kit.

- All the pieces come in re-sealable polythene bags
- Offers a significant saving over separately bought items
- Storage box with compartment tray and lid
- Dimensions of the box: 43cm x 31cm x 7cm
- Suitable for all ages
- Total number of components = 680
- Supplied as a **pack**

Kit contains:

1x 5mm red LED (pack 100)	55-1790
1x 5mm green LED (pack 100)	55-1792
1x 5mm yellow LED (pack 100)	55-1794
25x Flashing 5mm red LED	55-0140
25x Flashing 5mm green LED	55-0142
25x Flashing 5mm yellow LED	55-0144
1x 3mm red LED (pack 100)	55-1770
1x 3mm green LED (pack 100)	55-1772
1x 3mm yellow LED (pack 100)	55-1774
1x LED tester	55-0000
1x Miniature LDR	58-0134
1x Shallow tray	14-0430
1x Tray lid	14-0436
1x Insert 8 compartment	14-0443
<b>Total no. of components = 680</b>	

Type	Order code	1+
Education LED pack	13-0122	46.64

Kit contains:

1x 5mm red LED (pack 100)	55-1796
1x 5mm green LED (pack 100)	55-1792
1x 5mm yellow LED (pack 100)	55-1794
1x Carbon film resistor kit (pack 1000)	13-0260
1x Electrolytic capacitor kit (pack 93)	13-0220
1x Polyester capacitor kit (pack 100)	13-0215
30x Stripboard 25 x 64mm	34-0500
2x Single sided pins (pack 100)	34-0610
2x Equipment wire (pack 11)	01-0108
100x BC548B Transistor	81-0466
50x LM741 Op-amp	82-0458
50x NE555 Timer	82-0336
1x Shallow Tray	14-0430
1x Tray lid	14-0436
1x Insert (3 long compartments)	14-0438
<b>Total number of components = 1945</b>	

Type	Order code	1+
Education spares kit	13-0108	65.24

065934

Rapid

## Education Wire Starter Pack



A substantial kit containing a wide array of wire related consumables.

- Ideal for the classroom
- Contains wire cutters and strippers, wire, batteries and battery clips
- Offers a massive saving over separately purchased items
- Moulded box included
- Dimensions of the box: 43cm x 31cm x 7cm
- Great resource for all ages
- Supplied as a **pack**

Kit contains:

5x Wire stripper	86-0350
5x Economy side cutter	85-0205
10x Equipment wire (pack)	01-0108
15x PP3 zinc chloride battery	18-1448
50x PP3 battery clip	18-0105
1x Shallow tray	14-0430
1x Tray lid	14-0436

Type	Order code	1+
Wire starter pack	13-0112	40.54

065939

Rapid

## Education Electrical Kit



This respectable sized kit contains a wide range of high quality electrical consumables suitable for even the most ambitious students.

- Cost saving over buying components separately
- Ideal for tight school budgets

- Great resource for all ages
- Dimensions of box: 43cm x 31cm x 7cm
- Total components = 105
- Supplied as a **pack**

Kit contains:

Kit contains: electronic buzzer + 10cm lead	35-3596
30x Push to make switch	78-0100
3x Crocodile leads (pack 10)	17-0350
5x Medium torque motor	37-0142
10x 6V LES lamps	41-0105
10x Bulb holders	41-0070
1x Shallow Tray	14-0430
1x Tray lid	14-0436
1x Tray insert	14-0440

Type	Order code	1+
Electrical kit	13-0114	28.62

065942

Rapid

## Electricity Class Pack



A cost-saving classpack containing a selection of commonly used electrical accessories.

- Cost saving over buying parts separately
- Popular parts can be topped up
- Packed in a Grattells storage tray with lid
- Please see individual product descriptions for full details
- Supplied as a **pack**

Technical specification

Order code	Quantity	Description
41-0125	10	3.5V bulbs
18-0125	5	2x AA battery holders
41-0070	5	Bulb holders
37-0140	5	Motors
18-0105	5	Battery snaps
17-0350	1	Crocodile leads (Pack of 10)
01-0102	5	Wire
75-0180	5	Toggle switch
76-0100	5	Slide switch
78-0115	5	Push on/off switch
78-0112	5	Push to make switch
35-3610	5	Buzzer
14-0430	1	Grattells tray
14-0436	1	Lid for tray

Type	Order code	1+
Electricity classpack	70-1012	40.51

078013

Rapid

## Education Components Spares Kit



A comprehensive range of essential electronic consumables offering a huge saving over individually purchased items.

- The kit is ideal for the classroom and contains LEDs, resistors, capacitors, etc.
- All the pieces are neatly packed into a well laid out stackable storage box with lid
- Dimensions of the box: 43cm x 31cm x 7cm
- Great school resource
- Total number of components = 1945
- Supplied as a **pack**

Rapid

...where price meets quality



## Kitting Service

Don't forget we offer a bespoke kitting service

education@rapidonline.com



## Forces, Pressure & Gravity

**Rapid**

### Spring Balances with Metal Scales

A range of spring balances with rectangular plastic bodies and metal scales.

- Zero adjuster
- Suspension ring and load hook
- Graduated in both grams and Newtons



Type	Order code	1+
0 to 100g /1N	<b>06-2169</b>	1.12
0 to 250g /2N	<b>06-2170</b>	1.06
0 to 500g /5N	<b>06-2171</b>	1.12
0 to 1000g /10N	<b>06-2172</b>	1.12

538890

**Rapid**

### Plastic Spring Balance Scales

These colour-coded spring balances have a robust transparent plastic body with chrome-plated rings at the top and hooks at the bottom. Capacities range from 100g up to 5kg. They are graduated in both grams and Newtons.

- Can be used for both force and mass measurements
- Bevelled top for use on an inclined plane
- Zero adjustment
- Clear plastic tube allows students to see the action of the spring
- Fitted with chrome plated hooks and rings
- Overall length 285mm
- Length of tube: 160mm
- 20mm diameter



Capacity	Colour	Order code	1+
100g/1N	Dark brown	<b>06-2177</b>	2.02
250g/2.5N	Blue	<b>06-2178</b>	2.02
500g/5N	Green	<b>06-2179</b>	2.02
1000g/10N	Light brown	<b>06-2180</b>	2.02
2000g/20N	Red	<b>06-2181</b>	2.16
3000g/30N	White	<b>06-2182</b>	1.77
5000g/50N	Yellow	<b>06-2183</b>	2.57

538892

## Order online

Save time, and place your order at:  
**www.rapidonline.com**  
24 hours a day

**EISCO**  
Test & Balance Experts

### Brass Weight Hangers

A range of individual brass mass weight hangers for use with slotted masses.

- Made from solid brass
- Each hanger is marked for easy identification
- Eisco PH0258H series



We recommend using these hangers with only Eisco slotted masses as other brands of slotted masses may not fit.

Mass	Order code	1+
10g	<b>52-3409</b>	0.664
20g	<b>52-3410</b>	0.745
50g	<b>52-3411</b>	1.52
100g	<b>52-3412</b>	3.16

565571

**EISCO**  
Test & Balance Experts

### Brass Slotted Mass Weights

A range of individual brass mass weights with slots, allowing them to be used on suitable mass hangers.

- Made from solid brass
- Each mass is marked for easy identification
- Eisco PH0258G series



We recommend using these masses with only Eisco mass hangers as other brands of mass hanger may not fit.

Mass	Order code	1+
1g	<b>52-3402</b>	0.39
2g	<b>52-3403</b>	0.352
5g	<b>52-3404</b>	0.46
10g	<b>52-3405</b>	0.501
20g	<b>52-3406</b>	0.807
50g	<b>52-3407</b>	1.52
100g	<b>52-3408</b>	2.65

565570

**INVICTA**  
Established for over 45 years

### Stackable Weights



A set of 80 clearly marked stackable weights for use with most scales and balances.

- Supplied with 20 each of 1g, 2g, 5g and 10g
- Suitable for **Foundation and Key Stages 1 & 2** (ages 4 to 11)

Type	Order code	1+
Stackable weights	<b>52-1592</b>	6.49

122171

**Rapid**

### Pendulum Bobs for Simple Pendulums

A range of bob weights ideal for use as simple pendulums.

- Range of diameters
- Range of materials



MOQ 2			
Diameter	Material	Order code	2+
19mm	Lead	<b>06-2219</b>	0.777
Price each			
Diameter	Material	Order code	1+
13mm	Brass	<b>06-2221</b>	0.873
19mm	Brass	<b>06-2222</b>	1.55
MOQ 3			
Diameter	Material	Order code	3+
13mm	Steel	<b>06-2224</b>	0.35
MOQ 2			
Diameter	Material	Order code	2+
19mm	Steel	<b>06-2225</b>	0.615
25mm	Steel	<b>06-2226</b>	0.819

538894

**Rapid**

### Expandable Springs - Hooke's Law



These expandable springs are ideal for demonstrating Hooke's Law.

- Ideal for showing resolution of forces, kinetic energy measurement, etc.
- Expandable springs are 50mm x 15mm dia., and will recover from a 400mm approx. stretch
- Available in **packs of 25 and 100**

Type	Order code	1+
Expandable springs (25)	<b>37-0416</b>	2.36
Expandable springs (100)	<b>06-6022</b>	8.55

010567

**Rapid**

### Rubber Bands



A choice of popular sizes of rubber bands, ideal for general use in the home, office, school, or workshop.

- Supplied in boxes weighing 454g

Size	Dimensions (mm)	Order code	1+
No 10	31.75 x 1.6	<b>34-9970</b>	6.73
No 14	50.8 x 1.6	<b>34-9972</b>	6.27
No 16	63.5 x 1.6	<b>34-9973</b>	6.20
No 18	76.2 x 1.6	<b>34-9974</b>	4.84
No 19	88.9 x 1.6	<b>34-9975</b>	5.72
No 24	152.4 x 1.6	<b>34-9977</b>	5.72
No 30	50.8 x 3.2	<b>34-9978</b>	5.88
No 32	76.2 x 3.2	<b>34-9979</b>	5.90
No 33	88.9 x 3.2	<b>34-9980</b>	6.01
No 34	101.6 x 3.2	<b>34-9981</b>	4.90
No 38	152.4 x 3.2	<b>34-9984</b>	5.72
No 63	76.2 x 6.3	<b>34-9985</b>	5.72
No 64	88.9 x 6.3	<b>34-9986</b>	5.90
No 65	101.6 x 6.3	<b>34-9987</b>	5.12
No 69	152.4 x 6.3	<b>34-9988</b>	5.90
No 75	101.6 x 9.5	<b>34-9989</b>	9.28
No 89	152.4 x 12.7	<b>34-9990</b>	8.02

066084



### White Cotton String

A general-purpose white cotton string, also useful for model making.

- Approximate thickness 1.2mm (thin), 2.2mm (medium), 3.5mm (thick)
- Sold by reel weight



Type	Reel weight	Order code	1+
Thin	250g	06-9272	1.87
Medium	500g	06-9274	3.84
Thick	500g	06-9276	3.84

300489



### Pulley Starter Pack



A great pulley starter pack offering a range of different sized and shaped pulleys.

- 2 each of 10, 20, 30, 40, 50 and 60mm diameter
- 2x miniature pulleys
- 4x pulley stops
- Supplied in **packs of 18**

Type	Order code	1+
Pulley starter pack	37-0391	10.48

300343



### Wooden Inclined Plane Apparatus



An inclined wooden plane ideal for experimenting with friction. The plane is hinged to the wooden base and has a pulley at one end.

- Size 600 x 75mm
- Metal linear scale fixed to edge of plane
- Vertical linear and angular 0 to 45° scale fixed to base
- Clamp also serves as an index

#### Supplied complete with:

- Metal roller 75 x 25mm (length x dia.)
- Wooden block
- Scale pan with cord

Type	Order code	1+
Inclined plane	06-2212	23.81

533957



### Hooks Law Demonstration Apparatus

This Hooks Law apparatus consists of a stand supporting a spring with provision to hang masses from it.

- Extension can be measured on the 12cm long mirror scale for a range of masses



Supplied without masses.

Type	Order code	1+
Hooks law app.	06-2227	9.88

533961



### Air Powered Rocket Launcher

This Rocket Launcher is a working device that helps students to visualise the principle of action and reaction forces.

A 2 Litre plastic bottle (not included) is used as a rocket. Students can create a variety of rocket designs using empty fizzy drink bottles as part of a design and make project.

The launch pad has a solid, durable metal base and is equipped with a simple triggering mechanism. It is powered by an ordinary bicycle pump and can launch the rocket to surprising heights.

- Visualise the principle of action and reaction forces
- Design and make rockets using empty 2 litre fizzy drink bottles
- Solid, durable metal base
- Simple triggering mechanism
- Powered by a standard bicycle pump
- Can launch rockets to surprising heights

Type	Order code	1+
Rocket launcher	06-2234	40.56

533965



### Projectile Apparatus/Falling Body Apparatus

This apparatus demonstrates that horizontal and vertical motion are independent of each other. It consists of a wooden block with a pivoted 'L' section spring-loaded metal launching bar with a trigger catch. When the catch is released, one ball drops vertically while the other is projected horizontally. Observation will show that both balls will hit the floor at the same time.

- Wooden block 190 x 58 x 30mm approx.
- Supplied with 2 steel balls
- Storage recess in the wooden block

Type	Order code	1+
Projectile apparatus	06-2153	10.41

533994



### Young's Modulus Apparatus



Young's modulus apparatus from Eisco, complete with ceiling bracket, two self-centering chucks and tension weight.

The apparatus includes a spirit level mounted in two rectangular cast iron frames with one end resting on the point of a micrometer screw fitted in one frame, the second end of the spirit level pivoted in the second frame.

The micrometer is provided with a vertical scale 10mm on either side of the zero and vernier reading 0.01mm.

- Supplied in case
- Manufacturer's part **PH0328A**

Type	Order code	1+
Young's modulus apparatus	52-4215	31.41

568102

## Motion, Motors & Accessories



### Tornado in a Bottle

A simple plug-in plastic joiner enables water to pour from one bottle into another creating an impressive vortex if the top bottle is shaken with an orbital movement.

- Joiner fits most fizzy drinks bottles

Bottles not included.



Type	Order code	1+
Tornado in a bottle	70-1516	0.34

081690



### Cast Iron Bursting Bottles

Bursting bottle from Eisco designed to demonstrate the anomalous expansion of water on freezing.

- Bottle constructed from cast iron
- Length 90mm
- Diameter 20mm
- Supplied with plug
- Manufacturer's part **PH0119E**

Type	Order code	1+
Cast iron bursting bottles	52-4089	2.33

568086

## Order online

Save time, and place your order at:  
[www.rapidonline.com](http://www.rapidonline.com)  
 24 hours a day





## Kinetic Gas Theory Demonstration Apparatus

This apparatus allows students to study the motion and behaviour of molecules in gases.

An electric motor running at 4 to 12V DC vibrates a small platform inside a transparent tube, so that a number of small steel balls is vibrated violently inside the tube.

An increase in the violence of the vibration simulates an increase in gas temperature and an increase in the weight of the 'float' simulates an increase in gas pressure.

- Demonstrates kinetic gas theory
- Supplied with balls and 2 floats
- Includes instruction manual
- CE approved
- **Eisco type PH0203**

Type	Order code	1+
Kinetic theory apparatus	<b>52-3415</b>	17.22

565574



## Basic and Advanced Ripple Tank Kits



These ripple tank kits are supplied complete with all accessories needed for wave investigations.

Each water wave behaves similarly to a curved lens. The crest of the wave is seen as a bright region and the trough is seen as a dark region.

The ripple tanks have a mechanical vibrator attached to a wave generator that produces either point wavelets or parallel wave fronts.

- Advanced model is supplied complete with a power supply and wave controller
- Basic model requires additional power supply and controller

Type	Order code	1+
Advanced ripple tank	<b>52-3442</b>	213.51
Basic ripple tank	<b>52-3383</b>	68.98
Controller (52-3383)	<b>52-3704</b>	9.32

565558



## Vibration Generator and Accessories Set

A set of basic equipment for the study of vibration and resonance. The set includes a vibration generator, resonant vibration strips and a longitudinal wave spring.

The Vibration Generator is essentially a loudspeaker. A coil wound on a thin aluminium tube moves within a permanent magnetic field when an alternating current is applied to it, e.g., from your laboratory signal generator. The coil is supported by 2 guide control mechanisms for optimum performance.

Coupling the Vibration Generator to external equipment is facilitated by an 8 mm dia. aluminium pin connected to the coil. The pin is equipped with a 4mm hole for a banana plug connector to which various plates and springs, etc., can be attached.

### Set includes:

- Vibration generator
- Longitudinal spring for wave demonstrations
- Resonant vibration strips

The vibration generator is powered by a laboratory signal generator, not included.

### Technical specification

Frequency range	0.1Hz to 5kHz
Amplitude	7mm @1Hz, decreasing with increasing frequency
Impedance	8Ω
Max. current	1.0A, fuse limited

Type	Order code	1+
Generator + accs.	<b>52-2675</b>	167.73

550601



## Chladni Resonance Pattern Plate – Square

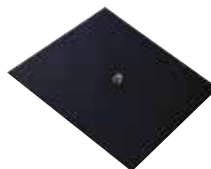
Used in conjunction with a vibration generator, this plate can be used to study sound waves and resonance. A thin layer of sand is spread over the plate and resonance patterns - **Chladni figures** - can be observed at certain frequencies.

- Plate resonances are audible
- Plate dimensions 140 x 140mm

See 52-2675 for a suitable vibration generator set.

Type	Order code	1+
Square Chladni plate	<b>52-2696</b>	15.54

550620



## Electrostatics Kit



This kit is ideal for small group experiments in electrostatics.

The set is built around the special, dual-purpose electrostatics, which in addition to being useful for general electrostatic experiments, is capable of performing measurements of the activity of weak radio-active materials. Positive and negative charges can be produced with the included acetate strips and woolen cloths.

A great variety of experiments can be performed including determining types of charge, measuring the amount of

conducted or induced charge with the gold leaf electroscope or by using the polystyrene spheres as hollow conductors, and using the proof plane to investigate the distribution of charges on conductors.

### Kit includes:

- 1x electroscope with top plate and hook electrode
- 1x packet of gold leaves
- 4x metallised polystyrene spheres
- 1x reel of very fine nylon thread
- 2x polythene plate, 75mm square
- 1x electrophorus plate, 50mm diameter with insulating handle
- 1x proof plane
- 2x aluminium calorimeters
- 1x cellulose acetate strip
- 1x polythene strip with woolen rubber
- 1x stirrup for suspending strip
- **Supplied as a set**
- **Eisco type PH0900**

Type	Order code	1+
Electrostatics kit	<b>52-3634</b>	22.82

565661



## Flexible Propellers

Economy 3-blade plastic propeller with twistable blades which can be bent either way to produce a clockwise or anticlockwise airscrew.

- The flexible nature of the plastic also reduces the danger of injury due to accidental contact with the blades
- Fits tightly on to a 2mm spindle
- 100mm diameter
- **Supplied singly**

Type	Order code	MOQ 4
3 blade 100mm, single	<b>37-2207</b>	0.23

034725



## Refraction/Wave Tank

Study the concept of refraction and the pattern of transverse waves with this Refraction/Wave tank.

Place different materials into the tank and demonstrate the refraction/internal reflection of those materials and how they vary from one another.

- Transparent acrylic tank
- Wooden handle

Type	Order code	1+
Refraction/wave tank	<b>06-2246</b>	48.72

533970



## Newton's 2nd Law of Motion Demonstration Apparatus

This apparatus demonstrates that 2 bodies will strike the floor at the same time even when their paths of flight and horizontal velocity components are different. The 2 balls are released simultaneously - 1 ball is released to drop vertically, the other is projected horizontally.

- Base
- Spring plunger
- 2 steel balls (1 solid, 1 pre-drilled)
- Instruction sheet

Type	Order code	1+
2nd law of motion	<b>06-2201</b>	8.21

533997



## Magnets



### Experiments for Magnetism Set



This is the perfect set for children to develop magnetic investigation. 16 experiments linked to **QCA Science Curriculum for Key Stage 1**, supplied with an A4 background information booklet.

#### The kit is supplied with:

- Four wands
- 20 magnetic marbles
- Two plastic cased magnets
- A super magnet
- Set of floating ring magnets
- Small horseshoe magnet
- Compass magnet
- Supplied in a purpose made plastic moulded carry box for easy counting in and out
- Suitable for **Key Stage 1** (ages 5 to 7)

Type	Order code	1+
First experiments magnet	<b>06-5984</b>	31.39

078892



### Magnet Kit



This magnet kit includes a selection of magnets and materials, assembled in a plastic tray for easy storage.

- **Kit contains:** alnico bars, alnico button magnets, ferrite blocks and rings, chrome steel horseshoe magnet, alnico horseshoe magnet and coloured squares of magnetic rubber
- Ideal as a classroom resource

Type	Order code	1+
Magnet kit	<b>06-0590</b>	28.40

072033



### Horseshoe and Ceramic Magnet Sets



A range of magnets and magnetic products, a must for every classroom.

- Horseshoe magnets supplied in **sets of 3**
- Super magnets supplied in **sets of 300**

Type	Order code	1+
Horseshoe magnet set	<b>06-0504</b>	15.44
300-piece magnet set	<b>06-0508</b>	15.73

066042



### Ferrite Magnets (Blocks)

These ferrite, painted bar magnets are illustrated with red and blue poles, stamped with N and S.

- Their low-cost, reliability and durability in use make them an ideal general purpose classroom resource
- 9 x 9 x 40mm
- Supplied in **packs of 20**

Type	Order code	1+
Ferrite block magnets	<b>06-0584</b>	5.94

072027



### Large Ferrite Block Magnets

These large painted bar magnets, with red and blue poles, are stamped with N and S.

- Ideal classroom resource
- Low-cost, reliable and durable
- 14 x 10 x 50mm
- Supplied in **packs of 20**

Type	Order code	1+
Large ferrite magnets	<b>06-0586</b>	7.06

072031



### Ferrite Block Magnets

These ferrite **block magnets** from **Shaw Magnets** are ideal for use with **reed switches** or for general tasks.

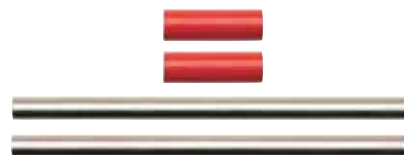
- Size 50 x 19 x 6mm
- Supplied in **pack of 10**

Type	Order code	1+
Pack of 10	<b>06-9986</b>	1.94

563504



### Alnico Rod Magnets



Permanent rod magnets, 24 x 8mm, with north end painted red.

- Supplied in **pairs**
- Manufacturer's part **AXR024PX2**

Type	Order code	1+
24 x 8mm magnet	<b>06-5954</b>	1.75

078886



### Alnico Bar Magnets



Shaw Magnets Bar Magnets are made from Alnico magnetic material. Alnico is an alloy of iron, ALuminium, Nickel and CObalt and has a high resistance to loss of magnetism. The magnets are supplied in pairs, complete with keepers which further help to 'keep' the magnetism without gradual loss and to protect their magnetic surfaces. North poles are denoted by a dimple or a notch.

- Red paint finish
- Complete with keepers
- Notch or dimple denotes North pole
- Supplied in **pairs**
- Shaw Magnets Types **ALN040, ALN060, ALN050 & ALN075**

Type	Order code	1+
12 x 5 x 40mm	<b>06-5981</b>	4.20
15 x 5 x 60mm	<b>06-5975</b>	7.00
15 x 10 x 50mm	<b>06-5977</b>	9.89
15 x 10 x 75mm	<b>06-5979</b>	13.25

501636



### Alnico Horseshoe Magnets

This Alnico **horseshoe magnet** from **Shaw Magnets** is painted red.

- Supplied with keeper
- Length 25mm

Length	Order code	1+
25mm	<b>06-9979</b>	3.65

563502



### Alnico Strong U Magnets

Red-painted strong Alnico cast U-shaped **magnets** from **Shaw Magnets**.

- Supplied with keeper

Size (mm)	Order code	1+
30 x 20 x 20	<b>06-9982</b>	5.58

563502





## Ceramic Magnets

Colour-coded bar magnets in a neat storage box.

- Size of each magnet 14 x 10 x 50mm
- Easy to see if all magnets have been returned after use
- Supplied as a **box of 20**



Type	Order code	1+
Ceramic magnets	<b>06-6302</b>	12.21

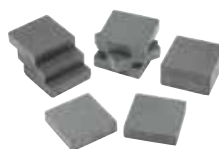
080603



## Ceramic Square Magnets

Multipole magnets with one strongly attractive face, ideal for attaching to metal surfaces.

- Ideal for fridge magnets, etc.
- Attach dimpled side to object to be held
- Dimensions: 19 x 19 x 5mm
- Available in **packs of 10 and packs of 20**



Type	Order code	1+
Pack of 20	<b>06-5978</b>	3.00

078895



## Colour Magnetic Wands

These plastic **magnetic wands** from **Shaw Magnets** are ideal for use with primary school classes. Supplied in a range of bright colours, these wands can be used in conjunction with metallic chips and magnetic marbles to display the forces of magnetism.

- Wand length 190mm
- Supplied in **pack of 6**



Type	Order code	1+
Pack of 6	<b>06-9991</b>	5.66

563508



## Wands and Marbles Set

This **magnetic wand** and marbles set from **Shaw Magnets** is ideal for use with primary school classes. This set includes 2 magnetic wands and 20 coloured plastic marbles.

- Wand length 190mm
- Marble diameter 15mm



Type	Order code	1+
2 wands, 20 marbles	<b>06-9992</b>	5.51

563509



## Magnetic Marbles

These magnetic marbles are ideal as a basic introduction to magnetism for young children.

- Supplied in **tubs of 100** assorted colours



Type	Order code	1+
Magnetic marbles	<b>06-6296</b>	16.26

080603



## Magnetic Floating Ring Set

A set of five coloured magnetic rings with a plastic stand.

- Create a floating magnetic trick
- Children will achieve this by simply stacking the rings with like poles facing each other so they repel
- Dimensions 24mm diameter x 5mm width
- Suitable for **Key Stages 1 & 2** (ages 5 to 11)



Type	Order code	1+
Floating ring set	<b>06-5980</b>	4.72

078890



## Magnetic Dots

Packs of self-adhesive round magnetic dots.

- Ideal for art and craft, design and technology and science projects
- Adhesive backed
- Dimensions 12mm diameter
- Thickness approx. 1.4 to 2mm
- Supplied in **packs of 300**



Type	Order code	1+
Magnetic dots	<b>06-5992</b>	3.49

078896



## 'Hercules' Demonstration Electromagnet

This electromagnet offers an amazing demonstration of how powerful magnetism can be. Powered by just one 9V PP3 battery, this small magnet has incredible lifting power of approximately 50kg.

- When switched on, an iron plate locks itself solidly to the bottom of the electromagnet core. Turning the switch off will release the load or hold it in the air, as required
- Karabiners are situated at the top and bottom of the device to make it easy to clip into position
- Battery and instructions included



Type	Order code	1+
Hercules electromagnet	<b>06-0592</b>	33.57

072035



## Electromagnet

The Eisco PH0800A electromagnet consists of a U-shaped iron core of circular section, with armature and carrying hook. It is wound with insulated copper wire and provided with colour-coded 4mm connectors.

- For use on 4 to 6V DC
- Eisco type PH0800A



Type	Order code	1+
Electromagnet	<b>52-3310</b>	6.48

565510



## Science Magnetism Tube

This giant magnet tube has a double wall with iron filings between two layers to show a 3 dimensional view of the magnetic field around the supplied magnet.

- The magnet is removable and the filings are safely encased
- Size: 130 x 90mm



Type	Order code	1+
Magnet tube	<b>06-0598</b>	14.59

072042



## Magnetic Field Display

These magnetic field windows contain 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
- Size 225 x 130 x 15mm
- Includes 2x plastic cased magnets, 2x ferrite magnets and an information/instruction booklet
- Available with white background (**06-0680**) or transparent background (**06-0282**) for use with an overhead projector



Type	Order code	1+
White Background	<b>06-0680</b>	22.00
Transparent background	<b>06-0682</b>	23.02

072049



## Electric Field Apparatus

This apparatus is ideal for demonstrating **electric fields** between various electrodes. Liquid paraffin is placed in the 90mm diameter petri dish and semolina or fine grass seed is sprinkled on the surface. Various electrode configurations can be arranged in the liquid and when a high voltage is applied via the 4mm terminals the **field pattern** is generated. The see-through base allows the pattern to be projected via an overhead projector system.

- Supplied without paraffin or semolina
- Dimensions (L x W x H): 150 x 150 x 60mm

A low current 0 to 5kV EHT supply is required (not supplied).



Size	Order code	1+
150 x 150 x 60mm	<b>52-2660</b>	98.74

550588

## Quick Quote

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for more details

**eisco**  
Trust 1 Online Education

### Gold Leaf Electroscope

This gold-leaf electroscope is great for hands-on experience with electrostatic principles in physics classrooms and labs.

When an electrostatic charge is induced or transferred to the electroscope, the charge causes a thin piece of gold leaf to be repelled away from its mount. The resultant deflection of the leaf shows the presence of an electrostatic charge and the angle of the leaf can be used as a measure of the charge.

The solidly constructed sheet anodised aluminium frame of the electroscope is mounted on a plastic base. Front glass window slides up to allow the insertion of ionizing material into chamber. A transparent scale is attached inside the chamber to measure the deflection of the gold leaf.

- Supplied with two gold leaf sheets
- Fitted with 4mm socket
- When assembled, the electroscope measures 165 x 95 x 71mm
- **Eisco type PH0916B**

*Note: the gold-leaf does not come pre-attached to the electroscope. Instructions on how to properly attach the gold-leaf to the conducting rod are included in the Experiment Guide.*

Replacement gold leaf is available separately.

Type	Order code	1+
Electroscope	<b>52-3640</b>	14.76
Gold leaves pack	<b>52-3641</b>	3.49

565635

**eisco**  
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### Magnetic Needle Stand and Needles

A range of magnetic needles and a suitable low-friction stand for use in the study of magnetic fields and compasses.

- Stand height 110mm
- Range of needle sizes
- All parts sold separately

Type	Order code	1+
Stand	<b>52-3318</b>	2.97
50mm needle	<b>52-3319</b>	0.807
75mm needle	<b>52-3320</b>	0.754
100mm needle	<b>52-3321</b>	1.32

565636

**shaw**  
magnets

### 45mm Compass

Tough plastic cased compass with lanyard.

- Marked with four compass points
- Full 360° scale around edge

Type	Order code	1+
45mm Compass	<b>06-5996</b>	1.42

078836

## Gasses & Liquids

**Rapid**

### Balloons

These packs of balloons offer great value for money.

- Available as round balloons in various colours
- Supplied in packs of 100



Type	Order code	1+
Round	<b>06-9972</b>	4.07

56396

**PSU**  
Base.co.uk

### CLASUB Charles's Law Apparatus - Single

The **PSU Base Charles's Law** apparatus is a simple way of demonstrating that the volume of a fixed mass of gas is proportional to its absolute temperature. Each unit is supplied with an easy to read oil bead and clear measurements ready to use.

- Mercury free
- Dimensions 335 x 40mm
- Capillary tube 0 to 20cm reading
- Thermometer -10°C to +100°C
- Supplied singly



Type	Order code	1+
Charles's law apparatus	<b>53-6922</b>	12.95

567893

**PSU**  
Base.co.uk

### CLASUB10 Charles's Law Apparatus - Classpack of 10



The **PSU Base Charles's Law** apparatus is a simple way of demonstrating that the volume of a fixed mass of gas is proportional to its absolute temperature. Each unit is supplied with an easy to read oil bead and clear measurements ready to use.

- **Classpack of 10**
- Mercury free
- Dimensions 335 x 40mm
- Capillary tube 0 to 20cm reading
- Thermometer -10°C to +100°C

Type	Order code	1+
Charles's law apparatus	<b>53-6923</b>	129.95

567894

**eisco**  
Trust 1 Online Education

### Whitley Bay Smoke Cell

The Whitley Bay smoke cell is used for the observation of 'Brownian' or random motion in smoke particles.

It consists of a box with flanges that allow it to be easily attached to a standard microscope. The box contains a smoke cell, a cylindrical condensing lens and a 12V, 3W festoon bulb. The apparatus is pre-set to focus the light at the correct height.

- Supplied with detailed instructions and a squeeze bottle type smoke generator
- 4mm electrical connections
- Box dimensions 90 x 46 x 20mm
- **Eisco type PH0203B**

Type	Order code	1+
Smoke cell	<b>52-3425</b>	12.73

565576



**Cochranes of Oxford**

### Hyman Fire Piston

The Hyman Fire Piston demonstrates the rise in temperature that is produced when a fixed mass of gas is compressed. In this apparatus the contained air is compressed by a hand-operated piston. The heat generated is sufficient to ignite a small quantity of tinder supported inside the transparent cylinder. Suitable tinder is included, but almost any organic material will work if dry enough, i.e. cotton, charcoal, tissue paper, etc.



The Hyman Fire Piston can also be used to demonstrate the need for oxygen to support combustion, by attempting to re-ignite a piece of part-burned tinder. Combustion will only occur if the piston is completely removed from the cylinder allowing a supply of fresh air to be introduced.

Additionally, a cloud can be formed in the cylinder by, having compressed moist air inside it, allowing a sudden decompression. The reduction in pressure lowers the temperature and immediately condenses the water vapour inside the cylinder.

- Demonstrates the rise in temperature when a fixed mass of gas is compressed
- Air is compressed by a hand-operated piston
- Heat generated is sufficient to ignite a small quantity of tinder placed inside the cylinder
- Suitable tinder included, but cotton, charcoal, tissue paper, etc., can also be used
- Can also be used to demonstrate the need for oxygen to support combustion
- Combustion will only occur if the piston is removed to allow fresh air in
- A cloud can be formed in the cylinder by allowing sudden decompression
- Reduction in pressure lowers the temperature and condenses the water vapour
- Includes 'fire piston', supply of tinder, lubricating oil, spare 'O' rings and full instructions

Type	Order code	1+
Hyman Fire Piston	<b>06-7791</b>	24.08

502591

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**Rapid**

**Boyle's Law Indicator**



This simple low-cost apparatus provides a means of demonstrating Boyle's law.

- Ideal for demonstrations
- Gives students literally a 'feel' for increase in pressure against volume

Please note that this product is for demonstration purposes and is not 100% accurate.

Type	Order code	1+
Boyle's law indicator	06-6068	11.89

080614

**eisco**

**Boyle's Law Apparatus**

This high quality Boyle's law apparatus comes complete with accessories, including a 405mm pump with braided hose.

The apparatus is 685mm tall with a powder-coated metal base approximately 205 x 125mm.

Experiments can be carried out with water or by simply adding any food colouring to the water.

- High quality pressure gauge
- 200mm braided nylon flexible hose
- Hand operated pump
- PPE funnel
- Instruction manual
- Eisco type PH0150A



Type	Order code	1+
Boyle's law app.	52-3414	114.92

565573

**eisco**

**Boyle's Law Simple Form**

A simple apparatus for the demonstration of Boyle's law, consisting of an airtight graduated plastic syringe with a lubricated piston, mounted between two wooden blocks.

Weights can be stacked on the top platform, compressing the gas. The corresponding measurement of volume can be read from the syringe scale.

- Air-tight plastic syringe supported between wooden blocks
- Weight on the upper block produces pressure that compresses the gas
- Volume measurements can be read from the syringe scale
- Eisco type PH0145A



Type	Order code	1+
Boyle's law simple	52-3349	7.57

565537

**eisco**

**Jolly Bulb with Gauge**

This Jolly bulb apparatus consists of a 60mm diameter bulb directly connected to a bourdon pressure gauge.

The apparatus is used for investigation of gas at a constant volume. By inserting the glass bulb into either warm or cold water, the expansion or contraction of the air contained in the bulb can be seen as a pressure change on the gauge.

- 60mm diameter glass bulb
- Gauge calibrated in both kg/cm<sup>2</sup> and in psi
- Eisco type PH0138C



Type	Order code	1+
Jolly bulb + gauge	52-3700	26.51

565673

**Rapid**

**Pascal's Vases Apparatus**

Pascal's Vases Apparatus shows that the pressure of a liquid varies with depth and not with the shape of the vessel.

- Apparatus includes 4 vessels of different shapes and a stand
- Pressure is measured by placing weights in the scale pan
- Repeating the experiment with each 'vase' proves the theory



Type	Order code	1+
Pascals vases	06-2159	25.54

533949

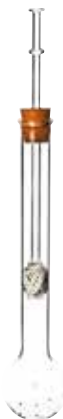
**eisco**

**Equality of Liquids Apparatus/ Pascal's Law Syringe**

An apparatus consisting of a glass flask with holes in the bulbous part and a glass piston that slides in the straight part.

When filled with liquid, the piston is pushed into the apparatus, causing liquid to exit each hole with equal pressure regardless of the hole's position or direction.

- Also known as Pascal's Law syringe
- Eisco type PH0194



Type	Order code	1+
Pascal's Law syringe	52-3330	5.74

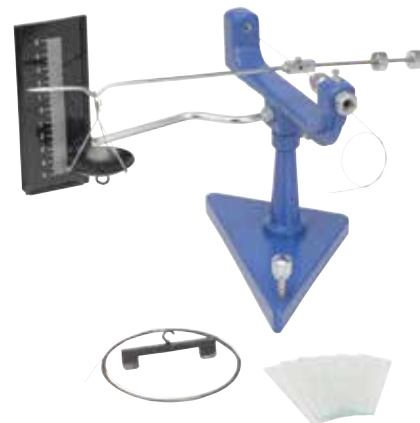
565523

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**Searles Surface Tension Balance**



This Searles Surface Tension Balance can be used to demonstrate the surface tension of a liquid by allowing it to be shown on a graduated scale.

A horizontal frame is mounted on a rod fitted to a base and carries a steel wire stretched across it, the tension of which can be adjusted by a tightening screw. A lightweight metal pointer with a counterpoise is attached to the centre of the wire by a clamp. A pan is hung from a notch in the pointer and has a hook at its underside from which can be suspended a light weight rectangular frame or a metal clip to hold a microslide edge. The tip of the pointer moves over the graduated scale.

- Supplied complete with rectangular wire frame, slide clip, six microslides, 3m of spare wire and full instructions.

Type	Order code	1+
Surface tension blnce	06-2160	31.31

533950

**eisco**

**Planck's Constant Apparatus**

This apparatus is designed to determine the approximate value of Planck's constant, using a range of LEDs of known wavelength, to allow the electron/photon energy to be calculated. The apparatus includes 7 LEDs, covering the light range from deep blue at 470nm to near IR at 940nm, mounted on a box with 4mm sockets for attachment to a voltmeter and ammeter for voltage and current measurements. By monitoring the voltage at which each LED just begins to emit light, a graph of energy input as a function of light emitted frequency can be plotted and an approximate value of Planck's constant can be deduced.

- Requires a 9V DC power supply



Type	Order code	1+
Planck's constant app	52-2639	33.25

550572

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**www.rapidonline.com/steam-lab**

## Rapid

## Magdeburg Pressure Disks

A practical vacuum/pressure demonstration set consisting of two plastic, 10cm diameter hemispheres.

Each hemisphere has a wooden handle firmly attached to it. One of the hemispheres has a raised edge to hold a rubber seal, while the other hemisphere has a stopcock for attaching to vacuum tubing. When the hemispheres are pushed together and evacuated using a vacuum pump they are hard to pull apart. Get 2 students to pull, then open the stopcock to let air in and the hemispheres will separate easily to the surprise of the students.

- Practical vacuum/pressure demonstration set
- Two 10cm dia. plastic hemispheres
- Evacuated hemispheres are hard to pull apart
- Hemispheres separate easily when stopcock opened

Type	Order code	1+
Magdeburg hemispheres	06-2236	18.28

533966

## Rapid

## Vacuum or Pressure Apparatus

A rugged hand-operated piston pump with two nozzles - one that creates vacuum and the other that creates pressure.

- Creates pressure or vacuum
- Metal barrel

Type	Order code	1+
Vacuum/pressure	06-2245	13.71

537517

## EISCO

## Cast Iron Bursting Bottles

Bursting bottle from Eisco designed to demonstrate the anomalous expansion of water on freezing.

- Bottle constructed from cast iron
- Length 90mm
- Diameter 20mm
- Supplied with plug
- Manufacturer's part **PH0119E**

Type	Order code	1+
Cast iron bursting bottles	52-4089	2.33

568086

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Materials  
& Properties

## EISCO

## 12-piece Science Metal Strips Set



This 12-piece metal strip set includes a strip of each of aluminium, brass, copper, bronze, nickel, mild steel, galvanized iron, magnetic and non-magnetic stainless steel, zinc, chrome and lead.

- All strips are marked with a letter to identify each metal - see Technical specification below
- Ideal for experiments to demonstrate magnetic properties and classifications of metals
- Strip size: 50 x 25mm
- Supplied as a set of 12 strips

## Technical specification

Code letter	Metal	Code letter	Metal
A	Aluminium	G	Galvanized iron
B	Brass	H	Stainless steel - non-magnetic
C	Copper	I	Stainless steel - magnetic
D	Bronze	J	Zinc
E	Nickel	K	Chrome
F	Mild steel	L	Lead

Type	Order code	1+
Metal strip set	06-0595	6.01

072038

## Rapid

## Brass Sheets

Economical brass sheets, ideal for cutting, shaping and bending.

- Superb rich brass finish
- 0.1mm thick sheets

Type	Order code	1+
A4	06-0744	4.14
A3	06-0746	6.79

066922

## Rapid

## Copper Sheets

These economical 0.1mm thick copper sheets are perfect for embossing, bending and cutting.

- Basic Design & Technology and Science resource

Type	Order code	1+
A4	06-0752	5.16
A3	06-0754	6.79

066924

## Learning Resources

## Complete Rock and Fossil Collection



Dig into some serious fun with this fascinating fossil and rock collection. The collection features handpicked specimens, chosen for their interest, colour, texture and beauty.

## 12-piece rock sets:

- Include an educational identification chart and activity guide
- Igneous rocks are produced by hot volcanic magma action
- Metamorphic rocks are transformed by intense heat and pressure
- Minerals combine with each other to make rocks
- Sedimentary rocks are formed by layers of deposited matter

## Fossil set:

- Contains 9 fossils in a handy divided tray
- Includes guide, 4-colour insert card of photographed fossils, foam sheet and die-cut sheet of circle labels for fossils
- Average fossil length approximately 2.5cm
- Fossils included are: brachiopod, bryozoa, crinoid stem, gastropod, colony coral, ammonite, shark's tooth, fossil fern/plant matter and petrified wood
- Supplied as a cost-saving set containing 4 rock sets plus a fossil set

Type	Order code	1+
Complete collection	52-9948	45.96

061830

## EISCO

## Assorted Metal Cubes



Set of 7 assorted metal cubes from Eisco.

- Cubes include aluminium, brass, copper, iron, lead and zinc
- Size 10 x 10 x 10mm
- Supplied in plastic box
- Instruction manual included
- Manufacturer's part **PH0106A**

Type	Order code	1+
Metal cubes	52-4190	9.33

568096

No minimum order value  
UK mainland only



## Conductivity & Energy

**eisco**  
Trust & Deliver. Learn

### Carbon Rod



A 140mm long carbon rod with a brass terminal for electrical connection.

- Length 140mm
- Diameter 15mm
- **Eisco type PH0937**

Type	Order code	1+
Carbon rod	<b>52-3605</b>	1.52

565644

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Trust & Deliver. Learn

### Thermal Conductivity Rods



These metal rods are ideal for thermal conductivity experiments.

- Metal rods for thermal conductivity experiments
- Approximately 300mm long x 3mm diameter
- Individual metal types supplied in **packs of 10**
- Assorted metal types supplied in **packs of 6**

Material	Order code	1+
Assorted (6)	<b>52-3352</b>	5.07
Aluminium (10)	<b>52-3656</b>	4.79
Brass (10)	<b>52-3657</b>	8.23
Copper (10)	<b>52-3351</b>	15.17
Iron (10)	<b>52-3659</b>	4.31
Lead (10)	<b>52-3660</b>	5.75

565639

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Trust & Deliver. Learn

### Leslie's Cubes

These Leslie's cubes have sides with different surface finishes. They are ideal for use in experiments to show how objects emit and absorb heat.



In use, the apparatus is filled with water which is maintained at boiling point by a low Bunsen burner flame. Infra-red sensors, etc., can be used to compare the relative radiant heat output from each of the four faces.

- Top hole for filling and emptying
- Bung for thermometer
- **Eisco PH0411 series**

Size	Material	Order code	1+
100mm	Copper	<b>52-3650</b>	10.69
130mm	Tin	<b>52-3649</b>	6.12

565638

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### Crookes Radiometer

This radiometer consists of a partly evacuated glass bulb approximately 70mm in diameter, containing a fine pivot which supports four light weight metal arms. One side of each vane is blackened, the reverse side is bright.

On exposure to sunlight, or a sufficiently bright incandescent light source, the vanes turn. The absorption of radiant energy by the blackened side of the vanes sets up a temperature differential with respect to the bright sides, causing net force to be exerted by the air molecules on the blackened side which makes the vanes rotate with their bright faces leading.

- Approx. 70mm diameter
- Mounted on round plastic moulded base
- **Eisco type PH0418A**

Type	Order code	1+
Crookes radiometer	<b>52-3332</b>	6.55

565525



**Rapid**

### Ice Melting Kit - Thermal Conductivity Demonstration

This ice melting kit can be used to demonstrate the difference in thermal conductivity and thermal capacity between two different materials.



The kit consists of two identically sized blocks, one made of aluminium, the other made of plastic. When an ice cube is placed on the aluminium block it turns into water in seconds, while an ice cube placed on the plastic block melts slowly. This is due to the aluminium block having a larger heat capacity and a higher thermal conductivity than the plastic block.

- Supplied complete with instructions

Type	Order code	1+
Ice melting kit	<b>06-2237</b>	13.62

534082

## Solar Power & Hydrogen Fuel

**Rapid**

### 1V, 150mA Solar Panel

Use these solar panels to build your own robots or other solar energy powered applications. Ideal for use for solar cars, solar motor kits and school projects.

- Solid, almost-unbreakable module
- Polycrystalline type, suitable for outdoor use
- Great for low power consumption projects
- Supplied with flying leads
- Output approximately 1V @ 150mA
- Can be wired in series or parallel to increase voltage or current
- Dimensions 60(L) x 30(W) x 2(D)mm
- Weight approx. 8g

Type	Order code	1+
60 x 30mm solar panel	<b>37-0438</b>	2.70

080724



**TruOpto**

### Solar Powered Light Module Kit



This simple, yet effective module demonstrates how solar panels can convert the sun's energy into electricity, how it can be stored and how that energy can be released and used when required.

In sunny conditions, the Poly-Silicon solar cell converts the sun's radiant energy into 1.8V of electricity which charges the Nickel Hydride rechargeable battery. As the sun's light reduces, so does the output of the solar panel. When the solar panel's output falls below approximately 0.7V, the circuit stops charging the battery and the captured energy remains in the battery. In darkness, the solar cell's output drops to zero which triggers the circuit to switch on the 2 LEDs to provide illumination.

The module is available both ready-assembled or as a kit of parts that can be assembled by students as part of a Design and Technology project.

- Practical demonstration of solar power
- Rechargeable battery: 1000mAh
- More than 20 hours illumination from fully charged battery
- Over-discharging protection
- Automatic light level detection
- Ideal for educational
- Available ready assembled or in kit form

Technical specification	
Main PCB dimensions	81 x 27.8 x 1.6mm
Solar panel dimensions	136.5 x 80mm
Solar panel output	1.8V, 1W
Controller IC	QX5252
LED driving current	15mA (average)
Working temperature	0 to +50 °C
Storage humidity	5 to 95%

Type	Order code	1+
Assembled	<b>55-0005</b>	16.08
Unassembled	<b>55-0006</b>	14.47

500483

**Rapid**

### Educational Solar Energy Kit



A complete kit of parts which provides the student or child with an introduction to solar energy. The kit comprises:

- 8x 500mV, 100mA solar cells in one panel
- Miniature DC motor
- Small fan
- Plus all tools and cables enabling the user to construct a working kit
- The solar cells provide an output of 3.2V and may be employed to drive a variety of other small components
- The kit also comes complete with an informative twelve page booklet explaining solar energy in considerable detail

Type	Order code	1+	10+	40+
Solar energy kit	<b>37-0420</b>	12.08	10.95	10.52

031204

**eisco**  
 Trust 1 Better Lesson

### Solar Cell and Motor Demo Set



A range of solar units, ideal for demonstrating the conversion of solar energy into mechanical energy.

- Range includes solar cells, solar motors, LED and buzzer

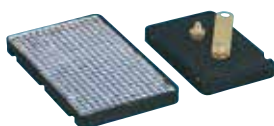
Type	Order code	1+
Solar cell & motor	<b>52-3353</b>	19.49
Solar motor & fan	<b>52-3355</b>	6.19

565540

**Rapid**

### Solar Cells

Fully encapsulated solar cell modules mounted in black polycarbonate cases.



- Output of 0.45V
- Fitted with threaded stud terminals and a copper busbar

Technical specification

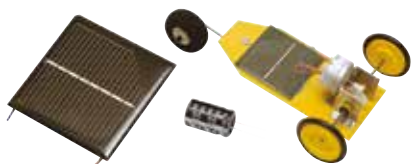
Module type	Output current	Length	Width	Height	Order code
G200	200mA	53	36	7.5	<b>37-0432</b>
G400	400mA	75	45	7.5	<b>37-0434</b>

Voltage	Current	Order code	1+	25+	100+
0.45V	200mA	<b>37-0432</b>	2.23	1.79	1.68
0.45V	400mA	<b>37-0434</b>	3.37	3.10	2.67

064795

**Rapid**

### Solar Power Project Pack



Contains project ideas and investigations based around a high-quality, low-cost solar module. Also in the pack are all the components required to build a solar powered buggy similar to the one shown here, plus an astonishing 10F super capacitor, which can be charged up from the solar panel and used to power lamps, motors, etc.

- Includes a photocopyable information booklet full of ideas and suggestions for using the solar module
- Buggy will run outdoors in sunlight or indoors with a bright lamp

Type	Order code	1+
Solar power project pack	<b>70-1526</b>	12.90

081632

**INVICTA**  
 Established for over 40 years

### Renewable Energy Kit



Enable Teachers to demonstrate the generation of electricity using Wind, Solar and Water power.

- This portable unit comes in an easy to assemble kit format and includes four interchangeable dials to demonstrate the power being generated – meter, moving cogs, flashing lights and a siren
- The unit can be used indoors and outdoors
- Applicable to both Science and Geography studies
- This teaching resource is relevant to the National Curriculum and helps pupils understand the process of renewable and sustainable energy, and the environmental issues surrounding these forms of energy generation
- Suitable for **Key Stages 2, 3 & 4** (ages 7 to 16)
- Supplied as a **kit**

Type	Order code	1+
Renewable energy kit	<b>52-0376</b>	73.34

070843

**Rapid**

### Wind Turbine

This Wind Turbine model can be used to carry out a wide range of experiments with wind power.

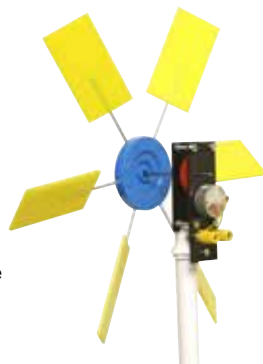
The blades of the turbine can be easily adjusted, attached and removed. This allows students to investigate the effects of changing the number, pitch, size and shape of the blades. Some of the effects can be quite counter-intuitive and will provoke students into thinking and discussing the concepts of energy and power.

The turbine blades are made of corriflute plastic. Some pre-cut blades are included, but it is also possible to cut new blades of different shapes and sizes. The blades can be attached and removed simply by pushing them on and off the posts on the turbine hub.

- Corriflute plastic blades
- DC output
- Supplied assembled

Type	Order code	1+
Wind Turbine	<b>06-1573</b>	18.94

553696



## Wind Power Renewable Energy Science Kit V3.0

Only

**£34.43**

Order code 70-0387

**THAMES KOSMOS**
[www.rapidonline.com](http://www.rapidonline.com)


## Sound

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### Resonance Apparatus with Telescopic Brass Tube

This resonance apparatus is comprised of two brass tubes that can telescope into each other, allowing the column of air within the tube to be varied between 300 and 530mm.

- Outer tube fits into base
- Eisco type PH0718B



Type	Order code	1+
Resonance tube	<b>52-3436</b>	19.88

565586

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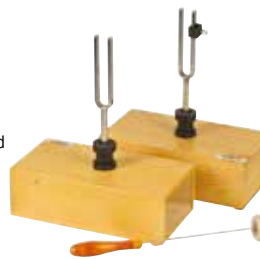
### Resonance Tuning Forks with Hammer

This apparatus can be used for demonstrating the production of beat frequencies.

It is comprised of two nickel-plated tuning forks mounted on individual sound boxes. The two forks both produce an 'A' note (440Hz) when struck with the mallet.

One fork is provided with an adjustable mass, by means of which the frequency of that fork may be shifted from the nominal 440Hz. When both forks are sounded at the same time, a clearly audible 'beat' is produced, its rate depending upon the difference in frequency between the two forks.

- Used to hear dissonance
- One fork adjustable
- Supplied complete with 2x tuning forks, 1x adjustable mass, 2x bases and mallet
- Eisco type PH0742A



Type	Order code	1+
Resonance apparatus	<b>52-3446</b>	15.02

565593

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### Tuning Forks Set 8

An eight-piece set of nickel-plated tuning forks with plain shanks. The forks are marked with their individual frequencies: C (256Hz), D (288Hz), E (320Hz), F (341Hz), G (384Hz), A (426Hz), B (480Hz) and C (512Hz).

- 8-piece set
- Supplied in wooden storage case
- Eisco type PH0738B



Type	Order code	1+
Tuning fork set	<b>52-3342</b>	13.03

565593



## Tuning Forks

A range of superior quality aluminium tuning forks with plain shanks and round stems.

- Ideal for school, college and laboratory use
- **Eisco PH0737 series**

Note	Frequency	Order code	1+
C	256Hz	<b>52-3453</b>	3.89
D	288Hz	<b>52-3454</b>	3.89
E	320Hz	<b>52-3309</b>	3.31
F	341Hz	<b>52-3455</b>	3.89
G	384Hz	<b>52-3456</b>	3.89
A	426Hz	<b>52-3457</b>	3.19
B	480Hz	<b>52-3458</b>	2.53
C	512Hz	<b>52-3459</b>	3.89



## Transistor Oscillator Buzzers

A 1.5V miniature transistor oscillator buzzer with flying leads.

- Frequency 400Hz
- Sound output 75dB at 30cm
- Height 15.5mm
- Length 33.5mm
- Width 16.5mm
- Lead length 150mm
- Voltage 1.5V



### Technical specification

Operating voltage	1.3 to 2V
Current consumption	25mA
Sound output	75dB at 30cm

Type	Order code	1+	25+	100+
1.5V buzzer (leads)	<b>35-0086</b>	1.40	1.09	1.03



## Electronic Buzzers



A range of compact, low-cost electronic buzzers.

- Available with either flying leads (10cm long) or PCB mounting pins
- 3V, 6V or 12V operating versions
- Resonant frequency is 400Hz
- Black ABS case material

Suitable for education and hobbyist use only.

### Technical specification

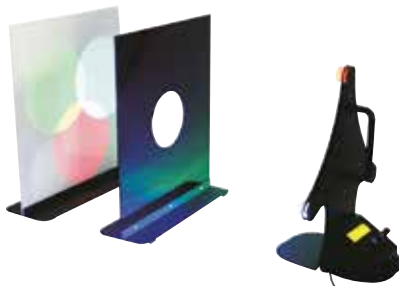
Operating voltage	2V to 5V DC or 4V to 8V DC or 9V to 15V
Rated voltage	2V to 5V type 4V to 8V type 9V to 15V
Max rated current	2V to 5V type 4V to 8V type 9V to 15V
Min sound pressure level	2V to 5V type 4V to 8V type 9V to 15V
Resonant frequency	400Hz ± 100Hz
Operating temperature	-20°C to +60°C
Weight	PCB type with lead
Dimensions	PCB type with lead

Type	Order code	1+	25+	100+
3V Buzzer + lead	<b>35-3592</b>	1.32	1.05	0.942
3V PCB Mount buzzer	<b>35-3594</b>	1.32	1.05	0.942
6V Buzzer + lead	<b>35-3596</b>	1.32	1.05	0.942
6V PCB Mount buzzer	<b>35-3598</b>	1.32	1.05	0.942
12V Buzzer + lead	<b>35-3610</b>	1.39	1.13	1.05
12V PCB Mount buzzer	<b>35-3612</b>	1.26	1.03	

## Light & Optics



## DCMPSUB Digital Colour Mixer + Screens & PSU



This **Colour Mixing** apparatus is designed to demonstrate a variety of colour concepts. The colour mixer features clear and bright red, green and blue lights, whose intensity may be individually adjusted to produce virtually any colour.

With the primary and secondary masks and screen you can use the colour mixer to demonstrate additive colour mixing, show how white light is produced, and explore the secondary colours of cyan, magenta and yellow. The setup is great for demonstrating how a television produces a full range of colours.

With the use of home made coloured filters (e.g. sweet wrappers) investigations into colour transmission and reflection may be performed, as well as Investigations of coloured shadows.

- Power supply included

Type	Order code	1+
Digital colour mixer	<b>53-6920</b>	95.95



## LEDPSUB LED Array 10x Coloured + 1 White LED 5V DC

This versatile **LED Array** from **PSU Base** enables students to investigate the link between wavelength and colour. The unit has 10x coloured LEDs plus a white LED fitted into a vertical steel tower. There is a selector switch that allows each individual colour to be selected or all colours simultaneously.

When used with a diffraction grating the unit may be used to determine the wavelength of a particular colour of light. When all the colours are viewed through a diffraction grating, it allows the student to observe the effect that the changing wavelength has on the diffraction pattern. When used with colour filters, sweet wrappers etc. it allows a study of coloured light transmission.

- Fitted with On/Off switch
- Supplied with plug top PSU

Type	Order code	1+
LED array	<b>53-6921</b>	29.45



...where price meets quality



## Enhanced Optical Bench Set



This optical bench kit includes an enhanced set of accessories allowing the user to perform more experiments than other more basic kits.

The bench is 1m long and is graduated on one side.

### Set includes:

- 1x 1m optical bench with end supports and graduation scale
- 8x riders with tightening screw
- 1x lamp housing with 12V, 24W halogen bulb
- 6x lens holder for 50mm dia. lenses
- 3x biconvex lenses: +10, +20 & +50
- 1x biconcave lens -20
- Set of diaphragms
- 1x plain mirror 100 x 100mm
- 1x translucent screen 100 x 100mm
- 1x transparent screen 100 x 100mm
- 1x object screen white 100 x 100mm
- **Eisco type PH0649**

Power source for lamp not included.

Type	Order code	1+
Optical bench set	<b>52-3679</b>	55.12



## Complete Optical Bench Set



An economical, yet effective Optical Bench Set that provides accurate demonstrations of basic optical principles.

### The complete system includes:

- 1x Optical bench-double-sided metre stick
- 1x Object and marker
- 1x Screen support
- 1x Candle holder
- 1x Pair of metal supports
- 2x Lens supports: 4cm and 7.5cm
- 5x White board screens, each 10 x 12.5cm with a millimeter scale along one side
- 12x paraffin candles

Type	Order code	1+
Optical bench set	<b>06-2242</b>	11.69



## Pin Hole Camera

The concept of the pin-hole camera is centuries-old. This model consists of a telescopic wooden box with a pinhole in one end. Light rays passing through the pinhole are projected as an image on a translucent plate. Students view this image through a hole in the other end and can change the image size by changing the length of the box.



- Demonstrates the behaviour of light
- **Eisco type PH0592**

Type	Order code	1+
Pin hole camera	<b>52-3687</b>	15.43



## Rapid

Digital Xenon Stroboscope  
Standard Version

This **digital xenon stroboscope** is a lightweight, sturdy and compact instrument which features a digital, variable flashing rate adjustment and external triggering facility. The bright xenon tube makes it ideal for educational uses for such as wave, motion and vibration experiments.



- Specifications 60 to 18,000rpm, 1 to 300Hz
- External triggering signal
- Power supply 240V AC, 50 Hz
- Dimensions (L x H x W): 215 x 140 x 150mm
- Supplied with mains lead

Size	Order code	1+
215 x 140 x 150mm	<b>52-2677</b>	305.50

550603

EISCO  
Trust & Deliver & Learn

## Spectrum Tubes, Holder &amp; Power Supplies



A range of spectrum tubes, associated holders and power supplies, for use in spectral analysis experiments.

- Wide range of materials
- Power supplies and tubes are sold separately

*Note: The spectrum tubes are intended for intermittent use only and are not suitable to be used as a lamp source. They should be used for periods of 30 seconds on/30 seconds off. Their expected life will vary depending on the gas they contain. Their useful life will be reduced if they are not used as recommended or allowed to overheat. Use tubes only with the Eisco power supply, 52-3613.*

Type	Order code	1+
Tube holder	<b>52-3612</b>	22.42
PSU 240V AC	<b>52-3613</b>	133.98
<b>Spectrum tubes</b>		
Argon	<b>52-3615</b>	11.94
Carbon dioxide	<b>52-3616</b>	8.09
Helium	<b>52-3617</b>	11.94
Hydrogen	<b>52-3618</b>	11.94
Iodine vapour	<b>52-3619</b>	9.79
Krypton	<b>52-3620</b>	11.94
Neon	<b>52-3621</b>	11.94
Nitrogen	<b>52-3622</b>	11.94
Oxygen	<b>52-3623</b>	11.94
Sulphur	<b>52-3624</b>	11.94
Xenon	<b>52-3625</b>	11.94

565650

EISCO  
Trust & Deliver & LearnPrimary and Secondary  
Coloured Filters

Sets of coloured plastic filters featuring primary and secondary colours.

- Available with or without mounts



Type	Order code	1+
50x50mm, mounted	<b>52-3686</b>	5.12
100x100mm, unmounted	<b>52-3694</b>	4.28

565600

## Rapid

## Newton's Colour Disc

This apparatus demonstrates the discovery, made by Newton, that white light is made up of seven individual colours. The apparatus consists of a pulley mounted on a metal stand. The seven-coloured disc is driven by a belt connected to a hand-driven wheel. When the disc is rotated fast, the eye is unable to distinguish between individual colours and perceives it as white.

- Demonstrates that white light is made up of 7 individual colours
- When rotated fast, the eye is unable to distinguish colours and sees white



Type	Order code	1+
Newton's colour disc	<b>06-2243</b>	13.29

534106

EISCO  
Trust & Deliver & Learn

## Light Box and Optical Set



This set of optical equipment is ideal for a wide range of reflection, refraction and colour-mixing experiments.

The light box consists of a 12V, 24W light source that can produce convergent, divergent or parallel beams. On one end, the light box has an adjustable cylindrical convex lens for producing a parallel beam. On the other end, there is a triple aperture system for colour mixing experiments. The box also has lateral apertures with adjustable hinged mirrors. All apertures in the box have vertical channels to hold slit plates and colour filters, etc.

The optical set includes acrylic blocks, a set of three mirrors, two slit black plates and a set of seven mounted colour filters.

- Supplied with experiment guide
- **Eisco type PH0615**

*Note: power supply for lamp not included.*

Type	Order code	1+
Light box & optic set	<b>52-3673</b>	38.50

565666

EISCO  
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## Ray Box



This traditional ray box has three openings, two of which can be used simultaneously by two sets of pupils. Only a minimum of accessories are needed to cover a wide range of optics experiments.

The two side openings each have two slots for blanking plates or 50mm slide accessories. The front opening has seven grooves for accessories and lenses. The front opening has been designed so that when used with a biconvex cylindrical lens of 75mm focal length, divergent or convergent rays are obtained through the slit plate.

## Set includes:

- Ray box with 2m flex and two 4mm plugs
- 12V, 24W, B15 bulb
- 1x slit plate
- 2x aluminium blanking plates
- Supplied with instructions
- **Eisco type PH0602A**

*Power supply not included.*

Type	Order code	1+
Ray box	<b>52-3678</b>	13.77

565669

## Rapid

## Colour Paddles - Pack of 6

A pack of 6 transparent colour paddles in different colours. The paddles are ideal for colour identification and for demonstrating the effects of mixing colours.



- Hole in the handle allows paddles to be strung together in sets
- Length of each paddle 150mm
- Supplied as a **pack of 6**

Type	Order code	1+
Colour paddles (6)	<b>52-0887</b>	2.66

547688

EISCO  
Trust & Deliver & Learn

## Spectroscope Kit

This industry standard spectroscope can be used for measuring light wavelengths and colours from various light sources.

The spectroscope measures wavelengths from 400 to 700nm for detailed examination.

- Measures wavelengths from 400 to 700nm
- **Eisco type PH100QA**



Type	Order code	1+
Spectroscope	<b>52-3382</b>	5.39

565557



### Wooden Lens Holder

A wooden holder with a V-shaped slot for supporting lenses or mirrors up to 76mm in diameter.

The holder consists of an upright 100mm high, mounted on a 100 x 50mm rectangular base. An index mark is engraved on each end of the base for easy distance measurements.

- Holds convex or concave lenses
- Dimensions: 100 x 100 x 50mm
- **Eisco type PH055A**



Type	Order code	1+
Wooden lens holder	<b>52-3682</b>	1.19

565678



### Acrylic Prisms – Set of 7



A set of seven clear acrylic blocks. The blocks are 25mm thick and are fully polished on all faces.

- Rectangle 75 x 50mm
- Semi circle 75mm dia.
- Triangle 60° x 60° x 60°, 58mm side
- Triangle 90° x 45° x 45°, 75mm hypotenuse
- Triangle 90° x 60° x 30°, 75mm hypotenuse
- Bi-convex 75mm long, curved faces 100mm radius
- Bi-concave 75mm long, curved faces 100mm radius
- Wooden storage box
- **Eisco type PH0571**

Type	Order code	1+
Acrylic prism set	<b>52-3362</b>	19.99

565544



### Plastic Mirrors 150 x 100mm

These Eisco plastic mirrors are ideal for science experiments dealing with reflection, symmetry and other light-related topics.

- Size 150 x 100mm
- Safe and durable
- Ideal for use by younger children
- Supplied **singly**
- **Eisco type PH0517A**



Type	Order code	1+
Plastic mirrors	<b>52-3363</b>	0.747

565545

## Order online

Save time, and place your order at:  
**www.rapidonline.com**  
24 hours a day



### Unmounted Plane Glass Mirrors Packs of 10

Silvered plane glass mirrors with a protective coating.

- Range of sizes
- Supplied in **packs of 10**



Size	Order code	1+
75 x 25mm	<b>52-3688</b>	0.853
75 x 50mm	<b>52-3689</b>	1.70
100 x 75mm	<b>52-3690</b>	1.42
150 x 25mm	<b>52-3691</b>	1.24
150 x 50mm	<b>52-3692</b>	3.05
150 x 100mm	<b>52-3693</b>	4.88

565671

## Flight



### Felix 60 V2 Free Flight Glider

This lightweight free flight Felix 60 V2 Glider from Powerglow is virtually indestructible, so you can launch it into the air time after time for flight after swooping flight. Made from a very lightweight and flexible foam the Felix 60 V2 can be assembled and made ready to fly within seconds. You can colour your glider with almost any commercially available, water-resistant fibre pen.

- Launched by hand
- 600mm wingspan
- Suitable for age 3 and over



#### Technical specification

Age class	For ages 3 years and over
Clamping range	600mm
Weight	45g
Manufacturer part no.	F2060

Type	Order code	1+
Felix 60 V2	<b>51-2271</b>	12.45

524182

## Rockets



### Bottle Rocket Launcher

This unique plastic moulding turns a fizzy drink bottle into a 'squeezey' or 'stomp rocket' launcher.

- Enables students to design and make educational kits
- Ideal for use in graphics and packaging projects
- The tubes also serve for rolling the paper rocket
- Rocket joiners are supplied complete with launch-tubes and nose cones in **sets of 10**



Bottles not included.

Type	Order code	1+
Bottle rocket launcher	<b>70-1514</b>	11.31

081689



### Paper Rocket Launcher



The launcher system comes as an unpainted flat-pack, needing only a screwdriver and pliers for assembly. Once set up, the launcher becomes the most popular piece of equipment in the school!

- Quick assembly
- Fantastic opportunity to engage pupils in designing and making
- Tested by hundreds of children (and adults)
- Can launch paper rockets up to 50 ft into the air
- Nose cones are available separately in **packs of 30**
- Paper-rolling mandrels are also available separately

Type	Order code	1+
Rocket launcher	<b>70-1518</b>	37.29
Nose cones (30)	<b>70-1522</b>	7.65
Rolling mandrel	<b>70-1524</b>	1.16

081691



## Astronomy



Cochranes of Oxford

### Helios Orrery and Star Dome



This Helios Orrery and Star Dome model from Cochrane's can be set up as either a basic orrery or an orrery with a star dome. Look through the dome to see the stars visible from earth for your latitude and the time of year. See how the stars and constellations have fixed locations in space and how the planets orbit the Sun. The dome shows all the major stars and constellations around the ecliptic and over the Northern hemisphere.

**The following subjects can be studied with the Orrery and Star Dome model:**

- The Planets in their orbits (length of a year, inferior and superior planets and more)
- The Moon and its phases
- 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?

Takes 4x D size batteries, not included.

Type	Order code	1+
Orrery and Star Dome	52-7145	385.00

502602



Cochranes of Oxford

### Orbit Tellurium 2



This attractive hands-on Tellurium model from Cochrane's of Oxford shows the Sun, Earth and Moon, correctly geared to show each month as the Earth orbits the Sun.

The flexible design instantly engages pupils and illustrates complex relationships more easily. The Orbit Tellurium 2 is an ideal model to aid lessons on: 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, the use of sundials and shadow sticks, lunar months and festivals linked to the Moon.

- 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
- 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 (No batteries required)
- Size: 65cm long, 25cm high

Type	Order code	1+
Orbit Tellurium 2	52-7141	192.00

502602



### Giant Magnetic Solar System



Most children love learning about the planets and this Giant Magnetic Solar System from Learning Resources will really capture their attention. These full-colour magnets can help you model all the concepts of the solar system, simply by using a whiteboard. The magnets include the 8 main planets, plus Pluto, the sun, the moon and the asteroid belt.

- Set of 12 magnets
- Largest magnet 25cm diameter
- Suitable for ages 5+
- Manufacturer's part LER 6040

Type	Order code	1+
Solar system	06-8960	11.99

517673

## CIC

### Solar Powered Solar System

This Solar-Powered Solar System Kit is ideal for young astronomers and model-makers as they build, paint, then watch their own Solar System come



to life, powered by solar energy. Planets orbit around the solar-powered 'Sun' that drives a motor moving the planets in realistic orbits. This excellent educational solar kit provides hands-on learning about how solar power drives a motor. The kit comes complete with 6 colours of opaque acrylic paint, plus a paintbrush.

- Solar-Powered Solar System Kit
- Build and paint your own working Solar System model
- Powered by solar energy
- Planets orbit around the solar-powered 'Sun'
- 6 colours of acrylic paint, plus a paintbrush
- Great exercise in science and creativity
- Solar battery and colour table included

Type	Order code	1+
Solar System Kit	06-9346	10.76

518242



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[www.rapidonline.com](http://www.rapidonline.com)

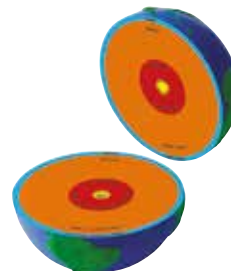
24 hours a day



### Cross-Section Foam Earth Model

This hands-on model makes illustrating the mysteries of the Earth easy.

- Outside of model shows oceans and continents
- The two hemispheres separate to show the four main layers of the Earth: crust, mantle, outer core and inner core, their temperatures and depths
- Easy for students to handle and examine
- Manufactured from soft foam
- Includes fact-filled activity guide
- Size 12.7cm diameter
- Suitable for Foundation Stage (ages 4 to 5)



Type	Order code	1+
Cross-section Earth model	52-9932	11.02

081526



### Inflatable Solar System Set



A set of models of the Sun, planets and the earth's Moon that will encourage students to learn about the position, order, size and shape of the contents of the solar system. When the lesson is finished simply hang everything from the ceiling.

- Made from durable washable plastic
- Hanging hooks provided
- Can be deflated for easy storage
- Supplied complete with foot-pump repair kit and activity guide
- Suitable for Key Stages 1 & 2 (ages 5 to 11)

Technical specification

Planet	Diameter	Planet	Diameter
Sun	580mm	Jupiter	360mm
Mercury	150mm	Saturn	280mm
Venus	190mm	Uranus	230mm
Earth	190mm	Neptune	230mm
Moon	130mm	Pluto	130mm
Mars	150mm		

Type	Order code	1+
Solar system set	06-5936	24.06

078683



## Electricity



### Electricity Kit



This **electricity kit** from **Eisco** provides the perfect starter platform to conduct a range of **physics experiments**, particularly those involving electricity and magnetism.

- Set includes 37 pieces
- Batteries not included
- Manufacturer's part **ELEM2**

#### Set includes the following:

- 2 x stackable single cell holders
- 3 x 300mm red and black crocodile leads
- 2 x 300mm red and black banana plug leads
- 1 x resistance 5Ω 1/4W
- 1 x resistance 10Ω 1/4W
- 2 x rheostats on base
- 2 x bulb holders on base;
- 2 x push switches on base
- 1 x voltmeter
- 1 x ammeter
- 1 x electroscope
- 1 x silk cloth
- 2 x PVC rod
- 1 x acrylic strip
- 1 x electrolysis apparatus
- 1 x 10g cupric sulphate
- 1 x L base
- 1 x support rod for L base
- 1 x rectangular wire coil
- 1 x bar magnet
- 1 x U-form electromagnet with keeper
- 1 x U magnet
- 1 x electro bar magnet
- 1 x 10g iron filings
- 1 x magnetic needle stand
- 1 x 62mm magnetic needle
- 5 x 5ins microfibre wire.

Type	Order code	1+
Electricity kit	<b>52-4128</b>	38.45

568091



### Basic Electricity Kits

These basic **electricity kits** from **Eisco** are ideal for teaching various topics related to electricity.

The kits provide a low-cost and flexible alternative to the "circuit board" approach for investigations into simple **electricity** circuits.

Each component - such as a switch or bulb holder - is mounted on its own individual plastic panel fitted with 4mm sockets. The panels are then formed into circuits by using 4mm stackable leads.

The kits are supplied in polystyrene trays that keep the units organised. Designed as a resource for the teaching



of introductory electricity, these kits include a well-structured instructional manual.

Type	Order code	1+
Basic kit	<b>52-4207</b>	27.55
Comprehensive kit	<b>52-4092</b>	132.05

568089



### Electricity Class Pack



A cost-saving classpack containing a selection of commonly used electrical accessories.

- Cost saving over buying parts separately
- Popular parts can be topped up
- Packed in a Grattells storage tray with lid
- Please see individual product descriptions for full details
- Supplied as a **pack**

#### Classpack contains:

Order code	Qty	Description	Order code	Qty	Description
<b>41-0125</b>	10	3.5V bulbs	<b>75-0180</b>	5	Toggle switch
<b>18-0125</b>	5	2x AA battery holders	<b>76-0100</b>	5	Slide switch
<b>41-0070</b>	5	Bulb holders	<b>78-0115</b>	5	Push on/off switch
<b>37-0140</b>	5	Motors	<b>78-0112</b>	5	Push to make switch
<b>18-0105</b>	5	Battery snaps	<b>35-3610</b>	5	Buzzer
<b>17-0350</b>	1	Crocodile leads (Pack of 10)	<b>14-0430</b>	1	Grattells tray
<b>01-0102</b>	5	Wire	<b>14-0436</b>	1	Lid for tray

Type	Order code	1+
Electricity classpack	<b>70-1012</b>	40.51

078013



### Demonstration Dynamo with Hand Pulley

This working model dynamo is mounted on a 200 x 125mm base plate, which also supports a 125mm diameter hand-driven pulley. The pulley is coupled, via a rubber belt, to a smaller pulley on the dynamo shaft, providing a step-up ratio of rotational speed.

Electrical output is via a pair of 4mm sockets and a light emitting diode is provided as a simple output indicator. The model can also be used as a motor when connected to a 6 to 8V DC supply (not included).

- Electrical output via 4mm terminals
- LED output indicator
- Can be used as a demonstration motor (requires 6 to 8V DC power supply)
- Includes instruction manual
- **Eisco type PH1246**

Type	Order code	1+
Demonstration dynamo	<b>52-3443</b>	27.88

565590

**No minimum order value  
UK mainland only**



### Rheostats



Useful for a variety of laboratory demonstrations, these rheostats provide a variable resistance in electrical circuits.

Oxidized constantan wire is wound on a vitreous enamelled tube. A sliding contact carriage, mounted on the slide bar, carries a phosphor bronze contact for long life. The rheostats have three binding posts with 4mm sockets for electrical connections: one at each end of the winding and another at the end of the slide bar.

- Available in a range of resistance values

Resistance in Ohms	Order code	1+
20	<b>52-3337</b>	20.66
37	<b>52-3336</b>	19.88
55	<b>52-3334</b>	18.43
125	<b>52-3335</b>	20.66

565527



### Van De Graaff Generator Motor or Hand Driven



These Van De Graaff generators have been specially designed for electrostatic experiments, and where a source of high voltage is required.

The generators are mounted on a stable base along with a choice of a hand-cranked pulley or a smooth-running AC motor.

- Develop voltage up to 200kV, depending on ambient conditions
- Spark length up to 60mm
- Sphere: aluminium
- Charge collecting belt: silicon rubber with excellent insulation resistance
- Belt-tracking easily adjusted
- Acrylic shaft allows for full visibility
- Charge collecting combs: aluminium mesh, clearly visible
- Connections: 4mm sockets in dome and base
- Discharger: spherical 100mm dia., with insulated handle and 4mm sockets
- **52-3416** can be operated by hand, or from a 110 or 220V AC mains supply
- **52-3636** is operated by hand only

Drive method	Order code	1+
Motor or hand	<b>52-3416</b>	124.18
Hand only	<b>52-3636</b>	101.12

565575



## Magnet Electricity Kit

Covering the needs of the National Curriculum Science for **Key Stages 1 & 2**, this unique set uses the force of magnets to make all connections between bulbs, switches, motors and buzzers.

- Connections are made using transparent wires, to show the copper core and bases are clear, allowing pupils to observe the path of electricity, right to the component
- Kit includes 6x bases, 2x MES bulbs and holders, 1x festoon bulb, 1x buzzer, 1x push-to-make switch, 1x motor, 10x Magleads, 2x crocodile clips, length of resistance wire, battery magnets and teachers notes
- Suitable for **Key Stages 1 & 2** (ages 5 to 11)
- Supplied as a **pack**

Requires 3x C cells, (not included).

Type	Order code	1+
Magnetic connections kit	<b>17-1506</b>	37.51

070757



## Demonstration Moving Coil Meter

Used to demonstrate the working principle of AC or DC ammeters or voltmeters, the meter is housed in a 300 x 150 x 30mm ABS plastic case with glass front and rear panels.

Exchangeable scales with built-in shunts are available separately that allow the meter to measure higher voltage and current.

- Moving coil type
- Accuracy of  $\pm 2.5\%$
- Basic sensitivity 5mA
- 100mV f.s.d. (full scale deflection)
- **Eisco type PH1116**

No scales are included with the meter.

Exchangeable scales with built-in shunts are available separately that allow the meter to measure higher voltage and current.

Type	Order code	1+
Demonstration meter	<b>52-3338</b>	39.49
Scale - 1V	<b>52-2999</b>	6.21
Scale - 0 to 1A	<b>52-3339</b>	6.21

565528



## LEDs



### Education LED Pack

A considerable range of LEDs and LED related products are neatly packaged in this classroom kit.

- All the pieces come in re-sealable polythene bags
- Offers a significant saving over separately bought items
- Storage box with compartment tray and lid
- Dimensions of the box: 43cm x 31cm x 7cm
- Suitable for all ages
- Total number of components = 680
- Supplied as a **pack**

Technical specification

1x 5mm red LED (pack 100)	<b>55-1790</b>	1x 3mm green LED (pack 100)	<b>55-1772</b>
1x 5mm green LED (pack 100)	<b>55-1792</b>	1x 3mm yellow LED (pack 100)	<b>55-1774</b>
1x 5mm yellow LED (pack 100)	<b>55-1794</b>	1x LED tester	<b>55-0000</b>
25x Flashing 5mm red LED	<b>55-0140</b>	1x Miniature LDR	<b>58-0134</b>
25x Flashing 5mm green LED	<b>55-0142</b>	1x Shallow tray	<b>14-0430</b>
25x Flashing 5mm yellow LED	<b>55-0144</b>	1x Tray lid	<b>14-0436</b>
1x 3mm red LED (pack 100)	<b>55-1770</b>	1x Insert 8 compartment	<b>14-0443</b>
<b>Total no. of components = 680</b>			

Type	Order code	1+
Education LED pack	<b>13-0122</b>	46.64

065946



## Miniature 3mm LEDs

A range of industry standard 3mm round LEDs housed in a diffused coloured package.

- Viewing angle 60°
- Supplied in **packs of 100 or 1000**

Technical specification

Colour	Wavelength (nm)	Lum. int. (mcd) @ I <sub>f</sub> (20mA)	I <sub>f</sub> max. (mA)	V <sub>f</sub> typ. (V)	V <sub>f</sub> max. (V)	Order code
Red	690	10	50	2	2.4	<b>55-1770/55-1778</b>
Bright red	643	100	30	1.7	2.6	<b>55-1776/55-1784</b>
Yellow	590	50	50	2	2.4	<b>55-1774/55-1782</b>
Green	572	28	20	2.2	2.5	<b>55-1772/55-1780</b>
Blue	470	80	30	3.3	3.8	<b>55-1762</b>
White	x: 0.31, y: 0.30*	120	30	3.3	3.8	<b>55-1766</b>

\* Chromaticity coordinates



Price per pack of 100

Colour	Order code	1+	10+	25+
Red	<b>55-1770</b>	10.61	7.90	7.00
Bright red	<b>55-1776</b>	9.25	6.86	6.05
Yellow	<b>55-1774</b>	11.79	8.92	
Green	<b>55-1772</b>	12.29	8.92	7.86
Blue	<b>55-1762</b>	19.46	15.12	
White	<b>55-1766</b>	19.46	15.12	

Price per pack of 1000

Colour	Order code	1+	5+
Red	<b>55-1778</b>	59.76	48.50
Bright red	<b>55-1784</b>	63.27	51.82
Yellow	<b>55-1782</b>	85.01	66.66
Green	<b>55-1780</b>	85.01	66.66

064821

## Circuit Components



### Essential Tool Pack

Your chance to buy a selection of essential hand tools, whilst also making a substantial saving.

- Supplied in a handy Grattnell's storage tray with clip-on lid
- Total number of tools = 18



Kit contains:

3x Economy side cutter	<b>85-0205</b>	3x Slotted screwdriver 100 x 5.5mm	<b>86-6416</b>
3x Economy snipe nose plier	<b>85-0225</b>	3x Pozidriv screwdriver 75mm x Pz1	<b>86-6424</b>
3x Light duty wire stripper	<b>86-0350</b>	1x Shallow tray	<b>14-0430</b>
3x Flat blade screwdriver 100 x 3mm	<b>86-0405</b>	1x Tray lid	<b>14-0436</b>

Type	Order code	1+
Tool pack	<b>13-0130</b>	30.68

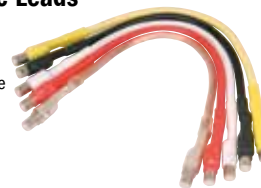
065950



## Shaw Magnets Magileads Magnetic Leads

Magileads are electrically conductive wires, with tiny magnets fitted at either end, which are used to provide an instant and effective electrical connection. For children presented with a battery, bulb and a couple of Magileads, making a circuit could not be easier.

- No stripping, cutting or use of any sort of mechanical joint is required
- Great primary school product
- Supplied in **packs of 10**



Type	Order code	1+
MagLeads 150mm	<b>17-1500</b>	5.90
MagLeads 300mm	<b>17-1502</b>	6.60

060908



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\* See Terms & Conditions for full details

## Rapid

### Crocodile Lead Pack

A pack of 460mm long crocodile clip leads. Available in either a **pack of 10** leads in 5 colours, or a **pack of 20** leads in red and black.

- Terminated at each end with a vinyl covered crocodile clip
- Ideal for use as test clips

Type	Quantity	Order code	1+	10+
Assorted	Pack 10	<b>17-0350</b>	3.03	2.37
Red/black	Pack 20	<b>17-0345</b>	5.50	4.59

063868

## TruConnect

### 4mm Stackable Plugs

These 4mm plugs have a 4mm socket in the rear providing an in-line stacking facility.

- The lead wire is clamped in position by a screw
- Nickel plated brass insert with stainless steel plug spring
- 30A rating
- Spare screws are available

MQQ 2				
Type	Order code	2+	100+	500+
Black stackable plug	<b>17-0400</b>	0.82	0.593	0.521
Blue stackable plug	<b>17-0405</b>	0.82	0.593	0.521
Green stackable plug	<b>17-0410</b>	0.82	0.593	0.521
Red stackable plug	<b>17-0420</b>	0.82	0.593	0.521
White stackable plug	<b>17-0425</b>	0.82	0.593	0.521
Yellow stackable plug	<b>17-0430</b>	0.82	0.593	0.521

Price each				
Type	Order code	1+	5+	10+
Spare screws (Pack of 25)	<b>17-0398</b>	1.31	1.03	0.939

063885

## TruOhm

### Preset Potentiometer Kit



A pack containing a total of 110 miniature horizontal preset potentiometers.

- Each value individually packed
- A total of 13 different values

See [www.rapidonline.com](http://www.rapidonline.com) for suitable storage cabinets.

Technical specification				
5 x 100R	10 x 1K	15 x 10K	15 x 100K	10 x 1M
5 x 200R	10 x 2K	5 x 20K	5 x 200K	
5 x 500R	10 x 5K	10 x 50K	5 x 500K	

Type	Order code	1+	5+
Preset potentiometer kit	<b>13-0225</b>	13.10	10.94

063267

## SCI PARTS

### Standard Toggle Switches

Low-cost standard size toggle switches.

- Complete with On/Off plate
- Rated at 250V 1.5A
- Panel cut-out 12mm
- These switches are not recommended for industrial applications



MQQ 5 - In Multiples of 5				
Type	Body dim.	Order code	5+	10+
SPST	25 x 14 x 14	<b>75-0180</b>	0.877	0.813

Price each				
Type	Body dim	Order code	1+	10+
DPDT	28 x 18 x 14	<b>75-0185</b>	0.907	0.839

030255

## Rapid

### Miniature Slide Switches

A miniature slide switch with solder tag connections and break before make DPDT contacts.

- Suited to a wide range of miniature electronic equipment
- Contacts rated at 0.3A, 125V AC
- Fixing centres 19mm
- 2x M2 fixing holes



MQQ 10 - In Multiples of 5				
Type	Order code	10+	100+	500+
DPDT slide switch	<b>76-0100</b>	0.30	0.202	0.159

030266

## Rapid

### Standard Slide Switches

Standard slide switches with solder tag connections and break before make DPDT contacts.

- Also available in centre off
- Suited to a wide range of miniature electronic equipment
- Contacts rated at 0.3A, 125V AC
- Fixing centres 28mm



MQQ 5 - In Multiples of 5				
Type	Order code	5+	100+	500+
DPDT Std. slide	<b>76-0105</b>	0.356	0.287	0.239
DPDT Centre off slide	<b>76-0110</b>	0.334	0.251	0.209

030267

## Rapid

### Miniature Push-button Switches



A range of low-cost, miniature push to make and push to break switches that are available in various button colours.

- Ideal for school projects and prototyping
- Non-locking
- Rated 125V AC 250mA
- Panel cut-out 7mm
- Dimensions 28mm long, ø10.5mm

**Note:** These switches are not recommended for industrial applications.

MQQ 10 - In Multiples of 10				
Colour	Order code	10+	100+	500+
<b>Push to make</b>				
Black	<b>78-0118</b>	0.246	0.21	0.193
Red	<b>78-0100</b>	0.239	0.203	0.187
Blue	<b>78-0119</b>	0.246	0.21	0.193
Green	<b>78-0120</b>	0.246	0.21	0.193
White	<b>78-0121</b>	0.246	0.21	0.193
Yellow	<b>78-0122</b>	0.246	0.21	0.193
<b>Push to break</b>				
Black	<b>78-0105</b>	0.246	0.21	0.193
Red	<b>78-0123</b>	0.246	0.21	0.193

071607

## TCS

### NTC Disc Thermistors

A range of miniature disc thermistors for general purpose applications such as temperature measurement and thermal compensation circuitry.

- The thermistors are clearly coded and have a wide working temperature range of -30°C to +125°C and a tolerance of 10%



Technical specification					
Resistance at 25°C	Approx. resistance @ 100°C	Max. current @ 25°C	B-Constant	Thermal time constant	Order code
100Ω	11Ω	-	3200°K	20s	<b>61-0398</b>
300Ω	24Ω	115mA	3500°K	22s	<b>61-0400</b>
1kΩ	90Ω	70mA	3800°K	22s	<b>61-0405</b>
5kΩ	300Ω	30mA	3950°K	21s	<b>61-0410</b>
20kΩ	1kΩ	20mA	4250°K	23s	<b>61-0415</b>
100kΩ	5kΩ	10mA	4400°K	24s	<b>61-0420</b>

MQQ 5				
Type	Order code	5+	25+	100+
100Ω	<b>61-0398</b>	0.527	0.394	0.315
300Ω	<b>61-0400</b>	0.349	0.27	0.199
1kΩ	<b>61-0405</b>	0.394	0.315	0.228
5kΩ	<b>61-0410</b>	0.394	0.315	0.228
20kΩ	<b>61-0415</b>	0.394	0.315	0.228
100kΩ	<b>61-0420</b>	0.349	0.27	0.199

031916

## eisco

### Laboratory Resistance Units

Single resistors encased in easy-to-use plastic enclosures with 4mm terminals. These resistance units are useful for physics classroom demonstrations or experiments in electricity and electronics laboratories.



- Connect to other resistance units or circuit elements with standard 4mm leads (not included)
- Can be used with 4mm stackable plug leads, spade terminals or bared wires
- Overall dimensions: 50 x 50 x 40mm
- Eisco PH1143 series**

Resistance	Order code	1+
1 Ohm	<b>52-3481</b>	1.19
2 Ohms	<b>52-3483</b>	1.10
5 Ohms	<b>52-3486</b>	2.17
10 Ohms	<b>52-3482</b>	2.65
50 Ohms	<b>52-3487</b>	2.08
200 Ohms	<b>52-3485</b>	1.19

565606

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## Dataloggers

### LogIT<sup>TM</sup> Explorer



The **LogIT Explorer** is the complete data logging solution for primary and lower secondary education. Utilising the latest technology and design it provides the ideal link between real hands-on science and IT to enhance and develop science for young students.

The explorer has been designed to meet the requirements of the current teaching curriculum as well as allowing for future education needs. Available in single versions as well as in two five-pack versions containing extra sensors (please see technical specifications for details).

- An all-in-one solution for data logging which can be used for many different experiments
- Designed to be used by young people, with simple to use controls (e.g. green button for GO, red button for STOP), as well as familiar stereo headphone type plugs for sensors, and a lanyard eyelet for security
- 3 built-in sensors for light, temperature and sound, plus 3 ports for a range of Explorer external sensors, up to 3 sensors can be used simultaneously
- Light sensor can also be used to time and calculate the speed of moving objects as well as a motion detector
- Results can be viewed on the Explorers LCD display or stored for subsequent downloading to computer (via supplied software)
- Software for Explorer and computer fully upgradeable via a simple internet link.
- Additional sensors available
- Suitable for **Key Stages 2 & 3** (ages 7 to 14)

Powered by 4x AA batteries or by connection to a computer via USB connection.

#### Technical specification

Temperature range	-10°C to +50°C
Sound level range	50dB to 100dB
Light level range	0 to 20,000 Lux

#### PC requirements

Windows USB port - Win 98SE/2000/NT/XP/7/8  
Mac - OS 9.2/OSX/10.4+  
Linux

#### Single pack includes:

Explorer datalogger with built-in sound, temperature and light sensors  
Single user data logging software CD  
Computer connection cable  
Fibreoptic light sensor cable  
Full instructions and teacher resource book  
Foam insert

#### USB Five pack includes:

5x USB port Explorer dataloggers  
5x USB cables  
5x Explorer books with 14 Explorer investigations  
5x Fibreoptic light sensors  
1x Explorer site licence with CD and manual  
Foam insert

#### USB Five plus pack includes:

5x USB port Explorer dataloggers  
5x USB cables  
5x Explorer books with 14 Explorer investigations  
5x Fibreoptic light sensors  
1x LogIT Lab for Explorer site licence with CD and manual  
1x Explorer temperature sensor  
1x Explorer controller set with lamp, buzzer, motor and fan  
1x Explorer interactive site licence CD  
Foam insert

Type	Order code	1+
USB Port windows	85-2661	166.25
Windows USB 5 pack	85-2659	809.38

073293

## Rapid

### Mini USB Dataloggers



This range of mini USB dataloggers are an indispensable tool for investigations and experiments where there is a requirement to record temperature, light level, voltage or acceleration.

The dataloggers are in the form of a USB stick, so no cables are required to retrieve data or configure the device. The sensor, memory and battery are all encapsulated on a single circuit so no additional hardware is required.

Simply plug the datalogger into your PC or laptop and configure it. Unplug it and position it where you want it to log. At the end of the logging period, plug it back into your PC or laptop to retrieve your data.

- 4 versions available: light, temperature, voltage and acceleration
- Replaceable battery - no cables required
- Battery life approx. 2 to 3 years
- Recommended temperature range -20 to +60°C
- Can be used outside or in a liquid, if protected in a self-seal bag or container
- Simple to program using the free downloadable software

Type	Order code	1+
Temperature	52-3300	17.89
Light level	52-3301	17.89
Voltage	52-3302	26.40
Acceleration	52-3303	24.89

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### EL-USB-LITE Low Cost USB Temperature Data Logger

The **Lascar EL-USB-LITE** is a **Low Cost USB Temperature Data Logger** with a



measurement range of -10°C to +50°C (+14°F to +122°F) and a fixed sample rate of 30 minutes. The data logger can store over 4,000 readings and is supplied with a coin-cell battery, which provides approximately 1 month's usage. Press the button and a red/green LED indicates whether a preset alarm level has been recorded.

The data logger is configured, and data downloaded, by plugging the EL-USB-LITE into a PC's USB port and running the supplied control software under 32-bit and 64-bit versions of Windows 7, 8 and 10. The downloaded data can be graphed, printed and exported to other applications.

#### What's in the Box?

Lascar EL-USB-LITE  
CR 1620 Battery

For further details see the FAQ at [www.lascarelectronics.com](http://www.lascarelectronics.com).

- -10°C to +50°C (+14°F to +122°F) measurement range
- 30 minute sample rate
- USB interface for set-up and data download
- User-programmable alarm thresholds
- Status indication via red and green LEDs
- Supplied with replaceable internal lithium battery
- Manufacturer's part: **Lascar EL-USB-LITE**

#### Technical specification

	Minimum	Typical	Maximum
Measurement range	-10°C (+14°F)	-	+50°C (+122°F)
Internal resolution	-	1°C (2°F)	-
Accuracy (overall error)	-	-	±2.5°C (±4.5°F)
Logging rate	every 30 minutes	-	-
Operating temperature range	-10°C (+14°F)	-	+50°C (+122°F)
Battery Life	1 Month	-	-

Type	Order code	1+
Lascar EL-USB-LITE	87-6212	19.39

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### USB Temperature Data Logger

The **Lascar EL-USB-1**

is a compact, easy to use data logger that can record up to 16,382 temperature readings and then download the data when the unit is plugged straight into a PC's USB port. Using the included, purpose designed software the collected data can be graphed, printed and exported, as well as being used for setting up the data logger by adjusting the logger name, °C or °F measurement, logging rate, high and low alarms and start date and time. The unit and software combination is ideal for use in a wide range of environmental and process monitoring applications, both indoor and outdoor and is especially suitable for unattended monitoring.

- Temperature measurement range -35°C to +80°C
- Unit set-up and data download via simple USB connection
- Includes Windows software for unit configuration and data manipulation
- Suitable for use with 32-bit and 64-bit versions of Windows 7, 8 and 10
- Programmable sample rates
- LED indication for unit status
- Two user-programmable alarm thresholds
- Data stored in non-volatile memory
- Powered by 1x ½ AA 3.6V lithium battery (supplied) - for suitable replacement see **Batteries** section
- Translucent cap for protection to **IP67**

#### Technical specification

Measurement range	-35°C to +80°C (-31°F to +176°F)
Internal resolution	0.5°C
Accuracy	± 0.5°C typical
Logging rates	10s, 1 mins, 5 mins, 30 mins, 1 hr, 6 hr, 12 hr
Operating temperature range	-35°C to +80°C (-31°F to +176°F)
Battery life	3 years @ 25°C and 1 mins. logging rate
PC requirements	32-bit and 64-bit versions of Windows 7, 8 and 10

Type	Order code	1+
Data logger temp	85-3410	34.87
D/logger +calibration	87-6250	76.53

080136



### Laboratory Timer and Timing Gate



A precision digital timer designed to measure the time interval between any two events with high accuracy.

The timer has four operating modes: manual, free-fall mode, timing gates mode and any other triggering start and stop.

The timer has a built-in power source for timing gates and the coil for 'g' by free fall apparatus.

- Display: LED 14mm
- Suitable for use with 'g' by free-fall equipment
- Supplied with timing gates & instruction manual
- **Eisco type LBTM**

Type	Order code	1+
Timer & timing gates	52-3434	81.91

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**Rapid**  
...where price meets quality