



UNITED

SCIENTIFIC SUPPLIES, INC.



EDUCATIONAL PRODUCTS

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Welcome to United



UNITED SCIENTIFIC SUPPLIES, INC.



United Scientific Supplies, Inc. is a family owned and operated business. Our products are manufactured in modern factories worldwide and distributed from our warehouse in Waukegan, Illinois. We have been serving the needs of the scientific community **since 1992**, and we look forward to working with you.

Our Mission

Our mission is to promptly deliver quality products at good prices. Our commitment to carry **large amounts of inventory** has allowed us to consistently meet and exceed customer expectations.

For over twenty years we have strived to offer the best quality products on the market. Our merchandise is **guaranteed** against defects in materials or workmanship for up to **one year** after the ship date. Most of our products are normally available for immediate shipping from inventory.



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UnitedScientific

Customer Service

Customer Service has always been a vital part of our company. You can expect personalized attention, fast confirmation of your orders, and quick responses to any questions that you may have. Our **experienced customer service team** is available to answer your questions promptly and provide you with friendly, efficient support.

We **custom manufacture** a wide variety of products that are not included in our catalog due to exclusive arrangements with our customers. We offer several advantages in custom manufacturing including economical tooling costs, short lead times, and extremely competitive pricing. We can also **customize a product with your name or logo**. Please contact us to discuss your individual needs.

To Place Your Order

Send orders to us via:

Email: orders@unitedsci.com

Fax: 847-336-7571

We'd also be happy to connect with you using your EDI platform. Contact us for details.

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We are your warehouse.

Our products are sold **only through our network of authorized dealers**. Count on us to maintain a generous supply of your most popular products. We keep our inventory levels high so you can be confident that **items will be in stock** when you and your customers need them.

We focus on strict quality control so our products **deliver consistent, reliable results** for your customers. We are here to support your sales efforts by offering excellent value, professional service, and quick delivery.

It has been a privilege to serve our dealers since 1992. Our business continues to expand, in large part because of long-time partnerships. Your continued loyalty is a key element of our ongoing success. **Thank you for your business!**



The products offered in this catalog are general use products designed for and intended primarily for use by persons at least 13 years old. Exceptions are specially noted on the pages where they are displayed. The products are not toys and are intended for educational laboratory use only. They should be used under qualified adult supervision.

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UNITED SCIENTIFIC SUPPLIES, INC.

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Meet our Scientists

We have long-standing relationships with many highly regarded scientists, some of whom have collaborated with us to bring products to the science education market. Below are profiles of a few of our collaborators.



Dr. Martin Taylor

Martin is a PhD Physicist and an equipment designer who has worked in the educational field for more than forty years. His early science career involved research in ultra-high-resolution microscopy at Cambridge University, U.K. and mass spectrometry at Bonn University, Germany. He quickly developed an interest in equipment for teaching physical sciences, and after a period working in the R&D area of a large German educational equipment manufacturer, he spent two decades as an executive and equipment specialist for Chicago-based educational suppliers. Martin has been enjoying a close cooperation with United Scientific Supplies since 2006, where his experience and technical expertise find application in developing new equipment, manual writing, and quality assurance activities.



Kenneth Rainis

Ken is a microbiology consultant, science education materials developer, and college science educator. He attended the University of the West Indies, Kingston Jamaica with a focus in tropical biology, graduated from Quincy University with a B.S. in Biology / Chemistry, and received an advanced degree in Zoology (Protozoology) from Iowa State University in 1976. Ken has worked as a microscopist, photographer, and natural science illustrator. Ken is also an award-winning author of 15 books, as well as numerous science educational products including investigation kits, posters, videos, and software. His partnership with United Scientific Supplies over the past few years, particularly his work creating content for NextGen STEM kits, has resulted in the development of many new, innovative products.



Patrick Traster

Patrick is a scientist and science educator who has been consulting and developing products with United Scientific Supplies for over 20 years. His interest in the field of genetics and, more specifically, recombinant DNA stem from both his educational background (a Masters in Biochemistry), as well as his time as a researcher for a large contract laboratory. His experiences teaching at mathematics/science centers and college/high school classrooms helped him identify the need for visual and tactile models to teach abstract concepts in biology and chemistry. His expertise and the formation of his relationship with the United family has led to a number of products that help teachers improve student learning while saving valuable lesson preparation time.



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Biology

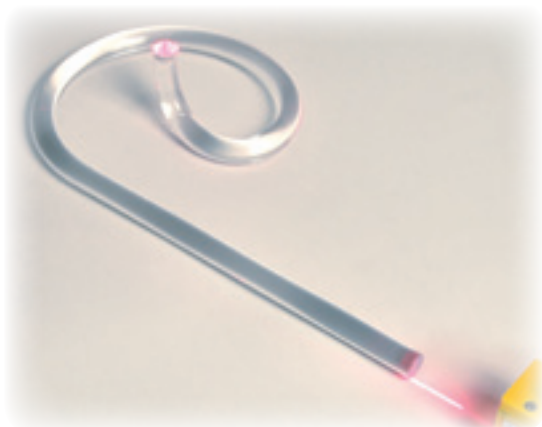
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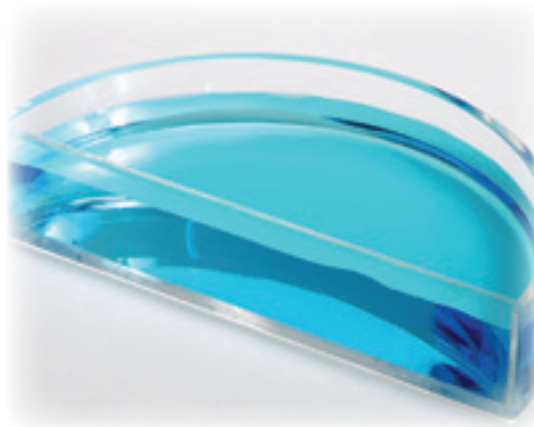
Featured Products

Lumiroad (Light Pipe)



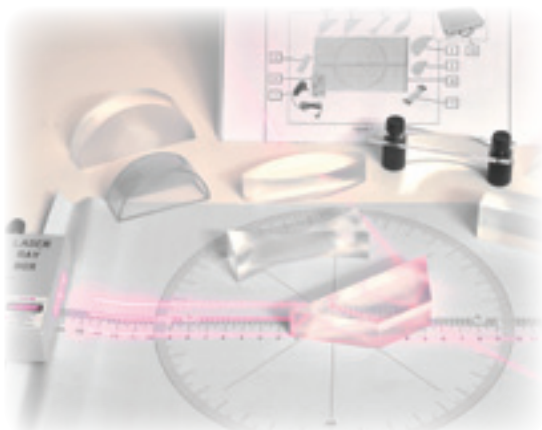
Demonstrate the principle of fiber optics using this curled clear acrylic rod. [See full description on page 19.](#)

Refraction Cells



Uniform clear acrylic walls provide distortion-free viewing from any angle. [See full description on page 21.](#)

Laser Optical Disk Set



Introductory ray optics set with a laser ray box, acrylic lenses, and adjustable mirror. [See full description on page 21.](#)

Optical Bench Set



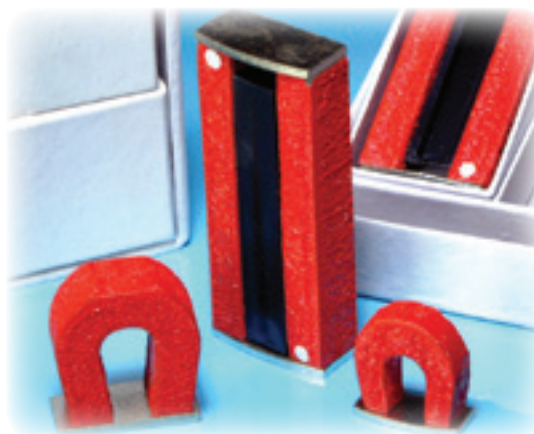
Bench is 96cm long and includes mounted optics, illuminator and power supply. [See full description on page 24.](#)

Spectrometer with 30mm Optics



Large diameter optics give brighter line images and make precise measurements easy. [See full description on page 25.](#)

Alnico Magnet Set



Powerful set of bar magnets and two different sizes of horseshoe magnets with keepers. [See full description on page 31.](#)



Featured Products

Electromagnet Kit



Learn about principles of electromagnets by building bar-shaped and U-shaped versions. [See full description on page 36.](#)

Electricity and Magnetism Kit



29-piece activity kit with components mounted on sturdy bases with screw terminals. [See full description on page 37.](#)

Hand Held Generator



Clear housing gives students a hands-on view of the Second Law of Thermodynamics. [See full description on page 38.](#)

Forces and Simple Machines Kit



Includes a comprehensive lab activities manual for performing 15 designed experiments. [See full description on page 50.](#)

Stirling Engine



Memorable demonstration of converting heat energy into mechanical work. [See full description on page 57.](#)

New York Demonstration Balance



Complete set to show basic physics principles such as levers and center of gravity. [See full description on page 58.](#)

Featured Products



Drilled Ball Set



Six different materials, with countersunk holes, for use in pendulum experiments. [See full description on page 60.](#)

Wave Motion Demonstrator



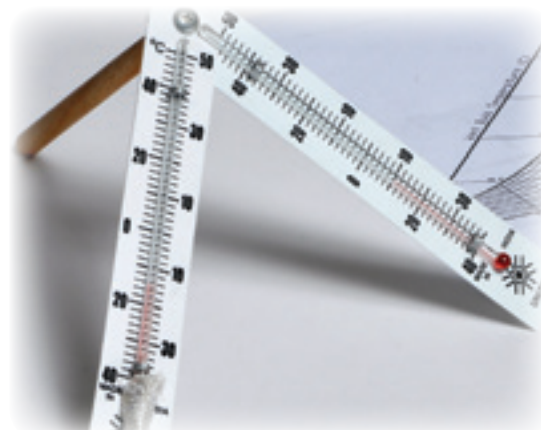
Demonstrate running waves, standing wave patterns, wave reflection and more. [See full description on page 63.](#)

Density Cube Set of 10



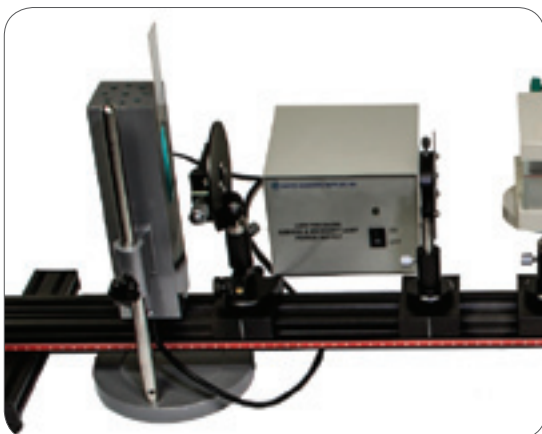
Convenient set of square density cubes in a sturdy wooden storage box. [See full description on page 66.](#)

Sling Psychrometer



Dry and wet bulb thermometers on a wood handle to measure relative humidity. [See full description on page 72.](#)

Ultrasonic Grating Apparatus



Explore how sound and light waves interact, and determine the speed of sound in liquids. [See full description on page 75.](#)

Stainless Steel Hooked Weight Sets



Individually calibrated weights from 5g up to 1000g in high quality stainless steel. [See full description on page 89.](#)



Learning to Measure STEM Kit



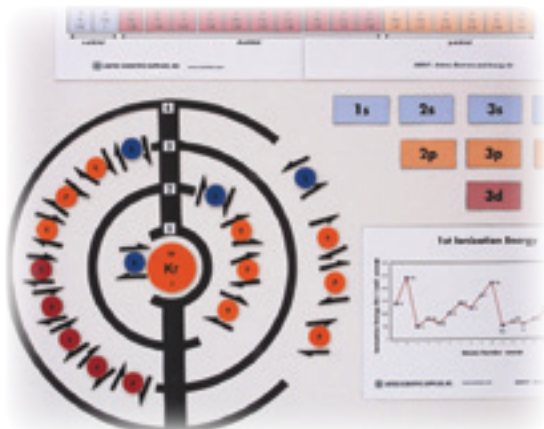
Students learn to measure length, distance, volume, mass, temperature, and time. [See full description on page 101.](#)

Deluxe Chemistry Assortment



Comprehensive selection of materials most commonly used in general chemistry labs. [See full description on page 108.](#)

Atoms, Electrons and Energy Kit



Large magnetic model helps teach periodic trends, ionization and electronegativity. [See full description on page 112.](#)

Featured Products

Light Technology Exploration Packs



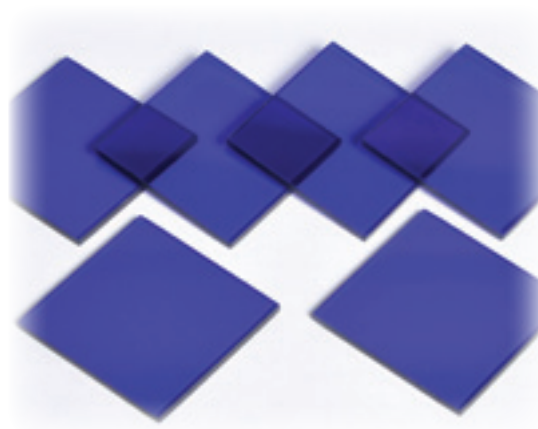
Attention-getting hands-on STEM activities correlated to NextGEN standards. [See full description on page 107.](#)

Organic Chemistry Glassware Kit



Assortment includes 16 pieces of jointed glassware for preparations to 150g. [See full description on page 111.](#)

Cobalt Glass Plates

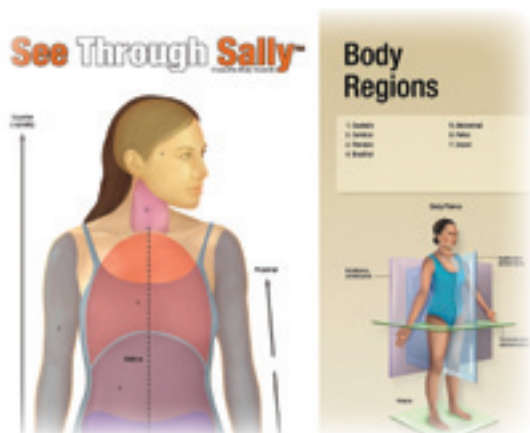


Dark blue cobalt glass filter for use in sodium and potassium flame tests. [See full description on page 114.](#)

Featured Products



See-Through Sally



Human anatomy taught with 12 large body systems charts and clear plastic overlays. [See full description on page 118.](#)

Human Brain Model, 8-Part



High-quality model with fold-out laminated color guide to test student knowledge. [See full description on page 119.](#)

Human Foot Model



Mounted on a sturdy plastic base, with flexible bones to show movement. [See full description on page 120.](#)

Micro Centrifuge Tubes



Maximum RCF 20000 polypropylene tubes are RNase, DNase and Pyrogen free. [See full description on page 148.](#)

Heavy Duty Clamp



PVC-coated prongs open to 4", total length 10.75", with stainless steel extension rod. [See full description on page 152.](#)

Stainless Steel Crucibles



Can withstand temperatures from -180°C to 800°C. Covers included. [See full description on page 157.](#)



Plastic Desiccator with Clear Base



Polycarbonate dome and bottom provide increased viewing clarity. [See full description on page 163.](#)

Featured Products

Ground Glass Joint Boiling Flasks



Borosilicate glass with uniform wall thickness, available with flat or round bottoms. [See full description on page 167.](#)

Porcelain Mortars & Pestles



Deep form mortars are glazed on the outside and include oversized pestles. [See full description on page 182.](#)

Bottle Top Dispensers



Easy-to-use, individually calibrated and certified in an ISO accredited laboratory. [See full description on page 189.](#)

Polypropylene Laboratory Scoops



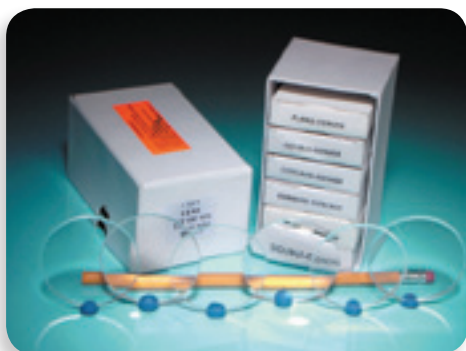
Versatile scoops are autoclavable, with molded-in capacities for easy reference. [See full description on page 198.](#)

Neoprene Stoppers



Withstand petroleum products and oils as well as most inorganic acids and bases. [See full description on page 208.](#)

Demonstration Lens Set, Glass



The set contains six lenses, one each of double convex, plano-convex, concavo-convex, double concave, plano-concave, and convexo-concave lens. Comes in a reusable cardboard storage box.

Available in 38mm, 50mm or 75mm diameters. Lenses in all sets have focal lengths of 150mm.

Item No.	Description
DEMO38	38 mm Demonstration Lens Set, Glass
DEMO50	50 mm Demonstration Lens Set, Glass
DEMO75	75 mm Demonstration Lens Set, Glass

Demonstration Lens Set, Acrylic

The set contains six lenses, one each of double convex, plano-convex, concavo-convex, double concave, plano-concave, and convexo-concave lens. Includes an activity guide and a reusable cardboard storage box.

Item No.	Description
LSTA38	38 mm Demonstration Lens Set, Acrylic
LSTA50	50 mm Demonstration Lens Set, Acrylic
LSTA75	75 mm Demonstration Lens Set, Acrylic



Mirror Set, Glass



A set of six glass spherical mirrors with back surface silvering. Includes three convex and three concave mirrors, all of 50mm diameter. Focal lengths are 50mm, 100mm, 200mm, -50mm, -100mm, and -200mm.

Item No.	Description
MCVSET	Glass Mirrors, Set of 6

Flexible Mirrors, Acrylic

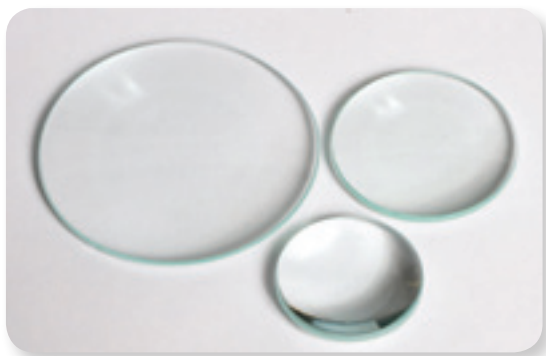
These acrylic double-sided mirrors are flexible and can be used for demonstrating concave and convex properties. Material can be cut easily with scissors. Available in various sizes and as an assortment. Mirror supports not included.

Item No.	Description
MSA2X3-F	Mirrors, Flexible Acrylic, Double sided 2" x 3", pk/15
MSA4X6-F	Mirrors, Flexible Acrylic, Double sided 4" x 6", pk/3
MSA8X11-F	Mirrors, Flexible Acrylic, Double sided 8.5" x 11", pk/4
MSAST6	Mirrors, Flexible Acrylic, Double sided, pk/12 (4 each of 6" x 7-1/2", 3" x 4", and 2" x 3" sizes)

Flexible mirrors can be custom cut and packaged to your specifications.



Individual Glass Lenses



Made from plate glass, with carefully ground and polished optical surfaces and cleanly ground edges.

Diameter	Focal Lengths (mm)	Double Convex Item No.	Double Concave Item No.
38	50	LCV302	LCC302
38	100	LCV304	LCC304
38	150	LCV306	LCC306
38	200	LCV308	LCC308
38	250	LCV310	LCC310
38	300-500*	LCV306**	LCC306**
50	50	LCV502	LCC502
50	100	LCV504	LCC504
50	150	LCV506	LCC506
50	200	LCV508	LCC508
50	250	LCV510	LCC510
50	300-500*	LCV506**	LCC506**
75	50	LCV702	LCC702
75	100	LCV704	LCC704
75	150	LCV706	LCC706
75	200	LCV708	LCC708
75	250	LCV710	LCC710
75	300-500*	LCV706**	LCC706**
100	100	LCV104	LCC104
100	150	LCV106	LCC106
100	200	LCV108	LCC108
100	250	LCV110	LCC110
100	300-500*	LCV106**	LCC106**
125	100	LCV204	LCC204
125	150	LCV206	LCC206
125	200	LCV208	LCC208
125	250	LCV210	LCC210
125	300-500*	LCV206**	LCC206**

* Focal lengths available are 300, 350, 400, 450 and 500mm.

** Please specify focal length when ordering.

We also carry plano-convex and plano-concave lenses. See dealer price list for complete listing. Lenses can also be manufactured to your specifications.

Individual Glass Mirrors



Concave Mirror



Convex Mirror

Optically true glass, with scratch-resistant copper back silvering.

Diameter	Focal Lengths (mm)	Convex Item No.	Concave Item No.
38	25	MCV301	MCC301
38	50	MCV302	MCC302
38	100	MCV304	MCC304
38	150-500**	MCV306**	MCC306**
50	50	MCV502	MCC502
50	100	MCV504	MCC504
50	150-500*	MCV506**	MCC506**
75	50	MCV702	MCC702
75	75	MCV703	MCC703
75	100	MCV704	MCC704
75	150-500*	MCV706**	MCC706**
100	100	MCV104	MCC104
100	150-500*	MCV106**	MCC106**

* Most popular focal length is 150mm. Focal lengths available are 150, 200, 250, 300, 350, 400, 450 and 500mm.

** Please specify focal length when ordering.

Plane Spherical Mirrors



Optically true glass, with scratch-resistant copper back silvering.

Item No.	Description
MPL038	Plane Spherical Mirror, 38 mm diameter
MPL050	Plane Spherical Mirror, 50 mm diameter
MPL075	Plane Spherical Mirror, 75 mm diameter
MPL100	Plane Spherical Mirror, 100 mm diameter

Prism and Lens Set



These superior quality, yet economical, prisms and lenses can be used to teach a wide variety of optical principles. Includes a sturdy wooden storage case and an activity guide.

Contents:

Double convex lens	1
Double concave lens	1
Semi-circular lens	1
Trapezoidal prism	1
Small right angle prism	1
Equilateral prism	1
Large right angle refraction prism	1

Item No.	Description
OPSETG2	Prism and Lens Set of 7, Glass
OPSETP3	Prism and Lens Set of 7, Acrylic

Set of Prisms

Boxed set of high quality acrylic prisms, made from clear acrylic sheet, all sides polished. The set consists of six prisms in a variety of shapes, and an activity guide.

Contents:

Rectangular block, 75mm x 50mm x 15mm	1
Semi-circle, 90mm base x 15mm thick	1
Equilateral prism, 75mm sides, 15mm thick	1
Double convex lens, 90mm long, 23mm at center	1
Double concave lens, 90mm long, 10mm at center	2

Item No.	Description
PSET06	Set of 6 Prisms



Large Demonstration Prism Set, Magnetic



An oversized set of 6 lenses and prisms designed for mounting on a magnetic chalk or marker board. Lenses are about 8" long, so your optics experiments would be clearly visible from every part of the classroom. Each piece in the set has a pre-attached magnetic backing. An activity guide is also included. Set comes in a sturdy wooden storage case. Please note: Laser Ray Box not included.

Contents:

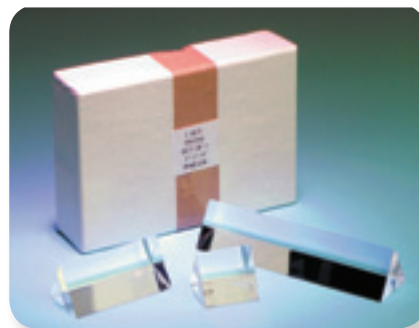
Semi-circular lens	1
Equilateral prism, 75mm sides	1
Double convex lens	1
Double concave lens	1
Single convex lens	1
Single concave lens	1

Item No.	Description
PST620	Large Demonstration Prism Set

Equilateral Acrylic Prism Set

Constructed of clear acrylic with highly polished surfaces, these prisms are ideal for projecting a clear, sharp spectrum. Set of equilateral prisms includes 25mm, 50mm, and 100mm long prisms.

Item No.	Description
PAE124	Equilateral Acrylic Prism Set



Right-Angled Acrylic Prism Set



Constructed of clear acrylic with highly polished surfaces, these prisms are ideal for projecting a clear, sharp spectrum. Set of right-angled prisms includes 25mm, 50mm, and 100mm long prisms.

Item No.	Description
PAR123	Right-Angled Acrylic Prism Set

Optics Set

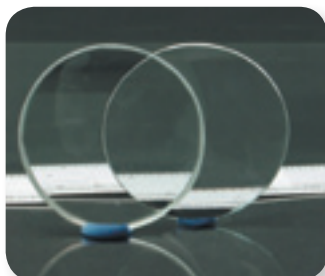
Includes two acrylic lenses, one each of double convex and double concave, and three mirrors, one each of convex, concave and plane. Packed in a cushioned wood storage box.

Item No.	Description
OPSET1	Optics Set

Properties of Acrylic:
Transmission of white light: 92%
Refractive index: 1.48 to 1.5
Haze: 1% to 3%



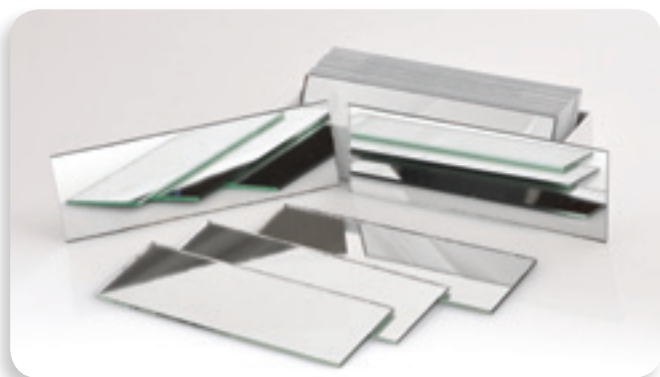
Neutralizing Lens Set



Set of two lenses, one concave and one convex, 38mm in diameter. Both lenses have a focal length of 150mm.

Item No.	Description
NELS38	Neutralizing Lens Set, 38mm diameter

Plane Mirror Strips



All sizes of mirror strips are also available in 1/4" thick glass. Call for prices.

Glass Mirror Strips are made from plate glass about 2mm thick, with a highly silvered back. Acrylic Mirror Strips are about 3mm thick.

Glass Mirror Strips

Item No.	Description	Quantity per pack
MSG2X2	2" x 2"	12
MSG3X1	3" x 1"	12
MSG3X2	3" x 2"	12
MSG4X2	4" x 2"	12
MSG4X4	4" x 4"	12
MSG6X2	6" x 2"	12
MSG6X4	6" x 4"	12
MSW6X4	6" x 4" x 1/4"	6

Acrylic Mirror Strips

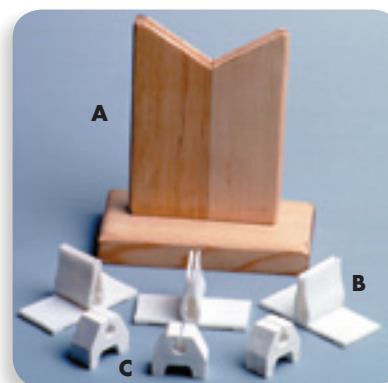
Item No.	Description	Quantity per pack
MSA4X2	4" x 2"	1
MSA4X4	4" x 4"	1
MSA6X4	6" x 4"	1

Mirror Supports

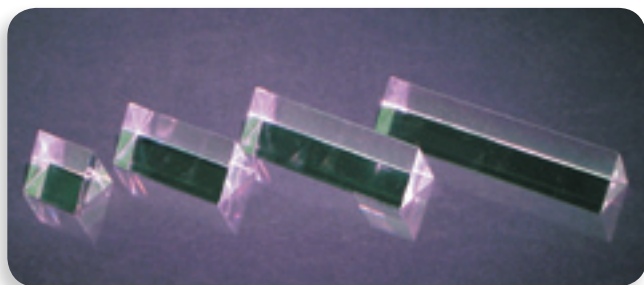
Wood Mirror Support is designed to support spherical mirrors and lenses. This polished wooden support is 5" tall and has a 1.5" V-shaped grooved wedge to hold mirrors or lenses 38mm through 100mm securely in place.

Plastic mirror supports securely hold a mirror in a vertical position on any flat surface. Available in two sizes.

Item No.	Picture	Description
MSW001	A	Wood Mirror Support
MSP001	B	Plastic Mirror Support, pack of 6
MSP002	C	Plastic Mirror Support, pack of 36



Equilateral Prisms



Equilateral prisms made from high quality clear acrylic sheet or glass sheet. Highly polished surfaces.

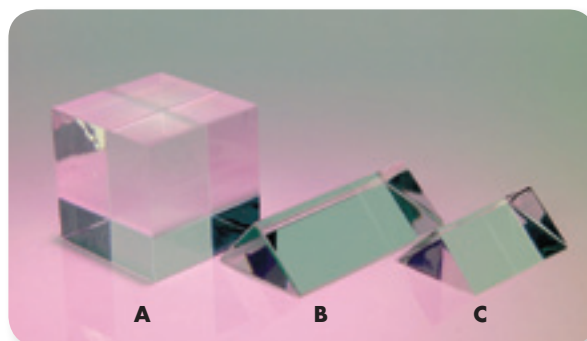
Length	Face Size	Acrylic Item No.	Glass Item No.
25mm	25mm	PAE025	PGE025
50mm	25mm	PAE050	PGE050
75mm	25mm	PAE075	PGE075
100mm	25mm	PAE100	PGE100
125mm	25mm	PAE125	PGE125
150mm	25mm	PAE150	PGE150

Right Angle Prisms

Prisms are manufactured from acrylic or flint glass, and feature polished surfaces. Available in a variety of sizes.

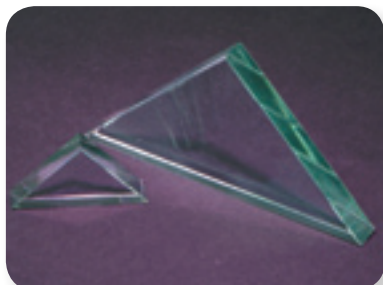
Item No.	Description (Length x Right Angle Side x Hypotenuse)	Picture
PAR048	Acrylic Prism, 50mm x 47mm x 67mm	Not Shown
PAR050	Acrylic Prism, 50mm x 25mm x 35mm	C
PAR075	Acrylic Prism, 75mm x 25mm x 35mm	B
PGR075	Glass Prism, 75mm x 28mm x 38mm	Not Shown
PAR100	Acrylic Prism, 100mm x 25mm x 35mm	Not Shown
PGR10	Glass Prism, 115mm x 12mm x 18mm	Not Shown
CUBA02	Acrylic Cube, 2" sides	A

Additional sizes of right angle prisms are available. Call for details.



**Properties of Flint Glass:
Refractive index: 1.5 to 1.6**

Right Angle Refraction Prisms



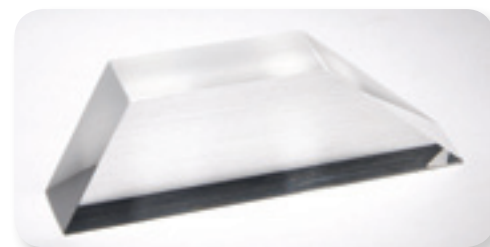
Glass and acrylic right angle refraction prisms feature highly polished surfaces.

Item No.	Description
PFG050	Right Angle Refraction Prism, 32mm x 45mm, Glass
PFG080	Right Angle Refraction Prism, 80mm x 115mm, Glass
PFA080	Right Angle Refraction Prism, 80mm x 115mm, Acrylic

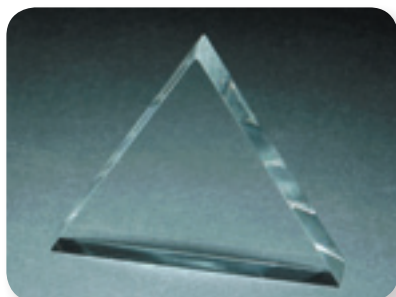
Trapezoid Prism

Clear acrylic trapezoid, with one flat surface frosted to enhance visibility. Bases are 89mm, and 40mm. Faces measure 47mm, and 35mm.

Item No.	Description
PATRAP	Trapezoid Prism



Equilateral Refraction Prisms



Prism measures 75mm long by 9mm thick, available in acrylic or flint glass versions.

Item No.	Description
FAP075	Equilateral Refraction Prism, Acrylic
FGP075	Equilateral Refraction Prism, Glass

Hollow Acrylic Prism



Equilateral prism has 45mm sides. One end has a hole for adding fluids to study refraction and dispersion. Includes a funnel and stopper.

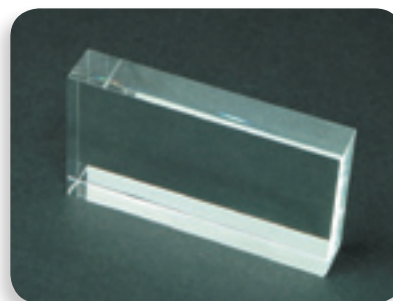
Item No.	Description
PHA045	Hollow Acrylic Prism

Properties of Acrylic:
Transmission of white light: 92%
Refractive index: 1.48 to 1.5
Haze: 1% to 3%

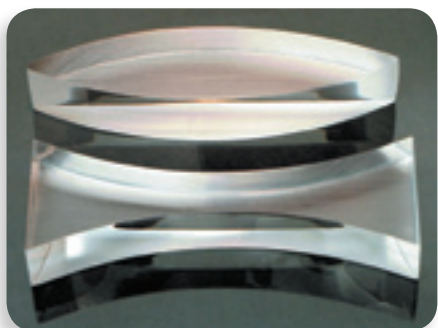
Rectangular Block

Rectangular blocks are available in a variety of sizes and are designed for use as an index of refraction plate.

Item No.	Description
RCB075	Rectangular Block, 75 x 50 x 15mm, Acrylic
RCB100	Rectangular Block, 100 x 75 x 20mm, Acrylic
RCB115	Rectangular Block, 115 x 65 x 20mm, Acrylic
RCB115-G	Rectangular Block, 115 x 65 x 20mm, Glass
RCB125	Rectangular Block, 125 x 65 x 20mm, Acrylic



Acrylic Lenses



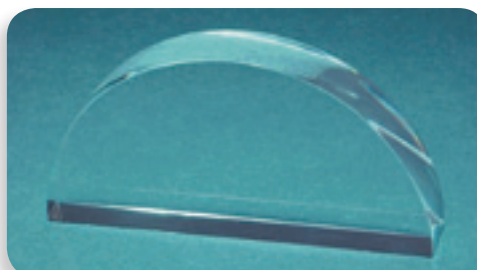
Lenses are made from clear acrylic with one frosted plane surface. Double convex lens is 89mm long, 15mm thick, and 25mm across the beam axis. Double concave lens is 86mm long, 15mm thick, and 18mm wide at the center.

Item No.	Description
PACV86	Acrylic Lens, Double Convex
PACC86	Acrylic Lens, Double Concave

Semi-Circular Lens

Acrylic semi-circular lens has a 75mm base and is 15mm thick.

Item No.	Description
SCL075	Semi-Circular Lens



Economy Optics Kit



**Includes
Activity
Guide**

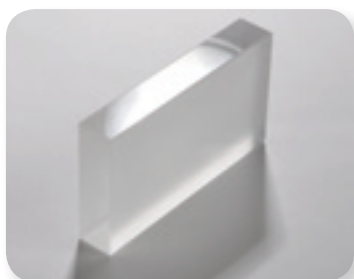
An entire optics set at a great price! Includes everything you need to demonstrate basic principles of light and color. Includes a reusable storage box.

Item No.	Description
OPTKIT	Economy Optics Kit

Contents:

Double Convex lens, 38 mm diameter, glass.	1
Prism, equilateral, 25mm x 50mm, acrylic	2
Double concave lens, 38mm diameter, glass.	1
Plain lens, 38mm diameter, glass.	1
Mirror, square, acrylic	2
Plastic mirror support	2
Wooden lens holder.	1
Beaker, graduated, plastic	1
Flashlight (2 batteries included)	1
Plastic screen, white.	1
Clear glass screen	1
Candle	1
Cellophane square in 5 colors.	5
Activity Guide, containing 20 experiments	1

Glass Block



Rectangular glass block measures 114mm x 63mm x 19mm and includes two frosted sides.

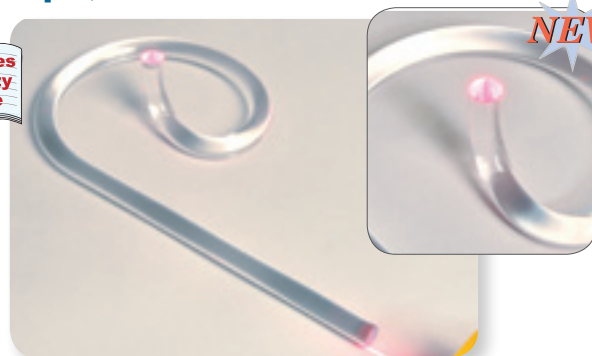
Item No.	Description
RGF114	Glass Block with Two Frosted Sides

Lumirod (Light Pipe)

Excellent tool for demonstrating the principle of fiber optics. The curled 24" long clear acrylic rod conducts light by internal reflection. A flashlight or laser pointer can be used for the demonstration. Includes activity guide.

Item No.	Description
LUMRD24	Lumirod (Light Pipe)

**Includes
Activity
Guide**



Hartl Optical Disc

NEW



**Includes
Activity
Guide**

The United Hartl Optical Disc is a compact apparatus that demonstrates the behavior of optical elements by means of ray paths through clear acrylic models. It consists of a circular 9" diameter graduated disk mounted on a stand and fitted with a ray box on an adjustable arm. Narrow, parallel rays of light are created across the surface of the disk by a cylindrical lens in the ray box and a pair of slit diaphragms placed in front of the lens.

The set includes six clear acrylic lenses and prisms with a magnetic backing that allows them to be attached to the disk in any suitable position, for use as optical element models. Includes activity guide.

The mounting of the disk allows it to be rotated through 360 degrees about an axis passing horizontally through its center to investigate the effect of angle variation on the ray paths through the optical element models.

The ray box requires a separately supplied power source capable of providing 12V/2A for the lamp.

Item No.	Description
HOD001	Hartl Optical Disc

Reflection and Refraction Tank



**Includes
Activity
Guide**



This product effectively demonstrates the laws of reflection and refraction. The 16cm diameter acrylic water tank has a 360 degree scale and a moveable arm carrying a laser activated by a momentary switch. The sharp beam of light produced by the laser can be adjusted to pass the center of the scale. Batteries and activity guide are included.

Please Note: This product emits laser light. Max. output power < 1mW. Wavelength 630-680nm. Class II laser product.

Item No.	Description
RRT001	Reflection and Refraction Tank

Laser Optical Disk Set

This is an excellent and economical set for introductory ray optics. The laser ray box projects one, three, or five parallel bright beams and is equipped with a momentary switch for safety. A vinyl template with a degree circle and a linear scale forms the optical disk, and the set includes seven clear acrylic optical elements and a mirror with adjustable curvature for investigating refraction, lenses, prisms, and mirrors. The bottoms of the acrylic elements are frosted to show the ray paths inside them. The set also includes an activity guide and storage box.

Please note: This product emits laser light. Max. output power < 1 mW per beam. Wavelength 650 nm. Class IIIa laser product.

Contents:

Wall-mount Power Supply	1
Laser Ray Box (1, 3, or 5 rays)	1
Parallel-sided Block	1
Trapezoidal Prism	1
Right Angle Prism	1
Biconcave Lens	1
Biconvex Lens	1
Semicircular Lens (solid)	1
Semicircular Cell	1
Flexible Template—ruler & protractor	1
Adjustable Mirror—plane/concave/convex	1
Aluminum Storage Case	1
Activity Guide	1

Item No.	Description
LODS01	Laser Optical Disk Set



Set includes a durable hard-shell storage case with foam insert for convenient storage of component parts.

Semicircular Refraction Cell



This clear acrylic semicircular refraction cell is excellent for showing refraction and internal reflection in water, and to measure its refractive index. The cell has uniform wall thickness to eliminate distortions.

Item No.	Description	Size
RCSC01	Semicircular Refraction Cell	12cm diameter x 2.5cm high

Uniform wall thickness provides distortion-free viewing from any angle.

Rectangular Refraction Cell

This clear acrylic rectangular refraction cell is excellent for showing refraction and internal reflection in water, and to measure its refractive index. The cell has uniform wall thickness to eliminate distortions.

Item No.	Description	Size
RCRC01	Rectangular Refraction Cell	6cm x 3cm x 6.2cm high



Uniform wall thickness provides distortion-free viewing from any angle.

Whiteboard Optics Set



Includes
Activity
Guide



Light box and prism are used together to produce a spectrum.

A comprehensive and economical set of equipment for ray optics and color experiments using magnetic-backed components that can be used on the included whiteboard or any installed steel whiteboard. The whiteboard has a usable surface of 23" x 15.5" and has swiveling feet on two sides so that it can be set up in wide or tall format. The double-ended light box contains a 12V/20W halogen lamp powered by a wall-mount AC adapter and cooled by a built-in fan. One end carries a cylindrical lens and slots for mounting the three slit diaphragms for ray optics.

The other end carries two adjustable mirrors and an open area for color mixing work using colored filters that fit into slots in the ray box.

Item No.	Description
WBOPS1	Whiteboard Optics Set
WBOPS1-A	Optical Parts Set only
WBOPS1-W	Whiteboard Only



Mirror can be adjusted to demonstrate concave (shown) and convex properties.



Colored filters and paddles enable a dramatic presentation of color mixing properties.

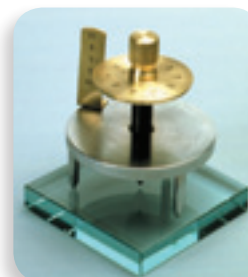
Contents:

Whiteboard, 23" x 15.5"	1
Double-ended Light Box	1
Convex Acrylic Lens	1
Concave Acrylic Lens	1
Semicircular Acrylic Lens	1
Rectangular Acrylic Block	1
Acrylic Right Angle Prism	1
Acrylic Equilateral Prism	1
30°/60°/90° Prism	1
Hollow Acrylic Rectangular Cell for Water Refraction	1
Plane Mirror	1
Adjustable Concave/Convex Mirror	1
Matched Set of Seven Color Filters	1
Set of Seven Corresponding Colored Paddles	1
White Card Screen, 10" x 10"	1
Card Protractor Circle	1
Magnets to hold Protractor	4
Activity Guide	1
Storage Box with Molded Inserts	1

Spherometer

A fine instrument for determining the radius of curvature of spherical surfaces such as mirrors and lenses. Its micrometer screw is graduated to measure displacement as small as 0.01mm. The instrument has two brass plates and three steel legs. A flat glass plate is provided for support while taking precision readings.

Item No.	Description
SPRM01	Spherometer



Meter Stick Optical Bench

Student optical bench contains sufficient equipment for high school physics applications.

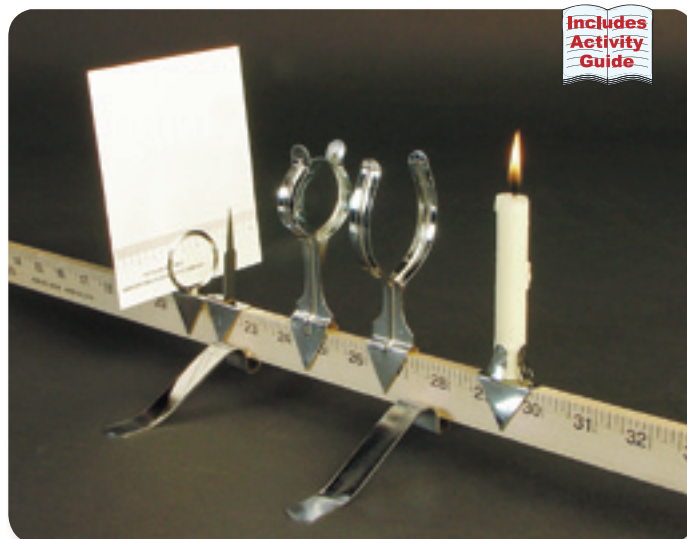
Contents:

Meter Stick	1
Screen Support	1
Lens support for 38mm and 75mm lenses/mirrors	2
Board screen measuring 10 x 125cm with a millimeter scale on both sides	5
Marker and object	1
Metal support for meter stick	2
Candle holder	1
Paraffin candle	1
Activity guide	1

Item No.	Description
OBSET1	Meter Stick Optical Bench
OBSET2-NS	Optical Bench Set without meter stick

Individual Accessories

Item No.	Description
OBLS38	Lens Support, 38mm
OBLS75	Lens Support, 75mm
OBMRK1	Marker and Object
OBCNH1	Candle holder, for 1 candle
OBLS01	Bulb Holder
OBSCS1	Screen Support
OBSCR5	Board Screens, pk/5
OBMS02	Metal Supports, pk/2
CLHW02	Wooden Support
OBMST1	Meter Stick



Light Source with Battery Holder



This light source is designed for use with a meter stick optical bench. The 1.5V bulb operates on a single AA battery (not included).

Item No.	Description
OBLSBH	Light Source with Battery Holder

Periscope

Inspired by naval periscopes used on submarines, our handheld periscope is designed to show students the reflective qualities of light. Our version consists of an outer case with mirrors at each end set parallel to each other at a 45 degree angle.

Item No.	Description
PSCOPE	Periscope



Optical Bench Set



The optical bench set is designed for basic geometric optics experiments, including imaging by lenses and mirrors. The optical elements are mounted in protective frames with mounting rods for easy alignment, and the four captive riders have an index mark and set screws to secure the rider and optical elements without disturbing their alignment. The bench is 96cm long and the set includes a pre-focused illuminator with a 12V/6W incandescent lamp, four 50mm diameter lenses, two mirrors, an object diaphragm, two screens, and an operator's manual. Also includes a 12V/0.5A power supply operating on 110VAC. Includes activity guide.

Contents:

Optical Bench with Printed Scale	1
Rider Mounted on Optical Bench	4
Opaque Screen	1
Object Diaphragm	1
Frosted Glass Screen, Translucent	1
Screen and Mirror Holder	1
Plane Mirror	1
Mounted Lens	4
Concave Mirror	1
Illuminator, 12V/6W	1
Activity Guide	1

Item No.	Description
OBSET3	Optical Bench Set

Color Mixing Apparatus



A compact and economical Color Mixing Apparatus. This updated version of the classic three color light projector uses three low voltage, high power LED's to project easily-seen red, green, and blue light onto a white screen. The projector mounting allows the beam angles to be adjusted to vary the overlap of the three colored images. The intensity of each LED can be adjusted separately by a potentiometer to give a convincing white light or various shades of mixed colors. Colored shadows can also be explored in a darkened room. The set includes a wall mount power supply and activity.

Item No.	Description
CMA001	Color Mixing Apparatus

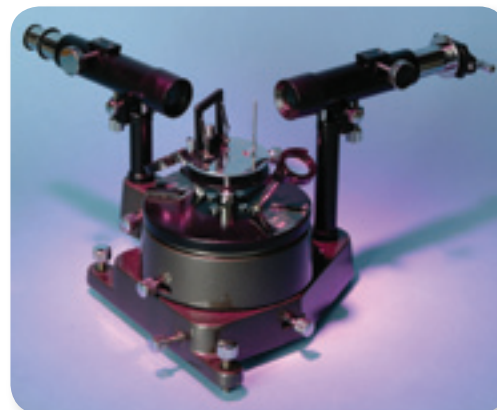
Basic Spectrometer

Assists in the measurement of spectroscopic angles, refraction, and diffraction. It is geared to meet the requirements of student lab experiments. The unit is mounted on stable base with an attached collimator. The platform is able to rotate 360 degrees.

Specifications include:

- A 2.6cm diameter achromatic optical system with a 10x eyepiece and crosshair.
- A 16cm diameter 360 degree x 0.5 degree enclosed graduated circle with a double-ended external 0-30' x 1' Vernier and 2 built-in scale reading magnifiers.
- An 8cm diameter grating/prism table with an engraved ring pattern. Table has adjustable prism and grating holders.
- A 6mm slit, opening to 2mm.
- Angular measurement accuracy of up to 1 degree
- Wooden storage box, teacher activity guide, and diffraction grating and prism are included.

Additional Spectrometer Prisms and Diffraction Gratings are available separately.



Item No.	Description
SPECT01	Spectrometer
SPECPRS	Spectrometer Prism
DFG600	Diffraction Grating

Intermediate Spectrometer



This instrument is easy to set up, easy to use, and is designed to make precise measurements. Features high quality 22mm optics, a built-in illuminated auto-collimator for fast set up, a 17.8cm diameter divided circle with clear graduations, a double-ended vernier with illuminated magnifier reading to 1' resolution, and a 7cm diameter prism table which rotates 360 degrees and adjusts 2cm in height to accommodate various accessories. The spectrometer is supplied with diffraction grating and grating holder, prism, illuminated magnifier, auto-collimation mirror, power supply (for 110VAC), and an instruction manual.

Additional Spectrometer Prisms and Diffraction Gratings are available separately.

Item No.	Description
SPECT02	Intermediate Spectrometer
SPECT02-P	Spectrometer Prism
DFG300	Diffraction Grating

Intermediate Spectrometer with 30mm Optics

This instrument is an enhanced version of our popular Intermediate Spectrometer (SPECT02.) Its larger 30mm diameter optics give brighter line images and make precise measurements easier. The optical focusing system has also been refined and the instrument retains the same premium features as the earlier version, including the built-in illuminated auto-collimator for fast set up, 17.8cm diameter divided circle, double-ended vernier reading to 1' resolution, and 7cm diameter rotatable and height-adjusting prism table to accommodate various accessories. The spectrometer is supplied with a 300 lines/mm diffraction grating and grating holder, high quality prism, illuminated magnifier, auto-collimation mirror with a power supply for 110VAC, and an instruction manual.

Additional Spectrometer Prisms and Diffraction Gratings are available separately.

Item No.	Description
SPECT03	Intermediate Spectrometer with 30mm Optics
SPECT02-P	Spectrometer Prism
DFG300	Diffraction Grating

NEW



Basic Spectroscope



An excellent hand held spectroscope for viewing the spectra of many different light sources. Durable construction with compound prisms and converging lenses made of high quality optical glass.

Item No.	Description
SPSCP1	Basic Spectroscope

Student Transmission Gratings

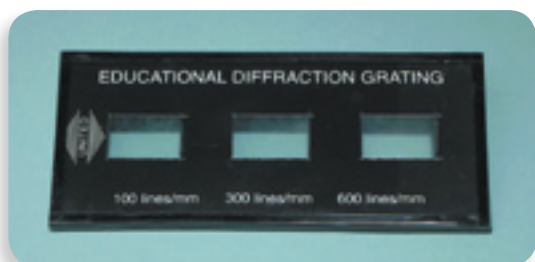
Quality linear gratings protected by two glass plates, 60mm x 45mm. Viewing area measures approximately 37mm x 20mm.

The DFG525-pk/5 Diffraction Gratings in Slide Viewers has a viewing area of 35mm x 25mm.

Item No.	Description
DFG100	Student Gratings, 100 lines per mm
DFG300	Student Gratings, 300 lines per mm
DFG600	Student Gratings, 600 lines per mm
DFG525-pk/5	Diffraction Gratings in Slide Viewers (13,400 lines per inch), pack of 5



Demo Diffraction Grating



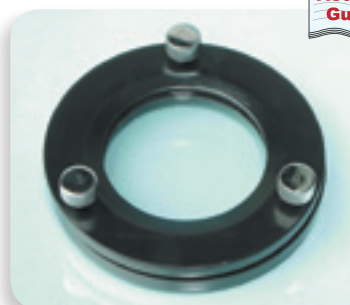
Demonstration slide has three 20mm x 10mm gratings with 100, 300, and 600 lines per mm, mounted between glass plates. The viewing area of each section is 15mm x 10mm.

Item No.	Description
DFG003	Demo Diffraction Grating

Newton's Ring Apparatus

A pair of lenses, mounted on a metallic frame with three adjusting screws.

Item No.	Description
NEWWIN	Newton's Ring Apparatus



Polarizing Film

An effective yet economical tool for demonstrating polarization of light. 2" x 2" mounted film is available in packs of 10. Unmounted film is available as packs of 2 in 3" x 3" and 6" x 6" sizes. Include instructions.

Item No.	Description
PLF020	Polarizing Film, mounted in 2" x 2" slide holders, pack of 10
PLF030	Polarizing Film, 3" x 3", pack of 2
PLF060	Polarizing Film, 6" x 6", pack of 2



Spectrum Tubes



The classic demonstration of spectral lines. These tubes acquaint students with the spectra of common gases in their pure form and are also used for demonstrating wavelength. Each gas has its own distinctive set of spectral lines when energized and viewed through a spectroscope. A spectrum tube power supply (not included) is required to energize the tubes.

The glass tubes are 25cm long with the capillary portion about 10cm long. An electrode is sealed in each end and attached to a metal end cap with a loop for convenient hookup to wire connections. Each spectrum tube includes an activity guide.

Item No.	Description
SPTAI01	Air Spectrum Tube
SPTAR01	Argon Spectrum Tube
SPTBR01	Bromine Spectrum Tube
SPTCD01	Carbon Dioxide Spectrum Tube
SPTCL01	Chlorine Spectrum Tube
SPTDT01	Deuterium Spectrum Tube
SPTHE01	Helium Spectrum Tube
SPTHY01	Hydrogen Spectrum Tube
SPTKR01	Krypton Spectrum Tube
SPTNE01	Neon Spectrum Tube
SPTNI01	Nitrogen Spectrum Tube
SPTOX01	Oxygen Spectrum Tube
SPTWV01	Water Vapor Spectrum Tube
SPTXE01	Xenon Spectrum Tube



Hand Lens - Metal Frame



Glass lenses mounted on metal frames with bakelite handles. 2.5x magnification.

Item No.	Description
MFG050	Hand Lens, Metal Frame, 50mm diameter
MFG065	Hand Lens, Metal Frame, 65mm diameter
MFG075	Hand Lens, Metal Frame, 75mm diameter
MFG100	Hand Lens, Metal Frame, 100mm diameter

Hand Lens - Plastic Frame

Glass lenses molded into high quality unibody plastic frames. 2.5x magnification.

Item No.	Description
MFP050	Hand Lens, Plastic Frame, 50mm diameter
MFP065	Hand Lens, Plastic Frame, 65mm diameter
MFP075	Hand Lens, Plastic Frame, 75mm diameter
MFP090	Hand Lens, Plastic Frame, 90mm diameter
MFP100	Hand Lens, Plastic Frame, 100mm diameter



All-Plastic Magnifier



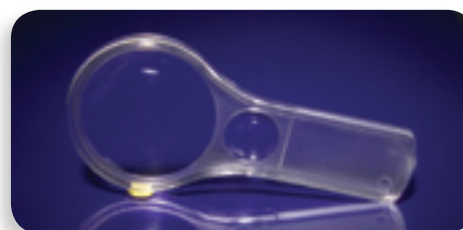
This inexpensive 3x magnifier is great for general purpose use. Plastic lens, 2" diameter. Overall length, 6".

Item No.	Description
XT81304	All-Plastic Magnifier

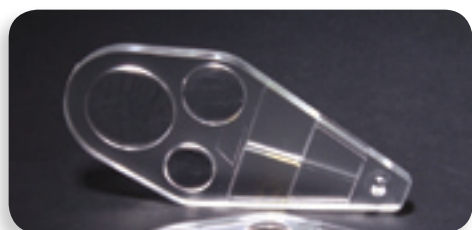
Clear Plastic Magnifier, 3x/6x

Clear plastic magnifier is 110mm (4.50") in length and features dual lenses of 3x and 6x magnification. 3x lens is 50mm in diameter and 6x lens is 20mm in diameter.

Item No.	Description
PMD002	Clear Plastic Magnifier, 3x/6x



Triple Magnifier - Plastic



Handy molded plastic magnifier has 2x, 6x, and 8x magnification lenses. Overall length is 100mm (4").

Item No.	Description
PMT003	Triple Magnifier, Plastic

Giant Folding Magnifier

This magnifier offers an extra-large field of view, hands-free use, and folds down to a compact size for storage. The 10cm lens provides 6x magnification.

Item No.	Description
MGFL6X	Giant Folding Magnifier



Folding Magnifiers

Folding magnifiers in plastic cases. Glass lenses are 25mm in diameter with 5x magnification. Single magnifier includes one lens. Double magnifier includes two lenses for 10x magnification. Triple magnifier includes three lenses for 15x magnification.

Item No.	Description
MPS010	Single Folding Magnifier, 5x
MPD010	Double Folding Magnifier, 10x
MPT010	Triple Folding Magnifier, 15x



MPS010



MPT010



MPD010

Large Folding Magnifiers

Sturdy plastic frames with 38mm (1.5") diameter glass lenses for a larger field of view. These versatile magnifiers can magnify objects up to 15x.

Item No.	Description
MPS038	Single Folding Magnifier, Large, 5x
MPD038	Double Folding Magnifier, Large, 10x
MPT038	Triple Folding Magnifier, Large, 15x



Loupe-Style Magnifiers

These high quality loupes feature a 25mm glass lens mounted in a sturdy black plastic frame. Available in either 6x or 10x magnification.

Item No.	Description
MFL006	Loupe-Style Magnifier, 6x
MFL010	Loupe-Style Magnifier, 10x





Brass Tripod Magnifier

10x magnification glass lens in brass holder is mounted on a tripod brass base.

Item No.	Description
TRPBR1	Brass Tripod Magnifier, 10x

Plastic Tripod Magnifier

10x magnification glass lens in plastic screw-thread holder is mounted on a metal tripod base.

Item No.	Description
TRP10X	Plastic Tripod Magnifier, 10x



Pocket Loupe

Compact pocket loupe, in a sturdy folding metal case. 10x magnification.



Item No.	Description
MFC010	Magnifier, Pocket Loupe, 10x

Folding Magnifier - Aluminum Case

Single folding magnifier folds into a protective aluminum case. Features a glass 10x magnification lens, 25mm in diameter and mounted in a plastic frame.

Item No.	Description
MPF010	Folding Magnifier in Aluminum Case, 10x



Folding Magnifier in Pouch

Folding magnifier in a pouch, 50mm dia., 2.5x magnification.



Item No.	Description
MPF050	Folding Magnifier in Pouch, 2.5x

Alnico Magnet Set

Set of 4 powerful alnico magnets with keepers. Set consists of 2 bar magnets 80mm x 15mm x 10mm; a small horseshoe magnet 25mm tall x 8mm wide; and a large horseshoe magnet 35mm tall x 15mm wide.

Item No.	Description
MSET4	Alnico Magnet Set of 4



Alnico Bar Magnets



ABM030

Powerful Alnico 1 grade bar magnets, shipped in pairs, with end keepers. Magnets are painted with North and South poles, clearly marked. Width 1/2", Thickness 1/4".

Item No.	Description	Color
ABM010	Alnico Bar Magnet, 1"	Red
ABM015	Alnico Bar Magnet, 1.5"	Red
ABM020	Alnico Bar Magnet, 2"	Red
ABM030	Alnico Bar Magnet, 3"	Red/Blue
ABM040	Alnico Bar Magnet, 4"	Red
ABM060	Alnico Bar Magnet, 6"	Red

Alnico Cylindrical Magnets

Strong Alnico 1 grade cylindrical magnets, shipped in pairs, with separators and keepers. North pole is marked with a dot.

Item No.	Description	Color
ACM020	Alnico Cylindrical Magnet, 5cm x 8mm	Red
ACM050	Alnico Cylindrical Magnet, 12.5cm x 10mm	Red



ACM020



Alnico U-Shaped Magnet, 3"

Powerful 3" tall U-shaped alnico magnet is painted red and supplied with a keeper. North pole is marked with a dot.

Item No.	Description
MHS030	Alnico U-Shaped Magnet, 3"

Alnico U-Shaped Magnet, 1"

Powerful 1" tall U-shaped alnico magnet is painted red and supplied with a keeper. North pole is marked with a dot.

Item No.	Description
AUM025	Alnico U-Shaped Magnet, 1"



Floating Magnets Set



This set includes a plastic stand designed to easily demonstrate the "floating" magnets effect. Plastic-encased magnets are durable and resist breakage. Set includes six brightly colored magnetic rings, plastic stand, and cardboard storage box. **Suitable for ages 11+.**

Item No.	Description
CMSET6	Floating Magnets Set

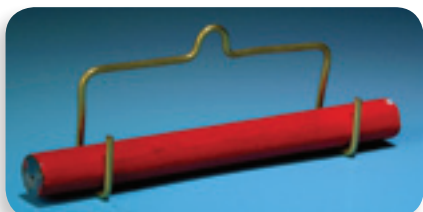
Magnets, Plastic Covered

These alnico magnets are encased in red and blue plastic to provide extra durability. Each magnet measures 80 x 15 x 10mm. Shipped as a pair.

Item No.	Description
MPC080	Magnets, plastic covered, red/blue (pair)



Stirrurp



Brass support for bar magnets or friction rods. Allows magnets or friction rods to hang freely and turn in a horizontal plane. Hooks are 89mm apart. Dimensions 3-1/2" x 2" x 1".

Item No.	Description
MGSTR01	Magnet Stirrup

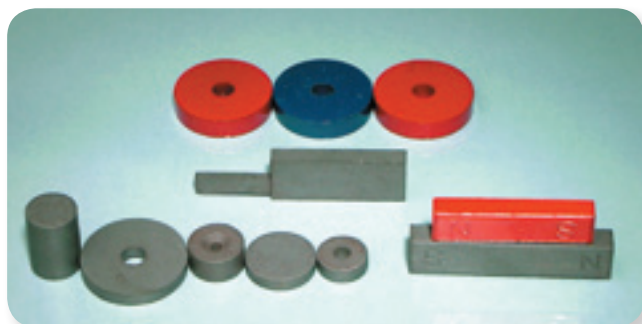
Steel Horseshoe Magnets

Strong steel magnets, zinc-plated with North and South poles marked. Supplied with keeper.



Item No.	Description
SHM020	Steel Horseshoe Magnet, 2"
SHM030	Steel Horseshoe Magnet, 3"
SHM040	Steel Horseshoe Magnet, 4"
SHM050	Steel Horseshoe Magnet, 5"
SHM060	Steel Horseshoe Magnet, 6"

Ceramic Magnets



We offer a variety of economical ceramic bar, disc, and ring shaped magnets. Magnets are unpainted except where noted.

Item No.	Description
CBM050	Bar, 50mm Long x 10mm Wide x 7mm Thick (pair), painted
CBM070	Bar, 70mm Long x 15mm Wide x 8mm Thick (pair)
CM7912	Disc, 25mm Dia., 5mm Thick
CM7702	Rectangular, 27mm Long X 8mm Wide X 3mm Thick
CM3030	Square, 30mm Sides, 3mm Thick, 10mm hole
CM8711-S	Ring, 30mm Dia., 5mm Thick, 12mm Hole
CM7907	Ring, 38mm Dia., 8mm Thick, painted
CM7907-PK/2	Pack of two, 38 x 8mm Rings, one Red, one Blue

Ceramic Disc Magnets, Set of 6

A set of colorful ceramic disc magnets in six primary colors. Magnets are 25mm in diameter. **Suitable for ages 11+.**

Item No.	Description
CMSET1	Ceramic Disc Magnets, Set of 6



Cow Magnet



Designed like a magnet that is generally fed to cows to attract metal particles they may have ingested while grazing. Students can use it in the classroom for magnetic field demonstration and other interesting experiments. Cylindrical magnet is 7.5cm long, 1.9cm in diameter, and weighs approximately 100 grams.

Item No.	Description
MGTCOW	Cow Magnet

Cow Magnet, Alnico

Strong alnico magnet with a magnetic pole on each end. It can be used for magnetic field demonstrations and a variety of other lab experiments. Magnet is 7.5cm long, 1.25cm in diameter, and weighs approximately 100 grams.

Item No.	Description
MGTCOW-A	Cow Magnet, Alnico



Economy Magnet Kit

Includes
Activity
Guide



An exceptional value! This kit includes a variety of magnets and accessories for teaching basics of magnetism. Includes a reusable storage box and an activity guide.

Contents:

Steel horseshoe magnet	1
Ceramic bar magnet	2
Ceramic donut magnet	3
Metal squares (one each of iron, copper, aluminum, zinc)	4
Iron filings pack	1
Lodestone	1
Magnetic compass	2
Activity guide, containing 17 experiments	1

Item No.	Description
MGTKIT	Economy Magnet Kit

Large Magnetic Compass

This magnetic compass is extra large (90mm diameter) and includes a bright color plastic case with a clear plastic top. **Suitable for ages 11+.**

Item No.	Description
CPL090	Large Magnetic Compass, 90mm diameter



Magnetic Compasses



We offer a variety of magnetic compasses, from small plotting compasses up to a 45mm compass with a cover and locking mechanism. Our compasses include sturdy aluminum cases and magnetic needles with the North pole marked.

Item No.	Picture	Size (Dia.)	Description
C1SG12	A	12 mm	Aluminum case, glass top
C1SG16	B	16 mm	Aluminum case, glass top
CBSG18	C	18 mm	Aluminum ring, glass top and bottom
C1SG20	D	20 mm	Aluminum case, glass top
C1SG25	E	25 mm	Aluminum case, glass top
CWR025	F	25 mm	Aluminum case, glass top with ring
CWR030	G	30 mm	Aluminum case, glass top with ring
CPL035*	H	35 mm	Plastic case, plastic top*
CWR045-W	I	45 mm	Aluminum case, glass top with ring
CWR045-B	J	45 mm	Aluminum case, glass top with ring
CWL045	K	45 mm	Aluminum case, glass top with lock

* Suitable for ages 11+

Demonstration Compass

This device includes a 4" magnetic needle mounted on a plastic support with a brass pivot. The North pole of the needle is painted red.

Item No.	Description
MNSB04	Demonstration Compass



Pair of Magnetic Needles



Two 14cm long magnetic needles with colored poles are mounted on plastic stands with needle bearings. Use individually as a demonstration compass, or as a pair to show attraction and repulsion.

Item No.	Description
MNSB05	Pair of Magnetic Needles

Lodestone

A natural rock, collected in Utah USA, that contains traces of iron ore with natural magnetic properties. Measures approximately 2" long. Available individually or as a pack of 5.

Item No.	Description
LODE02	Lodestone
LODE02-PK/5	Lodestone, pack of 5



Magnetic Field Demonstrator



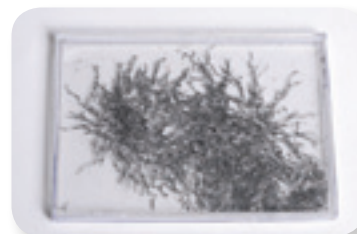
This is a quick and clean way to visualize magnetic fields. The demonstrator is a transparent acrylic case that holds iron filings suspended in a fluid of mineral oil. When it is placed over a magnet, the field pattern can be viewed directly, or it can be placed on an overhead projector for classroom demonstration.

Item No.	Description
MGFD03	Magnetic Field Demonstrator

Magnetic Field Demonstrator Student Version

Iron filings sealed in a transparent plastic case that measures approximately 90mm x 65mm x 6mm.

Item No.	Description
MGFD01	Student Magnetic Field Demonstrator





Tangent Galvanometer



Classic demonstration of how a current loop generates a magnetic field. Two coils of insulated wire, with five and ten turns respectively, are wound around a 6" diameter plastic ring. The ring is mounted on a plastic base with three binding posts that allow connection to five, ten, or fifteen turns of wire. A magnetic compass (included) can be placed on the base to observe and measure deflection of the compass. An activity guide is included. Power source and connecting wires not included.

Item No.	Description
TNGV01	Tangent Galvanometer

Large U-Shaped Electromagnet

Operating on 1.5 to 6 VDC, this electromagnet lifts up to 3.5kg. A current direction indicator is included for the study of the magnetic field.

Item No.	Description
EMGT01	Large U-Shaped Electromagnet



Ampere's Rule Apparatus



This apparatus allows students to study the magnetic field around a wire. A heavy brass wire with terminals is arranged on a clear plastic base. Also included are one each 45mm compass, six each 16mm compasses, and an activity guide.

Item No.	Description
AMPR01	Ampere's Rule Apparatus

Electromagnet Kit

This kit is designed for high school students to learn the principles and applications of electromagnets. It includes two coils on plastic spools, a U-shaped iron core, a straight iron core, two magnetic compasses with stands, and a pair of wires. Students can build a bar-shaped and a U-shaped electromagnet which they power with a 6V battery (not included) or DC power supply (not included), to determine the magnitude and polarity of electromagnetic forces. An activity guide and a plastic storage case are included.

Item No.	Description
EMKIT2	Electromagnet Kit



Electricity and Magnetism Kit

NEW

This comprehensive 29-piece kit introduces students to the basic principles of electricity and magnetism, including magnetic attraction and repulsion, magnetic fields, and electromagnetism. Electrical circuitry, voltage, current and resistance are covered, as well as series and parallel connection. Force in a magnetic field and electric motor basics are included, and light emitting diodes and a relay are provided for further investigations. The components are mounted on sturdy molded bases and connections are made with reliable screw terminals. An activity guide details the experiments. Requires three AA batteries (not included).



Item No.	Description
EMKIT3	Electricity and Magnetism Kit

Energy Conversion Kit

Includes Activity Guide



This economical seven-piece kit lets you demonstrate the conversion between different forms of energy. It includes four devices for generating electrical energy and three devices that use electrical energy. A set of cables is included for connecting the devices to each other in various combinations. Batteries not included.

Contents:

Hand generator (to produce electrical energy from motion)	1
Battery holder (to produce chemical energy)	1
Solar panel (to produce light energy)	1
Windmill (to produce wind energy)	1
LED lamp (to use electrical energy to produce light)	1
Electric motor (to use electrical energy to produce motion)	1
Buzzer (to use electrical energy to produce sound)	1
Connecting cords, banana plug, red	3
Connecting cords, banana plug, black	3
Activity guide	1

Item No.	Description
ECK001	Energy Conversion Kit

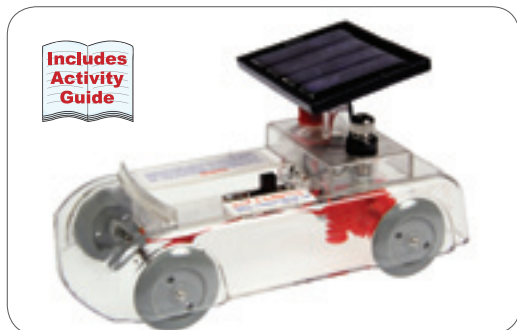
Primary and Secondary Coils

Superior version of the classic device for investigating electromagnetic induction. Primary and secondary coils are wound on robust molded formers fitted with shielded banana jacks. The plated iron core has a molded handle for accurate positioning in the coils. The primary coil has 175 turns of 18 AWG insulated copper wire (diameter 34mm, length 100mm, resistance 0.43 Ω , self-inductance ≈ 3.1 mH). Secondary coil has three available windings with 500, 1000, and 1500 turns of 26 AWG insulated copper wire (diameter 52mm, length 102mm, resistances 11.5 Ω , 23.3 Ω , 35.7 Ω , self-inductances ≈ 490 mH, 1.97H, 4.43H). Plated iron core is 19mm in diameter and 165mm long (including handle). Includes activity guide.

Item No.	Description
PSC001	Primary and Secondary Coils



Solar Powered Car



Includes
Activity
Guide

This economical demonstration solar car can be powered by a solar cell or a rechargeable battery (AA size, not included). Battery can be recharged from the solar cell, demonstrating an electricity storage system for solar power. The solar cell can be tilted to maximize solar input, features an on/off and select function switch, and includes two binding posts to measure output. All working parts are visible through the clear molded housing. Includes activity guide.

Item No.	Description
SLRCR1	Solar Powered Car

Hand Held Generator

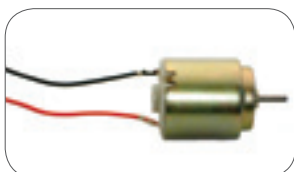
This 6V DC hand held generator can deliver up to 400mA current. The generator is equipped with a polarity coded plug-in lead with alligator clips. The clear plastic housing allows students to watch the coils, terminals, and gears. Students get a hands-on demonstration of the Second Law of Thermodynamics. Includes activity guide.

Item No.	Description
GENH02	Hand Held Generator



Includes
Activity
Guide

Miniature DC Motor



Operates on 1.5V or 3V DC. Speed: 7000-11000 RPM. Motor is approximately 40mm long x 20mm in diameter. Shaft size is 8mm long x 2mm in diameter. Includes soldered-on 4" wire leads.

Item No.	Description
DCM015	Miniature DC Motor

Miniature DC Motor for Solar Experiments

Solar motor is specifically designed for experiments using low starting voltage (0.5V) and current (25mA). Speed: 1000-5000 RPM. Motor is approximately 38mm long x 24mm in diameter. Shaft size is 8mm long x 2mm in diameter. Includes soldered-on 4" wire leads.

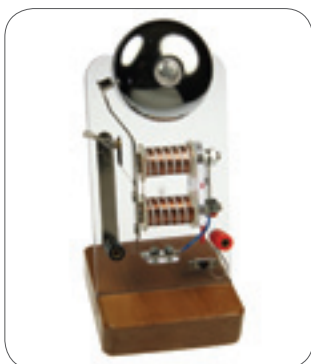
Item No.	Description
DCM015-C	Miniature DC Motor for Solar Experiments



NEW

Electric Bell Model

Includes
Activity
Guide



This well constructed and attractive electric bell model is mounted on a clear acrylic plate and a finished wooden stand to allow the functional parts to be clearly seen. Model operates on 6V DC with an on/off switch, adjustable contact screw, and binding posts for easy connection. Includes activity guide.

Item No.	Description
ELBM01	Electric Bell Model

Demonstration DC Motor

This pre-assembled DC motor is designed for students to learn about electromagnetic forces. The open structure resembles the diagram found in many textbooks. The polarity of the magnets can be reversed to change the direction of rotation. The motor can also be used with a rheostat to observe the change of speed with the change of current. The DC motor can stand vertically or horizontally and operates on a 1.5V battery (not included). It includes a sturdy plastic storage case and an activity guide.



Includes
Activity
Guide

Item No.	Description
DMOT01	Demonstration DC Motor

Create-A-Circuit Kit



Includes
Activity
Guide

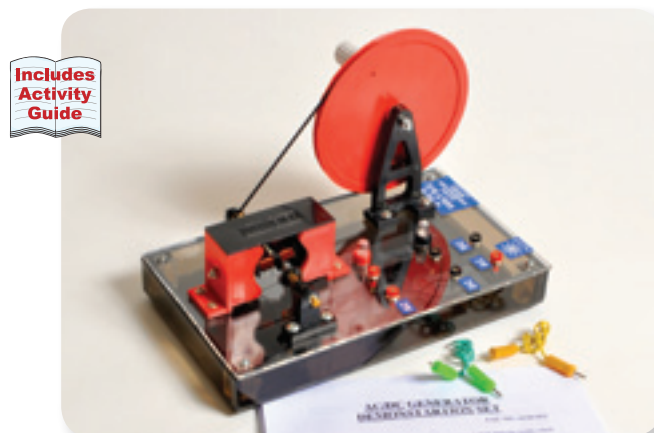
Build your own series or parallel circuit using this kit. It comes complete with a battery holder (D size battery not included), a knife switch, two miniature light bulbs, two lamp holders, and four alligator clip connecting cords. Includes activity guide.

Item No.	Description
CCK001	Create-A-Circuit Kit

AC/DC Generator Demo Set

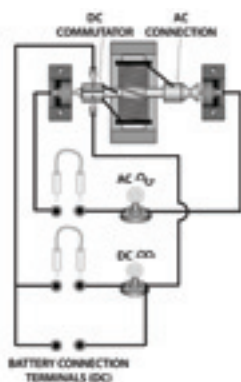
This unique hand generator is an easy yet effective way to teach how AC and DC electricity is produced. Banana plugs can be inserted into the different connectors to change from AC to DC electricity. The unit has a clear base for easy demonstration of connections. Includes activity guide.

Item No.	Description
ACDCSET	AC/DC Generator Set



Includes
Activity
Guide

AC/DC Generator
Circuit Diagram.



LaPlace's Law Demonstrator

NEW



**Includes
Activity
Guide**

A great device for teaching Fleming's left hand rule, this demonstrator consists of a base with two separate parallel conductors, a large U-shaped magnet that fits between the parallel conductors, and a conducting rod attached to a plastic disc. When a current is passed through the rods, a force is exerted on the rod with the disc which causes it to roll along the parallel rods. Includes activity guide.

Item No.	Description
LLDE01	LaPlace's Law Demonstrator

Demonstration Motor/Generator Set

This high quality yet economical device can be used as either a motor or generator demonstration in your classroom. The motor uses electrical energy to perform mechanical work. The generator converts mechanical work to electrical energy. Includes activity guide.

Item No.	Description
DMG002	Demonstration Motor/Generator Set

NEW

**Includes
Activity
Guide**



Wimshurst Generator

**Includes
Activity
Guide**



We offer a superior quality Wimshurst machine for demonstrating high-voltage electric charges. Our unit features clear acrylic rotating disks, good quality foil strips and brushes, insulated cylindrical capacitors, and a durable plastic platform. Guaranteed to produce large sparks for easy classroom demonstration. Product is 17" tall by 15" wide x 9.5" deep. Includes activity guide.

Item No.	Description
WIMS01	Wimshurst Generator

Eddy Current Demonstrator

A simple but effective device for demonstrating Lenz's Law using eddy currents induced in the wall of a copper tube by a falling magnet. The demonstrator consists of a 12" long copper tube and two apparently identical metal slugs with rubber end caps. One slug is plain steel and falls through the copper tube quickly. The other slug is a strong neodymium magnet that falls very slowly through the tube due to the braking effect of eddy currents. Includes activity guide.

Includes
Activity
Guide



Item No.	Description
EDYCR1	Eddy Current Demonstrator

Conductivity of Solutions Apparatus

Includes
Activity
Guide



This 3V conductivity tester demonstrates the electrical properties of various liquids. The item consists of a molded plastic lamp socket mounted on a base with two binding posts for connecting a wire cord. It comes complete with a bulb and glass tumbler. Includes activity guide.

Item No.	Description
CSA001	Conductivity of Solutions Apparatus

Morse Code Experiment Kit

Discover how people communicated over long distances before the telephone was invented. The Morse code experiment kit is designed to show the principle of a telegraph. The kit consists of a battery holder (D size battery not included), a telegraph key, one miniature bulb, one lamp holder, and three alligator clip connecting cords. Includes activity guide.

Includes
Activity
Guide



Item No.	Description
MCE001	Morse Code Experiment Kit

Telegraph Key



Telegraph key, mounted on a solid plastic base, measuring 11cm x 5cm, with two screw-type connecting terminals.

Item No.	Description
TGKY01	Telegraph Key

Gold Leaf Electroscope



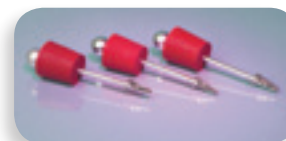
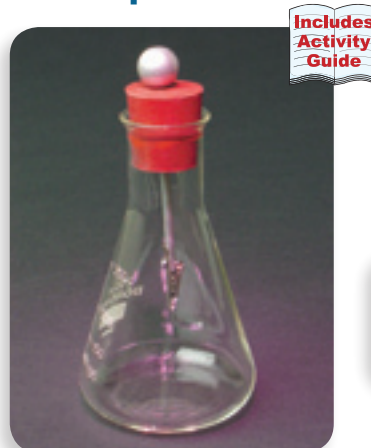
This sturdy electroscope features a metal case with front and rear glass windows for preventing air currents from affecting the deflection of the leaves. Leaves are gold and aluminum. Leaf support rod is held in place by an insulating plastic sleeve. A graduated scale is also provided for measuring the deflection from 0 to 90 degrees. Includes activity guide.

Item No.	Description
ELGL01	Gold Leaf Electroscope
ELGL01-FOIL	Spare gold leaves, pack of 6

Flask Form Electroscope

This electroscope is housed in a 250ml borosilicate flask with a metal rod attached to a rubber stopper. A pair of aluminum leaves is suspended from an alligator clip. The knob on top of the rubber stopper accepts a charge. When the charge enters the flask, the aluminum leaves separate. Also available are rod and alligator clip assembly for use with your own flask and replacement aluminum leaves. Includes activity guide.

Item No.	Description
ELFLO1	Flask Form Electroscope
ELFLO2-PK/3	Electroscope Assembly, without flask, pack of 3
ELFLO1-FOIL	Spare aluminum leaves, pack of 6



ELFLO2-PK/3

Electroscopes Kit



Demonstrate key electrostatics concepts with this kit. Contains everything necessary to construct two flask form electroscopes. Detailed manual includes experiments using two electroscopes for positive and negative charge studies, and a Faraday's Pail experiment.

Contents:

Glass flask	2
Aluminum disc terminal	2
Set of 4 foil leaves	2
Electrode assembly	2
Aluminum can (Faraday pail)	1
Glass rod	1
Silk cloth	1
Acrylic rod	1
Wool cloth	1
Activity guide	1

Item No.	Description
ELKIT1	Electroscopes Kit

Leyden Jar

Learn about static electricity and the function of a dielectric with this device. Two aluminum jars (one with an attached aluminum electrode) and one plastic jar are used to collect the charge. Assembled device is 6" tall and 3-1/4" in diameter. Includes activity guide.

Item No.	Description
LYJ001	Leyden Jar



Frictional Rods and Pads

Friction rods and pads are available in various materials. Rods are 12" long and approximately 1/2" in diameter. Pads are 12" x 12".



Item No.	Description
FRICTION RODS:	
FRSG12	Solid glass
FRHG12	Hollow glass
FRSP12	Solid plastic (acrylic)
FRHR12	Hard rubber (ebonite)
FRHR06	Hard rubber, 6" length (not shown)
FRICTION PADS:	
RPSL30	Silk
RPCT30	Cotton
RPWL30	Wool

Friction rods and pads are also available in custom sizes per your specifications.

Student Electricity Assortment

Convenient, economical package of materials to start investigating electricity concepts.

Contents:

Round Plastic Bulb Holder	6
Knife Switch, Single Pole, Single Throw	3
Battery Holder with Fahnestock Clip	10
Wire Stripper	1
Wire with Alligator Clips, 18", Assorted Colors	3
Wire with Banana Clips, 18", Assorted Colors	3
Insulated Copper Wire, 22 gauge, 100 foot roll	1
1.5V Light Bulb	10

Item No.	Description
EAKIT1	Student Electricity Assortment



Battery Holder Set



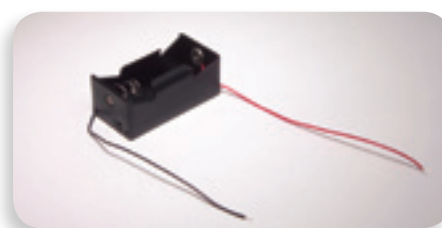
This battery holder fits four D cell batteries (not included) and is useful for virtually any experiment requiring a low voltage power supply and ships fully assembled. Five color-coded binding posts on the base make for easy, safe, and reliable connections to hook-up cords providing outlets for 1.5V, 3V, 4.5V, or 6V supply voltages. Battery holder is firmly mounted on a heavy duty base.

Item No.	Description
BHS001	Battery Holder Set

Battery Holders with Leads

These battery holders are made of unbreakable plastic. Curved tabs prevent the battery from falling out when the holder is inverted.

Item No.	Description
BTHAA1	AA Cell Battery Holder with Leads
BTHC01	C Cell Battery Holder with Leads



BTHAA1

Battery Holder with Fahnestock Clips



Unbreakable plastic battery holder includes curved tabs to prevent the battery from falling out when the holder is inverted. Fahnestock clips enable easy and quick connections.

Item No.	Description
BTHP01-F	D Cell Battery Holder with Fahnestock Clips

D Cell Battery Holder and Joiner

Single holders can be snapped together in parallel or series to extend capacity or voltage. Include male and female button snaps on ends to allow series connections. Also includes extensions on sides for parallel connections.

Item No.	Description
BTHD01	D Cell Battery Holder and Joiner
BTHD01-PK/4	D Cell Battery Holder and Joiner, pack of 4

BTHD01 can be connected together in parallel or series.



Fahnestock Clips



Versatile connecting clips for use in many electrical experiments. Supplied as a package of 10 clips.

Item No.	Description
FSCP01-PK/10	Fahnestock Clips, pack of 10

Miniature Lamp Holder, Screw Type

Suitable for miniature base lamps, this plastic holder includes a brass receptacle and two screw type terminals.

Item No.	Description
LMPP01	Miniature Lamp Holder, Screw Type



Miniature Lamp Holder, Spring Posts



Suitable for miniature base lamps, this plastic holder includes a brass receptacle and two spring post terminals.

Item No.	Description
LMPS01	Miniature Lamp Holder, Spring Posts

Miniature Lamp Holder, Fahnestock Clips

Suitable for miniature base lamps, this plastic holder includes fahnestock clips for quick, easy connections.

Item No.	Description
LMPR02	Miniature Lamp Holder, Fahnestock Clips



Miniature Lamp Bulbs



LMP015-PK/10

Miniature lamp bulbs are available in a variety of voltages. Sold as packs of 10.

Item No.	Description
LMP015-PK/10	Miniature Bulb, 1.5V, 0.3A, pack of 10
LMP025-PK/10	Miniature Bulb, 2.5V, 0.3A, pack of 10
LMP038-PK/10	Miniature Bulb, 3.8V, 0.3A, pack of 10
LMP062-PK/10	Miniature Bulb, 6.2V, 0.5A, pack of 10

Lamp Boards

Ideal for demonstrating series and parallel circuits. Miniature bulb receptacles are mounted on a clear acrylic base. Each receptacle is connected to two fahnestock clip terminals. Includes bulbs and activity guide.

Item No.	Description
LMPB01	Lamp Board, 1 Lamp
LMPB03	Lamp Board, 3 Lamps
LMPB04	Lamp Board, 4 Lamps
LMPB05	Lamp Board, 5 Lamps



Includes
Activity
Guide

Knife Switches, Screw Posts



Knife switches with plastic bases are suitable for low voltage experiments (less than 3.6V). Include thumbscrew connecting posts. Available in three different pole/throw configurations.

Item No.	Description
KSW001	Knife Switch, Screw Posts, Single Pole, Single Throw
KSW002	Knife Switch, Screw Posts, Single Pole, Double Throw
KSW004	Knife Switch, Screw Posts, Double Pole, Double Throw

Knife Switch, Small

Knife switch with plastic base is suitable for low voltage experiments (less than 3.6V). Includes screw connecting posts.

Item No.	Description
KSW001-K	Knife Switch, Small, Screw Posts, Single Pole, Single Throw



Economy Switch

Simple switch uses fahnestock clips for easy, quick connections.



Item No.	Description
KSE001	Economy Switch

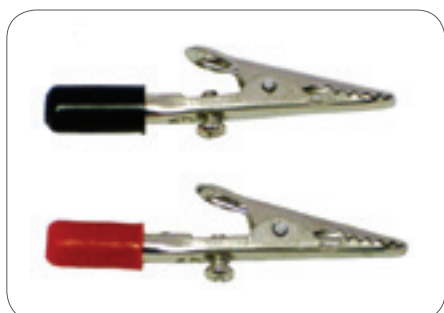
Alligator Clips

2" long, plain, chrome plated, with excellent conductivity. Available in packs of 10 or 100.

Item No.	Description
ACLP01-PK/10	Alligator Clips, plain, pack of 10
ACLP01-PK/100	Alligator Clips, plain, pack of 100



Insulated Alligator Clips



2" long, with protective vinyl sleeve, chrome plated, with excellent conductivity. Pack of 10, five each red and black.

Item No.	Description
ACLPBR-PK/10	Alligator Clips, insulated, pack of 10

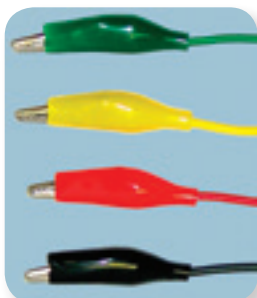
Alligator Clip Leads

Flexible, 18 gauge (SWG) stranded wire cord with alligator clips at both ends. Alligator clips have protective vinyl sheath. Available in various lengths.

Item No.	Description
WAG012-PK/6	Alligator Clip Leads, 12", pack of 6 (3 red, 3 black).
WAG024-PK/6	Alligator Clip Leads, 24", pack of 6 (3 red, 3 black).
WAG036-PK/6	Alligator Clip Leads, 36", pack of 6 (3 red, 3 black).
WAG012-R	Alligator Clip Lead, 12", red, each
WAG012-B	Alligator Clip Lead, 12", black, each
WAG024-R	Alligator Clip Lead, 24", red, each
WAG024-B	Alligator Clip Lead, 24", black, each
WAG036-R	Alligator Clip Lead, 36", red, each
WAG036-B	Alligator Clip Lead, 36", black, each



Alligator Cord Sets with Sheathed Clips



Flexible, 24 gauge (SWG) stranded wire cord with sheathed alligator clips at both ends. Packages of 10 cords include two each of white, yellow, black, red and green. Available in various lengths.

Item No.	Description
WAG012-PK/10	Alligator Cord Set, 12" long, pack of 10
WAG024-PK/10	Alligator Cord Set, 24" long, pack of 10
WAG036-PK/10	Alligator Cord Set, 36" long, pack of 10

Banana Plug / Alligator Clip Cords

Flexible, 18 gauge (SWG) stranded wire cord with a stackable banana plug at one end and an alligator clip at the other end. Alligator clip has a protective vinyl sheath. Available in various lengths.

Item No.	Description
WAB012-PK/6	Banana/Alligator Cords, 12", pack of 6 (3 red, 3 black)
WAB024-PK/6	Banana/Alligator Cords, 24", pack of 6 (3 red, 3 black)
WAB036-PK/6	Banana/Alligator Cords, 36", pack of 6 (3 red, 3 black)
WAB012-R	Banana/Alligator Cord, 12", red, each
WAB012-B	Banana/Alligator Cord, 12", black, each
WAB024-R	Banana/Alligator Cord, 24", red, each
WAB024-B	Banana/Alligator Cord, 24", black, each
WAB036-R	Banana/Alligator Cord, 36", red, each
WAB036-B	Banana/Alligator Cord, 36", black, each



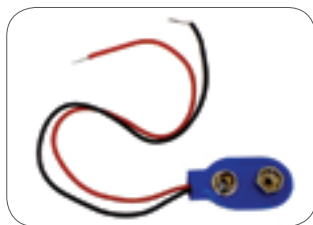
Banana Plug Cords

Flexible, 18 gauge (SWG) stranded wire cord with two-way stackable banana plugs at both ends. Available in various lengths.



Item No.	Description
WBP012-PK/6	Banana Plug Cords, 12", pack of 6 (3 red, 3 black)
WBP024-PK/6	Banana Plug Cords, 24", pack of 6 (3 red, 3 black)
WBP036-PK/6	Banana Plug Cords, 36", pack of 6 (3 red, 3 black)
WBP012-R	Banana Plug Cord, 12", red, each
WBP012-B	Banana Plug Cord, 12", black, each
WBP024-R	Banana Plug Cord, 24", red, each
WBP024-B	Banana Plug Cord, 24", black, each
WBP036-R	Banana Plug Cord, 36", red, each
WBP036-B	Banana Plug Cord, 36", black, each

9-Volt Battery Connector



An insulated snap-on connector with 15cm red and black leads.

Item No.	Description
BTNV15	9-Volt Battery Connector

Connecting Wire, Plastic Insulated Copper

22 gauge (SWG) plastic insulated copper wire is supplied in 100 foot rolls. Available in three colors.

Item No.	Description
WCP22-BK	Plastic Insulated Copper Wire, Black, 100-foot roll
WCP22-R	Plastic Insulated Copper Wire, Red, 100-foot roll
WCP22-W	Plastic Insulated Copper Wire, White, 100-foot roll



WCP22-R

Connecting Wire, Nickel-Chromium



Bare nickel-chromium connecting wire is supplied in 4-ounce spools. Available in a variety of gauges (SWG).

Item No.	Description
WNC018	Nickel-Chromium Wire, 18-gauge, 4-ounce spool
WNC020	Nickel-Chromium Wire, 20-gauge, 4-ounce spool
WNC022	Nickel-Chromium Wire, 22-gauge, 4-ounce spool
WNC024	Nickel-Chromium Wire, 24-gauge, 4-ounce spool
WNC028	Nickel-Chromium Wire, 28-gauge, 4-ounce spool

Connecting Wire, Enameled Copper Magnet

Enameled copper magnet wire is supplied in 4-ounce spools. Available in two gauges (SWG).

Item No.	Description
WEC026	Enameled Copper Wire, 26-gauge, 4-ounce spool
WEC028	Enameled Copper Wire, 28-gauge, 4-ounce spool



Connecting Wire, Soft Bare Copper



Soft bare copper wire is available in 4-ounce or 1-pound spools. Available in a variety of gauges (SWG).

Item No.	Description
WBC018-4oz	Soft Bare Copper Wire, 18 gauge, 4-ounce spool
WBC018-1lb	Soft Bare Copper Wire, 18 gauge, 1-pound spool
WBC020-4oz	Soft Bare Copper Wire, 20 gauge, 4-ounce spool
WBC020-1lb	Soft Bare Copper Wire, 20 gauge, 1-pound spool
WBC022-4oz	Soft Bare Copper Wire, 22 gauge, 4-ounce spool
WBC022-1lb	Soft Bare Copper Wire, 22 gauge, 1-pound spool
WBC024-4oz	Soft Bare Copper Wire, 24 gauge, 4-ounce spool
WBC024-1lb	Soft Bare Copper Wire, 24 gauge, 1-pound spool

Meters

Our meters are mounted in black plastic cases. Meters have a scale length of 75mm, offer +/- 2.5% accuracy, and come with 5-way binding post and external calibrating screw. Meters are not protected against prolonged or significant overload. Stackable for storage.

Item No.	Range / (Readability)
DC VOLTMETERS:	
MVT001	0-3V (0.1V); 0-15V (0.5V); 0-300V (10V)
MVT002	0-3V (0.1V); 0-10V (0.2V); 0-15V (0.5V)
MVT003	0-3V (0.1V)
MVT004	0-5V (0.1V)
MVT005	0-10V (0.2V)
MVT006	0-5V (0.1V); 0-15V (0.3V)
DC AMMETERS:	
MAM001	0-50mA (1mA); 0-500mA (10mA); 0-5A (0.1A)
MAM002	0-1A (20mA); 0-5A (100mA)
MAM003	0-1A (20mA)
MAM004	0-3A (100mA)
MAM005	0-5A (100mA)
MAM006	0-10A (100mA)
DC MILLIAMMETERS:	
MMA001	0-200mA (4mA)
MMA002	0-500mA (10mA)
MMA003	0-500uA (10uA)
MMA004	0-1mA (0.02 mA)
MMA005	0-100mA (1mA)
DC GALVANOMETERS:	
MGV001	-35mV/+35mV (1mV)
MGV002	+/-500-0-500uA (20uA)
MGV003	+/-50-0-50 (2uA)



Multimeter

Compact analog multimeter offers popular features such as AC voltage, DC voltage, DC current, Ohms, measures capacitance and decibels, and comes with overload protection and diode test. Includes test leads and instruction manual. Operates on two AA size batteries (not included).

Item No.	Description
YX360TRF	Multimeter

Multimeter includes test leads and a protective plastic case.



Forces & Simple Machines Kit



The Lever as a Balance activity

The Forces & Simple Machines Kit contains a variety of custom made and unique components, including a Force Board, Inclined Plane, and Vector Board. Also included is a complete set of accessories needed for 15 different activities, including an 11 piece weight set, spring scales, pulleys, levers, support base and rod, and much more.

We have also included a comprehensive lab activities manual (over 80 pages) and a CD containing a slide presentation of all experiments that can be performed.

Item No.	Description
FSMKIT-01	Forces & Simple Machines Kit



Moments and the Balance activity



Vector and Scalar Quantities activity



Balancing Forces activity

Basic Simple Machines Kit

This economical version of our Forces & Simple Machines Kit, this set is ideal for introducing students to the concepts of changing force by levers and pulleys, and the notion of mechanical advantage. The manual describes experiments with the three types of levers, single and double pulley systems, and shows the characteristics of each machine.

Contents:

Lever with centimeter scale	1
Pulley	2
Spring scale	1
Weight hanger	2
Slotted weight set	1
Base and support rod	1
Support rod with clamp	1
Hook collar	2
Pulley cord	1
Activity Guide	1



Item No.	Description
FSMKIT02-E	Basic Simple Machines Kit

Force Table

This student force table is a complete set that features a dual scale, an outer scale for accurate pulley positioning and an inner scale for orienting a tracing paper overlay. The set includes four complete weight sets (each with brass slotted weights, 2 x 5g, 4 x 10g, 4 x 20g, and a 20g brass weight hanger), four pulleys with clamps and two sets of strings that allows students to investigate the equilibrium of either three or four forces. A 16" diameter lightweight, durable table top and sturdy cast iron support allow both ease of use and accuracy. Includes activity guide.

Item No.	Description
FTE001	Force Table



Pulleys

These free-running, sturdy pulleys feature 50mm diameter plastic sheaves with deep V-grooves, aluminum frames, and swivel hooks on both ends.



Item No.	Description
PULS01	Single Pulley
PULD02	Double Pulley
PULT03	Triple Pulley
PULQ04	Quadruple Pulley

Tandem Pulleys

Free-running tandem pulleys feature plastic sheaves, plated aluminum frames, and a hook at each end.

Item No.	Description
PTAN01	Single Tandem, 50mm sheave
PTAN02	Double Tandem, 40 & 50mm sheaves
PTAN03	Triple Tandem, 30, 40, & 50mm sheaves



Demonstration Pulleys



These jumbo sized pulleys are designed for classroom demonstration. The single, double, and triple pulleys are all 70mm in diameter. The pulleys are "open" type so users can run pulley cords through them more easily. Lightweight, low-friction, and deformation-resistant plastic ensures accurate results.

Item No.	Description
PUDS01	Demonstration Single Pulley
PUDD01	Demonstration Double Pulley
PUDT01	Demonstration Triple Pulley

Multi-Use Bench Pulley



High quality bench pulley that can be mounted on a support stand rod. Constructed of a heavy duty cast aluminum support frame, this 50mm diameter pulley is mounted on heavy duty low friction cone bearings. Fits table tops up to 1-3/4" thick (4.5cm).

Item No.	Description
PULB01	Multi-Use Bench Pulley

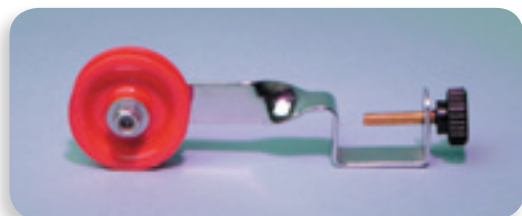
Pulley on Rod

This sturdy pulley is excellent for use with an inclined plane or any other similar apparatus. It features a 4cm plastic pulley mounted on a chrome plated steel rod. The overall length is 15cm and the shaft diameter is 8mm.

Item No.	Description
PROD01	Pulley on Rod



Pulley with Clamp



Rugged plastic pulley with deep V-grooves mounted on a metal clamp. The sheave is 50mm in diameter. Clamp can be mounted on surfaces up to 35mm thick.

Item No.	Description
CLPL01	Pulley with Clamp

Bench Pulley with Clamp, Horizontal

Pulley with table clamp features a sturdy steel frame and a 50mm diameter plastic sheave. Clamp opens to 25mm.

Item No.	Description
PULBN1	Bench Pulley with Clamp, Horizontal



Bench Pulley with Clamp, Vertical



Pulley with table clamp features a sturdy steel frame and a 50mm diameter plastic sheave. Clamp opens to 30mm.

Item No.	Description
PULBN2	Bench Pulley with Clamp, Vertical

Pulley Demonstration Set

Use this convenient set to perform various pulley demonstrations. The durable 20cm x 15cm base is fitted with a capstan and a 61cm tall aluminum support rod. Also includes a 20cm crossbar with clamp. Includes activity guide.

Contents:

Wooden base with capstan, hook and rod support	1
Vertical support rod, 24"	1
Horizontal support rod with clamp, 8"	1
Wheel and axle.	1
Single sheave pulley.	8
Double sheave pulley	2
Tommy bar	1
Clamp holder	1
Hook collar clamp	6
Pulley cord, spool	2
Hooked weight, 1kg.	1
Hooked weight, 500g	1
Hooked weight, 1kg.	1
Hooked weight, 500g	1
Hooked weight, 200g	2
Hooked weight, 100g	1
Hooked weight, 50g	1
Hooked weight, 20g	1
Hooked weight, 10g	1
Activity Guide	1



Item No.	Description
PUDE01	Pulley Demonstration Set

Inclined Plane with Pulley



This versatile and tough steel inclined plane includes a graduated protractor and an adjustable pulley. Incline is 4" wide x 23" long. Includes a 14 oz. roller that can be used as a vehicle on the plane or as a counterweight. Also includes a pan and cord for masses. Includes activity guide.

Item No.	Description
INPL01	Inclined Plane with Pulley
INPL01-R	Roller only for Inclined Plane

Inertia Demonstrator

This durable inertia demonstrator works reliably every time and is a great improvement on traditional versions of this classic experiment. A steel ball rests on a thin metal card on top of a pillar, and a spring-loaded catch is mounted next to the pillar. When the catch is released, a piston strikes the edge of the metal card sharply. The card flies out from under the ball, which remains in place on top of the pillar due to its large inertial mass. The card is tethered to the aluminum base for easy recovery after the experiment. In a second experiment the cord is pulled slowly and steadily. In this case, the ball and card fall off the pillar together. Includes activity guide. Approximate product dimensions are 5" x 3" x 2".

Item No.	Description
IDEM01	Inertia Demonstrator



Friction on an Inclined Plane



This set is used to demonstrate the resolution of forces on an inclined plane, uniform and accelerated motions, kinetic and potential energies, and the friction between two surfaces. The wooden inclined board is 60cm long and 10cm wide. It can be set at any angle between 0 degrees and 45 degrees. The two scales on the protractor allow angle measurements to be made directly or by trigonometry. Students can determine the coefficients of static and sliding friction and verify the normal and frictional components of the force exerted by the plane. The aluminum wheel and cone bearings on the Hall's carriage help minimize friction on the inclined plane. Includes activity guide.

Contents:

Inclined plane with pulley and protractor	1
Hall's carriage.	1
Weight hanging pan (mass not included)	1
Large wooden board	1
Small wooden board	1
Metal plate	1
Activity guide	1

Item No.	Description
INPW02	Friction on an Inclined Plane

Economy Inclined Plane

Economical version of the traditional wood inclined plane. 80cm long x 12cm wide. Made of medium-density fiberboard (MDF). Includes adjustable-angle pulley and a 14mm diameter cross hole for support rod.

Item No.	Description
INPM01	Economy Inclined Plane



Hall's Carriage



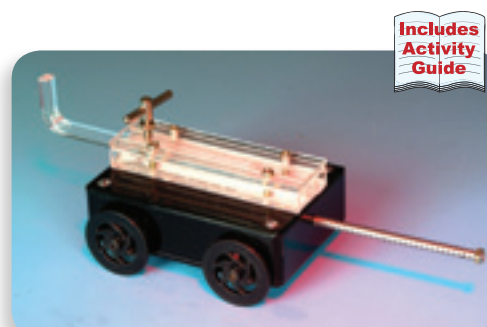
This Hall's carriage has a durable plastic body with a roomy well for additional masses (not included). The machined aluminum wheels and axles are mounted on hardened steel cone bearings for minimum friction and long life. For use with all types of inclined planes.

Item No.	Description
HLCRG1	Hall's Carriage

Impact Car

Sturdy plastic impact car features a graduated spring scale and a slide that is displaced on impact against an obstacle. Includes activity guide.

Item No.	Description
IMPACT1	Impact Car



Fan Cart

A basic, inexpensive Fan Cart powered by two AA size batteries (not included) demonstrates Newton's principle of action and reaction. The batteries are contained in the removable power unit and the fan is controlled by a switch. The propeller delivers a thrust of about 88mN, accelerating the cart at 0.4 m/s^2 . A transparent plate can be attached to show the effect of reversing the airflow. Includes activity guide.

Item No.	Description
FNCRT1	Fan Cart

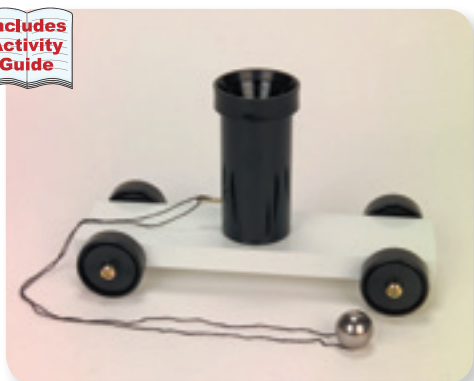


A transparent plate can be attached to show the effect of reversing the airflow.



Ballistics Car

Push the cart and eject the steel ball from the spring-loaded barrel. The ball falls back into the barrel of the moving car, demonstrating that the forward motion of the ball is the same as the vehicle from which it was ejected. Comes with a steel ball, release pin, and cord. The barrel permits two different heights of ball flight. Includes activity guide.



Item No.	Description
BLCAR1	Ballistics Car

Ballistics Car with Remote Trigger

This Ballistics Car demonstrates the independence of vertical and horizontal motions. It consists of a four-wheeled cart carrying a vertical tube with a spring-loaded piston inside. The tube is loaded with a ball and the cart is set in motion. During the motion, the piston is released remotely by a wireless signal, projecting the ball upwards out of the tube. Both the ball and the cart share the same horizontal velocity, which is unaffected by gravity, so that when the ball falls back down, it lands back in the tube and does not get "left behind" by the cart.

Cart includes a conical rubber catcher to compensate for slight trajectory variations. Supplied with two $3/4$ " steel balls. Requires one 9V battery (not included). Includes activity guide.

Item No.	Description
BLCAR2	Ballistics Car with Remote Trigger



The SpillNot™



The design of the SpillNot™ uses the principles of Newtonian physics to keep the liquid in the container. The flexible handle and the location of the suspension point above the center of the tray ensure that the forces on the liquid are always directed towards the supporting tray, even when the tray is in motion. The sideways forces that are usually responsible for spills are not transmitted to the tray by the flexible handle and the radial forces generated during swinging motion only pin the liquid into the container more firmly. An inexpensive demonstration to intrigue students and challenge their analytical powers! Includes activity guide.

Item No.	Description
SPNT01	The SpillNot™

Wheel & Axle

This is a classic device for demonstrating mechanical advantage and the conservation of energy. It consists of a single stepped wheel with four coaxial steps of 35, 50, 65, and 105mm diameter. The wheel is supported on a steel rod by a ball bearing.

Item No.	Description
WAXL01	Wheel & Axle



Maxwell's Wheel

Includes
Activity
Guide



This classic device is used to demonstrate the conservation of mechanical energy and its conversion from one form to another. After the wheel is rotated by hand to roll the supporting cords to the top and then released, its potential energy turns into kinetic energy of rotation as it falls. After the wheel reaches its bottom position, the kinetic energy changes back to potential energy as it rolls the cords up again. This process continues until all the energy is lost to friction. All metal construction. Includes activity guide.

Item No.	Description
MAXW01	Maxwell's Wheel

Low Temperature Difference Stirling Engine

This economical Stirling Engine runs by exploiting the heat flow generated by the small temperature difference between room temperature and a cup of hot water or ice. It is a classic illustration of converting heat energy into mechanical work using a thermodynamic cycle. The engine runs at about 150 rpm when used with a cup of hot water. Additional information available upon request. Includes activity guide.

Item No.	Description
LTDSE1	Low Temperature Difference Stirling Engine

Includes
Activity
Guide



The engine runs fast on a glass of hot water



It slows down later as the top plate warms up



And is revived by ice on the top plate.



The engine also runs in the opposite direction on a glass of ice water.

Hooke's Law Apparatus

Includes
Activity
Guide



Quantitatively show the principles related to Hooke's Law with this complete apparatus. Includes a 14" metal rod that mounts on a 4-1/2" diameter base. Scale in centimeters and inches can be easily adjusted along the rod. The plated steel weight holder and spring are attached to an adjustable collar with crossbar. Requires slotted weights (not included - we recommend our WHST08 set of 8 slotted weights). Includes activity guide.

Item No.	Description
HKLW12	Hooke's Law Apparatus

NEW

New York Demonstration Balance

21st century New York Balance is ideal for demonstrating basic physics principles including levers and center of gravity. Set includes a demonstration balance support, three knife edge lever clamps, a half meter stick, one 50g hooked weight, and one 100g hooked weight. Includes activity guide.

Item No.	Description
NYB001	New York Demonstration Balance



Demonstration Balance Support

Sturdy support for meter stick demonstration balances and torque experiments. The cast metal support is 18.5cm high. Requires knife-edge clamps, slotted weights and hangers, and a meter stick.

Item No.	Description
DBS002	Demonstration Balance Support



Knife Edge Lever Clamp

This clamp can be attached to any standard meter stick. It is used as a knife-edge fulcrum for supporting the meter stick in the inverted position.

Item No.	Description
CLMKE1	Knife Edge Lever Clamp



Half Meter Stick

Hardwood half meter stick for use with our Demonstration Balance Support or other laboratory measurement activities.

Item No.	Description
OBMST2	Half Meter Stick



Friction Apparatus



Includes
Activity
Guide

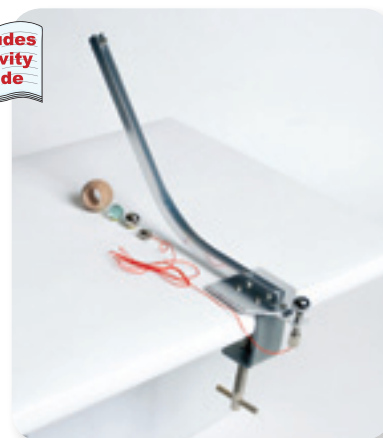
This set includes a friction block and a friction board, both made of high quality, smoothly finished pine wood. The friction block has a hook for a spring scale and three compartments for additional weights. It can be placed face-up or sideways. Students can vary the weight or area of contact to test their impact on the frictional force. The set comes with three 50g weights and a 100g spring scale. The board is 20" x 2" and the block is 4" x 1.5" x 1". Includes an activity guide.

Item No.	Description
FRAP01	Friction Apparatus

Collision in Two Dimensions Apparatus

This apparatus allows students to investigate conservation of momentum and kinetic energy change in collisions. It can also be used to compare elastic and inelastic collisions. A flat base supports a curved aluminum track and an adjustable target support. The kit includes two steel balls, a glass ball, a hollow wooden ball, and a plumb line. Includes activity guide.

Includes
Activity
Guide



Item No.	Description
CTDA01	Collision in Two Dimensions Apparatus

Friction Box



Two leather strips are attached to the bottom of the Friction Box.

This friction box is used for coefficient of friction studies when larger loads are required. The 6" x 3.5" x 2.5" box will accommodate a load of 2kg or more. Constructed of smooth sanded wood with two leather strips attached to the bottom.

Item No.	Description
FRBX01	Friction Box

Newtonian Demonstrator

Excellent for illustrating Newton's Third Law of Motion and the principle of Conservation of Momentum. The five polished metal balls with thin bifilar suspensions on a unique support design provide for better results and stability.

Item No.	Description
NWDM01	Newtonian Demonstrator



Includes
Activity
Guide

Pendulum Balls

These drilled balls are excellent for use as pendulum bobs or in impact and collision experiments. All drilled balls feature 3mm countersunk holes so pendulum cord knots can be recessed.

Aluminum Balls

Item No.	Description
PNBA19	Drilled Aluminum Ball, 19mm diameter
PNBA25	Drilled Aluminum Ball, 25mm diameter
PNBA25-H	Hooked Aluminum Ball, 25mm diameter

Brass Balls, Polished

Item No.	Description
PNBB19	Drilled Brass Ball, 19mm diameter
PNBB25	Drilled Brass Ball, 25mm diameter
PNBB25-H	Solid Brass Ball, With Hook, 25mm diameter
PNBB38-H	Solid Brass Ball, With Hook, 38mm diameter

Copper Balls

Item No.	Description
PNBCP25	Drilled Copper Ball, 25mm diameter
PNBCP38-H	Solid Copper Ball, With Hook, 38mm diameter

Cork Balls

Item No.	Description
PNBCK19	Drilled Cork Ball, 19mm diameter
PNBCK25	Drilled Cork Ball, 25mm diameter
PNBCK38-S	Solid Cork Ball, 38mm diameter

NEW



Plastic Balls

Item No.	Description
PNBP19	Drilled Plastic (Nylon) Ball, 19mm diameter
PNBP25	Drilled Plastic (Nylon) Ball, 25mm diameter

Steel Balls

Item No.	Description
PNBS19	Drilled Steel Ball, 19mm diameter
PNBS25	Drilled Steel Ball, 25mm diameter
PNBS13-S	Solid Steel Ball, 13mm diameter
PNBS19-S	Solid Steel Ball, 19mm diameter
PNBS25-S	Solid Steel Ball, 25mm diameter
PNBS38-S	Solid Steel Ball, 38mm diameter
PNBS25-H	Solid Steel Ball, With Hook, 25mm diameter
PNBS25-L	Solid Steel Ball, With Lugs, 25mm diameter

Wood Balls

Item No.	Description
PNBW19	Drilled Wood Ball, 19mm diameter
PNBW25	Drilled Wood Ball, 25mm diameter

NEW



Assorted Ball Set

A comprehensive set of 12 balls. Includes one each of 25mm diameter drilled aluminum, copper, steel, and wood balls, two each of 25mm drilled brass balls, two each of solid steel balls (one plain and one with suspension lugs), 38mm diameter brass, steel, and copper balls with hooks, and a 38mm cork ball. All drilled balls feature 3mm countersunk holes so pendulum cord knots can be recessed. Packed in a plastic storage box.

Item No.	Description
DBLST12-A	Assorted Ball Set

Drilled Ball Set

An economical set of 12 drilled balls for all your pendulum experiments. Set contains two each 25mm diameter balls of brass, aluminum, steel, wood, cork, and copper, in a plastic box for easy storage. All drilled balls feature 3mm countersunk holes so pendulum cord knots can be recessed.

Item No.	Description
DBLST12	Drilled Ball Set

NEW



Set includes a clear plastic box with foam insert for convenient storage.

Free Fall Apparatus

This convenient free fall apparatus for measuring the acceleration of gravity has a 150cm fall length. It includes an electromagnetic ball release, a pair of photogates on a long cable harness, two steel balls, a plumb line, and a catcher. Requires the digital timer DTPHG1 (not included). More detailed description available upon request. Includes activity guide.



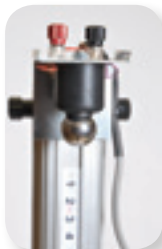
Item No.	Description
FFA001	Free Fall Apparatus
DTPHG1	Digital Timer with Photogates



Digital Timer with Photogates



Catcher



Electromagnetic ball release



Photogate mounted on Free Fall Apparatus

Free Fall Tube



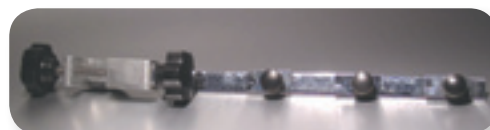
An economical version of a classic device! It demonstrates that all objects experience the same gravitational acceleration and fall at the same speed in a vacuum, but in air the air resistance slows down some objects more than others. Features a disc and a feather in a tough, clear, plastic tube, 90cm long and 4.5cm diameter, with rubber end caps and hose cock for connection to any standard vacuum pump (not included). Includes activity guide.

Item No.	Description
FFT001	Free Fall Tube

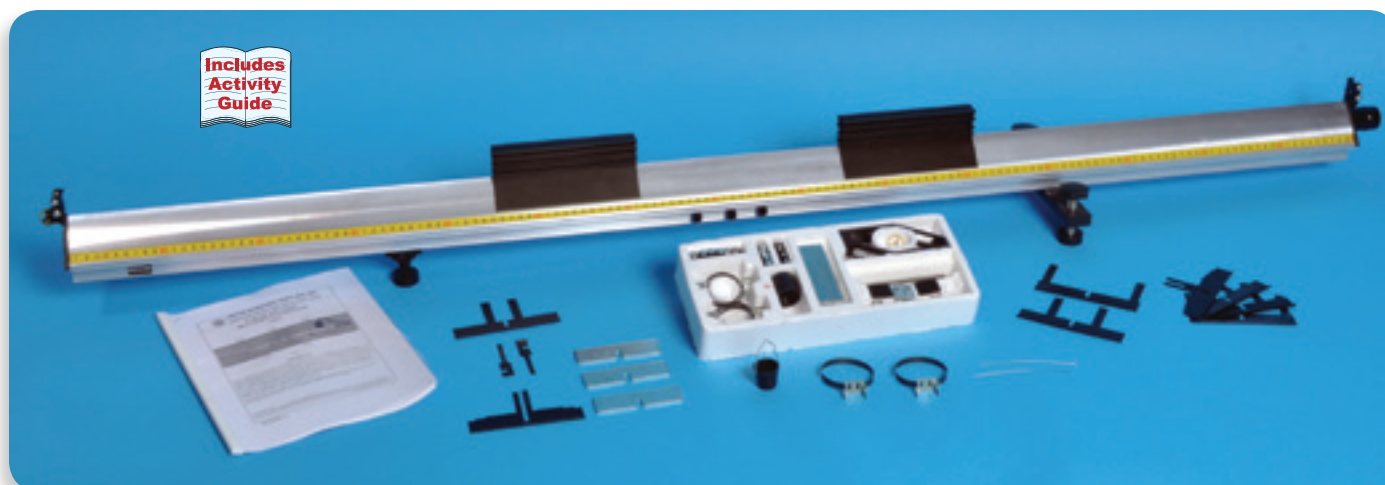
Pendulum Clamp

Connect this clamp to any support rod to set up three separate pendulum demonstrations. Includes individual cord clamps.

Item No.	Description
CLPEN1	Pendulum Clamp



Air Track and Accessories



ATRK01

This air track is constructed of high quality aluminum alloy and has the advantages of being both lightweight and highly durable. Precision machining provides a smooth surface and high linearity. It includes a comprehensive accessory package for experiments in linear motion. The track length is 150cm or 200cm sizes, and it is straight to better than 0.1mm throughout. Includes activity guide

NOTE: This item requires an air source, item QAS001-V, and a digital timer with photogates, item DTPHG1 (both not included). More detailed description available upon request.



ATRK01 Air Track includes a large assortment of accessories.

Item No.	Description
ATRK01	Air Track and Accessories, 150cm
ATRK02	Air Track and Accessories, 200 cm

Quiet Air Source with Variable Output



This low noise (<58dB) air source is an ideal accessory for air tracks, air tables, and other pneumatic equipment in physics labs. The 250W motor produces a clean air output with a flow rate of 35 m³/hour at a 0.70 kPa overpressure.

Item No.	Description
QAS001-V	Quiet Air Source with Variable Output

Digital Timer with Photogates

This four-digit timer is designed to be used with air tracks, free fall apparatuses, and other equipment. It is microprocessor-controlled and offers eight programmed functions to record counts, interruption timing, time between interruptions, period of oscillation, acceleration, acceleration due to gravity, velocity in collisions, and time scale output. It comes with two photogates. Includes activity guide.

Item No.	Description
DTPHG1	Digital Timer with Photogates
DTPHG1-P	Pair of Photogates with Brackets



Wave Motion Demonstrator

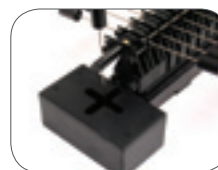


This unique and versatile transverse wave machine consists of a series of pendulums independently suspended on a common base and coupled together by long, light springs. It has two modules with 21 pendulums each, a damping unit with a paddle and water bath, and a motor-powered eccentric driver for controlled excitation of traveling or standing waves. The ends of the pendulums are bright yellow for excellent visibility of the wave pattern. Coupling hardware is supplied so that the demonstrator can be used with either a single module or with both modules coupled to make a longer machine. A brake mechanism allows all the pendulums to be arrested simultaneously, "freezing" the momentary pattern of the pendulums.

Basic phenomena in transverse wave propagation can be clearly shown. Using the damping module, running waves can be generated and standing wave patterns, wave reflection, and superposition can be shown when the damping module is removed. Includes activity guide.



Pendulums are independently suspended on a common base and coupled together by long, light springs.



The damping unit with paddle and water bath can be used to generate running waves.



Motor powered eccentric driver can create traveling or standing waves.



Modules can be used independently or together as a longer machine.

Item No.	Description
WMD001	Wave Motion Demonstrator

Ripple Tank



This device demonstrates the generation, propagation, reflection, interference, and diffraction of waves. It comes with all accessories necessary for these experiments. A 6V DC power source and an overhead projector are required (not included). Includes activity guide.

Item No.	Description
RPLTNK1	Ripple Tank

Tuning Forks

Made of aluminum alloy. The frequency and scale letter is stamped on each fork.



TFSET8



TFSET13

Individual Tuning Forks

Item No.	Description / Frequency (Hz)	Note
TFK100	100	-
TFK128	128	C
TFK256	256	C'
TFK288	288	D'
TFK320	320	E'
TFK341	341.3	F'
TFK384	384	G'
TFK426	426.6	A'
TFK480	480	B'
TFK512	512	C''
TFK640	640	E''
TFK1024	1024	C'''
TFK2048	2048	C''''
TFK4096	4096	C'''''

Tuning Fork Sets

Item No.	Description
TFSET8	Set of 8 - 256 to 512 Hz
TFSET13	Set of 13 - 100 to 4096 Hz

Tuning Fork Boxed Set of 8

Tuning Fork Boxed Set of 8 includes a wooden box with foam lining. Each tuning fork has a specific place in the foam lining die-cut for easy storage. Also contains a mallet specially designed with one hard and one soft end for use with all frequencies of forks. Contains one each of tuning forks with frequencies of 256, 288, 320, 341.3, 384, 426.6, 480, and 512 Hz.

Item No.	Description
TFBOX8	Tuning Fork Boxed Set of 8



Tuning Fork Boxed Set of 13



Tuning Fork Boxed Set of 13 includes a wooden box with foam lining. Each tuning fork has a specific place in the foam lining die-cut for easy storage. Also contains a mallet specially designed with one hard and one soft end for use with all frequencies of forks. Contains one each of tuning forks with frequencies of 100, 128, 256, 288, 320, 341.3, 384, 426.6, 480, 512, 1024, 2048, and 4096 Hz.

Item No.	Description
TFBOX13	Tuning Fork Boxed Set of 13

Resonance Box with Tuning Forks

Each unit consists of a wooden resonator box, tuning fork, and a tuning fork mallet. Resonator box is 18cm x 9cm x 5cm. Available in four tuning frequencies listed below. Additional frequencies can be made per your specifications.

Item No.	Description
TFRB256	Resonance Box with Tuning Fork, 256 Hz (C')
TFRB320	Resonance Box with Tuning Fork, 320 Hz (E')
TFRB341	Resonance Box with Tuning Fork, 341.3 Hz (F')
TFRB512	Resonance Box with Tuning Fork, 512 Hz (C'')



Tuning Fork & Striker Set



Discover the science of music with the tuning fork and striker set. The 256 Hz tuning fork is made of high-quality aluminum alloy and has been accurately calibrated. A rubber hammer striker for sounding the tuning fork is included.

Item No.	Description
TFSS01	Tuning Fork & Striker Set

Tuning Fork Mallet with Rubber Striker

Economical mallet for striking tuning forks includes a spherical hard rubber head on a hardwood handle.

Item No.	Description
TFWHAM	Tuning Fork Mallet with Rubber Striker



Tuning Fork Mallet with Acrylic/Rubber Striker



Tuning fork mallet has a head with one end made of hard acrylic and the other end made of rubber. Head is mounted on a metal rod with an easy-grip wooden handle.

Item No.	Description
TFHAMR	Tuning Fork Mallet with Acrylic/Rubber Striker

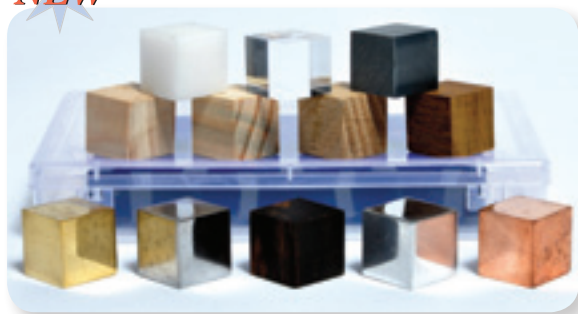
Wave Demonstrator Set

Set includes two helical springs. The long, narrow spring measures 3/4" x 72" and can be extended to 5 meters. The larger spring measures 3" x 4", and can be extended many times its length without distortion. Includes activity guide.

Item No.	Description
WDSET1	Wave Demonstrator Set (both springs and cotton string)
WDS006	Spiral Spring, 3/4" x 72"
FCS003	Flat coiled spring, 3" x 4"



NEW



Density Cube Set of 12

This set of 1" cubes includes one each of acrylic, oak, pine, poplar, steel, aluminum, copper, brass, nylon, PVC, lignum vitae, and polypropylene cubes packaged in a plastic storage box. Includes a reference table showing density values of individual specimens.

Item No.	Description
DCSET12	Density Cube Set of 12 in Plastic Storage Box

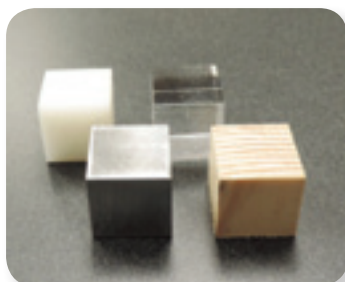
Density Cube Set of 10

This set of 1" cubes includes one each of acrylic, oak, pine, poplar, steel, aluminum, copper, brass, nylon, and PVC cubes packaged in a wooden storage box. Includes a reference table showing density values of individual specimens.

Item No.	Description
DCSET10	Density Cube Set of 10 in Wooden Storage Box



Density Cube Set of 4



This set includes one each of acrylic, pine, nylon, and aluminum cubes packaged in a poly bag. Includes a reference table showing density values of individual specimens.

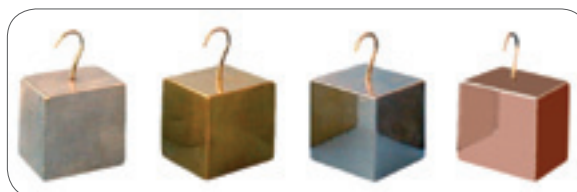
Item No.	Description
DCSET4	Density Cube Set of 4 in Poly Bag

Density cubes can be custom sized or assembled into sets per your specifications. Please contact us to discuss your specific needs.

Density Blocks, Hooked Set of 4

These oversized blocks demonstrate the density of four different materials - aluminum, brass, steel, and copper. Each cube is 3.2cm and has a hook. Includes a reference table showing density values of individual specimens.

Item No.	Description
SGHC04	Density Blocks, Hooked Set of 4



Equal Volume Metal Squares, Set of 4

Square specimen set is used for density and specific gravity studies. Set of four includes aluminum, copper, steel, and brass cylinders. Includes a storage box and activity guide.

Item No.	Description
SGVS04	Equal Volume Metal Squares, Set of 4



Equal Mass Metal Cylinders, Set of 5



Each specimen in this set of five metal cylinders has identical mass and radius. Materials included are aluminum, zinc, tin, steel and copper. Includes a storage box and activity guide.

Item No.	Description
SGMC05	Equal Mass Metal Cylinders, Set of 5

Equal Mass Cylinders, Set of 5

Each specimen in this set of five diverse materials cylinders has identical mass and radius. Materials included are acrylic, PVC, nylon, aluminum and brass. Includes a storage box and activity guide.

Item No.	Description
SGMD05	Equal Mass Diverse Materials Cylinders, Set of 5



Equal Volume Metal Cylinders, Set of 4



Cylinder specimen set is used for density and specific gravity studies. Set of four includes aluminum, copper, steel, and brass cylinders. Includes a storage box and activity guide.

Item No.	Description
SGVC04	Equal Volume Metal Cylinders, Set of 4

Bimetal Strip / Compound Bar



**Includes
Activity
Guide**

A quick and easy tool for demonstrating thermal properties of matter. Bar is bi-metallic and has a wooden handle attached. When heated, the bar bends dramatically. Includes activity guide.

Item No.	Description
BMST05	Bimetal Strip / Compound Bar

Heat Conductometer

This item is used for comparing the thermal conductivities of aluminum, brass, steel, nickel, and copper. The five radial spokes are attached to a brass hub. Each rod is marked with the metal name on the hub. There are notches in each rod to hold a wax pellet.

The unit comes assembled and with a supply of wax. Includes activity guide.

Item No.	Description
CNDM01	Heat Conductometer



**Includes
Activity
Guide**

Ball and Ring Apparatus

**Includes
Activity
Guide**



All brass construction with brown lacquer finish wood handle. Includes activity guide.

Item No.	Description
BRA001	Ball and Ring Apparatus

Density Rod

Machined aluminum cylinder floats in cold water, but sinks in warm water. Includes activity guide. Measures 0.65" diameter x 3.5" long. Weight is 0.5 oz.

Item No.	Description
DNROD1	Density Rod



**Includes
Activity
Guide**

Hydrometer

Hydrometer for determining the specific gravity of liquids. Includes a reusable storage tube.

Item No.	Description	Specific Gravity Range
HYML01	Hydrometer	0.700 - 1.000



Specific Gravity Bottles, Borosilicate Glass



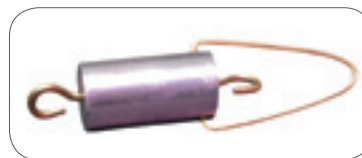
These uncalibrated borosilicate glass bottles are excellent for determining the specific gravity of liquids. Include a ground glass stopper with a hole to allow air to escape. Available in 10ml or 25ml sizes.

Item No.	Description
SGB010	Specific Gravity Bottle, 10ml
SGB025	Specific Gravity Bottle, 25ml

Bucket and Cylinder

This Archimedes' Principle apparatus consists of a solid metal cylinder in a close-fitting metal bucket. The bucket is 50mm long and 19mm in diameter and has a displacement capacity of approximately 22ml.

Item No.	Description
BCL001	Bucket and Cylinder



Archimedes' Principle Apparatus, Large



This oversized model has a larger displacement capacity (100ml) than our traditional aluminum model (22ml) for higher accuracy and easier operation. Also, both the cylinder and the cup have marked divisions which allow the students to repeat the experiment with different volumes. The cylinder is made of white nylon. This item requires a 200g spring scale, an overflow can, and a beaker (not included). Includes activity guide.

Item No.	Description
BCL002	Archimedes' Principle Apparatus, Large

Overflow Can and Bucket Set

An aluminum overflow can and a catch bucket are packaged as a convenient set for use in Archimedes' Principle, density, and specific gravity experiments. The overflow can measures 4" I.D. x 5" high and has a capacity of approximately 800ml. Its spout is 0.5" I.D. x 1.5" long. The catch bucket with detachable aluminum handle measures 4" I.D. x 3" high. The can and bucket are also sold separately.

Item No.	Description
OFLSET	Overflow Can and Bucket Set
OFLCN1	Overflow Can only
CABKT1	Catch Bucket only





Double Walled Calorimeter

This calorimeter consists of two nested aluminum cans separated by a 1.7cm thick styrofoam liner and a clear molded plastic lid with a filler cap. A plastic insulator ring protects the styrofoam insulation against damage and liquid spills. The inner reservoir has a capacity of 150ml. A thermometer stopper and an insulated stirrer are included. Includes activity guide.

Item No.	Description
CLRM01	Double Walled Calorimeter

Radiation Can Set

Two identical sized screw cap metal cans (one smooth metal and other painted dull black) to demonstrate the difference in cooling rates of hot water inside the cans due to different surfaces. The difference in the cooling rates is attributed to the thermal radiation emitted by the two cans. Includes activity guide.

Item No.	Description
RDCN02	Radiation Can Set



NEW

Radiation Can Kit

Demonstrate how two identically sized cans absorb and radiate energy differently. One of the screw cap cans is smooth metal and the other is painted dull black. Water cools or heats at different rates because of the thermal radiation emitted by the two cans. Kit contains a lamp assembly with reflector and stand (bulb not included), one smooth metal can, one black metal can, and thermometer. Includes activity guide. Lamp assembly with stand is also sold separately.

Item No.	Description
RDCNKIT	Radiation Can Kit
LWB001	Lamp Assembly with Stand

NEW



RDCNKIT



LWB001

Radiometer

Our Radiometer is made from a glass bulb from which much of the air has been removed. Inside the bulb, on a low-friction spindle, is a rotor with four vanes. Each vane has one blackened side and one silvered side; one black vane features a white dot in order to count rotations easily. When exposed to sunlight or artificial light, the vanes turn with no apparent motive power. This effect is due to differential heating of the black and silvered vanes.

Item No.	Description
RADIO1	Radiometer



Boyle's Law Apparatus

This low cost apparatus is great for demonstrating Boyle's law (elasticity of gases). A plastic syringe is mounted on a wooden base. A piston is mounted to a platform that holds various size weights, allowing students to plot pressure versus volume of gases in the cylinder. Includes activity guide.



Item No.	Description
EGA001	Boyle's Law Apparatus

Metal Magdeburg Hemispheres



These heavy duty Magdeburg hemispheres are closer to the original version than plastic or rubber models. Thick cast iron walls and large steel handles make this item extremely durable. Plated brass valve and precision machining prevent leakage.

Item No.	Description
MGH001	Metal Magdeburg Hemispheres

Convection of Gases Apparatus

This apparatus consists of a metal box (22 x 10 x 11cm) with clear acrylic front panel, two glass chimneys, a candle, and a cotton filled wick as the smoke source. Includes activity guide.



Item No.	Description
CGA001	Convection of Gases Apparatus

Hand Air Pump



This pump features a painted steel barrel, steel valve assembly, and a wooden handle. Both in and out ports are equipped with hose connectors, for use with vacuum experiments as well as to generate pressure. Creates vacuum of 20" Hg.

Item No.	Description
HAP001	Hand Air Pump

Foot Pump

This foot operated air pump is equipped with a 15" hose with locking valve and features a pressure gauge. Ideal for use with rocketry kits.

Item No.	Description
APF001	Foot Pump



NEW

**Includes
Activity
Guide**

Sling Psychrometer

Use this simple apparatus to measure relative humidity. Includes two plastic-backed Celsius thermometers, one for dry bulb measurements and the other for wet bulb measurements. The thermometers mount on a wooden handle so they can be spun to obtain temperature readings. Includes an activity guide with relative humidity calculation table. Requires assembly.

Also available as a class pack of 15.



Assembled sling psychrometer includes wet and dry bulb thermometers.

Item No.

Description

SPCRKIT

Sling Psychrometer

SPCRKIT-PK/15

Sling Psychrometer, pack of 15

Aneroid Barometer

Mounted on a plastic base, with a ring for easy hanging. Includes an instruction sheet. Overall diameter is 7.5".

Item No.

Description

ANBR01

Aneroid Barometer

**Includes
Activity
Guide**



Simple Anemometer

This simple tool measures wind speed and direction. The wind speed range is 0 to 17 meters per second (+/-10%). The direction indicator is divided into 16 compass points. A built-in compass is provided.

Item No.

Description

ANMM01

Simple Anemometer



Solar System Model

This nicely constructed three dimensional model is a great way to explain the solar system to students. The model is mounted on a sturdy base. Includes a key.

Item No.

Description

SLSY01

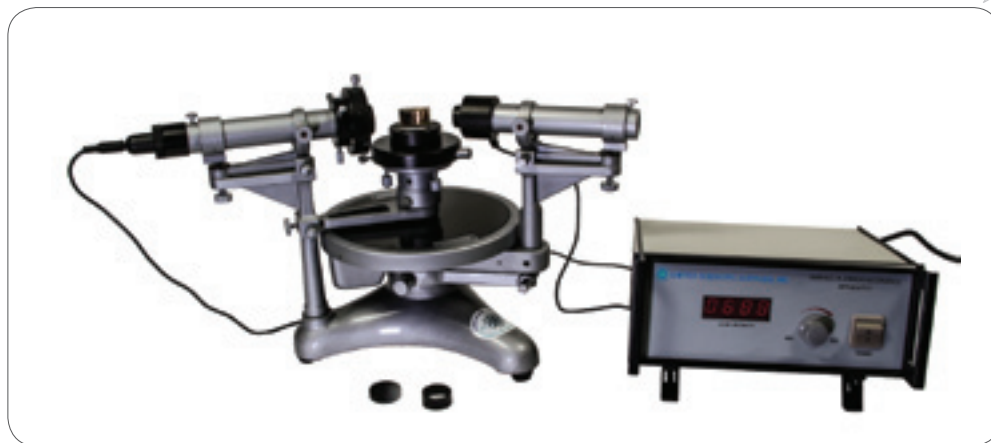
Solar System Model

NEW



- The items shown on pages 73 to 89 are suitable for more Advanced Physics labs. Detailed technical descriptions and sample copies of Activity Guides are available upon request.
- We do not hold stock of these items, but we can ship any of them in approximately 90 days. These items can be drop-shipped to your customers.
- Each unit is inspected and tested before shipment from our Waukegan IL facility. Our staff Physicist, Dr. Martin Taylor, will be glad to provide any post-sale technical assistance as needed.

Surface Plasmon Resonance Apparatus



Contents:

1. SPR Electronics Unit, 110V	1
2. Centering reticle for setup	1
3. Syringe for inserting sample	2
4. Polarizing Filter Unit	1
5. Connecting Cables	2
6. Optical Support for Prism	1
7. Light Sensor Unit	1
8. Centering Pin Puck	1
9. Laser Light Source Unit	1
10. SPR Prisms	2

Required Accessory: . . . SPECT02 Intermediate Spectrometer

Item No.	Description
SPRA01	Surface Plasmon Resonance Apparatus

- Demonstrate the principles of SPR analysis
- Use a light beam to excite resonant electron oscillations under specific conditions
- Includes a collimated laser, polarizer, and photodetector

Surface Plasmon Resonance is an analytical technique used for detecting and tracking a wide variety of surface processes such as DNA and protein interactions, drug mechanisms, immunoassays, anodic stripping, corrosion, gas detection, and many more.

In this technique, a light beam interacts with the electron plasma in a metal film at a metal-dielectric interface to excite resonant electron oscillations—plasmons—under specific conditions. The component of the photon momentum parallel to the metal surface must match the plasmon momentum. This occurs at a specific incidence angle of the light beam, which is highly sensitive to the state of the surface. In particular, any material attached to the surface produces a detectable change in the resonance angle.

The resonance is detected by monitoring the intensity of a totally internally reflected laser beam as a function of incidence angle. At resonance, light energy is absorbed and a significant intensity drop is observed.

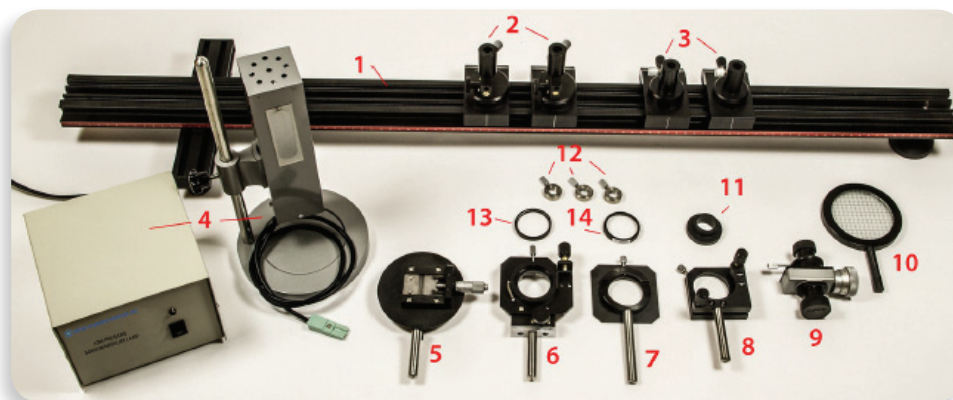
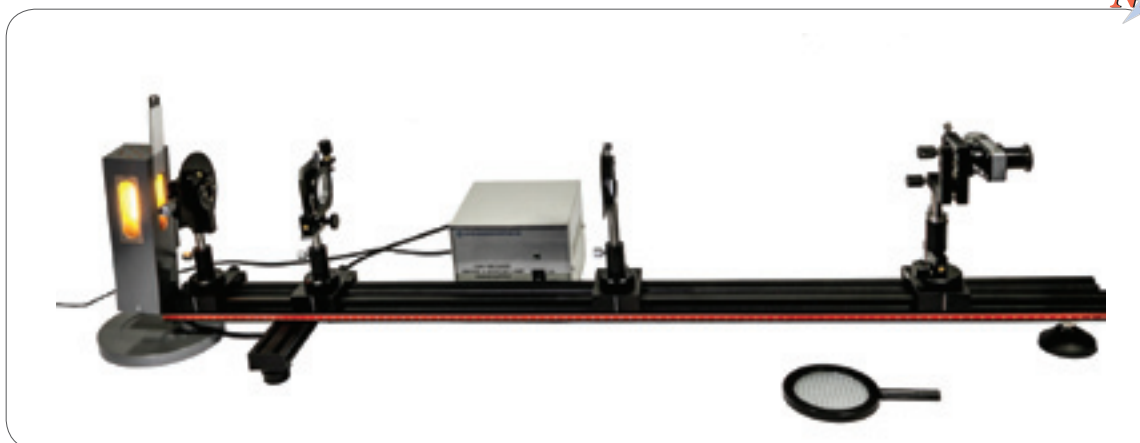
The apparatus is used together with the United SPECT02 Intermediate Spectrometer (not included). The spectrometer's slit, lenses, and eyepiece are replaced by a collimated laser, a polarizer, and a photodetector. An adjustable support plate for the SPR prism fits onto the spectrometer's table and an electronic unit controls the laser and measures the light output.

The SPR prism consists of a precise semicircular glass block with a thin layer of gold deposited on the flat surface and a plastic pocket for liquid samples fixed behind it (the Kretschmann configuration.)

At the laser beam's incidence point, an evanescent wave propagates through the gold layer. Surface plasmons are excited at the interface between the gold layer and the liquid sample, diverting energy from the monitored reflected laser beam.

Precision Fresnel Biprism Interference Apparatus

NEW



- **Perform Fresnel's Biprism Experiment on a 1m optical bench**
- **Precision optics allow fringe position measurements to 1/100mm**
- **Easy alignment and adjustment of the two virtual light sources**

Fresnel's Biprism Experiment is the fundamental example of common path interference by division of wavefront. Light from a slit passes through side-by-side prisms with very shallow angles to separate it into two almost parallel beams. When these beams are brought to overlapping by a convex lens, they interact as if they originated from two virtual sources side by side and generate equally-spaced fringes. The original version of the experiment by Fresnel is difficult to perform because it requires precise adjustment of the slit and prisms, a dark room, and a large amount of space to separate the fringes for easy viewing.

This apparatus allows these issues to be resolved by using a precision angle-adjustable slit, a prism carrier with both lateral and angular adjustment, and a micrometer eyepiece to allow fringe separation measurements to 1/100mm. The experiment can be carried out on a 1m optical bench with only dimmed lighting.

The micrometer eyepiece has a range of ± 4.00 mm with a backlash-free, easy-to-read drum scale.

During setup, the two virtual sources are focused onto a ground glass screen for easy alignment and adjustment so that the sources are parallel and of equal intensity.

The fringes show good contrast and separation for dark-dark position measurements.

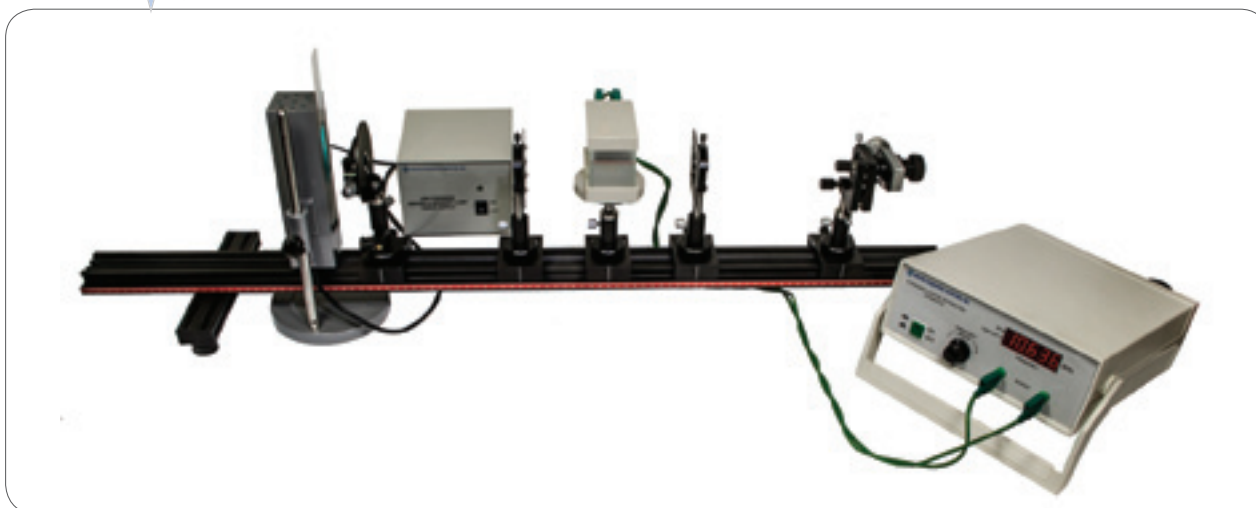
Contents:

1. Optical Bench, 1000mm	1
2. Riders, Lateral Adjustment	2
3. Riders, Plain	2
4. Sodium Lamp, 20W, 110V	1
5. Adjustable Slit	1
6. Biprism Carrier, Adjustable	1
7. Lens Carrier, Plain	1
8. Eyepiece Carrier, Adjustable	1
9. Micrometer Eyepiece	1
10. Ground Glass Screen	1
11. Eyepiece Adapter Ring	1
12. Height Fixing Collar	3
13. Biprism	1
14. Lens, $f = +150$ mm	1

Item No.	Description
PFB001	Precision Fresnel Biprism Interference Apparatus

NEW

Ultrasonic Grating Apparatus



Contents:

1. Optical Bench, 1000mm	1
2. Rider, Lateral Adjustment.	1
3. Riders, Plain	4
4. Micrometer Eyepiece	1
5. Eyepiece Adapter Ring	1
6. Glass Tank for HF Grating	1
7. HF Generator and Frame	1
8. Optical Table.	1
9. Connecting Cords	2
10. Lenses, $f = +170\text{mm}$	2
11. Height Fixing Collar	1
12. Eyepiece Holder, Adjustable	1
13. Lens Holders, Plain	2
14. Adjustable Slit	1
15. Mercury Lamp, 20W, 110V	1

- **Demonstrate the interaction of longitudinal sound waves and transverse light waves**
- **Precisely determine the speed of sound in liquids**
- **Use with any clear non-aggressive liquid of low electrical conductivity**

The Ultrasonic Grating Apparatus is both a unique demonstration of the interaction of longitudinal sound waves and transverse light waves and also a method for the precise determination of the speed of sound in liquids, which is otherwise difficult to do in the undergraduate lab.

The core of the apparatus is a parallel-sided glass tank that houses the liquid sample and contains a lead zirconate titanate (PZT) ultrasonic transducer. The transducer is energized by an RF signal in the 8-12 MHz range. Resonances can be found to set up a standing wave field in the liquid, which results in a periodic variation of the liquid's refractive index along the tank.

If a parallel light beam is now shone through the tank normally to the standing wave field, the liquid acts as a diffraction grating, producing fringes that can be measured with a micrometer eyepiece. In practice, the eyepiece is focused on the source slit and the exciting RF frequency is adjusted until the interference fringes appear.

The apparatus can be used for any clear non-aggressive liquid of low electrical conductivity. For aqueous solutions, the speed of sound is significantly affected by the dissolved matter. Distilled water and ethanol are suitable starting liquids.

Item No.	Description
UGA001	Ultrasonic Grating Apparatus

Michelson and Fabry-Pérot Interferometer



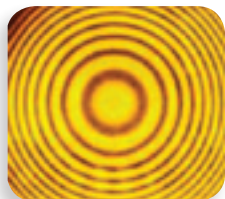
- **Precise, solidly constructed instrument for advanced studies**
- **Easily interchangeable Michelson and Fabry-Pérot configurations**
- **Precision geared mirror drive for 0.0001mm resolution**

The Michelson/Fabry-Pérot Interferometer base consists of a substantial casting that supports a machined and ground lathe bed at a convenient height for observation. The lathe bed has a precise 1mm pitch geared lead screw to adjust the movable mirror carriage. The large coarse adjustment knob sets the mirror position to within 0.01mm, read on a 205mm divided steel scale and a numbered dial for fractions of a millimeter. A further graduated fine adjustment knob reads to 0.0001mm, and is an excellent control for precise displacements and ring counting.

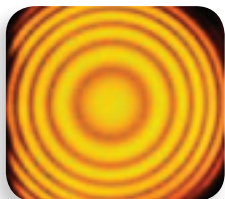
The interferometer optics fixed parts are mounted on vertical steel plates that attach to the side of lathe bed, while the movable mirrors for both configurations are fitted directly onto the moving carriage. Each mirror carries three coarse adjustment screws, and the fixed mirrors also have a two-dimensional flexion bar fine adjustment system. The optical elements themselves are of high quality optical glass, with surfaces flat to within $1/4$ wavelength of green light, giving high quality images across the visible spectrum.

The instrument includes a 3x fixed focus telescope with diopter adjustment for viewing remotely located fringe patterns and a 70mm diameter ground glass screen with a 5mm pitch grid for easy setup and viewing projected localized fringes. An operator's manual is also included.

Due to its precise construction, large range of mirror movement, and high quality optics, this instrument is ideal for precise wavelength determinations, refractive index measurements, and other demanding optical work.



Sample Fabry-Pérot interference pattern using sodium light.



Sample Michelson interference pattern using sodium light.

Specifications

Optics

Michelson mirror diameter: 34mm
Beam splitter & compensation plate: 35 x 40mm, 7.5mm thick
Distance, beam splitter to fixed mirror: 70mm
Fabry-Pérot mirror diameter: 24mm

Mechanical

Maximum mirror travel: 175mm (Michelson), 195mm (Fabry-Pérot)
Gearing: Coarse; 2.00mm per turn, fine: 0.01mm per turn
Dimensions: 55 x 22 x 40cm, weight: 19.4 kg



Fine control gearbox



Fabry-Pérot configuration.



Michelson configuration.

Item No.

MFPI01

Description

Michelson and Fabry-Pérot Interferometer

Laser Optics Demonstrator

- Comprehensive optical demonstration system with built-in He-Ne laser
- Top quality optical components for over 75 demonstrations
- Demonstrate both ray optics and selected wave phenomena in a lighted room

The **Laser Optics Demonstrator** consists of a base unit with a built-in He-Ne laser, deflection system and ray optics board, and an accessory case with 30 optical quality glass components mounted on carriers, three magnetic base supports, and a mechanical stage for wave optics experiments. An extensive operator's manual describes 51 ray optics demonstrations and 27 interference and diffraction experiments.

The **illumination system** consists of an enclosed horizontal He-Ne laser whose beam is diverted upwards at the left side of the instrument. A removable cylindrical lens on the top of the base fans the beam out for ray optics demonstrations. The beam then enters a series of five graded partially silvered mirrors that generate five equally intense beams. The mirror case is adjustable vertically and horizontally for positioning the ray bundle on the ray optics board, and the mirrors are independently adjustable to allow direct demonstrations of image formation (see illustration) and to allow a single beam to be generated for wave optics experiments.

The **ray optics board** carries a flush 360° graduated table at its center. The table can be rotated by a knob on the back of the board and has a central recessed magnet for holding optical elements in place. Each ray optics element is mounted on a chrome plated steel carrier rod that fits into the table recess. The collection of elements includes convex and concave lenses, plane, spherical, and angled mirrors, blocks and prisms, and simple optical instruments. A fiber optics demonstrator is also included.

For **wave optics experiments**, magnetic base supports fit onto the base to carry lenses and a polarizer as well as an air wedge and Fresnel's bi-prism and mirror. For other diffraction and interference arrangements, a mechanical stage attaches to the right side of the ray optics board to support and adjust three diaphragms that carry 34 different diffraction and interference apertures and obstacles. The diaphragms are mounted glass plates with an evaporated aluminum film, giving excellent contrast in the images. An additional film diaphragm carries nine more complex diffraction objects. Many interference and diffraction experiments can be viewed comfortably in a lighted room, but more extended patterns or diffraction at very small apertures require darkening.

Storage. The Laser Optics Demonstrator comes in a fitted metal carrying case that accommodates the base unit, the molded accessory case, and the operator's manual.

Specifications

Dimensions:

Base unit: 37cm L x 12.5cm W x 33cm H

Carrying case: 15" x 15" x 13"

Weight: 12 kg

The unit operates on 110V/60 Hz



Image formation by a convex lens.

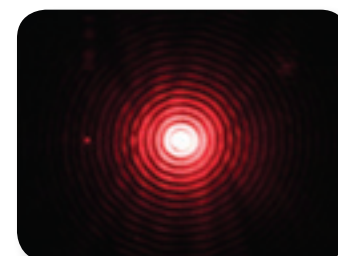


Photo of circular aperture diffraction pattern.

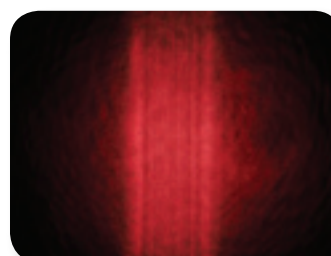


Photo of Fresnel's Mirror fringes.

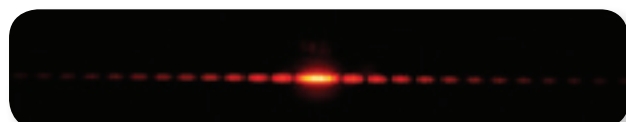


Image of Young's Double Slit experiment.

Item No.	Description
LOD001	Laser Optics Demonstrator

Photoelectric Effect Apparatus



- Study electron photoemission from a metal surface
- Obtain the characteristic curves of a vacuum photocell
- Explore the effect of illumination intensity using the inverse square law

The **Photoelectric Effect Apparatus** allows the photoelectric emission from a mixed metal cathode in vacuum to be studied. It consists of a light-tight box connected to a control and measurement unit by shielded cables.

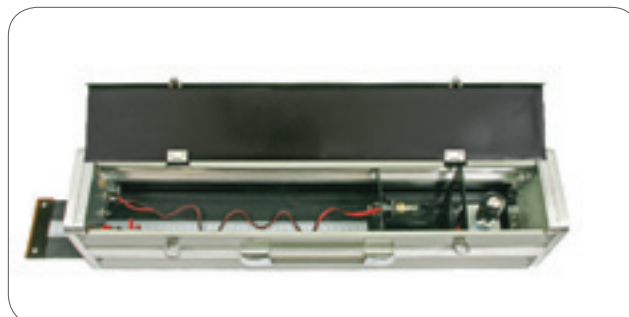
The **light-tight box** contains a vacuum phototube with a Cs/Sb cathode and a current-controlled incandescent lamp mounted on a slide operated from outside the box to vary the illumination of the phototube.

The **control and measurement unit** contains an adjustable highly stabilized lamp power supply. The current is indicated on a three-digit display. A second, independent, highly stabilized voltage source controlled by a multi-turn potentiometer applies a precise dc extraction voltage to the phototube electrodes. The applied voltage is indicated on a three-digit display. The resulting photocurrent is measured by a sensitive amplifier and indicated on a 3-1/2-digit display.

The **apparatus shows** the linear relation between light intensity and emission current and demonstrates the space charge dominated and saturation regions of the emission current relationship to the extraction voltage.



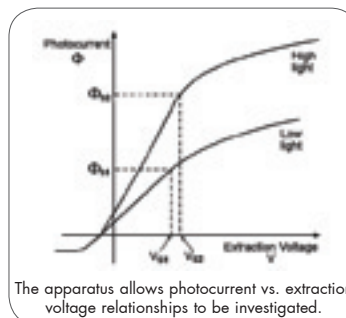
The control and measurement unit contains a highly stabilized lamp power supply adjusted by a multi-turn potentiometer.



The light-tight box contains a vacuum phototube mounted on a slide operated from outside the box to vary the illumination.

Specifications

Phototube:	Type GD-51 Mixed metal vacuum tube (Cs/Sb), rated voltage: 24V Integral sensitivity (white light): 100 μ A/Lm
Lamp:	Incandescent lamp, 12V/5W
Control Unit:	Lamp supply: 185mA—665mA, display resolution: 1mA Electrode voltage supply: -25.5V—+23.5V display resolution: 0.1V Photocurrent amplifier ranges: 0—19.99 μ A x 0.01 μ A; 0—199.9 μ A x 0.1 μ A Dimensions: 35cm x 26cm x 12cm Weight: 4.5 kg
Light-tight Box:	Slide range: 0.5 - 40.0cm, mm scale Dimensions: 60.5cm x 12cm x 15cm Weight: 3.8 kg



The apparatus allows photocurrent vs. extraction voltage relationships to be investigated.

Item No.	Description
PEEA01	Photoelectric Effect Apparatus

Planck's Constant Apparatus



- Compact, easy-to-use apparatus
- Accurate results with less than 5% error
- Measures Planck's constant and estimates the work function of cesium

The **Planck's Constant Apparatus** is a compact unit containing an enclosed vacuum photocell with an attachment for illuminating light sources, a high stability power supply for applying a variable stopping voltage to the cell and a nanoammeter for measuring the resulting photocurrents.

Light from five interchangeable narrow spectrum LEDs is applied to the photocell from a second integrated high stability power supply via an enclosed fiber optic connecting cable that plugs into the photocell enclosure so that the ambient illumination is excluded.

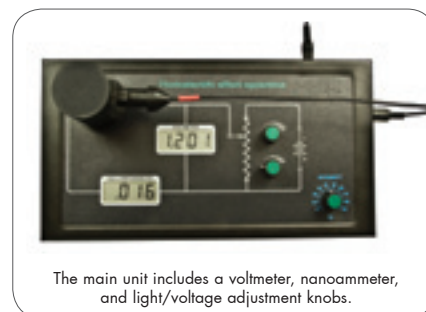
A **maximum energy of the photons** from each of the five LEDs in turn is measured by determining the stopping voltage for which the photocurrent becomes zero. This occurs for the peak wavelength of each LED.

Results are evaluated by combining the wavelength and energies to allow a value for Planck's constant to be found. The work function of the photocell cathode material can also be estimated. This can be performed graphically, analytically, or using the included Microsoft Excel® spreadsheet.

Specifications

Photocathode Material:	Cesium (Cs)
Voltmeter Display:	3½ Digit, LCD, precision 0.5% (typical)
Ammeter Display:	3½ Digit, LCD, precision 1% (typical)
Dimensions:	28cm x 12cm x 16cm
Weight:	Approx. 1 kg

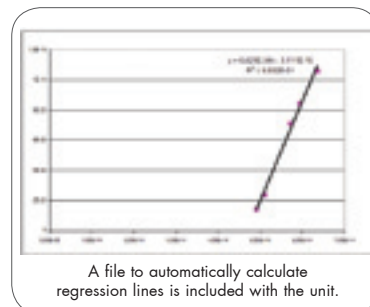
Item No.	Description
PLCN01	Planck's Constant Apparatus



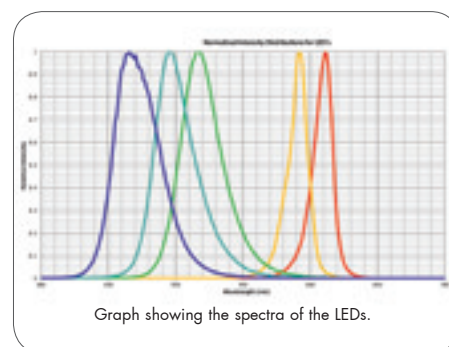
The main unit includes a voltmeter, nanoammeter, and light/voltage adjustment knobs.



Each of the five LEDs carries an identifying color band and a color patch with the wavelength maximum.



A file to automatically calculate regression lines is included with the unit.



Graph showing the spectra of the LEDs.

Thermoelectric Effects Apparatus



The sample oven contains a cooling fan, a massive metal block with an electric heater, three samples, and a control system sensor.



The sample heating assembly can be raised out of the oven on the telescoping support rod.



The control unit provides the heating current, connectors to the three sample devices, and the digital temperature controller.

- Investigate the thermal characteristics of three electrical thermometry devices
- Explore the features and behavior of a closed loop digital temperature control system

The Thermoelectric Effects Apparatus consists of an oven containing a cooling fan, a massive metal block and electric heater supported on two thin struts, the three samples, and the control system sensor. A control unit provides the heating current and houses the digital temperature controller. The oven and the control unit are connected by three multi-pole cables.

The sample devices are a thermocouple, a three-pole metal resistor, and a thermistor. An insulated flask is provided to hold ice water for the cold junction of the thermocouple. The signals from the three sample devices can be read by any suitable measuring device provided by the user connected to the outputs of the control unit (for example, digital multimeters.)

The digital control system can be operated in P, PI, PD, or PID mode to show their characteristics when controlling the oven temperature with or without fan cooling. A wide range of parameters and alarms can be set to explore their effects.

Specifications

Samples:

Thermocouple: Type K (chromel/alumel, approx. $41\mu\text{V}/^\circ\text{C}$)
 Resistor: Three-pole, approx. 50Ω and 100Ω at 0°C , (PT100+PT50).
 Thermistor: $12\text{k}\Omega$ NTC element. Approx. curve:
 $\ln R (\Omega) = 3655/T (K) + c$

Oven Dimensions:

Brass heating block: 40mm diameter, 67mm high
 Oven assembly: 37cm high, 14cm wide, 22cm deep
 Weight: 5.1 kg

Control Unit:

Heater supply: Regulated voltage source: 0–36Vdc 10-turn potentiometer Digital current display, 0.000–1.999A

Cooling fan: 12Vdc 0.14A, On/off switch control

Digital controller:

Configurable for P, PI, PD, or PID mode
 Process value (PV) range: 0–400°C (default—settable)
 Set value (SV) range: same as PV range
 PV temperature display: 4-digit, resolution 1°C or 0.1°C
 SV temperature display: 4-digit, resolution matches PV
 24 settable parameters
 2 parameters determined by apparatus configuration

Power input: 110VAC/60Hz, 65W

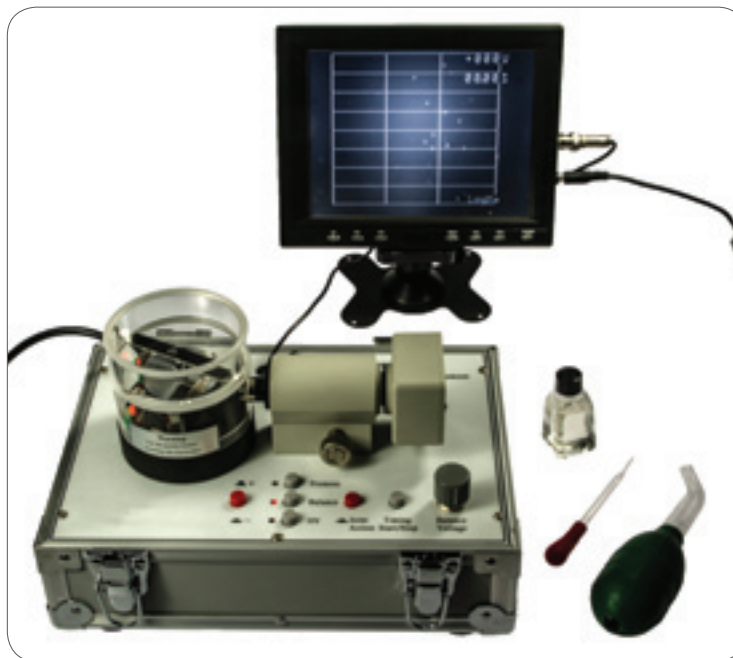
Dimensions: 13cm x 35cm x 31cm

Weight: 0 5.2 kg

Item No.	Description
THEA01	Thermoelectric Effects Apparatus

Millikan Oil Drop Apparatus

NEW



- **Improved Oil Drop Injection for Easier Capture**
- **Built-In Video Camera and Included Monitor for Better Results**
- **Compact Unit - No Setup Needed**

This compact Millikan Oil Drop Apparatus has been upgraded for increased performance and convenience, and includes a permanently-installed video camera on the observing microscope, digital readouts for the capacitor voltage and timer, and an 8" monitor for observation and control. The unit comes in a sturdy metal case, and includes silicone oil, an atomizer, a dropper for filling the oil, and a full operator's manual.

The measuring chamber arrangement consists of the capacitor chamber with a double illuminator and observation hole built into the side wall, and two outer acrylic chambers (see schematic). A cloud of oil drops from the atomizer is sprayed directly into the upper chamber where the turbulence is allowed to die out. A metal shutter is now opened to permit a small stream of drops to fall into the lower settling chamber and draft shield. A smaller selection of the drops falls through a small hole into the measuring chamber. This arrangement reliably produces a stream of charged droplets moving smoothly down the axis of the capacitor.

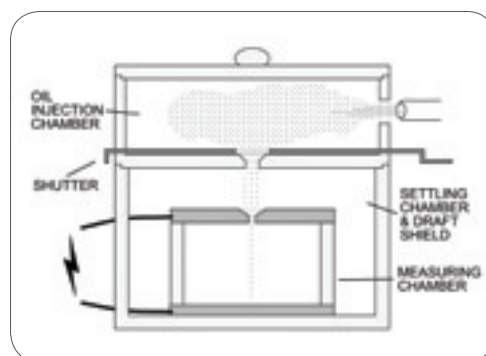
The charged drops' accurate location and the light color of the silicone oil make the drops easy to locate and capture - alleviates a common problem with many Millikan apparatus designs. Oil drops generally carry fewer electronic charges than the latex spheres sometimes used. This makes the analysis histogram easier to interpret.

The microscope and camera arrangement are designed for precise measurement and ease of use. The combined drop observation system is calibrated so that one division on the grid displayed on the computer monitor corresponds to 1mm at the focus of the microscope. The illuminator consists of two bright red LEDs whose reflected light is readily detected by the camera. The resolution of the system is sufficient that the slight Brownian motion of the falling drops is readily observable.

The measuring system consists of a high voltage power supply controlled by a potentiometer and pushbutton reversing switch as well as a timer. Measurements can be made using either the balancing technique or the rise time/fall time technique.



View of screen showing plotted oil drops.



Schematic of Millikan Oil Drop Apparatus.

Specifications

Measuring chamber:

Diameter: 32mm
Plate separation: 5.00mm

Balancing voltage:

0 — 370V

Case (includes lid):

27cm x 20cm x 18cm

Weight:

4.4 kg

Operates on 110VAC

Item No.	Description
MODA02	Millikan Oil Drop Apparatus

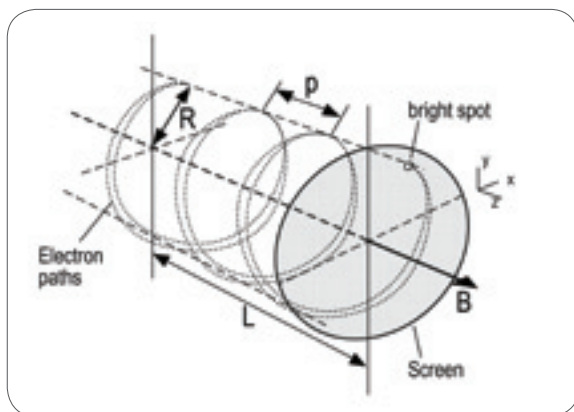
Complete Properties of Electrons Apparatus



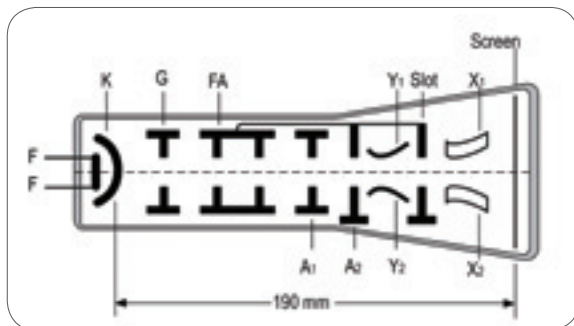
Setup for axial magnetic field & e/m measurements



Setup for transverse magnetic field measurements



Focusing effect of electrons spiraling in an axial magnetic field used to measure e/m .



Schematic of the CRT electrode arrangement

- **Compact, CRT-Based Electron Properties Lab**
- **Study Electrostatic & Magnetic Deflection and Measure e/m**
- **Precision Multi-Turn Potentiometer Controls and Digital Meters for Quantitative Studies**

This electron properties lab is based on a 75mm flat screen CRT, and is contained in a compact metal case with a removable lid. All the accessories needed to explore electrostatic deflection, focusing, and electron behavior in transverse and axial magnetic fields are included. The power supply and measurement circuitry is entirely enclosed for safety and reliability. Multi-turn potentiometers and three 3-1/2 –digit LED meter displays help students easily obtain precise results. A full operator's manual with experiment descriptions is included, and explains both the background and procedures, including the determination of e/m using the focusing effect of an electron beam spiraling around an axial magnetic field.

The CRT is a 14-pin tube, 240mm long with a 75mm diameter round screen. A separate transparent screen grid is provided for quantitative measurements. The tube operates on 900 – 1450V and includes electrodes for electrostatic focusing and for electrostatic deflection in the horizontal and vertical directions.

The power supply and control system provides the voltages to operate the tube, and the focusing and acceleration potentials can be set and monitored separately. Coarse and fine adjustments are provided. Similarly, the electrostatic deflection in each direction can be separately set and monitored. A further section provides power for the transverse and axial magnetic field coils.

The magnetic field coils supplied include a pair of 530-turn coils of 30mm mean diameter for the transverse field and a 1300-turn solenoid of 95mm diameter for the axial field. The transverse field coils plug directly into sockets in the base, and the axial field solenoid fits over the CRT and is connected to the base by a pair of supplied patch cords.

Specifications

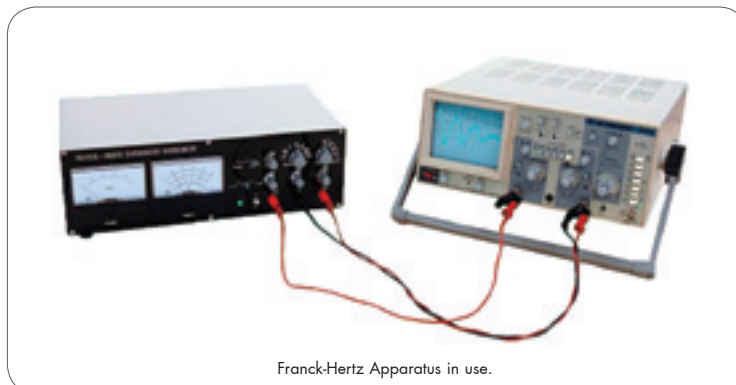
Case size: 47cm x 33cm x 22cm

Weight: 10 kg

Power: 110 VAC

Item No.	Description
PEA001	Complete Properties of Electrons Apparatus

Franck-Hertz Apparatus



Franck-Hertz Apparatus in use.

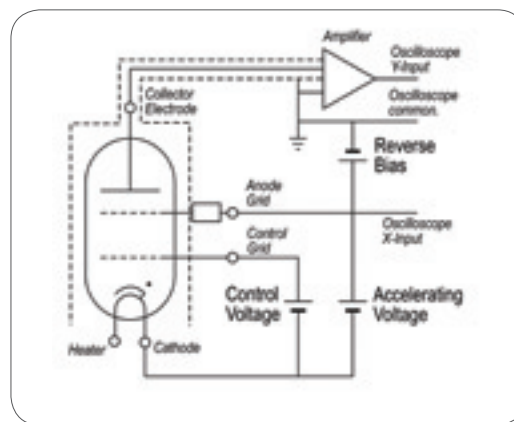
- Uses Argon for Room Temperature Measurements
- View on Oscilloscope or Record Manually for Quantitative Work
- Compact Unit for Easy Setup

In the **Franck-Hertz experiment** electrons in a vacuum tube containing a small amount of vapor are accelerated towards an anode grid. Beyond the grid is a second electrode held at a small negative potential with respect to the anode, so that only electrons with a certain minimum energy can reach the second electrode. The current arriving at this electrode is monitored as the accelerating voltage is increased. The schematic shows the arrangement. In general, the current rises with the accelerating voltage, but a series of superposed decreases is also observed as electrons acquire enough energy to excite atoms of the vapor. The energy lost in the excitation leaves the electron with too little energy to reach the second electrode. From the spacing of successive minima, the ionization potential of the vapor atoms can be derived. The original apparatus used mercury vapor heated to about 180°C. This apparatus uses argon at room temperature, which is much easier to control, and up to five minima can be easily obtained with manual plotting. The argon tube is enclosed in the metal casing of the unit, which also shields it from stray environmental voltages.

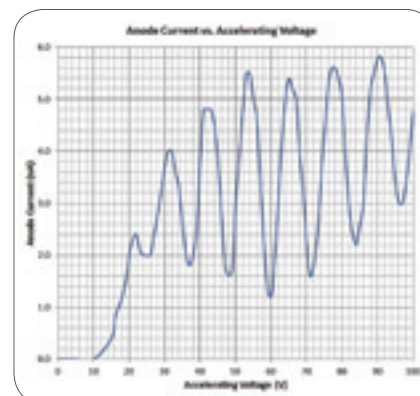


Argon Tube

The **Franck-Hertz Apparatus** can be used alone for manual recording of the voltage-current curves or with an oscilloscope in XY mode for repeated sweeping of the accelerating voltage. The built-in panel meters indicate the current and the three tube voltages. The current amplifier has four ranges from 10^{-5} A to 10^{-8} A for full scale deflection. A switch allows the voltages on the control grid, the anode, and the reverse bias electrode to be monitored in turn. Includes full operator's manual.



Schematic of Franck-Hertz Experiment



Sample manual Franck-Hertz curve

Specifications

Tube voltages:

Control grid: 1.3 - 5.0V

Acceleration: 0 - 100V

Reverse bias: 1.3 - 15V

Oscilloscope scan: 0 - 50V, 115 ± 20 Hz

Dimensions: 40cm x 23cm x 13cm

Weight: 8 kg.

Accessories needed:

- Oscilloscope with XY function
- Connecting cords

Item No.	Description
FHA001	Franck-Hertz Apparatus

Lorentz Force Demonstrator

- **Compact, All-in-One Apparatus for Investigating Electron Beam Behavior**
- **Show Magnetic and Electrostatic Deflection, Measure e/m**
- **Light-Shielding Enclosure Allows Use in Lighted Room**

The Lorentz Force Demonstrator is a "fine beam tube" device in which a sharply focused electron beam is projected into a vacuum containing a trace of inert gas. Ionization of the gas around the electron beam creates a glowing discharge marking the path of the electrons and helping to maintain the sharp focus of the beam. The demonstrator shows deflection of the beam by transverse electric fields and by magnetic fields of various orientations. The value of e/m can be found by bending the electron beam into a circular path with a homogeneous magnetic field and measuring the accelerating voltage of the electron gun, the strength of the magnetic field and the radius of the circular beam path.

The equipment consists of a vertically-oriented vacuum tube and a pair of Helmholtz coils mounted on a base which contains all the necessary power supplies and measuring instruments to operate the tube and demonstrate the properties of an electron beam. The entire apparatus is mounted in a light-shielding case with a mirror and scale for no-parallax measurements. Binding posts on the rear panel allow external multimeters to be attached for more precise measurement.

The vacuum tube contains an electron gun assembly oriented to project the electron beam horizontally and carries a pair of electrodes for electrostatic deflection in the vertical direction. The tube socket is mounted on the top of the power supply unit, and can be rotated 180° about the vertical axis to vary the orientation of the electron beam to the Helmholtz coils. A scale and pointer indicate the position of the tube.

The Helmholtz coils are also permanently mounted on the top of the power supply unit and carry an adjustable and removable transparent scale for measuring the diameter of the electron beam's circular path. A mirror is mounted on the back of the case to eliminate parallax in determining the electron beam position. Two red LED's mounted on the Helmholtz coil frame indicate the direction of the current through the coils.

The power supply provides the filament power, the grid and accelerating voltages, and the electrostatic deflection voltages to the electrode assembly, and also the current for the Helmholtz coils. The accelerating voltage and the Helmholtz coil current are indicated on built-in panel meters and are adjusted by two knobs on the front panel. The electrostatic deflection voltage is adjusted by a separate knob. Both the deflecting electrodes and the coils are provided with three position switches for controlling the polarity of the voltages and turning them off.

A full operator's manual with experiment descriptions is included.

Specifications

Vacuum tube:

Diameter: 160mm
 Voltages: Acceleration: 0 - 250V, Deflection: 50-250V

Helmholtz coils:

Dimensions: Mean radius: 280mm, 140 turns

Current: 0.5 - 2.5A

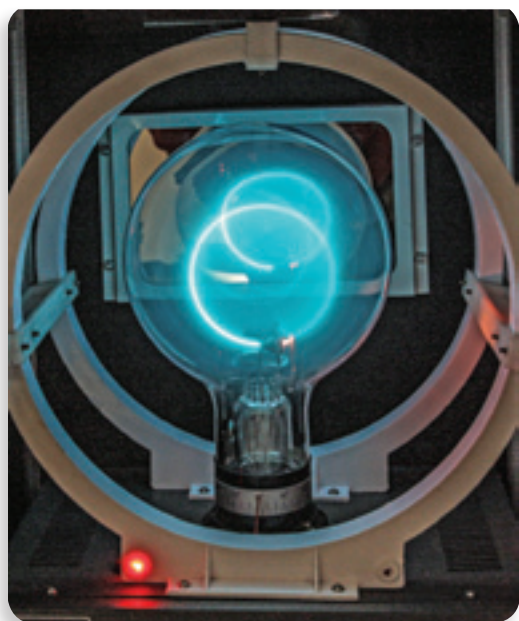
Dimensions: 35cm x 45cm x 30cm

Weight: 11 kg

Power: 110 VAC/45W



Rear panel with binding posts



Vacuum tube with electron beam

Item No.	Description
LFD001	Lorentz Force Demonstrator

Zeeman Effect Apparatus

- Complete Equipment Set for Studying Light Emission in a Magnetic Field
- Includes Video Capture Equipment and Computer Analysis Program
- Magnet Allows Transverse and Longitudinal Viewing

The Zeeman Effect Apparatus examines the effect of a strong magnetic field on the green emission line of mercury at 545.1nm wavelength. A magnetic field splits the degenerate 7s and 6p levels into three and five levels respectively, giving nine allowed transitions. The energy shifts of the splitting are tiny compared to the transition energy, so a high resolution spectrometer is necessary to observe them at the magnetic field strengths achievable in the laboratory. This resolution is usually achieved by using a high quality Fabry-Pérot étalon. The combination of these requirements has often discouraged the provision of Zeeman effect apparatus in the student laboratory. This apparatus addresses this issue.

The emitted light is polarized, and the nature and direction of the polarization depends on the orientation of the propagation direction to the magnetic field. For light emitted transversely to the field, the polarization is linear (π), with the polarization direction parallel to the electric field for one group of three transitions and perpendicular to the field for the remaining two groups. The components of these groups are usually not resolved sufficiently for easy measurement in practice due to overlap of their interference fringes. Light emitted parallel to the magnetic field is circularly polarized (σ), with only two groups of transitions emitted, showing opposing directions of polarization.

The electromagnet is mounted on a swivel on top of a power supply that also powers the slim low pressure mercury discharge lamp fitted between the magnet's pole pieces. A removable steel rod fills a long hole through one pole for transverse viewing; for parallel viewing, the magnet and lamp are swiveled 90° and the rod is replaced by a quarter wave plate for observing the circular polarization.

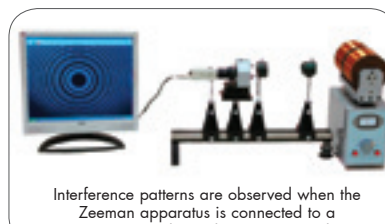
The optical system contains four elements and an optical bench. A polarizer and a 40mm diameter lens are mounted in a common housing. The polarizer can be rotated by 360° and clamped in any orientation. It serves as an analyzer for detecting the polarization state of the emitted light. The lens focuses the light for the spectrometer. An interference filter selects the emission line at 545.1nm, and a Fabry-Pérot étalon with a fixed spacing of 2.0mm acts as the resolving element. The étalon can be rotated in its housing and has three fine adjustment screws for setting exact parallelism of the mirrors. The étalon mount is a heavy steel block attached to a base plate with leveling screws. The steel lathe-bed style optical bench is equipped with four riders and the support rods for the optical elements carry height setting collars for easy fine alignment.

A CCD video camera with a mounting rod, power supply and PCI video capture card are supplied for direct live observation of the interference fringes. This makes measurement of fringe shifts on the computer monitor much easier than by visual observation using a conventional telescope arrangement.

Video capture and image analysis software is included in the equipment set. In addition to providing a live image of the Fabry-Pérot fringe pattern for viewing the fringe splitting as the magnetic field is increased and verifying the polarization states of the lines, an image can be captured and stored for analysis. The analysis module allows circles to be drawn on the image to exactly coincide with the positions of the fringes by manually inserting three reference points for each circle. To reduce image noise and improve positioning accuracy, a grayscale filter can be applied to the image before analysis. The software records the positions and radii of the circles drawn and, after circles have been added for all of the components of three successive fringes, calculates the wavelength shift for correlation with the magnetic field strength.



The étalon generates an interference pattern of concentric rings which is observed by a video camera.



Interference patterns are observed when the Zeeman apparatus is connected to a computer with a video capture card.



The initial appearance of the pattern with no imposed magnetic field.



This pattern shows the full range of Zeeman-split lines emitted in the transverse direction.



Triple fringes are strong π -polarized components that are used for measurement.



Fringes arising from the σ -polarized components are noticeably less intense.

Specifications

Lamp and Magnet:

Low pressure mercury discharge lamp, approx. 6mm diameter x 60mm long
Electromagnet with power supply in base, swivels 90° for transverse or longitudinal viewing
Current: 0, 0.3–2A
Field strength: 1 T (max)
Includes removable steel rod in one pole piece and plug-in quarter wave plate

Dimensions: 14cm x 29cm x 35cm

Power: 110 VAC

Weight: 43 kg.

Optical system:

Diameter of optical elements: 40mm

Interference filter: Central wavelength: 546.1nm
Transmission bandwidth: < 10nm

Fabry-Pérot étalon:

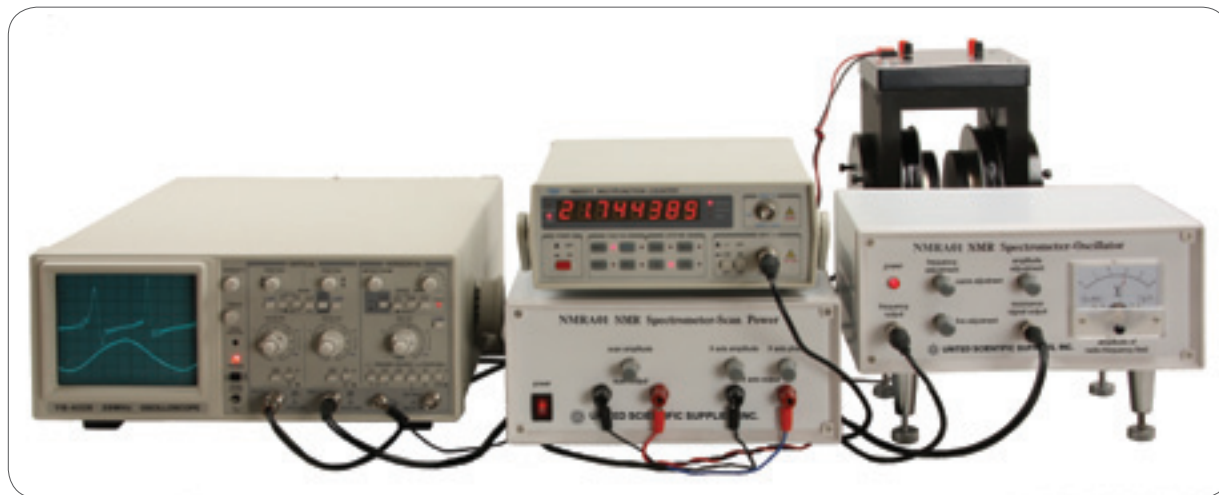
Quartz mirror plates with 2.0mm spacing
Central wavelength: 589.3nm
Resolution ($\lambda/\delta\lambda$): $> 2 \times 10^6$
High reflection bandwidth: 100nm

Computer and software requirements:

Requires a Windows-based computer with one available PCI slot running Windows 7 or 8 with at least 64MB of RAM and up to 1GB of hard disk space (for storing images)

Item No.	Description
ZEA001	Zeeman Effect Apparatus

Nuclear Magnetic Resonance Apparatus



- Demonstrate the basic phenomena of nuclear magnetic resonance
- Measure the nuclear magnetic moments of hydrogen and fluorine
- Determine gyromagnetic ratios

The NMR Apparatus is a set of equipment for introducing students to the basic phenomena of nuclear magnetic resonance using the CW (continuous wave) technique. It allows the hydrogen proton resonance to be observed in six different chemical environments. A fluoride sample also permits the fluorine resonance to be observed and compared to the hydrogen values.

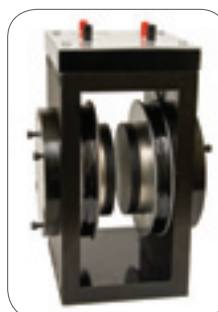
Further investigations allow the nuclear magnetic moments of the hydrogen proton and the fluorine nucleus to be measured and the use of NMR for the precise determination of magnetic fields to be demonstrated. If a gaussmeter is available, values for the gyromagnetic ratios of hydrogen and fluorine can be independently determined.

The apparatus set includes a large permanent magnet with flat pole pieces and soft iron pads. The field strength at the center of the gap is about 0.5T. The exact value is marked on each unit. Helmholtz coils surround the pole pieces. A scan control unit supplies an adjustable ac signal to the Helmholtz coils to scan the "fixed" magnetic field over a narrow range.

The samples, contained in small plastic vials, are placed inside the coil of an RF boundary oscillator. The coil is mounted in the end of a long shielded tube positioned at the center of the permanent magnet's air gap.

An oscillator control unit carries coarse and fine frequency adjustments and produces an RF signal of very high frequency stability which is measured by an included frequency counter. At a certain RF frequency determined by the nuclear species present in the sample and the strength of the fixed magnetic field, the magnetic moments of the nuclei in the sample resonate with the fields and absorb energy from the RF oscillator by quantum transitions of the nuclear magnetic moment. This causes a large change of the oscillator's amplitude, which can be observed on a user-supplied oscilloscope.

Five aqueous samples are included; copper sulfate, ferric chloride, hydrofluoric acid, pure water, and manganese sulfate. A glycerin sample is also provided.



The permanent magnet generates a homogeneous field of approximately 0.5 T and is equipped with a pair of 300-turn scan coils in approximate Helmholtz arrangement.



The oscillator control unit carries coarse and fine frequency adjustments and produces an RF signal of very high frequency stability.



The scan control unit supplies an adjustable AC signal to the Helmholtz coils to scan the fixed magnetic field through a narrow range.

Specifications

- Magnet module:** Permanent magnet with flat soft iron pole pads, air gap 16.5mm
Field strength: Approximately 0.5 T, exact value marked on magnet
Field uniformity: Better than 0.1% over central region
Scan coils: Helmholtz arrangement, 300 turns each, 0.15mA—200mA
Dimensions: 18 x 15 x 26cm
Weight: 24.7 kg
- Scan Control Unit:** Provides power to the scan coils and oscillator unit, provides scan output to the oscilloscope with amplitude and phase adjustment.
Scan frequency: 60 Hz. Oscilloscope output: Amplitude 0—19Vp-p Phase adjustment $\pm 90^\circ$.
Power: 115 VAC/60 Hz
Dimensions: 24.5 x 12 x 20cm
Weight: 2.3 kg
- Oscillator Unit:** RF boundary oscillator with probe coil, range 15.8 MHz—24.6 MHz
Dimensions: 24.5 x 21 x 10.5cm
- Weights:** Oscillator unit: 2.3 kg, probe: 113 g

Item No.	Description
NMRA01	Nuclear Magnetic Resonance Apparatus

Force Between Conductors Demonstrator

- **Convincing demonstration of a basic electromagnetic phenomenon**
- **Enclosed power supply and momentary switch for safety**
- **Simple, clear arrangement of the electric circuit**

A basic property of electromagnetism is the mechanical force which exists between two neighboring, current-carrying conductors. However, observing the small force with simple conductors requires large currents.

The Force Between Conductors Demonstrator offers a simple, direct method for accomplishing this usually difficult and often unsatisfying demonstration. The device consists of a metal frame which supports two long straight conductors that can pivot about vertical axes. The base of the frame contains a power supply to energize the conductors.

Voltage can be applied to the conductors in various configurations - series or parallel, same sense or opposite sense – by connecting the supplied heavy duty cords to the appropriate binding posts. Two adjustable indicator arrows show the direction of the current in each conductor.

After the connections are made, a pushbutton applies the voltage, allowing a large current to flow momentarily in the conductors. The conductors swing either towards each other or apart and their movement indicates the generation of a magnetic force between them and its direction.

Specifications

- Conductors:** Thin wall brass tubes with copper end pieces.
Length: 39.5cm, lever arm: 2.5cm
Cold resistance (each): Approx. 0.013Ω
- Power supply:** Input: 110VAC/60 Hz, 345W (max., - operate for < 5 seconds)
Output: Operating voltage 0.5–1.5 Vdc
Approx. operating currents: 55A in series, 2 x 37A in parallel
Fuse: Miniature fuse, 250V/3A
- Dimensions:** Height: 56.5cm, base diameter 19cm
Weight: 4.25 kg

Item No.	Description
FBCD01	Force Between Conductors Demonstrator



Pointed ends of the conductors fit into dimples in the top and bottom bearing contacts.



Force Between Conductors Demonstrator shown with parallel connection yielding currents traveling upward.



Force Between Conductors Demonstrator shown with anti-parallel connection yielding currents traveling clockwise.

Cavendish Gravitational Balance



- **Demonstrates the existence of gravitational forces between masses**
- **Measures the Universal Gravitational Constant, G**
- **Verifies the Inverse Square Law for gravitational forces**

This **innovative apparatus**, developed from the traditional Cavendish pattern, is substantially less expensive than earlier models, making the measurement of the tiny but significant Universal Gravitational Constant more accessible to students. It is precisely constructed and allows measurements of G to be made to better than 15% relative error using either the initial acceleration method or the equilibrium displacement method.

In the initial acceleration method, the value of G is derived from the angular acceleration of the balance during the first 90 seconds after moving the large attracting lead spheres mounted on the swivel from one side of the apparatus to the other (see diagram.)

The equilibrium displacement method derives G from the change in the equilibrium rest position of the balance after a reversal of the position of large attracting spheres from one side to the other. This yields a more accurate result, but takes much longer to accomplish because of the long period of the balance (about 10 minutes) and the tiny forces involved. The built-in oil damping system greatly reduces the settling time of the balance to about one hour from the more than two hours needed by the undamped system.

The pendulum system consists essentially of a suspended central rod carrying a small mirror for the optical lever detection system, a light aluminum cross-piece with two 20g lead balls 10cm apart, and a light damping vane. The suspension wire is a very fine beryllium bronze torsion wire 15cm long. This configuration gives the pendulum a torsional period of 590 ± 10 seconds.

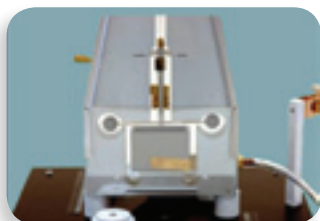
The system is mounted in a massive aluminum case, 25mm thick, with glass windows to eliminate drafts. An adjustment screw with an angle scale at the top of the housing allows the pendulum's rest position to be centered before adding the attracting masses. A supplied magnet uses the diamagnetic properties of lead to speed the settling process when centering. A fork operated by an outside screw secures the pendulum against the housing to protect the sensitive suspension during transportation. Damping oil is added to the internal system from an outside glass reservoir. Silicone damping oil is supplied.

The large attracting masses are two 1.5 kg plastic-coated lead balls that rest atop light aluminum cylinders. The cylinders fit onto a swivel that enables the balls to be swung from one side to the other of the apparatus, or they can also be placed onto two circular sliding mounts on the base that allow the distance between the pendulum and the attracting masses to be varied for Inverse Square Law investigations. The base rests on three leveling feet. The unit operates on 110V/60 Hz.

Overall dimensions are 30 x 30 x 42cm, weight is 12 kg.

Accessories needed:

- Laser pointer, scale and windup tape for the optical lever
- Balance (2000g capacity) and vernier caliper for determining the exact masses and diameters of the lead balls
- Stop watch for timing the oscillation in the initial acceleration method



The innovative pendulum system uses a central rod carrying a small mirror.

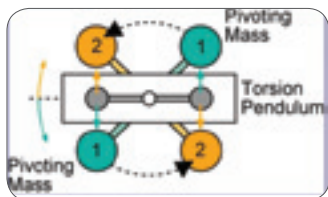
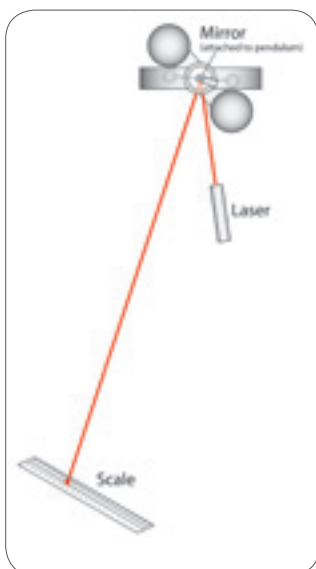


Illustration shows the equilibrium displacement method.



Optical lever arrangement for Cavendish Balance.

Item No.	Description
CGB001	Cavendish Gravitational Balance

Foucault's Pendulum Apparatus

- **Precise Demonstration Model Shows Earth's Rotation**
- **Electrically Maintained — Needs no Attention**
- **Ideal Display Item for Science Rooms, Foyers, and Museums**

Léon Foucault's famous 1851 experiment in the Panthéon in Paris used a 27 kg pendulum bob suspended on a 67m wire, and demonstrated that the pendulum's plane of swing precessed with the rotation of the Earth. This was the first direct dynamic evidence that the Earth rotates about a polar axis, and the phenomenon has been a popular topic of discussion ever since.

The precession of Foucault's pendulum is often poorly explained. At the Earth's poles, the plane of the swing remains constant relative to the fixed stars and appears to an Earth-based observer to rotate once every sidereal day. At the equator, the plane of swing co-rotates with the Earth and the pendulum does not appear to precess. At other latitudes, the behavior is intermediate between these extremes and the pendulum precesses with respect to both the Earth and the fixed stars. At 30°, the apparent precession takes two days. If the motion is analyzed using a co-rotating coordinate system, then the force causing the precession is just the Coriolis force experienced by the moving bob.

This Foucault's Pendulum Apparatus is a carefully constructed miniature version of Foucault's device. Since the forces causing the precession are small, the effect is easily disturbed by other small environmental forces. To eliminate drafts, the pendulum is enclosed in a glass case, and the heavy vibration-damping base is equipped with leveling feet. The pendulum is electrically maintained to counter air resistance damping, and the swing amplitude can be adjusted using a potentiometer.

The suspension device ensures accurate centering of the pendulum's rest position over the graduated circle below the bob.

The graduated circle carries an adjustable double-ended marker bar for precise measurement of the plane of swing when tracking the precession rate.

The durable steel case is attractively finished suitable for permanent display, with a plaque carrying a brief description of Foucault's experiment.

Specifications

Overall dimensions are 16" x 16" x 57" high, weight is 110 lb.

Requires 110VAC.



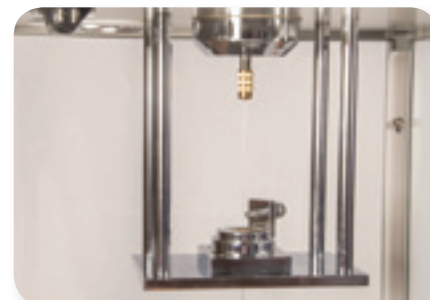
Item No.	Description
FCPN01	Foucault's Pendulum Apparatus



The durable steel case includes a plaque with a brief description of Foucault's experiment.



The graduated circle carries an adjustable double-ended marker bar for precise measurement of the plane of swing.



The suspension device ensures accurate centering of the pendulum's rest position.

Deluxe Slotted Weight Set of 8



Includes rack and eight brass weights, 1 x 500g, 2 x 200g, 1 x 100g, 1 x 50g, 2 x 20g, 1 x 10g,

Item No.	Description
WHST08	Deluxe Slotted Weight Set of 8

Deluxe Slotted Weight Set of 10

Includes rack and ten brass weights, 1 x 500g, 5 x 100g, 1 x 50g, 2 x 20g, 1 x 10g.

Item No.	Description
WHST10	Deluxe Slotted Weight Set of 10



Deluxe Slotted Weight Set of 12



Includes rack and twelve brass weights, 1 x 500g, 2 x 200g, 1 x 100g, 1 x 50g, 2 x 20g, 1 x 10g, 1 x 5g, 2 x 2g, 1 x 1g.

Item No.	Description
WHST12	Deluxe Slotted Weight Set of 12

Slotted Weight Set of 13

Includes hanger, case, and thirteen brass weights, 1 x 50g, 9 x 20g, 1 x 10g, 2 x 5g.

Item No.	Description
WHST13	Slotted Weight Set of 13



Weight Hangers

For use with slotted weights. Brass hanger weighs 50g. Stem length is 11.5cm. Aluminum hanger weighs 50g. Stem length is 14cm.

Item No.	Description
WHNG50B	Weight Hanger, 50g, Brass
WHNG50A	Weight Hanger, 50g, Aluminum



Brass weight hanger



Aluminum weight hanger

Hooked Weight Set of 9, Brass

These weights feature flat countersunk bottoms, with a double-ended hooked rod through the middle. They can be used on balance pans, as well as hooked in tandem for lever arm studies. Set of nine weights consisting of one each 10g, 50g, 100g, 500g, 1,000g, and two each 20g and 200g weights. Weights are made of polished brass and come in a storage block. Replacement weights are available separately.

Item No.	Description
WHSET9	Hooked Weight Set of 9, Brass



Weights are designed to be hooked in tandem.



Hooked Weight Sets, Stainless Steel



WSST10

Individually calibrated weights made of high quality stainless steel. Both sets come with a sturdy plastic storage block. Set of 9 includes one each of 5g, 10g, 50g, 100g, and 500g, plus two each of 20g and 200g weights.

Set of 10 includes all of the above, plus one each 1000g weight.

Item No.	Description
WSST09	Hooked Weight Set of 9, Stainless Steel
WSST10	Hooked Weight Set of 10, Stainless Steel

Hooked Weight Set of 9, Black Enamel

Set of nine weights consisting of one each 10g, 50g, 100g, 500g, 1000g, and two each 20g and 200g weights. Weights are made of cast iron with a black enamel finish and come with a sturdy plastic storage box. Weights can be hooked in tandem.

Item No.	Description
WHSBE9	Hooked Weight Set of 9, Black Enamel



Weights are designed to be hooked in tandem.



Basic Hooked Weight Set of 10, Stainless Steel



Set of ten hooked weights are made of high quality stainless steel. Includes one of 200g, two of 100g, three of 50g, and four of 20g weights.

Item No.	Description
WHSET10	Basic Hooked Weight Set of 10, Stainless Steel

Hooked Weight Set of 6, Aluminum

Set of six hooked aluminum masses with a plastic storage base. Includes one each of 10g, 20g, 30g, 40g, 50g, and 100g masses.

Item No.	Description
WSAL06	Hooked Weight Set of 6, Aluminum



Weight Set of 9, Stainless Steel



Good quality weight set contains nine weights (one each of 1g, 5g, 10g, 50g and 100g sizes, and two each of 2g and 20g sizes) plus a set of 1 to 500mg fractional weights and a 5mg rider and forceps, in a wooden storage box. Weights are made of polished stainless steel and each weight is inscribed with its capacity.

Item No.	Description
AWSS09	Weight Set of 9, Stainless Steel

Analytical Weight Box Set of 9, Brass

Analytical Weight Box contains nine brass weights (one each of 1g, 5g, 10g, 50g and 100g sizes, and two each of 2g and 20g sizes), in polished wooden box, with a 1 to 500mg fractional weight set, 5mg rider and forceps.

Item No.	Description
AWB100	Analytical Weight Box Set of 9, Brass



Individual Brass Masses

Made of brass with nickel plated surfaces. All masses are carefully tested and calibrated (but not certified).



Item No.	Description
ABW001	Individual Brass Mass, 1g
ABW002	Individual Brass Mass, 2g
ABW005	Individual Brass Mass, 5g
ABW010	Individual Brass Mass, 10g
ABW020	Individual Brass Mass, 20g
ABW050	Individual Brass Mass, 50g
ABW100	Individual Brass Mass, 100g

Individual Hooked Brass Masses

These hooked masses are made of polished brass. All masses are carefully tested and calibrated (but not certified).

Item No.	Description
WHB005	Individual Hooked Brass Mass, 5g
WHB010	Individual Hooked Brass Mass, 10g
WHB020	Individual Hooked Brass Mass, 20g
WHB050	Individual Hooked Brass Mass, 50g
WHB100	Individual Hooked Brass Mass, 100g
WHB200	Individual Hooked Brass Mass, 200g
WHB500	Individual Hooked Brass Mass, 500g
WHB1000	Individual Hooked Brass Mass, 1000g



Hexagonal Mass Sets



These weight sets include accurate, non-rolling hexagonal masses made of steel, and feature a durable black oxidized finish. Sets are supplied in sturdy cardboard boxes.

Metric Weight Set includes two each of 5g, 10g, 20g, 50g, and 200g masses, plus one each of 100g and 500g masses.

Customary Weight Set includes eight each of 1 oz., two each of 4 oz., two each of 8 oz., and one each of 1 lb. weights.

Item No.	Description
WHSETM-F	Hexagonal Weight Set, Metric
WHSETC-F	Hexagonal Weight Set, Customary



Hexagonal Mass Set of 5, Plated



Set of five zinc-plated hexagonal masses supplied in a sturdy cardboard box. Includes one each of 100g, 500g, and 1000g, and two each of 200g masses.

Item No.	Description
WHXP05	Hexagonal Mass Set of 5, Plated

Hexagonal Masses

Accurate, non-rolling hexagonal masses are made of steel, and feature a durable black oxidized finish. Available in both customary and metric sizes.

Hexagonal Masses, Metric Sizes

Item No.	Description
WHX001	Hexagonal Mass, 1g
WHX005	Hexagonal Mass, 5g
WHX010	Hexagonal Mass, 10g
WHX020	Hexagonal Mass, 20g
WHX050	Hexagonal Mass, 50g
WHX100	Hexagonal Mass, 100g
WHX200	Hexagonal Mass, 200g
WHX500	Hexagonal Mass, 500g
WHX1000	Hexagonal Mass, 1000g

Custom Hexagonal Weight Sets are available upon request. Call for details.



Hexagonal Masses, Customary Sizes

Item No.	Description
WHX1OZ	Hexagonal Mass, 1 oz.
WHX4OZ	Hexagonal Mass, 4 oz.
WHX8OZ	Hexagonal Mass, 8 oz.
WHX1LB	Hexagonal Mass, 1 lb.

Fractional Weight Set



Set includes 1 each of 1, 5, 10, 50, 100, and 500mg weights, two each of 2, 20, and 200mg weights, rider, forceps and rectangular plastic box. Also available as a set without forceps in a round plastic box. Riders are also available separately.

Item No.	Description
FWB500	Fractional Weight Set with Rider and Forceps
FWS500	Fractional Weight Set with Rider
AWR005	Rider, 5mg, pack of 3

Aluminum Spring Scales



Constructed of anodized aluminum, with steel hooks, this spring scale is extremely durable. Available in seven color-coded sizes.

Item No.	Description	Graduation	Color
SB0100-A	100g / 1N	2g / 0.02N	Black
SB0250-A	250g / 2.5N	5g / 0.05N	Blue
SB0500-A	500g / 5N	10g / 0.1N	Green
SB1000-A	1000g / 10N	20g / 0.2N	Brown
SB2000-A	2000g / 20N	40g / 0.4N	Red
SB3000-A	3000g / 30N	50g / 0.5N	Silver
SB5000-A	5000g / 50N	100g / 1N	Gold
SBASET7	Set of 7 Aluminum Scales (one each of above)		

Push Pull Scales

This versatile spring scale can be used to measure forces using push or pull functions, or to weigh a suspended object from the large hook. Includes a zero adjustment screw and a metal suspension ring. Available in six color-coded sizes.

Item No.	Description	Graduation	Color
PS0250	250g / 2.5N	5g / 0.05N	Blue
PS0500	500g / 5N	10g / 0.1N	Green
PS1000	1000g / 10N	20g / 0.2N	Brown
PS2000	2000g / 20N	40g / 0.4N	Red
PS3000	3000g / 30N	50g / 0.5N	Cream
PS5000	5000g / 50N	100g / 1N	Yellow
PSSET6	Set of 6 Push-Pull Scales (one each of above)		



Spring Scales



These Spring Scales feature a clear plastic case so students can observe the mechanism. Scales include an aluminum front panel that can be moved up or down for zero adjustment, metal pointer, suspension ring, and load hook. Calibrated in Grams and Newtons.

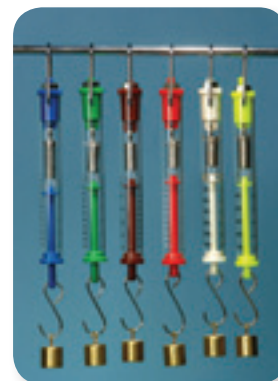
Item No.	Description	Graduation
SB0100	100g / 1N	2g / 0.02N
SB0250	250g / 2.5N	5g / 0.05N
SB0500	500g / 5N	10g / 0.1N
SB1000	1000g / 10N	20g / 0.2N
SB2000	2000g / 20N	40g / 0.4N
SB5000	5000g / 50N	100g / 1N

Your Company's logo and/or name can be printed on the face of the scale at no additional charge if you order 1,000 or more.

Spring Scales, Clear Plastic

These color-coded spring scales feature a clear plastic tubular design, a suspension ring, and an oversized load hook. A zero adjustment screw is provided at the top. Overall length is approximately 7".

Item No.	Description	Graduation	Color
SB0250-P	250g / 2.5N	5g / 0.05N	Blue
SB0500-P	500g / 5N	10g / 0.1N	Green
SB1000-P	1000g / 10N	20g / 0.2N	Brown
SB2000-P	2000g / 20N	40g / 0.4N	Red
SB3000-P	3000g / 30N	50g / 0.5N	Cream
SB5000-P	5000g / 50N	100g / 1N	Yellow
SBTSET6	Set of 6 Spring Scales (one each of above)		



Student Platform Scale



Sturdy economical scale for general use in the lab. It features a round plastic weighing platform. Capacity is 5 kg, or 11 lbs.

Item No.	Description
KCZ-002	Student Platform Scale

Sextant, Brass

Designed for beginners as well as experienced navigators, this sextant features an adjustable index mirror, index, and horizon shades. Durable brass construction, and features like more expensive models make this a great value. Weighs only 0.75 lbs. Includes activity guide.

Item No.	Description
SXTNT1	Sextant, Brass



Secchi Disk



Good quality and inexpensive Secchi Disk for water clarity measurements. Constructed of robust white plastic disk with permanent screen printed black sectors. Includes attached sinker and rot-proof polymer line on polymer foam bobbin. Line length is approximately 72 feet (22m) and includes a marking at each foot.

Item No.	Description
SCDSK1	Secchi Disk



Line is marked with a black dot at each foot.

Student Thermometers



These student grade partial immersion thermometers are etched in 1° increments. Each thermometer comes with an anti-roll triangle and a re-usable plastic storage tube. Filled with a petroleum-based column with red dye. The thermometer has a white back and is 11-3/4" (30cm) long. Additional sizes available. Call for details.

Item No.	Temperature Range	Divisions
THPC01	-20 to 110°C	1°C
THPCF1	-20 to 110°C/0 to 230°F	1°C / 1°F
THNT25	No-roll triangles, pack of 25	

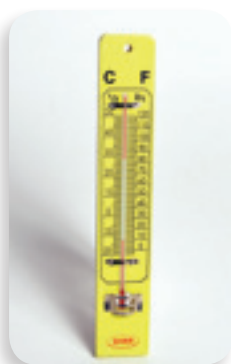
Wall Thermometer, Wet and Dry Bulb

Graduated in Celsius -20° to +50° (1°C) and Fahrenheit 0° to +120° (2°F). Includes humidity table in C and F. Dimensions: 10" x 3" x 0.5".

Item No.	Description
THWD01	Wall Thermometer, Wet and Dry Bulb



Wall Thermometer on Wooden Base



Graduated in Celsius and Fahrenheit, this thermometer shows temperature ranges of -20°C to +50°C in 1° divisions, and 0° to +120°F in 2° divisions. Thermometers are filled with Toluene mixed with red color. Mounted on a 10" tall wooden base.

Item No.	Description
THWW01	Wall Thermometer on Wooden Base

Wall Thermometer on Plastic Base

Graduated in Celsius and Fahrenheit, this thermometer shows temperature ranges of -20°C to +50°C in 1° divisions, and 0° to +120°F in 2° divisions. Mounted on a 8.5" tall plastic base.

Item No.	Description
THWP01	Wall Thermometer on Plastic Base



Metal Back Student Thermometers



Glass thermometer mounted on aluminum back. Thermometers are filled with approximately 3 grams of Toluene mixed with red color.

Item No.	Description
THMCF1	-20° to 230°F / -30° to 110°C
THMC02	-40° to 110°C
THVB02	0° to 230°F / -20° to 110°C

Add your logo on the thermometers at no additional charge for quantities over 1,000 each.

Plastic-Backed Thermometer

Glass thermometer with red Toluene solution is mounted on a plastic backing card. Range is -40° to +50°C.

Item No.	Description
THMPB1	Plastic-Backed Thermometer, -40° to 50°C



NEW

Probe Thermometer



Thermometers feature 5" long stainless steel probes. Temperatures are shown on a dial display. Includes protective sleeve with pocket clip.

Item No.	Temperature Range	Divisions
THMPR2	-10° to 50°C	1°C
THMPR3	0° to 200°C	2°C
THMPR1	25° to 125°F	1°F
THMPR4	50° to 550°F	5°F

Dial Thermometer

This versatile 38mm (1-1/2") diameter thermometer features molded plastic dial, with temperature ranges of -20° to +50°C, and 0° to 120°F, in 1° divisions. Can be mounted on any indoor/outdoor surface, with a nail or two-sided adhesive tape (not included).

Item No.	Description
THMR01	Dial Thermometer



Measurement Tools Kit



Includes a variety of tools and objects for teaching basics of measurement. Kit is shipped in a foam-lined wooden storage box. Includes activity guide with 15 activities.

Contents:

Depth gauge	1
Micrometer	1
Protractor, plastic	1
Ruler, 12", plastic	1
Tape measure	1
Vernier caliper, brass	1
Wire gauge, with conversion table	1
Aluminum square	1
Aluminum wire	1
Graduated cylinder	1
Plastic cylinder	1
Plastic vial	1
Activity guide	1

Item No.	Description
MEAKIT	Measurement Tools Kit

Digital Stopwatch

This plastic electronic stopwatch can be set to display time (hours/minutes/seconds) in 12 or 24 hour mode, calendar, 24-hour stopwatch, alarm, hourly chime, 1/100 second chronograph, split time, and total elapsed time. It is lightweight, easy to operate, and includes a battery and lanyard.

Item No.	Description
STOPWD	Digital Stopwatch



Vernier Calipers, Stainless Steel



Economical stainless steel Vernier calipers with 125mm/5 inch capacity. Features inside and outside jaws, full length depth gauge, friction ruler and sliding lock for gauging. Graduated in millimeters and 1/16".

Item No.	Description
VCB001	Vernier Calipers, Stainless Steel

Vernier Calipers, Plastic

All plastic construction. Dual scale range is 6" or 150mm. Readability is 1/128" or 0.05mm.

Item No.	Description
VCP001	Vernier Calipers, Plastic



Precision Measuring Set

This measuring set contains four high quality instruments housed in a sturdy plastic storage case. Includes instructions.

Contents:

Micrometer Caliper, 0 - 25mm x 0.01mm1
 Knife Edge Square, 90°, 100mm x 70mm1
 Vernier Caliper, 150mm x 0.02mm1
 Ruler, Steel, 15cm x 0.5mm.....1



Item No.	Description
PMSET04	Precision Measuring Set

Dial Vernier Calipers



This precision measuring tool is made of hardened steel for long-term durability. It has a range of 0 to 150mm and a large, easy-to-read dial with a resolution of 0.02mm. A storage case and instructions are included.

Item No.	Description
VCDT06	Dial Vernier Calipers

Digital Vernier Calipers

This advanced measuring tool is accurate to 0.001"/ 0.01mm and measures in both metric and English units. Range is 6"/150mm. It has a bright LCD display and easy access push buttons. A durable plastic storage case with instructions is included.

Item No.	Description
VCD001	Digital Vernier Calipers



Deluxe Micrometer



This micrometer is made of hardened steel for precision and durability. Its range is 0 - 25mm and it has a precision rotary scale with a resolution of 0.01mm, a ratchet thimble and a locking lever. Instructions are included.

Item No.	Description
MCRDLX	Deluxe Micrometer

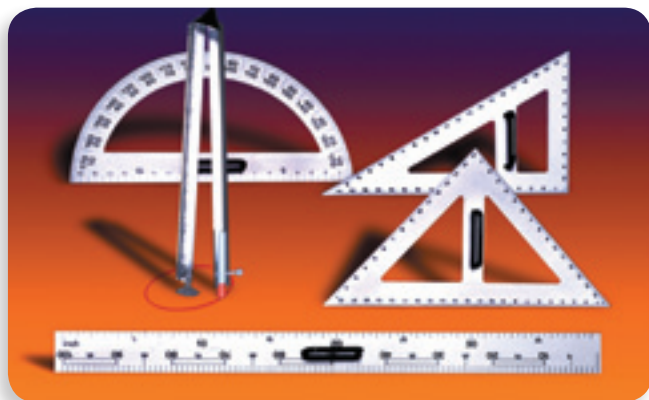
Micrometer

Introductory level metric micrometer graduated to read up to 25mm in 0.01mm divisions. Comes in a plastic storage case.

Item No.	Description
MCR025	Micrometer



Chalkboard Drawing Instruments Set



Durable, lightweight oversized plastic instruments, designed for whiteboards and chalkboards. Triangles, protractor, and ruler are made of white polystyrene and feature handles for ease of use. Compass is made of clear acrylic, and accommodates most dry erase and magic markers. Individual parts are also available separately.

Contents:

Triangle, 45°, 23" base, 16" sides	1
Triangle, 60°, 22" base	1
Protractor, 180° marked with intervals of 1°, 20" base, 10" height.	1
Meter Ruler, graduated in inches (1 - 39") and centimeters (1 to 100cm), 7cm wide	1
Compass, with locking screw, rubber suction cup, 18" long, accommodates most dry erase and magic markers, radius 15".	1

Item No.	Description
CHKSET	Chalkboard Drawing Instruments Set
CHTE45	Triangle, 45°
CHTR60	Triangle, 60°
CHPR01	Protractor, 180°
CHRL40	Metric Ruler
CHCMP1	Compass

Tape Measure, 3 Meter

This versatile tape measure is perfect for a wide variety of applications. The bright yellow steel tape retracts with a simple push of a button. It also features a high impact plastic case with a belt clip and loop handle. The tape is marked in both English and metric scales.

Item No.	Description
TPM03M	Tape Measure, 3 Meter



Tape Measure, 7.5 Meter

NEW



This 25 foot / 7.5 meter metal blade tape measure is 1" wide and is scaled in 1/16" increments on one side and 1mm increments on the other side. Features an easy to read lockable, retractable yellow blade and high-impact ABS case.

Item No.	Description
TPM025	Tape Measure, 7.5 Meter

Wooden Ruler

This 12" / 30.5cm wooden ruler has a double bevel and a pencil groove. It is scaled in 1/16" increments on one bevel and 1 mm increments on the opposite bevel. There is a metal edge on one side.

Item No.	Description
SCLW12	Wooden Ruler



Clear Plastic Rulers

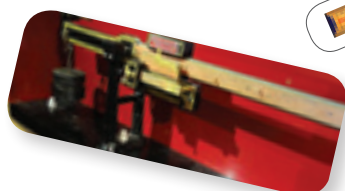
The clear plastic 12" / 30.5cm ruler is scaled in 1/16" increments on one side and 1mm increments on the other side. The clear plastic 6" / 15cm ruler is scaled in 1mm increments on one side.



Item No.	Description
SCALE12	Clear Plastic Ruler, 12"
SCALE6	Clear Plastic Ruler, 6"



Learning to Measure - Building STEM Skills Kit



United's series of STEM based curriculum kits accent the scientific method and independent inquiry featuring hands-on learning materials and exciting interactive digital content that can be accessed on a computer, tablet or your mobile device. Kits contain structured, guided, and open investigations, at introductory, intermediate, and advanced levels, to make inquiry based learning affordable and fun. Requires additional household materials for independent investigations.

Our Learning to Measure Kit contains 5 classroom activities and 5 independent investigations for students to measure lengths and distances, volumes, mass, temperature, and time, and also investigates conservation of mass. The kit includes enough materials for 40 students working in groups of 4, as well as a DVD with PDF Teacher and Student Guides and other digital content.

Item No.	Description
AISMEKIT	Learning to Measure - Building STEM Skills Kit



Activity Summaries

Activity 1 - Learning to Measure Lengths and Distances

(GUIDED - MODEL EXPERIMENT)

- Learning To Measure Lengths & Distances** (BEGINNER)
Student groups practice measuring printed type fonts and longer distances.

(GUIDED INQUIRY - INDEPENDENT INVESTIGATION)

- Can Measurement Accuracy be Affected by Temperature?** (BEGINNER - INTERMEDIATE)
Student groups assess how changes in temperature affect the accuracy of a scale.

Activity 2 - Learning to Measure Volumes

(GUIDED - MODEL EXPERIMENT)

- Learning To Measure Volumes** (BEGINNER)
Student groups use graduated cylinders to measure volumes (reading a meniscus).

(GUIDED INQUIRY - INDEPENDENT INVESTIGATION)

- Determining the Volume of a Regular and Irregular Solid** (BEGINNER)
Students assess the volume of a regular and irregular solid by displacement. They also make indirect measurements (by calculation).

Activity 3 - Learning to Measure Mass

(GUIDED - MODEL EXPERIMENT)

- Learning To Measure Mass on a Triple-Beam Balance** (BEGINNER)
Measuring mass using a triple-beam balance. (Step-by-step)

(GUIDED INQUIRY - INDEPENDENT INVESTIGATION)

- Detecting a Mint Change**
Students compare the masses of US one-cent coins (pennies) to determine which year a major change was made.

Activity 4 - Learning to Measure Temperature

(GUIDED - MODEL EXPERIMENT)

- Learning To Measure Temperature** (BEGINNER)
Student groups use measure temperature under various conditions - converting from Fahrenheit to Celsius scales.

(GUIDED INQUIRY - INDEPENDENT INVESTIGATION)

- How much heat is lost in an endothermic reaction?** (INTERMEDIATE)
Students measure the change in temperature during an endothermic reaction (adding Alka-Seltzer to a glass of water).

Activity 5 - Learning to Measure Time

(GUIDED - MODEL EXPERIMENT)

- Constructing a Time Machine (sundial)** (INTERMEDIATE)
Student groups use a GPS app to determine latitude, and use this information to help them construct a sundial for time measurement. They determine the precision and accuracy of their constructed instruments.

Going Further

(OPEN INQUIRY - INDEPENDENT INVESTIGATION)

- Demonstrating Conservation of Mass in a Closed System** (BEGINNER / INTERMEDIATE)
Students design an investigational protocol that demonstrates conservation of mass in a chemical reaction.

Background Information

Keywords & Analysis Skills Audit, Overview, Time & Space, Volume, Mass, Time, Temperature, Indirect Measuring

Measurement Review

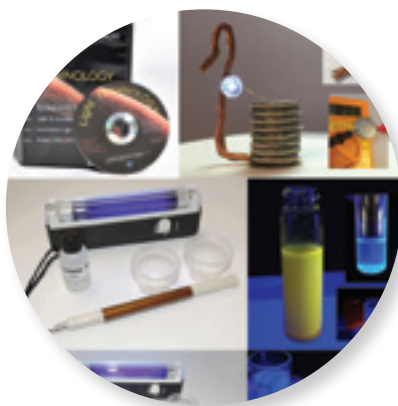
Precision vs. Accuracy, Worksheet Table, SI Units

References and Resources

Websites, PDF Resources, YouTube, eBooks (Kindle), Apps (iTunes)

All Activities are aligned to Common Core Standards

United STEM Kits - Correlated to NextGen Science Standards



United's series of STEM-based curriculum kits accent the scientific method and independent inquiry featuring hands-on learning materials and exciting interactive digital content that can be accessed on a computer, tablet or your mobile device. Kits contain structured, guided, and open-ended investigations, at introductory, intermediate, and advanced levels, to make inquiry-based learning affordable and fun. Kits require additional locally obtained materials for independent investigations.

For pennies per experiment, your students have access to digital PDF content such as:

- Independent Investigation Inquiry suggestions
- Background information including content tables and concept animations
- Powerpoint concept presentation (and video version)
- Comprehensive glossary of terms
- Student activity PDFs have a special Typewriter functionality allowing them to take notes, record experimental data, and answer analysis questions. They simply email their worksheets back to you!

 UNITED SCIENTIFIC SUPPLIES, INC.			
United STEM Kits Correlated to Next Generation Science Standards			
Concept / Skill	United STEM Kit Title	NextGen Standard	Common Core State Standards Connection
accuracy	Learning About pH, Learning To Measure, Ink Chromatography & Forensics, Batteries	HS-PS1-2(8)	HS-NGA.3
acids	Learning About pH, Invisible Ink, Batteries	MS-PS1-5	
affinity (molecular forces)	Ink Chromatography & Forensics	HS-PS1-6	
bases	Learning About pH		
biomolecules	Learning About pH, Invisible Ink		
buffers	Ink Chromatography & Forensics		
capillary action	Learning To Measure	HS-PS1-7	
changes in state	Invisible Ink	MS-PS1-2	
chemical bonds	Learning About pH, Invisible Ink		
chemical change	Invisible Ink, Batteries	MS-PS1-1	
chemical energy	Learning About pH, Learning To Measure, Invisible Ink		

All United NextGen STEM kits are correlated to NextGen and Common Core State Standards.



pH, Indicators and Dyes STEM Kit



Includes
Activity
Guide

This kit is a unique teaching tool for introducing your students to the chemistry behind plant pigments (the blueberry biopigment cyanidin) and how they can be used as pH indicators and fabric dyes. Students use their knowledge to create their own pH test strips and evaluate them against a commercial type.

Includes materials for four detailed activities featuring 'model' and 'inquiry' investigation paths - a total of 11 investigational activities, which can accommodate up to 40 students! Also contains a DVD with PDF Teacher and Student Guides and other digital content.

Covered concepts include: data analysis, accuracy vs. precision, biopigment structure, pH, pH scale, pH indicators, stains and dyes, acids, bases, acid-base interactions, solutions, and self-ionization of water.



Item No.	Description
AISPHKIT	pH, Indicators, and Dyes STEM Kit

Activity Summaries

Activity 1 - Learning About pH, Indicators & Dyes

(GUIDED - MODEL EXPERIMENT)

(BEGINNER - INTERMEDIATE)

OVERVIEW: In this STRUCTURED INVESTIGATION, students learn about biological pigments and how they are used as pH indicators and can be manipulated as fabric colorants.

OBJECTIVES: Students will...

- ✓ Understand the difference between a biological pigment and a dye.
- ✓ Understand what a solvent is and how water (the universal solvent) can be used to extract a biological pigment.
- ✓ Understand the concept of pH and the role of biological indicators in measuring pH.
- ✓ Use extracted biological pigments as pH indicators.
- ✓ Use biological pigments as fabric dyes.

INDEPENDENT INQUIRY

Students must decide which biopigment to extract to obtain a specific fabric dye color.

Activity 2 - Learning About the Chemistry of Plant Pigments

(GUIDED - MODEL EXPERIMENT)

(ADVANCED)

OVERVIEW: In this STRUCTURED INVESTIGATION, students are introduced to the diversity of plant pigments, their unique chemical structure, and how certain metal elements are incorporated into these biomolecules, as well as their similarity to other biomolecules. They learn a pigment extraction procedure, and investigate how pH change and metal ions affect plant pigment color by performing a number of chemical reactions.



OBJECTIVES: Students will...

- ✓ Learn how to harvest the biopigment anthocyanin that occurs in blueberries.
- ✓ Understand how certain metal ions (Mg^{+} , Al^{+}) can initiate a molecular change and thus affect pigment color.
- ✓ Perform chemical reactions:
 1. color change (removing Mg^{+} from chlorophyll, changing it to pheophytin).
 2. sodium hydroxide test for presence of Mg^{+} ion.

INDEPENDENT INQUIRY

Students must decide which biopigment should be used for a specific pH range.

Activity 3 - Learning About Making pH Paper Strips

(GUIDED - MODEL EXPERIMENT)

(BEGINNER - INTERMEDIATE)

OVERVIEW: In this STRUCTURED INVESTIGATION, students design methods to impregnate various paper substrates (watercolor, office, commercial filter) with an extracted plant pigment indicator of their choosing made in ACTIVITY 2.

OBJECTIVES: Students will...

- ✓ Design and produce a pH test strip that consistently measures a specific pH of a test material.

Activity 4 - Learning About Evaluating pH Paper Test Strips

(GUIDED - MODEL EXPERIMENT)

(INTERMEDIATE)

OVERVIEW: In this STRUCTURED INVESTIGATION, students compare and evaluate their group-manufactured pH strips (ACTIVITY 3) against a commercial version on several known pH standard materials.

OBJECTIVES: Students will...

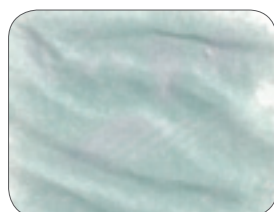
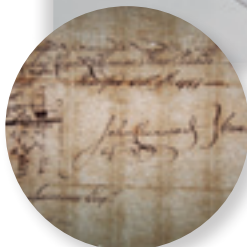
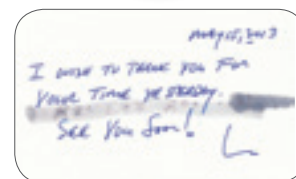
- ✓ Compare the group-manufactured pH test strip (ACTIVITY 3) pH determination value against a commercial pH strip determination value for three unknown pH test solutions.
- ✓ Understand the terms precision and accuracy.

NEW

The Chemistry of Invisible Inks STEM Kit



**Includes
Activity
Guide**



This kit is a unique teaching tool for introducing your students to the fascinating chemistry and physics behind invisible inks, i.e. colorless substances usable for writing that can be made to run color using a chemical or physical process. Students investigate how organic fluids and chemical reagents can be used as invisible inks. Relying on historical example, students create various invisible inks and security documents for other student groups to analyze and decode! Includes materials for two detailed activities (each with a 'model' and 'inquiry' investigation paths - a total of four investigational activities), which can accommodate up to 40 students. Also contains a DVD with PDF Teacher and Student Guides and other digital content.

Covered concepts include: data analysis, chemical & physical processes, elements, mixtures & compounds, pH indicators, transmitted vs. reflected light, the periodic table, fluorescent compounds, types of chemical reactions, and hypothesis testing.

Item No.	Description
AISINKIT	The Chemistry of Invisible Inks STEM Kit

Activity Summaries

Activity 1 - Investigating Organic Fluids as Invisible Inks

(GUIDED - MODEL EXPERIMENT)

(INTERMEDIATE)

OVERVIEW: In this STRUCTURED INVESTIGATION, students develop an understanding of how a natural material (lemon juice / organic acids and sugars) can be employed as an invisible ink and how the application of heat sets up a chemical reaction [oxidation (caramelization)] of organic materials (organic acids and sugars).

OBJECTIVES: Students will...

- ✓ Learn the major chemical constituents of lemon juice.
- ✓ Understand how the application of heat (ironing) initiates a chemical reaction (caramelization) that 'develops' the invisible ink.
- ✓ Evaluate various 'secret messages' that have been developed by heating.

INDEPENDENT INQUIRY

Design an investigation that evaluates various natural, organic materials as effective invisible inks using heating as a developer.

Activity 2 - Investigating Chemical Reagents as Invisible Inks

(GUIDED - MODEL EXPERIMENT)

(INTERMEDIATE - ADVANCED)

OVERVIEW: In this STRUCTURED INVESTIGATION, students develop an understanding of how various chemical reagents (acids, bases, fluorescent compounds, inorganic salts, organic compounds) can be employed as invisible inks and developers to create 'secret messages' and security documents.

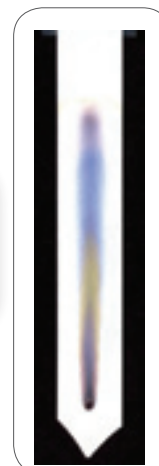
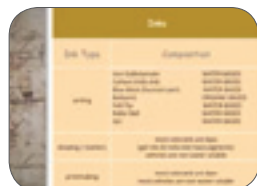
OBJECTIVES: Students will...

- ✓ Evaluate various chemical reagents as effective inks and developers for creating 'secret messages'.
- ✓ Understand how various 'developer systems' (pH indicator, pH precipitation, indicator reaction, and light-emitting radiation) can be employed to image an invisible ink material.

INDEPENDENT INQUIRY

Design an effective and secure invisible ink system (ink / developer). Design an effective, secure security document using invisible inks and developers.

Ink Chromatography and Forensics STEM Kit



Use this kit to introduce your students to ink chromatography and its application in solving forensics cases. Students gain experience in creating ink databases, identifying 'ink tags' to 'date' various inks and then use them (as professional document examiners do) in solving two mysteries involving document inks - an apparent suicide note and a forgery case. Includes materials for three detailed activities (with 'model' and 'inquiry' investigational paths - a total of four investigational activities), which can accommodate up to 40 students. Also contains a DVD with PDF Teacher and Student Guides and other digital content.

Covered concepts include: data analysis, chromatographs, inks and their composition, mixtures, compounds, molecules, solubility, affinity, polar substances, R_f values, capillary action, light energy, fluorescence, and hypothesis testing.

Item No.	Description
AISCRKIT	Ink Chromatography and Forensics STEM Kit

Activity Summaries

Activity 1 - Working with Ink Lines and an Ink Database

(GUIDED - MODEL EXPERIMENT)

(BEGINNER - INTERMEDIATE)

OVERVIEW: In this STRUCTURED INVESTIGATION, student teams are assigned a writing instrument and are asked to create ink lines. Later, they evaluate these ink lines for instrument type, and ink composition using chromatographic separation techniques. Students then use these data to identify ink brands from an ink database.

OBJECTIVES: Students will...

- ✓ Learn about writing instruments (e.g. pen nibs).
- ✓ Learn how to perform a chromatographic analysis.
- ✓ Analyze a chromatograph, determine R_f values.
- ✓ Identify an unknown ink based on its R_f value from an ink database.

INDEPENDENT INQUIRY

Student teams function as 'independent laboratories' to identify a particular ink and instrument used to create an ink line.



Activity 2 - Case of the Quivering Line

(GUIDED - MODEL EXPERIMENT)

(INTERMEDIATE - ADVANCED)

OVERVIEW: In this STRUCTURED INVESTIGATION student teams examine evidentiary material for analysis concerning the type of writing instrument and the type of ink recovered from a pen at the scene.

OBJECTIVES: Students will...

- ✓ Develop an informed opinion from evidentiary material regarding the ink and the instrument used to create a document.
- ✓ Submit a formal forensics report to the local sheriff's office.

Activity 3 - Case of the Crossed Four

(GUIDED - MODEL EXPERIMENT)

(INTERMEDIATE - ADVANCED)

OVERVIEW: In this STRUCTURED INVESTIGATION, student teams examine evidentiary material for possible alteration of a check. They determine if the ink(s) used are identical, or different - indicating fraudulent intent.

OBJECTIVES: Students will...

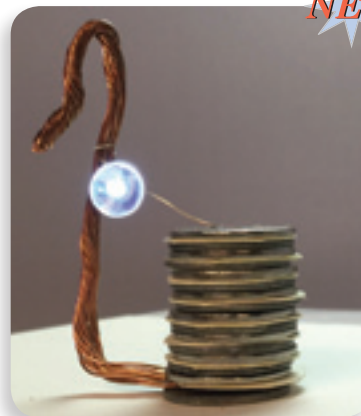
- ✓ Develop an informed opinion from evidentiary material regarding the ink and the instrument used to create a document. Was this check altered?
- ✓ Submit a formal forensics report to the local sheriff's office.

Building & Designing Batteries STEM Kit

NEW



Includes
Activity
Guide



Contains eight investigative activities that teach students how to use a multimeter to measure voltage and amplitude, calculate electrical resistance and electrode potentials, evaluate battery performance, assemble electrical circuits, and construct batteries. The kit includes enough materials for 40 students working in groups of 4, as well as a DVD with PDF Teacher and Student Guides and other digital content.

Item No.	Description
AISBAKIT	Building & Designing Batteries STEM Kit

Activity Summaries

Activity 1 - Building a Pile Battery Voltaic Cell

(GUIDED - MODEL EXPERIMENT)

Students review and practice using a multimeter to measure electrical quantities and validate their measurements using Ohm's Law; construct a pile battery and evaluate its energy characteristics and compare it to a commercial D cell. Student groups will then team up to construct an appropriate circuit that will produce enough current to light an LED lamp.

Activity 2 - Designing the Better Pile Battery

(OPEN - INQUIRY EXPERIMENT)

Students use their initial pile battery-building experience (from the MODEL experiment) to design, build, and test battery designs and evaluate how they meet minimal performance specifications of a design goal. Students must choose: metals, electrolyte, separator material, and battery shape.

Activity 3 - Building a LED Light Battery

(GUIDED - MODEL EXPERIMENT)

Students view a guide image of a "quarter battery" with an illuminated LED light. They will use this image as a design prototype to construct their own pile battery that lights a 3.5V (20mA) LED lamp using zinc and nickel planchets. They evaluate the electrical properties of their battery and validate these measurements using Ohm's Law. They then compare the energy density to that of a commercial D cell.

Activity 4 - Designing an Alkaline LED Light Battery

(GUIDED - INQUIRY EXPERIMENT)

Students design, build, test, and compare the power output and energy density of an acid to alkaline version cell at the same voltage.

Activity 5 - Building Earth & Microbe Batteries

(GUIDED - MODEL EXPERIMENT)

Students will set up an "earth battery" and record voltage readings under different soil types and conditions. In a long term (>30 days) student groups use aerated soils - from various sources (source of *Shewanella* spp.) - as an electrolyte in constructing a microbial fuel cell (MFC). They construct this microbe battery and evaluate its energy characteristics over time (about 1+ month).

Going Further

Activity 6 - Working with Earth Batteries

- Improving Electrode Design
Students use suggestions in designing alternative earth electrode designs based on increased surface area.
- Improving Earth as an Electrolyte
Students place earth battery electrodes in different combinations (series / parallel), and in different soil conditions (marsh, sand, loam, fertilized, high salt content, etc.) to optimize voltage output. Students also investigate the use of diatomaceous earth as an electrolyte.

Activity 7 - A Closer Look at Galvanic Corrosion

- Interpreting Experimental Results
Students interpret a photograph of experimental results involving galvanic corrosion - solid copper wire was wrapped around the center area of an iron nail.

Activity 8 - Microbial Fuel Cell (MFC) Size & Performance

- Use 5-gallon plastic pails as MFC containers.
Students use a current (US Navy) version and simple MFC construction tip videos as guides to upgraded designs.
- Improve MFC Performance Using Electrolyte "Microbial Enhancers"
Students propose (hypothesize) fuel cell "enhancements" that increase power output; they also investigate some "improvement tips." Students place earth battery electrodes in different combinations (series / parallel), and in different soil conditions (marsh, sand, loam, fertilized, high salt content, etc.) to optimize voltage output. Students also investigate the use of diatomaceous earth as an electrolyte.

Skills/Concepts

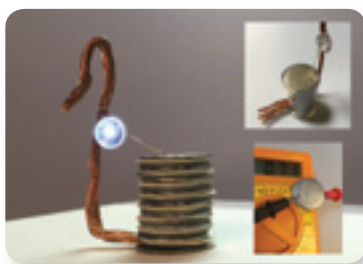
- Experimental/Engineering Design
- Investigating
- Energy & Matter
- Scientific Method
- Measuring
- Data Analysis
- Spreadsheet Preparation
- Communication
- Technology
- Scientific Method

Includes
Activity
Guide



DVD is included with Exploration Pack Sets (10 of each activity or complete set of 4).

Light Technology Exploration Pack Sets



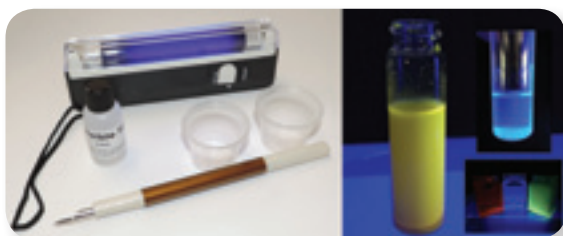
LED Battery Exploration Pack includes materials to construct a battery that illuminates an LED.

This set of four activities investigates how light is used in technology products. Each activity has deep content and unique materials so users can explore science concepts using STEM methodology. Pack Sets, designed for use by an entire class, include 10 sets of hands-on materials for one activity and a DVD with extensive content for all four activities.

The DVD contains:

- Teacher and Student Guides
- Background Information
- Powerpoints and Videos
- Glossary
- Worksheets

Individual Exploration Packs without the DVD are also available - these contain printed instruction sheets highlighting one model experiment. The Exploration Pack Set includes all four individual hands-on Exploration Packs and the DVD.

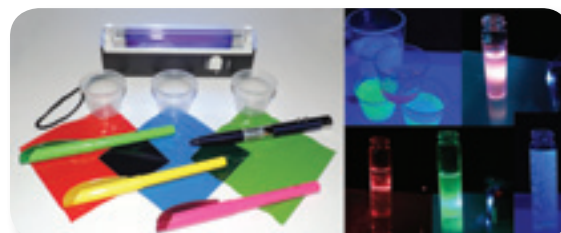


Light & Invisible Ink Exploration Pack contains a UV flashlight, invisible ink, a steel nib pen, and dipping wells.



Smart Colors Exploration Pack contains two thermal ink pens, chromatography paper, marking cards, and a dipping well.

Item No.	Description
AISSLBP	Building an LED Light Battery Exploration Pack
AISSLIP	Light & Invisible Ink Exploration Pack
AISSLLEP	Luminous Light Exploration Pack
AISSCEP	Smart Colors Exploration Pack
AISSLBES	LED Battery Exploration Pack Set of 10 with DVD
AISSLIES	Light & Invisible Ink Exploration Pack Set of 10 with DVD
AISSLLES	Luminous Light Exploration Pack Set of 10 with DVD
AISSCES	SMART Colors Exploration Pack Set of 10 with DVD
AISSLTEP	Light Technology Exploration Pack Set of 4 with DVD



Luminous Light Exploration Pack contains a UV flashlight, red laser diode pointer, three colored acetate sheets, three fluorescent ink pens, and dipping wells.

Build an LED Battery Exploration Pack Set

Constructing an LED Light Battery

(GUIDED - MODEL EXPERIMENT)

Students view a guide image of a "quarter battery" with an illuminated LED light. They will use this image as a design prototype to construct their own pile battery that lights a 3.5V (20mA) LED lamp using zinc and nickel planchets. After the battery is assembled, students will evaluate its power performance and energy density characteristics.

Comparing Acid and Alkaline Electrolytes

(GOING FURTHER ACTIVITY)

Students investigate the difference between an acid electrolyte and an alkaline electrolyte in the Ni-Zn battery system. They are asked to design an alkaline Ni-Zn pile battery and compare its energy performance characteristics to that of the previously constructed acid pile battery. From this comparison, students determine which electrolyte type (acid or alkaline) provides for a higher energy density (Wh/Kg) at the same output voltage.

Investigating Light and Invisible Inks Exploration Pack Set

Using Near-UV Light to Image a Commercial Invisible Ink

(GUIDED - MODEL EXPERIMENT)

Provides students with experience in understanding the physical properties of certain colored dyes, specifically how they fluoresce under ultra-violet lighting and can be used as invisible inks.

Designing a Security Document Using a Self-Made Invisible Ink

(GOING FURTHER ACTIVITY)

Students design their own security document using a self-made invisible ink.

Investigating Luminous Light Exploration Pack Set

Understanding Why Fluorescent Dyes Glow

(GUIDED - MODEL EXPERIMENT)

Provides students with experience in understanding the visible spectrum, light energy, and fluorescence.

Using UV Light to Hunt for Fluorescent Objects

(GOING FURTHER ACTIVITY)

Students engage in OPEN inquiry-driven independent explorations of various types of fluorescent materials.

Investigating Smart Colors Exploration Pack Set

Designing a Smart Thermometer

(GUIDED - MODEL EXPERIMENT)

Provides students with experience in understanding thermochromism - the property of substances to change color due to a change in temperature. Students design an investigative technique using thermochromic ink that will determine if a microwave is producing uniform heating over its revolving food support surface.

Designing a Freshness Indicator

(GOING FURTHER ACTIVITY)

Students engage in OPEN inquiry-driven independent explorations to investigate the property of halochromism - the property of substances to change color when pH changes occur. As vegetables degrade, excessive organic acids are produced and pH falls, with the food being in an over-ripened condition. Students will choose a natural pH indicator and design a test strip that registers a change in pH that indicates over-ripening in vegetable packages.

Chemistry Hardware Assortment



An assortment of hardware most often used in general chemistry labs. Starter kit includes the following:

Contents:

Beaker Tongs	1
Burette Clamp	1
Burner Tripod, 3" ring, 9" legs	1
Clamp, Mohr's Pinchcock	1
Clamp Holder, Right Angle	1
Clay Pipe Triangle, 2"	1
Crucible Tongs, Nickel-plated Steel, 9"	1
Ring Support with Clamp, 4"	1
Support Stand with Rod, 5" x 8" / 24" rod	1
Test Tube Rack, Plastic, holds 6 tubes	1
Test Tube Clamp	1
Wire Gauze with Ceramic Center, 5" x 5"	1

Item No.	Description
HRDKIT2-C	Chemistry Hardware Assortment

We can custom assemble hardware kits per your specifications - call for details.

Chemistry Hardware Assortment, Deluxe

A comprehensive assortment of glassware, plasticware, porcelain and other hardware most commonly used in general chemistry labs. Kit includes the following:

Contents:

Beaker, Glass, 100ml	1	Rubber Stopper, #2, solid	1
Beaker, Glass, 250ml	1	Rubber Stopper, #2, one-hole	1
Beaker, Glass, 400ml	1	Rubber Stopper, #2, two-hole	1
Beaker, Glass, 1000ml	1	Rubber Stopper, #6, solid	3
Bottle, Wash, 125ml, Plastic	1	Rubber Stopper, #6, one-hole	3
Clamp, Burette	1	Rubber Stopper, #6, two-hole	3
Clamp, Mohr's Pinchcock	1	Test Tube, Glass, 16 x 150mm	6
Crucible with Cover, 10ml	1	Test Tube Brush	1
Cylinder, Graduated, Glass, 10ml	1	Test Tube Clamp	1
Cylinder, Graduated, Glass, 50ml	1	Test Tube Rack, 2-tier, wooden	1
Cylinder, Graduated, Plastic (PP), 100ml	1	Tongs, Crucible	1
Evaporating Dish, Porcelain, 35ml	1	Triangle, Clay Pipe	1
Filter Paper, 9cm dia., pk/100	1	Tripod Stand, 6"	1
Flask, Boiling, 100ml	1	Stirring Rod, Glass, pk/12	1
Flask, Boiling, 250ml	1	Support Stand, with 18" Rod	1
Flask, Erlenmeyer, Glass, 250ml	1	Support Ring, 3" O.D. with clamp	3
Flask, Erlenmeyer, Glass, 500ml	1	Test Paper, Litmus, Blue	1
Flask, Volumetric, w/stopper, 250ml	1	Test Paper, Litmus, Red	1
Laboratory Apron	1	Test Paper, Cobalt Chloride	1
Mortar & Pestle, 90mm	1	Tubing, Glass, Assorted, one pound	1
Rubber Stopper, #1, solid	6	Wire Gauze, 5" square	1
Rubber Stopper, #1, one-hole	1		



Item No.	Description
HRDKIT4	Chemistry Hardware Assortment, Deluxe

Filtering Kit

An excellent, faster working, alternative to traditional gravity based liquid filtration. The included Hand Vacuum Pump is also available separately.

Contents:

Filtering Flask, 500ml	1
Buchner Funnel, Porcelain, 90mm	1
Filter Paper, 90mm dia., pk/100	1
Hand Vacuum Pump with Gauge	1
Rubber Stopper	1
Vacuum Hose	1
Activity Guide	1

Item No.	Description
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FLTKIT	Filtering Kit
HVP001	Hand Vacuum Pump only



Chemistry Labware Kit

A convenient assortment of glassware, plasticware and hardware most commonly used in general chemistry labs. Kit includes the following:

Contents:

Dropping Bottle, 30ml, Barnes.2	Crucible tongs, steel, 9" long1
Dropping Pipettes, Plastic6	Funnel, Glass, long stem, 90mm dia.1
Beaker, Glass, 50ml1	Funnel, Plastic, 75mm dia.1
Beaker, Glass, 100ml1	Test Tube Clamp, brass, with finger grips1
Beaker, Glass, 250ml.1	Wire Gauze, 5" x 5", with ceramic center1
Evaporating Dish, Porcelain, 70mm dia.1	Crucible, Porcelain, 25ml with lid . .1
Stirring Rods, Glass, 8"6	Watch Glass, 75mm dia.1
Erlenmeyer Flask, Glass, 125ml. . . .1	Plastic Scoop1
Erlenmeyer Flask, Glass, 250ml . . .1	Spatula, stainless, 3" long blade with wooden handle1
Test Tubes, Glass, 18 x 150mm. . . .6	Rubber Stoppers, solid3
Cylinder, Plastic (PP), 10ml1	Rubber Stoppers, one-hole3
Cylinder, Plastic (PP), 50ml1	Rubber Stoppers, two-hole3
Cylinder, Plastic (PP), 100ml1	Total pieces48
Forceps, stainless, 5" long1	



Item No.	Description
HRDKIT3	Chemistry Labware Kit

Distillation Apparatus



This complete set features high quality borosilicate glass parts and all hardware necessary for simple distillation experiments.

Contents:

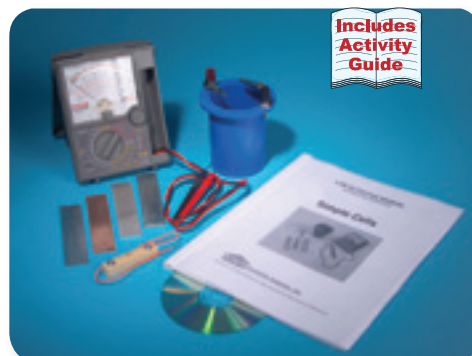
Round Bottom Flask with Side Tube, 500ml.1
Graham Condenser, 300mm.1
Erlenmeyer Flask, 250ml.1
Glass Stopper1
Support Stand (6"X9") with 24" Rod1
Swivel Burette Clamp1
Extension Clamp1
Clamp Holder1
Activity Guide1

Item No.	Description
DSA001	Distillation Apparatus

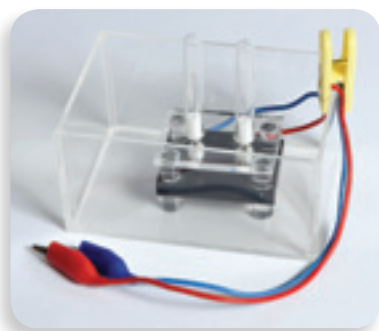
Basic Simple Cells Kit

This kit allows students to explore the electrical properties of different combinations of electrode materials using safe, everyday chemicals such as soda, vinegar, and fruit juice as electrolytes. The set contains everything needed for the experiments except the electrolytes. Voltage, current, and polarization effects can be investigated. Contents of the set include a simple cell with electrode holders, electrodes of copper, aluminum, iron, and zinc, a mounted resistor for use as a current load, a multimeter, and a manual.

Item No.	Description
SCLKIT-E	Basic Simple Cells Kit



Mini Electrolysis Device



This easy to set up, inexpensive device was designed by teachers in order to collect the correct proportions of hydrogen and oxygen from the electrolysis of water. Its unique design helps correct issues such as falling test tubes perched over unsteady electrodes and gases escaping due to poor alignment.

This product is great for general science teachers, chemistry classes or when teaching concepts such as Mixtures and Compounds, States of Matter, Oxidation Reduction Reactions, Law of Thermodynamics, and Alternative Energy. Each device consists of the electrolysis unit, gas collection tubes and a clear plastic tub. The device will attach to any 6-12 VDC power supply (not included) using the alligator clips on the unit's power leads. Includes activity guide and an instructional CD.

Item No.	Description
ELWD01	Mini Electrolysis Device

Hoffman Electrolysis Apparatus

The Hoffman Electrolysis Apparatus is used for the qualitative and quantitative study of the electrolytic decomposition of electrolytes such as water and hydrochloric acid. Included platinum electrodes are also sold separately. Includes activity guide.

Contents:

Glass Electrolysis Unit	1
Support Stand with Rod	1
Burette Clamp	1
Extension Clamp	1
Bosshead Clamp	1
Platinum Electrode	2
Carbon Electrode	2
Activity Guide	1



Item No.	Description
HEA001	Hoffman Electrolysis Apparatus
HEA001-P	Replacement Platinum Electrodes, pair

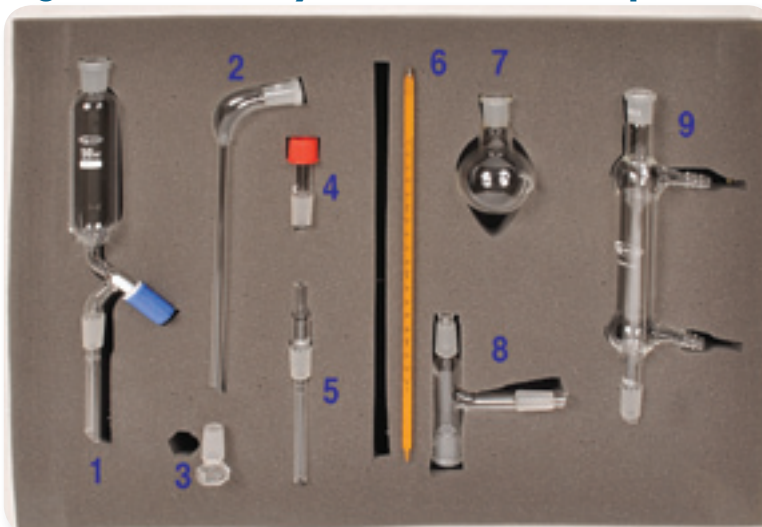
Brownlee Electrolysis Apparatus



This is a simple and economical type of electrolysis apparatus. Platinum electrodes are attached to insulated connecting rods which are attached to binding posts mounted on a nonconducting support. The support rests across the top of a beaker and has two clips that each hold an inverted test tube. Available in two versions, with or without a beaker. The unit operates on a user-supplied 6V battery or 10V DC power supply.

Item No.	Description
BEA001-B	Brownlee Electrolysis Apparatus with Beaker
BEA001	Brownlee Electrolysis Apparatus

Organic Chemistry Glassware Kit, 9 pieces



This starter set is designed for organic chemistry labs and is suitable for small-scale procedures up to 30g. All of the ground glass components in this set have a joint size of 14/23. Includes a sturdy storage box with foam insert.

Item No.	Description
ORGKIT-09	Organic Chemistry Glassware Kit, 9 pieces

Contents:

1. Dropping Funnel (50ml with Rotoflo Stopcock) 1
2. Receiver Delivery Adapter, Long Stem 1
3. Stopper for Dropping Funnel 1
4. Screw Cap Adapter 1
5. Air Leak / Steam Inlet Tube 1
6. Thermometer 1
7. Boiling Flask (50ml) 1
8. Still Head 1
9. Liebig Condenser 1

Parts also available individually - call for details.

Organic Chemistry Glassware Kit, 16 pieces

Contents:

1. Still Head, (socket size 14/23, cone size 19/26) 1
2. Dropping Funnel (100ml) (socket size 19/26, cone size 19/26) . . . 1
3. Thermometer Pocket (cone size 14/23) 1
4. Air Leak / Steam Inlet Tube (cone size 19/26) 1
5. Round Bottom Flask (250ml) (socket size 24/29) 1
6. Erlenmeyer Flask (250ml) (socket size 24/29) 1
7. Reducing Adapter (socket size 19/26, cone size 24/29) 1
8. Round Bottom Flask (100ml) (socket size 24/29) 1
9. Receiver Adapter with Vent (socket size 19/26, cone size 24/29) . . 1
10. Multiple Adapter (socket size 19/26, cone size 24/29) 1
11. Round Bottom Flask (50ml) (socket size 24/29) 1
12. Stopper, (cone size 19/26) 1
13. Stopper, (cone size 19/26) 1
14. Stopper, (cone size 24/29) 1
15. Receiver Delivery Adapter, Long Stem (socket size 19/26) 1
16. Liebig Condenser (socket size 19/26, cone size 19/26) 1



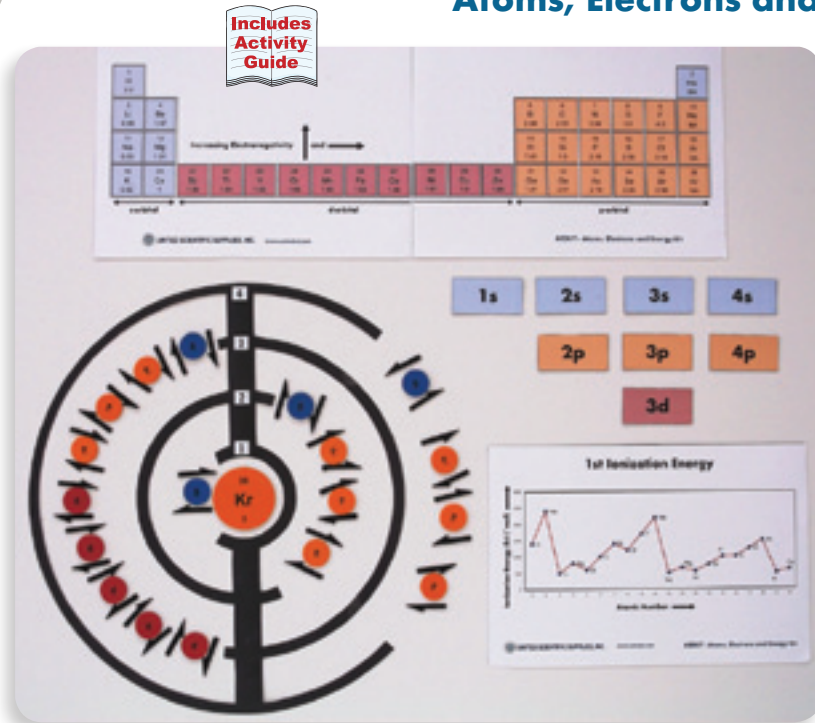
Parts also available individually - call for details.

This deluxe set is designed for organic chemistry labs and is suitable for preparations up to 150g. All glassware is jointed (joint sizes available upon request). Includes a sturdy storage box with foam insert.

Item No.	Description
ORGKIT-16	Organic Chemistry Glassware Kit, 16 pieces

Atoms, Electrons and Energy Kit

NEW



It can be challenging to learn the atomic structure of elements and how such structure leads to trends in the periodic table. Teachers using visual and tactile models can overcome the abstract nature of the subject matter and greatly enhance student conceptualization.

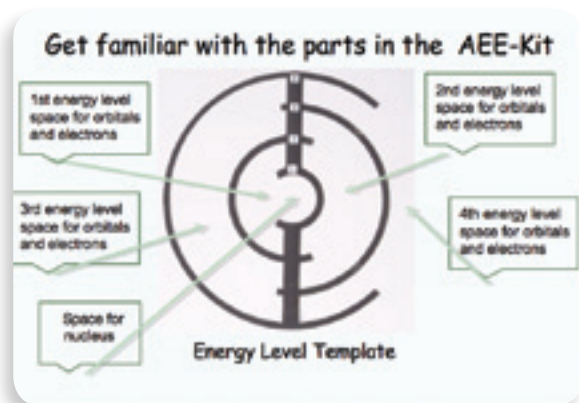
This kit contains materials representing atomic structures and electron arrangement within elements. It also provides materials necessary to demonstrate how atomic arrangement relates to placement in the periodic table of elements. The kit was developed by experienced chemistry teachers and has been refined and tested to meet your needs.

The kit contains an energy level template, and enough nuclear areas, orbitals (s,p,d) and electrons to represent the first 36 elements. Each nucleus and orbital is color coded to match a large periodic chart depicting trends in electron orbital arrangement and electronegativity. Also included is a large 1st ionization energy chart for these 36 elements.

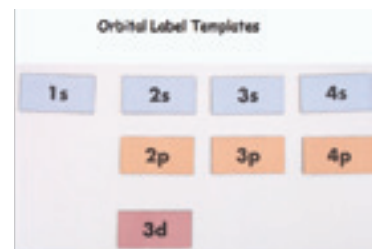
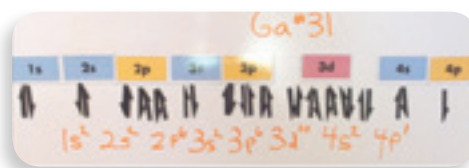
Science standards expect students to identify and explain periodic trends, including atomic and ionic radii, electronegativity, and ionization energy. The United AEEKIT is designed to do just this! All manipulatives in the teacher demonstration kit are magnetic, colorful, reusable and easily seen from the back of the classroom.

Also included are ten sets of smaller, reusable student manipulatives suitable for a class of 30 students.

An included instructional CD and teaching manual will walk you through using the kit for the first time in an easy, familiar and pictorial slide show fashion. This is a complete package, fun to use and will save you time and frustration!



Item No.	Description
AEEKIT	Atoms, Electrons and Energy Kit



Molecular Model Set, Teacher

Suitable for constructing complex organic and inorganic molecules. The teacher set contains 100 atom centers and 86 bonds. Includes a durable plastic storage box with a copy of the periodic table for easy reference.

SMALL PARTS: NOT FOR CHILDREN UNDER 3 YRS.

Contents:

Carbon (Black).....	12	Phosphorus (Purple).....	7
Hydrogen (White).....	14	Divalent Metals (Silver).....	7
Oxygen (Red).....	22	Trivalent Metals (Silver).....	7
Nitrogen (Blue).....	10	Bonds (Large).....	36
Sulphur (Yellow).....	13	Bonds (Small).....	50
Halogen (Green).....	8		



Item No.	Description
58011	Molecular Model Set, Teacher

Molecular Model Set, Student

Suitable for constructing complex organic and inorganic molecules. The student set has 48 atom centers and 35 bonds. Includes a durable plastic storage box with a copy of the periodic table for easy reference.

SMALL PARTS: NOT FOR CHILDREN UNDER 3 YRS.

Contents:

Carbon (Black).....	6	Phosphorus (Purple).....	1
Hydrogen (White).....	14	Divalent Metals (Silver).....	5
Oxygen (Red).....	6	Trivalent Metals (Silver).....	4
Nitrogen (Blue).....	3	Bonds (Large).....	10
Sulphur (Yellow).....	3	Bonds (Small).....	25
Halogen (Green).....	5		



Item No.	Description
58012	Molecular Model Set, Student

Atomic Models Set, Classroom

Model different organic and inorganic compounds with this large set suitable for use by an entire class. Set includes 150 connecting lugs and 370 colored balls, and a molded storage box with compartments.

SMALL PARTS: NOT FOR CHILDREN UNDER 3 YRS.

Contents:

Carbon (Black).....	60	Monovalent Metals (Orange).....	20
Hydrogen (White).....	125	Divalent Metals (Orange).....	30
Oxygen (Red).....	30	Trivalent Metals (Yellow).....	30
Halogen (Green).....	25	Non-Metals (Blue).....	30
Metal (Yellow).....	20	Bonds.....	150



Item No.	Description
58001	Atomic Models Set, Classroom

Atomic Models Set, Student

Model different organic and inorganic compounds with this set. Set includes 30 connecting lugs and 75 colored balls, and a molded storage box with compartments.

SMALL PARTS: NOT FOR CHILDREN UNDER 3 YRS.

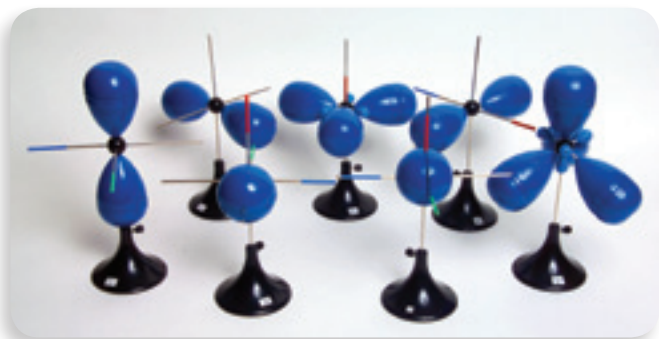
Contents:

Carbon (Black).....	12	Monovalent Metals (Orange).....	4
Hydrogen (White).....	26	Divalent Metals (Orange).....	6
Oxygen (Red).....	6	Trivalent Metals (Yellow).....	6
Halogen (Green).....	5	Non-Metals (Blue).....	6
Metal (Yellow).....	4	Bonds.....	30



Item No.	Description
58002	Atomic Models Set, Student

Set of Seven Molecular Orbit Models



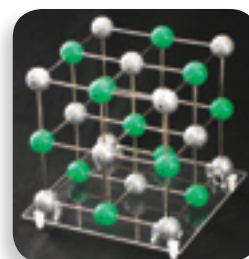
This set of seven models illustrates the most common atomic and hybridized molecular orbits. Each model is assembled on a vertical rod representing the z-axis and is mounted on a removable stand. Orbits represented include s, p_x , p_y (same model), p_z , sp, sp^2 , and sp^3 . Height is 23cm, base diameter is 10cm, and lobes are 6-10cm in diameter.

Item No.	Description
MOMS07	Set of Seven Molecular Orbit Models

Sodium Chloride Crystal Model

Ball-and-spoke structural model of the unit cell of a sodium chloride crystal, NaCl (table salt). Permanently mounted on a clear square acrylic base. Clearly shows the two interpenetrating face centered cubic lattices of sodium and chloride ions. The model contains 27 balls, each 22mm in diameter. Dimensions: cube side 14cm, overall height 18cm.

Item No.	Description
CMSSCL	Sodium Chloride Crystal Model



Diamond Crystal Model



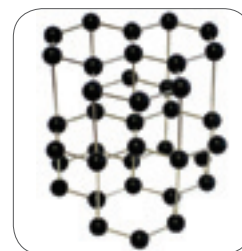
A ball-and-spoke structural model of the diamond crystal form of carbon, permanently mounted on a clear triangular acrylic base. It contains 30 balls, each 22mm in diameter. Overall dimensions: height 20.5cm, base side 25.5cm.

Item No.	Description
CMSDMD	Diamond Crystal Model

Graphite Crystal Model

A ball-and-spoke structural model of the graphite crystal form of carbon, permanently mounted on a clear hexagonal acrylic base. Clearly shows the layered structure. It contains 39 balls, each 22mm in diameter. Overall dimensions: height 27cm, base side 14.5cm.

Item No.	Description
CMSSGP	Graphite Crystal Model



NEW



Cobalt Glass Plates

High-quality dark blue cobalt glass filter is used in sodium and potassium salt flame tests. When a flame is viewed through this filter, the color orange is blocked so that a violet-colored flame is visible. Sold as packs of 6.

Item No.	Description
CGP2X2	Cobalt Glass Plates, 2" x 2", pack of 6
CGP3X3	Cobalt Glass Plates, 3" x 3", pack of 6
CGP4X4	Cobalt Glass Plates, 4" x 4", pack of 6

pH Paper, Wide Range

Ideal for classroom use, this general purpose pH paper provides a distinct color match for each pH unit from 1 to 14. 100 strips, measuring 2" long x 1/4" wide, are packaged in a plastic vial along with a pH color matching chart.

Item No.	Description
PHP100	pH Paper, Wide Range, vial/100 strips

We will custom package all test papers per your specifications. Please call for details.



Litmus Paper

Red litmus paper will turn blue when it comes into contact with an alkaline solution. Blue litmus paper will turn red or pink when it comes in contact with an acidic solution. Neutral litmus paper turns red in an acid solution and blue in a base solution. 100 strips, measuring 2" long x 1/4" wide, are packaged in plastic vials.

Item No.	Description
LPR100	Red Litmus Paper, vial/100 Strips
LPB100	Blue Litmus Paper, vial/100 Strips
LPN100	Neutral Litmus Paper, vial/100 Strips



LPR100



LPB100



LPN100

DNA Model



This pre-assembled DNA model is built to a scale of 10cm to 1nm and accurately depicts a 16 base pair section of DNA. The phosphate-deoxyribose backbone and the four bases are represented by custom plastic moldings that show the shapes of the molecules in scale and illustrate the bonding between them. The model is supported by a central pillar which can rotate on a circular stand. Dimensions of the model are 24" high x 8" in diameter, making it suitable for classroom demonstrations.

SMALL PARTS: NOT FOR CHILDREN UNDER 3 YRS.

Item No.	Description
DNAM01	DNA Model

DNA Model Kit

Our popular DNA Model is now available as a kit. Kit includes one pre-assembled DNA Model, three unassembled models, and one instructional CD. The CD explains key concepts related to DNA structure and includes step-by-step instructions for assembly of the DNA Models. The model is built to a scale of 10cm to 1nm and accurately depicts a 16 base pair section of DNA. The model is supported by a central pillar which can rotate on a circular stand. Each model can be used by a group of 5 students. Kit contains no consumable parts and is designed for repeated use. Developed by teachers.

The full lesson can be completed in one class period and is hands-on for all students. If you already own one of these models, we offer additional unassembled models and instructional CDs.

SMALL PARTS: NOT FOR CHILDREN UNDER 3 YRS.

Item No.	Description
DNAM01-K4	DNA Model Kit with four models and CD
DNAM02-CD	CD Only for DNA Model
DNAM03-U	DNA Model (one model, unassembled)



Meiosis Manipulatives Kit



Teaching meiosis presents challenges for both teaching and learning because it is an abstract concept that requires visual and tactile models for most students to conceptualize. The exchange process of maternal and paternal alleles during cross-over is especially difficult without such a reference. A lot of time was spent designing, testing and refining this kit in classrooms to meet your needs. This kit will make teaching and learning meiosis much more enjoyable for you, just as it has for others. The kit includes:

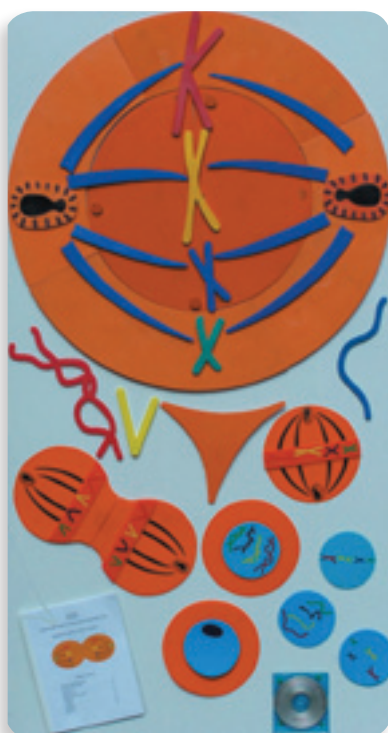
- **Teacher Demonstration Models:** 30 large chromosomes arranged in five colorful sets that can be seen on your board from the back of your classroom. Each set consists of a maternal and paternal homolog and four sister chromatids. Alleles and parental lineage are clearly identified. The fifth set has removable alleles for demonstrating cross-over.

- **Student Models:** Students carry out teacher directed assignments at their desk using their own smaller sets of chromosomes. There are no consumables so the kit can be used over and over again.
- **Instructional CD and Teacher Manual:** We will walk you through using the kit for the first time in an easy, familiar and pictorial slide show fashion. Don't worry if this is your first time teaching meiosis because absolutely everything you need is in the kit. Recommended student activity and assessment options are also included. We even provide a student activity sheet that you can copy.

This is a complete package that makes the complex biological process of meiosis come alive in your classroom. It makes teaching fun!

Item No.	Description
MEIKIT	Meiosis Manipulatives Kit

Mitosis Manipulatives Kit



Designed by teachers and tested by teachers, this kit greatly enhances students' understanding of the process of mitosis. All four stages of the cell cycle can be easily demonstrated with the parts included. The kit gives students a "hands-on" experience without the need for expensive laboratory equipment.

The mitosis kit contains oversized teacher manipulatives (66 pieces), for use on a magnetic dry erase board. Magnets for teacher's manipulatives are included. Also included are 5 sets (85 pieces) of smaller student manipulatives, which are sufficient for a class of 30.

There are no consumable parts in this kit, so it can be used again and again! A detailed instructional CD is included in order to illustrate the uses of the kit's components. Also included is an activity manual to assist the teacher in preparing lesson plans and assessing the students' understanding of mitosis.

Item No.	Description
MITKIT2	Mitosis Manipulatives Kit



DNA Manipulatives Kit

Developed by teachers, this kit aids students in understanding the principles of recombinant DNA technology. It consists of teacher demonstration models and student manipulative sets, sufficient for a classroom of 30 students. Using the manipulatives, students learn the process of recombinant DNA technology. Plasmid DNA is cut with restriction enzymes and recombinant plasmids are formed. Laminated teacher and student gel electrophoresis boards are also included.

Our kit allows students to learn DNA technology without the need for expensive laboratory equipment. Kit contains no consumable parts. It can therefore be used over and over again, and/or can be shared by the entire science department. Includes 78 pieces of specially designed plastic manipulatives. Also included are a manual and instructional CD in which an experienced teacher demonstrates use of the manipulatives included in the kit.

Item No.	Description
DNAKIT	DNA Manipulatives Kit



Protein Synthesis Manipulatives Kit



The kit was developed by the same teacher who brought you recombinant DNA technology manipulatives. Now available are manipulatives for teaching protein synthesis. Whether you have taught this content a thousand times or this is your first, you will find that all students can learn this material! What makes this kit different from any other protein synthesis instructional materials?

- **33 Teacher Manipulatives:** These colorful, large DNA, mRNA, ribosome, tRNA and amino acid models attach to your blackboard and can be seen from the back of the classroom. You simulate the process for your students at your own pace, allowing students to ask questions as you proceed.
- **180 Student Manipulatives:** Students work at their tables using smaller size models to work through the process and internalize key concepts. Includes 5 sets of student materials, sufficient for a class of 30 students.
- **Assessment:** Each student is given a unique DNA sequence and is asked to identify the resulting amino acid sequence. Verification of the sequence is a snap using the included teacher key.
- **No Consumables:** The kit can be used over and over again, and can be shared by the entire science department.
- **Instructional CD:** A CD demonstrating how to use the kit is included. Students see protein synthesis in action, model it and are then assessed on the lessons.

It is a complete package that makes complex biological processes fun for students and easy to teach!

Item No.	Description
PSYKIT	Protein Synthesis Manipulatives Kit



See-Through Sally™ Human Anatomy Display

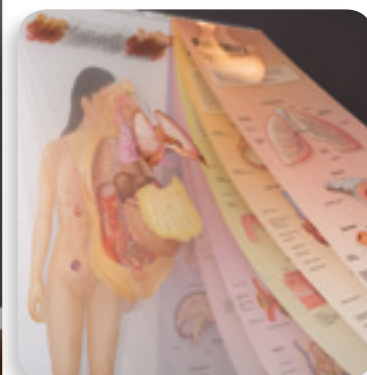
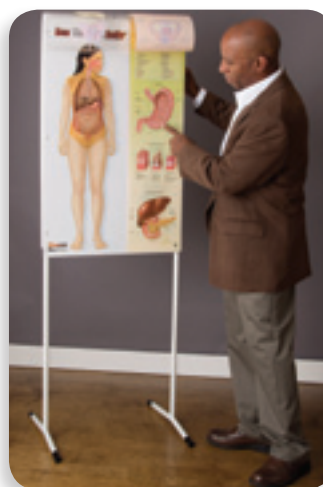
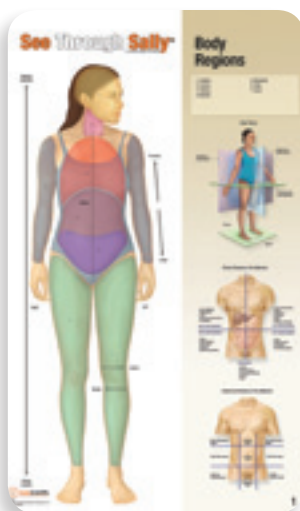


See-Through Sally™ provides a memorable visual aid for teaching human anatomy. This set consists of 12 spiral-bound anatomy charts, each representing a different area of the body, mounted on a rigid metal frame and floor stand. See-Through Sally is arranged according to both how the body presents its anatomy as if you were unlayering it, and also to correspond with how systems and organs are sequentially taught in some Human Anatomy and Physiology classes. Students can understand how the body systems work together as they turn from page to page. The initial page starts with the regions of the body, cavities, anterior and posterior quadrants and what organs fall into those areas. It begins with the outer layer of the body, and continues through the lymphatic, muscular, vascular, skeletal, nervous, respiratory, heart, digestive, urinary, reproductive, and endocrine systems.

The first six pages are full system views, and pages 7 through 12 are transparent overlays of internal organs and body systems. Each page is divided into a left and right side. The left side includes the full-view of the human body, with all organs in that view numbered sequentially. On each page a number key is provided at the top right of the image to make it easy for teachers and students to locate structures. The right side of each page highlights important anatomical features for each system.

Chart dimensions are 22" wide x 36" high. Standing height is 66".

Item No.	Description
SEETHS1	See-Through Sally™ Human Anatomy Display



Human Brain Model, 8-Part



Eight-part full-sized brain is molded from PVC plastic and hand-painted to show lobes. Parts of the brain are held together by embedded magnets. Includes over 50 labeled structures of the brain. Mounted in a rotatable metal wire harness on a plastic stand. Includes a fold-out laminated color guide indicating brain structures. One side of the guide includes structure names. The other side includes only numbers so it can be used for student assessment. Fold-out guide rests in a slot molded into the plastic base.

Item No.	Description
MABR08	Human Brain Model, 8-Part



Includes a laminated fold-out chart with structure names and student assessment sheet.



Brain is dissectible into eight parts.

Human Hand Model



NEW

This high quality model is great for anatomical study. The hand is mounted on a sturdy plastic base, and the fingers are flexible enough to demonstrate movement. Model is 8.5" tall and 4" wide.

Item No.	Description
HUHN01	Human Hand Model

Human Foot Model

This high quality foot model is great for anatomical study. The foot is mounted on a plastic base, and the bones are flexible in order to demonstrate movement. Model is 8.5" long and 6" high.

Item No.	Description
HUFT01	Human Foot Model

NEW



Human Skull Model



This life-sized skull model is excellent for introductory anatomy courses. The model shows excellent detail with a removable molar, incisor, and canine tooth for further study of the tooth roots. The mandible is spring mounted and the sectioned calvarium is detachable. A detailed key is included.

Item No.	Description
PSM001	Human Skull Model

Oral Hygiene Model

This is an excellent model for demonstrating the proper technique for brushing teeth and gums. Hinged upper and lower palates simulate the normal opening and closing of the mouth. It comes complete with an oversized soft bristle toothbrush (9" long) and a detailed key.

Item No.	Description
MAOH01	Oral Hygiene Model



Human Skeleton Model, 85cm

This is an excellent half-size model for demonstrating the basic anatomical features of the human skeleton. The carpals and tarsals are fused, but the rest of the skeleton has natural movement in the joints. The heavy-duty metal base adds an extra measure of stability while the skeleton itself is constructed of rugged plastic. Features include unbreakable ribs, stainless steel screws, brackets and springs to resist corrosion. Detailed key included. Height: 85cm (33.5 in.)

Item No.	Description
HSKL85	Human Skeleton Model, 85cm



Human Skeleton Model, Life-Sized

This life-sized model features unbreakable plastic bones which were carefully cast to preserve the finest details. The mandible is hinged; the arms, legs and skull are removable; and the calvarium is sectioned to allow for study of the cranial vault. There is natural movement in the joints wherever possible. The jaw features a full set of teeth, three of which are removable for closer examination. The spinal column shows the spinal cord, nerve exits, vertebral arteries, and a herniated disk. The skeleton is mounted in an upright position on a heavy duty base with smooth gliding casters. A dust cover and detailed key are included. Height: 170cm (5 ft., 7 in.).

Item No.	Description
HSLS01	Human Skeleton Model, Life-Sized



Spinal nerve exits
and herniated disc



Spinal nerve exits and
vertebral arteries

Brain Model, 3-Part



This is an excellent life-sized human brain model for students. It is dissectible into three parts and shows all major parts of the brain as well as some vascular structures. Includes a sturdy base and a detailed key.

Item No.	Description
MAHB03	Brain Model, 3-Part



Brain is dissectible into three parts.

Brain Model, 8-Part

This life-sized brain model is dissectible into eight parts: two parts in the brain stem, two parts in the cerebellum, and four parts in the cerebrum. The following features are shown in vibrant colors: brain stem, nerves, blood vessels, parietal lobes, and temporal lobes. A key and a molded plastic base are included.

Item No.	Description
MAHB08	Brain Model, 8-Part



Deluxe brain is dissectible into eight parts.



Skin Model

This cross-sectional view of the human skin, enlarged 105 times, gives students a close-up and three-dimensional view. It shows three layers and a detailed view of the sweat gland, fatty tissue, and hair follicle. A color key is included.

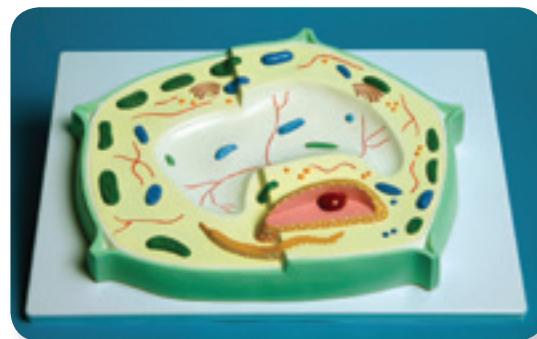
Item No.	Description
MAHS01	Skin Model



Plant Cell Model

This model displays the three essential parts of a plant cell: the cell wall, cytoplasm, and the nucleus. The model also shows the nature and position of the vacuole and nucleus. A detailed key is included.

Item No.	Description
MBPC01	Plant Cell Model



Monocotyledon Stem Model



This model is patterned on a corn stem to show the general anatomy of a monocot in both longitudinal and cross sections. Features such as the cuticle layer, epidermis, closed vascular bundles, and parenchyma cells are clearly shown. This injection molded model is more durable than the more common fiberglass construction. A detailed key is included.

Item No.	Description
MBMS01	Monocotyledon Stem Model

Dicotyledon Stem Model

This model is patterned on the sunflower stem and shows the epidermis, cork layer, phloem region, cambium, xylem region, pith, and other vital structures. The anatomy is displayed in cross, radial, and tangential sections. This injection molded model is more durable than the more common fiberglass construction. A detailed key is included.

Item No.	Description
MBDS01	Dicotyledon Stem Model



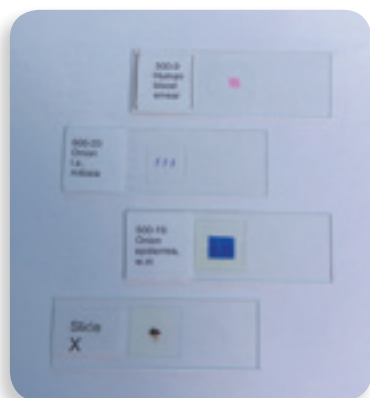
Leaf Structure Model



This model is patterned on a lima bean leaf. It is enlarged 45 times and shows details of the transverse and longitudinal sections. The mesophyll includes palisade parenchyma and spongy parenchyma. Both surfaces are shown with stomas and guard cells. There is additional detail of the xylem, phloem, and vascular veins. Constructed of durable plastic. A detailed key is included.

Item No.	Description
MBLS01	Leaf Structure Model

Prepared Microscope Slides



Our Prepared Slides show top quality specimens in Zoology, Botany, General Biology, Histology, Parasitology, Embryology, Fungi, Monera, and Protista. Single Slides and Sets available. Below is a list of prepared slides we currently stock.

Additional slides can be prepared per your specifications. Please call for details.

Item No.	Description
500-1	Amoeba Proteus
100-179	Ascaris (Roundworm), Egg, cs
NEW 100-186	Ascaris (Roundworm), Mitosis, sec (Animal Cell Mitosis)
500-13	Aspergillus
NEW 100-70	Areolar Tissue, Animal, cs
100-06	Bacteria, 3 types
500-10	Bacteria, smear from mouth
100-10	Basswood Stem, cs
100-15	Bread Mold
100-14	Bread Mold, sexual
100-16	Budding Yeast
500-15	Buttercup Root
100-20	Butterfly Wing
100-137	Cardiac Muscle
500-22	Compact Bone, cs
100-02	Cork Section
500-16	Corn Stem, cs
100-26	Daphnia (Water Flea), wm
500-4	Daphnia & Cyclops (Marine Biology), wm
500-3	Earthworm, cs of posterior
100-30	Euglena
100-31	Feathers, 3 types
100-33	Fern Spores Germinating
NEW 100-88	Fish Scale
100-04	Frog Blood Smear
100-67	Frog Liver Sec. (Animal Cells slide)
100-171	Fruit Fly, wm, (Slide X)
100-110	Grantia Spicules, wm
100-170A	Graph, black gridlines, (Slide A)
NEW 100-184	Grasshopper testis, Mitosis (Animal Cell Mitosis)
100-87	Green Algae
100-36	Hair, 3 types
500-25	Honeybee anterior/posterior wing
100-174	Housefly, wm
100-39	Housefly head/legs/wings
500-5	Housefly head with mouthparts, wm
500-6	Housefly leg w/ clinging pads
500-9	Human Blood Smear, Wright's Stain
100-13	Human Bone Ground, cs
500-7	Human Cheek Cells
NEW 100-192	Human Liver Cells, Normal
NEW 100-193	Human Liver Cells, Cirrhosis
NEW 100-188	Human Lung Tissue, Normal
NEW 100-189	Human Lung Tissue, Diseased
500-21	Human Scalp, vs

Item No.	Description
100-105	Human Sperm Smear
NEW 100-190	Human Stomach Tissue, Healthy
NEW 100-191	Human Stomach Tissue, Ulcer Cells
500-2	Hydra, wm
100-40	Hydra, budding, wm
100-79	Involuntary Smooth Muscle, ls & cs
100-01	Letter 'e'
100-41	Lichen, sec
500-24	Lilac Leaf
500-17	Lily Anthers, cs
NEW 100-182	Lily Meiosis, First Meiotic Division (Plant Cell Meiosis)
NEW 100-183	Lily Meiosis, Second Meiotic Division (Plant Cell Meiosis)
500-18	Lily Ovary, cs
100-44	Lily Stem, cs
500-11	Mixed Diatoms, wm
100-45	Mixed Protozoa
100-46	Molds, 3 types (Aspergillus, Penicillium, Rhizopus)
100-76	Monocot Stem
100-75	Monocot and Dicot Stem
500-14	Moss stem w/ leaves, wm
100-66	Multi-polar Motor Neurons
100-47	Muscle, 3 types
100-48	Mushroom, cs
100-187	Nerve Cells, Animal
100-49	Oleander Leaf, cs
500-19	Onion Bulb Epidermis, wm (Plant Cells slide)
100-86	Onion Leaf Epidermis
500-20	Onion Root Tip Mitosis
100-50	Onion Skin, cs
100-08	Paramecium, wm
100-51	Planaria
NEW 100-173	Pond Life
NEW 100-177	Pumpkin, cs
NEW 100-82	Ranunculus Stem, Buttercup, cs
NEW 100-180	Skeletal Muscle, cs and ls
100-59	Spider, wm
500-12	Spirogyra
100-73	Squamous Mesothelium, wm, mammal
500-8	Striated Muscle, ls
500-23	Sunflower Stem, cs
100-63	Textile Fibers, 3 types
NEW 100-90	Threads, Colored, Crossed, wm
100-64	Volvox, wm
NEW 100-178	Wheat, cs

Prepared Slide Set of 25



Glass prepared microscope slides, supplied in a wooden case.

Contents:

- Amoeba Proteus, wm
- Hydra, wm
- Earthworm, cs of posterior
- Daphnia and cyclops, wm
- Housefly head with mouthparts, wm
- Housefly leg with clinging pads
- Mouth smear, squamous epithelium
- Striated muscle, ls
- Human blood smear
- Bacteria, smear from mouth
- Diatoms, mixed, wm
- Spirogyra, vegetative filaments, wm
- Aspergillus, wm
- Moss stem with leave, wm
- Buttercup root, cs
- Corn stem, cs
- Lily anthers, cs
- Lily ovary, cs
- Onion epidermis, wm
- Onion root tip, ls, mitosis
- Human scalp, vertical sections
- Compact bone, cs
- Sunflower stem, cs
- Lilac leaf, cs
- Honeybee anterior and posterior wing

Item No.	Description
SLD500-SET/25	Prepared Slide Set, 25 Slides

Basic Prepared Slide Set of 25

Glass prepared microscope slides, supplied in a wooden case.



Contents:

- Mitosis in plants, cs
- Pollen Grains, wm
- Amoeba, wm
- Yeast Cells, wm
- Green Algae, wm
- Letter "e"
- Tape Worm, ts
- Silk Fabric, wm
- Lily Leaf, vs
- Mammal Lung, ts
- Meiosis in Animals
- Aves Feather, wm
- Lily Stamen, ts
- Mammal Hair, wm
- Mosquito Mouth Parts, wm
- Housefly Mouth Parts, wm
- Frog Blood Smear
- Human Blood Smear
- Onion Cells, wm
- Hibiscus Stem, ts
- Wood Fabric, wm
- Fish Scale, wm
- Skeletal Muscle, wm
- Herbaceous Stem, young, ts
- Skin Cells, vs

Item No.	Description
SLD025-SET/25	Basic Prepared Slide Set, 25 Slides

Prepared Slide Set of 100

A comprehensive selection of prepared microscope slides featuring 24 different subject areas. The set includes slides depicting Protozoa, Porifera, Coelenterata, Platyhelminthes, Annelida, Anthropoda, Molluska, Echinodermata, Pisces, Reptila, Aves, Mammalia, Development, Bacteria, Fungi, Algae, Ptfidophyta, Cells, Leaves, Stem, Root, Reproductory Organs, Cell contents, and Vascular systems.



Item No.	Description
SLD100-N	Prepared Slide Set, 100 Slides

Biology Prepared Slide Set of 13

Glass prepared microscope slides, supplied in a wooden case.

Contents:

- Involuntary Smooth Muscle (Domesticated Cat)
- Lily Anthers, cs
- Lilac Leaf, cs
- Monocot/Dicot Stem
- Multi Polar Neurons (Domesticated Pig)
- Letter "e"
- Hydra, Budding wm
- Amoeba
- Paramecium
- Euglena
- Onion Root Tip Mitosis
- Horse Ascaris Egg, Sec (Domesticated Horse)
- Skeletal Muscle, cs, ls (Domesticated Dog)



Item No.	Description
SLD013	Biology Prepared Slide Set, 13 Slides

Biology Prepared Slide Set of 12

Glass prepared microscope slides, supplied in a plastic case.

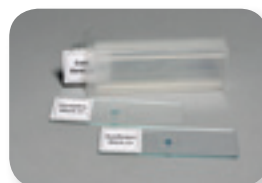
Contents:

- Bacteria, smear from mouth
- Onion root tip, ls, mitosis
- Amoeba Proteus, wm
- Monocot/Dicot Stem, cs
- Paramecium, wm
- Lilac leaf, cs
- Spirogyra, vegetative filaments, wm
- Hydra, wm
- Bread Molds, Sexual, wm
- Earthworm, cs of posterior
- Buttercup Root, cs
- Human Blood Smear



Item No.	Description
SLD200-SET/12	Biology Prepared Slide Set, 12 Slides

Prepared Slide Set of 4



Glass prepared microscope slides, supplied in a plastic mailer.

Contents:

- Sunflower Stem, cs
- Wheat, cs
- Corn Stem, cs
- Pumpkin, cs

Item No.	Description
SLDSET4	Prepared Slide Set, 4 Slides

Microscope Slides, Glass, Plain



Pre-cleaned slides are 75mm x 25mm, 1.0mm to 1.2mm thick, and are packaged in boxes of 72. Made of quality sheet glass, with ground edges.

Item No.	Description
MSL3X1	Plain Slides, 75mm x 25mm, pack of 72

Microscope Slides, Glass, Plain, Rounded Corners

Pre-cleaned slides with rounded corners are 75mm x 25mm, 1.0mm to 1.2mm thick, and are packaged in boxes of 72. Made of quality sheet glass, with ground edges.

Item No.	Description
MSL3X1RC	Plain Slides, 75mm x 25mm, Rounded Corners, pack of 72



Microscope Slides, Glass, Frosted Ends



Pre-cleaned slides with one frosted end are 75mm x 25mm, 1.3mm thick, and are packaged in boxes of 72. Made of quality sheet glass, with ground edges. Frosted end is designed for easy marking and organization of slides.

Item No.	Description
MSLF01	Frosted Slides, 75mm x 25mm, pack of 72

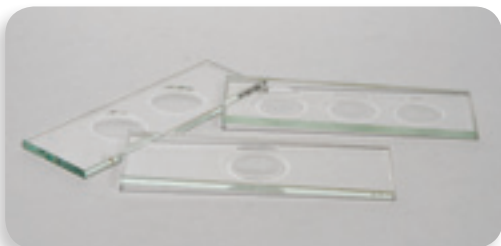
Concavity Slides, Glass

Pre-cleaned slides with concavities are 75mm x 25mm, 1.3mm thick, and are packaged in boxes of 12. Spherical concavities are approximately 16mm in diameter and 0.8mm deep. Available with single, double, or triple concavities. Made of quality sheet glass, with ground edges.

Item No.	Description
CS3X11	Concavity Slides, 75mm x 25mm, 1 Concavity, pack of 12
CS3X12	Concavity Slides, 75mm x 25mm, 2 Concavities, pack of 12
CS3X13	Concavity Slides, 75mm x 25mm, 3 Concavities, pack of 12



Concavity Slides, Glass, Thick



Pre-cleaned slides with deep concavities are 75mm x 25mm, 3mm thick, and are packaged in boxes of 12. Spherical concavities are approximately 16mm in diameter and 0.8mm deep. Available with single, double, or triple concavities. Made of quality sheet glass, with ground edges.

Item No.	Description
CSTK01	Thick Concavity Slides, 75mm x 25mm, 1 Concavity, pack of 12
CSTK02	Thick Concavity Slides, 75mm x 25mm, 2 Concavities, pack of 12
CSTK03	Thick Concavity Slides, 75mm x 25mm,, 3 Concavities, pack of 12

Plastic Well Slides, pack of 10

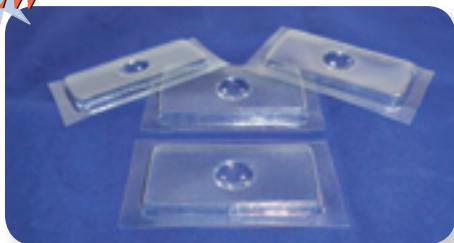
Reusable plastic well slides measure 3" x 1" and are constructed of clear plastic. The well is approximately 16mm diameter with a depth of 2 to 3mm. Supplied as sheets of 10.

Item No.	Description
CSPL10	Plastic Well Slides, pack of 10



Plastic Well Slides, Large, pack of 10

NEW



Clear plastic slides measure 3" x 1" and feature raised edges designed to be easily gripped by a mechanical stage. The well is approximately 16mm in diameter with a depth of 2 to 3mm. Supplied in packs of 10.

Item No.	Description
CSPLG1	Plastic Well Slides, Large, pack of 10

Glass Coverslips

Pre-cleaned coverslips are made of quality, non-corrosive glass and packaged in 1 oz. boxes. The 22 x 22mm sized coverslips are available in thickness #1 or #2. The #1 thickness ranges from 0.13 to 0.17mm. The #2 thickness ranges from 0.18 to 0.25mm. A 1 oz. package includes more than 100 coverslips.

Additional sizes of coverslips are available. Please call for details.

Item No.	Description
SCSS18-1oz	#1 Glass Coverslips, 18mm X 18mm, 1 oz.
SCSS22-1oz	#1 Glass Coverslips, 22mm X 22mm, 1 oz.
SCSP02	#2 Glass Coverslips, 22mm X 22mm, 1 oz.



All microscope slides and coverslips can be packaged per your specifications. Please call for details.

NEW



Coplin Staining Jar, PP, Flat Cap

Coplin Staining Jar with flat cap is made of polypropylene and can hold 10 slides (75 x 25mm) back to back. The interior is grooved to hold the slides in an upright position. Flat cap features large milled edge for easy hand grip and has a built-in plug seal. Autoclavable.

Item No.	Places	Height (mm)	Quantity per pack
P90101	10	114	12

Coplin Staining Jar, PP, Domed Cap

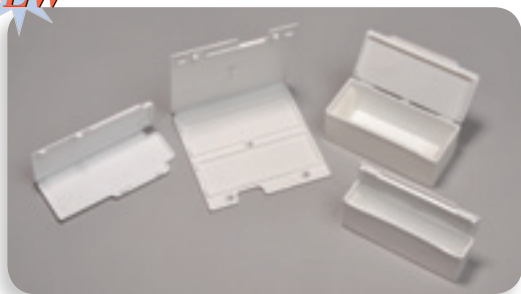
Coplin Staining Jar with domed cap is made of polypropylene and can hold 10 slides (75 x 25mm) back to back. The interior is grooved to hold the slides in an upright position. Jar features domed and shallow thread screw cap. Autoclavable.

Item No.	Places	Height (mm)	Quantity per pack
62101	10	112	12



NEW

Microscope Slide Mailers, PP



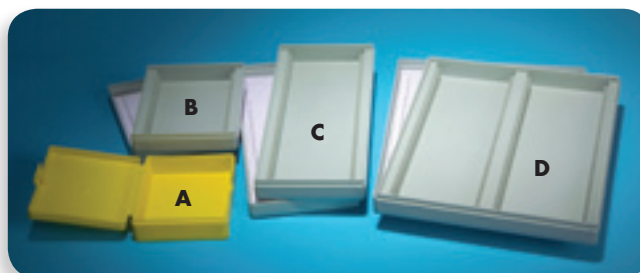
These white polypropylene slide mailers include hinged covers and molded-in dividers to securely hold 3" x 1" microscope slides. Available in four different capacities (1, 2, 5 and 10 slides).

Item No.	Description	Quantity per pack
62100	Slide Mailer, PP, 1 Slide	25
62102	Slide Mailer, PP, 2 Slides	25
62103	Slide Mailer, PP, 5 Slides	25
62111	Slide Mailer, PP, 10 Slides	25

Slide Storage Boxes, Plastic

Sturdy two-piece molded polystyrene slide boxes hold standard 75 x 25mm microscope slides. The bottom section has numbers engraved for easy reference, and the inside of the lid carries a numbered slide index. Slide box of 10 (SBP010) features a hinged design.

Item No.	Picture	Places	L x W x H (mm)	Quantity per pack
SBP010	A	10	96 x 83 x 23	12
SBP025	B	25	122 x 92 x 32	12
SBP050	C	50	230 x 96 x 32	12
SBP100	D	100	230 x 184 x 32	6



NEW

Slide Storage Boxes, Plastic, Hinged



Plastic (ABS) boxes with hinged lids hold standard 75 x 25mm microscope slides. Bottoms are lined with cork and a printed index is mounted inside the lid.

Item No.	Places	L x W x H (mm)	Quantity per pack
P90103	25	95 x 82 x 32	12
P90104	50	199 x 82 x 32	6
P90105	100	192 x 162 x 32	6

Slide Storage Rack with Clear Lid, Plastic

Plastic (ABS) slide storage box features a removable slide tray with 100 numbered slots that hold one or two slides each. Clear hinged lid allows easy view of labels. Slides can be stored vertically with the labels up for easy identification or bar code reading. Measures 3" W x 9" D x 3-1/2" H. Non-autoclavable.

Item No.	Description	Quantity per pack
62501	Slide Storage Rack with Clear Lid, Plastic	1



NEW

Slide Storage Boxes, Wooden



WSB100

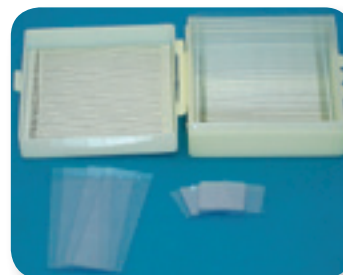
Strong wooden frame, with hinged cover. Slides fit into numbered beveled slots. Printed index lines the cover.

Item No.	Places	L x W x H (mm)	Quantity per pack
WSB025	25	128 x 106 x 35	1
WSB050	50	252 x 107 x 35	1
WSB100	100	252 x 194 x 35	1

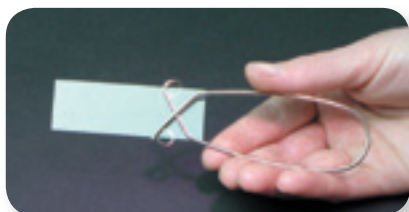
Microscope Slide-Making Set

A great biology resource! Prepare your own slide specimens with this microscope slide making kit. The reusable glass slides can be used time and time again, providing excellent value. Includes 12 slides, 12 cover slips, and a storage box holding up to 25 slides.

Item No.	Description
MSSG12	Microscope Slide-Making Set



Slide Holding Forceps



Made of plated steel wire for careful and tight handling of cover glasses and slides.

Item No.	Description
SFK001	Slide Holding Forceps

Pocket Illuminated Microscope, 30X

This easy to focus 30x pocket microscope is excellent for classroom investigation as well as outdoor use. Includes a protective case. Requires two AA batteries (not included).

Item No.	Description
MCR30X	Pocket Illuminated Microscope, 30x



NEW

Student Stereo Microscope



This versatile 10x/30x stereo microscope features three-way LED illumination (top, bottom, or both), paired 10x WF eyepieces, and 1x/3x objectives on a rotatable turret. The head is rotatable 360° and can be rotated on its mounting pole to view objects too large for the stage.

Includes a frosted glass stage plate, reversible black/white stage plate, two metal stage clips, and a vinyl dust cover.

Specifications:

- Viewing Head: Binocular head inclined at 45°. Rotatable 360°. Adjustable interpupillary distance from 55 to 75mm
- Eyepiece: Paired WF 10x eyepieces, one with diopter adjustment. Includes rubber eyecups
- Objectives: 1x, 3x (for 10x and 30x magnification)
- Stage: Plain, 100 x 105mm with slideclips
- Condenser: Single lens with disc diaphragm
- Focusing: Coarse adjustment knobs
- Bulbs: LED
- Power: 110V

Item No.	Description
MCR002	Student Stereo Microscope

Hand Microtome



Easy to use, this microtome lets you cut sections to 10 microns. Equipped with a clamping mechanism for securing various shapes and sizes of objects. Supplied in a wood storage box, with two glass overlays for the stage, and a tempered steel razor knife. Includes instructions for use.

Item No.	Description
MCT001	Hand Microtome

Gel Staining Tray

This Polypropylene Staining Tray helps in staining, fixing, de-staining, and handling fragile electrophoresis gels and membranes. Tray, as well as cover, will resist temperatures from -70° to 70° Celsius. The LDPE plug provides a leak-proof seal and allows easy liquid drainage.

Item No.	Description
79301	Gel Staining Tray



Water Bath, Stainless Steel



Solid stainless steel water bath measures 8" in diameter x 2.75" deep. Features seven concentric rings, steam escape outlet, flat bottom, and handles. Ideal for a variety of heating applications in the laboratory.

Item No.	Description
WTBH08	Water Bath, Stainless Steel

Blood Pressure Monitoring Kit

Perfect for students, our blood pressure monitoring kit includes everything needed to measure blood pressure and pulse. The kit includes a teaching stethoscope and an aneroid sphygmomanometer.

Item No.	Description
SPHYSET	Blood Pressure Monitoring Kit



Sphygmomanometer

This student blood pressure set has a self-adjusting cuff with gauge holder. Includes a vinyl storage pouch.

Item No.	Description
SPHY01	Sphygmomanometer



Stethoscope, Bowles Type



This stethoscope features a chestpiece composed of a 3.8cm flat disc diaphragm in a shallow metal bell cup. Chrome-plated binaurals are adjustable, and tubing is made of PVC. Ear tubes include plastic ear tips for comfort. Supplied with a spare diaphragm and extra set of ear tips.

Item No.	Description
STHB01	Stethoscope, Bowles Type

Stethoscope, Ford Type

Ford stethoscope uses a deep 2.5cm bell with a dual stem chestpiece. Chrome-plated binaurals are adjustable, and tubing is made of PVC. Ear tubes include plastic ear tips for comfort. Supplied with an extra set of ear tips.

Item No.	Description
STHF01	Stethoscope, Ford Type



Stethoscope, Dual Earpiece - Teaching



Teaching Bowles stethoscope has a 3.8cm chestpiece and two sets of binaurals joined together to allow two people to listen simultaneously. Chrome-plated binaurals are adjustable, and tubing is made of PVC. Ear tubes include plastic ear tips for comfort. Supplied with a spare diaphragm and two extra sets of ear tips.

Item No.	Description
STTCH1	Stethoscope, Dual Earpiece - Teaching

Dissecting Instruments, Deluxe Set of 14



Deluxe set of stainless steel dissecting instruments in a zippered vinyl case.

Contents:

Scale, 6"	1
Forceps, Blunt, 5"	1
Forceps, Sharp, Straight, 4"	1
Needle, Arrow	1
Needle, Sharp, Straight	1
Mall & Probe Seeker	1
Scalpel w/ fixed blade, 5"	1
Scissors, Blunt/Sharp, 5"	1
Scissors, Sharp, 4"	1
Scalpel Handle, #4 w/ Blade	1
Teasing Needle w/ Plastic Handle	1
Spatula	1
Needle, Angular, Blunt	1
Dropper	1

Item No.	Description
DSET14	Dissecting Instruments, Deluxe Set of 14

Dissecting Instruments, Deluxe Set of 14 with Dissecting Tray

A convenient starter set, includes our popular DSET14 Instruments Set and one DPS001 Dissecting Tray. The tray includes a layer of white wax and measures 11.5" x 7.5" x 2".



Item No.	Description
DSST01	Dissecting Instruments, Deluxe Set of 14 with Dissecting Tray

Dissecting Instruments, Instructor's Set of 10



Instructor's set of stainless steel dissecting instruments in a large trifold vinyl pouch.

Contents:

Scale, 6"	1
Scalpel Handle, #4 w/ Blade	1
Forceps, Angular, Sharp, 5"	1
Mall & Probe Seeker	1
Scissors, Sharp, 4"	1
Scissors, Blunt/Sharp, 5"	1
Needle, Sharp, Straight	1
Needle, Arrow	1
Needle, Angular, Sharp	1
Dropper	1

Item No.	Description
DSET10	Dissecting Instruments, Instructor's Set of 10

Dissecting Instruments, Economy Set of 8

Economy set of stainless steel dissecting instruments in a folding vinyl pouch.

Contents:

Scale, 6"	1
Scalpel w/ fixed blade, 6.5"	1
Forceps, Blunt, 5"	1
Needle, Angular, Blunt	1
Needle, Angular, Sharp	1
Needle, Sharp, Straight	1
Scissors, Blunt/Sharp, 5"	1
Dropper	1



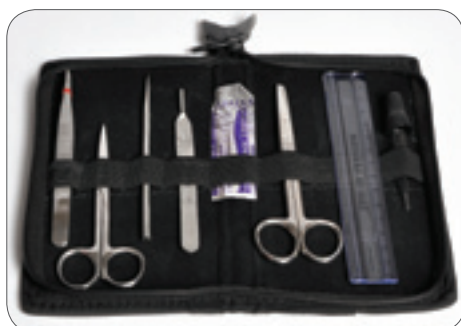
Item No.	Description
DSET08	Dissecting Instruments, Economy Set of 8

Dissecting Instruments, Economy Set of 7

Economy set of stainless steel dissecting instruments in a folding vinyl pouch.

Contents:

Scale, 6"	1
Scalpel Handle, #4 with Blade	1
Forceps, Blunt, 5"	1
Scissors, Sharp 4"	1
Needle, Sharp, Straight	1
Scissors, Blunt/Sharp, 5"	1
Dropper	1



Item No.	Description
DSET07	Dissecting Instruments, Economy Set of 7

Individual Dissecting Instruments



NAB001



SCBS06



NSS001

Good quality stainless steel dissecting instruments.

Item No.	Description
BNCT05	Forceps, bone cutting, 5"
BNCT07	Forceps, bone cutting, 7"
FOBL05	Forceps, blunt, 5"
FOBL05	Forceps, blunt, angular 5"
FOBL45	Forceps, economy blunt, 4.5"
FOMF05	Forceps, sharp, 5"
FOPN04	Forceps, dissecting, 4"
SLHDN3	Scalpel Handle, No. 3
SLHND4	Scalpel Handle, No. 4
BLADE10-PK/10	Blade #10, pack of 10
BLADE12-PK/10	Blade #12, pack of 10
BLADE20-PK/10	Blade #20, pack of 10
BLADE21-PK/10	Blade #21, pack of 10
BLADE22-PK/10	Blade #22, pack of 10
BLADE23-PK/10	Blade #23, pack of 10

Item No.	Description
SCLPL1	Scalpel, fixed blade
SCI425	Scissors, closed shank, 4.25"
SOS425	Scissors, open shank, 4.25"
SCBS06	Scissors, blunt/sharp, 6"
NSB001	Teasing Needle, blunt, straight
NAB001	Teasing Needle, blunt, angular
NSS001	Teasing Needle, sharp, straight
NAS001	Teasing Needle, sharp, angular
NEDARW	Teasing Needle Arrow

Dissecting Trays



Dissecting trays are made of durable stainless steel and include a layer of white wax. Available in four sizes.

Item No.	Description
DPS001	Dissecting Tray, 11.5" x 7.5" x 2"
DPS002	Dissecting Tray, 12" x 10" x 2"
DPS003	Dissecting Tray, 12.75" x 9.25" x 2"
DPS004	Dissecting Tray, 16" x 12.75" x 2"

Teasing Needles

Durable, plastic handles. The pin points allow accurate work. Stainless steel needles eliminate rust and other corrosion. Sold as packs of 12.

Item No.	Description	Quantity per pack
NEDPL1-PK/12	Straight Teasing Needles	12
NEDPB1-PK/12	Bent Teasing Needles	12



Hand Tally Counter



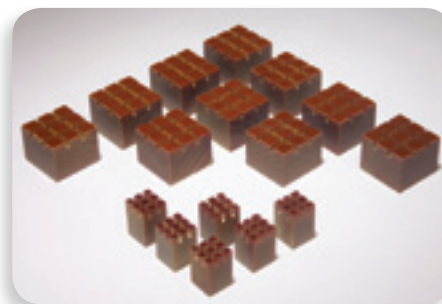
Bright plastic case makes this hand tally counter lightweight yet sturdy. The counter advances by 1 with each click, up to a maximum of 9999. Turn the side knob to return the reading to zero. Use for general counting applications such as bacterial colonies.

Item No.	Description
HTCP01	Hand Tally Counter

Embedding Blocks

Used for celloidin or paraffin sections, these embedding blocks are made of phenolic resin, which can be marked with a glass marking pencil. Top surface has 1/32" deep grid to provide a firm hold for embedded specimen. Blocks are 3/4" high.

Item No.	L x W x H (inches)	Quantity per pack
EB0001	1/2" x 1/2" x 3/4"	10
EB0002	5/8" x 5/8" x 3/4"	10
EB0003	3/4" x 3/4" x 3/4"	10
EB0004	1" x 1" x 3/4"	10



T-Pins, Nickel Plated

These 2" long nickel-plated pins feature a "T" head which allows for a firm grip, making them easier to insert and extract.



Item No.	Description
TPIN02-PK/100	T-Pins, Nickel Plated, pk/100

Insect Pins

These steel pins are coated with a corrosion-resistant finish and have a yellow epoxy head. Sold as packs of 100.



Item No.	Description	Quantity per pack
IPIN00-PK100	Insect Pins, #00	100
IPIN00-PK100	Insect Pins, #0	100
IPIN01-PK100	Insect Pins, #1	100
IPIN02-PK100	Insect Pins, #2	100
IPIN03-PK100	Insect Pins, #3	100
IPIN04-PK100	Insect Pins, #4	100
IPIN05-PK100	Insect Pins, #5	100

Pinning Block

This wooden pinning block has three steps. Excellent for mounting insects.



Item No.	Description
IPB003	Pinning Block

Inoculating Loops, Metal



Our inoculating loop features an 8" long solid brass handle with an insulated grip. The non-calibrated 26 gauge nickel-chromium wire loop is approximately 8mm in diameter.

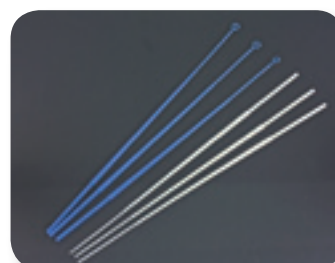
Also available as a set of 4, with color-coded handles for easy identification.

Item No.	Description
INL703	Inoculating Loop
INL703-PK/4	Inoculating Loop, set of 4

Inoculating Loops, Plastic

Disposable economical plastic loops for use when flame sterilization is not needed. Overall length is 8.75". Sterilized and packed in a plastic bag.

Item No.	Capacity (µl)	Color	Quantity per pack
K1020	10	Blue	30
K1021	1	White	30



Properties of United Glassware

Chemical Composition:

Our glassware is manufactured from low-expansion Type 1, Class A Borosilicate 3.3 glass that complies with ASTM E438 Standard Specification for Glasses in Laboratory Apparatus.

It is low alkali glass with a typical chemical composition of approximately 81% silica, 13% boric oxide, 4% sodium oxide, and 2% aluminum oxide. It is virtually free of magnesia-lime-zinc group, and contains only traces of heavy metals.

Thermal Properties:

Borosilicate glass has a low coefficient of thermal expansion. Therefore, the thermal stresses under a given temperature gradient are low, and the glass can withstand higher temperature gradients as well as sudden temperature changes / thermal shocks. However, even minute scratching of glass surface can reduce its thermal resistance.

The 'Strain Point' (about 500°C) is generally recommended as the maximum safe operating temperature for United glassware. The glass may acquire permanent stresses upon cooling if it is heated above 500°C. Our glassware is annealed in modern ovens under strictly controlled conditions to ensure minimal residual stress.

Chemical Durability:

United glassware is highly resistant to water, neutral and acid solutions, concentrated acids and their mixtures, as well as to chloride, bromine, iodine, and organic matters. Even during extended period of reaction and at temperatures above 100°C, its chemical resistance exceeds that of most metals and other materials. Our glassware can withstand repeated dry and wet sterilization and offers good resistance against various chemicals, except for hydrofluoric acid, hot phosphoric acid and alkaline solutions.

Optical Properties:

United glassware has a clear and colorless appearance, and shows no noticeable absorption in the visible region of the spectrum.

Safety:

Treated with proper care, United glassware will offer long-term, reliable service in the laboratory. Please contact us for detailed recommendations regarding heating and cooling, mixing and stirring, vacuum and pressure, cleaning, and safety precautions that must be followed while using glassware.

Properties of United Plastic Labware

Our plastic labware is manufactured from high-quality resins. Treated with proper care, United plasticware will offer long-term, satisfactory service in the laboratory. Please refer to the chart below for physical properties of United plasticware.

Physical Properties of United Plastic Labware

Resin	Maximum Use Temperature (°C)	Brittleness Temperature (°C)	Transparency	Autoclavable *
High Density Polyethylene (HDPE)	120	-100	Translucent	No
Low Density Polyethylene (LDPE)	80	-100	Translucent	No
Polycarbonate (PC)	135	-135	Clear	Yes
Acrylic (PMMA)	50	20	Clear	No
Polymethylpentene (PMP)	175	20	Clear	Yes
Polypropylene (PP)	135	0	Translucent	Yes
Polystyrene (PS)	90	20	Clear	No
Polytetrafluoroethylene (PTFE)	270	-200	Opaque	Yes
Polyvinyl Chloride (PVC)	70	-30	Clear	No

*Autoclave at 121°C, 15 psi for 20 minutes. Clean and rinse item with distilled water before autoclaving. Certain chemicals which have no appreciable effect on resins at room temperature may cause deterioration at autoclaving temperatures.

Please contact us for detailed information regarding compatibility of our plastic labware with specific chemicals.

Glass Beaker Set of 5, Borosilicate



An ideal starter set for any laboratory, this set contains 5 borosilicate glass beakers in sizes 50ml, 100ml, 250ml, 600ml, and 1000ml.

Item No.	Description
BGSET5	Glass Beaker Set of 5, Borosilicate

Beakers, Low Form, Borosilicate Glass

Our beakers are made from low-expansion borosilicate glass. Beakers feature heavy and uniform wall thickness, spouts designed for easy pouring, and beaded tops. The 20ml and larger sizes also have a double graduated metric scale and a marking area. Tolerance for beakers is approximately $\pm 5\%$.

Item No.	Capacity (ml)	Grad. Range (ml)	Grad. Interval (ml)	Quantity per Pack	Quantity per Case
BG1000-5	5	NA	NA	12	48
BG1000-10	10	NA	NA	12	48
BG1000-20	20	5-15	10	12	48
BG1000-25	25	10-20	10	12	48
BG1000-30	30	5-25	10	12	48
BG1000-50	50	10-40	10	12	48
BG1000-100	100	20-80	10	12	48
BG1000-150	150	20-140	20	12	48
BG1000-250	250	25-200	25	12	48
BG1000-400	400	50-300	25	12	48
BG1000-500	500	100-400	50	6	36
BG1000-600	600	100-500	50	6	36
BG1000-800	800	100-750	50	6	24
BG1000-1000	1000	100-900	50	6	24
BG1000-1500	1500	200-1400	200	4	16
BG1000-2000	2000	200-1800	200	1	8
BG1000-3000	3000	250-2500	250	1	4
BG1000-4000	4000	500-3500	500	1	6
BG1000-5000	5000	1000-4000	500	1	4
BG1000-10000	10000	2000-8000	1000	1	1



Beakers, Berzelius, Tall Form, Borosilicate Glass

Tall form Berzelius beakers include a spout. Our beakers are made from low-expansion borosilicate glass. Beakers feature heavy and uniform wall thickness, spouts designed for easy pouring, and beaded tops. Also include white printed graduations and a marking area. Tolerance for beakers is approximately $\pm 5\%$.



BG1040-500

Tall Form Berzelius Beakers with Spout

Item No.	Capacity (ml)	Grad. Range (ml)	Grad. Interval (ml)	Quantity per Pack	Quantity per Case
BG1060-100	100	20-80	10	12	48
BG1060-200	200	25-150	25	12	48
BG1060-250	250	25-200	25	12	48
BG1060-300	300	25-250	25	12	48
BG1060-400	400	50-300	25	6	36
BG1060-500	500	100-400	50	6	24
BG1060-600	600	100-500	50	6	24
BG1060-1000	1000	100-900	50	6	18

Tall Form Berzelius Beakers without Spout*

Item No.	Capacity (ml)	Grad. Range (ml)	Grad. Interval (ml)	Quantity per Pack	Quantity per Case
BG1040-100	100	20-80	10	12	48
BG1040-250	250	25-200	25	12	48
BG1040-500	500	100-400	50	6	24

*Additional sizes of Berzelius beakers are available. Please call for details.

Plastic Beaker Set of 5, PP

This handy set for any laboratory contains 5 graduated polypropylene beakers in sizes 50ml, 100ml, 250ml, 500ml and 1000ml.



Item No.	Description
BPSET5	Plastic Beaker Set of 5, PP

Plastic Beaker Set of 5, PMP

This set of polymethylpentene beakers offers glass-like clarity with the durability of plastic. Includes 5 graduated PMP beakers in sizes 50ml, 100ml, 250ml, 500ml and 1000ml.

Item No.	Description
BMSET5	Plastic Beaker Set of 5, PMP



Beakers, Griffin Style, Polypropylene (PP)



Beakers, molded in polypropylene, have excellent clarity and very good chemical resistance. They are autoclavable and feature raised graduations on the outer surface. Griffin Style beakers nest without sticking together.

Item No.	Capacity (ml)	Graduation Interval (ml)	O.D. x Height (mm)	Quantity per pack
BP0050	50	5	55 x 55	12
BP0100	100	5	60 x 62	12
BP0250	250	10	85 x 100	6
BP0500	500	10	100 x 120	4
BP0600	600	10	110 x 125	4
BP1000	1000	25	124 x 150	3
BP2000	2000	250	155 x 185	3

Beakers, New Style, PP

Beakers, molded in polypropylene, have excellent clarity and very good chemical resistance. They are autoclavable and feature raised graduations on the outer surface. New Style beakers feature oversized, tapered spouts for easier pouring of solutions.

Item No.	Capacity (ml)	Graduation Interval (ml)	O.D. x Height (mm)	Quantity per pack
11110	25	5	34 x 49	12
11111	50	5	43 x 54	12
11112	100	5	53 x 62	12
11113	250	10	72 x 100	6
11114	500	10	89 x 120	4
11115	1000	25	110 x 150	3
11116	2000	50	135 x 184	3
11117	5000	200	213 x 260	1



Tri-Corner Beakers, PP

These sturdy polypropylene beakers feature three pouring lips for drip-less dispensing. Beakers are graduated in both ounces and milliliters. Available in packs of 100, or as an assortment of 30 beakers featuring 5 of each size.

Item No.	Capacity	Graduation Interval	O.D. x Height (mm)	Quantity per pack
BTC0050	50ml/1.5 oz.	10ml/0.5 oz.	57 x 67	100
BTC0100	100ml/3.5 oz.	10ml/0.5 oz.	71 x 84	100
BTC0250	250ml/8 oz.	20ml/1 oz.	88 x 101	100
BTC0400	400ml/13 oz.	40ml/1 oz.	111 x 115	100
BTC0800	800ml/26 oz.	50ml/2 oz.	137 x 134	100
BTC1000	1000ml/32 oz.	50ml/2 oz.	143 x 141	100



Item No.	Description
BTCST30	Tri-Corner Beaker Set (five each of 50ml, 100ml, 250ml, 400ml, 800ml, and 1000ml sizes)

Stackable Beakers, PP

Polypropylene beakers are highly flexible; a gentle squeeze creates a spout anywhere on the rim. Stacking the ribs prevents the beakers from sticking together. Autoclavable.

Item No.	Capacity	Graduation Interval	O.D. x Height (mm)	Quantity per pack
BST120-PK/25	120ml/4 oz.	10ml/0.5 oz.	70 x 64	25
BST120-CASE	120ml/4 oz.	10ml/0.5 oz.	70 x 64	1000
BST500-PK/25	500ml/17 oz.	50ml/1 oz.	108 x 95	25
BST500-CASE	500ml/17 oz.	50ml/1 oz.	108 x 95	500



Beakers, Printed Graduations, Polymethylpentene (PMP)

Polymethylpentene beakers with pouring spouts are ideal for general laboratory use. Tapered design is convenient for stacking and holding. All sizes have easy to read silk-screened graduations. Autoclavable.

NEW



Item No.	Capacity (ml)	Height (mm)	Quantity per pack
P50701	50	59	12
P50702	100	73	12
P50703	250	94	12
P50704	500	128	6
P50705	1000	150	4
P50706	2000	190	4
P50707	5000	263	2
P50708	10000	330	1

NEW

Beakers, Printed Graduations, PP



Polypropylene beakers with pouring spouts are ideal for general laboratory use. Tapered design is convenient for stacking and holding. All sizes have easy to read silk-screened graduations. Autoclavable.

Item No.	Capacity (ml)	Height (mm)	Quantity per pack
P50601	50	59	12
P50602	100	73	12
P50603	250	94	12
P50604	500	128	6
P50605	1000	150	4
P50606	2000	190	4
P50607	5000	263	2
P50608	10000	330	1

Beakers with Handle, Printed Graduations, PMP

Polymethylpentene beakers with pouring spouts are ideal for general laboratory use. Includes rectangular handle for easy carrying and pouring. All sizes have easy to read silk-screened graduations. Autoclavable.

Item No.	Capacity (ml)	Height (mm)	Quantity per pack
P50902	100	73	6
P50903	250	94	6
P50904	500	128	6
P50905	1000	150	4
P50906	2000	190	4
P50907	5000	248	2
P50908	10000	330	1

NEW



NEW

Beakers with Handle, Printed Graduations, PP



Polypropylene beakers with pouring spouts are ideal for general laboratory use. Includes rectangular handle for easy carrying and pouring. All sizes have easy to read silk-screened graduations. Autoclavable.

Item No.	Capacity (ml)	Height (mm)	Quantity per pack
P50802	100	73	6
P50803	250	94	6
P50804	500	128	6
P50805	1000	150	4
P50806	2000	190	4
P50807	5000	248	2
P50808	10000	330	1

Beakers with Handle, Short Form, PP

Short form beakers with raised graduations, molded in polypropylene, are clear, autoclavable and have good chemical resistance. All sizes have handles for convenient lifting.

Item No.	Capacity (ml)	Top Flange Diameter (mm)	Height (mm)	Graduation Interval (ml)	Quantity per pack
81121	500	95	110	25	12
81122	1000	122	132	50	6
81123	2000	145	167	50	6
81124	3000	170	188	100	6
81105	5000	184	225	250	1

Item No.	Description
PJSET5	Set of 5 Beakers with Handle (one each of 500ml, 1000ml, 2000ml, 3000ml, and 5000ml sizes)



Beakers with Handle, Tall Form, PP



Tall form beakers with raised graduations, molded in polypropylene, are clear, autoclavable and have good chemical resistance. All sizes have handles for convenient lifting.

Item No.	Capacity (ml)	Top Flange Diameter (mm)	Height (mm)	Graduation Interval (ml)	Quantity per pack
81101	250	83	99	10	12
81102	500	97	126	10	12
81103	1000	114	170	10	6
81104	2000	150	212	20	6

Beaker Tongs

Beaker tongs feature strong zinc-plated steel construction with flat riveted joints and vinyl coated sleeves that open to 7". Tongs can handle beakers from 50ml to 1500ml capacity. Overall length is 9.75".

Item No.	Description
BTSP09	Beaker Tongs, each



Beaker Brush, Nylon Bristles



Good quality nylon black bristles, mounted on a wooden handle. Includes a radial top.

Item No.	Brush Length	Brush Diameter	Overall Length	Quantity per pack
BBR013	6"	3"	13"	1
BBR016	6"	3"	16"	1

Media / Storage Bottles, Borosilicate Glass



These borosilicate glass, general purpose media bottles are autoclavable with permanent white imprinted graduations and marking spots. The screw thread opening has an I.D. of approximately 30mm. The supplied GL 45 cap is liner-less and both the cap and drip free ring are polypropylene autoclavable to 140° Celsius. Maximum use temperature of bottles is 450° Celsius.

Item No.	Capacity (ml)	Graduation Range (ml)	O.D. x Height (mm)	Quantity per pack
BM0100	100	20-80	56 x 100	10
BM0250	250	50-200	70 x 138	10
BM0500	500	100-400	86 x 175	10
BM1000	1000	100-900	101 x 225	10
BM2000	2000	400-1800	136 x 262	4

Reagent Bottles, Narrow Mouth, PP and HDPE

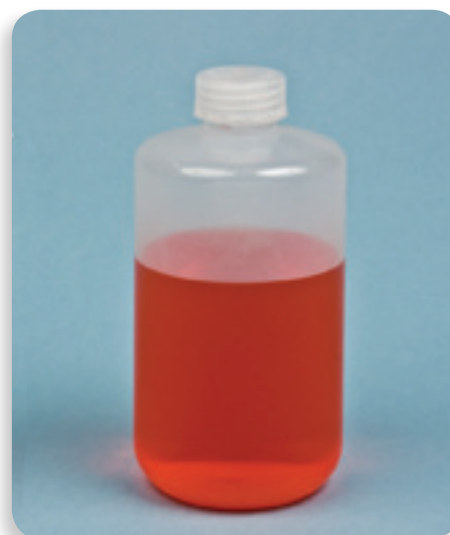
Available in polypropylene (PP) as well as high density polyethylene (HDPE). The PP bottles are rigid, translucent and have excellent contact clarity. These bottles can be autoclaved. The HDPE bottles are not rigid yet have excellent strength.

Polypropylene (PP)

Item No.	Capacity (ml)	Height (mm)	Neck Dia. I.D./O.D. (mm)	Quantity per pack
33253	15	58	14/17	12
33254	30	62	14/17	12
33301	60	72	17/22	12
33302	125	110	16.5/20	12
33303	250	139	20/25	12
33304	500	165	20/25	12
33305	1000	222	20/25	6

High Density Polyethylene (HDPE)

Item No.	Capacity (ml)	Height (mm)	Neck Dia. I.D./O.D. (mm)	Quantity per pack
33401	60	72	17/22	12
33402	125	110	16.5/20	12
33403	250	139	20/25	12
33404	500	165	20/25	12



Reagent Bottles, Bulk Pack, HDPE



Leak-proof narrow mouth bottles constructed of High-Density Polyethylene (HDPE), with Polypropylene (PP) closure. A great value!

Item No.	Description	Quantity per pack
33402-BULK	Reagent Bottles, Narrow, HDPE, 125ml	500
33403-BULK	Reagent Bottles, Narrow, HDPE, 250ml	250
33404-BULK	Reagent Bottles, Narrow, HDPE, 500ml	125

Reagent Bottles, Wide Mouth, PP and HDPE

Available in polypropylene (PP) as well as high density polyethylene (HDPE). The PP bottles are rigid, translucent and have excellent contact clarity. These bottles can be autoclaved. The HDPE bottles are not rigid yet have excellent strength.

Polypropylene (PP)

Item No.	Capacity (ml)	Height (mm)	Neck Dia. I.D./O.D. (mm)	Quantity per pack
33311	30	62	21/25	12
33306	60	73	20/25	12
33307	125	100	27/32	12
33308	250	137	35/41	12
33309	500	149	35/41	12
33310	1000	218	35/41	6

High Density Polyethylene (HDPE)

Item No.	Capacity (ml)	Height (mm)	Neck Dia. I.D./O.D. (mm)	Quantity per pack
33406	60	73	20/25	12
33407	125	100	27/32	12
33408	250	137	35/41	12
33409	500	149	35/41	12



Wash Bottles, Unitary, LDPE



These bottles are made of translucent and low density polyethylene (LDPE). The distinguishing feature of these bottles is the built-in delivery tube which makes it a one-piece wash bottle. Graduated on the outer surface to reflect an approximate volume of solution filled or dispensed.

Item No.	Capacity (ml)	Graduation Interval (ml)	Quantity per pack
36607	125	25	12
36605	250	50	12
36606	500	100	12

Wash Bottles, LDPE

These bottles are made of translucent and low density polyethylene (LDPE). Solutions can be dispensed easily by lightly squeezing the bottle. The flexible polyethylene delivery tube can be directed wherever required.

Item No.	Capacity (ml)	Quantity per pack
36601	125	12
36602	250	12
36603	500	6
36604	1000	6



NEW

NEW

Carboys with Stopcock, PP



These polypropylene, autoclavable carboys are equipped with a preassembled leak-proof stopcock. Ideal for storing and dispensing various laboratory solutions. Threads should be totally disengaged before autoclaving.

Item No.	Capacity (L)	O.D. x Height (mm)	Mouth I.D. (mm)	Quantity per pack
34051	10	250 x 430	67	1
34052	20	300 x 542	67	1

Carboys, PP

These polypropylene, autoclavable carboys feature wide handles for convenient carrying and pouring. Ideal for storing various laboratory solutions. Threads should be totally disengaged before autoclaving.

Item No.	Capacity (L)	O.D. x Height (mm)	Mouth I.D. (mm)	Quantity per pack
34001	10	250 x 430	67	1
34002	20	300 x 542	67	1



NEW

NEW

Bottle, Square, Wide Mouth, PP



This large, autoclavable polypropylene bottle can be used for storing and shipping chemicals and reagents. The 86 mm diameter opening makes it easy to fill and dispense contents. Bottle features built-in grips on two sides for secure handling. Threads should be totally disengaged before autoclaving.

Item No.	Capacity (ml)	O.D. x Height (mm)	Mouth I.D. (mm)	Quantity per pack
33511	4000	137 x 290	86	1

Bottles, Storage, Wide Mouth, PP

These polypropylene bottles provide an excellent option for storage of reagents and other materials in the laboratory. The square shape is designed to optimize shelf space. Available in three different sizes, these bottles feature polypropylene caps, are autoclavable, and provide good chemical resistance.

Item No.	Capacity (ml)	O.D. x Height (mm)	Mouth I.D. (mm)	Quantity per pack
81900	250	64 x 87	36	12
81901	500	78 x 115	49	12
81902	1000	100 x 135	71	6



NEW

Barnes Dropping Bottle, 30ml, Glass

Square shaped clear flint glass bottles with glass pipet and rubber bulb stopper. Capacity 30ml. Replacement pipets also available. Standard pack quantity is 36 each.

Item No.	Description
BOT030	Barnes Dropping Bottle, with pipet and rubber bulb
BOT030-PK/36	Barnes Dropping Bottle, with pipet and rubber bulb, pack of 36
BPB010-PK/12	Replacement pipets and bulbs, pack of 12
BULB010-PK/12	Replacement bulbs, pack of 12



Eye Dropper, Glass



Straight glass pipettes with tapered rubber bulbs. Approximately 70mm long with 2ml capacity.

Item No.	Description
BPB002-PK/3	Eye Dropper, pack of 3
BPB002-PK/12	Eye Dropper, pack of 12
BPB002-PK/72	Eye Dropper, pack of 72

Flint Glass Bottle

Round clear flint glass bottle, 60ml capacity. Size O stoppers can be used for closures.

Item No.	Description
BOT060	Flint Glass Bottle, 60ml



BOD Bottles, Glass



BOD300



BOD060



BODCAR

BOD Bottles for incubating diluted samples of clean water, waste water, effluent water, and polluted water during the 5-day biochemical oxygen demand (BOD) test. Bottles are unnumbered and feature a penny head stopper.

Item No.	Description	Quantity per pack
BOD060	BOD Bottle, 60ml, unnumbered	36
BOD300	BOD Bottle, 300ml, unnumbered	24
BODCAR	BOD Bottle Carrier	1

Numbered and barcoded BOD bottles are also available. Please contact us for details.

Burettes, Class B, with Straight Bore PTFE Key Stopcock



Burettes are made from the highest quality accurate bore tubing to provide a high degree of accuracy, reliability, and durability. All graduations are in resilient white enamel. Accuracy as per Class B.

Item No.	Capacity (ml)	Graduation Interval (ml)	Tolerance (\pm ml)	Quantity per pack
BR2130-10	10	0.05	0.04	1
BR2130-25	25	0.10	0.06	1
BR2130-50	50	0.10	0.10	1
BR2130-100	100	0.20	0.20	1

Burettes, Class B, with Screw Thread Stopcock

Include general purpose screw thread stopcocks with PTFE keys. Burettes are made from the highest quality accurate bore tubing to provide a high degree of accuracy, reliability, and durability. All graduations are in resilient white enamel. Accuracy as per Class B.

Item No.	Capacity (ml)	Graduation Interval (ml)	Tolerance (\pm ml)	Quantity per pack
BR2122-10	10	0.05	0.04	1
BR2122-25	25	0.10	0.06	1
BR2122-50	50	0.10	0.10	1
BR2122-100	100	0.20	0.20	1



Burettes, Class B, with Straight Bore Glass Stopcock



Burettes are made from the highest quality accurate bore tubing to provide a high degree of accuracy, reliability, and durability. All graduations are in resilient white enamel. Accuracy as per Class B.

Item No.	Capacity (ml)	Graduation Interval (ml)	Tolerance (\pm ml)	Quantity per pack
BR2124-10	10	0.05	0.04	1
BR2124-25	25	0.10	0.06	1
BR2124-50	50	0.10	0.10	1
BR2124-100	100	0.20	0.20	1

Stopcock plugs are not interchangeable. We recommend using different types of greases depending on the reagent used. Please call for details.

Burettes, Class B, with PTFE Detachable Stopcocks

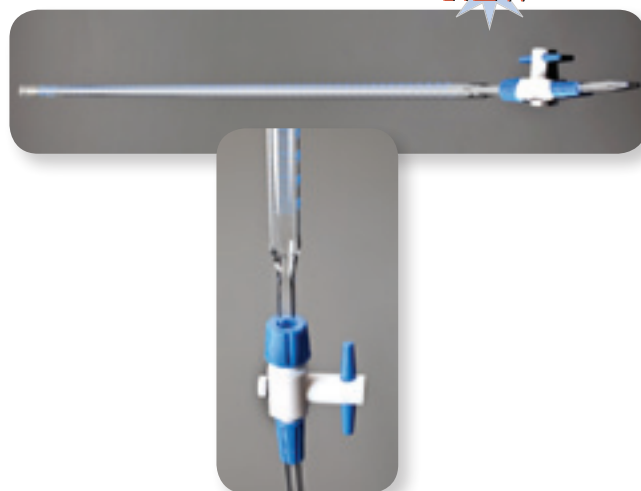
NEW

Burettes are made from the highest quality accurate bore tubing to provide a high degree of accuracy, reliability, and durability. Accuracy as per Class B.

PTFE stopcock and tip detaches from the body of the burette for easy cleaning and convenient replacement of broken tips.

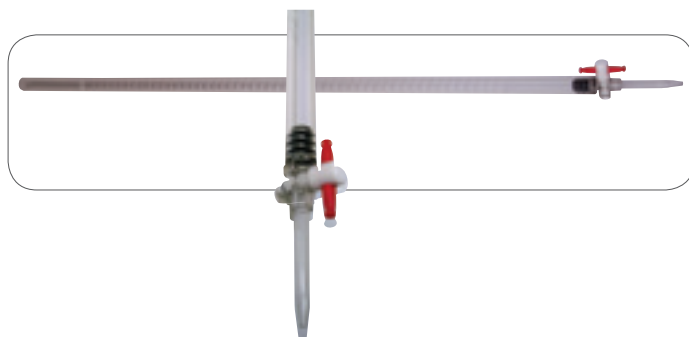
Item No.	Capacity (ml)	Graduation Interval (ml)	Tolerance (\pm ml)	Quantity per pack
BR2116-10	10	0.05	0.04	1
BR2116-25	25	0.10	0.06	1
BR2116-50	50	0.10	0.10	1

Class A certified burettes are also available. Please contact us for details.



Acrylic Buret

This buret has a clear acrylic body and leakproof stopcock with a self-lubricating PTFE plug. Acrylic body is resistant to dilute mineral acids and bases except Hydrofluoric Acid and Ammonium Hydroxide. Graduations are in 0.1 ml increments.



Item No.	Capacity (ml)	Overall Length (mm)	Quantity per pack
11501	25	570	1
11502	50	735	1
11503	100	835	1

Burette Brush, Nylon Bristles

Good quality nylon bristles, mounted in twisted heavy gauge galvanized wire. Includes a radial top.

Item No.	Brush Length	Brush Diameter	Overall Length	Quantity per pack
BUBRO1	10"	1/2"	28"	1



Image shows close-up of Burette Brush bristles.

NEW

Microcentrifuge Tubes, PP



Made from high-quality virgin polypropylene, these microcentrifuge tubes are RNase, DNase and Pyrogen free for safer use in molecular biology and other biochemical applications. Include a connected snap cap, large molded-in graduations, and a frosted surface for easier writing. Autoclavable tubes can be used in very low temperatures and with various organic solvents. Maximum RCF 20000. Amber colored tubes are suitable for light sensitive applications because they do not allow any light to pass through the samples.

Item No.	Capacity (ml)	Outside Diameter (mm)	Height (mm)	Quantity per pack
P10201	0.5 (Natural)	10	31.5	1000
P10201A	0.5 (Amber)	10	31.5	1000
P10207	0.5 (Blue)	10	31.5	1000
P10202	1.5 (Natural)	13	41	500
P10204A	1.5 (Amber)	13	41	500
P10204	1.5 (Blue)	13	41	500
P10203	2.0 (Natural)	13	41	500
P10203A	2.0 (Amber)	13	41	500
P10205	2.0 (Blue)	13	41	500

Microcentrifuge Tubes, Rainbow Pack

This convenient assortment includes 125 each of red, blue, yellow and green tubes.

Made from high-quality virgin polypropylene, these microcentrifuge tubes are RNase, DNase and Pyrogen free for safer use in molecular biology and other biochemical applications. Include a connected snap cap, large molded-in graduations, and a frosted surface for easier writing. Autoclavable tubes can be used in very low temperatures and with various organic solvents. Maximum RCF 20000.

NEW



Item No.	Capacity (ml)	Outside Diameter (mm)	Height (mm)	Quantity per pack
P10204R	1.5	13	41	500

Micro Pestles, PP

NEW



This double-ended polypropylene micro pestle features one end that fits 1.5ml microcentrifuge tubes and another end that fits 0.5ml tubes. Autoclavable.

Micro pestles are excellent for resuspending bacterial cells and precipitates of nucleic acids or proteins, and are useful for tissue grinding.

Item No.	Description	Quantity per pack
81441	Micro Pestle for 1.5ml and 0.5ml tubes	12

Rack for Microcentrifuge Tube, PC

NEW

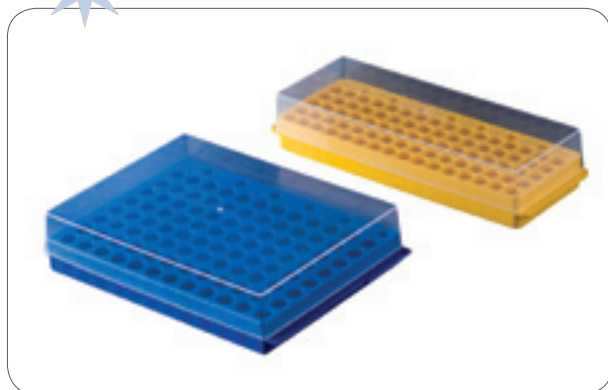
Stackable polycarbonate racks are compatible with both 1.5ml and 2.0ml microcentrifuge tubes. Each hole has molded in numbers and letters for sample identification. Ergonomic design provides easy insertion and removal and of tubes. Can be used in wide temperature range (-135° to 135°C). Autoclavable.

Item No.	Tube Capacity (ml)	Places	Color	L x W x H (mm)	Qty per pack
P20201	1.5 and 2.0	24 (6 x 4 array)	White	164 x 100 x 59	8
P20202	1.5 and 2.0	24 (6 x 4 array)	Yellow	164 x 100 x 59	8
P20203	1.5 and 2.0	48 (12 x 4 array)	White	293 x 100 x 59	8
P20204	1.5 and 2.0	48 (12 x 4 array)	Yellow	293 x 100 x 59	8



Reversible Rack for Microcentrifuge Tube, PP

NEW



Polypropylene racks contain grids on both sides. One side holds 1.5/2.0ml microcentrifuge tubes with extra smaller positions for 0.5ml tubes, and the other side holds 0.5ml microcentrifuge tubes with extra positions for 1.5/2.0ml microcentrifuge tubes. The 96 place rack contains 12 x 8 arrays. The 80 place rack contains 16 x 5 arrays. Molded-in coding for easy identification of tubes. Autoclavable.

Item No.	Tube Capacity (ml)	Places	L x W x H (mm)	Quantity per pack
P20206	1.5, 2.0 & 0.5	96 (12 x 8 array)	220 x 150 x 50	6
P20207	1.5, 2.0 & 0.5	80 (16 x 5 array)	240 x 85 x 50	6

Rack for Microcentrifuge Tube, PP

NEW

Sturdy autoclavable racks are compatible with both 1.5ml and 2.0ml microcentrifuge tubes. Racks lock together on each side so that several can be attached for larger experiments. Each hole has molded in numbers for sample identification. Ergonomic design provides easy insertion and removal and of tubes. Include rubber supports on the bottom for stability.

Item No.	Tube Capacity (ml)	Places	L x W x H (mm)	Quantity per pack
P20205	1.5 and 2.0	20 (10 x 2 array)	210 x 70 x 35	8



NEW

Centrifuge Tube, Conical Bottom, PP/HDPE



Polypropylene tubes include blue HDPE leak-proof screw caps. The tubes and caps feature specially-designed flat threads for vacuum-type closure that is leak-free at a pressure of >700mm Hg. Highly smooth hydrophobic internal surfaces minimize wall effect. Silk-screen graduations and a frosted surface make writing easier.

Autoclavable at 121°C and 15 psi for 30 minutes. Radiation sterilized. DNase, RNase, Pyrogen and latex-free. Maximum RCF 14000.

Amber colored tubes are suitable for light sensitive applications because they do not allow any light to pass through the samples.

Item No.	Capacity (ml)	Cap Color	O.D. x Height (mm)	Quantity per pack
P10402	15 (Sterile)	Blue	16.5 x 117.8	500
P10406	15 (Sterile Amber)	Blue	16.5 x 117.8	500
P10404	50 (Sterile)	Blue	29.2 x 114.3	500
P10408	50 (Sterile Amber)	Blue	29.2 x 114.3	500

Self Standing Centrifuge Tubes, PP/HDPE

Polypropylene tubes include a convenient flat bottom so they stand on their own, a large white frosted labeling area, silk screen graduations, and HDPE leak-proof caps.

Autoclavable at 121°C and 15 psi for 30 minutes. Radiation sterilized. DNase, RNase, Pyrogen and latex-free. Maximum RCF 9000.

Item No.	Capacity (ml)	Cap Color	O.D. x Height (mm)	Quantity per pack
P10424	50 (Sterile)	Blue	29.2 x 117.3	500



NEW

Self Standing Centrifuge Tubes, PP/HDPE



Polypropylene tubes feature a convenient flat bottom so they stand on their own. Include blue HDPE leak-proof screw caps, silk-screen black graduations and a large white marking spot. Tubes are graduated from 5 to 50ml with graduation intervals of 2.5ml.

Autoclavable at 121°C and freezable to -45°C. Steam sterilized. Maximum RCF 9000.

Item No.	Capacity (ml)	O.D. x Height (mm)	Quantity per pack	Quantity per case
D1002	50 (Sterile)	29.2 x 117.3	50	500

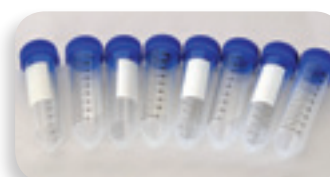
Centrifuge Tube, Conical Bottom, PP/HDPE

Polypropylene tubes include blue HDPE leak-proof screw caps, silk-screen black graduations and a large white marking spot. Available in 15ml capacity (racked) or 50ml capacity (bulk in a poly bag).

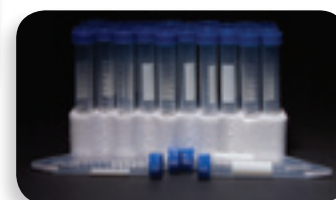
15ml tubes are graduated from 2 to 14ml with graduation intervals of 0.5ml. 50ml tubes are graduated from 5 to 47.5ml with graduation intervals of 2.5ml.

Autoclavable at 121°C and freezable to -45°C. Steam sterilized. Maximum RCF 9000.

Item No.	Capacity (ml)	O.D. x Height (mm)	Quantity per pack	Quantity per case
D1003	15 (Sterile)	16.5 x 117.8	50	500
D1001	50 (Sterile)	29.2 x 114.3	50	500



D1001



D1003

Racked Centrifuge Tube, Conical Bottom

NEW

Centrifuge tube and rack sets are a convenient solution for organizing and storing conical bottom tubes. Racks are made of expanded polystyrene (EPS) and include holes arranged in a zigzag format for easy dispensing. Racks contain 50 of the 15ml tubes or 25 of the 50ml tubes. Sterile tubes are available in Clear or Amber styles.

For a detailed listing of tube specifications, please refer to our 'Centrifuge Tube, Conical Bottom, PP/HDPE' presentation.

Item No.	Capacity (ml)	Height (mm)	Quantity per pack
P10412	15 (Racked, Sterile)	125	50 pcs x 10 Racks
P10414	15 (Sterile Amber, Racked)	125	50 pcs x 10 Racks
P10416	50 (Racked, Sterile)	120	25 pcs x 20 Racks
P10418	50 (Sterile Amber, Racked)	120	25 pcs x 20 Racks



NEW

Rack for Microcentrifuge Tube, PP



Two-tier polypropylene racks hold up to 100 of 1.5ml microcentrifuge tubes. Racks are autoclavable and can be used in water baths or freezers. A molded-in alphanumeric index makes sample identification easy. Racks are stackable and have a 2-3/4" x 1" labeling area on two sides.

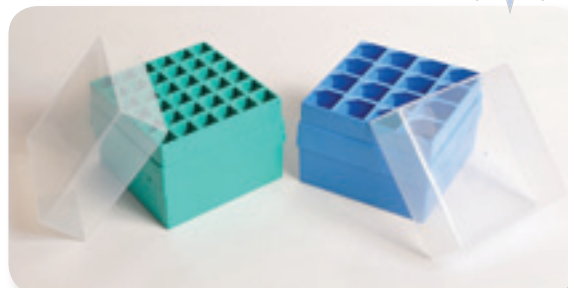
Item No.	Description	Quantity per pack
77910	Rack for Microcentrifuge Tubes, PP	6

Centrifuge Tube Box, PP

NEW

Autoclavable centrifuge tube boxes provide a more durable and rugged alternative to cardboard or foam racks. These racks can withstand a temperature of -90° to 121°C. Color-coding makes it easy to distinguish between rack sizes - green racks hold 15ml tubes, and blue racks hold 50ml tubes. Each tube placeholder contains a numeric code, easily visible through the clear lid.

Item No.	Capacity (ml)	L x W x H (mm)	Quantity per pack
P20604	15	145 x 145 x 125	4
P20605	50	145 x 145 x 125	4



Hand Centrifuge



This hand-driven centrifuge comes with a table-mounting clamp. Features a painted metal body and metal head. Comes complete with four aluminum shields. Easily disassembles for storage in specially designed foam box. Crank is geared to head at 16:1 ratio. A crank rate of 12 turns in 10 seconds yields a head speed of 1152 RPM.

Item No.	Description
CENTFG1	Hand Centrifuge

NEW

3-Prong Heavy Duty Extension Clamp with Stainless Steel Rod



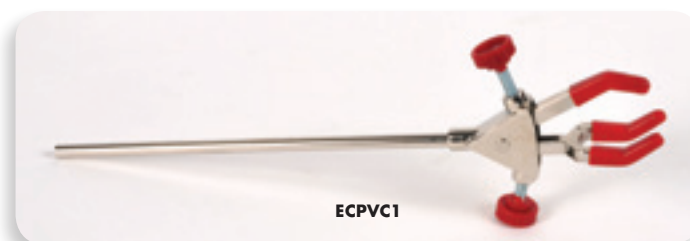
This extension clamp features heavy-duty electroplated zinc alloy construction and dual prong adjustments. The 5" long extension rod is constructed of stainless steel. Prongs open to about 4", have a recommended maximum grip size of about 3.25", and feature double keyed spring-type adjustment screws. Prongs are covered with non-slip PVC sleeves. Overall length is 10.75".

Item No.	Description	Maximum Use Temperature
CLHD03	3-Prong Heavy Duty Extension Clamp	80°C

3-Prong Extension Clamp with Rod

Our deluxe line of 3-prong extension clamps are constructed of pressure die-cast zinc alloy and are chrome-plated. Prongs open to about 3", have a recommended maximum grip size of about 2.25", and feature double keyed spring-type adjustment screws. Extension rod is 8.25" long, 5/16" OD, with an overall length of 12.75".

Item No.	Description	Maximum Use Temperature
ECPVC1	3-Prong Extension Clamp with Rod, PVC coated grips	80°C
ECSIL1	3-Prong Extension Clamp with Rod, Silicone coated grips	280°C



3-Prong Extension Clamp with Boss Head



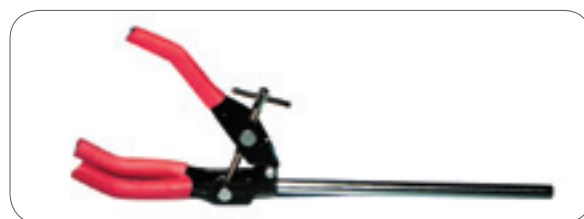
Our deluxe line of 3-prong extension clamps are constructed of pressure die-cast zinc alloy and are chrome-plated. Prongs open to about 3", have a recommended maximum grip size of about 2.25", and feature double keyed spring-type adjustment screws. Boss head clamp can swing freely, is lockable at any angle up to 360°, and can be used with rods up to 19mm.

Item No.	Description	Maximum Use Temperature
ECPVC2	3-Prong Extension Clamp with Boss Head, PVC coated grips	80°C
ECSIL2	3-Prong Extension Clamp with Boss Head, Silicone coated grips	280°C

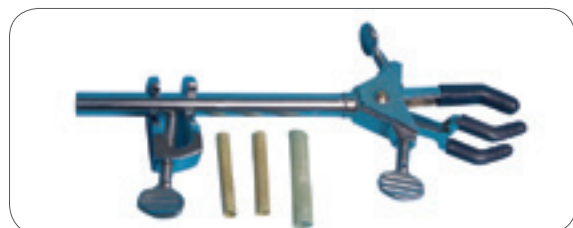
3-Prong Extension Clamp with Steel Rod

Features a 3-prong die-cast clamp attached to a chrome-plated steel rod. Prongs are covered with rubber tubing. Overall length is 10".

Item No.	Description	Maximum Use Temperature
ECLJ03	3-Prong Extension Clamp with Steel Rod	60°C



3-Prong Universal Clamp with Holder



Clamp features vinyl coated 3-prong jaws that open up to 2.25" wide. Includes fiberglass sleeves and a clamp holder that can be rotated 360°.

Item No.	Description	Maximum Use Temperature
ECBH01	3-Prong Universal Clamp with Clamp Holder	80°C

2-Prong Burette Clamp with Extension Rod

Our deluxe line of 2-prong burette clamps are made of pressure die casted zinc alloy and are chrome plated. Adjustable to hold up to 60mm OD burettes, these clamps feature a spring-type adjustment key. Extension rod is 8.25" long, 5/16" OD, with an overall length of 12.75".

Item No.	Description	Maximum Use Temperature
CLCORK1	2-Prong Burette Clamp with Extension Rod, Cork coated grips	60°C
CLPVC1	2-Prong Burette Clamp with Extension Rod, PVC coated grips	80°C
CLSIL1	2-Prong Burette Clamp with Extension Rod, Silicone coated grips	280°C



2-Prong Burette Clamp with Boss Head

Our deluxe line of 2-prong burette clamps are made of pressure die casted zinc alloy and are chrome plated. Adjustable to hold up to 60mm OD burettes, these clamps feature a spring-type adjustment key. Boss head clamp can swing freely and is lockable at any angle up to 360°, and can be used with rods up to 19mm.

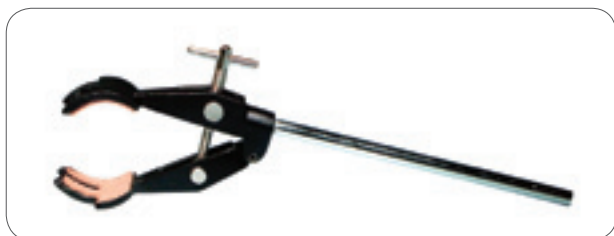
Item No.	Description	Maximum Use Temperature
CLCORK2	2-Prong Burette Clamp with Boss Head, Cork coated grips	60°C
CLPVC2	2-Prong Burette Clamp, with Boss Head, PVC coated grips	80°C
CLSIL2	2-Prong Burette Clamp, with Boss Head, Silicone coated grips	280°C



2-Prong Extension Clamp with Steel Rod

Features a 2-prong die-cast clamp attached to a chrome-plated steel rod. Jaws are lined with cork. Overall length is 8".

Item No.	Description	Maximum Use Temperature
CLEX01	2-Prong Extension Clamp with Steel Rod	60°C



Deluxe Burette Clamps

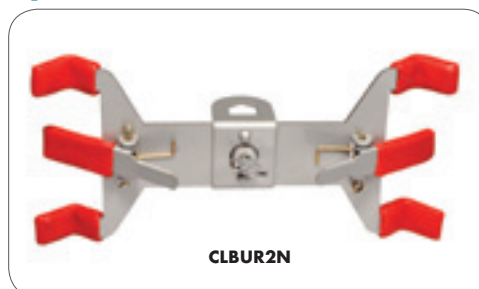
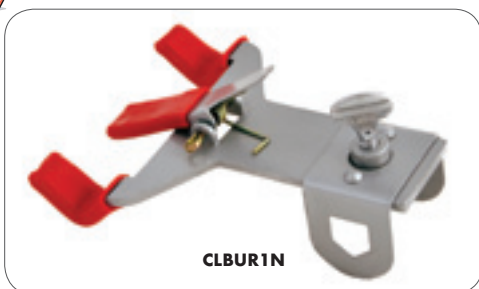


Deluxe burette clamps are die-cast from aluminum and feature black rubber sleeves for firm gripping of burettes. The adjustable clamps hold up to 30mm O.D. burettes which are held in place by the pressure created by the springs. For use with rods up to 19mm diameter.

Item No.	Description
CLBURDS	Deluxe Burette Clamp, Single
CLBURDD	Deluxe Burette Clamp, Double

NEW

Burette Clamps



These clamps are constructed from aluminum and feature PVC covered spring jaws. Available in single and double versions, these clamps accept burettes up to 35mm O.D., and can be used with support rods up to 1/2" O.D.

Item No.	Description
CLBUR1N	Burette Clamp, Single
CLBUR2N	Burette Clamp, Double

Burette Clamp, PP

These polypropylene burette clamps are completely corrosion-proof. The spring-loaded jack in the middle provides a vice like grip on the burette and prevents it from slipping. Two tapered wedges are included to ensure firm grip on 1/2" or 3/8" diameter rods.

Item No.	Description	Quantity per pack
45101	Burette Clamp, PP, Single	12
45102	Burette Clamp, PP, Double	6



Lincoln-type Burette Clamp



This zinc-plated stamped steel burette clamp has a steel thumbscrew and can be used with rods up to 3/4" in diameter. The distance between the two burettes is 7-1/4" (18.4cm).

Item No.	Description
CLLB02	Lincoln-Type Burette Clamp

Burette Clamp with Boss Head, Coated Jaws

Excellent for holding small objects. The jaws open from 15mm to 45mm (1/2" to 1-3/4"). The clamp attaches to rods up to 13mm (1/2") O.D. Jaws can be rotated and locked at any angle. Jaws are covered with PVC sleeves.

Item No.	Description
COBR3-FR	Burette Clamp with Boss Head, Coated Jaws



Burette Clamp with Boss Head, Uncoated Jaws



Excellent for holding small objects. The jaws open from 15mm to 45mm (1/2" to 1-3/4"). The clamp attaches to rods up to 13mm (1/2") O.D. Jaws can be rotated and locked at any angle.

Item No.	Description
COBR3-U	Burette Clamp with Boss Head, Uncoated Jaws

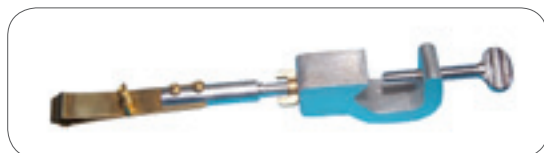
Clamp with Hook

Clamp with Hook can be rotated and locked in any position. Ideal for supporting suspended thermometers, drying tubes, etc. The clamp attaches to rods up to 13mm (1/2") O.D.

Item No.	Description
CLHK01	Clamp With Hook



Thermometer Clamp



Thermometer Clamp features adjustable 360° rotating jaw for suspending thermometers. The clamp attaches to rods up to 13mm (1/2") O.D.

Item No.	Description
THCL01	Thermometer Clamp

Clamp Holder, Brass

For rods to 19mm in diameter. Brass body with brass thumb screws.

Item No.	Description
RCLBH2	Clamp Holder, Brass Body, Brass Thumb Screws



Clamp Holder, Cast Iron



For rods to 19mm in diameter. Cast iron body with steel thumb screws.

Item No.	Description
RCLBH1	Clamp Holder, Cast Iron, Steel Thumb Screws

Swivel Clamp Holder

Plated steel double clamp. Accepts rods up to 3/4" diameter (19 mm). One clamp can be rotated 360° along its axis and locked in any position. Length across clamps is 4.5".

Item No.	Description
CLMS01	Swivel Clamp Holder



C-Clamps



Our clamps feature strong cast iron frames and a screw-thread mechanism that provides a sturdy grip.

Item No.	Description
CLMPC2	C-Clamp, 2" jaw opening
CLMPC3	C-Clamp, 3" jaw opening
CLMPC4	C-Clamp, 4" jaw opening
CLMPC5	C-Clamp, 5" jaw opening
CLMPC6	C-Clamp, 6" jaw opening

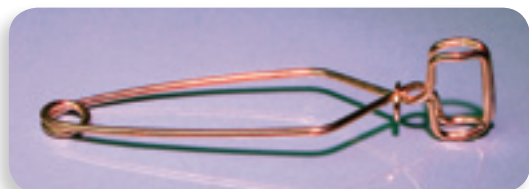
Hook Collar Clamps

Plated steel collar clamps feature thumbscrews and hooks for suspending pulleys, balances, etc. from support rods or crossbars.

Item No.	Description
HKCL01	Hook Collar Clamp, for 1/2" diameter rods
HKCL02	Hook Collar Clamp, for 3/4" diameter rods



Test Tube Clamps



Self-closing, available in brass wire or steel wire with brass finish.

Item No.	Description
TTCL01	Test Tube Clamp, Brass Wire, With Finger Grips
TTCL02	Test Tube Clamp, Brass Wire, Without Finger Grips
TTCL03	Test Tube Clamp, Steel Wire, Brass Finish, With Finger Grips
TTCL04	Test Tube Clamp, Steel Wire, Brass Finish, Without Finger Grips

Test Tube Clamp, Wooden

This test tube clamp is 18cm (approx. 7") in length and will accommodate test tubes from 12 to 25mm in diameter.

Item No.	Description
TTCW01	Test Tube Clamp, Wooden



Mohr's Pinchcock Tubing Clamps



Pinchcock tubing clamps are made of zinc-plated steel wire.

Item No.	Description
CLMP01	Mohr's Pinchcock Clamp, for 10mm diameter tubing
CLMP02	Mohr's Pinchcock Clamp, for 13mm diameter tubing
CLMP03	Mohr's Pinchcock Clamp, for 16mm diameter tubing

Screw Compressor Tubing Clamps

Closed-type tubing clamps are made of zinc-plated steel wire.

Item No.	Description
HSCOP1	Screw Compressor Tubing Clamp, opens to 3/4"
HSCOP2	Screw Compressor Tubing Clamp, opens to 1"



Nickel Crucibles



Unibody construction from sheet nickel, polished inside and out. Can withstand temperatures up to 600°C. Covers included.

Item No.	Capacity (ml)	Height (mm)	Top Outside Diameter (mm)	Quantity per pack
NCR015	15	29	32	1
NCR025	25	39	36	1
NCR050	50	47	45	1
NCR100	100	56	57	1

Stainless Steel Crucibles

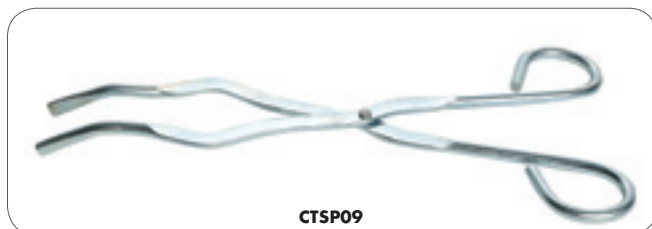
Unibody construction from Type 304 stainless steel. Can withstand temperatures from -180° to 800°C. Covers included.

Item No.	Capacity (ml)	Height (mm)	Top Outside Diameter (mm)	Quantity per pack
SSR015	15	34	32	1
SSR020	20	34	33	1
SSR025	25	34	36	1
SSR030	30	38	39	1
SSR050	50	48	46	1
SSR100	100	55	57	1



Crucible Tongs

Tongs have an overall length of 9" and include riveted joints and serrated tips.



CTSP09

Item No.	Description
CTSP09	Crucible Tongs, Plated Steel
CTOS09	Crucible Tongs, Oxidized Steel
CTBR09	Crucible Tongs, Brass
CTSS09	Crucible Tongs, Stainless Steel

NEW

Porcelain Crucibles, Wide Form with Cover



Wide form crucibles include covers. Crucibles are glazed on inner and outer surfaces except for the outside bottom and rim.

Autoclavable. Withstand temperatures to 1150°C. To prevent thermal stress cracks, we strongly recommend a heating/cooling rate not exceeding 200°C per hour. United porcelain crucibles offer excellent resistance to acids and alkalis except for hydrofluoric acid.

Item No.	Capacity (ml)	Height (mm)	Top Outside Diameter (mm)	Quantity per pack
JCL010	10	20	32	6
JCL020	20	26	41	6
JCL030	30	31	50	6
JCL050	50	37	61	6
JCL100	100	46	76	6
JCL150	150	52	84	6
JCL250	250	60	102	6

Porcelain Crucibles, Tall Form with Cover

NEW

Tall form crucibles include covers. Crucibles are glazed on inner and outer surfaces except for the outside bottom and rim.

Autoclavable. Withstand temperatures to 1150°C. To prevent thermal stress cracks, we strongly recommend a heating/cooling rate not exceeding 200°C per hour. United porcelain crucibles offer excellent resistance to acids and alkalis except for hydrofluoric acid.

Item No.	Capacity (ml)	Height (mm)	Top Outside Diameter (mm)	Quantity per pack
JCT013	1.3	15	15	6
JCT005	5	20	24	6
JCT010	10	26	31	6
JCT015	15	29	35	6
JCT025	25	32	40	6
JCT030	30	37	43	6
JCT040	40	40	50	6
JCT050	50	43	53	6
JCT100	100	54	65	6
JCT250	250	72	88	6



NEW

Porcelain Crucibles, Gooch Filter with Cover



Gooch crucibles have a perforated bottom and include covers. Crucibles are glazed on inner and outer surfaces except for the outside bottom and rim. Used for determination of total suspended solids.

Autoclavable. Withstand temperatures to 1150°C. To prevent thermal stress cracks, we strongly recommend a heating/cooling rate not exceeding 200°C per hour. United porcelain crucibles offer excellent resistance to acids and alkalis except for hydrofluoric acid.

Item No.	Capacity (ml)	For Filter Paper Dia. (mm)	Height x Top O.D. (mm)	Quantity per pack
JGC015	15	15 - 16	32 x 29	6
JGC030	30	20 - 21	45 x 36	6
JGC050	50	23 - 24	49 x 40	6
JGC140	140	30	83 x 55	1

Graduated Cylinders, Glass, Plastic Base

Double metric scale, calibrated to contain. Borosilicate glass cylinders with pour spouts feature heavy uniform wall tubing and plastic hexagonal bases. All cylinders come with bumper guards.

Item No.	Capacity (ml)	Graduation Interval (ml)	Tolerance (\pm ml)	Quantity per pack
CY137-10	10	0.2	0.2	10
CY137-25	25	0.5	0.34	10
CY137-50	50	1	0.5	10
CY137-100	100	1	1.0	10
CY137-250	250	2	2.0	10

Class A certified graduated cylinders are also available. Please contact us for details.



Graduated Cylinders, Glass

Cylinders comply with ASTM E-1272, Class B standards.

Double metric scale, calibrated to contain. Borosilicate glass cylinders with pour spouts feature heavy uniform wall tubing and attached glass hexagonal bases. All cylinders come with bumper guards.



Item No.	Capacity (ml)	Graduation Interval (ml)	Tolerance (\pm ml)	Quantity per pack
CY3022-10	10	0.2	0.2	24
CY3022-25	25	0.5	0.34	18
CY3022-50	50	1	0.5	18
CY3022-100	100	1	1.0	12
CY3022-250	250	2	2.0	12
CY3022-500	500	5	4.0	8
CY3022-1000	1000	10	6.0	1
CY3022-2000	2000	20	12.0	1

Measuring Cylinders, Round Base, PP



Our polypropylene one-piece measuring cylinders have raised graduations for easy readability. They are autoclavable and have excellent contact clarity. The broad round base provides good stability. Stated tolerances are the same as graduated intervals below.

Item No.	Capacity (ml)	O.D. (mm)	Height (mm)	Graduation Interval (ml)	Quantity per pack
CP0010	10	15	110	0.2	24
CP0025	25	19	170	0.5	12
CP0050	50	26	198	1	12
CP0100	100	34	210	1	12
CP0250	250	46	321	2	6
CP0500	500	56	361	5	4
CP1000	1000	72	375	10	3
CP2000	2000	90	473	20	2

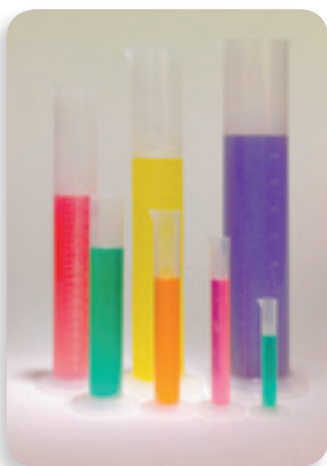
Measuring Cylinders, Hexagonal Base, PP

Our polypropylene one-piece measuring cylinders have raised graduations for easy readability. They are autoclavable and have excellent contact clarity. The hexagonal base provides excellent stability to the cylinder, and the tapered spout enables easy pouring of reagents. Stated tolerances are the same as graduated intervals below.

Item No.	Capacity (ml)	O.D. (mm)	Height (mm)	Graduation Interval (ml)	Quantity per pack
80031	10	15	110	0.2	24
80032	25	19	170	0.5	12
80033	50	26	198	1	12
80034	100	34	210	1	12
80035	250	46	321	2	6
80036	500	56	361	5	4
80037	1000	72	375	10	3



Measuring Cylinder Sets, PP



A convenient set of 7 graduated polypropylene cylinders in sizes 10ml, 25ml, 50ml, 100ml, 250ml, 500ml, and 1000ml.

Also available as a set of 4 in sizes 10ml, 25ml, 50ml and 100ml.

Item No.	Description
CPSET7	Plastic Graduated Cylinders, Set of 7
CPSET4	Plastic Graduated Cylinders, Set of 4

Measuring Cylinders, Class B, PMP

Polymethylpentene cylinders have glass-like clarity and feature easy-to-read molded in graduations. Hexagonally-shaped bases for extra stability. Large spouts for smooth flow of liquids during pouring. Autoclavable to 121°C.

Meets accuracy requirements of Class B under DIN 1261.

Item No.	Capacity (ml)	Graduation Interval (ml)	Tolerance (± ml)	Height (mm)	Quantity per pack
P50401	10	0.2	0.2	138	12
P50402	25	0.5	0.5	169	12
P50403	50	1	1	198	12
P50404	100	1	1	258	6
P50405	250	2	2	314	6
P50406	500	5	5	345	3
P50407	1000	10	10	411	3
P50408	2000	20	20	482	3



Hydrometer Cylinders, Borosilicate Glass

Made from heavy borosilicate glass, these cylinders have a beaded top with a pouring spout and a round base for stability.



Hydrometer cylinder shown with hydrometer.



Item No.	Capacity (ml)	O.D. x Height (mm)	Quantity per pack
HYC500	500	50 x 300	1
HYC600	600	50 x 375	1
HYC1000	1000	65 x 425	1
HYC1200	1200	65 x 450	1

Hydrometer Rack, 12-Tube, PP

Sturdy polypropylene plastic rack will hold 12 hydrometers or test tubes up to 25mm in diameter. Easy to assemble, and chemical resistant.

Item No.	Description
TTHP03	Plastic Test Tube/Hydrometer Rack, 12-Tube



Desiccators, Vacuum, White Base, PP/PC



These autoclavable desiccators are made of polypropylene (PP) and polycarbonate (PC) and can hold a vacuum up to 740mm Hg for 24 hours without any greasing. Autoclavable at 121°C for 15 minutes.

The top dome, molded in rigid and transparent PC, gives a crystal-clear view of the sample. The knurled knob on the top provides easy handling of the dome.

The lower part is made of PP and includes a perforated PP desiccator plate. An internal groove on the flange holds the silicon rubber O-ring.

The PP stopcock accepts 1/4" I.D. tubing and has a self-lubricating PTFE plug. Use the three-way plug to create a vacuum, release a vacuum, or for shut-off.

Item No.	Size	Flange OD/ID (mm)	Plate OD (mm)	Height (mm)	Maximum Clearance* (mm)	Qty per pack
55204	6" / 150mm	171/150	138	204	123	1
55205	8" / 200mm	232/199	190	257	166	1
55206	10" / 250mm	276/240	238	315	207	1
55207	12" / 300mm	340/300	295	405	255	1

* Maximum clearance above plate.

Desiccators, Non-Vacuum, White Base, PP/PC

These autoclavable desiccators are made of polypropylene (PP) and polycarbonate. Autoclavable at 120°C for 15 minutes.

The top dome, molded in rigid and transparent PC, gives a crystal-clear view of the sample. The knurled knob on the top provides easy handling of the dome.

The lower part is made of PP. An internal groove on the flange holds the silicon rubber O-ring. Vacuum grease should be applied on the flanges to make it air-tight.

Item No.	Size	Flange OD/ID (mm)	Plate OD (mm)	Height (mm)	Maximum Clearance* (mm)	Qty per pack
55201	6" / 150mm	171/150	138	204	123	1
55202	8" / 200mm	232/199	190	257	166	1
55203	10" / 250mm	276/240	238	315	207	1
55208	12" / 300mm	340/300	295	405	255	1

* Maximum clearance above plate.



Desiccators, Vacuum, Clear Base

NEW

These autoclavable desiccators are made of polypropylene (PP) and polycarbonate (PC) and can hold a vacuum up to 740mm Hg for 24 hours without any greasing. Autoclavable at 120°C for 15 minutes.

The top dome, molded in rigid and transparent PC, gives a crystal-clear view of the sample. The knurled knob on the top provides easy handling of the dome.

The transparent PC bottom provides increased viewing clarity. An internal groove on the flange holds the silicon rubber O-ring.

The PP stopcock has a self-lubricating PTFE plug. The three-way plug opens to create a vacuum, closes to hold a vacuum, and opens again to release a vacuum.



Item No.	Size	Flange OD/ID (mm)	Plate OD (mm)	Height (mm)	Maximum Clearance* (mm)	Qty per pack
55214	6" / 150mm	171/150	138	204	123	1
55215	8" / 200mm	232/199	190	257	166	1
55216	10" / 250mm	276/240	238	315	207	1
55217	12" / 300mm	340/300	295	405	255	1

* Maximum clearance above plate.

NEW

Porcelain Desiccator Plates with Small Holes



Plates include numerous 5mm diameter perforations. Also includes large hole in center. Glazed on one side.

Item No.	Diameter (mm)	Diameter of Holes (mm)	Diameter of Center Hole (mm)	Quantity per pack
JSD140	140	5	25	1
JSD190	190	5	25	1
JSD230	230	5	25	1

Porcelain Desiccator Plates with Large Holes

Includes large hole in center and additional 6 to 10 holes depending on plate size. Glazed on one side.

Item No.	Dia. (mm)	Number of Holes	Dia. of Holes (mm)	Dia. of Center Hole (mm)	Quantity per pack
JDP140	140	6	35	35	1
JDP190	190	8	35	50	1
JDP230	230	10	35	50	1



NEW

NEW

Porcelain Desiccator Plates with Stand



Desiccators include three 16mm high feet. Glazed on top surface.

Item No.	Diameter (mm)	Number of Holes	Diameter of Holes (mm)	Quantity per pack
JDS095	95	3	30	1
JDS115	115	4	30	1
JDS142	142	5	30	1
JDS146	146	7	30	1
JDS190	190	7	30	1
JDS230	230	8	30	1

NEW

Porcelain Evaporating Dishes, Round Form



Round form evaporating dishes include lip. Dishes from 35ml to 250ml capacity are glazed inside and outside. Dishes 385ml and larger are glazed inside and partially outside.

Autoclavable. Withstand temperatures to 1150°C. To prevent thermal stress cracks, we strongly recommend a heating/cooling rate not exceeding 200°C per hour. United porcelain evaporating dishes offer excellent resistance to acids and alkalis except for hydrofluoric acid.

Item No.	Capacity (ml)	Top Outside Diameter (mm)	Quantity per pack
JED035	35	60	6
JED070	70	75	6
JED080	80	80	6
JED120	120	94	6
JED150	150	100	6
JED250	250	115	6
JED385	385	145	1
JED525	525	162	1
JED765	765	185	1
JED1285	1285	215	1
JED2100	2100	265	1
JED3250	3250	305	1

Porcelain Evaporating Dishes, Flat Form

Shallow form with lip and flat bottom. Glazed except for rim and part of outside bottom.

Autoclavable. Withstand temperatures to 1150°C. To prevent thermal stress cracks, we strongly recommend a heating/cooling rate not exceeding 200°C per hour. United porcelain evaporating dishes offer excellent resistance to acids and alkalis except for hydrofluoric acid.

Item No.	Capacity (ml)	Top Outside Diameter (mm)	Quantity per pack
JEF035	35	65	6
JEF050	50	75	6
JEF080	80	85	6
JEF100	100	100	6
JEF200	200	120	6
JEF300	300	150	6

NEW



Porcelain Evaporating Dishes, Economy



These glazed evaporating dishes can withstand temperatures up to 1050°C. Each dish is individually packed.

Item No.	Capacity (ml)	Top Outside Diameter (mm)	Quantity per pack
PED035	35	60	1
PED050	50	70	1
PED075	75	82	1
PED100	100	90	1
PED125	125	98	1

Porcelain Combustion Boats

Glazed on inner and outer surfaces except for outside bottom surface.

Item No.	Capacity (ml)	L x W x H (mm)	Quantity per pack
JCB017	0.1	17 x 6 x 4	1
JCB060	2.0	60 x 10 x 8	1
JCB097	7.0	97 x 16 x 10	1
JCB100	12.0	100 x 20 x 13	1

NEW



Porcelain Casseroles

NEW

With lip and flat porcelain handle. Glazed on inner and outer surfaces except for rim and top of handle.

Autoclavable. Withstand temperatures to 1150°C. To prevent thermal stress cracks, we strongly recommend a heating/cooling rate not exceeding 200°C per hour. United porcelain casseroles offer excellent resistance to acids and alkalis except for hydrofluoric acid.

Item No.	Capacity (ml)	Height (mm)	Top Outside Diameter (mm)	Quantity per pack
JPC020	20	22	40	1
JPC060	60	33	70	1
JPC140	140	42	85	1
JPC200	200	52	100	1
JPC500	500	75	125	1
JPC750	750	88	150	1
JPC1200	1200	98	175	1



Porcelain Casseroles, Economy

With lip and porcelain handle. Casseroles are glazed inside and out.



Item No.	Capacity (ml)	Height (mm)	Top Outside Diameter (mm)	Quantity per pack
PCS050	30	25	50	1
PCS070	80	35	70	1
PCS090	175	45	90	1
PCS100	220	50	100	1

Petri Dishes, Polystyrene (PS)

Disposable polystyrene petri dishes offer optical clarity and strength at economical prices. 65mm dish includes a molded-in grid on the lid for easy colony counting. Sterilized.

Item No.	Dimensions (mm)	Quantity per pack	Quantity per case
K1006	65 diameter x 15 height	10	650
K1004J	90 diameter x 15 height	10	500
K1001	150 diameter x 15 height	10	180
Petri Dish with Two Compartments			
K1003	90 diameter x 15 height, two compartment	10	500



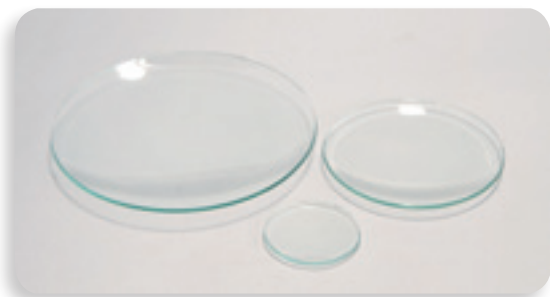
Petri Dishes, Borosilicate Glass



Made from high quality borosilicate glass, these autoclavable, flat, clear Petri dishes can withstand repeated sterilization and can be used many times. Each dish includes a lid. Note: lids do not seal air-tight.

Item No.	Description	Quantity per pack
G1060	Glass Petri Dish 60 x 65 x 15mm	10
G1075	Glass Petri Dish, 75 x 82 x 15mm	10
G1100	Glass Petri Dish, 100 x 107 x 20mm	10

Watch Glasses



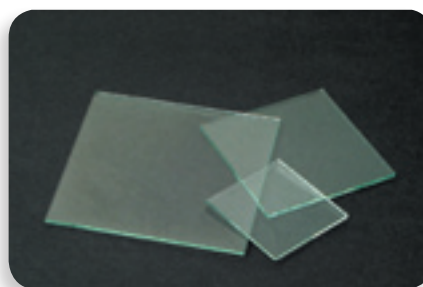
Made from clear flint glass (1.8 to 2.0mm thick), fine ground and polished edges.

Item No.	Diameter (mm)	Quantity per pack
WGL025	25	12
WGL040	40	12
WGL050	50	12
WGL065	65	12
WGL075	75	12
WGL090	90	12
WGL100	100	12
WGL125	125	12
WGL150	150	12
WGL200	200	12
WGL250	250	12
WGL300	300	12

Glass Plates

Plates made of clear flint glass, 2mm thick, with ground polished edges. Useful for a variety of general laboratory applications including as a cover, mixing surface, etc.

Item No.	Description	Quantity per pack
GLP2X2	Glass Plate, 2" x 2"	12
GLP3X3	Glass Plate, 3" x 3"	12
GLP4X4	Glass Plate, 4" x 4"	12
GLP5X5	Glass Plate, 5" x 5"	12
GLP6X6	Glass Plate, 6" x 6"	12
GLP8X11	Glass Plate, 8" x 11"	1



Filter Paper, Circular, Grade 1



The most widely used qualitative filter paper for routine applications. Medium porosity and flow rate. 100 circles packed in a cardboard box.

Item No.	Diameter (cm)	Quantity per pack
FPR007	7	100
FPR009	9	100
FPR011	11	100
FPR125	12.5	100
FPR150	15	100
FPR180	18	100
FPR240	24	100
FPR320	32	100

Filter Paper, Rectangular, Grade 1

The most widely used qualitative filter paper for routine applications. Medium porosity and flow rate.

Item No.	Dimensions (inches)	Quantity per pack
FPR8X11	8.5" x 11"	100
FPR18X22	18" x 22"	100



Boiling Flask, Round Bottom, Ground Glass Joints, Borosilicate Glass

Boiling, round bottom flasks with ground glass joints. Our boiling flasks are made from low-expansion borosilicate glass. Feature uniform wall thickness for superior mechanical strength and shock resistance. Ideal for boiling, heating and mixing in the laboratory.



NEW

Item No.	Capacity (ml)	Approx. O.D. x Height (mm)	Joint Size	Qty per pack	Qty per case
FRB057-50	50	51 x 95	24/40	6	24
FRB057-100	100	64 x 110	24/40	6	24
FRB057-250	250	85 x 145	24/40	6	24
FRB057-500	500	105 x 178	24/40	6	24
FRB057-1000	1000	128 x 212	24/40	6	24
FRB057-2000	2000	166 x 260	24/40	1	6

Boiling Flask, Flat Bottom, Ground Glass Joints, Borosilicate Glass

NEW



Boiling, flat bottom flasks with ground glass joints. Our boiling flasks are made from low-expansion borosilicate glass. Feature uniform wall thickness for superior mechanical strength and shock resistance. Ideal for boiling, heating and mixing in the laboratory.

Item No.	Capacity (ml)	Approx. O.D. x Height (mm)	Joint Size	Qty per pack	Qty per case
FFB058-50	50	51 x 95	24/40	6	24
FFB058-100	100	64 x 110	24/40	6	24
FFB058-250	250	85 x 145	24/40	6	24
FFB058-500	500	105 x 178	24/40	6	24
FFB058-1000	1000	128 x 212	24/40	6	24
FFB058-2000	2000	166 x 260	24/40	1	6

Boiling Flask, Round Bottom, Borosilicate Glass

Our boiling flasks are made from low-expansion borosilicate glass. Feature uniform wall thickness for superior mechanical strength and shock resistance. Ideal for boiling, heating and mixing in the laboratory.



Item No.	Capacity (ml)	Approx. O.D. x Height (mm)	Quantity per pack	Quantity per case
FG4260-25	25	42 x 90	6	24
FG4260-50	50	51 x 95	6	24
FG4260-100	100	64 x 110	6	24
FG4260-250	250	85 x 145	6	24
FG4260-500	500	105 x 178	6	24
FG4260-1000	1000	128 x 212	6	24
FG4260-2000	2000	166 x 260	1	6
FG4260-3000	3000	185 x 310	1	6

Also available in 5, 6, 10 and 20L capacities. Call for details.

Boiling Flask, Flat Bottom, Borosilicate Glass



Our boiling flasks are made from low-expansion borosilicate glass. Feature uniform wall thickness for superior mechanical strength and shock resistance. Ideal for boiling, heating and mixing in the laboratory.

Item No.	Capacity (ml)	Approx. O.D. x Height (mm)	Quantity per pack	Quantity per case
FG4060-50	50	51 x 90	6	24
FG4060-100	100	64 x 105	6	24
FG4060-250	250	85 x 140	6	24
FG4060-500	500	105 x 170	6	24
FG4060-1000	1000	133 x 200	1	6
FG4060-2000	2000	167 x 250	1	6
FG4060-3000	3000	186 x 300	1	1

Also available in 5, 6, 10 and 20L capacities. Call for details.

Erlenmeyer Flask, Narrow Mouth, Borosilicate Glass



Borosilicate glass flasks are designed to give the best combination of thermal shock resistance and physical strength. Feature heavy-duty rims and graduations in durable white enamel.

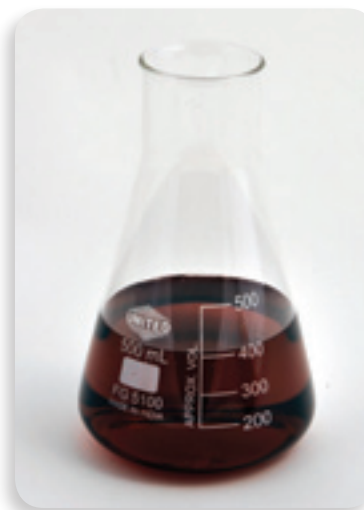
Item No.	Capacity (ml)	Graduation Range (ml)	Graduation Interval (ml)	Qty per pack	Qty per case
FG4980-10*	10	NA	NA	12	36
FG4980-25	25	10 - 25	5	12	48
FG4980-50	50	20 - 50	10	12	48
FG4980-100	100	50 - 100	25	12	48
FG4980-125	125	50 - 125	25	12	48
FG4980-150	150	75 - 150	25	6	24
FG4980-250	250	50 - 200	25	12	48
FG4980-500	500	100 - 500	50	6	36
FG4980-1000	1000	250 - 1000	50	6	24
FG4980-2000	2000	600 - 2000	200	1	8
FG4980-3000	3000	1000 - 3000	500	1	1
FG4980-5000	5000	1500 - 5000	500	1	1

* Note: 10ml flask is not graduated.

Erlenmeyer Flask, Wide Mouth, Borosilicate Glass

Wide-mouth flasks are ideal for titrations and culture work. Borosilicate glass flasks are designed to give the best combination of thermal shock resistance and physical strength. Feature heavy-duty rims and graduations in durable white enamel.

Item No.	Capacity (ml)	Approx. O.D. x Height (mm)	Quantity per pack	Quantity per case
FG5100-100	100	70 x 110	12	48
FG5100-125	125	69 x 117	12	48
FG5100-250	250	84 x 138	12	48
FG5100-500	500	105 x 186	6	36
FG5100-1000	1000	131 x 222	6	24



Erlenmeyer Flask, with Screw Cap, Borosilicate Glass



Recommended for culturing, mixing and storing applications. Borosilicate glass flasks are designed to give the best combination of thermal shock resistance and physical strength. Feature heavy-duty rims and graduations in durable white enamel. Blue caps with liner are autoclavable.

Item No.	Capacity (ml)	Approx. O.D. x Height (mm)	Quantity per pack	Quantity per case
FG5021-100	100	64 x 110	6	24
FG5021-150	150	72 x 125	6	24
FG5021-250	250	85 x 145	6	24
FG5021-500	500	104 x 180	6	24
FG5021-1000	1000	131 x 225	1	4

Erlenmeyer Flask Set of 5, Borosilicate Glass

A convenient set of 5 of our FG4980 series borosilicate glass Erlenmeyer Flasks. Set consists of one each of 50ml, 125ml, 250ml, 500ml, and 1000ml Flasks.

Borosilicate glass flasks are designed to give the best combination of thermal shock resistance and physical strength. Feature heavy-duty rims and graduations in durable white enamel.

Item No.	Description
FGSET5	Erlenmeyer Flask Set of 5, Borosilicate Glass



Wide-Mouth Erlenmeyer Flask, PP



Wide-mouth polypropylene flasks are autoclavable and include a screw cap for easy mixing and storage of solutions. Flasks are graduated to show approximate volumes.

Item No.	Capacity (ml)	Graduation Interval (ml)	Quantity per pack
FP0125	125	25	12
FP0250	250	50	12
FP0500	500	50	12

Flask Tongs, Stainless Steel

Stainless steel flask tongs are 12" long with riveted joints. Heavy duty construction safely accommodates flasks up to 5000ml. Silicone-coated jaws grip flasks firmly and open to 6".

Item No.	Description
FTSS04	Flask Tongs, Stainless Steel



Flask Stand, PP



For use with flasks up to 10L, this polypropylene stand is ribbed to safely hold flasks in place. Autoclavable.

Item No.	Description	Quantity per pack
45105	Flask Stand, PP	1

Filtering Flask, Borosilicate Glass



Heavy wall filtering flask includes a bolt neck with tubulation.

Borosilicate glass flasks are designed to give the best combination of thermal shock resistance and physical strength. Feature heavy-duty rims and printing in durable white enamel.

Item No.	Capacity (ml)	Approx. O.D. x Height (mm)	Quantity per pack	Quantity per case
FG5340-50	50	52 x 85	6	24
FG5340-100	100	64 x 108	6	24
FG5340-250	250	86 x 160	1	18
FG5340-500	500	108 x 190	1	18
FG5340-1000	1000	138 x 245	1	12
FG5340-2000	2000	170 x 305	1	12
FG5340-5000	5000	237 x 390	1	1

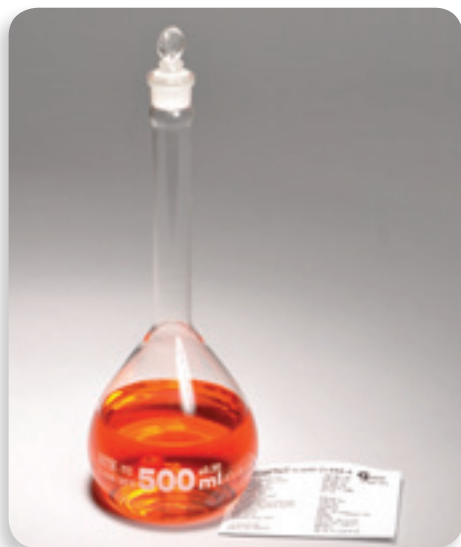
Rubber Filter Aid

This molded rubber filter disc is designed to support and seal in place a filter crucible or a funnel in the neck of a filter flask. Inside diameter of the socket at top is 32mm, and outside diameter of the disc is 76mm. The bottom of the disc is flat so that it seals tightly against the lip of the flask.

Item No.	Description
FLTR01	Rubber Filter Aid



Volumetric Flask, Class A, with Glass Stopper, Batch Certified



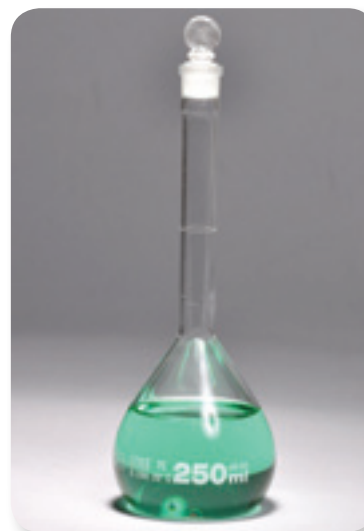
Durable, machine-blown body. Heavy beaded tubing neck. Flasks feature a sharp graduation line and large white block letters. A ground glass stopper is included. Meets Class A specifications per ASTM E-288. Batch certified.

Item No.	Capacity (ml)	Tolerance (\pm ml)	Stopper Size	Quantity per pack
FG5640-5	5	0.02	9	1
FG5640-10	10	0.02	9	1
FG5640-20	20	0.03	9	1
FG5640-25	25	0.03	9	1
FG5640-50	50	0.05	9	1
FG5640-100	100	0.08	13	1
FG5640-200	200	0.10	16	1
FG5640-250	250	0.12	16	1
FG5640-500	500	0.20	19	1
FG5640-1000	1000	0.30	22	1
FG5640-2000	2000	0.50	27	1

Volumetric Flask, Class B, with Glass Stopper

Durable, machine-blown body. Heavy beaded tubing neck. Flasks feature a sharp graduation line and large white block letters. A ground glass stopper is included.

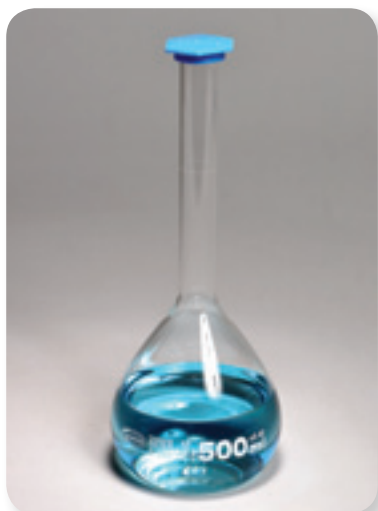
Item No.	Capacity (ml)	Tolerance (\pm ml)	Stopper Size	Quantity per pack
FG5641-5	5	0.04	9	12
FG5641-10	10	0.04	9	12
FG5641-25	25	0.06	9	12
FG5641-50	50	0.10	9	12
FG5641-100	100	0.16	13	12
FG5641-200	200	0.20	16	12
FG5641-250	250	0.24	16	12
FG5641-500	500	0.40	19	12
FG5641-1000	1000	0.60	22	6
FG5641-2000	2000	1.00	27	4



Volumetric Flask, Class B, with Snap Cap

Durable, machine-blown body. Heavy beaded tubing neck. Flasks feature a sharp graduation line and large white block letters. A plastic snap cap is included.

Item No.	Capacity (ml)	Tolerance (\pm ml)	Plastic Cap Number	Quantity per pack
FG5581-50	50	0.10	3	12
FG5581-100	100	0.16	4	12
FG5581-250	250	0.24	5	12
FG5581-500	500	0.40	5	12
FG5581-1000	1000	0.60	6	6
FG5581-2000	2000	1.0	8	4



Distilling Flask, Borosilicate Glass

Our distilling flasks are made from low-expansion borosilicate glass. Uniform wall thickness provides superior mechanical strength and shock resistance. Long side arm is ideal for distillation applications. Feature large white block letters for easy identification of capacity.

Item No.	Capacity (ml)	Quantity per pack
FG4620-100	100	12
FG4620-125	125	12
FG4620-250	250	12
FG4620-500	500	6
FG4620-1000	1000	6
FG4620-2000	2000	4



Stainless Steel Forceps



Good quality stainless steel forceps for general use in the laboratory. All feature serrated tips. Non-sterile, autoclavable.

Item No.	Description
FRSS14	Stainless Steel Forceps, Blunt, 5"
FOBL05	Stainless Steel Forceps, Economy Blunt, 5"
FOBLC5	Stainless Steel Forceps, Angular Blunt, 5"
FOMF05	Stainless Steel Forceps, Sharp, 5"
FOBL45	Stainless Steel Forceps, Economy Blunt, 4.5"

Plastic Forceps, PP



These 4.5" long polypropylene forceps feature serrated inside tips and ribbed finger supports. Non-sterile, autoclavable.

Item No.	Description
FOBPP5	Plastic Forceps, PP

Plastic Tweezers, PP

These polypropylene tweezers are 10cm in length and feature serrated tips. Non-sterile, autoclavable. Sold as a pack of 12.

Item No.	Description
P1012-1	Plastic Tweezers, PP, pack of 12



Funnels, Glass, Long Stem



These borosilicate glass funnels include 60° cone angle, beaded tops, and long stems.

Item No.	Approx. Top Dia. (mm)	Stem Length (mm)	Overall Length (mm)	Quantity per pack	Quantity per case
GF6140-50	50	150	195	6	12
GF6140-65	65	150	205	6	12
GF6140-75	75	150	215	6	12
GF6140-100	100	150	235	6	6

Funnels, Standard Stem, PP

These clear funnels have long stems, smooth walls and external ribs to prevent air lock. Molded in polypropylene. Autoclavable.

Item No.	Capacity (ml)	Top Outside Diameter (mm)	Stem Length (mm)	Quantity per pack
FSP55	20	57	40	12
FSP65	45	67	65	12
FSP75	75	79	70	12
FSP10	150	101	85	6
FSP150	500	150	110	6



Funnels, Short Stem, Plastic



These powder funnels feature wide, short stems. The 35ml and 300ml sizes are made of high density polyethylene, and the 100ml size is made of polypropylene.

Item No.	Capacity (ml)	Top Outside Diameter (mm)	Stem Length (mm)	Quantity per pack
FHD165	35	65	20	12
FHD185	100	85	30	12
FHD125	300	125	38	12

Funnels, Utility, PP

Available in three sizes, these funnels have eight internal ribs to facilitate filtration. They are made of polypropylene.

Item No.	Capacity (ml)	Top Outside Diameter (mm)	Stem Length (mm)	Quantity per pack
FPPC35	5	37	30	12
FPPC52	25	56	30	12
FPPC65	40	67	30	12
FPPC03-PK/3	One each of the above 3 funnels.			



Funnel, Powder, PP

NEW



Polypropylene funnels have short, wide stems for convenient use with powders. Autoclavable.

Item No.	Capacity (oz.)	Overall Height (mm)	Top Inside Diameter (mm)	Stem Length (mm)	Quantity per pack
57221	2	65	65	22	12
57222	3	85	78	30	12
57223	5	105	100	33	6
57224	16	135	145	30	6

NEW

Buchner Funnels, Porcelain



Porcelain Buchner funnels include fixed perforated plates. Funnels are glazed on inner and outer surfaces except for the rims.

Item No.	Approx. Capacity (ml)	Top Dia. x Height (mm)	For Filter Paper Size (cm)	Quantity per pack
JBFO03	3	20 x 66	1.3	1
JBFO35	35	50 x 91	4	1
JBFI100	100	65 x 103	5.5	1
JBFI200	200	86 x 140	7	1
JBFI350	350	105 x 162	9	1
JBFI600	600	127 x 194	11	1
JBFI800	800	143 x 200	12.5	1
JBFI1150	1150	172 x 220	15	1
JBFI2000	2000	210 x 272	18	1
JBFI4800	4800	270 x 352	24	1

Buchner Funnels, Porcelain, Economy

Good quality glazed porcelain. Acid and alkali resistant. Sold as eaches.

Item No.	Approx. Capacity (ml)	Top Dia. x Height (mm)	For Filter Paper Size (cm)	Quantity per pack
PBFO50	50	50 x 90	4	1
PBFO70	120	70 x 125	5.5	1
PBFO90	200	90 x 155	7	1
PBFI110	400	110 x 165	9	1
PBFI150	650	150 x 220	12.5	1
PBFI200	900	200 x 250	18	1
PBFI250	1200	250 x 280	24	1



Funnels, Buchner, PP



These polypropylene two-piece funnels are light-weight, easy to clean and autoclavable. The top portion snaps into the lower one, forming a vacuum seal that does not require greasing. The base of the top portion has a perforated filter plate.

Item No.	Capacity (ml)	Top O.D. (mm)	Stem Length (mm)	Filter Paper Size (cm)	Quantity per pack
57105	125	80	60	7	12
57105-A	300	104	70	9	12
57106	650	136	85	11	12

Hirsch Funnels, Porcelain

Porcelain funnels feature fixed perforated plates. Glazed on inner and outer surfaces except for the rim.

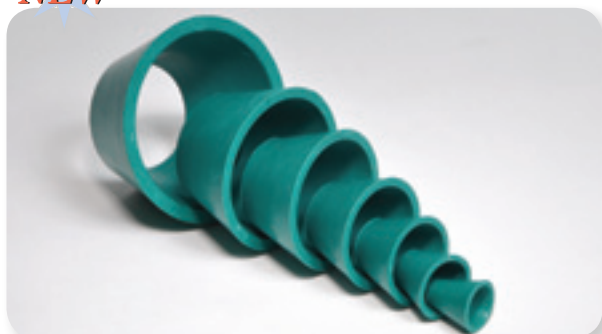
Item No.	Approx. Capacity (ml)	Top Dia. x Height (mm)	For Filter Paper Dia. (mm)	Quantity per pack
JHF010	10	30 x 50	10	1
JHF012	12	40 x 70	15	1
JHF025	25	50 x 75	30	1
JHF050	50	75 x 130	47	1
JHF140	140	100 x 175	55	1

NEW



NEW

Filter Adapter Set of 7, Neoprene



Set of seven neoprene adapter cones designed to fit Buchner and fritted glass funnels, porcelain filters without headpieces, and for reverse flow cleaning of filter crucibles. Adapters can be used to support funnels, Gooch crucibles, filter tubes, and other apparatus in filtration assemblies. These adapters are functional even if not tightly fitted around the funnel stem. Can be used individually or nested with adjacent sizes. Provide an excellent alternative to boring special size holes in rubber stoppers. Autoclavable.

Item No.	Description
FASN07	Filter Adapter Set of 7, Neoprene

Funnel Holder, Single, PP

This corrosion-resistant polypropylene holder can be used with 3" to 6" diameter funnels, and includes an extra plate to accommodate 1" to 3" diameter funnels. Two tapered wedges are provided to ensure firm grip on rods measuring 1/2" or 3/8" diameter.

Item No.	Description	Quantity per pack
45103	Funnel Holder, Single, PP	12



Funnel Holder, Double, PP



Suspend two funnels simultaneously using this polypropylene holder. These corrosion-resistant holders can be used with 3" to 6" diameter funnels, and include an extra plate to accommodate 1" to 3" diameter funnels. Two tapered wedges are provided to ensure firm grip on rods measuring 1/2" or 3/8" diameter.

Item No.	Description	Quantity per pack
45106	Funnel Holder, Double, PP	6

Separatory Funnels, PP



These pear-shaped polypropylene separating funnels feature excellent clarity and strength, and include a leak-proof threaded screw cap. The polypropylene stopcock is fitted with a self-lubricating PTFE plug. Not graduated.

Item No.	Capacity (ml)	Top Outside Diameter (mm)	Stem Length (mm)	Quantity per pack
81201	100	55	45	1
81202	250	75	45	1
81203	500	90	45	1

Separatory Funnel, Glass

These pear-shaped borosilicate glass funnels include a PTFE stopcock and a plastic stopper. Feature a marking spot and large white block letters for easy identification of capacity, as per ASTM E-1096. PTFE stopcocks are compliant with ASTM standard E-675.

Item No.	Capacity (ml)	Stopper Size	Quantity per pack	Quantity per case
SF149-125	125	22	2	20
SF149-250	250	22	2	20
SF149-500	500	27	2	20
SF149-1000	1000	27	1	10
SF149-2000	2000	38	1	10



Separatory Funnel Holder, PP



This non-corrosive separatory funnel holder, molded in polypropylene, has a front opening which provides clear view of the solution and allows unobstructed placement of separating funnels. Two tapered wedges are provided to ensure firm grip on rods measuring 1/2" or 3/8" diameter.

Item No.	Description	Quantity per pack
45104	Separatory Funnel Holder, PP	12

Digital Hot Plate / Magnetic Stirrer

This Digital Hot Plate, with magnetic stirrer, features a scratch and chemical resistant ceramic coated heating plate. Designed with double PT sensors, this hotplate also features a digital temperature controller, RPM controller, and time controller, all of which have independent LED displays. The following accessories are included: boss head clamp, stainless steel rod, magnetic stirring bar, and PT100 sensor probe. The technical specifications are listed below:

- Speed range of 50 to 1500 RPM
- Maximum Stir Bar length of 80mm
- Heat output of 450W
- 0-350° Celsius temperature range
- Frequency of 60 Hz
- Voltage, 115V
- Master selector knob for temperature, stir speed and time settings
- Adjustable safety cutoff range of 50-400° Celsius
- Designed for use with beakers/flasks up to 3000ml in capacity

Item No.	Description
HPLATE-D	Digital Hot Plate / Magnetic Stirrer



Analog Hot Plate / Magnetic Stirrer



This Analog Hot Plate/Magnetic Stirrer features a stainless steel heating plate. Designed with double PT sensors, it also features a hot top indicator for safety along with an adjustable safety cut off. The technical specifications are listed below:

- Speed range of 50 to 1700 RPM
- Maximum Stir Bar length of 80mm
- Heat output of 450W
- 0-350° Celsius temperature range
- Frequency of 60 Hz
- Voltage, 115V
- Separate knobs for controlling stir speed and heat level
- Designed for use with beakers/flasks up to 3000ml in capacity

Item No.	Description
HPLATE-A	Analog Hot Plate / Magnetic Stirrer

Magnetic Stir Bars

Our Magnetic Stir Bars are constructed of high quality magnets coated with PTFE. Along with individual sizes of polygon, octagon, and egg-shaped, two convenient assortments are available. Stir Bar retrievers also available.

Item No.	Description	Dimensions (Length x Diameter)
MSB15	Stir Bar, Octagon, with pivot ring	15mm x 7.5mm
MSB25	Stir Bar, Octagon, with pivot ring	25mm x 8mm
MSB35	Stir Bar, Octagon, with pivot ring	35mm x 9mm
MSB40	Stir Bar, Octagon, with pivot ring	40mm x 8mm
MSB48	Stir Bar, Octagon, with pivot ring	48.5mm x 10mm
MSZ12	Stir Bar, Polygon, without pivot ring	12mm x 3mm
MSZ25	Stir Bar, Polygon, without pivot ring	25mm x 8mm
MSZ40	Stir Bar, Polygon, without pivot ring	40mm x 8mm
MSZ70	Stir Bar, Polygon, without pivot ring	70mm x 9mm
MSHL15	Stir Bar, Egg-shaped, blunt edges	15mm x 7mm
MSHL30	Stir Bar, Egg-shaped, blunt edges	30mm x 13mm
MSHL50	Stir Bar, Egg-shaped, blunt edges	50mm x 20mm



Item No.	Description
MSBA20	Magnetic Stir Bar Assortment, set of 20 (2 each of all MSB series bars, plus 2 each of MSZ12, MSZ70, MSHL15, MSHL30 and MSHL50)
MSBA50	Magnetic Stir Bar Assortment, set of 50 (5 each of all MSB series bars, plus 5 each of MSZ12, MSZ70, MSHL15, MSHL30 and MSHL50)



Item No.	Description
MBR350	Magnetic Stir Bar Retriever, 350mm long

General Lab Glassware Starter Kit



A convenient glassware assortment designed for general laboratory use. Starter kit includes the following:

Contents:

Beaker, Glass, Set of 5	1
Beaker Tongs, 9"	1
Erlenmeyer Flasks, Set of 5	1
Cylinder, 10ml, Hex Base	1
Cylinder, 25ml, Hex Base	1
Cylinder, 100ml, Hex Base	1
Media Bottle, 100ml	1
Media Bottle, 500ml	1
Test Tube Rack (blue/yellow) with 12 Test Tubes (TT9800-F) and 12 Rubber Stoppers (RST1-S)	1
Test Tube Clamp, Steel Wire, with Grips	1
Glass Rod, 8", pk/12	1
Dropping Bottle, 30ml, Barnes, with Dropper Pipets	12

Item No.	Description
GLSKIT3	General Lab Glassware Starter Kit

Volumetric Glassware Starter Kit

A customized volumetric glassware assortment designed for general laboratory use. Starter kit includes the following:

Contents:

Burettes, 50ml Straight Bore, PTFE Stopcock	1
Cylinders, Double Scale, 50ml	1
Cylinders, Double Scale, 100ml	1
Flask, Filtering, 500ml	1
Flask, Volumetric with Snap Cap, 50ml	1
Flask, Volumetric with Snap Cap, 100ml	1
Separatory Funnel, Conical, 500ml	1
Pipettes, Measuring (Mohr Type), Class B, 10ml Capacity x .10ml Graduations, pk/6	1
Pipettes, Transfer, Volumetric, 25ml, pk/6	1



Item No.	Description
GLSKIT4	Volumetric Glassware Starter Kit

Glassware Assortment



Quality glassware assortment for use in a laboratory. Shipped in a reusable storage box. Kit includes the following items:

Contents:

Beaker, Glass, 100ml	2	Mortar and Pestle, Porcelain	1
Beaker, Glass, 250ml	1	Cylinder, Glass, 10ml	1
Beaker, Glass, 400ml	1	Cylinder, Glass, 25ml	1
Bottles, 4 oz. w/ Screw Caps	2	Cylinder, Glass, 50ml	1
Burets, 50ml, Mohr	2	Cylinder, Glass, 100ml	1
Crucible, Porcelain	1	Test Tubes, 13 x 100mm	6
Crucible Cover, Porcelain	1	Test Tubes, 18 x 150mm	6
Dropper, Pipet (Eye Dropper)	1	Test Tubes, 25 x 200mm	6
Dropping Bottle, 30ml, Barnes	12	Glass Capillary Tubing	4
Evaporating Dish, Porcelain	1	Flask, Erlenmeyer, 250ml	1
Funnel, Short Stem, 75mm	1	Glass Rod, 8 inch	1
Watch Glass, 75mm	1	Petri Dish, 100mm	2
		Total Pieces	57

Item No.	Description
GLSKIT1	Glassware Assortment

Hardware Assortment

Kit includes a variety of commonly used hardware items in a general science, physical science, or chemistry laboratory. Designed for use by 2 to 4 students. Shipped in a reusable storage box.

Contents:

Alligator Clip w/ 24" Wire2	Rubber Stopper #0, 1-hole2
Burette Brush1	Rubber Stopper #3, 1-hole2
Burette Clamp, Double1	Rubber Stopper #6, 1-hole2
Clamp, Boss Head1	Rubber Stopper #6, 2-hole2
Clay Pipe Triangle, 2"1	Rubber Tubing, 4 feet, 1/4" I.D. . . .1
Crucible Tongs, Plated, 9"1	Test Tube Clamp2
Electrodes, Carbon Rods2	Test Tube Brush, 3" x 1/2"1
Metric Ruler, Plastic, 30cm1	Test Tube Rack, 12 Holes,
Nichrome Wire with	12 Pins, Wood1
Aluminum Handle1	Thermometer, 20 to 150°C1
Pencil, Glass Marking, Blue1	Wash Bottle, 250ml, Polyethylene . .1
Pinch Clamp, Mohrs, 2-1/4"1	Water Reservoir, Pneumatic Trough .1
Ring Stand (5" x 8" base)1	Wire Gauze, Ceramic, 5" x 5"1
Ring Support with 4" Clamp1	Total Pieces32



Item No.	Description
HRDKIT1	Hardware Assortment

Student Plasticware Assortment Kit



An affordable assortment of some of most commonly used plastic labware items. Kit consists of 20 items shipped in a plastic storage box.

Contents:

Beaker, 100ml	1
Beaker, 250ml	1
Graduated Cylinder, 10ml	1
Graduated Cylinder, 100ml	1
Funnel, 65mm top diameter	1
Drop Dispenser Bottle	1
Reagent Bottle	4
Wash Bottle	1
Plastic Test Tubes	3
Pipettes	6

Item No.	Description
PLKIT20	Student Plasticware Assortment Kit

Plasticware Starter Kit

A customized plasticware assortment that is designed for general laboratory use. Starter kit includes the following:

Contents:

Beaker Set of 5 (50, 100, 250, 500 & 1000ml)	1
Graduated Cylinder Set of 4 (10, 25, 50 & 100ml)	1
Wash Bottle, 250ml	1
Wash Bottle, 500ml	1
Reagent Bottle, PP, Narrow Mouth, 250ml	1
Reagent Bottle, PP, Narrow Mouth, 500ml	1
Reagent Bottle, PP, Widemouth, 250ml	1
Reagent Bottle, PP, Widemouth, 500ml	1
Measuring Jug, 500ml	1
Measuring Jug, 1000ml	1

Item No.	Description
PLSKIT1	Plasticware Starter Kit



NEW

Porcelainware Starter Kit



A customized kit that includes our top-selling porcelain products. Starter kit includes the following:

Contents:

Crucible, Porcelain, Low Form, 50ml capacity (JCL050)	1
Crucible, Porcelain, High Form, 50ml capacity (JCT050)	1
Casserole, Porcelain, 200ml capacity (JPC200)	1
Mortar and Pestle, 275ml capacity (JMD275)	1
Evaporating Dish, 80ml capacity (JED080)	1
Clay Pipe Triangle, 2" (CPT020)	1
Crucible Tongs, Nickel Plated, Steel, 9" (CTSP09)	1

Item No.	Description
PORTKIT2	Porcelainware Starter Kit

Porcelainware Starter Kit, Economy

A customized kit that includes our top-selling porcelain products. Starter kit includes the following:

Contents:

Crucible, Porcelain, Low Form, 50ml	1
Crucible, Porcelain, High Form, 50ml	1
Casserole, Porcelain, 220 ml capacity	1
Mortar and Pestle, 125mm I.D., 500ml capacity	1
Evaporating Dish, 82mm diameter, 75ml capacity	1
Clay Pipe Triangle, 2"	1
Crucible Tongs, Nickel Plated, Steel, 9"	1



Item No.	Description
PORTKIT1	Porcelainware Starter Kit, Economy

Laboratory Tools Kit



An assortment of six of the most commonly used laboratory tools, available as one convenient set. Contains one each of following: test tube brush, spatula, crucible tongs, test tube clamp, lab scoop, and forceps.

Item No.	Description
LSET6	Laboratory Tools Kit

Laboratory Coats

Knee-length lab coats made of easy care white cotton blend fabric (65% polyester, 35% cotton). Our coats feature one upper left breast pocket, two roomy lower pockets, side pocket slit openings, and a sewn-down back belt.

Item No.	Description
MEN:	
LCMXS1	Men's Lab Coat, Extra Small, size 34
LCMS01	Men's Lab Coat, Small, size 36
LCMM01	Men's Lab Coat, Medium, size 40
LCML01	Men's Lab Coat, Large, size 44
LCMXL1	Men's Lab Coat, Extra Large, size 48
LCMXXL1	Men's Lab Coat, Double Extra Large, size 50
LCM3XL1	Men's Lab Coat, Triple Extra Large, size 52
WOMEN*:	
LCLS01	Women's Lab Coat, Small, size 4-6
LCLM01	Women's Lab Coat, Medium, size 8-10
LCLL01	Women's Lab Coat, Large, size 12-14

* Women's sizes correspond to women's dress sizes.



Tie-dyed Laboratory Coats

Featuring a vibrant tie-dyed pattern, these knee length coats are made of easy care 100% cotton. Coats feature one upper left breast pocket, two roomy lower pockets, side slit openings, and a sewn-down back belt.



Item No.	Description
LBCTSM	Tie-dyed Lab Coat, Small
LBCTMD	Tie-dyed Lab Coat, Medium
LBCTLG	Tie-dyed Lab Coat, Large
LBCTXL	Tie-dyed Lab Coat, Extra Large
LBCT2XL	Tie-dyed Lab Coat, Double Extra Large

Laboratory Aprons

These aprons are made of a chemical resistant PVC-coated fabric which stays flexible. There is reinforcement at the points of strain. Aprons include cloth ties at the neck and waist.

Item No.	Description
LBAP01	Lab Apron, 36" x 27"
LBAP02	Lab Apron, 42" x 27"
LBAP03	Lab Apron, 42" x 36"
LBAP04	Lab Apron, 46" x 36"



NEW

Mortar & Pestle Sets, Agate Stone



Octagonal mortar and pestle sets feature highly polished grinding surfaces. Made of naturally hard agate stone (6.5 on Moh's Scale). For use in laboratories demanding contamination-free results. Physical dimensions have a tolerance of +/- 3mm.

Item No.	Mortar Top O.D. (mm)	Capacity (ml)	Mortar Height (mm)	Pestle Length (mm)	Quantity per pack
MPA015	38	5	25	38	1
MPA020	65	10	28	50	1
MPA030	76	25	34	76	1
MPA035	89	50	38	88	1
MPA040	102	75	41	101	1
MPA060	152	250	65	152	1

Mortar and Pestle Sets, Deep Form, Porcelain

NEW

Deep form mortars with lips are glazed on the outside (except for the bottom) and unglazed inside. Oversized pestles are glazed to grinding surface.

Item No.	Capacity (ml)	Mortar Height (mm)	Pestle Length (mm)	Quantity per pack
JMD050	50	47	95	1
JMD070	70	52	115	1
JMD150	150	70	135	1
JMD275	275	70	160	1
JMD400	400	80	185	1
JMD750	750	110	200	1
JMD1900	1900	130	222	1



Mortar and Pestle Sets, Porcelain, Economy



Mortars have pouring spout, are glazed outside only, with porcelain pestles glazed to grinding surface.

Item No.	Capacity (ml)	Mortar I.D. (mm)	Pestle Length (mm)	Quantity per pack
PPM060	80	60	95	1
PPM075	125	75	115	1
PPM100	300	100	135	1
PPM125	500	125	165	1

Pipettes, Transfer, Volumetric, Class B

These pipettes are made from borosilicate glass in compliance with ASTM specification E-969 for Class B pipettes. Color-coded. Calibrated to deliver. Printed with durable amber markings.

Item No.	Capacity (ml)	Tolerance (ml)	Color	Quantity per pack
PT7102-A	1	± 0.012	Blue	6
PT7102-B	2	± 0.012	Orange	6
PT7102-C	5	± 0.020	White	6
PT7102-D	10	± 0.040	Red	6
PT7102-E	20	± 0.060	Yellow	6
PT7102-F	25	± 0.060	Blue	6
PT7102-G	50	± 0.100	Red	6
PT7102-H	100	± 0.160	Yellow	6



Class A certified pipettes are also available. Please contact us for details.

Pipettes, Measuring (Mohr), Class B

These pipettes are made from borosilicate glass in compliance with ASTM specification E-1293 for Class B pipettes. Color-coded. Calibrated to deliver. Printed with durable amber markings.



Item No.	Capacity (ml)	Graduation Interval (ml)	Tolerance	Color Code	Quantity per pack
PM7060-A	0.1	0.01	± 0.005	White	6
PM7060-B	0.2	0.01	± 0.008	Black	6
PM7060-C	1.0	0.01	± 0.020	Yellow	6
PM7060-D	1.0	0.1	± 0.020	Red	6
PM7060-F	2.0	0.1	± 0.020	Green	6
PM7060-H	5.0	0.1	± 0.040	Blue	6
PM7060-I	10.0	0.1	± 0.060	Orange	6
PM7060-J	25.0	0.1	± 0.100	White	6

Pipettes, Serological, Accuracy as per Class B

These Type 3 serological pipettes are made from borosilicate glass and comply with USP standards. Color-coded. Calibrated to deliver. Printed with durable amber markings.

Item No.	Capacity (ml)	Graduation Interval (ml)	Tolerance (ml)	Color Code	Quantity per pack
PS7080-A	0.1	0.01	± 0.005	White	6
PS7080-B	0.2	0.01	± 0.008	Black	6
PS7080-C	1.0	0.01	± 0.020	Yellow	6
PS7080-D	1.0	0.1	± 0.020	Red	6
PS7080-F	2.0	0.1	± 0.020	Green	6
PS7080-H	5.0	0.1	± 0.040	Blue	6
PS7080-I	10.0	0.1	± 0.060	Orange	6
PS7080-J	25.0	0.1	± 0.100	White	6



Pipette Filling Device



Fill any standard pipette using this efficient and reliable electronic instrument. It is designed for ease and comfort to suit various types of liquid handling needs in laboratories.

Features include LED charging indicators, adjustable pump speed, comfort grip and multiple housing color combinations. A universal silicon collet is provided to accept all standard pipettes up to 100ml. Internal knurlings on the collet hold the pipette firmly.

An in-line membrane filter (0.2 micron filter included) prevents aerosol contamination and prevents liquid from entering the equipment by accident.

Ni-MH 3.6V batteries are used in combination with a low power consumption circuit and vacuum/pressure pump. This allows for eight hours of continuous operation. Each device includes a battery charger that is compatible with both 110V and 220V.

Item No.	Description
PFD001	Pipette Filling Device
PFDS01	Stand for Pipette Filling Device
Replacement Filters:	
MPF-20-pk/5	Replacement filters 0.2 μ m
MPF-45-pk/5	Replacement filters 0.45 μ m



Adjustable Pump Speed:
Control knob allows easy adjustment of pump speed, even while the unit is operating.



Status Indicator LEDs:
Red LED indicates low charge and green LED indicates that battery is charged.



Comfortable Grip:
Ergonomic handle is designed for extended use.



Universal Collet:
A universal silicon collet with internal knurlings firmly holds all standard pipettes up to 100ml.

Pipette Pumps



Good quality pipettors designed for easy and precise pipetting. Pumps feature a lever for quick release, and forward or backward wheel movement. The soft elastic chuck has a threaded collar to tightly grip glass or plastic pipettes. Easy to clean.

Item No.	Capacity (ml)	Color	Quantity per pack
PPMP02	2	Blue	12
PPMP10	10	Green	12
PPMP25	25	Red	12

Mini Pipettes

These mini pipettes include a two step plunger that facilitates super blow-out from the tip (last drop dispensing), resulting in very high accuracy and precision. This allows the mini pipette to be used for reverse pipetting and repetitive pipetting.

The tip cone of the 5 μ l, 10 μ l, and 20 μ l mini pipettes is designed to accept both regular 200 μ l tips or ultra micro tips up to 20 μ l. Use of ultra micro tips for volumes up to 20 μ l enhances accuracy and precision. Can be used for reverse pipetting and repetitive pipetting.

These pipettes provide an optimum length of 130mm for user comfort during pipetting, and are fully autoclavable at 121°C, 15 psi for 10 to 15 minutes. Plungers are color coded for different volumes for easy identification in the lab.

Each pipette is individually calibrated per DIN 12650 standards. Pipettes are manufactured in an ISO 9002 certified facility - calibration certificates for specific batches are available upon request.

Item No.	Capacity (μ l)	Accuracy (\pm %)	Precision (\leq %)
PMP005	5	1.5	1.0
PMP010	10	1.0	1.0
PMP020	20	0.5	0.5
PMP025	25	0.5	0.5
PMP050	50	0.4	0.3
PMP100	100	0.3	0.3
PMP200	200	0.5	0.5
PMP250	250	0.5	0.5
PMP500	500	0.5	0.5
PMP1000	1000	0.5	0.5



Color Coding:

Different volume range mini pipette plungers are color-coded for easy identification.



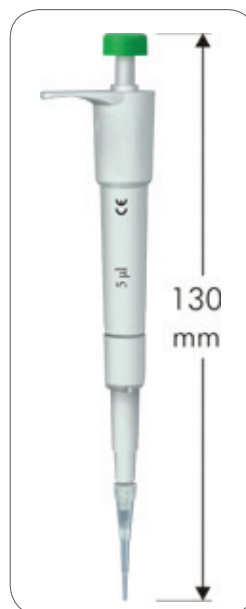
Optimum Shape:

Unique design can be held like a micropipette, not a syringe!



Two-step Plunger:

Two-step plunger operation facilitates super blow-out from the tip (last drop dispensing), resulting in very high accuracy and precision.



Optimum Size:

130mm length was chosen to provide comfort for all users.



Unique Tip Cone

Designed to accept both regular 200 μ l tips or ultra micro tips up to 20 μ l.

NEW



Variable Volume Fully Autoclavable Micropipettes

Our Variable Volume Micropipettes feature built-in tip ejectors and autoclavable tip cones. They are offered in nine volume ranges, as detailed below. They work on a click stop digital system, are easy to calibrate and maintain, and easy to disassemble for autoclaving. Manufactured in an ISO 9001:2008 certified facility, these pipettes are highly accurate. Each pipette is individually calibrated according to ISO 8655 standards. A calibration certificate is provided with each pipette.

Item No.	Volume Range	Increment (μl)	Volume (μl)	Accuracy (± %)	Precision (± %)	Compatible Tips
PRV-2	0.2-2.0 μl	0.01	0.2	12.0	6.0	20 μl
			1.0	2.5	1.5	
			2.0	1.5	0.7	
PRV-10	0.5-10 μl	0.1	0.5	5.0	2.8	200 μl
			5.0	1.5	0.8	
			10.0	1.0	0.4	
PRV-20	2-20 μl	0.1	2.0	5.0	1.5	200 μl
			10.0	1.0	0.6	
			20.0	1.0	0.3	
PRV-50	5-50 μl	1.0	5.0	2.5	1.5	200 μl
			25.0	0.7	0.3	
			50.0	0.7	0.3	
PRV-100	10-100 μl	1.0	10.0	2.5	0.7	200 μl
			50.0	0.8	0.3	
			100.0	0.8	0.15	
PRV-200	20-200 μl	1.0	20.0	2.5	0.7	200 μl
			100.0	1.0	0.3	
			200.0	0.6	0.2	
PRV-1000	100-1000 μl	10.0	100.0	1.6	0.3	1000 μl
			500.0	0.6	0.2	
			1000.0	0.5	0.2	
PRV-5000	0.5-5 ml	100.0	500.0	1.5	0.3	5 ml
			2500.0	0.6	0.2	
			5000.0	0.6	0.2	
PRV-10000	2-10 ml	100.0	1000.0	1.5	0.3	10 ml
			5000.0	0.6	0.2	
			10000.0	0.6	0.2	



Easy Volume Adjustment:

Easy volume adjustment by simply turning the plunger. Plunger does not snag gloves.



Volume Setting:

Soft click sound at every increment ensures perfect volume setting and no accidental volume change. It also facilitates single handed operation.



Digital Display:

Four-digit display with subdivisions provides small volume increments.



Large Grip:

Specially designed large grip is provided for comfort during frequent use.



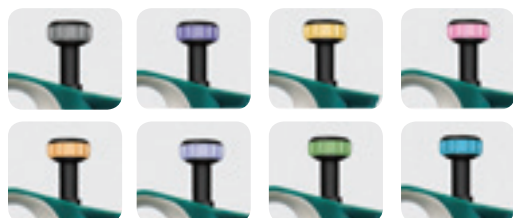
Tip Ejector:

Built-in streamlined tip ejector facilitates easy tip ejection and access to narrow necked bottles and tubes.



User Adjustment:

Re-calibration can be performed.



Color Coding:

Different volume range micropipette dials are color-coded for easy identification.

Contact us for information regarding private labeling.

Multichannel Fully Autoclavable Micropipettes

Our Multichannel micropipettes are recommended for a wide variety of applications such as ELISA, molecular screening, kinetic studies, and DNA amplifications. Available in 8-channel and 12-channel options.

Our Variable Volume Micropipettes feature built-in tip ejectors and autoclavable tip cones. They work on a click stop digital system, are easy to calibrate and maintain, and easy to disassemble for autoclaving. Manufactured in an ISO 9001:2008 certified facility, these pipettes are highly accurate. Each pipette is individually calibrated according to ISO 8655 standards and includes a calibration certificate.

8-Channel Item No.	12-Channel Item No.	Volume Range	Increment (μl)	Volume (μl)	Accuracy (± %)	Precision (± %)	Compatible Tips
PMC8-10	PMC12-10	0.5-10 μl	0.1	1.0	4.00	4.00	200 μl
				5.0	2.50	2.50	
				10.0	1.50	1.50	
PMC8-20	PMC12-20	2-20 μl	0.1	2.0	4.00	4.00	200 μl
				10.0	1.50	1.50	
				20.0	1.50	1.00	
PMC8-50	PMC12-50	5-50 μl	1.0	5.0	3.00	2.00	200 μl
				25.0	1.50	1.00	
				50.0	0.50	0.50	
PMC8-100	PMC12-100	10-100 μl	1.0	10.0	3.00	1.50	200 μl
				50.0	1.00	0.50	
				100.0	1.00	0.50	
PMC8-200	PMC12-200	20-200 μl	1.0	20.0	2.00	0.80	200 μl
				100.0	1.00	0.50	
				200.0	0.70	0.25	
PMC8-300	PMC12-300	40-300 μl	1.0	40.0	2.00	0.80	1000 μl
				150.0	1.00	0.50	
				300.0	0.70	0.25	

NEW



8-Channel Micropipette



Operation Flexibility:
Lower housing can be rotated 360° for flexibility during operation.



Easy Tip Ejection:
Remove tips easily with specially designed sequential tip ejector.



Pipette Holder:
Each micropipette includes a holder for easy, efficient and safe storage.



Soft Grip and Ergonomics:
Comfortable body design and soft grip reduce user fatigue.



Tip Ejection Knob:
Thoughtful placement and design allows easy single handed tip ejection.



12-Channel Micropipette



Variable Volume Semi-Autoclavable Micropipettes

Our Variable Volume Micropipettes feature built-in tip ejectors and autoclavable tip cones. They are offered in nine volume ranges, as detailed below. They work on a click stop digital system, are easy to calibrate and maintain, and easy to disassemble for autoclaving. Manufactured in an ISO 9001:2008 certified facility, these pipettes are highly accurate. Each pipette is individually calibrated according to ISO 8655 standards. A calibration certificate is provided with each pipette.

Item No.	Volume Range	Increment (µl)	Volume (µl)	Accuracy (± %)	Precision (± %)	Compatible Tips
PVV-2	0.2-2.0 µl	0.01	0.2	12.0	6.0	20 µl
			1.0	2.5	1.5	
			2.0	1.5	0.7	
PVV-10	0.5-10 µl	0.1	0.5	5.0	2.8	200 µl
			5.0	1.5	0.8	
			10.0	1.0	0.4	
PVV-20	2-20 µl	0.1	2.0	5.0	1.5	200 µl
			10.0	1.0	0.6	
			20.0	1.0	0.3	
PVV-50	5-50 µl	1.0	5.0	2.5	1.5	200 µl
			25.0	0.7	0.3	
			50.0	0.7	0.3	
PVV-100	10-100 µl	1.0	10.0	2.5	0.7	200 µl
			50.0	0.8	0.3	
			100.0	0.8	0.15	
PVV-200	20-200 µl	1.0	20.0	2.5	0.7	200 µl
			100.0	1.0	0.3	
			200.0	0.6	0.2	
PVV-1000	100-1000 µl	10.0	100.0	1.6	0.3	1000 µl
			500.0	0.6	0.2	
			1000.0	0.5	0.2	
PVV-5000	0.5-5 ml	100.0	500.0	1.5	0.3	5 ml
			2500.0	0.6	0.2	
			5000.0	0.6	0.2	
PVV-10000	2-10 ml	100.0	1000.0	1.5	0.3	10 ml
			5000.0	0.6	0.2	
			10000.0	0.6	0.2	

Fixed Volume Semi-Autoclavable Micropipettes

With autoclavable tip cone, these fixed volume micropipettes are available in a wide range of capacities and are low cost with very high accuracy. Ideal for clinical diagnostics, routine tests, control analysis, etc.

Item No.	Volume Range (µl)	Accuracy (± %)	Precision (± %)	Compatible Tips
PFV-05	5	1.5	0.8	20 µl
PFV-10	10	1.0	0.6	200 µl
PFV-20	20	0.5	0.3	200 µl
PFV-25	25	0.3	0.3	200 µl
PFV-100	100	0.3	0.3	200 µl
PFV-200	200	0.3	0.2	200 µl
PFV-1000	1000 (1ml)	0.3	0.2	1000 µl
PFV-5000	5000 (5ml)	0.3	0.2	5 ml
PFV-10000	10000 (10ml)	0.3	0.2	10 ml

Bottle Top Dispensers

United brand bottle top dispensers offer high accuracy at economical prices. Each dispenser is individually calibrated and certified in an ISO 17025 accredited laboratory in accordance with ISO 8655 standards.

Five adapters are included with each unit for use with a wide range of bottle sizes. All wetted parts are made from PTFE and borosilicate glass for maximum chemical resistance.

These easy-to-use instruments are suitable for all laboratory applications except HF. Special precautions must be taken for use, cleaning, and storage when working with concentrated fuming acids.

A factory calibration certificate is provided with each bottle top dispenser. Dispensers are easy to disassemble and can be recalibrated in the lab. Fully autoclavable at 121°C, 15 psi for 10 to 15 minutes.

Item No.	Volume Range (ml)	Volume Increment (ml)	Accuracy (\pm % / ml)	CV (\pm % / ml)	Bottle Size (ml)
BTDR-1	0.25 - 2.5	0.05	0.6 / 0.015	0.2 / 0.005	
BTDR-2	0.5 - 5	0.1	0.5 / 0.025	0.1 / 0.005	
BTDR-3	1 - 10	0.2	0.5 / 0.050	0.1 / 0.010	
BTDR-4	2.5 - 30	0.5	0.5 / 0.150	0.1 / 0.030	
BTDR-5	5 - 60	1.0	0.5 / 0.300	0.1 / 0.060	
Bottle Top Dispensers with Borosilicate Glass Bottles					
BTDR1-SET	0.25 - 2.5	0.05	0.6 / 0.015	0.2 / 0.005	100
BTDR2-SET	0.5 - 5	0.1	0.5 / 0.025	0.1 / 0.005	100
BTDR3-SET	1 - 10	0.2	0.5 / 0.050	0.1 / 0.010	250
BTDR4-SET	2.5 - 30	0.5	0.5 / 0.150	0.1 / 0.030	500
BTDR5-SET	5 - 60	1.0	0.5 / 0.300	0.1 / 0.060	1000
BTDR6-SET	5 - 60	1.0	0.5 / 0.300	0.1 / 0.060	2000

Sets with plastic narrow-mouth bottles are available upon request. Please call for details.



Piston:
Specially designed PTFE piston ensures smooth, effortless movement and high accuracy.



Glass Barrel Protection:
Polypropylene sleeve protects glass barrel and prevents glass splitting in case of any accidental breakage.



Adjustable Nozzle with Cap:
Delivery nozzle adjusts for easy dispensing at different angles. Cap prevents any unwanted drops on the workspace and avoids contact with chemicals.



Valve Manifold:
Specially designed, springless, PTFE valve manifold provides excellent chemical compatibility and leak-proof valve functioning.



Volume Adjustment Knob:
Quick-set volume adjustment knob with large pointer enables precise, easy, and fast volume adjustment.



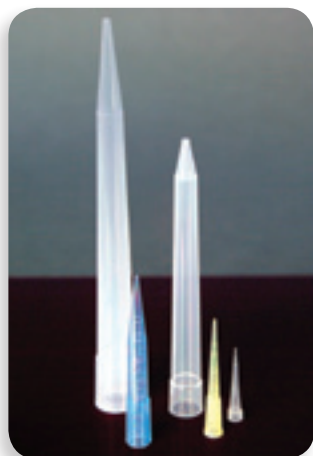
Adapters:
A set of adapters to fit most laboratory reagent bottles are provided. Sizes are 28, 30, 32, 36, 40, and 45mm.



Calibration:
Specially designed calibration tool is provided for convenient and quick in-lab user re-calibration. This is in compliance with GLO/ISO norms.



Micropipette Tips, PP



Manufactured in a precision molding facility from 100% virgin polypropylene, United micropipette tips are DNase, RNase and Pyrogen free. The highly smooth surface is hydrophobic to provide low liquid retention, increased accuracy and repeatability. Inner radial rings enable an airtight grip on the tip cone. Autoclavable at 121°C and 15 psi for 30 minutes.

United tips are compatible with many leading brands of pipettes, such as Eppendorf, Gilson, and Rainin. Please call for a complete list of compatible micropipette models.

Item No.	Tip Size	Description / Color	Quantity per pack
T10UL-N	10 µl	Natural	1,000
T20UL-N	20 µl	Natural	1,000
T200UL-Y	200 µl	Yellow	1,000
T200UL-N	200 µl	Natural	1,000
T1000UL-B	1000 µl	Blue	500
T1000UL-N	1000 µl	Natural	500
T5ML-N	5 ml	Natural	500
T10ML-N	10 ml	Natural	400

Racked Micro Tips, PP, Sterile

Sterile tips are packaged in racks of 96 with 10 racks in each case.

Manufactured in a precision molding facility from 100% virgin polypropylene, United micropipette tips are DNase, RNase and Pyrogen free. The highly smooth surface is hydrophobic to provide low liquid retention, increased accuracy and repeatability. Inner radial rings enable an airtight grip on the tip cone. Autoclavable at 121°C and 15 psi for 30 minutes.

Item No.	Capacity (µl)	Color	Quantity per case
P10117	0.5 - 10 Sterile	Natural	10 racks x 96 pcs (960 pcs)
P10111	2 - 200 Sterile	Yellow	10 racks x 96 pcs (960 pcs)
P10113	100 - 1000 Sterile	Blue	10 racks x 96 pcs (960 pcs)



Pipette Starter Kit



This custom kit contains three pipettes, plus accessories, at an economical price.

Contents:

Variable Volume Micropipette, 2-20 µl (PVV-20)	1
Variable Volume Micropipette, 2-200 µl (PVV-20)	1
Variable Volume Micropipette, 100-1000 µl (PVV-1000)	1
Replacement Micropipette Tips, 200 µl, pk/1000 (T200UL-Y)	1
Replacement Micropipette Tips, 1000 µl, pk/500 (T1000UL-B)	1
A guide to pipetting	1

Item No.	Description
PVVKIT	Pipette Starter Kit

Pasteur Pipettes, LDPE

Unbreakable, non-toxic all-in-one pipettes are molded from translucent low-density polyethylene. Can be sealed and refrigerated. Available in sterile and non-sterile versions. Sterile pipettes are individually wrapped.

NEW



Item No.	Capacity (ml)	Length (mm)	Quantity per pack
P31201	1.0	150	500
P31202	1.0 (Sterile)	150	500
P31205	3.0	155	500
P31206	3.0 (Sterile)	155	500

Micropipette Stand, PP

NEW



Ideal for holding a micropipette conveniently at a workstation, this polypropylene stand is designed for easy access. The modular shape enables multiple stands to be joined together, so micropipettes of various capacities can be stored as a group.

Item No.	Description
MPSM01	Micropipette Stand, Modular

Reagent Reservoir, PP

For use with micropipettes. Total capacity of 75ml. Includes graduation marks at 10, 30 and 60ml levels. Autoclavable. Sold as a pack of 12.

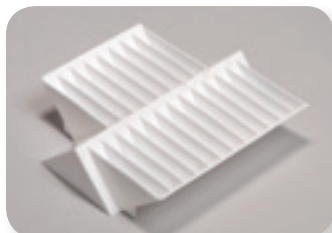
NEW



Item No.	Description
79121	Reagent Reservoir, PP, pk/12

Reversible Reagent Reservoir, PP

NEW



This versatile polypropylene reservoir is useful for single and multichannel micropipettes. Positioned one way, it provides a 50ml reservoir for use with a single channel micropipette. Flipped over, it provides a numbered reservoir with eight separate 5ml reagent channels, and a numbered reservoir with twelve separate 5ml reagent channels. Autoclavable. Sold as a pack of 6.

Item No.	Description
79131	Reversible Reagent Reservoir, PP, pk/6

Pipette Stand, Rotary, 94-Place, Plastic



Molded in polypropylene, this non-corrosive pipette stand holds up to 94 pipettes and can be rotated for convenient selection of any pipette. Central vertical axis measures 19" in height. The lower rotating disc measures 9" in diameter and has four concentric troughs that align with the upper disc. This stand can be easily disassembled and reassembled.

Item No.	Description	Quantity per pack
79103	Pipette Stand, Rotary, 94-Place	1

Pipette Stand, Vertical, 28-Place, Plastic

Polypropylene, non-corrosive pipette stand can hold up to 28 pipettes. The heavy base is 9" in diameter and the polypropylene coated square rod is 15" high. The top disc has holes for supporting the pipettes while the lower disc has pilot holes where pipette tips rest and liquids can drain down to the base. Distance between the discs can be adjusted to accommodate various pipette lengths.

Item No.	Description	Quantity per pack
79102	Pipette Stand, Vertical, 28-Place	1



Pipette Stand, Horizontal, 12-Place, Plastic



Polypropylene pipette stand can hold up to 12 pipettes in a horizontal position. Autoclavable. Stand is constructed with three polypropylene coated metal rods for extra weight and stability. Can be easily disassembled and reassembled.

Item No.	Description	Quantity per pack
79101	Pipette Stand, Horizontal, 12-Place	6

Instrument Trays, PP

Handy for storage and sterilization of instruments, these durable polypropylene trays include covers that fit snugly into grooves molded into the trays. Available in two sizes: the smaller size can be used to sterilize small instruments, and the large size allows pipettes to be fully immersed in disinfectant before sterilization. Autoclavable.

Item No.	Description	Quantity per pack
81736	Instrument Tray, 22cm x 15cm x 7cm	2
81737	Instrument Tray, 45cm x 15cm x 7cm	2

NEW



Safety Goggles Box, Acrylic

Store goggles, glasses, or other small lab products using this clear box. It can be used on a desktop or can be mounted on a wall. Includes a lid to keep the box free of dust or contamination. Available in two sizes.

Item No.	L x W x H (cm)	Size	Quantity per pack
P70106	23 x 16 x 18	Small	1
P70107	23 x 16 x 25	Large	1



NEW

Parafilm M® Dispenser, Acrylic

NEW



Durable acrylic dispenser is ideal for storing, dispensing and cutting Parafilm M® tape and labels. Holds two-inch or four-inch rolls and includes a sharp, serrated blade for easy cutting. Lid opens for quick loading of rolls. Parafilm M not included.

Item No.	Capacity (inch)	L x W x H (mm)	Quantity per pack
P70401	2 and 4	180 x 120 x 160	1

Test Tube Baskets, PP

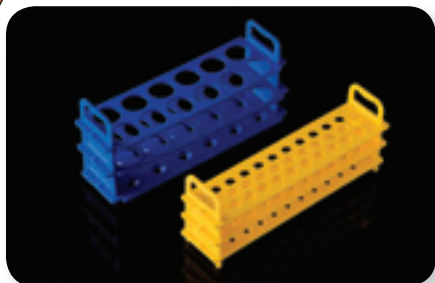
These test tube baskets are made of polypropylene. Autoclavable, unbreakable and non-corrosive baskets are ideal for rinsing and draining glassware. They are also useful for storage of test tubes or culture tubes during sterilization or incubation.

Item No.	Description	Quantity per pack
78101	Test Tube Basket, 140 x 120 x 110mm	6
78102	Test Tube Basket, 160 x 160 x 160mm	6



Test Tube Rack, PC

NEW

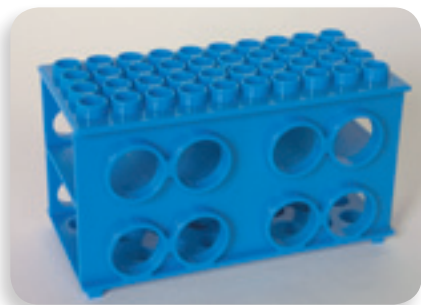


Polycarbonate racks feature ergonomic design for easy handling. Provides good chemical resistance. Autoclavable and withstands temperatures from -135° to 135°C. Includes molded-in numbers and letters for easy identification of test tubes.

Additional sizes are available. Please call for details.

Item No.	Tubes (mm)	Places	Color	L x W x H (mm)	Qty per pack
P20708B	16	31	Blue	275 x 65 x 110	4
P20708W	16	31	White	275 x 65 x 110	4
P20708Y	16	31	Yellow	275 x 65 x 110	4

Test Tube Rack, Cube, PP



A sturdy one-piece molded polypropylene rack. All four sides can be used interchangeably for 12mm through 25mm diameter tubes. Rack features a total of 88 spaces on its four sides.

Tube Diameter	Number per unit
50ml Tubes	8
20ml Tubes	20
15ml Tubes	24
12ml Tubes	40

Item No.	Description
76001	Plastic Test Tube Rack, Cube

Test Tube Rack Set, Glass Tubes

This set contains twelve 24ml glass test tubes with rubber stoppers, and a brightly colored two tiered test tube stand.

Item No.	Description
TTRSET	Test Tube Rack with 24ml Glass Tubes and Rubber Stoppers



Test Tube Rack Set, Plastic Tubes

This set contains twelve 15ml screw top graduated plastic tubes and a brightly colored two tiered test tube stand.

Item No.	Description
TTRSET-P	Test Tube Rack with 15ml Plastic Tubes



Test Tube Rack, Plastic, 6-Tube, Unassembled

This polyethylene rack will hold six test tubes, and has six drying pins. Sides are fully open for clear viewing. Rack has six 25mm holes and requires assembly.

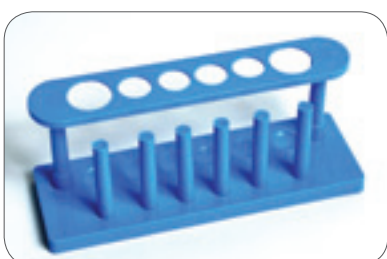
Item No.	Description
TTHP02	Test Tube Rack, Plastic, 6-Tube, Unassembled



Test Tube Rack, Plastic, 6-Tube

This polyethylene rack will hold six test tubes, and has six drying pins. Sides are fully open for clear viewing. Rack has two 30mm and four 20mm holes, and is pre-assembled.

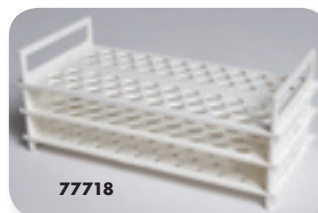
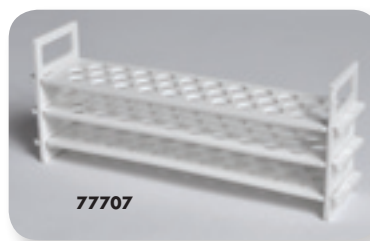
Item No.	Description
TTHP01	Test Tube Rack, Plastic, 6-Tube



Test Tube Rack, PP, 3-Tier

Polypropylene racks with a three-tier design provide a clear view of the tube contents and convenient insertion and removal of tubes.

Item No.	For tubes up to / No. of places	Quantity per pack
77706	13mm / 31 tubes	2
77707	16mm / 31 tubes	2
77708	20mm / 20 tubes	2
77709	25mm / 12 tubes	2
77710	25mm / 18 tubes	2
77711	32mm / 12 tubes	2
77712	25mm / 36 tubes	2
77714	13mm / 18 tubes	4
77715	15mm / 18 tubes	4
77716	18mm / 12 tubes	4
77717	13mm / 62 tubes	2
77718	16mm / 62 tubes	2
77719	20mm / 40 tubes	2



Test Tube Racks, PP, Wet/Dry



Economical yet very durable racks that are submersible, autoclavable, and easily stack when empty. Made from a special blend of polypropylene (PP) that makes them sink in a water bath and maintain their stability even in agitated water. The top tier features an alphanumeric grid reference. Available in white, but can be special ordered in various colors.

Item No.	For tubes up to / No. of places	Quantity per pack
77901	13mm / 90 tubes	6
77902	16mm / 60 tubes	6
77903	20mm / 40 tubes	6
77904	25mm / 24 tubes	6
77905	30mm / 21 tubes	6

Test Tube Rack, PP, 12-Tube, Unassembled

Sturdy polypropylene plastic rack will hold 12 test tubes up to 25mm in diameter. Easy to assemble, and chemical resistant.

Item No.	Description
TTHPO3	Test Tube Rack, PP, 12-Tube, Unassembled



NEW

Test Tube Racks, PP, One-Piece



One-piece molded racks have a three-tier grid design. Polypropylene construction provides good chemical and thermal resistance. Autoclavable. Racks feature a 3/4" x 2-3/4" labeling area on two sides. Open design allows easy viewing of contents from all sides.

Available in sizes that hold 13mm or 16mm tubes. Both racks feature a 6 x 6 array of holes.

Item No.	For tubes up to / No. of places	Quantity per pack
77906	13mm / 36 tubes	4
77907	16mm / 36 tubes	4

Test Tube Rack, Wooden, 6-Tube



Six 25mm holes, six drying pins, with a 1/2" thick base. Solid hardwood construction. Polished to minimize damage from spills.

Item No.	Description
TTHW01	Test Tube Rack, Wooden, 6-Tube

Test Tube Rack, Wooden, 12-Tube

Twelve 25mm holes, twelve drying pins, with a 1/2" thick base. Solid hardwood construction. Polished to minimize damage from spills.

Item No.	Description
TTHW03	Test Tube Rack, Wooden, 12-Tube



Test Tube Rack, Wooden, 13-Tube



Two-tier rack with thirteen 25mm holes, and six drying pins. Solid hardwood construction. Polished to minimize damage from spills.

Item No.	Description
TTHW04	Test Tube Rack, Wooden, 13-Tube

Test Tube Rack, Wire, Epoxy-Coated

Heavy wire test tube rack includes a durable epoxy coating. Holds up to 36 tubes.

Item No.	Description
TTWE01	Test Tube Rack, Wire, Epoxy-Coated

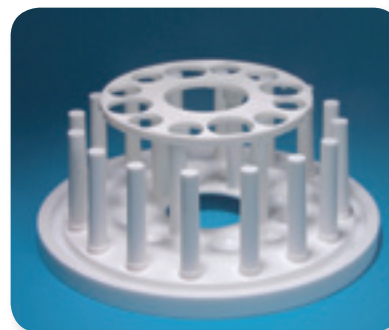
NEW



Test Tube Rack, PP, Round, 12-Tube

This circular 12 place polypropylene test tube stand has four 25mm diameter holes and eight 19mm diameter holes. The base has matching wells and 16 drying pins surrounded by a trough to catch drippings. Pre-assembled.

Item No.	Description
77704	Test Tube Rack, PP, Round, 12-Tube



Test Tube Rack, Plastic, Round, 24-Tube



Good quality round test tube rack will hold 24 tubes up to 20mm in diameter. Solid high-impact plastic construction. Rack is 145mm in diameter and 70mm high, and features a perforated bottom. Shipped preassembled.

Item No.	Description
TTHP05	Test Tube Rack, Plastic, Round, 24-Tube

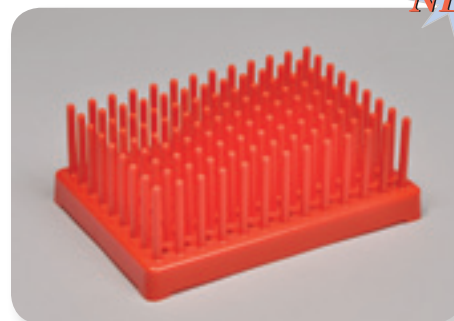
Test Tube Drying Racks, PP

These polypropylene racks can conveniently hold inverted tubes for drying and to minimize collection of airborne contaminants. Racks can also be used to hold and dry electrophoresis and chromatography plates. Autoclavable.

The 96 place rack features an 8 x 12 array of pegs that hold tubes up to 13mm in diameter. The 50 place rack features a 5 x 10 array of pegs that hold tubes up to 16mm in diameter.

Item No.	Description	Quantity per pack
77851	96 places for up to 13mm tubes	6
77852	50 places for up to 16mm tubes	6

NEW



Drying / Draining Rack



The ABS plastic draining rack provides an excellent option for post-wash draining of tubes and bottles. Rack stands 20" tall x 14" wide. The back plate has 20 holes into which 5" pegs are tightened with the help of screw-nuts. Also includes two holes so the rack can be mounted on a wall. The bottom of the rack features a wastewater tray and drain.

Item No.	Description	Quantity per pack
81741	Drying / Draining Rack, 20 Place	1

NEW

Laboratory Scoops, PP



These sturdy polypropylene scoops are available in a variety of sizes and as a complete set of 7 scoops. Capacities are molded into the top of each scoop for easy reference. The PP material is autoclavable and will not rust or corrode.

Item No.	Capacity (ml)	Quantity per pack
81253	10	12
81254	25	12
81255	50	12
81256	100	12
81257	250	12
81258	500	6
81259	1000	6
81260	Set of 7 Scoops	

Laboratory Scoops with Handles, Stainless Steel

These laboratory scoops are made from high quality stainless steel and are available in two sizes: 5 oz. and 52 oz.

Item No.	Description
SCPSM05	Laboratory Scoop with Handle, Stainless Steel, 5 oz.
SCPLG52	Laboratory Scoop with Handle, Stainless Steel, 52 oz.



SCPSM05



SCPLG52

Laboratory Scoop, Stainless Steel



Stainless steel scoop with one pointed end for handling small amount of chemicals. Length 6-1/2" (16.5cm). Also available with 5" long hardwood handle.

Item No.	Description
LSCSS6	Laboratory Scoop, Stainless Steel
LSHND1	Hardwood Handle for Laboratory Scoop
LSCSET	Laboratory Scoop and Hardwood Handle Set

Spatulas, Stainless Steel with Wooden Handles

Flexible stainless steel blade with rounded end, mounted in a polished wood handle.

Item No.	Description
SSSW03	Spatula with Wooden Handle, 3" Blade
SSSW04	Spatula with Wooden Handle, 4" Blade
SSSW05	Spatula with Wooden Handle, 5" Blade
SSSW06	Spatula with Wooden Handle, 6" Blade
SSSW08	Spatula with Wooden Handle, 8" Blade



Spatulas, Set of 6

Set of six of our most popular spoons and spatulas for the laboratory. Includes one each: SSSW04 (4" blade stainless steel spatula mounted on a hardwood handle), 81301 (6" polypropylene spatula, one end flat, one end spoon), SSFB06 (6" stainless steel spatula, one end bent, one end flat), SSSP06 (6" stainless steel spatula, one end flat, one end spoon), SSSS06 (6" stainless steel spatula, both ends flat), and SSFT06 (6" stainless steel spatula, one end flat, one end tapered).

Item No.	Description
SPATST6	Spatulas, Set of 6



Spatulas, Stainless Steel

Stainless steel spatulas, available in various styles and sizes.



Nickel spatulas are also available.
Please call for details.

Item No.	Description
SSFB04	Spatula, 4" (10cm) long, one end flat, one end bent
SSFB06	Spatula, 6" (15cm) long, one end flat, one end bent
SSFB08	Spatula, 8" (20cm) long, one end flat, one end bent
SSFF05	Spatula, 5" (12.5cm) long, both ends flat
SSFT06	Spatula, 6" (15cm) long, one end flat, one end tapered

Spatulas, Stainless Steel, Both Ends Flat

Stainless steel spatulas with both ends flat.

Item No.	Description
SSSS04	Spatula, Both Ends Flat, 4" (10cm) long
SSSS06	Spatula, Both Ends Flat, 6" (15cm) long
SSSS08	Spatula, Both Ends Flat, 8" (20cm) long



Spatulas, Stainless Steel, Flat and Spoon

Stainless steel spatulas with one flat end and one spoon end.



Item No.	Description
SSSP04	Spatula, One Flat End, One Spoon End, 4" (10cm) long
SSSP06	Spatula, One Flat End, One Spoon End, 6" (15cm) long
SSSP08	Spatula, One Flat End, One Spoon End, 8" (20cm) long

Spatulas, PP, Flat and Spoon



Molded in polypropylene, spatulas feature a spoon on one side. Available in 6" or 8" lengths.

Item No.	Description	Quantity per pack
81301	Spatula, PP, Flat and Spoon, 6" long	12
81302	Spatula, PP, Flat and Spoon, 8" long	12

Plastic Policeman / Spatula

Multi-purpose tool made from polypropylene can be used as a stirrer or spatula. Measures 9.5" long with a diameter of 1/4".

Item No.	Description	Quantity per pack
81411	Plastic Policeman / Spatula	12



Spatula, Porcelain

NEW



Glazed porcelain spatula, with one long flat end, features a knob on the other end for easy grip. Measures 20cm (8") long.

Item No.	Description	Quantity per pack
JST001	Spatula, Porcelain	1

Spatulas with Spoons, Porcelain

Glazed porcelain spatula with one flat end and one spoon end.

Item No.	Length (mm)	Capacity (ml)	Quantity per pack
JSS001	100	0.1	1
JSS003	125	0.3	1
JSS005	165	0.5	1
JSS010	198	1.2	1
JSS060	260	5.5	1

NEW



Micro Spatula, Stainless Steel



Stainless steel micro spatula, 21cm (8.25") long, one end flat and one end pointed.

Item No.	Description
SSFT08	Micro Spatula, Stainless Steel

Micro Spoon, Stainless Steel with Plastic Handle

Stainless steel micro spoon has an overall length of 16.5cm (6.5"), with one end round and one end plastic-coated for easy grip.

Item No.	Description
SSPP07	Micro Spoon, Stainless Steel with Plastic Handle



Micro Spoon, Stainless Steel



Stainless steel micro spoon has an overall length of 23.5cm (9.25"), with one end spoon and one end flat.

Item No.	Description
SSFS09	Micro Spoon, Stainless Steel

Spot Plate, 12 Cavity, Plastic

These economical white polystyrene plates have 12 depressions and are suitable for most applications where glass or porcelain plates are used. They are not recommended for strong solvents such as acetone or xylene. Each plate measures 112 x 92mm. Sold as a pack of 12.



Item No.	Description	Quantity per pack
SPPL12	Spot Plate, 12 Cavity, Plastic	12

Spot Plates, Porcelain

NEW



Color-reaction or spot plates, glazed except for bottom surface.

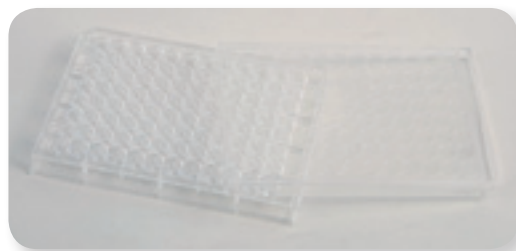
Item No.	Number of Wells	Length (mm)	Width (mm)	Quantity per pack
JSC003	3	90	29	1
JSC006	6	94	62	1
JSC012	12	115	88	1
JSC030	30	177	137	1

Well Plates, Clear Plastic

Clear polystyrene plate features deep uniform wells and include lids. Each well has an alpha-numeric marking. Non-sterile plates are individually wrapped in a plastic bag.

The 24-well plate measures 5" long x 3-1/4" wide x 7/8" high. Flat-bottomed wells are 5/8" deep and approximately 10mm in diameter.

The 96-well plate measures 5" long x 3-1/4" wide x 5/8" high. U-bottomed wells are 7/16" deep and approximately 6mm in diameter.



F1003-U

Item No.	Description	Quantity per pack
F1004	Well Plate, 24 Wells	10
F1003-U	Well Plate, 96 Wells	10

NEW



Streak Plate, Porcelain

Porcelain streak plate, unglazed, for use in hardness testing of rocks and minerals.

Item No.	Length	Width	Thickness	Quantity per pack
JSP001	2.5"	2"	1/8"	1

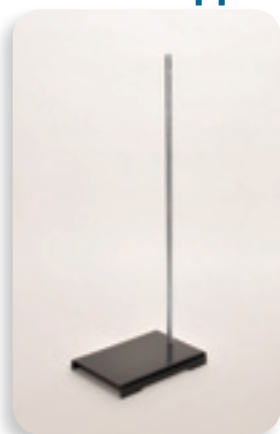
Streak Plates, Glass

Designed for use in hardness testing of rocks and minerals, these 1/4" thick glass streak plates are sold as packs of 10.

Item No.	Length	Width	Thickness	Quantity per pack
GLP1X2-P	2"	1"	1/4"	10
GLP2X2-S	2"	2"	1/4"	10
GLP3X2-P	3"	2"	1/4"	10



Support Stands with Rods, Stamped Steel



Stamped steel bases, with black enamel finish. Includes a removable, zinc-plated steel rod. Bases and Rods are also available individually.

Item No.	Base Size	Rod Length	Rod Diameter
SSB4X6	4" x 6"	18"	5/16"
SSB5X8	5" x 8"	20"	3/8"
SSB6X9	6" x 9"	24"	1/2"
SSB6X1	6" x 11"	36"	1/2"

Heavy Support Stands with Rods, Stamped Steel

Heavy stamped steel bases with black enamel finish feature an added steel plate on the back, which makes them about 50% heavier than regular stamped steel bases. The steel plate also facilitates a sturdier threading of the rod into the base.

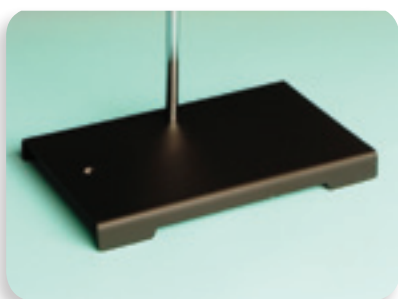
Includes a removable, zinc-plated steel rod. Bases and Rods are also available individually.

Item No.	Base Size	Rod Length	Rod Diameter
SSB4X6-H	4" x 6"	18"	5/16"
SSB5X8-H	5" x 8"	20"	3/8"
SSB6X9-H	6" x 9"	24"	1/2"
SSB6X1-H	6" x 11"	36"	1/2"



Heavy support stand includes a reinforcing steel plate that provides extra weight.

Two-Hole Support Stands with Rods, Stamped Steel



Stamped steel bases with black enamel finish feature 2 tapped holes. Hole at center of the shorter side is for standard ring stand use. Hole at center of the longer side is for applications such as titrations, specific gravity determinations, etc.

Includes a removable, zinc-plated steel rod. Bases and Rods are also available individually.

Item No.	Base Size	Rod Length	Rod Diameter
SSB4X6-H2	4" x 6"	18"	5/16"
SSB5X8-H2	5" x 8"	20"	3/8"
SSB6X9-H2	6" x 9"	24"	1/2"
SSB6X1-H2	6" x 11"	36"	1/2"

Support Stands with Rods, Cast Iron

Heavy cast iron bases with black enamel finish. Includes a removable, zinc-plated steel rod.

Item No.	Base Size	Rod Length	Rod Diameter
SSB4X6-CI	4" x 6"	18"	5/16"
SSB5X8-CI	5" x 8"	20"	3/8"
SSB6X9-CI	6" x 9"	24"	1/2"
SSB6X1-CI	6" x 11"	36"	1/2"



Support Stand and Ring Sets

Each set contains a stamped steel base and a zinc-plated steel rod, along with 2, 3, 4, or 5 cast iron rings with clamps.

Item No.	Base Size	Rod Length	Rod Diameter	Ring Size
SET462	4" x 6"	18"	5/16"	3", 4"
SET583	5" x 8"	20"	3/8"	3", 4", 5"
SET694	6" x 9"	24"	1/2"	3", 4", 5", 6"
SET615	6" x 11"	36"	1/2"	2", 3", 4", 5", 6"



Triangular Support Stands with Rods, Cast Iron



Heavy cast-iron triangular bases, with black enamel finish. Includes a removable, zinc-plated steel rod.

Item No.	Base Size	Rod Length	Rod Diameter
TSR318	3"	18"	5/16"
TSR420	4"	20"	3/8"
TSR524	5"	24"	1/2"
TSR636	6"	36"	1/2"

Tripod Stands, Cast Iron

Cast iron ring with black enamel finish. Detachable zinc plated legs are interchangeable for use with various sizes of rings. Rings and legs are also available individually.

Item No.	Ring O.D.	Height
TRS3X6	3.5"	6"
TRS3X9	3.5"	9"
TRS5X8-S	5"	9"
TRS5X8	5"	8"
TRS6X9	6"	9"



Tripod Stands with Concentric Rings, Cast Iron



Removable concentric rings provide an adjustable worksurface for various applications. Cast iron ring with black enamel finish. Detachable zinc plated legs are interchangeable for use with various sizes of rings. Rings and legs are also available individually.

Item No.	Ring O.D.	Height
TCR6X9	3.5", 4.75", 6.5"	9"
TCR8X9	3.5", 4.75", 6.5", 8"	9"

A-Base and Rod, Cast Iron



The A-shaped base is made of rugged, cast iron and is designed for extra stability. It has 8" long legs with a black enamel finish. The 5" to 7-1/2" opening between the legs is designed for positioning items near the support rod. Includes a removable, zinc-plated steel rod that is 24" long and 1/2" in diameter.

Item No.	Description
SBA724	A-Base and Rod, Cast Iron

Support Rings, Cast Iron

Cast iron, zinc-plated support ring with boss-head clamp and thumbscrew. Distance from support to center of ring is 4-1/2" for all sizes.

Item No.	Description	Quantity per pack
SRCI02	Cast Iron Support Ring, 2" Diameter	5
SRCI03	Cast Iron Support Ring, 3" Diameter	5
SRCI04	Cast Iron Support Ring, 4" Diameter	5
SRCI05	Cast Iron Support Ring, 5" Diameter	5
SRCI06	Cast Iron Support Ring, 6" Diameter	5
SRCI07	Cast Iron Support Ring, 7" Diameter	5



Support Rings, Steel Rod



Steel rod, zinc-plated support ring with attached boss-head clamp and thumbscrew. Distance from support to center of ring is 4-1/2" for all sizes.

Item No.	Description	Quantity per pack
SRSR02	Steel Rod Support Ring, 2" Diameter	5
SRSR03	Steel Rod Support Ring, 3" Diameter	5
SRSR04	Steel Rod Support Ring, 4" Diameter	5
SRSR05	Steel Rod Support Ring, 5" Diameter	5
SRSR06	Steel Rod Support Ring, 6" Diameter	5
SRSR07	Steel Rod Support Ring, 7" Diameter	5

Extension Support Rings

Steel rod, zinc-plated extension support rings. Rod diameter 5/16", overall length 12" for all sizes.

Item No.	Ring Diameter	Quantity per pack
SRSE02	Extension Support Ring, 2" Diameter	1
SRSE03	Extension Support Ring, 3" Diameter	1
SRSE04	Extension Support Ring, 4" Diameter	1
SRSE05	Extension Support Ring, 5" Diameter	1
SRSE06	Extension Support Ring, 6" Diameter	1



Laboratory Jack

Laboratory support jack is constructed of chemically resistant anodized aluminum and stainless steel. The scissor jack design enables height adjustment with a simple turn of the knob. Sturdy design can support loads up to 100 pounds.

Lab jack platform measures 4.5" x 5.5". Platform height can be vertically adjusted from closed position of 2.75" up to 10.5".

Item No.	Description
LBJK01	Laboratory Jack



Laboratory Jack with Platform and Rod



Laboratory support jack is constructed of chemically resistant anodized aluminum and stainless steel. The scissor jack design enables height adjustment with a simple turn of the knob. Sturdy design can support loads up to 100 pounds.

Lab jack platform measures 4.5" x 5.5". Platform height can be vertically adjusted from closed position of 2.75" up to 10.5".

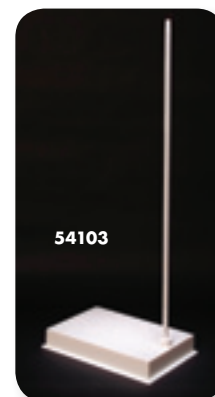
Set includes a removable 8" x 8" platform that attaches to the lab jack using the included 18" long, 1/2" diameter support rod.

Item No.	Description
LBJSET	Laboratory Jack with Platform and Rod

Support Stands with Rods, Plastic

Molded polystyrene support stands are ideal for use in applications that require non-corrosive worksurfaces. Heavy, weighted base provides stability similar to metal versions. The removable steel rod is coated with polypropylene to make it non-corrosive.

Item No.	Base Size	Rod Length	Rod Diameter
54101	6" x 9" with side hole	30"	1/2"
54102	8" x 12" with center hole	30"	1/2"
54103	8" x 12" with side hole	30"	1/2"



Alcohol Burner Stand

Made of steel wire, zinc plated. Stand has a heavy wire gauze top. Overall height is 5", to accommodate all sizes of burners. Also available with a ceramic center on wire gauze top.



Item No.	Description
ABSP05	Alcohol Burner Stand
ABSC05	Alcohol Burner Stand, with Ceramic Center

Two-Way Burner Stand

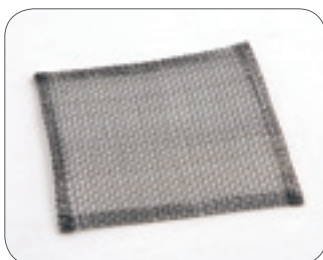
This stand is ideal for use with alcohol burners. The base is made from 3/16" stainless steel rod, with a plated steel mesh top. The stand can be used in either high (5") or low (4") position.

Item No.	Description
ABHL01	Two-Way Burner Stand



Wire Gauze, Plain

Iron wire gauze (24 SWG/10 Mesh) with folded edges. Sold as packs of 10.

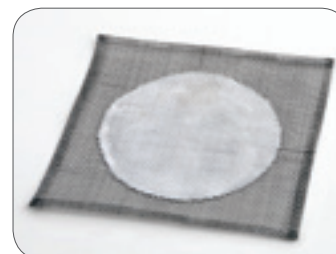


Item No.	Description	Quantity per pack
WGPL44	Wire Gauze, Plain, 4" x 4"	10
WGPL55	Wire Gauze, Plain, 5" x 5"	10
WGPL66	Wire Gauze, Plain, 6" x 6"	10

Wire Gauze with Ceramic Center

Iron wire gauze (24 SWG/10 Mesh) with ceramic coating at the center and folded edges. Contains no asbestos. Sold as packs of 10.

Item No.	Description	Quantity per pack
WGCC44	Wire Gauze with Ceramic Center, 4" x 4"	10
WGCC55	Wire Gauze with Ceramic Center, 5" x 5"	10
WGCC66	Wire Gauze with Ceramic Center, 6" x 6"	10



Clay Pipe Triangle

Good quality clay pipe mounted on heavy gauge twisted galvanized steel wire.



Item No.	Description
CPT015	Clay Pipe Triangle, 1.5" Side Length
CPT020	Clay Pipe Triangle, 2.0" Side Length
CPT025	Clay Pipe Triangle, 2.5" Side Length
CPT030	Clay Pipe Triangle, 3.0" Side Length

Glass Stirring Rods

Stirring rods are made of soft flint glass, with both ends fire-polished and rounded.

Item No.	Length / Diameter	Quantity per pack	Quantity per case
GSR005	5" / 3mm	12	144
GSR006	6" / 5mm	12	144
GSR008	8" / 5mm	12	144
GSR010	10" / 6mm	12	144
GSR012	12" / 10mm	12	144
GSR015	15" / 6mm	12	144



Glass Stirring Rods with Rubber Policeman



Rubber policeman attached to glass rod facilitates scraping and mixing. Stirring rods are made of soft flint glass, with both ends fire-polished and rounded. Policemen are made of natural rubber. Pre-assembled.

Item No.	Length / Diameter	Quantity per pack
GRPL05	5" / 3mm	12
GRPL06	6" / 5mm	12
GRPL08	8" / 5mm	12
GRPL10	10" / 6mm	12
GRPL12	12" / 10mm	12

Rubber Policeman

Made of natural rubber. Ideal for scraping and mixing applications in the laboratory. Sold as a pack of 12.

Item No.	Description	Quantity per pack
RHGSR1	Rubber Policeman, fits 5mm and 6mm diameter rods	12
RHGSR2	Rubber Policeman, fits 10mm diameter rods	12



Plastic Stirring Rods

Stirring rods made of polypropylene, with both ends rounded.



Item No.	Length / Diameter	Quantity per pack
81401	10" / 10mm	12
81405	8" / 7mm	12
81406	10" / 7mm	12
81407	12" / 7mm	12

Rubber Stoppers



Rubber stoppers are packaged in convenient one-pound bags.

These black stoppers are made of solid natural rubber that stays pliable over a long period of time. Ideal for use with nonaggressive or concentrated solutions. Low sulfur content. Withstand temperatures from -13 to 158°F (-25 to 70°C).

Available in solid, one-hole, and two-hole versions. Each stopper has its size marked in raised figures. Sold as one-pound bags.

Item No. Solid	Item No. One-Hole	Item No. Two-Hole	Stopper Size	Approx. No. per Lb.	Hole Size
RST000-S	RST000-H	NA	000	170	NA
RST00-S	RST00-H	NA	00	90	3mm
RST0-S	RST0-H	RST0-H2	0	63	3mm
RST1-S	RST1-H	RST1-H2	1	52	4mm
RST2-S	RST2-H	RST2-H2	2	45	5mm
RST3-S	RST3-H	RST3-H2	3	33	5mm
RST4-S	RST4-H	RST4-H2	4	28	5mm
RST5-S	RST5-H	RST5-H2	5	24	5mm
RST5A-S	RST5A-H	RST5A-H2	5½	21	5mm
RST6-S	RST6-H	RST6-H2	6	18	5mm
RST6A-S	RST6A-H	RST6A-H2	6½	16	5mm
RST7-S	RST7-H	RST7-H2	7	13	5mm
RST8-S	RST8-H	RST8-H2	8	10	5mm
RST9-S	RST9-H	RST9-H2	9	9	5mm
RST10-S	RST10-H	RST10-H2	10	7	5mm
RST10A-S	RST10A-H	RST10A-H2	10½	7	5mm
RST11-S	RST11-H	RST11-H2	11	6	5mm
RST11A-S	RST11A-H	RST11A-H2	11½	6	5mm
RST13-S	RST13-H	RST13-H2	13	4	5mm
RST14-S	RST14-H	RST14-H2	14	1	5mm
RST15-S	RST15-H	RST15-H2	15	1	5mm
RST16-S	RST16-H	RST16-H2	16	1	5mm

Neoprene Stoppers

Neoprene stoppers can be used in areas where rubber would be attacked by reagents or solvents. Synthetic neoprene stoppers have good resiliency and shelf-life. They withstand petroleum products and oils as well as most inorganic acids and bases. Stoppers are green for easy identification. Sold by the pound.

NEW



Item No. Solid	Stopper Size	Approx. No. per Lb.
NST000-S	000	160
NST00-S	00	95
NST0-S	0	68
NST1-S	1	57
NST2-S	2	48
NST3-S	3	35
NST4-S	4	30
NST5-S	5	25
NST5A-S	5½	21
NST6-S	6	19
NST6A-S	6½	16
NST7-S	7	14
NST8-S	8	12
NST9-S	9	10
NST10-S	10	8
NST10A-S	10½	7
NST11-S	11	6
NST11A-S	11½	6
NST13-S	13	4

Rubber Stopper Assortments

These black stoppers are made of solid natural rubber that stays pliable over a long period of time. Ideal for use with nonaggressive or concentrated solutions. Low sulfur content. Withstand temperatures from -13 to 158°F (-25 to 70°C).

These convenient assortments of various sizes of rubber stoppers are sold as one-pound bags.



Item No.	Description	Sizes
RSTPK1	Rubber Stoppers, Assorted, one pound	1 to 6
RSTPK2	Rubber Stoppers, Solid, one pound	00 to 7
RSTPK3	Rubber Stoppers, 1-Hole, one pound	00 to 7
RSTPK4	Rubber Stoppers, 2-Hole, one pound	2 to 8

NEW



Cork Stoppers

These grade XXX tapered cork stoppers are an excellent choice for general laboratory use. They are effective for both liquid and solid mediums, and offer light weight, resilience and compressibility. Chemically inert and moisture resistant. Sold as packs of 100.

Item No.	Stopper Size	Length (mm)	Top Diameter (mm)	Bottom Diameter (mm)	Quantity per pack
CST000	000	13	6	4	100
CST00	00	13	8	5	100
CST0	0	13	10	7	100
CST1	1	16	11	8	100
CST2	2	17	13	9	100
CST3	3	19	14	10	100
CST4	4	20	16	11	100
CST5	5	22	17	12	100
CST6	6	24	19	13	100
CST7	7	25	21	15	100
CST8	8	27	22	17	100
CST9	9	29	24	18	100
CST10	10	31	25	20	100
CST11	11	31	27	21	100
CST12	12	31	29	22	100
CST13	13	31	30	24	100
CST14	14	31	32	25	100
CST15	15	31	33	27	100
CST16	16	38	35	27	100
CST17	17	38	36	30	100
CST18	18	38	38	31	100
CST19	19	38	40	33	100
CST20	20	38	41	34	100

Cork Borer Sets

Good quality plated brass cork borers with solid brass handles, except for set of 3 which includes plastic handles.

Item No.	Description
CBST03	Cork Borers, Set of 3
CBST06	Cork Borers, Set of 6
CBST09	Cork Borers, Set of 9
CBST12	Cork Borers, Set of 12



NEW

Test Tube, Polystyrene with Cap



This 13 x 100mm polystyrene test tube has a capacity of 7ml. Tube features a round bottom and includes a hollow top plug cap made of polypropylene. Sold as a pack of 100 tubes.

Item No.	Description
TPSC131	Test Tube, Polystyrene with Cap, pack of 100

Test Tube, Polypropylene

This 12 x 75mm polypropylene test tube has a capacity of 5ml. Tube features a round bottom and is autoclavable. Sold as a pack of 100 tubes.

Item No.	Description
TPP1275	Test Tube, Polypropylene, pack of 100



NEW

Test Tube Brushes, Natural Bristles



Good quality natural bristles, mounted in twisted heavy gauge galvanized wire. All brushes feature a radial top.

Additional sizes are available. Please call for details.

Item No.	Brush Length	Brush Diameter	Overall Length	Quantity per pack
TTBN01	3"	1/2"	8"	12
TTBN02	3"	3/4"	8"	12
TTBN03	3"	1"	9"	12
TTBN04	4"	1-1/2"	11"	12

Test Tube Brushes, Nylon Bristles

Good quality nylon bristles, mounted in twisted heavy gauge galvanized wire. All brushes feature a radial top.

Additional sizes are available. Please call for details.

Item No.	Brush Length	Brush Diameter	Overall Length	Quantity per pack
TTBRB1	3"	1/2"	8"	12
TTBRB2	3"	3/4"	8"	12
TTBRB3	3"	1"	9"	12
TTBRB4	4"	1-1/2"	11"	12



Test Tubes with Rim, Borosilicate Glass

Pre-cleaned borosilicate glass test tubes with rims. Tubes can be used for hot or cold applications, are reusable, and can be autoclaved.

Item No.	O.D. x Length (mm)	Capacity (ml)	Quantity per pack	Quantity per case
TT9800-A	10 x 75	3	72	720
TT9800-B	12 x 75	5	72	720
TT9800-C	12 x 100	8	72	720
TT9800-D	15 x 125	15	72	720
TT9800-E	15 x 150	17	72	720
TT9800-L	16 x 100	14	72	720
TT9800-M	16 x 125	16	72	720
TT9800-F	18 x 150	24	72	720
TT9800-N	20 x 150	36	72	720
TT9800-G	25 x 100	37	72	720
TT9800-H	25 x 150	60	72	288
TT9800-I	25 x 200	75	48	192
TT9800-J	32 x 200	125	50	50
TT9800-K	38 x 200	175	50	50



Test Tubes without Rim, Borosilicate Glass

Pre-cleaned borosilicate glass test tubes without rims. Tubes can be used for hot or cold applications, are reusable, and can be autoclaved.



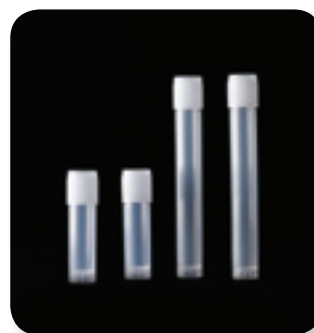
Item No.	O.D. x Length (mm)	Capacity (ml)	Quantity per pack	Quantity per case
TT9820-A	10 x 75	3	72	720
TT9820-B	12 x 75	5	72	720
TT9820-C	12 x 100	8	72	720
TT9820-D	15 x 125	15	72	720
TT9820-E	15 x 150	17	72	720
TT9820-F	16 x 100	14	72	720
TT9820-G	18 x 150	24	72	720
TT9820-H	25 x 100	37	72	720
TT9820-I	25 x 150	60	72	288
TT9820-J	25 x 200	75	48	192
TT9820-K	32 x 200	125	50	50
TT9820-L	38 x 200	175	50	50

Storage Vial, PP

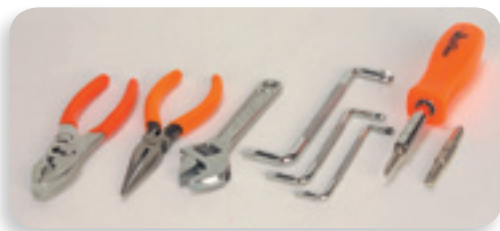
Storage vials are designed for use with samples from -80° to 121°C. DNase, RNase, and Pyrogen free. Used for storage of PCR reagents, enzymes and other diagnostics, biochemical reagents or samples.

Polypropylene vials feature a large white frosted labeling area, silk screen graduations, and a leak-proof HDPE cap.

Item No.	Capacity (ml)	Outside Diameter (mm)	Height (mm)	Quantity per pack
P60106	2.0	11.80	47.2	1000
P60107	5.0	11.80	88	1000



General Tools Kit



Consists of 6" slip joint pliers, 6.5" long nose pliers, 6" adjustable wrench, 3-piece offset screwdriver set, and a 6-in-1 screwdriver set featuring slotted bits, Phillips bits, and nut drivers.

Item No.	Description
TKIT04	General Tools Kit of 7

Wire Stripper

Quickly removes insulation without damaging wire. Set-screw adjusts stripper to fit wire gauges from 10 to 24. Made from drop-forged, heat-treated steel with black baked enamel finish. PVC handles. Total length is 4 inches.

Item No.	Description
WSTK01	Wire Stripper



Screwdriver

Slotted screwdrivers with durable plastic handle. Available in two different head sizes.



Item No.	Description
SDR001	Screwdriver, 120mm long x 2mm head
SDR002	Screwdriver, 110mm long x 4mm head

Triangular File

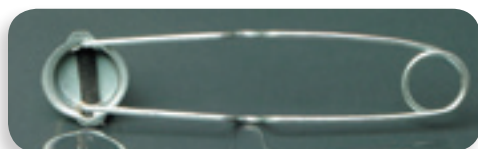
Triangular file has a tapered shape, and is mounted on a hardwood handle for easy gripping. For general laboratory use, including to score glass before cutting.

Item No.	Description	Overall Length
TRF004	4" Triangular File	7"
TRF005	5" Triangular File	8"
TRF006	6" Triangular File	9"
TRF008	8" Triangular File	11"



Gas Lighter

Hooded lighter is safe, and economical. The hood traps gas, and protects the lighting file. Replacement flints are also available.



GSLT01



GSFLT1-PK/5

Item No.	Description
GSLT01	Gas Lighter
GSFLT1-PK/5	Replacement flints, pack of 5

Flashlight, LED

Plastic 6" long flashlight includes long-lasting LED illumination and lanyard. Uses two AA batteries (not included). Plastic case color may vary.

Item No.	Description
FSLT02	Flashlight, LED



NEW

Ultraviolet Light

This high-quality 6", 4W handheld blacklight is ideal for forensics or illuminating fluorescent and blacklight reactive items. Also includes a built-in LED flashlight. Requires 4 AA batteries (not included).

NEW

Item No.	Description
AISUVLT1	Ultraviolet Light



Utility Tray, PP

Steam autoclavable, polypropylene molded tray can be used for sterilizing and drying labware. 5" depth makes this tray ideal for storage of labware.



Item No.	Description	Quantity per pack
81721	Utility Tray, PP, 15" x 14" x 5"	6

Laboratory Tray, PP

Multi-purpose polypropylene molded trays can be used for sterilizing, drying glassware, porcelain ware, and other laboratory supplies. These steam autoclavable trays have tapered walls designed for nesting.

Item No.	Description	Quantity per pack
81701	Laboratory Tray, PP, 18" x 14" x 3"	10
81702	Laboratory Tray, PP, 15" x 12" x 3"	10



Draining Tray, PP

This polypropylene basket with wide, net-like structure on all sides is useful for post-wash draining of laboratory apparatus. Autoclavable.



Item No.	Description	Quantity per pack
78103	Draining Tray, PP, 16" x 16" x 4"	6

Carrier Tray, PP

Steam autoclavable, polypropylene molded tray has a built-in handle for easy carrying of reagent bottles or other laboratory ware using one hand. Overall depth including the handle is 6". Trays are nestable for easy storage when empty.

Item No.	Description	Quantity per pack
81731	Carrier Tray, PP, 15" x 9.5" x 4.5"	6



Laboratory Tray, Flat, PP



Flat polypropylene trays are ideal for containing small spills, and to serve as a drip pan. Economical trays measuring 15" x 11.5" are versatile for general laboratory use. Autoclavable. Solds as packs of 10.

Item No.	Description	Quantity per pack
LTRAY1	Laboratory Tray, Flat, PP, 15" x 11.5"	10

Connectors, L-shaped, PP

Polypropylene L-shaped connectors with serrated ends are ideal for leak-proof tubing connections. Autoclavable.

Item No.	Description	Quantity per pack
46131	L-Connector, for 6mm tubing	12
46132	L-Connector, for 8mm tubing	12
46133	L-Connector, for 10mm tubing	12



NEW

Connectors, T-shaped, PP

Polypropylene T-shaped connectors with serrated ends are ideal for leak-proof tubing connections. Autoclavable.

Item No.	Description	Quantity per pack
46111	T-Connector, for 6mm tubing	12
46113	T-Connector, for 8mm tubing	12
46115	T-Connector, for 10mm tubing	12

NEW



Connectors, Y-shaped, PP

Polypropylene Y-shaped connectors with serrated ends are ideal for leak-proof tubing connections. Autoclavable.

Item No.	Description	Quantity per pack
46112	Y-Connector, for 6mm tubing	12
46114	Y-Connector, for 8mm tubing	12
46116	Y-Connector, for 10mm tubing	12



NEW

Connectors, Four-way, PP

Polypropylene cross-shaped connectors with serrated ends are ideal for leak-proof tubing connections. Autoclavable.

Item No.	Description	Quantity per pack
46121	Four-way Connector, for 6mm tubing	12
46122	Four-way Connector, for 8mm tubing	12
46123	Four-way Connector, for 10mm tubing	12

NEW



Stopcocks, PP/PTFE

These leakproof, economical polypropylene stopcocks have a PTFE plug and serrated ports that accept tubing from 6mm to 10mm in diameter. Available in 2-way and 3-way versions.

NEW



Item No.	Description
55301	Stopcock, 2-way, pk/6
55302	Stopcock, 3-way, pk/6

Rubber Tubing, General Purpose

Flexible and strong rubber available in 10' and 50' lengths. We stock red color; black is available as special order. Additional sizes as well as custom lengths are available upon request.



Item No.	Description	Bore/Thickness
RT4812-10	Rubber Tubing, Red, 10'	4.8mm/1.2mm
RT4812-50	Rubber Tubing, Red, 50'	4.8mm/1.2mm
RT6016-10	Rubber Tubing, Red, 10'	6.0mm/1.6mm
RT6016-50	Rubber Tubing, Red, 50'	6.0mm/1.6mm
RT9524-10	Rubber Tubing, Red, 10'	9.5mm/2.4mm
RT9524-50	Rubber Tubing, Red, 50'	9.5mm/2.4mm

Glass Tubing Assortment

This convenient one pound assortment of borosilicate glass tubing includes various thicknesses and wall sizes. All pieces are 12" in length.

NEW

Item No.	Description	Bore/Thickness
GBT001	Glass Tubing Assortment	Various



- A**C/DC Generator Demo Set 39
- Agate Mortar & Pestle Sets 182
- Air Source, Quiet 62
- Air Track and Accessories 62
- Alcohol Burner Stand 206
- Alligator Clips 46
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- Aneroid Barometer 72
- Aprons, Rubberized 181
- Archimedes' Principle Apparatus 69
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- Assortments & Kits 178-180
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 - Plastic Balls 60
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