

# Physical Sciences

Fisher Science Education  
2022 Product Catalog



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CORNING



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## Helpful Icons



New product



Must be shipped by truck for regulatory reasons



Meets Americans with Disabilities Act requirements



Protects against splashes from hazardous chemicals or potentially infectious materials



Applicable for remote learning

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**Address:** Fisher Science Education  
4500 Turnberry Drive  
Hanover Park, IL 60133

For international orders, see page 96.

*Products featured in this catalog may have limited availability and extended lead times. Prices are subject to change.*

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# Physical Sciences

Preparing today's students to be the innovators of tomorrow isn't always easy, but finding the right teaching tools can be. From basic lab supplies to state-of-the-art classroom technology, the Fisher Science Education team has everything you need to create a 21st century STEM learning environment. Visit [fisheredu.com](https://fisheredu.com) to get started.

## Want to customize aspects of your curriculum?

Explore custom kits to meet the unique demands of your classroom. Visit [fisheredu.com/customkitting](https://fisheredu.com/customkitting) to learn more.

## Concerned about shipping and handling fees?

We offer \$12 flat-rate shipping on most orders and our hazardous material fee is just \$15 — the lowest in the country.

## Looking for Something Else?

Check out our other 2022 catalogs:

- Chemicals
- Equipment and furniture
- Lab supplies and consumables
- Life sciences
- Safety
- STEM



When powerful waves move from deep to shallow water, they can break into a hollow barrel perfect for surfing.

Visit [fisheredu.com/headlinediscoveries](https://fisheredu.com/headlinediscoveries) for more articles and information for your classroom.

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Visit [fisheredu.com](https://fisheredu.com) to view our full offering of products.



**kemtec**<sup>™</sup>  
excite. encourage. inspire.

# Characteristics of Matter

**Meets National Standards for Grades 5-9.** Kemtec<sup>™</sup> Characteristics of Matter includes 10 experiments exploring the characteristics of matter and features reproducible student labs, reproducible assessment materials for each lab, vocabulary, and complete answer keys. Designed for 24 students working in groups of four.

**Best Seller!**



**Elevating education with hands-on, classroom-ready science kits.**

Description	Cat. No.	Price
Characteristics of Matter Kit	S06736	\$195.00

Visit [fisheredu.com/kemtec](http://fisheredu.com/kemtec) to learn more.





## Create Realistic Models

Help your students understand the structure of atoms and how sediment moves in rivers with these models.

Description	Cat. No.	Price
Lab-Aids <sup>®</sup> Atom Modeling: Structure, Valence & Bonding	<b>S98162</b>	\$231.00
Lab-Aids Engineering & Design: Modeling & Mitigating Stream Processes (Developed by SEPUP)	<b>S98181</b>	\$314.00



## Hands-On Learning Tools

Demonstrate a variety of concepts with kits, sets, and other tools from Eisco.

Description	Cat. No.	Price
Eisco™ Garage Physics Murlin Trebuchet Kit	<b>S88359</b>	\$106.00
Eisco™ Magnet Probe	<b>S15128</b>	\$27.50
Eisco™ Optical Glass Lens Set, 6 Pieces	<b>S15099</b>	\$25.00
Eisco™ Double Long Metal Pulley	<b>S15116</b>	\$10.50
Eisco™ Malvern Fly Wheel Unit	<b>S15121</b>	\$92.00
Eisco™ Heat Absorption Radiation Comparator	<b>S15122</b>	\$52.75
Eisco™ Adjustable Helmholtz Coils	<b>S15129</b>	\$179.00
Eisco™ Density Cube Set, 7 Pieces	<b>S15106</b>	\$54.00



## Prepare for Liftoff

This launch pad comes complete with blast deflector, standoff stem, two-piece 1/8 in. launch rod, and launch rod cap.

Description	Cat. No.	Price
Estes Industries LLC Porta-Pad II & Electron Beam	<b>S68262</b>	\$30.00



## Gaze at the Stars and Discover Invisible Properties

Peer at the moon, planets, and deep-sky objects with a telescope, or direct your attention to pet stains, auto leaks, and more with a UV flashlight.

Description	Cat. No.	Price
Carson™ SkySeeker™ Newtonian Reflector Telescope with Dobsonian Mount, 15x–37.5x	<b>S98152</b>	\$114.00
Carson™ UVSight PRO UV Flashlight with Carabiner Clip Attachment	<b>S81726</b>	\$15.50



## Measure and Verify

Test electronics with a digital multimeter or make basic weather observations with a mini weather station.

Description	Cat. No.	Price
United Scientific™ Digital Multimeter	<b>S111002</b>	\$8.80
United Scientific Mini Weather Station	<b>S111030</b>	\$9.70



# Engage Your Students Wherever They Are

Keep your students safe and engaged with a selection of remote learning tools and materials.

You'll find:

- Products for real-time instruction
- Activities for independent learning
- Physical distancing aids
- And more

Visit [fisheredu.com/remoteteaching](https://fisheredu.com/remoteteaching) to learn more.



# Need help choosing supplies?

Use this curated list of products to restock your chemistry classroom, and visit [fisheredu.com](http://fisheredu.com) to find even more science education products.



Description	Cat. No.	Quantity
<b>Chemicals</b>		
Fisher Science Education™ Hydrochloric Acid, ACS, 12M	S25838	2.5 L
Fisher Science Education Hydrogen Peroxide, 30% Solution	S25360	500 mL
Fisher Science Education Sulfuric Acid, Concentrated, Reagent Grade	S25894	2.5 L
<b>Equipment</b>		
Fisher Science Education Portable Balances	S94792C	Each
OHAUS™ Scout™ SKX Portable Balances	S14531	Each
OHAUS Triple Beam Balances	S40020	Each
<b>Glassware</b>		
DWK Life Sciences Kimble™ ValueWare™ Narrow-Mouth Erlenmeyer Flasks	S00144	12/Pk
PYREX™ VISTA™ Educational-Grade Cylinders	S95186C	12/Cs
Eisco™ Glass Burette with PTFE Key Stopcock	S27992	Each
DWK Life Sciences Kimble ValueWare Volumetric Flasks, Class A	S00126	6/Pk
DWK Life Sciences Kimble ValueWare Class A Volumetric Pipets	S00157	12/Cs
DWK Life Sciences Kimble ValueWare Volumetric Flasks, Class A	S00122	6/Pk
<b>Plasticware</b>		
United Scientific™ Plastic Graduated Cylinder Kit, 10 mL, 25 mL, 50 mL, 100 mL, 250 mL, 500 mL, 1000 mL	S01973	Each
Eisco Acrylic Burette	S95180A	Each
Fisher Science Education Polypropylene Beaker Set, 50 mL, 100 mL, 250 mL, 500 mL, 1000 mL	S400563B	Pack
<b>Labware</b>		
Eisco Chemistry Lab Starter Set	S23713	Each
GSC Go Science Crazy Cast Iron Support Ring Stand	S13746	Each
GSC Go Science Crazy Double Burette Clamp	S13739	Each
<b>Pipets</b>		
Edvotek™ Variable Micropipets	S90243B	Each
Thermo Scientific™ Disposable Transfer Pipets	S304671	500/Pk
Sartorius mLINE™ Pipette Multipacks	S35895	Each
<b>Tubing</b>		
Cloth-Covered Burner Tubing	S491411	Each
Supertek Scientific Rubber Tubing	S09607	Each
Fisherbrand™ Pressure/Vacuum Tubing	S50454	Each
<b>Personal Protective Equipment (PPE)</b>		
Kimberly-Clark Professional™ Kimtech™ Purple Nitrile™ Gloves	S78944	100/Pk
Fisher Scientific™ PVC Aprons	S47382A	Each
Visorgogs™ Goggles	S47619S	Each
<b>Cleaning Supplies</b>		
Fisherbrand Sparkleen™ 1 Detergent, Powder, 3.25 lb.	S701101	Each
Glassware Drying Rack	S47855	Each

## Chemistry

## General Chemistry

**Kemtec™ Chemistry Kit: Characteristics of Matter**

Explore various physical and chemical properties of matter.

- Students can observe chemical properties of five solutions by observing their reactions with other solutions
- Then determine names of two unknown solutions
- Ten experiments to explore various characteristics of matter: color, odor, solubility, shape, size, texture, density, alkalinity, acidity, states of matter, boiling point and melting point (graphing of melting and boiling points)
- Grades 5-9
- Class size: 24 students

**INCLUDES:**

Spot plates, wood stirrers, thermometers, 0.5 oz. plastic bottles with droppers and caps, blue and red litmus, pipets, ammonia solution, baking soda solution, calcium chloride solution, vinegar, washing soda solution, calcium chloride solution, calcium carbonate, sodium chloride, sucrose, sand, instructor manual, special needs guide, methods of assessment manual, SDS

**REQUIRES:**

Balance, glassware and ice.



Cat. No.	Description	Price
S06736	Characteristics of Matter	215.00/Ea

**Lab-Aids® Identification of Chemical Reactions Kit**

Conduct experiments and identify four types of chemical reactions: color changes, precipitates, gas generation, and exothermic. Involves deductive reasoning when testing 'unknowns'.

This kit will help students hone their deductive reasoning and observation interpretation skills. Students first mix seven known solutions into any of twenty-one possible combinations, using standard lab procedures. Then observe and make notations as to how the chemicals react. Some of the chemical reactions produced by the combinations are: formation of a precipitate, color change, gas generation, exothermic reaction. After recording their observations, students must decide whether a chemical reaction has taken place, and provide evidence to support their deductions. As an extension, students can write the probable chemical equation of each reaction. Accommodates 15 groups of 2 students.

**INCLUDES:**

Chemplates™ with spatula (12); drop-controlled bottles of solution one, Hydrochloric Acid, Sodium Carbonate, Sodium Hydroxide, Potassium Chromate, Calcium Chloride, Sodium Sulfite, Copper Sulfate and an unknown solution; worksheets and guides; and instructions with MSDS

**ORDERING INFORMATION:**

Class size: 50 students.

Cat. No.	Description	Price
S19421	Identification of Chemical Reactions	151.00/Ea

**Small Group Learning: Introduction To Chemical Equations**

Students will perform a series of experiments highlighting the differences in chemical reactions and use what they learn to write balanced chemical reaction equations

Chemical reactions take place all around us. Being able to identify reactions and communicate what is happening is vital to the scientific community.

- Kit will introduce two common types of chemical reactions; single replacement and double replacement.
- Contains enough materials for 5 groups
- Teacher's manual and Student Study Guide copymasters are included
- Aligned to the Next Generation Science Standards (NGSS)
- Disciplinary Core Ideas: PS1.A; PS1.B
- Performance Expectations: MS-PS1-2; MS-PS1-5; HS-PS1-1; HS-PS1-7
- Cross Cutting Concepts: Patterns; Energy and Matter
- Engineering Practices: Developing and Using Models; Analyzing and Interpreting Data

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**⚠️ ALERTS:**

**WARNING: This product can expose you to chemicals including Nickel (soluble compounds), which is known to the State of California to cause cancer, birth defects and reproductive harm.**



Cat. No.	Description	Price
S40726***	Small Group Learning: Introduction To Chemical Equations	36.25/Ea



## Small Group Learning: A Safer Flame Test – Identification Of Metal Lab



The flame test is an analytical technique often used for the identification of certain elements, primarily metal ions. The color of the flame is observed and the spectra of light emitted from the flame is viewed through a spectroscope.



- Traditionally, this test poses safety concerns for students in a laboratory setting. This kit minimizes these concerns by utilizing small candles that are easier to manage in a lab setting.
- There is no loss in the clarity of the emission spectra from the candles, making it easy for students to observe and deduce what element is causing the colored flame.
- Kit contains enough material for 5 groups
- Teacher's Manual and Student Study Guide copymasters are included
- Aligned to the Next Generation Science Standards (NGSS)
- Disciplinary Core Ideas: PS1A; PS1B
- Performance Expectations: MS-PS1-1; MS-PS1-2; HS-PS1-2; HS-PS1-4
- Cross Cutting Concepts: Patterns; Scale, Proportion and Quantity; Energy and Matter
- Engineering Practices: Developing and Using Models; Analyzing and Interpreting Data; Scientific Knowledge is Based on Empirical Evidence

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**WARNING: This product can expose you to chemicals including Methanol and Respirable crystalline silica, which are known to the State of California to cause cancer, birth defects and reproductive harm.**

Cat. No.	Description	Price
S40728***	Small Group Learning: A Safer Flame Test – Identification Of Metal Lab	36.25/Ea

## Exploring The Solubility Rules A Guided Inquiry

Students investigate to determine the basic rules of solubility and challenges students to identify patterns within the experiment and then apply that knowledge in a practical exercise.



- Students are exposed to a new experience while still attaining the same critical information.
- Aligned to the Next Generation Science Standards (NGSS)\*
- Disciplinary Core Ideas: PS1.A; PS1.B  
Performance Expectations: MS-PS1-2; HS-PS1-2
- Cross Cutting Concepts: Patterns
- Engineering Practices: Analyzing and Interpreting Data; Constructing Explanations and Designing Solutions

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Cat. No.	Description	Price
S40763	Exploring The Solubility Rules A Guided Inquiry	88.00/Ea



\* California - WARNING: Cancer [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*\* California - WARNING: Reproductive Harm [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*\*\* California - WARNING: Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## Porosity And Permeability Lab Activity

In this activity, students examine three different substrates and determine the porosity of each. After finding the volume of water each substrate can hold, students will compare substrate permeability to determine how each may affect the ability of water to move beneath the surface.



While sources of fresh water are usually associated with visible bodies of water such as lakes, rivers, ponds, and streams, the majority of fresh water on Earth is actually underground, collectively referred to as groundwater. Like fresh water found on the surface, groundwater can flow beneath the surface of the planet. Porosity and permeability are two factors that affect both how much groundwater may be found in a given area and the ability of this water to move beneath the surface as well as affect the degree in which certain environmental issues, such as water pollution, may impact different areas.

- Kit contains enough materials for 15 groups
- Teacher's Manual and Student Study Guide copymasters are included
- Aligned to the Next Generation Science Standards (NGSS)
- Disciplinary Core Ideas: ESS3.A; ESS2.A
- Performance Expectations: MS- ESS3-1; HS-ESS2-2; HS- ESS3-1
- Cross Cutting Concepts: Influence of Science, Engineering and Technology on Society and the Natural World; Stability and Change, Cause and Effect
- Engineering Practices: Constructing Explanations and Designing Solutions; Developing and Using Models
- For grades 7+

**INCLUDES:** Marble chips; Medium gravel; Coarse sand; 60 Plastic cups; 15 Nails; Modeling clay; 25 mL Food coloring

**⚠️ ALERT:**

**WARNING: This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer.**

Cat. No.	Description	Price
S40769*	Porosity And Permeability Lab Activity	54.25/Ea

## Small Group Learning: Nitrates, Phosphates and Eutrophication

Students will observe and examine the effects of nitrates, phosphates, and a combination of the two in miniature ponds.




- Students will understand the importance and value of fresh water and the need to protect and conserve this valuable resource. They will realize that a variety of factors, including natural ones, contribute to the overall problem of water pollution.
- After completing this lab, students should understand the difference between point source and non-point source pollution and understand the role of nitrates and phosphates in the process of eutrophication.
- Materials for 5 groups
- Teacher's manual and student copymasters are included
- Aligned to the Next Generation Science Standards (NGSS)
- Disciplinary Core Ideas: PS1.A; PS1.B
- Performance Expectations: MS-PS1-2; HS-PS1-3
- Cross Cutting Concepts: Patterns
- Engineering Practices: Analyzing and Interpreting Data; Planning and Carrying Out Investigations

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Cat. No.	Description	Price
S40758	Small Group Learning: Nitrates, Phosphates and Eutrophication	34.00/Ea



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 \*\*\* California - WARNING: Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



## Lab-Aids® Flame Tests and Emission Spectroscopy Kit

Observe and record colors emitted by elements upon heating, observe individual spectrum through hand held spectroscopes and explore process of spectrum analysis.



The concept of spectrum analysis is introduced with this kit as students conduct these dramatically colorful, spectroscopy experiments. Students use safe, non-flammable, water-based solutions containing a variety of salts to observe the colors that various metallic elements produce when burned. Then, the students view the flame through a spectroscope and observe the spectra of each of the elements that are visible to the human eye.

Students will learn that no two spectrum have identical colors. They will work in teams as one student uses a small bottle to spray a fine mist of each solution through a flame and a teammate observes the spectrum created. This activity's procedure is also an important step in the analysis of an unknown substance. Bunsen burners are required, but not included in the kit. Accommodates 2 classes, each with 12 groups of 2 students. Includes teacher guide, student sheets, assessment questions, SDS for all chemicals included.

### REQUIRES:

Bunsen burners

Cat. No.	Description	Price
S19457	Flame Tests and Emission Spectroscopy Kit	162.00/Ea

## Periodic Table — Nonmetals, Metals and Metalloids



Students will learn about three different categories of elements – metals, nonmetals, and metalloids. They will examine the physical properties of several elements, test the chemical reactivity of each element and classify each of the tested elements as either metal, nonmetal, or metalloid.



During the nineteenth century Russian chemist Dmitri Mendeleev began constructing a table of the elements. The work of Mendeleev allows us to understand that the periodic table of the elements is an organized classification of chemical elements based on certain properties of each element in relation to other elements.

- Kit contains enough material for 15 groups
- Teacher's Manual and Student Study Guide copymasters are included
- Aligned to the Next Generation Science Standards (NGSS)
- Disciplinary Core Ideas: PS1.A; PS1.B
- Performance Expectations: MS-PS1-2; HS-PS1-1; HS-PS1-2
- Cross Cutting Concepts: Patterns
- Engineering Practices: Analyzing and Interpreting Data; Developing and Using Models

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Cat. No.	Description	Price
S40759	Periodic Table — Nonmetals, Metals and Metalloids	48.50/Ea

## Silicate Garden Chemical Demonstration Kit

Silicate Garden Chemical Demonstration Kit allows students to grow large, plant like structures from crystals placed in a solution-filled glass jar.

- A few colored crystals are added to a clear solution in a glass jar or beaker.
- Within a few minutes large plant like structures extend from the crystals.



Cat. No.	Description	Price
S27131	Silicate Garden Chemical Demonstration Kit	41.75/Ea

## Polyurethane Foam Chemical Kit

Excellent demonstration of thermoplastic polymers.

Produce polyurethane foam with the condensation reaction of a polyisocyanate and a hydroxyl-containing material (i.e., a polyol derived from propylene oxide).

- Mix two viscous liquids to initiate a reaction
- Lightweight foam expands to 30 times the original volume of the liquids
- After about 10 minutes, the foam hardens

Perform in a fume hood and wear chemical splash goggles, apron and gloves as the chemical components are eye and skin irritants.

**INCLUDES:** Two premixed chemicals and instructions

**REQUIRES:** Plastic or paper cups and safety equipment



Cat. No.	Description	Price
S73009	Polyurethane Foam Chemical Kit	54.00/Ea

## Lab-Aids® Engineering and Design: Chemical Hand Warmers (Developed by SEPUP)

Science kit that allows students to undertake a design challenge to use specific set of materials to construct/test a chemical hand warmer.

- Students undertake a design challenge to construct and test a hand warmer device that uses the thermal energy released from an iron exothermic reaction.
- In Part One students initially observe a teacher demonstration then brainstorm and sketch several possible designs and choose one to build as a prototype and test. When testing their designs, students analyze and evaluate their results and brainstorm ideas for further modification. In Part 2, students redesign, construct, test, and evaluate hand warmers using the same reaction as in Part 1 but with an additional criterion introduced—students must consider how to control the start of the chemical reaction in their design modifications.
- Students brainstorm new designs that will allow users to start the chemical reaction when they want to use the hand warmer. These designs may be redesigns of those developed in Part 1 or may be totally new. Students discuss designs and choose one to build as a prototype. Pairs of students exchange prototypes, test, and evaluate them, then think about what modifications can help optimize their designs.
- Accommodates one class with 8 groups of 4 students.
- Performance Expectations: MS-PS1-6, MS-ETS1-3, MS-ETS1-4
- Disciplinary Core Ideas: MS-PS1.B, MS-ETS1.B, MS-ETS1.C, MS-PS3.A
- Science and Engineering Practices: Analyzing and Interpreting Data, Constructing Explanations and Designing Solutions
- Crosscutting Concepts: Energy and Matter



**Includes:**

- 20 large sealable plastic bags
- 10 small sealable plastic bags
- 10 medium sealable plastic bags
- 24 scoops (5 cc)
- 8 scoops (30 cc)
- 8 graduated cups (30 mL)
- 8 immersion thermometers
- 1 bottle each of iron filings, calcium chloride, and absorbent beads
- 32 Student Guides
- 1 Teacher's Guide
- 1 Safety Data Sheet (SDS) packet

Cat. No.	Description	Price
S27121	Chemical Hand Warmers	241.00/Ea

## A Greener Synthesis of Acetyl-Salicylic Acid Kit

A Greener Synthesis of Acetyl-Salicylic Acid Kit produces acetylsalicylic acid from a naturally occurring, renewable resource. Students will synthesize the components and examine their product with a simple confirmation test.

- This kit shows students that it is possible to produce acetylsalicylic acid from a naturally-occurring, renewable resource
- Students will convert sodium salicylate to salicylic acid, collect and dry prepared salicylic acid
- Then, they will use a quick confirmatory test to examine for the presence of salicylic acid
- The prepared salicylic acid can then be used to synthesize acetylsalicylic acid
- Kit contains enough materials for 15 groups
- Teacher's Manual and Student Study Guide copy masters are included



Cat. No.	Description	Price
S27133	A Greener Synthesis of Acetyl-Salicylic Acid Kit	64.25/Ea

## Magnesium Ribbon

High quality 99% pure Magnesium

Magnesium ribbon 25 grams, is primarily used by lighting it on fire, which creates a bright, white light, intense heat, and magnesium oxide. Use this product to explore chemical reactions. For your safety, store in a cool, dry place, keep a fire extinguisher on hand, and do not look at the flame for too long.



Cat. No.	Description	Price
S24563	Magnesium Ribbon	5.75/Ea

## Chromatographic Paper

No. 1 paper can be used for one- and two-dimensional work.

- Smooth surface
- Thickness: 0.07 in. (0.18mm)
- Medium flowrate
- Good resolution
- Suitable for general analytical separations



Cat. No.	Length	Format	Width	Quantity	Price
S47086	57 cm	Sheet	46 cm	100	418.00/Pk
S47087A	91 m	Roll	3.8 cm	11	87.00/Cs
S47087	100 m	Roll	2 cm	Each	48.75/Ea

## Eisco™ Mole Set

Helps students develop greater understanding of concept of mole, mass, molar mass, and properties of each element when they compare these four specimens side by side.

- Contains four element specimens: Copper, Iron, Zinc and Aluminium
- Each sample contains one mole,  $6.02 \times 10^{23}$  atoms of the element
- Copper  $45 \times 12.7 \times 12.7$  mm
- Iron  $46 \times 12.6 \times 12.6$  mm
- Zinc  $61 \times 12.6 \times 12.6$  mm
- Aluminum  $65 \times 12.6 \times 12.6$  mm



Cat. No.	Description	Price
S23760	Mole Set	22.50/Ea

## Lab-Aids® Design-Your-Own Custom Molecular Model Kit

Why limit your lab activities by using only standard molecular model kits? Now, you can design your own activity kits.



Design your own activity kits. This complete assortment of color coded atoms and bonds allow the flexibility to create individualized models and molecules. Just like the standard model kits, atoms are modeled in polypropylene with flexible vinyl connectors to represent the bond 'linkages.' Double and triple bonds are easily constructed. The models are easy to assemble, well constructed and come apart only when you want them to come apart. Contains an extensive assortment of 480 atoms plus 300 bonds.

**INCLUDES:** Atoms (490) and bonds (300)

Cat. No.	Description	Price
S19491	Design-Your-Own Custom Molecular Model Kit	135.00/Ea

## Eisco™ Economy Atomic Model Set

Economy Atomic Model Set can be used for modeling three-dimensional structures of organic or inorganic compounds

- Includes (30) connecting lugs and (75) colored balls in a partitioned plastic case.
- Assembly required.
- Ideal for advanced level courses
- Create three dimensional simple or complex molecular structures, organic or inorganic compounds
- Universal color code for atoms
- For teacher use or student use



**WARRANTY:** 1 year limited manufacturer warranty

Cat. No.	Description	Price
S41139	Economy Atomic Model Set	22.00/Ea



## Eisco™ Junior/Senior Economy Atomic Model Set

Suited for advance level courses.



- For modeling three-dimensional simple or complex molecular structures of organic and inorganic compounds
- With universal color code for atoms
- Set consists of 150 connecting lugs and 370 balls in different sizes and colors
- With instructions manual

Cat. No.	Description	Price
S23645	Junior/Senior Economy Atomic Model Set	82.00/Ea

## 3B Scientific™ Inorganic/Organic Student Set

Teaching tool designed for school, college or self study (private) chemistry courses.



- Model for organic structures and inorganic molecules with empirical formula representations, for example carbon dioxide, ammonia, sulphuric acid, calcium hydroxide, metal salts, copper sulphate, alkanes, alcohols, glucose and benzene
- Used to represent any element having one  $sp^3$ , one  $dsp^3$  and one  $d^2sp^3$  in addition to existing element hybridizations done by three brown atoms
- Molecular model easily assembled and reassembled
- Links provided to make single, double, and triple bonds for OPEN and short links for CLOSED models

### INCLUDES:

51 atom-parts, 6 Carbon 4-holes tetra, black, 6 Oxygen, 2-holes ang., red, 14 Hydrogen, 1-hole, white, 3 Nitrogen, 2 tetra, 1 tribipyr., blue, 3 Sulphur, 1 ang., 1 tetra, 1 octa, yellow, 1 Phosphorus, 4-holes, purple, 6 Halogen, 1-hole green, 3 Metal, 1-hole, 17mm, grey, 6 Metal, 3 ang., 2 pyr., 1 tetra, grey, 3 Brown, 1  $sp^3$ , 1  $dsp^3$ , 1  $d^2sp^3$  26 links, grey, medium ML-12 12 links, grey, flexible long ML-13

Cat. No.	Description	Price
S07017	Inorganic/Organic Student Set	34.25/Ea

## Eisco™ Chemistry Molecular Model Set

Consists of 54 balls of various colors and 24 links.

- Hard plastic storage case
- Standard size
- Interchangeable with other branded sets



Cat. No.	Description	Price
S24527	64 pieces: 54 balls of various colors and 24 links	18.00/Ea
S24528	101 pieces: 51 balls of various colors and 30 links	36.50/Ea

## Eisco™ Student Basic Organic Chemistry Molecular Model Sets

Let students visualize three-dimensional molecule structures and understand molecular formulas.

- Hard plastic balls of different colors represent atoms
- Each has holes at correct angles to be connected with flexible plastic "bonds"
- Medium links represent single covalent bonds while long links can be used for double and triple covalent bonds



### 54-Piece Set (S96538)

- 14 White hydrogen (1 hole)
- Six black carbon (4 holes)
- Two blue nitrogen (4 holes)
- Six red oxygen (2 holes)
- Two green halogen (1 hole)
- 28mm Gray links (20)
- 43mm Gray links (4)

- 43mm Gray links (12)
- 28mm White links (26)
- Assembly tool

### 500-Piece Set (S96541)

### 114-Piece Set (S96539)

- 12 Black carbon (4 holes)
- 20 White hydrogen (1 hole)
- Six red oxygen (2 holes)
- Four blue nitrogen (4 holes)
- Two yellow sulphur (6 holes; 1 hole)
- One purple phosphorus (4 holes)
- One gray metal (1 hole)
- 28mm Gray links (26)

- 12 Gray metal (2 holes)
- 10 Gray metal (3 holes)
- 10 Gray metal (6 holes)
- 42 Red oxygen (2 holes)
- 12 Red oxygen (4 holes)
- 18 Red oxygen (1 holes)
- 12 Yellow sulfur (4 holes)
- 15 Blue nitrogen (3 holes)
- 45 Black carbon (4 holes)
- 12 Purple phosphorus (4 holes)
- Six purple phosphorus (3 holes)
- 36 White hydrogen (1 hole)
- 170 Medium gray links
- 100 Long gray links

Cat. No.	Description	Price
S96538	54 Piece Molecular Model Set	37.00/Ea
S96539	114 Piece Molecular Model Set	49.75/Ea
S96541	500 Piece Molecular Model Set	118.00/Ea

## Eisco™ Student Organic and Inorganic Chemistry Molecular Model Set

Lets students visualize three-dimensional molecule structures and understand molecular formulas



Hard plastic palls of different colors represent atoms; each has holes at correct angles to be connected with flexible plastic "bonds." Medium links represent single covalent bonds while long links can be used for double and triple covalent bonds.

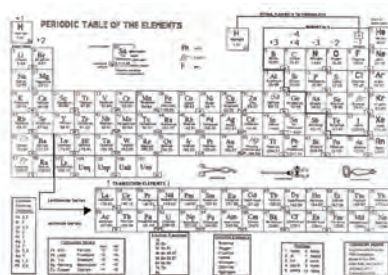
- Six black carbon (4 holes)
- 14 White hydrogen (1 hole)
- Two blue nitrogen (4 holes)
- One blue nitrogen (5 holes)
- Six red oxygen (2 holes)
- Three yellow sulfur (one each: 2 holes, 4 holes, and 6 holes)
- One purple phosphorus (5 holes)
- Six green halogen (1 hole)
- Three gray metal (1 hole)
- Three gray metal (2 holes)
- Two gray metal (3 holes)
- One gray metal (4 holes)
- One brown™ sp<sup>3</sup> (4 holes)
- One brown™ dsp<sup>3</sup> (5 holes)
- One brown™ d<sup>2</sup>sp<sup>3</sup> (6 holes)
- 28mm Gray links (20)
- 43mm Gray links (10)
- 28mm Purple links (5)
- Instruction manual

Cat. No.	Description	Price
S96540	Student Organic and Inorganic Chemistry Molecular Model Set	55.50/Ea

## Chemistry and Physics Helper

Inexpensive, yet invaluable information.

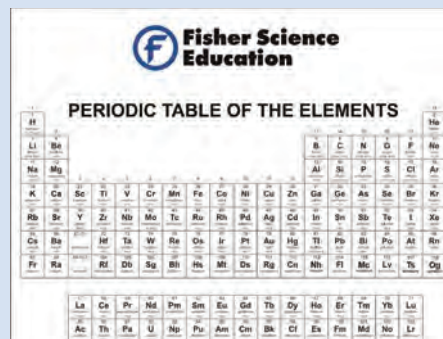
These handy laminated sheets are filled with useful technical information. The Chemistry Helper highlights the mole concept, consistency in significant figures, circle formulas, electron placement notations, a solubility chart, and the periodic table.



Cat. No.	Description	Price
S24678	Chemistry and Physics Helper	3.83/Ea

## fisherbrand™ Periodic Table of the Elements

Personal size periodic table of the elements for the entire class.



- Quality print on standard white paper
- Each sheet is 8.5 × 11 in.
- 25 sheets per package

Cat. No.	Description	Price
S30781	Black, White, Blue	22.25/Ea
S30782	Black, White	17.00/Ea

## Fisher Science Education™ Giant Periodic Table

Updated periodic table includes new elements Nihonium, Moscovium, Tennessine, and Oganesson

This table shows the interval atomic mass for select elements. Symbol text is 1.125 in. high; text for names and molar masses is 0.375 in. high. Maximum useful viewing distance to read masses is 25 ft.



- Made of tri-fold corrugated plastic board
- Measures 8 × 4 ft.
- All elements are in bold, black lettering
- Updated July 2017 to include new elements: Nihonium, Moscovium, Tennessine, and Oganesson
- Includes grommets for easy hanging

Cat. No.	Description	Price
S71879	Giant Periodic Table	224.00/Ea

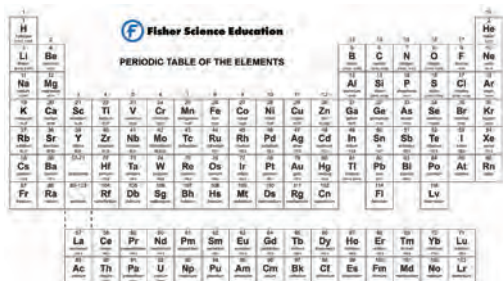


**FISHER SCIENCE EDUCATION**  
MAKING SCIENCE MATTER

Visit us online at [fisheredu.com](http://fisheredu.com) to learn more about our programs, services and resources.

## Fisher Science Education™ Periodic Table of Elements Poster

Offers a large format and easy-to-use display.



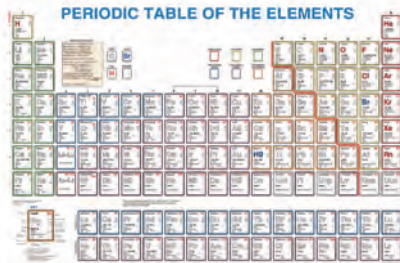
- Printed on 10mL indoor/outdoor poster stock material
- Corner grommets for easy display
- Large 48 × 84 in. display
- Tear resistant

Cat. No.	Description	Price
S07899	Periodic Table of Elements Poster	245.00/Ea

## Advanced Periodic Table of the Elements

Presents far more information than the typical periodic table.

- Identifies elements as noble gases, nonmetals, and various metals classes
- Indication of physical state at atmospheric pressure and temperature by the color of the element symbol
- Separate presentation of important physical constants
- Table indicates the color various elements give off when heated in the flame of a Bunsen burner
- Each element displays IUPAC name, symbol, atomic weight, oxidation states, density, boiling and melting points, number of naturally occurring radioactive isotopes, and pertinent information for the most abundant radioactive isotope
- Chart measures 58 × 42 in. (147 × 107cm); available with or without spring-activated roller. Notebook size charts are 11 × 8.5 in. (28 × 21.6cm).



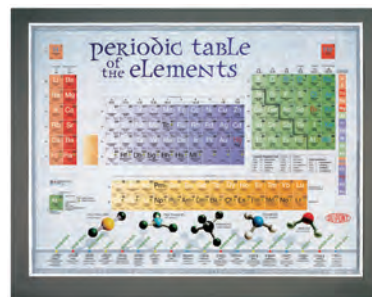
Cat. No.	Description	Price
S45525	Periodic Table Chart without Roller	200.00/Ea
S45525A	Advanced Periodic Table Chart with Roller	217.00/Ea
S45525B	Advanced Periodic Table Notebook	80.00/Ea

\* California - WARNING: Cancer [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)  
 \*\* California - WARNING: Reproductive Harm [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)  
 \*\*\* California - WARNING: Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## Colorful Periodic Chart

Shows essential element information clearly and colorfully.

- Different colors highlight group similarities and reinforce different electron configurations
- Contains the element symbol, atomic number, element name, atomic mass and radioactivity



Cat. No.	Description	Height	Width	Price
S63055	Periodic Chart Laminated Poster	96.5cm	127cm	28.50/Ea
S63056	Periodic Chart Pad (x100 sheets)	21.6cm	27.9cm	23.50/Ea

## United Scientific™ Deluxe Chemistry Hardware Assortment

Most commonly used items in general chemistry labs. United Scientific™ Chemistry Hardware Assortment, Deluxe is a comprehensive assortment of glassware, plasticware, porcelain and other hardware.

### INCLUDES:

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



WARRANTY: 1 year

Cat. No.	Description	Price
S23933	Deluxe Chemistry Hardware Assortment	180.00/Ea



## Electrochemistry

## STEM Investigations: Create Your Own Power Kit

Stem Investigations: Create Your Own Power Kit teaches students to set up electrochemical cells utilizing different combinations of materials for the anode and the cathode of the cell.

NEW

- The voltaic cell is an electrochemical cell that produces electrical energy an oxidation-reduction chemical reaction
- In this activity students will set up electrochemical cells, with each group using a different combination of materials for the anode and the cathode of the cell
- Students will also compare two different styles of cell, one using a salt bridge and one using a semi-permeable membrane
- After determining the voltage output of their unique cells, and comparing their values to the rest of the class, students will be challenged to design an electrochemical cell capable of running a small motor

- Kit contains enough materials for 15 groups
- Teacher's manual and Student Study Guide copy masters are included

**DISCLAIMERS:**

WARNING: This product can expose you to chemicals including Phthalates, which is known to the State of California to cause reproductive harm.

For more information go to <http://www.P65Warnings.ca.gov>.



Cat. No.	Description	Price
S27135**	STEM Investigations: Create Your Own Power Kit	436.00/Ea

## Lab-Aids® Investigating the Design &amp; Output of Wet Cell Batteries

Design and conduct a scientific investigation, use appropriate tools and techniques to gather, analyze, and interpret data and use evidence to develop descriptions, explanations, predictions, and models.

This kit introduces students to the concept of energy conversion through the study of a simple electrochemical cell connected to an electric motor. Electrochemical cells are the basis for batteries and contain metals and other chemicals with stored chemical potential energy. Students design and conduct an experiment that uses the unique Lab-Aids® Wet Cell Chamber to determine which combination of different metals works best to convert the potential chemical energy into electric energy. Their results allow them to rank the metals tested in order of reactivity. They also investigate how the distance between the metals, the direction of current flow, and the amount of metal surface area impacts the electrical output of the wet cell. Accommodates 6 groups of 4 students. Includes Teacher guide, student sheets, assessment questions and SDS for all chemicals.

**INCLUDES:**

Teacher's guide with MSDS; 28 student worksheets and guides; 30 table salt; 12 strips each: copper, iron, magnesium, zinc; 6 electric motors; 6 Wet Cell Chambers (SEPUP); 6 black wire leads with alligator clips; 6 3% Hydrogen Peroxide solution, 30mL dropper bottles; 6 graduated cups, 30mL; 6 plastic cups, 270mL; 6 sandpaper, small pieces; 6 red wire leads with alligator clips; 6 plastic spoons; Transparency: Sample Procedure and Data Table for Part B; Transparency: Metals Activity Chart

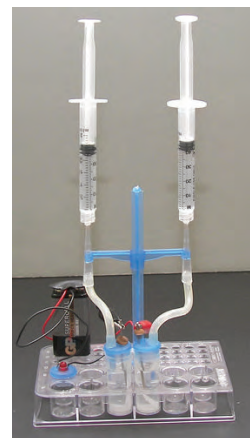
Cat. No.	Description	Price
S20954	Investigating the Design & Output of Wet Cell Batteries	206.00/Ea

## Electrolysis of Aqueous Solution In Electrochemical Cells Kit

Learn about electrolysis with this hands-on kit.

- Accommodates up to 15 lab groups
- Complete kit provides everything needed such as syringes, vials, tubing, comboplates, electrodes, solutions and more

**⚠ ALERTS:**  
**WARNING: This product can expose you to chemicals including Strong Inorganic Acid Mists containing Sulfuric Acid, which are known to the State of California to cause cancer.**



Cat. No.	Description	Price
S95333*	Electrolysis of Aqueous Solution In Electrochemical Cells Kit	319.00/Ea

## fisherbrand FE 150 Benchtop pH Meter Education Sets

Designed for convenient routine pH measurement in the lab: user-friendly, stores data sets in non-volatile memory and meter-attachable electrode stand. Efficient sample reading and recording with flexible display options: display both pH and temperature or mV and temperature simultaneously.

The essential functions needed for routine measurements

- One to five point pH calibration
- Automatic buffer recognition with selection of two pH buffer sets
- pH slope and offset display
- One point mV calibration
- One point ATC temperature probe calibration
- Automatic or manual temperature compensation
- Ready icon to indicate measurement stability
- Electrode condition icon to indicate status
- 100 data set storage with non-volatile memory




**S35923:** 3-in-1 set includes FE150 pH meter, 3-in-1 single junction gel, pH electrode, ATC probe and stand

**S35924:** Bio set includes FE150 pH meter, double junction gel pH electrode, ATC probe and stand

**S35925:** Education set includes FE150 pH meter, single junction gel, pH electrode, ATC probe and stand

Cat. No.	Description	Price
S35923	FE150 Benchtop Meter pH Education Set	465.00/Ea
S35924	FE150 pH Benchtop Meter Bio Set with double junction gel pH electrode	476.00/Ea
S35925	Fisherbrand FE150 pH Benchtop Meter 3-in-1 set with 3-in-1 single junction gel pH/ATC electrode and stand	482.00/Ea



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## fisherbrand pH Pen

pH measurement is easier than ever with the Fisherbrand™ pH Pen™ – an economical range pocket-size tester designed for on-the-go pH measurements.

Accurate and easy to use, these testers are ideal for quick pH measurements in hydroponic gardening, aquaculture, agriculture, pools, simple lab work and other water/wastewater applications.

- ±0.1% accuracy across full pH range
- Auto-buffer recognition and auto-calibration functions – quick, easy calibrations at the press of a button
- Long-lasting sensor – large volume of polymer gel reference gives longer sensor lifespan, while single Kynar™ reference junction prevents clogging
- Automatic temperature compensation and up to three calibration points for broadened accuracy throughout the pH range



Cat. No.	Description	Price
S35927	Fisherbrand pH Pen	55.00/Ea

## OHAUS™ Aquasearcher™ pH Meter AB33PH

The Aquasearcher™ pH Meter AB33PH is a highly reliable and user-friendly pH benchtop meter with electrode (ST310) for standard laboratory applications. Designed to measure pH and oxidation-reduction potential with temperature measurements.

- Equipped with a large 6.5 in. LCD display and a touch keypad
- Features a 1000 item memory for pH measurements and calibration trail
- Provides connectivity and data output capabilities with RS232 and USB interface
- i-Steward monitors the condition of electrodes to ensure repeatable and consistent measurement accuracy
- Intuitive user interface makes changing the parameters, executing setup, and performing calibration as simple as using a smartphone
- Auto endpoint mode and auto buffer recognition makes calibration easy
- Choose between just the AB33PH meter with electrode holder and a full kit including AB33PH meter, ST310 electrode, electrode holder, 4 pH buffer mini kits (50 mL)



Cat. No.	Description	Price
S05296	Aquasearcher™ pH Meter AB33PH	576.00/Ea

## OHAUS™ Aquasearcher™ pH Meter AB23PH

The Aquasearcher™ pH Meter AB23PH is a simple to use benchtop meter for measuring pH and oxidation-reduction potential (ORP). An intuitive design and auto-buffer recognition make measuring pH straightforward and easy.



- Equipped with a large 5 in. LCD display and six instructional menu buttons
- Auto buffer recognition and 3-point calibration capability ensures a reliable calibration result
- Features a 99 item memory for measurements and last calibration
- Choose between just the AB23PH meter with electrode holder and a full kit including AB23PH meter, ST320 pH electrode, and four pH Buffer Mini Kits (50 mL)

Cat. No.	Model	Description	Price
S05302	ST2100-F	Model 2100 Water Analysis Bench Meter	411.00/Ea

## OHAUS™ Starter pH Pen Meters

Convenient pH testing. OHAUS Starter pH Pen Meters offer a convenient way to measure pH, or the relative acidity or alkalinity of a sample at a given temperature. The pH pen meters can be completely operated with just one hand, freeing up your other hand to handle samples.

- Fast, straightforward results
- Durable IP67 waterproof design
- Equipped with wrist strap for security
- Automatic Shutdown after six minutes of non-use
- Requires four AG13 1.5V Micro Alkaline Batteries
- Size/Weight: 185 × 45 × 38mm, 110g
- Includes buffer powder pack (ST20)



Cat. No.	Accuracy (pH)	Range (pH)	Resolution (pH)	Display Type	Price
S05085	0.01 pH	0 to 14	0.01	Single	121.00/Ea
S05084	+/-0.1 pH	0 to 14	0.1	Dual	72.50/Ea

## Thermo Scientific™ Orion Star™ A121 pH Portable Meter

Portable, waterproof meter provides simple operation and accurate readings every time.

Thermo Scientific Orion Star A121 pH Portable Meters combine simplicity with accuracy. A large LCD displays pH or mV readings along with temperature. Icons provide quick updates on battery life, electrode status and calibration information. Simple button layout and onscreen messages help with calibration and setup menu choices.



- Large, informative screen clearly shows the main information, including pH or mV reading, temperature in °C or °F, meter mode, calibration information and battery life
- Don't miss a reading - Auto-Read measurement mode locks in the stable reading on your screen and ready indicator alerts when readings are stable
- Up to 3 points pH calibration
- Automatic recognition of USA/NIST and DIN buffers
- Easily recall calibration slope data for procedure checks
- Non-volatile memory holds up to 50 data points
- Four AA batteries (included) provide over 2000 hours of operation or purchase the universal power adapter (sold separately) to run meter on AC power
- Perfectly portable, waterproof and protected to take anywhere with a IP67-rated housing
- 3 year meter replacement warranty

### Specifications

- Accuracy (mV):  $\pm 0.2$  mV or  $\pm 0.05\%$  of reading whichever is greater
- Accuracy (pH):  $\pm 0.01$  pH
- Battery Life: 2000 hours
- Inputs: BNC (pH), 8-pin Mini-DIN (temperature)
- Probe Type:  $\pm$ pH electrode, ATC probe, ORP electrode - purchase separately
- Range (mV): 1600.0mV
- Range (pH): -2.00 to 16.00pH
- Relative Humidity Range: 5 to 85 %, non-condensing
- Resolution (mV): 0.1mV
- Resolution (pH): 0.1, 0.01pH
- Temperature (Metric) Operating: 5 to 45°C
- Temperature Range: -5° to +105°C
- Calibration Points (pH): 1 to 3

### CERTIFICATIONS

IP-67, CE, TV, FCC CLASS A LIMITS

**S04968 Meter Kit:** Star A121 pH Meter with Batteries; 9107BNMD Gel-filled Epoxy pH/ATC Triode with 1.5 Meter Cable; 916099 pH Buffer 60mL Kit; 911110 Rinse Solution Pouches; STARA-CS Star A Meter Hard Carrying Case; STARA-AR Star A Meter Armor with Stand and Electrode Holder

Cat. No.	Description	Price
S04953	Meter Only	581.00/Ea
S04968	Meter Kit	966.00/Ea



## OHAUS™ Starter Water Analysis Portable pH Meters

LCD meters combine portability with precise pH measurement.

- Auto buffer recognition stores calibration data to avoid errors
- Automatic/manual temperature compensation for accurate readings
- ORP or temperature electrode connectivity for additional functionality
- IP54 protection shields water/dust damage
- Size: 90 × 150 × 35mm
- Weight: 0.18kg

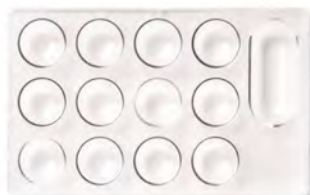


Cat. No.	Description	Resolution	Price
S05080	ST300	0.01pH; 1mV; 0.1°C	449.00/Ea
S05079	ST300-B	0.01pH; 1mV; 0.1°C	337.00/Ea

## Lab-Aids® 9-Level Conductivity Meter

The Lab-Aids® 9 Level Conductivity Meter shows the relative conductivity/resistance of liquids and solids.

Lab-Aids® 9-Level Conductivity Meter shows the relative conductivity/resistance of liquids and solids. As the conductivity of the tested material increases, the number of glowing red LEDs (light emitting diodes)



will increase to a maximum of 8, which indicates a very good conductor. There will be zero glowing red LEDs if the material being tested has a very low electrical conductivity (is a good insulator). The 9 Level Conductivity Meter is well constructed. When treated with proper care and concern it should provide you with many hours of exemplary service. After each use, the probes should be thoroughly cleaned and dried. When storing, the 9V battery should be unsnapped from the battery posts.

One 9V battery is required, but is not supplied with the kit. Includes teacher guide, student sheets, and assessment questions. SDS for all chemicals are included.

**INCLUDES:** Chemplate™ and instructions for use

**REQUIRES:** 9V battery

**WARRANTY:** One-year limited

Cat. No.	Description	Price
S45012	LED Conductivity Indicator	39.25/Ea

## 10 Level Conductivity Tester

Tool for quickly and easily determining the conductivity of various solutions. The 10 Level Conductivity Indicator can be used for quick comparisons of conductivity in solutions such as tap water, vinegar, baking soda solution, or varying concentrations of salt water.

- Quickly compare conductivity
- Activated by push and hold switch
- Multicolored bar LED lights to display results and 3 in. brass prongs



Cat. No.	Description	Price
S28110	10 Level Conductivity Tester	33.00/Ea

## Conductivity Tester

Demonstrates the effects of liquid conductivity.

- Consists of molded socket mounted on a PVC base with binding posts for quick electrical connection
- Two electrodes are internally connected to the lamp circuit
- Fits a clear tumbler which is the reservoir for the solution
- Size 4 × 4 × 5 in., weight 5 lb.



**INCLUDES:**

Molded socket on a PVC cover with binding posts for connection of two wire cords, light bulb, Glass tumbler and instructions

Cat. No.	Description	Price
S43475A	Conductivity Tester	17.75/Ea

## RCI Conductivity Indicators

Ideal for comparing various solutions across a wide range of conductivity levels.

Simply immerse the probes in the solution and record the display lamp lit. The higher the numbered display lamp lit, the greater the solution conductivity.

- Unique, multiple lamp conductivity display determines the relative conductivity of solutions
- 10 levels

**REQUIRES:**

9V transistor battery



Cat. No.	Description	Price
S63198	RCI-JR (10-level RCI Junior)	76.00/Ea

## pH Buffer Pack

**INCLUDES:**

- pH Buffer 4: 500mL
- pH Buffer 7: 500mL
- pH Buffer 10: 500mL
- Electrode Storage Solution: 500mL



Cat. No.	Description	Price
S02641	pH Buffer Pack	53.50/Pk

## Insta-Chek™ Wide-Range Paper Dispenser

Single color match for each pH value.

- 14 distinct colors match the 14 pH values for accurate readings
- Includes color chart
- Dispenser contains 50 ft. x 0.5 in. W roll (15.2m x 1.27cm)



Cat. No.	Description	Price
S60149	Paper Dispenser	15.25/Ea
S60149A	pH Test Strip Refill	16.50/Ea

## fisherbrand Plastic pH Test Strips

Offer excellent color separation in the pH range; 100 pH test strips/vial.

- Packaged in flip-top, spill-proof vial
- Colorimetric chart located on the vial label
- Plastic pH test strip construction
- Ideal for lab, field or classroom use
- Instant dip and read result



**ORDERING INFORMATION:**

Box 6 Vials, 100 strips per vial.

Cat. No.	pH Range	Price
S04677	0 to 6	20.50/Ea
S04674	0 to 14	20.50/Ea
S04673	5 to 9	20.50/Ea
S04676	6.5 to 13	20.50/Ea

## fisherbrand pH Paper Strips

An easy choice for classroom experiments or demonstrations

- Ideal for educational use
- Low-cost paper strips are easy to pass around the classroom
- Easy-to-use — simply dip strip in solution to be tested and match to color chart immediately



**ORDERING INFORMATION:**

Box of 10 vials, 100 low-cost paper strips per vial.

Cat. No.	Description	pH Range	Price
S22511	pH Test Paper	0 to 3	19.25/Cs
S22508	pH Test Paper	0 to 14	19.25/Cs
S22515	pH Test Paper Set	0 to 14	19.25/Cs
S22509	pH Test Paper	3 to 5.5	19.25/Cs
S22510	pH Test Paper	6 to 8	19.25/Cs
S22512	pH Test Paper	8 to 9.5	19.25/Cs
S22513	pH Test Paper	10 to 12	19.25/Cs

## fisherbrand pH Paper Rolls

General purpose pH papers in efficient 15' rolls

- Convenient dispenser allows you to select the right amount of pH paper for each application
- Easy-to-use — Dip paper in solution to be tested and match to color chart immediately
- Highly accurate and well suited for most applications
- Each SKU is packed in box of five clear plastic dispensers
- Cat. No. S22507 is a pH paper testing set that includes shrink wrapped pack of seven dispensers (one of each SKU)
- Store at room temperature. Keep out of direct sunlight.



**ORDERING INFORMATION:**

15 ft. Roll provides about 100 tests.

Cat. No.	Description	pH Range	Quantity	Price
S22500	pH Test Paper	0 to 3	5	30.25/Cas
S22507	pH Test Paper Set	0 to 14	7	37.00/Pk
S22506	pH Test Paper	1 to 12	5	30.25/Pk
S22501	pH Test Paper	3 to 5.5	5	30.25/Cs
S22502	pH Test Paper	6 to 8	5	30.25/Cs
S22503	pH Test Paper	8 to 9.5	5	30.25/Cs



## Economical Plastic pH Strips

Offer excellent color separation in the pH range;  
50 pH test strips/Pk.

- Packaged in zip lock pack
- Colorimetric chart located on the vial label
- Plastic pH test strip construction
- Ideal for lab, field or classroom use
- Instant dip and read result
- Pack 50



### DISCLAIMERS:

This product is not intended to diagnose, treat, cure or prevent any disease or condition. Please contact a medical doctor to diagnose and treat any medical condition.

Cat. No.	Description	Price
S21140	pH Strips; -range: 0 to 14	13.50/Pk

## Hydrion™ Wide-Range pH Test Papers

Select the pH range you need, quickly and inexpensively.

- Type A indicates pH 2, 4, 6, 8 and 10
- Type B indicates pH 1, 3, 5, 7, 9 and 11



### ORDERING INFORMATION:

- Cat. No. S60146 and S60148: 5 rolls and 2 color charts per kit, 10 kits per case
- Cat. No. S60152: 10 vials per box

Cat. No.	pH Range	Description	Quantity	Price
S60146	1 to 11	Type A Refill	5 Pack	34.75/Pk
S60144	1 to 11	Hydrion™ D/R AB Dispenser	Each	12.50/Ea
S60152	1 to 11	Type B pH Paper	10 Pack	24.25/Pk
S60148	1 to 11	Refill Roll	5 Pack	34.75/Pk
S60150	2 to 10	Type A Vial	10 Pack	24.25/Pk

## Eisco™ Litmus Test Papers



- 100 Strips/Vial, 12 Vials/Pk
- Blue pH paper (S80845) indicates presence of an acid; pH range 4.0-6.8
- Red pH paper (S80846) indicates presence of a base; pH range 6.8-8.1



Neutral paper (S80849) tests for acidity, neutrality or alkalinity; turns red in presence of acid (pH<7) or blue in presence of alkaline (pH>7)

Cat. No.	Description	Price
S80845	Blue Litmus pH Test Paper	14.25/Ea
S80846	Red Litmus pH Test Paper	14.25/Ea
S80849	Neutral Litmus Test Paper	14.00/Ea

## fisherbrand Test Paper

Use these test papers for a variety of applications.

- PTC (pheythiocarbamide) taste test paper test for the genetically controlled ability to taste this substance
- This will allow for the development of a Pedigree for an individual
- PTC can taste bland, bitter or even vile depending upon how sensitive your taste buds are to this chemical
- The bitter taste detected by some individuals, and its intensity, depends upon a homozygous dominant or heterozygous condition in the individuals tested
- PTC Taste Test Paper is perfectly safe to use
- Phenylthiocarbamide (PTC) is present at only 3-5 micrograms per strip
- At this level, the compound is negligible and harmless
- Cobalt Chloride test paper detects the presence of moisture
- This test paper is useful in difficult to reach places and recesses
- Cobalt chloride test paper is responsive to 50% relative humidity and above, and any direct measure of an aqueous solution
- Phenolphthalein test paper is sensitive to Ammonia Vapors, and thus is used to detect Ammonia leaks, for example, in refrigerators or air conditioners
- Phenolphthalein detects Ammonia in solution from 3 - 5ppm
- The test strip will turn a pinkish color if Ammonia is detected



Cat. No.	Description	For Use With	Price
S60124	Methyl Violet	For all lab moisture tests	27.75/Pk
S60130	PTC Taste Test Paper	Genetic taste test strips	23.85/Pk
S60126	Moisture Detection	Detects ammonia in solution from 3-5ppm	23.85/Pk
S60125	Lead Acetate Test paper	Detects hydrogen sulfide in water down to 5ppm	49.25/Ea
S67172	Litmus Neutral Test Strip	Determines if solution is acidic or alkaline	13.50/Pk
S60100	Cobalt Chloride Test Paper	For all moisture tests	27.75/Pk
S67171	Litmus Red Test Strip	For all moisture tests	14.25/Pk
S67170	Litmus Blue Test Strip	For all moisture tests	15.75/Pk

## United Scientific™ pH Paper

Determine pH of wide range of solutions!

- pH range: 1-14
- Each vial includes 5 packs of 20 strips
- Size: 2 × 0.25 in. (5 × 0.6cm)



Cat. No.	Description	Price
S99398	pH 1-14; 100 strips/vial	3.15/Ea

## United Scientific™ Litmus Paper

Available as Litmus paper and Litmus Granular in bottles.

- 100 strips each in matching color plastic vials
- Individual strips are approximately 2 in. long and 0.25 in. wide



Cat. No.	Description	Quantity	Price
S99399	Red Litmus Paper	100 Strips/Vial	3.30/Ea
S99400	Blue Litmus Paper	100 Strips/Vial	3.30/Ea
S99401	Neutral Litmus Paper	100 Strips/Vial	3.30/Ea



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 \*\* California - WARNING: Reproductive Harm [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)  
 \*\*\* California - WARNING: Cancer and Reproductive Harm -[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## United Scientific™ Hoffman Electrolysis Apparatus

For qualitative and quantitative study of electrolytic decomposition of electrolytes such as water and hydrochloric acid.

- Tubes are 2 in. (50mm) each
- Dimensions: 24 × 12 × 6 in. (61 × 31 × 15cm)



**INCLUDES:** Support stand, burette clamp, extension clamp, bosshead clamp, pair of platinum electrodes, pair of carbon electrodes, activity guide

Cat. No.	Description	Price
S07009	Hoffman Electrolysis Apparatus	175.00/Ea
S07010	Replacement Platinum Electrodes	34.25/Pk

### Advanced Placement Chemistry

## AP Chemistry Kits: *The Electrochemical Series*

Discover electrode potential.

- The electrochemical series is built up by arranging various redox equilibria in order of their standard electrode potentials. When a strip of metal is placed in water, the metal has a tendency to go into solution as ions with a simultaneous buildup of electrons on the metal strip
- The process produces an electrical potential difference between the metal and solution

### INCLUDES:

Materials for 15 groups: EZ-Prep™ to make 1000mL of 1.0M solution of Copper Sulfate, Zinc Sulfate, Magnesium Sulfate, Iron Sulfate and Aluminum Sulfate Copper (15 strips); Copper (15 strips); Zinc (15 strips); Magnesium (15 strips); Iron (15 strips); Aluminum (15 strips); filter paper strips (75); teacher's guide; and student copy masters



Cat. No.	Description	Price
S96899	AP Chemistry Kits: The Electrochemical Series	87.00/Ea

## AP Chemistry Kits: *Electrochemical Cells*

Electrolysis of water produces hydrogen and oxygen.

The tendency of oxidation-reduction reactions is to proceed to an equilibrium state. In electrochemical cells, these reactions provide another way for us to express the driving force in chemical reactions.

When reagents that accept or donate electrons are arranged so that the electrons can enter or leave the reaction through a metallic conductor, an electrochemical cell is established. A half-cell contains a metal in contact with a solution of its salt. Each metal will develop a different electrical potential based on its electron configuration.

The standard reduction potential listed in various references is the voltage that a half-cell develops when combined with a hydrogen half-cell. First, construct a simple chemical battery and determine from the standard reduction potentials what the output of the battery will be (if a voltmeter is available the actual and theoretical voltages can be compared). Second, construct an electrolysis cell and demonstrate how hydrogen and oxygen can be produced from the electrolysis of water.

- Electrolysis cell is the reverse of a battery where a voltage higher than the reversible electromotive force of the cell is applied to the electrodes
- In a cell containing water and an electrolyte, the oxidation reaction occurring at the anode produces oxygen gas while the reduction occurring at the cathode produces hydrogen gas
- By the addition of a pH indicator, the oxidation-reduction reactions can be monitored visually
- Gases produced are collected in inverted test tubes and the volumes of hydrogen and oxygen are compared



### INCLUDES:

Materials for 15 groups: 500mL Cupric Sulfate, 0.5M solution (2); 25mL Bromothymol Blue, 0.04% solution; 500mL Sodium Sulfate, 1M solution (8); Copper metal strips (15); Magnesium metal strips 5 in. UN1869 (15); Dialysis tubing strips 6 in. (15); teacher's guide; and student copy masters

Cat. No.	Description	Price
S90741*	AP Chemistry Kits: Electrochemical Cells	48.00/Ea

## Kemtec™ AP™ Chemistry Kits: AP Chemistry Series Kits (16 Kits)

Order all 16 Kemtec AP Chemistry Kits at once.

Both series kits include a balance. And all kits are designed to exceed 2013 AP Next Generation National Standards.

When reagents that accept or donate electrons are arranged so that the electrons can enter or leave the reaction through a metallic conductor, an electrochemical cell is established. A half-cell contains a metal in contact with a solution of its salt. Each metal will develop a different electrical potential based on its electron configuration.



### The Basic AP Chemistry Series Kit (S07345) includes:

- Statistics: Precision & Accuracy (no glassware S07328)
- Spectrophotometric Analysis of Copper: Beer's Law (S07330)
- Synthesis and Gravimetric Analysis of Cobalt Oxalate Hydrate (S07331)
- Acid-Base Titrations: An Inquiry Investigation (S07332)
- Separating Substances by Absorption Chromatography (S07333)
- Stoichiometry: Reactions with Copper Compounds (S07334)
- Stoichiometry: Mole Ratio of an Unknown (S07335)
- Determining Molar Mass by Colligative Properties (S07336)
- Determining Molar Mass Using the Ideal Gas Equation (S07337)
- Reaction Rate and Order (S07338)
- Determining Molar Enthalpy Using Hess's Law (S07339)
- Le Chatelier's Principle Featuring Ag<sup>+</sup> reaction! (S07340)
- Identifying Weak Acids by pKa (S07341)
- Preparing Buffer Solutions and Determining Their Properties (S07342)
- Determining the Equilibrium Constant (and Temperature's Effect) with Beer's Law (S07343)
- Micro-Scale Electrochemical Cells – Voltaic and Electrolytic (S07344)

### The Enhanced AP Chemistry Series Kit (S07346) includes:

- Statistics: Precision & Accuracy (with glassware S07329)
- Spectrophotometric Analysis of Copper: Beer's Law (S07330)
- Synthesis and Gravimetric Analysis of Cobalt Oxalate Hydrate (S07331)
- Acid-Base Titrations: An Inquiry Investigation (S07332)
- Separating Substances by Absorption Chromatography (S07333)
- Stoichiometry: Reactions with Copper Compounds (S07334)
- Stoichiometry: Mole Ratio of an Unknown (S07335)
- Determining Molar Mass by Colligative Properties (S07336)
- Determining Molar Mass Using the Ideal Gas Equation (S07337)
- Reaction Rate and Order (S07338)
- Determining Molar Enthalpy Using Hess's Law (S07339)
- Le Chatelier's Principle Featuring Ag<sup>+</sup> reaction! (S07340)
- Identifying Weak Acids by pKa (S07341)
- Preparing Buffer Solutions and Determining Their Properties (S07342)
- Determining the Equilibrium Constant (and Temperature's Effect) with Beer's Law (S07343)
- Micro-Scale Electrochemical Cells – Voltaic and Electrolytic (S07344)

Cat. No.	Description	Price
S07345	The Basic AP Chemistry Series Kit	2054.00/Ea
S07346	The Enhanced AP Chemistry Series Kit	2538.00/Ea

Kemtec AP kits are compatible with optional data collection and simulations using TI-Nspire handhelds and software. Free activities can be found at [www.fisheredu.com/TI](http://www.fisheredu.com/TI).

## AP Chemistry Kits: Le Chatelier's Principle

In this experiment, see Le Chatelier's Principle by observing physical changes to solutions as systems are stressed.

Le Chatelier's Principle is a qualitative rule that allows the prediction of the effect of temperature, pressure and concentration changes on chemical reactions. The principle states: A chemical system at equilibrium when stressed by external forces will adjust in such a way as to minimize that stress.

### INCLUDES:

Materials for 15 groups: 25mL Hydrochloric Acid, 36% solution UN1789 (6); 25mL Sodium Hydroxide, 0.1N solution UN1824 (2); 25mL Bromothymol Blue, 0.04% solution (2); 10g Potassium Thiocyanate crystals; 200mL Potassium Thiocyanate, 0.002M solution (1); 25mL Ferric Nitrate, 0.2M solution (2); 50g Sodium Chloride crystals; 10g Sodium Phosphate, Dibasic, Heptahydrate; teacher's guide; and student copy masters



Cat. No.	Description	Price
S90729	AP Chemistry Kits: Le Chatelier's Principle	40.25/Ea



## AP Chemistry Kits: Activity Series

In this experiment, empirically determine an activity series for a group of metals and a group of nonmetals.



An activity series of metals is a table of metals arranged in order of their decreasing chemical activity or the ease at which the metal will give up one or more electrons to form positive ions; this table is similar to the electrochemical series of elements. For example, if you take the group of metals magnesium, mercury and nickel, magnesium is the most reactive and mercury the least.

### INCLUDES:

Materials for 15 groups: Copper metal strips (15); Zinc metal pieces (60); Magnesium metal strips, 5 in. UN1869 (15); Lead metal strips 0.375 × 5 in. (1.0 × 12.7cm) (15); 50mL Cupric Nitrate, 0.1M solution (3); 50mL Zinc Nitrate, 0.1M solution (3); 50mL Magnesium Nitrate, 0.1M solution (3); 50mL Lead Nitrate, 0.1M solution (3); 4.3g Potassium Bromide; 1.2g Potassium Bromate UN1484; 100mL Sulfuric Acid, 0.5M solution; 100mL Chlorine Water solution UN1760; 100mL Iodine Water solution; 50mL Sodium Bromide, 0.1M solution (2); 50mL Potassium Iodide, 0.1N solution (2); 50mL Sodium Chloride, 0.1M solution (2); 100mL Mineral Oil (2); empty bottle labeled "Bromine Water"; teacher's guide; and student copy masters

### ⚠️ ALERTS:

**WARNING: This product can expose you to chemicals including Lead and Lead Compounds, Potassium Bromate and Strong inorganic Acid Mists containing Sulfuric Acid, which are known to the State of California to cause cancer and reproductive harm.**

Cat. No.	Description	Price
S90727***	AP Chemistry Kit: Activity Series	92.00/Ea

## AP Chemistry Kits: Reaction Kinetics

In this experiment, the time it takes for a reaction to occur is monitored by observing a color change.



By varying concentration of reactants, the rate law is determined. By varying the temperature, the activation energy is determined. The data should be graphed and analyzed during the lab so additional measurements can be made if necessary. In a chemical reaction, reactants are converted to product at a given rate. This rate can be changed by alternating either the temperature of the reaction, the form of the reactants, the concentration of reactants or products, or by adding a catalyst.

### INCLUDES:

Materials for 15 groups: 100mL Potassium Iodide, 0.1% solution 0.006M (2); 100mL Sodium Thiosulfate, 0.001M solution (2); 100mL Hydrogen Peroxide, 3% solution 0.88M (2); 5 capsules Starch Soluble (5 caps per bottle); 100mL Hydrochloric Acid, 0.1M solution UN1789 (2); 150 pipets; teacher's guide; and student copy masters

Cat. No.	Description	Price
S90732	AP Chemistry Kit: Reaction Kinetics	46.50/Ea



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 \*\*\* California - WARNING: Cancer and Reproductive Harm -[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# Ohaus Starter Pen Meters

## Convenient, Accurate Results in Seconds

- Portable and compact
- Single-hand operation
- Durable IP67 waterproof design
- Include wrist strap for security
- Auto shutdown after four minutes of non-use
- Require four AG13 1.5 V microalkaline batteries (included)
- Size/weight: 185 x 45 x 38 mm; 110 g



ST20

Model	Range	Resolution	Temp. Display	Cat. No.	Price
<b>pH Pen Meters</b>					
ST10	0.0 to 14.0 pH	0.1 pH	No	<b>S05084</b>	\$72.50/Ea
ST20	0.00 to 14.00 pH	0.01 pH	Yes	<b>S05085</b>	\$121.00/Ea
<b>ORP Pen Meters</b>					
ST10R	-1000 to 1000 mV	1 mV	No	<b>S05086</b>	\$140.00/Ea
ST20R	-1000 to 1000 mV	1 mV	Yes	<b>S05087</b>	\$188.00/Ea
<b>Conductivity Pen Meters</b>					
ST10C-A	0.0 to 199.9 µS/cm	0.1 µS/cm	No	<b>S05088</b>	\$85.00/Ea
ST10C-B	0 to 1999 µS/cm	1 µS/cm	No	<b>S05089</b>	\$85.00/Ea
ST10C-C	0.00 to 19.99 mS/cm	10 µS/cm	No	<b>S05090</b>	\$85.00/Ea
ST20C-A	0.0 to 199.9 µS/cm	0.1 µS/cm	Yes	<b>S05091</b>	\$125.00/Ea
<b>Salinity Pen Meters</b>					
ST20S	0.0 to 80.0 ppt	+/- 1.5% FS	Yes	<b>S05095</b>	\$125.00/Ea
<b>TDS Pen Meters</b>					
ST20T-A	0.0 to 100.0 mg/L	0.1 mg/L	Yes	<b>S05098</b>	\$125.00/Ea

Choose from five models in a variety of calibrations.



S05084

S05087

S05088

S05091

S05086

S05095

S05098



## Earth &amp; Space

## Geology

**Eisco™ Fact and Fault Model**

Useful for illustrating important folds and faults found in Earth's crust. Students can understand fold planes, the effect of tectonics stress, and structural elements of a fault.

- Perfect for classroom and laboratory study
- Set includes 5 pieces
- Illustrates important folds and faults found in the earths crust
- Visual representation of fold planes, the effects of tectonic stress, and structural elements of a fault
- Includes Identification Key
- Approximate weight: 6.5 lb.

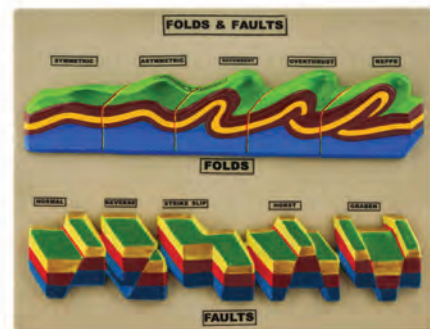


Cat. No.	Description	Price
S27469	Fact and Fault Model	292.00/Ea

**Eisco™ Fold and Fault Model**

Illustrates important folds and faults found in Earth's crust. Model provides a visual/tactile view of symmetric, asymmetric, recumbent, over thrust, and neppe folds. Normal, reverse, strike slip, horst and graben faults are also represented.

- Perfect for classroom and laboratory study
- Displays the age of different earth bedding & stratification
- Illustrates important folds and faults found in the earths crust
- Folds: symmetric, asymmetric, recumbent, over thrust, and neppe
- Faults: normal, reverse, strike slip, horst, and graben
- Identifications labeled on model base
- Approximate Weight: 1.5 lb.
- 10 x 13 in.



Cat. No.	Description	Price
S27470	Fold and Fault Model	246.00/Ea

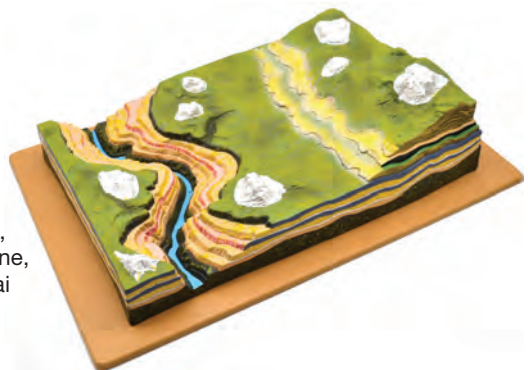
**Eisco™ Premium Horizontal Strata Model**

Demonstrates underlying strata and typical phenomenon of water erosion features in Arizona, Utah, the Grand Canyon, and the Grand Staircase. Includes a numbered key card to help students identify 27 distinct geological landscapes.

- Displays the typical phenomenon of water erosion features
- Designed for educational use
- Includes a numbered key card
- Created from PVC, mounted on a sturdy wooden base
- Hand painted
- Landscape is demonstrative of underlying strata and covers features in Arizona, Utah, the Grand Canyon, and the Grand Staircase

**Identify the following features:**

Mountains, Pink Cliffs, Painted Desert, North Rim, Grand Canyon, Cape Royal, South Rim, Bryce Canyon, Kaibab Plateau, Colorado River, Kaiparowits Formation, Wahweap Sandstone, Tropic Formation, Dakota Sandstone, Carmel Formation, Kaibab Formation, Sevier Fault, White Cliffs, Badlands, Hoodoo Fields, Tapeats Sandstone, Bright Angel Shale, Muave Limestone, Supai Group, Hermit Shale, Coconino Sandstone, and Toroweap Formation



Cat. No.	Description	Price
S27471	Premium Horizontal Strata Model	246.00/Ea



## United Scientific™ Tectonics Model Set



Demonstrates plate tectonic principles, plate boundary interactions, and the geometry/relative motions of faulting of geological layers

- Contains a Fault 3D Model Set (5 Manipulatives) and a Tectonics Sand Layer Model
- Fault Model Set demonstrates normal faulting (extension), reverse faulting (compression), and horizontal slip faulting (shear)
- Tectonics Sand Layer Model explores orogeny of the Appalachian Mountains, including coal formation in the sedimentary Appalachian Basin and its coal seam
- Construct a sand layer model system mimicking a subduction zone of oceanic crust (Juan de Fuca Plate)
- Simulate the creation of the San Andreas Fault
- Includes three hands-on, geoinformation activities for students to work on using metadata (Map the Continental Shelf, Tectonic Plate Movement, Earthquake Prediction)
- Access code is provided to download interactive Teacher and Student Guides, videos, geoinformation data sets, and other resource information



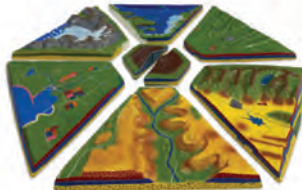
Cat. No.	Description	Price
S27858	Tectonics Model Set	233.00/Ea

## Landform 3D Models



Investigate geographical and geological features

- Eight 3D landform models showing the mountains, lakes, rivers, deserts, glaciers, coastlines, canyons and cultural point
- Includes lesson plan
- Finished size 35 × 35 in.



Cat. No.	Description	Price
S81674	Landform 3D Models	307.00/Ea

## Eisco™ Fractures, Faults and Dislocations Model

Excellent way to illustrate various structures related to fault planes and fractures.

- Shows cross section of five different structural features
- Made of colored, unbreakable material
- Mounted on base



**INCLUDES:** Numbered key card

Cat. No.	Description	Price
S05844	Fractures, Faults and Dislocations Model	199.00/Ea

## Diversified Spaces™ Augmented Reality Sandbox

This Augmented Reality Sandbox allows users to create topography models by shaping real sand, which is then augmented in real time by an elevation color map, topographic contour lines, and simulated water and lava.

This amazing sandbox uses 3D visualization applications and a hands-on exhibit combining a real sandbox, virtual topography and water created using a closed loop of a Microsoft Kinect 3D camera, powerful simulation and visualization software, and a data projector. The system teaches geographic, geologic, and hydro-logic concepts such as how to read a topography map, the meaning of contour lines, watersheds, catchment areas, levees, and much more.



- 48W × 30D × 36H in.
- Comes complete with the box, camera, projector, wire management, and laptop loaded with visualization software
- Solid oak and oak veneer construction with heavy duty locking casters
- SEFA compliant and MAS Certified Green—Finished with a durable UV earth-friendly finish
- Includes detailed instructions for calibrating the software and running the program
- Features a shelf for laptop with wire management system
- Kit includes Microsoft Kinect 3D camera, powerful simulation and visualization software, and a data projector
- Made in the USA

**Note:** Sand not included (we recommend 250 lbs. of Sandastik™ sparkling white play sand)

**ORDERING INFORMATION:** Sand not included

**WARRANTY:** Limited Lifetime

Cat. No.	Description	Price
S37563	Augmented Reality Sandbox	9786.00/Ea

## Classroom Rock and Mineral Collection

50 rock and mineral specimens.

Samples have been carefully selected to support studies of:

- Rock-forming minerals
- Igneous, metamorphic, and sedimentary comparison
- Ores of common metals
- Sources of uranium
- Hardness scale



- Specimen dimensions (approx.): 1 × 1 in.

**INCLUDES:** Manual and description key

Cat. No.	Description	Price
S84011	Classroom Rock and Mineral Collection	41.45/Pk

## Washington School Rock and Mineral Collection

40 large, carefully cut, and selected specimens.

- 20 Rock-forming, ore-forming, and useful minerals
- 20 Igneous, sedimentary, and metamorphic rocks
- Numbered and keyed to an identification list printed on the inside cover of the compartmented storage box
- See S45011 to order a separate matching set of smaller, unmarked specimens
- Size (approx.): 1.5 × 2 in.



### INCLUDES:

- Four rock formation charts with classification, identification, and formation of rock types
- Study guide

Cat. No.	Description	Price
S45010A	Washington School Rock and Mineral Collection	45.00/Ea

## Rock, Mineral and Fossil Collections Set

Dig into some serious fun with these fascinating collection kits.

Each collection features a selection of hand-picked specimens chosen for color, texture and beauty. Also contains a four-color identification chart, self-adhesive labels, handy storage tray and an information-packed guide.

Individual kits can be found at [www.fishersci.edu](http://www.fishersci.edu).

### INCLUDES:

Fossil collection, igneous rock collection, metamorphic rock collection, mineral collection and sedimentary rock collection



Cat. No.	Description	Price
S96075	Rock, Mineral and Fossil Collections Set	109.00/Ea

## Introductory Rock Collection

15 Specimens compare the three different types of rocks.

- Igneous, metamorphic, and sedimentary rocks are all represented in this classroom collection
- Coded by number in a compartmented container
- Rock size (approx.): 1.5 × 1.5 in.



**INCLUDES:** Identification key and rock cycle chart

Cat. No.	Description	Price
S45059	Introductory Rock Collection	25.55/Ea

## Introductory Earth Science Rock and Mineral Collection

Designed to match most introductory-level textbooks

This all-in-one collection covers a broad range of demonstration needs! The 75 specimens for observation, comparison, and testing include 13 igneous rocks; 14 sedimentary rocks; 9 metamorphic rocks; 17 rock-forming minerals; 9 samples from the hardness scale (diamond omitted); and 13 examples of important physical properties (specific gravity, tenacity, cleavage, fracture, luster, streak, refraction, magnetism, and acid test).



**INCLUDES:** A handbook, streak plate, magnifier, and magnet come with the collection.

Cat. No.	Description	Price
S45051	Introductory Earth Science Rock and Mineral Collection	100.00/Ea

## Eisco™ Sedimentary Rocks Kit

For use in identification of depositional history of sedimentary rocks based on their grain size and composition. EISCO; Sedimentary Rocks Kit contains 12 specimens and specimen key.

- Classroom tool for sedimentary rock classification and identification
- Numbered and stored in sturdy, sectioned container for easy access and safety
- Average specimen size: 2-3cm
- Size and shape of grains can be used to identify what kind of environment would have formed particular rock



**INCLUDES:** Bituminous coal, breccia, conglomerate, dolostone, rock gypsum, gray and fossiliferous limestone, red and white sandstone, argillaceous and carbonaceous shale, and siltstone

Cat. No.	Description	Price
S24665	Sedimentary Rocks Kit	23.75/Ea



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## Sedimentary Rock Collection

15 Specimens demonstrate the three categories of sedimentary rocks.

- Displays sedimentary rocks of all three categories:
- Clastic—accumulation of solid particles
- Chemical—from evaporation of water
- Organic—modified skeletons of plants and animals
- Store in a sturdy compartmented box
- Labeled in both English and Spanish



Cat. No.	Description	Price
S45022A	Sedimentary Rock Collection	25.55/Pk

## Learn Your Fossils Kit

Learn about and classify fossils that are many hundreds of millions of years old.

- Step-by-step instructions

**INCLUDES:**

24 fossils, magnifier, numbering kit, compartmented collection box and detailed study guide



Cat. No.	Description	Price
S67608	Learn Your Fossils Kit	43.70/Ea

## Introductory Fossil Collection

20 fossils offer broad array of geological time.

With some samples ranging from more than 400 million years old, this collection is displayed in a durable, compartmented box.

- Illustrated key gives pertinent facts about each fossil including its geological time
- 20 selected fossils including foraminifer, horn coral, snails, trilobite, shark's tooth, bryozoan, brachiopod, cephalopod, clams, and oyster



Cat. No.	Description	Price
S45057	Introductory Fossil Collection	27.55/Pk

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## Open Your Own Geode

Open geodes in the classroom.

- Amaze students when you open geodes and see the magnificent crystals inside
- Specimen size: 1 to 1.5 in. (2.54 to 3.81cm)

**INCLUDES:**

Two unopened geodes and instructions



Cat. No.	Description	Price
S79092	Open Your Own Geode	22.00/Pk

## Learn Your Minerals Kit

Follow step-by-step instructions to easily learn the properties of minerals.

- Specimens clearly illustrate the properties of hardness, cleavage, fracture, tenacity, and streak

**INCLUDES:**

22 specimens: 1.25 x 1.25 in. (3.18 x 3.18cm); streak plate; numbering kit; compartmented collection box; detailed study guide



Cat. No.	Description	Price
S67607	Learn Your Minerals Kit	62.20/Ea

## Rock and Mineral Test Kit

Identify rock and mineral characteristics.

**Includes:**

- Black and white ceramic streak plates
- Dropping bottle
- Magnifying lens
- Mohs Hardness Scale chart
- Glass plate
- Nail
- Penny
- Magnet



Cat. No.	Description	Price
S44872	Rock and Mineral Test Kit	16.41/Ea

## Mineral Hammer-Pick

Trim small samples from large rocks.

- Single-piece construction of forged steel
- Nylon-cushioned handle
- Combination flat and pick head
- Best for igneous and metamorphic rocks
- 22oz



Cat. No.	Description	Price
S45044	Mineral Hammer-Pick	37.00/Ea



## United Scientific™ Mineral Test Kit



Mineral Test Kit for rock, mineral, and fossil identification.

- This mineral test kit is useful for rock, mineral and fossil identification
- Includes: Hardness scale, dropper bottle, hand lens, glass streak plate, black streak plate, white streak plate, ceramic bar magnet, nail and penny



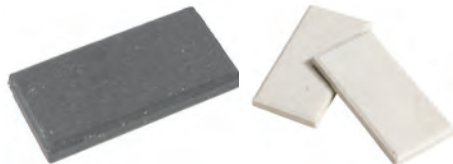
Cat. No.	Description	Price
S81054***	Mineral Test Kit	7.70/Ea

## United Scientific™ Streak Plates



Streak plates designed for hardness testing of rocks and minerals.

- Excellent for Hardness Testing of Rocks and Minerals
- Porcelain streak plate



Cat. No.	Description	Price
S81059	Black, 1 × 2 in.	5.00/Pk
S67817	Glass, 1 × 1 in.	8.30/Pk
S67818	Glass, 1 × 2 in.	18.75/Pk
S81053	White, 1 × 2 in, 10 Pk.	5.00/Pk
S81055	White, 1 × 2 in, 12 Pk.	5.90/Pk

## Geology-Paleontology Specimen Cabinet without Trays



Provides excellent way to store your geology and paleontology collection.

- Double-wall, heavy-duty steel construction can store heavy specimens
- Elastomeric seal eliminates seepage of dust and foreign matter
- Powder paint finish will not off gas
- Reinforced to allow double stacking of cabinets
- Features two heavy-gauge bar handles and large label holder
- Lift-off door makes it easy to transfer specimens



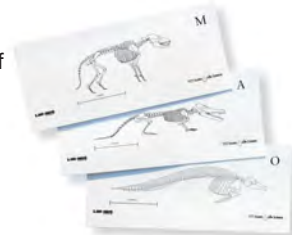
- Door can be locked with a paracentric lock
- Holds a maximum of 16 trays (sold separately)
- 36.88H × 29W × 31.94 in.D
- Gray finish
- Shipped completely assembled

Cat. No.	Description	Price
S51071MF	Geology-Paleontology Specimen Cabinet without Trays	1211.00/Ea
S51071A	Cabinet Tray; For 301 Geology Case	174.00/Ea

## Lab-Aids® Evolution: Examining Fossils and DNA Evidence (Developed by SEPUP)

Scientific inquiry includes critical thinking to evaluate evidence and the explanations proposed by other scientists.

In Activity 1, students investigate how fossil whales provide a line of evidence in support of the theory of evolution. Students then apply the theory of natural selection to whale evolution, using anatomical adaptations to infer the habitats, lifestyles, and evolutionary relationships of extinct species.



In Activity 2, students examine classification from an evolutionary perspective. They compare DNA sequences from a number of vertebrates and create an evolutionary tree. Scientific inquiry includes critical thinking to evaluate evidence and the explanations proposed by other scientists.

Accommodates unlimited classes, each with 12 groups of 2 students. Includes Teacher guide, student sheets and assessment questions.

**INCLUDES:** 1 teacher's guide, 28 student worksheet and guides, 12 sets of five skeleton cards, 12 whale fossil charts, 12 mysticetes skeleton cards, 12 sets of five DNA cards, Transparency 1: Whale evolutionary tree, Transparency 2: Scientific illustration of an ambulocetid, Transparency 3: Comparison of living vertebrate forelimbs

Cat. No.	Description	Price
S02448	Evolution: Examining Fossils and DNA Evidence	81.00/Ea

## Lab-Aids® The Rock Cycle Activity (Developed by SEPUP)

Reusable game reinforces the concepts of the rock cycle.

- Record changes to igneous, sedimentary, and metamorphic rocks
- Share data to construct and evaluate a scientific model
- Student sheet relates game results to the rock cycle
- Contains eight complete sets so an entire class can play simultaneously



**ORDERING INFORMATION:** Class size: 32 students.

**INCLUDES:** Eight rock cycle activity boards; eight number cubes; 32 activity pieces; 32 student worksheets and guides; 32 geologist's notes; teacher's manual; and eight sets each of 20 igneous rock cards, 20 metamorphic rock cards, 20 sedimentary rock cards and nine Earth process cards

Cat. No.	Description	Price
S90177	Rock Cycle Activity	152.00/Ea

## Lab-Aids® Rock Cycle: An Interactive Exploration Through Geologic Time

Explore the rock cycle, identifying the processes forming and destroying rocks, share data to construct a model and evaluate a scientific model.



The focus of this activity is helping students attain a better understanding of the rock cycle as a series of ongoing geologic processes that constantly reshape the earth around us and beneath our feet. This activity engages the students through an active learning alternative to the traditional passive methods of studying the rock cycle. Students first imagine themselves as bits of earth material moving through eight different earth process stages. After a set period of time, students analyze the unique pattern of their movement between these stages, calculate geologic time and illustrate their pattern by constructing a rock cycle diagram based on their own experiences. This kit is complete for 32 students and is reusable. Includes teacher guide, student sheets and assessment questions.

### ORDERING INFORMATION:

Class size: 32 students.

### INCLUDES:

32 student worksheets and an instruction manual

Cat. No.	Description	Price
S90178	Rock Cycle: An Interactive Exploration Through Geologic Time	68.25/Ea

## Lab-Aids® Classifying Sedimentary, Igneous and Metamorphic Rocks (Developed by SEPUP)

Introduce and explain rock formation, describe and identify different rock types, use data to identify an unknown rock type and apply earth science to a real-world scenario.

Why study rocks? This kit helps you answer this question while providing rock samples for study. A fictional scenario describes the alleged discovery of diamonds in a national forest by a pair of hikers. Students learn that certain natural resources are often found in association with certain rocks.

A reading on the formation of igneous, sedimentary, and metamorphic rocks supplements student observations as they examine, describe, and group rock samples. Students will use this knowledge to identify the hikers rock and decide whether the hikers were likely to have seen diamonds. Step-by-step student worksheets guide students to work in pairs. The rock samples provided in this kit are 1x2x1 in. or larger (except hiker's rocks) and clearly show characteristic features of sedimentary, igneous and metamorphic rocks. This kit is complete for 32 students and is reusable.



### ORDERING INFORMATION:

Class size: 32 students.

### INCLUDES:

- **Six Igneous Samples:** Two each of gabbro (purple), granite (light blue) and obsidian (white)
- **Six Sedimentary Samples:** Two each of coal (yellow), limestone (blue) and sandstone (black)
- **12 Metamorphic Samples:** Two each of gneiss (red) and phyllite (brown); eight garnet schist (green)
- **Supplies:** 16 magnifying glasses, 32 students worksheets and guides, 32 reading guides, teacher's manual

Cat. No.	Description	Price
S90180	Classifying Sedimentary, Igneous and Metamorphic Rocks	162.00/Ea

## Lab-Aids® Examining Fossils (Developed by SEPUP)

Explore the role of fossils as evidence, gather data through observations and understand the history and evolution of life on earth.

Fossils provide important evidence about changes on earth. This kit provides students with the opportunity to handle and examine eight different fossils from various localities and geologic ages. Fossils of species that are no longer living, as well as fossils of species similar but not identical to those alive today, provide evidence for extinction and evolutionary change. Students experience first-hand the power and limitations of using fossils as evidence of past life and as one of the bases for determining evolutionary relationships. The geologic time scale is also introduced. This kit is complete for 32 students and is reusable.

### ORDERING INFORMATION:

Class size: 32 students.

### INCLUDES:

16 magnifying lenses; 32 student worksheets and guides; 32 student data sheets: "Fossil Observations"; "Geologic Time Scale" transparency; and instruction manual



Cat. No.	Description	Price
S90179	Examining Fossils	188.00/Ea



# Rock Specimens for Hands-On Learning

To teach your students about rocks, minerals, and geology, you need the right tools. Choose from a full selection of individual rock specimens and rock collections for your classroom.



## Featured Eisco™ Rock Specimens and Kits

Description	Quantity	Cat. No.
Apatite Specimen, 3 cm	Each	S39309
Biotite Mica Mineral Specimen, 2 to 3 cm	12/Pk	S24682
Calcite Specimen, 2 to 3 cm	Each	S24683
Carbonaceous Shale Specimen, 2 to 3 cm	Each	S24742
Conglomerate Specimen, 2 to 3 cm	Each	S24722
Granite Specimen, 2 to 3 cm	Each	S26609
Halite Mineral Specimen, 2 to 3 cm	12/Pk	S24692
Hornblende Specimen, 2 to 3 cm	Each	S24695
Limestone Specimen, 2 to 3 cm	12/Pk	S24727
Olivine Specimen, 2 to 3 cm	Each	S24706
Pyrite Mineral Specimen, 2 to 3 cm	Each	S24708
Sandstone Specimen, 2 to 3 cm	12/Pk	S24739
Mineral ID Kit	Each	S27922
Physical Properties of Minerals Kit	Each	S24661
Introduction to Minerals Kit	Each	S24662
Basic Rocks and Minerals Kit	Each	S24663

*Most rock specimens are available as both single samples and packs of 10 or 12. Other sample types are available.*

Visit [fisheredu.com](http://fisheredu.com) or contact your Fisher Science Education sales representative to access our full selection of products.

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Geography

### Atlantis Globe

Mountains rise from its surface, continental slopes descend to its ocean floor. Gyromatic meridian for easy viewing and locating

- Gyro-matic mounting with numbered full-meridian swings up or down to bring any area into closer view
- Raised and depressed relief globe vividly reveals suboceanic mountains, trenches, and fracture zones
- Natural colors illustrate mountains, deserts, forests, and grasslands
- Snow and ice are also depicted
- Globe diameter: 12 in.



Cat. No.	Description	Price
S45159	Atlantis Globe	100.00/Ea

### Traveler Political Globe

Scratch-resistant world globe with mountain ranges around the globe rendered in raised relief and crisp, bright colors used to denote each country, this globe is a great tool for helping children of all ages learn world geography.

- 12 in. diameter; 16-inch height
- Blue oceans with brightly-colored land formations
- Scratch-resistant black acrylic base
- Semi-meridian in a smoky-gray finish
- Raised relief surface clearly denotes mountain ranges



Cat. No.	Description	Price
S04401	Traveler Political Globe	50.00/Ea

### Explorer Political Globe

Experience 3-D mountains in raised relief and political regions in vivid, contrasting colors.

- Ideal for the study of geography, history, science and other subjects
- Dimensions: 12 dia. x 16 in.H



Cat. No.	Description	Price
S45160	Explorer Political Globe	58.00/Ea

### Write-On Dry Erase Globe

Helps students learn geography. Globe can be written on with a dry-erase marker, and helps students memorize geographic locations.

- Made from dry-erase material
- Set in sturdy plastic base
- Continents outlined
- Latitude and longitude lines shown
- Can be cleaned with soft cloth



Cat. No.	Description	Price
S28100	Write-On Dry Erase Globe	53.75/Ea

### Inflatable Globe



Make a game of geography.

For age group between 5 to 13.

- Kids can toss this globe and identify continents, countries, capitals and oceans or hang for display



**INCLUDES:**

A repair kit and an activity guide

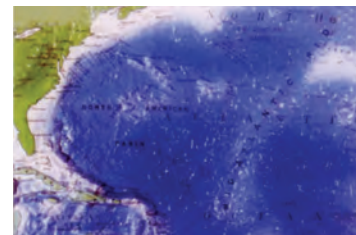
Cat. No.	Description	Price
S98487	Inflatable Globe	9.50/Ea

### Ocean Floor Raised Relief Map



Relief map of North Atlantic Ocean showing typical portion of ocean floor.

- Relief map of North Atlantic Ocean showing typical portion of ocean floor
- Easy to identify all the major ocean features
- Complete with lesson plan
- 18 x 24 in.



Cat. No.	Description	Price
S81667	Ocean Floor Raised Relief Map	261.00/Ea

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## Lab-Aids® Making and Interpreting Topographic Maps (Developed by SEPUP)



Use appropriate tools to analyze and interpret data. Topographic maps provide information about landforms and can be used to help determine an area's past and ongoing geologic processes.

This activity provides students with a basic understanding of topographic maps and how to interpret them. Students conduct a hands-on investigation using the Lab-Aids® Topographic Model to construct contour lines and create a topographic map of an area. The activity illustrates the relationship between the contour lines on a topographic map and the actual shape of the land. Accommodates dozens of classes, each with 6 groups of 4 students. Includes Teacher guide, student sheets, assessment questions and SDS.



Cat. No.	Description	Price
S96774	Base Kit	98.00/Ea
S96775	ADD A GROUP (provides enough material for one additional group of 4 students)	21.75/Ea

## Contour Map Making Kit

Learn how to read and make contour maps.

Easy to use—just cover the molded plastic model with water, mark mountain at each elevation, and then trace contour lines from above onto a transparent plastic sheet.



### INCLUDES:

- Plastic sheet
- Plastic mountain
- Plastic box, 12L x 6W x 3 in.H

Cat. No.	Description	Price
S53005	Contour Map Making Kit (1)	25.50/Ea
S53005B	Contour Map Making Kit (15)	209.00/Ea

## Eisco™ Plotting Compass with Glass Face



This plotting compass with glass face features a dial marked with principal points and features a glass face and aluminum case. It is a great option for students and is economically priced.

- Aluminum case with glass face
- Dial marked with principal points
- High accuracy and sturdy build
- Great option for students
- Economically priced
- 100 mm



Cat. No.	Description	Price
S27744	Plotting Compass with Glass Face	4.45/Ea

## United Scientific™ Liquid-Filled Compass

Durable liquid-filled compass housed in a black rotatable bezel.

- Durable, liquid-filled clear magnetic compass
- Housed in a black plastic rotatable bezel with an outside diameter of 45 mm
- Outer diameter of clear compass is 35 mm
- Graduated in 5° increment
- Includes a lanyard



Cat. No.	Description	Price
S43686	Liquid-Filled Compass	2.20/Ea

## Eisco™ Plotting Compass

Dial marked with principal compass points.

- Glass face
- Aluminum case
- Diameter: 0.6 in. (1.3cm)
- Pack of 10



Cat. No.	Description	Price
S95977	Plotting Compass	7.45/Pk

## Orienteering Compass

Basic, accurate compass to get started with map and compass work.

Compass available individually, as part of an orienteering kit, or as part of a demonstration kit.



### Orienteering Compass

- Graduated in 2° increments and features four scales
- Black bezel with easy-to-read print
- Has liquid-filled capsule, declination correction scale, luminous points, and 4X magnifier in base
- Acrylic base offers scales in inches, centimeters, 1:25,000, and 1:50,000

### Teacher's Compass

- Nonfunctional, oversized 9 x 15 in. (22.8 x 38cm)
- Clear; can be used on an overhead projector

### INCLUDES:

Compass, red base, lanyard and instructions

Cat. No.	Description	Price
S96996	Orienteering Compass	6.80/Ea

Meteorology

## Eisco™ 3 in 1 Weather Station



This 3 in 1 Weather Station Measures Temperature in Celsius, Air Pressure, and Air Moisture Levels

- 3 in 1 weather station acts as a thermometer, barometer, and hygrometer
- Economically priced
- 5.12 in. diameter



Cat. No.	Description	Price
S27651	3 in 1 Weather Station	48.75/Ea

## Eisco™ Small Anemometer

Simple device for elementary children to determine wind speed. It is simple enough for children to understand and use.

- Made of corrosive resistant materials for prolonged outdoor use
- Cups are each mounted on horizontal arms which extends from the axis of rotation
- Includes one red cup and three blue cups
- Red cup is for determining the number of rotations
- Dimensions (L x W x H): 20 x 20 x 7.1cm (7.9 x 7.9 x 2.8 in.)
- Weight: 0.3kg (0.6 lb.)



Cat. No.	Description	Price
S23653	Small Anemometer	16.50/Ea

## Durac™ Compact Sling Psychrometer Thermometers

Measures relative humidity with weather bureau-type wet and dry bulb.



Two thermometers designed with a built in slide rule to convert wet and dry bulb readings to relative humidity. Eliminates the need for calculating tables.

- Range: -5/50 °C
- Divisions: 1°C
- Length: 210mm (8.3")
- Accuracy: 1°C

Cat. No.	Description	Price
S02692	Compact Sling Psychrometer	79.00/Ea

## United Scientific™ Sling Psychrometer

Needs Assembly, Comes with Activity Guide



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.

Cat. No.	Description	Price
S23981	Sling Psychrometer	5.40/Ea
S23982	Sling Psychrometer, 15 pack	71.50/Pk

## Eisco™ Universal Laboratory Hydrometer



Measures specific gravity within the range of 0.700 to 2.000 with 0.01 graduations and a dual scale for light or heavy liquids



- Universal Laboratory Hydrometer
- includes hard plastic case
- Measures specific gravity range 0.700 to 2.000
- Dual Scale For Light and Heavy Liquids
- Graduations: 0.01

Cat. No.	Description	Price
S80850	Universal Laboratory Hydrometer	8.85/Ea

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## Exploring Meteorology

This experiment provides students with the experience of being a meteorologist.



- Studies of pressure changes and creating a barometer
- Studies of wind speed and creating an anemometer
- Learn the skills to confidently read a weather map
- Includes a demonstration of how clouds form by allowing the instructor to form a vapor cloud
- Experiment includes material for 15 groups of 2 to perform the tasks
- Demonstration portion has enough material to perform the demonstration 5 times
- Aligned to the Next Generation Science Standards (NGSS)\*
- Disciplinary Core Ideas: ESS2.C; ESS2.D
- Performance Expectations: MS- ESS2-5
- Cross Cutting Concepts: Cause and Effect
- Engineering Practices: Planning and Carrying Out Investigations

**DISCLAIMERS:** Next Generation Science Standards is a registered trademark of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards was involved in the production of, and does not endorse, this product.

Cat. No.	Description	Price
S40768	Exploring Meteorology	54.50/Ea

## Weather Board

Provides all the tools your class will need to discuss today's date, temperature and weather.

- Students can use the vinyl cling-on pieces to build sentences, and colorful dinosaurs to describe the weather
- Write-on, wipe-off surfaces are provided for writing in numbers, and graphing weather conditions over the course of a month
- Two eyelets for easy hanging.
- Activity guide included provides ideas for Language, Math, and Science activities
- L x W: 26 x 20 in. (66 x 51 cm)



Cat. No.	Description	Price
S93832	Weather Board	41.50/Ea

## Lab-Aids® Weather Forecasting Kit (Developed by SEPUP)

Students work together in teams to interpret weather maps from eight consecutive days.

Each team initially interprets the map for a single day and constructs a weather report for that day. Teams assigned the same day then combine to prepare, and present their weather report to the class. Students then use the information for all eight days to forecast the weather for the unknown, ninth day. Accommodates unlimited classes, each with 16 groups of 2 students.



### INCLUDES:

Four weather map cards for each of eight days; transparency: "Satellite Image of Clouds over North America"; teacher's guide; and 32 student activity worksheets and guides

Cat. No.	Description	Price
S98817	Weather Forecasting Kit	56.50/Ea

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## Kemtec™ Environmental Extremes Plant Growth Kit

Simulate conditions of acid rain, saline soils, drought and erosion in classroom.



A complete introductory unit on environmental studies. Plan to spend four to six weeks.

- Six experimental protocols introduce students to scientific method using plant science model
- Applicable to any biology or environmental science course.
- Students design their own experiments after becoming familiar with experimental model, protocols, data collection and data analysis processes
- Most kit components are reusable for many years
- Complete instructor's manual with reproducible student protocols
- For grades 6 to 12
- Class size: 24 students
- Acids are not included

### ORDERING INFORMATION:

Designed for 24 students. This complete kit includes reproducible student protocols and instructor manual. (Acids not included.)

Can also be made available as an extended kit which includes STEM-related equipment you may not have in your lab, such as pH meters, buffer calibration kit and digital scales; contact your Fisher Science Education Representative for details.

### INCLUDES:

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Instructor manual with reproducible student data sheets</li> <li>• Stirring Rods</li> <li>• Weigh Dishes</li> <li>• Markers</li> <li>• Graduated Cylinders</li> <li>• Flasks</li> <li>• Gloves</li> <li>• Parafilm</li> <li>• Rulers</li> <li>• Cups</li> <li>• Deli Containers</li> <li>• Potting Soil</li> <li>• Petri Dishes</li> <li>• Seeds</li> </ul> | <ul style="list-style-type: none"> <li>• Acid pH Solution Set</li> <li>• Sodium Chloride</li> <li>• Construction Paper</li> <li>• Masking Tape</li> <li>• Paper Towel Roll</li> <li>• Forceps</li> <li>• Magnifiers</li> <li>• Spoons</li> <li>• Write-N-Wipe Boards</li> <li>• 16 oz. Spray Bottle</li> <li>• 70% Alcohol Wipe</li> <li>• pH Meter</li> <li>• Digital Pocket Pen</li> <li>• Digital Scale, 2000Gx 0.1G</li> <li>• Stainless Steel scoop</li> </ul> |
|--|---|

Cat. No.	Description	Price
S02640	Environmental Extremes Plant Growth Kit	773.00/Ea

## Astronomy

### Solar System Model



This Solar System Model allows you to see the solar system in action

- See the solar system in action
- 3D model of our Sun and the eight planets
- The calendar at the base allows the positioning of planets according to the date



Cat. No.	Description	Price
S81696	Solar System Model	109.00/Ea

### Eisco™ Sun, Earth & Moon Orbital Model

Multiple moving axis on this gear driven model demonstrate daylight, night, seasons and phases of moon.

- Mechanical gear-driven model
- Multiple moving axis to demonstrate daylight, night, seasons and phases of the moon
- 12V light bulb inside sun demonstrates sunlight on moon and earth
- Base labeled with the months of the year and seasons for each hemisphere
- Requires 2 AA batteries, not included



Cat. No.	Description	Price
S12895	Sun, Earth & Moon Orbital Model	177.00/Ea

### Eisco™ Solar System Model

Three dimensional model.

- Students can see the planets in their relative sizes and colours. Planet may be set by month to show their relative position
- Sturdy base supports 15 cm. dia. Sun with the outer planet 18 in. from the Sun
- Illustrated study guide includes planet position tables



Cat. No.	Description	Price
S05842	Solar System Model	112.00/Ea

## Elementary Lighted Planetarium

Beginning model shows individual concepts, one at a time

Earth and moon move separately by hand. The ladder chain and gear drive is used solely to keep the axis of the Earth point at a 23.5° angle toward the North Star.



### Demonstrates several concepts:

- The reason for the occurrence of night and day
- The variation in the length of daylight
- The movement of the Earth around the sun from west to east
- Why only one side of the moon is seen from the Earth
- How eclipses of the sun and moon occur
- The cause of the phases of the moon

### ORDERING INFORMATION:

- Height: 12 in. (30.5cm)
- Arm length: 17 in. (43cm)
- Sun: 5.75 in. (14.5cm)
- Earth: 4 in. (10cm)
- Globe color: Light blue or black oceans
- Electrical requirements: 110V

### INCLUDES:

Instruction book

Cat. No.	Description	Price
S96817	Elementary Lighted Planetarium	184.00/Ea

## Kemtec™ Solar System Model Building Kit



Kemtec™ Solar System Model Building Kit contains building materials for students to create models of the solar system.

- Each planet is tiny relative to the size of the sun, and the orbits are massive compared to the size of the planets.
- Although students will discover that it is not plausible to build a true scale model, they are challenged to build a model that suggests the scale of the solar system.
- Meets National Standards for Grades 6 to 12.



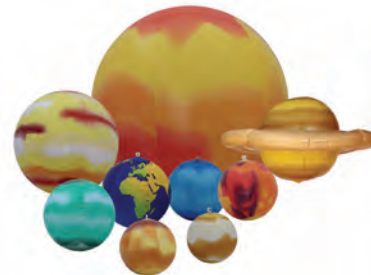
Cat. No.	Description	Price
S27527	Solar System Model Building Kit	476.00/Ea

## Inflatable Solar System



Explore the wonders of astronomy with this Inflatable Solar System Set, and turn any space into outdoorspace.

- Inflate a planet and easily transform any setting into a personal planetarium with this fun, decorative and educational set.
- The color and design of this set is based on actual representations of the planets' view from space including cloud cover and weather systems.
- The set includes a large 28 in. diameter Sun along with Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto which are all proportional in size.
- Each planet is made of easy-to-clean and durable vinyl and features built-in mounting loops so you can easily string your set indoors or outdoors (mounting string not included).



Cat. No.	Description	Price
S81627	Inflatable Solar System	35.00/Ea

## Eisco™ Celestial Star Globe

This model illustrates the Earth's rotation on its axis and its revolution.

The globe shows the milky way, major stars in 3-D and constellations.

- Globe Diameter
- Tall (overall model)
- 17.5 in. detailed Earth globe is fitted inside the large star globe



Cat. No.	Description	Price
S12896	Celestial Star Globe	92.00/Ea



### REMOTE LEARNING ENGAGE YOUR STUDENTS

Find tools and materials to keep your students engaged at [fisheredu.com/remotelearning](https://www.fisheredu.com/remotelearning).



## Lab-Aids® Analyzing & Explaining Moon Phases (Developed by SEPUP)



Collect, analyze, and interpret data to identify the causes of cyclic pattern of Moon's phases, and explain why solar/lunar eclipses occur.



- In the first of the three activities in this kit, students start by ordering the phases of the Moon based on their own experiences and observations of the Moon. They then are challenged to figure out whether there is a predictable, and repeating, pattern in how the Moon's appearance changes over time. Using the pattern they discover, they analyze and interpret data on an incomplete Moon phase calendar and determine which phases occur on the missing days.
- In Activity 2, students interact with a computer simulation that models the Moon's orbit around Earth. Students record data on how the Moon's appearance changes as its position in its orbit around Earth. They then analyze and interpret their data to identify the causes of the cyclic pattern of the Moon's phases.
- In the final activity, students develop and use a three-dimensional model that illustrates how the Moon's orbital plane is not aligned with Earth's orbital plane around the Sun. This phenomenon explains why there are solar and lunar eclipses a few times a year but not each lunar cycle. This activity also provides an opportunity for students to cement their understanding of the relationship between the Moon's orbit and the cyclical pattern of moon phases.
- Accommodates unlimited classes, each with 8 groups of 4 students.

**Includes:**

- 16 sets of eight Moon Phase Cards
- 16 wooden dowel rods
- 16 yellow sticks
- 16 green sticks
- 16 red sticks
- 8 Earth models (2 in. foam ball)
- 8 Sun models (3 in. foam ball)
- 8 Moon models (1 in. foam ball with a hole in it)
- 8 blue sticks
- 8 purple sticks
- 8 large foam boards (8.5 × 8.5 × 1 in.)
- 8 small foam squares (3 × 3 × 1 in.)
- 8 Earth and Moon Positions Templates
- 32 Student Guides
- 1 Teacher's Guide

Cat. No.	Description	Price
S27120	Analyzing & Explaining Moon Phases	376.00/Ea

## Celestron™ Cometron 114AZ Telescope

Celestron's Cometron 114AZ is designed for viewing all types of celestial objects. Features a parabolic mirror to capture the sharpest views of even dim comets. Ideal for even beginner stargazers.

- Quality optical design--parabolic mirror provides sharp image and eliminates spherical aberration
- Fast focal ratio offers a wide field of view, perfect for observing comets, star clusters, galaxies and more
- No-tool setup means you are up and observing in no time
- Lightweight and portable, a great grab-and-go telescope
- Large aperture collects more light and provides more detail



**INCLUDES:**

optical tube, tripod with altazimuth mount, accessory tray, red-dot finderscope, and Celestron Starry Night Basic Edition Software and SkyPortal App downloads.

**WARRANTY:** 2 Year Limited warranty

Cat. No.	Description	Price
S72020	Celestron Cometron 114AZ Telescope	202.00/Ea

## Celestron™ Travel Scope Portable Telescope

Telescopes and tripods that fit inside a custom backpack for easy traveling and storage.

- All coated-glass optical elements for clear, crisp images
- Erect image diagonal so that your views are correctly oriented
- Smooth functioning altazimuth mount with easy pointing to located objects
- Preassembled aluminum full-size photographic tripod ensures a stable platform
- Quick and easy no-tool setup
- Magnification: Magnification 1: 20x, Magnification 2: 40x
- Focal Length: 15.74 in.
- Resolution: 1.99 Arc sec. (Rayleigh), 1.66 arc sec. (Dawes)



**INCLUDES:** Celestron Starry Night Basic Edition Software and SkyPortal App downloads

Cat. No.	Description	Price
S01919	Travel Scope Portable Telescope	93.04/Ea

\* California - WARNING: Cancer [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)  
 \*\* California - WARNING: Reproductive Harm [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)  
 \*\*\* California - WARNING: Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## Refracting Telescope Kit

### Students make a working refracting telescope

This Refracting Telescope Kit allows students to repeat Galileo's ground-breaking work, by constructing 16X refracting telescope. Along the way, students will be able to identify the elements of a simple refracting telescope, learn how lenses work, and be able to measure telescope magnification. No expensive optical benches or materials are required.

- Pack of 10
- All components are included: plastic lenses, coated cardboard telescope tubes, and instructions.



Cat. No.	Description	Price
S48823	Refracting Telescope Kit	111.00/Pk

## Celestron™ National Park Foundation Telescopes

Celestron™ National Park Foundation Telescopes are designed with travelers in mind, yet offer high quality optical power



### TravelScope™ 60

- Designed with traveling in mind - offers high-quality performance at an exceptional value
- This refractor telescope is perfect for terrestrial and celestial viewing on the go
- Can view the planets, moon, star clusters and brighter deep sky objects like the Orion Nebula and Andromeda Galaxy at night
- Erect image star diagonal makes the optical tube ideal for using as a spotting scope during the day
- Adjustable tripod legs allow you to customize the telescope's height or place it on raised surfaces like a picnic table

### FirstScope

- It doesn't get much simpler or more portable than the FirstScope's tabletop Dobsonian design
- The Newtonian reflector optical system features a spherical glass mirror with a generous 76 mm of aperture
- You'll get bright, sharp views of celestial objects and observe the Moon's mountains and craters in crisp detail
- Wide field of view allows for observation of the expansive views of the

sky, which include open star clusters, or favorite deep-sky objects like the Orion Nebula

- Weighing just 4.3 lb. it is the perfect companion for any outdoor adventure
- Includes free downloads of Celestron Starry Night Basic Edition Software and SkyPortal App.



Cat. No.	Description	Price
S81329***	FirstScope Telescope	64.50/Ea
S81328***	Travel Scope™ 60 Telescope	80.00/Ea

## HookUpz 2.0 Universal Smartphone Optics Digiscoping Adapter

HookUpz 2.0 Universal Smartphone Optics Digiscoping Adapter allows users to connect their smartphones or tablets to a variety of different optics and then use built-in camera applications to take pictures and record video through the eyes of the optics.



- Connect smartphone to binoculars, spotting scopes, telescopes, microscopes (including slit lamps), monocular, endoscopes, borescopes and more
- Compatible with smartphones and phablets like the iPhone 6/6S Plus, iPhone 7/7 Plus, iPhone 8/8 Plus, iPhone X, iPhone XS/XS Max, iPhone 11/11 Pro/11 Pro Max and Samsung Galaxy models with cases up to 3.75 inches wide
- Compatible with multi camera phones as well
- Not compatible with tablets or riflescopes
- Only compatible with optic eyepieces that have an outer housing diameter that range between 25 and 58 mm and a depth of at least 14 mm (0.6 in.).
- Optical eyepiece can be straight or slightly tapered but complex shaped eyepieces may not work (reference sizing guide for additional information).
- Contains glow in the dark rubber pieces to increase visibility in low light situations

- Clamping mechanism features a self-centering, dual-spring, quick-release clamp and an optic cam-lock for a tight grip on the eyepiece to prevent sagging and slippage issues
- Horizontal and vertical adjustment features are compact and ergonomic.
- Horizontal phone alignment uses a variable pitch screw for fine control adjustments but can also be moved quickly between an iPhone (corner camera) and Android (center camera) positions.
- Vertical alignment is controlled on the top for a compact design that should not interfere with any side buttons on a phone.



- Comes included with a protective EVA zippered storage case along with an optional lens spacer for added eye relief.
- Limited lifetime warranty
- Includes free downloads of Celestron Starry Night Basic Edition Software and SkyPortal App.

Cat. No.	Description	Price
S81148	HookUpz 2.0 Universal Smartphone Optics Digiscoping Adapter	67.50/Ea

## MonoPix Smartphone Digiscoping Adapter Bundle



MonoPix Smartphone Digiscoping Adapter Bundle comes with a retrofitted 8 x 42 mm waterproof monocular.

- Take pictures and record video using the built-in camera application on a smartphone through the lenses of the monocular.
- Adjustable to fit most popular smartphones (up to 3.75 in. wide in portrait orientation) including Apple (iPhone), Samsung (Galaxy/Note), HTC, LG and more.
- Compatible with multi-camera smartphones.
- In most instances, there is no need to remove the phone case. However, some larger, thicker phone cases may need to be removed.
- Digiscoping adapter is not compatible with other binoculars, spotting scopes, riflescopes, microscopes, telescopes or tablets on the marketplace.
- Included monocular is tripod mountable and comes



included with a soft pouch, wrist strap, lens covers and a microfiber cleaning cloth.

- Monocular contains an 8X power magnification and a 42 mm objective lens.
- Lenses are fully multi-coated to ensure extremely sharp and ultra-precise image quality.
- Digiscoping adapter set is great for bird watching, hunting, sight-seeing, surveillance, sporting events, concerts and other outdoor adventures.
- Limited Lifetime Warranty

Cat. No.	Description	Price
S81150	MonoPix Smartphone Digiscoping Adapter Bundle	113.00/Ea

## Celestron™ UpClose G2 Binoculars



High Quality Binoculars at an affordable price

### FEATURES:

- Multi-coated optics increase light transmission resulting in brighter and sharper images with high contrast levels
- Stylish rubber covered aluminum body protects from rough handling
- Ergonomic thumb indents and finger ridges for extra non-slip comfort and ease of use
- Water resistant
- Soft carrying case
- Binocular straps



**WARRANTY:** Limited Lifetime

### Ideal For:

- Bird Watching
- Sporting Events
- Nature & Wildlife
- Hunting
- Travel & ventures
- Concerts & live events
- Boating

**INCLUDES:** Soft Carrying Case, Binocular Straps

Cat. No.	Description	Magnification	Price
S28084	Porro Prism	10x	42.25/Ea
S28083	Roof Prism	10x	18.00/Ea

## Celestron™ SkyMaster 12X 60mm Binocular

Features multi-coated optics and high index BaK-4 prisms for effective light transmission, increased contrast and resolution.

- 12X magnification porro prism binocular
- Large 60mm objective lens offers maximum image brightness in low-light conditions
- Multi-Coated optics for sharp, clear views
- Suitable for terrestrial or astronomical viewing
- Protective rubber covering for ultra-firm grip
- Large center focus knob for easy focusing
- Tripod adaptable
- Long eye relief ideal for eyeglass wearers



### Specifications:

- Exit Pupil: 5mm
- Eye Relief: 17mm
- Close Focus: 18m (59 ft.)
- IPD Max: 56mm
- IPD Min: 72mm
- Twilight Factor: 27
- Relative Brightness: 25
- Prisms: BaK-4

**INCLUDES:** Objective lens cap, rain guard, carrying case, neck strap, lens cloth, instruction manual

**WARRANTY:** Limited Lifetime Warranty

Cat. No.	Description	Price
S14066	SkyMaster 12X 60mm Binoculars	84.00/Ea

## Celestron™ Cometron 7x50 Binoculars

Celestron Cometron sleek, portable binoculars feature large objective lenses and multi-coated optics for optimal light-gathering capabilities to bring celestial objects into bright, sharp focus. Ideal for comet watching, stargazing, and viewing craters on the moon.

- Wide field of view reveals a larger portion of the night sky, allowing you to view more of the comet's tail
- Large 50 mm objective lenses have tremendous light-gathering ability, ideal for astronomical use
- Multi-coated optics dramatically increase light transmission for brighter images with increased contrast and resolution
- Large exit pupil provides maximum light during nighttime and low-light viewing sessions
- Strong and durable aluminum housing



### INCLUDES:

Neck strap, carrying case, objective lens caps, eyepiece caps, lens cloth, instruction manual

**WARRANTY:** Limited Lifetime

Cat. No.	Description	Price
S72021	Celestron Cometron 7x50 Binoculars	36.75/Ea



## Economy Celestial Globe

Compact 8 in. (20.3cm) globe illustrates many astronomical concepts.



- Contains a movable Earth and sun
- Disassembles for easy storage
- Shows constellations, right ascension, declination lines and the ecliptic



### INCLUDES:

Teacher's guide with assembly instructions and activities

Cat. No.	Description	Price
S98151	Celestial Globe	189.00/Ea

## Hawk Binoculars for Kids

Aids children in exploring outdoor field trips.

- Ultra-deluxe 30mm pair of field binoculars for children
- Durable, lightweight, easy for children to hold on their own
- For outdoor events, sports, bird watching camping



### INCLUDES:

Pouch and lens cloth

Cat. No.	Description	Price
S38810	Hawk Binoculars for Kids	19.25/Ea

## MiniMight 6X 18mm Pocket Monocular with Carabiner Clip

MiniMight 6X 18 mm Pocket Monocular is a compact and portable monocular that comes included with an carabiner clip, soft pouch and a lens cloth.

- Comes with a carabiner clip to attach to gear or clothing.
- Features fully coated optics that will give a crystal clear, precise image.
- Field of view is 426 feet at 1,000 yards
- Comes with a soft pouch, carabiner clip and a lens cloth
- Backed by a No Fault, No Hassle warranty



Cat. No.	Description	Price
S81151	MiniMight 6X 18mm Pocket Monocular with Carabiner Clip	22.75/Ea



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\*\*\* California - WARNING: Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## Celestron™ Kids 7-in-1 Spy Gadget

Celestron™ Kids 7-in-1 Spy Gadget is pocket sized and can be carried anywhere!



- 8x magnification telescope
- 9x magnifier
- 30x magnification microscope
- Pocket Sized: Small and portable for use anywhere
- Wrist strap for easy carrying
- CPSIA and ASTM F963 tested
- Age rated 8+



Cat. No.	Description	Price
S81335	Kids 7-in-1 Spy Gadget	15.25/Ea

## Celestron™ NexYZ 3-Axis Universal Smartphone Adapter

Celestron NexYZ 3-Axis Universal Smartphone Adapter connects a smartphone to a telescope, spotting scope, binocular, monocular, and microscope to capture images and video through the eyepiece.

### FEATURES:

- A complete digiscoping solution: NexYZ connects your smartphone to almost any eyepiece
- NexYZ's patented design works with telescopes (with most 1.25" or 2" eyepieces), spotting scopes, binoculars, monoculars, and microscopes (with the included adapter rings).
- Works with virtually all smartphone models, including the latest devices from Apple, Samsung, and Google.
- Features three directional knobs (X-, Y-, and Z-axis) that perfectly align your phone's camera with the eyepiece in seconds. In addition, you can make tension adjustments to keep the phone firmly in place.
- Stands up to rigorous field use thanks to its robust, durable construction with a metal frame and polymer body.



Smartphone and microscope not included

### Easy as X-Y-Z

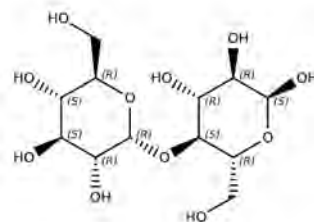
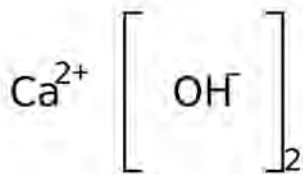
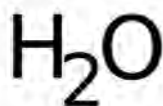
- Three-axis adjustment gives users the power to place a phone on the platform
- Adjustment is precise, quick and easy
- Switching phones, eyepieces, or optical instruments, only necessitates slight adjustments to re-center the camera over the new eyepiece

### WARRANTY: 2-Year Warranty

Cat. No.	Description	Price
S72453	NexYZ 3-Axis Universal Smartphone Adapter	66.00/Ea

# Chemicals for Environmental Science

Use this curated list of products to restock your Environmental Science classroom, and visit [fisheredu.com](http://fisheredu.com) to find even more science education products.



Description	Quantity	Cat. No.
Fisher Science Education™ Calcium Sulfate, Dihydrate	100 g	S25230
Fisher Science Education Sodium Phosphate Solution, 0.1M	500 mL	S25889
Fisher Science Education Sodium Nitrate	500 g	S25558A
Fisher Science Education Bromothymol Blue Solution, 0.04%	10 mL	S25207
Fisher Science Education Sodium Hydroxide Solution	500 mL	S25880
Fisher Science Education Vinegar	500 mL	S25623
Fisher Science Education Sodium Bicarbonate	500 g	S25533
Fisher Science Education Hydrochloric Acid Solutions (Molar)	500 mL	S25855
Fisher Science Education Sodium Thiosulfate Solution, 0.1M	500 mL	S25893
AquaPhoenix Scientific™ Starch Indicator Solution, 1.0% w/v	500 mL	S88794
Fisher Science Education Sulfamic Acid	50 g	S25792
Fisher Science Education Manganese(II) Sulfate	500 g	S25422
Lugol's Dilute Solution, 2%	500 mL	S25945
Fisher Science Education Lime Water	500 mL	S25386
Fisher Science Education Water	4 L	S25293
Fisher Science Education Crystal Violet, 1%, Solution	100 mL	S25275
Fisher Science Education Potassium Iodide Solution, 0.1M	500 mL	S25864
Fisher Science Education Sulfuric Acid Solution, 0.05M	500 mL	S25895
Fisher Science Education Bromocresol Green Solution	100 mL	S25846

## Environmental Science

## Agricultural Science

**LaMotte™ Garden Guide Kit**

Convenient kit for classroom soil testing and garden analysis.

Measures nitrogen, phosphorus, potassium and soil pH.

- Case holds all components, including instruction manuals and accompanying handbooks
- Grades 5+

**INCLUDES:**

- 15 tests each for nitrogen, phosphorus and potassium; 30 tests for soil pH (range 4.0 to 9.0)
- Diagrammed instructions in English, Spanish and French
- Laminated color charts
- *Garden Guide* chart
- *LaMotte™ Soil Handbook*
- Free downloadable handbooks and teacher resources

Cat. No.	Description	Price
S85039	Garden Guide Kit	66.50/Ea
S85039R	Reagent Refill	48.25/Ea

**Lab-Aids® Soil Nutrients and Fertilizers (Developed by SEPUP)**

In this activity, students will measure the amount of nitrogen in several different soils.



Nitrogen is one of the essential plant nutrients found in soil. Students measure the amount of nitrogen in several different soils. They then examine the role of nitrogen in plant growth and consider the effect of excess nutrients in an ecosystem.

**INCLUDES:**

1 teacher's guide with MSDS; 32 student worksheets and guides; 1 potting soil, vial; 2 fertilizer solution, bottle; 3 nitrate extraction solution, bottle; 8 vials labeled "N"; 8 vials labeled "B"; 16 AB trays; 8 stir sticks; 8 white scoops; 8 filter funnels, SEPUP; 8 filter paper circles, fine; 8 3mL pipets; 8 nitrogen color charts; 8 cups, 30mL, graduated

Cat. No.	Description	Price
S20953	Soil Nutrients and Fertilizers	194.00/Ea

**Lab-Aids® Soil Composition and Structure**

Gather data through direct observations. Accurate and complete observations are important for making conclusions about the natural world.

Contains three activities for students:

- Activity 1: Students describe a soil sample, then identify the similarities and differences between their group's descriptions and those of other groups and develop a primary definition of soil.
- Activity 2: Expands the investigation of soils by using a water column to separate soil samples into various components. This data provides more evidence on the types and proportions of the different materials in each soil and allows students to refine their previous definition of soil.
- Activity 3: Is a reading which provides information that expands their personal experience and observations from the previous activities to deepen and refine their understanding of the composition, structure and development of soil.

**INCLUDES:**

One teacher's guide with MSDS; 28 student worksheets and guides: How to Measure Length using a Metric Rule; 28 student worksheets and guides: Measuring Volume with a Graduated Cylinder; 28 student worksheets and guides: Soil Composition and Structure; 18 cups, 9 oz. plastic; 12 plastic tubes with caps, clear; 12 3x5 index cards; 8 plastic teaspoons; 6 sieves; 6 cylinders and bases, 50mL graduated; 6 cups, 30mL graduated; 6 AB trays; 1 soil A, 32 oz. bottle; 1 soil B, 32 oz. bottle; 1 transparency: Comparing Particle Size

Cat. No.	Description	Price
S20661	Soil Composition and Structure	184.00/Ea

**Soil Test Kit**

Accurate test results within the hour.

- Measure soil's pH, nitrogen, phosphorus and potassium — up to 10 times each
- Color comparator system
- Color-coded reagent capsules perform 40 total tests



Cat. No.	Description	Price
S17702	Soil Test Kit	24.00/Ea



## LaMotte™ Soil NPK Test Kit

Unit dose tablet test for soil macronutrients



- Simple diagramed instructions and laminated color chart
- 50 tests each for nitrogen, phosphorus and potassium in soil
- Originally developed for the GLOBE program

Cat. No.	Description	Price
S65951	Soil NPK Test Kit	35.00/Ea

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## LaMotte™ Soil Macronutrients Test Kit

Make detailed evaluations of soil composition.

- Soil analysis outfit includes all of the materials needed for accurate and detailed soil evaluation
- Determines soil pH, nitrogen, phosphorus, potassium content and soil texture
- Each self-contained, individual module contains the necessary materials and equipment to conduct 50 tests
- All components are contained in a specially designed, rugged carrying case



**ORDERING INFORMATION:** Grades 6+.

**INCLUDES:**

- Soil sampling tube
- 50 soil sample bags
- Free downloadable handbooks and teacher resources
- Soil analysis report forms

Cat. No.	Description	Price
S17704	Soil Macronutrients Test Kit	519.00/Ea

## LaMotte™ Nitty-Gritty Soil Test Kit

Investigate the basics of soil science and healthy plant requirements for proper soil texture, ideal levels of soil pH and nutrients.

- Learn to properly care for plants and perform pH, nitrate, phosphate and potassium soil tests using unit dose TestTabs™ methods
- Ideal demos for elementary students



**ORDERING INFORMATION:**

Grades 3+.

**INCLUDES:**

Reagents for 10 tests for each test factor, games and activities and instruction manual

Cat. No.	Description	Price
S65404	Nitty Gritty Soil Science Kit	37.75/Ea

## Soil pH Meter

Meter designed exclusively for quick soil testing.

- Measures soil pH from 3.5 to 9 so you can ensure proper plant nutrition
- No more litmus paper, chemicals or messy solutions
- No batteries required — meter works by sensing minute soil currents
- Packaging includes detailed instruction with optimal pH values for more than 400 plants



Cat. No.	Description	Price
S45153	Soil pH Meter	31.75/Ea

## Soil and Composting Thermometer

Soil and Composting Thermometer is easily readable thermometer when measuring soil temperature



- Body has a ball at one end to make it easier to stick the thermometer into the soil
- Sturdy metal construction will stand up to rugged use

Cat. No.	Description	Price
S38987	Soil and Composting Thermometer	9.85/Ea

## Kemtec™ Soil Analysis Kit



Kemtec™ Soil Analysis Kit helps students gain hands on experience identifying, characterizing, and describing earth materials through seven experiments designed to determine texture, composition, particle size range, density, permeability, porosity, and pH.



- Students learn how soils are formed, assess properties important in determining agricultural and commercial use, and discover characteristics important in assessing soil drainage, erosion, and fertility.
- Includes loam, silt, clay, sandy soil, topsoil, fine sand, coarse sand, and gravel for making classic comparisons.
- Additional soil samples may be used if desired.
- Includes sieve sets and all required supplies for testing, complete instructor's manual with worksheets, assessment materials, and answer keys.
- Packaged in a reusable plastic tote.
- Allow 4 to 5 hours of lab time to complete all experiments in the soils unit.
- Some experiments will require observation on subsequent days.
- Designed for 24 students working in groups of four.
- Balance recommended, not included.
- Meets National Standards for Grade Levels 7 to 12.

Cat. No.	Description	Price
S27532	Soil Analysis Kit	341.00/Ea

## Small Group Learning: Soil Analysis

Soil composition has been a keystone experiment in earth science classrooms for many years. Our soil analysis kit will teach students the skills needed to properly conduct soil composition tests as well as allow them to collect and evaluate local soil samples.



- By bringing in local soil samples the students can build a stronger connection to their own local environment while still building on a knowledge base that can be applied to any other environment.
- Kit contains enough material for 5 groups
- Teacher's Manual and Student Study Guide copymasters are included
- Aligned to the Next Generation Science Standards (NGSS)
- Disciplinary Core Ideas: ESS2.A
- Performance Expectations: MS-ESS2-1
- Cross Cutting Concepts: Stability and Change
- Engineering Practices: Developing and Using Models
- Size: 12 x 12 x 12 in. (L x W x H)

**Note:** This learning activity requires a fume hood. (Sold separately.)

### ⚠️ ALERTS:

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, Phenolphthalein/Methanol/Methyl isobutyl ketone, Bromoform, Chromium/hexavalent compounds, Lead and lead compounds and Respirable crystalline silica, which are known to the State of California to cause cancer, birth defects and reproductive harm.

Cat. No.	Description	Price
S40743***	Small Group Learning: Soil Analysis	134.00/Ea

## LaMotte™ Soil Sampling Tube

Easy-to-use, easy-to-clean, galvanized-steel sampling tube.

- Collects soil samples from a depth of up to 12 in. (30.5cm)
- Cutaway viewing window for inspection of soil stratification 9.75 in. (25cm)
- Soil core: 1D x 11.75 in.L (2.5 x 30cm)



**INCLUDES:** 20 sample bags and instructions

Cat. No.	Description	Price
S45110	Soil Sampling Tube	38.50/Ea



\* California - WARNING: Cancer [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)  
 \*\* California - WARNING: Reproductive Harm [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)  
 \*\*\* California - WARNING: Cancer and Reproductive Harm -[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## Eisco™ Ganong's Potometer with Glass Stopcock

Eisco™ Ganong's Potometer with Glass Stopcock is used for measuring the rate of water uptake of a leafy shoot during transpiration or photosynthesis.

- For demonstration of transpiration rates and rates of water absorption by a cut shoot under various external conditions
- Made from high quality borosilicate glass
- Mounted on wooden base by clips
- Base, approximately 12.25 in. wide
- Height to top of reservoir is approximately 6.5 in.
- Reservoir Diameter is approximately 0.75 in.
- Capillary bore diameter is 1 mm
- Instruction manual included
- Length: 5 cm



**WARRANTY:** 1 year limited manufacturer warranty

Cat. No.	Description	Price
S29355	Ganong's Potometer with Glass Stopcock	25.50/Ea

## Eisco™ H Type Potometer

Eisco™ H Type Potometer is suitable for individual student use to measure the uptake of water by a leafy shoot during conditions that cause transpiration or photosynthesis.

- H Type potometer for measuring rate of water uptake by a leafy shoot
- Cut shoot is attached to the side arm with tubing and the wide glass tube acts as the reservoir
- Made from high quality borosilicate glass
- Reservoir tube measures 6 in. long, 3 in. wide with side arm
- Capillary tube measures 7 in.
- Great for individual student use



**WARRANTY:**

1 year limited manufacturer warranty

Cat. No.	Description	Price
S29356	H Type Potometer	14.25/Ea

## Brassica Quick Plant™ Seeds

Quick-growing seeds encourage hands-on classroom activities.

- Vial contains 200 seeds



Cat. No.	Description	Price
S05697	Brassica Quick Plant™ Seeds	57.00/Ea

## Eisco™ Polypropylene Flower Pot

Eisco™ Polypropylene Flower Pot with a downward extended rim which provides convenient lifting even if the pot is filled.

- Polypropylene pots with holes in the bottom for draining
- Pots have a downward extended rim to make lifting easier even if the pot is filled



**WARRANTY:**

1 year limited manufacturer warranty

Cat. No.	Height	Price
S29361	100 mm	1.45/Ea
S29362	150 mm	2.15/Ea
S29363	200 mm	3.70/Ea
S29364	250 mm	7.55/Ea

## GrowLab™ II Compact Indoor Garden

Ideal for classrooms on a budget where space is limited and/or mobility is not an issue.

Complete, programmable, indoor growing unit allows more freedom.

- Sturdy, easy-to-assemble frames constructed of 1 in. (2.5cm) square aluminum
- Lightweight, 48 in. (123cm) fluorescent fixtures on easy-to-adjust slide rods
- 40w Sylvania™ Gro-Lux™ wide-spectrum bulbs for optimum plant growth
- Removable plant trays constructed of rigid heavy-duty plastic
- 24-hour programmable timers control “day” length
- Plastic moisture grids provide water for plants on weekends
- Humidity tent provides a moist and warm growing environment



**ORDERING INFORMATION:**

Frame dimensions: 54 × 12 × 40 in. (135 × 30 × 100cm).

**INCLUDES:**

- One light fixture
- Two 40w Gro-Lux wide-spectrum bulbs
- Two plastic trays
- Two moisture grids
- 24-hour timer
- Climate control tent
- 128-page teacher's manual
- “Growlab: A Complete Guide to Gardening in the Classroom”

Cat. No.	Description	Price
S28280	GrowLab™ II Compact Indoor Garden	342.50/Ea



## Ecology &amp; Pollution

## Stream Table

Demonstrates stream erosion and deposition of soils either in the classroom or outside

- Includes a plastic tray, drain trough, tray support, and siphon tube
- Students will learn the impact water has on the development of land formation
- Allows students create their own landforms while simulating water streams
- Used in the classroom, at home or outdoors
- Sand not included
- For grades 3 to 12 and ages 8 to 18 years
- Dimensions of this table are: 14 × 46 × 2.5 in. deep
- Activity Guide included



Cat. No.	Description	Price
S81790	Stream Table	125.00/Ea

## Stream Table

With an integrated design, setup is a breeze — simply add water, turn on the pump and teach.

Stream tables are an essential part of the earth sciences class for the study of erosion, sediment deposition and the behavior of rivers and lakes. Use them to unfold these processes inside the classroom at an accelerated rate — easier than observing a real river over the course of decades.

- Rugged plastic construction
- Features five water jets
- One water jet yields one piddly stream, while many jets form tributaries that form rivers
- Integrated reservoir with sediment trap prevents particulates from clogging the pump
- Clear acrylic sides allow views of sediment layers
- Integrated prop holds the table at several angles
- Removable dam creates a lake to illustrate how sediments form deltas
- Fully watertight
- Folds for storage

### ORDERING INFORMATION:

Dimensions: 48 × 20 in. (122 × 50.8cm).



Cat. No.	Description	Price
S06669	Stream table	545.00/Ea

## Lab-Aids® Modeling and Investigating Watersheds

Using this kit, students use appropriate tools to analyze and interpret data.

This kit provides students with exclusive Lab-Aids® Watershed models to help them explore the dynamics of watersheds. Despite the significance of watersheds, many students get few opportunities to explore this important aspect of topography and its relationship to the water cycle. Students apply 'rain' over a topographic model and observe the water runoff. From their observations they identify the location of major bodies of water such as lakes, rivers, and streams. This activity not only provides students with first hand experience with watersheds but also provides a knowledge base to better understand issues such as how an abandoned mine may influence water quality far from the mine site or how farming practices in Nebraska may influence the health of organisms in the Gulf of Mexico. Accommodates 10 classes, each with 6 groups of 4 students. Includes teacher guide, student sheets, assessment questions and SDS for

all chemicals.

### INCLUDES:

- Teacher's manual
- 28 student worksheets and guides
- 6 Lab-Aids® watershed trays
- 6 Pipets, 3mL
- 1 Blue food coloring, 12mL drop controlled bottle
- 12 red/blue pencils
- Transparencies: Map of Major U.S. Rivers, Sample Map of Water Flow within the Model, Map of the Mississippi Watershed Sub-Basins



Cat. No.	Description	Price
S94496	Modeling and Investigating Watersheds	126.00/Ea

## Lab-Aids® Desktop Modeling Stream Erosion and Deposition Kit

Student groups use a Lab-Aids® Mini Stream Table to investigate the dynamics of stream erosion and deposition.

Using specially engineered materials students create, observe, describe, and interpret the erosional and depositional patterns created when 'rainwater' flows over an area. Some of the features commonly formed include canyons, braided streams, and deltas. Accommodates 2 classes, each with 6 groups of 4 students. Includes teacher guide, student sheets, assessment questions and SDS for all chemicals.

**ORDERING INFORMATION:**  
Grades 6+.

**INCLUDES:**  
**Classroom Kit (S96778):** Two bottles of sand, six stream tables, six rainmakers, six stands, six catch basins, six spoons and cups, 32 worksheets and teacher's guide



**Student Kit (S96779A):** One each of all the items included in the Classroom Kit

Cat. No.	Description	Price
S96779A	Student Kit	43.25/Ea
S96778	Classroom Kit	204.00/Ea

## Environmental Testing Kit

Environmental Testing Kit teaches students how environmental scientists study pollution by collecting, and testing samples from their local community.



**DISCLAIMERS:**  
WARNING: This product can expose you to chemicals including Chromium, hexavalent compounds, which are known to the State of California to cause cancer and reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

- Learn how environmental scientists study pollution by testing air and water samples from your local area!
- This kit includes nine different tests to determine the air and water quality of samples collected from the community
- Investigate water quality by testing for dissolved oxygen levels, water hardness, pH, phosphate, and chloride content
- Additionally, test for particulate and chemical pollutants in the air, measure smoke density, and learn how excess carbon dioxide in air affects the environment
- Teacher's Manual and Student Worksheets included
- Materials provided accommodate a class of 30 working in group

Cat. No.	Description	Price
S27134	Environmental Testing Kit	66.25/Ea

## Kemtec™ Environmental Extremes Kit Plus

Kemtec™ Environmental Extremes Kit Plus introduces students to environmental studies through the creation of their own soil erosion model

- Simulate the conditions of acid rain, saline soils, drought, and erosion
- Uses plant growth models and soil erosion models
- Includes extended erosion activities featuring cost analysis
- Introduce students to scientific process through nine detailed experiments
- Students design their own experiments once familiar with experimental protocols, data collection, and data analysis
- Ideal for biology, agriculture, or general science courses
- Includes pH meters and digital scales
- Acids are not included
- Grades 6-12



Cat. No.	Description	Price
S30829	Environmental Extremes Kit Plus	824.00/Ea

## Lab-Aids® Climate Change: Organisms as Climate Indicators Kit (Developed by EDC)

Lab-Aids® Climate Change: Organisms as Climate Indicators Kit helps students investigate the effects of climate change

- The presence, or specific features, of certain organisms are good indicators, or proxies, for determining the climate of a region
- Since organisms become adapted to survive in the climatic conditions of their habitats, fossils of past life have played an important role in determining past climates
- Examine simulated drill cores of recent and much older seafloor sediments that contain 'fossils' of microscopic organisms called foraminifera (forams)
- Students sort the different forams contained in their sediment core and determine the percentage of a certain species with right-coiling shells
- Knowing the age of the sediments and that the percentage of right-coiling shells correlates to the water temperature at the time, create a graph showing how water temperature has changed over time



Cat. No.	Description	Price
S72108	Climate Change: Organisms as Climate Indicators Kit	134.00/Ea

## Lab-Aids® Climate Change: Carbon Cycling Kit (Developed by EDC)

Lab-Aids® Climate Change: Carbon Cycling Kit helps students understand the role carbon plays in everyday life

- Over the course of several class periods, students engage in four activities related to carbon and its movement through the carbon cycle
- In Parts A and B students build molecular models to better understand some of the everyday reactions that allow carbon atoms to form different molecules and move from one place to another
- Part C ties the previous parts together as students are introduced to, and do a basic analysis of, Earth's major carbon sources, sinks, and associated fluxes
- Additionally, they learn that when properly balanced, the carbon cycle helps maintain stable conditions, including average surface and ocean temperature



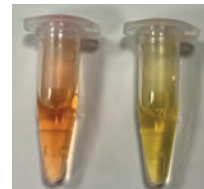
Cat. No.	Description	Price
S72109	Climate Change: Carbon Cycling Kit	192.00/Ea

## Invisible Footprints: Seeing Carbon Dioxide and Understanding Climate Change Kit

**NEW**

In this experiment, students get to be in charge of their own personal atmosphere! Explores the global carbon cycle and climate change in a simple, positive, and intimate way. Ideal for a middle school classroom.

- Completion Time: 1 Week (1-1.5 hours total lab time)
- For 20 Students



Cat. No.	Description	Price
S27557	Invisible Footprints: Seeing Carbon Dioxide and Understanding Climate Change Kit	55.00/Ea

## Water Cycle Model

**NEW**

This 3D Water Cycle Model will show upper level of an underground surface in which soil or rock is permanently saturated with water

- 3D Water Cycle Model
- Shows upper level of an underground surface in which soil or rock is permanently saturated with water
- The water table separates the underground water zone from the capillary fringe or zone of aeration



Cat. No.	Description	Price
S81680	Water Cycle Model	63.25/Ea

## Water Cycle 3-D Model Kit

**NEW**

Assemble and use 3-D models to visualize and investigate key science structures.

- Gain a critical understanding of complex structures & processes through the assembly of 3-dimensional models
- Kit includes enough materials for students to assemble up to 10 paper models by working either independently or cooperatively in small groups
- Also includes comprehensive Teacher Resource Guide outlining opportunities for your students to Engage, Explore, Explain, Extend & Evaluate their understanding of key Scientific concepts
- Satisfies NGSS Standards which encourage students to develop & use models to represent structures, systems & processes, then provide explanations, make predictions or investigate solutions
- Perfect for use in the classroom, lab or at home



Cat. No.	Description	Price
S81486	Water Cycle 3-D Model Kit	37.50/Ea



## Water Treatment and Filtration

Develop a knowledge of the processes performed at a water treatment plant and understand the reasons for each.



- Use “polluted” water to perform on a small-scale several procedures that occur in a water treatment plant. Examine the changes in the water after each treatment step is performed.
- Observe physical characteristics of water, such as clarity, color, odor and how each is affected from the beginning of the treatment process until the end.

### INCLUDES:

1500g fine sand, 1500g coarse sand, 1500g fine gravel, 300g activated charcoal, 25g potassium aluminum sulfate (alum), 25g calcium oxide (lime), 5g Kaolin (clay) powder, 5mL green food coloring, 5mL odor agent, 75 plastic cups and 15 stirring sticks

### REQUIRES:

Container large enough to prepare “untreated water” ( and a sharp item (such as a nail or dissecting probe) for students to poke small holes in the cups used for filtration

### ⚠️ ALERTS:

**WARNING: This product can expose you to chemicals including Respirable Crystalline Silica, which is known to the State of California to cause cancer.**

Cat. No.	Description	Price
S97623*	Water Treatment and Filtration Demonstration Kit	74.75/Ea

## LaMotte™ Water Pollution 1 Kit

For detecting water pollution in aquatic environments.  
Water Pollution 1 Kit

- Examines water quality in suspected or known polluted aquatic environments
- Contains individual test modules for 11 key test factors: dissolved oxygen, chlorine, pH, nitrate-nitrogen, phosphate, ammonia-nitrogen and temperature
- With complete instructions and reagents to perform 50 tests for each factor



**ORDERING INFORMATION:** Grades 5+.

**INCLUDES:** A field tote and free downloadable handbooks and teacher resources

Cat. No.	Description	Price
S04351	Water Pollution 1 Kit	503.00/Ea

## Lab-Aids® Groundwater Contamination: Trouble in Fruitvale (Developed by SEPUP)

Exploring earth science concepts such as the water cycle, map making and interpretation, and groundwater pollution is the objective of this module.



These concepts are used in an investigation of groundwater contamination in the fictional city of Fruitvale. Students design and carry out a plan for testing water from different parts of the city to determine the contamination’s source, severity, extent, and rate of travel. The data is then used to analyze the risk to Fruitvale’s water supply. Finally, the students read about several clean-up options and participate in a role-play of a town meeting to decide which clean-up option to use.

Cat. No.	Description	Price
S28728	Groundwater Contamination: Trouble in Fruitvale	483.00/Ea

## Kemtec™ The Fish Factory Kit

Kemtec™ The Fish Factory Kit allows students to create their own model of a fish and defend the design choices that they made

- Fish Factory examines the relationship between structure and function in the context of adaptability of fish to their ecosystems
- Students integrate classification, anatomy, marine habitats, and behavior of fish
- Design and build a model of a new fish species and assign it a genus and species
- Coordinate the habitat, survival techniques, behavior, and feeding patterns with the characteristics of their new fish
- Short presentations are given to defend student fish designs
- Pairs well with online Build A Fish activities and climate change discussions
- Grades 5-9



Cat. No.	Description	Price
S30819	The Fish Factory Kit	149.00/Ea

	* California - WARNING: Cancer <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>
	** California - WARNING: Reproductive Harm <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>
	*** California - WARNING: Cancer and Reproductive Harm - <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>

## Kemtec™ Environmental Engineering Oil Spill Management Kit

Hands-on oil spill awareness and cleanup kit designed for grades 7 to 12.

Students simulate deep-ocean and beach crude oil spills as they engage in the work of an environmental engineering team using models to learn the physical and chemical properties of oil and experience how scientists respond to oil spill disasters.



- Teaches environmental impact, basic oil biology, micelle structures and chemistry concepts such as hydrophobic and hydrophilic interactions
- Students simulate basic oil containment and removal techniques using their own oil spill models
- Includes a quantitative analysis of absorbent materials, hands on skimming and dispersant activities and an experimental introduction to concept of bioremediation
- Students work as team to research and systematically design oil spill solution, use iterative cycle to improve their solutions and learn to argue their points of view
- Great for applying knowledge and teaching higher order thinking skills including creative thinking, reasoning, decision making and problem solving
- Plan to spend several weeks on unit
- Class size: 24 students

### ORDERING INFORMATION:

Designed to accommodate 24 students working in groups of two.

### INCLUDES:

- Instructor manual with reproducible student data sheets
- Test Tubes/Stoppers
- Vegetable Oil
- Stopwatch
- Test Tube Rack
- Graduated Cylinders
- Corn Syrup
- Food Coloring
- Empty Bottles with caps
- Potting Soil
- Aluminum Pan
- Sand
- Gravel
- Pipettes
- Spoons
- Paper Towel Strips
- Tubing
- Fabric (Cotton, Polyester)
- Deli Container
- Thermometer
- Sugar Packet
- Digital Scale, 500g
- Yeast Packet
- Strainer
- Dishwashing Liquid
- Cocoa Powder
- Stainless Steel Scoop
- Gloves
- Nylon Stocking
- Cotton Balls
- Beaker
- Shredded Copy Paper
- Scissors
- Weigh Dish
- Mixed Seashells

Cat. No.	Description	Price
S02643	Groundwater Contamination: Trouble in Fruitvale (Developed by SEPUP)	808.00/Ea

## Kemtec™ Oil Spill Junior Kit

Kemtec™ Oil Spill Junior Kit teaches young students about basic oil containment and removal techniques

- Students can experience how engineers and scientists approach oil spill disasters
- Explore the physical and chemical properties of oil
- Use models to simulate basic oil containment and removal techniques
- Learn to measure data and compare results
- Enhances understanding of scientific process, establishes problem solving skills, and explores inquiry based learning
- Includes multiple sets of worksheets for differentiated K-1, 2-3 and 4-5 learning levels
- The perfect hands on activity to pair with your favorite elementary level oil spill book
- Supports Next Generation Science Standards K-2-ETS1-2, Engineering Design & 3-5-ETS1, Engineering Design and Structure and Properties of Matter, 2-PS1-1 & 2-PS1-2



Cat. No.	Description	Price
S30831	Oil Spill Junior Kit	170.00/Ea

## Lab-Aids® Qualitative Introduction to Water Pollution Kit

Chemically examine natural waters, gain a basic understanding of water analysis, interpret tests, identify ten common pollutants in natural waters and measure pH of water samples.

What are some common causes of water pollution? Organic waste from sewage, industrial chemicals dumped into ground water, rain contamination by air pollution, fertilizers and pesticides washed into water from farmlands. This kit provides

an unsophisticated, but effective way to examine their region's natural and treated waters. The easy-to-perform chemical tests in this kit qualitatively identify many common water pollutants. Pollutants are detected through color changes - the deeper the color, the greater the pollution. Tests are performed for these common pollutants: Ammonia, Chlorine, Chromium, Copper, Cyanide, Iron, Nitrate, Phosphate, Silica and Sulfide. While conducting these tests, students also learn about the different methods used in quality water testing methods, how to interpret results from these methods, and how to identify the pH of locally collected water. This kit includes enough material to conduct 50 tests for each of the ten major pollutants.



**ORDERING INFORMATION:** Class size: 50 students.

**INCLUDES:** Instructions and background information

Cat. No.	Description	Price
S19348	Qualitative Introduction to Water Pollution Kit	285.00/Ea

Water Testing

## LaMotte™ Digital Tapwater Tour Kit

A classroom investigation of how and why the characteristics of tap water can vary and affect every day activities



- Instructor manual including background information, set up and shopping list
- Student Manual including test procedures, data sheets and puzzles
- Students work in groups and individually
- Works on computers or tablets
- Great for inclusion classrooms
- Refill includes reagents and sample bags for 50 students

Cat. No.	Description	Price
S72761	Digital Tapwater Tour Kit	88.00/Ea
S72762	Refill for Digital Tapwater Tour Kit	71.50/Ea

## LaMotte™ AP™ Water Quality Assessment Package

Explores the Water Quality Index.



Combine with the Water Quality Educator (S66223) and AP Environmental Science Water Quality Assessment Curriculum Module (S04349) to teach STEM-based skills that will satisfy Section 8 (water pollution) of the AP Environment Topics Outline.

Cat. No.	Description	Price
S04350	AP The Water Quality Assessment Package	613.00/Ea

## LaMotte™ SMART™ Water Analysis Laboratory

The digital SMART™ colorimeter analyzes test sample color reactions and provides direct readouts for 15 factors.

- Portable
- Measures 24 water quality parameters for pollution detection, environmental studies, and industrial water and wastes
- Provide results directly in ppm for 6 additional factors
- Programmed to provide direct readouts for over 40 factors using optional reagent packages



**INCLUDES:**

Includes digital meters to measure pH, conductivity, and TDS

Cat. No.	Description	Price
S94987	Model SCL-05, 120V/60Hz	4552.00/Ea
S94989	Model SCL-04; Without pH and conductivity meters	2968.00/Ea
S94990	Model SCL-04 Reagent Refill	653.00/Ea

## Water Quality Testing I: Chromogenic Analysis of Water Bacteria Contaminants

Students will test for coliforms in simulated contaminated water, and can test water samples from the environment.

Safe drinking water is vitally important to health. Both pathogenic and harmless bacteria can be found in the guts of mammals and birds. Presence of coliforms in water is an indicator of fecal contamination.



- Testing for coliforms, including E. coli, using color and fluorescent reagents
- Extension activity includes Gram Stain test that can be performed on the collected samples
- Test duration: complete in 30 minutes and grow overnight

**INCLUDES:** instructions, BactoBeads™, ReadyPour™ Agar, fluorescent reagents, Petri dishes, inoculating loops, sterile swabs, microtubes

**REQUIRES:**

Longwave UV lamp, microscope, slides and coverslips

Cat. No.	Description	Price
S68636	Water Quality Testing I: Chromogenic Analysis of Water Bacteria Contaminants	133.00/Ea



## Water Quality Testing III: Multiplexed PCR for Testing Water Bacteria

Students will investigate presence of contaminants in a water sample.

- Drinking water is routinely tested for contamination. If a screening tests positive, more sophisticated tests are required to determine whether harmful microbes are present
- Students use PCR in multiplex format
- Single PCR test detects presence of three separate, classroom-safe organisms
- Analyzed on agarose gels

### Experiment times:

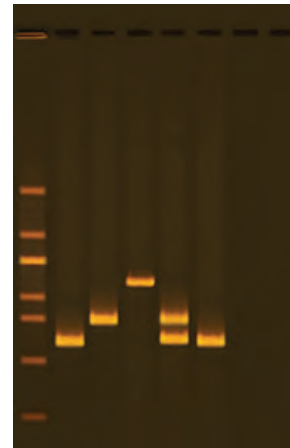
- Setup: 60 minutes
- PCR: 120 minutes or overnight
- Electrophoresis: 45 minutes

### INCLUDES:

instructions, PCR EdvoBeads™, Universal DNA Buffer, LyphoPrimer™ Mix, EdvoQuick™ DNA Ladder, LyphoControl™ (Complete PCR Control), TE Buffer, Proteinase K, Potassium Acetate, DNA Extraction Buffer, BactoBeads™, UltraSpec-Agarose™, Electrophoresis Buffer (50X), SYBR™ Safe Stain, FlashBlue™ Stain, Microcentrifuge & PCR Tubes

### REQUIRES:

Thermal cycler; waterbath, electrophoresis tank; power supply; micropipets to measure between 5 and 50µL; tips and microcentrifuge



Cat. No.	Description	Price
S95132	Water Quality Testing II: Multiplexed PCR for Testing Water Bacteria	269.00/Ea

## LaMotte™ Water Quality Educator and Monitoring Outfit

Ideal for long-term water-quality monitoring.

- Tests for seven basic water-quality test factors  
Prepares students for field tests or classroom work
- Set up a water-quality monitoring program, procure measurements, and interpret results
- Soft-sided tote made of durable fabric, solid rubber bottom ready for field work; handy side pockets hold thermometer, pens, writing tablets and other tools

### INCLUDES:

- *The Monitor's Handbook* (71 pages)
- 100 tests for pH
- 50 tests for the following five factors: nitrate-nitrogen, phosphate, dissolved oxygen, total alkalinity, turbidity, unlimited temperature tests, aquatic macroinvertebrate bioassessment
- Lesson plans for grades 5 to 8 and 9 to 12



Cat. No.	Description	Price
S66223	Water Quality Educator and Monitoring Outfit	459.00/Ea

## LaMotte™ Earth Force Low-Cost Water Monitoring Kit

Learn the basics of water quality monitoring and testing.

- Analyze sample water for pH, dissolved oxygen, biochemical oxygen demand, temperature, turbidity, nitrate, phosphate and coliform bacteria
- Each unit dose, TesTabs™ reagent tests 10 water samples (three samples for coliform)

### INCLUDES:

Manual (in English, Spanish and French) with diagrammed instructions, laminated color chart, all necessary apparatus and TesTabs reagents



Cat. No.	Description	Price
S65401	Earth Force Low-Cost Water Monitoring Kit	50.25/Ea

**ORDERING INFORMATION:** Grades 4+.

## LaMotte™ Earth Force Low-Cost Estuary Monitoring Kit

Simple, nonhazardous methods to test saline and brackish waters found in estuaries.



- Test water samples for coliform bacteria, salinity, dissolved oxygen, nitrate, pH, phosphate, temperature and turbidity
- Supplied with all TesTabs™ reagents and components to test 10 water samples (two samples for coliform)

### INCLUDES:

Manual (in English, Spanish and French) with diagrammed instructions, laminated color chart, all necessary apparatus and TesTabs reagents

Cat. No.	Description	Price
S65403	Earth Force Low-Cost Estuary Monitoring Kit	73.00/Ea

## LaMotte™ Fresh Water Test Kit

Teaches sampling techniques, careful measurement and data recording.

- Combines limnology with a water testing kit
- Tests for dissolved oxygen, carbon dioxide, nitrates, phosphates, silica, pH, calcium, magnesium and total hardness
- Soft-side tote is made of durable fabric and a solid plastic bottom ready for field work
- Handy side pockets hold thermometers, pens, writing tablets and other tools



**ORDERING INFORMATION:** Grades 5+.

### INCLUDES:

- Six individual cases that house components needed for various chemical tests
- Sampling bottles
- Free downloadable handbooks and teacher resources
- Analysis report forms
- 50 tests per factor, except nitrate (40) and pH (100)

Cat. No.	Description	Price
S45078	Fresh Water Test Kit	594.00/Ea

## LaMotte™ TesTabs™ Water Investigation

Test water quality as a complete experiment or in addition to other water studies.



- Measures water quality with 12 TesTabs reagents
- Uses easy-to-perform, nonhazardous TesTabs
- Flashcards inform about each test factor, describe the chemical reaction and explain the chemical influence on the environment
- To use: fill tube with water, add necessary tablets, shake tube until each tablet fully dissolves and compare resulting color to the color chart

### ORDERING INFORMATION:

Grades 5+.

### INCLUDES:

Tablets to perform 100 tests per reagent module, test factor flashcards, color chart, test tubes and reference book (*The Monitor's Handbook*)

Cat. No.	Description	Price
S66982	TesTabs™ Water Investigation	292.00/Ea

## LaMotte™ Total Hardness Test Kit

Uses EDTA titration

Dropper Bottles - Bottle tips deliver a consistent standard drop size to add titrant to the sample; the number of drops used to complete the reaction is multiplied by a given equivalence factor to determine the concentration.



Hardness - Test uses EDTA titration with a red to blue endpoint; with inhibitors to eliminate metal interferences. Liquid buffer and tablet indicator. Results as CaCO<sub>3</sub>.

Cat. No.	Description	Price
S72403	Total Hardness Test Kit	55.25/Ea

## LaMotte™ Lead Screening Test Kit

An affordable, safe, and reliable screening test to identify lead in drinking water. Ideal for classroom studies or the professional screening multiple tests on campuses, office buildings, etc.

In 10 minutes the analyst can detect lead levels above 15 ppb—the EPA action level. Just immerse a strip in a water sample and read after a 10 minute waiting period.



- This multi-test package is designed for the professional monitoring multiple sites
- The kit includes 10 test packs with one diagrammed instruction
- Each test comes in a sealed pouch with a test vial and dropper
- Simple test protocol: immerse, wait 10 minutes, and read  
Easy analysis—1 Line or 2 Line result indicates result  
Detects Lead to EPA action level of 15 parts per billion (ppb)

### INCLUDES:

10 test packs and diagrammed instructions

Cat. No.	Description	Price
S29054	Lead Screening Test Kit	105.00/Pk

## LaMotte™ Urban Water Quality Test Kit

Introduces water chemistry concepts in urban areas.

- Introduces water chemistry concepts in areas where the lifestyle does not often include involvement in outdoor activities or contact with nature
- Helps urban students understand that environmental issues are a part of their world, and issues involving water chemistry are all around them
- Employs methods suitable for testing drinking water, runoff and street puddles
- Tests for chlorine, copper, iron, hardness, nitrate, pH, phosphates, dissolved oxygen, coliform and temperature using nonhazardous TesTabs™



### INCLUDES:

Materials for 10 tests for each factor (coliform contains five tests), comprehensive handbook, all necessary equipment

Cat. No.	Description	Price
S66226	Urban Water Quality Test Kit	62.75/Ea

## Vernier® Colorimeter

For Beer's law experiments to determine concentration of unknown solutions or studying changes in concentration vs. time.

- 4-wavelength Colorimeter measures amount of light transmitted through sample at user-selectable wavelength to determine concentration of solution



- Features automatic sensor identification and one-step calibration
- Transfer function:  $V_{out} = 0.035 \times (\%T) + 0$
- Power up time: 700ms (maximum)

### INCLUDES:

Colorimeter, (15) 3.5mL cuvettes, User manual

Cat. No.	Description	Price
S16008ND	Colorimeter	129.00/Ea

## LaMotte™ Colorimeter Reagent Systems for SMART 3 Colorimeter

For water analysis in the field or in the lab



- High-quality reagents manufactured from ACS raw materials for high reproducibility
- All systems are designed to overcome test interferences for fast and dependable results
- For use with SMART 3 Colorimeter (S66155A)

Cat. No.	Description	Range	Test Method	Price
S72372	Aluminum	0 to 0.3ppm	Eriochrome Cyanine R	104.00/Ea
S72361	Chromium, Hexavalent	0 to 1ppm	Diphenylcarbohydrazide	47.25/Ea
S72359	Ammonia Nitrogen	0 to 4ppm	Nesslerization	56.75/Ea
S72360	Bromine, Low Range	0 to 9ppm	DPD Tablets	76.00/Ea
S72364	Nitrate Nitrogen	0 to 3ppm	Cadmium Reduction	62.00/Ea



## LaMotte™ Wide Range pH Test Kit

Two octet comparators.



Simply fill the tube to the mark with sample water, add several drops of indicator and compare the resulting color against the permanent color standards.

- Range: 3.0 to 10.5
- Sensitivity: 0.5

**ORDERING INFORMATION:** 100 tests.

**INCLUDES:** Two Octa-Slide Color Bars, graduated test tubes and a bottle of indicator

Cat. No.	Description	Price
S96703	Wide Range pH Test Kit	48.00/Ea

## LaMotte Company Turbidity Meter Kits, 2020T Tungsten Version

New Ratiometric design allows for easy and accurate testing.



- Multi-detector optical configuration assures long-term stability and minimizes stray light and color interference.
- Ideally suited for low-level drinking water applications, mid-range industrial applications, and high-range environmental applications.
- Seven user selected languages – English, Spanish, French, Japanese, Chinese, Italian, and Portuguese
- Advanced calibration algorithms
- Easy menu driven operation and large LCD display
- 500 point data log; stored results can be viewed directly on instrument

Cat. No.	Description	Price
S72723	Turbidity Meter Kits, 2020T Tungsten Version	1251.00/Ea

## Turbidity Tube

Turbidity Tube measures the cloudiness of a fluid

- Fill the tube with water and drain it slowly by limiting flow with the pinch clamp on the hose
- Stop draining once the black and white Secchi disk on the bottom of the tube becomes visible
- Take note of the water level using the centimeter graduations on the tube



Cat. No.	Description	Price
S38986	Turbidity Tube	34.25/Ea

## Eisco™ Transparent Turbidity Tube

Determines transparency of water in lakes, streams, oceans.

- Contains clear tube with small Secchi Disc of alternating black and white quadrant
- Provides quick and easy way to probe turbidity, which is measure of clarity of water, which is in turn is related to amount of sediments or pollutants in water



**INCLUDES:**

1m transparent turbidity tube, rubber stopper with drainage mechanism

Cat. No.	Description	Price
S12998	Transparent Turbidity Tube	66.25/Ea

## LaMotte™ Turbidity Test Tubes

Replacement test tubes for use in LaMotte Turbidity Meters (for use with item S72723)



- Sample vial for turbidity measurements, 10 mL line.
- Set of 6

Cat. No.	Description	Price
S72729	Turbidity Test Tubes	41.00/Pk

**BIOTECHNOLOGY**  
ITS FULL OF LIFE

Visit [fisheredu.com/biotechnology](http://fisheredu.com/biotechnology) for the latest resources, products and training information.

## LaMotte™ Dissolved Oxygen Kit

Learn how to conduct oxygen-level tests for plants and animals.



- Direct-reading titrator test measures levels of oxygen
- Indicates whether a body of water can sustain healthy aquatic plants and animals
- Low oxygen levels signal contamination from organic wastes
- Measures 0 to 10ppm in 0.2ppm increments
- Azide modification of Winkler method

### Dissolved Oxygen Kit includes:

30mL Manganous Sulfate Solution, 30mL Alkaline Potassium Iodide Azide, 30mL Sulfuric Acid, 60mL 0.025N Sodium Thiosulfate, 30mL Starch indicator solution, direct reading titrator, 5-10-12.9-15-20-25mL glass test tube with cap, 60mL water sampling Glass bottle

### Dissolved Oxygen Kit includes:

Five reagents; makes 50 tests at 10ppm

Cat. No.	Description	Price
S94979	Dissolved Oxygen Kit	65.75/Ea
S45088R	Dissolved Oxygen Kit Reagent Refill	41.00/Ea

## LaMotte™ Dissolved Oxygen/BOD Testab™ Module



Simple TesTab™ method for measuring dissolved oxygen.

- TesTabs™ to perform 100 tests for dissolved oxygen and 100 tests for BOD
- Easy-to-read diagrammed instructions
- Test factor flash card with helpful background information
- Includes: color chart/ instruction card and test tubes



Cat. No.	Description	Price
S81623	Dissolved Oxygen/BOD Testab™ Module	44.50/Ea

## LaMotte™ Nitrate-Nitrogen Kit

Colorimetric test system.



- Range: 0 to 15ppm
- Sensitivity: 1.0ppm
- Number of Tests: 50

### INCLUDES:

50 Nitrate No. 1 tablets, 50 Nitrate No. 2 test tablets, two plastic test tubes with caps, Octa-Slide viewer with slide bar, instructions

Cat. No.	Description	Price
S65410	Nitrate Nitrogen Tablet Test Kit	66.25/Ea
S65411	Reagent Refill Test Kit	29.50/Ea

## LaMotte™ 10mL Square Test Tube

For use with LaMotte™ water quality monitoring kits.

- With cap

Cat. No.	Description	Price
S72378	10mL Square Test Tube	4.25/Ea

## LaMotte™ COD Multi-Range Reagent Systems Vials for SMART 3 Colorimeter

LaMotte™ Chemical oxygen demand reagent systems are an easy and precise way to measure critical COD levels.

- Range: 0 to 15,000ppm (High)
- Mercury-free

Cat. No.	Description	Price
S43593	COD Multi-Range Reagent Systems Vials	66.75/Ea

## LaMotte™ Direct Reading Titrator

Replacement for glass direct reading titrators

- Chemically resistant plastic
- One-piece plunger
- Special precision tip
- Range: 0 to 200
- 1mL



Cat. No.	Description	Price
S72342	Direct Reading Titrator	8.15/Ea

## LaMotte™ Insta-Test™ Single and Multi-Factor Test Strips

For water quality testing

- No reagents or field kits required for most strips
- Chemically treated pads on plastic strips produce color change
- Pop-top vials have molded desiccant liner and hinged snap cap to protect from moisture
- As little as 10-second development time
- Test strips for testing water: wastewater, industrial water boiling and cooling, drinking water, laundry and sanitation



Cat. No.	Parameter Specifications	Range	Quantity	Price
S72315	Chlorine - free, high range	0-50-100-250-500-800 ppm	50 Strips/Vial	23.50/Ea
S72330	Copper	0-0.3-0.6-1-3 ppm	25 Strips/Vial	12.25/Ea
S72329	Chlorine - total, low range	0 to 10 ppm (0, 0.25, 0.5, 1, 3, 10)	25 Strips/Vial	8.25/Ea

## LaMotte™ Dual Range QAC Test Strips

Dual Range QAC Test Strip takes care of all testing needs on one strip.

Whether checking the concentration of a quaternary ammonium compound solution or checking to ensure complete removal, the Dual Range QAC test strip is ideal. Chemically treated test strips change color to indicate sanitizer level. Strips and color chart are packaged in a waterproof plastic vial.



Cat. No.	Description	Price
S43599	Dual Range QAC Test Strips	9.75/Ea



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## LaMotte™ Test Strips

For chlorine, iodine and QAC testing

Test chlorine from 10 to 200ppm, iodine from 12 to 100ppm and quaternary ammonium compounds from 50-400ppm, or from 200 to 1500ppm

- Chemically treated paper strips produce color changes in as little as 5 seconds
- Simply dip strip into sample
- Compare strip color to color chart located on plastic vial
- Plastic, waterproof vials are labeled with test instructions
- Desiccant cap
- Test drinking water, industrial water for boiling and cooling, laundry /sanitation water and wastewater



Cat. No.	Description	Range	Includes	Quantity	Price
S72324	High Range QAC Test Paper	200-400-600-1000-1500 ppm	Color chart, plastic vial	Each	9.50/Ea
S72405	Iodine Test Strip	12-25-50-100 ppm	Color chart, plastic vial	200	7.75/Pk
S72406	QAC Test Strip	50-100-200-400 ppm	Color chart, plastic waterproof opaque vial, desiccant cap	100	7.50/Pk
S72417	Chlorine Test Paper	10-50-100-200 ppm	Color chart, plastic vial	200	7.75/Pk
S72338	QAC Test Strip	0, 100, 200, 300, 400, 500 ppm	Color chart, plastic waterproof opaque vial, desiccant cap	100	7.75/Ea

## Eisco™ Cobalt Chloride Paper Test Strips



For detecting the presence of moisture in a given area

- Detects the presence of moisture when exposed to humidity of 50% or greater
- Strip will turn from blue to light pink/white color in the presence of humidity
- Great for detecting moisture in hard to reach places
- 100 Strips/Vial, 12 Vials/Pk



Cat. No.	Description	Price
S80840	Cobalt Chloride Paper Test Strips	21.50/Ea

## Windup Meter Tapes

Durable tapes won't tear, break, rust or stretch.

- High-quality fiberglass in ABS plastic windup case
- Calibrated on one side in centimeters and on the other in inches
- Great for outdoor activities, track and field, rough terrain, mud and water



Cat. No.	Description	Length	Price
S94310	ABS Plastic windup case	98.4 ft.	19.00/Ea
S94311	ABS Plastic windup case, handle	164 ft.	29.00/Ea



## LaMotte™ Kick-Net

Strong net designed for rapid bioassessments.



- Use this net for performing USEPA Rapid Bioassessment Protocols for benthic macroinvertebrates
- 1 × 1m<sup>2</sup>, 500µm, tan net
- Hemmed sides hold poles
- Reinforced bottom seam helps anchoring

Cat. No.	Description	Price
S85005P	Professional Kick-Net with Poles	117.00/Ea

## Student Screen Sieves Set

Separate soil ranging in size from pebbles to silt.

- Load samples into top sieve, cover and shake vigorously
- Set of four sieves separates the sample based on particle size

### INCLUDES:

- Four 4 in. dia. (10.2cm) containers with No. 6, 20, 40 and 100 wire mesh screens
- Container lid
- Solid bottom container



Cat. No.	Description	Price
S53020A	Student Screen Sieves Set	50.00/Ea

## Eisco™ 8 Piece Plastic Sieve/Strainer

Six plastic sieves with stainless steel mesh, cover and bottom collector.

- Each Sieve has a plastic frame having an individual size one each (Mesh no. 5, 10, 35, 60, 120, 230)
- Complete with plastic lid and bottom collector
- Stackable - Diameter of Sieves are 6.75 in.
- Total height of stacked sieves approx. 15 in.



Cat. No.	Description	Price
S12897	8 Piece Plastic Sieve/ Strainers	149.00/Ea

## Eisco™ Bottom Sampling Net

Eisco™ Bottom Sampling Net designed specially for collecting animals and vegetation from trees or pond and stream bottoms.

- Sturdy metal edge net designed for sampling from trees and bottoms of ponds/streams
- Strong cloth backed with metal wire mesh
- Top ring has flattened outer edge to facilitate bottom sampling
- Net collapses completely for carrying and storage
- Net is 10 in. in diameter and is 27.5 in. deep
- Length: 25cm



**WARRANTY:** 1 year limited manufacturer warranty

Cat. No.	Description	Price
S29534	Bottom Sampling Net	31.75/Ea

## Eisco™ Plankton Net with Collection Vial

Eisco™ Plankton Net with Collection Vial features a collection bag made of strong bolting netting cloth suspended by muslin reinforcement and mounted on a wire ring.

- 35 in. deep plankton net
- 12 in. diameter metal ring
- Made of strong muslin netting cloth
- 3 braided leads provide maximum strength during collection
- Strong cloth pocket holds collection vial
- Includes durable plastic collection vial
- Collection vial is 2 in. deep with a 1.5 in. opening
- Length: 31cm



**WARRANTY:** 1 year limited manufacturer warranty

Cat. No.	Description	Price
S29535	Plankton Net with Collection Vial	32.50/Ea

## LaMotte™ D-Net with Expandable Pole

Bag attached to metal frame with clamp rings.

- 12 in. (30.5cm) rim dip net
- Rim fitted with heavy canvas bag, approximately 6.5 in. deep (16.5cm)
- Bag bottom made of approximately 500µm nylon mesh
- Canvas skirt extends 3 in. (7.6cm) below bag bottom to protect mesh
- Aluminum pole extends from 52 to 84 in. (137.2 to 213.3cm)



Cat. No.	Description	Price
S85027	D-Net with Expandable Pole	94.00/Ea
S85027B	Replacement Bag	22.25/Ea

Alternative Energy

## United Scientific™ Solar Furnace

A graphic demonstration of the sun's radiative energy

- Concentrate solar energy to boil water
- Large convex mirror is adjustable through 180° to follow the sun throughout the day
- Experiment with different liquids to study specific heat
- Activity guide included



Cat. No.	Description	Price
S27843	Solar Furnace	69.75/Ea

## United Scientific™ Basic Solar Kit


A convenient introduction to the conversion of solar light energy into electrical energy



- Convenient kit provides everything needed to convert solar-generated electrical energy into light, sound, or motion
- Observe the correlation between angle of incidence and energy output



Cat. No.	Description	Price
S27844	Basic Solar Kit	9.00/Ea

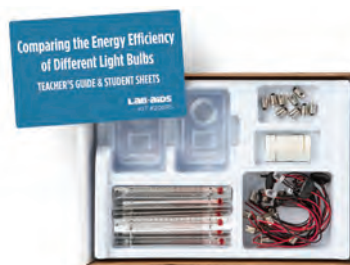


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## Lab-Aids® Comparing the Energy Efficiency of Different Light Bulbs (Developed by SEPUP)

Lab-Aids® Comparing the Energy Efficiency of Different Light Bulbs kit for comparing the amount of thermal energy transferred by a small incandescent bulb and a small LED bulb.



Students apply their understanding of the concepts of energy transfer and transformation to compare the efficiencies of two different types of light bulbs. They compare the amount of thermal energy transferred by a small incandescent bulb and a small LED bulb. They use their measurements to calculate the efficiency of the bulbs to produce light by measuring how much wasted thermal energy is lost. They also compare lifetime costs for different types of bulbs and consider the trade-offs involved when deciding which type of bulb to purchase.

- Accommodates unlimited classes, each with 8 groups of 4 students.
- This kit requires the use of the following not included in kit: 8 graduated cylinders (at least 1 mL resolution), 8 timers, 8 new or reasonably fresh 9 V batteries, supply of room-temperature water.
- NGSS Related Performance Expectation: MS-PS3-4, MS-PS3-5
- Disciplinary Core Ideas: MS-PS3.A Definitions of Energy, MS-PS3.B Conservation of Energy
- Science and Engineering Practices: Analyzing and Interpreting Data, Planning and Carrying Out Investigations
- Crosscutting Concepts: Energy and Matter, Connections to Nature of Science
- Common Core State Standards/Mathematics: MP.2, 6.EE.A.2, RST.6-8.3
- INCLUDES: 8 9 V battery harnesses with an LED and socket, 8 bulb socket and thermometer holders, 8 hot bulb trays, 8 flashlight bulbs, 8 metal-backed thermometers, 32 Student Worksheet and Guides, Teacher's Guide

Cat. No.	Description	Price
S27118	Comparing the Energy Efficiency of Different Light Bulbs	216.00/Ea

## Low-Cost Solar Energy Project Kit

Discover how to convert solar energy into electrical energy.

Ideal for basic solar energy demonstrations.

### INCLUDES:

- Encapsulated solar cell with attached motor
- Propeller
- Informative guide



Cat. No.	Description	Price
S63319	Low-Cost Solar Energy Project Kit	12.50/Ea

## Renewable Energy Kit

Demonstrate the workings of a complete clean energy system on a miniature scale.

- Combines electronics, chemistry, and physics with multiple experiments
- Modular experiment set encourages users to learn the system step by step or configure the system in different ways



### Renewable Energy Education CD

- Renewable Energy Science Education Manual: Introduces renewable energy in seven chapters—Global Warming and Climate Change, Solar Technologies, Wind Technologies, Electrolyzers, Fuel Cells, Hydrogen Storage, and Basic Electronics
- Experiment Manual: More than 20 experiments for middle to high school level sciences in several sections—Solar Energy, Wind Energy, Energy from Hydrogen (Fuel Cell), and “Ultra Cool» experiments
- Flash Animations: Describe and show how a fuel cell works, different types of fuel cells, electrolysis, and various applications for fuel cells
- Assembly Guides
- Technical Support with videos

### INCLUDES:

Wind turbine kit, solar photovoltaic panel, electrolyzer, a PEM fuel cell, hydrogen storage system, all necessary parts, and a Renewable Energy Education CD

### REQUIRES:

Scissors and water

Cat. No.	Description	Price
S98609	Renewable Energy Kit	417.00/Ea

## Solar Power Racer Education Kit

Construct a motorized DIY project using power from a solar cell.

Students will learn how motors and automotive transmissions work. They will also explore how solar cells convert the energy from sunlight into electricity to power the car's motor.

Requires little to no previous knowledge of electronics to construct and operate.

For 4th grade and up.



### Kit includes:

- 1x Solar Cell
- 1x Metal body
- Gears, shafts, motor, and necessary parts

Cat. No.	Description	Price
S35778	Solar Power Racer Educaiton Kit	27.50/Ea

## Photon Solar Racer Kit

Challenge your students to design and make their own solar-powered cars.

- Imaginative kit allows students to easily construct their own solar-powered car
- Dimensions: 8.5 × 3.5 × 1.5 in. (21.6 × 8.9 × 3.8cm)



### INCLUDES:

All the materials required to build the racer are included — you supply paint for the car body

Cat. No.	Description	Price
S63318	Photon Solar Racer Kit	17.70/Ea

## Horizon Fuel Cell H-Racer and H-Racer 2.0

Combination of hydrogen with oxygen generates a DC current to power an electric motor.

- Unique miniature fuel-cell car and solar hydrogen refueling station
- Refueling station creates hydrogen by electrolysis using water
- Fill the hydrogen fuel tank and the car runs on its own fuel-cell system with the simple flip of a switch
- H-Racer 2.0 features IR, remote-controlled steering
- Grades 3+



### INCLUDES:

Solar cell, solar refueling station, hydrogen fuel-cell car assembly parts, instruction manual, and Renewable Energy Education CD with science education and experiment manuals and assembly guide. H-Racer 2.0 also includes remote control with batteries.

Cat. No.	Description	Price
S98604	Horizon Fuel Cell H-Racer and H-Racer 2.0	230.00/Ea



## Eisco™ Solar Cell Unit



Capture the sun's energy with this solar cell and transfer the electricity to the Mini Motor (not included) which generates enough power to operate a small propeller

- Single, small sized solar cell unit
- Unit has two 4 mm plug terminals
- Easily connects using standard 4 mm banana plug connection leads
- Capture the sun's energy with the solar cell
- Connect to mini motor (not included) and generate enough power to operate a small propeller
- Great tool for science projects, as well as energy conversion and electrical circuit demonstrations
- 3 × 4 × 1 in.

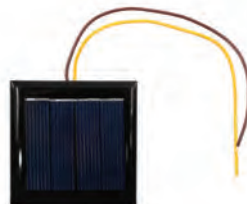


Cat. No.	Description	Price
S80857	Solar Cell Unit	25.25/Ea

## Eisco™ Polycrystalline Solar Cell with Wires

Polycrystalline solar cell includes yellow and red leads, and is ideal for use with other 1.5 V devices including buzzers, motors, lightbulbs, and much more.

- Includes yellow and red leads (approx. 5.5 in. each)
- Excellent for use in a wide variety of science fair projects and classroom demonstrations
- Size: 54 × 54 mm



Cat. No.	Description	Price
S26590	Polycrystalline Solar Cell with Wires	11.25/Ea

## Solar Panel with Alligator Clips



Each panel comes with alligator clips to easily hook up and power anything.

- Typical applications include solar model cars, solar model boats, solar toys, solar scientific kits, solar experimental kits, solar construction kits.
- Panels can be connected in series or parallel to increase voltage or current output.
- 20 in. insulated alligator clip lead (1 red, 1 black)
- Solar cell type: Polycrystalline

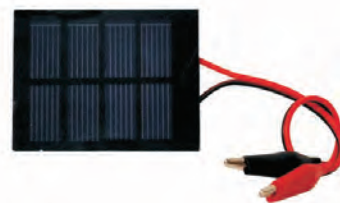


Cat. No.	Description	Price
S81194	Solar Panel with Alligator Clips	22.00/Ea

## Vernier® KidWind Solar Panel

For classroom experiments and basic applications that require more power.

- Includes attached clip cords for easy connection
- Dimensions: 6.2 × 12 cm
- Recommended for College, High School, and Middle School Science
- 2V/400mA



### Concepts:

- Understanding clean energy; discovering and discussing solar power as an energy source
- Discovering differences between power and energy
- Learning weather and climate
- Exploring circuits, electricity, and magnetism
- Designing controlled experiments
- Analyzing data

### Activities performed:

- Build solar fan
- Compare efficiency over time without changing the angle of the panel
- Compare temperature and rate for temperature increase, depending on time of day and ambient air temperature

**WARRANTY:**  
5-year limited warranty

Cat. No.	Description	Price
S04828ND	KidWind Solar Panel	21.50/Ea

## 50 Watt Wind and Solar Hybrid System



The 50 Watt Wind and Solar Hybrid System is a complete hybrid wind and solar system kit that is great for a STEM Lab classroom, camp, or scout project.

- Get started with solar and wind energy in one complete kit.
- This kit includes a 50 Watt solar panel and a 50 Watt DIY Wind Turbine Kit.
- The system voltage is 12V DC with the solar panel having an average output of 1.2 amps and the wind turbine having a typical output of 1 to 2 amps.
- This hybrid wind and solar system is great for a STEM Lab classroom, camp, or scout project.



- 1 Long Tower (14 in.)
- 1 Short Tower
- 1 Base
- 1 Weighted Insert
- 1 Back Fin
- 1 Fin Rod
- 10 Nuts 8-32 × 3/4 in.
- 10 Screw 8-32
- 1 Solar Panel (50 Watt/12 V)
- 1 Battery (12 V)
- 1 Inverter (12V DC-110 AC)

### What Is included?

- 1 Pre-Assembled Motor (24V)
- 1 Motor Housing
- 1 Housing Cap
- 5 50 Watt Blades
- 1 Blade Hub

Cat. No.	Description	Price
S81193	50 Watt Wind and Solar Hybrid System	854.00/Ea

## 50 Watt Wind Turbine DIY Kit



This simple DIY wind turbine kit is perfect for classroom use.

System voltage is 12 V DC with the solar panel having an average output of 1.2 amps and the wind turbine having a typical output of 1 to 2 amps.



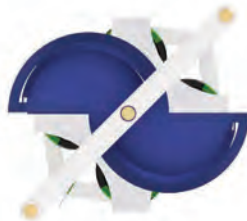
Cat. No.	Description	Price
S81197	50 Watt Wind Turbine DIY Kit	160.00/Ea

## Savonius AC Wind Turbine



Savonius AC Wind Turbine consists of a set of blades that are folded around a dowel mounted inside of a base. The savonius blades spin the AC motor which generates power. This kit also includes electronic components to test the output of wind harnessed.

- Explore Wind Energy with the Savonius V4 Wind Turbine Lab.
- Construct this STEM kit from scratch and engineer it to make it power an led, piezo buzzer or just showcase the power on a standard multimeter.
- Use the Solar Panel to create a fully functioning hybrid.



Cat. No.	Description	Price
S81191	Savonius AC Wind Turbine	33.00/Ea

## Savonius AC and DC Solar Lab



Savonius AC and DC Solar Lab allows users to explore wind energy. Construct this STEM kit from scratch and engineer it to make it power an led, piezo buzzer or just showcase the power on a standard multimeter. Use the Solar Panel to create a fully functioning hybrid.

- Turbine is made in the USA out of recycled plastics so it not only creates alternative energy but is also made of sustainable components locally
- Each kit contains all the parts needed to build a fully functioning Savonius Wind Turbine.
- Grades 1st Grade + for the DC Kit
- 3rd Grade+ for the AC version
- This is great for K to 12 and also University Intro to engineering courses



Cat. No.	Description	Price
S81192	Savonius AC and DC Solar Lab	55.00/Ea

## Savonius DC Wind Turbine



Savonius DC Wind Turbine helps users learn about vertical wind turbines. The savonius blades spin the DC motor which generates power. This kit also includes electronic components to test the output of the wind harnessed.

- Explore Wind Energy with our Savonius V4 Wind Turbine Lab
- Construct this STEM kit from scratch and engineer it to make it power an led, piezo buzzer or just showcase the power on a standard multimeter.
- Use the Solar Panel to create a fully functioning hybrid.
- Turbine is made in the USA out of recycled plastics so it not only creates alternative energy but is also made of sustainable components locally.
- Each kit contains all the parts needed to build a fully functioning Savonius Wind Turbine.



Cat. No.	Description	Price
S81190	Savonius DC Wind Turbine	22.00/Ea

## STEM Wind Module – One Full Class



Students test different types of turbines to collect and analyze data to design their ideal turbine. Using these findings, they will evaluate the pros and cons of their wind turbine design, using evidence to support their claim.

- In this module, students will engage in and explore different scientific principles of wind energy to acquire a comprehensive understanding of how wind can be harnessed as a renewable energy source.
- Students then apply their knowledge to test different wind blades on two different types of turbines to collect and analyze data to design their ideal turbine.
- Using these findings, students will also evaluate the pros and cons of their wind turbine design and use of wind as a renewable energy source, using evidence to support their claim.
- Upon completion of this module, students will be able to apply their new-found knowledge to understand other renewable energy sources in addition to their applications in sustainable engineering.
- Long tower: 11 in. (279.4 mm)
- Blades: 6 in. (152 mm)



Cat. No.	Description	Price
S81184	STEM Wind Module - 1 Full Class	767.00/Ea

## SKY-Z Mini DC Wind Turbine



SKY-Z Mini DC Wind Turbine is ideal for the classroom or at home experiments. This compact alternative energy kit empowers students to experiment with creating the most efficient turbine using direct current.

- Explore Wind or hydro energy SKY-Z Turbine Labs
- Construct this STEM kit from scratch and engineer it to make it power an led, piezo buzzer or just showcase the power on a standard multimeter.
- Use the Solar Panel to create a fully functioning hybrid.
- Each kit contains all the parts needed to build a fully functioning SKY-Z Wind Turbine.
- Short tower: 5.5 in. (139.7 mm)
- Blades: 6 in. (152 mm)



Cat. No.	Description	Price
S81185	SKY-Z Mini DC Wind Turbine	33.00/Ea

## SKY-Z Limitless Wind Turbine - AC and DC Lab



SKY-Z Limitless Wind Turbine - AC and DC Lab comes fully stocked for students to create a full-sized tabletop wind turbine using AC or DC power. 25+ hours curriculum

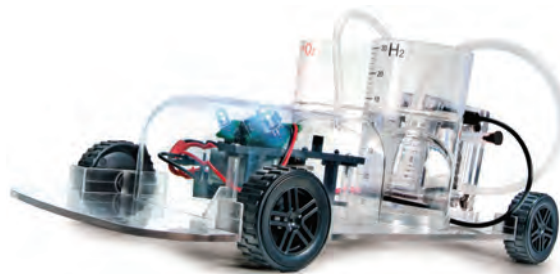
- Explore Wind or Hydro Energy with SKY-Z Turbine Labs
- Construct this STEM kit from scratch and engineer it to make it power an led, piezo buzzer or just showcase the power on a standard multimeter.
- Use the Solar Panel to create a fully functioning hybrid.
- Each kit contains all the parts needed to build a fully functioning SKY-Z Wind Turbine.
- Short tower: 5.5 in. (139.7 mm)
- Blades: 6 in. (152 mm)



Cat. No.	Description	Price
S81186	SKY-Z Limitless Wind Turbine - AC and DC Lab	110.00/Ea

## Fuel Cell Car Science Kit

Combines cutting-edge science, education, and fun for all



- Uses a reversible PEM fuel cell that combines electrolysis and power conversion into one device
- Oxygen and hydrogen gases are formed in two transparent water containers
- Steers independently of the user once in operation
- Runs past obstacles; if the car hits a barrier, it automatically reverses 90°
- Grades: 6+

### Renewable Energy Education CD

- Renewable Energy Science Education Manual: Introduces renewable energy in seven chapters—Global Warming and Climate Change, Solar Technologies, Wind Technologies, Electrolyzers, Fuel Cells, Hydrogen Storage, and Basic Electronics
- Experiment Manual: More than 20 experiments for middle to high school level sciences in several sections—Solar Energy, Wind Energy, Energy from Hydrogen (Fuel Cell), and “Ultra Cool” experiments
- Flash Animations: Describe and show how a fuel cell works, different types of fuel cells, electrolysis, and various applications for fuel cells
- Assembly Guides
- Technical Support with videos

### INCLUDES:

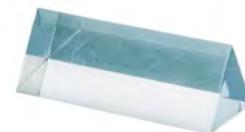
Car, solar panel, water-filling syringe, all necessary components, instruction manual and a Renewable Energy Education CD

Cat. No.	Description	Price
S98606	Fuel Cell Car Science Kit	142.00/Ea



# Need help choosing supplies?

Use this curated list of products to restock your physics classroom, and visit [fisheredu.com](http://fisheredu.com) to find even more science education products.



Description	Cat. No.	Quantity
<b>Weight and Density</b>		
Fisher Science Education™ Portable Balances	S94792C	Each
OHAUS™ Scout™ SKX Portable Balances	S14531	Each
OHAUS™ Triple Beam Balances	S40020	Each
Fisher Science Education Analytical Balance with Draftshield	S72473	Each
Eisco™ Premium Brass Slotted Mass Set	S41488	Each
GSC Go Science Crazy Density Rod Set	S28111	Each
Eisco™ Equal Mass Metal Cylinders Set	S07850	Each
United Scientific Supplies Fractional Brass Masses	S40267	Each
<b>Electricity</b>		
Three-Output Variable AC/DC Power Supply	S90163	Each
Vernier® Extech Digital DC Power Supply	S15972ND	Each
Eisco™ Deluxe Battery Eliminator	S96208	Each
Variable Voltage Power Supply Kit	S46113	Each
Fisher Science Education D-Cell Alkaline Batteries for Science Kits	S05148	8/Pk
Rayovac Heavy-Duty D Batteries	S43923H	6/Pk
Rayovac Heavy-Duty 6V Batteries	S43408	Each
Thermo Scientific™ Drive Belt	13-687-218	Each
Bullard™ Free-Air™ EDP30 / EDP50 Electric Driven Pump Accessory, Drive Belt	17-604-237	Each
<b>Magnetics</b>		
United Scientific Supplies Alnico Bar Magnets	S13055	Each
Fisher Science Education Ring Magnet	S04585	Each
Eisco™ Junior Science Magnet Kit	S13479	Each
Magnet Wand and Shapes Kit	S8652	Each
<b>Light</b>		
United Scientific Supplies Prism and Lens Sets	S90324	Each
Eisco™ Acrylic Equilateral Prisms	S23677	Each
United Scientific Supplies Prism and Lens Sets	S90323	Each
Eisco™ Optics Lens and Mirror Set	S24875	Each
<b>Lab Supplies</b>		
Glassware Drying Rack	S47855	Each
Fisherbrand™ Sparkleen™ 1 Detergent	S701101	Each

Physics

Mechanics

## Simple Machines Set

Build all five simple machines at the same time.



Construct, examine and explain simple machines to develop a deeper understanding of how they make work easier.

- Build a lever, pulley, inclined plane, wheel and axle, and wedge
- Explore effort, force, load, motion and distance by modifying with rubber bands
- Pieces assemble easily, separate for storage

### ORDERING INFORMATION:

Grades 4+

### INCLUDES:

- 63 Pieces including four weights: 5g (2) and 10g (2)
- Rubber bands (8)

Cat. No.	Description	Price
S95876	Simple Machines Set	58.00/Ea

## Eisco™ Newton's Second Law of Motion Apparatus

Demonstrate Newton's Second Law of Motion with a device that can be mounted to a support stand or a table clamp. The Eisco™ Newton's Second Law of Motion Apparatus is made of solid metal and designed to last many years in the classroom.

- This Second Law of Motion Apparatus is made of solid metal and designed to last many years in the class room
- Base is painted blue and is 10 in. x 2.5 in.
- Spring driven and offers two tensions
- Includes 7.5 in. x 0.50 in. diameter rod to be able to mount on table clamp or fixed to a support stand
- Complete with two steel balls



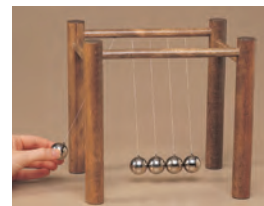
Cat. No.	Description	Price
S12939	Newton's Second Law of Motion Apparatus	37.25/Ea

## Newtonian Collision Ball Apparatus



Classic physics apparatus demonstrates conservation of energy.

Visual demonstration helps students understand properties such as collisions between equal mass bodies, exchange velocities, kinetic energy and momentum.



- Apparatus comes fully assembled
- Durable, walnut-stained wood frame
- Five nickel-plated, 1 in. dia. (2.5cm) steel balls
- 9.25L x 7.25W x 8.75 in.H (23.1 x 18.1 x 21.9cm)

Cat. No.	Description	Price
S40976	Newtonian Collision Ball Apparatus	36.25/Ea

## New York Demonstration Balance

A great classroom apparatus to help students understand the principles of torque and its properties. The New York Demonstration Balance helps demonstrate the relationship between length of the lever arm, moment of force, and amount of force. The unit is designed to help students to understand the principles of torque and its properties.

- Demonstration kit
- Includes everything needed
- Teachers' instructions included



### INCLUDES:

Includes 50cm meter stick, cast iron support stand, three knife-edge clamps, one 50g hooked weight, one 100g hooked weight and teachers' instructions

Cat. No.	Description	Price
S13617	New York Demonstration Balance	33.25/Ea

## Eisco™ Rolling Friction Cars

Provides four cars for exploration into force of friction.

- Provides set of different material wheels (wood, fabric, soft rubber, soft silicone) with different coefficient of friction
- By setting cars in motion with equivalent velocities, one can qualitatively demonstrate frictional properties of rolling without slipping
- Includes: Instruction manual



Cat. No.	Description	Price
S12997	Rolling Friction Cars	45.50/Ea

## Incline Plane Friction Set

A great addition to any science classroom, the Incline Plane Friction Set demonstrates the resolution of forces, uniform and accelerated motion, and potential energies. The Incline Plane Friction Set can be used for multiple demonstrations including the resolution of forces, uniform and accelerated motion, and potential energies.

- Used for multiple demonstrations
- Can be set between 0 and 45 degrees
- Instructions included



### INCLUDES:

Two scales, aluminum wheels and cone bearings to minimize friction, aluminum weight, hanger (50 grams), instruction manual.

Cat. No.	Description	Price
S13858	Incline Plane Friction Set	44.00/Ea

## Eisco™ Adjustable Clamp Pulley

To demonstrate wide variety of mechanics principles.



- Sturdy metal construction
- Metal sheave can be adjusted from flush with tabletop to 13cm above it
- Pulley can be rotated to 360° to suit any experimental setup
- L x W x H: 10.6 x 5.9 x 2.8 in.

Cat. No.	Description	Price
S23660	Adjustable Clamp Pulley	22.25/Ea

## Eisco™ Economy Force Table

For educational purpose.

- Equipped with large tabletop
- With thick support and heavy cast base with levelling screws
- Durable polymer tabletop carries angle scale with 0.5° divisions, marked every 10° in both rotation directions
- With four pulleys
- Four sets of weights
- Diameter: 40cm
- Chrome plated 250g each set



Cat. No.	Description	Price
S96528	Economy Force Table	247.00/Ea

## Solid Steel Ball (Smashing Steel Sphere Kinetic Energy Demo)

For physics experiments and demonstrations such as kinetic, density and volume measurements, pendulum bob, potential energy and conservation experiments, ballistics.

- Diameter: 40mm (1.5 in.)
- Sold as pair
- Includes teacher's guide



Cat. No.	Description	Price
S12857	Solid Steel Ball	33.00/Ea

## Physics Ball Set

Set of 14 balls of different materials for Physics

- 25mm diameter with drilled center hole 3mm diameter
- Fourteen balls per set - 2 each: aluminum, brass, copper, lead, steel, zinc, and wood
- Supplied in a foam lined plastic case.



Cat. No.	Description	Price
S09605	Physics Ball Set	58.00/Ea

## Eisco™ Hall's Car Pair

Essential items for dynamics experiments.

Use in conjunction with inclined plane, pulley and weights to study relationship between work and energy.

- Low-friction wheels
- Oil-free sleeve bearings — never needs adjustment
- Durable plastic molded body has deep well for weights and low profile



Cat. No.	Description	Price
S96317	Hall's Car Pair	24.50/Ea

## Eisco™ Plastic Dynamic Cart Set

Excellent upgrade from the traditional wooden or metallic carts.

Pair of single-piece, virtually unbreakable ABS carts can be used for a variety of precision experiments.

- Body mounted on set of three low-friction nylon wheels to produce straight-line travel over long distances
- Lockable spring-load punch has two levels of compression, activated by trigger knob on cart top
- Cushioned cart surface supports addition of more masses to increase effective weight of cart
- Carts are stackable to create single cart of two or three times the basic cart mass
- Velcro™ rear pads enable study of inelastic collisions



Cat. No.	Description	Price
S05833	Plastic Dynamic Cart Set	100.00/Ea



## Dynamics Cart

A great tool for experiments in conservation, velocity, elastic collision, acceleration and momentum. The Dynamics Cart is for performing experiments in conservation, velocity, elastic collision, acceleration and momentum. The set contains two high impact plastic cars with snap in wheels and two spring steel bumpers with rubber stopper assemblies. Each car has a recession for holding additional weight.

- 2 Cars
- Used for a variety of experiments
- Recession for holding weight
- Blue

**⚠ ALERTS:**  
Not a toy. Product intended for ages 13 and up.



Cat. No.	Description	Price
S13616	Dynamics Cart	18.25/Pk

## Eisco™ Wood Dynamics Carts

Ideal for demonstrating Newton's laws of motion.



- Carts made with low-friction ball-bearing wheels
- Top surface can be loaded with additional masses
- One cart in each set is equipped with an “exploder piston,” activated by a trigger on top that can be preset to three positions
- Spring-steel hoop bumpers used for collision and energy experiments

**ORDERING INFORMATION:** Sold as a set of two carts.

Cat. No.	Description	Weight (English)	Weight (Metric)	Price
S96176	With Hoops	5.7 lb.	2.6kg	126.00/Ea
S96175	No Hoops	4.6 lb.	2.09kg	57.00/Ea

## Eisco™ Handheld Centripetal Force Kit

Provides necessary tools to discover properties of rotational dynamics.

- Rubber stopper swings around on end of string counter balanced by weights
- Allows students to see how mass and radius affect centripetal acceleration and rotational velocity



**INCLUDES:** Instructions

Cat. No.	Description	Price
S13002	Handheld Centripetal Force Kit	7.85/Ea

## Vernier® Dynamics Cart and Track System with Motion Encoder

The Dynamics Cart and Track System with Motion Encoder is a revolutionary way for physics students to study dynamics. The Motion Encoder adds an optical position-sensing system to record cart motion and eliminates the need for a motion detector for cart-on-track activities.



Resolution: 1 mm Maximum useful data rate: 30 Hz

**INCLUDES:**

Dynamics Cart and Track System with Motion Encoder, Combination 1.2 m Track/Optics Bench, Motion Encoder Cart with magnetic and hook-and-pile end caps, Motion Encoder Receiver, Plunger Cart with magnetic and hook-and-pile end caps, 4 hexagonal masses, 125 g each, Mounting hardware for Dual-Range Force Sensor and accelerometers, Adjustable End Stop, 2 Adjustable Two-Foot Levelers, Motion Detector Bracket, Motion Detector Reflector Flag, Rod Clamp, 2 Photogate Brackets, Ultra Pulley, Pulley Bracket, Dynamics Cart and Track System with Motion Encoder and Long Track.

**REQUIRES:**

Motion Encoder Receiver requires an interface and software (sold separately)

**WARRANTY:**

5-year limited warranty

Cat. No.	Description	Price
S16275ND	Dynamics Cart and Track System	488.00/Ea

## Eisco™ Wooden Lever

Wooden lever ideal for use in physics classrooms to explore lever, simple machines, and forces.



- One meter long wooden graduated scale balanced on knife edge of the fulcrum
- Supplied with 2 sets of 100 g weights
- Perfect for physics classrooms to explore lever, simple machines, and forces

Cat. No.	Description	Price
S26661	Wooden Lever	39.25/Ea

## Eisco™ High Power Catapult Kit

High Power Catapult Kit allows students to explore the concepts of force, acceleration, parabolic trajectory, center of mass, Hooke's law, vector components, and class 2 levers

- Includes adjustable parts to experiment with different initial conditions
- Assembly instructions included as well as learning exercises
- Launches objects 50% further than the original Garage Physics Catapult Kit
- contains everything needed for easy assembly, no tools required
- Contains catapult sides, side supports, firing arm, rubber bands, dowels, hook, and ping-pong ball
- Hands-on activities aid in the conceptualization of abstract mathematical ideas
- Correlates well with NGSS standards 3-PS2-1&2, MS-PS2-2, and HS-PS2-1 (Motion and Stability: Forces and Interactions)



**WARRANTY:** 1 year limited manufacturer warranty

Cat. No.	Description	Price
S88362	High Power Catapult Kit	70.50/Ea

## Bottle Rocket Launcher

Get a quantitative idea of the effects of varying moments of inertia.

Pressurize a plastic soda bottle with an ordinary bicycle pump (not included). Vary the amount of pressure and/or water fuel to see whose rocket will go the highest. Experiment with different fin styles to observe how changes in design affect flight paths.

- Solid aluminum construction
- Simple triggering mechanism
- Mounting stakes

### INCLUDES:

Instructions and a paper astrolabe for determining rocket altitude



Cat. No.	Description	Price
S41988	Bottle Rocket Launcher	42.75/Ea

## Eisco™ Bottle Rocket Launcher

Introduces rocket science and concepts involving Newton's laws to students.

- Uses water and pressurized air as fuel
- Bottle rocket launcher attached to sturdy base
- Can launch 2L plastic soda bottles over 30.4m (100 ft.) in air
- Using water as liquid fuel, pressurize bottle with bicycle pump (Schafer-type connection, pump not included)
- Bottle is remotely launched from safe distance using corded release mechanism
- Connects to power source (such as battery) using spade terminal connections (battery and connectors not included)
- Applications:
- Outdoor science toy



Cat. No.	Description	Price
S12993	Bottle Rocket Launcher	56.75/Ea

## Single Stage Engines

For use with model rockets.

Estes Model Rocket Engines have been proven consistent and reliable in more than 300,000,000 launches. Refer to the recommended engines listed with the rocket.

- Pack of 24

**INCLUDES:** Igniters and plugs



Cat. No.	For Use With	Price
S41867A	Engines B6-4	75.00/Pk
S41871A	Engines A8-3	75.00/Pk

## Viking™ Rocket

A versatile high flier.

- Customize your rocket with up to 48 different fin configurations
- Easy to assemble and ideal for aerodynamic experiments and comparisons
- Includes: Molded nose cone, a single piece body tube, card stock fins and self-stick decals



### Specifications

- Length: 12.1 in. (30.7cm)
- Diameter: 0.74 in. (18.8mm)
- Weight: 0.6 oz. (17g)
- Recovery: Streamer
- Fins: Die cut card
- Max. Altitude: 1470 ft. (448m)
- Recommended Engines: 1/2A6-2, A8-3, A8-5, B4-4, B6-4, B6-6, C6-5, C6-7

Cat. No.	Description	Price
S41995PK	Viking™ Rocket	77.00/Pk



Log in to your account on [fisheredu.com](http://fisheredu.com) to see your discounts.

## Alpha III Launch Set

Designed with pre-colored parts and self-stick decals, you'll be ready for lift-off in under an hour. Includes the Porta-Pad II launch pad and Electron Beam launch controller. Engines and recovery wadding sold separately

A true classic, the Alpha III was the first rocket in the Beginner level series. Designed with pre-colored parts and self-stick decals, you'll be ready for liftoff in under an hour. The launch set includes the Porta-Pad II launch pad and Electron Beam launch controller. Engines and recovery wadding sold separately.



- The first rocket in the Beginner level series, the high-flying Alpha III was designed with beginners in mind.
- Renown for its classic good looks, simple assembly, and excellent performance, the Alpha III is one of the model rocketry's best-known and most-loved designs. The black body tube, fluorescent orange nose cone and one piece fin unit makes this rocket easy-to-assemble and fun to fly. With nothing needed more than everyday household supplies and some glue, you'll be ready for lift-off in minutes. Using standard Estes engines (sold separately), watch as the Alpha III soars to 1100 feet high. Once the rocket reaches its peak altitude, it will gently return to earth on its brightly colored, matching orange 12 inch parachute.
- WHAT YOU NEED TO BUILD: Scissors, pencil, ruler, sandpaper, carpenter's glue and hobby knife. (Tools, construction and finishing supplies not included.)
- WHAT YOU NEED TO LAUNCH (sold separately): Estes Porta-Pad II Launch Pad with a 1/8 inch launch rod and Electron Beam launch controller, Estes model rocket engines, starters and recovery wadding. Four 1.5 V high quality AA alkaline batteries are also required for launch controller (not included).

Cat. No.	Description	Price
S13198	Alpha III Launch Set	36.75/Ea

## Shock Cords & Mount Kit

Contains two sizes of shock cords with mounts and instructions.

- Contains two 1/8 in. x 18 in and one 1/4 in x 36 in. rubber shock cords and four shock cord mounts



Cat. No.	Description	Price
S13193	Shock Cords & Mount Kit	6.15/Ea

## Altitrak

Measure the maximum altitude of your rocket.

- Gathers experimental performance and altitude data
- Tracks rocket in flight with easy-to-use sights
- Follow rocket to its apogee, then lock trigger to the reading
- Instantly and accurately determines peak altitude
- Displays altitude in meters and elevation angle in degrees



**INCLUDES:** Meters-to-feet conversion table

Cat. No.	Description	Price
S41861	Altitrak Altimeter	34.00/Ea

## 12 in. Parachute

Preassembled parachute with printed two color design.

- This 12 in. (30.5 cm) parachute is preassembled and ready to use
- For use with model rockets that require a 12 in. parachute



Cat. No.	Description	Price
S13194	Parachute	4.10/Ea

## NC-50 Nose Cone

NC-50 Nose Cones will fit the BT-50 body tubes.

- Each package of nose cones contains five nose cones that will fit the BT-50 body tubes
- All have eyelets or nose cone pins for shock cord and shroud line attachments



Cat. No.	Description	Price
S13196	NC-50 Nose Cone	9.20/Pk

## Tube Marking Guide

The tube marking guide is an easy way to mark your fin and launch lug placement. The marking guide is a must for any rocket builder.

- Easy way to mark fin and launch lug placement lines
- Also includes a fin gluing jig



Cat. No.	Description	Price
S13191	Tube Marking Guide	13.25/Ea



## BT-50 Body Tube

High quality spiral wound paper tube for kits using the BT-50 body tube.

- Use tube couplers to connect tubes of the same diameter
- Three tubes per package
- Works with the NC-50 nose cone



Cat. No.	Description	Price
S13197	BT-50 Body Tube	8.75/Pk

## Eisco™ Projectile Launcher

Launch a projectile at any angle from  $-15^\circ$  to  $+90^\circ$  straight up.

Solidly built to withstand the rigors of a hands-on lab and precision machined for reproducible results.

- Clamps to any tabletop, compatible with an electronic timer
- Angle adjusts with launcher mount, then locks into place with auxiliary brace
- Combination of launcher mount and brace means maximum flexibility plus great rigidity
- Measure your angle to within  $0.5^\circ$  accuracy with plumb bob
- Range is up to 10 ft. (3m) and is infinitely adjustable



**INCLUDES:** Spring-loaded gun, two balls, instructions with experiments, protractor (not shown), plumb bob (not shown)

Cat. No.	Description	Price
S96174	Projectile Launcher	138.00/Ea

## Projectile Launcher

Alter the mass of projectiles and observe the effect on their trajectories. The Projectile Launcher features a built-in clamp to fasten the device securely to tabletops.



- Students can alter the mass of the ball and observe the effect on the ball's trajectory
- The launcher features a spring loaded trigger and easy to use release mechanism that can be adjusted for tension
- A protractor and plumb bob are fixed to the face of the apparatus for determining the angle of inclination
- The built-in clamp is used to secure the apparatus to a tabletop
- Four holes spaced 5cm apart are located at the top and bottom edge and are used for attaching a photogate (not included)
- The kit also included three 25mm balls with a different mass, aluminum, lead and steel

Cat. No.	Description	Price
S13995	Projectile Launcher	102.00/Ea

## Vernier® Projectile Launcher

Ideal for investigating important concepts in two-dimensional kinematics.

Launch steel balls at angles between 0 and 70 degrees and over distances up to 2.5 m.

- The solid, heavy base provides an easy-to-use and reliable setup
- A unique pneumatic launching system provides excellent repeatability and allows you to set the launch speed
- Built-in photogates and angle markings provide easy and accurate measurement of the ball's launch velocity, allowing for precise quantitative analysis of projectile motion. Simply plug the device into a compatible data-collection interface.

### Specifications:

- Launch angle: 0 to 70 degrees
- Launch speed: 0-6 m/s
- Launch height: 146 mm
- Maximum launch distance: 2.5 m
- Internal photogate interval: 50 mm
- Steel ball diameter: 17.46 mm
- Steel ball mass: 21.8 g

### Data-Collection Interface and Software Compatibility

Data collection with the Projectile Launcher is possible with the following combinations of interfaces and software.

- **Logger Pro 3:** Use version 3.8.5 or newer with LabQuest® 3, LabQuest® 2, original LabQuest®, LabQuest® Mini, and LabPro®
- **LabQuest App:** Use LabQuest 2 or original LabQuest with version 1.6 or newer when LabQuest is used as a standalone device
- **DataQuest® Software for TI-Nspire®:** Use this application with TI-Nspire® Technology and the TI-Nspire® Lab Cradle
- **EasyData App:** Use this app with a TI-83 Plus or TI-84 graphing calculator and LabPro or CBL 2®
- **LabVIEW®:** National Instruments LabVIEW® software is a graphical programming language sold by National Instruments and used with SensorDAQ. Contact Vernier for more information concerning compatibility.



### REQUIRES:

Compatible interface and Software

Cat. No.	Description	Price
S15975ND	Projectile Launcher	440.00/Ea

## Eisco™ Physical Science System Base and Pendulum

A system that allows students to use all technologies available to learn physics through technology, engineering and real-world applications.

### Base (S06893)

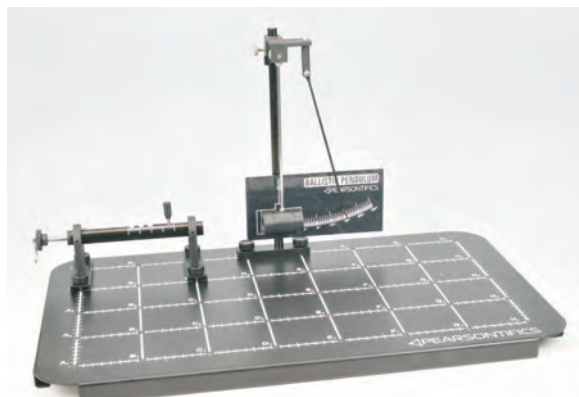
A large, robust base with precise magnetic and threaded mounting locations helps students set up experiments easily and quickly with reproducible results.

- Large, magnetic base for sturdily attaching experiments
- High-contrast color grid for easy data collection with video analysis systems
- Each junction in the grid accepts threaded rods for accurate mounting
- Dimensions: 25 × 16 × 2.5 in. (63.5 × 40.6 × 6.35cm)
- Accepts any probeware system

### Ballistic Pendulum (S06895)

A great demonstration or experiment as students try to derive the velocity of a ball leaving the launcher. Students can calculate velocity and test their calculations using this system with separate video or probeware system.

- Main Lab: find the velocity
- Extension One: photogate verification of muzzle velocity
- Extension Two: damped simple harmonic motion
- Covers 10 Next Generation Science Standards Concepts
- Covers 17 Common Core Standards
- 27 pages total
- Student workbook is a guide for students to fill out as they work through the main lab and lab extensions
- General Theory Section lays out the theory and mathematics behind the lesson plan
- Experimental Teaching Guide helps teachers prepare lesson plans and lead inquiry or step-based activities



- All labs and extensions include recommendations for video analysis setups
- For use with Physical Science System Base (S06893).

### S06895 INCLUDES:

Spring-loaded launcher, rigid-arm pendulum with barrel, measuring board, ball, small metal rod with handle, extensive instructions to assist with lesson planning, student activities and experimental procedures

### REQUIRES: Safety glasses (not included)

- Go to [Fisheredu.com](http://Fisheredu.com) for additional Visual Scientific products.

Cat. No.	Description	Price
S06893	Physical Science System Base	173.00/Ea
S06895	Ballistic Pendulum	67.50/Ea

## Kemtec™ Gravity Well Kit

Kemtec™ Gravity Well Kit allows students to build a large scale demonstration model to explore gravity in the classroom.



- Students model the bending of spacetime by gravity to explore the behavior of gravity on a cosmic scale.
- Simulate the motion of planets, galaxies, star systems, moons, and more.
- Create synchronous orbits and model the Big Bang Theory.
- Materials expansion kit for 17-102, Earth's Place in the Universe.
- Meets National Standards for Grades 6 to 12.



Cat. No.	Description	Price
S27544	Gravity Well Kit	176.00/Ea

## Eisco™ Hooke's Law Apparatus

Used to teach Hooke's Law in the classroom.

- 15cm mirror scale is marked in millimeters and mounted on a sturdy 30 cm. support rod and wooden base
- Mirror adjusts to prevent parallax error
- Hook attached to rod supports a coiled spring with mass hanger and indicator



### REQUIRES:

Weights (not included)

Cat. No.	Description	Price
S96529	Hooke's Law Apparatus	24.00/Ea

## Eisco™ Helical Spring Set

Demonstrates the extension of a spring in relation to the force applied to it.

- Helical spring has rings at both ends
- Three masses included: 1.1 lb. (500g), 4.4 lb. (2000g) and approximately 0.52 lb. (237g)
- All masses made with double hook



Cat. No.	Description	Price
S96185	Helical Spring Set	42.00/Ea

## K'NEX™ Creation Zone 50 Model Building Set



Set contains 417 classic K'NEX pieces to build over 50 unique models.

- Set contains 417 classic K'NEX pieces to build over 50 unique models.
- Build 50 different models including a dragon, swing ride, robot and more.
- Comes in a blue plastic storage tub that holds all K'NEX parts, or partially and fully built models.
- Set comes with an easy-to-follow instruction manual. Ideal for kids 5 and up.
- STEAMagination - It's the connection of STEAM (science, technology, engineering, arts, & math) with a child's curiosity and creativity. It powers the fun of each K'NEX set.
- K'NEX supports the developmental growth of hand-eye coordination, fine motor skills, problem-solving skills, & spatial awareness.



Cat. No.	Description	Price
S80753	Creation Zone 50 Model Building Set	30.25/Ea

## Bridge Building Class Pack

Challenge students' mathematical skills with this analytical exercise in creativity.

- Supports a wide variety of curricula including geometry, physics, technology, mathematics and general science
- Build the strongest bridge with the smallest amount of materials
- Bridge efficiency is judged as the ratio of the weight held by the bridge to the weight of the bridge



### ORDERING INFORMATION:

- Select 360 pieces of either 0.13 × 0.13 × 24 in. (0.31 × 0.31 × 60cm) balsa wood or 0.14 × 0.14 × 24 in. (0.34 × 0.34 × 60cm) basswood
- Class size: 24 students

### INCLUDES:

All materials required:

- Wood
- Adhesive
- Competition design parameters
- Booklet: "Teaching with Model Bridge Building Programs"

Cat. No.	Description	Price
S41893B*	Bridge Building Class Pack	122.30/Ea

## Kemtec™ Boomilever Test Kit



Kemtec™ Boomilever Test Kit includes everything required to test boomilevers for competition, except for the ballast (sand).



- Kit includes a test stand that can fit on any table or lab bench with a lip, a loading block, a boomilever scale, a ballast scale, a scoring sheet, chain, S-hook, bucket, beaker with handle, and plastic tarp.
- Meets National Standards for Grades 6-12.

Cat. No.	Description	Price
S27541	Boomilever Test Kit	372.00/Ea
S27542	Refill Pack	434.00/Ea



\* California - WARNING: Cancer [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*\* California - WARNING: Reproductive Harm [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*\*\* California - WARNING: Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



Volume & Density

### Eudiometers

Measures change in volume of gas mixture following a physical or chemical change.

- Capacity: 50 to 100mL
- Subdivisions at 0.1 to 0.2mL



Cat. No.	Description	Price
S32353	50mL with subdivisions at 0.1mL	51.50/Ea

### United Scientific™ Equal Volume Cylinders

Ideal for specific gravity, density, volume and calorimetry experiments.

- Available as individual and set of cylinders
- Made of aluminium, brass, copper, steel, PVC and wood



Cat. No.	Description	Price
S07021	Aluminum	3.70/Ea
S07023	Brass	4.30/Ea
S07024	Copper	5.65/Ea
S07025	PVC	3.55/Ea
S07022	Steel	3.70/Ea
S07026	Wood	3.20/Ea
S07034	Aluminum, copper, steel, and brass cylinder set	18.25/Ea

### Eisco™ Square Density Blocks

The Eisco™ Square Density Blocks is perfect for students studying mass, volume, and density.

- Density Block set consists of 9 blocks 1 in. square blocks
- Materials included brass, iron, copper, aluminum, hardwood, softwood, nylon, PVC and acrylic
- Supplied in 5.75 in. x 5.75 in. x 1.25 in. wooden box with hinges and clasp



Cat. No.	Description	Price
S12916	Square Density Blocks	65.00/Ea

### Eisco™ Metal Density Cubes without Hooks

Designed for density exploration and experiments

- Solid cubes, 20 mm each size
- Stamped with element
- Pack of 6: Brass, Lead, Zinc, Copper, Aluminum, Iron



Cat. No.	Description	Price
S24860	Metal Density Cubes without Hooks	25.50/Ea

### Eisco™ Density Identification Cylinder

The Eisco™ Density Identification Cylinder is for students to identify and figure out mass, volume and density.

- 12 Density Cylinders
- Wooden holder to keep all cylinders together and organized
- This set contains different metals, plastics, wooden materials



Cat. No.	Description	Price
S12924	Density Identification Cylinder	46.75/Ea

### United Scientific™ Density Cube Sets

- For use in science experiments involving density
- Cube measurements are equal

**S23979:** Set of 10 Cubes. One each of acrylic, oak, pine, poplar, steel, aluminum, copper, brass, nylon, and PVC cubes packaged in wooden storage box and a reference table

**S23978:** Set of 12 Cubes. One each of acrylic, oak, pine, poplar, steel, aluminum, copper, brass, nylon, PVC, lignum vitae, and polypropylene cubes; Plastic storage box



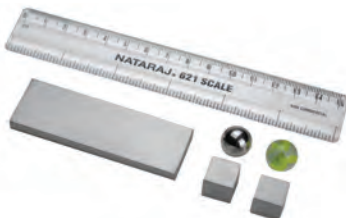
Cat. No.	Description	Price
S23979	Set of 10	32.25/Ea
S23978	Set of 12	36.25/Ea

## United Scientific™ Density Kit



This kit is ideal for teaching students how to make measurements in the metric system, and then apply those measurements to determine density using the formula  $Density = Mass/Volume$ .

- Ideal for teaching students how to make measurements in the metric system
- Apply measurements to determine density using the formula  $Density = Mass/Volume$
- Includes metric ruler, aluminum bar (76 × 25 × 6 mm), aluminum cube (13 mm), steel sphere (13 mm) and glass sphere (13 mm)



Cat. No.	Description	Price
S81069	Density Kit	9.95/Ea

## Density Rod

To compare the density of different materials

- Available in square wood block
- Measure mass using scale, volume using graduated cylinder, and density



Cat. No.	Description	Price
S13642	Set of 12 Aluminum	26.75/Ea
S13641	Set of 12 Materials	34.00/Ea

## Density Cube Set

Demonstrates density experiment in a dozen ways.

- Two cubes to our 10-cube set
- Lignum Vitae (ironwood), one of the heaviest and hardest woods in the world, sinks in water, although because it is wood, you students may expect it to float
- Polypropylene floats in water, although because it is dense plastic, your students may expect it to sink
- 12 one-inch cubes, with instructions and handy storage case



Cat. No.	Description	Price
S96830	Density Cube Set	34.50/Pk

## Eisco™ Specific Gravity Metal Cylinder Set

Set of four different metal cylinders.

- Made of aluminium, zinc, copper, and steel
- L × dia.: 38 × 10mm
- Supplied in plastic box



Cat. No.	Description	Price
S12803	Specific Gravity Metal Cylinder Set	15.75/Ea

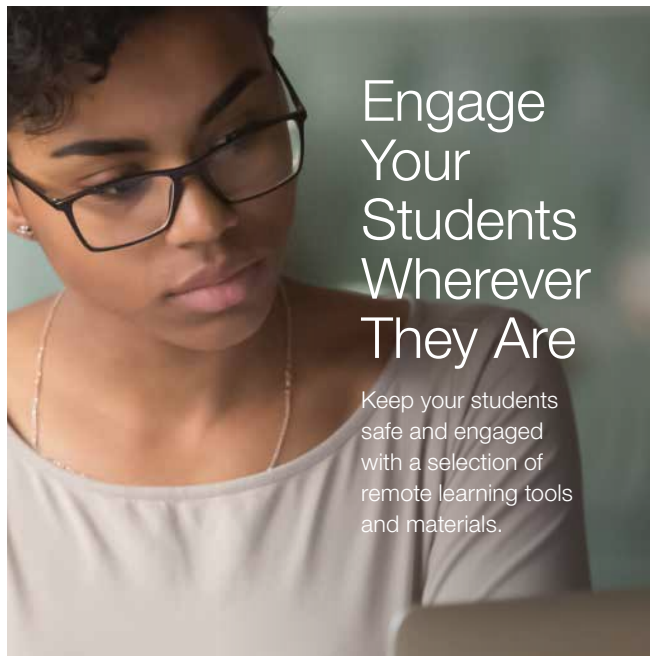
## Eisco™ Specific Gravity Cubes

Investigate a range of specific gravities.

- 0.79 in. (20mm) cubes with hooks
- Set of 4 includes brass, iron, aluminum and zinc cubes



Cat. No.	Description	Price
S99390	Specific Gravity Cubes	22.50/Ea



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Heat & Thermodynamics

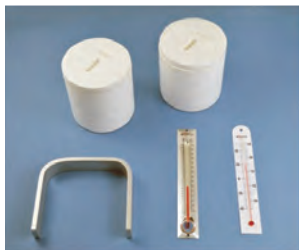
### Eisco™ Heat Transfer Kit

Introduces concepts of thermal energy and heat transfer to students.

Features aluminum heat transfer bar to demonstrate migration of thermal energy between two Styrofoam calorimeters.

**INCLUDES:**

Styrofoam Calorimeters with lids, Aluminum heat transfer bar, Low range thermometer (-40° to +50°C), High range thermometer (-30° to +10°C)



Cat. No.	Description	Price
S12996	Heat Transfer Kit	30.25/Ea

### Energy Transfer Demonstration

Investigate the transfer of heat between hot and cold liquids. The Energy Transfer Demonstration allows students to observe heat being transferred through an aluminum bar between two calorimeters by measuring the temperatures over time in each.

- Investigate the transfer of heat between hot and cold liquids
- The heat will flow through a heavy aluminum bar dipping into each of those two liquids
- The liquids will be contained in insulated containers, calorimeters, so that temperature changes you observe will be almost entirely due to heat moving through the aluminum bar
- The cup on the right will contain water and the cup on the left can contain a variety of liquids including salt water and alcohol
- The kit includes two insulated cups, two thermometers, an aluminum heat transfer bar and instructions



Cat. No.	Description	Price
S13993	Energy Transfer Demonstration	35.25/Ea

### Heat Transfer Kit

Observe and measure the transfer of heat between two water samples of different temperatures.

- Includes two insulated containers with slotted lids, a U-shaped aluminum transfer bar and two thermometers
- Grades 6 to 12



Cat. No.	Description	Price
S53012	Heat Transfer Kit	27.75/Ea

### Five Metal Heat Conductometer

Demonstrates the different conductive properties of various metals. The Five Metal Heat Conductometer contains one spoke each of aluminum, steel, brass, copper, and nickel extending from a central hub. This tool is perfect for classroom demonstrations of heat conduction principles.



- Used to demonstrate the different conduction properties of various metals
- Consists of five different metal spokes that extend from a center hub which is connected to a wooden handle
- When the hub is heated, students watch as wax falls from each spoke in the order of highest conductivity
- Ideal for classroom or other educational settings
- Wax and instructions included
- Metals include aluminum, steel, brass, copper, and nickel

**INCLUDES:**

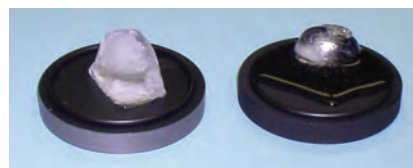
Aluminum, steel, brass, copper, & nickel rods; Wax for visualization; Instructions

**⚠ ALERTS:**  
Intended for ages 13 and up.

Cat. No.	Description	Price
S13644	Five Metal Heat Conductometer	10.50/Ea

### Ice Melting Set

Two black blocks simply and quickly demonstrate differences in heat conductivity.



- One block is made from aluminum, which is an excellent conductor of heat
- Other is made from plastic foam, which is a poor conductor of heat
- Simply put an ice cube on each block and watch as one quickly melts away
- Rim on each block prevents spillage

**INCLUDES:**

Instructions with theory

Cat. No.	Description	Price
S68112	Ice melting set	26.25/Ea



## Waves, Sound, &amp; Light

**Eisco™ Wave Demonstration Set**

Guides students through understanding standing waves, nodes, tension and speed.

- Helps students understand various concepts like: effect of amplitude of pulse, length, tension and material of spring on speed of pulse
- Includes 10+ page instruction booklet covering approximately two to three hours of class/lab time material, 10+ Next Generation Science Standards Concepts and 10+ Common Core Standards
- Every module includes comprehensive instructions to assist with lesson planning, student activities and experimental procedures
- All labs and extensions feature recommended video analysis setups and guides

**INCLUDES:**

Thin and thick strings, oscillating motor, mountable pulley

**REQUIRES:**

Visual Scientific's base (S06893) and back board (S06894), ring stand posts, video camera, digital balance

Cat. No.	Description	Price
S07814	Wave Demonstration Set	42.50/Ea

**United Scientific™ Wave Demonstrator Set**

Includes two helical springs and a length of cotton string.

- Long, narrow spring measures  $0.75 \times 72$  in., and can be extended to 5m
- Larger spring measures  $3 \times 4$  in. and can be extended many times its length without distortion

**ORDERING****INFORMATION:**

Weight: 2.5 lb. (1.1kg).

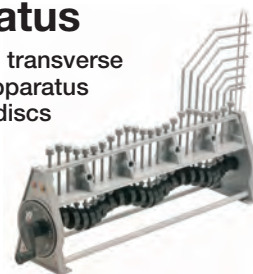
**INCLUDES:**

Teacher activity guide

Cat. No.	Description	Price
S06685	Wave Demonstrator Set	26.25/Ea

**Eisco™ Wave Apparatus**

Demonstrate both longitudinal and transverse wave motions. The Eisco™ Wave Apparatus consists of a number of eccentric discs supporting a series of metal rods revolving on a handle. Transverse waves are obtained from the straight rods and longitudinal waves are obtained from the bent rods.



Cat. No.	Description	Price
S12967	Wave Apparatus	88.00/Ea

**Kemtec™ Light and Sound Activity Stations**

Kemtec™ Light and Sound Activity Stations guides middle school students to explain phenomena they observe in terms of the properties of light and sound.

- Includes a wave simulator students can build, activities for modeling the reflection, refraction, and absorption of light, and activities for exploring the relationship between vibration and sound.



- Students explore the electromagnetic spectrum, mirrors, prisms, lenses, and digital and analog signaling.
- Includes extension activities for demonstrating proficiency.
- Meets National Standards for Grades 6 to 8.

Cat. No.	Description	Price
S27536	Light and Sound Activity Stations	379.00/Ea

**Eisco™ Resonant Tuning Fork Set**

Demonstrates acoustical resonance and sympathetic vibration.

- Generates 440Hz vibrations
- Forks mounted on wooden resonance boxes

**INCLUDES:**

Two 440Hz chromium-plated, carbon-steel tuning forks; wooden resonance boxes; rubber hammer



Cat. No.	Description	Price
S96193	Resonant Tuning Fork Set	190.00/Ea

## Student-Grade Tuning Fork Sets

Economical set.

- 8-Piece set includes forks with 256, 288, 320, 341.1, 384, 426.7, 480 and 512Hz
- 13-Piece set includes forks with 261.6, 277.1, 293.7, 311.1, 329.6, 349.2, 369.9, 392, 415.30, 440, 466.1, 493.9 and 523.2Hz



Cat. No.	Description	Price
S68770	8-Piece Set	20.75/Ea
S68769	13-Piece Set	34.25/Ea

## Eisco™ 8-Piece Tuning Fork Set

Demonstrate eight different frequencies with one set.

- Forks vibrate with these frequencies: 256, 288, 320, 341.3, 384, 426.6, 480 and 512Hz
- Mallets made with one hard and one soft end
- Cushioned for safe storage



### ORDERING INFORMATION:

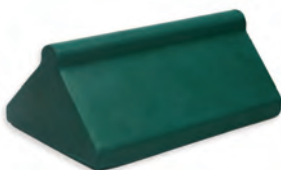
Come in sturdy wooden case.

Cat. No.	Description	Price
S96194	8-Piece Tuning Fork Set	50.00/Ea

## Eisco™ Tuning Fork Striker

A rubber tuning fork striker that ideal for classroom use

- A rubber striker for tuning fork
- Ideal for classroom use
- Dimensions: 110 × 70 × 50 mm



Cat. No.	Description	Price
S80855	Tuning Fork Striker	8.85/Ea

## United Scientific™ Optics Set

Explore the world of light reflection and diffraction.

Basic optics set can be used by itself or with the current optics experiments.

- Two acrylic lenses (one double convex and one double concave)
- Three mirrors (one convex, one concave and one plane)
- Comes in a wood storage box
- Dimensions: 5 × 3.5 × 1.5 in. (12.7 × 8.9 × 3.8cm).



Cat. No.	Description	Price
S66968	Optics Set	39.50/Ea

## Eisco™ Student Optical Bench



A cost effective way to demonstrate the basic principles of optics in a typical high school science lab

- Cost effective student optical bench
- Demonstrates basic optical principles
- Economy model



Cat. No.	Description	Price
S80854	Student Optical Bench	57.00/Ea

## Eisco™ Light Box and Optical Set

For reflection, refraction and color mixing experiments.

### Light Box

- Light source produces convergent, divergent or parallel beams
- One end of box constructed with adjustable cylindrical convex lens for parallel beams
- Other end has triple aperture system for color mixing experiments (lateral apertures have an adjustable hinged mirror) All apertures designed with vertical channels to hold slit plates and color filters



### Optical Set

- Two black plates supplied with three narrow slits at one end and one narrow slit at the other
- Third black plate provides four narrow slits at one end and one wide slit at the other
- Set of seven mounted color filters

### INCLUDES:

Light box includes 12V 24W lamp and adjustable cylindrical convex lens triple aperture system with vertical channels. Optical Set supplied with acrylic blocks, three mirrors, three slit black plates and set of color filters. Power supply, such as S96208, sold separately.

Cat. No.	Description	Price
S96022	Light Box and Optical Set	199.00/Ea

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## Kemtec™ Light & Color Kit

Kemtec™ Light & Color Kit includes fourteen activities and four demonstrations to introduce students to the properties of light

- Kit includes fourteen activities and four demonstrations
- Introduce properties of waves, properties of light, and the electromagnetic spectrum
- Includes reflection of light, pool reflections, reflection from plane mirrors, reflection from concave and convex mirrors, refraction through concave and convex lenses
- Features using a prism to separate white light into the colors of the visible spectrum
- Teaches how reflection determines color, mixing primary colors of light, and mixing the primary colors of pigments
- Complete with all materials for station based investigation, reproducible student data sheets, assessment questions, and answer keys
- Addresses national standards for Grades 5-8



Cat. No.	Description	Price
S30805	Light & Color Kit	286.00/Ea

## Eisco™ Newton's Color Disc

Rotating multicolored disc demonstrates that white light is composed of all the spectral colors.

- Multicolored disc is mounted on a driving wheel secured to a metal stand
- Hand crank drives the belt that rotates the color wheel
- Disc dia.: 7.1 in. (180mm)



Cat. No.	Description	Price
S99384	Newton's Color Disc	33.00/Ea

## Diffraction Viewing Glasses

See the spectrum with these "specs."

- Cardboard glasses use a small, flexible, diffraction grating that breaks up light into the colors of the spectrum
- Great for classroom spectroscopy experiments and elementary physical science investigations
- Individually sold glasses have green frames; packs have assorted color frames



Cat. No.	Description	Price
S48814	1 Green Frame	0.86/Ea
S48814A	10 Assorted Color Frames	13.13/Pk

## Eisco™ 6-Piece Prism Set

Variety of shapes for different demonstrations.

- Set of six prisms
- Clear acrylic, all sides polished

### ORDERING INFORMATION:

Set includes one rectangular, one semi-circle and one equilateral prism, plus one double convex and two double concave lenses.



Cat. No.	Description	Price
S96195	Boxed Prisms	51.50/Ea

## United Scientific™ Glass Equilateral Prism



Glass Equilateral Prism is high quality and easy to use.



- Equilateral prism made from high quality glass sheet
- Highly polished surfaces
- Prop 65 Warning Label
- Dimensions: 50 × 25 mm

Cat. No.	Description	Price
S81057	Glass Equilateral Prism	3.85/Ea

## United Scientific™ Acrylic Prism



Acrylic Prism provides excellent clarity for optics demonstrations.



- Prism made from acrylic
- Highly polished surfaces
- Dimensions: 50 × 25 × 35 mm

Cat. No.	Description	Price
S81067	Acrylic Prism	4.20/Ea



## United Scientific™ Prism and Lens Set

Teach a wide variety of optical principles. Set housed in a wooden case. Shipping weight: 2 lb. (0.9kg); box dimensions: 9.25 × 8 × 2 in. (23.1 × 20 × 5cm). Glass and acrylic sets each have seven components.



- Double convex lens
- Double concave lens (can be used together with double convex lens)
- Semicircular lens
- Trapezoidal prism
- Small right-angle prism
- Equilateral prism
- Large right-angle refraction prism

Cat. No.	Description	Price
S90324	Prism and Lens Set	78.00/Ea

## Eisco™ Universal Mirror

Aids students in performing experiments using light rays with plane, concave and convex mirrors.



- Made from stainless-steel

Cat. No.	Description	Price
S24359	Universal Mirror	5.65/Ea

## United Scientific™ Double Convex Lens



Double Convex Lens is high quality and safe for students.

- Made from plate glass
- Carefully ground and polished optical surfaces, and cleanly ground edges
- Prop 65 Warning Label
- Diameter: 75 mm



Cat. No.	Description	Price
S81063	Double Convex Lens	3.45/Ea

Log in to your account on **fisheredu.com** to see your discounts.

## United Scientific™ Flexible Acrylic Mirrors

Flexible, double-sided, acrylic mirrors.



- Available in various sizes and assortments

Cat. No.	Description	Quantity	Type	Price
S07369	Acrylic mirror	3 Pack	4 × 6 in., pk/3	19.75/Ea
S07370	Acrylic mirror	4 Pack	8.5 × 11 in., pk/4	45.25/Ea
S07371	Mirror set	12 Pack	4 each of 6 × 7.5 in., 3 × 4 in, and 2 × 3 in. sizes	29.25/Ea

## Vernier® Optics Expansion Kit

Add the Vernier Optics Expansion Kit to your Dynamics Cart and Track System to conduct optics experiments, such as image formation with lenses and light intensity vs. distance. You can even use the kit to build a basic telescope.

- Combination LED point and luminous light source with power supply
- Three lenses integrated with holders (100, 200, and –150 mm focal length)
- Screen and holder
- Light Sensor holder
- Aperture screen and holder
- Power supply



- The parts of the Optics Expansion Kit snap onto the track, so the parts can be left in place while the track is moved. The three lenses are permanently mounted in three plastic supports.
- The light source is LED-based, so it uses less energy and is cool to the touch. A rotating disc on the light source gives you the option of a radiant object, a point source, an L with 2 × 1 cm dimension, and parallel lines for resolution experiments.
- The power supply is the same as the LabQuest® power supply. An additional aperture plate is included for experiments based on lens diameter and shape.

### INCLUDES:

Combination LED point and luminous light source with power supply, Three lenses integrated with holders (100, 200, and –150 mm focal length), Screen and holder, Light Sensor holder, Aperture screen and holder, Power supply

### WARRANTY:

5-year limited warranty

Cat. No.	Description	Price
S16054ND	Optics Expansion Kit	204.00/Ea

## Laser Pointers

For presentation and instructions.

- For indoor and outdoor use
- Batteries Included: 2 × AAA
- Laser Class: IIIA
- Max. Power Output: 5mW
- One-year warranty

### Spectra (Red Laser Pointer S14229)

Made of aircraft aluminum

- Range of over 500 yards
- Color: Black
- Laser Wavelength: 650nm
- Size: 1.09 × 13.4cm (0.43 × 5.3 in.)



### Sotonic (Green Laser S14230)

Made of brass

- Range of over 1 mile
- Color: Matte Black
- Laser Wavelength: 532nm
- Size: 1.5 × 14.9cm (0.625 × 5.87 in.)

Cat. No.	Description	Price
S14230	Green Laser Pointer	21.25/Ea
S14229	Red Laser Pointer	73.80/Ea

## Mounted Spectroscope

Observe the visible line spectra of metals and gases as well as the absorption spectra of solutions and gases.



- Replica diffraction grating instrument with a scale shows approximate wavelengths in nanometers
- Identify elements when vaporized by heat
- Identify colored solutions which produce absorption spectra
- View prominent Fraunhofer lines
- One-piece aluminum casting serves as the body of the spectroscope
- Diffraction grating replica of 15,000 lines per inch
- Use any convenient light for illumination

### INCLUDES:

Tripod support

Cat. No.	Description	Price
S42550	Mounted Spectroscope with Tripod Support	550.00/Ea

## Eisco™ Quantitative Spectroscope

A quantitative spectroscope for measuring wavelength and color of light.

- Diffraction grating with series of parallel slits 500 lines/mm separates white light into its spectrum
- Measures wavelengths from 400 to 700nm
- Accuracy of ±5nm for precise measurement
- Versatile for measuring spectras emitted from gas tubes, flame tests and basic astronomy applications



Cat. No.	Description	Price
S07816	Quantitative Spectroscope	6.10/Ea

## Plexiglass Mirrors

Small and durable. Extremely resistant to shattering.

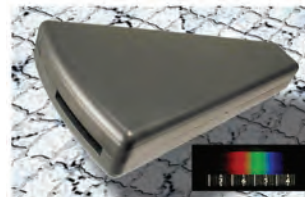


Cat. No.	Description	Price
S13674	2.5 × 3 in.	2.00/Ea
S13676	10 × 12 in.	15.75/Ea

## Quantitative Analysis Spectroscope

Highly accurate diffraction grating spectroscope.

- Housed in an unbreakable plastic case
- Wavelength range: 4000 to 7000Å
- Accuracy: ±50Å
- Overall length: 7.88 in. (20cm)
- Scale length: 1.5 in. (37mm)



### INCLUDES:

Instructions and suggestions for laboratory use

Cat. No.	Description	Price
S42581A	Analysis Spectroscope	9.35/Ea

Electricity & Magnetism

## Advanced Snap Circuits Kit

Advanced topics challenge knowledge and creativity.

More than 75 modular parts easily and safely build over 500 experiments. Designed for high school and vocational training, this advanced electronics kit explores the technology behind AM/FM radios, digital recording, seven-segment LED displays and more.



- Included student manual relates information about topics such as resistors, capacitors, transistors, motors, various types of circuits, diodes, relays and transformers
- Parts are stored in a lightweight, durable case with custom foam inserts
- Teaching guide prepares educators for proper instruction and includes quizzes

### ORDERING INFORMATION:

Student and teaching guides help integrate more advanced topics in electronics. Optional computer interface takes learning to the next level with an additional 73 experiments.

**REQUIRES:** Four AA batteries (S43921)

Cat. No.	Description	Price
S68213A	Advanced Snap Circuits Kit	200.00/Ea

## Vernier® Circuit Board 2

The Vernier Circuit Board 2 is a convenient platform for circuit labs, from basic series and parallel circuits to RLC circuits. Many components are provided for experimentation, and additional components can be added to expand the capability of this useful board.

- Size: 10 in. × 6.5 in. (25.5 cm × 16.5 cm)
- Mass: 0.44 kg
- Optional power sources: up to 4 AA batteries, not included LabQuest Power Supply, not included (or other 5 VDC adapter with center-positive inch connector) DC power supply, such as Extech Digital DC power supply
- Maximum voltage: 10 V resettable fuse opens at 0.8 A, but 0.3 A or less is recommended
- All parts ROHS compliant



### INCLUDES:

One circuit board, ten insulated jumper wires fitted with mini-alligator clips, five #48 lamps rated 0.06 A at 2.0 V (cylindrical body), five #50 lamps rated 0.220 A at 7.5 V (round body)

**WARRANTY:** 5-year limited warranty

Cat. No.	Description	Price
S15955ND	Circuit Board 2	147.00/Ea

## Eisco™ Junior Science Magnet Kit

For science experiments.

### Kit Components:

- 1 Pc. each of square iron, aluminium, zinc and copper metal
- 1 Horseshoe magnet with keeper (100mm)
- 2 Ceramic bar magnets (75mm)
- 3 Ceramic ring magnets (38mm dia.) face polarised
- 2 Plotting compasses, clear both sides (19mm dia.)
- 1 Pack iron filings



### INCLUDES:

Kit of magnets and accessories in compartmental storage tray, Contents: 1 Horseshoe magnet with keeper, 100mm 2 Ceramic bar magnets 75mm Long. 3 Ceramic ring magnets, 38mm dia., face polarised, 2 Plotting compasses, clear both sides, 19mm dia., 1 Pack Iron Filing, 1 pack Each of square iron, aluminium, zinc and copper metal

Cat. No.	Description	Price
S13479	Junior Science Magnet Kit	27.50/Ea

## Eisco™ Bar Magnet Set

Alnico bars with keepers.

- Each size sold as set of two magnets



### ORDERING INFORMATION:

Dimensions: small, 1.5 × 0.4 × 0.2 in. (37 × 11 × 6mm); large, 3.0 × 0.4 × 0.2 in. (75 × 11 × 6mm)

Cat. No.	Description	Price
S95956	Small	10.50/Pk
S95957	Large	15.25/Pk

## Eisco™ Ceramic Magnetic Disks

Economically priced and perfect for student use.

- Ceramic disc magnets
- Economically priced
- Great for student use



### WARRANTY:

1 year limited manufacturer warranty

Cat. No.	Description	Price
S40917	25 × 5 mm	0.95/Ea
S40914	20 × 4 mm	0.95/Ea



## Eisco™ Floating Ring Magnets

Demonstrate magnetic repulsion in a colorful and memorable way.

When stacked so they mutually repel, the rings appear to float on the support rod.

### INCLUDES:

Five 12.6 in. (32cm) external diameter ceramic ring magnets; one 5.9 in. (15cm) wooden rod on base



Cat. No.	Description	Price
S95967	Floating Ring Magnets	25.75/Ea

## Ring Magnets

Study magnetic attraction and repulsion.



- These magnets are used in conjunction with disk magnets (S52174) in collision and scattering experiments.
- Set of 16

Cat. No.	Description	Price
S52173	Ring Magnets	28.75/Pk

## Eisco™ Horseshoe Magnets

Chrome steel, with keepers.

- Dimensions are nominal.

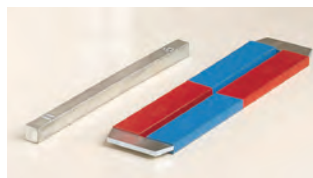


Cat. No.	Height (English)	Length (English)	Weight (English)	Width (English)	Price
S95963	1.57 in.	8.6 in.	3.5 lb.	5.9 in.	10.75/Ea

## Eisco™ Bar Magnets

Perfect for classroom experiments.

- Red and blue magnets with stamped polarity measure 3.9 × 0.79 × 0.23 in. (10 × 2 × 0.6cm) and are boxed



### ORDERING INFORMATION:

Magnets sold in packs of two.

Cat. No.	Description	Price
S95966	Bar Magnets	20.50/2 Pair

## Pre-Marked Ceramic Rare Earth Magnets



These Pre-Marked Ceramic Rare Earth Magnets are the strongest type of permanent magnet available today, making them the preferred choice for many commercial, industrial and technical applications.

- Rare-earth magnets, made from alloys of rare-earth elements are the strongest type of permanent magnet available today.



- Magnetic properties for rare-earth magnets far exceed those of other magnet materials, making them the preferred choice for many commercial, industrial and technical applications.

- 2" × 3"
- Pack of 4

Cat. No.	Description	Price
S81196	Pre-Marked Ceramic Rare Earth Magnets	5.50/Ea

## Eisco™ Metal Magnetic Needle on Stand

Study magnetism with this easy-to-use demonstration tool. The Eisco™ Metal Magnetic Needle on Stand is perfect for positioning a magnetic needle to create a tool for demonstrating and studying magnetism.

- Includes base, non-magnetic pillar, and magnetic point
- 4.5 in. tall (from bottom of base to tip of magnetic point)
- 2 in. diameter base



**Note:** The magnetic needle is not included (S27739 or S27740).

Cat. No.	Description	Price
S12976	Metal Magnetic Needle on Stand	7.75/Ea

## Eisco™ Magnetizer Box for Bar Magnets



User-friendly magnetizer box for bar magnets has the ability to re-magnetize old magnets and make them like new again

- Magnetizer Box
- Re-magnetizes old magnets
- Blue box with yellow markings and red switches
- Works on 110/120 V, 60 Hz
- Dimensions: 5.88 × 3.5 × 3 in.

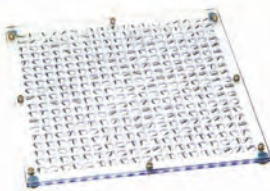


Cat. No.	Description	Price
S80847	Magnetizer Box for Bar Magnets	187.00/Ea

## Eisco™ Magnetic Field Demonstration Plate

Tool used to view magnetic fields.

- Transparent plate having matrix of small circular chambers with iron rod to function as plotting compass
- Suitable for OHPs
- Dimensions: L x W x H: 11.8 x 10.2 x 1.9 in. (30 x 26 x 5cm)
- Size: 9.8 x 9.8 in. (25 x 25cm)



Cat. No.	Description	Price
S07851	Magnetic Field Demonstration Plate	31.75/Ea

## Eisco™ Dry Field Mapping Kit

Makes the learning the concepts of electric fields easy. With the Eisco™ Dry Field Mapping Kit, students use the conductive paper that comes with the kit to draw any electrode configuration and then test it with an included battery.

- Best experiment for visualizing the electric field
- Easy to find the electric field around any conducting shape
- Conductive paper allows probing of equipotential lines with multimeter (not included)
- Comes with instructions
- Multi-meter and D-cell battery not included

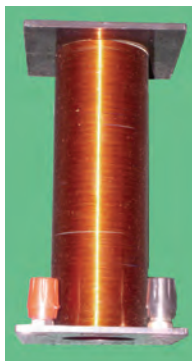


Cat. No.	Description	Price
S12984	Dry Field Mapping Kit	148.00/Ea

## Air Core Solenoid

Provides a useful magnetic field for many magnetism and electricity experiments.

- Investigate the mass of electron apparatus and experiments using the current balance (S94280)
- Constructed using four layers, approximately 710 turns, of #23 gauge (0.67mm) polyurethane-enameled copper wire
- Coil is designed to carry 7-10A intermittently and will sustain a current of 5A



To use:

- Connect a power supply that does not put out more than 5A to the solenoid
- Coil will generate a magnetic field when current passes through it
- Use a compass, iron rod, or iron filings to study the nature of the generated electric field

Cat. No.	Description	Price
S94209	Air Core Solenoid	30.00/Ea

## Lab-Aids® Audible Conductivity Indicator

Auditory Conductivity Indicators are a practical alternative to light sensitive LED conductivity indicators. They also provide semi-quantitative information about the materials being tested.

Auditory Conductivity Indicators are a practical alternative to light sensitive LED conductivity indicators. They also provide semi-quantitative information about the materials being tested. When both probes are in contact with a solid, or immersed in a solution, and the material is a conductor, the audible tone increases in volume and intensity as conductivity increases. There will not be any tone if the material is a non-conductor. The indicator comes with a one year limited warranty. (A 9-volt battery is required, but not included).



Kit includes a 12 well Chemplate for testing multiple items conveniently. The plate also has a large well built-in for easy rinsing.

Cat. No.	Description	Price
S45012A	Audible Conductivity Indicator	43.25/Ea

## Eisco™ Electrostatic Friction Rod Kit

Use to study static electricity by creating charges with different materials.

This electrostatic kit provides the necessary tools to free both positive and negative charges for exploration into electrostatic forces. Students can experiment with different combinations of cloth and rod materials to explore how each manufactures charge carriers.



Cat. No.	Description	Price
S13000	Electrostatic Friction Rod Kit	20.75/Ea



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Visit us online at [fisheredu.com](http://fisheredu.com) to learn more about our programs, services and resources.



\* California - WARNING: Cancer [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*\* California - WARNING: Reproductive Harm [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*\*\* California - WARNING: Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## Lab-Aids® Maglev Transport Systems (Developed by SEPUP)



Design a magnetically levitated cart with the Lab-Aids® Engineering & Design: Maglev Transport Systems kit.



- In this multi-day activity students are challenged to design a magnetically levitated cart.
- They follow the engineering design process by building a prototype and then using an iterative testing procedure to optimize the size of the cart and the number and placement of magnets on the cart in order to maximize the load the cart can transport.
- Accommodates unlimited classes, each with 8 groups of 4 students.

### INCLUDES:

- 8 tracks with magnetic strips
- 8 short carts
- 8 medium carts
- 8 long carts
- 8 magnetic wands
- 16 track piers
- 16 metal pieces, 20 g
- 32 metal strips, 4 g
- 32 small ceramic disk magnets
- 32 large ceramic disk magnets
- 32 Student Worksheet and Guides
- 1 Teacher's Guide

Cat. No.	Description	Price
S27117	Maglev Transport Systems	411.00/Ea

## United Scientific™ DC Ammeter



Ammeter for use in electricity demonstrations.

- DC, 0-1A/0-5A
- Mounted in a black plastic case
- Meters have a scale length of 75 mm
- $\pm 2.5\%$  accuracy and comes with 5-way binding post and external calibrating screw
- Meters are not protected against prolonged or significant overload
- Stackable for storage
- Prop 65 Warning Label



Cat. No.	Description	Price
S81078***	DC Ammeter	8.95/Ea

## Deluxe Van de Graaff Generator

Demonstrates electrostatic phenomena.

A first-rate apparatus for demonstrating static electricity.

- Generates potentials as high as 400,000 volts
- Produces sparks as long as 15 in. (38cm)
- Belt current charges the dome at  $10\mu\text{A}$
- Operates on 110VAC with grounded cord
- Replacement belts are available



### Rotary Dial:

- Located in the unit's base Allows you to vary the motor's speed

### Terminal:

- Located on the 9.8 x 11.8 in. (25 x 30cm) base
- Grounded to safely produce sparks and discharge the dome

### Aluminum Electrode:

- Highly polished and anodized
- 9.8 in. (25cm) diameter
- Supported by a sturdy, insulated, polycarbonate column

### Aluminum Sphere:

- 9.8 in. (25cm) diameter
- Creates sparks of greater intensity
- Mounted on a Lucite™ rod with a metal base
- Overall height: 29.9 in. (76cm)

Cat. No.	Description	Price
S43207	Deluxe Van de Graaff Generator	868.00/Ea
S43208	Replacement Belt	18.00/Ea
S43209	Discharge Electrode	284.00/Ea

## Eisco™ Ohm's Law Apparatus



Effectively demonstrates the interdependence of current, voltage, and resistance on Ohm's Law

- Demonstrates the interdependence of current, voltage, and resistance on Ohm's Law
- includes a DC Voltmeter, DC Current meter, and a low wattage built in rheostat
- DC Voltage is connected from outside at the appropriate sockets
- Measure the values of voltage (V), current (I), and connected external resistance (R) on the meters
- Can be verified using different set of voltage and resistance



Cat. No.	Description	Price
S80856	Ohm's Law Apparatus	133.00/Ea



## Kemtec™ Series and Parallel Circuits Kit



Kemtec™ Series and Parallel Circuits Kit teaches students to build parallel and series circuits using electrical components.



- Students begin by following the flow of energy from a battery as it converts to chemical, electrical, light, sound, motion, and heat energy.
- Students observe how energy flow differs when using batteries and loads in series and in parallel.
- Allow for 5 hours of instruction and 5 hours of lab time.
- Meets National Standards for Grades 3 to 6.

**Kit includes:**

- Battery Holders
- Motors
- Light Bulbs
- Light Bulb Holders
- Alligator Clip Leads
- Buzzers
- Masking Tape
- Propeller
- Optional D-Cell Batteries

Cat. No.	Includes	Price
S27538	No batteries	254.00/Ea
S27537	D-Cell Batteries	325.00/Ea

## Eisco™ Deluxe Battery Eliminator

More convenient than keeping many kinds of batteries on hand.



- Regulated, multiple outputs: 1.5, 3, 4.5, 6, 9 and 12V AC/DC
- DC output only
- For maximum of 1 amp load, 120V, 60Hz input

Cat. No.	Description	Price
S96208	Deluxe Battery Eliminator	266.00/Ea

\* California - WARNING: Cancer [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)  
 \*\* California - WARNING: Reproductive Harm [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)  
 \*\*\* California - WARNING: Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## United Scientific™ Red Banana/Alligator Cord



Banana/Alligator Cord for use with multiple electricity demonstrations.

- 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
- 12 in., 24 in., or 36 in. lengths
- Prop 65 Warning Label



Cat. No.	Description	Price
S81071***	12 in.	3.10/Ea
S81062***	24 in.	2.25/Ea

## United Scientific™ Student Electricity Assortment

Conveniently assembles materials for investigation of electricity concepts.

**INCLUDES:**

Six round plastic bulb holders, three knife switches, six battery holders with Fahnestock clips, 10 Fahnestock clips, one wire stripper, three 18 in. (45.7cm) wires in assorted colors with alligator clips, three 18 in. (45.7cm) wires in assorted colors with banana clips, 100 ft. (31m) of insulated 22-gauge copper wire, 10 1.5V light bulbs



Cat. No.	Description	Price
S96416	Student Electricity Assortment	50.50/Ea

## Eisco™ Economy Electricity Kit

Ideal for introductory electronics. Eisco™ Economy Electricity Kit is a basic assortment of circuit components.

- Ideal for introductory electronics



Cat. No.	Description	Price
S23691	Economy Electricity Kit	43.50/Ea

## Eisco™ Spectrum Tube Power Supply

The main use of this safe, economical and fun spectrum tube power supply is to provide a view of gas discharge spectral lines that can be viewed with something as simple as a diffraction grating, to as complicated as digital spectrometers.

- Black panel behind the tube eliminates distracting ambient light and protects tube from breakage
- Specially designed box holds tube firmly, preventing student from touching electrodes
- Suitable for 10.25 in. (26cm) long spectrum tubes
- For 20-26cm spectrum tubes; Output 5kV, 2-3mA; 120VAC 60Hz



### ORDERING INFORMATION:

Operates on 120VAC 60Hz ±10%.

Cat. No.	Description	Price
S96205	Spectrum Tube Power Supply	283.00/Ea

## Eisco™ Spectrum Tubes

For demonstrating spectral lines of pure substances.

- For power supplies holding 26cm spectrum tubes
- Features large 10cm capillary in center for greater viewing area
- For operation intervals of 30 seconds, 30 seconds on and 30 seconds off
- For intermittent use only, not to be used as lamp source



Cat. No.	Description	Price
S13011	Carbon Dioxide Spectrum Tube	24.50/Ea
S13009	Nitrogen Spectrum Tube	24.50/Ea
S13012	Hydrogen Spectrum Tube	24.50/Ea
S24910	Iodine Spectrum Tubes	24.50/Ea

## Vernier® Spectrum Tube Single Power Supply

Energizes a single tube to simply view gas discharge spectral lines with any of the Vernier spectrometers.

- Ultra-safe
- No exposed high voltage
- Energize one tube at a time
- Storage space for an additional six tubes
- Grades 9 and up
- Includes Spectrum Tube Fiber Optic Holder
- Gas spectrum tubes sold separately



Cat. No.	Description	Price
S16017ND	Spectrum Tube Single Power Supply	255.00/Ea

## Vernier® Argon Spectrum Tube

These gas tubes are for qualitative study by students noting more spectral lines and unique characteristic lines.

- Permanently enclosed in plastic carriers to prevent breakage
- No through-the-glass electrodes
- Ultrasafe
- Long-lasting and superior to older designs
- For grades 9 and up



Cat. No.	Description	Price
S16019ND	Argon Spectrum Tube	46.25/Ea

## United Scientific™ Spectrum Tubes

The classic demonstration of spectral lines.

Acquaint students with the spectra of common gases in their pure form while demonstrating concept of wavelength.

- 25cm (10 in.) long
- Capillary portion about 4 in. (10cm) long



**Note:** For intermittent use only; 30 seconds on requires 30 seconds off while in use.

**INCLUDES:** Sealed electrode, metal endcap, loop for convenient hookup to wire connections. Activity guide comes with each spectrum tube.

Cat. No.	Description	Price
S06994	Hydrogen Spectrum Tube	27.75/Ea
S06998	Water vapor Spectrum Tube	27.75/Ea
S06999	Air Spectrum Tube	27.75/Ea
S06995	Helium Spectrum Tube	27.75/Ea
S06997	Oxygen Spectrum Tube	27.75/Ea
S06996	Neon Spectrum Tube	27.75/Ea
S07004	Xenon Spectrum Tube	27.75/Ea
S07003	Krypton Spectrum Tube	27.75/Ea
S07001	Chlorine Spectrum Tube	27.75/Ea
S07005	Deuterium Spectrum Tube	27.75/Ea

## United Scientific™ Radiation Can Kit

Demonstrate how two identically sized cans absorb and radiate energy differently.

- Includes two cans: one smooth metal can w/screw cap and other black metal can
- Thermal radiation emitted by two cans cools or heats water at different rates



**ORDERING INFORMATION:** Lamp assembly with stand is also sold separately.

**INCLUDES:** Lamp assembly with reflector and stand (bulb not included), thermometer, one smooth metal can, one black metal can, thermometer.

Cat. No.	Description	Price
S07397	Radiation Can Kit	60.00/Ea
S07396	Lamp Assembly	45.00/Ea

## Digital Geiger Counter with External Wand

Imagesco GCA-07W Professional Digital Geiger Counter with External Wand is an easy to use, handheld personal nuclear radiation detector. The external wand makes it easier to search materials and surfaces for radioactivity, while the LCD provides a current count, and radiation level readout.



- The GCA-07W Professional Digital Geiger Counter with External Wand is a handheld personal nuclear radiation detector with a proven track record for detecting nuclear radiation in hospitals, medical research, industrial settings, transport containers, topsoil, granite tabletops, scrap metal, oil fields, objects and interior spaces.
- The external wand makes it easier to search materials and surfaces for radioactivity.
- Detects Alpha, Beta, X-ray and Gamma radiation above 3 MeV, 50 KeV, and 7 KeV respectively.
- Has the ability to detect a broad spectrum of nuclear radiation, including low energy background radiation and radiation emitted from Naturally Occurring Radioactive Materials (NORM).
- Easy to read LCD is a 2 line by 16 characters that provides a current count and radiation level readout. Simple front panel instrument controls make the Geiger Counter easy to use. Toggle switches control all the front panel options.

- User can select a time period, type of measurements (Imperial or Metric). Measurements (counts per second) are converted into radiation levels (mR/hr or mSv/hr). Time selection switch allows Counts Per Second (CPS) or Counts Per Minute (CPM) mode.
- Factory calibrated using a NIST traceable source to insure measurements. NRC certification is available at additional cost from the manufacturer. The NRC certification certifies the Geiger Counter has passed ANSI-STD N323A calibration using a NIST traceable source from an independent US licensed laboratory conforming to United States Nuclear Regulatory Commission NRC regulations 10-CFR-34 and 10-CFR-35 standards (available at additional costs through the manufacturer).
- Suitable for regulatory inspections. USA Tech Support. Assembled in the USA.

- Options: Jack for Headphones or External Speaker. External Power Supply included. 3.5 mm Data Port for WIN PC and microcontroller interface. The WIN PC program requires optional 3.5 mm to USB data cable. Secondary indicators: audio (clicks) and visual (LED) included. 9 V battery (mobile operation) not included.

Cat. No.	Description	Price
S81378	Digital Geiger Counter with External Wand	550.50/Ea

## Professional Digital Geiger Counter/Radiation Monitors

Easy-to-use units with a proven track record for detecting nuclear radiation in hospitals, medical research, industrial settings, transport containers, topsoil, granite tabletops, scrap metal, oil fields, objects and interior spaces.



Has the ability to detect a broad spectrum of nuclear radiation, including low energy background radiation and radiation emitted from Naturally Occurring Radioactive Materials (NORM). Choose from Desktop Model DTG-01 (S81624) for laboratories or Handheld Model GCA-06W (S81625) for field and lab use. Both models feature:

- **Counting Resolution and Range:** 1 Count Per Minute (CPM) - 10000 Counts Per Second (CPS)
- **Radiation Resolution and Range:** 0.001 mR/hr resolution/1000 mR/hr Range (Imperial measurements); 0.01 uSv/hr resolution - 10 mSv/hr range (Metric)
- **Detector Sensitivity:** Alpha radiation above 3 MeV, Beta above 50 KeV, X-Rays and Gamma above 7 KeV. The external wand makes it easier to test and measure radioactivity in materials. Contains LND 712 Geiger Mueller (GM) Tube detector, which is Ne + Halogen filled; has a 0.38 in. effective diameter and a 1.5 to 2.0 mg/cm<sup>2</sup> mica end window.
- 2 line by 16 character (LCD) digital display provides a current count and radiation level readout.

- The **external wand** makes it easier to search materials and surfaces for radioactivity

Switch selection allows DTG-01 Geiger Counter to measure and convert radiation (counts per second) into in mR/hr or mSv/hr. Time selection switch allows Counts Per Second (CPS) or Counts Per Minute (CPM) mode.

- **Factory calibration** using NIST Traceable radiation source to insure an accurate meter measurement. NIST calibration performed by independent laboratory that conforms to NRC regulations 10-CFR-34, 10-CFR-35 are available at additional costs through the manufacturer.
- **Random Number Generator:** Range Selectable 1 to 2 and 1 to 128. TTL Serial output.
- **Other Features:** Serial Data Output Jack: Outputs Serial Data. Pulse outputs a TTL logic pulse for each radioactive particle detected. The serial output is the counts per second



sent via USB cable (not included) to our Windows PC Geiger Counter Free Graphing program for charting and recording the measured radiation over time. Secondary indicators; audio (clicks) and visual (LED) included. Also includes a headphone jack.

- **Suitable for regulatory inspections.** USA Tech Support. Assembled in the USA.
- **Options:** Jack for Headphones or External Speaker. External Power Supply included. 3.5 mm Data Port for WIN PC and microcontroller interface. The WIN PC program requires optional 3.5 mm to USB data cable. Secondary indicators: audio (clicks) and visual (LED) included. 9 V battery (mobile operation) not included.

Cat. No.	Description	Price
S81624	Desktop Professional Geiger Counter Nuclear Radiation Detection Monitor with Digital Meter and external Wand Probe	620.00/Ea
S81625	GCA-06W Professional Handheld Digital Geiger Counter Radiation Monitor with External Wand	520.50/Ea



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