

# INNOVATING SCIENCE®

by Aldon

"Cutting edge science for the classroom"

## HANDS-ON SCIENCE FOR:

Elementary - Middle School - High School - College



**Chemistry Demonstrations**

**AP Environmental Science**

**Small Group Learning**

**Forensic Science**

**Green Chemistry**

**Life Science**

**Safety Kits**

**STEM**

**CTE**

**AP Biology**

**AP Chemistry**

**Elementary Science**

**Individual Instruction**

**Environmental Science**

**Biomedical Engineering**



**ALDON®**  
A VION BIO SCIENCES COMPANY

# 2026

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## New Products for 2026

### Individual Instruction: Plant Tissue Micronutrients

Plants need a variety of nutrients and minerals to grow and maintain overall health. The three main nutrients that plants require to survive and thrive are nitrogen, phosphorus, and potassium (also known as NPK). In this activity, students will extract nutrients from plants of your choice and perform analyses to determine if nitrogen, phosphorus, and potassium concentration is abundant, adequate, or deficient. Kit contains enough materials to perform 5 tests.

#### Kit Contains:

50mL	Plant Nutrient Extractor	Filter Paper, Pack/100
5mL	Nitrate Reagent #1	4 Collection Bottles
5g	Nitrate Reagent #2	Spot Plate
5g	Phosphorous Reagent #1	Stir Stick
5mL	Phosphorous Reagent #2	5 Pipettes
5g	Potassium Reagent #1	
10mL	Potassium Reagent #2	

#### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



**IS1520**

### Individual Instruction: Determination of Alkalinity

Perform a very simple titration to determine the two types of alkalinity for a water sample: phenolphthalein alkalinity and total alkalinity. The kit contains everything needed for one student to perform a water analysis either in the laboratory setting or out in the field twice. Instruction manual included.

#### Kit Includes:

15mL	Total Alkalinity Indicator
15mL	Phenolphthalein Indicator
120mL	Hydrochloric acid Titrant
	Titration
	Measuring Tube

DOT Info: Non-regulated



**IS1523**



## New Products for 2026

### Individual Instruction: Diffusion and Cell Size

Why are cells microscopic? The answer relates to the need for the cell to effectively bring materials in and remove waste. In this activity, create simulated cells (agar blocks) of different sizes and examine how effectively a substance is able to diffuse into the cell in a set period of time. A special indicator in the cells will allow for visualization of the degree of diffusion. The results will clearly display the fact that a smaller volume creates a more favorable condition for the exchange of material across a cell membrane. Kit contains enough materials for a student to perform the activity twice. Instruction Manual included.

#### Kit Includes:

4.5g Agar  
3mL Bromothymol blue concentrate  
10mL Hydrochloric acid 2M solution  
Agar block casting tray  
Plastic cup  
Plastic knife  
Plastic stirrer

#### DOT Info:

Non-regulated

**IS1524**



### Career Technology Education: Genetics of Polycystic Kidney Disease

Perform simulated clinical DNA testing - gel electrophoresis - to determine who within a family has the gene for Polycystic Kidney Disease. This kit contains enough materials for 10 groups, a Teacher's Manual, and a Student Study Guide copymaster. Aligned to NGSS and NCHSE standards.

#### Kit Includes:

2x125mL 0.8% Prepared Agarose  
500mL 5X TBE Buffer  
60mL 20X DNA Stain  
Normal DNA Sample  
Mutated DNA Sample  
DNA Samples, 100 µL each:  
Patient #1 Sample: Dirk  
Patient #2 Sample: Morgan  
Patient #3 Sample: Samantha  
Patient #4 Sample: Aaron  
Patient #5: Charlotte

#### DOT Info:

Non-regulated

**IS3405**



## New Products for 2026


### Career Technology Education: Blood Evidence

A crime was committed with only blood left as evidence. Perform presumptive blood testing, ABO blood typing, and blood spatter analysis on samples to determine the culprit. This kit contains enough materials for 10 groups, a Teacher's Manual, and a Student Study Guide copymaster.

**Kit Includes:**

5	Positive Presumptive Test Control Samples
5	Sample Strips with Crime Scene Sample #1
5	Sample Strips with Crime Scene Sample #2
5	Sample Strips with Crime Scene Sample #3
2x25mL	Phenolphthalein
2x25mL	Ethanol, 95% Denatured
2x25mL	Hydrogen Peroxide, 3%
10mL	Simulated Antiserum Anti-A
10mL	Simulated Antiserum Anti-B
10mL	Crime Scene Sample #1
10mL	Crime Scene Sample #2
10mL	Crime Scene Sample #3
10mL	Victim Blood Sample
10mL	Suspect #1 Blood Sample
10mL	Suspect #2 Blood Sample
10x25mL	Simulated Spatter Blood
60	Blood Typing Trays
2	Cotton Swabs pk/50
2	Mixing Sticks, Pack
1pkg	Index Cards, 5x8"

DOT Info: Small Quantity Exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
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 **WARNING:** This product can expose you to chemicals including Methanol which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS3406**

## New Products for 2026

### Soil, Sand, and Gravel Set

Perform porosity and permeability tests, simulate weathering and erosion, or use for general Earth Science or Environmental Science labs. This kit comes with 7 samples each in a 32-ounce container including: Topsoil, Clay, Silt, Fine Sand, Coarse Sand, Pebbles, and Gravel.

**Kit Includes:**

1kg	Topsoil
500g	Clay
500g	Silt
1kg	Fine Sand
1kg	Coarse Sand
1.5kg	Pebbles
1.5kg	Gravel



DOT Info: Non-regulated

**WARNING:** This product can expose you to Respirable Crystalline Silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS8708**

AP® and the Advanced Placement Program are registered trademarks of the College Entrance Examination Board. The activities and materials in these kits were developed and prepared by Aldon, which bears sole responsibility for their contents.

### AP® Environmental Science: Landfills and Decomposition

Simulate a sanitary landfill and an open-air dumpyard to explore the advantages of a landfill while observing decomposition in both aerobic and anaerobic environments. This kit contains enough materials for 8 groups of students and comes with a Teacher's manual and student study guide copymaster. The activity covers primary learning objectives STB-3.K and STB-3.L.

**Kit Includes:**

1 Bag	Soil
10	Plastic Cups, 9-ounce
8	Plastic Jars with Lids
	Cotton Fabric, 3x6"
8	Starch Packing Peanuts
32	Paper Squares
4	Straws
16	Aluminum Squares

DOT Info: Non-regulated



**IS9900**

## New Products for 2026

### AP® Environmental Science: Salt Toxicity

Model the salt toxicity of three different salts using radish seeds and process of determining the LD50 for three different salts: NaCl, MgCl<sub>2</sub>, and CaCl<sub>2</sub>. This kit contains enough materials for 8 groups of students and comes with a Teacher's manual and student study guide copymaster. The activity covers primary learning objectives STB-3.B, EIN-3.A, and EIN-3.B.

**Kit Includes:**

	Sodium Chloride Quicksolution, Makes 500 mL of 3% Solution
	Magnesium Chloride Quicksolution, Makes 500 mL of 3% Solution
	Calcium Chloride Quicksolution, Makes 500 mL of 3% Solution
20g	Radish Seeds
48	Germination Trays with Lids
48	Pipettes
48	Cups, 5 oz.
32	Stir Sticks
	Toothpicks

DOT Info: Non-regulated



**IS9901**

### AP® Environmental Science: Physical and Chemical Properties of Soil

Perform chemical and physical tests on local soil samples to explore different soil types and their characteristics due to their unique compositions. This kit contains enough materials for 8 groups of students and comes with a Teacher's manual and student study guide copymaster. The activity covers primary learning objective ERT-4.C.

**Kit Includes:**

50mL	Soil pH Indicator Solution	500mL	Soil Nutrient Extracting Solution
20mL	Phosphorous Reagent #2	5g	Phosphorous Indicator Powder, with Scoop
25mL	Nitrate Reagent #1	5g	Nitrate Reagent #2, with Scoop
30mL	Potassium Reagent Solution	5g	Potassium Indicator Powder, with Scoop
3kg	Sand	3kg	Clay Powder
40g	Detergent Powder, with Spoon	8	Extraction Bottles
8	Jars with Lids	40	Pipettes
11	Soil Scoops (8 for Soil Samples, 3 for Reagents)	24	Coffee Filters
24	Cups, 5 oz.	8	pH, N, P, K Color Charts

DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
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**IS9902**



## New Products for 2026

### AP® Environmental Science: Water Quality

Test a local water body for a variety of parameters to determine overall water quality and learn about different indicators and sources of pollution. This kit contains enough materials for 8 groups of students and comes with a Teachers manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objectives STB-3.B and STB-3.F.

#### Kit Includes:

8	Collection Bottles, 500 mL	16	DO/BOD Sample Bottles, 4-ounce
8	Coliform Test Powder Vials	15mL	Griess Reagent
0.5g	Cadmium Metal Powder	2x25mL	Manganese Chloride Reagent
40mL	Alkaline Iodide Reagent	40mL	Sulfuric Acid, 50%
25mL	Starch Indicator Solution	50mL	Sodium Thiosulfate Titrant
8	Phosphate Powder Pillows 1		Wide Range pH Test Strips, pk/100
1	Toothpicks, pk/100	8	Secchi Sticks

#### DOT Info:

UN2976, Sulfuric Acid, 8, PG II, LTD QTY

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IS9903

### AP® Environmental Science: Ocean Acidification

Changes to the carbon cycle and climate due to human activities have had detrimental effects on the environment. One example of this is known as ocean acidification, which is the changing of the ocean's chemistry due to increased carbon dioxide in the atmosphere and ocean. In this activity, simulate ocean acidification by introducing carbon dioxide into simulated ocean water while measuring the pH over time. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers primary learning objective STB-4.H.

#### Kit Includes:

	Simulated Ocean Water QuickPrep for 1 Gallon	8	Tygon Tubing, 40 cm
40g	Sodium Carbonate	8	Rubber #7 Stoppers, 2-Hole
2x100g	Baking Soda	8	Air Stones
2x500mL	Vinegar	8	Spoons
8	Pipettes		

DOT Info: Non-regulated



IS9904

## New Products for 2026

## AP® Environmental Science: Microbial Activity in Soil

Soil holds the largest portion of active carbon on earth, at an estimated equivalent of around three times the total amount of carbon stored in the atmosphere. Not only is carbon critical to soil function and productivity, but it is also a main component of overall healthy soil conditions that affects both animal and crop life. In this activity, simulate the production of carbon dioxide due to microorganisms in soil. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objective ERT-4.C.

**Kit Includes:**

	4x50mL Bromothymol Blue pH Indicator
1 bag	Soil
	Sugar Quicksolution 0.1%, To Make 200 mL
	Sugar Quicksolution 1%, To Make 200 mL
	Sugar Quicksolution 10%, To Make 200 mL
25	Containers
25	Bags, 8x10"
25	Plastic Reservoirs
9	Spoons
9	Cups, 5-ounce
25	Pipettes, 3 mL
9	Bromothymol Blue pH Color Charts

DOT Info: Non-regulated



IS9905

## AP<sup>®</sup> Environmental Science: Effects of SO<sub>2</sub> and NO<sub>2</sub> on Plants

Acid deposition, more commonly known as acid rain, occurs when primary pollutants like nitrogen dioxide and sulfur dioxide react with the water in the atmosphere to form the secondary pollutants, nitric and sulfuric acid, which then fall to the surface in rain. This can cause significant stress to both ecosystems in forests, streams, lakes, and the ocean as well as human infrastructure. In this activity, simulate the effects of nitrogen oxides and sulfur oxides on the germination of radish seeds. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objectives STB-2.H and STB-2.I.


Kit Includes:

25mL	Sodium Sulfite, 1 M
25mL	Sulfuric Acid, 2 M
25mL	Nitric Acid, 0.5M
16	Copper Wire Pieces, 1 cm
10g	Radish Seeds
1	pH Strips, pk/100
24	Petri Dishes
24	Reactant Reservoirs
1 pkg	Filter Paper
1 pkg	Cotton Balls
8	Pipettes
8	Forceps
8	Hand Magnifiers

DOT Info: Small quantity exemption 173.4

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**IS9906**

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## New Products for 2026

### AP® Environmental Science: Soil Compaction in Agriculture

When it comes to agriculture, crop yields depend heavily on the type and condition of the soil on the land being used for cultivation. In efforts to alter the soil and improve crop yields, the use of agricultural machinery has exponentially increased in the last century. However, the heavy machinery has lead to compacted soils that inhibit crop growth. Simulate the effects of soil compaction on plant growth to exampine the impacts of agricultural mechanization on the environment. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objectives EIN-2.C and EIN-2.D.

**Kit Includes:**

50g	Pea Seeds
32	Growing Cups, 9 oz.
1 bag	Soil
3kg	Sand
1kg	Clay Powder
8	Scooping Cups
16	Mixing Bags, 8" x 10"
4	Misting Bottles



DOT Info: Non-regulated

IS9907

**WARNING:** This product can expose you to a chemical, crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### AP® Environmental Science: Net Productivity of Aquatic Plants

Living organisms require energy for growth, respiration, reproduction, and movement. Primary producers such as plants absorb energy from the sun and convert it to biomass, via photosynthesis, which is then either used for cellular respiration or passed up the food chain. In this activity, simulate the photosynthesis and cellular respiration of an aquatic plant under different conditions to demonstrate when plants need for each process. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objective ENG-1.A.

**Kit Includes:**

2x25mL	Manganese Chloride Reagent
2x25mL	Alkaline Iodide Reagent
2x25mL	Sulfuric Acid, 50%
2x15mL	Starch Indicator Solution
2x750mL	Sodium Thiosulfate Titrant, 0.002 M
24	Pipettes
16	Sample Bottles with Caps

DOT Info: Small quantity exemption 173.4  
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**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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS9908

## Featured Product



Enable students to work together, whether they are 6 feet apart or 6 streets apart.

- Co-lab-orate is a game changer for teachers and students. Whether in class or remote, students can get their work done and teachers can get insights into their process.

Co-lab-orate is an innovative digital lab notebook that allows teachers to easily assign lab reports to their classes, and lets their students work individually or together to complete hands-on activities that are easy to access and grade. With Co-lab-orate, students don't have to pivot because they suddenly find themselves learning from home, they just work the way they always do!

Co-lab-orate is packed with features that make teaching and learning easy and collaborative!

- Create new labs or import PDFs of labs you already have
- Easily deliver assignments to all students and classes
- Import photos, and create and edit graphs, tables, and equations
- Access, complete, or grade hands-on lab activities using a mobile device, tablet, or laptop
- Communicate with other students and teachers through comments, or work independently
- Integrates with Google classroom, Canvas, and Schoology

What does it cost?

- Our goal is to enable as many teachers and students as possible. Teachers can purchase a license for up to 150 students for only \$149 per year. That's less than \$1 per student!



**IS4900**

## Aldon Chemical Inventory Management System VERSION 3

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Chemicals in the  
Database!  
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Chemicals!

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day  
Trial Version  
Available

Our Inventory Management System allows customers to login to their own home page and set up a database that helps track inventory at different locations, such as buildings or even classrooms. You can easily add, modify, or delete chemical inventory items, and view information about each chemical. This data is easily accessible from any computer using a web browser, helping you reach your safety goals!

- Available anywhere, from any web browser.
- Access your chemical inventory during an emergency.
- Track all of your chemicals by Building, Room and Cabinet location
- Find SDS, Storage codes and more.
- Ipad or tablet compatible.





## Urinalysis Using Simulated Urine

Urinalysis, one of the oldest medical diagnostic tests performed, is to this day still one of the most common. In this activity, students will use simulated urine to avoid the unpleasantness of using the real thing while still performing actual tests used on real urine samples. Students will examine the simulated urine for factors such as pH, color, clarity, as well as test for the presence or absence of proteins, glucose, and calcium. The students will then examine the samples microscopically to determine if crystals may be present in any of the samples. Kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide copymasters are included. Needed but not supplied are a hot water bath, glass test tubes, and compound microscopes (4X/10X/40X).

### Kit Includes:

- 4 Simulated urine samples, 250mL each
  - Patient X
  - Patient Y
  - Patient Z
  - Control
- 2 x 25mL Benedict's Qualitative
- 2 x 25mL Biuret Reagent
- 2 x 25mL Sulkowitch reagent
- 1 pkg. pH test strips, 100/vial
- 1 box Microscope slides
- 1 pkg. Coverslips
- 60 Graduated plastic cups, 30mL
- 60 Graduated pipettes, 1mL

DOT Info: Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only



### IS3008

**IS3008-REF** - Replacement Urine for IS3008

## Simulated ABO Blood Typing

The first blood typing system discovered, the ABO system, is the most important and widely used. In this activity, students will determine the ABO blood type of four unknown samples. Utilizing Innovating Science's new simulated blood, students will come to understand the nature and importance of antigen-antibody reactions. The most realistic simulated blood available, this activity provides the most realistic simulation of the actual blood typing procedure. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 4 Simulated Blood Samples
  - Donor #1
  - Donor #2
  - Donor #3
  - Donor #4
- 1 btl Simulated anti-A serum
- 1 btl Simulated anti-B serum
- 40 Blood typing trays
- 1pkg Toothpicks

DOT Info - Non-Regulated



### IS3100

**IS3100-REF** - ABO Blood Typing Refill

## Simulated ABO/Rh Blood Typing

This activity provides the most procedurally accurate simulation of the blood typing technique available. Students test and determine the ABO/Rh blood types of four different simulated blood samples. Using Innovating Science's new simulated blood, the students combine blood samples and antisera, gently agitate the blood typing tray, and observe the results. No toothpicks, no stirring, and no waiting for results required. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 4 Simulated Blood Samples
  - Donor #1
  - Donor #2
  - Donor #3
  - Donor #4
- 1 btl Simulated anti-A serum
- 1 btl Simulated anti-B serum
- 1 btl Simulated anti-Rh serum
- 40 Blood typing trays
- 1pkg Toothpicks

DOT Info - Non-Regulated



### IS3101

#### IS3101-REF ABO/Rh Blood Typing Refill

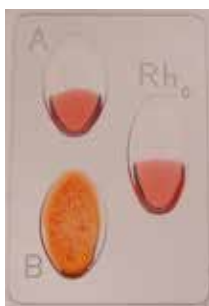
## Genetics of Blood Types (Simulated)

Blood type, an inherited characteristic, has use in everything from forensic investigations to medical procedures. In this activity, students will learn about the genetics that determine blood type and the possible inheritance patterns and how they express themselves. Students will use Innovating Science's new simulated blood to determine the blood type of four unknown samples and use their results to assist in the resolution of a fictional paternity dispute. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 4 Simulated Blood Samples
  - Mother
  - Child
  - Sample X
  - Sample Y
- 1 btl Simulated anti-A serum
- 1 btl Simulated anti-B serum
- 40 Blood typing trays
- 1pkg Toothpicks

DOT Info - Non-Regulated



### IS3102

#### IS3102-REF Genetics of Blood Refill

## Understanding Blood Type Interactions through Simulated Blood Typing

The earliest historical attempts at blood transfusions often had lethal results. These results led to the investigation and discovery of blood types, as well as a deeper understanding of the importance of antigen/antibody interactions. In this investigation, students will utilize Innovating Science's new simulated blood to determine the ABO/Rh blood type of four individuals, one in need of a transfusion. Based on the results, students will then determine which of three potential donors would provide the best match for the patient in need. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 40 Blood typing trays
- 4 Simulated Blood Samples
  - Donor #1
  - Donor #3
  - Donor #2
  - Patient
- 1 btl Simulated anti-A serum
- 1 btl Simulated anti-B serum
- 1 btl Simulated anti-Rh serum
- 1pkg Toothpicks

DOT Info - Non - Regulated



### IS3103

#### IS3103-REF

## Determination of Cholesterol Using Simulated Blood

Cholesterol levels can have a major impact on your health and your risk of heart disease. In this activity, students will measure the total cholesterol level for four patients using test strips and simulated blood. After analyzing their results and the lifestyles of each patient, students will recommend treatment plans to help the patients lower their cholesterol. The cholesterol levels for each patient will be tested again, and students will determine whether or not their treatment plans were successful. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copy masters are included.

### Kit Includes:

8 Simulated Blood Samples

Patient #1 Pre Treatment

Patient #2 Pre Treatment

Patient #3 Pre Treatment

Patient #4 Pre Treatment

15 Spot Plates

120 pH Strips

15 Cholesterol Charts

Patient #1 Post Treatment

Patient #2 Post Treatment

Patient #3 Post Treatment

Patient #4 Post Treatment



IS3105

DOT Info: Non-regulated

## Diagnosis of White Blood Cell Counts

While white blood cells, or leukocytes, only account for approximately 1% of the total number of cells found in blood, they are a critical part of the immune system, protecting the body from foreign invaders such as bacteria and viruses. White blood cells counts are often performed as part of a medical diagnosis to determine if the level of white blood cells in a patient's blood is within or outside the normal range. In this activity students will perform white blood cell counts on five different patient samples and suggest possible diagnoses based on the white blood cell levels. The samples contain safe, non-biological simulated cells that do not require staining. Requires microscopes and hemocytometers (not included). Contains enough material for 15 groups and includes Teacher's Guide and Student Study copymasters.

### Kit Includes:

5 Simulated Blood Samples

Patient #1

Patient #2

Patient #3

Patient #4

Patient #5



DOT Info: Non-regulated

IS3106

## ABO/Rh Blood Typing Tray

These styrene trays are washable and reusable. They contain depression wells to perform ABO and Rh blood-typing.

Package of 100.



DOT: Non-regulated

IS3155

## Erycard™ Blood Typing Card

Determine ABO or ABO/Rh blood type of real human blood in under five minutes.

A small amount of blood is applied to a series of wells containing lyophilized blood typing antibodies, followed by the addition of a wash buffer that flows across each well. Red blood cells that agglutinate in the presence of a particular antibody will not be rinsed from the sample well and the well will remain red, indicating a positive result. Red blood cells that have not undergone agglutination will be rinsed from the well and the well will revert to white, indicating a negative result. Each card contains a negative control well to ensure accurate results.

**\*\*For Educational Use Only**

DOT Info: Non-regulated

**IS3180** - Erycard ABO Blood Typing card Pack of 24

**IS3181** - Erycard ABO/Rh Blood Typing card Pack of 24



## Erycard™ Blood Typing Single Test Kit

Determine ABO/Rh blood type of real human blood in under five minutes.

A small amount of blood is applied to a series of wells containing lyophilized blood typing antibodies, followed by the addition of a wash buffer that flows across each well. Red blood cells that agglutinate in the presence of a particular antibody will not be rinsed from the sample well and the well will remain red, indicating a positive result. Red blood cells that have not undergone agglutination will be rinsed from the well and the well will revert to white, indicating a negative result. Each card contains a negative control well to ensure accurate results. Kit contains enough materials for 1 test. Instructions are included.

Kit Includes:

6 mL Buffer Solution

1 Erycard™

1 Alcohol Wipe

1 Lancet

4 Blood Collection Sticks

DOT Info: Non-regulated

***This test kit is designed for educational/instructional use only.***

***This test kit is not designed for clinical/medical/diagnostic use.***



**IS3185**

## Determination of Blood Type Using Real Blood and Saliva

This kit has been designed to allow students to test their own saliva to determine their ABO blood type. Students that are part of the ~80% of the human population that secrete their blood antigens will perform titers to understand which blood type they belong too. These titers will be performed using supplied screened/typed human blood samples allowing the students to better understand how real blood typing works and what would happen if the wrong blood was given to a patient needing a transfusion. The initial box contains all of the non-perishable supplies including a disinfecting solution spray as well as a coupon that is to be redeemed for the perishable components near the time of use. This kit has all of the materials necessary for 30 students working in groups of three. Teacher's Manual and Student Study Guide copymasters are included.

Kit Includes:

500mL Isopropyl Alcohol 99.9%

150mL Saline 0.9%

30 Saliva Collection Cup

150 Graduated Pipette

***Kit Contains coupon for perishable materials.***

***Redeem by fax, phone or e-mail.***

Materials sent upon redemption of coupon:

10mL Anti A

10mL Anti B

10mL Red Blood Cells Type A

10mL Red Blood Cells Type B

10mL Red Blood Cells Type O

10mL H Lectin



DOT: UN1219, Isopropanol, 3, II, Ltd Qty

**IS3190**



## Electrophoresis and DNA Fragment Length Determination

In this activity students will perform agarose electrophoresis on three DNA samples that have already been treated with restriction enzymes. Students will not only learn about the process of DNA electrophoresis but learn the techniques associated with the process, such as setting up an agarose gel, loading DNA samples in the agarose gel, and staining the gel in order to visualize the DNA bands. They will also learn how to determine the sizes of unknown DNA fragments after examining their results. The kit includes specially-treated DNA samples that do not require refrigeration or freezing, prepared agarose that may simply be melted in a hot water bath or microwave, TBE electrophoresis buffer, and DNA stain. There is enough DNA to run 10 gels.

### Kit Contains:

200mL	0.8% Agarose
500mL	5X Tris Borate ETA Buffer,
60mL	20X DNA Stain
	LAMBDA DNA ECORI DIGEST With Loading Dye
	LAMBDA DNA HINDIII DIGEST With Loading Dye
	LAMBDA DNA ECORI/HIND III DIGEST With Loading Dye

DOT Info: Non-regulated

**IS3300**



## DNA Fingerprinting Electrophoresis Lab Activity

DNA fingerprinting is one of the strongest forms of evidence in forensic investigations. In this activity students will perform agarose gel electrophoresis on four DNA samples to determine if DNA from suspects matches that of DNA found at a crime scene. Students will also learn about restriction enzymes and the importance of these enzymes in the DNA fingerprinting process. The kit contains enough materials for 8 groups and includes a Teacher's Guide and Student Study copymasters.

### Kit Includes:

200mL	Prepared Agarose 0.8% Solution	500mL	Tris-Borate-EDTA Buffer 5X
60mL	DNA Stain 20X	10µg	Crime Scene DNA
10µg	Victim DNA	10µg	Suspect #1 DNA
10µg	Suspect #2 DNA		

DOT Info: Non-regulated

**IS3301**



## DNA Paternity Testing Electrophoresis Lab Activity

While over 99% of DNA is the same among all humans, the remaining part is unique to every individual (with the exception of identical twins). These differences are hereditary, with parts of the unique sequence coming from each parent. By using DNA fingerprinting, or DNA profiling, a child's paternal relationship can be tested by comparing the child's DNA profile to the profile of the mother and possible father to determine if an individual is the father or not. In this activity students will use electrophoresis to separate DNA samples of a child, mother, and two potential fathers to determine if either father is a possible paternal match. The kit contains enough materials for 8 groups of students and includes a Teacher's Guide and Student Study Guide copymasters.

### Kit Includes:

200mL	Prepared Agarose 0.8% Solution	500mL	Tris Borate EDTA Buffer 5X
60mL	DNA Stain 20X	10µg	Mother's DNA Sample
10µg	Child's DNA Sample	10µg	Possible Father #1 DNA Sample
10µg	Possible Father #2 DNA Sample		

DOT Info: Non-regulated

**IS3303**



## Engineer and Explore Your Own Enteric Coated Drugs

In this lab, students will learn the basic structures and pathway of the digestive system and understand the different functions of the stomach and the small intestine in regards to digestion. They will investigate how the properties of different enteric coatings react in different sections of the digestive system. Next they will explore the purpose of an enteric coating and make a simulated “coating” and engineer a coating most suitable for certain pharmaceutical needs. This lab was written by a Biomedical Engineer and has enough materials for 15 groups. Includes Teacher’s manual and student guide.

### Kit Includes:

200mL	Isopropyl alcohol 99%	34g	Shellac orange flakes
4g	Alginic acid sodium salt	2 x 25mL	Hydrochloric acid 10M
150mL	Sodium hydroxide 10M	2	Aspirin tablets, enteric-coated
2	Aspirin tablets, regular	50	5oz cups
30	Pipettes	45	Beads, white
1pkg	Coverslips	15	Spot plates

### DOT Info:

UN1824, Sodium hydroxide solution, 8, II, Ltd Qty  
UN1219, Isopropanol, 3, II, Ltd Qty  
UN1789, Hydrochloric acid, 8, II, Ltd Qty

**WARNING:** This product can expose you to chemicals including Acetyl Salicylic Acid/Aspirin, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



### IS3401

## Engineering a Drug Delivery System

Biomedical engineers design devices, equipment, and processes to improve medical treatment methods and the quality of human health and life. They apply engineering principles to biology and medicine to create products such as prosthetic limbs and artificial organs, among other things. One major focus of biomedical engineers is the design of drug delivery systems, which can control the transport and release of medicine in the body to more effectively treat diseases and illnesses. In this experiment, students will gain an understanding of drug delivery and its importance by testing simulated delivery systems in multiple environments that mimic different parts of the body. The delivery systems will be analyzed and compared, allowing students to engineer an optimal solution and learn what properties must be considered when designing new drug delivery systems. This lab has enough materials for 15 groups. Teacher’s manual and Student Study Guide copy masters included.

### Kit Includes:

5g	Simulated Drug
1L	Hydrochloric Acid 1.0M
1L	Sodium Hydroxide 1.0M
45	Hydrogel Delivery Systems
45	Plastic Delivery Systems
45	Cups, 5oz

### DOT Info:

UN1789, Hydrochloric acid, 8, III, Ltd Qty  
UN1824, Sodium hydroxide solution, 8, II, Ltd Qty



### IS3403

## Engineer and Explore Materials for Prosthetics

In this lab, students will explore the materials that biomedical engineers use when creating prosthetic devices. They will first investigate the physical properties of various metals, ceramics, and polymers to understand how they differ, and determine which materials would be most suitable for use in a hip replacement prosthetic. Students will then engineer their own prosthetic arm that meets certain design requirements and mimics the functionality of a real hand. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copy masters are included.

### Kit Includes:

15 Bone Pieces	30 Aluminum Strips
30 Cobalt Pieces	30 Brass Foil Strips
30 Zinc Pieces	30 Ceramic Tile Pieces
1pkg Glass Slides	30 Polyethylene Pieces
30 Rubber Stoppers	30 Balloons
15 Push Pins	15 Plastic Cups
20 Cardboard Pieces	2 Toothpick Packs
150 Plastic Stirrers	2 Sticky Connecting Putty Packs
150 Small Wooden Skewers	100 Rubber Bands
100 Straws	100 Wooden Craft Sticks
100 Index Cards	Package of String



DOT Info: Non-regulated

IS3404



**CHOKING HAZARD**  
Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.



**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 [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Career Technology Education: Genetics of Polycystic Kidney Disease

Perform simulated clinical DNA testing - gel electrophoresis - to determine who within a family has the gene for Polycystic Kidney Disease. This kit contains enough materials for 10 groups, a Teacher's Manual, and a Student Study Guide copymaster. Aligned to NGSS and NCHSE standards.

### Kit Includes:

2x125mL	0.8% Prepared Agarose
500mL	5X TBE Buffer
60mL	20X DNA Stain
	Normal DNA Sample
	Mutated DNA Sample
	DNA Samples, 100 µL each:
	Patient #1 Sample: Dirk
	Patient #2 Sample: Morgan
	Patient #3 Sample: Samantha
	Patient #4 Sample: Aaron
	Patient #5: Charlotte



DOT Info: Non-regulated

IS3405

## Career Technology Education: Blood Evidence

A crime was committed with only blood left as evidence. Perform presumptive blood testing, ABO blood typing, and blood spatter analysis on samples to determine the culprit. This kit contains enough materials for 10 groups, a Teacher's Manual, and a Student Study Guide copymaster.

### Kit Includes:

5	Positive Presumptive Test Control Samples
5	Sample Strips with Crime Scene Sample #1
5	Sample Strips with Crime Scene Sample #2
5	Sample Strips with Crime Scene Sample #3
2x25mL	Phenolphthalein
2x25mL	Ethanol, 95% Denatured
2x25mL	Hydrogen Peroxide, 3%
10mL	Simulated Antiserum Anti-A
10mL	Simulated Antiserum Anti-B
10mL	Crime Scene Sample #1
10mL	Crime Scene Sample #2
10mL	Crime Scene Sample #3
10mL	Victim Blood Sample
10mL	Suspect #1 Blood Sample
10mL	Suspect #2 Blood Sample
10x25mL	Simulated Spatter Blood
60	Blood Typing Trays
2	Cotton Swabs pk/50
2	Mixing Sticks, Pack
1pkg	Index Cards, 5x8"



**WARNING:** This product can expose you to chemicals including Methanol which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

DOT Info: Small Quantity Exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

### IS3406

## Introduction to Basic, Selective, and Differential Media

In this activity, students will learn about the different types of media that can be used to grow bacteria. They will predict which media will support the growth of different bacteria, then streak the different media with bacteria cultures to observe their growth. The bacteria growth will be evaluated to determine if students' predictions were correct. Kit contains enough material for 10 groups.

### Kit Includes:

2x200mL Prepared tryptic soy agar	30 Tryptic soy broth tubes
2x200mL Prepared MacConkey agar	40 Sterile petri dishes
10 Serratia marcescens cultures	40 Cotton swab packs, 2/pk
10 Bacillus subtilis cultures	30 Sterile pipettors
10 Escherichia coli cultures	

DOT Info: Non-regulated

**WARNING:** This product can expose you to chemicals including Crystal Violet, which are known to the State of California to cause cancer. For more information go to <http://www.P65Warnings.ca.gov>.



### IS3610



## Biotechnology Reagents

Item #	Description
IS3150	Blood Typing Anti-Sera: Anti-A and Anti-B DOT: Non-regulated
IS3151	Blood Typing Anti-Sera Type A, B and Rh DOT: Non-regulated
IS3152	Blood Typing Anti-Sera: Anti-Rh DOT: Non-regulated
IS3170	Blood Typing Anti-Sera: Anti-A and Anti-B, Freeze Dried DOT: Non-regulated
IS3171	Blood Typing Anti-Sera Type A, B and Rh, Freeze Dried DOT: Non-regulated
IS3172	Blood Typing Anti-Sera: Anti Rh, Freeze Dried DOT: Non-regulated
IS5007	Agarose Dye Marker Set <small><b>WARNING:</b> This product can expose you to chemicals including Crystal Violet, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.</small> DOT: Non-regulated
IS5201	Prepared Agarose: 0.8% Agarose 200mL, Resolves DNA fragments 0.6-35kb long
IS5202	Prepared Agarose: 1.0% Agarose 200mL, Resolves DNA fragments 0.5-20kb long
IS5203	Prepared Agarose: 2.0% Agarose 200mL, Resolves DNA fragments 0.1- 5kb long
IS5204	Powdered Agarose: Agarose 5 gram bottle (Low EEO)
IS5205	Powdered Agarose: Agarose 25 gram bottle (Low EEO)
IS5206	TBE Buffer 5XConcentrate 500mL. 5X running buffer concentrate makes 2.5L of 1X working concentration
IS5207	Tris-EDTA (TE) Solution 10X concentrate 25mL. Use for diluting DNA samples
IS5208	Loading Dye 10x 5mL. Dye that is used for tracking DNA during agarose electrophoresis.
IS5209	DNA20x Stain 60mL bottle.
IS5250	Agarose Gel Electrophoresis Reagent Pack

For Product details visit our website [www.aldon-chem.com](http://www.aldon-chem.com)



## Individual Instruction kits from Innovating Science

Designed for two groups of students, these kits are perfect for a Individual Instruction setting. Check out our hands-on activities for chemistry and life science classes. Our Individual Instruction kits are aligned to the Next Generation Science Standards and include an instruction manual.

### Individual Instruction: Acids and Bases

Students will be introduced to acids and bases, and test a dilute acid and dilute base with neutral litmus paper to learn how pH strips indicate if something is acidic or basic. Then, they will test common items that could be found around their household to determine if they are acids or bases. Extra litmus paper is included if students want to test more items found in their home to gain a greater understanding of acids and bases. The kit contains an Instruction Manual and enough materials for 2 groups.

#### Kit Includes:

- 10mL 0.01M HCl
- 10mL 0.01M NaOH
- 10mL Distilled water
- 10mL Vinegar
- 10mL Household ammonia
- 10mL Liquid hand soap
- 10mL Lemon juice
- 1pkg Neutral litmus paper
- 2 Spot plates

#### DOT Info:

Non-regulated



WARNING:  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



### Individual Instruction: Elephant Toothpaste

This activity is a fun, safe way to teach students the effect a catalyst has on a chemical reaction. The decomposition of hydrogen peroxide can be visualized by mixing in a small amount of dish soap and adding yeast as a catalyst. As the reaction occurs, a large amount of foam is formed that flows up and out of the reaction bottle. This kit contains an Instruction Manual and enough materials to perform the demonstration twice.

#### Kit Includes:

- 50mL Hydrogen peroxide, 3%
- 6mL Dish soap
- 2g Yeast
- 2 Plastic cups, 5oz
- 2 Stir sticks
- 1 Clear bottle, 8oz

#### DOT Info:

Non-regulated



WARNING:  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



IS1500

IS1501

### Individual Instruction: Paper Chromatography

Chromatography is the oldest documented technique to separate chemical substances. In this activity, students will perform paper chromatography on three individual dyes, along with a mixture of dyes, to determine the composition of the mixture. Students will understand not only the components of a chromatography system, but also why different substances separate and move at different rates within the system. An Instruction Manual and enough materials for 2 groups are included.

#### Kit Includes:

- 1 Chromatography Dye Set containing:
  - 0.5mL Crystal Violet
  - 0.5mL Safranin O
  - 0.5mL Toluidine Blue
  - 0.5mL Chromatography Mixture
- 30mL 50% Ethanol
- 2 Chromatography Sheets
- 4 Capillary Tubes
- 2 Plastic Cups, 10oz

#### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



WARNING: This product can expose you to chemicals including Crystal Violet and Methanol/Methyl isobutyl ketone, 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).



IS1502

## Individual Instruction: Acids, Bases and the pH Scale

In this lab, students will gain an understanding of the basic differences between the properties of acids and bases, learn the role of hydrogen and hydroxide ions in acidic and basic substances, and comprehend the nature of the pH scale with regards to acid and base strength. Students will examine the effects of acids and bases on several pH indicators, determine the pH of several common household materials, and use the knowledge gained to determine the identity of four unknown solutions. Instruction Manual and enough materials for 2 groups are included.

### Kit Includes:

5mL Deionized water	5mL Dilute acid (0.1M HCl)
5mL Dilute base (0.1M NaOH)	5mL Litmus blue, 0.5%
5mL Methyl red, 0.02%	5mL Bromothymol blue, 0.5%
5mL Phenolphthalein, 1.0%	5mL Vinegar
5mL Household ammonia	5mL Soap solution
5mL Filtered water	5mL Vitamin C solution
5mL Unknown solution #1	5mL Unknown solution #2
5mL Unknown solution #3	5mL Unknown solution #4
1 pkg Wide-range pH test strips	2 Reaction trays



### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Phenolphthalein, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS1503**

## Individual Instruction: Periodic Table - Nonmetals, Metals and Metalloids

During the nineteenth century, a Russian chemist name Dmitri Mendeleev began constructing a table of the elements. The result, called 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. In this lab students will learn about three different categories of elements—metals, nonmetals, and metalloids. They will examine the physical properties of several elements and test their chemical reactivity, then use their results to classify each of the tested elements as either metal, nonmetal, or metalloid. Kit contains an Instruction Manual and enough materials for 2 groups of students.

### Kit Includes:

4g Aluminum pellets	4g Carbon pellets
4g Silicon pellets	4g Zinc pieces
4g Sulfur pieces	6 Copper pieces
6 Magnesium pieces	5g Sodium bicarbonate
20mL Hydrochloric acid 1.0N	20mL Copper (II) chloride
14 Test tubes	4 Pipettes
2 Nails	6 Plastic cups, 5oz
1 Plastic scoop	



### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**IS1504**

## Individual Instruction: DNA Extraction

In this lab students will learn the history of the discovery of DNA and DNA structure. They will understand the nature of genetic inheritance and the role of DNA and proteins in genetic expression while using biological detergents, enzymes, and ethanol to isolate DNA from plant material. You will need to supply the plant material. Kit contains an Instruction Manual and enough material for 2 groups of students.

### Kit Includes:

50mL 7.5% SDS/1.5% NaCl	1 Pepsin (to make 25mL of 0.5% solution)
10mL Ethanol, 95%	2 Zipper bags
2 Filters	2 Plastic tubes
4 Graduated pipettes	2 Stirrers
2 Plastic cups	

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is 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).

## IS1505

## Individual Instruction: Kidneys and Blood Filtration

Learn the role of the kidney in blood filtration and waste removal along with the many tasks performed by the functional units of the kidney, called nephrons, as well as nephron structure. Students will create an artificial kidney model to filter a simulated blood solution, and will be able to visually determine if filtration of the simulated blood occurred. They will also perform chemical tests on the resulting filtrate to detect any possible waste material that may have been removed by the artificial kidney. Kit contains an Instruction Manual and enough materials for 2 groups.

### Kit Includes:

10mL Simulated Unfiltered Blood	250mL Deionized Water
2 pc. Dialysis Tubing	2 Plastic Cups
2 Pipettes	4 Salt Test Strips
4 Urea Test Strips	

### DOT Info:

Non-regulated



**WARNING:** This product can expose you to chemicals including Benzidine-based dyes, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## IS1506

## Individual Instruction: Forensic Chemistry of Unknown Substances

When collecting evidence at a crime scene, investigators may encounter substances that they are not able to identify in the field. These substances will be sent to a crime lab, where a forensic scientist will work to analyze and identify them. In this experiment, students will take on the role of a forensic scientist and use their observation skills, senses, and a series of chemical tests to determine the identity of two mystery substances. Kit contains an Instruction Manual and enough materials for 2 groups of students.

### Kit Includes:

4g Baking Powder	4g Baking Soda
4g Corn Starch	4g Plaster
4g Salt	4g Gelatin
4g Mystery Substance #1	4g Mystery Substance #2
4mL Biuret Reagent	4mL Dilute Lugol's Iodine
4mL Acetic Acid	4 Reaction Plates
8 Scoops	

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



## IS1507



## Individual Instruction: Forensic Chemistry of Blood Typing

Blood typing is a method of classifying blood based on the presence or absence of specific proteins, called antigens, on the surface of red blood cells. Blood type, an inherited characteristic, is valuable to know as it affects medical procedures, such as surgery and transfusions, and paternity testing, as well as serving as evidence in criminal investigations. Determining the blood type of a suspect in a crime can help provide supporting evidence that they are guilty, or eliminate them as a possibility. In this activity, students will determine the blood type of simulated blood samples collected from a crime scene, as well as from two suspects, to determine the likelihood of the suspects' involvement in the crime. Kit contains an Instruction Manual and enough materials for 2 groups.

### Kit Includes:

4 Simulated Blood Samples  
3mL Victim  
3mL Suspect #1  
3mL Suspect #2  
3mL Crime Scene

1 set ABO/Rh Blood Typing Anti-sera (3mL of each)  
8 Blood Typing Trays  
1 Pkg Mixing Sticks

*Note: This activity uses Innovating Science Simulated Blood and is safe for educational use.*

DOT Info: Non-regulated

**IS1508**



## Individual Instruction: Forensic Chemistry - Drug Detection

Everyone who ate the school cafeteria's chili became ill. Could someone have tainted the chili? You are a forensic toxicologist, and it is up to you to determine if any of the ingredients in the cafeteria could have been substituted for aspirin, which appears to have been stolen from the nurse's office. You will perform a series of chemical tests on the cafeteria ingredients and a control sample of aspirin, to determine if all the ingredients are what they are supposed to be. Kit contains an Instruction Manual and enough material for 2 groups.

### Kit Includes:

4g Control Acetylsalicylic Acid  
4mL Ferric Nitrate Solution 0.2M  
4mL Sodium Hydroxide 1.0N  
2 Micro-reaction Plates  
4 Scoops

3 X 4g Chili Ingredients  
4mL Dilute Lugol's Iodine  
4mL Deionized Water  
1 box Toothpicks

### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Acetyl Salicylic Acid/Aspirin, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS1509**



## Individual Instruction: Cellular Respiration - What Sugar Does Yeast Like Best?

In this experiment, students will expose living yeast cells to three different sugars-glucose, sucrose, and lactose. The yeast cells should begin to utilize the sugars as a food source if they are capable of metabolizing them, and will begin to engage in aerobic respiration and/or fermentation. This activity allows students to understand that yeast may use different options for energy production, with varying degrees of effectiveness. A pH indicator will be used to indirectly determine the effectiveness of the three different sugars as a food source for the yeast. Kit contains an Instruction Manual and enough material for 2 groups of students.

### Kit Contents:

10mL 0.5% Litmus  
5mL 0.1M Sodium hydroxide  
6 Plastic cups  
2 Plastic scoops  
2 Pipettes

1g Dehydrated yeast  
1 Glucose QuickSolution (to make 30mL)  
1 Sucrose QuickSolution (to make 30mL)  
1 Lactose QuickSolution (to make 30mL)

DOT Info: Non-regulated

**IS1510**



## Individual Instruction: Chromatography of Plant Pigments

Chlorophyll is the most prevalent and well-known plant pigment related to photosynthesis. It is not, however, the only pigment necessary for photosynthesis to occur. Other pigments are also involved in the process, though they are often overlooked as they tend to be masked by the abundance of the green pigment chlorophyll. In this activity, students will use paper chromatography to separate the various pigments from a sample of plant pigment extract. Students will not only confirm the presence and learn the role of these “hidden” pigments, but will also learn about chromatography as a technique for separating molecules. Kit contains an Instruction Manual and enough materials for 2 groups of students.


### Kit Includes:

30mL Chromatography solvent	20mL Plant pigment extract
2pcs Chromatography paper	2 Microscope slides
2 Plastic cups, 10oz	2 Petri dishes

### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

 **WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>



## IS1511


## Individual Instruction: Mohs Hardness Test

The Mohs hardness scale was invented by Friedrich Mohs in 1812, and has been a useful tool for geologists to determine the identity of different minerals. With this kit, students will become familiar with the Mohs hardness scale and how to perform the hardness test, allowing them to develop vital skills that will help them throughout their studies in earth science. This kit also provides students an opportunity to go out into their local environment to investigate the relative hardness of the minerals around them. Kit contains an Instruction Manual and enough materials for 2 groups of students.

### Kit Includes:

2 pcs Mineral A	2 pcs Mineral B
2 pcs Mineral C	2 pcs Mineral D
1 Aluminum foil piece, 12"x6"	2 Scratch plates
2 Streak plates	

DOT Info: Non-regulated

 **WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to <http://www.P65Warnings.ca.gov>



## IS1512

## Individual Instruction: Urinalysis Using Simulated Urine

Urinalysis is one of the oldest medical diagnostic tests, and is still one of the most commonly used tests to this day. In this activity, students will perform a urinalysis on four different samples of simulated urine. Using a standard urinalysis test strip, students will determine the pH of the samples, and test for the presence or absence of glucose, protein, and ketones. Students will then analyze the results of the tests to determine a potential diagnosis for each patient. Kit contains an Instruction Manual and enough material for 2 groups of students.

### Kit Includes:

4 Simulated urine samples, 40 mL each
Patient A
Patient B
Patient C
Control

8 Urine test strips
8 Plastic cups
2 Color charts

DOT Info: Non-regulated



## IS1513

### Individual Instruction: Osmosis and Diffusion

This lab allows students to learn about two forms of passive transport, diffusion and osmosis, and compare and contrast the similarities and differences between the two processes. Students will first investigate the process of diffusion, and determine the effect of solution temperature on the rate of diffusion of a solute. Then, they will set up an environment that is likely to facilitate osmosis, and gather data to determine whether or not osmosis occurred over a set period of time. Kit contains an Instruction Manual and enough material for 2 groups of students.

**Kit Includes:**

- 1 Sucrose QuickSolution (to make 20 mL of 1M solution)
- 3mL Blue food coloring
- 20mL Deionized water
- 2 pcs Dialysis tubing
- 4 Plastic cups
- 2 Graduated pipettes
- 2 Plastic vials



DOT Info: Non-regulated

**IS1514**

### Individual Instruction: A Safer Flame Test

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. The traditional flame test poses safety concerns for students in a laboratory setting, however, this kit minimizes these concerns by utilizing small candles that are easier to manage. There is no loss in the clarity of the emission spectra, making it easy for students to observe and deduce what element is causing the colored flame. Kit contains an Instruction Manual and enough materials for 2 groups of students.

**Kit Includes:**

- 2mL Mineral salt alcohol solution
- 2 Diffraction grating slides
- 85g Sand
- 1 Spectroscope
- 4 Color flame candles
- 1 Micro-burner
- 4 Candle holding trays

**DOT Info:**

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



**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 and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.

**IS1515**

### Individual Instruction: Gas Laws

Gases are, for the most part, invisible, and therefore cannot be observed as readily as a solid or a liquid. Because of this, they are often examined and analyzed through measurable physical characteristics such as volume, pressure, temperature, and moles (number of particles). These properties have simple, consistent mathematical relationships that led to the development of the gas laws (Boyle's, Charles's, and Gay-Lussac's), and eventually the ideal gas law. By using these relationships you can determine the value of an unknown property based on the other three, or predict the effect that varying one component will have on the others. In this activity, students will use the Innovating Science apparatuses and your temperature and pressure sensors to measure and plot the physical characteristics of a gas. Kit contains an Instruction Manual and enough materials for 2 groups of students.

**Kit Includes:**

- 2 Gas law demonstration apparatuses
- 4 Styrofoam cups
- 2 Plastic test tubes
- 2 Rubber stoppers, 2-hole
- 2 Rubber stoppers, 1-hole

**Required Materials:**

Neulog™ temperature and pressure sensors

DOT Info: Non-regulated



**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>.

**IS1516**

## Individual Instruction: Introduction to Chemical Properties

How do scientists identify unknown chemicals? What makes one solution different from another? This activity will help students answer these questions, and understand the impact different chemicals can have when added to various solutions. Students will test four unknown solutions and determine their identity by comparing their chemical properties to a variety of known samples. Kit contains an Instruction Guide and enough materials for 2 groups of students.

### Kit Includes:

6mL Acetic acid, 1.0 M	6mL Bromothymol blue indicator
6mL Ammonium hydroxide, 1.0 M	3mL Unknown A
6mL Cupric sulfate, 0.1 M	3mL Unknown B
6mL Hydrochloric acid, 0.1 M	3mL Unknown C
6mL Sodium bicarbonate, 0.1 M	3mL Unknown D
6mL Sodium carbonate, 0.1 M	2 Preprinted acetate sheets
6mL Sodium hydroxide, 0.1 M	

DOT Info: Non-regulated

**IS1517**



## Individual Instruction: Introduction to Ionic Reactions

This activity is designed to introduce students to ionic reactions. Students will test a series of microscale chemical combinations to learn how to identify if a chemical reaction has occurred. The contents of this kit have been optimized to minimize pre-lab preparation, waste generation, and risks of cross-contamination. Kit contains an Instruction Guide and enough materials for 2 groups of students.

### Kit Includes:

6mL Aluminum nitrate, 0.1 M	6mL Sodium acetate, 0.1 M
6mL Barium nitrate, 0.1 M	6mL Sodium carbonate, 0.1 M
6mL Cadmium nitrate, 0.1 M	6mL Sodium chloride, 0.1 M
6mL Calcium nitrate, 0.1 M	6mL Sodium ferrocyanide, 0.1 M
6mL Chromium nitrate, 0.1 M	6mL Sodium hydroxide, 0.1 M
6mL Cobalt nitrate, 0.1 M	6mL Sodium iodide, 0.1 M
6mL Cupric nitrate, 0.1 M	6mL Sodium oxalate, 0.1 M
6mL Ferric nitrate, 0.1 M	6mL Sodium phosphate, 0.1 M
6mL Lead nitrate, 0.1 M	6mL Sodium silicate, 0.1 M
6mL Silver nitrate, 0.1 M	6mL Sodium sulfate, 0.1 M
6mL Strontium nitrate, 0.1 M	1 box Toothpicks
6mL Zinc nitrate, 0.1 M	2 Preprinted acetate sheets

### DOT Info:

Small quantity exemption 173.4  
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**WARNING:** This product can expose you to chemicals including Lead and lead compounds, Cadmium and cadmium compounds and Chromium/hexavalent compounds, which are known to the State of California to cause cancer and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.

**IS1518**





## Individual Instruction: Science in the Kitchen

This comprehensive kit incorporates a variety of scientific techniques all themed around common kitchen materials. Students will perform chromatography on commercial food colors, use chemical tests to identify an unknown cooking ingredient, examine the protein digesting ability of a common meat tenderizing enzyme, use titration to quantify vitamin C levels and then test an unknown juice or soda (not provided), and lastly examine some of the differences and similarities in the materials used to clean up (soap, hand dishwashing detergent, and machine dishwashing detergent). Kit contains enough materials for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Contains:

25g	Unknown Powder		Ascorbic Acid Capsule
5mL	Blue Food Dye		Chromatography Paper
5mL	Green Food Dye		Centrifuge Tube
5mL	Red Food Dye		Spot Plate
5mL	Yellow Food Dye		Toothpicks, Package
5g	Gelatin Powder		Pipette
5g	Baking Powder		Universal Indicator pH Strips
5g	Papain Powder	4	Capillary Tubes
5g	Baking Soda	5	Test Tubes, Plastic
5g	Corn Starch	6	Medicine Cups
5mL	Vinegar	5mL	5% Calcium Chloride
5mL	Dishwashing Detergent - Machine	5mL	Dishwashing Detergent - Hand
30mL	Iodine Potassium Iodide	30mL	Dilute Lugols Solution
10mL	Soap Solution, 5%	5mL	Starch Indicator Solution



DOT Information: Not Regulated

**IS1519**

## Individual Instruction: Plant Tissue Micronutrients

Plants need a variety of nutrients and minerals to grow and maintain overall health. The three main nutrients that plants require to survive and thrive are nitrogen, phosphorus, and potassium (also known as NPK). In this activity, students will extract nutrients from plants of your choice and perform analyses to determine if nitrogen, phosphorus, and potassium concentration is abundant, adequate, or deficient. Kit contains enough materials to perform 5 tests.

### Kit Contains:

50mL	Plant Nutrient Extractor		Filter Paper, Pack/100
5mL	Nitrate Reagent #1	4	Collection Bottles
5g	Nitrate Reagent #2		Spot Plate
5g	Phosphorous Reagent #1		Stir Stick
5mL	Phosphorous Reagent #2	5	Pipettes
5g	Potassium Reagent #1		
10mL	Potassium Reagent #2		

### DOT Info:

Small quantity exemption 173.4

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**IS1520**



## Individual Instruction: Introduction to Mendelian Genetics

In this activity, students can simulate Mendel's work and determine patterns of inheritance. Using special chips and Innovating Science's exclusive "double dice," students will be able to simulate both monohybrid and dihybrid crosses. After the crosses, students will be able determine genotypic and phenotypic ratios for select traits and compare their values to the theoretical "ideal" values as put forth by Mendel. Kit contains enough materials for 2 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Contains:

Monohybrid chip, female (red/yellow)  
Monohybrid chip, male (red/white)  
Dihybrid double die, female (clear)  
Dihybrid double die, male (colored)  
Plastic shaker cup

DOT Information: Not Regulated

**IS1521**



## Individual Instruction: Ocean Acidification

Changes to the carbon cycle and climate due to human activities have had detrimental effects on the environment. One example of this is known as ocean acidification, which is the changing of the ocean's chemistry due to increased carbon dioxide in the atmosphere and ocean. In this activity, students will learn about the carbon cycle and how it relates to ocean acidification. Through three different activities, students will investigate the cause of ocean acidification, and the effects it can have on the ecosystem and marine life. Kit contains enough materials for 2 groups of students. Teacher's Manual and Student Study Guide Copymasters are included.

### Kit Contains:

10mL Bromothymol Blue	2 Cups, Bomb shot
2x30mL 0.1 N Hydrochloric Acid	4 Antacid Effervescent Tablets
2x30mL 1.0 N Hydrochloride Acid	6 Seashells
5g Sodium Bicarbonate	

### DOT Info:

Small quantity exemption 173.4

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**IS1522**

## Individual Instruction: ABO/Rh Blood Typing

This popular kit that has now been scaled down for distance learning provides the most procedurally accurate simulation of the blood typing technique available. Test and determine the ABO/Rh blood types of four different simulated blood samples. Using Innovating Science's new simulated blood, combine blood samples and antisera, gently agitate the blood typing tray, and observe the results. No toothpicks, no stirring, and no waiting for results required. Instruction Manual included. Use gloves while performing tests.

### Kit Includes:

- 4 Simulated Blood Samples
- Donor #1
- Donor #2
- Donor #3
- Donor #4
- 1 btl Simulated Anti-A Serum
- 1 btl Simulated Anti-B Serum
- 1 btl Simulated Anti-Rh Serum
- 12 Blood Typing Trays



DOT Info: Non-regulated

**IS3110**

## AP® Biology Investigation #1: Artificial Selection

Students will study the process of artificial selection using Innovating Science fast growing plants. Students will identify phenotypic differences to observe. They will then use selective cross pollination to examine the prevalence of that phenotype in successive generations. Meets AP Science Practices 2, 5, and 7, and Big Idea 1. Materials provided for 32 students in eight lab groups.

### Kit Includes:

- 1 Bag Potting Soil
- 1 Bag Vermiculite
- 1 pkg 7 oz cups
- 1 pkg 5 oz cups
- 8 Magnifiers
- 1 Nutrient Quick Solution to make 1 Liter
- 1 pkg Innovating Science Fast Growing Plant Seeds
- 1 pkg Cotton Swabs
- 1 pkg Hydroponic Wicks



Brassica  
Rapa  
Seeds  
Pk/200

**IS3733**  
**\$20.54**

DOT Info: Non-regulated

**IS3701**

## AP® Biology Investigation #4: Diffusion and Osmosis

Students will study the movement of water and nutrients across a cell membrane and observe osmosis in living tissue. They will then investigate the relationship between surface area and volume as it relates to cells and diffusion. They will also examine the concept of molarity and how it relates to osmotic potential and the movement of water. Students will be able to explain how cell size and shape affect the overall rate of nutrient intake and water elimination. Students will use plant tissue to determine the molarities of unknown solutions based on the direction and degree of water movement. This kit contains enough materials for 8 groups. Teacher's manual and Student Study Guide copymasters are included. Meets AP® Science Practices 2, 4, and 5, and Big Idea 2.

### Kit Includes:

- |   |                           |
|---|---------------------------|
| 45g Agar  | 40 pc. Dialysis tubing    |
| 15mL Bromothymol blue concentrate                           | 48 Plastic cups, 7oz      |
| 2x25mL 2.0M Hydrochloric acid                               | Microscope slides, pkg/72 |
| 8 Agar block casting trays                                  | Coverslips                |
| 8 Plastic cups, 5oz   | Cork borer                |
| 8 Plastic knives  | 8 Metric rulers           |
| 8 Plastic stirrers  |                           |
| Sucrose QuickSolution (to make 1L of 1.0M solution)         |                           |
| Sodium chloride QuickSolution (to make 1L of 1.0M solution) |                           |
| Glucose QuickSolution (to make 1L of 1.0M solution)         |                           |
| Ovalbumin QuickSolution (to make 1L of 5.0% solution)       |                           |
| Food coloring set (red, blue, yellow, green)                |                           |
| Sucrose QuickSolution set to make:                          |                           |
| 1L of 0.2M solution (Solution #3)                           |                           |
| 1L of 0.4M solution (Solution #2)                           |                           |
| 1L of 0.6M solution (Solution #5)                           |                           |
| 1L of 0.8M solution (Solution #1)                           |                           |
| 1L of 1.0M solution (Solution #4)                           |                           |
| 1L distilled water (Solution #6)                            |                           |

DOT Info:  
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**IS3704**



## AP® Biology Investigation #5: Photosynthesis

Students will learn the necessary components and conditions for photosynthesis to occur while using leaf disks to measure the accumulation of oxygen and relate it to the rate of photosynthesis. Students will then use guided inquiry to design and conduct an experiment to examine the effects of a chosen variable on the rate of photosynthesis. Teachers manual and Student Study Guide copymasters are included. There are enough materials provided for 8 lab groups. This lab meets AP Science Practices 1, 2, 3, 6, and 7, and Big Idea 2.

### Kit Includes:

- 1 Hole Punch
- 16 Dispensers 10mL
- 16 Plastic Cups
- 30mL Dilute Soap Solution
- 50g Sodium Bicarbonate



DOT: Non-regulated

**IS3705**

## AP® Biology Investigation #6: Cellular Respiration

Students will use a respiration chamber to measure and record the rate of oxygen consumption (cellular respiration) using germinating seeds versus a non-germinating control sample. Teachers manual and Student Study Guide copymasters are included. There are enough materials provided for 8 lab groups. Meets AP Science Practices 1, 2, 3, 6, and 7, and Big Idea 2.

### Kit Includes:

1 pkg. pea seeds	1 pkg. plastic beads
24 respiration chambers	24 rubber stoppers
48 washers	24 graduated pipets, 1 mL
1 pkg. non-absorbent cotton	1 pkg. absorbent cotton
1 btl. 15% KOH, 30 mL	8 trays
1 tube petroleum jelly sealant	

Refill Kit  
available  
**IS3706-REF**  
**\$53.00**

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**IS3706**

## AP® Biology Investigation #8: Biotechnology: Bacterial Transformation

Students will genetically engineer bacteria through transformation with a plasmid that confers antibiotic resistance. They will then examine the number of resistant bacteria to determine the efficiency of the transformation procedure. Teachers manual and Student Study Guide copymasters are included. Materials provided for 8 lab groups. Meets AP Science Practices 1, 3, 5, 6, and 7, and Big Idea 3.

### Kit Includes:

30mL Sterile Calcium Chloride 0.05M	16 Sterile Volumetric Pipet
8 Pipet Bulb	8 Micropipet w/Plunger 10ul
16 Microcentrifuge Tube 1.5mL	8 Sterile Inoculating Loop
40 Petri Dish	4 Luria Agar 200mL
1 Luria Broth 9mL Tube	

**Kit Contains coupon for perishable materials. Redeem by fax, phone or e-mail.**

Materials sent upon redemption of coupon:

2 btl. 0.02g Ampicillin	1000 ng pUC 19 Plasmid
1 Tryptic Soy Broth Tube 9mL	1 Tryptic Soy Agar Slant 6mL
1 Pipet, Sterile, Disposable	1 E. Coli Culture (freeze dried)

DOT: Non-regulated

**IS3708**



## AP® Biology Investigation #7: Cell Division: Mitosis and Meiosis

Students will study the cellular steps involved in DNA replication and cell division in both mitosis and meiosis. This investigation will allow students to examine the stages of mitosis in the preparation of plant root tips. Crossing over in meiosis will also be investigated through the use of Sordaria cultures. Meets AP Science Practices 1, 5, 6, and 7, and Big Idea 3. Materials provided for 32 students in eight lab groups.

**Kit Contains coupon for perishable materials. Redeem by fax, phone or e-mail.**

10 Disposable scalpels, sterile	8 Forceps
20 Petri dishes, sterile	16 Plastic pipettes
Sordaria agar, 200mL	1 Coverslips
Sordaria mating agar, 200mL	1 Sand, 500g
1 Microscope slides	8 Plastic cups
8 Disposable inoculating loops, sterile	
1 Hydrochloric acid, 6.0M, 30mL	
1 Toluidine blue, 1%, 30mL	

DOT: Small quantity exemption 173.4

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**IS3707**



## AP® Biology Investigation #9: Biotechnology: Restriction Enzyme Analysis of DNA

In this lab students will understand the action and specificity of restriction enzymes, while learning the components involved in the process of DNA electrophoresis and the role of each component as it applies to the entire process of electrophoresis. Students will perform the electrophoresis process on DNA samples treated with different restriction enzymes and construct a standard curve using a known DNA sample while determining the approximate size of the DNA fragments in unknown samples. Meets AP Science Practices 3 and 6, and Big Idea 3. Materials provided for eight lab groups.

### Kit Includes:

Prepared agarose, 0.8%, 200mL

TBE buffer, 5X, 500mL

DNA Stain, 20X, 60mL

DNA Samples, 100ul each:

DNA Marker (Lambda DNA HindIII digest)

Sample #1 (Lambda DNA)

Sample #2 (Lambda DNA BstEII digest)

Sample #3 (Lambda DNA EcoRI digest)

Sample #4 (Lambda DNA BstEII digest)



DOT: Non-regulated

**IS3709**

## AP® Biology Investigation #11: Transpiration

Students will study the process of transpiration/transpiration pull and the role it plays in water/nutrient movement in plants. They will study the role of stomata in relation to the transpiration process using a potometer to examine the rate of transpiration in a bean seedling under a select set of environmental conditions. They will also examine the location/density of stomata on a leaf surface by preparing a stomatal peel. Lastly students will design and conduct an experiment to show how altering an environmental condition may affect the rate of transpiration. Meets AP Science Practices 1, 2, 4, 6, and 7, and Big Idea 4. Materials provided for 32 students in eight lab groups.

### Kit Includes:

8 pc Clear tubing, 12"

8 Pipettes, 1mL

8 Planting trays, 6 cell

1 pkg Bean seeds

1 btl Nail polish

8 Tubing clamps

8 Dispensers, 10mL

1 bag Potting soil

1 tube Petroleum jelly

1 pkg Microscope slides



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**IS3711**



**IS3712-CHOICE**  
**Innovating Science Behavior**  
**Choice Chambers pkg/8**

## AP® Biology Investigation #12: Fruit Fly Behavior

Students will study whether fruit flies will move toward or away from important chemicals and food that aid in their survival. Using the Innovating Science choice behavior chamber, behaviors of the fruit-flies are observed and any pattern can be identified. Students will formulate their own theories based on the fruit flies' response to the chemicals and foods, and then determine what materials and experiments should be tested further. Meets AP Science Practices 1, 3, 4, 5, 6, and 7, and Big Idea 4. Materials provided for eight lab groups.

**Kit Includes:**

30mL Ethyl Alcohol  
30mL Ammonia 5%  
30mL Deionized Water  
30mL Vinegar  
8 Innovating Science® Behavior Choice Chambers  
Fruit Fly Vials

**Kit Contains coupon for perishable materials. Redeem by fax, phone or e-mail.**

Materials sent upon redemption of coupon: 8 Fruit Fly Cultures

DOT: Small quantity exemption 173.4

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**IS3712**



## AP® Biology Investigation #13: Enzyme Activity

Students will learn the nature and specificity of enzyme-catalyzed reactions. Students will then use an extract of turnips to examine the reaction between hydrogen peroxide and the enzyme peroxidase while testing one or more factors that influence the rate of enzyme reactions. In this lab students will develop data collection strategies and analyze their results. This kit contains enough materials for 8 groups. Teachers manual and Student Study Guide copymasters are included. Meets AP Science Practices 4, 5, 6, and 7, and Big Idea 4.

**Kit Includes:**

1.5mL Guaiacol concentrate  
50mL 1.0% Hydrogen peroxide  
100mL pH 3 Buffer  
100mL pH 5 Buffer  
100mL pH 6 Buffer  
100mL pH 7 Buffer  
100mL pH 8 Buffer  
100mL pH 10 Buffer

DOT: Non-regulated



**IS3730  
Guaiacol  
5mL**



**IS3713**

DOT: Non-regulated

## Arabidopsis Seeds

Innovating Science Fast Growing Plant Seeds Great for science fair projects and University Research. Quick growth time. 94% Viability. Pk/300. For Lab and Research Use Only.

DOT Info: Non-regulated

**IS3731**



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## AP® Chemistry Guided Inquiry Reflect the Updated AP® Chemistry Curriculum!

### Lab #1: Effect of Concentration on Transmitted Light

Students will be guided through an investigation to study food dyes and determine how the absorbance of light can be used to study color and determine concentrations of chemicals in solutions. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. This lab meets Big Idea 1, Investigation 1, and Primary Learning Objective 1.15.

#### Kit Includes:

10mL Food Dye Blue #1, 0.5%  
8 Test Tubes  
4 Graduated Cylinders

DOT: non-regulated

IS8101



### Lab #2: Beer's Law - Mass Percent of Copper in Brass

Students will design a laboratory procedure to analyze the amount of copper in brass using a spectrophotometer. Students identify the correlation among wavelength, absorbance, and concentration for each of three possible ions that may be obtained from brass: copper, zinc, and iron. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. This lab meets Big Idea 1, Investigation 2, and Primary Learning Objective 1.16.

#### Kit Includes:

50mL Cupric Nitrate 0.1M	50mL Cupric Sulfate 0.1M
50mL Ferric(III) Nitrate 0.1M	50mL Ferric Sulfate 0.1M
50mL Zinc Nitrate 0.1M	50mL Zinc Sulfate 0.1M
100mL Cupric Nitrate 0.4M	100mL Nitric Acid, 70%
20g Brass Pellets	

#### DOT Info:

UN2031, Nitric acid, 8(5.1), II  
UPS Hazard charge applies



**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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS8102

### Lab #3: What Makes Water Hard?

Students will investigate the suitability of gravimetric analysis for determining the amount of water hardness in the form of calcium carbonate found in various water samples. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 1, Investigation 3, Primary Learning Objective 1.19.

#### Kit Includes:

40g Calcium Chloride  
50g Sodium Carbonate  
500mL Sodium Carbonate, 0.5M  
2 Filter paper, pk/100  
200mL Water Sample #1 (0.75M calcium chloride)  
200mL Water Sample #2 (0.2M calcium chloride)  
200mL Water Sample #3 (0.5M calcium chloride)  
200mL Water Sample #4 (0.1M calcium chloride)  
200mL Water Sample #5 (0.05M calcium chloride)  
200mL Water Sample #6 (0.9M calcium chloride)

DOT: Non-regulated

IS8103



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## Lab #4: Acid in Fruit Juices and Soft Drinks

Study how the concentration of acids in various consumer beverages may be determined by titration with sodium hydroxide. Students will determine the proper indicator to use in the titration of a weak acid. Students will create an experiment to calculate the molar concentration of acid in a beverage. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. This lab meets Big Idea 1, Investigation 4, Primary Learning Objective 1.20.

### Kit Includes:

10g	Potassium hydrogen phthalate	4 X 25g	Sodium Hydroxide
100mL	Hydrochloric Acid, 0.1M	100mL	Acetic Acid 0.1M
500mL	Sodium Hydroxide, 0.1M	25mL	Phenolphthalein, 1%
25mL	Methyl Red 0.02%	25mL	Bromothymol Blue 0.04%
1	pH Strips 1-14 Pkg/100		

DOT: Small quantity exemption 173.4  
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**IS8104**

## Lab #6: What's In That Bottle?

Students will identify unknown chemicals based on laboratory testing of their physical and chemical properties. Students will identify the 4 different kinds of bonds that exist in chemicals: ionic, polar covalent, nonpolar covalent and metallic. Students review the properties of each solid using various tests. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 2, Investigation 6, Primary Learning Objective 2.22.

### Kit Includes:

10g	Ammonium Chloride	10g	Calcium Carbonate
10g	Magnesium Oxide	10g	Potassium Nitrate
10g	Benzoic Acid	10g	Salicylic Acid
10g	Aluminum Metal	10g	Calcium Metal
10g	Paraffin Wax	10g	Zinc Metal
10g	Sodium Acetate	10g	Cupric Sulfate, anhydrous
10g	Sodium Carbonate	10g	Sucrose
10g	Copper Metal	10g	Sodium Bicarbonate
10g	Cupric Sulfate, pentahydrate	10g	Magnesium metal
10g	Sodium Chloride	10g	Urea
30mL	Universal Indicator	30mL	Hydrochloric Acid 0.1M
30mL	Sodium Hydroxide 0.1M	30mL	Ethanol, 95%
30mL	Hexane	30mL	Phenolphthalein, 1%
30mL	Deionized Water	32	Melting Point Tubes

LED Conductivity Tester

DOT Info: Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
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**IS8106**

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## Lab #5: Separation of Molecules

Students collect data using different solvents to identify the optimal solvent for separation. They will then illustrate the intermolecular forces that are acting on the molecules in the separation. Students evaluate the chromatograph with different solvents and establish a connection between molecular structure and intermolecular attraction to the solvent. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 2, Investigation 5, Primary Learning Objective 2.10.

### Kit Includes:

30mL	Food Dye Blue #1, 0.5%
30mL	Food Dye Yellow #5, 0.5%
30mL	Food Dye Red #40, 0.5%
200mL	9:1 Petroleum ether/Acetone
200mL	Ethyl Alcohol, 95%
200mL	Isopropyl Alcohol, 99%
200mL	Acetone
200mL	Deionized Water
15	Chromatography Paper
30	Glass Vials
4	Capillary Tubes

DOT Info:  
DOT: Small quantity exemption 173.4  
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**IS8105**



## Lab #7: Green Chemistry and Purification

First, students will design their own experiment to separate two substances using green chemistry principles. Students will also design and perform an experiment to quantitatively measure the weight percent of the mixture. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 3, Investigation 7, Primary Learning Objectives 3.5 and 3.3.

Kit Includes:

300g 85% Sodium Bicarbonate/ 15% Sodium Carbonate Mixture

DOT Info: Non-regulated

IS8107



## Lab #8: Determination of the Actual Percentage of Hydrogen Peroxide

Students will determine the actual concentration of the hydrogen peroxide in the bottle by titration and determine if it is lower than the value on the label. Hydrogen peroxide will degrade over time, and students will determine how much it degrades. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 3, Investigation 8, Primary Learning Objective 3.9.

Kit Includes:

1000mL Iron Ammonium Sulfate 0.1M  
1000mL Potassium Permanganate 0.02M  
1000mL Sulfuric Acid, 6M  
250mL Hydrogen Peroxide 3%  
250mL Hydrogen Peroxide 6%  
500mL Deionized Water

**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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

DOT Info:

UN2796, Sulfuric acid, 8, II, Ltd Qty

IS8108



## Lab #9: Examining the Composition of a Pain Reliever

Students will test the solubility of each possible component of a commercially available pain reliever in an organic solvent, ethyl acetate, and in a basic aqueous solution of sodium bicarbonate. These results will help the student create a procedure that will be used to separate components in a mixture and determine percent composition. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 3, Investigation 9, Primary Learning Objective 3.10.

Kit Includes:

750mL Ethyl Acetate	750mL Sodium Bicarbonate 10%
250mL 6.0M Hydrochloric Acid	50g Sucrose
100g Acetaminophen	100g Acetylsalicylic Acid
1 Ph Strips 1-14 Pkg/100	

DOT Info:

UN1173, Ethyl acetate, 3, II, Ltd Qty

UN1789, Hydrochloric acid, 8, II, Ltd Qty

**WARNING:** This product can expose you to chemicals including Acetyl Salicylic Acid/Aspirin, which are known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

IS8109



## Lab #10: How Long Will That Marble Statue Last?

Students will observe and measure the evolution of carbon dioxide gas from the decomposition of calcium carbonate when mixed with an acid. Students will also create experiments to determine the rate of reaction with different concentrations of hydrochloric acid. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 4, Investigation 10, Primary Learning Objective 4.1.

### Kit Includes:

200g Marble Chips  
500mL Hydrochloric Acid, 1.0M  
2x500mL Hydrochloric Acid, 3.0 M

500mL Hydrochloric Acid, 6.0M  
15 Silicone Tubing  
15 Dispensers, 10mL

DOT Info: UN1789, Hydrochloric Acid, 8,III Ltd Qty

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS8110**

## Lab #11: Rate Law of the Fading of a Dye Using Beer's Law

Students will determine the rate law for the reaction of crystal violet and sodium hydroxide. Students will also prepare dilutions of stock crystal violet solutions to generate a Beer's law calibration curve. This lab will require students to integrate prior chemistry knowledge involving spectroscopy, Beer's law, solution dilution, calibration curves, and chemical kinetics. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 4, Investigation 11, Primary Learning Objective 4.2.

### Kit Includes:

1500mL Crystal Violet, 1%  
1500mL Sodium Hydroxide 0.2M  
1000mL Deionized Water

### DOT Info:

UN1824, Sodium hydroxide solution, 8,II, Ltd Qty

**WARNING:** This product can expose you to chemicals including Crystal Violet, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS8111**

## Lab #12: Designing an Effective Hand Warmer

Students study the various energy changes that occur with the formations of solutions for laboratory salts. From this data they will create the best and safest hand warmer. Students will determine the heat of solutions for each solid and analyze the cost and safety information with provided safety data sheet. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 5, Investigation 12, Primary Learning Objective 5.7.

### Kit Includes:

100g Calcium Chloride	100g Sodium Carbonate
100g Lithium Chloride	100g Sodium Acetate
100g Ammonium Nitrate	100g Sodium Chloride
200g Magnesium Sulfate	

### DOT Info:

UN1942, Ammonium nitrate, 5.1,III, Ltd Qty



**IS8112**

## Lab #13: Le Chatelier and the Colors of the Rainbow

Students will investigate Le Chatelier's principle and why it works. They will also investigate this principle by testing several systems at equilibrium and then selecting specific ones to produce the colors of the rainbow based on specific applications of Le Chatelier's principle. Students will then be challenged by selecting which reaction system to use for which color in producing the rainbow while trying to only use a given "stress" once. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 6, Investigation 13, Primary Learning Objective 6.9.

### Kit Includes:

3 X 30mL Bromothymol Blue 0.04%	3 X 15mL Hydrochloric Acid 0.1N	3 X 15mL Sodium Hydroxide 0.1N
3 X 15mL Sodium Chloride 0.1M	3 X 250mL Potassium Thiocyanate 0.1M	3 X 15mL Ferric Nitrate 0.2M $\text{Fe}(\text{NO}_3)_3$
3 X 10g Potassium Thiocyanate	3 X 10g Iron(III) Chloride	3 X 10g Sodium Phosphate Tribasic
3 X 15mL Potassium Nitrate 0.1M	3 X 250mL Copper (II) Sulfate	3 X 15mL Hydrochloric Acid 1.0 N
3 X 15mL Ammonium Hydroxide Acs 28-30%	3 X 10g Copper(II) Chloride	3 X 15mL Hydrochloric Acid T/G 32%
3 X 10g Cobalt Chloride Hexahydrate	3 X 250mL Ethyl Alc R/G 95% Denat	3 X 30mL Deionized Water
3 X 30mL Acetone	3 X 10g Sodium Chloride	3 X 15mL Methyl Red Indicator 0.3%
3 X 15mL Silver Nitrate 0.1M		

DOT Info: Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

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IS8113

## Lab #14: Structure & Concentration In Acid and Base Titrations

Students will conduct a series of acid-base titrations and determine the concentrations of two unknowns. They will create a procedure to collect quantitative titration data using a buret and pH meter. Using titration data that they collected, they will determine the concentration of each unknown. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 6, Investigation 14, Primary Learning Objective 6.13.

### Kit Includes:

4 X 500mL	Hydrochloric Acid 0.2M, Part A
4 X 500mL	Sulfuric Acid 0.1M, Part B
2 X 1 L	Nitric Acid 0.05M, Part C
4 X 500mL	Calcium Hydroxide 0.1M
4 X 500mL	Ammonium Hydroxide 0.2M, Part E
4 X 500mL	Acetic Acid 0.1N, Part F
4 X 500mL	Sodium Hydroxide 0.1N

DOT Info:  
UN2796, Sulfuric acid, 8, II, Ltd Qty

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IS8114

## Lab #15: Buffering Activity of Common Household Products

Many household products contain buffering chemicals. Students will design a procedure to determine the buffering agents that are in different household products such as foods, beverages and over the counter drugs. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. Meets Big Idea 6, Investigation 15, Primary Learning Objective 6.20.

**Kit Includes:**

4 X 500mL	Hydrochloric Acid 0.1N
4 X 500mL	Sodium Hydroxide 0.1N
500mL	Citric Acid Solution 0.02M
2 X 500mL	Isopropyl Alcohol 90%

**DOT Info:**

UN1219, Isopropanol solution,3,II,Ltd Qty



**IS8115**

## Lab #16: Preparation of Effective Buffers

Students will design a buffer that can maintain a pH within a narrow range when certain amounts of acid and base are added. The activity contains enough materials for 15 groups of students as well as a Teacher's Guide and Student Study Guide Copymasters. This lab meets Big Idea 6, Investigation 16, Primary Learning Objective 6.18.

**Kit Includes:**

1000mL	0.1M acetic acid	25g	Sodium acetate
1000mL	0.1M ammonia	25g	Sodium hydrogen phosphate
1000mL	0.1M sodium dihydrogen phosphate	25g	Ammonium chloride
1000mL	0.1M citric acid	50g	Sodium dihydrogen citrate
1000mL	0.1M sodium monohydrogen citrate	50g	Sodium citrate
1000mL	0.2M sodium hydroxide	25g	Sodium chloride
1000mL	0.2M hydrochloric acid		
1000mL	pH 7 buffer		

**DOT Info:**

UN1824,Sodium hydroxide solution,8,II,Ltd Qty



**IS8116**

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**IS8117**



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## Thermochemistry and Hess' Law

Employ Hess's Law of enthalpy based on the observed data for two reactions. Students can measure the temperatures of the reaction in a calorimeter and analyze the data calculating the enthalpy of each reaction.

### Kit Includes:

8 x 250mL	Hydrochloric Acid, 2M/2N Solution
8 x 250mL	Sodium Hydroxide, 2M/2N Solution
2 x 500mL	Ammonium Chloride, 2M Solution
2 x 500mL	Ammonium Hydroxide, 2M Solution

### DOT Info:

UN1789, Hydrochloric acid, 8, III, Ltd Qty

UN1824, Sodium hydroxide solution, 8, III, Ltd Qty



**IS8001**

## Mole Ratio of Reactants

Using the method of continuous variation, two solutions are combined in various ratios. To select the ratio that produces the most product or consumes the most reactants, students must find an empirical method which is proportional to the amount of reaction that occurs. The reaction selected for this experiment is exothermic and the optimum ratio produces the greatest temperature change. In this experiment the total numbers of moles of reactants are kept constant while varying each reactant. The measurements are made on each different ratio until the optimum ratio, the stoichiometric ratio in the equation, is made which consumes the greatest amount of reactants, produces the greatest amount of product and produces the greatest amount of heat.

### Kit Includes:

3 X 250mL	Sodium hypochlorite 13% concentrate
1 X 237g	Sodium thiosulfate, anhydrous

### DOT Info:

UN1791, Hypochlorite solutions, 8, III, Ltd Qty



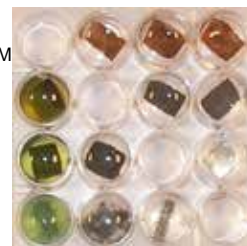
**IS8003**

## Activity Series

An activity series of metals is a table of metals arranged in the 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. To empirically determine which of these metals is more reactive, place a piece of the metal in a salt solution of the other. The more reactive metal will replace the less reactive metal and the less reactive will appear in the solid form. The reactive metal has been oxidized; the less reactive metal has been reduced.

### Kit Includes:

45 pieces	Copper Metal
45 pieces	Zinc Metal
45 pieces	Magnesium Metal
45 pieces	Lead Metal
50mL	Copper Nitrate, 0.1M
50mL	Zinc Nitrate, 0.1M
50mL	Magnesium Nitrate, 0.1M
50mL	Lead Nitrate, 0.1M
2.15g	Potassium Bromide
0.6g	Potassium Bromate
25mL	Sulfuric Acid, 1.0M
2 x 25mL	Chlorine Water
2 x 25mL	Iodine Water
2 x 25mL	Sodium Bromide, 0.1M
2 x 25mL	Potassium Iodide, 0.1M
2 x 25mL	Sodium Chloride, 0.1M
2 x 75mL	Mineral Oil
1	Empty Bottle (for bromine water)



### DOT Info:

Small quantity exemption 173.4

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**IS8002**

## Le Chatelier's Principle

Le Chatelier's Principle is a qualitative rule, which 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. For example when a system is subjected to increased pressure it adjusts so that it will occupy less volume. This offsets the pressure increase. If ice is placed under an increased pressure, it melts because the water obtained from a given mass of ice occupies less volume. In the formation of ammonia (the Haber process) from hydrogen and nitrogen, the product of the reaction ( $\text{NH}_3$ ) occupies less volume than the two uncombined gases. The increase in pressure favors the production of ammonia. This experiment is divided into three separate reactions demonstrating how different types of stress effect equilibrium. Students are asked to predict the outcome of each situation and then prove or disprove their predictions.

### Kit Includes:

1 X 25mL	Bromothymol blue pH indicator solution 0.04%
1 X 10g	Potassium thiocyanate crystal
1 X 25mL	Ferric nitrate solution 0.2M
1 X 200mL	Potassium thiocyanate solution 0.002M
1 X 10g	Sodium phosphate, dibasic
1 X 25mL	Concentrated hydrochloric acid, 36%
2 X 25mL	Sodium hydroxide solution 0.1N
1 X 50g	Sodium chloride

### DOT Info:

Small quantity exemption 173.4

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**IS8004**

## Ester Formation

The yield of ester can be increased either by removing one of the products of the reaction as it is formed or by increasing the concentration of one of the reactants. The normal procedure is to remove water using the dehydrating agent sulfuric acid, which also acts as the catalyst. In this experiment, we will combine various alcohols with acetic and butyric acids to form esters. The esters can be identified by their distinctive odors.

### Kit Includes:

2 X 25mL	Acetic acid	2 X 25mL	n-Butyric acid
25mL	n-Butyl alcohol	25mL	Octyl alcohol
25mL	Methyl alcohol	25mL	Ethyl alcohol
25mL	Concentrated sulfuric acid		
7 ea.	Glass droppers		

### DOT Info:

Small quantity exemption 173.4

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**IS8005**

## Acids and Bases

A solution of sodium hydroxide which is approximately 0.01M will be standardized with a solid acid, potassium hydrogen phthalate, to determine the exact molarity of the base. The standardized base will then be titrated against a monoprotic unknown acid to determine the molarity of the acid. A pH indicator and/or a pH meter will be used to determine the equivalence point.

### Kit Includes:

2 X 25mL	Hydrochloric acid, 1.0M
30mL	Sodium hydroxide, 6.0M
5g	Potassium hydrogen phthalate
25mL	Phenolphthalein, 1.0%

### DOT Info:

Small quantity exemption 173.4

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**IS8006**

## Reaction Kinetics

In a chemical reaction, reactants are converted to product at a given rate. This rate can be changed by altering either the temperature of the reaction, the form of the reactants, the concentration of reactants or products or by adding a catalyst. 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.

### Kit Includes:

2 x 100mL	Potassium Iodide, 0.1% Solution (0.006M)
2 x 100mL	Sodium Thiosulfate, 0.001M Solution
2 x 100mL	Hydrogen Peroxide, 3% Solution (0.88M)
5 capsules	Starch Soluble (5 caps per bottle)
2 x 100mL	Hydrochloric Acid, 0.1M Solution UN1789
Pkg. of 150	Pipettes

DOT Info:  
Non-regulated



IS8007

## Dissociation Constants of Weak Acids

Students determine the equilibrium constant of three unknown acids and compare the data to known values to identify them.

### Kit Includes:

10g	Benzoic Acid Crystals
10g	Potassium Hydrogen Phthalate
10g	Sodium Bisulfate (Sodium Hydrogen Sulfate)
10 x 250mL	Sodium Hydroxide, 0.1M Solution
4 x 25mL	Phenolphthalein, 1% in IPA Solution

DOT Info: Small quantity exemption 173.4  
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IS8008

## Qualitative Analysis

Colorimetric or turbidimetric methods of analysis have been developed for most of the elements and ionic species. These methods can be employed to quickly determine the chemical composition of an unknown substance. Before attempting to analyze an unknown it is useful to develop a logical process to follow. Care must be taken in sampling, collecting and washing precipitates, performing confirmatory tests and most importantly, recording data. It is also good laboratory practice to always analyze a known with each unknown as a double check on the reagents being used. The unknowns will be analyzed for one of six possible anions:  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ ,  $\text{PO}_4^{2-}$ ,  $\text{NO}_3^-$ , and  $\text{SO}_4^{2-}$ . A standard solution for each anion will also be run.

### Kit Includes:

100mL	Sodium bromide, 0.1M
100mL	Sodium chloride, 0.1M
100mL	Sodium iodide, 0.1M
100mL	Sodium nitrate, 0.1M
100mL	Sodium phosphate, 0.1M
100mL	Sodium sulfate, 0.1M
200mL	Nitric acid, 6M
50mL	Ammonium hydroxide, 6M
2 X 100mL	Mineral oil
75mL	Ammonium molybdate 0.1M
75mL	Diphenylamine reagent
75mL	Barium chloride 0.1N
100mL	Potassium permanganate 2%
100mL	Ferric nitrate 0.1M
50mL	Silver nitrate 0.1M

DOT Info:  
UN2031, Nitric acid, 8, II  
UN2672, Ammonia solutions, 8, III, Ltd Qty  
UN1830, Sulfuric Acid solution, 8, II, Ltd Qty  
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IS8009

## Beer Lambert Law

The probability that a photon of light will be absorbed by a solution is directly proportional to the concentration of the absorbing molecules, the thickness of the sample and the degree to which the molecules absorb light. This relationship is called the Beer-Lambert Law and is used in analytical chemistry to determine concentrations of various compounds spectrophotometrically. A series of 5 solutions with different concentrations of iron are prepared and analyzed using the spectrophotometric assay for iron.

### Kit Includes:

25mL	Ferric chloride, 0.1M UN2582
5g	Ascorbic acid
50mL	1,10 Phenanthroline
100mL	Acetate buffer

### DOT Info:

Small quantity exemption 173.4

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## IS8010

### Stoichiometry in the Synthesis of an Ionic Compound

Many combinations of mono and trivalent cations yield crystals of the same stoichiometry and structure. The crystals are normally in the form of an octahedron. Sodium, potassium and ammonium ions are often the monovalent species whereas aluminum and chromium are examples of the trivalent ions. Potassium alum,  $KAl(SO_4)_2 \cdot 12H_2O$ , is the most common and is used in water purification, paper manufacturing and as a mordant in dyeing. In this experiment we will perform a series of chemical reactions which lead to the synthesis of the ionic compound potassium alum.

### Kit Includes:

2 x 25g	Aluminum Metal Powder
2 x 250mL	Potassium Hydroxide, 3.0M Solution
4 x 250mL	Sulfuric Acid, 3M Solution
4 x 250mL	Ethanol/Water V/V 50/50% Solution

### DOT Info:

UN1814, Potassium hydroxide, solution, 8, II, Ltd Qty

UN2796, Sulfuric acid, 8, II, Ltd Qty

UN1170, Ethanol, 3, III, Ltd Qty



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## IS8011

### Equilibrium Constant of an Ionic Compound

The idea of the reversibility of chemical reactions was first stated by C. Berthollet in 1799. He noted deposits of sodium carbonate in certain salt lakes in Egypt and concluded that they were produced by the high concentration of sodium chloride and dissolved calcium carbonate. This is the reverse of the standard laboratory procedure in which calcium carbonate is produced from the reaction on sodium carbonate and calcium chloride. A standard curve will be established for the absorbance of a colored species and then used to determine the concentrations of unknown solutions. The results will allow us to determine the equilibrium constant for the formation of the colored species.

### Kit Includes:

500mL	Iron (III) nitrate, 0.2M
2 X 100mL	Potassium thiocyanate, 0.002M
100mL	Nitric acid, 0.5M UN2031

### DOT Info:

UN3264, Corrosive liquid, acidic, Inorganic, n.o.s., (Nitric acid), 8,III,Ltd Qty



## IS8012



## Oxidation-Reduction Reactions

The term oxidation can mean the chemical combination of a substance with oxygen and reduction can be the removal of oxygen from a compound. When oxygen reacts with any other element (except fluorine) it acquires electrons from that element. The element that donated the electrons is said to be reduced. Three experiments will be run where a compound, which is colorless in solution when reduced, is converted to a deeply colored solution when oxidized. The complete balanced reactions for each step should be written showing the transfer of electrons during oxidation and reduction.

### Kit Includes:

10g	Ferrous ammonium sulfate
100mL	Sulfuric acid, 6.0M
2 X 100mL	Potassium thiocyanate 1.0M
25mL	Potassium permanganate
25mL	Hydrogen peroxide, 3%
3 X 100mL	Stannous chloride 0.1M
25mL	Methylene blue 1%
3 X 250mL	Potassium hydroxide 1.0M
100g	Dextrose

### DOT Info:

UN1814, Potassium hydroxide, solution, 8, II, Ltd Qty  
UN2796, Sulfuric acid, 8, II, Ltd Qty



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IS8013

## Freezing Point Depression

Molecular mass is a parameter, which is useful in determining the identity of an unknown compound. One technique to determine the molecular mass of an unknown is to measure the effect the compound has on the freezing point of a solvent in which the unknown is dissolved. The freezing point of a solution is a colligative property. That is, it is a property which varies based on the number of particles (solute) dissolved in the solvent and not on the chemical makeup of the particles themselves. Other colligative properties, which also can be used to determine molecular mass, are osmotic pressure, vapor pressure and boiling point. The nonpolar solvent 2,6-di-tert-butyl-4-methylphenol has a freezing point of approximately 70°C. A quantity of para-dichlorobenzene will be dissolved in the solvent and the effect on the freezing point determined. The freezing point depression constant will be calculated for the solvent. The experiment will be repeated with each of two unknowns and the molecular weight of the unknowns will be determined from the freezing point depression.

### Kit Includes:

2 x 25g	Di-Tert-Butyl-4-Methylphenol Crystals
25g	p-Dichlorobenzene Crystals
25g	Stearic Acid Flakes
25g	Naphthalene Flakes UN1334

### DOT Info:

Small quantity exemption 173.4

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IS8014

## Vapor Pressure

Raoult's Law can be proven empirically by measuring the change in vapor pressure as solute is added to a solvent. The measurements will be taken at different temperatures to demonstrate the effect of temperature on vapor pressure.

### Kit Includes:

2 x 2.5kg	Sodium Chloride Crystals
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DOT Info: Non-Regulated

IS8015

## Electrochemical Cells

The tendency of oxidation-reduction reactions is to proceed to an equilibrium state. These reactions occurring in electrochemical cells 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.

### Kit Includes:

2 x 500mL	Cupric Sulfate, 0.5M Solution
25mL	Bromothymol Blue, 0.04% Solution
8 x 500mL	Sodium Sulfate, 1M Solution
Pkg. of 15	Copper Metal Strips
Pkg. of 15	Magnesium Metal Strips 5"UN1869
Pkg. of 15	Dialysis Tubing Strips 6"

### DOT Info:

Small quantity exemption 173.4  
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**IS8016**



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## Thin Layer Chromatography

Chromatography is an analytical tool used to separate similar compounds. Thin-layer chromatography utilizes a sheet coated with silica gel. The samples are applied to the silica gel sheet and separated by migrating an appropriate solvent up the sheet. This type of separation is called adsorption chromatography because the separation of similar compounds is based on the selective adsorption of the compounds on the silica gel solid phase. In this lab samples of various plant leaf materials may be extracted or the red and green leaf extracts included may be used. The samples of extracted leaf pigments are applied to a silica gel sheet and separated using a mixture of organic solvents.

### Kit Includes:

2 x 10g	Alfalfa Powder
2 x 25mL	Red Extract
Pkg. of 15	Chromatography TLC Sheets
6 x 250mL	Chromatographic Solvent
2 x 50mL	Isopropyl Alcohol, 70%

### DOT Info:

UN1230, Methanol, 3, PG II, Ltd Qty  
UN1219, Isopropanol, 3, PG II, Ltd Qty



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**IS8017**



## Determination of the Molecular Mass of a Liquid

A volatile liquid is placed in a test tube and the tube is closed with a stopper with a hole in it. The test tube is placed in a hot water bath. The liquid vaporizes and excess vapors escape through the hole. The tube is then placed in an ice bath to quickly cool the vapor and cause it to condense. The mass of the tube is determined.

### Kit Includes:

2 x 25mL	Methyl Alcohol UN1230
2 x 25mL	Isopropyl Alcohol UN1219

### DOT Info:

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

**IS8018**



## Thermochromism

The way in which light is absorbed or reflected by a crystalline material is determined by the structure of the crystal. This crystal structure can be changed by the application of heat. In some cases this change is reversible and the original structure, and therefore the original color, returns upon cooling. Two compounds are formed when metal salts are reacted with the  $[HgI_4]^{2-}$  ion. Each compound is heated on a hot plate and a change in color is noted. The initial color of the compound returns upon cooling.

### Kit Includes:

3 x 25g Mercury (II) Chloride UN1624  
3 x 25g Potassium Iodide  
15g Silver Nitrate UN1493  
2 x 25g Copper (II) Chloride, Anhydrous UN2802

### DOT Info:

Small quantity exemption 173.4  
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**WARNING:** This product can expose you to chemicals including Mercury/mercury compounds, which are known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS8019**

## Determination of the Hardness of Water

In this experiment the indicator eriochrome black T (EBT) is used to signal the presence of ions in the water sample. EBT binds with free metal ions in the water to form a pink complex. EDTA has a stronger affinity for the metal ions than EBT so when EDTA is added it replaces the EBT and the EBT returns to its blue, uncomplexed color. The blue color is used as the end point in the titration. A sample of tap water is treated with EBT indicator. If the indicator turns from blue to pink, metal ions such as calcium and magnesium are present. To determine the concentration of ions present, the sample is titrated with a known molar concentration of EDTA.

### Kit Includes:

4 x 500mL EDTA Solution, 0.005M  
2 x 200mL Buffer Solution  
2 x 15mL EBT Solution (Eriochrome Black, 0.1%) UN1219

### DOT Info:

Small quantity exemption 173.4  
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**IS8020**

## Synthesis of Aspirin

In a reaction vessel salicylic acid, acetic anhydride and sulfuric acid are mixed. The exothermic reaction will cause the temperature to increase to 70-80°C. Once the reaction is complete the vessel is cooled in an ice bath and the acetylsalicylic acid crystallizes out. This material is re-crystallized in toluene to purify the product. The product identity is confirmed by melting point. The mass of the re-crystallized product is used to determine the yield of the synthesis. In this experiment, we will perform the synthesis of acetylsalicylic acid (aspirin), purification by re-crystallization and use melting point to confirm identity.

### Kit Includes:

2 x 25mL Acetic Anhydride UN1715  
15g Salicylic Acid  
2 x 25mL Sulfuric Acid Concentrate UN1830  
2 x 25mL Toluene UN1294

### DOT Info:

Small quantity exemption 173.4  
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**WARNING:** This product can expose you to chemicals including Strong inorganic acid mists containing sulfuric acid and Toluene, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS8021**

## Grignard Synthesis of Benzoic Acid

Once the Grignard reagent is prepared, it can be used to prepare the target compound. In this experiment the target compound is a carboxylic acid. To prepare a carboxylic acid, the Grignard reagent is carboxylated in a reaction with dry ice. After the reaction is complete, hot water is added to evaporate any remaining solvent. Acid is added to dissolve the magnesium salts and liberate the carboxylic acid. Once the solution is cooled, the acid can be collected. In this experiment, we will prepare a carboxylic acid (benzoic acid) by the Grignard method.

### Kit Includes:

5g	Magnesium Metal Turnings
2 x 25mL	Tetrahydrofuran UN2056
20mL	Bromobenzene UN2514
25mL	Hydrochloric Acid, 36% UN1789
10g	Decolorizing Carbon

### DOT Info:

Small quantity exemption 173.4

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### IS8022

## Complete Set of 22 AP® Chemistry Lab Activities

### IS8023

Be prepared for the entire school year with the complete set of all 22 AP Chemistry lab activities. Set includes:

See individual kit listings for more detailed information

IS8001	Thermochemistry and Hess's Law
IS8002	Activity Series
IS8003	Mole Ratio of Reactants
IS8004	Le Chatelier's Principle
IS8005	Ester Formation
IS8006	Acids and Bases
IS8007	Reaction Kinetics
IS8008	Dissociation Constant of Weak Acids
IS8009	Qualitative Analysis
IS8010	Beer Lambert Law
IS8011	Stoichiometry in the Synthesis of an Ionic Compound



**WARNING:** This product can expose you to chemicals including Lead and lead compounds, Potassium Bromate, Methanol/Methyl isobutyl ketone, Phenolphthalein, Strong inorganic acid mists containing sulfuric acid, Naphthalene, p-Dichlorobenzene, Toluene and Mercury/mercury 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).

IS8012	Equilibrium Constant of an Ionic Compound
IS8013	Oxidation-Reduction Reactions
IS8014	Freezing Point Depression
IS8015	Vapor Pressure
IS8016	Electrochemical Cells
IS8017	Thin Layer Chromatography
IS8018	Determination of the Molecular Mass of a Liquid
IS8019	Thermochromism
IS8020	Determination of Water Hardness
IS8021	Synthesis of Aspirin
IS8022	Grignard Synthesis of Benzoic Acid

## Determination of the Properties of Buffer Solutions

In this experiment, you will prepare three buffer solutions having different pH values and show that the pH of these solutions does not change significantly when small amounts of acids and bases are added. You will also show that when the same amounts of acids and bases are added to water and to a non-buffer solution (e.g. NaCl solution), the pH changes are large.

### Kit Includes:

30g	Sodium Acetate, trihydrate
2 x 25g	Ammonium Chloride
30g	Sodium Bicarbonate
4 x 25g	Sodium Chloride
23mL	Acetic Acid EZ-Prep, to make 800mL of 0.5M Solution
27mL	Ammonium Hydroxide, EZ-Prep, to make 800mL of 0.5M Solution
15mL	Sodium Hydroxide, 1.0 N Solution UN1824
15mL	Hydrochloric Acid, 1.0 N Solution UN1789

### DOT Info:

Small quantity exemption 173.4

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### IS8024



## Determination of the Empirical Formula of Magnesium Oxide

The quantitative stoichiometric relationships governing mass and amount will be studied using the combustion reaction of magnesium metal. Magnesium is reacted with oxygen from the air in a crucible, and the mass before and after the oxidation is measured. The resulting masses are used to calculate the experimental empirical formula of magnesium oxide, which is then compared to the theoretical empirical formula. A crucible and Bunsen burner will be used to heat magnesium metal to burning. This lab illustrates the (i) law of conservation of mass and (ii) the law of constant composition.

### Kit Includes:

1 Roll Magnesium Metal, Ribbon UN1869

### DOT Info:

Small quantity exemption 173.4

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IS8025

## Acid Base Indicators

pH is the measure of the concentration of hydrogen ions in a solution. As this concentration can extend over several orders of magnitude, it is convenient to express it by means of logarithms of base ten. Certain pigments change color with a change in pH. In this experiment we will extract pigments from various sources and determine if they are sensitive to changes in pH.

### Kit Includes:

25mL Hydrochloric Acid, 32% UN1789  
10g Sodium Hydroxide UN1823  
2 x 30mL Isopropyl Alcohol, 99% UN1219  
30mL Acetone UN1090

### DOT Info:

Small quantity exemption 173.4

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IS8027

## The Molar Volume of a Gas

Students will determine the volume of one mole of gas. This is accomplished by generating a known mass of oxygen gas, measuring its temperature, volume and pressure, and then using the data to calculate the molar volume at STP. The oxygen is generated by the decomposition of potassium chlorate at high temperature.

### Kit Includes:

2 x 25g Potassium Chlorate UN1485  
2 x 25g Manganese Dioxide, 85% Native Powder UN1479

### DOT Info:

Small quantity exemption 173.4

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IS8026

## Gravimetric Analysis

Determine the identity of a metal carbonate by gravimetric analysis. Gravimetric analysis is a technique through which the amount of an analyte (the ion being analyzed) can be determined through the measurement of mass. You will complete the analyses comparing the masses of two compounds containing the analyte. The formula weight and the identity of the unknown are determined using gravimetric analysis.

### Kit Includes:

10 g Calcium Chloride, Anhydrous  
5 g Silver Nitrate UN1493

### DOT Info:

Small quantity exemption 173.4

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IS8028

## Analysis of Potassium Aluminum Sulfate 12 Hydrate

After a compound has been synthesized, analytical tests should be carried out to confirm that the correct compound has been produced. In this lab we will perform tests to confirm that the crystals formed are in fact potassium aluminum sulfate 12 hydrate by comparing the melting point to published results, finding the number of waters of hydration, and determining the percent of sulfate in the compound.

### Kit Includes:

- 2 x 100g Aluminum Potassium Sulfate
- 4 x 25g Barium Nitrate UN1446

### DOT Info:

Small quantity exemption 173.4

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## IS8029

### The Electrochemical Series

Students will study electrochemical series. The electrochemical series is built up by arranging various redox equilibria in order of their standard electrode potentials (redox potentials). When a strip of metal (an electrode) is placed in water the metal has a tendency to go into solution as ions, with a simultaneous build up of electrons on the metal strip. This process produces an electrical potential difference between the metal and solution which is called an electrode potential ( $E^\circ$ ).

### Kit Includes:

- 15 Copper Metal Strips
- 15 Zinc Metal Strips
- 15 Magnesium Metal Strips
- 15 Iron Metal Strips
- 15 Aluminum Metal Strips
- 75 Filter Paper Strips
- 1 ea EZ-Prep to make 1000mL of 0.1M Solution of:
  - Copper Sulfate
  - Zinc Sulfate
  - Magnesium Sulfate
  - Iron Sulfate
  - Aluminum Sulfate



### DOT Info:

Small quantity exemption 173.4

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## IS8030

### Liquid (Column) Chromatography

The mixture to be analyzed by column chromatography is applied to the top of the column. The liquid solvent (the eluent) is passed through the column by gravity or by the application of air pressure. Equilibrium is established between the solute adsorbed on the adsorbent and the eluting solvent flowing down through the column. Because the different components in the mixture have different interactions with the stationary and mobile phases, they will be carried along with the mobile phase to varying degrees and a separation will be achieved. The individual components, or elutants, are collected as the solvent drips from the bottom of the column.

### Kit Includes:

- 4X25mL Isopropyl Alcohol UN1219
- 100g Silica gel 60
- 2X15mL Dye Mixture
- 15 Pipettes
- Glass wool

**WARNING:** This product can expose you to chemicals including Glass wool fibers (inhalable and biopersistent), which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



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## IS8031

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## AP® Environmental Science: Landfills and Decomposition

Simulate a sanitary landfill and an open-air dumpyard to explore the advantages of a landfill while observing decomposition in both aerobic and anaerobic environments. This kit contains enough materials for 8 groups of students and comes with a Teacher's manual and student study guide copymaster. The activity covers primary learning objectives STB-3.K and STB-3.L.

### Kit Includes:

- 1 Bag Soil
- 10 Plastic Cups, 9-ounce
- 8 Plastic Jars with Lids
- Cotton Fabric, 3x6"
- 8 Starch Packing Peanuts
- 32 Paper Squares
- 4 Straws
- 16 Aluminum Squares

DOT Info: Non-regulated



IS9900

## AP® Environmental Science: Salt Toxicity

Model the salt toxicity of three different salts using radish seeds and process of determining the LD50 for three different salts: NaCl, MgCl<sub>2</sub>, and CaCl<sub>2</sub>. This kit contains enough materials for 8 groups of students and comes with a Teacher's manual and student study guide copymaster. The activity covers primary learning objectives STB-3.B, EIN-3.A, and EIN-3.B.

### Kit Includes:

- Sodium Chloride Quicksolution, Makes 500 mL of 3% Solution
- Magnesium Chloride Quicksolution, Makes 500 mL of 3% Solution
- Calcium Chloride Quicksolution, Makes 500 mL of 3% Solution
- 20g Radish Seeds
- 48 Germination Trays with Lids
- 48 Pipettes
- 48 Cups, 5 oz.
- 32 Stir Sticks
- Toothpicks

DOT Info: Non-regulated



IS9901

## AP® Environmental Science: Physical and Chemical Properties of Soil

Perform chemical and physical tests on local soil samples to explore different soil types and their characteristics due to their unique compositions. This kit contains enough materials for 8 groups of students and comes with a Teacher's manual and student study guide copymaster. The activity covers primary learning objective ERT-4.C.

### Kit Includes:

50mL	Soil pH Indicator Solution	500mL	Soil Nutrient Extracting Solution
20mL	Phosphorous Reagent #2	5g	Phosphorous Indicator Powder, with Scoop
25mL	Nitrate Reagent #1	5g	Nitrate Reagent #2, with Scoop
30mL	Potassium Reagent Solution	5g	Potassium Indicator Powder, with Scoop
3kg	Sand	3kg	Clay Powder
40g	Detergent Powder, with Spoon	8	Extraction Bottles
8	Jars with Lids	40	Pipettes
11	Soil Scoops (8 for Soil Samples, 3 for Reagents)	24	Coffee Filters
24	Cups, 5 oz.	8	pH, N, P, K Color Charts

DOT Info: Small quantity exemption 173.4  
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**IS9902**



## AP® Environmental Science: Water Quality

Test a local water body for a variety of parameters to determine overall water quality and learn about different indicators and sources of pollution. This kit contains enough materials for 8 groups of students and comes with a Teachers manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objectives STB-3.B and STB-3.F.

### Kit Includes:

8	Collection Bottles, 500 mL	16	DO/BOD Sample Bottles, 4-ounce
8	Coliform Test Powder Vials	15mL	Griess Reagent
0.5g	Cadmium Metal Powder	2x25mL	Manganese Chloride Reagent
40mL	Alkaline Iodide Reagent	40mL	Sulfuric Acid, 50%
25mL	Starch Indicator Solution	50mL	Sodium Thiosulfate Titrant
8	Phosphate Powder Pillows 1		Wide Range pH Test Strips, pk/100
1	Toothpicks, pk/100	8	Secchi Sticks

DOT Info:  
UN2976, Sulfuric Acid, 8, PG II, LTD QTY

**WARNING:** This product can expose you to chemicals including Strong inorganic acid mists containing sulfuric acid, Cadmium and cadmium compounds, and Methanol, which are known to the State of California to cause cancer or reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS9903**





## AP® Environmental Science: Ocean Acidification

Changes to the carbon cycle and climate due to human activities have had detrimental effects on the environment. One example of this is known as ocean acidification, which is the changing of the ocean's chemistry due to increased carbon dioxide in the atmosphere and ocean. In this activity, simulate ocean acidification by introducing carbon dioxide into simulated ocean water while measuring the pH over time. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers primary learning objective STB-4.H.

### Kit Includes:

40g	Simulated Ocean Water QuickPrep for 1 Gallon	8	Tygon Tubing, 40 cm
2x100g	Sodium Carbonate	8	Rubber #7 Stoppers, 2-Hole
2x500mL	Baking Soda	8	Air Stones
8	Vinegar	8	Spoons
	Pipettes		

DOT Info: Non-regulated

IS9904



## AP® Environmental Science: Microbial Activity in Soil

Soil holds the largest portion of active carbon on earth, at an estimated equivalent of around three times the total amount of carbon stored in the atmosphere. Not only is carbon critical to soil function and productivity, but it is also a main component of overall healthy soil conditions that affects both animal and crop life. In this activity, simulate the production of carbon dioxide due to microorganisms in soil. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objective ERT-4.C.

### Kit Includes:

4x50mL	Bromothymol Blue pH Indicator
1 bag	Soil
	Sugar Quicksolution 0.1%, To Make 200 mL
	Sugar Quicksolution 1%, To Make 200 mL
	Sugar Quicksolution 10%, To Make 200 mL
25	Containers
25	Bags, 8x10"
25	Plastic Reservoirs
9	Spoons
9	Cups, 5-ounce
25	Pipettes, 3 mL
9	Bromothymol Blue pH Color Charts

DOT Info: Non-regulated



IS9905

## AP® Environmental Science: Effects of SO<sub>2</sub> and NO<sub>2</sub> on Plants

Acid deposition, more commonly known as acid rain, occurs when primary pollutants like nitrogen dioxide and sulfur dioxide react with the water in the atmosphere to form the secondary pollutants, nitric and sulfuric acid, which then fall to the surface in rain. This can cause significant stress to both ecosystems in forests, streams, lakes, and the ocean as well as human infrastructure. In this activity, simulate the effects of nitrogen oxides and sulfur oxides on the germination of radish seeds. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objectives STB-2.H and STB-2.I.

### Kit Includes:

- 25mL Sodium Sulfite, 1 M
- 25mL Sulfuric Acid, 2 M
- 25mL Nitric Acid, 0.5M
- 16 Copper Wire Pieces, 1 cm
- 10g Radish Seeds
- 1 pH Strips, pk/100
- 24 Petri Dishes
- 24 Reactant Reservoirs
- 1 pkg Filter Paper
- 1 pkg Cotton Balls
- 8 Pipettes
- 8 Forceps
- 8 Hand Magnifiers



DOT Info: Small quantity exemption 173.4

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**WARNING:** This product can expose you to chemicals including Strong inorganic acids and sulfuric acid which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS9906**

## AP® Environmental Science: Soil Compaction in Agriculture

When it comes to agriculture, crop yields depend heavily on the type and condition of the soil on the land being used for cultivation. In efforts to alter the soil and improve crop yields, the use of agricultural machinery has exponentially increased in the last century. However, the heavy machinery has lead to compacted soils that inhibit crop growth. Simulate the effects of soil compaction on plant growth to examine the impacts of agricultural mechanization on the environment. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objectives EIN-2.C and EIN-2.D.

### Kit Includes:

- 50g Pea Seeds
- 32 Growing Cups, 9 oz.
- 1 bag Soil
- 3kg Sand
- 1kg Clay Powder
- 8 Scooping Cups
- 16 Mixing Bags, 8" x 10"
- 4 Misting Bottles



DOT Info: Non-regulated

**IS9907**

**WARNING:** This product can expose you to a chemical, crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## AP® Environmental Science: Net Productivity of Aquatic Plants

Living organisms require energy for growth, respiration, reproduction, and movement. Primary producers such as plants absorb energy from the sun and convert it to biomass, via photosynthesis, which is then either used for cellular respiration or passed up the food chain. In this activity, simulate the photosynthesis and cellular respiration of an aquatic plant under different conditions to demonstrate when plants need for each process. This kit contains enough materials for 8 groups of students and comes with a Teacher's Manual and student study guide copymaster. The activity covers AP Environmental Science primary learning objective ENG-1.A.

### Kit Includes:

2x25mL	Manganese Chloride Reagent
2x25mL	Alkaline Iodide Reagent
2x25mL	Sulfuric Acid, 50%
2x15mL	Starch Indicator Solution
2x750mL	Sodium Thiosulfate Titrant, 0.002 M
24	Pipettes
16	Sample Bottles with Caps

DOT Info: Small quantity exemption 173.4

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**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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

IS9908



All Chemistry Demonstration kits come with enough reagents to complete at least 5 chemistry demonstrations. Complete with instructions.

## Synthesis of Rayon

Demonstrate polymer chemistry. Newsprint is dissolved in a solution of ammonium hydroxide and cupric sulfate. The solution is then added to a sulfuric acid solution and dark strands are formed.

### Kit Includes:

- 125mL Copper (II) Sulfate, 25% Solution
- 175mL Ammonium Hydroxide, 28-30% Solution UN2672
- 200mL Sulfuric Acid, 0.5M/1.0N Solution UN2796

### DOT Info:

UN2672, Ammonia solutions, 8, III, Ltd Qty  
UN2796, Sulfuric acid, 8, II, Ltd Qty



**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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

IS7001

## Autocatalysis

Catalysis is a basic principle of chemistry and biochemistry. Some reactions are autocatalytic; the product of the reaction actually catalyzes further reactions. The reaction is initiated with acid and produces acid to continue the reaction.

### Kit Includes:

- 5mL Toluidine Blue, 0.5% Solution
- 30mL Sulfuric Acid, 3.0M Solution UN2796
- 250mL Potassium Chlorate/Sodium Sulfite Solution

### DOT Info:

Small quantity exemption 173.4  
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**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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS7002

## Ampholytes Chemical Demo

Ampholytes are compounds which react with both acids and bases. When zinc chloride is reacted with sodium hydroxide the soluble zincate ion is formed. When zinc hydroxide is reacted with hydrochloric acid, the soluble zinc chloride and water are formed.

### Kit Includes:

- 100mL Zinc Chloride, 0.5M Solution
- 250mL Sodium Hydroxide, 1.0M Solution UN1824
- 250mL Hydrochloric Acid, 1.0M Solution UN1789

### DOT Info:

UN1824, Sodium hydroxide solution, 8, II, Ltd Qty  
UN1789, Hydrochloric acid, 8, II, Ltd Qty



IS7003

## Exothermic Reactions

Study the process of exothermic reactions. The reaction is safely carried out in a plastic bag. The students can pass the bag around to feel the result of the reaction.

### Kit Includes:

- 5 bags of the following mixture:
  - 25g Iron Metal Powder, 1g Sodium Chloride Crystals,
  - 5g Calcium Chloride Flakes, 1 Tbsp Vermiculite

DOT Info: Non-Regulated



IS7004



### Endothermic Reactions

Study the process of endothermic reactions. The reaction is safely carried out in a plastic bag. The students can pass the bag around to feel the result of the reaction.

Kit includes:

5 bags x 25g Ammonium Nitrate UN1942 + 1 Tbsp Vermiculite

DOT Info:

Small quantity exemption 173.4

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**IS7005**

### Exothermic/Endothermic Combination

Study both processes of endothermic and exothermic reactions. Reactions are safely carried out in plastic bags. The students can pass the bags around to feel the results of the reactions.

Combo kit includes both IS7004 and IS7005 kits.

DOT Info:

Small quantity exemption 173.4

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**IS7006**

### Blue Bottle Reaction

Discover the principle of oxidation-reduction. Compounds that change color as a result of a change in their pH or oxidation state are called indicators. Illustrate this principle by mixing potassium hydroxide and dextrose with methylene blue and introducing oxygen by shaking the flask.

Kit Includes:

2 x 25mL	Potassium Hydroxide, 5.0M Solution UN1814
6mL	Methylene Blue Chloride, 1% Solution
5 bags x 5g	Dextrose Monohydrate (Glucose) Powder

DOT Info:

Small quantity exemption 173.4

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**IS7007**



### Synthetic Rubber

Show how the first synthetic rubber was made in United States by a reaction of sodium polysulfide with ethylene chloride. This produces a simple condensation polymer consisting of repeating units of ethane and polysulfide.

Kit Includes:

4 x 25mL	Sodium Polysulfide Solution UN1760
25mL	Ethylene Dichloride UN1184

DOT Info:

Small quantity exemption 173.4

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**WARNING:** This product can expose you to chemicals including Ethylene dichloride (1,2-Dichloroethane), which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS7008**

## Thin Layer Chromatography

TLC is a technique of separation chemistry, which provides a simple, rapid method of separating small amounts of compounds. A mixture of three dyes is prepared and then separated on a thin layer of the absorbent silica gel with the appropriate solvent.

### Kit Includes:

250mL Chromatography Solvent (Acetone / Ethyl Alcohol 9:1) UN1993  
 Pkg of 5 Chromatography TLC Sheets (2 1/2"x4")  
 3mL Sudan IV, 0.5% Solution UN1219  
 3mL Coumarin 314, 0.5% Alcohol Solution UN1170  
 3mL Methylene Blue Chloride, 1% Solution UN1170

### DOT Info:

UN1993, Flammable liquid, n.o.s.,  
 (Acetone, Ethyl alcohol), 3, PG II, Ltd Qty

**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS7009

## Formation of Silicate (Red & White Precipitates)

Show how silicates of divalent ions are insoluble in water whereas silicates of monovalent ions are soluble.

### Kit Includes:

50mL Calcium Chloride, 1.0 Molar Solution  
 50mL Calcium Chloride, 1.0 Molar Solution with Phenolphthalein  
 200mL Sodium Silicate, 15% Aqueous Solution

### DOT Info: Non-Regulated



IS7011

**WARNING:** This product can expose you to chemicals including Phenolphthalein, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Nylon 6-10 Rope Trick

Show an example of polymer chemistry. Make your own nylon which is a synthetic compound of high molecular weight that consists of up to millions of repeated chemical units that are linked together. This polymer is referred to as Nylon 6-10.

### Kit Includes:

25mL Solution A  
 (1,6-Hexanediamine, Sodium Hydroxide, Water)  
 UN1760  
 25mL Solution B  
 (Sebacoyl Chloride, Hexane) UN1208

### DOT Info:

Small quantity exemption 173.4  
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**WARNING:** This product can expose you to chemicals including n-Hexane, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

IS7010

## Surface Tension of Water

Explain the principle of high surface tension as water acts like a membrane stretched across the surface preventing the sulfur particles from sinking. A wetting agent lowers the surface tension and allows the particles to fall through the surface to the bottom of the beaker.

### Kit Includes:

1 x 15 g Sulfur NA1350  
 1 x 5 mL Dish Detergent, Green



### DOT Info: Non-Regulated

IS7012

### Chemiluminescence

Explain and view chemiluminescence. Observe how luminol is converted to an excited state in the presence of an oxidizer such as hydrogen peroxide. As the excited state molecule decays or returns to the ground state, energy is produced as light.

Kit Includes:

100mL Luminol Solution  
50mL Hydrogen Peroxide, 6% Solution

DOT Info: Non-Regulated



IS7013

### Chemical Battery

Construct a simple wet cell battery. When complete it will generate 1.5 volts for 20-30 minutes. Several cells can be connected in series to increase the voltage or in parallel to increase the current.

Kit Includes:

100mL Copper (II) Sulfate, 0.5M Solution  
200mL Sodium Sulfate, 0.5M Solution  
2 x 6" long Magnesium Metal Strips UN1869  
2 x 3/4"x5" Copper Metal Strips  
2 x 15.9mm Dialysis Tubing  
25mL Hydrochloric Acid, 3% Solution UN1789  
1 each Light Bulb & Wire Assembly  
1 each Empty Jar with Lid

DOT Info:  
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IS7015

### Eutectic Alloys

Form a metal alloy as bismuth and tin are heated to the eutectic point of the two metals which is lower than the melting point of either metal.

Kit Includes:

100mL Glycerin (Glycerol)  
50g Bismuth Metal Lumps  
15g Tin Metal Mossy

DOT Info:  
Non-Regulated



IS7014

### Negative Coefficient of Solubility

Explain how there are exceptions to the rules of chemistry. Heat a solution and watch it form a precipitate. Watch it go back into solution as it cools.

Kit Includes:

500mL Calcium Acetate, Saturated Solution

DOT Info: Non-Regulated



IS7016

## Polyurethane Foam

Make your own foam and explain how when two viscous liquids are mixed together, they initiate a reaction producing a light weight polyurethane foam which expands to 30 times the original volume of the two liquids.

Kit Includes:

500mL Polyurethane Foam System, Part A (Mixture)

500mL Polyurethane Foam System, Part B (Mixture)

DOT Info: Non-Regulated



IS7018

## Foam City - The Catalytic Decomposition of Hydrogen Peroxide

A large quantity of foam is produced when detergent and potassium iodide are added to hydrogen peroxide.

Kit Includes:

3x30mL Hydrogen Peroxide, 30% UN2014

30mL Dish Detergent, Green

10g Potassium Iodide, Crystals

DOT Info:

Small quantity exemption 173.4

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IS7019

## The Dehydration of Sucrose

Sulfuric acid is poured on sucrose. The resultant reaction produces a large amount of black foam as well as steam and smoke.

Kit Includes:

75g Sucrose, Granular

25mL Sulfuric Acid, Concentrate UN1830

DOT Info:

Small quantity exemption 173.4

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IS7020

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linkedin.com/aldon-corporation

TikTok @aldonchem



## The Volcano - Dehydration of Sucrose

Create your own volcano for a science fair demonstration.

### Kit Includes:

75g	Sucrose Crystals
25mL	Sulfuric Acid, Concentrate UN1830
50g	Sodium Carbonate, Anhydrous

### DOT Info:

Small quantity exemption 173.4

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IS7021

## Oscillating Reactions - Yellow to Blue and Back

Prepare a flask containing a yellow solution, as you mix it on a magnetic stirrer the solution will turn from yellow to blue and back to yellow.

### Kit Includes:

3 x 25mL	Hydrogen Peroxide, 12% UN2984
3 x 25mL	Potassium Iodate, 0.2M Solution UN2796
75mL	Starch Solution, 0.03%

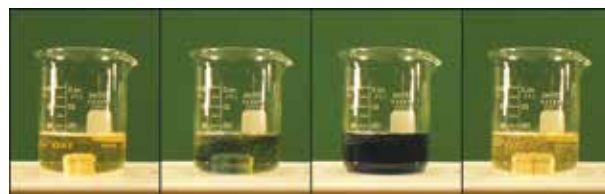
### DOT Info:

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IS7023

## Oscillating Reactions - The Traffic Light

A flask containing a yellow solution is gently swirled and the solution turns red. When the flask is shaken the solution turns green.

### Kit Includes:

10g	Sodium Hydroxide, Beads UN1823
0.5g	Indigo Carmine, makes 50mL
5 x 5g	Dextrose (Glucose)

### DOT Info:

Small quantity exemption 173.4

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IS7024

## Solid Fuel

Two solutions are poured together in a beaker and form a gel. The gel can be ignited with a match. Commercially this gel is sold as Sterno®.

### Kit Includes:

2 x 25mL Ethyl Alcohol, Denatured UN1170  
2 x 25mL Calcium Acetate Solution

### DOT Info:

Small quantity exemption 173.4  
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IS7025

## The Oxidation-Reduction Flag (Redox Flag)

You will be able to demonstrate the principles of a redox reaction. Paint the potassium thiocyanate solution and potassium ferrocyanide solution onto a filter paper. Once they are dry you can spray the filter paper with iron (II) chloride and watch blue and red colors appear.

### Kit Includes:

3 x 25mL Iron (III) Chloride 0.1M Solution UN2582  
30mL Potassium Thiocyanate 0.1M Solution  
30mL Potassium Ferrocyanide 0.1M Solution

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



IS7026

## Oscillating Reactions - The REDOX Rainbow

For this demonstration, add hydrogen peroxide to a colorless solution of potassium iodide to produce a red color, or you can add the hydrogen peroxide to a purple solution of potassium permanganate to create a colorless solution.

### Kit Includes:

100mL Hydrogen Peroxide, 3% Solution  
200mL Potassium Iodide, 0.1M Solution  
200mL Potassium Permanganate, 0.02M Solution  
10mL Sulfuric Acid, Concentrated UN1830

### DOT Info:

Small quantity exemption 173.4  
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IS7027

### Oxidation of Glycerin

A small amount of potassium permanganate is placed in a petri dish. A few drops of glycerin are added and after a few seconds, a puff of smoke and violent flames are produced.

**Kit Includes:**

30g Potassium Permanganate UN1490  
25mL Glycerin

**DOT Info:**

Small quantity exemption 173.4

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**IS7028**

### Underwater Fireworks - The Reaction of Acetylene and Chlorine

Calcium carbide is placed in a cylinder containing water. A reaction occurs producing acetylene gas bubbles. A plastic tube from a chlorine gas generator is placed in the cylinder. As the bubbles of acetylene and chlorine collide flashes of light are produced.

**Kit Includes:**

250mL Sodium Hypochlorite  
30mL Hydrochloric Acid, 1.0M Solution UN1789  
10g Calcium Carbide, Lumps UN1402

**DOT Info:**

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



**IS7029**

### Oxidation-Reduction of Complex Ions

Hydrogen peroxide is added to a solution of sodium potassium tartrate and heated. Copper sulfate solution is added and the solution turns light blue. With continued heating the solution foams and turns orange-gold.

**Kit Includes:**

250mL Hydrogen Peroxide, 3% Solution  
250mL Potassium Sodium Tartrate, 0.3M Solution  
10mL Copper (II) Sulfate, 1.0M Solution

**DOT Info:**

Non-Regulated



**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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS7030**

## The Silicate Garden

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.

### Kit Includes:

2 x 30mL Sodium Silicate Solution, 40%  
 20g Iron (III) Chloride, Hexahydrate UN1759  
 20g Copper (II) Chloride, Dihydrate UN2802  
 20g Cobalt Nitrate, Hexahydrate UN3085  
 20g Zinc Sulfate, Heptahydrate

### DOT Info:

Small quantity exemption 173.4  
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IS7031



## Formation of Tin Wool

This is a single replacement reaction in which the zinc metal dissolves in solution and tin metal is formed.

### Kit Includes:

2 x 700mL Tin (II) Chloride, 1.0 Solution UN1789  
 140g Zinc Metal Mossy

### DOT Info:

UN1760, Corrosive liquid, n.o.s.,  
 (Stannous Chloride, Hydrochloric Acid), 8, PGIII, Ltd. Qty



IS7032

## Up in Vapor!

## Hydrogen Peroxide Decomposition

In this experiment you will show the decomposition of the chemical hydrogen peroxide using sodium iodide.

### Kit Includes:

350mL Hydrogen Peroxide, 30%  
 7 x 4g Sodium Iodide

### DOT Info:

UN2014, Hydrogen peroxide, aqueous solutions, 5.1, (8), II  
 UPS Hazard charge applies



IS7033



## Le Chatelier's Principle: A Dynamic Demo on the Overhead

Use an overhead projector to study the reaction of Le Chatelier's principle.

Kit Includes:  
140mL Potassium Thiocyanate, 0.002M Solution  
10mL Iron (III) Nitrate, 0.2M Solution  
5g Potassium Thiocyanate  
5g Sodium Phosphate, Monobasic, Anhydrous

DOT Info: Non-Regulated



IS7034

## Water to Wine

Study acid base indicators and complex ions. Mixing three colored chemical solutions results in another wine colored solution. Adding the fourth chemical of sodium fluoride turns the solution clear.

Kit Includes:  
10mL Potassium Thiocyanate, 1.M Solution  
15mL Thymolphthalein, 0.04% Solution UN1170  
15mL Phenolphthalein, 0.5% Solution UN1987  
5g Iron (III) Chloride, 6-Hydrate UN1759  
3 x 25mL Sodium Fluoride, 1.0M Solution UN3415  
10mL Hydrochloric Acid, 32% UN1789  
10mL Ammonium Hydroxide, 14.8M, 28-30% Solution UN2672

DOT Info:  
Small quantity exemption 173.4  
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IS7035

## Forming Red, White & Blue

Introduce chemical reaction types. This is a patriotic demonstration that illustrates complex ion formation, double replacement while introducing chemical reaction types.

Kit Includes:  
30mL Iron (III) Chloride, 1.0M Solution UN2582  
140mL Silver Nitrate, 0.1M Solution  
140mL Potassium Ferrocyanide, 0.1M Solution  
140mL Potassium Thiocyanate, 0.002M Solution

DOT Info:  
Small quantity exemption 173.4  
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IS7036

## Density Of Liquids: The Color Column

Several liquids of varying color are added to a cylinder. Due to differing densities of the liquids, a density gradient is formed resulting in a layered, multi-colored column. As an optional investigation, the relative density of small solid objects may be compared by dropping them in the density column.

### Kit Includes:

450mL	Glucose syrup
400mL	Liquid detergent
400mL	Vegetable oil
400mL	Ethyl alcohol
25mL	Blue food coloring
25mL	Red food coloring
5	Graduated cylinder
	plastic cups

### DOT Info:

UN1170, Ethanol 3, II Ltd. Qty



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



IS7037

## Disappearing Rainbow

Three indicators are used in conjunction with acids and bases to create a rainbow of colors. In a basic solution, phenolphthalein is red, p-nitrophenol is yellow, and thymolphthalein is blue. These can be combined in various ways to create all the colors of the rainbow. If done correctly the students only see the acid or base being poured, which adds to the impressive display. There are enough materials to complete the demonstration 7 times.

### Kit Includes:

25mL	Red Indicator	UN1170
25mL	Orange Indicator	UN1170
25mL	Yellow Indicator	UN1170
25mL	Green Indicator	UN1170
25mL	Blue Indicator	UN1170
25mL	Violet Indicator	UN1170
2 X 30mL	Hydrochloric Acid 1.0 N	UN1789
2 X 30mL	Sodium Hydroxide 1.0 N	UN1824
30mL	Sodium Hydroxide Sol 6.0M (6N)	UN1824

### DOT Info: Small quantity exemption 173.4

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IS7039

## Thionin and Iron: A Light Induced Redox Reaction

In this lab a thionin-iron solution is prepared. Exposing the solution to light energy causes the colored thionin to be reduced by iron (II) ions, resulting in a clear solution. When half of the solution, in a single container, is exposed to light it will turn clear while the half not exposed to light will remain colored.

### Kit Includes:

10g Iron(II) sulfate  
2x25mL Sulfuric acid solution UN2796  
Thionin Quick Solution

DOT Info: Small quantity exemption 173.4  
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## IS7040

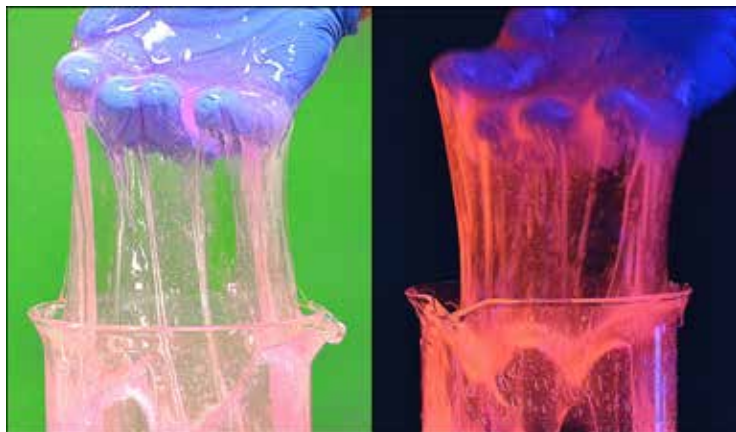
### Fluorescent Slime Using Polyvinyl Alcohol

Create your own fluorescent polymers (Slime) in this great classroom demonstration. Mixture is pink under regular light and glows orange under a black light. Included pigment will make this polymer activity easy to see and memorable for your students!

### Kit Includes:

100mL Sodium Borate 4% Sol  
500mL Polyvinyl Alcohol 3% Solution  
5mL Fluorescent Pink Pigment Mixture

DOT Info: Non-Regulated



## IS7041

### Instant Light Powder Chemiluminescence Demo

In this demonstration, students will observe an example of a chemiluminescence reaction. Instant light powder and water are placed in a beaker producing a blue light. This demonstration is designed to further help students understand the topics of chemiluminescence and kinetics. There is enough Instant Light Powder to complete 5 demonstrations.

### Kit Includes:

1 btl Instant Light Powder

DOT Info: Non-Regulated



## IS7042



## Snow Polymer Demonstration

Demonstrate the wonderful, super absorbent properties of a polymer while making snow in your classroom. As the hydrophilic polymer instantly absorbs water, it will expand to over 40 times its original volume. The end result is fluffy flakes of fake snow. Performs 5 demonstrations. Complete with instructions.

Kit Includes:

25g Snow Polymer  
5 Cups  
5 Stir Sticks

DOT: Non-regulated



## War of the Acids

What does it mean to be a strong acid or a weak acid? This demonstration kit uses visually stimulating comparisons between strong and weak acids to demonstrate this concept. A low range pH indicator solution allows the audience to see how pH is different between acids of equal concentration as well as the impact of adding the conjugate base materials. The violence of reactions using the different acids is demonstrated by creating an easily contained foaming volcano certain to grab anyone's attention. Lesson literature included in the kit reviews the scientific concepts of reversible reactions, pH vs concentration of acid, and reaction rates. This kit has enough materials to perform 7 demonstrations.

Kit Includes:

650 mL Hydrochloric Acid  
450mL Acetic Acid  
30mL Low Range pH Indicator  
115g Sodium Acetate  
85g Sodium Chloride  
290g Calcium Carbonate  
7 Pipettes  
Color Code Indicator Chart

DOT Info:

UN2789, Acetic Acid, glacial, 8, (3), II, Ltd Qty  
UN1789, Hydrochloric Acid, 8, II, Ltd Qty

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IS7043

IS7044

## Polymers – Making Fluorescent Worms

Allow students to learn about polymers and cross-linking using this fun and colorful activity. Students add a solution of sodium alginate to three calcium chloride solutions, each containing a different fluorescent dye. After a few minutes the liquid sodium alginate solution forms into gel-like polymer "worms." Upon completion of the activity, the worms may be placed under a black light and the students will observe their worms glow red, blue, and green. Contains enough material to make several dozen polymer worms.

Kit Includes:

6g Sodium alginate  
1L 0.1M calcium chloride/0.1% fluorescein  
1L 0.1M calcium chloride/0.04% rhodamine B  
1L 0.1M calcium chloride/0.5% quinine sulfate  
3 Empty bottles w/flip-top caps  
6 Forceps

DOT Info: Non-regulated

**WARNING:** This product can expose you to chemicals including D&C Red No. 19, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS7045



### Rainbow Electrolysis

Study oxidation-reduction, electrolysis and acid-base reactions as Universal Indicator is added to an aqueous sodium sulfate solution. When two carbon electrodes are connected to a battery and placed in the solution, a rainbow of colors forms as the water is electrolyzed. There are enough materials to complete the demonstration 5 times.

**Kit Includes:**

50 mL Sodium Sulfate Solution, 1M  
6 mL Universal Indicator  
1 Red Connecting Wire  
1 Black Connecting Wire  
12 Carbon Electrodes  
2 Petri Dishes

**DOT Info:**

Small quantity exemption 173.4  
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**IS7046**

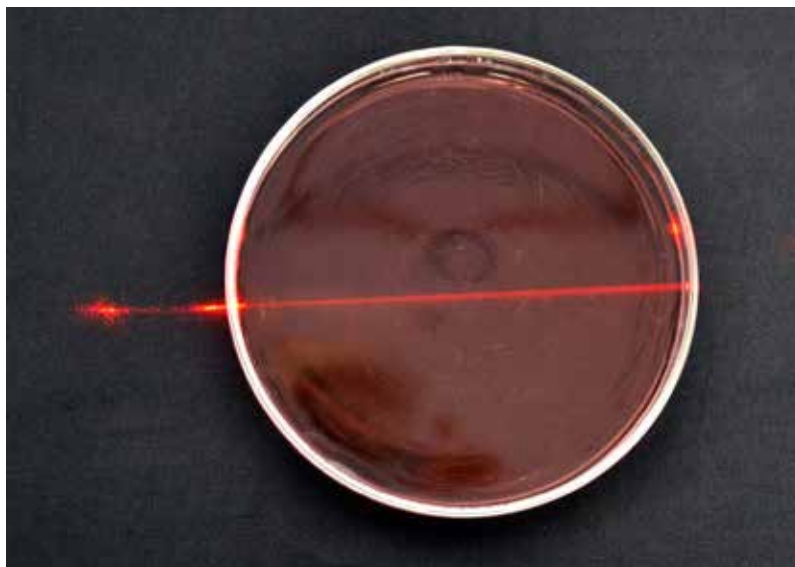
### Gold Nanoparticle Demonstration

Explore the interesting properties of nanomaterials by reducing a solution of gold (III) chloride to form colloidal gold nanoparticles. As the reaction occurs, the mixture undergoes multiple color changes before becoming the bright red color characteristic of small gold nanoparticles. There are enough materials to complete the demonstration 5 times.

**Kit Includes:**

100 mL Gold (III) Chloride Solution, 1mM  
10 mL Sodium Citrate Solution, 1%  
50 mL Sodium Chloride Solution, 1M

DOT Info: Non-regulated



**IS7047**

## Electrolysis of Tin

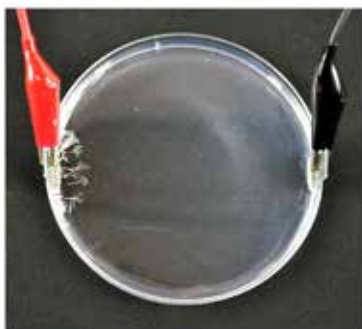
The electrolysis of a tin (II) chloride solution demonstrates the oxidation and reduction of  $\text{Sn}^{2+}$  ions as beautiful tin crystals grow and spread throughout the solution. There are enough materials to complete the demonstration 5 times.

### Kit Includes:

- 2.5g Tin (II) Chloride
- 10 Zinc Electrodes
- 5 Petri Dishes
- 1 Red Connecting Wire
- 1 Black Connecting Wire

### DOT Info:

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**IS7048**

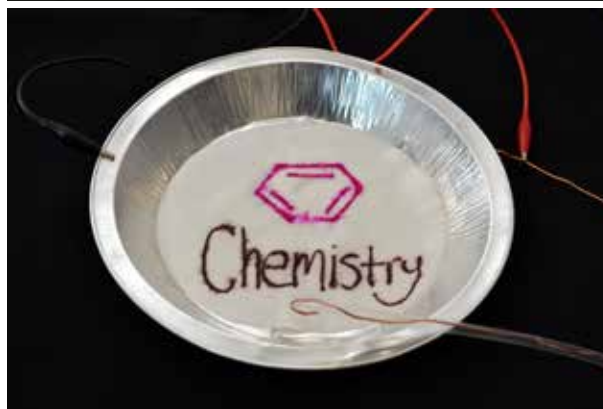
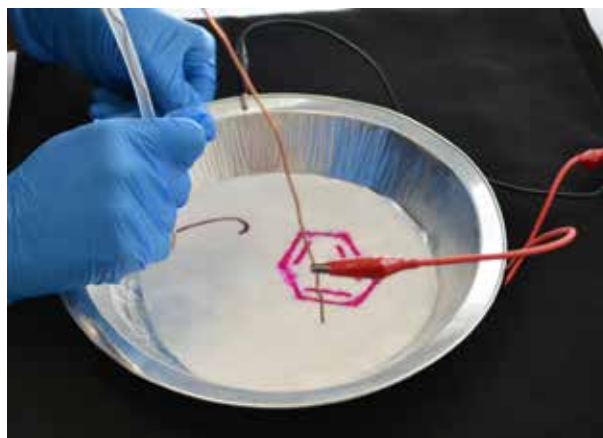
**WARNING:** This product can expose you to chemicals including Phthalates, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Electric Art

A copper “pen” will be used to electrolyze a solution of potassium iodide and draw on a piece of filter paper. The color of the “ink” will change depending on whether the copper is acting as the cathode or the anode in the electrolytic cell. There are enough materials to complete the demonstration 5 times.

### Kit Includes:

- 25 mL Phenolphthalein, 1% Solution
- 8g Potassium Iodide
- 2.5g Soluble Starch
- 1 Copper Wire
- 1 Aluminum Pan
- 1 Red connecting Wire
- 1 Black connecting Wire
- 10 Filter Paper Pieces
- 5 Plastic Straws



**WARNING:** This product can expose you to chemicals including Phenolphthalein and Phthalates, 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).

### DOT Info:

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**IS7049**

## Photochemistry & Cyanotype Printing Demonstration

Explore the chemistry behind a classic photograph development method: Cyanotype Printing. This process involves photo-redox of iron compounds and complexation to form Prussian Blue pigment.

### Kit Contents:

- 100mL Ferric Nitrate Solution
- 100mL Oxalic Acid Solution
- 200mL Potassium Ferricyanide Solution
- 200mL Intensifying Solution
- 4 Plastic Trays
- 4 Circular Paper Sheets
- 4 Medicine Cups
- Plastic Forceps

### DOT Info:

UN1760, Corrosive liquids, n.o.s., (Oxalic acid), 8, III, Ltd Qty



## IS7050

## Absorption Spectroscopy Demonstration

Explore the properties of atomic absorption and discover how certain elements absorb several specific wavelengths of light by viewing the dark line (absorption) spectra of various colored solutions including solutions containing elements that astronomers observe: erbium and praseodymium.

### Kit Contents:

- 20mL Red Food Dye
- 20mL Yellow Food Dye
- 20mL 0.001 M Potassium Permanganate
- 20mL 1 M Copper (II) Chloride
- 20mL 0.1 M Erbium Chloride
- 20mL 0.1 M Praseodymium Chloride
- 6 Petri Dishes
- 6 Pipettes
- 3 Black Construction Paper Pieces
- 2 Diffraction Grating Slides

### DOT Info:

Small quantity exemption 173.4

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## IS7051

## Firefly in a Flask: Oscillating Chemiluminescence

Two glow-in-the-dark reactions occur in turn: one that is bright and quick, and another that is dull and slow. The oscillation between these reactions looks like a firefly on a summer night!

### Kit Contents:

- 3x900mL Luminol-Thiocyanate Solution
- 3x100mL Copper Sulfate Solution
- 3x30mL Hydrogen Peroxide 30%

### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



## IS7052

## Green Chemistry: The Production of Biodiesel

In this activity, students will be performing a two-phase process to produce small batches of crude biodiesel. The crude biodiesel produced is of sufficient quality for use in the demonstration of the burning qualities of both biodiesel and vegetable oil. Included is an optional small-scale exercise where the students will use a washing procedure to experience the full process of producing biodiesel to meet quality levels necessary for use in vehicles. Kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

4 X 500mL	Vegetable oil
15 X 25mL	Methyl alcohol
20g	Potassium hydroxide
2	Microburners

### Optional:

Containers with sealable caps large enough to hold 200mL of liquid  
(if performing the washing process)  
Distilled water (if performing the washing process)

### DOT Info:

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



**IS9500**

## Electrochemical Remediation of Wastewater

Water pollution is one of the largest threats facing the global population. Water is a finite resource. Once polluted, it cannot be set aside in the hopes that the environment will "make" new, clean water. One procedure often employed to treat wastewater is coagulation/flocculation. While the coagulation/flocculation procedure in wastewater treatment is effective, it involves the addition of chemical components to the water being treated. Recently, a great deal of attention has been given to less traditional alternatives to the typical process of coagulation/flocculation. One such approach receiving a good deal of attention is a process called electrocoagulation. Electrocoagulation is a coagulation process carried out by an electrical charge. Kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

30	Aluminum electrodes
15	Red connectors w/alligator clips
15	Black connectors w/alligator clips
15g	Sodium sulfate
15mL	0.1% crystal violet

### Optional:

Funnels  
Filter paper



DOT Info: Non-regulated



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



**IS9501**

## Detergents and the Environment

Understand the consequences of cultural nutrient overloading on the aquatic environment. Recognize that there may be alternative, more environmentally-friendly alternatives in typical consumer chemical goods. Demonstrate and monitor the effects of two detergent builders on natural water samples. Visually quantify the differences between phosphate and non-phosphate detergent builders on aquatic organisms. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

50mL	Phosphate builder (10% sodium phosphate) solution,
2 x 25mL	Non-phosphate builder UN1760 (15% sodium silicate/5% citric acid) solution
50mL	Control (deionized) water
45	Plastic cups
1 box	Microscope slides
1 box	Coverslips

Optional: Microscopes, Plastic wrap or similar

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



**IS9502**



## A Greener Synthesis of Acetylsalicylic Acid

Show students 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. They may then 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 copymasters are included.

### Kit Includes:

6 x 25mL	Sodium Hydroxide 3M
6 x 25mL	Hydrochloric Acid 3M
25mL	Methyl Salicylate
2 x 25mL	Acetic Anhydride
5mL	Phosphoric Acid 85%
5mL	Ferric Nitrate
15	Pipettes, Disposable

### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4

for domestic highway or rail transport only



**IS9503**

## Determining the Composition of an Unknown Mixture

Often times, the composition of a mixture may contain a variety of unknown components. In some cases, the components of a mixture may be known but the exact amount of those components in the mixture is not. Analytical chemists often have a variety of tools and techniques to analyze unknown substances and arrive at conclusions with regards to the compounds/percentages in the mixture. In this activity, students will determine the percent composition of sodium carbonate and sodium bicarbonate in an unknown sample. The mixture is heated vigorously until the sodium bicarbonate is completely decomposed to sodium carbonate. The only other products of the reaction are carbon dioxide and water. After performing the necessary calculations, students will determine the percentage of sodium bicarbonate that was present in their original sample. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

200g	Sodium carbonate
200g	Sodium bicarbonate
5	Pre-labeled bottles (to prepare unknowns)

DOT Info: Non-regulated



**IS9504**

## An Alternative Iodine Clock Reaction

Students will learn the mechanisms and reactions involved in one type of clock reaction and understand how a clock reaction may provide insight into reaction kinetics. After assembling, performing, and obtaining data from several clock reactions students will alter experimental conditions and investigate the effects on clock reaction data. Determination of the effects of concentration and temperature on chemical kinetics will be investigated. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

3 X 100mL	Ascorbic Acid Quick Solution, makes 100mL of 1% solution
3 X 100mL	IKI Dilute Lugol's Solution
400mL	Hydrogen Peroxide 3%
3g	Starch, Soluble
30	Plastic Cups
30	Stir Sticks
60	Measuring Cups, Disposable
60	Pipettes, Disposable

DOT Info: Non-regulated



**IS9505**

## Green Nanochemistry: Synthesis of Silver Nanoparticles

Nanotechnology is a field of technology that is described as the control and manipulation of matter in the 1 to 100 nanometer (nm) range. A nanometer is one billionth of a meter, or one millionth of a millimeter. To put it in perspective, an average sheet of copier paper is about 100,000 nanometers thick so a nanometer is 100,000th the thickness of a piece of copier paper. Certain materials, when prepared at nanoscale levels, display different physical and chemical properties than those of the same materials prepared on a larger scale. In this activity, students synthesize silver nanoparticles from silver nitrate. The particles are synthesized in glucose and starch, as opposed to the more hazardous reagents typically employed. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

1mL	Silver nitrate, 0.1M
0.09g	Dextrose to make 5 mL of 0.1M Glucose
0.4g	Soluble starch (to make 200mL of 0.2% solution)
5mL	Sodium Hydroxide 0.1M

DOT Info: Non-Regulated



IS9506

## The Hydrogen Fuel Cell Demonstration

In this demonstration, energy will be produced from combining hydrogen and oxygen to form water. Platinum will serve as the catalyst and electrodes will be prepared by coating metal mesh with platinum. The hydrogen and oxygen will come from electrolysis. After the cell is set up, a brief current is applied (with a 9-volt battery) causing the formation of hydrogen gas bubbles on one electrode and oxygen gas bubbles on the other. Using a voltmeter, electricity produced by the recombining of hydrogen and oxygen, facilitated by the platinum metal catalyst, can be observed. Kit contains enough materials for 5 demos.

### Kit Includes:

15	Brass metal mesh squares
2	Red connecting wires w/alligator clips
2	Black connecting wires w/alligator clips
	D-cell battery holder w/clips
	Chloroplatinic acid 0.005M, 25mL UN3264
	Glass rod

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only

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



IS9507

## Green Fuel Cell: Energy From Yeast

The transfer of electrons is part of the metabolic process in living organisms. However, what if it were possible to capture, remove, and use some of these electrons? Could living organisms generate an electrical current? Students will set up a simple cell and using the simple-to-grow and environmentally tolerant organism yeast, as well as a special dye capable of entering yeast cells and collecting electrons, determine if the harvested electrons are capable of producing current in the cell and if so, how much current. This fun activity also serves as a great tool to stimulate discussion with regard to alternate energy sources. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

10g	Yeast Instant Dry
25g	Dextrose R/G Anhydrous (D-Glucose)
7.5g	Phosphate Buffer Ph 7.0
5mL	Potassium Ferricyanide 1.0M
5mL	Methylene Blue Chloride 1% Aq
30	15mL Bottles
15	Bottle Caps
15	Connecting Wire, Red 12" With Alligator Clips
15	Connecting Wire, Black 12" With Alligator Clips
30	Carbon Electrodes
20	1/4" X 4" strips, Filter Paper 8"X11"

DOT Info: Non-regulated

**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 [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS9508

### Environmental Chemistry: Water Treatment and Filtration

Students will develop a knowledge of the processes performed at a water treatment plant and understand the reasons for each process. They will perform, on a small-scale, several of the procedures that occur in a water treatment plant on “polluted” water. They will examine the changes in the water after each treatment step is performed. They will also observe physical characteristics of water, such as clarity, color, odor, and how they are affected from the beginning of the treatment process until the end. Kit contains enough materials for 15 groups of students. Teacher’s Manual and Student Study Guide copymasters are included.

#### Kit 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
25mL	White Vinegar
75	Plastic cups
15	Stirring sticks



DOT Info: Non-regulated

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS9700**

### Environmental Chemistry: Nitrates, Phosphates, and Eutrophication

Understand the importance and value of fresh water and the need to protect and conserve this valuable resource. 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. They will observe and examine the effects of nitrates, the effects of phosphates, and the effects of a combination of nitrates and phosphates in miniature “ponds.” Kit contains enough materials for 15 groups. Teacher’s Manual and Student Study Guide copymasters are included.

#### Kit includes:

50mL	Nitrate solution
50mL	Phosphate solution
50mL	Nitrate/Phosphate solution
50mL	Control (deionized) water
60	Plastic cups
1 box	Microscope slides
1 box	Coverslips



DOT Info: Non-regulated

**IS9701**

## Environmental Chemistry: Acid Rain, Weathering, and Erosion

Acid rain is a term used generically to describe any type of acidic moisture, be it rain, snow, or fog. Acid rain can have devastating effects on not only aquatic ecosystems but also terrestrial areas. Acid rain not only affects naturally-occurring surfaces, such as exposed rocky surfaces of mountainous regions, but also human-made surfaces as well. Different stone and metal substances used in the construction of buildings, statues, monuments, etc. may all be affected by acid rain. The rates of erosion and weathering may increase rapidly depending on the degree of acidity in the precipitation. In this activity, students expose many rock materials and metals, both naturally-occurring and common in construction, to an acidic environment and examine the reaction of these materials in contrast to the same materials exposed to "normal" rain (tap water). Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 1 bag Marble chips
- 1 bag Brick chips
- 1 bag Granite chips
- 1 bag Limestone chips
- 1 bag Sandstone chips
- 1 bag Steel shot
- 1 bag Copper shot
- 1 bag Zinc shot
- 3x25mL Sulfuric acid concentrate (to make 500mL each)
- 120 Measuring cups, disposable

### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Respirable crystalline silica and Strong inorganic acid mists containing sulfuric acid, which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## IS9703

## Acid Rain and the Environment: Acidity and Plant Growth

The problem of acid rain is quite often associated with its effects on aquatic systems. Unfortunately, acid rain can also have devastating effects on terrestrial environments as well. In this activity, students will examine the detrimental effects of acidic conditions on plants. Plants will be grown under normal soil conditions, mildly acidic soil conditions, and very acidic soil conditions. Through physical observation, students will determine if the acidity has any impact on the growth of the plant. Kit contains enough materials for 15 groups.

### Kit includes:

- 4 X 30mL Hydrochloric Acid 12M UN1789
- 1 Bag Potting Soil
- 45 5 oz Translucent cup
- 45 7 oz Translucent cup
- 45 Pcs Absorbent Wick Pad
- 1 Pkg Radish Seeds

DOT Info: Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only



## IS9704



### Oil Spill Cleanup: Biological vs. Physical

In this activity, students will compare two methods of oil spill cleanup: biological and physical. Applying both a special blend of oil degrading microbes and a hydrocarbon encapsulating polymer to oil and examining the results, students will draw conclusions with regard to the effectiveness of each approach. The kit includes a specially prepared stained vegetable oil to simulate crude oil, eliminating any of the hazards and associated disposal costs of the real thing while still allowing the students to perform the procedures using real oil. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

#### Kit Includes:

- 15g Oil degrading microbe blend
- 250mL Simulated crude oil
- 1 Nutrient QuickSolution, to make 1000mL
- 200g Hydrocarbon encapsulating powder
- 32 Plastic vials
- 15 Plastic cups
- 1 bag Cotton balls

DOT Info: Non-regulated

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS9705

### Effect of Salinity on Seawater

The world's ocean system contains a dynamic thermohaline current system that is responsible for many aspects of our environment. The experiments in this kit have been designed to help visualize the impact solutions of different density have on each other when mixed. Students will measure the salinity of three different water samples representing three major salt water bodies, as well as perform an experiment in which they will observe the flow patterns when different density solutions are mixed. This kit has enough materials for 15 groups. Teacher's Guide and Student Study Guide Copymasters included.

#### Kit Includes:

- 10mL Phenolphthalein Indicator
- 15mL 1.0 M Potassium Chromate
- 400mL 0.1 M Silver Nitrate
- 200mL 3.0 M Sodium Hydroxide
- 250mL Synthetic Atlantic Ocean Water
- 250mL Synthetic Gulf of Mexico Water
- 250mL Synthetic Pacific Ocean Water

DOT Info:

UN1824, Sodium hydroxide solution, 8, II, Ltd Qty.

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



IS9707

## Ocean Pollution

Examine five different types of ocean pollution in simulated ocean water. Remove debris, particulates, and oil, and test the water for toxins and dissolved nutrients. This kit contains enough materials for 15 groups working in pairs. A Teacher's Manual and Student Study Guide copymaster are included.

### Kit Includes:

2gal	Simulated Polluted Ocean Water Solids	15	Forceps
150mL	Simulated Crude Oil	30	Pipettes
15mL	Nitrogen Test Solution #1	15	Cups, 5 oz
15mL	Nitrogen Test Solution #2	31	Medicine Cups
15mL	Nitrogen Test Solution #3	15	Plastic Containers
7	Simulated Copper Test Strips		Plastic Scoop
45g	Sand		Cotton Balls
1g	Cork Dust	15	Spoons
15"	Cotton String	15	Coffee Filters
15	Small Balloons		Pipette, 3 mL
3	Plastic Straws		

### DOT Info:

Small quantity exemption 173.4

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**WARNING:** This product can expose you to a chemical, crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## IS9708

## Determination of Dissolved Oxygen Concentration

This kit has been designed to allow the analyst to perform a very simple titration to determine the dissolved oxygen concentration in their fresh water sample. The titration uses an easily identifiable color transition to indicate the end of the analysis. The kit contains everything an analyst would need to perform a water analysis either in the laboratory setting or out in the field. Kit contains enough materials to perform 40 tests.

### Kit Includes:

4	Plastic Pipettes
3	Reaction Vessel
3	Collection Bottle
1	Measuring Tube
2	Titration
30mL	Manganese Chloride Reagent
30mL	Alkaline Iodide Reagent
30mL	50% Sulfuric Acid
60mL	Sodium Thiosulfate Titrant
30mL	Starch Indicator Solution

### DOT Info: Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



**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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## IS9750

### Determination of Water Hardness

This kit has been designed to allow the analyst to perform a very simple titration to determine the hardness of their fresh water sample. The titration uses an easily identifiable color transition to indicate the end of the analysis. The kit contains everything an analyst would need to perform a water analysis either in the laboratory setting or out in the field. Kit contains enough materials to perform 40 tests.

#### Kit Includes:

- 6 Plastic Pipettes
- 3 Reaction Vessel
- 3 Collection Bottle
- 1 Measuring Tube
- 2 Titrator 3 mL
- 180mL 0.005 M EDTA Titrant
- 60mL pH 10 Buffer Solution
- 15mL Eriochrome Black T Indicator Solution



DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only

IS9751

### Determination of Alkalinity of Water

This kit has been designed to allow the analyst to perform a very simple titration to determine the alkalinity of their fresh water sample. This kit allows the analyst to determine both the phenolphthalein alkalinity as well as the total alkalinity. The titration uses an easily identifiable color transition to indicate the end of the analysis. The kit contains everything an analyst would need to perform a water analysis either in the laboratory setting or out in the field. Kit contains enough materials to perform 40 tests.

#### Kit Includes:

- 3 Plastic Pipettes
- 3 Reaction Vessels
- 3 Collection Bottles
- 1 Measuring Tube
- 2 Titrator, 3mL
- 180mL Hydrochloric Acid Titrant
- 15mL Total Alkalinity Indicator Solution
- 15mL Phenolphthalein Indicator Solution



DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/ Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

IS9752

## Determination of the Nitrite and Nitrate Concentration in Water


This kit is designed for an analyst to perform a simple colorimetric test to determine the nitrite and nitrate concentrations of fresh water samples. The reaction yields an easily identifiable color transition that can be compared with the colors on the color chart determining the concentrations. Identified nitrite and nitrate values are 0.0, 0.25, 0.5, 1.0, 2.0, 4.0, 6.0, 8.0 & 10.0 PPM. This kit contains everything an analyst would need to perform a water test either in the laboratory setting or out in the field. Kit contains enough materials to perform 40 tests.

### Kit Includes:

60mL	Griess Reagent	0.5 g	Cadmium Metal Powder
6	Plastic Pipettes	3	Reaction Vessel
3	Collection Bottle	1	Measuring Tube
1 pkg	Wooden Dowels	1	Nitrite & Nitrate Color Chart

### DOT Info:

UN2924, Flammable Liquids, Corrosive, n.o.s. (Ethanol, Phosphoric acid), 3 (B), III, Ltd Qty

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



**IS9753**

## Determination of the Ammonia Nitrogen Concentration in Water

This kit has been designed to allow the analyst to perform a very simple colorimetric analysis to determine the ammonia nitrogen concentration of their fresh water sample. The analysis yields an easily identifiable color transition that can be compared with the included color key to determine the concentration in your sample. The kit contains everything an analyst would need to perform a water analysis either in the laboratory setting or out in the field. Kit contains enough materials to perform 40 tests.

### Concentration Reader Range:

0, 0.25, 0.5, 0.75, 1.0, 1.5 and 2.0 mg NH<sub>3</sub>/L

Higher concentrations can be tested using a dilution of the water sample with DI water (not supplied)

### Kit Includes:

12	Plastic Pipettes
3	Reaction Vessel
3	Collection Bottle
1	Measuring Tube
15mL	Ammonia Test Solution #1
15mL	Ammonia Test Solution #2
15mL	Ammonia Test Solution #3
	Color Code Indicator Chart



DOT Info: Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**IS9754**



## Determination of Salinity

This kit has been designed to allow the analyst to perform a very simple titration to determine the salinity of their water sample. The titration uses an easily identifiable color transition to indicate the end of the analysis. This kit contains enough materials to perform 40 tests.

### Kit Includes:

- 100mL Silver Nitrate Titrant
- 15mL 1.0M Potassium Chromate
- 3 Plastic Pipettes
- 3 Reaction Vessels
- 3 Collection Bottles
- 2 1mL Titrators
- 1 Measuring Tube

DOT Info: Non-Regulated

**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).



**IS9755**

## Ocean Acidification

Changes to the carbon cycle and climate due to human activities have had detrimental effects on the environment. One example of this is known as ocean acidification, which is the changing of the ocean's chemistry due to increased carbon dioxide in the atmosphere and ocean. In this activity, students will learn about the carbon cycle and how it relates to ocean acidification. Through three different activities, students will investigate the cause of ocean acidification, and the effects it can have on the ecosystem and marine life. Kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide Copymasters are included.

### Kit Includes:

- 25 mL Bromothymol blue
- 500 mL Hydrochloric acid, 0.1M
- 500 mL Hydrochloric acid, 1.0M
- 10g Sodium bicarbonate
- 16 Effervescent tablets
- 15 Plastic cups
- 30 Seashell pieces

### DOT Info:

UN1789, hydrochloric acid, 8, III, LTD QTY



**IS9756**

## Determination Of Dissolved Carbon Dioxide Concentration

The proper amount of dissolved carbon dioxide in water is critical for maintaining a healthy aquatic ecosystem. All aquatic life has an impact on and is in turn impacted by the dissolved carbon dioxide concentration in a system, so tracking the concentration and changes in concentration can help scientists better understand the health of an aquatic system and the organisms that exist within it. Kit contains enough materials to perform 40 tests.

### Kit Contents:

- 3 Plastic Pipettes
- 3 Reaction Vessel
- 3 Collection Bottle
- 1 Measuring Tube
- 1 Titrator
- 15mL Phenolphthalein Indicator
- 50mL Potassium Hydroxide Reagent

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
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**WARNING:** This product can expose you to chemicals including phenolphthalein, which is known to the State of California to cause cancer. For more information go to <http://www.P65Warnings.ca.gov>.



**IS9757**

## Plant Tissue Macronutrients

Plants need a variety of nutrients and minerals to grow and maintain overall health. The three main nutrients that plants require to survive and thrive are nitrogen, phosphorus, and potassium (also known as NPK). In this activity, students will extract nutrients from plants of your choice and perform analyses to determine if nitrogen, phosphorus, and potassium concentration is abundant, adequate, or deficient. Kit contains enough materials to perform 50 tests.

### Kit includes:

- 1 X 500mL Nutrient Extractor Solution
- 1 X 30mL Nitrogen Reagent #1
- 1 X 30g Nitrate Reagent #2
- 1 X 30g Phosphorus Reagent #1
- 1 X 30mL Phosphorus Reagent #2
- 1 X 30g Potassium Reagent #1
- 1 X 120mL Potassium Reagent #2
- Pk/100 Filter Paper
- 4 Collection Bottles
- 1 Spot Plate
- 2 Reagent Scoops
- 1 Stir Stick
- 5 Pipettes

### DOT Info:

UN1170 Ethanol, 3, II Ltd. Qty



**IS9758**

### The Carbon Cycle In Soil

Changes in the carbon cycle and climate due to human activities have had detrimental effects on the environment. In this activity, students will learn about the carbon cycle in soil and how soil impacts global warming. Through 3 different activities, students will investigate one cause of global warming, and the effects of a positive feedback loop. Kit contains enough materials for 15 groups of students. Teacher's manual and student study guide copymasters are included. Kit includes enough materials for 15 groups of students.

#### Kit Includes:

- 30 Nylon Tubing
- 30 One-hole stoppers
- 30 Soil respiration chambers
- 2L Limewater
- 1kg Topsoil

DOT Info: Non-regulated



IS9759

### Estuary Monitoring Water Test Kit

Test a water sample of your choice for coliform bacteria, chloride, dissolved oxygen, biochemical oxygen demand, nitrate, pH, phosphate, and temperature. Kit contains enough materials to perform 30 tests.

#### Kit Includes:

- |          |                             |      |                      |
|----------|-----------------------------|------|----------------------|
| 3        | Water Collection Bottles    | 3    | Reaction Vessels     |
| 15       | Pipettes                    | 5    | Titration            |
| 3        | Measuring Tubes             | 2    | Color Charts         |
| 30       | Phosphate Powder Pillows    | 5g   | Coliform Test Powder |
| 1pkg     | Toothpicks                  | 1pkg | pH Strips            |
| 2 x 30mL | Starch Indicator Solution   |      |                      |
| 2 x 30mL | Manganese Chloride Reagent  |      |                      |
| 2 x 30mL | Alkaline Iodide Reagent     |      |                      |
| 2 x 30mL | 50% Sulfuric Acid Reagent   |      |                      |
| 2 x 60mL | Sodium Thiosulfate Titrant  |      |                      |
| 60mL     | Griess Reagent              |      |                      |
| 0.5g     | Cadmium Metal Powder        |      |                      |
| 3x100mL  | Silver Nitrate Titrant      |      |                      |
| 3 x 15mL | Salinity Indicator Solution |      |                      |

#### DOT Info:

UN2924, Flammable liquids, corrosive,  
n.o.s (Ethanol, Phosphoric Acid), 3(8), III, LTD QTY

**WARNING:** This product can expose you to chemicals including strong inorganic mists containing sulfuric acid, methanol, cadmium and cadmium compounds, and chromium hexavalent compounds, which are known to the State of California to cause cancer and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.



IS9760

## Soil Macronutrients

Plants need a variety of nutrients and minerals to grow and maintain overall health. The three main nutrients that plants require to survive and thrive are nitrogen, phosphorus, and potassium (also known as NPK). In this activity, students will extract nutrients from a soil sample and perform analyses to determine if nitrogen, phosphorus, and potassium concentration is abundant, adequate, or deficient. Kit contains enough materials to perform 50 tests.

Kit includes:

- 5 Soil Collection Bottles
- 5 Plastic Scoops
- 5 Pipettes
- 1 Color Chart
- 120mL Soil pH Indicator
- 120mL Nitrogen Extraction Solution
- 30g Nitrogen Indicator Powder
- 120mL Phosphorus Extraction Solution
- 30mL Phosphorus Reagent
- 15g Phosphorus Indicator Powder
- 120mL Potassium Reagent
- 15g Potassium Indicator Powder



DOT Info: UN1170, Ethanol, 3, II, LTD QTY



**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 <http://www.P65Warnings.ca.gov>.

## IS9761

### Environmental Air/Water Test Kit

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 you collect from your community. Investigate your water quality by testing for dissolved oxygen levels, water hardness, pH, and phosphate and chloride content. Then, test for particulate and chemical pollutants in the air, measure smoke density, and learn how excess carbon dioxide in air can affect your environment. Teacher's Guide and Student Analysis copymasters are included. There are enough materials for a class of 30 working in groups.

Kit Includes:

- |       |                          |        |                            |
|-------|--------------------------|--------|----------------------------|
| 25 mL | Methylene Blue, 0.1%     | 25 mL  | EDTA Solution, 0.015M      |
| 25 mL | Silver Nitrate, 0.014M   | 100 mL | Bromothymol Blue, 0.04%    |
| 3     | Hardness Powder Pillows  | 3      | Phosphate Powder Pillows   |
| 3     | Chloride Powder Pillows  | 1      | Glass Bottle, 4oz with Cap |
| 1pkg  | pH Strips                | 1      | Plastic Vial with Cap      |
| 1     | Medicine Cup             | 2      | Cups, 10oz                 |
| 1     | Magnifiers               | 4      | Clear Labels               |
| 1     | Nylon Fabric             | 2      | Rubber Bands               |
| 1     | Smoke Density Comparator | 1      | Phosphate Indicator        |
| 1     | Syringe                  | 1      | Drinking Straw             |

DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Chromium and 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).



## IS9799



## Urban Water Testing Kit

Test water sample for chloride, copper, iron, hardness, nitrate, pH, phosphates, and temperature. This kit will allow students to learn about how water quality affects urban areas. Kit contains enough materials to perform 10 tests.

### Kit Includes:

3	Water Collection Bottles
6	Reaction Vessels
6	Measuring Tubes
15	Pipettes
6	Titration, 1mL
2	Titration, 3mL
3	Color Charts
1pkg	Toothpicks
10	Phosphate Powder Pillows
1pkg	pH Strips
10	Iron Test Tablets
10	Copper Test Tablets
5g	Coliform Test Powder
60mL	pH Buffer 10 Solution
15mL	Eriochrome Black T Solution
60mL	Griess Reagent
0.5g	Cadmium Metal Powder
3 x 100mL	Silver Nitrate Titrant
3 x 15mL	Salinity Indicator Solution
3 x 60mL	EDTA Titrant

### DOT Info:

UN2924, Flammable liquids, corrosive, n.o.s (Ethanol, Phosphoric Acid), 3(8), III, LTD QTY

**WARNING:** This product can expose you to chemicals including methanol, cadmium and cadmium compounds, and chromium hexavalent compounds, which are known to the State of California to cause cancer and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.



IS9762

## Total Water Investigation Kit

Test water sample for alkalinity, ammonia, biochemical oxygen demand, chloride, coliform bacteria, copper, hardness, iron, nitrate, dissolved oxygen, pH, and phosphate. Kit contains enough materials to perform 10 tests.

### Kit Includes:

3	Water Collection Bottles
6	Reaction Vessels
6	Measuring Tubes
15	Pipettes
6	Titration, 1 mL
2	Titration, 3 mL
4	Color Charts
1pkg	Toothpicks
10	Phosphate Powder Pillows
1pkg	pH Strips
10	Iron Test Tablets
10	Copper Test Tablets
5g	Coliform Test Powder
60mL	pH Buffer 10 Solution
15mL	Eriochrome Black T Solution
60mL	Griess Reagent
0.5g	Cadmium Metal Powder
15mL	Total Alkalinity Indicator
15mL	Phenolphthalein Indicator
15mL	Ammonia Test Solution 1
15mL	Ammonia Test Solution 2
15mL	Ammonia Test Solution 3
3x60mL	Hydrochloric Acid Titrant
3x100mL	Silver Nitrate Titrant
3x15mL	Salinity Indicator Solution
3x60mL	EDTA Titrant
2x30mL	Starch Indicator Solution
2x30mL	Manganese Chloride Reagent
2x30mL	Alkaline Iodide Reagent
2x30mL	50% Sulfuric Acid
2x60mL	Sodium Thiosulfate Titrant

### DOT Info:

UN2924, Flammable liquids, corrosive, n.o.s (Ethanol, Phosphoric Acid), 3(8), III, LTD QTY

**WARNING:** This product can expose you to chemicals including Phenolphthalein, chromium hexavalent compounds, strong inorganic acids containing sulfuric acid, methanol, cadmium and cadmium compounds, which are known to the State of California to cause cancer and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.



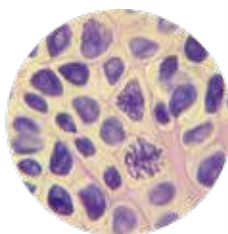
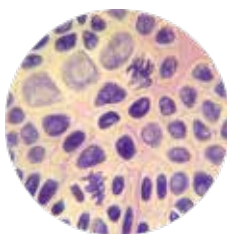
IS9763

## DNA/Chromosome Staining

Prepare your own squashed stained slide and be able to identify the phases of plant mitosis and chromosomal development. Students will be able to prepare, stain and mount slides using specially prepared onion root tips. Kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

1 vial	Preserved root tips
2 x 25mL	6M Hydrochloric acid
2 x 25mL	Toluidine blue 1.0% Solution
1 box	Microscope slides
1 box	Coverslips
30	Aluminum dishes
30	Forceps



DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is 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).

## IS3000

### Osmosis and Diffusion Lab

This lab allows you to learn about two forms of passive transport: diffusion and osmosis. You will compare and contrast similarities and differences in the processes of diffusion and osmosis. Use a colorimetric test to demonstrate the movement of a solute across a semi-permeable membrane. Set up an environment likely to facilitate osmosis and gather data to determine whether or not osmosis may have occurred. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

30 pc.	Dialysis tubing
1 cpsl	Starch (to make 100mL of 1.0% solution)
1 btl.	Sucrose (to make 100mL of 0.5M solution)
1 btl.	Iodine/potassium iodide solution, 15mL
30	Plastic cups

DOT Info: Non-regulated



## IS3001

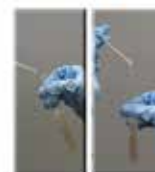
### DNA Extraction

In this lab you will learn the history of the discovery of DNA and DNA structure. Understand the nature of genetic inheritance and the role of DNA and proteins in genetic expression while using biological detergents, enzymes, and ethanol to isolate DNA from plant material. You need to supply the plant material. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

2 x 250mL	7.5% SDS/1.5% NaCl
1	Pepsin (to make 25mL 0.5% solution)
2 x 25mL	95% ethanol
20	Zipper bags
15	Filters
15	Plastic tubes
30	Graduated pipettes
15	Stirrers

DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



## IS3002

**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Diffusion and Cell Size

Why are cells microscopic? The answer relates to the needs for the cell to effectively move materials in and remove waste. In this activity, students will create simulated cells (agar blocks) of different sizes and examine how effectively a substance is able to diffuse into the cell in a set period of time. A special indicator in the cells will allow students to visualize the degree of diffusion. The results will clearly display the fact that a smaller volume creates a more favorable condition for the exchange of material across a cell membrane. Kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide copymasters are included.

Kit Includes:

75g	Agar
25mL	Bromothymol blue concentrate
3 x 25mL	2.0M Hydrochloric acid
16	Agar block casting trays
15	Plastic cups
15	Plastic knives
15	Plastic stirrers

DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



IS3003

## Anesthefly Kit

Anesthetize *Drosophila melanogaster* (fruit fly) and other small insects for at least 40-50 minutes without killing or sterilizing. Includes instructions.

Kit Includes:

25mL	Anesthefly solution UN2924
	Cotton tip swabs
	Sorting brush
	Vial

DOT: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS3005

## Kidneys and Blood Filtration

Learn the role of the kidney in blood filtration and waste removal along with the many functional tasks performed by nephrons, as well as nephron structure. Students will create an artificial kidney model to filter simulated blood. This will allow them to visually determine if filtration of the simulated blood may or may not have occurred. Chemically test the resulting filtrate to detect any possible waste material that may have been removed by the kidney. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

Kit Includes:

100mL	Simulated unfiltered blood
15 pc.	Dialysis tubing
15	Plastic cups
15	Pipettes, 1mL
30	Salt test strips
30	Urea test strips

DOT Info: Not regulated



**WARNING:** This product can expose you to chemicals including Benzidine-based dyes, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS3006

## Urinalysis Using Simulated Urine

Urinalysis, one of the oldest medical diagnostic tests performed, is to this day still one of the most common. In this activity, students will use simulated urine to avoid the unpleasantness of using the real thing while still performing actual tests used on real urine samples. Students will examine the simulated urine for factors such as pH, color, clarity, as well as test for the presence or absence of proteins, glucose, and calcium. The students will then examine the samples microscopically to determine if crystals may be present in any of the samples. Kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide copymasters are included. Needed but not supplied are a hot water bath, glass test tubes, and compound microscopes (4X/10X/40X).

### Kit Includes:

4	Simulated urine samples, 250mL each
	Patient X
	Patient Y
	Patient Z
	Control
2 x 25mL	Benedict's Qualitative
2 x 25mL	Biuret Reagent
2 x 25mL	Sulkowitch reagent
1 pkg.	pH test strips, 100/vial
1 box	Microscope slides
1 pkg.	Coverslips
60	Graduated plastic cups, 30mL
60	Graduated pipettes, 1mL



DOT Info: Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

### IS3008

**IS3008-REF** - Replacement Urine for IS3008

## Introduction to Mendelian Genetics

**Best Seller!**

In this activity, students can simulate Mendel's work and determine patterns of inheritance. Using special chips and Innovating Science's exclusive "double dice," students will be able to simulate both monohybrid and dihybrid crosses. After the crosses, students will be able to determine genotypic and phenotypic ratios for select traits and compare their values to the theoretical "ideal" values as put forth by Mendel. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

15	Monohybrid chips, female (red/yellow)
15	Monohybrid chips, male (red/white)
15	Dihybrid double dice, female (colored)
15	Dihybrid double dice, male (clear)
15	Plastic shaker cups

DOT Info: Non-regulated



### IS3010

## Enzymes and the Process of Digestion

All the food in the world is of no use if the human body does not have the ability to extract necessary nutrients from it. With this activity, students will be able to expose three nutrients (carbohydrates, proteins, and lipids) to different digestive enzymes. These samples will be compared to nutrients to which no enzymes are added and chemical tests will be used to determine if the enzymes were effective in digesting the compounds. Upon completion, students will not only understand the importance of the digestive system but also the vital role enzymes play in releasing nutrients from food and converting them to a form usable by the body. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

5.25g	Pancreatin, Bile Salts
2.5g	Albumin Egg Pwd
2.5g	Starch, Soluble
1.0g	Pepsin 1:10,000
0.25g	Amylase Bacteriological Pwd
25mL	Sodium Hydroxide 0.1N
25mL	Hydrochloric Acid 0.1N
25mL	Biuret For Protein Test
25mL	Phenolphthalein 1% IPA
25mL	IKI Dilute Lugols Solution
25mL	Olive Oil, Pure
10 Per Kit	Pipette, plastic, graduated

DOT Info: Small quantity exemption 173.4

This package conforms to 49CFR 173.4 for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Phenolphthalein, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



### IS3009



## Electrophoresis: Agarose Gel Separation of Dyes

Introduce your students to this valuable separation science in a safe and colorful manner. Unlike DNA and other molecules which cannot be seen during electrophoresis, this activity uses dyes that can be observed during the actual procedure, providing visual reinforcement of the forces driving molecular movement and separation in the electrophoresis process. Kit contains enough materials to run ten 20mL agarose gels (actual number of runs may vary based on your equipment). Teacher's Manual and Student Study Guide copymasters are included. Not included but required are agarose electrophoresis chambers, electrophoresis power supplies and micropipettes capable of measuring 10µL.

### Kit Includes:

200mL 2% Melt and Pour Agarose  
500mL 5X TBE Buffer  
1 set Electrophoresis dye sample set

DOT Info: Non-regulated

**WARNING:** This product can expose you to chemicals including Crystal Violet, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS3011

## Cellular Respiration: What Sugar Does Yeast Like Best?

In this experiment you will expose living yeast cells to three different sugars. The sugars used will be glucose, sucrose, and lactose. When living yeast cells are exposed to these sugars, the cells should begin to utilize the sugars as a food source if they are capable of metabolizing them. Upon using the sugars, the yeast cells will begin to engage in aerobic respiration and/or fermentation. This lab allows students to understand that yeast may use different options for energy production. Students will expose living yeast cells to three different potential food sources and use a pH indicator to indirectly determine the effectiveness of three different sugars as a food source for yeast. Kit contains enough materials for 15 groups.

### Kit Includes:

50mL Litmus blue 0.5%  
5g Yeast instant dry  
50g Dextrose (d-glucose)  
50g Sucrose  
50g Lactose monohydrate  
25mL Sodium hydroxide 0.1N 0.1M

DOT Info: Non-regulated

IS3012



## Testing Food For Nutrients

This experiment will help students understand the importance of proteins, carbohydrates, and lipids in living organisms. They will learn to identify a positive test result for proteins using biuret reagent and examine the reaction between Benedict's reagent and a simple sugar. Using iodine/potassium iodide they will test for the presence of starch and test for the presence of lipids using a fat-soluble dye.

### Kit Includes:

25mL Iodine/potassium iodide solution  
25mL Biuret reagent  
25mL Benedict's solution  
25mL 1.0% Sudan III stain  
25mL Vegetable oil  
10g Soluble starch  
10g Albumin  
10g Glucose

### DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only



IS3013

## Introduction To Microbiology: Bacterial Growth And Staining

Bacteria, good and bad, is all around us. In this activity students will collect and grow bacteria and then learn techniques for studying the bacteria they have grown. They will perform a simple staining technique on bacterial cells to study the morphology. They will also perform a differential staining technique, Gram staining, on bacterial cells and determine if the collected bacteria are Gram-positive, Gram-negative, or both.

### Kit Includes:

- 20 Sterile Petri dishes
- 2x200mL Prepared nutrient agar
- 20 Sterile cotton swabs, pk/2
- 30mL Methylene blue
- 30mL Crystal violet
- 30mL Gram's iodine
- 30mL Safranin O
- 4 x 30mL 95% Ethanol
- 1 Microscope slides, pk/72

### DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Crystal Violet and Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS3014**



## ATP Muscle Set

Students can observe and measure how muscles contract. The muscles are shipped in glycerol which extracts most of the water soluble material. This creates muscle tissue that can be identified and studied using a microscope. The muscle can also be stimulated to contract using the ATP chemical solution. There are enough materials for 15 groups. Perishable materials must be refrigerated until use.

### Kit Includes:

- 1 pack Microscope slides
- 1 pack Glass covers
- 25mL Rabbit Psoas Muscle Solution A
- 25mL Rabbit Psoas Muscle Solution B
- 25mL Rabbit Psoas Muscle Solution C
- Pk of 3 Rabbit Psoas Muscle in Glycerin

DOT Info: Non-regulated



**IS3015**

## Deluxe Owl Pellet Dissection Lab Activity

Owls have a specialized digestive tract which helps them expel the indigestible parts of their prey in pellet form. Dissecting an owl pellet can teach students the concepts of food webs and food chains while identifying the small animals that are prey for the owls. The pellets are heat sterilized and individually wrapped. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 15 Owl Pellets
- 30 Wooden probe
- 15 Forceps
- 60 Gloves
- 15 Magnifier
- 15 Small ruler

**WARNING:** CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.

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

DOT Info: Non-regulated



**IS3016**

## Lactose Intolerance: Inheritance and Variance of Traits

Lactose intolerance is common, but is actually a recessive genetic trait! Humans and other mammals are only meant to drink milk as infants and as they grow, they lose the ability to digest lactose. As populations began to develop, the domestication of cows and drinking milk into adulthood became more common, leading to a tolerance for lactose. Learn about variation, inheritance, and the role of DNA and proteins in expression of traits in this three-part laboratory activity! This kit contains enough materials for 15 groups, a Teacher's Manual, and a Student Study Guide copymaster.

Kit Contains:

3g	Lactase Powder	50g	Milk Powder
15	Glucose Test Strips	15	Glucose Color Charts
30	Mixing Cups	15	Stirring Rods
30	Multicolored Chips		Lactase Scoop
	Measuring Cup		

DOT Info: Not Regulated



IS3017

## Plant Food – Nutrient Deficiency in Plants

Using the materials provided, students will be able to examine the effects of nutrient deficiency on plants. Specially prepared nutrient solutions (included in the kit) will allow students to deprive each plant of one of seven specific vital nutrients. Over time, students will determine the effects, if any, of the nutrient deprivation through physical observation of the plant's growth. Kit contains enough materials for 3 complete set-ups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

Solution A - 200mL	Calcium Nitrate 1M
Solution B - 200mL	Potassium Nitrate 1M
Solution C - 100mL	Magnesium Sulfate 1M
Solution D - 50mL	Potassium Phosphate 1M
Solution E - 25mL	Sodium Phosphate 1M
Solution F - 100mL	Sodium Nitrate 1M
Solution G - 25mL	Magnesium Chloride 1M
Solution H - 25mL	Sodium Sulfate 1M
Solution I - 50mL	Calcium Chloride 1M
Solution J - 50mL	Potassium Chloride 1M
Solution K - 100mL	Micronutrient Solution
1 bag	Vermiculite
24	Cup 5oz. Clear Plastic
24	Cup 7oz. Clear
24 Pieces	Absorbent Wick Pad
1 Pkg	Radish Seeds



DOT Info - Non - Regulated

# IS3050

## Chromatography of Plant Pigments

Chlorophyll is the most prevalent and well-known plant pigment related to photosynthesis. It is not, however, the only plant pigment necessary for photosynthesis to occur. Other pigments are involved in the process. These pigments are often overlooked as they tend to be masked by the abundance of the green pigment chlorophyll. In this activity, students will extract the various pigments from green plant material and separate the pigment using chromatography. Students will not only confirm the presence and learn the role of these “hidden” pigments but also learn about chromatography as a technique for separating molecules. Kit contains enough materials for 15 groups and includes Teacher’s Manual and Student Study Guide copymasters.

### Kit Includes:

250mL Chromatography solvent 9-1 (Petroleum Ether/Acetone)  
100mL Plant pigment extraction solvent (Ethanol)  
15 Microscope Slides  
15 pc Chromatography paper  
15 Capillary tubes

### DOT Info:

UN1993 Flammable liquids, n.o.s., (Petroleum Ether, Acetone) 3, II Ltd Qty  
UN1170 Ethanol 3, 11, Ltd Qty



**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS3051**

## Cells - It's Alive! A Guided Inquiry

In this experiment, students will plan and execute their own investigation in which they will observe a variety of samples under the microscope to explore the various parts of a cell and distinguish between living versus non-living substances, animal cells versus plant cells, and unicellular versus multicellular organisms.

### Kit Includes:

11 Prepared Slides:  
Human Hair  
Thread  
Sand  
Onion Bulb Epidermis  
Onion Root Tip  
Elodea Yeast  
Euglena  
Paramecia  
Human Cheek Cells  
Human Nerve Cells

DOT Info: Non-regulated

**IS3052**



## Antimicrobial Properties of Essential Oils

Essential oils have been used for a variety of purposes throughout history for their scents, flavors, and pharmacological properties. Some oils are commonly used in cleaning products, but which ones are most effective? In this activity, students will perform the Kirby-Bauer test on a variety of essential oils to determine their antimicrobial efficacy.

### Kit Includes:

10mL	Peppermint Oil, with Dropper	3 x 9mL	Nutrient Broth Tubes
10mL	Lavender Oil, with Dropper	2 x 200mL	Nutrient Agar
10mL	Cinnamon Oil, with Dropper		B. Subtilis Freeze Dried Vial
10mL	Lemon Oil, with Dropper	2	50 pack, Blank Sterile Disks
10mL	Balsam Oil, with Dropper	5	Forceps
15	Sterile Cotton Swabs, 2-pack	20	Petri Dishes

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4 for domestic highway or rail transport only



**WARNING:** This product can expose you to a chemical Safrole which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS3055**



## Simulated ABO Blood Typing

The first blood typing system discovered, the ABO system, is the most important and widely used. In this activity, students will determine the ABO blood type of four unknown samples. Utilizing Innovating Science's new simulated blood, students will come to understand the nature and importance of antigen-antibody reactions. The most realistic simulated blood available, this activity provides the most realistic simulation of the actual blood typing procedure. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

4	Simulated Blood Samples	
	Donor #1	Donor #2
	Donor #3	Donor #4
1 btl	Simulated anti-A serum	
1 btl	Simulated anti-B serum	
40	Blood typing trays	
1pkg	Toothpicks	

DOT Info - Non-Regulated



### IS3100

#### IS3100-REF - ABO Blood Typing Refill

### Simulated ABO/Rh Blood Typing

This activity provides the most procedurally accurate simulation of the blood typing technique available. Students test and determine the ABO/Rh blood types of four different simulated blood samples. Using Innovating Science's new simulated blood, the students combine blood samples and antisera, gently agitate the blood typing tray, and observe the results. No toothpicks, no stirring, and no waiting for results required. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

4	Simulated Blood Samples	
	Donor #1	
	Donor #2	
	Donor #3	
	Donor #4	
1 btl	Simulated anti-A serum	
1 btl	Simulated anti-B serum	
1 btl	Simulated anti-Rh serum	
40	Blood typing trays	
1pkg	Toothpicks	

DOT Info - Non-Regulated



### IS3101

#### IS3101-REF ABO/Rh Blood Typing Refill

Check out our  
handy refill kits!

### Genetics of Blood Types (Simulated)

Blood type, an inherited characteristic, has use in everything from forensic investigations to medical procedures. In this activity, students will learn about the genetics that determine blood type and the possible inheritance patterns and how they express themselves. Students will use Innovating Science's new simulated blood to determine the blood type of four unknown samples and use their results to assist in the resolution of a fictional paternity dispute. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

4	Simulated Blood Samples	
	Mother	
	Child	
	Sample X	
	Sample Y	
1 btl	Simulated anti-A serum	
1 btl	Simulated anti-B serum	
40	Blood typing trays	
1pkg	Toothpicks	

DOT Info - Non-Regulated



### IS3102

#### IS3102-REF Genetics of Blood Refill

## Understanding Blood Type Interactions through Simulated Blood Typing

The earliest historical attempts at blood transfusions often had lethal results. These results led to the investigation and discovery of blood types, as well as a deeper understanding of the importance of antigen/antibody interactions. In this investigation, students will utilize Innovating Science's new simulated blood to determine the ABO/Rh blood type of four individuals, one in need of a transfusion. Based on the results, students will then determine which of three potential donors would provide the best match for the patient in need. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

- 40 Blood typing trays
- 4 Simulated Blood Samples
  - Donor #1 Donor #2
  - Donor #3 Patient
- 1 btl Simulated anti-A serum
- 1 btl Simulated anti-B serum
- 1 btl Simulated anti-Rh serum
- 1pkg Toothpicks

DOT Info - Non - Regulated



**IS3103**  
**IS3103-REF**

## Forensics Using Simulated Blood

Though the use of blood type in a forensic investigation is not enough to prove guilt, it may aid in exonerating a potential suspect. In this activity, students act as lab technicians and assist investigators by examining evidence collected at a crime scene. Students first use a presumptive blood test to determine if a substance on a stained piece of cloth may be blood, and then determine the blood type of a sample collected at the scene. Students then compare their results to those of samples provided from two suspects. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

- 40 Blood typing trays
- 10 Cotton swabs
- 1 pc Cloth
- 1pkg Toothpicks
- 1 btl 70% ethanol
- 1 btl Blood detection reagent #1
- 1 btl Blood detection reagent #2
- 4 Simulated blood samples
  - Victim
  - Suspect #2
- 1 btl Simulated anti-A serum
- 1 btl Simulated anti-B serum
- 1 btl Simulated anti-Rh serum

Suspect #1  
Crime Scene Evidence



**DOT Info:**

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

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

**IS3104**  
**IS3104-REF**

## Determination of Cholesterol Using Simulated Blood

Cholesterol levels can have a major impact on your health and your risk of heart disease. In this activity, students will measure the total cholesterol level for four patients using test strips and simulated blood. After analyzing their results and the lifestyles of each patient, students will recommend treatment plans to help the patients lower their cholesterol. The cholesterol levels for each patient will be tested again, and students will determine whether or not their treatment plans were successful. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copy masters are included.

**Kit Includes:**

- 8 Simulated Blood Samples
  - Patient #1 Pre Treatment
  - Patient #2 Pre Treatment
  - Patient #3 Pre Treatment
  - Patient #4 Pre Treatment
- 15 Spot Plates
- 120 pH Strips
- 15 Cholesterol Charts

Patient #1 Post Treatment  
Patient #2 Post Treatment  
Patient #3 Post Treatment  
Patient #4 Post Treatment



DOT Info: Non-regulated

**IS3105**

## Diagnosis of White Blood Cell Counts

While white blood cells, or leukocytes, only account for approximately 1% of the total number of cells found in blood, they are a critical part of the immune system, protecting the body from foreign invaders such as bacteria and viruses. White blood cells counts are often performed as part of a medical diagnosis to determine if the level of white blood cells in a patient's blood is within or outside the normal range. In this activity students will perform white blood cell counts on five different patient samples and suggest possible diagnoses based on the white blood cell levels. The samples contain safe, non-biological simulated cells that do not require staining. Requires microscopes and hemocytometers (not included). Contains enough material for 15 groups and includes Teacher's Guide and Student Study copymasters.

Kit Includes:

5 Simulated Blood Samples

Patient #1

Patient #2

Patient #3

Patient #4

Patient #5

DOT Info: Non-regulated



**IS3106**

## Blood Typing Sets

For blood typing using real human blood. 5 mL vials contain enough antisera for 75 students. Sample will keep over one year with proper refrigeration.

**FOR EDUCATIONAL USE ONLY.**

**NOT FDA APPROVED FOR CLINICAL USE.**

**IS3150** Blood Typing Anti-Sera: Anti-A and Anti-B

**IS3151** Blood Typing Anti-Sera Type A, B and Rh

**IS3152** Blood Typing Anti-Sera: Anti Rh

**IS3153** Blood Typing Anti-Sera: Anti-H Lectin

DOT: Non-regulated



## ABO/Rh Blood Typing Tray

These styrene trays are washable and reusable. They contain depression wells to perform ABO and Rh blood-typing.

Package of 100.

DOT: Non-regulated



**IS3155**

## Freeze Dried ABO Blood Typing Sets

Use for blood typing of real human blood. Five milliliter vial contains enough antisera for 75 students. No refrigeration needed for freeze dried samples.



**IS3170** Blood Typing Anti-Sera: Anti-A and Anti-B, Freeze Dried

**IS3171** Blood Typing Anti-Sera Type A, B and Rh, Freeze Dried

**IS3172** Blood Typing Anti-Sera: Anti Rh, Freeze Dried

DOT: Non-regulated

## Erycard™ Blood Typing Card

Determine ABO or ABO/Rh blood type of real human blood in under five minutes.

A small amount of blood is applied to a series of wells containing lyophilized blood typing antibodies, followed by the addition of a wash buffer that flows across each well. Red blood cells that agglutinate in the presence of a particular antibody will not be rinsed from the sample well and the well will remain red, indicating a positive result. Red blood cells that have not undergone agglutination will be rinsed from the well and the well will revert to white, indicating a negative result. Each card contains a negative control well to ensure accurate results.

**\*\*For Educational Use Only**

DOT Info: Non-regulated

**IS3180** - Erycard ABO Blood Typing card Pack of 24

**IS3181** - Erycard ABO/Rh Blood Typing card Pack of 24



## Erycard™ Blood Typing Single Test Kit

Determine ABO/Rh blood type of real human blood in under five minutes.

A small amount of blood is applied to a series of wells containing lyophilized blood typing antibodies, followed by the addition of a wash buffer that flows across each well. Red blood cells that agglutinate in the presence of a particular antibody will not be rinsed from the sample well and the well will remain red, indicating a positive result. Red blood cells that have not undergone agglutination will be rinsed from the well and the well will revert to white, indicating a negative result. Each card contains a negative control well to ensure accurate results. Kit contains enough materials for 1 test. Instructions are included.

Kit Includes:

6 mL Buffer Solution

1 Alcohol Wipe

4 Blood Collection Sticks

1 Erycard™

1 Lancet

DOT Info: Non-regulated

***This test kit is designed for educational/instructional use only.***

***This test kit is not designed for clinical/medical/diagnostic use.***

**IS3185**





## Determination of Blood Type Using Real Blood and Saliva

This kit has been designed to allow students to test their own saliva to determine their ABO blood type. Students that are part of the ~80% of the human population that secrete their blood antigens will perform titers to understand which blood type they belong too. These titers will be performed using supplied screened/typed human blood samples allowing the students to better understand how real blood typing works and what would happen if the wrong blood was given to a patient needing a transfusion. The initial box contains all of the non-perishable supplies including a disinfecting solution spray as well as a coupon that is to be redeemed for the perishable components near the time of use. This kit has all of the materials necessary for 30 students working in groups of three. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 500mL Isopropyl Alcohol 99.9%
- 150mL Saline 0.9%
- 30 Saliva Collection Cup
- 150 Graduated Pipette

**Kit Contains coupon for perishable materials.**

**Redeem by fax, phone or e-mail.**

Materials sent upon redemption of coupon:

- 10mL Anti A
- 10mL Anti B
- 10mL Red Blood Cells Type A
- 10mL Red Blood Cells Type B
- 10mL Red Blood Cells Type O
- 10mL H Lectin

DOT: UN1219, Isopropanol,3,II,Ltd Qty



**IS3190**

## Photosynthesis: The Hill Reaction

The ability to convert light energy into usable chemical energy (photosynthesis) makes life possible. The process of photosynthesis can be broken down into two parts known as light and dark cycles. The activities in this kit focus on understanding the function of the light cycle by running experiments based on the Hill reaction. The instructions in this kit are written for both visual analysis and/or UV-Vis analysis. Kit contains enough materials for 6 groups. Teacher's manual and Student Study Guide copymasters are included.

### Kit Includes:

- 40mL 10% Propylene Glycol Solution
- 500mL Plant Extract Buffer
- .05g 0.05% Dichloroindophenol makes
- 18g 0.5 M Sucrose makes 100mL solut
- 0.25g Sodium Hydrosulfite
- 2 Filters
- 30 Graduated Pipettes

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only



**IS3500**

## Introduction to Enzyme Catalyzed Reactions

Living organisms require enzymes to regulate the chemical reactions necessary to maintain life. The activities in this kit are designed to introduce students to the concepts of enzymes. Students perform a series of four experiments involving invertase, amylase and papain, demonstrating different enzyme functions, activities and specificities. Kit contains enough materials for 10 groups. Teacher's manual and Student Study Guide copymasters are included.

### Kit Includes:

- 250mL Starch Solution EZ Prep
- 200mL Sucrose Solution EZ Prep
- 200mL Invertase Solution EZ Prep
- 150mL Amylase Solution EZ Prep
- 100mL Papain Solution EZ Prep
- 15mL Benedicts Qualitative Solution
- 15g Gelatin Powder
- 100 Graduated Plastic Pipette
- 50 Student Solution Bottles with labels



DOT Info: Non-regulated

## IS3502

## Introduction to Basic, Selective, and Differential Media

In this activity, students will learn about the different types of media that can be used to grow bacteria. They will predict which media will support the growth of different bacteria, then streak the different media with bacteria cultures to observe their growth. The bacteria growth will be evaluated to determine if students' predictions were correct. Kit contains enough material for 10 groups.

### Kit Includes:

- 2x200mL Prepared tryptic soy agar
- 2x200mL Prepared MacConkey agar
- 10 Serratia marcescens cultures
- 10 Bacillus subtilis cultures
- 10 Escherichia coli cultures

- 30 Tryptic soy broth tubes
- 40 Sterile petri dishes
- 40 Cotton swab packs, 2/pk
- 30 Sterile pipettors



DOT Info: Non-regulated

**WARNING:** This product can expose you to chemicals including Crystal Violet, which are known to the State of California to cause cancer. For more information go to <http://www.P65Warnings.ca.gov>.

## IS3610

## Introduction to Streak Isolation and Aseptic Technique

In this activity, students will be introduced to the skills and techniques that microbiologists use on a daily basis. Students will practice these techniques by performing a streak isolation with the provided bacterial cultures, as well as samples they collect from their classroom, to learn about different types of media and how bacterium reproduce. Kit contains enough material for 10 groups.

### Kit Includes:

- 2x200mL Prepared tryptic soy agar
- 10 Lyophilized cultures of Serratia marcescens
- 20 Sterile petri dishes
- 10 Tryptic soy broth tubes
- 10 Inoculation loops
- 10 Sterile pipettors
- 10 Sterile cotton swabs, pk/2



DOT Info: Non-regulated

## IS3611

## Freeze Dried Bacteria Cultures

All cultures are freeze dried into a lyophilized pellet packaged in a sterile plastic vial. The culture includes one tube of rehydrating broth and one tube agar slant, sterile swab and instructions.

- IS3901** *Bacillus subtilis*
- IS3902** *E. coli*
- IS3903** *Micrococcus luteus*
- IS3904** *Serratia marcescens*
- IS3906** *Staphylococcus epidermidis*
- IS3907** *E. coli* jm101 freeze dried
- IS3908** *Bacillus cereus* freeze dried
- IS3909** *Enterobacter aerogenes*, freeze dried

DOT Info: Non-regulated

## Antibiotic Discs

Each cartridge contains 50 disks of antibiotics with a reclosable cap. Disks are 1/4 inch in diameter.

Available Antibiotics and part number:

Ampicillin 10mcg	<b>XD1361</b>
Chloramphenicol 30mcg	<b>XD1362</b>
Gentamicin 10mcg	<b>XD1363</b>
Penicillin 10 units	<b>XD1364</b>
Streptomycin 10mcg	<b>XD1365</b>
Tetracycline 30mcg	<b>XD1366</b>
Blank Sterile disks	<b>XD1368</b>
Disk Dispenser	<b>XD1360</b>
Erythromycin 15mcg	<b>XD1397</b>
Neomycin 30mcg	<b>XD1398</b>

DOT Info: Non-regulated

**XD1365 WARNING:** This product can expose you to chemicals including Streptomycin sulfate, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**XD1366 WARNING:** This product can expose you to chemicals including Oxytetracycline, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## Student Bacteria Science Kit

Bacteria are often associated with various diseases, infections, and other sicknesses. Certain bacteria can have negative effects on other living organisms, but in reality the vast majority of bacteria range from harmless to incredibly beneficial. This kit contains materials for students to use in investigating bacteria in their environment. While learning proper microbiological techniques, you will test hands, mouths, and your classroom for bacteria, before and after cleaning.

Kit Includes:

- 2 x 200mL Nutrient Agar
- 20 Sterile Petri Dishes
- 20 Sterile Cotton Swabs

DOT Info: Non-regulated



**IS5100**

## Dehydrated Microbiology Media

We can help you with your microbiology needs!

Check our comprehensive list below or contact us for custom agar.

DOT Info: Non-regulated



Item #	Description	Amount Needed per Liter
IS5110	Nutrient Agar, 1kg	23g/L
IS5111	Nutrient Broth, 1kg	8g/L
IS5112	Tryptic Soy Agar, 1kg	40g/L
IS5113	Tryptic Soy Broth, 1kg	25g/L
IS5114	Luria Agar (Miller's), 1kg	40g/L
IS5115	Luria Broth (Miller's), 1kg	25g/L
IS5116	Sabouraud-Dextrose Agar, 1kg	65g/L
IS5117	Sabouraud-Dextrose Broth, 1kg	50g/L
IS5118	EMB(Levine) Agar, 1kg	36g/L
IS5119	MacConkey Agar, 1kg  <b>WARNING:</b> This product can expose you to chemicals including Crystal Violet, which is known to the State of California to cause cancer. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .	50g/L
IS5130	Nutrient Agar, 100g	23g/L
IS5131	Nutrient Broth, 100g	8g/L
IS5132	Tryptic Soy Agar, 100g	40g/L
IS5133	Tryptic Soy Broth, 100g	25g/L
IS5134	Luria Agar (Miller's), 100g	40g/L
IS5135	Luria Broth (Miller's), 100g	25g/L
IS5136	Sabouraud-Dextrose Agar, 100g	65g/L
IS5137	Sabouraud-Dextrose Broth, 100g	50g/L
IS5138	EMB(Levine) Agar, 100g	36g/L
IS5139	MacConkey Agar, 100g  <b>WARNING:</b> This product can expose you to chemicals including Crystal Violet, which is known to the State of California to cause cancer. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .	50g/L
IS5150	Nutrient Agar, 500g	23g/L
IS5151	Nutrient Broth, 500g	8g/L
IS5152	Tryptic Soy Agar, 500g	40g/L
IS5153	Tryptic Soy Broth, 500g	25g/L
IS5154	Luria Agar (Miller's), 500g	40g/L
IS5155	Luria Broth (Miller's), 500g	25g/L
IS5156	Sabouraud-Dextrose Agar, 500g	65g/L
IS5157	Sabouraud-Dextrose Broth, 500g	50g/L
IS5158	EMB(Levine) Agar, 500g	36g/L
IS5159	MacConkey Agar, 500g  <b>WARNING:</b> This product can expose you to chemicals including Crystal Violet, which is known to the State of California to cause cancer. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .	50g/L



Item #	Description	Amount Needed per Liter
IS5160	Phenol Red Lactose Broth, 100g	21g/L
IS5161	Phenol Red Lactose Broth, 500g	21g/L
IS5162	Phenol Red Sucrose Broth, 100g	21g/L
IS5163	Phenol Red Sucrose Broth, 500g	21g/L
IS5164	Phenol Red Dextrose Broth, 100g	21g/L
IS5165	Phenol Red Dextrose Broth, 500g	21g/L
IS5166	Starch Agar, 100g	25g/L
IS5167	Starch Agar, 500g	25g/L
IS5168	Simmons Citrate Agar, 100g	24g/L
IS5169	Simmons Citrate Agar, 500g	24g/L
IS5170	SIM Medium, 100g	30g/L
IS5171	SIM Medium, 500g	30g/L
IS5172	Potato Dextrose Agar, 100g	39g/L
IS5173	Potato Dextrose Agar, 500g	39g/L
IS5174	Potato Dextrose Broth, 100g	24g/L
IS5175	Potato Dextrose Broth, 500g	39g/L
IS5176	Mueller-Hinton Agar 100g	38g/L
IS5177	Mueller-Hinton Agar 500g	38g/L

DOT Info: Non-regulated

## Prepared Microbiology Media Packs

Our agar and broth media now comes in packs of 12 tubes!

Item #	Description
IS5360	Tryptic Soy Agar Slant Tubes pk/12
IS5361	Tryptic Soy Broth Tubes pk/12
IS5362	Nutrient Agar Tubes pk/12
IS5363	Nutrient Broth Tubes pk/12
IS5364	Luria Agar (Miller's) Tubes pk/12
IS5365	Luria Broth (Miller's) pk/12
IS5366	Sabouraud-Dextrose Agar Tubes pk/12
IS5367	Sabouraud-Dextrose Broth Tubes pk/12
IS5368	Potato Dextrose Agar Tubes pk/12
IS5369	Potato Dextrose Broth Tubes pk/12



DOT Info:  
Non-regulated

## Prepared Microbiology Media

Our agar and broth media comes in bottles and tubes! We are now manufacturing sterile microbiological media for the lab and education market. Our product will bring quality back to the lab market, as we are manufacturing our tubes with the classic black rubber lined phenolic caps to ensure a sterile seal. Great quality and competitive pricing will help you outsource or upgrade your current product line. Let us help you be successful in the microbiology market!

Item #	Description
MD0100-CS/24	Nutrient Agar, 200mL
MD0101-CS/24	Nutrient Agar, 125mL
MD0102-CS/24	Tryptic Soy Agar, 200mL
MD0103-CS/24	Tryptic Soy Agar, 125mL
MD0104-CS/24	EMB(Levine) Agar, 200mL
MD0105-CS/24	EMB(Levine) Agar, 125mL
MD0106-CS/24	Luria Agar (Miller's), 200mL
MD0107-CS/24	Luria Agar (Miller's), 125mL
MD0108-CS/24	Sabouraud-Dextrose Agar, 200mL
MD0109-CS/24	Sabouraud-Dextrose Agar, 125mL
MD0110-CS/24	MacConkey Agar, 200mL
MD0111-CS/24	MacConkey Agar, 125mL
MD0300-CS/100	Nutrient Agar Tube, Slant, 6mL
MD0301-CS/100	Nutrient Broth Tube, 9mL
MD0302-CS/100	Tryptic Soy Agar Tube, Slant 6mL
MD0303-CS/100	Tryptic Soy Broth Tube, 9mL
MD0306-CS/100	Luria Agar (Miller's) Tube, Slant 6mL
MD0307-CS/100	Luria Broth (Miller's) Tube, 9mL
MD0308-CS/100	Sabouraud-Dextrose Agar Tube, Slant 6mL
MD0309-CS/100	Sabouraud-Dextrose Broth Tube, 9mL

DOT Info:  
Non-regulated



## STEM Investigations: Create Your Own Power

The voltaic cell is an electrochemical cell that produces electrical energy through a chemical reaction, specifically an oxidation-reduction 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 cells and comparing their values to the rest of the class, students will be challenged to design an electrochemical cell that can run a small motor. Kit contains enough materials for 15 groups. Teacher's manual and student study guide copymasters are included.

### Kit Includes:

1L Copper Chloride 1.0M  
1L Iron Chloride 1.0M  
1L Zinc Chloride 1.0M  
1L Potassium Chloride 1.0M  
125 pieces Tin Foil Strips  
125 pieces Aluminum Metal Strips  
125 pieces Magnesium Metal Ribbon Strips  
15ft Dialysis Tubing  
15 Black Connecting Wires with Alligator Clips  
60 Pipettes

1L Magnesium Chloride 1.0M  
1L Tin (II) Chloride 1.0M  
1L Aluminum Chloride 1.0M  
125 pieces Copper Metal Foil Strips  
125 pieces Iron Metal Strips  
125 pieces Zinc Strips  
60 Cups, 5oz  
15 Red Connecting Wires with Alligator Clips  
20 pieces Filter Paper  
15 3 volt Motors



### DOT Info:

UN3082, RQ, Environmentally hazardous substance, liquid, n.o.s., (Cupric chloride solution), 9, III, Ltd Qty  
UN1760, Corrosive liquids, n.o.s., (Stannous chloride, Hydrochloric acid), 8, III, Ltd Qty  
NA1760, Ferrous chloride solution, 8, III, Ltd Qty  
UN2581, Aluminum chloride solution, 8, III, Ltd Qty



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>.

**IS3450**

## STEM Investigations: Fingerprint Classification

In this lab activity students will learn about the history of fingerprinting as a tool for identification. They then will analyze fingerprints for common characteristics and create a classification system using those characteristics. Once they have created a system, they will analyze class data using the system that is used worldwide for classification. This kit includes an optional activity where students can practice lifting a fingerprint and comparing it to a "crime scene" print. Kit contains enough materials for 15 groups. Teacher's Guide and Student Study Guide copymasters are included.

### Kit includes:

15 Hand magnifiers  
1 Ink pad  
1 btl Fingerprinting powder  
15 Fingerprinting brushes  
30 Acetate sheets  
Fingerprint Record Sheet

### DOT Info: Non-regulated



WARNING: This product can expose you to chemicals including Carbon Black, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS3451**

## STEM Investigations: Is Yeast Alive?

How do scientists know if something is alive? There are certain characteristics that the scientific community uses to determine whether something could be considered living. On first observation, yeast does not look like a typical living thing. In this activity, students will hypothesize about yeast and then test to see if their hypothesis is correct. Using this information they will be able to come to a conclusion to the question of whether yeast is alive. Kit contains enough materials for 15 groups. Teacher's Guide and Student Study Guide copymasters are included.

### Kit Includes:

30	Test tubes
40g	Yeast
25g	Sugar
40	Water Balloons
20	Petri dishes
2btl	Sabouraud-Dextrose Agar
15	Pipette



### CHOKING HAZARD

Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.

DOT Info: Non-regulated

IS3452

## STEM Investigations: Design a Water Filter

How is the water that comes out of our faucets made safe for consumption? Students will learn about the processes performed at water treatment facilities, and then engineer their own small scale filtration plant. Once they design their filtering system, they will observe and evaluate the quality of the water they produce. Kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

1500g	Fine Sand
1500g	Gravel
300g	Activated Charcoal
15	Coffee Filters
1 bag	Cotton Balls
5mL	Green Food Coloring
25mL	White Vinegar
75	Plastic Cups
15	Stirring Sticks



DOT Info: Non-regulated



**WARNING:** This product can expose you to chemicals including Respirable crystalline silica which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS3453

## STEM Investigations: Make Your Own Liquid Crystal Thermometer

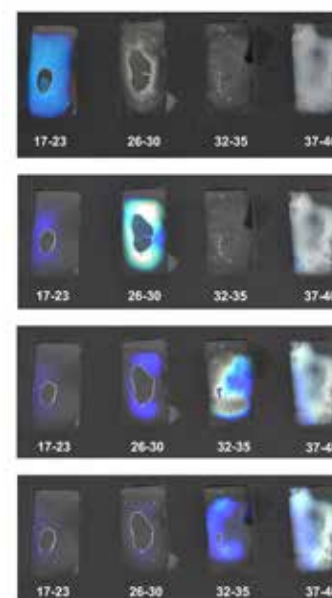
Students explore materials science and engineering while learning about an interesting state of matter: liquid crystals. Liquid crystals have an ordered structure like a solid, but are also fluid like a liquid. The molecular-level structure of a liquid crystal can be affected by changes in its environment, such as electric field or temperature, which can lead to changes in its macroscopic properties, such as color. In this experiment, students mix three chemicals in different ratios to form four different liquid crystal mixtures that are sensitive to temperature. Working in groups, students will determine the working temperature range for each of the four liquid crystal mixtures. As an engineering challenge, the students will then use the information they have gathered to design and construct a thermometer using their liquid crystals. Through this kit, students will gain an understanding of liquid crystals and how they can be used in a variety of everyday technologies.

### Kit Includes:

5g	Cholesteryl Oleyl Carbonate
5g	Cholesteryl Pelargonate
2g	Cholesteryl Benzoate
8	Dram Vials with Caps
90	Clear Labels
8	Plastic Forceps
16	Black Index Card, 4"x 6"

DOT Info: Non-regulated

IS3454





## STEM Investigations: Design a Biodegradable Plastic

Hundreds of millions of tons of plastic are produced each year and used for a variety of products, from packaging to automobiles. The majority of these products are disposable items, leading to excessive amounts of plastic being discarded into landfills and the oceans. Due to the major threat this poses to the environment, scientists and engineers are developing bioplastics that break down more quickly and produce less harmful byproducts than traditional plastics. In this activity, students will make samples of different bioplastics to study how their composition affects their physical properties. They will then use what they have learned to create a bioplastic that could be used to replace the PET plastic in disposable water bottles. Additionally, students will design an experiment to compare the biodegradability of their bioplastic samples to a traditional plastic. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copy masters are included.

Kit Includes:  
25mL Glycerin  
75mL Vinegar  
175g Gelatin  
125g Starch  
45 Petri dishes  
30 Pipettes

DOT Info: Non-regulated



**IS3455**

## Introduction to Materials Science

In this activity, students will be introduced to the field of materials science as they explore the four main types of materials: metals, polymers, ceramics, and composites. They will test the physical and mechanical properties of different material samples, then categorize each material based on their results. Kit contains enough material for 15 groups. Teacher's Guide and Student Study Guide copymasters included.

Kit Includes:

30 Aluminum strips	30 Glass slides
30 Copper strips	30 Plastic chips
30 Tongue depressors	30 Balloons
30 Playing cards	30 Plastic bags
30 Tile pieces	15 Steel nails

DOT Info: Non-regulated



**IS3470**

## Separation of a Mixture: Physical Properties of Matter

After a class discussion of matter and the fact that matter may differ from other matter in a variety of ways, students will examine three different solids individually and observe some differences in physical properties. Sand, iron filings and salt will be observed and tested using water and magnets. Based on what they find individually they will come up with a method (as a class or as groups) to separate a mixture of all three. The activity contains enough materials for 6 groups of students.

### Kit Includes:

50g Sand  
50g Salt  
50g iron filings  
200g 3 part mixture  
Magnets  
Plastic cups  
Magnifiers

DOT: Non-regulated



**WARNING:**  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS1000**

## Acids and Bases

Students will learn about acids and bases through a class discussion and then test a dilute acid and dilute base with neutral litmus paper to learn how the paper indicates something is acidic or basic. Once that skill is learned they can move on to test some common items that would be found around their house to determine if they are acids or bases. Optional: Extra litmus paper is included to test more items either from home or around the school building for a greater understanding of acids and bases. The activity contains enough materials for 6 groups of students.

### Kit Includes:

30mL 0.01M HCl  
30mL 0.01M NaOH  
30mL Distilled water  
30mL Vinegar  
30mL Dilute ammonia  
30mL Liquid soap  
30mL Lemon juice  
Neutral litmus paper  
Spot plates

DOT Info: Non-regulated



**WARNING:**  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



**IS1001**

### Playing with Polymers

Teacher leads a class discussion about polymers and their importance in our everyday lives (specifically plastics). After the discussion students will be able to make two different polymers – worms and slime. The activity contains enough materials for 6 groups of students.

Kit Includes:

- 4g Sodium alginate
- 500mL Calcium chloride
- 1L Polyvinyl alcohol
- 250mL Sodium borate
- 12 Plastic cups, large
- 12 Plastic cups, small
- 6 Plastic scoops

DOT: Non-regulated



**WARNING:**  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



IS1002

### Properties of Matter: What is Oobleck?

This kit has been designed to introduce young students (K-4) to the concepts of matter in a fun, safe, hands-on way. Students are given samples of both a solid and a liquid so that they can perform some simple experiments that demonstrate the differences. The students are then given a sample of "Our Friend Oobleck" (a non-Newtonian fluid) to use in the same experiments and are asked to determine if Oobleck is a solid or a liquid. This kit contains everything needed for 30 students to perform the experiments while working in groups of 3.

Kit Includes:

- 1000g Oobleck powder
- 10 pcs Solid samples
- 30 Holding trays
- 10 Testing spatulas

DOT: Non-regulated



**WARNING:**  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS1003

## Seed Germination and Plant Structure

Designed for young elementary students to help them examine and understand the needs of plants for growth and survival. This kit contains materials for 15 groups of two to dissect and germinate seeds, and compare their plant's growth to other types of plants grown in the classroom.

### Kit Includes:

- 15 Bean Seeds
- 15 Magnifiers
- 15 Toothpicks
- 30 Plastic cups, 5oz
- 30 Plastic cups, 7oz
- 30 Pea seeds
- 30 Sunflower seeds
- 30 Wicks
- 1 bag Soil



WARNING:  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



DOT Info: Non-Regulated

**IS1004**

## Healthy Plants

Designed for older elementary students to help them examine and understand the needs of plants for growth and survival. For the sake of time, the class can be split in thirds, with some students conducting a light/dark experiment, some studying plant nutritional needs, and some studying effects of acid rain. Results will be shared at the end. This kit contains materials for 15 groups of two.

### Kit Includes:

- 30mL Sulfuric Acid 0.02M Solution
- 45 Plastic cups, 5oz
- 45 Plastic cups, 7oz
- 60 Bean seeds
- 45 Wicks
- 1 bag Soil
- 1 bag Vermiculite
- Nutrient Powder



WARNING:  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**IS1005**

## Soap Power!

Why are raindrops the shape that they are? How do detergents work? Simply put - surface tension. This kit contains materials to demonstrate the concept of surface tension to your classroom using soap as a power source! Kit contains enough materials for 6 groups of 4.

### Kit Includes:

- 6 Plastic tray
- 6 pkts Pepper
- 6 btl Liquid dish soap
- 2 Foam tray

DOT Info: Non-Regulated



WARNING:  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



**IS1006**



### Elephant Toothpaste

Check out this fun demonstration that is classroom safe and shows the effects of a catalyst on a chemical reaction. Discussion topics can include basic chemical reactions, phase changes and catalysts.

#### Kit Includes:

- 1 Clear bottle, 8oz
- 5g Yeast
- 150mL Hydrogen peroxide, 3%
- 30mL Dish soap
- 5 5oz Plastic cups
- 5 Stir sticks

DOT Info: Non-Regulated



**WARNING:**  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



IS1007

### Density: Lava Lamp

What is density? This concept can be difficult to explain to your elementary students. Help them visualize and understand density and introduce the idea of polarity as well with this demonstration for the whole classroom.

#### Kit Includes:

- 5 Plastic bottles
- 1L Vegetable Oil
- 25mL Food Coloring
- 10 Alka Seltzer tablets

DOT Info: Non-Regulated



**WARNING:**  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



**WARNING:** This product can expose you to chemicals including Acetyl Salicylic Acid/Aspirin, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS1008

### Fossils: How Are They Formed?

Teach students about the importance of fossils and how they form with this fun hands-on activity! This kit simulates the formation of cast-and-mold fossils. Kit contains enough materials for 15 groups of students. Teacher's manual and Student Study Guide copymasters are included.

#### Kit Includes:

- 15mL Vegetable Oil
- 100g Plaster Powder
- 375g Clay
- 15 Plastic Cups, 5oz
- 15 Medicine Cups
- 15 Spoons
- 15 Shells
- 1 box Toothpicks

DOT Info: Non regulated



IS1009

## Small Group Learning kits from Innovating Science

These kits cross different curriculums and are designed for smaller class settings, distance learning, after school programs and home schools. Most kits are designed for 5 groups and include a teacher's manual and student guide to complete the lab. These kits provide the same results as our larger traditional classroom kits but allow for situations where a smaller group is desired.

### Small Group Learning: Introduction to Chemical Equations

Chemical reactions take place all around us. Being able to identify reactions and communicate what is happening is vital to the scientific community. For full kit description see IS2514 on page 155. Kit contains enough materials for 5 groups. Teachers Manual and Student Study Guide copymasters are included.

#### Kit Includes:

20mL	Cobalt Nitrate 0.1M
20mL	Cupric Nitrate 0.1M
20mL	Ferric Nitrate 0.1M
20mL	Nickel Nitrate 0.1M
20mL	Aluminum Nitrate 0.1M
4x25mL	Sodium Hydroxide 0.2M
2x25mL	Hydrochloric Acid 2.0M
2x25mL	Silver Nitrate 0.1M
3	Zinc Metal pieces
5	Copper Wire pieces
1 pack	Wooden Dowels
12	Graduated Pipettes



#### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



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

### IS2514-SGL

### Small Group Learning: Introduction to Ionic Reactions

This kit is designed to introduce students to the concept of ionic reactions. For full kit description see IS2518 on page 156. This kit has all of the materials needed for 5 groups. Teachers Manual and Student Study Guide copymasters are included.

#### Kit Includes:

10mL 0.1 M Sodium Acetate	10mL 0.1 M Sodium Chloride
10mL 0.1 M Sodium Carbonate	10mL 0.1 M Sodium Ferrocyanide
10mL 0.1 M Sodium Hydroxide	10mL 0.1 M Sodium Iodide
10mL 0.1 M Sodium Oxalate	10mL 0.1 M Sodium Phosphate
10mL 0.1 M Sodium Silicate	10mL 0.1 M Sodium Sulfate
10mL 0.1 M Lead Nitrate	10mL 0.1M Silver Nitrate
10mL 0.1 M Cupric Nitrate	10mL 0.1 M Cadmium Nitrate
10mL 0.1 M Strontium Nitrate	10mL 0.1 M Cobalt Nitrate
10mL 0.1 M Calcium Nitrate	10mL 0.1 M Zinc Nitrate
10mL 0.1 M Aluminum Nitrate	10mL 0.1 M Chromium Nitrate
10mL 0.1 M Ferric Nitrate	10mL 0.1 M Barium Nitrate
1 box Toothpicks	5 Acetate Sheets (Preprinted)



#### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



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

### IS2518-SGL

### 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. For full kit description see IS2520 on page 157. This kit contains enough material for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

#### Kit Includes:

2mL	10% Boric Acid in Methanol
250g	Sand
1 pkg	Color Flame Candles
1	Alcohol Burner
5	Diffraction Slides
1	Spectroscope
12	Small Trays

#### DOT Info:

Small quantity exemption 173.4  
this package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**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, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS2520-SGL**

### Small Group Learning: Fractional Distillation

In this activity, students will complete a fractional distillation experiment to simulate the fractionation of crude oil. For full kit description see IS2521 on page 157. This kit contains enough material for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

#### Kit Includes:

150mL	Simulated Crude Oil
5	Rubber Stoppers
5 pc	Tubing
10	Disposable Cups

DOT Info: Non-Regulated

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



**IS2521-SGL**

## Small Group Learning: Chromatography of Amino Acids

In this activity, students will perform a paper chromatography experiment on three known amino acids, and then use their results to identify the components of an unknown amino acid mixture. For full kit description see IS2522 on page 157. This kit contains enough material for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.


### Kit Includes:

0.5g	Ninhydrin Powder
4x25mL	95% Ethanol Solution
2x25mL	Chromatography Solvent
10mL	Alanine Control
10mL	Glycine Control
10mL	Leucine Control
10mL	Unknown Amino Acid Mixture
4	Capillary Tubes
7	Chromatography Paper

### DOT Info:

Small quantity exemption 173.4

this package conforms to 49 CFR 173.4 for domestic highway or rail transport only

 **WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## IS2522-SGL

## Small Group Learning: Separation of a Mixture of Solids

Performing liquid-liquid extractions allows students to apply their knowledge of the properties of molecules. Students will learn how the properties of solubility can be utilized to separate two solids in a mixture. For full kit description see IS2523 on page 157. This kit contains enough material for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

15g	Benzoic Acid/Acetanilide 1:1 Mixture
15g	Benzoic Acid/Acetanilide 2:1 Mixture
15g	Benzoic Acid/Acetanilide 3:1 Mixture
1g	Methyl Violet
135mL	Ethyl Acetate
75mL	Sodium Bicarbonate
100mL	Hydrochloric Acid 1.0N
12	Pipettes

### DOT Info:

UN1173 Ethyl acetate, 3, II, Ltd Qty

UN1789 Hydrochloric acid, 8, III, Ltd Qty



## IS2523-SGL



### Small Group Learning: DNA/Chromosome Staining

Prepare your own squashed stained slide and be able to identify the phases of plant mitosis and chromosomal development. Students will be able prepare, stain and mount slides using specially prepared onion root tips. Each kit contains enough material for 5 groups.

#### Kit Includes:

1 vial	Preserved Root Tips
20mL	Hydrochloric Acid, 6M
20mL	Toluidine Blue 1.0% Solution
1 box	Microscope Slides
1 box	Coverslips
5	Aluminum Dishes
5	Forceps

#### DOT Info:

Small quantity exemption 173.3

THIS PACKAGE CONFORMS TO 49CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.



### IS3000-SGL

### Small Group Learning: DNA Extraction

In this lab you will learn the history of the discovery of DNA and DNA structure. Understand the nature of genetic inheritance and the role of DNA and proteins in genetic expression while using biological detergents, enzymes, and ethanol to isolate DNA from plant material. You need to supply the plant material. There are enough materials for 5 groups.

#### Kit Includes:

250mL	7.5% SDS/1.5% NaCl
20mL	95% Ethanol
1	Pepsin to make 25 mL 0.5% solution
10	Zipper Bags
5	Filters
5	Plastic Tubes
10	Graduated Pipettes
5	Stirrers

#### DOT Info:

Small quantity exemption 173.3

THIS PACKAGE CONFORMS TO 49CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.



### IS3002-SGL

## Small Group Learning: Diffusion and Cell Size

Why are cells microscopic? The answer relates to the need for the cell to effectively bring materials in and remove waste. In this activity, students will create simulated cells (agar blocks) of different sizes and examine how effectively a substance is able to diffuse into the cell in a set period of time. A special indicator in the cells will allow students to visualize the degree of diffusion. The results will clearly display the fact that a smaller volume creates a more favorable condition for the exchange of material across a cell membrane. Kit contains enough materials for 5 groups of students. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 25g Agar
- 10mL Bromothymol blue concentrate
- 25mL Hydrochloric acid, 2.0M
- 6 Agar block casting trays
- 5 Plastic cups
- 5 Plastic knives
- 5 Plastic stirrers

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



## IS3003-SGL

## Small Group Learning: Enzymes and the Process of Digestion

Upon completion of this lab, students will not only understand the importance of the digestive system but also the vital role enzymes play in releasing nutrients from food and converting them to a form usable by the body. For full kit description see IS3009 on page 86. Kit contains enough materials for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

1.75g	Pancreatin, Bile Salts
1g	Albumin Egg Pwd
1g	Starch, Soluble
350mg	Pepsin 1:10,000
100mg	Amylase Bacteriological Pwd
10mL	Sodium Hydroxide 0.1M
10mL	Hydrochloric Acid 0.1M
10mL	Biuret For Protein Test
10mL	Phenolphthalein 1% IPA
10mL	IKI Dilute Lugols Solution
10mL	Olive Oil, Pure
4	Pipette, plastic, graduated

### DOT Info: Small quantity exemption 173.4

This package conforms to 49CFR 173.4 for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Phenolphthalein, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## IS3009-SGL

### Small Group Learning: Introduction to Mendelian Genetics

In this activity, students can simulate Mendel's work and determine patterns of inheritance using special chips and Innovating Science's exclusive "double dice." For full kit description see IS3010 on page 86. Kit contains enough materials for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

- 5 Monohybrid chips, female (red/yellow)
- 5 Monohybrid chips, male (red/white)
- 5 Dihybrid double dice, female (colored)
- 5 Dihybrid double dice, male (clear)
- 5 Plastic shaker cups

DOT Info: Non-regulated



**IS3010-SGL**

### Small Group Learning: Introduction to Microbiology - Bacterial Growth and Staining

Bacteria, good and bad, is all around us. In this activity students will collect and grow bacteria and then learn techniques for studying the bacteria they have grown. They will perform a simple staining technique on bacterial cells to study the morphology. They will also perform a differential staining technique, Gram staining, on bacterial cells and determine if the collected bacteria are Gram-positive, Gram-negative, or both. Kit contains enough materials for 5 groups of students. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

- 50mL Prepared nutrient agar
- 30mL Ethanol, 95%
- 10mL Methylene blue
- 5 Sterile petri dishes
- 10mL Crystal violet
- 5 Sterile cotton swabs, pk/2
- 10mL Gram's iodine
- 10mL Safranin O
- Microscope slides, pk/72
- Coverslips

**DOT Info:**

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Crystal Violet and Methanol/Methyl isobutyl ketone, 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).



**IS3014-SGL**

## Small Group Learning: Deluxe Owl Pellet Dissection Lab Activity

In this activity, students will dissect an owl pellet and discuss food chains. For full kit description see IS3016 on page 88. This kit contains enough material for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

Kit includes:

- 5 Owl Pellets
- 10 Wooden probe
- 5 Forceps
- 20 Gloves
- 5 Magnifier
- 5 Small ruler



DOT Info: Non-regulated



**WARNING:**  
CHOKING HAZARD  
Small parts.  
Not for children under 3 yrs.



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



### IS3016-SGL

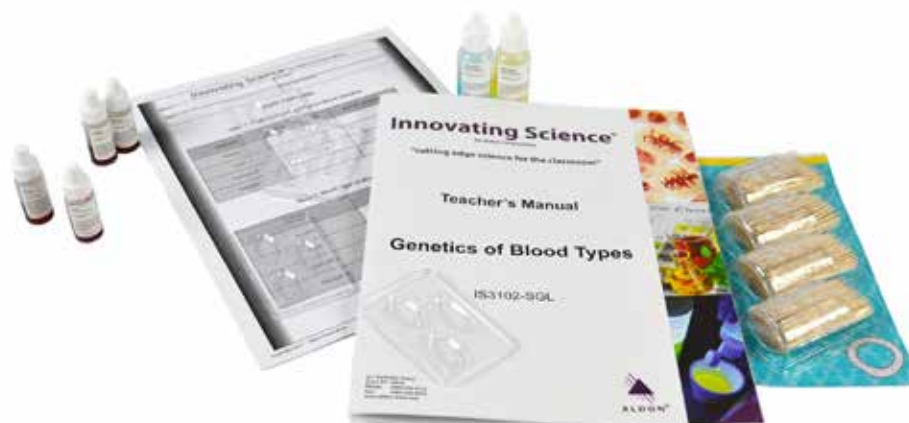
## Small Group Learning: Genetics of Blood Types (Simulated)

In this activity, students will learn about the genetics that determine blood type and the possible inheritance patterns and how they express themselves. For full kit description see IS3102 on page 91. Kit contains enough materials for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

Kit Includes:

- 4 Simulated Blood Samples
  - Mother Sample X
  - Child Sample Y
- 1 btl Simulated anti-A serum
- 1 btl Simulated anti-B serum
- 20 Blood typing trays
- 1pkg Toothpicks

DOT Info: Non - Regulated



### IS3102-SGL



### Small Group Learning: Diffusion and Osmosis

Students will study the movement of water and nutrients across a cell membrane and observe osmosis in living tissue, along with many other related topics. For full kit description see IS3704 on page 29. This kit contains enough materials for 4 groups. Teacher's manual and Student Study Guide copymasters are included.

#### Kit Includes:

25g	Agar	20 pc	Dialysis tubing
8mL	Bromothymol blue concentrate	24	Plastic cups, 7oz
25mL	Hydrochloric acid, 2.0M	1pkg	Microscope slides
4	Agar block casting trays	1pkg	Coverslips
4	Plastic cups, 5oz	1	Cork borer
4	Plastic knives	4	Metric rulers
4	Plastic stirrers		
	Sucrose QuickSolution (to make 250mL of 1.0M solution)		
	Sodium chloride QuickSolution (to make 250mL of 1.0M solution)		
	Glucose QuickSolution (to make 250mL of 1.0M solution)		
	Ovalbumin QuickSolution (to make 250mL of 5.0% solution)		
	Food coloring set (red, blue, yellow, green)		
	Sucrose QuickSolution set to make:		
	250mL of 0.2M solution (Solution #3)		
	250mL of 0.4M solution (Solution #2)		
	250mL of 0.6M solution (Solution #5)		
	250mL of 0.8M solution (Solution #1)		
	250mL of 1.0M solution (Solution #4)		
	250mL distilled water (Solution #6)		

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

#### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4

for domestic highway or rail transport only



### IS3704-SGL

### Small Group Learning: Oxidation-Reduction Reactions

Three experiments will be run where a compound, which is colorless in solution when reduced, is converted to a deeply colored solution when oxidized. For full kit description see IS8013 on page 43. This kit contains enough materials for 5 groups. Teacher's manual and Student Study Guide copymasters are included.

#### Kit Includes:

4g	Ferrous ammonium sulfate
30mL	Sulfuric acid, 6.0M
60mL	Potassium thiocyanate 1.0M
10mL	Potassium permanganate
10mL	Hydrogen peroxide, 3%
100mL	Stannous chloride 0.1M
5mL	Methylene blue 1%
250mL	Potassium hydroxide 1.0M
50g	Dextrose

#### DOT Info:

UN1814, Potassium hydroxide, solution, 8, PG II, Ltd Qty

UN2796, Sulfuric acid, 8, PG II, Ltd Qty



**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. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### IS8013-SGL

## Small Group Learning: The Electrochemical Series

Students will study electrochemical series which is built up by arranging various redox equilibria in order of their standard electrode potentials (redox potentials). For full kit description see IS8030 on page 48. This kit contains enough materials for 5 groups. Teacher's manual and Student Study and Analysis copymasters are included.

Kit Includes:

- 5 Copper Metal Strips
- 5 Zinc Metal Strips
- 5 Magnesium Metal Strips
- 5 Iron Metal Strips
- 5 Aluminum Metal Strips
- 8 Filter Paper Strips
- 1 ea EZ-Prep to make 500mL of 0.1M Solution of:
  - Copper Sulfate
  - Zinc Sulfate
  - Magnesium Sulfate
  - Iron Sulfate
  - Aluminum Sulfate



DOT: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**IS8030-SGL**

## Small Group Learning: Formation of a Native Copper Mineral Deposit

In this activity, students will create specific environment conditions and examine the formation of native copper deposits over several days. For full kit description see IS8701 on page 122. Kit contains enough materials for 5 groups. Teacher's Guide and Student Study and Analysis copymasters are included.

Kit Includes:

- 75g Copper Sulfate
- 75g Sodium Chloride
- 10 Iron nails
- 5 Plastic vials
- 20 Filter paper discs, 25mm
- 5 Hand magnifiers

DOT Info: Non-regulated



**IS8701-SGL**

### Small Group Learning: Soil Analysis

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. For full kit description see IS8702 on page 122. Kit contains enough materials for 5 groups. Teacher's Guide and Student Study and Analysis copymasters are included.

**Kit Includes:**

- 5x1.5mL Universal Indicator Solution
- 5 Magnifiers
- 5 Universal Indicator Solution Color Chart
- 5 Forceps
- 28mL Bromoform
- 10 Polarizing filters
- 28mL Bromobenzene
- 25 Drying Dishes
- 5x6mL Lead Test Reagent
- 10 Sieve Screen Small
- 5x6mL 0.5 M Hydrochloric Acid
- 10 Sieve Screen Large
- 5x12g Soil Sample A
- 5x12g Soil Sample B
- 5x12g Soil Sample C
- 5x12g Soil Sample D
- 5 Plastic Scoops
- 1pkg Glass Slides
- 4 Test Tubes with Caps for Density Column Tubes



DOT: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/Methyl isobutyl ketone, Bromoform, and Respirable crystalline silica, which are known to the State of California to cause cancer and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.

### IS8702-SGL

### Small Group Learning: Forensic Chemistry of Unknown Substances

In this experiment, students will use their observation skills, senses, and chemical tests on a series of known substances as well as two unknown substances. For full kit description see IS9006 on page 126. Kit contains enough material for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

- 10 Reaction Plates
- 10g Baking Powder
- 10g Baking Soda
- 10g Corn Starch
- 10g Plaster
- 10g Salt
- 10g Gelatin
- 10g Mystery Substance #1
- 10g Mystery Substance #2
- 10mL Biuret Reagent
- 10mL Dilute Lugol's Iodine
- 10mL Acetic Acid



DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

### IS9006-SGL

## Small Group Learning: Forensic Chemistry of Hair Analysis

Discover how forensic scientists use hair to assist in solving crimes. For full kit description see IS9007 on page 126. Kit contains enough material for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

Kit Includes:

- 1 box Microscope Slides
- 1 pkg Coverslips
- Deer Hair Sample
- Cat Hair Sample
- 4 Human Hair Samples
- 5 Forceps

DOT Info: Non-Regulated



**IS9007-SGL**

## Small Group Learning: Properties of Toothpaste

In this activity, students will investigate several properties of toothpaste samples provided in the kit. For full kit description see IS9350 on page 136. Kit contains enough materials for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

Kit Includes:

- 10mL Hydrochloric Acid UN1789
- 50mL Glycerin
- 10g Sodium Lauryl Sulfate UN1325
- 10g Gum, Arabic
- 50g Calcium Carbonate
- 3 tubes Toothpaste
- 1 Pkg/20 Universal Indicator Strips
- 1 Pkg/20 Fluoride Test Strips
- 5 Acetate Sheets
- 15 Polystyrene Test Tubes
- 15 Graduated Plastic Pipettes

DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS9350-SGL**



### Small Group Learning: Properties of Soaps and Detergents

Students will examine the similarities and differences in the properties of soap, hand dishwashing detergent, and machine dishwashing detergent, all provided in the kit. For full kit description see IS9351 on page 136. Kit contains enough materials for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

10mL	Liquid Soap
10mL	Dishwashing Detergent (Hand)
10mL	Dishwashing Detergent (Machine)
20mL	Vegetable Oil
20mL	Calcium Chloride, 5% Solution
20	Disposable Medicine Cups
20	Polystyrene Test Tubes
20	Capillary Tubes
20	Graduated Plastic Pipettes
1 Pkg/50	Universal Indicator Strips

DOT Info: Non-Regulated



#### IS9351-SGL

### Small Group Learning: Properties of Aspirin

Students will examine the solubility of aspirin in varying gastrointestinal environments, a comparison of active ingredients in regular and extra-strength aspirin, and the differences between regular and buffered aspirin. For full kit description see IS9354 on page 138. Kit contains enough materials for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

50mL	Hydrochloric Acid, 1M Solution UN1789
3 x 30mL	Sodium Hydroxide, 1M Solution UN1824
10mL	Phenolphthalein, 1% in Ethanol UN1170
1 Pkg/18	Universal Indicator Strips
1 Pkg/5	Graduated Plastic Pipettes
15	Disposable Medicine Cups
1 Pkg/25	Aspirin, Regular
1 Pkg/20	Aspirin, Buffered
1 Pkg/15	Aspirin, Enteric Coated
1 Pkg/5	Aspirin, Extra Strength

**DOT Info:**

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Acetyl Salicylic acid/Aspirin and Phenolphthalein/ Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

#### IS9354-SGL

## Small Group Learning: Science in the Kitchen

This comprehensive kit incorporates a variety of scientific techniques all themed around common kitchen materials. For full kit description see IS9355 on page 138. Kit contains enough materials for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

0.5mL	Food Color, Red	0.5mL	Food Color, Blue
0.5mL	Food Color, Green	0.5mL	Food Color, Yellow
10g	Baking Powder	10g	Baking Soda
10g	Corn Starch	10g	"Unknown powder"
10mL	Acetic Acid, 5% Solution	10mL	Iodine Solution
5g	Papain	5g	Gelatin
1 capsule	Ascorbic Acid	30mL	Iodine Potassium Iodide
10mL	Starch Indicator Solution	50mL	Detergent (Hand) 5%
50mL	Detergent (Machine)	50mL	Liquid Soap, 5%
10mL	Calcium Chloride, 5% Solution	1	Pkg/50 Universal Indicator Strips
5	Graduated Plastic Pipettes	30	Disposable Medicine Cups
25	Polystyrene Test Tubes	1 Pkg/4	Capillary Tubes
1 Pkg/5	Chromatography Sheets	5	Spot Plates
1 box	Toothpicks		

DOT Info:  
Non-Regulated



**IS9355-SGL**

## Small Group Learning: Green Chemistry: The Production of Biodiesel

In this activity, students will be performing a two-phase process to produce small batches of crude biodiesel. For full kit description see IS9500 on page 70. Kit contains enough materials for 5 groups of students. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

2 X 500mL	Vegetable oil
5 X 25mL	Methyl alcohol
10g	Potassium hydroxide
2	Microburners

Optional:  
Containers with sealable caps large enough to hold 200mL of liquid  
(if performing the washing process)  
Distilled water (if performing the washing process)

### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



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



**IS9500-SGL**

### Small Group Learning: Environmental Chemistry: Water Treatment and Filtration

Students will develop a knowledge of the processes performed at a water treatment plant and understand the reasons for each process. For full kit description see IS9700 on page 73. Kit contains enough materials for 5 groups of students. Teacher's Manual and Student Study Guide copymasters are included.

#### Kit Includes:

500g	Fine sand
500g	Coarse sand
500g	Fine gravel
100g	Activated charcoal
10g	Potassium aluminum sulfate (alum)
10g	Calcium oxide (lime)
5g	Kaolin (clay) powder
2mL	Green food coloring
10mL	White Vinegar
25	Plastic cups
5	Stirring sticks



DOT Info: Non-Regulated

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS9700-SGL**

### Small Group Learning: Environmental Chemistry: Nitrates, Phosphates, and Eutrophication

After completing this lab, students will realize that a variety of factors, including natural ones, contribute to the overall problem of water pollution. For full kit description see IS9701 on page 73. Kit contains enough materials for 5 groups. Teacher's Manual and Student Study Guide copymasters are included.

#### Kit includes:

20mL	Nitrate solution
20mL	Phosphate solution
20mL	Nitrate/Phosphate solution
20mL	Control (deionized) water
20	Plastic cups
1pkg	Microscope slides
1pkg	Coverslips



DOT Info: Non-regulated

**IS9701-SGL**

## Formation of a Native Copper Mineral Deposit

Of all the naturally occurring metals, copper is one of the most useful and versatile. Evidence suggests copper has been used by humans for at least 10,000 years. Copper is used in architecture, electrical wiring, water pipes, and plumbing fixtures. It is found in automobiles and a variety of electronics and electronic devices. It is used in electrical motors, generators, and turbines. It is an important part of heat exchangers found in refrigeration and air conditioning units, and is found on circuit boards and in electromagnets. While copper is typically extracted from copper-containing mineral ores that must be treated and refined to obtain the pure metal, copper also exists in nature in its native elemental form. This is the rarest and most valuable form of copper as it is the easiest to process to obtain pure metal. In this activity, students will create specific environment conditions and examine the formation of native copper deposits over several days. Kit contains enough materials for 15 groups. Teacher's Guide and Student Study and Analysis copymasters are included.

### Kit Includes:

200g	Copper Sulfate
200g	Sodium Chloride
30	Iron nails
15	Plastic vials
50	Filter paper discs, 25mm
15	Hand magnifiers

DOT Info: Non-regulated

**IS8701**



## 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 materials for 10 groups. Teacher's Guide and Student Study and Analysis copymasters are included.

### Kit Includes:

10 x 1.5mL	Universal Indicator Solution	10	Magnifiers
10	Universal Indicator Solution Color Chart	10	Forceps
28mL	Bromoform	20	Polarizing filters
28mL	Bromobenzene	50	Drying Dishes
10 x 6mL 0.5M Lead Test Reagent		20	Sieve Screen Small
10 x 6mL 0.5 M Hydrochloric Acid		20	Sieve Screen Large
10 x 12g	Soil Sample A	1pkg	Glass Slides
10 x 12g	Soil Sample B	10	Plastic Scoops
10 x 12g	Soil Sample C		
10 x 12g	Soil Sample D		

DOT: Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



WARNING: This product can expose you to chemicals including Phenolphthalein/Methanol/Methyl isobutyl ketone, Bromoform, and Respirable crystalline silica, which are known to the State of California to cause cancer and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.

**IS8702**



## Mohs Hardness

Mohs hardness scale was created by Fredrich Mohs in 1812. Since then, the Mohs hardness scale has assisted geologists in determining the identity of minerals. The activities in this kit will familiarize students with Mohs hardness scale and help them develop vital skills they will use throughout their studies in earth science. This kit also provides an opportunity to take samples from the local environment and investigate the relative hardness of the minerals around them. Kit contains enough materials for 15 groups. Teacher's Guide and Student Study and Analysis copymasters are included.

### Kit Includes:

1 bag	Sample A, 15 Pieces
1 bag	Sample B, 15 Pieces
1 bag	Sample C, 15 Pieces
1 bag	Sample D, 15 Pieces
35	Pieces of Aluminum Foil
35	Scratch Plate
35	Streak Plates

DOT Info: Non-regulated

**IS8703**



WARNING: This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).





## Chemical and Mechanical Erosion of Rocks

The rock cycle has been the subject of study for many years. A key component to the rock cycle is the mechanical and chemical erosion of rocks. In this kit students will learn about the rock cycle and the significance of certain types of erosion. This kit also provides an opportunity for students to investigate acid rain and other environmental factors that can be influenced by human actions. Also included is a demonstration that will help students visualize the freezing and thawing action of water on rocks. With multiple activities, this is a kit that is sure to keep students engaged throughout the whole experiment. Kit contains enough materials for 15 groups. Teacher's Guide and Student Study and Analysis copymasters are included.

### Kit Includes:

350g	Plaster of Paris
30mL	1M Hydrochloric Acid
1 Bag	Limestone, 50 Pieces
1 Bag	Granite, 50 Pieces
1 Bag	Sandstone, 50 Pieces
4	Plastic Cups
50	Plastic Bottles with Caps
2	Balloons
20	Disposable pipettes
50	Plastic Trays



DOT: Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**CHOKING HAZARD**  
Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.



IS8704

## Crystal Growing

This kit offers a chance for students to view the formation of colorful and unique shaped crystals. Over the period of a week, students will be able to observe natural formation of crystals. This kit also provides teachers with the opportunity to discuss the formation of crystals and how they play a role in the rock cycle. Students can also investigate different types of crystals that they encounter every day and view the different forms crystals can make. Kit contains enough materials for 15 groups. Teacher's Guide and Student Study and Analysis copymasters are included.

### Kit Includes:

50g	Potassium Ferrocyanide
100g	Nickel Sulfate
20g	Potassium Alum Sulfate
35g	Copper (II) Sulfate
65	Crystal Growing Pads
65	Plastic Trays
30	Hand Magnifiers



DOT Info: Non-regulated

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

IS8705

## Exploring Meteorology

Weather impacts everyone, everyday in some way and the meteorologist that study weather patterns are our best source for information. This experiment provides students with the experience of being a meteorologist. It includes studies of pressure changes and creating their own barometer. Studies of wind speed and creating their own anemometer and, the skills to confidently read a weather map. \*Bonus\* this experiment includes a demonstration of how clouds form by allowing the instructor to form a vapor cloud. Experiment includes enough material for 15 groups of 2 to perform the tasks. The demonstration portion has enough material to perform the demonstration 5 times.

### Kit Includes:

10mL Isopropyl alcohol 99%	15 Test tubes
15 Cork stoppers, small	15 Bottles
60 3 oz cups	30 5 oz cups
15 Stir sticks	30 Straws
15 Balloons	1 Dispenser
15 Rubber bands	1 Glass bottle
15 Push pins	15 Practice Weather Maps



### DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

**IS8706**

**CHOKING HAZARD**  
Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.

## Porosity and Permeability Lab Activity

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. In this activity, students will examine three different substrates and determine the porosity of each. After finding the volume of water each substrate can hold, students will then compare the permeability of the different substrates in order to determine how each may affect the ability of water to move beneath the surface. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

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

### DOT Info: Non-Regulated

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS8707**



## Geology Time Scale Poster

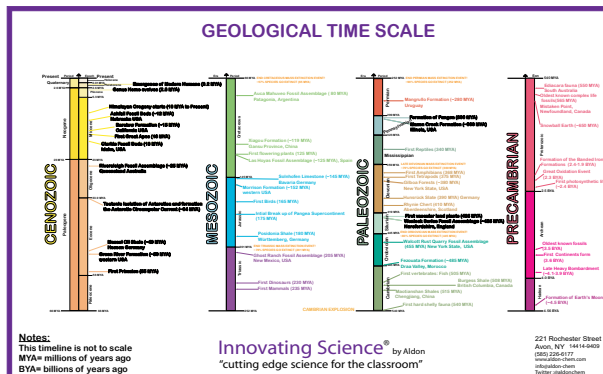
The Innovating Science Geological Time Scale shows major evolutionary events from 4.5 Billion Years Ago to present. Students can visualize the milestones of geologic history. The events are color coded to the Period or Epoch in which they occurred.

**IS8750**

Geology Time Scale, Laminated; Measures 11" by 17"

**IS8751**

Geology Time Scale; Measures 21" x 34"



## Master set of 12 Forensic kits IS9000

See individual kit listings for detailed information

### Gun Shot Residue Presumptive Test Kit

This is a two part test to determine whether a surface has been exposed to a discharged firearm. A rapid color change takes place to verify the presence of nitrates and lead. Kit contains instructions and enough materials for 30 tests.

#### Kit Includes:

5mL	Diphenylamine Sulfuric Acid Solution UN1830
0.025g	Sodium Rhodizonate
5mL	Lead Nitrate, 0.05M Aqueous Solution
20	Alcohol Swabs

#### DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Strong inorganic acid mists containing sulfuric acid, Lead and lead compounds, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS9001

### Presumptive Blood Test Kit

Test for the presence of blood on materials using phenolphthalein. The test will not distinguish between animal and human blood. Further serology tests are needed. Kit contains instructions, blood standard and reagents to complete 30 tests.

#### Kit Includes:

2 x 25mL	Phenolphthalein, 2% Solution UN1814
2 x 25mL	Ethyl Alcohol UN1170
1 x 50mL	Hydrogen Peroxide, 3% Solution
5	Blood Standard Strips
50	Cotton Swabs

#### DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

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



IS9002

### Forensic Chemistry of Document Analysis

The school library's computers have been stolen. Left behind was a ransom note demanding money. Help solve the crime using thin-layer chromatography to separate the ink on the ransom note and ink found in markers tied to possible suspects. It may be possible to provide evidence as to whether or not the ransom note could have been written with a particular marker. Kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

#### Kit Includes:

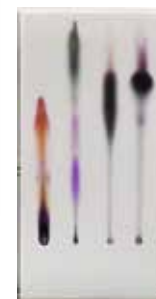
3	Felt Tip Markers
15 x 30mL	Chromatography Solvent UN1170
15	Silica Gel Chromatography Sheets
	Capillary Tubes

#### DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS9003

## Physical Properties of Glass

Often times, during a criminal investigation, police and crime scene investigators must use all available tools and pieces of evidence to work backwards and create the most likely scenario as to what might have occurred. Different types of evidence provide different pieces to the puzzle. Learn about the different chemical and physical characteristics and properties of glass. Find how forensic scientists use these differences to help provide evidence to solve crimes. Kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

1 bottle	Borosilicate Glass Beads
1 bottle	Flint Glass Beads
1 bottle	Soda-lime Glass Beads
1 set	Refractive Index Solutions
15	Magnifiers

**Optional:** UV Light Source

DOT Info: Non-Regulated

**IS9005**



**IS9005-REF**

Properties of Glass Refill Kit

## Forensic Chemistry of Unknown Substances

Often times, when collecting evidence at a crime scene, investigators may recover substances they are unable to identify in the field. Along with evidence such as fingerprints, hair, fibers, etc., there may be traces of unknown chemicals or powders left behind by the perpetrator or perpetrators. Evidence of this nature is sent to the crime lab for identification. In this experiment, students will use observation skills, senses, and chemical tests on a series of known substances as well as two unknown substances. They will then attempt to identify the mystery substances based on observations and recorded data. Kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

30	Reaction Plates
30g	Baking Powder
30g	Baking Soda
30g	Corn Starch
30g	Plaster
30g	Salt
30g	Gelatin
30g	Mystery Substance #1
30g	Mystery Substance #2
30mL	Biuret Reagent
30mL	Dilute Lugol's Iodine
30mL	Acetic Acid

DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



**IS9006**

## Forensic Chemistry of Hair Analysis

Discover how forensic scientists use hair to assist in solving crimes. Students will discover the differences between human and animal hair as well as differences among different types of human hair. In the second part of the activity, students will try to determine the origin of a hair sample from a crime scene in relation to hair samples from four known suspects. Kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

1 box	Microscope Slides
1 pkg	Coverslips
	Deer Hair Sample
	Cat Hair Sample
4	Human Hair Samples
15	Forceps

DOT Info: Non-Regulated



**IS9007**



## Forensic Chemistry of Blood Types

Blood typing is a method of classifying blood based on the presence or absence of specific proteins, called antigens, on the surface of red blood cells. Blood type, an inherited characteristic, is valuable to know in that it affects medical procedures, such as surgery and transfusions, paternity testing, as well as serving as evidence in criminal investigations. Determining blood type can help provide supporting evidence or eliminate a possible suspect's involvement in a crime. Kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 4 Simulated Blood Samples
  - Victim
  - Suspect #1
  - Suspect #2
  - Crime Scene
- 1 set ABO/Rh Blood Typing Anti-sera
- 1 Pkg Mixing Sticks
- Blood Typing Trays

DOT Info: Non-Regulated



### IS9008-REF Refill kit for Forensic Chemistry of Blood Typing

#### Contains:

- Simulated Blood Samples
  - Victim
  - Suspect #1
  - Suspect #2
  - Crime Scene
- ABO/Rh Blood Typing Anti-sera

## IS9008

**Note:** This activity uses Innovating Science Simulated Blood and is safe for classroom use.

## Chemiluminescence in Blood Stain Detection

Crime scene investigators are called to the scene of a possible violent crime. They examine the scene for evidence, such as fingerprints, hair, fibers, etc. After collecting the evidence, they notice there is no visible blood. Someone takes out a spray bottle and begins to spray the area with a liquid. After the area is covered with spray, they turn out the lights. A strange, faint glow appears in certain areas of the scene. Learn how luminol is used in scenes like this everyday. The special luminol formulation does not require a separate hydrogen peroxide catalyst. Simply re-hydrate and use with the simulated blood hemoglobin to show your class. This activity includes an Instruction Manual with suggested activities. Kit contains enough material for several demonstrations.

### Kit Includes:

- 2 bottles Luminol Reagent Powder
- 1 bottle Simulated Blood Hemoglobin

DOT Info:  
Non-Regulated



## IS9009



## Forensic Chemistry of Drug Detection

Everyone who ate the school cafeteria's chili became ill. Could someone have tainted the chili? You are a forensic toxicologist. It is you and your classmates' task to determine if any of the chili ingredients from the cafeteria could have been substituted with aspirin, which appears to have been stolen from the nurse's office. You will perform a series of chemical tests, including tests on control acetylsalicylic acid, the chemical name of aspirin, in the lab. Kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 1 bottle Control Acetylsalicylic Acid
- 3 bottles Chili Ingredients
- 1 bottle Ferric Nitrate Solution 0.2M
- 1 bottle Dilute Lugol's Iodine
- 15 Microreaction Plates
- 1 btl Sodium Hydroxide 1.0N UN1824

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Acetyl Salicylic Acid/Aspirin, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## IS9010



## Crime Scene Investigation Lab

Use your forensic techniques to solve the crime of the missing frogs from the biology classroom. Four possible suspects have been identified by the authorities. Use fingerprints, hair examination, and chemical analysis of ink by thin-layer chromatography to help determine the most likely culprit. Kit contains enough material for 6 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 1 bottle Fingerprinting Powder UN1361
- 6 Fingerprinting Brushes
- 6 Acetate Sheets
- 1 Ink Pad
- 6 Hand Magnifiers
- 6 Forceps
- 4 Felt Tip Markers
- 1 pkg Capillary Tubes
- 5 Evidence Envelopes
- 1 bottle Chromatography Solvent UN1170
- 6 Silica Gel Chromatography Sheets
- 1 box Microscope Slides
- 1 box Coverslips

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Carbon Black, Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## IS9011

## Forensic Chemistry of Dusting for Fingerprints

Learn to identify and classify different types of fingerprints. Students will learn how to identify different types of fingerprints and distinguishing characteristics, as well as dusting for fingerprints, the oldest and most commonly used method of fingerprint detection. Kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 1 bottle Fingerprinting Powder
- 15 Fingerprinting Brushes
- 15 Hand Magnifiers
- 1 Ink Pad
- 15 Acetate Sheets

**WARNING:** This product can expose you to chemicals including Carbon Black, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

DOT Info: Non-Regulated



## IS9012

**IS9012-REF**  
**Refill - 25g**  
**Fingerprint powder only**

## Forensic Chemistry: Chemical Detection of Fingerprints

Utilize alternative methods for detecting fingerprints. Examine some possible methods of gathering evidence when dusting for fingerprints is not effective. Learn to identify fingerprint types, a method of fuming for fingerprints, and a technique of chemically-developing fingerprints. The three activities include fingerprint analysis, ninhydrin development, and cyanoacrylate fuming. Kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 1 tube Super Bonding Glue
- 1 bottle Ninhydrin powder
- 4 bottles 95% ethanol
- 15 Fuming Trays
- 15 sheets Black Plastic

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## IS9013

## Blood Spatter Lab Activity

Bloodstain patterns at a crime scene can often yield a wealth of information. Part observational skills, part physics, and part mathematics, bloodstain pattern analysis may be used to help reconstruct as well as assist in supporting or refuting suspect/victim or other eyewitness accounts of the crime. Through a series of stations, students will examine the effects of several factors such as height, angle of impact, surface texture, and velocity before impact as they relate to the physical appearance of bloodstains. Kit contains enough materials for an entire class as well as Teacher's Manual and Student Study Guide copymasters.

15 x 25mL	Simulated spatter blood, dropper bottle
200mL	Simulated spatter blood
100	Small index cards, 3" X 5"
100	Large index cards, 5" X 8"
6	Rulers
3	Protractors
3	Clipboards
3	Dispensers, 3cc
30	Tongue depressors
3	Toothbrushes
15	Acetate sheets
15	Cloth squares
6	Spoons

DOT: Non-regulated

### IS9014



### Simulated Spatter Blood

**IS9075**

1L

**IS9077**

250mL

DOT: Non-regulated



## Forensics of Soil and Mineral Analysis

A crime has been committed and it's up to you to help prove who did it. This kit has been designed to introduce students to the field of forensic soil analysis by providing them with a set of soil and glass samples that have been recovered from a crime scene to compare with a set of samples taken from various suspects. Students will compare samples based on physical observations using polarized, UV and standard light both under ambient conditions and after heating the samples. The properties of the samples will be tested by measuring particle size distribution, material acidity, particle density gradient and mineral composition. This kit contains 10 unique sets of materials that will accommodate up to 30 students when working in groups of 3. Teacher's Manual and Student Study Guide copymasters are included.

### IS9015 Refill Kit

15mL	Universal Indicator
30mL	Bromoform
30mL	Bromobenzene
60mL	Lead Test Reagent
60mL	Hydrochloric Acid 0.5 M
30g	Soil Sample A
30g	Soil Sample B
30g	Soil Sample C
30g	Soil Sample D
30g	Crime Scene Soil Sample

### IS9015-Refill

#### Kit Includes:

15mL	Universal Indicator	30mL	Bromoform
30mL	Bromobenzene	60mL	Lead Test Reagent
60mL	Hydrochloric Acid 0.5 M	30g	Soil Sample A
30g	Soil Sample B	30g	Soil Sample C
30g	Soil Sample D	30g	Crime Scene Soil Sample
10bags	Glass Sample A	10bags	Glass Sample B
10bags	Crime Scene Glass Sample	10	Magnifying glass
10	Forceps	5	Capped Test Tubes
20	Polarizing Filters	50	Drying Dishes
10	Sieve Screen, Small	10	Sieve Screen, Large
72	Glass Slides	10	Plastic Scoops



DOT Info: Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/Methyl isobutyl ketone, Bromoform, and Respirable crystalline silica, which are known to the State of California to cause cancer and reproductive harm. For more information go to <http://www.P65Warnings.ca.gov>.



### IS9015

## Forensic Drug and Poison Analysis: Chemistry and Toxicology

In this lab, the student learns the difference between forensic chemistry and forensic toxicology. They gain knowledge in understanding how over-the-counter drugs, controlled drugs, and illegal drugs may act as toxins. Students will have the opportunity to perform presumptive chemical tests on drugs and poisons, identify unknown samples based on chemical test results and examine urine for evidence of heavy metal poisoning using chromatography. Teacher's Manual and Student Study Guide copymasters are included. This kit contains enough material for 15 groups.

### Kit Includes:

10g Aspirin	10g Acetaminophen
10g Sodium Bicarbonate Antacid	10g Effervescent Antacid
10g Unknown #1	10g Unknown #2
30mL Universal Indicator Solution	30mL 0.5M Hydrochloric Acid
30mL Ferric Nitrate	1g Simulated Marijuana
10g Simulated LSD	10g Simulated Cocaine
30mL Simulated Scott Reagent	30mL Simulated Van Urk Reagent
30mL Simulated Lead Solution	30mL Simulated Mercury Solution
30mL Unknown Poison	30mL Simulated Potassium Chromate
30mL Simulated Urine Sample	30mL Alanine Control
30mL Glycine Control	1 Spray Bottle w/ 0.5g Ninhydrin Powder
4 x 25mL 95% Ethanol	15 x 25mL Chromatography Solvent
15 Universal Indicator Color Charts	6 Capillary Tubes
15pc Chromatography Sheets	30 Spot Plates
8 Scoops	1pkg Toothpicks



**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/ Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

DOT Info: Small quantity exemption 173.4 This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

**IS9016**

## Document Analysis: Comprehensive Lab Activities

This kit has been designed to introduce students to the field of document analysis. Experiments in this kit cover paper analysis, hand writing analysis, detection of a forgery, recovery of mechanical/chemical erasures, hidden message discovery and ink analysis. Students will use microscopy, chromatography and fuming techniques to complete the activities. Kit contains 10 unique sets of materials for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

10 x 20mL Ink Remover	10 x 5mL Lemon Juice
10 x 10mL Phenolphthalein	10 x 5mL 1.0 M Sodium Hydroxide
1 x 500mL Chromatography Solvent	1 x 55mL Iodine Solution
10 pcs Chromatography Paper	100 pcs Paper Slips
10 pcs Paper A	10 pcs Paper B
10 pcs Paper C	10 pcs Paper D
10 pcs Paper E	10 pcs Paper F
10 x 10g Transfer Clay	10 Forceps
10 Magnifying glass	50 Cotton Swabs
2 Marker A	2 Marker B
2 Marker C	2 Marker D
2 #1 Pencil	2 #2 Pencil
2 #3 Pencil	2 Yellow Highlighter
10 Developing Chamber	

### DOT Info:

UN1170, Ethanol, 3, II, Ltd Qty



**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/ Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS9017**

## Check out our Handy Refill Kits!

### Forensic Drug and Poison Analysis IS9016-REF



### Document Analysis IS9017-REF



### Forensic Mastery Refill Kit

This refill kit pack includes the necessary materials to repeat our IS9020 Forensic Mastery Kit. Includes refill items from: IS9007, IS9013, IS9015, IS9016, IS9017

### DOT Info:

UN1170, Ethanol, 3, II, Ltd Qty

**\*\*See individual listings for hazard warnings.**

### IS9020-REF





## Forensic Analysis of Fabric and Fibers

This kit has been designed to introduce students to the concepts of fabric and fiber analysis. Experiments in this kit cover the areas of cloth weave identification, microscopic fiber analysis, burn testing and chemical analysis. Students will first analyze a group of known materials to learn the various techniques. They will then be given a crime scene sample and need to test materials taken from four suspects to try and identify who might be involved. Kit contains enough materials for 10 groups. Teachers manual and Student Study guide copymasters are included.

### Kit Includes:

4 x 25mL Acetone	4 x 25mL Sodium Hypochlorite (Bleach)
4 x 25mL Hydrochloric Acid	4 x 25mL Sodium Hydroxide
1 x 25mL Mounting Medium	1 Pack pH Strips
1 Pack Microscope Slides	2 Packs Microscope Cover Slips
1 Pack Lead Acetate Paper	10 Metal Forceps
1 Cotton Fabric Sample	1 Wool Fabric Sample
1 Acetate Fabric Sample	1 Polypropylene Fabric Sample
1 Polyester Fabric Sample	1 Crime Scene Sample
1 Suspect #1 Sample	1 Suspect #2 Sample
1 Suspect #3 Sample	1 Suspect #4 Sample

### DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Ethylbenzene which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## IS9018

### Who Stole the Gold? A Comprehensive Forensic Analysis

Your forensic team is needed to help figure out which of four suspects is responsible for stealing the gold. Evidence collected from the scene, as well as samples from the four suspects need to be analyzed using techniques from soil and mineral analysis, document analysis, fabric and fiber analysis, blood analysis, fingerprint analysis and hair analysis. This kit contains enough materials for 15 groups. Teacher's Guide and Student Study Guide copymasters included.

### Kit Includes:

3 x 3mL Crime Scene Blood Sample	3 x 3mL Suspect #1 Blood Sample
3 x 3mL Suspect #2 Blood Sample	3 x 3mL Suspect #3 Blood Sample
3 x 3mL Suspect #4 Blood Sample	3 x 5mL Simulated Anti-B Serum
3 x 5mL Simulated Anti-A Serum	3 x 3mL 0.5M Hydrochloric Acid
3 x 2mL Universal Indicator	24g Crime Scene Soil Sample
24g Suspect #1 Soil Sample	24g Suspect #2 Soil Sample
24g Suspect #3 Soil Sample	24g Suspect #4 Soil Sample
3 Universal Indicator Color Charts	5 Plastic Scoops
3 Small Mesh Screens	3 Large Mesh Screens
15 Blood Typing Trays	2 Boxes Microscope Slides
1 Pack Microscope Slide Cover Slips	3 Hand Magnifiers
1 Pack pH Strips	1 Pack Lead Acetate Paper
3 Metal Forceps	1 Crime Scene Fabric Sample
1 Suspect #1 Fabric Sample	1 Suspect #2 Fabric Sample
1 Suspect #3 Fabric Sample	1 Suspect #4 Fabric Sample
3 Crime Scene Note	3 Suspect #1 Writing Sample
3 Suspect #2 Writing Sample	3 Suspect #3 Writing Sample
3 Suspect #4 Writing Sample	1 Crime Scene Hair Sample
1 Suspect #1 Hair Sample	1 Suspect #2 Hair Sample
1 Suspect #3 Hair Sample	1 Suspect #4 Hair Sample

### DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica and Phenolphthalein/Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## Forensics Mastery

This kit pack includes the necessary materials to introduce students to the forensic fields of hair analysis, fingerprint analysis, soil and mineral analysis, drug and poison analysis and document analysis. Each kit contains enough material for 30 students when working in groups of 2 to 3. Teacher 's Guide and Student Study Guide copymasters included.

### Kit Includes:

- IS9007** Forensic Chemistry of Hair Analysis Kit
- IS9013** Forensic Chemistry: Chemical Detection of Fingerprints Kit
- IS9015** Forensics of Soil and Mineral Analysis Kit
- IS9016** Forensic Drug and Poison Analysis Lab Activity Kit
- IS9017** Document Analysis: Comprehensive Lab Activities Kit

See individual kit listings for more detailed information

### DOT Info:

UN1170, Ethanol, 3, II, Ltd Qty

## IS9020



## IS9019

## Forensic Dental Analysis

Forensic dentistry is defined as the branch of forensic medicine that deals with identification through teeth, dental apparatus and their markings. The activities in this kit will introduce students to the various techniques used in forensic dentistry while they try and identify the suspect in the case. The eight different activities in this kit include the concepts of creating a dental chart, creating a dental casting, creating a bite impression, identification of a patient from dental records, metric analysis of castings and metric analysis of bite marks. This kit includes enough materials for 30 students. Teacher Manual and Student Study guide copymasters are included.

### Kit Includes:

1 lb pkg	Dental Alginate	2 Boxes	Nitrile Glove, Medium
12	Dental Impression Tray, Small	2 x 900g	Plaster of Paris
24	Dental Impression Tray, Medium	32	Plastic Cup, 3 oz
15	Measuring Cup	32	Plastic Cup, 7 oz
15	Metric Ruler	32	Plastic Scoop
90	Tongue Depressor	1 Box	Toothpicks
1 Box	Wax Bite Plates		

DOT Info: Non-regulated

**IS9021**

**Check  
out our  
Handy Refill Kit!  
IS 9021-REFILL**



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

## Forensic Toxicology

Your class will utilize different lab techniques to determine the presence of alcohol, illicit drugs and pain medications present in the simulated urine samples of suspected criminals. The various tests include the Marquis Test for morphine, Simon's test for MDMA, THC Immunoassay, Cocaine Immunoassay, Marquis Test for morphine, 6-Monoacetylmorphine Test. This kit includes enough materials for 30 students. Teacher Manual and Student Study guide copy masters are included.

### Kit Includes:

100mL	Driver urine sample	100mL	Passenger #1 urine sample
100mL	Passenger #2 urine sample	100mL	Passenger #3 urine sample
100mL	Patient #1 urine sample	100mL	Patient #2 urine sample
100mL	Patient #3 urine sample	100mL	Patient #4 urine sample
100mL	Patient #5 urine sample	100mL	Patient #6 urine sample
400mL	Patient #7 urine sample	400mL	Patient #8 urine sample
400mL	Patient #9 urine sample	400mL	Patient #10 urine sample
400mL	Patient #11 urine sample	200mL	Patient #12 urine sample
200mL	Patient #13 urine sample	200mL	Patient #14 urine sample
200mL	Patient #15 urine sample 1	20mL	Synthetic cocaine indicator
30mL	Synthetic ethanol test reagent	60mL	Synthetic marquis reagent
30mL	Synthetic Simon's reagent	2mL	Ferric chloride 1.0M
500mL	Synthetic THC indicator Solution 1	60mL	Synthetic THC indicator Solution 2
30mL	Synthetic 6-monoacetylmorphine 15		Synthetic marquis reagent color charts indicator

DOT Info:  
UN1789, Hydrochloric acid, 8, III, Ltd Qty

**IS9022**



**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/ Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Luminol Blend - for Forensic Detection of Blood

To utilize the luminol solution simply add 250 mL of distilled water to the dry luminol reagent. Spray the area of interest with the luminol solution and observe for blood evidence. This special luminol formulation does not require a separate hydrogen peroxide catalyst. Once hydrated the solution is good for up to 2 days if kept refrigerated.

15 g Luminol Reagent Powder

DOT Info:  
Non-Regulated

**IS5040**



## Forensic Drug Testing: A Simulated Immunoassay

Drug testing comes in two forms, presumptive and confirmatory. Because of the cost associated with confirmatory testing, a presumptive test is often employed first. While there are various forms of presumptive drug testing, two of the most common techniques are immunoassay testing and thin-layer chromatography. In this activity, students will perform a simulated immunoassay test on several urine samples for the detection of the cocaine metabolite benzoylecgonine. All urine samples and testing reagents are simulated to avoid the potential hazards of actual biological specimens while still providing realistic results. Kit contains enough materials for 15 groups. Teacher's Guide and Student Study Guide copymasters are included.

### Kit Includes:

- 5mL Positive Control
- 5mL Negative Control
- 5mL Specimen 1
- 5mL Specimen 2
- 5mL Specimen 3
- 5mL Specimen 4
- 5mL Specimen 5
- 5mL Specimen 6
- 30mL Antibody Solution
- 30mL Labeled Metabolite
- 15 Spot Plates

### DOT Info:

Non-regulated



**IS9023**

## Forensic Case Study: Drugs - Small Town, Big Problem

In the small community of Riverside, police have noticed a recent increase in drug-related activity. Under orders of the mayor, the police department was tasked with solving the problem. After extensive investigation the police determined the distributor of the drugs is most likely one of six suspects. The Riverside police have asked the police department from the neighboring town of Mapledale to assist in the investigation. In this activity your students work for the Mapledale Forensic Analysis Lab and have been asked to analyze a variety of forensic evidence, including fingerprints, unknown powders, urine specimens, money, and handwriting samples, to assist the Riverside police in determining which is the most likely suspect. Kit includes enough materials for 15 groups. Teacher's Guide and Student Analysis copymasters are included.

### Kit Includes:

- 25g Suspect 1: White Powder Evidence
- 25g Suspect 3: White Powder Evidence
- 25g Suspect 5: White Powder Evidence
- 10mL Suspect 1: Urine Sample
- 10mL Suspect 3: Urine Sample
- 10mL Suspect 5: Urine Sample
- 3 x 10mL Drug Detection Reagent
- 3 x 10mL Drug Metabolite Detection Reagent
- 15 strips Suspect 1: Money Evidence
- 15 strips Suspect 3: Money Evidence
- 15 strips Suspect 5: Money Evidence

- 25g Suspect 2: White Powder Evidence
- 25g Suspect 4: White Powder Evidence
- 25g Suspect 6: White Powder Evidence
- 10mL Suspect 2: Urine Sample
- 10mL Suspect 4: Urine Sample
- 10mL Suspect 6: Urine Sample
- 3 x 10mL Drug Extraction Reagent
- 15 Spot Plates
- 15 strips Suspect 2: Money Evidence
- 15 strips Suspect 4: Money Evidence
- 15 strips Suspect 6: Money Evidence

**WARNING:** This product can expose you to chemicals including Phenolphthalein and Methanol/Methyl isobutyl ketone, 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).

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



**IS9024**

**Check  
out our  
Handy Refill Kit!  
IS 9024-REF**

## Forensic Case Study: Murder at Eagle Nest Harbor

A murder in a quiet house boat community sets the stage for you and your students to test their forensic knowledge. Students will take on the role of a forensic technician as they analyze hair, fiber, fingerprint, blood, and hand writing evidence to help pinpoint the killer. This kit provides a unique and complex set of evidence for students to analyze. The kit includes enough evidence and reagents for 15 groups to perform their analysis as well as teacher and student guide master copies. Does your class have what it takes to find the murderer?

### Kit Includes:

10mL Crime Scene: Blood Evidence  
10mL Suspect 2: Blood Evidence  
10mL Suspect 4: Blood Evidence  
3 x 10mL Anti-A Antiserum  
3 x 10mL Anti-Rh Antiserum  
15 pieces Crime Scene: Thread Evidence  
15 pieces Suspect 2: Thread Evidence  
15 pieces Suspect 4: Thread Evidence  
1 bag Crime Scene: Hair Evidence  
1 bag Suspect 2: Hair Evidence  
1 bag Suspect 4: Hair Evidence  
90 Blood Typing Trays  
1 pkg Microscope slides

10mL Suspect 1: Blood Evidence  
10mL Suspect 3: Blood Evidence  
10mL Suspect 5: Blood Evidence  
3 x 10mL Anti-B Antiserum

15 pieces Suspect 1: Thread Evidence  
15 pieces Suspect 3: Thread Evidence  
15 pieces Suspect 5: Thread Evidence  
1 bag Suspect 1: Hair Evidence  
1 bag Suspect 3: Hair Evidence  
1 bag Suspect 5: Hair Evidence  
1 pkg Toothpicks  
1 pkg Coverslips

**Check out our  
Handy Refill Kit!  
IS 9025-REF**

### DOT Info:

Non-regulated

### IS9025



## Forensic Analysis of Narcotics

Forensic chemists are responsible for analyzing and identifying unknown substances, such as drugs and narcotics, that are found at a crime scene. In this activity, students will learn how forensic chemists can use simple chemical tests and reactions to help determine the identity of an unknown substance. Students will perform a variety of presumptive tests on an unknown substance along with a series of known controls. By comparing the test results of the unknown with those of the controls, the most likely composition of the unknown will be determined. Teacher's Manual and Student Study Guide copymasters are included. Kit contains enough materials for 15 groups.

### Kit Includes:

10g Aspirin  
10g Acetaminophen  
10g Simulated Oxycodone  
10g Simulated Ecstasy  
10g Unknown  
30ml Universal indicator solution  
30ml 0.5M Hydrochloric acid  
30ml Ferric nitrate, 0.2 M  
15 Universal indicator color charts  
30 Spot plates  
8 Scoops  
1pkg Toothpicks

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only

### IS9026





## The Case of the Contaminated Lake

You are a scientist from the Environmental Protection Agency (EPA) visiting Lakeville for the annual water quality inspection of Pine Lake, however something has gone awry. Someone intentionally polluted the lake! Perform chemical tests for contaminants on water and soil samples, analyze fibers, fingerprints, and footprints, and investigate suspect activity on social media in this environmental-forensic chemistry activity to uncover the culprit behind the crime. This kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide copymaster included.

### Kit Includes:

30g	Phosphorous Indicator Powder	75	Pipettes
250mL	Simulated Lake Water Sample	5	Plastic Scoops
360mL	Phosphorous Extraction Solution		Crime Scene Fabric
30mL	Phosphorous Reagent #2	3	Suspect Fabric Samples
20mL	Universal pH Indicator		Universal pH Indicator Color Chart
20mL	Iron Indicator Solution		Microscope Slides
50g	Factory Soil Sample		Coverslips
50g	Farm Soil Sample		
50g	Restaurant Soil Sample		
30g	Copper Indicator Powder		

### DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to Phenolphthalein, Methanol and Methyl isobutyl ketone, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



## IS9027

## Forensic Urine Drug Test Kit

Your class will utilize different lab techniques to determine the presence of alcohol, illicit drugs and pain medications present in the simulated urine samples of suspected criminals. The various tests include the Marquis Test for Morphine, Simon's test for MDMA, THC Immunoassay, Cocaine Immunoassay, and 6-Monoacetylmorphine Test. This kit includes enough materials for 30 students. Teacher Manual and Student Study guide copy masters are included.

### Kit Includes:

100mL	Driver urine sample	100mL	Passenger #1 urine sample
100mL	Passenger #2 urine sample	100mL	Passenger #3 urine sample
100mL	Patient #1 urine sample	100mL	Patient #2 urine sample
100mL	Patient #3 urine sample	100mL	Patient #4 urine sample
100mL	Patient #5 urine sample	400mL	Patient #6 urine sample
400mL	Patient #7 urine sample	400mL	Patient #8 urine sample
400mL	Patient #9 urine sample	400mL	Patient #10 urine sample
400mL	Patient #11 urine sample	200mL	Patient #12 urine sample
200mL	Patient #13 urine sample	200mL	Patient #14 urine sample
200mL	Patient #15 urine sample 1	20mL	Synthetic cocaine indicator
30mL	Synthetic ethanol test reagent	60mL	Synthetic marquis reagent
30mL	Synthetic Simon's reagent	2mL	Ferric chloride 1.0M
500mL	Synthetic THC indicator Solution 1	60mL	Synthetic THC indicator Solution 2
30mL	Synthetic 6-monoacetylmorphine	15	Synthetic marquis reagent color charts indicator

DOT Info: UN1789, hydrochloric acid, 8, III, LTD QTY

**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/ Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## IS9050

## Properties of Toothpaste


The history of teeth cleaning agents actually goes back thousands of years. Toothpaste as we know it today however is a comparatively recent development. In this activity, students will investigate several properties of toothpaste samples, provided in the kit, including presence of fluoride, pH, abrasiveness, and foaming ability. As a second activity, students will use the included materials to create their own toothpaste. Kit contains enough materials for fifteen groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

30mL	Hydrochloric Acid UN1789
100mL	Glycerin
25g	Sodium Lauryl Sulfate UN1325
25g	Gum, Arabic
150g	Calcium Carbonate
3 tubes	Toothpaste
1 Pkg/50	Universal Indicator Strips
1 Pkg/50	Fluoride Test Strips
1 Pkg/15	Acetate Sheets
45	Polystyrene Test Tubes
45	Graduated Plastic Pipettes

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

 **WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS9350**

## Properties of Soaps and Detergents

Though similar in function, soaps and detergents differ in chemistry and performance. Students will examine the similarities and differences in the properties of soap, hand dishwashing detergent, and machine dishwashing detergent, all provided in the kit. Activities include testing pH, examining the effect of soap and detergent on the surface tension of water, foaming ability, fat emulsification, and the performance of soap and detergent in hard water. Kit contains enough materials for fifteen groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

25 mL	Liquid Soap
25 mL	Dishwashing Detergent (Hand)
25 mL	Dishwashing Detergent (Machine)
60 mL	Vegetable Oil
60 mL	Calcium Chloride, 5% Solution
60	Disposable Medicine Cups
60	Polystyrene Test Tubes
60	Capillary Tubes
60	Graduated Plastic Pipettes
1 Pkg/50	Universal Indicator Strips

### DOT Info:

Non-Regulated



**IS9351**

## Properties of Antacids

With the global population spending over a half a billion dollars a year on commercial antacids, several companies are out there competing for a part of the business. In this activity, students will learn about some of the more common active components in over-the-counter antacids as well as investigate the rate of acid neutralization of five different antacids. Students will also compare the buffering ability of three different calcium carbonate based antacids. All antacid samples are included and the kit contains enough materials for fifteen groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

5 x 30mL	Hydrochloric Acid, 1M Solution UN1789
2 x 30mL	Universal Indicator UN1170
2 x 30mL	Bromothymol Blue, 0.5% Aqueous Solution
60mL	Antacid #5, Liquid
1 Pkg/7	Antacid #1, Tablet
1 Pkg/7	Antacid #2, Extra Strength
1 Pkg/7	Antacid #3, Tablet
2 Pkg/2	Antacid #4, Tablets
1 Pkg/15	Graduated Plastic Pipettes
2 Pkg/50	Universal Indicator Strips
90	Disposable Medicine Cups

### DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Acetyl Salicylic acid/Aspirin and Phenolphthalein/Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS9352**

## Properties of Shampoo

Different shampoos are manufactured from a variety of ingredients to perform a variety of tasks. In this investigation, students will not only learn about the role of several shampoo ingredients, but also test several properties of different shampoos which are included in the kit. Students will determine the relative viscosity, pH, flash-foam formation and retention, oil emulsification, and contaminant-dispersion abilities of different shampoos. Kit contains enough materials for fifteen groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

30mL	Shampoo #1
30mL	Shampoo #2
30mL	Shampoo #3
30mL	Ink, Black, 10%
30mL	Vegetable Oil
1 Pkg/50	Universal Indicator Strips
1 Pkg/45	Graduated Plastic Pipettes
1 Pkg/25	Copper Balls
45	Disposable Medicine Cups
45	Polystyrene Test Tubes
3	Plastic Centrifuge Tube

### DOT Info:

Non-Regulated



**IS9353-REF**

*Refill pack for  
Properties of  
Shampoo*

**IS9353**

## Properties of Aspirin

Aspirin is to this day the most widely used painkiller and largest selling non-prescription medicine in the world. Learn about the history of the development acetylsalicylic acid (aspirin) and test the performance of several different types of aspirin. Students will examine the solubility of aspirin in varying gastrointestinal environments, a comparison of active ingredients in regular and extra-strength aspirin, and the differences between regular and buffered aspirin. All aspirin samples are included and the kit contains enough materials for fifteen groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

5 x 30mL	Hydrochloric Acid, 1M Solution UN1789
8 x 30mL	Sodium Hydroxide, 1M Solution UN1824
30mL	Phenolphthalein, 1% in Ethanol UN1170
1 Pkg/50	Universal Indicator Strips
1 Pkg/15	Graduated Plastic Pipettes
45	Disposable Medicine Cups
1 Pkg/75	Aspirin, Regular
1 Pkg/60	Aspirin, Buffered
1 Pkg/45	Aspirin, Enteric Coated
1 Pkg/15	Aspirin, Extra Strength

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Acetyl Salicylic acid/Aspirin and Phenolphthalein/Methanol/ Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS9354**

## Science in the Kitchen

This comprehensive kit incorporates a variety of scientific techniques all themed around common kitchen materials. Students will perform chromatography on commercial food colors, use chemical tests to identify an unknown cooking ingredient, examine the protein digesting ability of a common meat tenderizing enzyme, use titration to quantify vitamin C levels and then test an unknown juice or soda (not provided), and lastly examine some of the differences and similarities in the materials used to clean up (soap, hand dishwashing detergent, and machine dishwashing detergent). Kit contains enough materials for fifteen groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

0.5mL	Food Color, Red
0.5mL	Food Color, Blue
0.5mL	Food Color, Green
0.5mL	Food Color, Yellow
25g	Baking Powder
25g	Baking Soda
25g	Corn Starch
25g	"Unknown"
30mL	Acetic Acid, 5% Solution
30mL	Iodine Solution
5g	Papain
15g	Gelatin
1 capsule	Ascorbic Acid
3 x 30mL	Iodine Potassium Iodide
30mL	Starch Indicator Solution
100mL	Detergent (Hand) 5%
100mL	Detergent (Machine)
100mL	Liquid Soap, 5%
30mL	Calcium Chloride, 5% Solution
1 Pkg/50	Universal Indicator Strips
1 Pkg/15	Graduated Plastic Pipettes
90	Disposable Medicine Cups
75	Polystyrene Test Tubes
1 Pkg/4	Capillary Tubes
1 Pkg/15	Chromatography Sheets
15	Spot Plates
1 box	Toothpicks

### DOT Info:

Non-Regulated



**IS9355**



### Solvent, Caustic and Acid Spill Clean Up Master Kit

Be prepared for spills in your lab. This kit contains enough material to clean up a liter of four different kinds of chemicals in your lab. Complete with instruction sheets and SDS.

Kit Includes:

- 1100g Diatomaceous Earth (Flammable Absorbent Material)
- 1.0kg Acid Spill Cleanup Kit (Acid Neutralizing Mixture)
- 1.2kg Spill Kit, Caustic Cleanup (Caustic Neutralizing Mixture)
- 200g Vermiculite (Absorbent)
- Splash Resistant Goggles
- 24 Nitrile Gloves
- 1 Dustpan and Brush Set
- 1 Spill Kit Storage Container



DOT Info: Non-regulated

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS5000**

### Solvent Spill Clean Up

Kit Includes:

- 1 Instruction Sheet/MSDS
- 2 Nitrile Exam Gloves
- 2 9" x 16" Polybags
- 2 Twist Ties
- 2 Blank Shipping Tags
- 1 Dust Pan and Brush
- 1 bag Diatomaceous Earth

DOT Info: Non-Regulated



**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS5001**

### Caustic Spill Clean Up

Kit Includes:

- 1 Instruction Sheet/MSDS
- 2 Nitrile Exam Gloves
- 2 9" x 16" Polybags
- 2 Twist Ties
- 2 Blank Shipping Tags
- 1 Dust Pan and Brush
- 1 Bag Vermiculite Absorbent
- 1 Bag Neutralizing Mixture (Citric Acid, Anhydrous & Litmus Powder)

DOT Info: Non-Regulated



**IS5002**

## Acid Spill Clean Up

### Kit Includes:

- 1 Instruction Sheet/MSDS
- 2 Nitrile Exam Gloves
- 2 9" x 16" Polybags
- 2 Twist Ties
- 2 Blank Shipping Tags
- 1 Dust Pan and Brush
- 1 Bag Vermiculite Absorbent
- 1 Bag Neutralizing Mixture (Calcium Hydroxide, Sodium Carbonate, Calcium Carbonate, Litmus Powder)

DOT Info: Non-Regulated

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS5003

## Formaldehyde Solution Spill Kit

Be prepared for spills in your lab. This kit contains enough material to clean up a liter of a 10% formalin solution. Complete with instruction sheets and SDS.

### Kit Includes:

- 1 Instruction Sheet/SDS
- 2 Nitrile Exam Gloves
- 2 9" x 16" Polybags
- 2 Twist Ties
- 2 Blank Shipping Tags
- 1 Dust Pan and Brush
- 1 Bag Vermiculite Absorbent
- 1kg Formaldehyde Neutralizing Agent (Sodium Bisulfite)

DOT Info:  
UN3260, Corrosive solid, acidic, inorganic,  
n.o.s., (Sodium bisulfate), 8, III, Ltd Qty



IS5035

## Lab Pillows

Each 4" x 14" x 1" lab pillow absorbs 0.22 gal (750 mL) of solvent. Not to be used on hydrofluoric acid. Pack of 18

DOT Info: Non-Regulated



IS5034

## Universal Absorbent

Be prepared for spills in your lab. This universal absorbent eliminates the guesswork and is safe for use on all chemicals except hydrofluoric acid. This kit contains enough material to absorb 1 liter of solvent. Complete with instruction sheets and SDS.

### Kit Contains:

- 1.1kg Universal Absorbent

DOT Info: Non-Regulated

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS5037

### Universal Mini Spill Kit

Be prepared for spills in your lab. This universal absorbent eliminates the guesswork and is safe for use on all chemicals except hydrofluoric acid. This kit contains enough material to absorb 1 liter of solvent. Complete with instruction sheets and SDS.

#### Kit Contains:

- 1.1kg Universal Absorbent
- 1 pair Nitrile gloves
- 1 Splash resistant goggles
- 1 Dustpan & Brush set
- 2 Poly bags 9 x 16
- 2 Twist ties
- 2 Blank tags

DOT Info: Non-Regulated

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



IS5038

### Universal Spill Kit

Be prepared for spills in your lab. This universal absorbent eliminates the guesswork and is safe for use on all chemicals except hydrofluoric acid. This kit contains enough material to absorb 10 liters of solvent. Complete with instruction sheets and SDS.

#### Kit Contains:

- 1.1kg Universal Absorbent
- 1 pair Nitrile gloves
- 1 pair Latex boots
- 1 Splash resistant goggles
- 6 Lab pillows 4" x 14" x 1"
- 2 Absorbent pads
- 2 Poly bags 9 x 16
- 2 Twist ties
- 2 Blank tags

DOT Info :Non-Regulated



IS5039

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### Master Spill Kit

All your spill clean up needs in one spot!

- 3 dust pan and brush sets
- Poly bags and twist ties
- Blank tags
- Nitrile gloves
- Splash resistant goggles
- Diatomaceous earth x 2
- Vermiculite absorbent x 2
- Caustic neutralizing mixture x 2
- Acid neutralizing mixture x 2



**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

DOT Info: Non-Regulated

IS5041 Master Spill Kit

## Vital Stain Kit

### Kit Includes:

- 30mL Bismarck Brown, 1% Alcohol Solution UN1170
- 30mL Brilliant Cresyl Blue, 1% Alcohol Solution UN1170
- 30mL Cupric Acetate, 3% Aqueous Solution
- 30mL Cupric Sulfate, 1% Aqueous Solution
- 30mL Janus Green, 1% Alcohol Solution UN1170
- 30mL Methylene Blue, 1% Alcohol Solution UN1170
- 30mL Neutral Red, 1% Alcohol Solution UN1170

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone and Strong inorganic acid mists containing sulfuric acid, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## IS5004

## Acid Fast Stain Chemicals

### Kit Includes:

- 30mL Methylene Blue Chloride, 1% Alcohol Solution UN1219
- 30mL Carbol Fuchsin Solution UN1992
- 30mL Hydrochloric Acid, 1% Alcohol Solution UN2924

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

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



## Spore Stain Chemicals

### Kit Includes:

- 30mL Carbol Fuchsin UN1992
- 30mL Safranin O, 1% Aqueous Solution
- 30mL Ethyl Alcohol, Denatured, Reagent UN1170
- 30mL Malachite Green Oxalate, 1% Aqueous Solution
- 30mL Formalin - Nigrosin Solution

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only



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

## IS5005

## IS5006

## Bacteria Stain Chemicals

### Kit Includes:

- 30mL Methylene Blue Loefflers Solution UN1987
- 30mL Methylene Blue Saturated, 1% in IPA/Water UN1219
- 30mL Carbol Fuchsin Solution UN1992
- 30mL Carbol Rose Bengal Solution UN1992
- 30mL Crystal Violet, 1% Alcohol UN1170

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Crystal Violet and Methanol/Methyl isobutyl ketone which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## IS5008



## Microcrystal Growth Kit

Discover the differences in the crystalline properties of different chemicals. Students will use solutions to create different crystals and study them under a microscope or magnifier (not included).

Kit Includes:

- 60mL Ammonium Phosphate
- 60mL Copper Sulfate
- 60mL Potassium Chromate
- 60mL Potassium Ferricyanide
- 60mL Sodium Chloride
- 60mL Sodium Nitrate



DOT Info: Non-Regulated

**WARNING:** This product can expose you to chemicals including Strong inorganic acid mists containing sulfuric acid and 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).

**IS5009**

## pH Indicator Set

Kit Includes:

- 30mL Phenolphthalein, 1% Solution UN1219
- 30mL Universal Indicator UN1170
- 30mL Bromothymol Blue, 0.04%

DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only



**IS5012**

**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Negative Stain Set

Often used to determine cell size and examine cell arrangement, negative staining stains the background while leaving bacterial cells untouched. The result is clear cells against a dark background. Negative staining does not require the bacterial cells to be heat-fixed and is especially useful for cells that are susceptible to damage during the heat fixation process.

Kit Includes:

- 30mL Formaline-Nigrosin Solution
- 30mL 1% Hydrochloric Acid
- 30mL 1% Congo Red

DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



**IS5014**

**WARNING:** This product can expose you to chemicals including Formaldehyde, Methanol and Benzidine-based dyes, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Gram's Stain

Small Kit Includes:

- 4 x 25 mL Ethyl Alcohol, Denatured, 95% UN1170
- 30mL Crystal Violet Ammonium Oxalate
- 30mL Safranin O, 1% Aqueous Solution
- 30mL Iodine, Potassium Iodide Solution

**IS5011 - Small**

**WARNING:** This product can expose you to chemicals including Crystal Violet and Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



Large Kit Includes:

- 500mL Dilute Lugols
- 500mL Crystal Violet
- 500mL Safranin O 1% Aqueous
- 2 L Ethanol 95%, UN1170

**IS5017 - Large**

DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only



## Microscope Slide Making Kit

This basic microscope slide-making kit will get you started mounting your own slides.

Kit Includes:

- 25mL Synthetic Balsam
- 1 Microscope Slide, Pack/72
- 1 Coverslips, Pk/100
- 1 Forceps

**WARNING:** This product can expose you to chemicals including Ethylbenzene, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**IS5015**

## Wide Range pH Water Test Kit

Test water pH within 2-10 range with this wide range pH testing kit. Kit includes enough materials to repeat the procedure over 50 times.

***This test kit is designed for educational/instructional use only.***



DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to Phenolphthalein, Methanol and Methyl isobutyl ketone, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS5016**

## Complete Stain Kit

Innovating Science's Complete Stain Kit contains everything you need for a variety of staining techniques!

Kit Includes:

- IS5004 Vital Stain Kit
- IS5008 Bacteria Stain Chemicals Set
- IS5011 Gram's Stain Kit

DOT Info:

Small quantity exemption 173.4

THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



**IS5018**

## Cereal Grass Medium

Aldon's Innovating Science cereal grass media is used for culturing protozoa (Rhizopods, Choanoflagellates, Ciliates, and Flagellates). It contains dehydrated cereal grass leaves with natural vitamins A,B,C,K. Our cereal grass media is recommended by King's lab at The University of California at Berkeley.

DOT Info:

Non-regulated

- IS5020** 25grams
- IS5021** 100grams
- IS5022** 500grams



## Make Your Own Bromine Water

Prepare fresh bromine water in a couple of minutes! Save on hazardous transport costs and avoid storing elemental bromine in your storage room.

Kit Includes:

- 2.15g Part 1 Potassium Bromide
- 0.6g Part 2 Potassium Bromate
- 25mL Part 3 Sulfuric Acid 1 M
- 50mL Part 4 Bromine Water-Btl/Label Only

DOT: Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

**IS5023**



**WARNING:** This product can expose you to chemicals including Potassium Bromate and Strong inorganic acid mists containing sulfuric acid, which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Microbiology Science Fair Kit

Students can grow their own bacteria with this hands-on, easy-to-use kit. They will be able to swab various surfaces around the classroom such as door handles and sinks to inoculate agar plates. Students will also investigate the levels and importance of bacteria in everyday situations.

Kit Includes:

- 2g Nutrient Agar (makes 100mL 2% Agar)
- 6 Petri Dishes
- 6 Sterile Swabs

DOT: Non-regulated



**IS5030**

## Acid Rain Science Fair Kit

The Acid rain test kit is great to use in the classroom or for science fair projects to determine if you have acid rain in your area. Collect water samples and use a low range pH indicator to determine the pH of your water sample with a colorimetric comparison chart.

Kit Includes:

- Collection Bottle
- 15mL Low Range pH Indicator
- 6 Test tubes
- Color Chart

DOT Info:

Small quantity exemption 173.4

This package conforms to 49 CFR 173.4 for domestic highway or rail transport only



**IS5032**

**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Qualitative Coliform Test Kit

Coliforms are a broad group bacteria mostly found in the intestines of warm blooded animals. While these organisms are not typically associated with serious illness themselves, they are often used as indicator organisms. The presence of coliforms may indicate a possible presence of other pathogenic or disease-causing organisms. With this easy to use and economical test kit, students simply add a small amount of collected water to a sample tube and incubate for 24-48 hours. A distinct color change indicates that coliforms are present. The kit contains instructions enough tubes to perform 25 tests.

Kit Includes: 25 Lactose Tubes

DOT: Non-regulated



**IS5031**

## Instant Drosophila Medium, White

Just add water to easily produce the medium, no need to sterilize. ½ liter will make 30-40 standard cultures. Inquire for larger sizes or bulk quotes.

DOT Info: Non-Regulated

**IS5036**



## Phenol Red pH Testing Kit

Test water pH samples within pH range of 6.8-8.2 with this phenol red pH testing kit. The kit includes phenol red pH indicator, pipettes, reaction vessels, a color chart to compare your results to, and instructions on how to use the kit. Enough materials to repeat the procedure over 50 times!

Kit Includes:

30mL Phenol Red pH Indicator  
2 Test Tubes  
2 Pipettes  
Phenol Red pH Color Chart

DOT Info: Non-regulated

**IS5043**



## Buffer Calibration Kit

This kit includes 500mL of each buffer solution pH 7, pH 4, and pH 10. It also includes 100mL of electrode storage solution.

Kit Includes:

500mL Buffer pH 4  
500mL Buffer pH 7  
500mL Buffer pH 10  
120mL Potassium Chloride 1M

DOT Info:

Non-Regulated

**IS5050**



**Best Seller!**

## pH Buffer Solution

5L of our best selling buffer solutions:

**IS5051** 5L Buffer pH 4  
**IS5052** 5L Buffer pH 7  
**IS5053** 5L Buffer pH 10

DOT Info:

Non-Regulated



## Coliform Powder Test Kit

Simply add a small amount of collected water to the sample tube and incubate for 24-48 hours. A distinct color change from purple to yellow indicates that coliforms are present. Available as a single test or pack of 5 tests.

Kit Includes:

1 tube Coliform test powder

DOT Info: Non-regulated



**IS5055**  
**IS5056** pk/5





## Rheoscopic Fluid

Rheoscopic solution is a pearly-white, water-based solution that can be used to demonstrate concepts that are usually difficult to see such as: ocean currents, turbulence, and convection. Adding food coloring to color the solution will make it even easier and more exciting to simulate oceanic and atmospheric patterns.

DOT Info: Non-regulated

### IS5060

1 Liter

### IS5061

120mL concentrate makes 7.5 liter

### IS5062

Concentrate makes 62.5 liters

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



## Sterile Ringer's Solutions

200mL bottle.

**IS5065** Ringers, Mammal

**IS5066** Ringers, Frog

**IS5067** Ringers, Chicken

DOT Info: Non-Regulated



## Red Cabbage Juice pH Indicator

Learn about acids, bases, and pH indicators with our red cabbage juice kit. A pH indicator is a chemical that behaves differently depending on the pH level it is exposed to. Red cabbage juice is a natural pH indicator that changes color from red to purple to yellow-green as the pH of a solution increases. Test out different substances to determine if they are acidic or basic, and see if you can make all six colors found on the color chart!

Kit Includes:

20 g Red cabbage powder

Scoop

Pipette

Plastic beaker

Red cabbage juice color chart

DOT Info: Non-regulated



### IS5068

## Artificial Urine

Use simulated urine to identify a variety of physiological conditions with urine test strips.

**IS5070** - Urine, Artificial (Control)

**IS5071** - Urine, Artificial W/Vitamin C

**IS5072** - Urine, Artificial W/Phosphates

**IS5073** - Urine, Artificial W/ Albumin

**IS5074** - Urine, Artificial W/ Ketone

**IS5075** - Urine, Artificial W Glucose

**IS5080** - Urine, Artificial Set Of 4  
(5070, 5072, 5073, 5075)

DOT Info: Non-regulated



**IS5070**



**IS5072**



**IS5073**



**IS5075**



**IS5080**

## Sucrose Solution Set

Makes:

- 1.0M 1Liter solution
- 0.8M 1Liter solution
- 0.6M 1Liter solution
- 0.4M 1Liter solution
- 0.2M 1Liter solution

DOT Info: Non-Regulated

**IS5095**



## Mannitol Salt Agar

A selective and differential medium designed for the growth of Staphylococcus aureus and Staphylococcus epidermidis bacteria. Use 11 grams with 100mL of deionized water.

Note: Media needs to be sterilized with autoclave prior to use.

DOT Info:  
Non-regulated

**IS5178 - 100g**  
**IS5179 - 500g**



## Universal Indicator pH Color Charts

Universal indicator color charts are used to determine the pH of a solution. These handy charts display the colors and pH values an indicator would create for each pH unit from ≤3 to ≥10. The charts are available as an overhead transparency, 8.5×11" sheet and smaller chart cards.

**IS5097** - Laminated 8½" x11"

**IS5098** - 8½" x11" Overhead Transparency

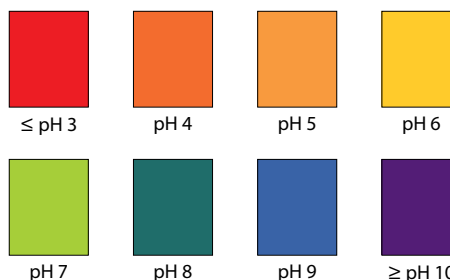
**IS5099** - pack of 30 chart cards

For use with:

**IS30000** Universal Indicator Solution 500ml

**IS30002** Universal Indicator Solution 25ml

### Universal Indicator pH Color Chart



Innovating Science™, "enriching education for the learner"

Item # IS5097

**WARNING:** This product can expose you to chemicals including Phenolphthalein and Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, birth defects and reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Instant Snow Powder

Demonstrate the super absorbent properties of some polymers by making snow! As the polymer absorbs water it will expand to over 40 times its original volume, resulting in fluffy flakes of fake snow!

DOT Info: Non-regulated

**IS5270 - 100g**

**IS5271 - 400g**



## Ph Up And Ph Down Set For Hydroponics

Innovating Science's pH Up and pH Down solutions are great for hydroponics! Use pH Down to lower the pH level when it is too high, or pH Up to raise the pH level when it is too low. A little solution goes a long way--after measuring your pH, add a small amount of pH Up or pH Down and then measure the pH again, repeat until the pH is at the proper level. Kit contains an instruction sheet and everything you need to test and adjust your pH level.

Kit Includes:

250 mL	pH Up solution
250 mL	pH Down solution
1 pkg	pH Test strips
2	Plastic cups
2	Pipettes

DOT Info: Non-regulated

**IS5272**

## Aldon Dry Erase Board Cleaner and Conditioner

Make dry erase surfaces look new again.

- Just spray and wipe
- Safe cleaner removes shadows, ghosting, and stains
- Can be used on Dry Erase and Magnetic Dry Erase Boards
- 8 oz. Spray Bottle

DOT: Non-regulated

**IS5600**



## Laboratory Cleaner

This cleaner has been specially formulated for use on laboratory surfaces including stainless steel, stone/ composite bench tops and fume hood sashes. This cleaner is intended for removal of stains and residues. It is not intended as a disinfectant.

**IS5601** - 4 oz Spray Bottle

**IS5602** - 32 oz Spray Bottle

DOT Info:

UN1760 Corrosive Liquids, 8, III, Ltd Qty



## Aldon Screen Clean and Conditioner

Safe for use on all screens: phones, tablets, computer screens, televisions.

Integrated liquid glass will create the highest level of gloss on your screen while repelling and resisting dust, smudges and fingerprints.

DOT: Non-regulated

**IS5605**



## Obliterate

Use Innovating Science's Obliterate to eliminate RNase, DNase, and DNA contamination.

- Use on glass, plastics, and stainless steel
- Decontaminate beakers, flasks, pipettes, and tubes
- Residue free
- Phosphate free/biodegradable

DOT Info: Non-regulated

**IS5603** 32oz

**IS5603-CS/12** 32oz

**IS5604** 2oz








## Popular Chemical Reagents

Item #	Description	DOT Info
IS5801	Janus Green - 1% Alcohol Solution	Small Qty Exemption 49CFR173.4
IS5802	Neutral Red - 1% Alcohol Solution	Small Qty Exemption 49CFR173.4
IS5803	Bismarck Brown - 1% Alcohol Solution	Small Qty Exemption 49CFR173.4
IS5804	Brilliant Cresyl Blue - 1% Alcohol Solution	Small Qty Exemption 49CFR173.4
IS5805	Copper(II) Acetate - 3% Aqueous Solution	Non-regulated
IS5806	Copper(II) Sulfate - 1% Aqueous Solution	Non-regulated
IS5807	Methylene Blue - 1% Aqueous Solution	Non-regulated
IS5808	Methylene Blue, Saturated 1%Alcohol Solution	Small Qty Exemption 49CFR173.4
IS5809	Carbol Fuchsin Ziehl Neelsen Solution	Small Qty Exemption 49CFR173.4
IS5810	Carbol Rose Bengal Solution	Small Qty Exemption 49CFR173.4
IS5811	Methylene Blue (Loeffler's) Solution	Small Qty Exemption 49CFR173.4
IS5812	Crystal Violet - 1% Alcohol Solution	Small Qty Exemption 49CFR173.4
IS5813	Safranin O Solution	Non-regulated
IS5814	Ethyl Alcohol Denatured, 95%	Small Qty Exemption 49CFR173.4
IS5815	Gram's Iodine Solution	Non-regulated
IS5816	Congo Red - 1% Aqueous Solution	Non-regulated
IS5817	HCl - 1% In Alcohol	Small Qty Exemption 49CFR173.4
IS5818	Formalin-Nigrosin Solution	Non-regulated
IS5819	Malachite Green - 1% Aqueous Solution	Non-regulated
IS5820	Eosin Y - 1% Solution 30ml	Non-regulated
IS5821	Eosin B - 1% Solution 30ml	Non-regulated



## Popular Chemical Reagents

Item #	Description	DOT Info	Proposition 65
IS10023	Acetone ACS 12oz	Limited Quantity	
IS10035	Agar, Bacteriological Powder L/G 100g	Non-Regulated	
IS10072	Ammonia Household 500ml	Non-Regulated	
IS11035	Benedict's Qualitative 100ml	Non-Regulated	
IS11053	Biuret Reagent 100ml	Limited Quantity	
IS11070/ IS11072	Bromothymol Blue Sol 0.04% Aq 500ml/100ml	Non-Regulated	
IS11073	Bromothymol Blue Sol 0.5% (Aq) 30ml	Non-Regulated	
IS11104	Buffer Solution Ph 7.00 Yellow 500ml	Non-Regulated	
IS12035	Calcium Chloride Anhyd L/G (4-20 Mesh) 500g	Non-Regulated	
IS12192	Copper (II) Sulfate 5-Hydrate L/G Pwd 500g	Non-Regulated	
IS12196	Copper (II) Sulfate 1.0M 500ml	Non-Regulated	
IS14034	Ethyl Acetate 30ml w/ Dropper	Limited Quantity	
IS14025	Ethyl Alcohol 95% ACS 8oz	Limited Quantity	 <b>WARNING:</b> This product can expose you to chemicals including Methanol, which are known to the State of California to cause reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .
IS14018	Ethyl Alcohol 95% Denatured L/G 500ml	Limited Quantity	 <b>WARNING:</b> This product can expose you to chemicals including Methanol, which are known to the State of California to cause reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .
IS14021	Ethyl Alcohol 95% Denatured R/G 500ml	Limited Quantity	 <b>WARNING:</b> This product can expose you to chemicals including Methanol, which are known to the State of California to cause reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .
IS17013	Hydrochloric Acid 1.0M 500ml	Limited Quantity	
IS17019	Hydrochloric Acid 2.0M 500ml	Limited Quantity	
IS17020	Hydrochloric Acid Sol, 0.1M 1L	Non-Regulated	
IS17046	Hydrogen Peroxide 6% 500ml	Non-Regulated	
IS18019	Iodine Solution (Starch Test) L/G 100ml	Non-Regulated	
IS22062	Methyl Alcohol ACS Acetone Free 500ml	Limited Quantity	 <b>WARNING:</b> This product can expose you to chemicals including Methanol, which are known to the State of California to cause reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .
IS22075	Methylene Blue L/G Pwd 25g	Non-Regulated	
IS25043	Phenol Red 0.02% 500ml	Non-Regulated	
IS25139/ IS25138	Potassium Permanganate Reagent 100g/500g	Limited Quantity	
IS28041	Silver Nitrate 0.1M 50ml	Non-Regulated	
IS28078	Sodium Carbonate Anhydrous R/G 500g	Non-Regulated	
IS28113	Sodium Hydroxide Pellet L/G 100g	Limited Quantity	
IS28128/ IS28130	Sodium Hydroxide 0.1M 1L/500ml	Non-Regulated	
IS28121	Sodium Hydroxide 1.0M 1L	Limited Quantity	
IS28256/ IS28255	Sulfuric Acid 1.0M 500ml/1L	Limited Quantity	 <b>WARNING:</b> 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. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .
IS35002	Zinc Metal Granular (20 Mesh) R/G 100g	Non-Regulated	

## Endothermic Reactions

When chemical reactions absorb heat the environment around the reaction becomes colder. Students will create an endothermic reaction and monitor the change in temperature as the reaction occurs. Students will then examine a commercial application that exploits endothermic reactions, the instant cold pack. The kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

Kit Includes:  
8 pkg x 2 tabs Sodium bicarbonate/citric acid tablets  
15 Plastic cups  
15 Stirring sticks  
15 Bags containing:  
25g Ammonium nitrate UN1942  
1 tbsp Vermiculite

DOT Info:  
Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Acetyl Salicylic Acid/Aspirin, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS2500**



## Exothermic Reactions

Allow students to see how chemistry can be used in a beneficial manner. Most students are probably familiar with heat packs, or hand warmers. Utilizing the release of chemical energy, these self-contained exothermic reactions are quite useful in cold environments. In this activity, students will first investigate the temperature change of an exothermic reaction and then examine how the oxidation of iron, in a process similar to rusting, can be used to create the little bags of heat used to keep hands and feet warm. The kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

Kit Includes:  
100g Calcium chloride  
15 Plastic cups  
15 Stirring sticks  
15 Bags containing:  
25g Iron powder  
1g Sodium chloride  
5g Calcium chloride  
1 tbsp Vermiculite

DOT Info:  
Non-Regulated

**IS2501**



## Chemiluminescence

Most physical and chemical reactions that involve the release of light energy also involve the release of heat energy. One unique and interesting form of light-emitting reaction is called chemiluminescence, or "cool light." Similar to the familiar glow of a firefly, students will create a chemiluminescent reaction in the classroom, and then observe the fascinating blue glow of the reaction, which lasts for over ten minutes. This is chemistry that never fails to amaze students. The kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

Kit Includes:  
15 x 25mL Luminol solution  
25mL 6% hydrogen peroxide  
15 Plastic cups, 30mL  
15 Transfer pipettes, 1mL

DOT Info:  
Non-Regulated

**IS2502**



## Paper Chromatography

Chromatography is the oldest documented technique to separate chemical substances. In this activity, students will perform paper chromatography on three individual dyes and a mixture of dyes to determine if all three dyes are in the mixture. Students will understand not only the components of a chromatography system but also why different substances move at different rates within the system. The kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 1 Chromatography dye set containing:
  - 0.5mL Crystal violet
  - 0.5mL Safranin O
  - 0.5mL Toluidine blue
  - 0.5mL Chromatography mixture
- 5 x 30mL 95% Ethanol UN1170
- 16 Filter paper sheets
- 4 Capillary tubes

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Crystal Violet and Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS2503**

## Thin Layer Chromatography

Commercial food colors may contain more than meets the eye. Students will perform thin layer chromatography, a highly effective separation procedure, on four different food colors to determine if there may be more in each color than visual appearance would lead them to believe. Each group will perform the chromatography procedure in one of three different solvents and compare their results to other student groups, allowing students to reach conclusions regarding the solubility of each food dye in different solvents. The kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 1 Food coloring sample set containing:
  - 0.5mL Yellow
  - 0.5mL Red
  - 0.5mL Blue
  - 0.5mL Green
- 5 x 30mL Chromatography solvent #1 (Deionized water)
- 5 x 30mL Chromatography solvent #2 (50% Ethanol) UN1170
- 5 x 30mL Chromatography solvent #3 (95% Ethanol) UN1170
- 15 TLC (thin layer chromatography) sheets
- 4 Capillary pipettes



### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only



**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS2504**

## Properties of Polymers

Polymers affect every aspect of our daily lives. From the plastics we use to the clothes we wear, polymer chemistry is everywhere. In this kit, students will perform three fun and fascinating activities involving polymers. In the first two activities, students will perform a cross-linking procedure on polymers to create polymer "worms" and the classic "slime." In the third activity, students will investigate the properties of a super-absorbent polymer, capable of absorbing hundreds of times its own weight in water, to create instant "polymer snow." The kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

- 4g Sodium alginate (Alginic acid)
- 30mL Calcium chloride concentrate
- 4 x 250mL 3% polyvinyl alcohol
- 200mL 4% sodium borate
- 35g Sodium polyacrylate powder (snow)
- 45 Clear plastic cups
- 15 Graduated measuring cups, 30mL
- 15 Plastic pipettes, 1mL

DOT Info: Non-Regulated



**IS2505**

## Acids, Bases, and the pH Scale

In this lab, you will gain an understanding of the basic differences between the properties of acids and bases, learn the role of hydrogen and hydroxide ions in acids and bases, and comprehend the nature of the pH scale with regards to acid and base strength. Students will examine the effects of acids and bases on several chemical pH indicators, determine the pH of several common household materials, and use the knowledge gained to determine the composition of four unknown clear solutions. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

25mL Deionized water	25mL Soap solution
25mL Dilute acid (0.1M HCl)	25mL Filtered water
25mL Dilute base (0.1M NaOH)	25mL Vitamin C solution
25mL 0.5% litmus	2 Wide-range pH test strips, pkg/50
25mL 0.02% methyl red	25mL Unknown solution #1 (Water)
25mL 0.5% bromothymol blue	25mL Unknown solution #2 (Dilute base)
25mL 1.0% phenolphthalein	25mL Unknown solution #3 (Phenolphthalein)
25mL Vinegar	25mL Unknown solution #4 (Dilute Acid)
25mL Household ammonia	15 Reaction trays

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Phenolphthalein, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS2507**

## Chemical Identification of Biomolecules

Understand the importance of proteins, carbohydrates, and lipids in living organisms. Students will learn to identify a positive test result for proteins using biuret reagent, examine the reaction between Benedict's reagent and a simple sugar, use iodine/potassium iodide to test for the presence of starch, and test for the presence of lipids using a fat-soluble dye. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

25mL Iodine/potassium iodide solution
25mL Biuret reagent
25mL Benedict's solution
25mL 1.0% Sudan III stain
25mL Vegetable oil
10g Soluble starch
10g Albumin
10g Glucose



### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**IS2508**

## Chemical Element Observation Set

Explore the Periodic Table of Elements with the Chemical Element Observation Set. Students will study the similarities and differences between these elements. Each element is packaged in a break resistant plastic container and clearly labeled. A periodic table is included for review.

### Kit Includes:

1.0g Aluminum Metal	1.0g Iron
1.0g Antimony Metal	1.0g Lead
0.5g Barium Metal	1.0g Magnesium Metal
1.0g Bismuth Metal	1.0g Manganese
1.0g Cadmium Metal	1.0g Nickel Metal
1.0g Calcium Metal	1.0g Silicon Metal
1.0g Carbon (Charcoal)	1.0g Silver
1.0g Chromium Metal	1.0g Sulfur
1.0g Cobalt Metal	1.0g Tin Metal
1.0g Copper Metal	1.0g Tungsten Metal
1.0g Carbon (Graphite)	1.0g Zinc Metal
0.1g Germanium	

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Cadmium and cadmium compounds, Chromium/hexavalent compounds, Cobalt metal powder, Lead and lead compounds, Respirable crystalline silica and Nickel metallic, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS2510**

## Introduction to Chemical Properties

How do scientists identify an unknown solution? What makes one solution different from another? The experiments in this kit will help students understand the impact different chemicals have when added to a solution. Students will test and identify unknown solutions based on a comparison of the chemical properties to a known sample. Kit contains enough materials for 10 groups. Teacher's manual and Student Study Guide copymasters are included.

### Kit Includes:

10 x 3mL 0.1M Cupric Sulfate	10 x 3mL 1.0N Ammonium Hydroxide
10 x 3mL 1.0N Acetic Acid	10 x 3mL 0.1N Sodium Hydroxide
10 x 3mL 0.1M Sodium Bicarbonate	10 x 3mL 0.1N Hydrochloric Acid
10 x 3mL 0.1M Sodium Carbonate	10 x 3mL Phenolphthalein Indicator
10 x 1.5mL Unknown A	10 x 1.5mL Unknown B
10 x 1.5mL Unknown C	10 x 1.5mL Unknown D
10 Preprinted Acetate Sheets	

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only

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



**IS2511**



## Introduction to Reaction Rates

Chemical reactions vary greatly. Some chemicals react extremely fast like an explosion, while others, like rusting metal, can react over a long period of time. Understanding factors that influence the rate of a reaction allows a scientist to speed up or slow down reactions as desired. This kit has been designed to introduce students to the concepts of reaction rates through a series of experiments demonstrating the impact of concentration, heat, surface area and catalysts. Kit contains enough materials for 10 groups. Teacher's manual and Student Study Guide copymasters are included.

### Kit Includes:

500mL	0.01M Sodium Hydroxide
10 x 1mL	Phenolphthalein Indicator
300mL	Iodine Clock Reagent A
400mL	Iodine Clock Reagent B
1 L	0.15M Sodium Thiosulfate
300mL	2.0M Hydrochloric Acid
1g	Copper Metal Powder
20	Effervescent Tablets
20	Aspirin Tablets
80	Reaction Vessels
1 Pack	Wooden Dowels



### DOT Info:

UN1789, Hydrochloric acid, 8, III, Ltd Qty

**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol and Acetyl Salicylic Acid/Aspirin, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## IS2512

### Classification of Chemicals: Elements, Compounds and Mixtures

The three major classes of matter are elements, compounds and mixtures. Students will do three lab activities to help understand the differences between elements, compounds and mixtures. Kit contains enough materials for 15 groups. Teacher's manual and Student Study Guide copymasters are included.

### Kit Includes:

0.5mL	Toluidine Blue 0.5%
0.5mL	Crystal Violet 0.1%
0.5mL	Safranin O 0.25%
0.5mL	Chromatographic Dye Mixture
400mL	Ethanol 95%
750mL	Copper Chloride, EZ Prep, 0.1M
15	Iron Metal Strips
15	Chromatography Paper Sheets
8	Capillary Tubes



### DOT Info:

UN1170, Ethanol, 3, II, Ltd Qty  
UN2802, Copper chloride, 8, III, Ltd Qty

## IS2513

**WARNING:** This product can expose you to chemicals including Crystal Violet and Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Introduction to Chemical Equations

Chemical reactions take place all around us. Being able to identify reactions and communicate what is happening is vital to the scientific community. This kit will introduce two common types of chemical reactions: single replacement and double replacement. Students will perform a series of experiments highlighting the differences in these reactions and use what they learn to write balanced chemical reaction equations. Kit contains enough materials for 15 groups. Teacher's manual and Student Study Guide copymasters are included.

### Kit Includes:

5 x 12mL	Cobalt Nitrate 0.1M	5 x 12mL	Cupric Nitrate 0.1M
5 x 12mL	Ferric Nitrate 0.1M	5 x 12mL	Nickel Nitrate 0.1M
5 x 12mL	Aluminum Nitrate 0.1M	5 x 60mL	Sodium Hydroxide 0.2M
5 x 30mL	Hydrochloric Acid 2.0M	5 x 30mL	Silver Nitrate 0.1M
6g	Zinc Metal	15	Copper Wire pieces
1 pack	Wooden Dowels	32	Graduated Pipettes

### DOT Info:

UN1824, Sodium hydroxide solution, 8, III, Ltd Qty  
UN1789, Hydrochloric acid, 8, PGIII, Ltd Qty

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



## IS2514

### Chemical Analysis Using Titrations

A major challenge for any scientist is identifying what and how much of something is in a solution. One of the most common measurement techniques used is titration. The activities in this kit will focus on how acid-base titrations work and how to identify the concentration of an unknown acid. Kit contains enough materials for 10 groups. Teacher's manual and Student Study Guide copymasters are included.

### Kit Includes:

10 x 10mL	0.01M Sodium Hydroxide
10 x 2mL	0.1N Hydrochloric Acid
10 x 1.5mL	Phenolphthalein Indicator
10 x 1mL	Universal Indicator
10	Universal Indicator Color Charts
10	Reaction Vessels

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/Methyl isobutyl ketone, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## IS2515

## Element Groups

The periodic table is more than just a list of elements. The activities in this kit focus on developing a better understanding of why periodic trends occur within the elements. Students will perform two sets of experiments focusing on the alkaline earth metals and the halogens groups. Kit contains enough material for 8 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

2 x 20mL 0.5M Sulfuric Acid	8 x 3.5mL Iodine Water
8 x 3.5mL Chlorine Water	8 x 15mL Mineral Oil
8 x 3mL 1.0M Potassium Bromide	8 x 3mL 1.0M Potassium Chloride
8 x 10mL 0.2M Potassium Iodate	8 x 10mL 1.0M Magnesium Nitrate
8 x 10mL 1.0M Calcium Nitrate	8 x 10mL 1.0M Strontium Nitrate
8 x 10mL 0.2M Barium Nitrate	8 x 10mL 1.0M Sulfuric Acid
8 x 10mL 1.0M Sodium Carbonate	8 x 10mL 0.25M Ammonium Oxalate
8 x 3mL 1.0M Potassium Iodide	0.5g Potassium Bromate
1.72g Potassium Bromide	120 Graduated Plastic Pipette
8 Vials for Bromine Water	8 Labels for Bromine Water

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR 173.4 for domestic highway or rail transport only

**WARNING:** This product can expose you to chemicals including Strong inorganic acid mists containing sulfuric acid and Potassium Bromate, which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS2516**



## Physical and Chemical Properties of Matter

The activities in this kit focus on developing a better understanding of what is matter and what the different types of properties are. Students perform a series of experiments focusing on the physical properties of density, smell, color, melting point, boiling point and solubility. Other experiments focus on chemical properties: students perform a series of reactions as they try and identify an unknown solution. Kit contains enough material for 10 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

10 x 10mL	0.1M Cupric Sulfate
10 x 10mL	1.0N Ammonium Hydroxide
10 x 10mL	1.0N Acetic Acid
10 x 10mL	0.1N Sodium Hydroxide
10 x 10mL	0.1N Hydrochloric Acid
10 x 3mL	Unknown
10 x 1 mL	0.1N Sodium Carbonate
30g	Sodium Chloride
30	Dextrose
30g	Talc Powder
10 x 5g	Copper Sample
10 x 2g	Glass Sample
10	Thermometers
30g	Calcium Chloride
30g	Sand
10 x 5g	Zinc Sample
10 x 2g	Aluminum Sample
1 pack	pH Strips
10	Preprinted Acetate Sheets

### DOT Info:

Non-Regulated

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS2517**



## Introduction to Ionic Reactions

This kit is designed to introduce students to the concept of ionic reactions. Students will test a series of chemical combinations and observe reactions. The contents of this kit have been designed to minimize cross contamination and waste generation, while streamlining teacher preparation. This kit has all of the materials needed for 15 groups. Teachers Manual and Student Study Guide copymasters are included.

### Kit Includes:

3 x 10mL 0.1 M Sodium Acetate
3 x 10mL 0.1 M Sodium Chloride
3 x 10mL 0.1 M Sodium Carbonate
3 x 10mL 0.1 M Sodium Ferrocyanide
3 x 10mL 0.1 M Sodium Hydroxide
3 x 10mL 0.1 M Sodium Iodide
3 x 10mL 0.1 M Sodium Oxalate
3 x 10mL 0.1 M Sodium Phosphate
3 x 10mL 0.1 M Sodium Silicate
3 x 10mL 0.1 M Sodium Sulfate
3 x 10mL 0.1 M Lead Nitrate
3 x 10mL 0.1M Silver Nitrate
3 x 10mL 0.1 M Cupric Nitrate
3 x 10mL 0.1 M Cadmium Nitrate
3 x 10mL 0.1 M Strontium Nitrate
3 x 10mL 0.1 M Cobalt Nitrate
3 x 10mL 0.1 M Calcium Nitrate
3 x 10mL 0.1 M Zinc Nitrate
3 x 10mL 0.1 M Aluminum Nitrate
3 x 10mL 0.1 M Chromium Nitrate
3 x 10mL 0.1 M Ferric Nitrate
3 x 10mL 0.1 M Barium Nitrate
1 box Toothpicks
15 Acetate Sheets (Preprinted)

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



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

**IS2518**

## Molarity Lab Investigation

The experiments in this kit have been designed to introduce students to the concept of molarity. Students will first try to make a solution with a specific molarity to demonstrate the importance of good laboratory technique. In the second set of experiments students will perform a titration on a known acid solution before using the concepts they have learned to identify the concentrations of three unknown solutions. This kit has enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters included.

### Kit Includes:

400mL	0.3 M Hydrochloric Acid
3x15mL	Phenolphthalein Solution
5x 1L	0.1 M Sodium Hydroxide
2 x 600g	Sucrose
400mL	Unknown Hydrochloric Acid #1
400mL	Unknown Hydrochloric Acid #2
400mL	Unknown Hydrochloric Acid #3

### DOT Info:

UN1789, Hydrochloric Acid 8, III, Ltd Qty  
UN1219, Isopropanol solution, 3, II, Ltd Qty



**WARNING:** This product can expose you to chemicals including Phenolphthalein, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS2519**

## 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. This kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

5mL	10% Boric Acid in Methanol
500g	Sand
2 pkg	Color Flame Candles
2	Alcohol Burners
15	Diffraction Slides
1	Spectroscope
24	Small Trays



DOT Info:  
Small quantity exemption 173.4  
this package conforms to 49 CFR 173.4  
for domestic highway or rail transport only

**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, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS2520**

## Chromatography of Amino Acids

Amino acids are the fundamental building blocks of all proteins. Often times scientists may need to identify the amino acid contained in a protein. One such method for separating and identifying individual amino acids is paper chromatography. In this activity, students will perform a paper chromatography experiment on three known amino acids, and then use their results to identify the components of an unknown amino acid mixture. This kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

1 btl	Ninhydrin Powder
4x25mL	95% Ethanol Solution
4x25mL	Chromatography Solvent
30mL	Alanine Control
30mL	Glycine Control
30mL	Leucine Control
30mL	Unknown Amino Acid Mixture
8	Capillary Tubes
20	Chromatography Paper



**WARNING:** This product can expose you to chemicals including Methanol/Methyl isobutyl ketone, which is known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

DOT Info:  
Small quantity exemption 173.4  
this package conforms to 49 CFR 173.4 for domestic  
highway or rail transport only

**IS2522**

## Fractional Distillation

Crude oil is a complex mixture of many useful hydrocarbons such as gasoline, kerosene, butane, and motor oil. In order to be of use, these hydrocarbons must first be separated from each other. In this activity, students will complete a fractional distillation experiment to simulate the fractionation of crude oil. Topics such as boiling and condensation points, conservation of matter, and forces between molecules are covered as they factor into how a distillation is performed. This kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

450mL	Simulated Crude Oil
15	Rubber Stoppers
15 pc	Tubing
30	Disposable Cups



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

DOT Info:  
UN1993, Flammable Liquid, n.o.s., (Methyl Alcohol) III, Ltd Qty

**IS2521**

## Separation of a Mixture of Solids

Performing liquid-liquid extractions allows students to apply their knowledge of the properties of molecules. Students will learn how the properties of solubility can be utilized to separate two solids in a mixture. This kit provides for a qualitative test that will help students visualize that two different solids were collected, despite their similar appearance. Students will also explore the concept of the law of conservation of mass as well as how acid-base reactions can be utilized to manipulate molecules. This kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

35g	Benzoic Acid/Acetanilide 1:1 Mixture
35g	Benzoic Acid/Acetanilide 2:1 Mixture
35g	Benzoic Acid/Acetanilide 3:1 Mixture
2g	Methyl Violet
400mL	Ethyl Acetate
200mL	Sodium Bicarbonate
250mL	Hydrochloric Acid 1.0N
35	Pipettes

DOT Info:  
UN1173 Ethyl acetate, 3, II, Ltd Qty  
UN1789 Hydrochloric acid, 8, III, Ltd Qty



**IS2523**



## Periodic Table - Nonmetals, Metals and Metalloids

During the nineteenth century, a 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. In this lab 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. This kit contains enough material for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

25g	Aluminum Metal Shot	25g	Carbon Activated Pellets
25g	Silicon Metal Lumps	25g	Zinc Shot
25g	Sulfur Lumps	45pcs	Copper Metal Foil 0.5"
45 pcs	Magnesium Metal 0.5"	4 x 30ml	Hydrochloric Acid 1.0N
4 x 30ml	Copper (II) Chloride	105	Test Tubes
30	Pipettes	15	Nails

### DOT Info:

Small quantity exemption 173.4  
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**IS2524**

## Exploring the Solubility Rules: A Guided Inquiry

Take your students on an investigation to determine some of the basic rules of solubility. This experiment challenges students to identify patterns within the experiment and then apply that knowledge in a practical exercise. With this new twist to an old experiment, learners are exposed to a new experience while still attaining the same critical information.

### Kit Includes:

20mL	Ferrous Chloride 0.1M Solution
20mL	Potassium Iodide 0.1M/0.1N Solution
20mL	Sodium Bromide 0.1M Solution
20mL	Calcium Chloride 0.1M Solution
20mL	Sodium Carbonate 0.1M/0.2N Solution
20mL	Potassium Phosphate 0.1M Solution
20mL	Calcium Acetate 0.1M Solution
20mL	Sodium Silicate 0.1M Solution
20mL	Aluminum Sulfate 0.1M Solution
20mL	Silver Nitrate 0.1M Solution
20mL	Zinc Sulfate 0.1M Solution
20mL	Potassium Hydroxide 0.1N Solution
20mL	Unknown 0.1M Solution
210	Pipettes
45	Trays

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



**IS2525**

## Equilibrium and Le Chatelier's Principle

Students will investigate equilibrium and Le Chatelier's principle through four different experiments. They will apply various stresses to different chemical systems at equilibrium, then use their understanding of Le Chatelier's principle to explain their results. Kit contains enough material for 15 groups. Teacher's Guide and Student Study Guide Copymasters are included.

### Kit Includes:

25mL Bromothymol blue	50mL Sodium hydroxide, 0.1M
150mL Potassium thiocyanate solution	25mL Hydrochloric acid, 0.1M
25mL Ferric nitrate solution	15g Potassium thiocyanate crystals
15g Sodium phosphate crystals	150mL Copper (II) sulfate solution
100mL Ammonium hydroxide, 1M	25mL Hydrochloric acid, 1M
50mL Methyl red	

### DOT Info:

Non-Regulated



**IS2526**

## Stoichiometry of Copper and Silver Nitrate

Introduce students to stoichiometry and mole ratios with the reaction of copper and silver nitrate! Students will watch as beautiful silver crystals are formed on the copper wire, then determine the moles of silver formed and moles of copper reacted to calculate the mole ratio. Using this data, they will write the balanced chemical equation for the reaction, and determine the limiting reactant and their percent yield. Kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide Copymasters are included.

### Kit Includes:

15 pcs	Copper wire
10 g	Silver nitrate
200 mL	Acetone

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



**IS2527**



## The Ideal Gas Law

Explore the gas laws through the reaction of sodium bicarbonate and hydrochloric acid. Students will perform the reaction and use the ideal gas law to calculate the amount of carbon dioxide produced. They will then use stoichiometry to determine their percent yield. Kit contains enough materials for 15 groups of students. Teacher's Manual and Student Study Guide Copymasters are included.

### Kit Includes:

1 x 40g Sodium bicarbonate  
15 x 25mL Hydrochloric acid, 1M  
1 pkg String  
15 Balloons

### DOT Info:

Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only



**CHOKING HAZARD**  
Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.

**IS2528**

## Energy - Cool It! A Guided Inquiry

The first law of thermodynamics is a physical law that governs the conservation of energy and heat transfer within a system. Energy - Cool It! is a kit that allows the demonstration of this law on an intermediate level. The included experimental protocol enables students to plan and conduct an experiment on their own with basic guidance, and allows the assessment of student learning capabilities. This kit contains enough materials for 15 groups of students. Teacher's manual and Student Study Guide copymasters are included.

### Kit Includes:

30 Styrofoam Cups  
18 Thermometers  
15 50 mL Plastic Beakers  
300 Zinc Washers: 15 Sets of 2,6, and 12 washers  
15 Plastic Forceps

### DOT Info: Non regulated

**IS2529**



## Matter - All Mixed Up! A Guided Inquiry

Everything from elements to molecules, objects, plants, and animals, even you and I, are all made up of matter. Matter - All Mixed Up! allows students to explore the physical properties of matter through the separation of various mixtures. The included experimental protocol enables students to plan and conduct an experiment on their own with basic guidance, and allows the assessment of student learning capabilities. This kit contains all materials needed for 15 groups to perform the experiment on one of the four mixtures. Teacher's manual and Student Study Guide copymasters are included.

### Kit Contains:

Mixture #1 - Enough for 5 Samples	20	4 oz Jars with Lids
Mixture #2 - Enough for 5 Samples	8	Transfer Pipettes
Mixture #3 - Enough for 5 Samples	8	Magnets
Mixture #4 - Enough for 5 Samples	15	Plastic Funnels
200mL Mixture #2 Liquid	16	Pieces of Filter Paper
125mL Mixture #4 Liquid A	16	7 oz Plastic Cups
125mL Mixture #4 Liquid B	48	Disposable Petri Dishes
8 Metal Tweezers	4	Magnifying Glasses
4 Sieves		

### DOT Info: Non regulated

**IS2530**

**IS2530-REF**

**WARNING:** This product can expose you to chemicals including Respirable crystalline silica, which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## Unknown Compositions - Potassium Hydrogen Phthalate

Learn the importance of substance purity by determining the composition of a set of impure potassium hydrogen phthalate samples via one of the most common analytical methods: Acid-Base Titration. This kit contains materials for 25 groups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

10 x 25g	Numbered Impure Potassium Hydrogen Phthalate Samples
2 x 500mL	1 N Hydrochloric Acid Solution
2 x 30mL	Bromothymol Blue Indicator

**DOT Info:**

UN1823, Sodium Hydroxide, 8, II, Ltd Qty.  
UN1789, Hydrochloric Acid, 8, III, Ltd Qty.



**IS2531**

## Unknown Compositions - Ferrous Ammonium Sulfate

In this experiment, students will perform Gravimetric analysis and Spectrophotometric analysis to determine the purity of ferrous ammonium sulfate samples of unknown composition. This kit contains materials needed for 25 groups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

5 x 25g	Numbered Impure Ferrous Ammonium Sulfate Samples
5 x 25g	Lettered Impure Ferrous Ammonium Sulfate Samples
12.5g	Phenanthroline
3 x 50mL	Ammonia Solution

**DOT Info:**

UN2811, Phenanthroline, 6.1, III, Ltd. Qty.



**IS2532**

## Unknown Compositions - Soda Ash

In this experiment, students will compare two analytical methods, Gravimetry and Double Acid-Base Titration, by using these methods to determine the purity of sodium carbonate. This kit contains materials needed for 25 groups. Teacher's Manual and Student Study Guide copymasters are included.

**Kit Includes:**

10 x 25g	Numbered Impure Sodium Carbonate Samples
75g	Calcium Chloride
2 x 500mL	3 M Hydrochloric Acid Solution
2 x 250mL	2 N Sodium Hydroxide Standard Solution
2 x 30mL	Bromothymol Blue Indicator
2 x 30mL	Methyl Orange Indicator

**DOT Info:**

UN1789, Hydrochloric Acid, 8, III, Ltd. Qty.  
UN1824, Sodium Hydroxide, 8, II, Ltd. Qty.



**IS2533**

## Introduction to Complexometric Titration

Complex formation is frequently used in both qualitative and quantitative inorganic analysis. This activity introduces topics such as metal-ligand interactions using complexometric titration to determine the calcium content of both known and unknown samples. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

4x500 mL	EDTA 0.1 M Titrant Solution
3x60 mL	Eriochrome Black T Indicator Solution
500 mL	Calcium Chloride 0.1 M Solution
500 mL	Unknown Calcium Solution #1
500 mL	Unknown Calcium Solution #2
3x500 mL	pH 10 Buffer

### DOT Info:

UN1170, Ethanol, 3, II, LTD QTY

**WARNING!** This product can expose you to chemicals including Methanol and Methyl isobutyl ketone, which are known to the State of California to cause cancer and birth defects or other reproductive harm.. For more information go to <http://www.P65Warnings.ca.gov>.



IS2534

## Synthesis of a Coordination Compound

Coordination complexes are brightly colored compounds consisting of a central metal atom and ligand molecules, atoms, or ions. Synthesize and purify a lime-green coordination complex called potassium ferrioxalate trihydrate in this multi-step synthesis and optionally analyze the complex via UV-Visible spectrophotometry. This kit contains enough materials for 15 groups, a Teacher's Manual, and Student Study Guide copymaster.

### Kit Contains:

615mL	0.5 M Oxalic Acid
180mL	1.0 M Potassium Oxalate
180mL	3% Hydrogen Peroxide
135mL	95% Ethanol
180mL	50% Ethanol
325mL	0.1 M Sulfuric Acid
50g	Ferrous Ammonium Sulfate Hexahydrate
15	Pipettes
15	Filter Papers

### DOT Info:

UN1760, Corrosive liquids, n.o.s., (Oxalic acid), 8, III, Ltd Qty

UN1170, Ethanol, 3, II, Ltd Qty

**WARNING:** This product can expose you to chemicals including Methanol, Methyl Isobutyl Ketone, and strong inorganic mists containing Sulfuric Acid, which are known to the state of California to cause cancer and birth defects or reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



IS2535

## Ferrofluid

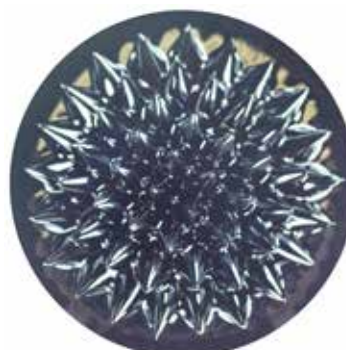
Ferrofluid is a colloidal liquid made of particles less than 10 nanometers in diameter. When exposed to a magnetic field, the nanoparticles form regular patterns of peaks and valleys. You can demonstrate magnetic fields for your students in a very visual way.

### Kit Includes:

50mL Ferrofluid

DOT Info: Non-regulated

**WARNING: This is not a toy, this product is intended for scientific use by ages 13 and up.**



IS2801

## Nanotechnology: Ferrofluids

Understand the definition of nanotechnology as it applies in current usage. Learn of one nanomaterial, ferrofluid, and some of its applications in modern technology. Create magnetite nanoparticles through a precipitation reaction, while employing a surfactant to create a colloidal suspension of magnetite nanoparticles (ferrofluid). In the end you will examine the response of ferrofluid upon exposure to a magnetic field. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

8g	Ferrous Chloride	NA 1759
22g	Ferric Chloride	UN1759
20mL	10N Hydrochloric Acid	UN1789
2x25mL	Ammonium Hydroxide	UN2672
20mL	Tetramethylammonium Hydroxide	UN1835
15	Pipettes	
15	Petri Dishes	

### DOT Info:

Small quantity exemption 173.4  
This package conforms to 49 CFR173.4  
for domestic highway or rail transport only



## IS2800

### Periodic Table

Colored printing helps your students distinguish between metals, non-metals, and noble gas families as well as allowing them to differentiate types of metals, solids, liquids and gases from synthetic elements. Name, symbol, atomic number, weight, mass, electron configuration are included.

**IS2900** Periodic Table, Laminated

**IS2910** Periodic Table, Paper, Set/25 Measures 11" by 17"

**IS2940** Periodic Table Poster 21" x 34"

**IS2941** Periodic Table Poster 45" x 35"

**IS2942** Periodic Table Poster, vinyl 4' x 8'

DOT - Non-regulated

Periodic Table of the Elements																	
Group 1	2	13	14	15	16	17	18										
1a	2a	3a	4a	5a	6a	7a	8a										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1s	2s	2p	3s	3p	4s	3d	4p	5s	4d	5p	6s	4f	5d	6p	7s	5f	6d
H	He	Li	Be	B	C	N	O	F	Ne	Na	Mg	Al	Si	P	S	Cl	Ar
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Na	Mg	Al	Si	P	S	Cl	Ar	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
Cs	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	
87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
Fr	Ra	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	



## Periodic Table with Reference Charts

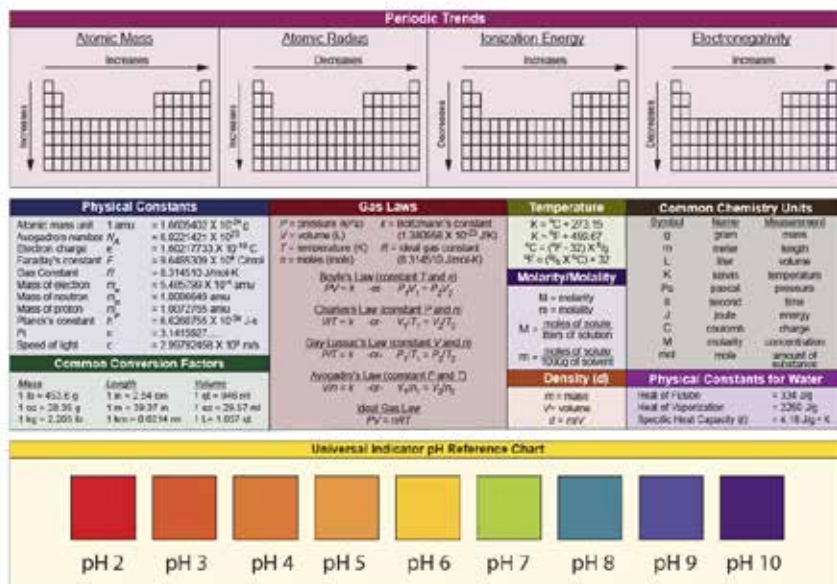
Our great updated periodic table in full color as pictured above, with the addition of handy reference charts on the back including periodic trends, physical constants, conversion factors, and more! Measures 8.5" x 11", printed on 100 lb glossy paper, and is 3-hole punched for easy use in notebooks and binders.

### IS2943

Periodic Table with Reference Charts

### IS2944

Periodic Table with Reference Charts pk/10



## Periodic Table Pen

The most convenient reference guide available - the Periodic Table Pen. This pen holds a double sided Periodic Table. The back side is a handy miniature reference chart. A great reference right at your fingertips!

### IS2920 - Periodic Table Pen

### IS2920-CS/25 - Periodic Table Pen

DOT - Non-regulated



## Acid Base Strength Chart

Easily determine the relative strength of different acids and bases on this laminated 11x17 inch chart.

DOT - Non-regulated

### IS2985

#### Relative Strengths of Acids and Bases in Aqueous Solutions at 25°C

	Name of Acid	Acid	Base	K <sub>a</sub>	
Strong Acids	Hydriodic	HI	→ H <sup>+</sup> + I <sup>-</sup>	>> 1	
	Hydrobromic	HBr	→ H <sup>+</sup> + Br <sup>-</sup>	>> 1	
	Hydrochloric	HCl	→ H <sup>+</sup> + Cl <sup>-</sup>	>> 1	
	Sulfuric	H <sub>2</sub> SO <sub>4</sub>	→ H <sup>+</sup> + HSO <sub>4</sub> <sup>-</sup>	> 1	
	Nitric	HNO <sub>3</sub>	→ H <sup>+</sup> + NO <sub>3</sub> <sup>-</sup>	> 1	
Weak Acids	Hydronium Ion	H <sub>3</sub> O <sup>+</sup>	⇌ H <sup>+</sup> + H <sub>2</sub> O	5.50 X 10 <sup>-1</sup>	
	Oxalic	H <sub>2</sub> C <sub>2</sub> O <sub>4</sub>	⇌ H <sup>+</sup> + HC <sub>2</sub> O <sub>4</sub> <sup>-</sup>	5.90 X 10 <sup>-2</sup>	
	Sulfurous	H <sub>2</sub> SO <sub>3</sub>	⇌ H <sup>+</sup> + HSO <sub>3</sub> <sup>-</sup>	1.41 X 10 <sup>-2</sup>	
	Hydrogen Sulfate Ion	HSO <sub>4</sub> <sup>-</sup>	⇌ H <sup>+</sup> + SO <sub>4</sub> <sup>2-</sup>	1.20 X 10 <sup>-2</sup>	
	Phosphoric	H <sub>3</sub> PO <sub>4</sub>	⇌ H <sup>+</sup> + H <sub>2</sub> PO <sub>4</sub> <sup>-</sup>	7.52 X 10 <sup>-3</sup>	
	Nitrous	HNO <sub>2</sub>	⇌ H <sup>+</sup> + NO <sub>2</sub> <sup>-</sup>	5.62 X 10 <sup>-4</sup>	
	Hydrofluoric	HF	⇌ H <sup>+</sup> + F <sup>-</sup>	3.53 X 10 <sup>-4</sup>	
	Formic	HCO <sub>2</sub> H	⇌ H <sup>+</sup> + HCO <sub>2</sub> <sup>-</sup>	1.78 X 10 <sup>-4</sup>	
	Benzoic	C <sub>6</sub> H <sub>5</sub> CO <sub>2</sub> H	⇌ H <sup>+</sup> + C <sub>6</sub> H <sub>5</sub> CO <sub>2</sub> <sup>-</sup>	6.46 X 10 <sup>-5</sup>	
	Acetic	CH <sub>3</sub> CO <sub>2</sub> H	⇌ H <sup>+</sup> + CH <sub>3</sub> CO <sub>2</sub> <sup>-</sup>	1.76 X 10 <sup>-5</sup>	
	Carbonic	H <sub>2</sub> CO <sub>3</sub>	⇌ H <sup>+</sup> + HCO <sub>3</sub> <sup>-</sup>	4.30 X 10 <sup>-7</sup>	
	Hydrogen Sulfite Ion	HSO <sub>3</sub> <sup>-</sup>	⇌ H <sup>+</sup> + SO <sub>3</sub> <sup>2-</sup>	1.02 X 10 <sup>-7</sup>	
	Dihydrogen Phosphate Ion	H <sub>2</sub> PO <sub>4</sub> <sup>-</sup>	⇌ H <sup>+</sup> + HPO <sub>4</sub> <sup>2-</sup>	6.23 X 10 <sup>-8</sup>	
	Boric	H <sub>3</sub> BO <sub>3</sub>	⇌ H <sup>+</sup> + H <sub>2</sub> BO <sub>3</sub> <sup>-</sup>	5.79 X 10 <sup>-10</sup>	
	Ammonium Ion	NH <sub>4</sub> <sup>+</sup>	⇌ H <sup>+</sup> + NH <sub>3</sub>	5.64 X 10 <sup>-10</sup>	
Weakest Acids	Hydrogen Carbonate Ion	HCO <sub>3</sub> <sup>-</sup>	⇌ H <sup>+</sup> + CO <sub>3</sub> <sup>2-</sup>	5.61 X 10 <sup>-11</sup>	
	Monohydrogen Phosphate Ion	HPO <sub>4</sub> <sup>2-</sup>	⇌ H <sup>+</sup> + PO <sub>4</sub> <sup>3-</sup>	2.20 X 10 <sup>-13</sup>	
	Water	H <sub>2</sub> O	⇌ H <sup>+</sup> + OH <sup>-</sup>	1.00 X 10 <sup>-14</sup>	

All reactions assume water as a reactant.  
HA + H<sub>2</sub>O ⇌ H<sub>3</sub>O<sup>+</sup> + A<sup>-</sup>

Innovating Science®  
by Aldon Corporation  
"cutting edge science for the classroom"

K<sub>a</sub> = [H<sup>+</sup>][A<sup>-</sup>] / [HA]  
pK<sub>a</sub> = -log K<sub>a</sub>  
pH = -log [H<sup>+</sup>]

## GHS Poster

Identify new Global Harmonization Symbols quickly and easily.

DOT - Non-regulated

## IS2980

Laminated 11" x 17"



## Principles of Stoichiometry

Ever wonder what would happen if you mixed this chemical with that one? This kit has been designed to allow students to perform experiments to see what types of reactions occur when various solutions are mixed together. Four different experiments focus on the concepts of decomposition reactions, single replacement reactions, double replacement reactions and balanced reactions. The materials in this kit are packaged to minimize the need for teacher preparation providing 5 unique sets of materials for students working in groups of 6. The dropper topped bottles allow students to perform the array experiments without the risk for cross contamination of chemicals. Teacher's Manual and Student Study Guide copymasters are included.

### Kit Includes:

50mL	Cupric Sulfate 1.0 M	15mL	Cupric Nitrate 0.1 M
15mL	Nickel Nitrate 0.1 M	75mL	Lead Nitrate 0.1 M
15mL	Cobalt Nitrate 0.1 M	15mL	Nitric Acid 0.1 M
15mL	Silver Nitrate 0.1 M	15mL	Aluminum Nitrate 0.1 M
15mL	Iron (III) Nitrate	15mL	Sodium Carbonate 0.1 M
15mL	Sodium Sulfate 0.1 M	15mL	Ammonium Hydroxide 0.1 M
15mL	Sodium Chloride 0.1 M	15mL	Ethylenediamine TetraAcetic Acid 0.1 M
75mL	Sodium Iodide 0.1 M	15mL	Sodium Thiocyanate 0.1 M
15mL	Sodium Chromate 0.1 M	15mL	Sodium Dichromate 0.1 M
15mL	Sodium Hydroxide 0.1 M	150mL	Deionized Water
5x12mL	Hydrochloric Acid 1.0 M	65mL	Nitric Acid 1.0 M
5x12mL	Sulfuric Acid 1.0 M	5x12mL	Calcium Nitrate 0.1 M
5x12mL	Sodium Oxalate 0.1 M	5pkg	Aluminum Metal Strips
5pkg	Zinc Metal Strips	5pkg	Copper Metal Strips
5pkg	Magnesium Metal Strips	15	Preprinted Acetate Grid Sheet
15	Dual Well Combo Plates	1box	Wooden Dowels
5	Forceps	24	Carbon Electrodes
5 sets	Cotton String		

### DOT Info:

UN2031, Nitric acid, 8, II  
UPS Hazard charge applies

**WARNING:** This product can expose you to chemicals including Lead and lead compounds, Chromium/ hexavalent compounds, Nickel (soluble compounds) and Strong inorganic acid mists containing sulfuric acid which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## IS8060



### American Chemical Society: Chemistry – Investigating Your World Lab Activity

This series of activities, developed by the American Chemical Society through grants from the National Science Foundation and National Institutes of Health, is comprised of four lessons that investigate chemical changes. Using the instruction manual obtained from the American Chemical Society's website, and the materials included in the kit, students will take an imaginary trip around the globe to meet scientists and get a sense of the wide variety of ways that chemistry is used to benefit mankind. Activities include the production of a gas, chemistry and color change, formation of a precipitate, and temperature change of a chemical reactions. Contains enough materials for eight groups.

100g	Citric Acid	8	Student Thermometer
100g	Sodium Carbonate	8	Vials
250g	Sodium Bicarbonate	8	Spot Plates
250g	Calcium Chloride	33	Pipettes
8x25mL	Universal Indicator	1	Test Tube w/Rubber Stopper
30mL	Dish Detergent	1	Balloon
30mL	Bromothymol Blue	2	Drinking Straw
16	3oz cups	8	Universal Indicator Chart
32	2oz cups	6	Self Inflating Reaction Bag
9	Medicine Cups	1	Foot Warmer, 2 pack
18	Scoops	18	Spoons
	Toothpicks		



DOT Info:  
Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4  
for domestic highway or rail transport only

**IS2550**

**CHOKING HAZARD**  
Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.

**WARNING:** This product can expose you to chemicals including Phenolphthalein/Methanol/Methyl isobutyl ketone and Phthalates, which are known to the State of California to cause cancer, reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### American Chemical Society: Chemistry's Colorful Clue Lab Activity

Through the lessons in this lab students will learn how human activity may affect natural water sources. Using an indicator, students will determine how acids and bases impact the pH of water. Upon completion of this activity, students will then create carbon dioxide gas through a chemical reaction and determine if the carbon dioxide could have affected the pH of a local stream.

Kit Includes:	
30g Citric Acid	30g Baking Soda
9 x 25mL Bromothymol Blue Indicator	9 Small Metric Measuring Cups
16 Portion Cups, 2oz	25 Clear 10oz Plastic Cups
18 Clear 3oz Plastic Cups	16 Clear 9oz Plastic Wide Cups
9 Small Plastic Spoons	8 Pipettes
1 pkg Toothpicks	32 Cotton Swabs
1 Plastic Spoon	1 Straw
5 pieces Paper	

DOT Info: Non-regulated

**IS2551**



### American Chemical Society: Glow It Up Lab Activity

This lesson explores chemical reactions that release energy in the form of light, known as chemiluminescence. Teachers begin with a demonstration that uses a luminol mixture and oxidizer to create a chemical reaction that glows. Students will then conduct an experiment to see how the amount of oxidizer affects the brightness and duration of the light. Students will also add a fluorescent highlighter dye to the reaction to see how this affects the brightness and duration of the glow. Additionally, they will learn about the invention of the glow stick and relate their experience to how a glow stick works.

**Kit Includes:**

9 x 5g Luminol Copper Blend	9 x 5g Sodium Percarbonate
8 Polypropylene Beaker	18 Small Plastic Scoops
1 Clear 10oz Plastic Cup	25 Clear 3oz Plastic Cups
17 Pipettes	2 Yellow Highlighters
8 pieces Construction Paper	5 Small Glow Sticks
40 pieces White Paper Squares, 1" x 1"	

DOT Info: Small quantity exemption 173.4  
THIS PACKAGE CONFORMS TO 49 CFR 173.4 for domestic highway or rail transport only



**IS2552**

### American Chemical Society: CO<sub>2</sub> To the Rescue Lab Activity

This lesson begins with a design challenge: to invent a small device that could rescue a cell phone that accidentally falls into water. The teacher starts off by showing students a balloon that inflates with carbon dioxide gas as chemicals inside the balloon react with one another. Students conduct a pair of chemical reactions to determine which of two acids react with baking soda to produce the most carbon dioxide gas. Once students determine the best acid to use, they compare the amount of gas produced with different amounts of baking soda. Finally, trying to use the smallest volumes possible, students discover how much of each reactant is needed to fully inflate a small zip-closing plastic bag to see if it can get a model clay cell phone to float.

**Kit Includes:**

175g Baking Soda	8 x 25g Citric Acid
8 x 5g Calcium Phosphate	25mL Liquid Dish Detergent
8 Small Metric Measuring Cups	16 Portion Cups, 2oz
8 Clear 10oz Plastic Cup	16 Clear 3oz Plastic Cups
16 Clear 9oz Plastic Wide Cups	9 Long Pipettes
8 Short Pipettes	24 Small Scoops
16 Tubes	40 Reclosable Bags
1 Plastic Spoon	5 Self-inflating Balloons
1 Clear Self-inflating Balloon	160g Clay

DOT Info: Non-regulated

**CHOKING HAZARD**  
Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.



**IS2553**



## Engineer and Explore Your Own Enteric Coated Drugs

In this lab, students will learn the basic structures and pathway of the digestive system and understand the different functions of the stomach and the small intestine in regards to digestion. They will investigate how the properties of different enteric coatings react in different sections of the digestive system. Next they will explore the purpose of an enteric coating and make a simulated “coating” and engineer a coating most suitable for certain pharmaceutical needs. This lab was written by a Biomedical Engineer and has enough materials for 15 groups. Includes Teacher’s manual and student guide.

### Kit Includes:

200mL	Isopropyl alcohol 99%	34g	Shellac orange flakes
4g	Alginic acid sodium salt	2 x 25mL	Hydrochloric acid 10M
150mL	Sodium hydroxide 10M	2	Aspirin tablets, enteric-coated
2	Aspirin tablets, regular	50	5oz cups
30	Pipettes	45	Beads, white
1pkg	Coverslips	15	Spot plates

### DOT Info:

UN1824, Sodium hydroxide solution, 8, II, Ltd Qty  
UN1219, Isopropanol, 3, II, Ltd Qty  
UN1789, Hydrochloric acid, 8, II, Ltd Qty

**WARNING:** This product can expose you to chemicals including Acetyl Salicylic Acid/Aspirin, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**IS3401**

## Biomaterials to Make Your Own Contact Lenses

Engineers play an integral role in the process of finding a “perfect” material or ratio of materials to maximize the desired properties of an invention and decrease the amount of negative effects of other properties. For example, when developing the perfect material for use in contact lenses, an engineer will have to test many different materials before finding the right one. A hydrogel is a polymer similar to plastic that has favorable optical properties and favorable flexibility/strength but like paper and glasses/ceramics is hydrophilic, which is necessary for a contact lens to function properly. Testing a hydrogel, which is favorable for all three of the main properties needed for a contact lens to function properly, is the main job of a biomedical engineer developing contact lenses today. They make a hydrogel and find the perfect “ratio” of polymer to water. The composition of the hydrogel needs to be hydrophilic enough to maintain a wet environment in the eye but not too hydrophilic so that the contact begins to swell and change size and shape. Students will engineer a lens using 2 different materials. They will determine the correct material and the concentration that has similar properties as a contact lens, while discovering the correct optical properties, tensile strength and hydrophobicity. Kit contains enough materials for 15 groups. Teacher’s Manual and Student Study Guide copymasters are included.

### Kit Includes:

300g	Gelatin Powder
15 pcs	Zinc Metal
15	Plastic Pipettes
45	Petri Dishes
1pkg	Glass Cover Slips
15 pcs	Chromatography Paper
15	Plastic Microscope Slides
15	Glass Microscope Slides
1pkg	Toothpicks
1 bar	Soap

DOT Info: Non-regulated

**IS3402**



## Engineering a Drug Delivery System

Biomedical engineers design devices, equipment, and processes to improve medical treatment methods and the quality of human health and life. They apply engineering principles to biology and medicine to create products such as prosthetic limbs and artificial organs, among other things. One major focus of biomedical engineers is the design of drug delivery systems, which can control the transport and release of medicine in the body to more effectively treat diseases and illnesses. In this experiment, students will gain an understanding of drug delivery and its importance by testing simulated delivery systems in multiple environments that mimic different parts of the body. The delivery systems will be analyzed and compared, allowing students to engineer an optimal solution and learn what properties must be considered when designing new drug delivery systems. This lab has enough materials for 15 groups. Teacher's manual and Student Study Guide copy masters included.

### Kit Includes:

5g	Simulated Drug
1L	Hydrochloric Acid 1.0M
1L	Sodium Hydroxide 1.0M
45	Hydrogel Delivery Systems
45	Plastic Delivery Systems
45	Cups, 5oz

### DOT Info:

UN1789, Hydrochloric acid, 8, III, Ltd Qty  
UN1824, Sodium hydroxide solution, 8, II, Ltd Qty



**IS3403**

## Engineer and Explore Materials for Prosthetics

In this lab, students will explore the materials that biomedical engineers use when creating prosthetic devices. They will first investigate the physical properties of various metals, ceramics, and polymers to understand how they differ, and determine which materials would be most suitable for use in a hip replacement prosthetic. Students will then engineer their own prosthetic arm that meets certain design requirements and mimics the functionality of a real hand. Kit contains enough materials for 15 groups. Teacher's Manual and Student Study Guide copy masters are included.

### Kit Includes:

15 Bone Pieces	30 Aluminum Strips
30 Cobalt Pieces	30 Brass Foil Strips
30 Zinc Pieces	30 Ceramic Tile Pieces
1pkg Glass Slides	30 Polyethylene Pieces
30 Rubber Stoppers	30 Balloons
15 Push Pins	15 Plastic Cups
20 Cardboard Pieces	2 Toothpick Packs
150 Plastic Stirrers	2 Sticky Connecting Putty Packs
150 Small Wooden Skewers	100 Rubber Bands
100 Straws	100 Wooden Craft Sticks
100 Index Cards	Package of String

DOT Info: Non-regulated



**IS3404**

**CHOKING HAZARD**  
Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.

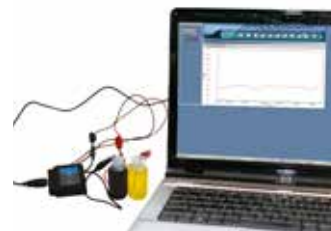
**WARNING:** This product can expose you to chemicals including Phthalates, which is known to the State of California to cause reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## STEM - Science, Technology, Engineering, and Mathematics For use with Neulog® sensors

### Green Fuel Cell Kit - IS 6500

Monitor the voltage generated by a biological fuel cell, using the yeast *Saccharomyces cerevisiae*. A simple sugar will be used as a food source for the yeast and methylene blue will be employed as an electron mediator. The cell will be constructed without the mediator and a baseline voltage will be established as some electrochemical activity will be occurring. Once the cell has stabilized, the mediator will be added and the effect on voltage will be monitored and recorded using a Neulog® Voltage sensor. There are enough materials for 15 set ups.

**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 [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



### Photosynthesis and Respiration Chamber - IS6501

The photosynthesis/respiration demonstration chamber may be used to monitor oxygen levels, carbon dioxide levels, or both in an enclosed environment. The chamber has been designed to be used with the Neulog™ Oxygen logger sensor and/or the Neulog® Carbon dioxide logger sensor as well as Neulog™ software for data acquisition. As an option, a light sensor may also be used when running photosynthesis experiments to correlate light intensity to changes in carbon dioxide and oxygen levels in the chamber. The lid of the chamber provides openings for both the oxygen sensor and the carbon dioxide sensor. If both sensors will not be used for a particular experiment, place the proper rubber stopper in the opening that will not contain a sensor during the experimental run. You can set up an experiment and record light and dark cycles over a weekend or period of time without even being in the classroom as the sensors will capture all of the information for your student to study.

**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 [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### Effectiveness of Sunscreen - IS6502

Electromagnetic radiation in the UV range of the spectrum cannot be perceived by the human eye. Using the Neulog® UVB sensor specifically designed to measure UVB radiation, you will compare the amount of UVB radiation reaching the sensor. The sensor will be protected by both SPF15 and SPF30 sunscreens to determine if the sunscreens actually provide UVB protection and if so, how much protection. There are enough materials for 15 set ups.



### Optimized Fermentation and Yeast - IS6503

Determine the optimum food source for yeast by monitoring growth rate and respiration. Requires pressure sensor.



### Physical Characteristics of Gases - IS6509

The gas laws (Boyle's, Charles's and Gay-Lussac's) are simple mathematical relationships between volume, temperature and pressure. By varying one factor you can measure the effect on the others. Requires temperature and pressure sensors.

**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 [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



DOT Info: Non-regulated

## Biotechnology

### Electrophoresis and DNA Fragment Length Determination

In this activity students will perform agarose electrophoresis on three DNA samples that have already been treated with restriction enzymes. Students will not only learn about the process of DNA electrophoresis but learn the techniques associated with the process, such as setting up an agarose gel, loading DNA samples in the agarose gel, and staining the gel in order to visualize the DNA bands. They will also learn how to determine the sizes of unknown DNA fragments after examining their results. The kit includes specially-treated DNA samples that do not require refrigeration or freezing, prepared agarose that may simply be melted in a hot water bath or microwave, TBE electrophoresis buffer, and DNA stain. There is enough DNA to run 10 gels.

**Kit Contains:**

200mL	0.8% Agarose
500mL	5X Tris Borate ETA Buffer,
60mL	20X DNA Stain
	LAMBDA DNA ECORI DIGEST With Loading Dye
	LAMBDA DNA HINDIII DIGEST With Loading Dye
	LAMBDA DNA ECORI/HIND III DIGEST With Loading Dye

DOT Info: Non-regulated

**IS3300**



### DNA Fingerprinting Electrophoresis Lab Activity

DNA fingerprinting is one of the strongest forms of evidence in forensic investigations. In this activity students will perform agarose gel electrophoresis on four DNA samples to determine if DNA from suspects matches that of DNA found at a crime scene. Students will also learn about restriction enzymes and the importance of these enzymes in the DNA fingerprinting process. The kit contains enough materials for 8 groups and includes a Teacher's Guide and Student Study copymasters.

**Kit Includes:**

200mL	Prepared Agarose 0.8% Solution	500mL	Tris-Borate-EDTA Buffer 5X
60mL	DNA Stain 20X	10µg	Crime Scene DNA
10µg	Victim DNA	10µg	Suspect #1 DNA
10µg	Suspect #2 DNA		

DOT Info: Non-regulated

**IS3301**



### DNA Paternity Testing Electrophoresis Lab Activity

While over 99% of DNA is the same among all humans, the remaining part is unique to every individual (with the exception of identical twins). These differences are hereditary, with parts of the unique sequence coming from each parent. By using DNA fingerprinting, or DNA profiling, a child's paternal relationship can be tested by comparing the child's DNA profile to the profile of the mother and possible father to determine if an individual is the father or not. In this activity students will use electrophoresis to separate DNA samples of a child, mother, and two potential fathers to determine if either father is a possible paternal match. The kit contains enough materials for 8 groups of students and includes a Teacher's Guide and Student Study Guide copymasters.

**Kit Includes:**

200mL	Prepared Agarose 0.8% Solution	500mL	Tris Borate EDTA Buffer 5X
60mL	DNA Stain 20X	10µg	Mother's DNA Sample
10µg	Child's DNA Sample	10µg	Possible Father #1 DNA Sample
10µg	Possible Father #2 DNA Sample		

DOT Info: Non-regulated

**IS3303**





## Agarose Dye Marker

Agarose dye marker set can be used with a 2% agarose gel to get students accustomed to the electrophoresis process without using expensive DNA. You can run up to 8 gels.

### Kit Includes:

1mL	Bromophenol Blue
1mL	Xylene Cyanol
1mL	Orange G
1mL	Crystal Violet
1mL	Malachite Green
1mL	Dye Mixture

DOT Info: Non-Regulated

**WARNING:** This product can expose you to chemicals including Crystal Violet, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**IS5007**

*For  
Biotechnology equipment  
and Histology Reagents  
please visit our website!*

## Prepared Agarose

Simply melt the prepared agarose in a water bath or microwave. Pour into a gel casting tray, allow the molten agarose to solidify and run your gel.

### IS5201

0.8% Agarose 200mL - Resolves DNA fragments 0.6-35kb long

### IS5202

1.0% Agarose 200mL - Resolves DNA fragments 0.5-20kb long

### IS5203

2.0% Agarose 200mL - Resolves DNA fragments 0.1- 5kb long

DOT Info: Non-Regulated

## Powdered Agarose

Prepare your own agarose gels at any concentration with the addition of TBE running buffer. Can be stored at room temperature for years.

**IS5204** - Agarose 5 gram bottle (Low EEO)

**IS5205** - Agarose 25 gram bottle (Low EEO)

## Agarose Gel Reagents

**IS5206** - TBE Buffer 5XConcentrate 500mL. 5X running buffer concentrate makes 2.5L of 1X working concentration

**IS5207** - Tris-EDTA (TE) Solution 10X concentrate 25mL. Use for diluting DNA samples

**IS5208** - Loading Dye 10x 5mL. Dye that is used for tracking DNA during agarose electrophoresis.

**IS5209** - DNA20x Stain 60mL bottle. Stain and Destain in 40 Minutes. This highly sensitive stain will stain a gel in about 20 minutes and destain in 20minutes. Once the gels are stained they can be stored for months without fading. Stain up to 20 gels with 60mL.

**IS5250** - Agarose Gel Electrophoresis Reagent Pack. All the necessary reagents to prepare and run agarose gels in one convenient package. Contains: TBE buffer, 5x concentrate 500mL; Agarose, powdered, 5g; DNA Stain 20x concentrate, 60mL; Loading Dye, 10x concentrate, 10mL

DOT Info: Non-Regulated



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*The following disclaimer applies to each item sold by Aldon.*

**WARNING:** These products are not toys. Products are not for children under age 13. Products may contain lead or choking hazards such as small parts, small balls, marbles, and balloons. Adult supervision is required.

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