

**Materials Provided in Kit****Unit A: Studying Materials Scientifically**

- 1 DVD, "Hazardous Materials"
- 2 screw top jars
- 120 100-mL (3.25-oz) plastic cups with lids
- 24 270-mL (9-oz) plastic cups with lids
  - 1 bottle of iron nitrate crystals
  - 2 480-ml bottles of mineral oil
- 100 black HDPE squares
- 100 red HDPE tubes
- 80 aluminum washers
- 10 short aluminum cylinders
- 10 zinc cylinders
- 20 3-mL pipettes
- 16 plastic forceps
- 16 plastic droppers
  - 8 30-mL bottles of 100,000 ppm copper chloride solution
  - 2 pieces of copper wire
- 16 pieces of steel wool
  - 8 nematode funnels with screens
- 80 6-cm filter paper circles
- 16 SEPUP trays
  - 8 sets of 12 Chemical Data Cards
- 16 3-dram vials with caps
- 200 strips of cobalt chloride paper
- 200 strips of pH paper
  - 8 pH color scales
  - 8 battery harnesses with light bulbs
  - 8 60-ml bottles of ethanol
  - 8 30-ml bottles of 0.1M potassium thiocyanate solution
  - 8 30-ml water bottles
- 16 50-ml graduated cylinders with bases
  - 1 modeling clay set
- 16 metric rulers
  - 8 aluminum cubes
  - 8 long aluminum cylinders
  - 8 aluminum bars
  - 8 steel cubes
  - 8 black steel cylinders
  - 8 steel bars

**Unit B: The Chemistry of Materials**

- 8 sets of 21 Material Data Cards
- 1 large strip of each:
  - aluminum
  - copper
  - iron
  - Formica
  - polystyrene plastic
- 1 large version of each:
  - piece of ceramic tile
  - block of wood
  - glass rod
  - piece of granite
  - piece of limestone
  - carbon rod
- 16 270-mL (9-oz) plastic cups
- 16 stir sticks
  - 8 glass scratch plates
  - 8 battery harnesses with light bulbs
  - 8 15-mL bottles of 1M hydrochloric acid
- 8 strips of:
  - aluminum
  - copper
  - iron
  - Formica
  - polystyrene plastic
- 8 pieces of ceramic tile
- 8 pieces of wood
- 8 glass rods
- 8 pieces of granite
- 8 pieces of limestone
- 8 small carbon rods
- 8 sets of 4 Element Family Cards
- 8 sets of 13 Element Cards
- 16 molecular model sets containing:
  - 32 white "atoms"
  - 18 black "atoms"
  - 14 red "atoms"
  - 4 blue "atoms"
  - 54 white bonds
- 20 packets of table salt
  - 8 30-mL bottles of denatured alcohol (ethanol)

- 50 strips of:
- blue polypropylene (PP)
  - green polyvinyl chloride (PVC)
  - red high-density polyethylene (HDPE)
  - yellow polystyrene (PS)
- 40 squares of:
- blue polypropylene (PP)
  - green polyvinyl chloride (PVC)
  - red high-density polyethylene (HDPE)
  - yellow polystyrene (PS)
- 20 strips of:
- clear polypropylene (PP)
  - orange polyvinyl chloride (PVC)
  - black high-density polyethylene (HDPE)
  - white polystyrene (PS)
- 10 squares of:
- clear polypropylene (PP)
  - orange polyvinyl chloride (PVC)
  - black high-density polyethylene (HDPE)
  - white polystyrene (PS)
- 1 180-mL bottle of acetone
- 32 30-mL graduated cups
- 32 3-dram vials with caps
- 16 pairs of plastic forceps
- 8 180-mL bottles of 4% polyvinyl alcohol solution
- 8 30-mL bottles of 4% sodium borate solution
- 16 plastic spoons
- 8 60-mL wide-mouthed plastic bottles
- 500 silver paper clips
- 100 colored paper clips
- 40 copper-coated plastic pieces
- 2 240-mL bottles of etching solution
- 5 etching trays
- 16 pieces of steel wool
- 8 30-mL bottles of 25,000 ppm copper chloride solution
- 8 30-mL bottles labeled "water"
- 8 30-mL bottles of 5% ammonia solution
- 8 30-mL bottles labeled "used copper chloride"
- 16 SEPUP trays
- 16 droppers
- 8 60-mL bottles of 0.8M sodium hydrogen phosphate
- 16 10-mL graduated cylinders
- 32 reaction bottles
- 1 DVD "Waste Disposal: Computers and the Environment"
- 5 resealable plastic bags
- 1 package of metal paper
- 160 aluminum washers
- 80 iron washers
- 80 zinc washers
- 8 30-mL bottles of 0.8M sodium carbonate solution
- 16 SEPUP funnels
- 170 7-cm filter paper circles
- Unit C: Water**
- 250 small plastic tasting cups
- 24 140-mL plastic graduated cups
- 1 color transparency 32.1
- 1 color transparency 32.2
- 8 packages colored pencils
- 2 metal backed thermometers
- 8 small, clear plastic vials with caps marked "A"
- 8 small, clear plastic vials with caps marked "B"
- 8 60-mL dropper bottles labeled "Liquid A" (empty)
- 8 60-mL dropper bottles labeled "Liquid B"
- 8 10-mL graduated cylinders
- 30 microscope slides
- 16 molecular model sets containing:
- 32 white "atoms"
  - 18 black "atoms"
  - 14 red "atoms"
  - 4 blue "atoms"
  - 54 white bonds
- 8 containers of sodium chloride
- 8 containers of copper chloride
- 8 containers of cornstarch
- 8 containers of iron chloride
- 8 60-mL dropper bottles of distilled water
- 16 SEPUP trays
- 16 SEPUP funnels
- 800 7-cm filter paper circles
- 16 stir sticks
- 16 droppers
- 16 magnifying lenses (4X)
- 8 30-mL dropper bottles of ethanol
- 8 containers of sugar
- 8 containers of lauric acid
- 8 containers of copper sulfate
- 8 containers of neroline yara yara
- 8 containers of nitrate indicator Powder

- 16 sets of 6 Contaminants and the Water Cycle cards
  - 16 white plastic number cubes
  - 16 blue plastic number cubes
  - 8 15-mL dropper bottles of red food coloring solution
  - 1 60-mL dropper bottle of 0.1M sodium nitrate solution
  - 1 240-mL dropper bottle of "Fenton River Water Stock Solution", (empty)
  - 1 240-mL dropper bottle of "Willow Lake Water Stock solution", (empty)
  - 1 240-mL dropper bottle of "Well Water Stock solution", (empty)
  - 1 container of clay
  - 8 30-mL dropper bottles of universal indicator solution
  - 8 30-mL dropper bottles of 5% ammonia solution
  - 8 30-mL dropper bottles of 0.1M potassium thiocyanate solution
  - 8 60-mL dropper bottles of 0.5M hydrochloric acid solution
  - 8 20-mL calibrated plastic tubes
  - 8 tube caps
  - 8 30-mL dropper bottles for Fenton River Water (shipped empty)
  - 8 30-mL dropper bottles for Willow Lake Water (shipped empty)
  - 8 30-mL dropper bottles for Well Water (shipped empty)
  - 2 watch glasses
  - 1 container of potting soil
  - 1 container of sand
  - 1 container of activated charcoal
  - 1 15-mL dropper bottle of green food coloring
  - 1 15-mL dropper bottle of blue food coloring
  - 1 container of gravel
  - 8 tubes with holes in bottom
  - 8 tube holders
  - 8 containers of alum
  - 8 large plastic spoons
  - 8 small plastic spoons
  - 8 30-mL graduated cups
  - 24 270-mL (9-oz) plastic cups
    - 8 60-mL dropper bottles of 5% sodium carbonate solution
    - 8 30-mL dropper bottles of 50,000 ppm copper chloride solution
  - 32 square bottom vials with caps
    - 4 vials of pH paper
    - 8 pH color scales
    - 8 60-mL dropper bottles of 1% potassium hydroxide (KOH) solution
  - 8 30-mL dropper bottles of 1% hydrochloric acid solution
  - 8 30-mL dropper bottles of 0.1% phenolphthalein solution
  - 1 battery harness with bulb
  - 1 audible conductivity indicator
  - 5 salt packets
  - 5 sugar packets
  - 1 240-mL bottle of Acme Metals Wastewater Stock Solution (empty)
  - 8 30-mL dropper bottles of Acme Metals Wastewater (empty)
  - 1 240-mL bottle of 0.6M Hydrochloric Acid
  - 1 funnel
- Unit D: Energy**
- 8 short transparent tubes
  - 8 long transparent tubes
  - 8 short aluminum cylinders
  - 8 long aluminum cylinders
  - 8 short steel cylinders
  - 8 long steel cylinders
  - 10 galvanized nails
  - 24 Styrofoam blocks
    - 8 shot shakers
      - 1 container of metal shot
    - 8 caps for shot shaker
    - 8 glass thermometers
  - 16 270-mL (9-oz) plastic cups
    - 4 sets of 16 Energy Event cards
  - 16 50-ml graduated cylinders with bases
  - 32 8-oz Styrofoam cups
  - 16 metal backed thermometers
  - 16 plastic spoons
    - 8 SEPUP nut holders
    - 8 30-ml dropper bottles of 3% hydrogen peroxide
    - 8 pieces of sandpaper
  - 16 wet cell chambers and stand sets
  - 16 zinc metal strips
  - 16 copper metal strips
  - 16 iron metal strips
    - 1 magnesium metal roll
  - 400 salt packets
  - 24 black jumper leads
  - 24 red jumper leads

- 16 electric motors
- 24 bulb sockets
- 24 bulbs
  - 8 electric buzzers
- 12 small carbon rods
- 12 glass rods
  - 8 granite pieces
  - 8 polystyrene plastic strips
  - 8 ceramic tiles
  - 8 blocks of wood
  - 8 9V battery harnesses
- 16 bulb socket and thermometer holders
- 32 sealable plastic bags
  - 8 aluminum strips
  - 8 white plastic tubing holders
  - 8 12-foot coils of black plastic tubing
  - 8 solar cells
  - 8 water pumps
- 16 metric rulers
- 16 boxes
  - 8 pieces of:
    - clear plastic film
    - tinted plastic film
    - reflective plastic film
- 16 LAB-AIDS hot bulb trays
  - 6 neodymium magnets
- 32 bar magnets
- 24 battery holders
- 16 copper support strips
  - 8 motor mounts
  - 8 wire coils
  - 8 LED bulbs
- 16 compasses
- 16 9-oz plastic cups
- 16 small tasting cups
  - 1 stick of modeling clay
  - 1 balloon

**Unit E: Force and Motion**

- 16 track pieces
  - 8 carts
  - 8 ramps
  - 8 timers
  - 8 wooden blocks
- 24 metal cylinders
- 32 metric rulers
  - 8 glass marbles
  - 8 metal marbles
  - 8 miniature road cones
  - 8 circular tracks (2 pieces)
- 16 force meters
  - 8 rubber bands
  - 8 braking cloths
  - 8 barrier track pieces
- 16 plastic cylinders

**Unit F: Waves**

- 8 Sound Intensity card sets
- 8 metal washers
- 8 1.5 m lengths of yarn
- 8 50-cm lengths of thick string
- 8 timers
- 8 long metal springs
  - 1 diffraction grating
- 24 Phospho-boxes
- 16 cards with a star-shaped cut out
- 24 thermometers
  - 8 film A
  - 8 film B
  - 8 film C
- 16 black cloth
  - 8 aluminum foil squares
- 24 UV cards
  - 16 pieces of plastic
- 48 UV card holders
  - 8 30-mL bottles of SPF 30 sunblock lotion
  - 8 30-mL bottles of moisturizing lotion

**Materials Not Provided in kit****Unit A: Studying Materials Scientifically**

- 1 DVD Player
- 1 TV monitor
- 1 overhead projector
  - chart paper
  - markers
  - news stories about a local hazardous materials incident (optional)
- 2 glass beakers
  - matches
- 1 candle
  - paper towels
- 1 class set of safety goggles
  - several different types of batteries (household, rechargeable, watch) (optional)
  - masking tape
- 1 permanent marker
- 1 cork
- 1 rock
- 8 9-volt batteries
  - assorted objects to demonstrate volume, such as a capped 2-liter bottle of air, a 1-liter bottle of water, a sealed baggie or balloon filled with air, a beaker half-filled with water, containing a few drops of food coloring, and several small and large solid objects.
- 16 balances
  - 1 class set of calculators
- 32 index cards

**Unit B: The Chemistry of Materials**

- 1 overhead projector
- 1 plastic bottle, glass bottle, and aluminum can
- 8 sets of blank slips of paper (at least 8 slips per set)
  - graph paper
- 8 transparency markers
  - chart paper
  - poster markers
  - water
- 8 9-volt batteries
  - paper towels
- 1 class set of safety goggles
  - various samples of elements such as sulfur, silver, and tin (optional)
- 1 glass beaker

- 1 heat lamp or hair dryer
- 1 metal ring stand
- 2 wood strips or glass slides
- 1 heavy duty pair of scissors
- 8 petri dishes or containers to hold plastic strips
- 80 zip lock plastic bags (optional)
- 8 sets of colored pencils
  - circuit board (optional)
- 8 permanent felt tip markers
  - white 8 1/2" x 11" paper
- 1 bottle of food coloring
- 1 can of soda
- 16 balances
  - 1 TV monitor and DVD player
- 2 metal plates or pie tins
  - potholder or insulating pad
  - matches
  - waste container
  - flat open container to evaporate waste solutions
  - 2 liter bottle for collecting used copper chloride
- 2 containers to hold ash samples
  - masking tape

**Unit C: Water**

- 11 overhead projector
- 3 liters of distilled water
  - 1 liter of bottled commercial spring water
- 3 containers (approx 1 liter) labeled A, B, and C
  - transparent tape
- 16 blank transparencies
- 16 transparency marking pens
- 2 hot plates
- 1 metal tongs
- 1 permanent marker
  - masking tape
- 2 100-mL beakers
- 2 150-mL beakers
- 1 250-mL beaker
  - paper towels
- 8 balances
  - safety goggles
  - pictures illustrating states of water in the water cycle (optional)

- 1 oven mitt or potholder
  - at least two acids, such as colorless soda water, colored juice, carbonated beverage, or drink mix dissolved in water, buttermilk, orange juice, vinegar
  - at least two bases, such as ammonia-based cleaner, baking soda dissolved in water, liquid laundry or dishwasher detergent, milk of magnesia
  - at least two neutral liquids such as rubbing alcohol, milk, chicken broth
- 40 index cards
  - 1 red marking pen
  - 1 blue marking pen
  - 1 9-volt battery
- 16 sets of colored pencils (optional)

**Unit D: Energy**

- 1 overhead projector
  - paper towels
- 8 timers/stopwatches
  - small cooler or container for transporting ice
  - ice cubes
  - foam ball (optional)
  - syringe (optional)
  - insulating materials
- 2 100-mL beakers, or other small similar containers
- 1 250-mL beaker, or other larger container
- 8 wire coat hangers, wrapped with aluminum foil
- 8 aluminum beverage can
  - nuts removed from shell
- 8 boxes wooden matches or a log lighters
- 8 tongs or potholder
- 8 ring stands (optional)
- 8 clamps (optional)
  - safety goggles
- 1 multimeter (optional)
  - masking tape
- 32 D-cell (1.5 V) batteries
  - 1 incandescent bulb, 40-watt

- 1 incandescent bulb, 75-watt
- 1 standard screw-in socket or lamp fixture
- 1 incandescent bulb, either 75- or 40-watt, painted black (optional)
- 8 9-volt batteries
- 8 protractors
  - 17 x 20 cm pieces of cardboard (optional)
  - graph paper
  - pieces of cloth and/or paper of different colors
  - newspaper
  - aluminum foil
- 8 scissors

**Unit E: Force and Motion**

- Overhead projector
- 8 meter sticks
- 8 scissors
  - tape or glue
  - graph paper
  - markers
  - masking tape
  - chart paper
  - large cart on wheels (optional)
  - assorted masses, such as blocks or books (optional)
- 3 chairs
- 16 paper clips or envelopes (optional)
- 16 calculators (optional)
- 8 trays (optional)
  - computers with Internet access (optional)

**Unit F: Waves**

- 8 meter sticks
- camera
  - graph paper
  - aluminum foil
- 16 calculators (optional)
  - paper towels
  - masking tape