

Energy from Chemical & Nuclear Reactions

Included Items

Lesson

1	Small sticky dots (green)	3 sheets
1	Small sticky dots (blue)	3 sheets
1,2,3,6,7,9,10,11,13	Fuel Data cards	8 pk
2	Bromothymol blue	100 ml
2	Ethanol	200 ml
2	Large plastic syringe	1
2	Syringe cap	1 pk
2	Lighter, hooded	1
2	Sticky tack (optional)	2
2	Tea candle holder, subbed aluminum weigh dish	3
2	Thermometer, infrared	1
2,3	Fire syringe	1
4,5,6	Glass marble	1 pk
4,5,6	Ruler, 12" plastic with recessed groove	19
4,5,6,7	Ball bearing, steel, used as metal marbles	16
4,5,6,7	Magnet marbles	3 pk
4,5,6,7,9	Hot glue gun	1
4,5,6,7,9	Hot glue sticks, mini	2 pk
4,6	Box, corrugated cardboard, 4x3x2"	24
4,6	Level, mini	1
5,10	Permanent marker	1
6,7	Magnet, round, neodymium, 0.37 in dia. x 0.12 in	40
6,7	Magnet, round, ceramic, 0.50 in dia. x 0.20 in	40
8	Calcium chloride	40 g
8	Instant cold pack	1
8	Instant hot pack	1
8	Potassium chloride	100 g
8	Scoopula	1
8	Weighing dishes	8
9	Aluminum electrode, subbed for aluminum foil	6
9	Ammeter, replaced by multimeter, <i>see note last page</i>	8
9	Black wire with alligator clips	8
9	Yellow wire with alligator clips	8

9	Copper electrode, subbed for copper foil	6
9	Electrode, iron	2
9	Electrode, zinc	2
10	1" styrofoam balls	3 pk of 16
10	2" styrofoam balls	6 pk of 12
10	12" pipe cleaners	1 pk of 100

Locally Sourced Items		Suggested Quantities	Available at wardsci.com Part #
Lesson			
2	Cotton ball, 100% cotton	1 pkg of 200	470338-036
2	Hot plate or electric kettle	1	470343-060
2,8	Individual whiteboard	35	470231-738
4,5,7	Small flathead screwdriver	1	470018-626
4,6	Pieces of scrap paper	1	
9	Distilled water (for electrolyte solution)		
9	Gallon jug	1	470332-684
9	Table salt, 500 g (for electrolyte solution)	737 g	470324-147
9	Vinegar (for electrolyte solution)	473 ml	470174-478

Std. Lab/Class Equipment		Suggested Quantities	Available at wardsci.com	
Lesson			Part #	
1	Colored pencils	3	set of 12	470353-380
1,2,3,4,5,8,9,10,12,13	Chart paper	1	pad of 50	470149-864
1,2,3,4,5,8,9,10,12,13	Chart paper markers	1	set	470338-508
1,3,8,11,13	Sticky notes	70+	pads	STTS592837
1,3,8,11	Colored markers	5	set of 8	470347-380
2	1000 mL glass beaker	1		470175-966
2	Small clear plastic cups or small petri dishes	1	pkg of 20	470210-566
2,8	Dry erase marker	35		470046-806
2,8,9	Non-latex apron	2	pkg of 20	470332-710
2,8,9	Sanitized indirectly vented chemical splash goggles	35		470016-082
4,6	Clear tape	1		470223-174
4,7	Safety glasses with side shields	35		470100-596
7	Calculator	35		470349-970
7	Paper clips	1	box of 100	470143-696
8	100 mL beaker	8		470191-188
8	100 mL graduated cylinder	8		470174-198
8	Scale (0.1 g precision)	1		470350-092
8	Stir rod	7		470235-782
8	Thermometer, liquid or digital (non-mercury)	8		470349-810
8,9	Non-latex nitrile gloves	2		76518-338
9	500 mL beaker	7		470144-854
9	Binder clip (or clothespin)	2	boxes of 12	470188-342
9,10	Scissors	1		470018-874

Note about using multimeter:

When you are using a multimeter in this experiment, place the black cord in the COM port and red cord in the ν (omega) mA. Next connect the black alligator clip to one of the electrodes and the other end to the black pin on the cord from the multimeter. Connect the yellow alligator cord between the other electrode and the red pin from the multimeter. Turn the dial to 20 in the section labeled as DCV and turn on the multimeter.

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