

Reacting Copper With Sulfur

Name _____ Date _____ Period ___ Group ___

Problem: When copper and sulfur are mixed together and heated, will it cause a chemical change to occur?

Hypothesis: _____

Variables: By the time you finish this experiment ,you will need to identify the different types of variables present in this investigation. Consult your notes for definitions of the types of variables.

Independent Variables: _____

Dependent Variables: _____

Controlled Variables: _____

Materials: Small test tube, balance, scoop, small containers of copper and sulfur, burner, test tube holder, small balloon, centimeter ruler

Procedures: If you have ever smelled rotten eggs, then you'll have some idea of how unpleasant sulfur can be in some situations. Since we'll be heating sulfur, along with copper, the resulting odors can be very offensive and with some individuals, irritating. To keep these odors from causing any problems, we're going to confine them in the test tube they're being heated in. To do this, you'll cover the end of the test tube with a small balloon, after you've added the copper and sulfur to the tube.

1. Adjust your balance to read 'zero' when nothing is on it.
2. Observe and record the odor , color and luster of the copper and sulfur before heating. Record step 2 observations in the chart at the bottom of the page.
3. Use the scoop to add an amount of copper granules to the test tube equal to a depth of 1 cm .
4. In the same way, add an amount of powdered sulfur to the test tube equal to a depth of 1 cm .
5. Cover the test tube with your finger and shake it until the copper and sulfur are evenly mixed.
6. Now seal the end of the test tube with the small balloon. The balloon will remain on until you are done with massing in the experiment.
7. Measure and record the mass of the test tube and it's contents in the chart on the back.
8. Use the test tube holder to grip the test tube right under the lip of the test tube opening. Hold the test tube with the tube holder at a 45° angle over the burner flame at the hottest part of the flame, and heat until no more yellowish gas is seen swirling around the inside of the tube. Keep the balloon itself away from the flame.
9. Only when the test tube has cooled, mass the test tube and its contents again and record the mass.
10. Calculate the percent change in mass as indicated in the chart.
11. Observe and record the odor (remove balloon only after massing and let it air out before testing for odor) , color and luster of the copper and sulfur now that it has reacted and record in the chart on the back.

Safety: Safety goggles must be worn when using burner, as well as tying back long hair and wearing proper footwear. Handle test tube only when cool.

	Copper (Before heating)	Sulfur (Before heating)	Copper + Sulfur (After heating)
Odor			
Color			
Luster (how it reflects light)			

