

**Station 1: (Synthesis Reaction)**

**\*\*Safety precaution—Mg is flammable and may burn, if it does burn do not look directly into the flame and remove heat.**

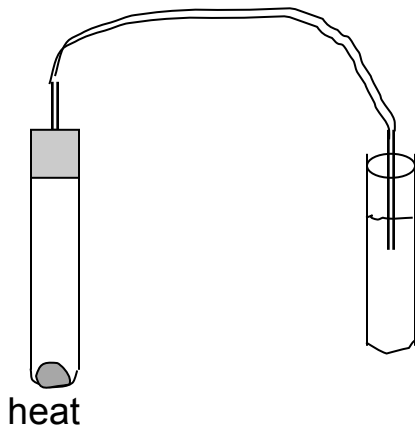
1. Roll a small piece (~13 cm long) into a loose ball. Place the Mg in a clean, dry crucible and measure the mass of the crucible and its contents carefully to the nearest 0.01 gram. Record the mass under properties of reactants along with other observations about the malleability, color, ect.
2. Place the crucible in a clay triangle, and place the clay triangle on a ring. Begin heating, slowly at first. Gradually increase the intensity of the heat to the hottest flame of your burner.
3. When the Mg begins to glow brightly, stop heating. After the crucible has cooled, remove it from the clay triangle with forceps. Measure the mass, then empty the crucibles contents into the container designated by your instructor. Record the mass and other observations about the properties of the reactants in your data table.

## Station 2: (Decomposition Reaction)

**\*\*Safety Precaution: copper (II) carbonate is poisonous; avoid skin contact. Limewater causes burns; avoid skin contact. Do not point these test tubes at yourself or anyone else.**

1. Obtain two small spatulas of copper (II) carbonate,  $\text{CuCO}_3$ , and place them in a large, dry test tube. Cap the test tube with the 1 hole stopper with glass tubing. Connect the plastic tubing to the end of the glass tubing and to the end of another glass tube.
2. Pour about 5 mL of limewater,  $\text{Ca}(\text{OH})_2$  into a medium test tube. Place the end of the right angle glass tube in the limewater solution as shown in figure 1. Record observations of reactants.

Figure 1:



3. Heat the tube containing the  $\text{CuCO}_3$  while holding the end of the glass tube in the limewater solution with test tube clamps. Continue heating until bubbling has nearly stopped. Remove the limewater tube before removing the heat from the  $\text{CuCO}_3$ . A cloudy appearance in the  $\text{Ca}(\text{OH})_2$  indicates the presence of  $\text{CO}_2$ . Record any other observations of the products.
4. Place the solid left over from heating the  $\text{CuCO}_3$  into the waste container designated by your instructor. The limewater solution may be rinsed down the sink using plenty of water.

**Station 3: (Single Displacement)**

**\*\*No burner!! Keep away from open flame. HCl causes burns; avoid skin contact. Rinse spills with plenty of water.**

1. Clean and dry the apparatus used for Exercise 2. Obtain a small piece of zinc and place it in the test tube. Measure 5 mL of 6M HCl in a graduated cylinder. Record observations of reactants in your data table. Add the 5 mL HCl to the zinc in the test tube and quickly insert the rubber stopper containing the glass tube and clamp the test tube in place as shown in figure 2.

Figure 2:



2. A gas should escape from the tubing. With the glass tubing turned up, collect some of that gas by displacement of air by inverting another test tube over the upturned gas delivery tube. (See figure 2.)
3. Remove the test tube containing the collected gas—keeping it upside down. Bring a burning splint near its mouth and a “pop” or “bark” indicates the presence of Hydrogen gas. Record your observations of the products in your data table.
4. Remove the rubber stopper from the test tube and add tap water to the contents of the test tube. Pour the liquid onto the sink and rinse with plenty of water. The solid may be placed in the garbage can.

**Station 4:** (Double displacement)

**\*\*Caution: Nitrates can be corrosive, avoid skin contact. Rinse spills with plenty of water.**

1. Add 5 mL of sodium sulfate,  $\text{Na}_2\text{SO}_4$ , to a small test tube. Record observations of reactants. Add about 10 drops of Barium nitrate solution,  $\text{Ba}(\text{NO}_3)_2$ , to the  $\text{Na}_2\text{SO}_4$ .
2. After observing and recording the properties of the reactants, empty the liquid and solid contents into the waste container designated by your teacher.