

Name _____
Period _____

Unit 3

Title: Chemical Reactions

Problem: What two chemical changes occur as you produce and burn hydrogen?

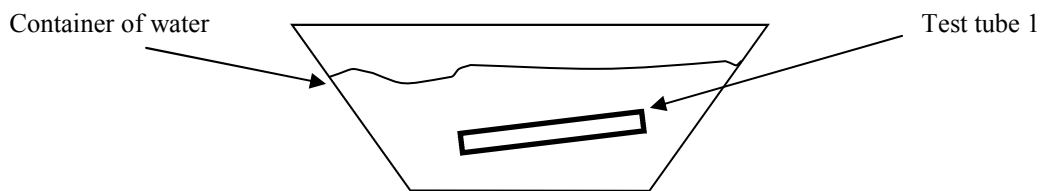
Hypothesis:

Materials: 15 mL dilute hydrochloric acid, 1 large and 1 small test tube, 1-hole rubber stopper that fits the large test tube, plastic or glass tube about 4 cm long that is inserted into the 1-hole stopper, hose about 20 cm to 30 cm long, water, container for the water, test-tube holder, matches, wooden splints, several small pieces of zinc, cover goggles, and apron.

Procedure and Observations:

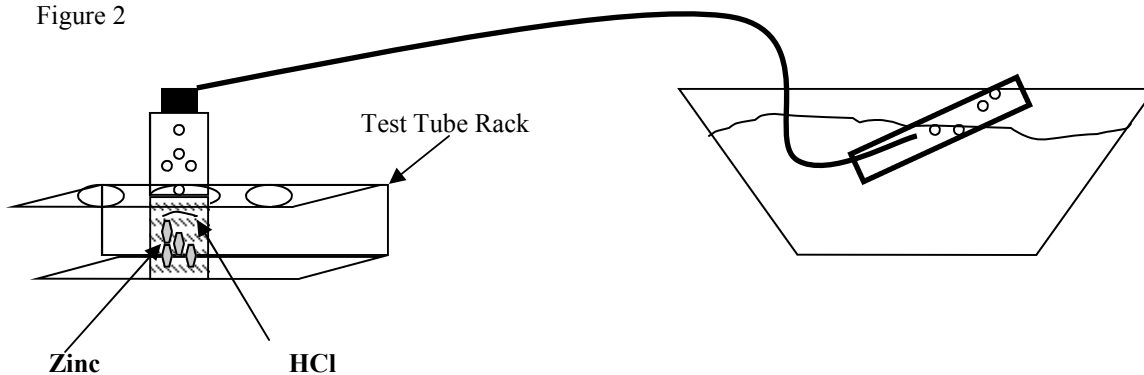
1. Wet one end of the hose and push it onto the end of the tube sticking out of the stopper.
2. Fill the container half full of water.
3. Place small test tube in the container, making sure that the test tube is completely filled with water, as shown in Figure 1.

Figure 1



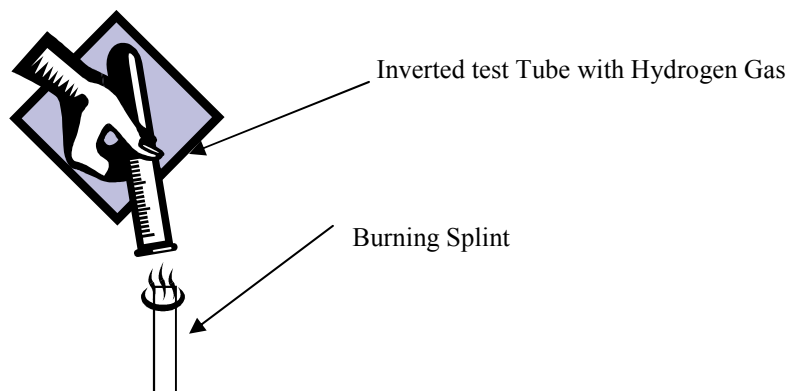
4. Examine the zinc pieces. Place no more than 3 to 5 pieces of the zinc in largest test tube.
- ***Caution: Be careful when working with the acid. Acid can damage skin and clothing. Be sure never to block the stopper hole. Follow the procedures precisely. Pour no more than 15 mL of dilute hydrochloric acid into large test tube. Stopper the test tube. Use only the quantities indicated.

Figure 2



5. Place the hose in the water as shown in Figure 2. Bubbles of gas should escape through the free end of the hose. Wait about 4 min. before collecting any of the gas that is escaping from the test tube.
6. After 4 min. invert small test tube in the water as shown in Figure 2. The test tube must be inverted and filled with water. Place the free end of the hose under the opening of the test tube and collect the bubbles of gas.
7. Remove large test tube from the water holding it topside down as shown in Figure 3. Note Keep the test tube bottom-side-up.

Figure 3



8. Light a match and ignite a wooden splint.
9. Insert the burning splint into the mouth of the test tube and listen for the reaction.

Analysis and Conclusions:

1. Describe some physical properties of zinc.
2. Describe a chemical property of zinc.
3. Describe some physical properties of hydrogen.
4. Describe a chemical property of hydrogen.
5. Explain 2 chemical reactions that took place in this activity. *Show equations!!!!*
6. Give a reason for allowing the air to escape for 4 min. before collecting gas in Step 3.
7. What is the reason for filling small test tube with water and forcing the water out with the gas?

