

Name: _____

Date: _____

Properties of Common Gases

Objective:

To produce some common gases and observe some of their chemical properties.

Materials:

ammonium chloride	copper	magnesium
hydrochloric acid	sodium carbonate	red/blue litmus paper
phenolphthalein	barium hydroxide	sodium sulfite
potassium permanganate	nitric acid	bromothymol blue
copper (II) carbonate	sodium bicarbonate	

Equipment:

test tubes	test tube rack	test tube clamp
wood splint	match	rubber stoppers
Bunsen burner	rubber tubing	Erlenmeyer flask
gas generating bottle	ring stand	beaker

Procedure:

Part A

1. Attach a test tube clamp to the ring stand.
2. Place two scoops of sodium carbonate in the test tube.
3. Add a couple of drops of soap to the test tube. Add a few drops of hydrochloric acid.
4. Have a partner obtain a wood splint and light it.
5. Carefully burst the bubbles that are forming with the splint. Record your observations in your notebook.
6. Rinse the test tube out in the sink. Place any unused solid into the trash.

Part B

1. Obtain a beaker and fill it with tap water.
2. Add several drops of bromothymol blue to the beaker and note the color change.
3. Using a straw, vigorously blow bubbles into the beaker.
4. Note any changes that take place in the beaker.
5. Record your observations in your notebook. Empty the beaker the sink and discard the straw.

Part C

1. Attach a test tube clamp at a slight angle (that will keep the test tube from being parallel to the ground) to the ring stand.
2. Place two scoops of copper (II) carbonate in the test tube.
3. Light the Bunsen burner and use it to heat the contents of the test tube.

4. Have a partner obtain a wood splint and light it.
5. Remove the burner flame and place the splint in the mouth of the test tube.
6. Record your observations in the data table. Discard any remains in the trash.

Part D

1. Attach a test tube clamp at a slight angle (that will keep the test tube from being parallel to the ground) to the ring stand.
2. Place two scoops of sodium bicarbonate in the test tube.
3. Light the Bunsen burner and use it to heat the contents of the test tube.
4. Have a partner obtain a wood splint and light it.
5. Remove the burner flame and place the splint in the mouth of the test tube.
6. Record your observations in the data table. Discard any remains in the trash.

Part E

1. Attach a test tube clamp to the ring stand.
2. Place several pieces of magnesium in the test tube.
3. Add a couple of drops of soap to the test tube. Add a few drops of hydrochloric acid.
4. Have a partner obtain a wood splint and light it.
5. Carefully burst the bubbles that are forming with the splint. Record your observations in your notebook.
6. Rinse the test tube out in the sink. Place any unused solid into the trash.

Part F – Class

1. Obtain a small strip of white paper. Place several drops of phenolphthalein solution and allow it to dry. Also obtain a few pieces of red litmus paper.
2. Obtain a gas generating bottle with a stopper apparatus that fits. Place two scoops of ammonium chloride inside.
3. Place the red litmus paper and the phenolphthalein dotted paper inside the bottle. Tape the open end of the glass tubing so gas cannot escape.
4. Add two scoops of barium hydroxide. Immediately place the stopper on top. Gently shake the contents of the bottle to allow the solid reactants plenty of contact.
5. Observe what is taking place inside the bottle.
6. Rinse out the contents of the bottle under the hood. Place the papers in the trash.

Part G – Class

1. Obtain a gas generating bottle with a stopper apparatus that fits.
2. Place two scoops of sodium sulfite and several strips of blue litmus paper inside the bottle. Tape the open end of the glass tubing so gas cannot escape.
3. Add approximately 20 mL of hydrochloric acid to the bottle. Immediately place the stopper on top. Gently shake the contents of the bottle to allow the reactants plenty of contact.
4. Add several drops of potassium permanganate to the bottle.

5. Gently shake the contents some more to allow further contact. Note any changes that take place.
6. Rinse out the contents of the bottle under the hood.

Part H – Class

1. Obtain a flask from under the hood.
2. Add approximately 20 mL of nitric acid to the beaker.
3. Place the beaker on the hot plate under the hood. Gently warm it for a few minutes.
4. Turn the ventilation on and pull down the hood's window far enough so that you can only reach your beaker.
5. Add a scoop of copper. Note the reaction taking place.
6. Rinse out the contents of the flask under the hood.

Part I – Class

1. Obtain a small beaker and place three scoopulas of potassium chlorate inside.
2. Place the beaker on a wire gauze supported by a ring clamp attached to a ring stand.
3. Heat the beaker with a Bunsen burner until all of the chlorate has decomposed to a liquid.
4. Turn the ventilation on and pull down the hood's window far enough so that you can only reach your beaker.
5. Remove the heat and drop an object made of sucrose in the beaker.
6. Note any changes that take place.

Part J – Class

1. Attach a test tube clamp to a ring stand under the hood.
2. Add several scoops of zinc powder to the test tube. Add several scoops of iodine crystals.
3. Gently mix them with the scoopula so they come in close contact.
4. Secure the test tube in the clamp.
5. Turn the ventilation on and pull down the hood's window far enough so that you can only reach your beaker.
6. Add a few drops of water to catalyze the reaction. Note any changes that take place.