

Science 9-Chemistry

Activity 2C

Testing Gases



10

Name _____

Due Date _____

Show Me Hand In

Correct and Hand In Again By _____

Purpose:

To carry out a chemical reaction and test the gas that is produced.

Background Information:

Outline the test for *oxygen* gas and tell what happens when **oxygen** is present:

Outline the test for *hydrogen* gas and tell what happens when **hydrogen** is present:

Outline the test for *carbon dioxide* gas and tell what happens when **carbon dioxide** is present:

Procedure:

1. Put on a pair of safety goggles and keep them on during this whole experiment!
2. Obtain a small plastic container with *solid magnesium carbonate*. Bring it to your lab station.
3. Obtain each of the following and bring it to your lab station:
 - a test-tube rack with 3 test tubes
 - a 400 mL beaker
 - a 250 or 125 mL Erlenmeyer flask
 - a gas collecting hose (a small stopper with glass connected to a rubber hose)
 - a 100 mL beaker about $\frac{1}{2}$ full of dilute hydrochloric acid
 - a bunsen burner and a two wood splints
 - a scoopula
4. Fill the 400 mL beaker about $\frac{2}{3}$ full of water. Completely fill two test tubes with water, cover each one with your thumb and invert them into the water in the beaker.
5. Make sure the third test tube is in the test tube rack. Using a scoopula, add solid magnesium carbonate to a depth of about 2 cm in the test tube.
6. Make sure you have your gas collecting hose ready to place in the test tube.
7. Put the end of the rubber hose in the water in the 400 mL beaker and make sure the test tube and the beaker are close enough to put the stopper end in the test tube in the rack!
8. Making sure you have goggles on, carefully pour about 3 cm of dilute hydrochloric acid on top of the solid magnesium carbonate in the test tube. QUICKLY put the stopper on and move the hose in the beaker of water under a test tube so that you can collect the gas.
9. If the hose stops bubbling, remove the stopper from the test tube and add more acid. Quickly replace the stopper and collect more gas. Do this until you have both test tubes full of gas. Don't remove them from the water yet. Just leave the test tube in the rack for now.
10. Light your Bunsen burner or share one with another group. Have a wood splint ready to light.
11. Remove one of the test tubes full of gas from the beaker and hold it with the top up, open to the air for about 15 seconds. Meanwhile get your partner to light a wood splint.
12. Test the gas with a burning splint. Write down what happens (or if nothing happens)

13. *Does the gas appear to be hydrogen?* _____

14. Now, light another splint and blow it out so you have a glowing splint.
15. Take the other test tube with gas out of the water and put the glowing splint in to test for oxygen.

Write down what happens. _____

Does the gas appear to be oxygen? _____

16. Take your Erlenmeyer flask to the counter and put in limewater to a depth of about 1 cm. Bring the flask with the limewater back to your lab station.
17. Take the stopper off the test tube in the rack, rinse it out with water and add about 2 cm of solid magnesium carbonate.
18. Place the end of the hose in the limewater in the Erlenmeyer flask. Get your partner to hold the end under the water.
19. Carefully add about 3 cm of dilute hydrochloric acid on top of the solid magnesium carbonate and QUICKLY place the stopper with the hose on top. The other end of the hose should be bubbling into the limewater.
20. After the bubbling stops, take the hose out of the Erlenmeyer flask, Put your hand over the opening on top and swirl it.

Does the limewater turn cloudy? _____

Does the gas appear to be carbon dioxide? _____.

21. Put any unused containers of chemicals (solid magnesium carbonate or hydrochloric acid) back on the counter.
22. Rinse the rest of the glassware out and bring it to the place designated by your teacher. Make sure your lab table is wiped clean and wash your hands before leaving the lab.