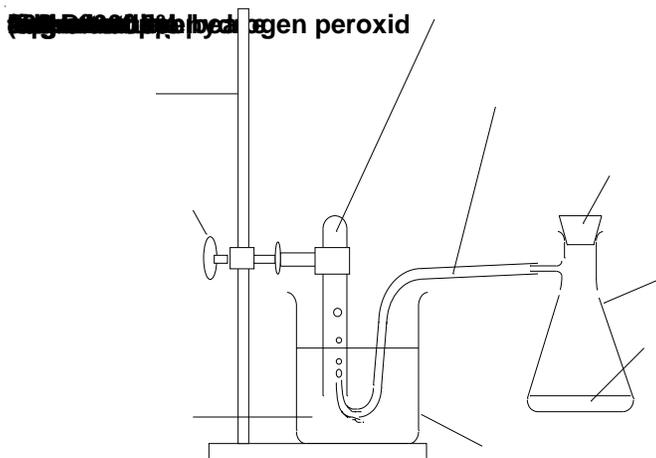


THE PREPARATION OF OXYGEN FROM HYDROGEN PEROXIDE AND POTASSIUM IODIDE

This experiment is designed to show you how to prepare oxygen gas and observe some of its properties.

PROCEDURE

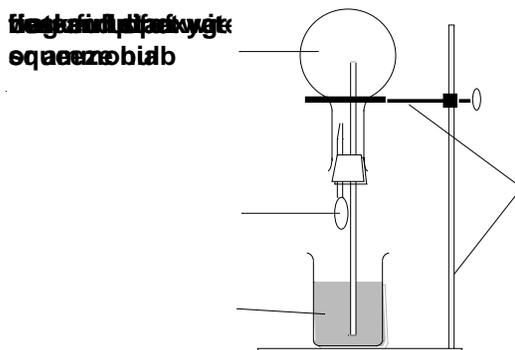
- You will work with a partner in this experiment. Assemble the following equipment at your desk.
 - a side-arm flask
 - a length of rubber tubing
 - a large test tube
 - a large rubber stopper (to fit the top of the side-arm flask)
 - a small rubber stopper (to fit the test tube)
 - a 400 or 600 mL beaker
 - a 100 mL graduated cylinder
 - a ring stand
 - a test tube clamp
 - a wooden splint
 - a bunsen burner
 - a flint striker
 - a bottle of 6% hydrogen peroxide (one bottle per bench).
- Fill the beaker about two-thirds full of tap water. Fill the large test tube with water and place your thumb over the end of the tube. Invert the test tube, put the mouth of the tube below the water level in the beaker and release your thumb. The test tube should remain full of water. Place the beaker on a ring stand and use the test tube clamp to hold the test tube upright, so that the mouth of the test tube is just below the top of the water in the beaker.
- Measure out 100 mL of 6% hydrogen peroxide (**CARE: DO NOT SPILL ANY OF THE LIQUID ON YOU. WASH WITH TAP WATER IF IT GETS ON YOUR HANDS OR THEY WILL FEEL ITCHY.**)
- Pour the 100 ml of hydrogen peroxide into the side-arm flask. Holding the flask firmly, push one end of the rubber tubing onto the side arm – **JUST A LITTLE WAY ON: LESS THAN $\frac{1}{2}$ inch (1 cm).**
- Bring the flask close to the beaker and ring stand. Carefully take the second end of the rubber tubing and push it under the water in the beaker, then bend it upward so that it comes up inside the test tube (see the diagram) below.



- Use the electronic balance to weigh about 1.0 g of potassium iodide into a plastic weighing boat.
- Get the rubber stopper ready! Quickly dump the 1.0 g of potassium iodide into the one-arm flask and immediately stopper the flask. **Record ALL your observations (they should be detailed).**

(TURN OVER PAGE)

8. When the test tube is full of gas, reach under the water in the beaker and put the small rubber stopper into the test tube mouth, to seal it.
9. Wash out the contents of the flask using a **LIGHT FLOW** of water from the tap – **don't splash the water into the flask or you will spray the reaction mixture all over your face!** Wash the contents down the drain and when the flask is clean, put it back where you got it from.
10. **Describe the appearance of the gas** in the test tube.
11. Light the bunsen burner as instructed by your teacher.
12. Remove the stoppered test tube from the clamp. Hold the stoppered test tube upside down and do the following four things in quick succession.
 - (a) Use the bunsen burner to light the wooden splint.
 - (b) Blow out the burning splint, making sure that the wood still has a glowing ember at the end.
 - (c) Remove the rubber stopper.
 - (d) Place the burning splint into the mouth of the test tube.**Describe what you see. Is there any distinctive sound?**
13. Your teacher will fill several test tubes full of oxygen. Cautiously smell the gas inside by removing the rubber stopper and sniffing the contents. **Record what you smell.**
14. **Observe and record** what happens when the apparatus below is assembled and water is squirted into
 - (a) a flask full of oxygen, and
 - (b) a flask full of ammonia.
 What do your observations tell you about the ability of oxygen to dissolve in water, relative to the ability of ammonia to dissolve in water? (This should be part of your conclusions.)



In your conclusion:

- A. Summarize all the properties of oxygen gas that you observed (appearance, smell, effect on a glowing splint, ability to dissolve in water).
- B. How could you use the results of this experiment to help decide if an unknown gas was or was not oxygen?

QUESTIONS:

You may have noticed some things that puzzled you or made you wonder during this experiment. List as many questions as you can regarding this experiment. (**Note:** You do NOT have to answer the questions; just ask them. You will be marked on the quantity and quality of your questions.)