

Chemistry of Gases

Lab Activity – Student Edition

Making Oxygen

Background Information:

We cannot live without oxygen – our bodies need a constant supply. Oxygen is an essential ingredient in aerobic respiration, the reaction which allows our cells to release the energy from the food that we eat. At rest, an average-sized person uses approximately 20 liters of oxygen an hour. This level increases dramatically with activity. Our atmosphere consists of approximately 20% oxygen, the rest is mainly nitrogen with a few other gases present in much lower percentages. Oxygen is very reactive and is flammable, producing both heat and light in some reactions.

Learning Objectives

By the end of this lab, you will be able to:

1. Make and test oxygen gas.
2. Describe the properties of oxygen gas.

Time allowance:

30 mins

Equipment:

- 250ml Conical flask
- 2 x 10ml measuring cylinder:
- Delivery tube with stopper
- Water tub/basin
- Spatula
- Tapers/ wooden spl
- Matches or lighter
- Hydrogen peroxide (7.5%) so
- Manganese dioxide powder.
- Cold water

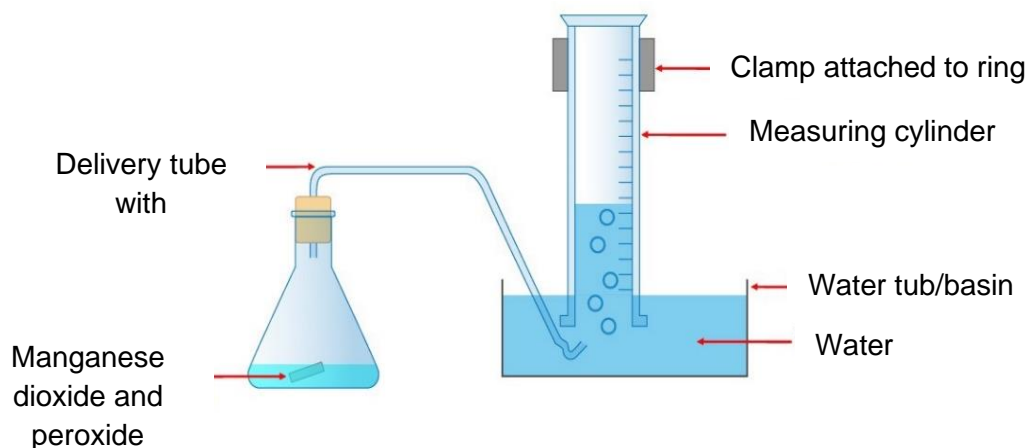
Method:

1. Half fill the water basin with cold water.
2. Place the measuring cylinder in the water basin and allow it to fill with water. Turn the cylinder upside down so that the mouth is resting on the bottom of the basin.
3. Place 1 spatula-full of manganese dioxide powder into the conical flask and add 3 ml of hydrogen peroxide solution. Quickly seal the conical flask with the stopper.
4. Place the delivery tube under the inverted measuring cylinder as seen in the diagram below. Secure using a clamp stand.

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- Once the measuring cylinder is full of gas (there is no water left in it) loosen the clamp and lift it out of the water, tilting it slightly upwards. Place your finger or thumb over the mouth of the cylinder to keep the gas inside.
- Take a glowing taper, remove your finger, and carefully place it in the mouth of the cylinder.

Diagram of Setup:



Tasks and Questions:

- Record your observations in the space below for your lab activity:

- Why does the splint only glow in air but burst into flame when placed in the test tube?

- Based on your observations, does oxygen dissolve in water? Explain your answer.
