

11. The preparation and properties of oxygen

Topic

Reduction, transition metals, oxygen.

Timing

30 min.

Description

Students produce oxygen by heating potassium manganate(VII).

Apparatus and equipment (per group)

- ▼ Test-tube holder
- ▼ Ceramic wool
- ▼ Test-tube
- ▼ Spatula
- ▼ Bunsen burner
- ▼ Splints
- ▼ Heat-proof mat.

Chemicals (per group)

Potassium manganate(VII) (**Oxidising and harmful**)

Teaching tips

As an extension, students could add half a spatula measure of manganese(IV) oxide (**Harmful**) to 20 cm³ (20 volume) hydrogen peroxide (**Irritant**) solution at room temperature and test for oxygen.

Safety

Wear eye protection. When KMnO₄ is heated, tiny particles shoot out. These are trapped by the ceramic wool.

Answers

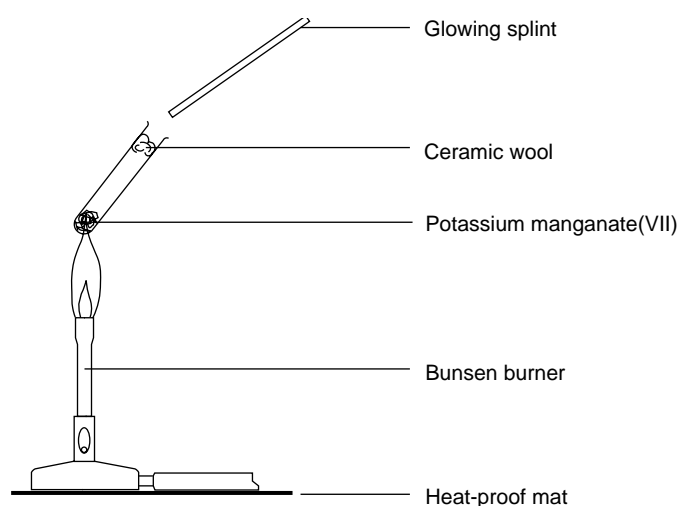
1. KMnO₄.

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The preparation and properties of oxygen

Introduction

Potassium manganate(VII) produces oxygen when heated. In this experiment oxygen is produced and identified with a glowing splint.



What to record

What was done and what was observed.

What to do

1. Place two spatula measures of potassium manganate(VII) in a test-tube.
2. Place a small piece of ceramic wool near the top of the test-tube. This stops fine dust escaping.
3. Gently heat the test-tube containing the potassium manganate(VII).
4. Light a splint and extinguish it, to make a 'glowing splint'.
5. Place the glowing splint just above the top of the test-tube. Keep heating the test-tube. The splint should relight.
6. Scrape out the ceramic wool. Let the test-tube cool to room temperature and then wash it out.
7. Notice the colours produced when the test tube is washed out.

Safety

Wear eye protection.

Potassium manganate(VII) is harmful if swallowed. It assists fire.

Questions

1. What is the chemical formula for potassium manganate(VII)?