Testing For Gases

Identification of gases

- Several tests for anions and cations produce **gases** which then need to be tested
- The gases included in the syllabus are:

1. Ammonia
2. Carbon dioxide
3. Chlorine
4. Hydrogen
5. Oxygen

1. Test for ammonia

- Ammonia is a gas with a characteristic sharp choking smell that turns damp **red** litmus paper **blue.**
- Hold the litmus paper near the mouth of the test tube, but be careful to avoid touching the sides of the test tube.
- If you are testing for ammonia produced from ammonium ions and sodium hydroxide, avoiding touching the sides to prevent traces of sodium hydroxide from also turning the red litmus paper blue

2. Test for carbon dioxide

- The test for carbon dioxide involves bubbling the gas through an aqueous solution of **limewater** (calcium hydoxide)
- If the gas is carbon dioxide, the limewater turns **cloudy white.**

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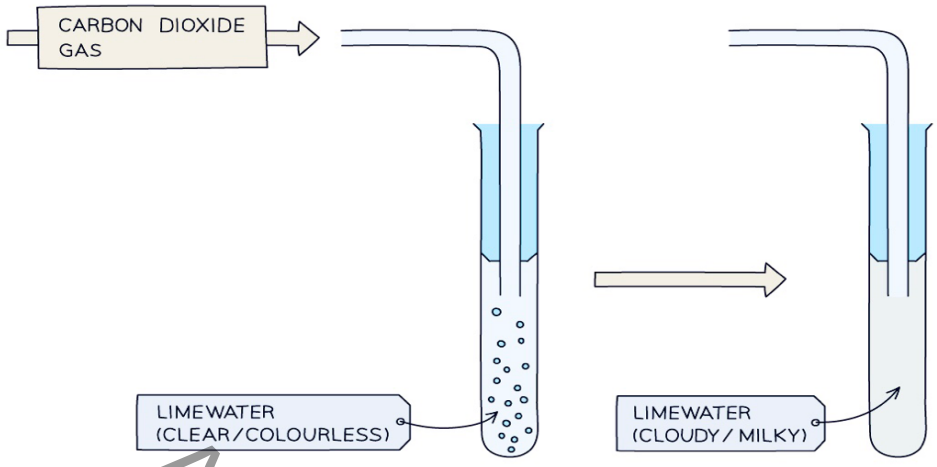

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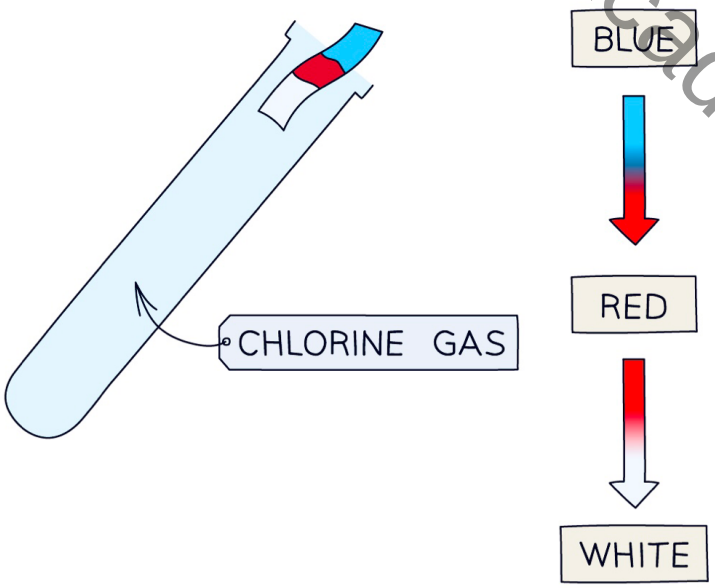
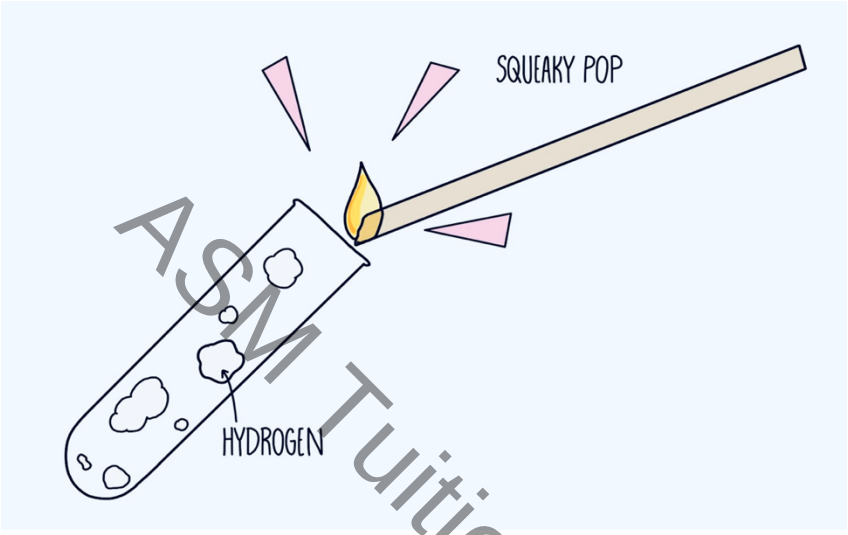
3. Test for chlorine gas

- The test for chlorine makes use of **litmus paper.**
- If chlorine gas is present, damp blue litmus paper will turn red and then be **bleached white.**
- It turns red initially as acids are produced when chlorine comes into contact with water
- Chlorine also has a characteristic sharp, choking smell



4. Test for hydrogen gas

- The test for hydrogen consists of holding a **burning splint** at the open end of a test tube of gas.
- If the gas is hydrogen it burns with a loud "**squeaky pop**" which is the result of the rapid combustion of hydrogen with oxygen to produce water.
- Be sure not to insert the splint right into the tube, just at the mouth, as the gas needs air to burn.



5. Test for oxygen

- The test for oxygen consists of placing a **glowing splint** inside a test tube of gas.
- If the gas is oxygen, the splint will **relight.**

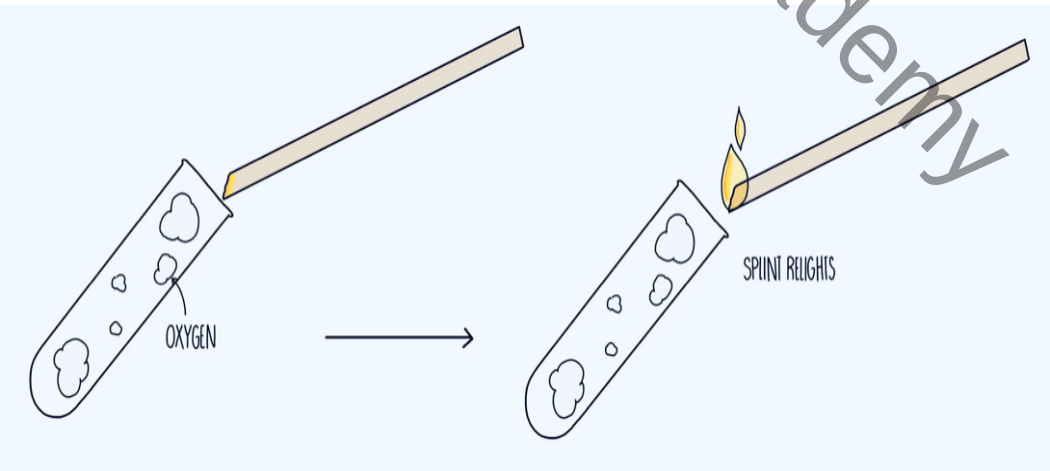


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Table for testing of Gases

Gas	Appearance of gas	Test	Result
Ammonia (NH_3)	Colourless, pungent smell	Damp red litmus paper	Turns blue
Carbon dioxide (CO_2)	Colourless and odourless	Bubble through limewater	Limewater turns milky/cloudy
Chlorine (Cl_2)	Pale green, choking smell	Damp blue litmus paper	Turns red and quickly is bleached
Hydrogen (H_2)	Colourless and odourless	Hold a lighted splint in mouth of test tube	Burns with a 'squeaky pop' sound
Oxygen (O_2)	Colourless and odourless	Hold a glowing splint	Splint relights

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