

# Edexcel Chemistry IGCSE

## 2.14 - Gases in the atmosphere

Determine the approximate percentage by volume of oxygen in air using a metal or a non-metal

Flashcards

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What are the percentages of the four most abundant gases in air?



What are the percentages of the four most abundant gases in air?

Nitrogen 78%

Oxygen 21%

Argon 0.9%

Carbon dioxide 0.03%



What apparatus is required to determine the percentage by volume of oxygen in air using a metal?



What apparatus is required to determine the percentage by volume of oxygen in air using a metal?

- Burette
- Water trough
- Clamp and stand



How could you approximate the percentage by volume of oxygen in air using a metal?



# How could you approximate the percentage by volume of oxygen in air using a metal?

- Place wet iron filings inside the end of a burette
- Stand the burette vertically over a trough of water using a clamp
- Record the starting height of the water in the burette
- After a few weeks record the final height of the water in the burette
- The decrease in the volume of air is the volume of oxygen that was originally in the burette
- Calculate the % of oxygen in air using the change in volume compared to the original volume of air in the burette



When approximating the percentage by volume of oxygen in air using a metal, why does the water level in the burette rise?





When approximating the percentage by volume of oxygen in air using a metal, why does the water level in the burette rise?

- The metal in the burette will react with the oxygen to form a metal oxide
- The volume of oxygen that the metal has reacted with will be replaced by water



The percentage of oxygen in the air is being approximated using a metal. During the experiment, the water level in the burette decreases from  $20\text{cm}^3$  to  $16\text{cm}^3$ . What percentage of oxygen is in the air?



The percentage of oxygen in the air is being approximated using a metal. During the experiment, the water level in the burette goes from  $20\text{cm}^3$  to  $16\text{cm}^3$ . What percentage of oxygen is in the air?

$$20 - 16 = 4\text{cm}^3 \text{ used up}$$

$$(4 \div 20) \times 100 = 20\% \text{ oxygen in the air}$$



What apparatus is required to determine the percentage by volume of oxygen in air using a non metal?



What apparatus is required to determine the percentage by volume of oxygen in air using a non metal?

- Bell jar and bung
- Evaporating dish
- Lighter
- Water trough



How could you approximate the percentage by volume of oxygen in air using a non metal?



## How could you approximate the percentage by volume of oxygen in air using a non metal?

- Float an evaporating dish of phosphorus in a trough of water
- Ignite the phosphorous
- Place a bell jar into the water trough, covering the dish
- Record the starting height of the water level in the bell jar
- Leave the apparatus for a few days
- Measure the final water level in the bell jar
- The decrease in the volume of air is the volume of oxygen originally in jar
- Calculate the % of oxygen in air using the change in volume compared to the original volume



When approximating the percentage by volume of oxygen in air using a non-metal, why does the water level in the bell jar rise?





When approximating the percentage by volume of oxygen in air using a non-metal, why does the water level in the bell jar rise?

The combustion of the non-metal uses up oxygen so the water level rises to replace the volume of oxygen used up



Write the word equation for the reaction  
between phosphorus and oxygen



Write the word equation for the reaction between phosphorus and oxygen

phosphorus + oxygen → phosphorus oxide

