

Cambridge IGCSE Chemistry

Topic 12: Sulfur

Notes





Name some sources of sulfur

- Volcanoes
- Obtained from some metal ores like Copper pyrites (CuFeS_2) and Blende (ZnS) and other purification processes, as all living things and fossils contain sulfur

(Extended only) Describe the manufacture of sulfuric acid by the Contact process, including essential conditions and reactions

- Make sulfur dioxide:
 - o $\text{S} + \text{O}_2 \rightarrow \text{SO}_2$
 - o Sulfur is burned in air
- Convert sulfur dioxide into sulfur trioxide
 - o $2\text{SO}_2 + \text{O}_2 \rightleftharpoons 2\text{SO}_3$
 - o Reversible reaction
 - o Catalyst of vanadium(V) oxide, V_2O_5
 - o Temperature of around 450°C
 - o Pressure of 2 atm.
- Convert sulfur trioxide into sulfuric acid
 - o $\text{H}_2\text{O} + \text{SO}_3 \rightarrow \text{H}_2\text{SO}_4$
 - o Reacted with water

Name the use of sulfur in the manufacture of sulfuric acid

- Sulfur is burned in air / reacted with oxygen to form sulfur dioxide which is later converted to sulfur trioxide and finally sulfuric acid

State the uses of sulfur dioxide as...

- A bleach in the manufacture of wood pulp for paper
- A food preservative (by killing bacteria)





(Extended only) Describe the properties and uses of dilute and concentrated sulfuric acid

Sulfuric acid properties:

- strong acid (fully dissociates in solution to release H^+ ions)
- corrosive (concentrated is more corrosive than dilute)
- good electrolyte

Uses of sulfuric acid:

- Production of fertilisers
- Manufacture of chemicals e.g. HCl, HNO_3 , sulfate salts, synthetic detergents, dyes and pigments, explosives and drugs
- In petroleum refining to wash impurities out of gasoline and other refinery products
- In processing metals
- Rayon is made with sulfuric acid. It serves as the electrolyte in the lead-acid storage battery

