

Practice and Revision - Study of Compounds - Nitric Acid

Chapter 10: Study of Compounds - Nitric Acid · Topic 2

Key Concept

Nitric acid is prepared in the lab by heating potassium/sodium nitrate with concentrated sulphuric acid, and industrially by the Ostwald process.

Nitric acid is a strong oxidising agent, reacting differently with metals compared to other acids, often not liberating hydrogen gas.

Concentrated nitric acid can passivate certain metals like iron and aluminium, forming a protective oxide layer that prevents further reaction.

Nitric acid is widely used in manufacturing fertilisers (ammonium nitrate), explosives, and various other industrial chemicals.

Quick Revision Notes

- Lab prep: heating nitrate salt with conc. H_2SO_4 .
- Industrial prep: Ostwald process.
- Nitric acid is a strong oxidising agent.
- It reacts differently with metals than typical acids.
- It often doesn't liberate hydrogen gas.
- Concentrated HNO_3 passivates iron and aluminium.
- This forms a protective oxide layer.
- Uses: fertilisers, explosives, industrial chemicals.

Practice Questions

- 1 Describe the lab preparation of nitric acid.
- 2 Describe the Ostwald process for industrial production.
- 3 Explain passivation with iron and concentrated nitric acid.
- 4 Research uses of nitric acid in industry.
- 5 Discuss why nitric acid is a strong oxidising agent.
- 6 Explain nitric acid's properties in your own words.