

GCSE Double Award Science Chemistry

Teacher / Technician Notes

Please note that it is the responsibility of the centre to ensure that all risk assessments for practical work are carried out and that all appropriate hazard labels are used for the chemicals listed.

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Practical C.1:

Investigate the reactions of acids, including temperature changes that occur

Experiment 1

Apparatus and Chemicals

- Boiling tube
- Boiling tube rack
- 25 cm³ measuring cylinder
- Splint
- Bunsen burner
- Hydrochloric acid (minimum 50 cm³ of 1 mol/dm³)
- 2 cm strip of magnesium
- 2 cm piece of zinc
- 2 cm strip of copper

Experiment 2

Apparatus and Chemicals

- Kettle
- 250 cm³ beaker
- 100 cm³ beaker
- 25 cm³ measuring cylinder
- Spatula
- Glass rod
- Heat proof mat
- Universal indicator paper
- Sulfuric acid (25 cm³ of 0.5 mol/dm³)
- Copper(II) oxide on a watch glass (2 g)

Experiment 3

Apparatus and Chemicals

- Polystyrene cup
- 250 cm³ beaker
- Thermometer
- 25 cm³ measuring cylinder
- Hydrochloric acid (25 cm³ of 1 mol/dm³)
- Sodium hydroxide solution (25 cm³ of 1 mol/dm³)
- Deionised water bottle

Experiment 4

Apparatus and Chemicals

- 25 cm³ measuring cylinder
- 10 cm³ measuring cylinder
- Boiling tube
- Test tube
- 1 × disposable pipette
- Test tube rack
- Hydrochloric acid (15 cm³ of 1 mol/dm³)
- Calcium carbonate (3 g)
- Limewater (5 cm³)

Practical C.2:

Identifying the ions in an ionic compound using flame tests

Apparatus and Chemicals

- Sodium chloride
- Calcium chloride
- Lithium chloride
- Potassium chloride
- Copper(II) chloride
- Potassium chloride labelled X
- Sodium chloride labelled Y
- Concentrated hydrochloric acid
- Heatproof mat
- Nichrome wire

Practical C.3: Investigate the reactivity of metals

Apparatus and Chemicals

- Boiling tube rack
- Boiling tubes × 3
- Copper(II) sulfate solution (0.5 mol/dm^3)
- Magnesium sulfate solution (0.5 mol/dm^3)
- Zinc sulfate solution (0.5 mol/dm^3)
- Iron(II) sulfate solution (0.5 mol/dm^3)
- Pieces of copper foil (3 small pieces approx. 1 cm^2)
- Zinc (3 small granules or pieces of foil approx. 1 cm^2)
- Iron (3 small ungalvanised nails)
- Magnesium ribbon (3 small pieces 1 cm length)
- Stop clock

Practical C.4:

Investigate how changing a variable changes the rate of reaction

Apparatus and Chemicals

- Hydrochloric acid (200 cm³ of 2 mol/dm³)
- 10 × 3 cm strips of magnesium
- 100 cm³ beaker
- 250 cm³ beaker
- Deionised water bottle
- 2 × measuring cylinders (25 cm³ and 10 cm³)
- Stop clock

Practical C.5:

Determine the mass of water present in hydrated crystals

Apparatus and chemicals

- Hydrated iron(II) sulfate $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ (1.50 – 1.70 g)
- Spatula
- Bunsen burner, tripod and gauze
- Heatproof mat
- Evaporating basin
- Tongs
- Electronic balance
- Stopclock

Practical C.6:

Investigate the preparation, properties, tests and reactions of the gases hydrogen, oxygen and carbon dioxide

Carbon dioxide

Apparatus and chemicals

- Calcium carbonate (small pieces approx. 3 g)
- Hydrochloric acid (50 cm³ of 1 mol/dm³)
- Wooden splint
- Limewater (5 cm³)
- Conical flask and stopper with 2 outlets
- Thistle funnel
- Delivery tube
- Beehive shelf
- 3 × gas jars with lids
- Trough

Hydrogen

Apparatus and chemicals

- Hydrochloric acid (20 cm³ of 1 mol/dm³)
- Zinc (a few small pieces of granulated zinc)
- Wooden splint
- Test tube
- Test tube rack
- Measuring cylinder
- Bunsen burner

Oxygen

Apparatus and chemicals

- Manganese(IV) oxide (approx. 2 spatula measures)
- Hydrogen peroxide solution (20 cm³ of 20 volume H₂O₂)
- Wooden Splint
- Spatula
- Test tube
- Test tube rack
- 10 cm³ measuring cylinder
- Bunsen burner

