Your notes

GCSE Chemistry: revision notes

Making salts

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Naming salts

- The **salt** depends on the acid: hydrochloric acid makes **chlorides**, sulfuric acid makes **sulfates** and nitric acid makes nitrates.
- The first part of the name comes from the metal (or ammonium) in the base, alkali, carbonate or metal.
- Example: copper oxide + sulfuric acid → copper **sulfate** + water.

Reactions that make salts

- Acid + metal → **salt** + hydrogen.
- Acid + metal oxide or hydroxide → **salt** + water.
- Acid + metal carbonate → **salt** + water + carbon dioxide. For example: $CaCO_3$ + $2HCl$ → $CaCl_2$ + H_2O + CO_2.

Formulae of salts

- Use the charges on the ions so the formula has no overall charge.
- Sodium **chloride**: Na^+ and Cl^- → NaCl. Magnesium **sulfate**: Mg^{2+} and SO_4^{2-} → $MgSO_4$.
- Sodium **sulfate**: Na^+ and SO_4^{2-} → Na_2SO_4. Magnesium **nitrate**: Mg^{2+} and NO_3^- → $Mg(NO_3)_2$.

Required practical: making a soluble salt

- Warm dilute sulfuric acid in a beaker (with a Bunsen burner or water bath).
- Add insoluble copper oxide a little at a time, stirring, until no more reacts (it is in **excess**). This makes sure all the acid has reacted.
- Filter to remove the **excess** copper oxide. The **filtrate** is copper **sulfate** solution.
- Heat the solution gently (on a water bath or electric heater) to evaporate some water, then leave it to cool so crystals form. Filter and dry the crystals.

Key terms

Salt	A compound formed when the hydrogen in an acid is replaced by a metal (or ammonium).
Chloride	A salt made from hydrochloric acid.
Sulfate	A salt made from sulfuric acid.
Nitrate	A salt made from nitric acid.
Excess	More of a reactant than is needed, so some is left over.
Crystallisation	Forming solid crystals from a solution by evaporating the solvent and cooling.
Filtrate	The solution that passes through the filter paper.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. Which acid makes chlorides?
2. What salt forms when zinc oxide reacts with sulfuric acid?
3. What are the products of an acid reacting with a metal carbonate?
4. What is the formula of sodium sulfate?
5. What is the formula of magnesium nitrate?
6. Why is copper oxide added in excess when making copper sulfate?
7. How is the excess copper oxide removed?
8. What salt forms when calcium carbonate reacts with hydrochloric acid?

Answers

1. Hydrochloric acid
2. Zinc sulfate
3. A salt, water and carbon dioxide
4. Na_2SO_4
5. $Mg(NO_3)_2$
6. To make sure all the acid has reacted
7. Filtration
8. Calcium chloride

What to do next

Practise 10 questions on this topic

Try 5 exam questions, with mark schemes

Read the lesson, one step at a time

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