

WJEC (Wales) Chemistry GCSE

Specified Practical 2.2a

Preparation of crystals of a soluble salt from an insoluble base or carbonate

[Methods are adapted from the [Royal Society of Chemistry](#)]

Welsh Specification

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Preparation of Salt Crystals

Aim

To prepare a **pure, dry** sample of **soluble salt crystals** from an insoluble base or carbonate.

Equipment list

- 1.0 M dilute sulfuric acid
- Copper(II) oxide powder
- Spatula
- Glass rod
- Measuring cylinder
- 100 cm³ beaker
- 250 cm³ beaker
- Bunsen burner
- Tripod
- Gauze
- Heatproof mat
- Filter funnel and paper
- Small conical flask
- Evaporating basin
- Crystallising dish
- Indicator paper

Method

1. Measure **20 cm³ sulfuric acid** and pour it into the beaker.
2. **Heat** the acid gently using a Bunsen burner. This step is not necessary but it increases the **rate** of reaction.
3. Add small amounts of copper(II) oxide until no more reacts and thus no more effervescence is produced (**excess** copper(II) oxide).
4. To ensure all the acid has reacted, touch the glass rod onto a piece of indicator paper. If it is acidic, keep stirring.
5. **Filter** the solution using the filter paper and funnel - removes excess copper(II) oxide.
6. Pour the solution into the evaporating basin.
7. **Evaporate** the solution using a water bath until crystals start to form.
8. Leave the evaporating basin in a **cool** place for at least 24 hours.
9. Gently pat the crystals **dry** between two pieces of filter paper.

Safety Precautions

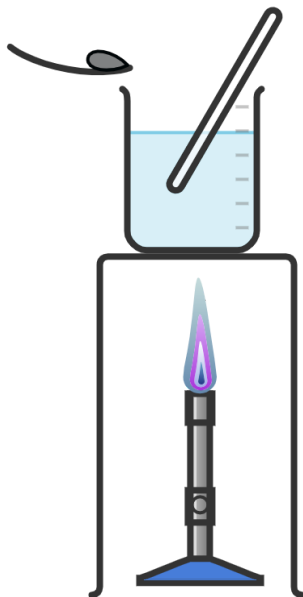
- Sulfuric acid is **corrosive**. Wear safety goggles and wash the skin immediately if there is any contact.



- When the **Bunsen burner** is not in use, turn it off or leave it on the orange safety flame. Tie hair back.
- Sulfuric acid releases **toxic fumes** on heating. Ensure the experiment is carried out in a well ventilated room.

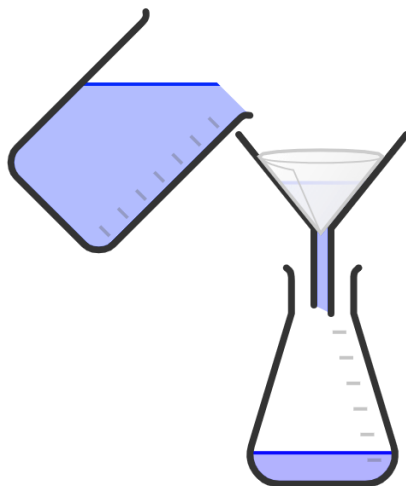
Diagram

- 1) Add your metal oxide, carbonate or hydroxide to the acid and stir with a stirring rod. Gently heat until it stops reacting.



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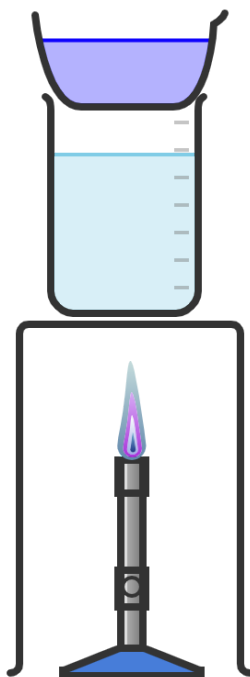
- 2) Since you used an excess of the metal, carbonate or hydroxide you will find that you have unreacted solid left behind. Filter this out using filter paper and a filter funnel.



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3) Gently, start heating your filtered solution. Then, turn off the Bunsen burner and let the rest of the water evaporate, leaving the salt crystals behind. It's important that this is done slowly so be careful not to heat too fiercely or too rapidly!



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