

---

# GCSE Chemistry required practical activity 1: Making salts

---

## Student sheet

Required practical activity	Apparatus and techniques
Preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate, using a Bunsen burner to heat dilute acid and a water bath or electric heater to evaporate the solution.	AT 2, AT 3, AT 4, AT 6

### Preparation of pure dry copper sulfate crystals

In this investigation you will use the reaction between an acid and an insoluble base to prepare an aqueous solution of a salt. After filtering to remove excess unreacted base, you will evaporate the filtrate to leave a concentrated solution of the salt, which will crystallise as it cools and evaporates further. These crystals, when dry, will be of high purity.

Learning outcomes
1
2
Teachers to add these with particular reference to working scientifically

## Method

You are provided with the following:

- 40cm<sup>3</sup> 1.0M dilute sulfuric acid
- Copper (II) oxide powder
- Spatula, glass rod
- 100cm<sup>3</sup> beaker, Bunsen burner, tripod, gauze, heatproof mat.
- Filter funnel and paper, clamp stand, conical flask.
- 250cm<sup>3</sup> beaker, evaporating basin, crystallising dish.

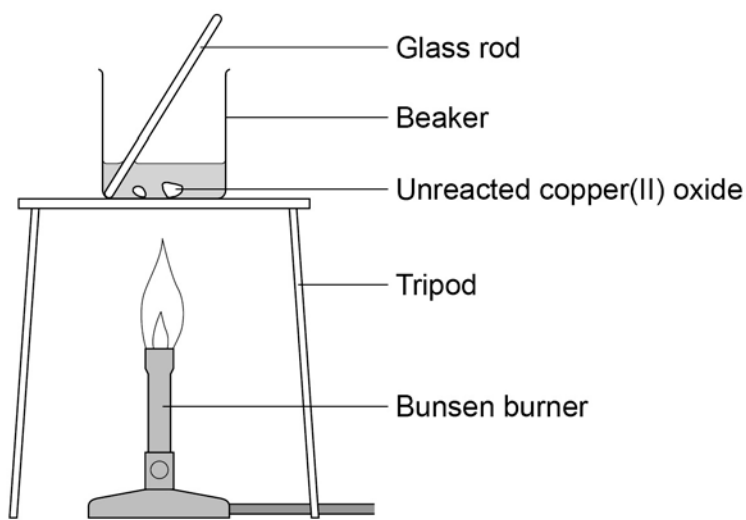
## Risk Assessment

Safety goggles must be worn throughout

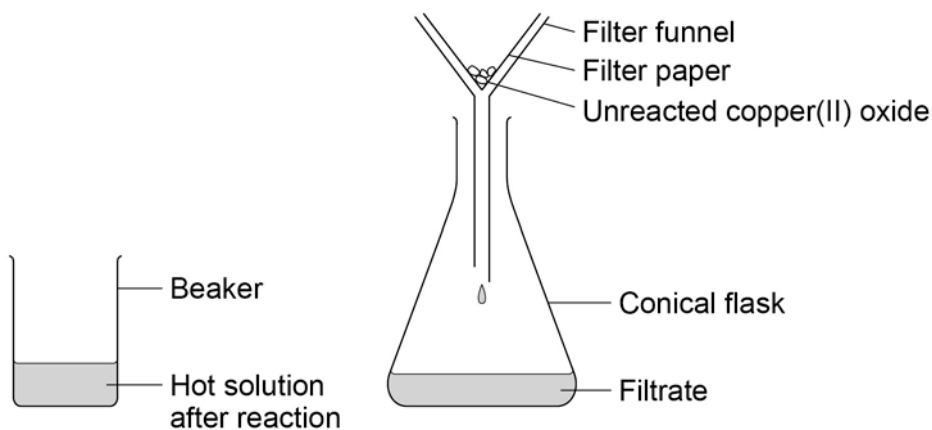
---

**You should read these instructions carefully before you start work.**

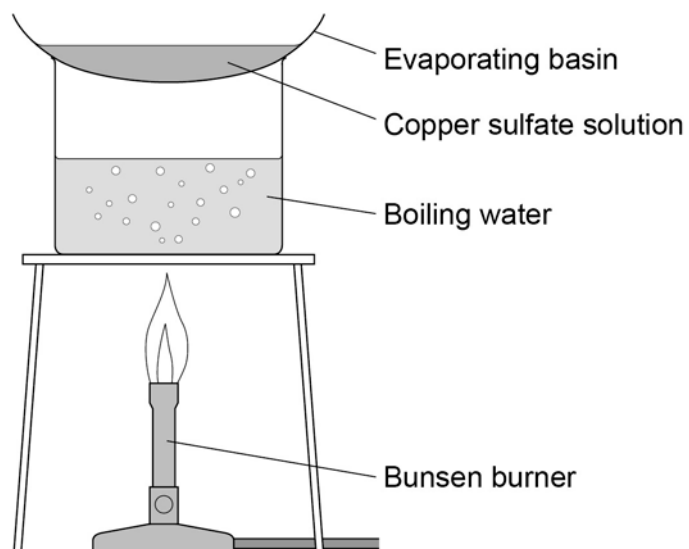
1. Measure 40cm<sup>3</sup> sulfuric acid into the beaker. The volume does not need to be very accurate, so you can use the graduations on the beaker.
2. Set up the tripod, gauze and heatproof mat. Heat the acid **gently** using the Bunsen burner until it is almost boiling. Turn off the burner.



3. Using the spatula, add **small** amounts of copper (II) oxide powder at a time, stirring with the glass rod. Continue to do this if, after stirring, the black powder disappears and the solution is **clear blue**.
4. Stop adding it when some black powder remains after stirring.
5. Set up the filter funnel and paper over the conical flask, using the clamp stand to hold the funnel. Filter the contents of the beaker from step 3.



- 
6. When filtration is complete, pour the contents of the conical flask into the evaporating basin. Evaporate this gently using a water bath on the tripod and gauze (see diagram) until around half of the solution remains. You will have to estimate this volume.



7. Transfer the remaining solution to the crystallising dish. Leave this in a cool place for at least 24 hours.
8. Remove the crystals from the concentrated solution with a spatula and **gently** pat them dry between two pieces of filter paper. These are pure dry crystals of copper (II) sulfate.