Your teacher may watch to see if you can…

- safely and correctly use apparatus.

Aim

To prepare a sample of pure, dry, hydrated copper sulfate crystals starting from copper oxide.

Apparatus

- eye protection
- 100 cm^3 conical flask
- 100 cm^3 beaker
- Bunsen burner
- gauze and tripod
- heat mat
- Petri dish or watch glass
- 100 cm^3 measuring cylinder
- evaporating basin
- spatula
- stirring rod
- filter funnel
- filter paper
- tongs
- water bath (set at 50 °C)
- dilute sulfuric acid
- copper(II) oxide

⚠ Safety

Wear eye protection at all times.

Method

A Pour about 20 cm^3 of dilute sulfuric acid into a conical flask.

B Place the conical flask into a water bath at 50 °C and heat for 3–4 minutes to allow the acid to heat up.

C Use the spatula to add a little copper oxide to the acid and stir or swirl the contents of the flask.

D Keep repeating step **C** until the black powder does not disappear after stirring. (This makes sure the copper oxide is in excess.)

E Return the mixture to the water bath for a few minutes (to make sure there is no more acid left).

F Filter the mixture into a beaker and pour into an evaporating basin.

G Place the evaporating basin on top of a beaker half full of water. Heat the beaker, evaporating basin and contents using a Bunsen burner on a blue flame.

H Heat until about half of the water has evaporated. Then allow the evaporating basin to cool.

I When cool, transfer the solution to a Petri dish or watch glass and leave for a few days to allow the water to evaporate.

J Observe the shape and colour of the copper sulfate crystals formed.

Step F

Step H