

PREPARING A SOLUBLE SALT

Paper: 1C
Question: 14(e)

Question

A salt can be made by reacting an acid with an insoluble base.

A student has a sample of copper(II) oxide.

The student uses this method.

- Stage 1 pour 50 cm³ of dilute sulfuric acid into a beaker
- Stage 2 warm the acid using a Bunsen burner
- Stage 3 add a small amount of copper(II) oxide to the warm acid and stir the mixture
- Stage 4 add further amounts of copper(II) oxide until copper(II) oxide is in excess
- Stage 5 filter the mixture
- Stage 6 obtain crystals from the filtrate

Describe how the student could obtain a pure, dry sample of hydrated copper(II) sulfate crystals from the filtrate in stage 6.

(5)

Mark Scheme

M1 heat/boil the filtrate	<p>NOTE: If the solution is heated to remove all the water then only M1 can be awarded</p> <p>NOTE If the solution is left to evaporate all the water without heating only 1 mark can be awarded</p>
M2 until crystals form in a cooled sample/ on a glass rod	<p>ACCEPT to crystallisation point /to form a saturated solution /until crystals start to form /to remove some of the water</p> <p>M2 dep on M1</p>
M3 leave the solution to cool/crystallise	<p>NOTE: If the solution is left to completely evaporate after heating then award MAX 3</p>
M4 filter (to remove the crystals)	<p>ACCEPT decant the (excess) solution</p> <p>IGNORE references to washing the crystals</p>
M5 dry the crystals on filter paper/on paper towel/in a warm oven /in a desiccator /leave to dry	<p>REJECT hot oven or any method of direct heating e.g. Bunsen burner</p> <p>No M5 if crystals washed after drying</p>