

Required Practical Making Salts

GCSE Chemistry · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Explain why copper(II) oxide is added until it is in excess. (2 marks)

Step 1 · Purpose

To make sure all of the sulfuric acid has reacted.

Step 2 · Why it matters

Any leftover acid would contaminate the crystals; the excess solid can simply be filtered off.

Answer: So all the acid reacts; excess solid is removed by filtering

Check: You can see excess when black solid stays in the beaker.

2. Now try one with the steps

Describe how to obtain dry crystals from the copper(II) sulfate solution after filtering. (3 marks)

Step 1 · Concentrate

Step 2 · Crystallise

Step 3 · Collect and dry

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Name the salt made from copper(II) oxide and sulfuric acid. [1]

2. Write the word equation for the reaction of copper(II) oxide with sulfuric acid. [1]

3. State how you know when the copper(II) oxide is in excess. [1]

4. Explain why the acid is warmed before adding copper(II) oxide. [1]

5. State why the mixture is filtered. [1]
6. Name the piece of equipment used to evaporate water from the solution. [1]
7. Give one safety precaution when using dilute sulfuric acid and explain it. [2]
8. Explain why the solution is not heated until all the water has evaporated. [2]
9. Suggest how a student could make larger crystals. [1]
10. Calculate the relative formula mass of anhydrous copper(II) sulfate, CuSO_4 . (Cu = 63.5, S = 32, O = 16) [1]
11. Suggest why copper(II) oxide rather than copper metal is used to make copper(II) sulfate. [1]
12. 25.0 cm^3 of 1.00 mol/dm^3 sulfuric acid reacts with excess copper(II) oxide. Calculate the number of moles of acid used. [1]
13. Using your answer to question 12, calculate the maximum mass, in g, of hydrated copper(II) sulfate crystals, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ($M_r = 249.5$), to 3 significant figures. [2]
14. 4.90 g of crystals is collected. Calculate the percentage yield to 3 significant figures, using a maximum mass of 6.2375 g. [1]

4. Before you hand it in

Adding acid to the oxide until it dissolves

Add the insoluble BASE to the acid until it is in excess, then filter.

Evaporating to dryness on a Bunsen

Evaporate about half, then cool to crystallise.

Forgetting to say what is removed by filtering

"Filter to remove excess copper(II) oxide."