Required Practical Water Purification

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

Name _____ Class _____ Date _____

1. Worked example

Describe how to find the mass of dissolved solids in a water sample. (4 marks)

Step 1 · Weigh

Weigh a clean, dry evaporating basin.

Step 2 · Measure

Add a measured volume of the sample, e.g. 25.0 cm^3 using a pipette or measuring cylinder.

Step 3 · Evaporate

Heat gently (over a water bath) until all the water has evaporated.

Step 4 · Reweigh

Let it cool and reweigh; repeat heating until the mass is constant. Mass of solids = final mass − basin mass.

Answer: Weigh basin, add known volume, evaporate, reweigh to constant mass

Check: Constant mass shows all the water has gone.

2. Now try one with the steps

Use the example data to calculate the mass of dissolved solids in 25.0 cm^3 of the salt water. (1 mark)

Step 1 · Subtract

Answer:

3. Practice

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

1. Describe how to measure the pH of a water sample. [1]

2. Explain why the evaporating basin is weighed before adding the sample. [1]

3. The basin weighs 52.31 g and 53.19 g after evaporation. Calculate the mass of dissolved solids in g. [1]

4. Explain why the basin is heated, cooled and reweighed until the mass is constant. [1]

5. State why the sample is distilled. [1]

6. Explain why anti-bumping granules are added to the flask. [1]

7. 0.88 g of solids came from 25.0 cm^3 of sample. Calculate the concentration in g/dm^3. [2]

8. 0.01 g of solids came from 25.0 cm^3 of tap water. Calculate the concentration in g/dm^3. [1]

9. Give two tests to show that the distilled water is pure. [2]

10. Explain why cold water enters the condenser at the bottom. [1]

11. Give two safety precautions for distillation. [2]

12. Explain why a result of 0.01 g of residue is unreliable when the balance reads to 0.01 g. [2]

13. Suggest one improvement to measure the dissolved solids in tap water more accurately. [1]

14. Explain why distilled water, not tap water, is used to make up solutions in chemical analysis. [1]

4. Before you hand it in

Heating the basin to dryness on a high flame

Heat gently (water bath), then finish carefully; reweigh to constant mass.

Forgetting to convert cm^3 to dm^3

25.0 cm^3 = 0.0250 dm^3.

"Distilled water has pH 7 so the test is not needed."

Check boiling point and residue to confirm purity.