Chemical Analysis

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

Name _____ Class _____ Date _____

1. Worked example

A sample of aspirin melts between 128 °C and 133 °C. Pure aspirin melts at 136 °C. What does this tell you? (2 marks)

Step 1 · Compare

The sample melts over a range and below the pure value.

Step 2 · Conclusion

The sample is impure: impurities lower the melting point and widen the range.

Answer: The sample is impure

Check: A pure substance melts at a sharp, specific temperature.

2. Now try one with the steps

In a chromatogram the solvent travels 7.5 cm and a spot travels 3.0 cm. Calculate the Rf value. (2 marks)

Step 1 · Formula

Step 2 · Calculate

Answer:

3. Practice

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

1. Define a pure substance in chemistry. [1]

2. Explain how melting point can be used to show a substance is pure. [2]

3. Define the term formulation. [1]

4. Give two examples of formulations. [2]

5. Write the equation for calculating an Rf value. [1]

6. A spot moves 3.0 cm and the solvent 7.5 cm. Calculate the Rf value. [2]

7. Describe the test for oxygen and its result. [2]

8. Describe the test for carbon dioxide and its result. [2]

9. A spot moves 4.2 cm and the solvent 6.0 cm. Calculate the Rf value. [1]

10. A substance has an Rf of 0.35. The solvent front is 8.0 cm from the baseline. Calculate the distance, in cm, moved by the substance. [2]

11. State how many spots a pure substance produces on a chromatogram in any solvent. [1]

12. Explain why the baseline on chromatography paper is drawn in pencil, not ink. [1]

13. Describe the test for hydrogen and the test for chlorine. [2]

14. Explain why different substances have different Rf values in the same solvent. [2]

4. Before you hand it in

Using the everyday meaning of 'pure'

Chemically pure = a single element or compound.

Measuring to the top of the spot

Measure from the baseline to the centre of the spot and to the solvent front.

Getting Rf greater than 1

Rf = substance ÷ solvent, always less than 1.