

Edexcel Chemistry IGCSE

1.13 - Elements, Compounds and Mixtures

Investigate paper chromatography using inks/food colouring

Flashcards

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How can chromatography show the composition of a mixture?



How can chromatography show the composition of a mixture?

Different coloured substances in the mixture will separate as they have different solubilities in the solvent and will travel at different rates



How could you use paper chromatography to separate a mixture of food colourings?



How could you use paper chromatography to separate a mixture of food colourings?

- Draw a pencil line 2 cm from the bottom of chromatography paper
- Mark 4 pencil spots along this line
- On each pencil mark, place one dot of 3 known food colouring and one unknown mixture, label each dot
- Place the chromatography paper in a beaker containing 1 cm of water
- Wait for the solvent to travel up most of the paper
- Remove from the beaker and draw a line where the solvent reached
- Hang the paper up to dry
- Calculate the R_f values



Why should pencil be used to draw the line along the bottom of the chromatography paper?



Why should pencil be used to draw the line along the bottom of the chromatography paper?

It will not affect the experiment as it is insoluble in the solvent



Why should the water in the beaker for paper chromatography be no deeper than 1 cm deep?



Why should the water in the beaker for paper chromatography be no deeper than 1 cm deep?

If it is deeper it will wash away the substances placed on the line on the chromatography paper



Why should you use a lid when carrying out paper chromatography?



Why should you use a lid when carrying out paper chromatography?

To prevent the solvent evaporating



How does paper chromatography separate a mixture?



How does paper chromatography work to separate a mixture?

- The mobile phase moves through the stationary phase so anything dissolved in the mobile phase will move with it
- Compounds interact differently with each phase so will move different distances through the stationary phase and will be separated



How many spots will a pure substance produce on a chromatogram?



How many spots will a pure substance produce on a chromatogram?

One



What is an R_f value?



What is an Rf value?

The Rf value is the ratio between the distance travelled by the dissolved substance (the solute) and the distance travelled by the solvent



How do you calculate Rf values?



How do you calculate Rf values?

Rf =

$$\frac{\text{Distance travelled by substance}}{\text{Distance travelled by solvent}}$$



When measuring the distance moved by a substance on the chromatography paper, where should you measure between?



When measuring the distance moved by a substance on the chromatography paper, where should you measure between?

Measure from the pencil baseline to the middle of the spot of the substance



How can you use chromatography to see if a certain substance is present in a mixture?



How can you use chromatography to see if a certain substance is present in a mixture?

Run a pure sample of this substance alongside the unknown mixture.

If the R_f value of the pure substance matches the value of one of the spots from the mixture, it is likely to be present.

