Your notes

GCSE Chemistry: revision notes

Mixtures and separating techniques

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Mixtures

- A **mixture** has two or more elements or compounds that are not chemically combined. Each substance keeps its own chemical properties.
- **Mixtures** can be separated by physical processes, which do not make new substances.

Filtration and crystallisation

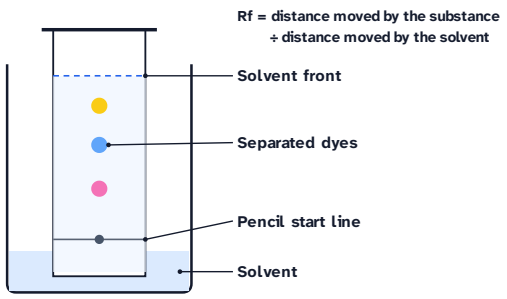
- **Filtration** separates an insoluble solid from a liquid, for example sand from water. The solid (**residue**) stays in the filter paper; the liquid (**filtrate**) passes through.
- **Crystallisation** gets a soluble solid from a solution. Heat the solution in an evaporating basin to evaporate some water, leave it to cool so crystals form, then filter and dry the crystals.
- Heating to dryness can be used instead, but some salts decompose when heated strongly, so **crystallisation** is often better.

Distillation

- **Simple distillation** separates a liquid from a solution, for example pure water from salt water. The liquid evaporates, then the vapour cools and condenses in a **condenser** and is collected.
- **Fractional distillation** separates a **mixture** of liquids with different boiling points, such as ethanol and water, or the fractions in crude oil.
- A fractionating column is hottest at the bottom and coolest at the top. Each liquid condenses at the height where the temperature is below its boiling point.

Chromatography

- Paper **chromatography** separates substances in a **mixture**, such as the dyes in ink, because they move different distances up the paper with the **solvent**.
- It can show whether a substance is pure: a pure substance gives a single spot.



Choosing a method

- Insoluble solid and liquid: **filtration**.
- Soluble solid dissolved in a liquid: **crystallisation** (to keep the solid) or **simple distillation** (to keep the liquid).
- Liquids with different boiling points: **fractional distillation**.
- Several dissolved coloured substances: **chromatography**.

Key terms

Mixture	Two or more substances that are not chemically combined.
Filtration	Separating an insoluble solid from a liquid using filter paper.
Residue	The solid left in the filter paper after filtration.
Filtrate	The liquid that passes through the filter paper.
Crystallisation	Forming crystals of a soluble solid by evaporating some of the solvent and cooling.
Simple distillation	Separating a liquid from a solution by evaporation and condensation.
Fractional distillation	Separating liquids with different boiling points using a fractionating column.
Condenser	Apparatus that cools a vapour so it turns back into a liquid.
Chromatography	Separating substances by how far they move through paper with a solvent.
Solvent	The liquid in which a solute dissolves.

Your notes

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. How would you separate sand from water?
2. How would you get salt crystals from salt solution?
3. How would you get pure water from sea water?
4. Which method separates ethanol from water?
5. What is the liquid that passes through filter paper called?
6. What does a condenser do?
7. Where is a fractionating column hottest?
8. How would you separate the dyes in a sample of ink?

Answers

1. Filtration
2. Crystallisation
3. Simple distillation
4. Fractional distillation
5. Filtrate
6. Cools vapour so it turns back into a liquid
7. At the bottom
8. Chromatography

What to do next

Practise 10 questions on this topic

Try 7 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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