



Separating mixtures

A mixture can be separated by finding a property that is different for the things in it: whether a solid is dissolved, how easily a liquid evaporates, or how the parts of a dye behave on paper. Match the difference to the method.

Pick the method from the difference

Filtration



uses particle size

- insoluble solid from a liquid
- sand from water

Evaporation



the water evaporates from the surface, even below its boiling point

- dissolved solid from a solution
- salt from salty water

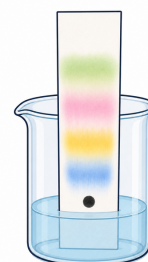
Distillation



the water boils off, is cooled and collected

- the liquid from a solution
- pure water from salty water

Chromatography



some dyes dissolve more readily, others are held more strongly by the paper

- dyes mixed in a liquid
- the colours in a felt-tip ink

Worked example

You have a beaker of muddy salt water. Describe how to get clean dry salt from it.

First filter it. The mud is an insoluble solid, so it stays in the filter paper; the salt is dissolved, so it passes through with the water.

Then gently warm the salt solution so some of the water evaporates and the solution becomes concentrated. Leave it to cool: salt crystals form. Filter them off and leave them to dry.

The common mistake

"Filter the salt water to get the salt out."

Filtration only catches solids that are not dissolved. Dissolved salt particles are far smaller than the holes in the filter paper, so the salt goes straight through with the water. To separate a dissolved solid you need evaporation, or distillation if you want the liquid instead.

Test yourself

- ☐ 1 Which method separates sand from water?
- ☐ 2 You want to keep the water from salty water, not the salt. Which method?
- ☐ 3 Why do the dyes in an ink travel different distances up the paper?

Next topic

Mixtures, including dissolving

thelearnden.com/year-8/science/mixtures-including-dissolving/

Answers: 1. Filtration. 2. Distillation. 3. Some dissolve more readily in the solvent and some are held more strongly by the paper, so they can separate.