GCSE Edexcel

Separation and purification

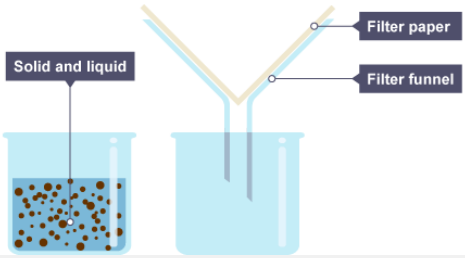
There are different ways to separate mixtures, for example by filtration, crystallisation, distillation or chromatography. The method chosen depends upon the type of mixture.

Filtration and crystallisation

Filtration

Filtration is used to separate an **insoluble** solid from a liquid. It is useful for separating sand from a mixture of sand and water, or **excess** **reactant** from a **solution**.

Filtration works because the filter paper has tiny holes, or pores, in it. These are large enough to let small **molecules** and **dissolved** **ions** through, but not the much larger particles of undissolved solid.



Separating insoluble solids

1. One beaker contains a mixture of solid and liquid, the other contains a funnel with filter paper

Crystallisation

Crystallisation is used to produce solid **crystals** from a solution. When the solution is warmed, some of the **solvent** **evaporates** leaving behind a more concentrated solution.

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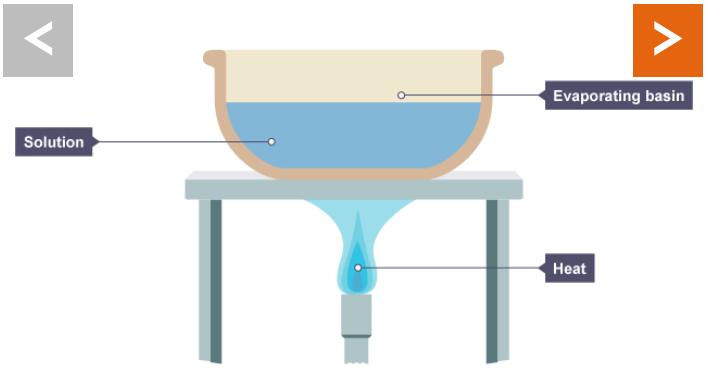

1. A solution is placed in an evaporating basin and heated with a Bunsen burner.

To obtain large, regularly shaped crystals:

- put the solution in an evaporating basin
- warm the solution by placing the evaporating basin over a boiling water bath
- stop heating before all the solvent has evaporated

After the remaining solution has cooled down, pour the excess liquid away (or filter it). Dry the crystals using a warm oven or in air.

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