

Science knowledge organiser — Year 5 — Changing materials

Reversible and irreversible changes

Some changes are **reversible** (can be changed back) whilst others are **irreversible** (cannot be changed back). For example, water freezing into ice is reversible as the ice can melt, turning back into water. However, putting bread in a toaster to make toast is irreversible, as you will be unable to return the toast to bread.

Mixture

A **mixture** is created when two or more materials are combined. Mixtures can be **separated** using methods such as **sieving**, **filtration** and **evaporation**.

Dissolving

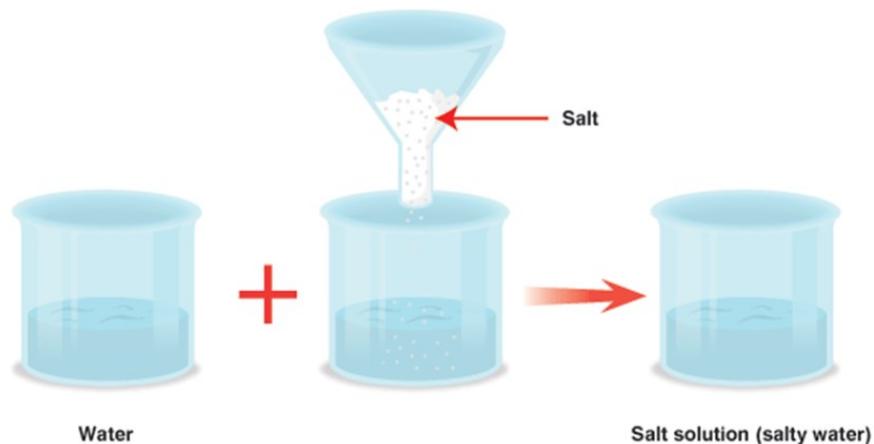
Sometimes when a **solid (solute)** is mixed with a **liquid (solvent)** it will dissolve to form a **solution** - this is an example of a mixture.

The solid seems to disappear in the solution.

A **soluble** material can dissolve however an **insoluble** material cannot dissolve.

It is easier to dissolve a solute in a hot liquid rather than a cold liquid.

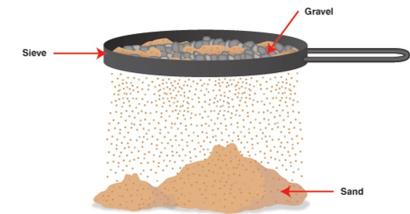
When no more solid can dissolve, the solution becomes **saturated**.



Methods of separating materials

Sieving

A mixture of different solid particles can be separated using a sieve.



Filtration

An insoluble solid can be separated from a liquid when passed through a filter. The liquid can pass through the filter whilst the solid particles are trapped in the filter.



Evaporating

When salt is mixed with water, it forms a solution. The salt seems to disappear in the water. If the solution is boiled, the solid can be recovered. The water will evaporate into a gas and the solid will be left behind.



Insulators and conductors

Heat can travel easily through **thermal conductors**. Metals are good thermal conductors, as they allow heat to move through them. A material that is a thermal conductor which be used for items that require an efficient transfer of heat e.g. radiators, pans.

Thermal insulators do not let heat travel through them easily. Some fabrics, wood and plastics are good thermal insulators. Thermal insulators can keep heat out or in. For example, a cool box stops heat from the air travelling through to the food inside, keeping it cool. A coat stops the heat from your body travelling through to the air outside, keeping you warm.