

### Key learning

Materials vary in terms of their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Tests can identify a material's properties which allows them to be grouped and sorted.

A materials properties will effect its suitability for different purposes, for example a wire is coated in rubber as rubber is not an electrical conductor.

Some materials will dissolve in liquid to form a solution.

Solids, liquids and gases can be separated in several ways, including filtering (separating a liquid and a solid), sieving (separating different sized solids) and evaporation (removing a liquid to leave a solid remaining)

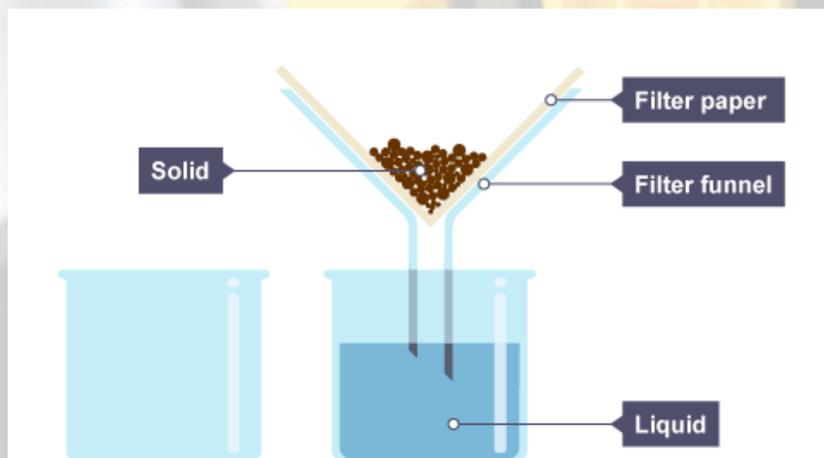
Reversible changes are changes that can be undone or reversed. These include melting, freezing, boiling, evaporating, condensing, dissolving and also changing the shape of a substance.

Irreversible changes result in the formation of new materials, such as ash after burning, dough after mixing a solid and a liquid or the action of acid on bicarbonate of soda.

### Evaporation:



### Filtration:



**Prior Learning to Reactive**

- Compare and group materials together, according to whether they are solids, liquids or gases (Year 4)
- Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) (Year 4)
- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (Year 2)

**Scientific Skills**

Carrying out scientific enquiries to answer child-led questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?' taking measurements using increasing accuracy recording data using tables and line graphs

Observing and comparing the changes that take place, for example, when burning different materials or baking bread or cakes.

Comparing materials in order to make a switch in a circuit .

Setting up controlled experiments where variables are controlled in order to answer questions fairly (i.e. 'How does the location of a jug of water effect the rate of evaporation?')

**Key vocabulary**

<b>Reversible</b>	A change that can be undone and reversed such as changing ice to water
<b>Irreversible</b>	A change that cannot be undone such as burning
<b>Filtering</b>	To pass a liquid, gas, light or sound through a device to remove unwanted material
<b>Sieving</b>	A method of separating solids of two different sizes
<b>Soluble</b>	Something that can be dissolved in water to form a solution
<b>Insoluble</b>	Something that does not dissolve in water so forms a mixture
<b>Solution</b>	The resulting mixture made when a substance dissolves in a liquid
<b>Solute</b>	The substance that has been dissolved in a liquid (for example salt dissolved in water)
<b>Conductivity</b>	The ability of a material to pass electricity and heat through it
<b>Insulation</b>	The ability of a material to prevent electricity and heat from passing through it