



What should I already know?

- I can compare and group materials together, according to whether they are solids, liquids or gases.
- I have observed that some materials change state when they are heated or cooled. I know the boiling point of water is 100°C and the melting point of ice is 0°C.
- I know the part played by evaporation and condensation in the water cycle and know that the higher the temperature the quicker the rate of evaporation.

Properties of materials

- Different materials are used for particular jobs based on their properties:
 - Hardness: hard, soft, malleable
 - Solubility: soluble, insoluble
 - Transparency: transparent, translucent, opaque
 - Conductivity: thermal or electricity, conductor, insulator
 - Flexibility: malleable, rigid, flexible
 - Absorbency: permeable, absorbent
- For example, glass is used for windows because it is hard and **transparent**. Oven gloves are made from a **thermal insulator** to keep the heat from burning your hand.

Scientists

We are scientists. We ask questions about our world and technology and then explore and discover the answers with the aim of making the world a better place.

Dissolving

- A solution is made when solid particles are mixed with liquid particles.
- Materials that will dissolve are known as soluble.
- Materials that won't dissolve are known as insoluble. A suspension is when the particles don't dissolve..
- Sugar is a soluble material.
- Sand is an insoluble material.

Irreversible changes

- Irreversible changes often result in a new product being made from the old materials (reactants).
- For example, burning wood produces ash. Mixing bicarbonate of soda and vinegar will produce carbon dioxide.

Reversible changes

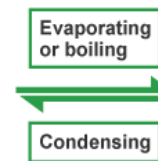
- Reversible changes, such as mixing and dissolving solids and liquids together, can be reversed by sieving, filtering or evaporating.
- Sieving: smaller materials are able to fall through the holes in the sieve, separating them from larger particles.
- Filtering: the solid particles will get caught in the filter paper but the liquid will be able to get through.
- Evaporating: the liquid changes into a gas, leaving the solid particles behind.



Solid



Liquid



Gas

Technical vocabulary

solid	A state of matter where particles are very close together meaning solids hold their shape.
liquid	A state of matter which can flow and take the shape of the container as the particles are more loosely packed than solids and can move around each other.
gas	A state of matter where the particles are further apart than in solids or liquids and they are free to move around. A gas fills its container, taking both the shape and volume of the container.
dissolve	A solid becomes incorporated into a liquid to form a solution.
material	The substance that something is made out of e.g. wood, plastic, metal
melting	The process of heating a solid until it becomes a liquid.
freezing	When a liquid cools and turns into a solid.
evaporation	When a liquid turns into gas or vapour.
condensation	When a gas, such as water vapour, cools and turns into a liquid.
conductor	A conductor is a material that heat or electricity can easily travel through. Most metals are both thermal conductors (they conduct heat) and electrical conductors (they conduct electricity).
reversible	Able to be reversed back to its original state.
irreversible	Impossible to reverse, turn back or change.
soluble	Able to be dissolve, especially in water.
solution	A solution is made when solid particles are mixed with liquid particles.

Spencer Silver

- A chemist who worked creating glue who accidentally created a weak glue.
- Working with a friend Arthur Fry he then used this glue to invent post it notes.