

# Properties and Changes in Materials

Year 5 Autumn 1 and 2

A Kingdom United  
and Food, Glorious Food

Science

## Useful websites

Everyday uses of materials

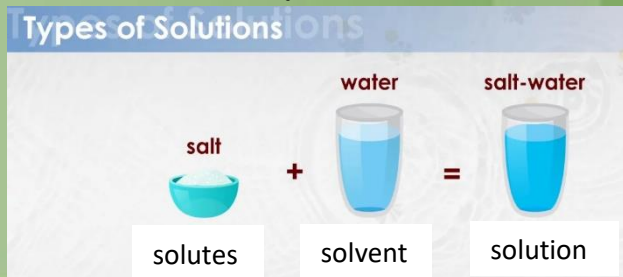
<https://www.bbc.co.uk/bitesize/topics/zryycdm/articles/zk2d96f>

Separating a mixture

<https://www.bbc.co.uk/bitesize/topics/zryycdm/articles/zsgfp4j>

Chemical reactions and reversible changes

<https://www.bbc.co.uk/bitesize/topics/zryycdm/articles/z7dcbqt>



Reversible	Irreversible
<ul style="list-style-type: none"> <li>✓ States of matter</li> <li>✓ Solid + Liquid</li> <li>✓ Solid + Solid</li> <li>✓ Soluble solid + Liquid</li> </ul>	<ul style="list-style-type: none"> <li>✗ Burning</li> <li>✗ Rusted metals</li> <li>✗ Heating food</li> <li>✗ Mixed ingredients</li> </ul>



### What are the three states of matter?

The three states of matter are solids, liquids and gases. The structure of the particles is different in each (Year 4).

### How can materials be sorted?

Materials can be sorted by their state of matter, solubility, transparency, conductivity, thermal, absorption, or magnetic characteristics

### How can materials be dissolved and recovered from a solution?

Add salt to water and stir until it has dissolved, Use different methods to recover the salt e.g. filtering, evaporation or sieving.

### Why are materials chosen for a specific purpose?

Identify the specific characteristics of materials and their suitability for purpose e.g, layers of metal and glass used for their thermal properties in a flask.

### What are reversible and irreversible changes?

A reversible change is when the original state of matter can be changed and returned to e.g. water – ice – water through a process of freezing and melting. An irreversible change cannot be changed back e.g. toasting bread.

### Examples of chemists who invented new materials.

**Spencer Ferguson Silver III** was an American chemist and inventor who created glue for Post-it notes.

**Ruth Benerito** - invented **wrinkle-resistant cotton fabric**, a physical chemist, is credited with saving the cotton industry.

## Vocabulary

## Definition

### States of matter

States of matter is the term used for three groups of things - solids, liquids and gases. All matter (all things) is made up of particles. The way these particles behave alters the state of matter. For example, a solid is made up of low energy particles in a close, fixed structure.

### solubility

Solubility is the term used to describe how easy it is for a substance to dissolve into a liquid (solvent). If a substance dissolves easily, like salt into water, then it is highly soluble.

### particles

A particle is a tiny piece of "stuff" or matter, which we cannot see with our eyes. Every single thing on Earth is made up of these particles. Depending on how the particles are arranged and how they behave, matter can be in a solid, liquid or gaseous state.

### dissolve

When a substance dissolves, it might look like it has disappeared, but in fact it has just mixed with the water to make a transparent (see-through) liquid called a solution.

### Condense and evaporate

When water is heated up, it changes from a liquid to a gas, called steam. This process is called evaporation. When a gas cools down, it can change state back into a liquid..This change is called condensation.

### Reversible and irreversible

Reversible Changes – This is when materials can be changed back to how they were before the reaction took place.

Irreversible Changes – This is when materials cannot be changed back to how they were before.

