

Science Knowledge Organiser

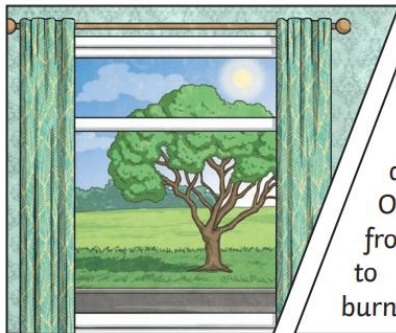
Year 5

Spring (ii)

How can changes be reversed?

Substantive Knowledge - Some changes to the state of materials are reversible whereas others are not; When there is a physical change, it is often reversible; When there is a chemical change, it is irreversible; We can use filtering, sieving and evaporation to separate materials.

Different **materials** are used for particular jobs based on their properties: electrical **conductivity**, flexibility, hardness, **insulators**, magnetism, solubility, thermal **conductivity**, **transparency**.



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.



To know different materials responses to magnets.

Use a **magnet** to test the objects and **draw** each one in the correct box:



Magnetic	Non-Magnetic

What are thermal insulators and conductors?

Materials which are good thermal conductors allow heat to move through them easily.

Thermal conductors are used to make items that require heat to travel through them easily, such as a saucepan which requires heat to travel through to cook food.

Thermal insulators do not let heat travel through them easily.

Examples of thermal insulators include woollen clothes and flasks for hot drinks.



To use our knowledge of solids, liquids and gases to decide how mixtures might be separated, including filtering, sieving and evaporating.

Sieving	Filtering
Smaller materials are able to fall through the holes in the sieve, separating them from larger particles.	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.	

Dissolving, mixing and changes of state are reversible changes

To know that some materials dissolve in liquid to form a solution, and describe how to recover a substance from a solution (reversible change).

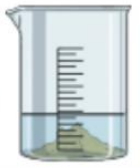
Dissolving

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**.

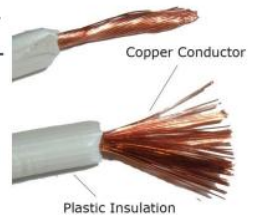


Sand is an **insoluble material**.



What are electrical insulators and conductors?

Electrical conductors allow electricity to pass through them easily while electrical insulators do not.



Electrical insulators have a high resistance which means that it is hard for electricity to pass through these objects.

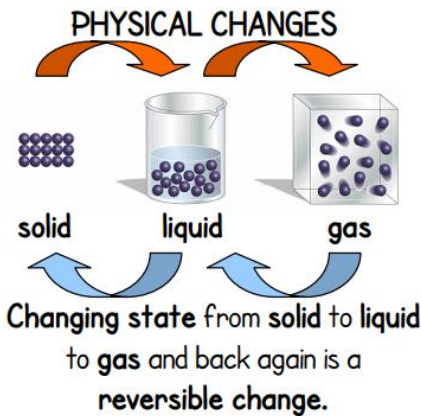
5 Electrical Conductors



5 Electrical Insulators



To explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning & the action of acid on bicarbonate soda.



When chocolate is **melted** it can **solidify** again. The change is **reversible**.

Cooking eggs, by frying, boiling, scrambling, poaching etc., is always an **irreversible** change.

When oil, vinegar and egg yolks are mixed together, they make a **precipitate** called mayonnaise. This change is **irreversible**.

Any **reaction**, such as burning, that causes new **substances** to be formed is called a **CHEMICAL CHANGE**. These changes are **irreversible**.



To give reasons, based on evidence from comparative & fair tests, for the particular uses of everyday materials, including metals, wood and plastic.

Uses of common materials

wood	Doors, tables
plastic	Pens, rulers
glass	Windows, glasses
metal	Cars, coins
brick	Houses, walls
Paper	School books, wrapping paper
Some objects can be made from various materials	E.g. a spoon can be made from: plastic, wood or metal.

Core vocabulary

solubility- the maximum amount of a substance that will dissolve in a given amount of solvent at a specified temperature

electrical conductivity- a measurement that determines a material's ability to transport an electric charge

thermal conductivity- the ability of a material to conduct heat

transparency- light completely passes through it, and you can see clearly through it