


## Key vocabulary


materials	The substance that something is made from.
solids	Solid particles are very close together, meaning solids (such as wood and glass) hold their shape.
liquids	Liquids can flow and take the shape of the container because the particles are more loosely packed than solids and can move around each other.
gases	Gas particles are further apart than solid or liquid particles and they are free to move around. Examples of gases are oxygen and helium.
melting	The process of heating a solid until it changes into a liquid.
freezing	When a liquid cools and turns into a solid.
evaporating	When a liquid turns into a gas or vapour.
condensing	When a gas, such as water vapour, cools and turns into a liquid.




**solid**

The **solid** melts.

The **liquid** freezes.




**liquid**



**liquid**

The **gas** condenses.

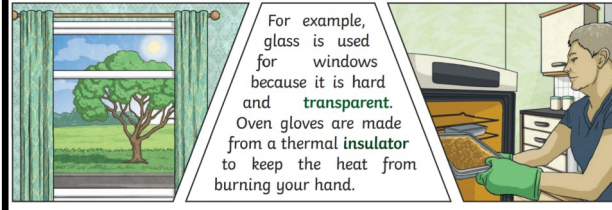
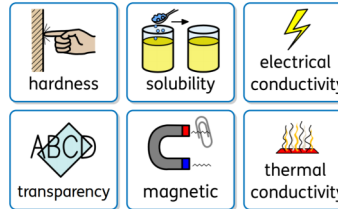
The **liquid** evaporates.



**gas**

The **properties of materials** make them useful for different purposes.

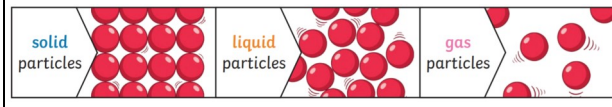
Materials have more than one property and can be natural or man-made.



## States of matter

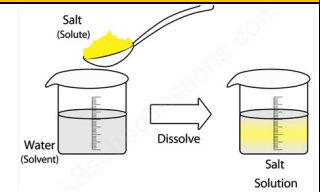
There are three main states of matter— **solids**, **liquids** and **gases**.

The state of matter of materials can change through processes such as freezing and melting.



## Solutions and separation

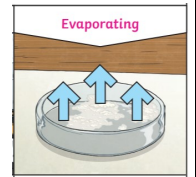
A **solution** is a specific type of mixture where one substance is **dissolved** into another.



An example of a solution is salt water. You cannot see the salt (it looks as if it has disappeared), but in fact it has been broken down to become a part of the liquid.


Materials that will dissolve are known as **soluble** e.g. salt, sugar. Materials that won't dissolve are known as **insoluble** e.g. sand.

You can recover a substance from a solution by **evaporation**. The liquid changes into a gas, leaving the solid particles behind.




## Reversible changes

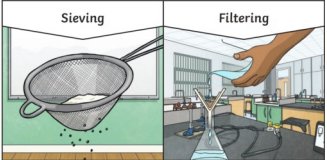
There are many ways in which materials can be changed, for example through heating, cooling, or mixing with other substances.



Some changes can be reversed (e.g. the material can be returned to its previous form). These are known as reversible changes. An example of this is the freezing of water into ice—it can be melted to become water again.



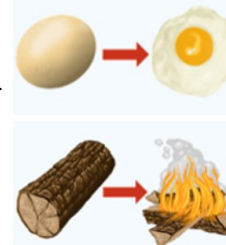
Other examples include filtering, sieving and evaporating.



## Irreversible changes

Other changes are irreversible. This means that the changes cannot be 'undone' - they often result in a new product being formed.

Examples of this include cooking, baking and burning materials. For example, you can't fry a raw egg to cook it and then return it back to a raw egg again!



Knowledge objective	Self-assessment (✓)
I can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.	
I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.	
I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.	
I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	
I can demonstrate that dissolving, mixing and changes of state are reversible changes.	
I can 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 and the action of acid on bicarbonate of soda.	