



Science Topic:	Materials	Year 5	Term: Autumn
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What should I already know and when did I learn this?

- I know the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Materials)
- I know how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Materials)
- I have compared and grouped together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. (Y3 - Forces and magnets)
- I have compared and grouped materials together, according to whether they are solids, liquids or gases. (Y4 - States of matter)
- I know 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). (Y4 - States of matter)
- I know the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (Y4 - States of matter)

What will I know by the end of the unit?

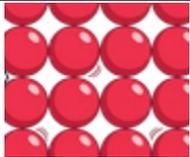
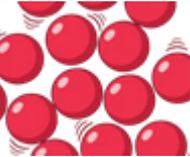
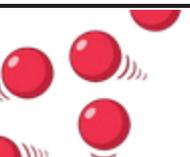
- I can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.
- I know that some materials will dissolve in liquid to form a solution and describe how to recover 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.

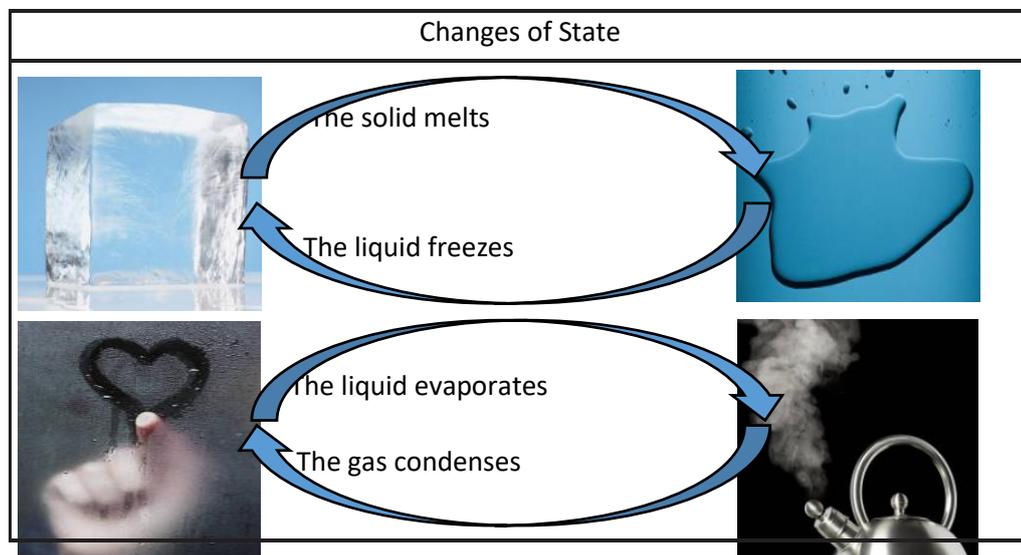
Key Vocabulary

materials	The substance of which something is made.
solids	One of the three states of matter. Solid particles are very close together, meaning they hold their shape.
liquids	This state of matter can flow and takes the shape of its container as the particles are more loosely packed than solids and can move around each other.
gases	One of the three states of matter. Gas particles are further apart than solid or liquid particles and they are free to move around.
melting	The process of heating a solid until it changes into a liquid .
freezing	When a liquid cools and turns into a solid .
evaporate	When a liquid turns into a gas or vapour.
condensing	When a gas , such as water vapour, cools and turns into a liquid .
insulator	An insulator is a material that does not let heat or electricity travel through them.
conductor	A conductor is a material that heat or electricity can easily travel through.

Key Knowledge

Materials can be grouped together based on their properties. For example: hardness, solubility, transparency, thermal conductivity, electrical conductivity and response to magnets. Different **materials** are used for particular jobs based on their properties.

States of Matter	
Solid particles	
Liquid particles	
Gas particles	



Reversible changes, such as mixing and dissolving **solids** and **liquids** together, can be reversed by:

Sieving	Filtering	Evaporating
		
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.	The liquid changes into a gas, leaving the solid particles behind.

Irreversible changes often result in a new product being made from the old materials (reactants).

	Burning wood produces ash.		Mixing vinegar and milk produces casein plastic.
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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.

Sand is an insoluble material.		Sugar is a soluble material.	
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Investigate

- Use understanding of properties to explain everyday uses of materials, for example, how bricks, wood, glass and metals are used in buildings.
- Use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving.
- Describe simple reversible and non-reversible changes to materials, giving examples.
- Group solids based on their observations when mixing them with water.