

Objectives and Sticky Knowledge

Prior Knowledge Recap:

- Objects are made from different materials
- Everyday materials have different properties which are used for specific jobs
- Materials can be changed by squashing, bending, twisting and stretching
- Temperature is one way materials can change state

Land Objectives and Sticky Knowledge:

Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets	Know and explain how a material dissolves to form a solution	Know and demonstrate that some changes are reversible and some are not	Know how some changes result in the formation of a new material and that this is usually irreversible	Know and show how to recover a substance from a solution	Know and demonstrate how some materials can be separated
<ul style="list-style-type: none"> - Soluble materials dissolve in liquid. - Transparent materials can be seen through. - Thermal/electrical conductors allow heat/electricity to pass through. - Thermal/electrical insulators do not allow heat/electricity to pass through. 	<ul style="list-style-type: none"> - Dissolving is the process that occurs when a solute is added to a solvent and the solute disappears. - Know that an insoluble substance will not dissolve in a liquid. - A solution is formed when a <u>solid dissolves</u> in to a liquid. 	<ul style="list-style-type: none"> - A reversible change is a change that can be undone and the original state can be recovered. - The reverse of melting is freezing. - The reverse of evaporating is condensing. 	<ul style="list-style-type: none"> - An irreversible change is when it cannot be changed back to its original form or substance, creating new material. - An irreversible change is a chemical change. - Burning and cooking are irreversible changes. 	<ul style="list-style-type: none"> - A solution is formed when a <u>solid dissolves</u> in a liquid. - Salt can be recovered by applying heat through the process of evaporation. 	<ul style="list-style-type: none"> - Large particles can be separated by sieving. - Small particles can be separated by filtering. - Evaporation can be used to recover a substance from a solution.

Links with 'Sustainability' Golden Thread:

Links with CST and CKA Values Crown:

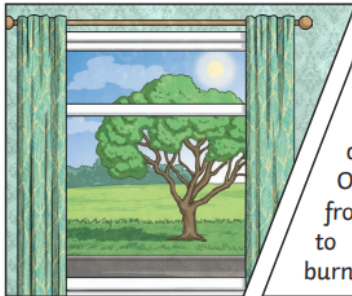
Year 5 Properties and Changes of Materials Knowledge Organiser

Key Vocabulary

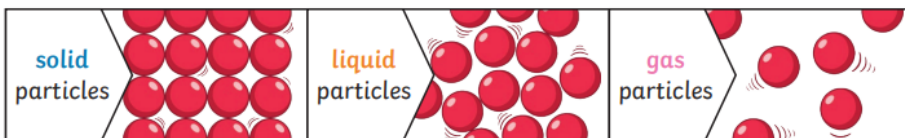
materials	The substance that something is made out of, e.g. wood, plastic, metal.
solids	One of the three states of matter. Solid particles are very close together, meaning solids , such as wood and glass, hold their shape.
liquids	This state of matter can flow and take the shape of the container because the particles are more loosely packed than solids and can move around each other. Examples of liquids include water and milk.
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. A gas fills its container, taking both the shape and the volume of the container. 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 .
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).
insulator	An insulator is a material that does not let heat or electricity travel through them. Wood and plastic are both thermal and electrical insulators .
transparency	A transparent object lets light through so the object can be looked through, for example glass or some plastics.

Key Knowledge

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.



Changes of State



The **solid** melts.

The **liquid** freezes.



The **gas** condenses.

The **liquid** evaporates.



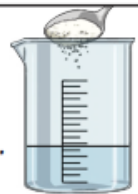
Irreversible changes often result in a new product being made from the old **materials** (reactants). For example, burning wood produces ash. Mixing vinegar and milk produces casein plastic.



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**.



Key Knowledge

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

<p>Sieving</p> <p>Smaller materials are able to fall through the holes in the sieve, separating them from larger particles.</p>	<p>Filtering</p> <p>The solid particles will get caught in the filter paper but the liquid will be able to get through.</p>	<p>Evaporating</p> <p>The liquid changes into a gas, leaving the solid particles behind.</p>
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Sky Objectives:

- Use a range of enquiries to answer a broad range of scientific-based questions.
- Carefully observe and accurately measure variables during an investigation.
- Use a combination of observations and data to draw conclusions that either support or refute the grounds of an investigation.