Properties and Changes of Materials

Science

Year 5

Key Vocabulary

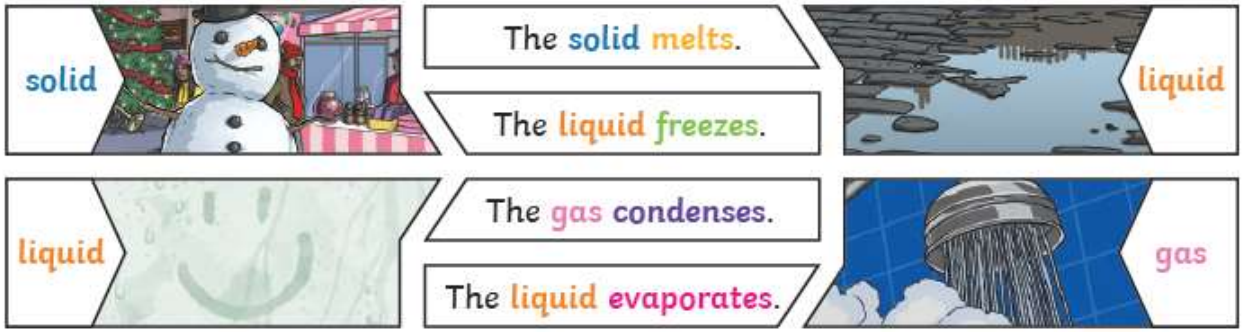
materials	The substance that something is made out of, e.g. wood, plastic, metal.
solids	One of the three states of matter. Solid particles are very close together, meaning solids, such as wood and glass, hold their shape.
liquids	This state of matter can flow and take the shape of the container because 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.

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



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Careers that link to this topic:

Pharmacologist — Chemist

Chef — Scientific Research

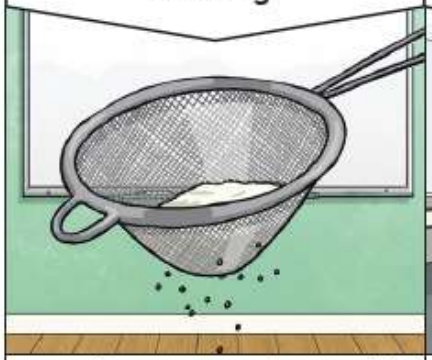
Key Vocabulary

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

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

Sieving

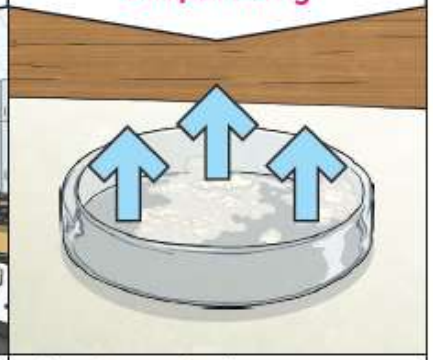


Smaller **materials** are able to fall through the holes in the sieve, separating them from larger particles.

Filtering

The **solid** particles will get caught in the filter paper but the **liquid** will be able to get through.

Evaporating

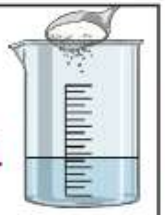


The **liquid** changes into a **gas**, leaving the **solid** particles behind.

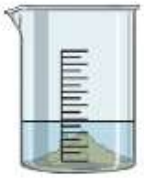
Dissolving

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**.



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.