

YEAR 5 Science

Properties and changes of materials

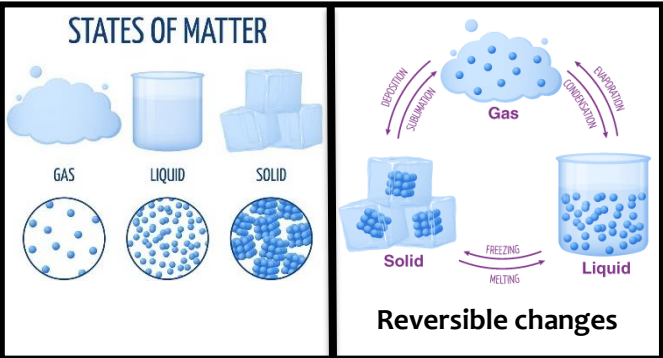
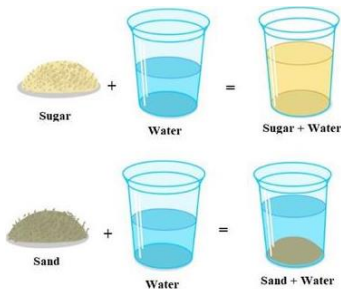
What I should already know:

- How to compare and group materials together, according to whether they are solids, liquids or gases.
- Observe 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).
- Identify the part played by evaporation and condensation in the water cycle and understand the rate of evaporation is related to temperature.

At the end of this topic, I will know:

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

When solid particles mix with liquid particles, a solution is made. Some materials will dissolve in the liquid. These materials are soluble. Other materials will not dissolve – they are insoluble.



Key Facts:
Different materials are used for certain jobs based on their properties.
Materials all have different properties such as: hardness, flexibility, magnetism, solubility, transparency, insulators, electrical conductivity, thermal conductivity.
Glass is the material used for windows due to its hardness and transparency.
Solids, liquids, and gases are all states of matter which can change form. These changes can be reversible or irreversible.
Reversible changes can be changed from one state to another, and then return to their original state.
Irreversible changes lead to a new product being made from the old materials. These materials are called reactants.



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