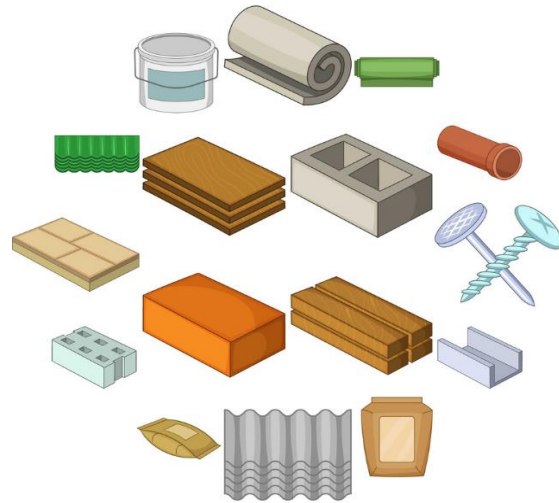


Year 6 Knowledge Organiser – Properties and Changes of Materials

What you should already know...



Materials are the **substances** that things are made from.

The **properties** of materials make them useful for different purposes. Properties can include the **hardness**, whether it **conducts electricity** or **heat**, the **shininess**, the **transparency**, or whether it is **magnetic**. Materials have more than one property and can be **natural** or **man-made**.

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.



A **solvent** is a substance that **dissolves** a solid, liquid, or gaseous solute.

A **solute** is the substance dissolved in the solvent. When it dissolves, it looks as though it has disappeared, but in fact it has been broken down to become a part of the liquid.

One example of a **solution** is salt water. You cannot see the salt, and the solution will remain if left alone.

Some mixtures and solutions can be separated through processes such as **sieving**, **evaporating**, **condensing**, **filtering** and **distilling**. Salt and water can be separated by evaporation.

Grouping Materials by Properties

PROPERTY	YES	NO
ELECTRICAL CONDUCTOR	Copper, aluminum, gold, silver, steel, sea water	Glass, air, plastic, rubber, wood, oil, diamond
MAGNETIC	Steel, nickel, cobalt, iron, uranium, platinum	Paper, glass, plastic, rubber, wood, wool
TRANSPARENT	Glass, water, clear plastic	Wood, rubber, oil, steel, copper, iron, silver
WATERPROOF	Plastic, rubber, metal, glass	Tissue, sponge, fabric

Reversible and Irreversible Changes

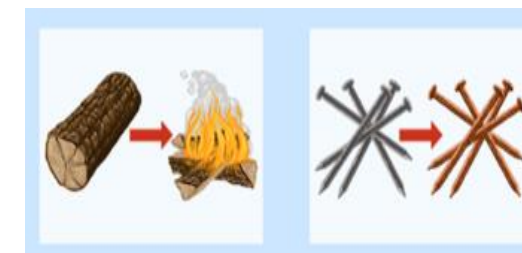
REVERSIBLE CHANGES



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.

IRREVERSIBLE CHANGES



Other changes are irreversible. This means that the changes cannot be 'undone.' Examples of this include cooking, baking, frying and burning materials. For example, you can fry a raw egg to cook it. You can't return it back to a raw egg again.

Changes that involve the formation of new materials (e.g. mixing cement) are not normally reversible.

Reversible Changes

Dissolving

Mixing



Changes of State

Burning



Rusting

Irreversible Changes

Decaying