COLD HARBOUR
C of E Primary School

Knowledge Organiser

Science – Properties and Changes of Materials

Key Questions

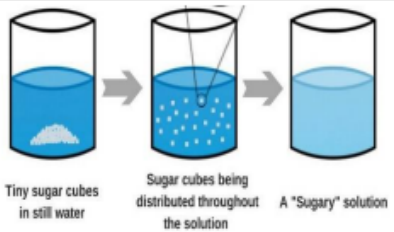
- How can we group materials according to properties?
- How do we separate materials that have become mixed?
- Which changes to properties of materials are reversible and which are irreversible?

What I should already know

- 1. Some materials have magnetic properties
- 2. Certain materials make good electrical conductors and others make good insulators
- 3. Water, when heated, evaporates into water vapour

DISSOLVING - Sometimes when a solid (solute) is mixed with a liquid (solvent) it will dissolve to form a solution e.g. dissolving sugar in hot tea.

The solid seems to disappear in the solution but it is still there it has just become part of the liquid.



A soluble material can dissolve however an insoluble material cannot dissolve.

PARTICLE ARRANGEMENT

Solid – particles packed closely together

Liquid – particles have some space to move

Gas – particles are free to move

COMPARING AND GROUPING - Materials can be compared and grouped together on the basis of their properties including:

- **Hardness** – how hard or soft a material is
- **Solubility** – whether a material can dissolve
- **Transparency** – whether it allows light to pass through
- **Conductivity** (electrical or thermal) – whether it allows heat or electricity to carry through
- **Response to magnets** – whether it is magnetic

Useful web links

https://www.bbc.co.uk/bitesize/topics/zryycdm

Key Vocabulary	
materials	The substance that something is made out of, e.g. wood, plastic, metal.
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.
evaporating	When a liquid turns into a gas or vapour.
freezing	When a liquid cools and turns into a solid.
melting	The process of heating a solid until it changes into a liquid.
condensing	When a gas, such as water vapour, cools and turns into a liquid.
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.