

What should I already know?

- *How suitable a material is for a particular use.
 - *Shapes of solid objects can be changed by squashing, bending, twisting and stretching.
 - *Materials can be compared based on magnetism.
- Materials can be grouped into solids, liquids or gases.
- Some materials change state when they are heated or cooled.
- How evaporation and condensation work in the water cycle.

All Saints CE Aided Primary School and Nursery

Year 5 Science

Autumn 1



Properties and Changes of Materials

Overall Enquiry Question

Aut 1 – Why are the properties of materials important?

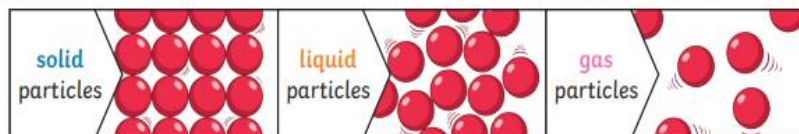
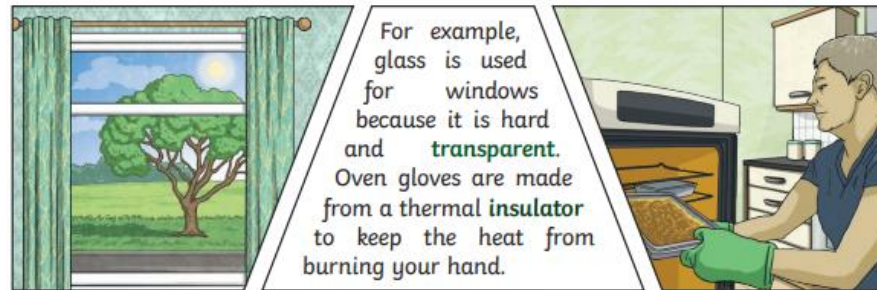
Aut 2 – Why are some changes reversible and others irreversible?

Key Questions

- Which materials have been used and why?
- Which material is the best thermal insulator?
- Which material is the most absorbent?
- How can mixtures be separated?
- Which materials are soluble?
- How can we purify water?
- Why are some changes irreversible?

Key Knowledge

Different **materials** are used for particular jobs based on their properties: electrical **conductivity**, flexibility, hardness, **insulators**, magnetism, solubility, thermal **conductivity**, **transparency**.



Key Knowledge

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

Sieving	Filtering	Evaporating
Smaller materials are able to fall through the holes in the sieve, separating them from larger particles.	The solid particles will get caught in the filter paper but the liquid will be able to get through.	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**.



What are thermal insulators and conductors?

- Materials which are good thermal conductors allow heat to move through them easily.
- Thermal **conductors** are used to make items that require heat to travel through them easily, such as a saucepan which requires heat to travel through to cook food.
- Thermal insulators do not let heat travel through them easily.
- Examples of thermal insulators include woollen clothes and flasks for hot drinks.



Irreversible Changes

Often result in a new product being made from the old material.

For example **burning wood produces ash**



Key Vocabulary

Flexibility	How easy it is to change the shape of something.
Transparency	How see through something is
Absorbency	How well something soaks up liquid
Thermal conductor	A material that heat is unable to pass through easily
Thermal insulator	A material that allows heat to pass through it easily
Mixture	A substance made from mixing other substances together
Dissolve	When a solid incorporates in to a liquid forming a solution
Soluble	A substance that is able to be dissolved in liquid
Insoluble	A substance that is unable to dissolve in liquid
Solution	A liquid that contains dissolved solid
Filter (verb)	To separate materials by passing through a material with tiny holes.
Sieve (verb)	To separate materials by passing then through a device with holes.

Key Vocabulary

Evaporate

When a liquid is heated and becomes a gas

Condense

When a gas (vapour) cools and becomes a liquid

Reversible change

A change that can be undone

Irreversible change

A change that cannot be undone. A chemical reaction has occurred and a new material has been formed.

Carbon dioxide

A gas that is in the air. CO_2 can be created when chemical reactions occur.