

Enquiry Question: What properties do materials have and how can they change?

Why this/why now?

We are studying materials and changes of state because how materials change affect us in our everyday lives. Now we are becoming more independent, it's important to understand why these changes take place.

How does this link to the National Curriculum?

Science NC – States of Matter

As well as working scientifically, we will be:

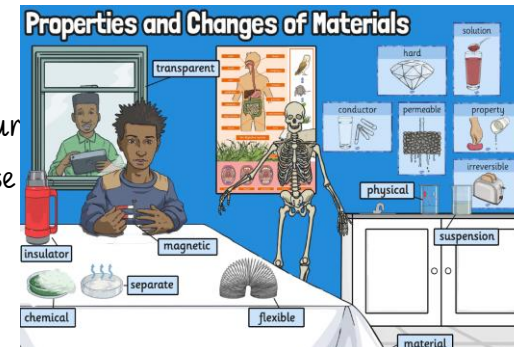
- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance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

How will this unit of work be assessed?

This will be assessed and evidenced by:

- Writing up science investigations
- Drawing scientific diagrams
- Using tables to record data
- Practical work in pairs and groups

Summer Term 2025



Character Muscles

Curiosity

Resilience

Questioning

Making links



Cooperation

Things my family can ask me:

- What investigations have you been carrying out?
- What can you do to help dissolve my sugar in my tea?
- How do you make sure an investigation is fair?

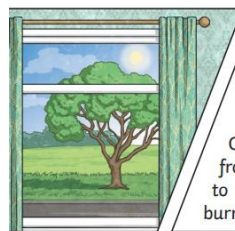
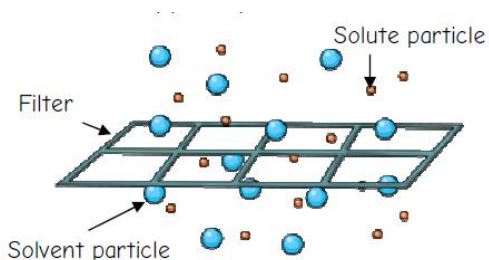
Links to other subjects

DT: making Greek food

The Knowledge (these are the key bits of information!)

Key Knowledge

The filter cannot separate the solution into solvent and solute because both types of particles can easily pass through the holes in the filter without being stopped.



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.



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**.



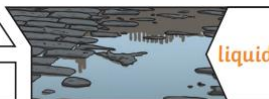
Sand is an insoluble **material**.



solid

The **solid** melts.

The **liquid** freezes.



liquid



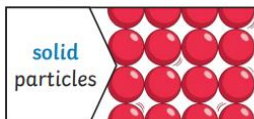
liquid

The **gas** condenses.

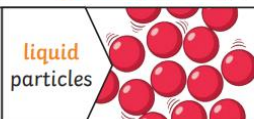
The **liquid** evaporates.



gas



solid particles



liquid particles



gas particles

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

Sieving



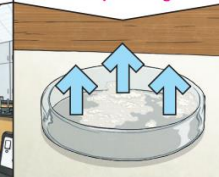
Smaller **materials** are able to fall through the holes in the sieve, separating them from larger particles.

Filtering



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

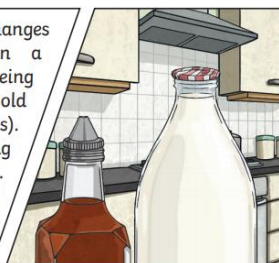
Evaporating



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



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.



Key Vocabulary

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Hardness

Transparency

Conductivity

Solubility

Solution

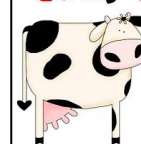
Dissolve

Filter

Evaporate

Fair Testing

COWS MOO SOFTLY



Change 1 thing

Measure or observe

Same for everything else

Further Research: Want to learn more? Follow the link: <https://www.bbc.co.uk/bitesize/topics/zryycdm>