

Science Y5 Summer 1– Properties and changes of materials

In this unit of work the children will compare and group a variety of materials based on first hand experiences. They will conduct experiments to find out which materials will dissolve in liquids to form a solution. They will test materials to find out if they have reversible or irreversible changes.

In this unit children will:

- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity and response to magnets.
- Find out which materials will dissolve in liquid to form a solution.
- Describe how to recover a substance from a solution.
- Use knowledge of solids, liquids and gases to decide how mixtures might be separated.
- Demonstrate reversible and irreversible changes in materials.

Prior Learning

FS – Looks closely at similarity, difference, pattern and change

Y1 –Name objects made from basic materials and their simple properties.

Y2 – Compare suitability of everyday materials.

Y4 – Compare and group materials; change of materials when heated or cooled

Cross Curricular Links

D&T – Making masks

Key Vocabulary

Conductor – A substance that heat or electricity can pass through or along.

Dissolves – When a substance is mixed with a liquid and the substance disappears.

Evaporation – To turn from liquid into gas; pass away in the form of vapour.

Filtering–A devise used to remove dirt or other solids from liquids or gases. A filter can be made of paper, charcoal, or other materials with tiny holes in it.

Insoluble– Impossible to dissolve.

Insulator– A non-conductor of electricity or heat.

Irreversible – Impossible to reverse, turn back or change.

Particles–A tiny amount of a substance or matter.

Resistance – Opposing power of 1 force against another

Soluble – Able to be dissolved

Solution – A mixture that contains 2 or more substances combined evenly.

State – The structure/condition of something.

Thermal – Relating to or caused by heat.

Key Knowledge

- Materials can be grouped based on their properties, if they are– magnetic, transparent, flexible, permeable, soluble and insoluble.
- 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.
- Electrical conductors allow electricity to pass through them easily while electrical insulators do not.
- Electrical insulators have a high resistance which means that it is hard for electricity to pass through these objects.
- When the particles of a solid mix with the particles of a liquid, this is called dissolving. The result is a solution.
- Materials that dissolve are soluble.
- Materials that do not dissolve are insoluble.



- Some materials can be separated after they have been mixed based on their properties – this is called a reversible change.
- Some methods of separation include the use of a magnet, a filter (for insoluble materials), a sieve (based on the size of the solids) and evaporation.
- When a mixture cannot be separated back into the original components, this is called irreversible change. Examples of this include when materials burn or mixing bicarbonate of soda with vinegar.

Key Questions

- Name something which a thermal insulator does.
- What do they call materials which dissolve?
- What is an example of an electrical conductor?
- You investigate if some solids dissolve quicker than others, what can you do to make the test fair?