

## 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?