

Science Y5 Spring 2 – Materials

In this unit the children will explore and compare the properties of a broad range of materials. They will explore reversible changes, including evaporating, filtering, sieving, melting and dissolving. They will investigate changes that are difficult to reverse and find out how chemists create new materials.

In this unit children will:

- Compare and group together everyday materials on the basis of their properties.
- 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 describe how mixtures might be separated, including through filtering, sieving and evaporating.
- Give reasons, based on evidence for the uses of everyday materials.
- Demonstrate that dissolving, mixing and changes of state are reversible.

Prior Learning

F.S Know that there are similarities and differences between materials

Y1 Name and describe common materials

Y2 Materials are suitably used based on their properties

Y3 Magnetic materials and permeable rocks

Y4 Solids, liquids, gases and the water cycle

Cross Curricular Links

Key Vocabulary

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

Filtering – A device used to remove dirt or other solids from liquids or gases.

Insoluble – Impossible to dissolve especially in a given liquid.

Insulator – A non-conductor of electricity or heat.

Irreversible– Impossible to reverse, turn back or change.

Permeable – A gas or liquid can pass through it.

Process – A series of actions used to produce something or reach a goal.

Rate – The speed with which something happens.

Soluble – Able to be dissolved.

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

Thermal – Relating to or caused by heat or changes in temperature.

Variable – Something that can change or that has no fixed value.

Key Knowledge

- Materials are grouped based on their properties, using vocabulary such as 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 saucepans which need heat to travel through them to cook the food.
- Thermal insulators do not let heat travel through them easily. These 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 and those which don't dissolve are insoluble.
- Some materials can be separated after they have been mixed based on their properties, this is 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 solid) and evaporation.
- When a mixture cannot be separated back onto the original components it is an irreversible change eg when materials burn or mixing bicarbonate of soda with vinegar.

Key Questions

- What do thermal insulators do?
- Give an example of an electrical conductor.
- What are materials which can be dissolved called?
- What is the process called when solid particles mix with the particles of a liquid?
- You conduct an experiment to investigate if some solids dissolve quicker than others. Name 1 thing you do to make it a fair test.