Properties and Changes of Materials - Year 5 - Unit 1

Scientific Enquiry

identifying & classifying

Identifying means knowing what something is and naming it. **Classifying** means grouping things together if they have something in common. We will explore adding a range of solids like sugar and salt to water and group solids based on observations.

comparative & fair testing

Comparative testing means testing objects to rank them. **Fair tests** are enquiries that observe or measure the impact of changing one variable when all others are kept the same. We will investigate the properties of different materials in order to recommend them for particular functions. We will test and compare dissolving rates and irreversible changes such as rusting.

Working Scientifically

Asking scientific questions
Planning an enquiry
Observing closely
Taking measurements
Gathering and **recording** results
Presenting results
Interpreting results
Concluding (drawing conclusions)
Predicting
Evaluating an enquiry

Subject Specific Vocabulary

conductor

A **conductor** is a material which electricity, heat or sound can flow through

insulator

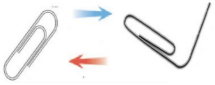
An **insulator** is a material that is a poor carrier of heat, electricity or sound.

Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and magnetism.

reversible

When materials can be changed back to their original state or form it is called a **reversible** change. When ice (solid) melts to form water (liquid). It can be frozen back to ice again. This is a **reversible** change.

When a steel paper clip is bent, it changes shape. This is a **reversible** change as it can be bent back to its original shape.



irreversible

Sometimes when materials are cooked, heated, burnt or mixed, a new material is formed. The new material cannot be changed back to how it was before. This is an **irreversible** change. Paper being burnt is an **irreversible** change. It is not possible to get the paper back.

Heating an egg to make a fried egg creates a new material. This change is **irreversible.**

dissolving

When a solid is **dissolved,** it is mixed into a liquid creating a solution. Some materials do not **dissolve**. They are insoluble and form sediment.

salt solution

sediment in water

evaporation

To recover a substance from a solution we can use different methods such as **evaporation** where a material is turned from its liquid state into a gas.

filtering

One was to separate materials in a mixture is by **filtering**. This involves passing a liquid through a mesh to separate solids.

sieving

Sieving separates solids from liquids or larger solids from smaller solids by passing them through a net.

filtering

sieving

Things you learnt in previous topics

In Year 2, you identified and compared the suitability of a variety of everyday materials for particular uses and found out how the shapes of solid objects made from materials like plastic and rubber could be changed. In Year 3, you identified magnetic materials. In Year 4, you compared and grouped materials according to whether they were solids, liquids or gases and observed changes of state. You learnt about evaporation and condensation and the water cycle.

How this connects with future learning

In KS3, you will learn about chemical reactions as the rearrangement of atoms. You will be able to represent chemical reactions using formulae and equations. You will learn about combustion, thermal decomposition, oxidation and displacement reactions. You will be able to define acids and alkalis in terms of neutralisation reactions. You will be able to use the pH scale for measuring acidity/alkalinity; and indicators.