

Fens Primary School Knowledge Organiser



Science Focus:

Properties and changes of materials

Year 5

Term:

Comparing and Grouping Materials

Materials can be grouped by their properties (is it hard or soft?) or by more than one of their properties (is it hard and magnetic?):

Properties of materials we can compare

Hard	Difficult to scratch, like the head of a hammer.
Soft	Easy to shape, like fabric.
Soluble	Can be dissolved, like coffee granules.
Insoluble	Cannot be dissolved, like pebbles.
Transparent	See through, like glass.
Opaque	Not see through, like a wooden door.
Electrical conductor	Lets electricity pass through easily, like copper wire.
Electrical insulator	Do not let electricity flow through easily, like plastic or rubber.
Thermal conductor	Lets heat pass through easily, like a metal kettle.
Thermal insulator	Does not let heat pass through easily, like a
Magnetic	Is attracted to a magnet, like a steel spoon. Note: Not all metals attract to magnets.
Not magnetic	Is not attracted to a magnet, like a wooden spoon.

What? (Key Vocabulary)

Spelling	Definition/Sentence
Dissolved	To become incorporated into a liquid so as to form a solution.
Separating	The action of moving things apart.
Evaporation	When a liquid turns to a gas due to an increase in temperature.
Properties	A specific quality of something.

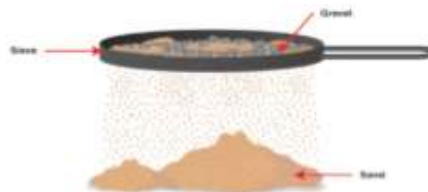
All matter in the Universe is made up of very small particles

When some substances combine they form a new substance (or substances) with properties that are different from the original ones. Other substances simply mix without changing permanently and can often be separated again.

Diagrams and Symbols

Sieving

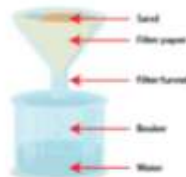
A mixture made of solid particles of different sizes, for example sand and gravel, can be separated by sieving.



Filtering

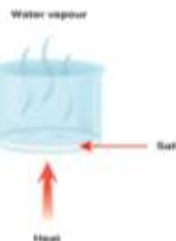
A mixture of water and an insoluble substance like sand can be separated by filtering.

The mixture of sand and water is poured into the filter funnel, which is lined with filter paper. The water can pass through the paper to collect in the beaker. The sand particles cannot pass through the filter paper and collect in the filter funnel.



Evaporating

By dissolving salt in water we make a solution. The salt dissolves (seems to disappear) into the water. We can separate the salt from the water by boiling a solution. The water will evaporate until it is all gone. The salt will be left behind.



Mixtures and Solutions

A mixture
Where substances are mixed together, but dissolving hasn't taken place. For example, mixing, cucumber slices, egg slices and tomato slices to make a salad.

A solution
Some substances dissolve in a liquid. When this happens the liquid is called a solution. For example, when gravy granules dissolve in water, this is a solution.

Separating a mixture

We can separate a mixture by sieving and/or filtering

- Sieving - sorting out the big bits from the small bits, e.g. stones from soil.
- Filtering - separating solid bits from a liquid, e.g. sand from sand and water.

Separating a solution

We can separate a solution by evaporation

- Because the soluble substance is too mixed into the water, it can't be removed by sieving or filtering.
- Evaporation - A liquid evaporates into a gas when it is heated. This removes the liquid and leaves the substance behind.

Reversible Changes

What is a reversible change?

A change that doesn't last forever. For example, water can turn to ice when frozen, but can be turned back to water by heating it.

Irreversible Changes

What is an irreversible change?

Lasts forever

- Usually caused by heat.
- E.g. Eggs, flour, butter and sugar heated to make a cake. The original ingredients can't be recovered.

Working as a Scientist

- Design an everyday item (oven glove, pan stand... based on the properties it would need.
- Experiment with irreversible changes, e.g. vinegar and bicarbonate of soda.