

Science Knowledge Organisers

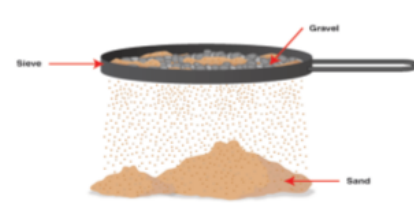


Science Focus

Properties and changes of materials

Year 5

Spr 1 and 2

Key Knowledge	
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?).	
Hard	Difficult to scratch
Soft	Easy to shape, like fabric.
Soluble	Can be dissolved
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 wood pan handle.
Magnetic	Is attracted to a magnet, like a steel spoon. Note: Not all metals attract to magnets.
Non magnetic	Is not attracted to a magnet, like a wooden spoon.
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.
We can separate a mixture by sieving and/or filtering	<ul style="list-style-type: none"> 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.
We can separate a solution by evaporation	<ul style="list-style-type: none"> 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
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.
What is an irreversible change?	<ul style="list-style-type: none"> 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.
Possible Experiences	
Experiments to find properties of materials, e.g. does it attract to a magnet, can heat pass through it... 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.	

Key Vocabulary	
Dissolved	To become incorporated into a liquid so as to form a solution
Separating	The action of moving things a part
Evaporation	When a liquid turns to a gas due to an increase in temperature
Properties	A specific quality of something
Diagrams and Symbols	
<p>Sieving A mixture made of solid particles of different sizes, for example sand and gravel, can be separated by sieving.</p>  <p>Filtering A mixture of water and an insoluble substance like sand can be separated by filtering.</p> <p>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.</p>  <p>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.</p> 	

Greater Depth Thinking

What are the most efficient ways to separate materials and why? How are the different techniques suited to different solutions/substances?