TPS Science Knowledge Organiser Year 5 Properties and Changes of Materials Summer term

Be a chemist, material scientist.

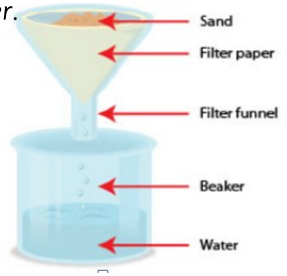
Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.

hardness	How easily a material can be scratched, dented or squeezed into another shape.
transparency	How well light passes through a material making it easier or harder to see through.
electrical conductor	Lets electricity flow through easily, like copper wire.
electrical insulattor	Does not let electricity flow through easily, like plastic or rubber.
thermal conductor	Lets heat pass through easily, like a metal pan.
thermal insulator	Does not let heat pass through easily, like a plastic pan handle.
attraction	Whether a material is attracted to a magnet or not

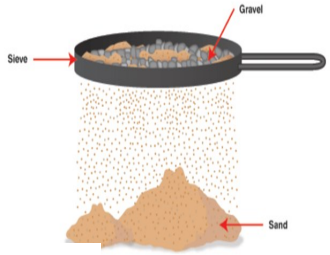
Mixtures can be separated by filtering, sieving and evaporation.

mixture	A combination of materials that can be easily separated. It can be any combination of solids, liquids

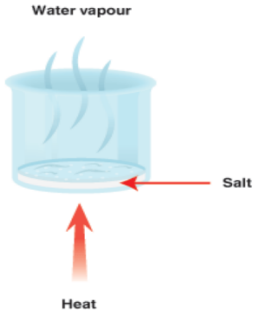
Filter a mixture made up of a liquid and an insoluble material. E.g. sand and water.



Sieve a mixture of solids that have pieces of different sizes. E.g. sand and gravel.



Evaporate a mixture made up of a liquid and soluble solid by heating . E.g. salt and water. Although the salt (solid) seems to have disappeared it is left behind as the water (liquid) turns to water vapour (gas).



Heat from below or leave in the sun

Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.

solution	A solution is a mixture made when a solid mixes completely (**dissolves**) into a liquid.
soluble	A material that dissolves in a liquid is described as soluble.
insoluble	A material that does not dissolve in a liquid is described as insoluble.

Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.

reversible change	A change that does not last forever and can be undone.
non-reversible change	Change is permanent and cannot be easily undone. Often result in a new material being made.
burning 	When wood is burnet a new material is created – ash.
rusting 	When iron is exposed to air and rainwater a new material is slowly created – rust.