



Knowledge Organiser: Year 5 - Changes of Materials

Careers connected to changes of materials:
laboratory technicians, technical associates,
research analysts, chemistry teachers.



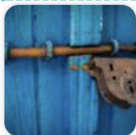
Lesson Sequence



1. Use evaporation to recover the solute from a solution



2. Recognise and describe reversible changes



3. Observe chemical reactions and describe how we know new materials are made



4. Investigate rusting reactions



5. Investigate burning reactions



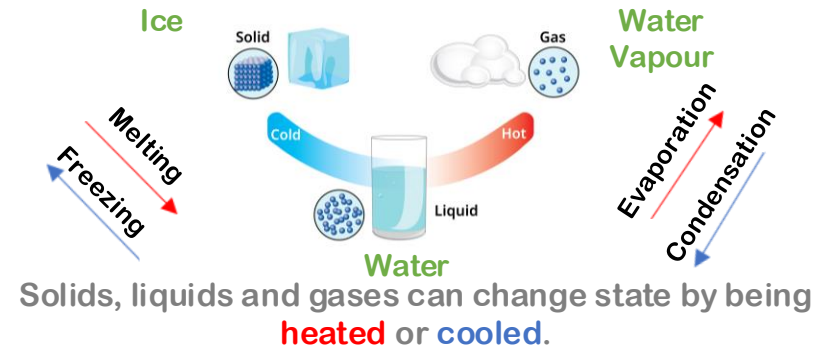
6. Investigate chemical reactions - acids and bicarbonate of soda

Evaporation



If a solid has **dissolved** in water (for example in a salt solution), **heating** it causes the water to **EVAPORATE**, leaving the solid (salt) behind.

Changes of State



Solids, liquids and gases can change state by being **heated** or **cooled**.

Irreversible Changes



These are **CHEMICAL** changes – they **cannot** be reversed as a new material has been made.

Reversible Changes



liquid chocolate
– **cool** –
solid chocolate



solid lolly
– **heat** –
liquid lolly



mixture of rice and flour
– **sieve** –
both separated



dissolved sugar
– **evaporation (heat)** –
solid sugar

These are **PHYSICAL** changes – they **can** be reversed as no permanent change has been made.

Rocket Words

	solute	a substance that can be dissolved in liquid
	solvent	a substance that can dissolve in a solute
	reversible	a change to a substance that can be undone or reversed
	evaporate	the process where a liquid changes to a gas
	chemical change	a type of change in which a new substance is formed
	effervescence	fizzing or bubbling
	fair test	an experiment that only changes one variable
	corrosion	the reaction of a metal with oxygen
	combustion	an irreversible change where a fuel uses oxygen to burn and releases energy
	extinguish	to put out a fire
	reaction	process in which substances are converted into different substances
	carbon dioxide	gas which makes up around 0.04% of our atmosphere

What I already know:

Year 2

- ☐ I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- ☐ I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

What I am learning now:

Year 5

- ☐ I can compare and group together everyday materials on the basis of their properties
- ☐ I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- ☐ I can use knowledge of solids, liquids and gases to decide how mixtures might be separated
- ☐ I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials
- ☐ I can demonstrate that dissolving, mixing and changes of state are reversible changes
- ☐ I can explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

What I will learn next:

KS3

- ☐ I can compare chemical and physical changes
- ☐ I can explain how mass is conserved during a physical change
- ☐ I can describe what occurs during changes of state



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Before & After Test



Tick all the **reversible** changes.

Frying an egg.		Water turning into water vapour.	
Burning paper.		A nail rusting.	
Melting chocolate.		A snowman melting.	
Mixing bicarbonate of soda and vinegar.		Mixing vinegar and milk.	

Fill in the missing labels using the following words:

evaporation **condensation** **freezing** **melting**



Draw a line from the picture to the correct process to **reverse** it.

Melted chocolate

Sieving

raspberry frozen in water

Cooling

Rice mixed with salt

Heating

Sand mixed with water

Filtering

A lost explorer collects some water from the sea. It contains dissolved salt.

1. What is the name of the process he would use to separate the salt from the water?
2. Explain how he could do this.
