Coley Primary School – Knowledge Organiser

SUBJECT FOCUS: Chemistry strand	Science: Properties and Changes of Materials	YEAR 5	TERM 2

WHAT? – Key Knowledge

- Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- Demonstrate that dissolving, mixing and changes of state are reversible changes
- 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.
- Explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes.
- Explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda.
- Use scientific language: say, read and spell scientific vocabulary.

Famous Scientists



John McAdam, who invented tarmac.



Harry Brearly, who invented stainless steel



Ruth Benerito, who invented wrinkle-free cotton.



Leo Baekeland, who invented a plastic called Bakelite.



Spencer Silver, who invented the glue for sticky notes.

Did you know….

Burning, rusting, and **cooking** are permanent changes. They cannot be undone by reversing the conditions that brought them about.

Melting and **boiling** are reversible changes produced by heat. **Steam** from a boiling kettle condenses back into drops of water when it comes into contact with a cold surface, such as a window.

Rusting is a chemical reaction between **iron, oxygen, and water**.

Examples of Chemical Change



Burning of incense stick



Burning of coal

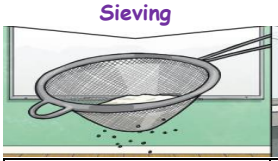


Rusting of iron

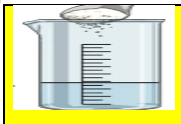
- Spoilage of food
- Digestion of food
- Burning of dry leaves
- Explosion of fireworks

Amazing Facts…

Reversible changes, such as **mixing** and **dissolving solids** and **liquids** together, **can** be reversed by:

Sieving	Filtering	Evaporating
		
Smaller materials are able to fall through the holes in the sieve, separating them from larger particles.	The solid particles will get caught in the filter paper but the liquid will be able to get through.	The liquid changes into a gas, leaving the solid particles behind.

Dissolving: A solution is made when solid particles are mixed with liquid particles.
Materials that will dissolve are known as **soluble**.
Materials that **won't dissolve** are known as **insoluble**. A suspension is when the particles don't dissolve.



Sugar is a **soluble** material.

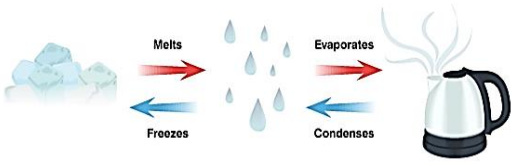


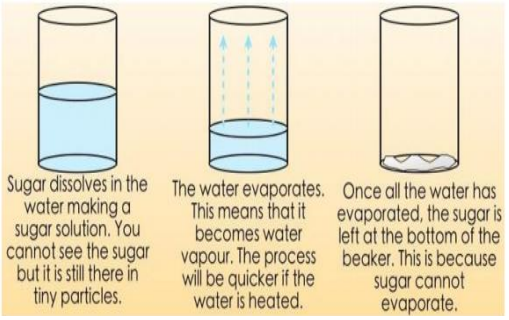
Sand is **insoluble** material

WHAT? – Key vocabulary

Materials	The substance that something is made out of. For example, wood, plastic, metal.
solids	One of the three states of matter. Solid particles are very close together, meaning solids, such as wood and glass, hold their shape.
liquids	This state of matter can flow and take the shape of container because the particles are more loosely packed than solids and can move about each other. Examples, of liquids, include water and milk.
gases	One of the three state of matter. Gas particles are further apart than solids or liquid particles and they are free to move around. Examples of gases are oxygen and helium.
melting	The process of heating a solid until it changes into a liquid.
freezing	When a liquid cools and turns into solid.
evaporating	When a liquid turns into a gas or vapor.
condensing	When a gas, such as water vapor, cools and turns into a liquid.

Diagrams and symbols





Working Scientifically Challenge:

Let's think like scientists…

Can they…

- explain the process of dissolving?
- recover a substance from a solution?
- decide how a mixture would best be separated? (filtering, sieving, evaporating)
- describe changes using scientific words? (evaporation, condensation)
- use the terms 'reversible' and 'irreversible'?

I wonder…

- Can they describe methods for separating mixtures? (filtration, distillation)

Possible experiences: *Curious minds…*

Many Kinds of Matters: A Look at Solids, Liquids and Gases, (Lightning Bolt) by Jennifer Boothroyd