UKS2 chemistry – Properties and changes of materials.

Key question – Why are some changes of state permanent and others are not?

Vocabulary	Meaning
properties	a property is anything that describes a material or substance. It is a characteristic of that material. For example, how hard the material is, its colour, or its shape. Elasticity is a property of rubber; in other words: rubber is elastic.
solution	A solution is a mixture of two or more substances that stays evenly mixed. Substances that are combined to form a solution do not change into new substances.
evaporate	To turn from liquid into vapour.
burn	To destroy, damage, or injure by heat or fire.
filter	a porous device for removing impurities or solid particles from a liquid or gas passed through it.
Reversable	Capable of being reversed so that the previous state or situation is restored.
separate	To separate into distinct elements.
dissolve	When a substance dissolves, it might look like it has disappeared, but in fact it has just mixed with the water to make a transparent (see-through) liquid called a solution. Substances that dissolve in water are called soluble substances.
substance	Substance is the material, or matter, of which something is made. Substances are physical things that can be seen, touched, or measured.
Changes of state	We can change a solid into a liquid or gas by changing its temperature. This is known as changing its state. Water is a liquid at room temperature, but becomes a solid (called ice) if it is cooled down. The same water turns into a gas (called water vapour) if it is heated up.
transparent	allowing light to pass through so that objects behind can be distinctly seen.

Lesson 1 LO: To compare materials according to their properties.	Can you name some properties of materials?
Lesson 2 LO: To investigate thermal conductors and insulators.	What are the best materials to use as thermal insulators?
Lesson 3 LO: To investigate materials which will dissolve.	What is the difference between dissolving and melting? How do you know if a substance has dissolved?
Lesson 4 LO: To use different processes to separate mixtures of materials.	What are the 4 main processes that can be used to reverse changes of mixed materials.
Lesson 5 LO: To identify and explain irreversible chemical changes.	Can you name any irreversible changes and their reactant and product.

Key Scientist- Stephanie Kwolec

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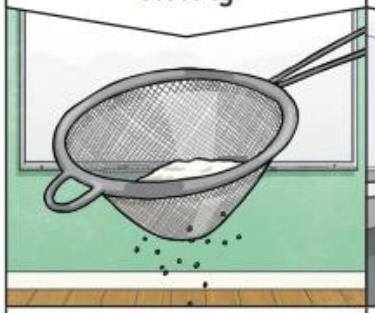
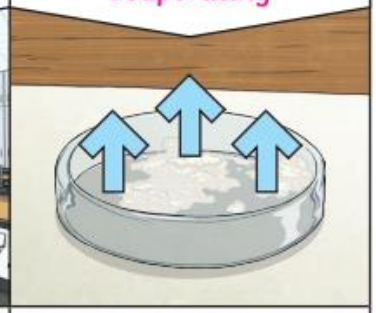
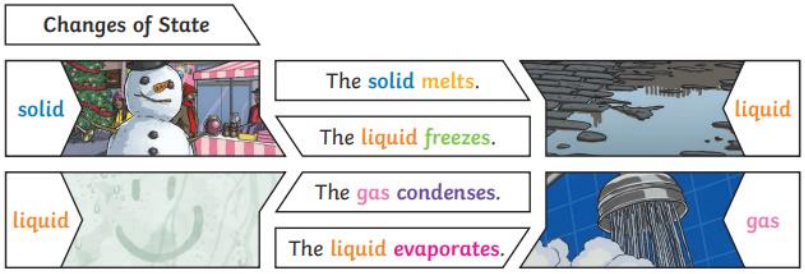
Disciplinary knowledge

Key Knowledge

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

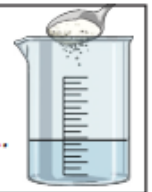
Sieving	Filtering	Evaporating
		
Smaller **materials** are able to fall through the holes in the sieve, separating them from larger particles.	The **solid** particles will get caught in the filter paper but the **liquid** will be able to get through.	The **liquid** changes into a **gas**, leaving the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

Irreversible changes often result in a new product being made from the old **materials** (reactants). For example, burning wood produces ash. Mixing vinegar and milk produces casein plastic.