



# Knowledge Organiser

## Science: Properties of Materials

Year 5  
Spring 1



### Irreversible changes

A reaction that means matter **cannot** be reversed to its original state. It causes a **permanent change** and can form a new material. For example, burning wood changes it to charcoal but cannot be turned back to wood.

### HEATING/COOKING



If you **heat** a **raw** egg to **cook** it, the **cooked** egg **can't** be **changed** back into a **raw** egg (you can't get the **ingredients** back from a **cake**!)

### BURNING

When **wood** is **burned** you get **smoke** and **ash**. You **can't** change the smoke and ash **back into wood**



### Changes in materials

Some **changes** to materials can be **reversed**, while others are **irreversible** and form **new materials**.

**Reversible reactions:** Melting, boiling, evaporation, freezing, condensation, dissolution.

**Irreversible reactions:** Burning, mixing, cooking, powdering. A new material is formed.

### BICARBONATE OF SODA

Mixing **bicarbonate of soda** and **vinegar** (an acid) creates a **chemical reaction** and **carbon dioxide gas** is created (bubbles). The gas and the leftover mixture **can't be turned back** into bicarbonate of soda and vinegar.

**Material** – The substance that something is made out of, e.g. plastic

**Solute** – A substance that is dissolved in another substance.

**Solution** – A liquid mixture which has had something dissolved in it.

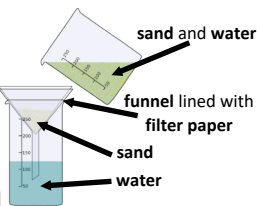
**Solvent** – A substance that something is dissolved in.

**Evaporate** – To turn from liquid into vapour.

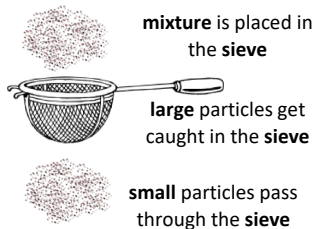


Use this **method** when there is a **mixture** of **liquid** and an **insoluble solid**. For example: **water** and **sand**

The **water** passes **through** the small **holes** in the **filter paper**; the **sand** does **not**

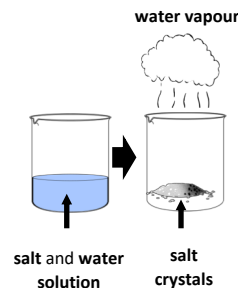


Use this **method** when there is a **mixture** of **different sized solids**. For example: **sand** and **pebbles**



Use this **method** when there is a **mixture** of **liquid** and a **soluble solid**. For example: **water** and **salt**

**Evaporate** the **water** by **boiling** it, or leaving it somewhere **warm**, and the **solid** is **left behind**



### Vocabulary Tier 3

Change of state, state of matter, substance, particles, dissolve, solution, soluble, insoluble, filter, reversible, irreversible change, melting, burning, rusting, gas, liquid, solids, oxygen, helium, vapour, evaporating, freezing, condensing, transparent, insulator, conductor, conduct, reactants, variables.

### Vocabulary Tier 2

Materials, mixture, heat, temperature, mixing, sieving, sieve, filter, filtering, processes, reaction.



Identify and classify

Observe over time

Fair testing

Pattern seeking

Research