# Year 5 Science

| NC Unit: Properties and changes of materials. | What are things made from, can we change them? | Chemistry |
|---|---|---|

## What should I already know?

- A variety of everyday materials including wood, plastic, glass, metal, water and rock.
- The physical **properties** of a variety of everyday **materials** (including those that are **transparent**) and to compare and group **materials** on the basis of these **properties**
- How materials are suitably used based on their **properties**.
- How **magnets** and **electrical circuits** work.
- Some materials which are **magnetic.**
- How shapes of solid objects can be changed by squashing, bending, twisting and stretching.
- **Materials** that are **solids, liquids** and **gases** and their **particle** structure.
- Some **materials** change **state** when they are heated or cooled and the **temperature** at which this happens.
- The roles of **melting, evaporation** and **condensation** in the **water cycle** and the role **temperature** has on the **rate** of **evaporation**.
- Some rocks are **permeable.**

## Big Ideas this works towards:

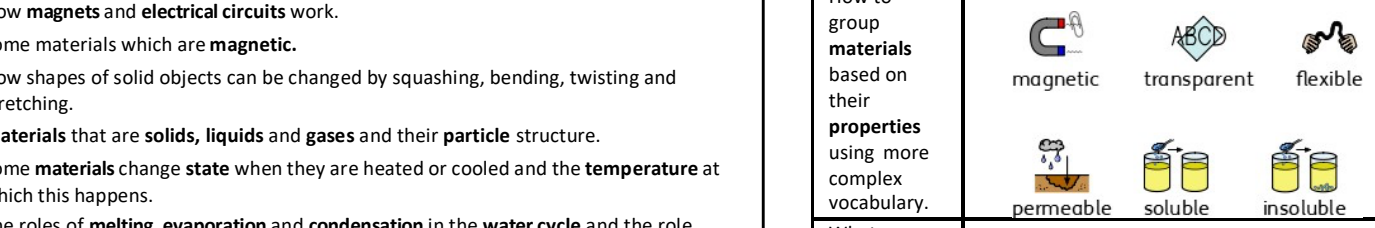
- ***The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc).***
- ***Matter can change if the arrangement of these building blocks changes.***

## Vocabulary

| | |
|---|---|
| circuit | a complete route which an electric current can flow around |
| condensation | small drops of water which form when water vapour or steam touches a cold surface, such as a window |
| conductor | a substance that heat or electricity can pass through or along |
| dissolves | when a substance is mixed with a liquid and the substance disappears |
| electricity | a form of energy that can be carried by wires and in used for heating and lighting, and to provide power for devices |
| evaporation | to turn from liquid into gas; pass away in the form of vapour. |
| filtering | a device used to remove dirt or other **solids** from **liquids** or **gases**. A filter can be made of paper, charcoal, or other material with tiny holes in it. |
| flexible | an object or material can be bent easily without breaking |
| gas | a form of matter that is neither **liquid** nor **solid**. A **gas** rapidly spreads out when it is warmed and contracts when it is cooled. |
| insoluble | impossible to **dissolve**, esp. in a given **liquid**. |
| insulator | a non-conductor of electricity or heat |
| irreversible | impossible to reverse, turn back, or change. |
| liquid | in a form that flows easily and is neither a **solid** nor a **gas**. |
| magnetic | having to do with magnets and the way they work |
| melting | to change from a **solid** to a **liquid** state through heat or pressure |
| particles | a tiny amount or small piece |
| permeable | of a substance, being such that **gas** or **liquid** can pass through it |
| process | a series of actions used to produce something or reach a goal. |
| properties | the ways in which an object behaves |
| rate | the speed with which something happens |
| resistance | the opposing power of one force against another. |
| reversible | able to turn or change back |
| solid | having a firm shape or form that can be measured in length, width, and height; not like a **liquid** or a **gas** |
| soluble | able to be **dissolved**. |
| solution | a mixture that contains two or more substances combined evenly |
| state | the structure or condition of something |
| temperature | a measure of how hot or cold something is |
| thermal | relating to or caused by heat or by changes in **temperature** |
| transparent | If an object is **transparent**, you can see through it |
| variable | something that can change or that has no fixed value |
| water cycle | the process by which water on the earth evaporates, then condenses in the atmosphere, and then returns to earth in the form of precipitation. |

## What will I know by the end of the unit?

**How to group materials based on their properties using more complex vocabulary.**

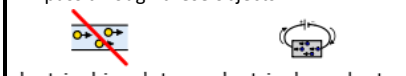



**What are thermal insulators and conductors?**

- **Materials** which are good **thermal conductors** allow heat to move through them easily.
- **Thermal conductors** are used to make items that require heat to travel through them easily, such as a saucepan which requires heat to travel through to cook food.
- **Thermal insulators** do not let heat travel through them easily.
- Examples of **thermal insulators** include woollen clothes and flasks for hot drinks.

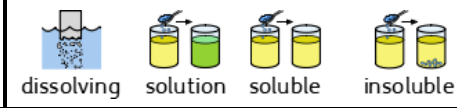

**What are electrical insulators and conductors?**

- **Electrical conductors** allow electricity to pass through them easily while **electrical insulators** do not.
- **Electrical insulators** have a high **resistance** which means that it is hard for electricity to pass through these objects.




**What is dissolving?**

- When the **particles** of a **solid** mix with the **particles** of a **liquid,** this is called **dissolving**.
- The result is a **solution.**
- **Materials** that **dissolve** are **soluble**.
- **Materials** that do not **dissolve** are **insoluble**.




**Can materials be separated after they have been mixed?**

- Some **materials** can be separated after they have been mixed based on their **properties**- this is called a **reversible** change.
- Some methods of separation include the use of a magnet, a **filter** (for insoluble materials), a sieve (based on the size of the solids) and **evaporation.**
- When a mixture cannot be separated back into the original components, this is called an **irreversible** change. Examples of this include when materials burn or mixing bicarbonate of soda with vinegar.