



## Dunholme St Chad's Year 5 Term 1 & 2 Science Knowledge Organiser

### Properties and Change in Materials

#### What should I already know?

- compare and group materials together, according to whether they are solids, liquids or gases
- observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

#### Key vocabulary I need to know

|                     |                                                                                                                                                                                 |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>materials</b>    | The substance that something is made out of e.g. wood, plastic, glass, etc.                                                                                                     |
| <b>properties</b>   | The features of a material/what it is like e.g. flexible, hard, transparent.                                                                                                    |
| <b>solids</b>       | One of the three states of matter. A solid's particles are close together, meaning they keep their shape.                                                                       |
| <b>liquids</b>      | One of the three states of matter. A liquid can flow and fit to the shape of a container as the particles are not as tightly packed. E.g. water, milk.                          |
| <b>gases</b>        | One of the three states of matter. A gas' particles move around freely. E.g. oxygen, helium.                                                                                    |
| <b>melting</b>      | The process of heating a solid, until it changes into a liquid.                                                                                                                 |
| <b>freezing</b>     | The process of cooling a liquid, until it changes into a solid.                                                                                                                 |
| <b>evaporating</b>  | When liquid turns into gas, or vapour.                                                                                                                                          |
| <b>condensing</b>   | When a gas, such as water vapour, turns into a liquid.                                                                                                                          |
| <b>conductor</b>    | A materials that allows heat or electricity to travel through it.                                                                                                               |
| <b>insulator</b>    | A materials that <b>does not</b> allow heat or electricity to travel through it.                                                                                                |
| <b>transparency</b> | An object that can be look through e.g. a window.                                                                                                                               |
| <b>dissolving</b>   | The process of solid particles mixing together with liquid particles to become one solution.                                                                                    |
| <b>soluble</b>      | A material that dissolves in water.                                                                                                                                             |
| <b>insoluble</b>    | A material that <b>does not</b> dissolve in water.                                                                                                                              |
| <b>solution</b>     | A liquid mixture of a solid and a liquid combined e.g. salt and water.                                                                                                          |
| <b>filtering</b>    | Pass a liquid through a material to separate a mixture e.g. a mixture of sand and water would be separated using as filter, as sand particles are too large to pass through it. |
| <b>reactants</b>    | In a chemical reaction, a reactant is needed to create the reaction. E.g. heat.                                                                                                 |
| <b>product</b>      | In a chemical reaction, the product is what is left over after a chemical reaction.                                                                                             |
| <b>reversible</b>   | To be able to go back to its original state.                                                                                                                                    |
| <b>irreversible</b> | Not able to go back to its original state.                                                                                                                                      |

#### What I will know by the end of the term

- How to describe materials' properties and explain, sort and compare the uses of different materials based on their properties.
- Which materials can be described as thermal conductors and thermal insulators and give reasons for the uses of these materials based on their thermal conductivity.
- What dissolving is and its differences to melting, as well as being able to identify and investigate materials which will dissolve in water.
- How and when to use sieving, filtering, evaporating and other processes to separate mixtures of materials.
- How to identify and explain irreversible chemical changes and describe the new materials created in irreversible chemical changes.
- How to identify electrical conductors and insulators and explain that some materials are mbetter conductors than others.
- How to use your knowledge and learning to ask further questions and conduct further experiments and investigations based on the properties of materials.
- How to present findings in a variety of ways, including: bar charts, tables, line graphs and reports.



#### Key facts

- Different materials have different uses based on their **properties**. E.g. hardness, flexibility, transparency.
- Materials are made up of **solids, liquids and gases**.
- Some materials can be changed and these changes can either be **reversible** (the change can be reversed) or **irreversible** (the change cannot be reversed).
- Irreversible changes are also known as **chemical changes**, as they require a **chemical reaction** to occur.
- **Alice Ball** was an African-American chemist who developed an injectable oil extract that was the most effective treatment for leprosy until the 1940s.