



## Knowledge you already have

- In year 2, I identified and compared the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
- In year 2, I found out how the shapes of solid objects made from some materials like plastic and rubber could be changed by squashing, bending, twisting and stretching.
- In year 3, I compared and grouped a variety of everyday materials based on whether they were magnetic.
- In year 4, I compared and grouped materials together, according to whether they were solids, liquids or gases.
- In year 4, I observed that some materials change state when they are heated or cooled. We measured and researched the temperature at which this happens in degrees Celsius (°C).
- In year 4, I learnt about evaporation and condensation and their role in the water cycle. I understood that the rate of evaporation is affected by temperature.

## Future Knowledge

- In KS3:
- I will learn about chemical reactions as the rearrangement of atoms. I will be able to represent chemical reactions using formulae and using equations.
  - I will learn about combustion, thermal decomposition, oxidation and displacement reactions.
  - I will be able to define acids and alkalis in terms of neutralisation reactions. I will be able to use the pH scale for measuring acidity/alkalinity; and indicators.

## New Knowledge

- I will compare and group everyday materials by their properties, including hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism.
- I will learn that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.
- I will use my knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
- I will give reasons, based on evidence from comparative and fair tests, for the uses of everyday materials.
- I will be able to demonstrate that dissolving, mixing and changes of state are reversible changes.
- I will explain that some changes create new materials, and often this is non-reversible, for example, burning.

## Scientific Enquiry

- Identifying and classifying:
- I will explore adding a range of solids, such as sugar and salt and other liquids, such as cooking oil, to water.
  - I will group solids based on observations.
- Comparative and fair testing:
- I will investigate the properties of different materials in order to recommend materials for particular functions for example, test waterproofness and thermal insulation to identify a suitable fabric for a coat.
  - I will investigate rates of dissolving by carrying out comparative and fair test.
  - I will carry out comparative and fair tests involving non-reversible changes such as rusting.

## Key Ideas and Vocabulary

Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets. Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment. Mixtures can be separated by filtering, sieving and evaporation.

Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.

**burning**



An object which is on fire.

**conductor**



A material which is able to carry heat or electricity.

**dissolve**



When a solid is mixed into a liquid creating a solution. Stirring sugar into tea.

**filter**



Passing a liquid through a mesh to remove solid particles.

**insulator**



A material that is a poor carrier of heat, electricity (or sound).

**reversible/  
non-reversible**



Able to change state./  
Not able to change state.