



Year 5

# Properties and Changes of Materials

## Statutory Requirements:

- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- Understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- Demonstrate that dissolving, mixing and changes of state are reversible changes
- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

## Working Scientifically:

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Using test results to make predictions to set up further comparative and fair tests
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations

## Key Vocabulary:

- |                |                |
|----------------|----------------|
| ➤ Property     | ➤ Solute       |
| ➤ Thermal      | ➤ Soluble      |
| ➤ Electrical   | ➤ Insoluble    |
| ➤ Conductor    | ➤ Reversible   |
| ➤ Insulator    | ➤ Irreversible |
| ➤ Hardness     | ➤ Sieve        |
| ➤ Transparency | ➤ Filter       |
| ➤ Magnetic     | ➤ Evaporate    |
| ➤ Dissolve     | ➤ Condense     |
| ➤ Solvent      | ➤ Mixture      |
| ➤ Solution     | ➤ State        |

## Key Knowledge:

- Materials can be sorted by properties such as hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.
- Dissolving is when a material (solute) is broken down by a liquid (solvent) and becomes part of a solution.
- Materials can be recovered from solutions by evaporating the liquid (solvent).
- Mixtures can be separated by sieving, filtering and evaporating. Sieving and filtering separate materials by size.
- A reversible change, such as melting ice, is one where the original material can be turned back to its original form.
- An irreversible change, such as burning, results in new materials.

## Key Scientists:



### Classic

**Marie Curie**  
(1867-1934)

French-Polish physicist who conducted pioneering research on radioactivity.



**Contemporary**  
**Saiful Islam**  
(1963 -)

Researching materials for clean energy and batteries.