Science Overview – Properties and Changes of Materials

Year 5

Spring Term

Key Question: Can we always believe what we read about the past?

National Curriculum

• 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
• give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
• use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
• know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
• 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.

SUBSTANTIVE KNOWLEDGE

- Know the difference in molecular structure between solids, liquids and gases.
- Know that materials are chosen for specific purposes based on their properties- name these properties.
- Know what dissolving is and that a solution is made after a solid has dissolved in a liquid.
- Know that materials can be soluble/insoluble.
- Know that materials can change state- name the processes involved (e.g. solid to liquid= melting)
- Know that mixing and dissolving solids and liquids together can be reversed by sieving, filtering and evaporating.
- Know that some changes are irreversible- these often result in a new product being made.

Key words:	**Solids** **Liquids** **Gases**
Vocabulary:	materials, melting, freezing, evaporating, condensing, dissolving, solution, soluble, insoluble, conductor, insulator, transparency, reversible, irreversible
Working scientifically	• Carry out comparative and fair tests • Take 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
Enquiry type to cover and enquiry question	**Comparative testing (enquiry type)** Which type of material is the best thermal insulator? **Identifying grouping and classifying (enquiry type)** Can you group these materials based on whether they are soluble or insoluble?
Learning Milestones /Assessment	I can… • Identify the properties of materials. • Explain why certain materials work well for particular jobs. • Name materials that will dissolve in water making a solution. • Identify changes to materials that are reversible and irreversible. • Explain how solids, liquids and gases may be separated.