

CHEMISTRY

YEAR 5 and 6: SPRING 1

Properties and Change?

COVERAGE: Properties and Change?

During the topic the children will look at specific scientific terminology and vocab. They will explore Hardness, Transparency, Conductivity, Reversible and Irreversible changes. All of this will be done with scientific experiments.

- Determine the hardness of different materials and link this to their uses.
- Determine the transparency of different materials and link this to their uses.
- Determine the thermal and electrical conductivity of different materials and link this to their uses.
- Demonstrate, identify and describe reversible and irreversible changes.

When working scientifically pupils who are secure will be able to:

- Evaluate the hardness test to determine the degree of trust in the results.
- Plan and draw a table of results.
- Write a detailed, organised and easy to follow method.
- Write a prediction using prior knowledge of the states of matter.
- Analyse observations about rusting and use them to support a conclusion.
- Measure accurately in centimetres.

KEY LANGUAGE AND VOCABULARY:

burning
control variable (LKS2)
conductor
electrical conductivity
hazard
insulator
irreversible change
method (LKS2)
reversible change
rust
rusting
safety
thermal conductivity
transparency
trustworthy (LKS2)
variable (LKS2)

KNOWLEDGE AND FACT SHEET

Science - Properties and change

Conductivity is a measure of how quickly and easily a material will let heat or electricity charge pass through.

- Good **conductors**, like metal, will let heat and electricity pass through quickly.
- Good **insulators**, like plastic and rubber, will not let heat and electricity pass through easily.

Hardness is a measure of how easily a material can be scratched or dented.

- Hard** materials, like most metals, cannot be scratched or dented easily.
- Soft** materials, like clay or wax, can be scratched and dented easily.

Materials are chosen for specific uses according to their **properties**. For example, buildings are made from strong, durable materials like wood, stone, brick, concrete and metal.

Transparency is a measure of how much light a material lets pass through.

- Opaque materials, like metal and wood, do not let any light pass through so objects on the other side cannot be seen.
- Translucent materials, like some plastics, let some light pass through. The light is scattered so it passes through as objects on the other side if visible appear blurry, coloured or distorted.
- Transparent materials, like glass, let most light pass through with minimal scattering so objects on the other side are clearly visible.

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Science - Properties and change

A **reversible change** is when a material is changed but can be easily returned to its original state.

Dissolving is a reversible change because the dissolved substance can be reclaimed by evaporating the liquid.

Melting (ice to water) and **freezing** (water to ice) are reversible changes. A new product (a gas) is formed which causes **rusting**.

Change of state are all examples of reversible changes because heating or cooling the substance will change it back to its original state.

An **irreversible change** occurs when a material is changed but cannot be easily returned to its original state. New materials are produced in the process.

Burning is an irreversible change in which a material is burned and makes new products.

Rusting is an irreversible change in which iron **goes ruddy** when exposed to **water** and **air** (**oxygen**).

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KEY QUESTION

1. How does the hardness of materials vary?
2. How can you explain transparency?
3. Can you reverse the mixture of materials?
4. What is an irreversible change?
5. Are their reversible changes?

KEY SKILLS AND KNOWLEDGE

Knowledge

- To describe a broader range of materials and their properties, including hardness, solubility, transparency, conductivity and response to magnets.
- To know:
- Dissolving, mixing and changes of state are reversible changes.
- Some changes result in the formation of new materials, which are usually irreversible (e.g. burning, rusting, the action of acid on bicarbonate of soda).

Skills

Planning

- Writing a method including detail about how to ensure control variables are kept the same.

Predicting

- Making increasingly scientific predictions by:

- using previous scientific knowledge and evidence to inform their predictions; using scientific language to describe a potential outcome or explain why they think something will happen; making links between topics to evidence a prediction. Measuring (quantitative data) - Using standard units to measure and compare with increasing precision (decimals). Recording (tables) - Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. - Analysing and drawing conclusions - Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Evaluating - Identifying which variables were difficult to control and suggesting how to better control them. Commenting on the degree of trust by also reflecting on: - accuracy (human error with equipment); reliability (repeating results).	
ENRICHMENT: ● Children will be working on Scientific Investigations and working scientifically through the different terminologies. Visits: -	Previous Learning: The children have previously examined States of Matter and Rocks and Soils in Year 3 and 4. Future Learning: The children will move onto exploring Evolution and Inheritance and investigating a Scientific Project about meteors!
School Drivers to Examine Children will look at: - Creativity and Innovation = how can changes in properties help us be creative and innovative?	