Properties of Materials Year 5

Knowing More, Remembering More

Remembering previous learning

What does opaque mean? Opaque materials do not let light pass through them, they block it.

What does translucent mean? Translucent materials allow some light to pass through them but do not form clear shadows.

What does transparent mean? Transparent materials allow light to pass through them easily.

What are the different properties of rocks? Some are hard, some react with acid, some are brittle, some float and some sink.

What type of force is a magnetic force? A non-contact force, objects do not touch.

What materials are magnetic? Two metals are magnetic – iron and steel.

What is electricity? Electricity is a way of moving energy to power appliances.

What is a circuit? A circuit is a closed path that energy can flow through. It can include bulbs, wires, switches, buzzers and cells connected in one loop. It must have a cell or battery.

What is a conductor? A material that allows energy to flow through it, such as metals.

What is an insulator? A material that does not allow energy to flow through it, such as rubber, plastic or wood.

In this unit children will:

- 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.

Working Scientifically:

5.3 Make predictions based on scientific knowledge.

5.5 With support, plan different types of scientific enquiry. Where appropriate, identify the dependent, independent and controlled variables.

5.7 Take accurate measurements using a range of scientific equipment. Start to take repeat readings when appropriate.

5.9 Record data using scientific diagrams and labels, classification keys, tables, bar and line graphs.

5.12 Use scientific evidence to answer questions.

5.15 Make predictions for new values, suggest improvements and raise further questions.

Key Vocabulary:

- transparent
- translucent
- opaque
- magnetism
- hardness
- electrical conductor
- electrical insulator
- circuit
- cell
- bulb
- independent variable
- dependent variable
- controlled variable
- thermal insulator
- thermometer
- control beaker
- temperature
- data
- conclusion
- anomalous result
- properties
- wood
- metal
- plastic
- lifespan

Key Learning Steps:

1. Test materials – magnetism, transparency and hardness
2. Test materials – electrical conductivity
3. Plan – insulating heat experiment
4. Investigate – insulating heat experiment
5. Evaluate – insulating heat experiment
6. Uses of everyday materials – plastic, wood and metal

Key Scientists:

Classic

Marie Curie (1867-1934)

French-Polish physicist who conducted pioneering research on radioactivity.

Contemporary

Saiful Islam

Researching materials for clean energy and batteries.

Knowing More, Remembering More

Knowing more in Y5

How can you test the hardness of a material? A harder material will scratch a softer material.

What is an electrical conductor? A material that allows electricity to flow through it, such as metals.

What is an electrical insulator? A material that does not allow electricity to flow through it, Such as plastic, wood and paper.

What is a thermal insulator? A material that prevents heat passing through it.