Properties of Materials

Year 5

Key Scientific Knowledge

Everyday materials can be categorized on the basis of their properties, including their hardness, transparency, conductivity (electrical and thermal), and magnetism.

The hardness of a material is it's resistance to being scratched, dented or bent.

Softer materials absorb more energy from an object bouncing on them.

Transparent objects let light pass through them. Translucent objects let some light pass through them. Opaque objects do not let light pass through them.

Some materials (thermal insulators) are better at slowing down the movement of heat than others.

Some materials (electrical insulators) are better at slowing down the movement of electricity than others.

Know that in thermal insulation heat always moves from hot to cold.

Objects/liquids will warm up or cool down until they reach the temperature of their surroundings.

Objects that contain Iron, cobalt or nickel are magnetic.

Scientific Vocabulary

Material Properties: Features of a material that we can sense, measure or test.

Hardness: The resistance of a material to scratching or denting.

Resistant: The ability to work against or in opposition to something.

Transparency: Allows light to pass through it.

Translucent: Allows only some light to pass through it.

Opaque: Does not allow light to pass through it.

Thermal Conductor: An object that allows heat to pass through it quickly and easily.

Electrical Conductor: An object that allows electricity to pass through it quickly and easily.

Thermal Insulator: An object that does not allow heat to pass through it.

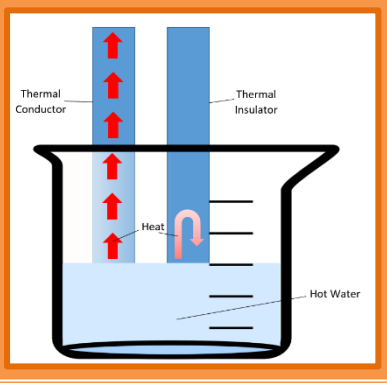
Electrical Insulator: An object that does not allow electricity to pass through it.

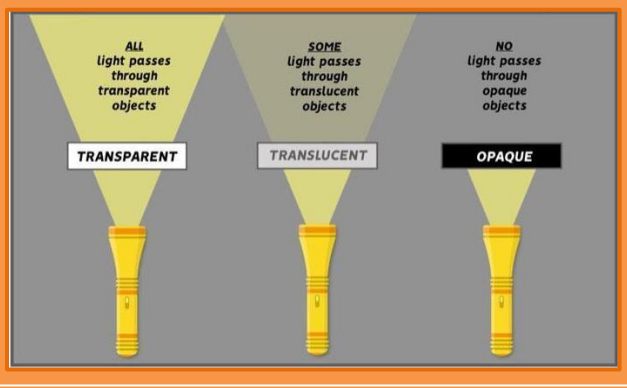
Magnetic: Adjective to describe an object that relates to the force of magnetism (attracted to a magnet).

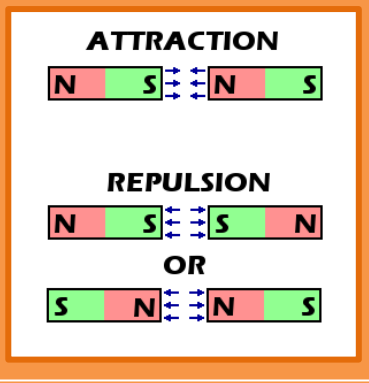
Repellent: Adjective to describe an object that resists the force of magnetism (moves away from a magnet)

Working Scientifically

- Compare a variety of materials and measure their effectiveness (e.g. hardness, transparency, thermal conductivity, electrical conductivity, magnetism).
- Carry out tests to answer questions regarding thermal conductivity such as 'Which materials would be the most effective for using as a handle on a saucepan etc.
- Carry out tests to answer questions regarding electrical conductivity such as 'Which materials would be the most effective for using as switch in a circuit etc.
- Carry out tests to answer questions regarding hardness such as 'Which material would be the most effective for building a squash court? etc.
- Carry out tests to answer questions regarding transparency such as 'Which material would be most effective for making blackout curtains?' etc.







Wider Curriculum Links

Year 1: The Great Outdoors – Materials
Year 2: Buckets and Spades - Use of materials and properties
Year 3: Magnetism
Year 4: Electricity
Year 6: Light, Electricity