



Year 5 Science

Properties and changes of materials

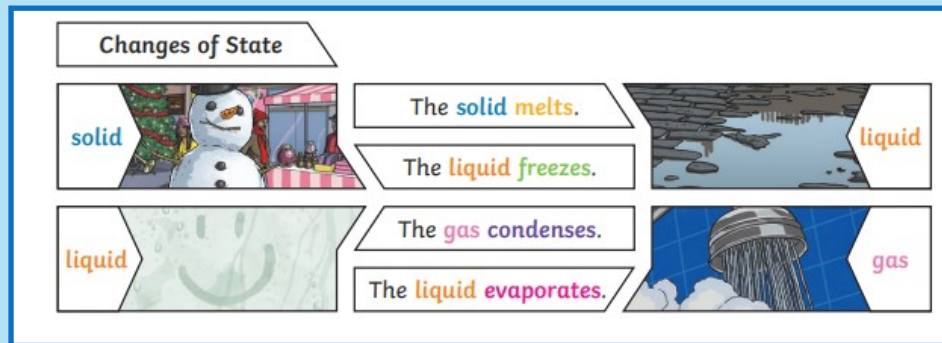
Things you should already know:

- A variety of everyday materials including wood, plastic, glass, metal, water and rock.
- The physical properties of a variety of everyday materials (including those that are transparent) and to compare and group materials on the basis of these properties.
- How materials are suitably used based on their properties.
- How magnets and electrical circuits work. Some materials which are magnetic.
- How shapes of solid objects can be changed by squashing, bending, twisting and stretching.
- Materials that are solids, liquids and gases and their particle structure.
- Some materials change state when they are heated or cooled and the temperature at which this happens.
- The roles of melting, evaporation and condensation in the water cycle and the role temperature has on the rate of evaporation.
- Some rocks are permeable.

Key Knowledge

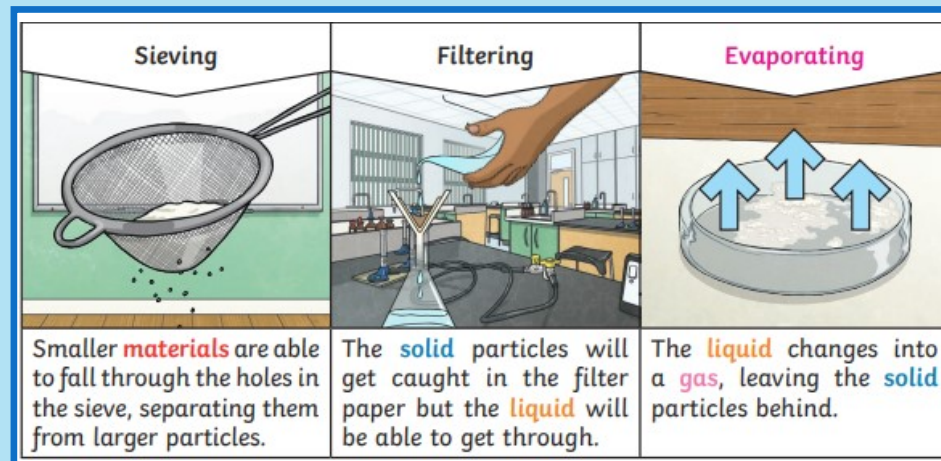
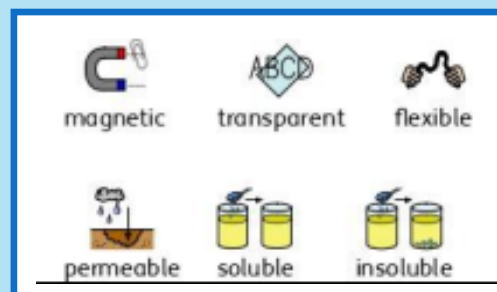
Different materials are used for particular jobs based on their properties: electrical conductivity, flexibility, hardness, insulators, magnetism, solubility, thermal conductivity, transparency.

For example, glass is used for windows because it is hard and transparent. Oven gloves are made from a thermal insulator to keep the heat from burning your hand.



New Learning for Year 5.

- To group materials based on their properties using more complex vocabulary.
- To know what thermal insulators and conductors are.
- To know that when the particles of a solid mix with the particles of a liquid, this is called dissolving and the result is a solution.
- Materials that dissolve are soluble and those that do not dissolve are insoluble.
- To know that some materials can be separated after they have been mixed using filtering, sieving, magnets or evaporation.
- To know that some changes are reversible whilst others are irreversible.



Amazing Facts

There are two types of material properties: - physical properties and chemical properties.

Physical properties can be observed by viewing or touching a sample.

To investigate the chemical properties, the internal structure of a substance must be affected.



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Key Vocabulary

Materials	The substance that something is made out of.
Solids	One of the three states of matter. Solid particles are very close together, meaning solids hold their shape.
Liquids	One of the three states of matter. Liquid particles are more loosely packed and can move around each other.
Gases	One of the three states of matter. Gas particles are further apart than solid or liquid particles and they are free to move around.
Melting	The process of heating a solid until it changes into a liquid.
Freezing	When a liquid cools and turns into a solid
Evaporating	When a liquid turns into a gas or vapour.
Condensing	When a gas, such as water vapour, cools and turns into a liquid.
Conductor	A conductor is a material that heat or electricity can easily travel through.
Insulator	An insulator is a material that does not let heat or electricity travel through them.
Transparency	A transparent object lets light through

A quiz on Materials — give it a go and see what you know.



Sticky Learning.

Can you answer any of these questions in your book?

What variables do we need to keep the same if we want to test whether the temperature of the water affects the time it takes for sugar to dissolve?

Scan this and have a go at the BBC Bitesize quiz!

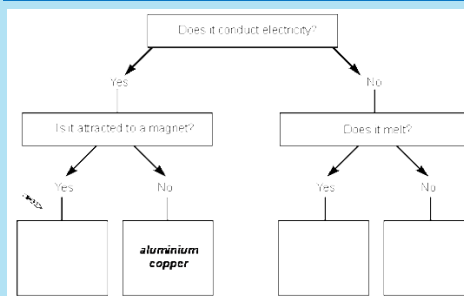


Sort the following materials using the questions below: wood, steel, paper, wax, aluminium and copper.

First, does it conduct electricity? Yes/No

Then, is it attracted to a magnet? Yes/No or does it melt? Yes/No

Draw a flow chart like the one below to show your answers.



Can you explain how the properties of a material affect its use?

Give examples of 3 different materials and explain how their properties make them fit for purpose

What is an irreversible change? Give five examples of irreversible changes.

