

Science Knowledge Organiser—Properties of Materials

Curriculum Objectives

By the end of this unit, your child will be able to:

- Follow instructions to test a material's properties.
- Explain the uses of thermal and electrical conductors and insulators.
- Explain the processes used to separate mixtures.
- Identify the new materials made in irreversible changes.
- Set up reliable and accurate investigations.

Here is an image of some copper.
What properties does this material have?

conducts electricity

reflective

smooth



conducts heat

opaque

shiny

waterproof

Knowing about the properties of solids, liquids and gases helps when it comes to separating mixtures.

What are the properties of a **solid**?



A solid can be held and it keeps its shape.

What are the properties of a **liquid**?



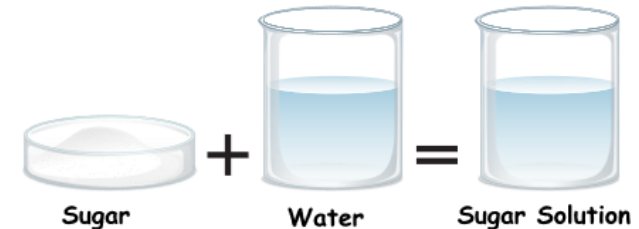
A liquid changes its shape to the container it's stored in. A liquid can flow.

What are the properties of a **gas**?

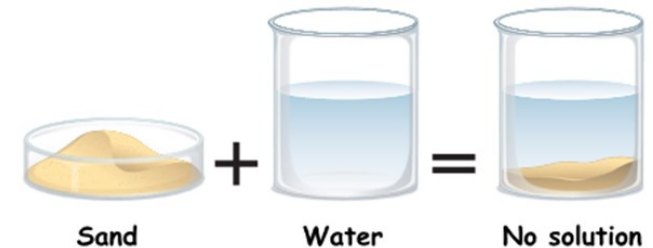


A gas has no fixed shape. The volume and shape change to fit the container it's stored in.

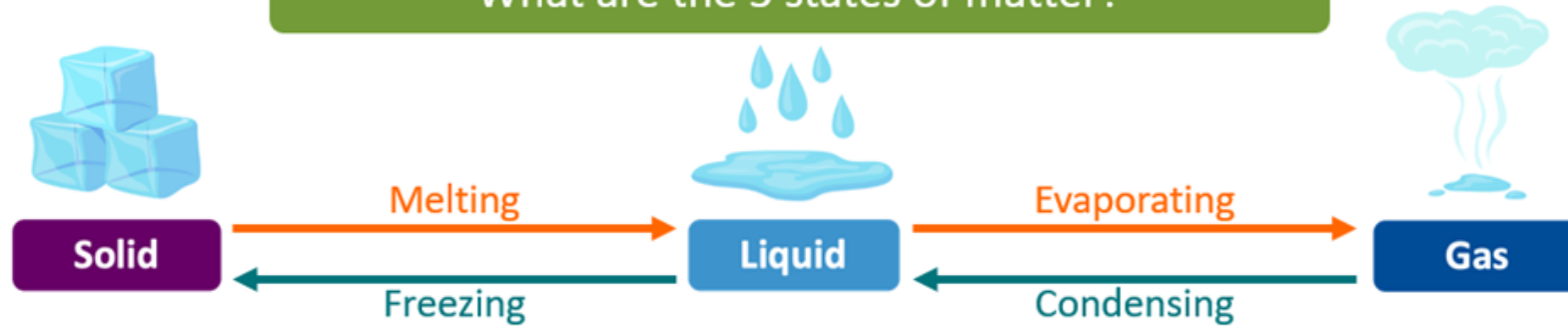
If a substance is **soluble**, it means it **dissolves**.



If a substance is **insoluble**, it means it **does not dissolve**.



What are the 3 states of matter?



Key facts

A solution is made when solid particles are mixed with liquid particles. Materials that will dissolve are soluble. Materials that won't are insoluble.

Different materials are used for jobs based on their properties: flexibility, hardness, insulators, magnetism and many more.

Irreversible changes often result in a new product being made from the old materials (reactants). For example, burning wood produces ash.

Reversible changes such as mixing and dissolving solids and liquids together, can be reversed by sieving, filtering and evaporating.

Key Vocabulary/Terminology

Materials	The substance that something is made out of, e.g. wood, plastic, metal.
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 is heated and turns into a gas.
Condensing	When a gas cools and turns into a liquid.
Conductor	A conductor is a material which does allow energy to travel through it.
Insulator	An insulator is a material which does not let energy travel through it.