



STATES OF MATTER – KNOWLEDGE ORGANISER

YEAR 4 SCIENCE

OCEANS & SEAS

SPRING TERM

Key Knowledge

Matter is the stuff that makes up our whole universe. Everything that takes up space is made of matter and all matter is made up of tiny, microscopic particles. Solids, liquids and gases are the three main states of matter and the particles behave differently in each of these states.

Solids

Solids stay in one place and can be held. They do not flow like liquids, but some solids like sand or salt can be poured. Solids always take up the same amount of space and do not spread out. Their particles are closely packed together in a regular pattern.

Liquids

Liquids can flow or be poured easily. They are not easy to hold and can change their shape depending on the container they are in. Liquids have particles which are close together but are randomly spaced and can move over each other.

Gases

Gases are often invisible. They spread out and change their shape and volume to fill up whatever container they are in and they escape from open containers. Gases have particles which are spread out and move in all directions.

Changing States

Many materials change state when they are heated or cooled. Solids can melt and turn into liquids and liquids can freeze and turn into solids. Liquids can also turn into gases when they are heated up and this is called evaporation. Different materials will melt, freeze or evaporate at different temperatures and some of these changes can be reversed.

States of Water

When liquid water is heated it turns into a gas called water vapour. This happens quickly when water is very hot but can also happen slowly, like a puddle evaporating in warm air. When water vapour cools down it turns back into liquid water and this is called condensation. You can see this happening when steam (water vapour) hits a cold mirror. Condensation and evaporation are both important processes in the earth's water cycle.

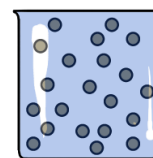
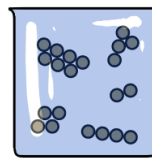
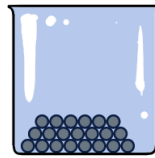
What should I already know?

Some materials are used for certain purposes because of their properties.

Solids, Liquids & Gases



Particles



SOLID

LIQUID

GAS

The Water Cycle



Key Vocabulary

condensation	droplets of water that form when water vapour cools down.
evaporation	to turn from a liquid into a gas.
freeze	to become solid from cold temperatures.
freezing point	the temperature at which a substance freezes.
gas	a form of matter that is not a liquid or solid.
liquid	a form of matter that flows easily and is not a solid or gas.
melt	to change from a solid to a liquid state through heat or pressure.
melting point	the temperature at which a substance melts.
particle	a tiny amount or small piece.
precipitation	water falling to earth in the form of rain, snow, sleet, or hail.
process	a series of changes or actions that happen one after another.
properties	the qualities of something.
solid	a form of matter with a firm shape that is not a liquid or gas.
temperature	a measure of how hot or cold something is.
water cycle	the process by which the earth's water evaporates, condenses in the atmosphere and returns to earth as precipitation.
water vapour	water in the form of gas, also called steam.

Science Skills

- Ask relevant questions.
- Set up practical enquiries and comparative and fair tests.
- Make accurate measurements using a range of equipment.
- Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.
- Use results to draw conclusions and suggest improvements, new questions and predictions for setting up further tests.
- Identify differences, similarities or changes related to simple, scientific ideas and processes.