Y4 Science Knowledge Mat—States of Matter; Solids, Liquids & Gases

Key Vocabulary

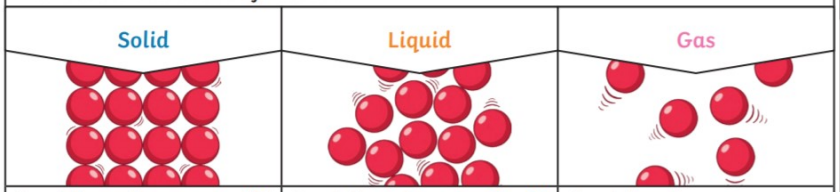
states of matter	Materials can be one of three states: solids, liquids or gases. Some materials can change from one state to another and back again.
solids	These are materials that keep their shape unless a force is applied to them. They can be hard, soft or even squashy. Solids take up the same amount of space no matter what has happened.
liquids	Liquids take the shape of their container. They can change shape but do not change the amount of space they take up. They can flow or be poured.
gases	Gases can spread out to completely fill the container or room they are in. They do not have any fixed shape but they do have a mass.
water vapour	This is water that takes the form of a gas. When water is boiled, it evaporates into a water vapour.
melt	This is when a solid changes to a liquid.
freeze	Liquid turns to a solid during the freezing process.
evaporate	Turn a liquid into a gas.
condense	Turn a gas into a liquid.
precipitation	Liquid or solid particles that fall from a cloud as rain, sleet, hail or snow.

Learning Link Backs:

Do you remember comparing and grouping together a variety of everyday materials on the basis

Sticky Knowledge

There are three states of matter.

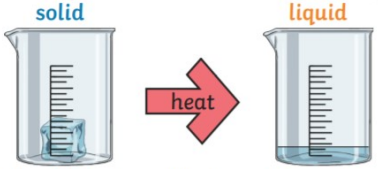


Particles in a **solid** are close together and cannot move. They can only vibrate.

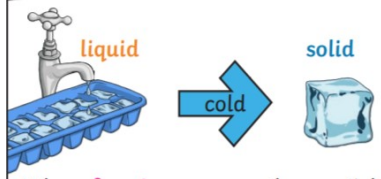
Particles in a **liquid** are close together but can move around each other easily.

Particles in a **gas** are spread out and can move around very quickly in all directions.

When water and other **liquids** reach a certain temperature, they change state into a **solid** or a **gas**. The temperatures that these changes happen at are called the boiling, **melting** or **freezing** point.

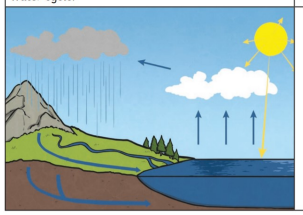


If a **solid** is heated to its **melting** point, it **melts** and changes to a **liquid**. This is because the particles start to move faster and faster until they are able to move over and around each other.

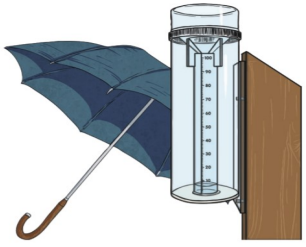


When **freezing** occurs, the particles in the **liquid** begin to slow down as they get colder and colder. They can then only move gently on the spot, giving them a **solid** structure.

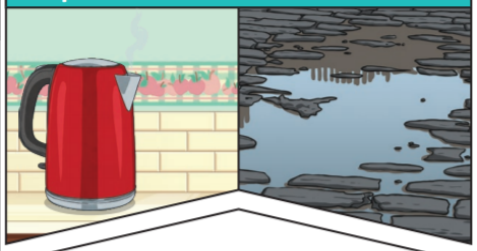
Condensation and **evaporation** occur within the water cycle.



1. Water from lakes, puddles, rivers and seas is **evaporated** by the sun's heat, turning it into **water vapour**.
2. This **water vapour** rises, then cools down to form water droplets in clouds (**condensation**).
3. When the droplets get too heavy, they fall back to the earth as rain, sleet, hail or snow (**precipitation**).

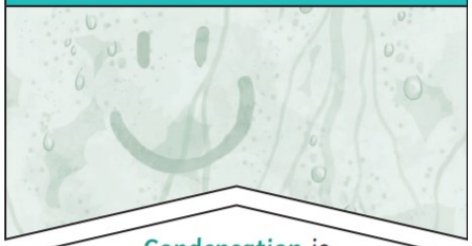


Evaporation



Evaporation occurs when water turns into **water vapour**. This happens very quickly when the water is hot, like in a kettle, but it can also happen slowly, like a puddle **evaporating** in the warm air.

Condensation



Condensation is when **water vapour** is cooled down and turns into water. You can see this when droplets of water form on a window. The **water vapour** in the air cools when it touches the cold surface.