Knowledge Organiser: Year 4 - States of Matter

Careers connected to States of Matter: Chemical Engineer, Pharmacologist, Pharmaceutical pharmacist, Chemist.



Lesson Sequence



1. The three states of matter are solid, liquid and gas.



2. Solids are tightly packed with a fixed shape, liquids are close together but can flow, gases move freely and are far apart.



3. Melting point is when a solid turns into a liquid.



4. Freezing point is when a liquid becomes a solid. Boiling point is when a liquid becomes a gas.



5. Evaporation is when a liquid turns into a gas or vapour. Condensation is the opposite.



6. The water cycle is the continuous cycle of water on Earth. It involves precipitation, evaporation and condensation.

States of matter

Everything in our universe is made of **matter**. There are 3 states of matter:

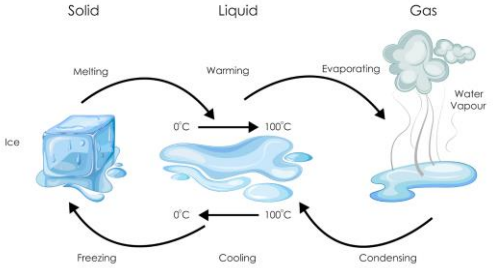


Solid **Liquid** **Gas**

Solid particles have **strong** bonds so solids have a fixed shape. **Liquid** particles have **weaker** bonds and more energy so liquids can change shape. **Gas** particles have **really weak** bonds so gases can spread out and move freely.

Changes of state

States of matter can change.
Substances can be **heated** or **cooled** to change from one state to another.



Ice **Water** **Water Vapour**

In water, the **melting** and **freezing point** is **0˚C** and the **boiling point** is **100 ˚C.**
Different substances have different melting, freezing and boiling points.

Condensation





When **water vapour (gas)** touches a **cold** surface, the particles **lose energy** and the bonds become **stronger**, turning the gas into a **liquid**.

Evaporation





Heating **liquid** water **increases** the particle's energy and the bonds become **weaker**, turning it into a **gas**. The **hotter** the temperature, the **faster** the rate of evaporation.

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