Physics

Science Y4: States of matter

Vocabulary

solid a substance whose particles are fixed together.
liquid a substance whose particles are free to move over each other but remain fixed.
gas a substance whose particles are free to move about.
particle a minute part or fragment of a substance.
melting the change from solid to liquid caused by heating.
freezing the change from liquid to solid caused by cooling at low temperatures.
solidifying the change from liquid to solid caused by higher temperatures.
evaporation the change from liquid to gas.
boiling to change from a liquid to a gas rapidly, using heat.

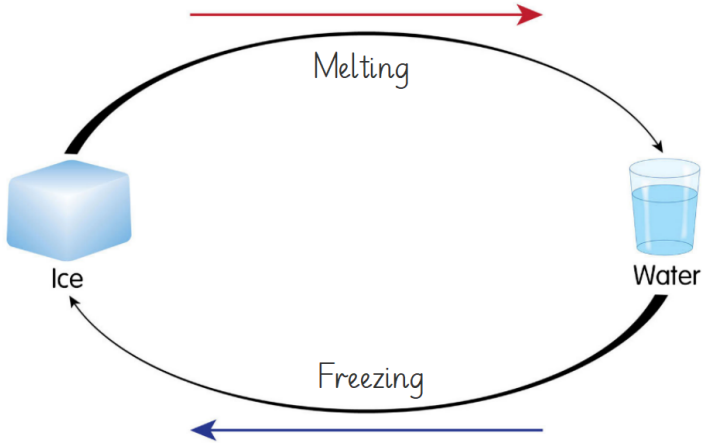
Key diagrams and knowledge

Materials can be classified as either a **solid, liquid** or **gas**:

- In a **solid**, the **particles** are closely packed and keep their shape.
- In a **liquid**, the **particles** are close together and take the shape of the container.
- In a **gas**, the **particles** are spread out and fill the container they are in.

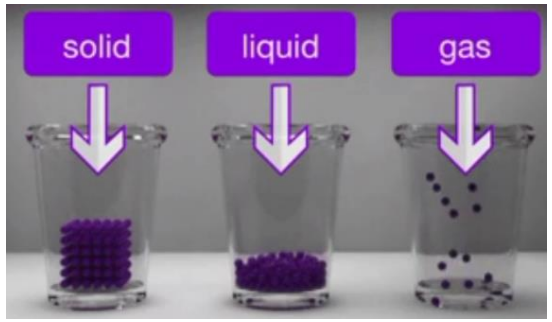
Changes of state occur as a result of **heating** or **cooling**. They affect the **properties** of the substance but not its chemical make-up of it. Water is a useful example because it exists as ice, water and steam, but it's important to understand that the same changes occur when other solids, liquids and gases are heated and cooled.

Some materials change state at very high or low temperatures such as metal. **Changes of state are reversible processes**; for example, when ice is heated it melts but the resulting water will become ice again if sufficiently cooled.



Scientists

George de Mestral (Velcro)



Links to prior learning and next steps:

Y3: Rocks and soils
Y5: Changing materials
Y6: Reversible and irreversible changes

Links to other subjects:

Maths: statisitics – bar charts
Geography: water cycle