

Key Concepts

Key Vocabulary

What is matter?

- Particles are what materials are made from.
- They are so small that we cannot see them with our eyes.
- The properties of a substance depend on what its particles are like, how they move and how they are arranged
- Particles behave differently in solids, liquids and gases.

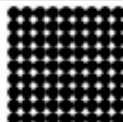
Liquids

- In the liquid state, the material holds the shape of the container it is in.
- This means that liquids can change shape, depending on the container.
- Liquids have particles which are close together but random.
- Liquid particles can move over each other.
- Liquids can be poured.



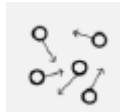
Solids

- In the solid state, the material holds its shape.
- Solids have vibrating particles which are closely packed in and form a regular pattern.
- This explains the fixed shape of a solid and why it can't be poured.
- Solids always take up the same amount of space.



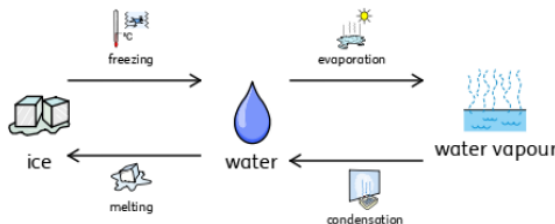
Gases

- In the gas state, particles can escape from open containers.
- Gases have particles which are spread out and move in all directions.



What happens to the particles in water when it is heated or cooled?

- When water (in its **liquid** form) is **heated**, the particles start to move faster and faster until they have enough energy to move about more freely. The water has **evaporated** into a **water vapour**.
- When water is **cooled**, the particles start to slow down until a solid structure (ice) is formed. The water has **frozen**.
- The **temperature** at which water turns to ice is called the **freezing point**. This happens at 0°C.



condensation	Small drops of water which form when water vapour or steam touches a cold surface such as a window.
cooling	Lowering the temperature of something
evaporation	To turn from liquid to gas; pass away in the form of vapour
freezing	If a liquid or a substance containing a liquid freezes, it becomes solid because of low temperatures
Freezing point	The freezing point of a particular substance is the temperature at which it freezes. The freezing point of water is 0°C.
gas	a form of matter that is neither liquid nor solid. A gas rapidly spreads out when it is warmed and contracts when it is cooled.
Liquid	in a form that flows easily and is neither a solid nor a gas.
Properties	the ways in which an object behaves
Solid	having a firm shape or form that can be measured in length, width, and height; not like a liquid or a gas
vibrations	when something vibrates, it shakes with repeated small, quick movements

Working Scientifically Skills

??	Asking relevant questions		Setting up fair tests (with help)
	Explaining results – drawing conclusions and using results.		Carefully observing and accurately measuring
	Recognising when to use other sources of information to find answers		Choosing how to record information – tables, tally charts, Venn and Carroll diagrams and bar charts.

Famous Scientists



Greg Foot (1983 -) is a science presenter on TV, online, on the radio and at live events. He's been recognized as one of the leading science communicators in the UK and named an engagement fellow for the Wellcome Trust.