Cromwell Learning Community Science Year 4 **States of matter** Knowledge Organiser

CHANGING STATE

Solids, liquids and gases are called the three states of matter. Materials can be changed from one state to another by heating or cooling.

Heating

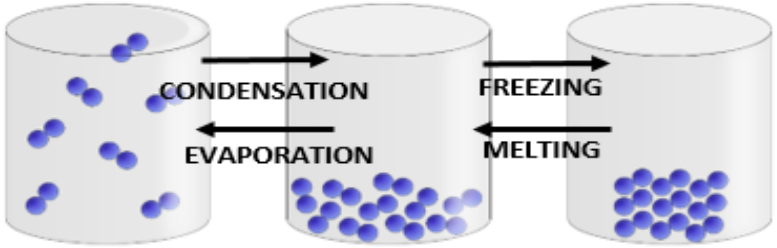
If ice (solid) is heated, it changes to water (liquid). This change is called **melting**.
Water (liquid) can change to water vapour (gas). This is called **evaporation**.
If water (liquid) is heated until it **boils**, it changes to water vapour (gas) very quickly. Water boils at 100°C.

Cooling

If water vapour (gas) is cooled, it changes to water (liquid). This change is called **condensing**.
If water (liquid) is cooled, it changes to ice (solid). This change is called **freezing**. Water freezes at 0°C.

Three states of matter

GAS: particles far apart and randomly arranged / move around
LIQUID: particles close but randomly arranged / move around
SOLID: particles very close together / vibrate around a fixed position



Gas	Liquid	Solid
Examples	**Examples**	**Examples**
Steam (water vapour)	Water	Ice
Hydrogen	Milk	Wood
Carbon Dioxide	Washing up liquid	Glass
Oxygen		Diamond

Temperature	how hot or cold something is. Measured in degrees Celsius (°C).
Particle	a tiny amount of something. You can't see them with your eyes!
Melting	the process of a solid heating and changing into a liquid.
Evaporation	the process of a liquid heating and changing into a gas.
Condensation	the process of a gas cooling and changing into a liquid.
Freezing	the process of a liquid cooling and changing into a solid.
Precipitation	When water or snow fall from a cloud
Solid	Firm and stable in shape, not a liquid or fluid
Liquid	A substance that flows freely but can be measured by volume e.g. water or oil
Gas	An air-like fluid substance which expands freely to fill any space available

FEATURES

- Solids hold their shape. (Salt, sand and sugar are tiny solids so they pour like a liquid but they pile up and are nit wet.)
- Liquids form a pool not a pile!
- Gases escape from an unsealed container and fill the entire volume of space.