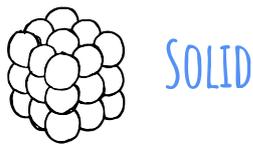


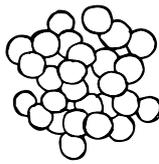
CHANGES OF STATE



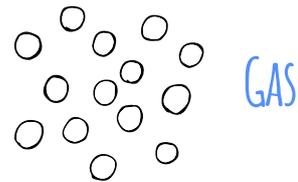
All materials are either a **solid**, a **liquid**, or a **gas**. These are the three **states of matter**.



SOLID



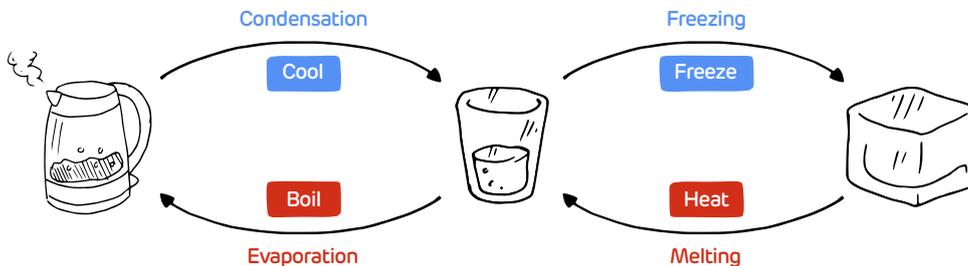
LIQUID



GAS

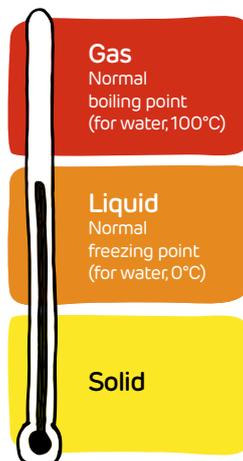
CHANGING STATES OF WATER

Through heating and cooling, we can change the state of materials. The diagram below shows how water changes state when heated or cooled.



BOILING POINT

The boiling point of water is 100°C . When the temperature rises above this point, the water evaporates and becomes a gas. When the gas cools, e.g. when the steam from a shower hits a cold window, it condenses back into water.



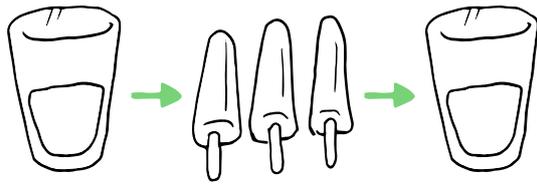
Gas
Normal boiling point
(for water, 100°C)

Liquid
Normal freezing point
(for water, 0°C)

Solid

FREEZING POINT

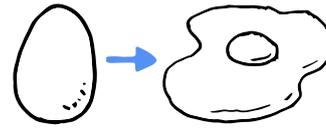
The freezing point of water is 0°C . At this point, the liquid changes into solid ice. This process is called freezing.



REVERSIBLE CHANGES

The changes that happen to water between its different states (solid - ice, liquid - water, and gas – water vapour/steam) are reversible because we can reverse the change to get the original substance back. Examples of reversible changes include dissolving, evaporation, melting and freezing.

For example, you can freeze juice to make ice lollies, then apply heat to melt the lollies and change them back into juice.



IRREVERSIBLE CHANGES

Irreversible changes are ones that you can't reverse - it's impossible to go back to the previous state or original material. Examples of irreversible changes include heating, mixing and burning.

For example, heating a raw egg to cook it is an irreversible change because, once it's cooked, the egg cannot be changed back into a raw egg.

VOCABULARY



Freezing

When a liquid turns into a solid

Freezing point

The same temperature as a material's melting point. This is the temperature at which a liquid turns into a solid

Melting

When a solid turns into a liquid

Melting point

The temperature at which a solid melts

Temperature

A measurement of how hot or cold something is

Thermometer

A device or instrument used to measure temperature



Do you know why we add salt to roads and paths in the winter?

Sprinkling salt onto ice causes the ice to melt because salt lowers the freezing point of the water.