

# States of Matter

## Particle Theory

All matter is made from tiny particles. Particles are single pieces of matter that are too small to be seen. The arrangement of particles in solids, liquids and gases explains their different properties.



In a solid, the particles are close together, arranged in a regular pattern and cannot move around each other. This arrangement means that solids keep their shape, always take up the same amount of space and cannot be compressed.



In a liquid, the particles are close together but arranged randomly, which means they can move around each other. This arrangement means that liquids can flow, take the shape of the container and cannot be compressed.



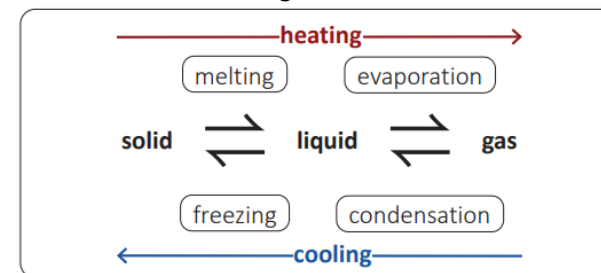
In a gas, the particles are far apart, randomly arranged and can freely move. This arrangement means that gases have no fixed shape, fill any container and can be compressed.





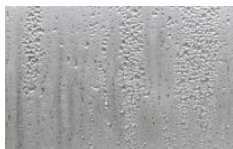




## Changing State



Materials can exist as solids, liquids or gases. However, some materials change state when heat is added or removed. The processes involved in changing state are melting, freezing, evaporation and condensation. These changes are reversible.



	<b>Properties of Solids</b> <ul style="list-style-type: none"> <li>• Solids can be held.</li> <li>• They keep their shape and do not flow.</li> <li>• They always take up the same amount of space.</li> <li>• They cannot be compressed</li> </ul>	 	When a solid is heated, it melts into a liquid.
	<b>Properties of Liquids</b> <ul style="list-style-type: none"> <li>• Liquids cannot be held easily.</li> <li>• They flow and can be poured.</li> <li>• They take the shape of the container they are in.</li> <li>• They cannot be compressed.</li> </ul>		When a liquid is heated, it evaporates into a gas.
	<b>Properties of Gases</b> <ul style="list-style-type: none"> <li>• Gases cannot be held.</li> <li>• They have no fixed shape and fill the available space in the container.</li> <li>• They can be compressed.</li> <li>• They are normally invisible.</li> </ul>		When a gas is cooled, it condenses into a liquid
			When a liquid is cooled, it freezes into a solid.

## Vocabulary

arrangement	The way in which things are placed
compress	To squash
gaseous	In the form of a gas
matter	What all things are made from
process	A series of actions taken to achieve a result
reversible	Capable of being reversed so that the previous state is restored
variable	A factor, such as an object or condition, that changes during an investigation