

# States of Matter

## Chemistry



### What should I already know?

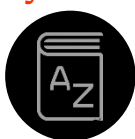
I can describe, compare and group objects based on their physical properties. I understand that these properties can be changed through bending, twisting, stretching and squashing.



|  <b>Solids</b><br>chair, plate, cardboard.                                                                                                                                           |  <b>Liquids</b><br>water, oil, orange juice.                                                                                                                                                                     |  <b>Gases</b><br>oxygen, helium, carbon dioxide.                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Particles are packed tightly together and <b>cannot move</b> very much.<br>They are held together with strong forces.<br>Keep their shape.<br>Cannot change shape on their own.<br>Do not spread out or flow.<br>Do not have to be hard, some can be squashy or soft. | The particles are less tightly packed together and can move around slightly so liquids flow.<br>The forces are weak, so they are not held tightly together.<br>They can't keep their shape unless they're in a container.<br>They can flow or be poured.<br>They take the shape of the container. | The particles are free to spread out and move around.<br>The forces are tiny so they can move around freely.<br>Do not keep their shape unless in a sealed container.<br>A gas will escape from any container that is not sealed.<br>Gases can be squashed. |

### Diagrams

### Vocabulary



|                                                                                                              |                                                                              |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <b>Particles</b><br>       | Tiny bits of matter that make up everything in the universe.                 |
| <b>Changing state</b><br> | A change from one state to another without a change in chemical composition. |
| <b>Temperature</b><br>    | How hot or cold something is.                                                |
| <b>Water cycle</b><br>    | The continuous journey water.                                                |
| <b>Precipitation</b><br>  | Rain, snow, sleet, or hail.                                                  |

### Quick Facts The three states of matter are: solids, liquids and gases.



Solids and liquids can be changed from one state to another by heating or cooling.

**Melting** happens when a solid turns into a liquid after being heated.

**Freezing** occurs when a liquid is cooled and becomes a solid.

**Evaporation** happens when a liquid turns into a gas after being heated.

**Condensation** happens when a gas turns into a liquid after being cooled.

When ice is heated it melts into water.

When water begins to boil in a kettle, it evaporates into water vapour.

By the time the temperature has reached 100° c all the water has turned to water vapour.

When water vapour touches a cool surface, it turns into water.

When water is put into a freezer, it freezes to become ice. Water freezes at 0° c.

Water on earth is constantly moving and recycled in the water cycle.

Heat from the sun causes water to evaporate from rivers, lakes and seas turning it into water vapour.

The water vapour rises and begins to cool down.

Clouds are made from water vapour that has condensed to form tiny water droplets.

When the cloud gets too heavy, the water falls as precipitation.

Rain water runs over the land and collects in lakes or rivers, which take it back to the sea.

The cycle starts all over again.

### Working Scientifically

|                                                                                                                         |                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
|  Questioning, Planning and Enquiring |  Investigating             |
|  Observing and Recording             |  Concluding and Evaluating |