

Nova's States of Matter Explorer Cards

Learning objective: To identify, describe, and compare the properties of solids, liquids, and gases, and understand how they change state when heated or cooled.

Use these flashcards to test your knowledge of how matter behaves. Nova the owl wants to know if you can explain the science behind the changes!

Solid

A state of matter where particles are packed closely together in a fixed shape and cannot be compressed.

Liquid

A state of matter that can flow and take the shape of its container, but has a fixed volume.

Gas

A state of matter where particles are far apart and move freely, filling all available space in a container.

Melting

The process of changing from a solid to a liquid by increasing the temperature.

Freezing

The process of changing from a liquid to a solid by decreasing the temperature.

Evaporation

The process where a liquid changes into a gas, usually caused by heating.

Condensation

The process where a gas changes into a liquid, often seen when warm water vapour touches a cold surface.

What happens to particles in a solid when it is heated to its melting point?

The particles gain energy and start to vibrate more, eventually breaking free from their fixed positions to become a liquid.

Explain why a gas is easier to compress than a solid.

A gas has large spaces between its particles, allowing them to be pushed closer together, whereas the particles in a solid are already tightly packed and cannot move closer.

Compare and contrast the movement of particles in a liquid and a gas.

In a liquid, particles can slide past each other but stay close together. In a gas, particles move rapidly in all directions and are much further apart.

Justify your answer: Is steam the same substance as liquid water?

Yes, it is the same substance (H₂O). It has simply changed its state of matter from liquid to gas due to a change in temperature.

What might happen if you left a sealed balloon filled with gas out in the hot sun all day?

The gas particles would gain more energy and move faster, hitting the inside of the balloon with more force, which could cause the balloon to expand or potentially burst.