

Nova's States of Matter Mastery

Learning objective: To identify, describe, and compare the properties of solids, liquids, and gases, and understand how they change state through heating and cooling.

Use these flashcards to test your knowledge of how particles behave in different states of matter. Nova the owl suggests saying the answers out loud to help them stick in your memory!

Solid

A state of matter where particles are packed closely together in a fixed structure, meaning it holds its own shape.

Liquid

A state of matter where particles are close together but can move past each other, allowing the substance to flow and take the shape of its container.

Gas

A state of matter where particles are far apart and move randomly at high speeds, filling all available space.

Melting

The process of changing from a solid to a liquid by adding heat energy.

Freezing

The process of changing from a liquid to a solid by removing heat energy.

Evaporation

The process where a liquid turns into a gas, usually when heated at the surface.

Condensation

The process where a gas cools down and turns back into a liquid.

Reversible Change

A change in state, such as melting ice, which can be undone by reversing the temperature change.

Explain why a gas is able to fill every corner of a room, while a solid block of wood cannot.

Gas particles have high kinetic energy and are not held together in a fixed structure, whereas solid particles are tightly bonded in a lattice.

Compare and contrast the arrangement of particles in a liquid versus a solid.

In both, particles are close together. However, in a solid, they are fixed in a rigid pattern; in a liquid, they are disordered and able to slide over one another.

Justify your answer: Is baking a cake a reversible or irreversible change?

It is irreversible because heating creates a chemical change in the ingredients, forming new substances that cannot be changed back into raw flour, eggs, or sugar.

What might happen if you left a sealed balloon full of air in a very cold freezer?

The gas particles would lose kinetic energy and move more slowly, causing the gas to occupy less volume and the balloon to shrink.