

States of Matter

What Is Matter?

Matter is anything that has mass and takes up space.
Everything around us is made of matter.



solid



The Three States of Matter

Solid

Has a fixed shape
Particles are packed tightly together
Particles vibrate in place
Example: Ice

Gas

Has no fixed shape
Spreads out to fill its container
Particles are far apart and move freely
Example: Water vapor (steam)



gas

Liquid

Has no fixed shape
Takes the shape of its container
Particles are close together but can move past each other
Example: Water



liquid

Changing States of Matter

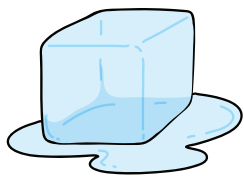
When matter changes from one state to another, it is called a phase change.

Common Phase Changes

Melting: solid » liquid Freezing: liquid » solid Evaporation: liquid » gas
Condensation: gas » liquid

Energy and States of Matter

Adding heat gives particles more energy
Removing heat gives particles less energy
Changing from a liquid to a gas requires the most energy.



Hands-On Physical Property Tests

Melting Test

Observe ice changing from solid to liquid.

Freezing Test

Freeze water and observe the change from liquid to solid.

Evaporation Observation

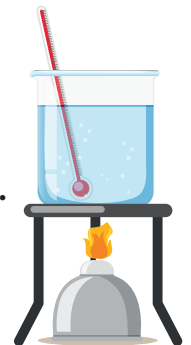
Watch water slowly disappear into the air.

Condensation Observation

Watch water droplets form from water vapor.

Solid, Liquid, or Gas Sort

Sort everyday items by state of matter.



Think Like a Scientist : What state of matter is this? What happens when heat is added or removed? Did the substance change into something new? Is this a physical change?