



# Changes of State

## Key Vocabulary

**solid:** has a fixed shape and does not flow like a liquid or gas

**liquid:** something you can pour. It changes shape to fit the container it's in at per minute

**gas:** a substance that spreads out to fill all the space around it, often **transparent**

**opaque:** stops light and you can't see through it at all

**translucent:** lets some light pass through them, but **not clearly**. You can see light coming through, but you **can't see through**

**transparent:** allows almost all light to pass through: you can **see through** it clearly

**viscous:** a liquid that is thick and sticky

**granule/granular:** a small piece or grain of a material. It's usually tiny and can be seen or felt

**powder/powdery:** very tiny, dry pieces of a material that feel soft

**state of matter:** the form in which a material is: solid, liquid or gas. Some materials can change from one state to another when they are heated or cooled.

## What is the difference between a solid, liquid and gas?

### Solids

- Keep their shape
- Have a fixed volume
- Particles are packed tightly and only vibrate
- Examples: ice, wood, metal

### Liquids

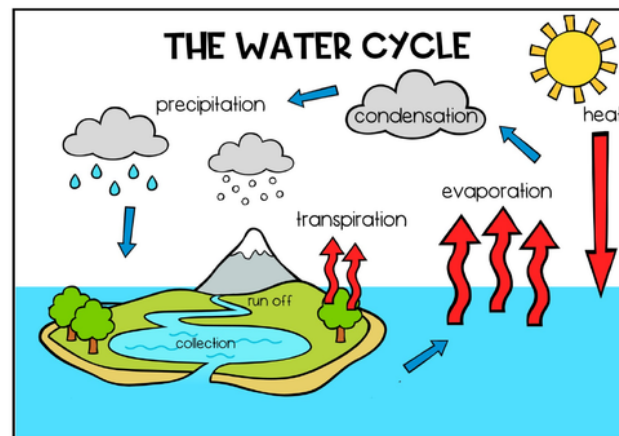
- Take the shape of their container
- Have a fixed volume but no fixed shape
- Particles are close together but can slide past each other
- Examples: water, milk, juice

### Gases

- Fill all the space available
- Have no fixed shape or volume
- Particles are far apart and move quickly in all directions
- Examples: air, steam, helium

## What is the water cycle?

The **water cycle** shows how water moves around our planet in a continuous loop.



## How do materials change state?

When you heat a material, it can change from one state to another:

• **Solid to Liquid:** This is called **melting**. For example, ice melts into water when heated.

• **Liquid to Gas:** This is called **evaporation** or **boiling**. For example, water turns into steam when boiled.

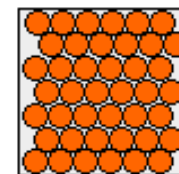
When you cool a material, it can also change state:

• **Gas to Liquid:** This is called **condensation**. For example, steam cools down and becomes water droplets.

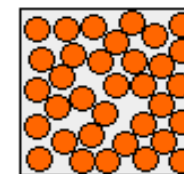
• **Liquid to Solid:** This is called **freezing**. For example, water freezes into ice in the freezer.

## Why Does This Happen?

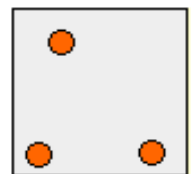
Heating gives particles **more energy**, so they move faster and spread out. Cooling takes away energy, so particles **slow down** and come closer together.



solid



liquid



gas