

Name \_\_\_\_\_



## The Marvelous Transformation of Matter

Matter is all around us, and it can exist in different forms or states. These states, also known as phases, include solids, liquids, and gases. The transition between these states is a fascinating process, influenced by temperature and pressure.

### Solid to Liquid: Melting

When a solid is heated, it undergoes a phase change called melting. Imagine a popsicle on a hot summer day. As it absorbs heat from the surroundings, the ice (solid) changes into a liquid. The temperature at which this change occurs is known as the melting point. For example, ice melts at 0 degrees Celsius (32 degrees Fahrenheit). Once a solid reaches its melting point, it begins to change into a liquid, and its particles move more freely.

### Liquid to Solid: Freezing

The reverse process of melting is freezing. When a liquid loses heat, it transforms into a solid. Think about a puddle of water on a cold winter morning. As the temperature drops, the liquid water turns into solid ice. Just like melting, freezing has a specific temperature called the freezing point. For water, this point is also 0 degrees Celsius (32 degrees Fahrenheit).

### Liquid to Gas: Evaporation

When a liquid turns into a gas, it's called evaporation. Picture a wet shirt drying on a sunny day. The liquid water on the shirt's surface absorbs heat from the sun, and its particles gain enough energy to become water vapor, which is invisible. This process doesn't happen only under the sun; it occurs at any temperature, even below the boiling point of the liquid.

### Gas to Liquid: Condensation

Condensation is the opposite of evaporation. It occurs when a gas turns into a liquid. Imagine taking a hot shower in a cold bathroom. The steam from the hot water (gas) touches the cold mirror and transforms back into tiny water droplets (liquid), causing the mirror to fog up. Condensation is essential for forming clouds and raindrops in the atmosphere.

### Solid to Gas: Sublimation

Sublimation is the transformation of a solid directly into a gas without passing through the liquid phase. A famous example of this is dry ice, which is solid carbon dioxide. When dry ice warms up, it changes from a solid into carbon dioxide gas, giving off the eerie fog that we often see at Halloween parties. Sublimation occurs at specific temperatures and pressures for different substances.

### Gas to Solid: Deposition

Deposition is the reverse of sublimation, where a gas changes directly into a solid without becoming a liquid first. An example of this is frost forming on a cold window pane. The water vapor in the air loses heat and goes straight from a gas to ice crystals on the glass.

