States of Matter: Solids, Liquids, and Gases

Did you know that everything around you is made of matter? That's right! The trees, your desk, even your dog is made of matter. **Matter** is anything that has mass and takes up space. Matter is made of tiny molecules. Three states of matter are solids, liquids, and gases.

A **solid** is a type of matter that has a definite shape and takes up a definite amount of space. This means that solids always keep the same shape and take up the same amount of space. Can you think of an example of a solid? How about a baseball? A baseball has a definite shape and occupies a definite amount of space. A baseball is hard, but solids can be soft too. A pillow is a solid. The molecules that make up solids are packed very close together. They stay tightly packed so the solid does not change shape.

A **liquid** is a type of matter that takes up a definite amount of space but does not have a definite shape. Liquids flow or move freely. Water is a liquid. Lemonade is a liquid too. Liquids take the shape of their containers. The molecules in a liquid are spread apart a little bit. They are not tightly packed together like a solid. They have room to flow.

Vocabulary

matter– anything that has mass and takes up space
solid– type of matter that has a definite shape and takes up a definite amount of space
liquid– type of matter that takes up a definite amount of space but does not have a definite shape
gas– type of matter that does not have a definite shape and does not take up a definite amount of space

A **gas** is a type of matter that does not have a definite shape and does not take up a definite amount of space. A gas spreads out in whatever space it is in. Air is a gas that is all around us. Molecules in a gas are spread apart. They are able to move about freely. In a room, the molecules in air spread apart to fill the room. When you blow up a balloon, the molecules in air spread apart to fill the balloon.

It's a Gas...It's a Solid...It's ALL Water!

Water is a master of disguise and can change between its solid, liquid, and gas states! So how does water change from a liquid that you can drink, to a gas that fills a hot air balloon, to a solid that makes ice skating, skiing and snowball fights possible? Water exists as one of these three states of matter depending upon the temperature of its surrounding environment.

Liquid water makes up the oceans, lakes, and rivers around you. It's what you drink to stay healthy and use to brush your teeth. Liquid water that falls from clouds is called rain.

Water in a solid state is called ice. Liquid water changes to ice when it **freezes** at a temperature below 0 degrees Celsius or 32 degrees Fahrenheit. When the temperature rises, the ice will **melt** and turn back into liquid water.

Water vapor is the name given to water in a gas state. When liquid water reaches a temperature of 100 degrees Celsius or 212 degrees Fahrenheit it **boils**, or changes from a liquid to a gas. When you boil water for pasta, the steam you see coming out of the pot is water vapor. The water vapor in the air can also change back into liquid water through **condensation**. Think about a cold can of your favorite soda. When air comes into contact with a cold soda can, the water vapor condenses into liquid water droplets. This is why your soda can may look like it's sweating.

Vocabulary

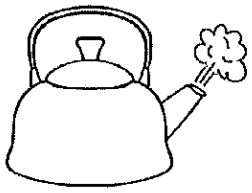
freeze– to change from a liquid to a solid at a temperature of 0 degrees Celsius and below

melt– to change from a solid to a liquid by heat energy

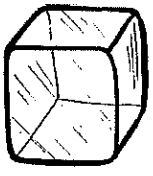
boil– to change from a liquid to a gas at a temperature of 100 degrees Celsius and above

condensation– change of state from gas to liquid

Liquid Water



Water Vapor



Ice