

The Three States of Matter

What Is the Matter about Matter?

By Janine G. Wilson

Matter is made up of particles called atoms. An atom is the basic and smallest part of any substance that cannot be broken down by chemical means. An atom is the smallest part of what it makes up, and the arrangement of atoms, or particles, in matter determines its unique properties. Matter is anything that has mass

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and volume. The amount of space that a substance takes up is called its volume. What happens when you soak a cloth in water? The cloth is all wet. The water has taken up the space between the fibers of the cloth. The volume of the cloth does not change. Liquids, like solids, have a fixed volume. A cup or 237 milliliters of water poured into a glass will still have the same volume when poured into a bowl. Because the particles in a liquid have some space in between them and are constantly slipping and sliding past each other, liquids flow and do not have a definite shape. Gases also flow because the particles in a gas are in constant motion with a lot of space between them. Gases have volume and take up space, but the volume is not definite. For example, think of how air inflates or expands a balloon. When you untie the balloon, gas flows out, into the surrounding

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space, so the volume changes. Liquids and gases do not have their own shape; they take the shape of the container they are in.

Matter can be described by other physical properties that can be observed or measured. Color, shape, texture, odor, and taste are observed. You can estimate the temperature and size of objects, while you can measure other properties precisely, using scientific tools. A balance scale measures mass in metric units called grams, and

a thermometer measures temperature in degrees Celsius. To measure length, first

the volume of an irregular object can be measured by pouring water into a graduated cylinder and measuring the width of the water level.

When an object is poured into a container, it takes the shape of the container. The original shape of the object is lost.

of water is lost. The original shape of the object is lost.

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What is the matter in matter? It is the matter in you and the world around us. What would our universe be without matter?

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- 1) Amari and John are studying the properties of matter. They compare two samples of matter and create the data table below. Which property confirms that sample 2 is a liquid and not a gas? Write the reason.


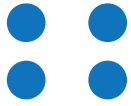

Properties of Matter	Sample 1	Sample 2
volume (in cm^3 or ml)	30	63

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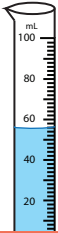

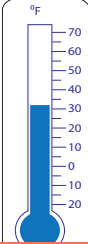

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Solid	Liquid	Gas
		

Solid	Liquid	Gas

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3) Match each tool with the property it measures.

Graduated Cylinder	Balance Scale	Thermometer	Metric Ruler
			

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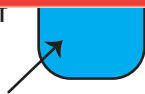
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A
B
C
D
4) Fi

The bottom of
the curve is
called the
meniscus.



Volume of  : _____