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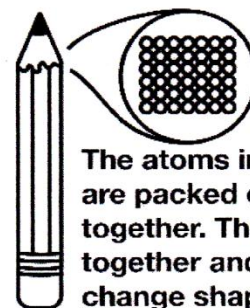
# Why Does Matter Matter?

by Kelly Hashway

What do trees, air, and water have in common? They all have matter. That means they take up space. You might be wondering why these things look so different if they all have matter. Everything found on Earth can be grouped into one of three states of matter: solid, liquid, or gas. In order to figure out which state of matter an object fits in, we have to examine its properties. The properties we look at are shape, mass, and volume. Mass is the amount of matter an object has, and volume is the amount of space the matter takes up.

Solids are easy to recognize. They have definite shape, mass, and volume. Trees are solids. They are made up of tiny particles called atoms. These atoms are packed closely together, and they hold the solid in a definite shape that does not change. If you look around your house, you will see lots of solids. Televisions, beds, tables, chairs, and even the food you eat.

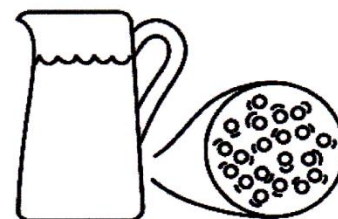
## Solid



The atoms in a solid are packed closely together. They bond together and do not change shape.

Liquids do not have definite shape, but they do have definite mass and volume. Liquids are similar to solids because their atoms are close together, but what makes a liquid different is that those atoms can move around. Liquids can change shape by flowing. If you've ever spilled a glass of milk, then you know it spreads out across the floor. It does this because the milk is taking the shape of the floor. Since liquids do not have a definite shape of their own, they will take the shape of their containers. This is why the same amount of milk can look different in a tall glass, a wide mug, or spread out on your kitchen floor.

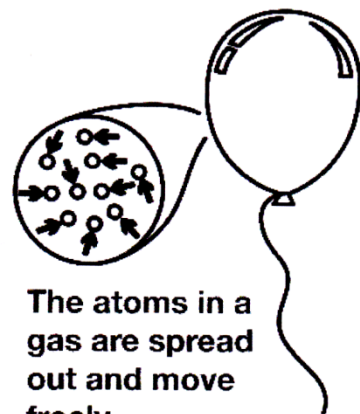
## Liquid



The atoms in a liquid are close together. They slide around.

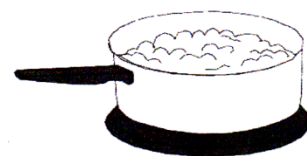
Gases do not have definite shape or volume. Like liquids, gasses will take the shape of their containers. If a gas is not in a container, it will spread out indefinitely. This is because the atoms in a gas are spaced farther apart than in a solid or a liquid. And being spread out like this allows them to move around freely. Think about the air you breathe everyday. That air is spread across the empty space around the earth. You've probably also noticed that you usually cannot see the air. This is another property of gases. Even though we cannot see them, you come in contact with them everyday. There's air in the tires of your family car and your bicycle. The sun is made up of gases, and the clouds in the sky are mostly made from water vapor.

## Gas



**The atoms in a gas are spread out and move freely.**

When trying to remember the three states of matter, think about water. If it freezes into a solid, it becomes ice. Its atoms are packed together keeping its shape. Of course, we know water can also be a liquid. It flows in rivers or it can be poured from a glass. When water evaporates it becomes water vapor, a type of gas in the air. Try a little experiment of your own by placing an ice cube in a covered glass or container. You will be able to observe the ice first in its solid form and then watch as it melts into a liquid to become water. Eventually the water will turn to water vapor and your glass or container will be filled with this gas.



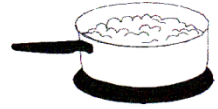
**You can see three different states of matter in this picture. The pot is made of solid matter. The water inside the pot is liquid. When the liquid is heated it becomes water vapor, which is a gas.**

**Matter is everywhere! Can you find a solid, a liquid, and a gas around you right now?**

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solids	volume	container	matter	ice	juice
gases	mass	atoms	chair	air	melting
liquids	shape	space	milk	clouds	

Choose a word from the box to complete each sentence.

1. The three basic properties of matter are \_\_\_\_\_,  
\_\_\_\_\_, and \_\_\_\_\_.
2. All matter is made up of tiny particles called \_\_\_\_\_.
3. Volume is the amount of \_\_\_\_\_ that matter takes up.
4. Mass is the amount of \_\_\_\_\_ an object has.
5. Liquids take the shape of their \_\_\_\_\_.
6. \_\_\_\_\_ do not have a definite shape or volume.
7. \_\_\_\_\_ do not have a definite shape, but they do have a definite volume.
8. \_\_\_\_\_ have a definite shape and volume.
9. A \_\_\_\_\_ and \_\_\_\_\_ are examples of solids.
10. \_\_\_\_\_ and \_\_\_\_\_ are examples of liquids.
11. \_\_\_\_\_ and \_\_\_\_\_ are examples of gas.
12. Solid ice is \_\_\_\_\_ when it is changing into a liquid.

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## What's the Matter?



Tell whether each is a solid, liquid, or gas.

- |                         |                           |
|-------------------------|---------------------------|
| 1. milk - _____         | 2. cookie - _____         |
| 3. oxygen - _____       | 4. fish - _____           |
| 5. pencil - _____       | 6. maple syrup - _____    |
| 7. shampoo - _____      | 8. carbon dioxide - _____ |
| 9. ice cube - _____     | 10. paint - _____         |
| 11. oil - _____         | 12. salt - _____          |
| 13. water vapor - _____ | 14. gasoline - _____      |
| 15. helium - _____      | 16. sand - _____          |

Complete each sentence with the word solid, liquid, or gas.

A \_\_\_\_\_ has a definite shape. It does not take the shape of its container. It also has a definite volume because it can be measured.

A \_\_\_\_\_ does not have a definite shape. It takes the shape of its container. It does have a definite volume because it can be measured.

A \_\_\_\_\_ does not have a definite shape. It sometimes takes the shape of its container and sometimes flies freely around you. These particles are not connected to each other and takes up whatever space is available.