

What is Matter?

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**. 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 a **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.

Liquids do not have a 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 the kitchen floor.

Gases do not have definite shape or volume. Like liquids, gases will take the shape of their containers. If 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 liquid. Being spread out like this allows them to move around freely.

Think about the **air** you breathe every day. 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 every day. 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 vapour.

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 vapour, a type of gas in the air.

Solid (ice)



Liquid (flowing water)



Gas (steam)



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

Choose a word from the box to complete each sentence. [17]

- The three basic properties of matter are _____, _____, and _____.
- All matter is made up of tiny particles called _____.
- Volume is the amount of _____ that matter takes up.
- Mass is the amount of _____ an object has.
- Liquids take the shape of their _____.
- _____ do not have a definite shape or volume.
- _____ do not have a definite shape, but they do have a definite volume.
- _____ have a definite shape and volume.
- A _____ and _____ are examples of solids.
- _____ and _____ are examples of liquids.
- _____ and _____ are examples of gas.
- Solid ice is _____ when it is changing into a liquid. [1]