

Materials Needed

- 1 scoop of ice cream
- 1 cup of soda pop
- Drinking glass or cup
- Spoon

Grade Range

Pre-K
K-2

Topics/Skills

Science: Matter; Physical and
Chemical Reactions

Learning Standards

NGSS: [Matter and its
Interactions](#)

Duration

15 - 20 minutes

Prep Time

5-10 minutes

What's the Matter with Floats?

Matter is everywhere, even in an ice cream float!

Ice cream floats aren't only delicious they're materially delicious! Matter of fact, ice cream floats include all three types of matter: solid, liquid, and gas! In this activity, students will observe a physical and chemical reaction and identify solids, liquids, and gases.

Activity Challenge

Build an ice cream float and name each part as a solid, liquid, or gas.

Preparation

Review the Materials Needed list and collect materials.

To Do

1. Fill a cup halfway with a carbonated drink, commonly called soda.
2. Spoon one scoop of ice cream into the same cup.

Observations

Parents, before students drink their ice cream float, ask them to observe what happens when the ice cream and soda pop mix. Ask:

- What do you see? What do you hear?
- Help them to identify the solid (ice cream), the liquid (soda pop) and the gas (fizzing bubbles made of carbon dioxide).
- Have them watch what happens to the ice cream when it starts to melt. Does it turn into a liquid? Why does this happen?

Extensions

- Put the ice cream float in a freezer friendly container that won't shatter, and place in the freezer for two to three hours.
- Ask your student to predict what might happen. You can give them a hint by showing them an ice cube and asking them what happens when you put water (a liquid) in the freezer.

The Science behind the Activity

Everything has features or characteristics we can use to describe them and to sort them into groups. For example, socks can be described and grouped by color, length or size.

Scientists use the words **solid**, **liquid**, and **gas** to describe a feature of the things commonly found on Earth. Things can be labelled as being in one of these three states (categories) and the words are referred to as **states of matter**.

An object's state of matter can change. The solid state of an object can change into a liquid state, like an ice cube melting into water. An object in a liquid state can change into a gas, or gaseous state. For example, a puddle of water evaporating into water vapor. These changes are often due to, and can be speeded up, when the temperature is increased. A reduction in temperature can cause a material in a liquid state to change into a solid state, like water freezing into an ice cube, which is as solid. The gaseous state of oxygen can be changed into a liquid state when cooled to a low enough temperature. Liquid oxygen is used for rockets since the liquid state of oxygen takes up less space than the gaseous state.

Scientists used the word **solid** for things, like a brick, that remains the same shape when put into any container that is bigger than the object. The word **liquid** is used for things, like milk, that take on the shape of the container holding them. Scientists use the word **gas** for something that will completely fill up any size container from top to bottom. The words solid and liquid are used by scientists just the same as in everyday language. The word gas, describes one possible states of matter and should not be confused with gasoline, commonly called gas. The gas from a gas stations is really a liquid.

A carbonated drink is made by dissolving carbon dioxide gas in water. This is done by injecting the gas into the water under high pressure. The resulting liquid is called carbonic acid, which has a slightly sour taste. The bottle, or can, must be kept tightly sealed to keep the pressure high enough to keep the carbon dioxide gas dissolved in the liquid. Once the container is opened, and the high pressure is reduced, the carbon dioxide gas can come out of the liquid and form visible bubbles. The gas bubbles will form more slowly if the liquid is colder. Over time more and more of the dissolved carbon dioxide gas will leave the liquid, turning the carbonic acid back into plain water. The fizzy, sour taste will diminish as this happens.