

MAKING HOMEMADE ICE CREAM

and Studying Phase Changes

FOCUS QUESTION:

How do phase changes help us make ice cream?

WHAT YOU'LL LEARN:

You will observe how a liquid cream mixture changes into a solid ice cream through freezing.

MATERIALS:

- 1 cup heavy cream
- 1/2 cup whole milk
- 1/3 cup sugar
- 1 teaspoon vanilla extract
- 1/4 teaspoon salt
- 2 cups ice
- 1/2 cup rock salt (ice melt)
- 1 quart-size zip-top bag
- 1 gallon-size zip-top bag
- Measuring cups and spoons
- Small bowl
- Towel or mitt (optional)

**SAFETY NOTES:**

- Rock salt can irritate skin. Avoid getting salt in your eyes or on open cuts.
- Do not eat the ice or salt mixture.
- Wash hands after the experiment.

PROCEDURE:

1. **Make the Cream Mixture:** In a small bowl, whisk together heavy cream, milk, sugar, and vanilla extract until the sugar is mostly dissolved.
2. **Seal the Small Bag:** Pour the cream mixture into the quart-size zip-top bag. Remove as much air as possible and seal it tightly.
3. **Make the Ice and Salt Mixture:** In the gallon-size zip-top bag, add the ice and rock salt.
4. **Combine and Shake:** Place the sealed small bag inside the large bag. Seal the large bag tightly. Shake vigorously for 5–8 minutes. The outside of the large bag will feel very cold.
5. **Check the Ice Cream:** Open the large bag and carefully remove the small bag. Open it and look at your ice cream! If needed, reseal the bags and shake for another 2–3 minutes for a firmer texture.
6. **Enjoy:** Wipe off the small bag and enjoy your homemade ice cream!

OBSERVATIONS:

Record what you observed during the experiment.

1. What was the cream mixture like before shaking?
2. What happened to the ice in the large bag?
3. What did the cream mixture become?
4. How did the temperature feel before and after shaking?

CONCLUSION:

Answer the focus question in your own words.

**WHAT'S HAPPENING?**

The rock salt lowers the freezing point of ice. This causes the ice to melt and creates a very cold mixture. The cold is transferred to the cream mixture, causing it to freeze from a liquid (cream) to a solid (ice cream). This is a phase change called **freezing**.

PHASE CHANGES REVIEW

Match each phase change with its definition.

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|-----------------|---|-------------------------------------|
| 1. Melting | • | • A. A gas changes into a liquid. |
| 2. Freezing | • | • B. A liquid changes into a gas. |
| 3. Evaporation | • | • C. A solid changes into a liquid. |
| 4. Condensation | • | • D. A liquid changes into a solid. |

