Making **Science** Make **Sense**®

ICE CREAM CHEMISTRY

MATERIALS:

- ½ cup milk, cream or half & half
- One tablespoon sugar
- ¼ teaspoon vanilla extract
- Other flavors/add-ins (optional)
- Six tablespoons salt
- Ice
- Plastic bags - large and small

PROCEDURE:

1. Add milk, sugar and vanilla to a small zip-top bag. Optional ingredients should be added at this time as well. Squeeze out air and seal the bag tightly. Place inside a second small zip-top bag and seal.

2. Place the bagged ingredients inside a gallon-size freezer bag. Fill the freezer bag halfway with ice, pour in the salt, squeeze out air and seal.

3. Now comes the fun part. Gently shake the bag, making sure the ice is evenly spread out. Continue to shake the bag in your hands (for about 5-10 minutes). You might want to use a towel or gloves, since the bag will be cold and slippery.

4. When frozen, eat your ice cream straight out of the bag!

WHAT THIS MEANS:

Salt makes ice melt. That's why people sprinkle it on icy roads and driveways in cold climates. The salt does this by lowering the **freezing point** of the ice. Water normally freezes at 32 degrees Fahrenheit or 0 degrees Celsius.

Melting ice is an **endothermic** process because heat is required. The moment you add salt, the ice starts to absorb more energy (heat) from its surroundings, like the ingredients and your hands. This makes the ice colder than freezing.

By lowering the temperature at which ice is frozen, the milk mixture is able to freeze faster. As the liquid gets colder, it expands and the molecules slow down. The **state of matter** changes from liquid (milk mixture) to solid (ice cream).

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