

ICE CREAM IN A CAN

Materials

For each group of 3-4:

- 3 pound coffee can
- 1 pound coffee can
- 1 cup milk or half & half
- 2 tablespoons sugar
- 1 teaspoon vanilla
- chocolate syrup (if desired)
- rock salt
- ice cubes

For each student:

- bowl
- spoon

National Standards

A: Science as Inquiry

B: Physical Science

Extension

Demonstrate how salt allows ice to become colder. Do this by having a cup of water, add ice to it, then some salt. Record the temperature. Continue adding salt and taking temperature readings.

After making ice cream the students will be able to show how salt lowers the freezing point of water.

Background

Why are we using salt and what does it do? When salt comes in contact with ice, the freezing point of ice is lowered. Water will normally freeze at 32 degrees F. A 10% salt solution freezes at 20 degrees F, and a 20% solution freezes at 2 degrees F. By lowering the temperature at which ice is frozen, we are able to create an environment in which the milk mixture can freeze at a temperature below 32 degrees F into ice cream.

Procedure

1. Place the ice cream ingredients in the smaller coffee can (milk, sugar, and vanilla). Seal the can with the lid on tightly.
2. Place the smaller can inside the larger coffee can. Place the ice and salt around the smaller can making sure the smaller can is more or less centered.
3. Place the lid on the larger can and make sure it is closed tightly. Get kids to sit in a circle and roll the can around to each other for ~5-10 minutes. You may have to periodically check to see if the ice cream is done.
4. When it is all done.....everyone will have a treat!

Activity variation

In place of coffee cans, use two large ziploc freezer bags. Place the ice cream making ingredients into one freezer bag and securely close it. Then place this bag inside another freezer bag. Add the ice and salt to this bag. Close the seal. Wrap the bags in newspaper. Gently “shake” the bags for ~5-10 minutes.