



# URI 4-H Ice cream in a Bag

Modified by Lucia Merino

Source: 4-H, <http://www.mypyramid.gov/>



## Goals:

- 1) Youth will learn that salt reduces the melting point of ice
- 2) Youth will learn how to make home made icecream.
- 3) Youth will observe store bought icecream ingredients and compare with home made at home

## Materials: For Youth in Teams of 2

- 1) 1 Gallon zipper style heavy duty freezer bag
- 2) 1 quart zipper style bag
- 3) 4 cups of ice
- 4) 1 cup of salt
- 5) 1 tablespoon of sugar
- 6) ½ cup cream
- 7) ½ teaspoon vanilla extract
- 8) cups and spoons
- 9) If wanted toppings: sprinkles, gummy bears, or fudge etc.

**Background :** Ice has to absorb energy in order to melt, changing the phase of water from a solid to a liquid. When you use ice to cool the ingredients for ice cream, the energy is absorbed from the ingredients and from the outside environment (like your hands, if you are holding the baggie of ice!). When you add salt to the ice, it lowers the freezing point of the ice, so even more energy has to be absorbed from the environment in order for the ice to melt. This makes the ice colder than it was before, which is how your ice cream freezes. Ideally, you would make your ice cream using 'ice cream salt', which is just salt sold as large crystals instead of the small crystals you see in table salt. The larger crystals take more time to dissolve in the water around the ice, which allows for even cooling of the ice cream.

(<http://chemistry.about.com/cs/howtos/a/aa020404a.htm>)

**Step 1:** Ask the students how do they think home made ice cream is made? What do they think is needed to make it quickly?

**Step 2:** Point out that we actually use salt to make icecream! Use the background information to explain.

**Step 3:** Pair the students and direct them with the following instructions

**Step 4:** Pour the cream, vanilla, sugar into a small zipper bag. Squeeze as much air out as possible, Seal the bag tightly.



[http://honestinfomercialreviews.com/home/kitchen/how\\_to\\_make\\_homemade\\_ice\\_cream/](http://honestinfomercialreviews.com/home/kitchen/how_to_make_homemade_ice_cream/)~ also see video on website

# Review

# Do

**Step 5:** Shake, toss and flip the “Ice cream machine” for 5-10 minutes. If the bag gets too cold, wrap it with a towel or pass it person to person. If mizture has not frozen after 10 minutes, add more salt and ice.

**Step 6:** Open the larger bag and remove the smaller bag. Wipe the smaller bag thoroughly before opening it so the salty water does not contaminate the ice cream. Eat right out of bag or serve in small cups.

**Step 7:** Brain challenge! : Why do we put salt on the roads when in snows?

Ice forms when the- temperature of water reaches 32 degrees Fahrenheit (0 degrees Celsius). When you add salt, that temperature drops: A 10-percent salt solution freezes at 20 F (-6 C), and a 20-percent solution freezes at 2 F (-16 C). On a roadway, this means that if you sprinkle salt on the ice, you can melt it. The salt **dissolves** into the liquid water in the ice and lowers its freezing point.

(<http://science.howstuffworks.com/nature/climate-weather/atmospheric/road-salt.htm>)

**Step 9:**

- Ask students what part of the food pyramid ice cream would go under?

**Step 10:** Taking it further:

- Try to make ice cream with whole milk or reduced fat milk and observe if there are any differences.
- Have the look at the labels and add make their own serving size chart. At home when they buy ice cream, compare the ingredients. Are there more? What are they?