

VBS 2020 Science Experiments

Day 4 – Make Ice Cream in Five-Minutes

<https://science.howstuffworks.com/innovation/edible-innovations/ice-cream3.htm>

You will need: 1 tablespoon sugar, ½ cup milk, cream, or half and half, ¼ teaspoon vanilla extract (or other flavoring), 6 tablespoons salt, enough ice to fill the gallon-sized bag halfway, 1 gallon-sized Ziploc bag, 1 pint-sized Ziploc bag

Step 1: Mix the salt & ice in the gallon size bag and set aside.

Step 2: Pour the milk, sugar, and vanilla extract into a bowl or other container and mix. Carefully pour the mixture into the pint bag. Close the bag, making sure it is completely sealed.

Step 3: Put the pint bag into the gallon bag

Step 4: Shake the combined bag for at least five minutes. The longer you shake the bag, the thicker will be the ice cream.

Step 5: Take the pint bag out of the gallon bag. Open the pint bag and enjoy.

Tips:

Ordinary table salt will work, but salt that has larger crystals, such as kosher salt or rock salt, will work much better.

Make sure the pint bag gets buried in the ice. Seal the gallon bag. Shake the bags vigorously for five minutes. You might want to use a towel to hold them, since they will be very cold and slippery from condensation.

Milk will provide a less rich, lower calorie ice cream, while using heavy cream will have the opposite effect.

This method will make a small amount of ice cream, about enough for two people to enjoy. Experimenting with other methods can allow you to make more. One version uses two coffee cans of differing sizes instead of plastic bags.

Flavor combinations are almost limitless. Chocolate syrup is a basic option, while various flavor extracts available in your grocery store's baking section can lead to more exotic variations. Try combining mint extract with chocolate, or adding small chocolate chips.

Science Involved

There are actually two opposing chemical reactions happening at the same time. As you shake the gallon bag, the ice/salt mixture (a solid) turns into a liquid (melted ice). When ice absorbs energy, it changes the phase of water from a solid to a liquid. The ice absorbs energy from the ice cream ingredients and also from your hands as you roll the can. Conversely, the liquid ingredients inside (milk, cream) are turning into a solid (ice cream) as the molecules in the liquid slow down and eventually freeze in place.

Bible Connection

God knows everything, especially how much Americans like ice cream. The average American eats more than 23 pounds of ice cream per year!

