

Ice Cream in a Bag!

Explore the chemistry of states of matter and freezing while making edible ice cream!

Big Idea

Mixing salt with ice lowers the temperature water freezes at, which hardens the ice cream ingredients, changing the cream mixture from a liquid to a solid.

Standards

MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	Children will analyze the ingredients before and after the reaction to determine if a reaction occurred and if ice cream is made!
11.A.ECc: Plan and carry out simple investigations.	Children will investigate what happens when different ingredients mix.
7.C.ECa: With teacher assistance, explore use of measuring tools that use standard units to measure objects and quantities that are meaningful to the child.	Children will measure out the ingredients with adult assistance.

Materials

- ½ cup half and half (cream and milk)
- ¼ tsp vanilla extract
- 1 tbsp sugar
- 3 cups of ice
- 1/3 cup kosher or rock salt (also called ice cream salt)
- Gallon size zip lock bag
- Quart size zip lock bag
- Gloves
- Timer or clock
- Spoon
- Any other toppings for your ice cream (sprinkles, chocolate sauce, fruit)

Setup

This recipe requires at least 5 minutes of mixing/shaking time, so have music on hand and plenty of space to start a dance party. Also, the mixture gets very cold, so be sure to wear gloves while shaking the bags.

Directions

1. Pour the ice and ice cream salt into a gallon size bag. Leave it open, but put it to the side.
2. In the quart size bag, pour in the half and half, vanilla, and sugar. Seal the bag VERY TIGHTLY and shake it around a little to mix the ingredients.

3. Place the small bag of ingredients inside the gallon bag of ice and salt. Try to make sure the smaller bag is surrounded by the ice and SEAL the gallon bag.
4. Put gloves on, put on some music, and set a timer for 5 minutes.
5. Shake the bag up!
6. After 5 minutes, open up the bags and check your ingredients. If the half and half mixture looks a little runny, seal the bags and shake it up for another minute or two. If they have hardened like ice cream, add some toppings and dig in!

Investigation Questions:

- *What do you notice about your mixture? Why do you think it changed?*
- *What would happen if you didn't use salt in the gallon bag, just ice?*
- *What happens if you use table salt instead of ice cream salt?*
- *What happens if you use something other than half and half, like regular milk or almond milk?*