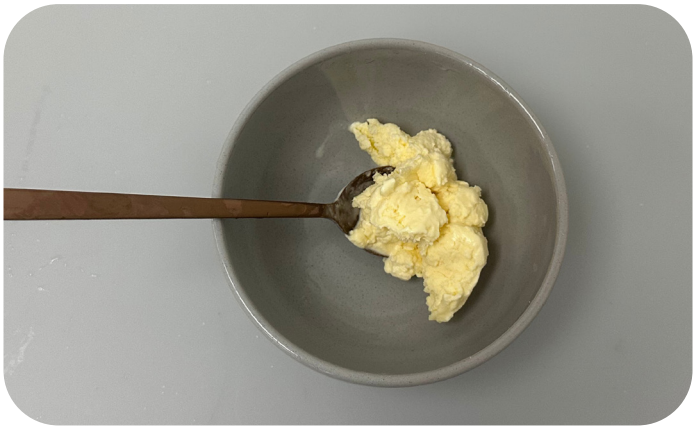
Ice Cream in a Bag!

Time: 15mins

Age: 5-13

Parent help required for younger scientists!



No ice cream in the freezer? No problem - science is here to save the day!

You can make your very own ice cream at home using chemistry and the ingredients you already have. Did we mention it's in a bag?

But first, lets make some predictions!

- How long do you think it will take the ingredients in the bag to freeze? Will it be faster or slower than using a freezer and why do you think that?
- What do you think the purpose of the salt is? What might it be added to to help create icecream?

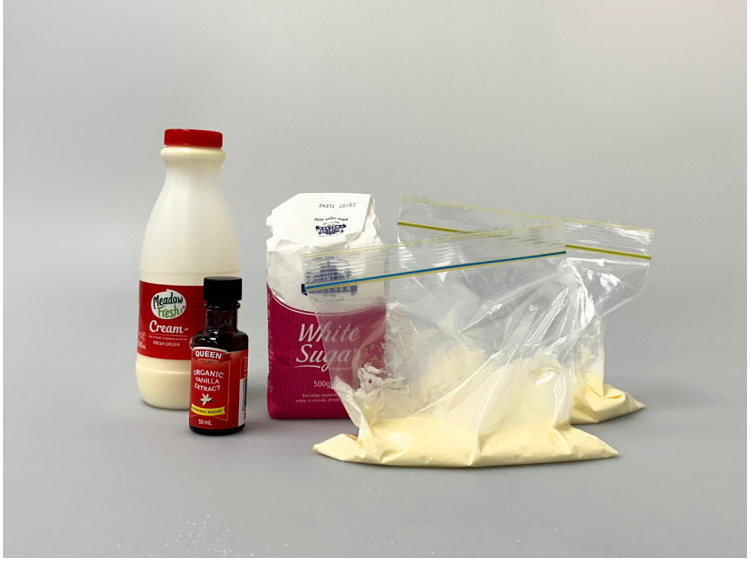
Step 1:

Gather all your materials:

- Sugar
- Blue top milk or runny cream
- Vanilla extract
- Salt
- Measuring spoons
- Measuring cup
- A bag of ice (around 8 cups)
- 1 or 2 small, sealable bags e.g ziplock bag
- 1 or 2 large sealable bags (big enough to fit a small bag inside)
- Oven mitts or a small towel
- Timer or clock

Step 2:

Using 2 small sealable bags - place 1 tablespoon of sugar, ½ a cup of milk or cream, and a ¼ of a teaspoon of vanilla extract in each (If you like, you could make each bag a different flavour!).



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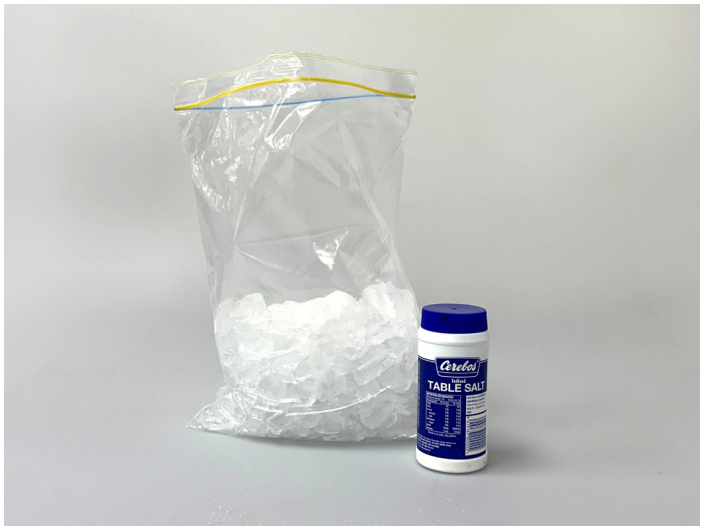
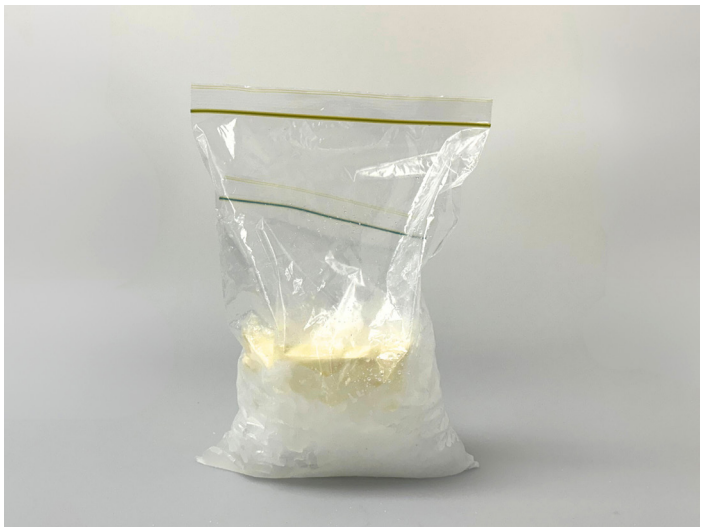
Step 3:

Add 4 cups of ice and ½ a cup of salt to each large sealable bag.



Step 4:

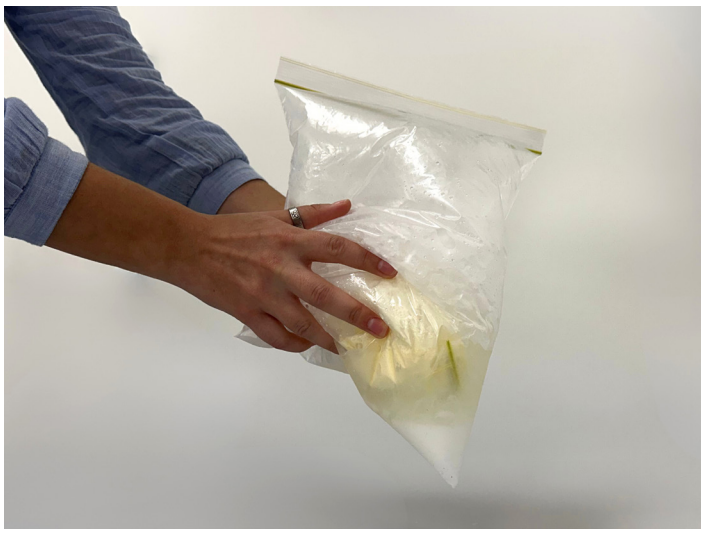
Take one of the smaller bags with the cream mixture inside and place it carefully into a large bag filled with ice. Make sure the smaller bag is completely surrounded by ice and the top is sealed!



Step 4:

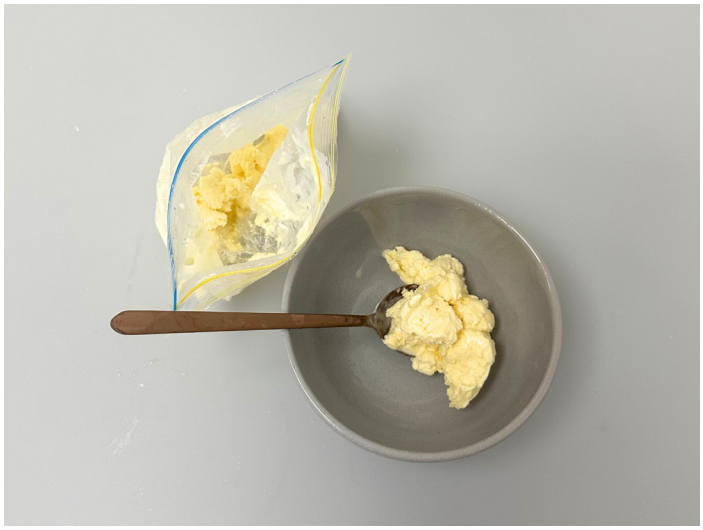
Shake each of the bags for 5 minutes each. You may want a friend to help you shake the other bag or do one after the other. Make sure you check the smaller bags every few minutes to see what is happening inside! Use the towel or oven mitts to hold the bag as it gets cold.

Watch and see what happens to the milky mixture. Do you notice any differences between the ice cream bags? Did the salt and ice together make a difference?



Step 6:

Enjoy your well deserved, homemade ice cream!



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How does it work?

The water we get from taps or the fridge is a liquid. When water drops below 0 °C, it changes from a liquid to a solid called ice. This temperature is called the **freezing point — the point where a liquid turns solid.**

Salty Ice steals heat and freezes cream:

Salt makes the ice colder than usual because it has to work harder to stay frozen. That extra-cold ice steals heat from the milk mixture. As the milk loses heat quickly, it freezes and turns into delicious ice cream!

Extra for Experts!

- Try using different types or different amounts of salt with the ice. See if it changes how quickly or how well the ice cream freezes.

Reflect:

- Can you think of an example in day-to-day life where salt changes how cold or frozen something is?
- What might happen if you didn't add the salt to the bag?