

Experiment:

Making
Ice Cream

(Without a Freezer !)



1/4 tsp vanilla
essence



1 tbs sugar



1/2 cup salt



ice cubes



measuring cup and
spoon for mixing



measuring
spoons

Ingredients and Equipment

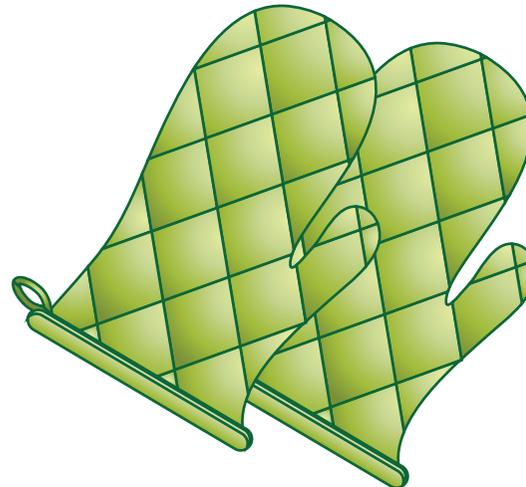
1 small resealable bag for milk mixture
1 large resealable bag for ice



1 cup milk



serving cup and
spoon



oven mitts

Note: The small bag must be able to fit inside the bag of ice.

What To Do:

1

Pour 1 cup of milk into the measuring jug. Add 1 tbs sugar and 1/4 tsp vanilla essence. Stir mixture well to help the sugar dissolve. Pour the milk mixture into the smaller bag and seal it carefully.



2

Put plenty of ice and 1 tbs salt in the larger bag. Place the sealed smaller bag in the larger bag with the ice and salt and seal the large bag.

3

Wear oven mitts to protect your hands from cold. Shake the bag for about 5 minutes ensuring that there is plenty of ice surrounding the bag containing the milk mixture. (Add more ice and salt if necessary.)

4

When ice cream is sufficiently solid transfer to a bowl and eat!



What's Happening?

Your freezer's temperature is generally about $-18\text{ }^{\circ}\text{C}$. Therefore, ice cubes that come out of the freezer will be at a temperature below $0\text{ }^{\circ}\text{C}$.

When you add salt to the ice cubes the salt lowers the melting point of water. So ice will begin to melt at temperatures lower than $0\text{ }^{\circ}\text{C}$.

Ice has to absorb energy in order to melt. The ice absorbs this energy from the outside environment. This means that it absorbs the heat from the milk mixture, the air and your hands.

The melted liquid in your ice bag is still chilly, less than $0\text{ }^{\circ}\text{C}$, which is cold enough to draw down the temperature of your milk mixture to its freezing point. (This is why you need the oven gloves!)



Many home ice cream makers use salt and ice to make ice cream.