

Equipment

- 50mls milk
- Drop of vanilla essence
- 1 tbsp sugar
- Salt
- Crushed ice
- Small Ziploc bag
- Large Ziploc bag

Method

1. Pour 50mls milk into the small Ziploc bag
2. Add a drop of vanilla essence and 1 tablespoon of sugar
3. Seal the bag and mix together
4. Add some crushed ice to the large Ziploc bag and 3 tablespoons of salt
5. Insert the small Ziploc bag into the large Ziploc bag and seal
6. Rock the bags backwards and forwards for about 10 minutes, the milk should solidify
7. Open both bags and enjoy!

The Science

Water freezes to make ice at 0°C. But your freezer at home is around -18°C, so how are we making the ice cold enough to freeze your creamy mixture? The secret is in the salt.

Ice is in a constant state of melting and refreezing and melting and refreezing. When we add salt, the salt particles block the path of the melted ice, stopping it from freezing back on to the rest of the ice but ice can still melt. Therefore more ice is melting than freezing.

Now you may be thinking that surely if the ice is melting that means it is getting warmer? It's actually the opposite. For ice to melt it needs to break the bonds that are formed between the H₂O molecules. This breaking requires energy which it gets in the form of heat. When a molecule melts away a bond is broken, taking heat away from the surrounding, causing the temperature to drop.

This is also the reason that salt is put on icy roads – it stops water forming ice

