

Making Sorbet

The most delicious demonstration we have! This works well as an end-of-term treat or perhaps for an open day/sports day crowd-pleaser. Hopefully most of the class can enjoy this non-dairy treat, but please check for fruit and food allergies.



courtesy of Grey House School, Hampshire

Here's the science:

When the ice cream mixture is chilled water ice crystals start to form and this continues through the chilling process. When an ice crystal is formed it attracts surrounding moisture to it and therefore grows in size. The objective is to create lots of small ice crystals so that the resultant ice cream feels smooth and creamy in your mouth, rather than fewer larger water ice crystals that will feel gritty and sharp in the mouth. For this reason it is necessary to chill down the contents as quickly and evenly as possible. We do not want to risk anyone

putting dry ice in their mouths so it is important to wait at least one hour before consuming. The sorbet must therefore be stored in a freezer, however if you do this it will turn rock hard and be horrible. This is where gelatin comes in. The collagen in the gelatin softens the mixture allowing the sorbet to be spoon cut from the freezer.

Food grade dry ice for chilling down is a good choice as it is very cold and can be mixed into the bulk of the mixture. Dry ice works best with fruit flavoured

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Mrs Zoe Edwards of Wycombe Abbey School made ice-cream for a school event using pre-mixed Smoothies and dry ice:

“ it went brilliantly! We had run out of 40 litres of smoothie an hour into our 2 hour time slot - it was so successful that we had a queue forming 10 minutes before we opened the first carton! The dry ice was perfect. I am hoping to do the same activity next year ”

ices and sorbets, this is because any residual CO₂ absorbed into the smoothie from the dry ice causes a slight tartness on the tongue due to formation of carbonic acid with water which complements fruity flavours.

When using dry ice in food preparation, you need to take exactly the same precautions as you would with boiling water, naked flames, hot pans and baking trays straight out of the oven. Don't let it come into direct contact with your skin or you will get a burn.

Recipe For 'Fruit Smoothie' Sorbet

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Sufficient for a class of 30 students to each have a taste, scale up in proportion for larger quantities.

WHAT YOU'LL NEED:

- ✓ 750 ml smoothie
- ✓ 100g of sugar
- ✓ 250g of dry ice
- ✓ Food processor with blade fitting to break up dry ice pellets.
- ✓ Disposable spoons and bowls.
- ✓ 1 pack of unflavoured gelatin.



photo courtesy of Farnborough Hill School, Hampshire

Step 1

Wear blue gloves provided and eye protection. (In the photo the demonstrator (the author) is not wearing either, idiot.)

Step 2

Weigh out the dry ice pellets and place in the food processor. Blitz for about 10 seconds which will render the dry ice to powder (the consistency of icing sugar is ideal). Please examine this powder to satisfy yourself that there are no large lumps of dry ice remaining. If you do see residual pellets you will need to blitz again. If you do not want to blitz the 9mm dry ice pellets, please ask Chillistick about our rice grade dry ice, which is a much finer material.

Step 3

Pour smoothie mixture into a bowl and add the sugar mix thoroughly to ensure that the sugar has dissolved.

Step 4

Let the gelatin soften in 1/4 cup of the smoothie, then gently heat until it is dissolved at which point add to the balance of the smoothie. (If you do not add the gelatin you will end up with a rock hard ice the following day!)

Step 5

Add about half the dry ice to the smoothie, sugar and gelatin mix and mix either using a whisk, or if you prefer mix using the food processor.

You will see a column of white fog leaving the mixture and you should pick up the aroma of the smoothie.

Step 6

When the smoking has died down remove the bowl and add small amounts of additional powdered dry ice, continually stir with a wooden spoon or whisk. You will start to see that the smoothie is becoming a thick liquid and that the dry ice is causing it to

foam and bubble in the bowl. Add more dry ice bit by bit until you see that the smoothie mix has set like an ice cream.

Step 7

Put the sorbet in a freezer for one hour or longer to ensure that all the dry ice has sublimed before serving.

Class Note:

We find it easier and more fun to use a whisk to combine the dry ice to the smoothies mixture. If you prefer to use a food mixer a wide diameter food processor works fine, however an upright liquidiser design does not mix as well and when we tried with this machine the dry ice fog pumped liquid out of the top and over your humble narrator.

Some of the carbon dioxide evolved from the dry ice will absorb into the mixture and will provide a very small amount of fizz – be prepared for applause!