

## Crystallization

Many factors can influence crystallization in food. Controlling the crystallization process can affect whether a particular product is spreadable, gritty or smooth in mouth.

In some cases, crystal formation becomes essential whereas in some other cases it has to be avoided. It depends on the product.

Two categories of candy

\* Crystalline - Fudge & Fondant

\* Non-crystalline - lollipops, toffee & caramels

Processing of non-crystalline are specially designed to prevent the formation of sugar crystal.

\* One way to reduce crystallization of sucrose is to make sure other types of sugar such as fructose & glucose are present to slow down or inhibit the process.

Acids are also added to invert the sugar. Fats added to certain confectionery items have similar effect.

Factors promote crystallization:

\* Pots & utensils are not cleaned

\* Sugar with impurities

\* Hard water

\* Agitation.

Crystallization can be prevented by adding interferent such as acids or glucose or corn syrup.

As discussed earlier, even ice cream has fat & ice crystals that co-exist with other elements makes up the body of ice cream. Some of this will crystallize either partially or completely. The bottom line is that the nature of crystalline phase will determine the quality, appearance, texture, feel in mouth & stability.

Ice cream derived from small ice crystal which provide smooth texture & excellent melt-down & cooling properties. When ice crystal grow large it becomes coarse & less enjoyable. Similar concerns apply to sugar crystal in fondant, fudge & frostings & fat crystals in chocolate, butter & margarine.

Control of crystallization in fat is essential as it affects appearance, texture, spreadability & flavour release. The above mentioned parameters can be achieved only when there is appropriate number of crystals with some size & distribution of crystals in correct shape.

Factor in controlling:

- \* No & size of crystals
- \* Crystal distribution
- \* Proper polymorph (crystal shape)