

ICE-CREAM & FROZEN DESSERTS



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Module 9. Technology of dried ice cream mix and nutritive value of ice cream

Lesson 25

DRIED ICE CREAM MIX- COMPOSITION, TECHNOLOGY, USES

25.1 Introduction

Ice cream is a delicious, wholesome, frozen dairy product and is liked equally by the people of all age groups. Ice cream is obtained with the addition of milk, cream, sugar in certain proportions and freezing. During lean season, there is a acute shortage of milk and milk products. Significant advancements in drying techniques have overcome this difficulty by manufacturing ice cream mix powder during flush season and using it during lean season for the ice cream manufacture. The advantages claimed for dried ice cream mix are reduction in volume with a consequent saving in storage space, ease of packaging and handling, lesser perish ability, refrigerated storage space not necessary and lower transportation costs due to reduction in weight.

25.2 Composition of Dried Ice Cream Mix

The general composition of dried ice cream mix is shown in the Table 25.1.

Table 25.1 Composition of dried ice cream mix

Constituents (%)	Full sugar mix	20% sugar mix
Moisture	1.0 – 2.5	1.0 –2.50
Milk fat	25.0 – 29.0	39.7 – 45.20
SNF	25.0 – 30.0	39.7 – 46.80
Sugar	37.0 – 42.0	07.4 –8.40
Stabilizer/Emulsifier	0.5 – 1.2	0.8 –1.56

BIS specifications for dried ice cream mix (IS: 7839– 1975) is shown in Table 25.2.

Table 25.2 BIS specification for dried ice cream mix

Sr. No.	Constituents	Percentage (%)
1.	Moisture % by mass, maximum	4.0
2.	Milk fat % by mass, minimum	27.0
3.	Milk protein % by mass, minimum	9.5
4.	Sucrose % by mass, maximum	40.0
5.	Stabilizers and emulsifiers % by mass,Maximum	1.25

Dried ice cream mix has to be reconstituted in water in certain proportion (1:1.7) and is ready for freezing.

25.3 Manufacture of Dried Ice Cream Mix

There are two approaches to the preparation of base mix for drying

- a) Standardization of whole milk and cream to the required fat to SNF ratio, and

condensing in vacuum pan.

b) Preparation of standardized ice cream mix in a normal manner with the desired amount of sugar in it and using the usual sources for various ingredients of the mix. Standard conditions were used for the manufacture of ice cream mix and only 25% of the total sugar was added before spray drying. The basic principle of spray drying consists in atomizing the milk, to form a spray of very minute droplets which are directed into a large, suitably designed drying chamber, where they mix intimately with a current of hot air (inlet air temperature 190 to 195°C; outlet air temperature 85 to 87°C) owing to their large surface area. The milk particles surrender their moisture practically instantaneously and dry to fine hollow, spherical particles with some occluded air. This method has been successfully employed in the manufacture of ice cream mix powders.

Prompt cooling of the powder is necessary because it decreases the cooked flavour, which is a common defect in powders, and also because it decreases the rate of development of stale flavour.

Since dried ice cream mix is very rich in milk fat, hence it is very susceptible to oxidative rancidity on storage. In order to delay the appearance of this particular defect, it is essential to have low moisture content in dried mix and the product should be gas packed and stored at low temperature conditions. The flavour of dried ice cream mix is adversely affected by high moisture content, metallic contamination, high storage temperatures and long storage periods.

Dried ice cream with less than 3% moisture keeps well even at 30°C if it is double gas packed. Higher freeze warming temperature also prolongs the keeping quality and retards the oxidized flavour.

25.4 Uses of Dried Ice Cream Mix

The use of dried ice cream mix is gaining momentum and is of great utility to small scale ice cream manufacturers.

- It is convenient to use as a value added product.
- Soft serve ice cream manufacturers have a great utility of this product.

A good market in the households can be created for those who prepare their own ice cream using small domestic freezers

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