

ICE CREAM

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Characteristics of the ice cream

[Resolución 1804 de 1989](#)

	DE CREMA	DE LECHE CON GRASA VEGETAL	DE LECHE
Grasa total minima	8	8	3
Grasa láctea %m/m, mínimo	8	2	3
Sólidos lácteos no grasas %m/m, mínimo	11	11	8
Sólidos totales %m/m, mínimo	30	30	26
Peso por volumen gil, mínimo	475	475	475
Proteínas lácteas %m/m, mínimo	2.5	2.5	2.0
Índice de Reichart Meiseel en la grasa, mínimo	22	4.4	22
Fosfatasa	Negativa	Negativa	Negativa

Typical ice cream formulas

Type of ice cream	Fat % wt	MSNF % wt	Sugar % wt	E/S % wt	Water % wt	Overrun % vol
Dessert ice	15	10	15	0.3	59.7	110
Ice cream	10	11	14	0.4	64.6	100
Milk ice	4	12	13	0.6	70.4	85
Sherbet	2	4	22	0.4	71.6	50
Water ice	0	0	22	0.2	77.8	0

Fat:

Milk, cream, butter or vegetable fat

Water:

May include flavouring or colouring matter

MSNF:

Milk solids-non-fat (protein, salts, lactose)

Sugar:

Liquid or solid sucrose (10% of sugar may be glucose or non-sugar sweetener)

E/S:

Emulsifier and stabiliser, e.g. monoglycerides, gelatin, alginate

Overrun:

Amount of air in product

Other ingredients: Egg, fruit and chocolate pieces may be added during processing.

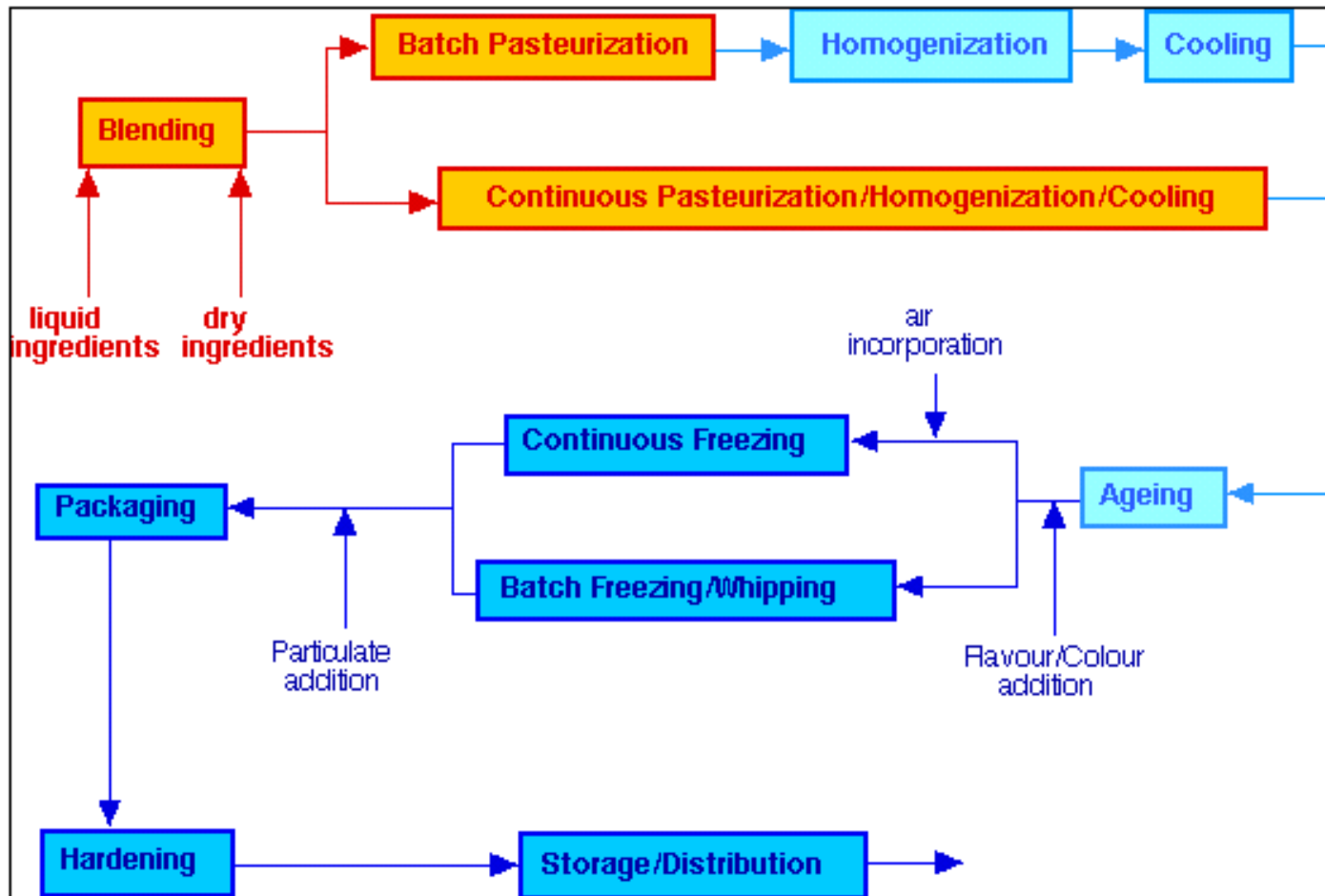
Ingredients

- greater than 10% milkfat by legal definition, and usually between 10% and as high as 16% fat in some premium ice creams
- 9 to 12% milk solids-not-fat: this component, also known as the serum solids, contains the proteins (caseins and whey proteins) and carbohydrates (lactose) found in milk
- 12 to 16% sweeteners: usually a combination of sucrose and glucose-based corn syrup sweeteners
- 0.2 to 0.5% stabilizers and emulsifiers
- 55% to 64% water which comes from the milk or other ingredients

Mix Calculations for Ice Cream

- Milkfat, supplied by Cream (which also supplies SNF and water) or Butter (which also supplies SNF, water);
- Milk solids-not-fat, supplied by any of the following:
 - Skim powder (which also supplies water, about 3%)
 - Condensed skim (which also supplies water)
 - Condensed milk (which also supplies water and fat)
 - Sweetened condensed (which also supplies water and sugar)
 - Whey powder (which also supplies water)
- Water, supplied by Skim milk (which also supplies msnf), or milk (which also supplies fat and msnf), or pure water.
- Sweetener, supplied by dry or liquid (which also then supplies water) sucrose or corn syrup solids.

Ice Cream Manufacture



Congelation

CARPIGIANI
LB-100B
Batch Freezer Counter Model



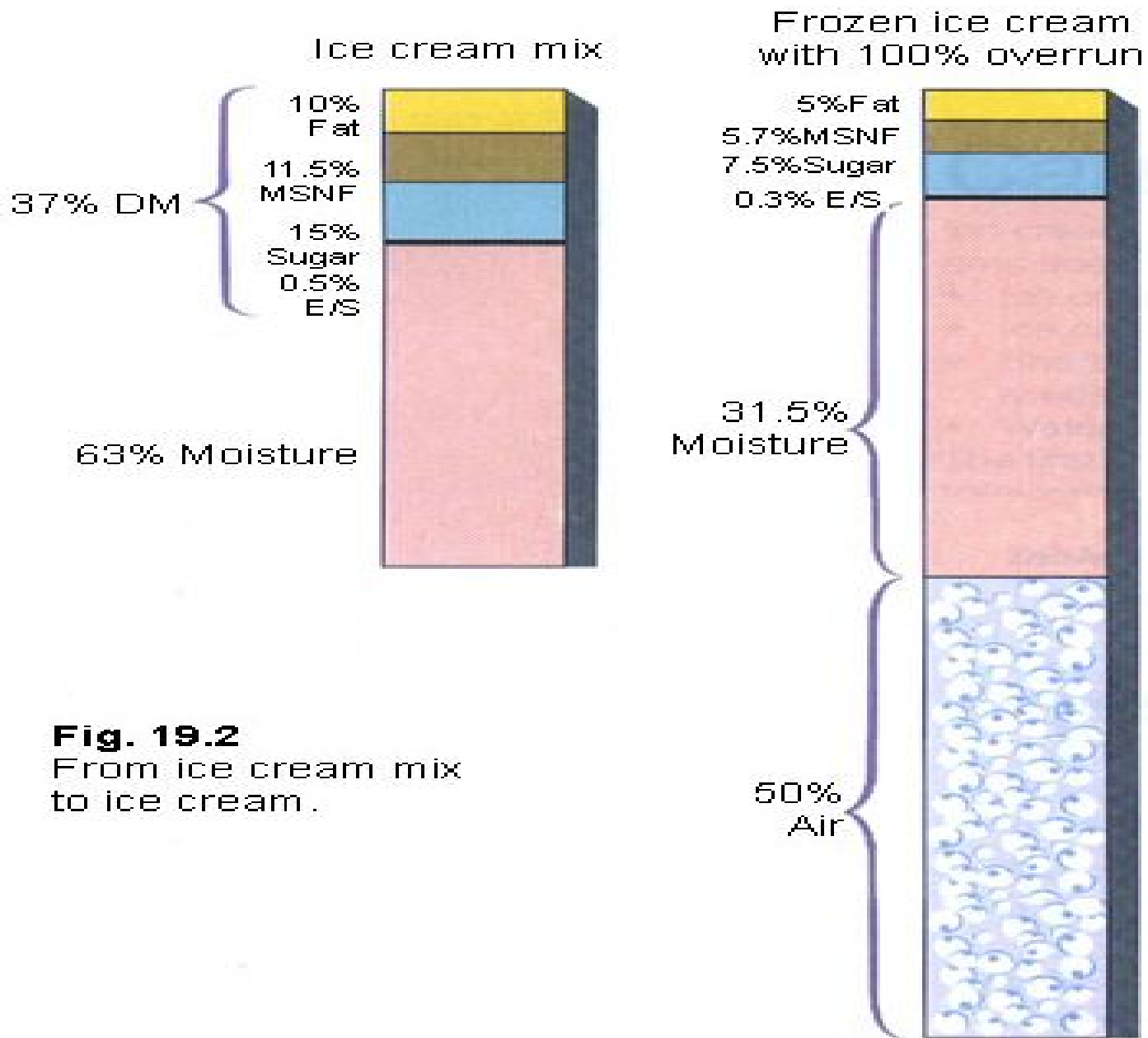
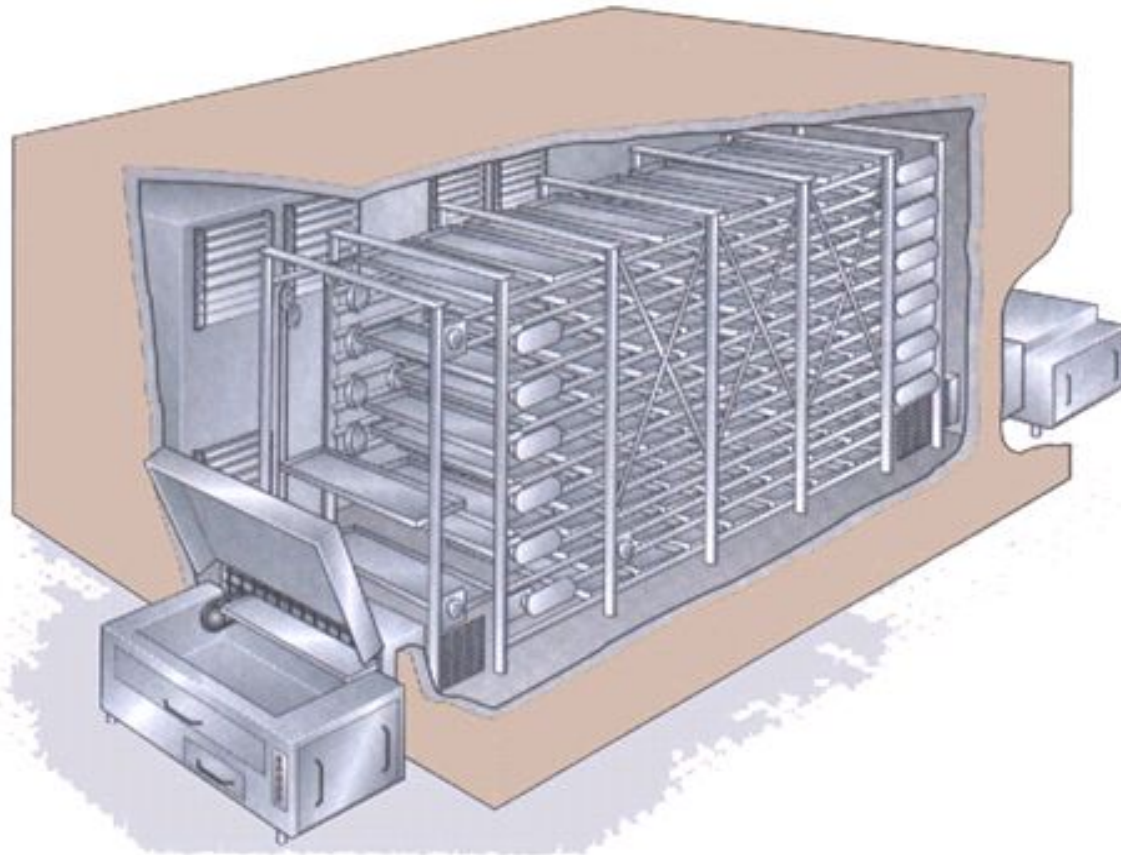


Fig. 19.2
From ice cream mix
to ice cream.

Hardening Tunnel



- A Raw material storage
- B Dissolving of ingredients and mixing
 - 1 Mixing unit
 - 2 Plate heat exchanger
 - 3 Mixing tanks (at least two for continuous processing)
- C Pasteurisation, homogenisation and fat standardisation of the mix
 - 4 Plate heat exchanger
 - 5 Homogeniser
 - 6 Tank for AMF or vegetable fat
- D Ice cream production plant
 - 7 Ageing tanks
 - 8 Continuous freezer
 - 9 Bar freezer
 - 10 Wrapping and stacking unit
 - 11 Cartoning unit
 - 12 Cup/cone filler
 - 13 Hardening tunnel
 - 14 Cartoning line
 - 15 Return conveyor for empty trays
 - 16 Tray tunnel extruder
 - 17 Chocolate enrobing unit
 - 18 Cooling tunnel
 - 19 Wrapping unit
 - 20 Cartoning unit
 - 21 Cold storage

Large Ice Cream Plant for Production of 1,000-10,000l/h of Various Types of Ice Cream

