PM Formalisation of

Micro Food Processing Enterprises Scheme

HANDBOOK OF

PREPARATION OF CUASTARD APPLE KULFI

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CHAPTER 1

INTRODUCTION

1.1 Origin and Distribution

- ✓ The custard apple is believed to be a native of the West Indies but it was carried in early times through Central America to southern Mexico. It has long been cultivated and naturalized as far south as Peru and Brazil. It is commonly grown in the Bahamas and occasionally in Bermuda and southern Florida.
- ✓ Apparently it was introduced into tropical Africa early in the 17th century and it is grown in South Africa as a dooryard fruit tree. In India the tree is cultivated, especially around Calcutta, and runs wild in many areas. It has become fairly common on the east coast of Malaya, and more or less throughout south east Asia and the Philippines though nowhere particularly esteemed. Eighty years ago it was reported as thoroughly naturalized in Guam. In Hawaii it is not well known.
- ✓ Custard Apples are a sub-tropical deciduous tree belonging to the *Annonaceae* family. This family contains over 2000 members spread throughout the world. Of this family, it is the *atemeoya*, a hybrid of the *Annona* genus, that Australia's commercial cultivars derive from.

- ✓ Custard Apple trees are large and spreading, shaded by large, green drooping leaves. The tree sets many light yellow trumpet shaped flowers that emit a pungent, sweet smell especially in the late afternoon when the male pollen sacks burst open. Of these flowers, only a small number will set fruit.
- ✓ The Fruit takes between 20 and 25 weeks to reach maturity in sub-tropical climates where the days are not too warm and the nights not too cool.

1.2 Importance & Uses

- ✓ Botanically it is a "Multiple-fruit" wherein the fruit is developed from merger of several individual flowers (Ovaries) into a larger fruit mass (infructescenes).
- ✓ There are two main varieties of Custard Apples, the Pinks Mammoth (or Hillary White) and the African Pride. Both are sweet, juicy and full of flavor. Pinks Mammoth are large super sweet fruit which some growers hand pollinate at flowering to improve fruit shape. These trees can produce fruit weighing as much as 3kg. African Prides are a medium sized, well shaped 500g to 800g fruit that sets well on the tree. Both fruit when mature have a fullness appearance with a smoothing out of the bumps. They also turn from dark green to a light green. Pinks Mammoth can also, when mature, show a yellowing between the fruit carpules.
- ✓ A custard apple is ripe when you gently squeeze it and it gives slightly under your hand. Much the same as an avocado. You can buy custard apples ready to eat, or still hard to the touch and let it ripen over the next few days after purchase.
- ✓ If you want to hasten the ripening process then simply put the fruit into a brown paper bag with a banana and leave it on the kitchen bench. The banana will accelerate the ripening of the custard apple.
- ✓ Custard Apples are only eaten when soft, and only the flesh is eaten. To eat, simply cut in half and scoop out the white flesh. The Custard Apple should be moist with a pleasant sweet aroma. Once ripe, custard apples can be stored in the fridge for up to 3 days. Once the skin has gone purple or black, they have passed their best eating quality.
- ✓ Try giving some mashed custard apple to toddlers or a custard apple smoothie to the kids. A fresh and healthy alternative they will want time and time again.

- ✓ In India, the fruit is eaten only by the lower classes, out-of-hand.
- ✓ In Central America, Mexico and the West Indies, the fruit is appreciated by all.

- ✓ When fully ripe it is soft to the touch and the stem and attached core can be easily pulled out. The flesh may be scooped from the skin and eaten as is or served with light cream and a sprinkling of sugar.
- ✓ Often it is pressed through a sieve and added to milk shakes, custards or ice cream.
- ✓ The leaves have been employed in tanning and they yield a blue or black dye. A fiber derived from the young twigs is superior to the bark fiber from *Annona squamosa*. Custard apple wood is yellow, rather soft, fibrous but durable, moderately close-grained, with a specific gravity of 0.650. It has been used to make yokes for oxen.
- ✓ The leaf decoction is given as a vermifuge. Crushed leaves or a paste of the flesh may be poulticed on boils, abscesses and ulcers.
- ✓ The unripe fruit is rich in tannin; is dried, pulverized and employed against diarrhea and dysentery.
- ✓ The bark is very astringent and the decoction is taken as a tonic and also as a remedy for diarrhea and dysentery.
- ✓ In severe cases, the leaves, bark and green fruits are all boiled together for 5 minutes in a liter of water to make an exceedingly potent decoction. Fragments of the root bark are packed around the gums to relieve toothache. The root decoction is taken as a febrifuge.
- ✓ Custard apple is a wonderful fruit having exceptional juiciness, vibrant flavour and immense health benefits. It contains considerable calcium, potassium, fibre, and vitamins. It is low in fat and cholesterol. Custard Apple is a digestive aid and a natural Anti-Inflammatory fruit. It has demonstrated significant anti-inflammatory effects, reducing swelling in inflammatory conditions such as acute sinusitis, arthritis and gout and speeding recovery from injuries and surgery.

1.3 Value Added Products from Custard apple

- The fresh fruits have limited shelf life; therefore, it is necessary to process fresh fruits in to different value added products to increase its availability over an extended period and to stabilize the price during the glut season.
- The processed products have good potential for internal as well as external trade. Seasonal losses in surplus fruits can be avoided by processing into different value added products that make them more attractive to the buyer and/or more readily usable to the consumer.
- The fresh fruits have limited shelf life; therefore, it is necessary to process fresh fruits in to different value added products to increase its availability over an extended period and to stabilize the price during the glut season.
- The processed products have good potential for internal as well as external trade. Seasonal losses in surplus custard apple fruits can be avoided by processing into different value added products that make them more attractive to the buyer and/or more readily usable to the consumer.
- Custard apple being rich in taste can be used for preparation of natural jam and jelly. Processed custard apple pulp is an excellent raw material for preparation of juice, RTS beverages, nectar, powder, candy and preserve. In view of changing consumer attitude, demand and emergence of new market, it has become imperative to develop products that have nutritional as well as health benefits.
- In this context, custard apple has excellent digestive and nutritive value, pleasant flavor, high palatability and availability in abundance at cheapest rates. Custard apple is a very popular fruit in India and it is available throughout the year except few months. The nutritive value of the fruit is very high and thus it is an ideal crop for processing and value addition.
- It is consumed in large quantities either fresh or in such prepared foods such as jam, juices, ice creams, milk shakes, Pulps, RTS, Nectars, Juice powder, toffee, and chocolates.
- In current days dried fruits or candied fruits are running fast in the market.
- More antioxidants present made it more suitable for diabetics also.

1.4 Scope of Custard apple Industry

- Standardization of technology to bring down cost of production of fresh custard apple and its adoption by growers, assured market for the produce and to produce Custard apple throughout the year may go a long way in promoting Custard apple industry in India.

Though Custard apple is an excellent material to be preserved in different forms; bulk of the Custard apple produced in the country is consumed in fresh form, the production used for processing being less than 10%.

The processing industry for Custard apple is not very well developed in India. Major constraints in processing are as follows :

1. High cost of canning due to high cost of fruit, sugar, containers and overheads.
2. Non-availability of fruits throughout the year.

CHAPTER 2

PREPARATION OF CUSTARD APPLE KULFI

2.1 Custard Apple Processing

Custard apple is one of the popular fruits and is liked by majority of the people irrespective of their age group. As is the case with most of the fruits and vegetables, their availability is limited during off-seasons. Many techniques have been developed to make available seasonal fruits as well as vegetables even during off-season. This fruit is highly perishable and seasonal. Hence processing is necessary. Processed custard apple is popular and is exported by many countries. During processing, nutritional quality of fruit can be affected but there are recent researches carried out which use new technologies to retain the nutritional quality of the fruit as it. This is to meet the consumer demand for healthy, nutritious and natural products. Some of the food industries based on custard apple are described below.

2.2 Current trends in Fruit processing

Some of the processing methods using the new technologies are as follows:

i. Vacuum frying - This is a technology where food products are deep fried under vacuum or near vacuum conditions to reduce the fat content compared to normal deep-frying. It is a process that produces healthy fruit snacks which partially preserve the fruit's original color and nutritional compounds and have a high hydrophilic antioxidant capacity.

ii. Radiation processing - Under radiation processing, the food is subjected to radiation by exposing it to a source of ionising radiation. This ionising radiation usually is in the form of gamma rays from a source of cobalt-60 or from a non-radioactive source like electron beam

generated from electricity. A dose of 2 kGy did not affect significantly the nutritional value as well as the sensory quality of minimally processed custard apple.

iii. Thermal processing – Thermal treatments are critical in controlling foodborne pathogens in ready-to-eat (RTE) food products. Food products are subjected to a combination of temperature (80°C to 150°C) and time (30 minutes to few seconds) required to eliminate desired number of microorganisms. It helps in the improvement of color, as a quality attribute of processed custard apple. This is made possible by the increase in knowledge of kinetics of color change.

iv. Ultrasound drying - This is a pre-treatment for drying of custard apple. Ultrasound pre-treatment consists in immersing fruit pieces in water or in an osmotic solution and to subject the fruit and solution to ultrasonic waves (at frequencies ranging from 18 to 40 kHz) for a period of time (usually less than 60 min). Ultrasound is showed to have higher influence on fruits with high water content, and high content of fibers and phenolic cells.

v. Osmotic evaporation – It is the partial removal of water from plant tissues by immersion in a hypertonic (osmotic) sugar or brine solution. Water is removed by evaporation at atmospheric pressure and temperatures near the ambient temperature. The Custard apple pulp is concentrated at moderate temperatures and pressures with good nutritional and sensory qualities. This process has minor changes in the concentrated juices which makes it more preferable.

vi. High pressure technology - This method is used in food processing where food borne micro-organisms and enzymes are inactivated at low temperature, without the need for chemical preservation. It is a cold pasteurization technique which consists of subjecting food, previously sealed in flexible and water-resistant packaging, to a high level of hydrostatic pressure (pressure transmitted by water) up to 600 MPa / 87,000 psi for a few seconds to a few minutes. This is done in fruit juice processing to preserve most of the nutritional qualities similar to a fresh product.

2.2.1 Fruit Processing

Fruits are highly perishable items which needs processing to make it durable. Fruit processing is any deliberate change in a fruit that occurs before it's available for us to eat. Processing methods extend the shelf life of fruits.

Fruit processing has three major aims:

1. To make fruit safe (microbiologically & chemically).
2. To provide good quality products with good flavor, color, texture and taste.
3. To make convenient fruits products

Fruits should be prepared for preservation as soon as possible after harvesting within 4 to 48 hours. As time passes spoilage increases rapidly. Fruit processing involves many steps.

Cleaning and washing

First, the fruits should be cleaned thoroughly to remove any adhering dirt or pesticide residues. This cleaning process usually involves washing the product with running water.

Sorting

To achieve a uniformly sized product, fruits and vegetables are sorted immediately after cleaning according to their size, shape, weight or color. Sorting by size is especially important if the products are to be dried or heated, because their size will determine how much time will be needed for these processes.

Cutting

Cutting is important in order to get uniform pieces for heating, drying and packing. Fruits are usually cut into cubes, thin slices, rings or shreds. The cutting utensils have to be sharp and clean to prevent micro-organisms from entering the food.

Blanching

Blanching is a slight heat treatment, using hot water or steam that is applied mostly to fruits before canning or freezing. It is done by immersing fruits in water at a temperature of 90-95°C. The result is that fruits become soft and the enzymes are inactivated. Blanching is done before a product is dried in order to prevent unwanted color and odour changes and an excessive loss of vitamins.

2.3 Fruit Preservation

Fruit preservation is the process of treating and handling food to stop or slow down fruit spoilage, loss of quality, edibility or nutritional value and thus allow for longer fruit storage.

Preservation usually involves preventing the growth of bacteria, fungi (such as yeasts), and other micro-organisms as well as retarding the oxidation of fats which causes rancidity. Fruit preservation can also include processes which inhibit visual deterioration, such as the enzymatic browning reaction in apples after they are cut, which can occur after fruit cutting.

Many processes designed to preserve food will involve a number of fruit preservation methods. Preserving fruit by turning it into jam, for example, involves boiling (to reduce the fruit's moisture content and to kill bacteria, yeasts, etc.), sugaring (to prevent their re-growth) and sealing within an airtight jar (to prevent recontamination).

Maintaining or creating nutritional value, texture and flavor is an important aspect of fruit preservation.

Preservation methods

Drying

Drying is one of the most ancient fruit preservation techniques, which reduces water activity sufficiently low to prevent bacterial growth. Drying is the partial removal of water from solid

foods. It is one of the oldest methods of food preservation. It was traditionally carried out in the presence of sun.

Refrigeration

Refrigeration preserves fruit by slowing down the growth and reproduction of micro- organisms and the action of enzymes. Refrigerators should be set to below 4°C to control the growth of micro-organisms. This lowered temperature also reduces the respiration rate of fruits and retard the spoilage.

Commercial and domestic refrigerators improved the shelf life of foods such as fresh fruits and salads to be stored safely for longer periods, particularly during warm weather.

Vacuum packing

Vacuum-packing stores food in a vacuum environment, usually in an air-tight bag or bottle. The vacuum environment strips bacteria of oxygen needed for survival, slowing spoiling. Vacuum-packing is commonly used for storing dried fruits to reduce loss of flavor during oxidation.

Freezing

Freezing is also one of the most commonly used processes commercially and domestically for preserving fruit including prepared fruit stuffs which would not have required freezing in their unprepared state. Lowering the temperature below the freezing point of the product stops microorganisms from growing and reduces the activity of enzymes. Fruits are heat treated (blanched) before freezing to eliminate enzymes. Home freezers are held at -10°C,commercial freezers are under -18°C. At this temperature, the growth of micro-organisms is almost stopped.

Pasteurization

Pasteurization is a process of heating a product at a specific temperature for a controlled period of time to destroy the most heat resistant vegetative pathogenic organism. The process is also applied for fruit juices and juice products.

Canning

Canning involves cooking food, sealing it in sterile cans or jars and boiling the containers to kill bacteria.

2.3.1 Importance of Sugar & Preservatives in Fruit Preservation

Sugar is used to preserve fruits, either in syrup with fruit such as apples, pears, peaches, apricots, plums or in crystallized form where the preserved material is cooked in sugar to the point of crystallization and the resultant product is then stored dry. This method is used for the skins of citrus fruit (candied peel) and ginger.

Preservative / food additives can be antimicrobial; which inhibit the growth of bacteria or fungi, including mold or antioxidant; such as oxygen absorbers, which inhibit the oxidation of fruit constituents. Common antimicrobial preservatives include calcium propionate, sodium nitrate, sodium nitrite; sulfites (sulfur dioxide, sodium bisulfate, potassium metabisulfite, etc) and antioxidants which include BHA (Butylated Hydroxy Anisole) and BHT (Butylated Hydroxy Toluene).

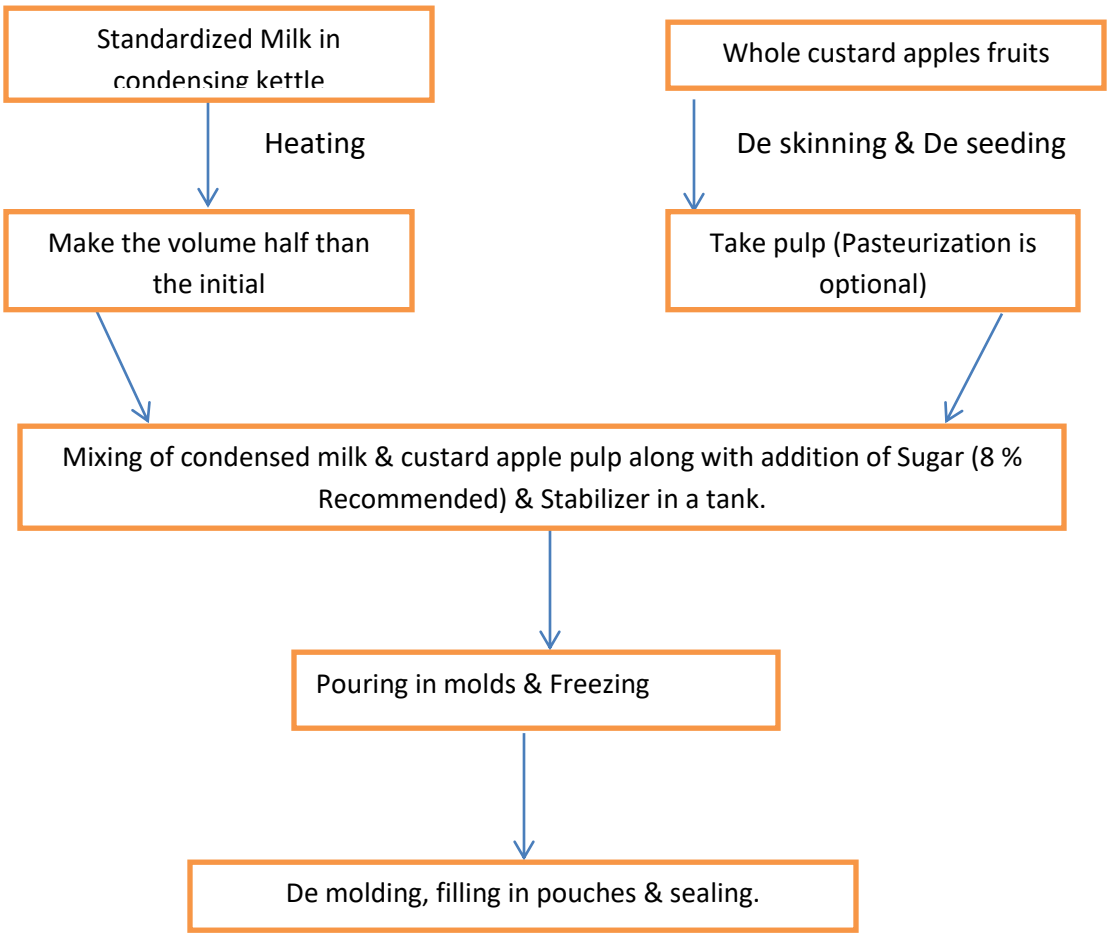
Storage

Always store the preserved food in a cool place, at a temperature below 20°C. Keep glass bottles and jars out of light. The storage area has to be dry and with a consistent temperature. Moisture will make tins rust.

2.4 Formulation of Custard apple Kulfi :- A typical Kulfi formulation.

Ingredients	% BY mass
Milk	77.80
Sugar	6.80
Custard Apple Pulp	15.00
Stabilizer	0.20

2.4.1 Flow chart for Custard apple Kulfi



Final packing & transfer in Cold Sotre (-18°)

2.4.3 Equipments involved

INLINE HOMOGENIZER

BULK MILK CHILLER

KULFI MOLDS

AGEING TANK

CHAPTER 3

PACKAGING OF CUSTARD APPLE KUFLI

3.1 The factors that lead to spoilage of KULFI:

Odor Absorption

Odor absorption by oils and fats can also be a problem. Odorous compounds are often very soluble in oils and fats and can be readily absorbed from materials such as paints, printing inks, petroleum oils and disinfectants. When the product is eaten, the odors are released in the mouth producing objectionable flavors.

3.2 Packaging material used for kulfi items.

Factors to consider include product damage, fines, stickiness, bag opening size, re-closure among other things.

Packaging:-

The Enclosure of products, items or packages in a wrapped pouch, bag, box, cup, tray, bottle or other container to perform the following function: Containment; Protection; and/or preservation; communication and Utility of performance.

The packaging requirements….

- Absolutely leak-proof and pervert contamination
- Protects the contents against chemical deterioration
- No pick up of external flavors
- Be hygienic and safe
- Economical, easy to use and dispose
- Process
- Maintain product composition & quality at full shelf-life.
- Pack size, printing options, display etc.
- Satisfy legislation requirement

- Free From pin holes from supplier side.

Packaging materials for Fruit Products…

Glass : Chemically inert & Will not affect the quality, odor or taste of the product. It is strong, rigid & 100 % recyclable.

PET (Polyethylene terephthalate) : lightweight, flexible & recyclable, it can be used for both still & carbonated products.

Metal Cans : Including aluminium & steel, are mainly used for carbonated drinks. They are 100% recyclable & lightweight.

Cartons : Major packaging format for still drinks & fruit juices. They protect the freshness, flavors and nutritional qualities of both fresh & long-life drink products, enabling distribution at ambient temperatures or under refrigerated conditions.

Tetra Packaging :

Tetra packaging material is a six-layers material as follows.

1. First later – which seals in the liquid
2. Second layer is adhesion layer of polyethylene
3. Third layer is aluminium foils, which acts as barrier for oxygen, flavor & Light.
4. Fourth layer is adhesion layer again of polyethylene same as second.
5. Fifth layer is of paper board for stability.
6. Top layer is again of polyethylene for protection against outside moisture.

Aseptic Packages… :

- Aseptic packages are made by combining thermoplastic with paperboard and aluminium foil.
- Aluminium foil layer is strong barrier for O2 and light.
- Inner plastic layer is made of polyethylene makes it possible to seal through the liquid.
- The outer paper layer provides the stiffness thus, enabling maximum utilization of available storage and transportation space. Excellent graphics are possible leading to good display and shelf appeal.

Packaging Materials used for KULFI

A variety of packaging materials are available, the ultimate choice of the packing depends upon the required shelf-life, performance on the filling machine and the cost which is purely based on the segment of the market targeted by the manufacturer. The most common choice of packaging medium is PET (Polyethylene Terphthalate) as it provides the required protection and preservation, grease resistance, physical strength, machinability and printability. Plastics being lighter in weight are, therefore, the most preferred material for packaging of Kulfi.

3.3 Future Trends

The candies market is one of the most competitive in the FMCG area. Major companies continuously battle to entice sweet-toothed consumers from competing brands. A strong brand The developing trends in candy packaging are:

- Widespread and increasing use of cold seal
- Use of laminated structures and cold seals for premium products
- Increasing use of opaque multi-packs for grocery outlets
- Switch over to higher yield opaque films for cost reduction
- Replacement of Al foil / paper wraps by OPP laminates
- Developments in low temperature heat seal packs

CHAPTER 4

FOOD SAFETY REGULATIONS AND STANDARDS OF CUSTARD APPLE KULFI

4.1 Food Standards

4.1.2 Processed fruits

Includes all forms of processing other than peeling, cutting and surface treating fresh fruits.

4.1.2.1 Custard apple kulfi

Includes all fruit pulp cooked with addition of sugar, water, suitable colors and preservatives.

FSSAI category:- it has been covered in category 1.7

This Standard applies to Ice Cream and Kulfi and their variants, in conformity with the definitions given in the regulation

Essential Composition and Quality Factors

Raw Material – Milk and milk products

Permitted ingredients

- sugar and other nutritive sweeteners (e.g. jaggery, dextrose, fructose, liquid glucose, dried liquid glucose, high maltose corn syrup, honey etc.)
- potable water
- starch, provided it is added only in amounts functionally necessary as governed by Good Manufacturing Practice, taking into account any use of the stabilizers or thickeners as specified in Appendix 'A' of these regulations.

- other non-dairy ingredients – fruit and fruit products, eggs and egg products, coffee, cocoa, chocolate, confectionary, condiments, spices, ginger and nuts; bakery products such as cake or cookies.

Labelling.-

Name of the Food

The name of the product shall be

- 'Ice Cream', 'Kulfi', 'Chocolate Ice Cream' or 'Softy Ice Cream'.
- 'Milk Ice' or 'Milk Lolly'.
- 'Dried Ice Cream Mix'.
- The type of ice cream, kulfi, chocolate ice cream or softy ice cream shall always be indicated on the label of the product.
- For softy ice cream offered for sale directly from the freezer without pre-packaging, the type of product shall be displayed in a manner and at a place that is clearly visible to the consumer.
- Every package of ice cream, kulfi, chocolate ice cream and softy ice cream containing starch shall have a declaration on its label as specified in sub- regulation 2.7.1 (2) of Food Safety and Standards (Packaging and Labelling) Regulations, 2011.

Standard for Frozen Desserts or Confections with Added Vegetable Oil/ Fat or Vegetable Protein, or both

This Standard applies to Frozen Desserts or Confections. The regulations have defined the terms to which these standards apply.

- Frozen Dessert or Frozen Confection
- Dried Frozen Dessert Mix or Dried Frozen Confection Mix

Essential Composition and Quality Factors

Raw Material

- Milk and/or milk products
- Vegetable oils or fats
- Vegetable protein products

Permitted ingredients

- sugar and other nutritive sweeteners (e.g. jaggery, dextrose, fructose, liquid glucose, dried liquid glucose, high maltose corn syrup, honey etc.)
- potable water
- starch, provided it is added only in amounts functionally necessary as governed by Good Manufacturing Practice, taking into account any use of the stabilizers or thickeners as specified in Appendix 'A' of these regulations
- other non-dairy ingredients – fruit and fruit products, eggs and egg products, coffee, cocoa, chocolate, confectionary, condiments, spices, ginger and nuts; bakery products such as cake or cookies.

Note

- In case where coating, base or layer of non-dairy ingredients forms a separate part of the product, only the Frozen Dessert or Frozen Confection portion shall conform to the respective composition.
- When any type of Frozen Dessert or Frozen Confection is offered for sale in contravention of the requirements as stated, the Standards prescribed for these types of Frozen Desserts or Frozen Confections as per this item shall apply.

Dried Frozen Dessert Mix or Dried Frozen Confection Mix

The product on addition of water shall give a product conforming to the composition, except the 'weight', as specified in the regulation. The moisture content of the dried product shall not be more than 4.0 % (m/m).

Labelling

Name of the foods shall be

'Frozen Dessert or Frozen Confection'.

'Dried Frozen Dessert or Dried Frozen Confection'

- The type of Frozen Dessert or Frozen Confection shall be indicated on the label of the product.
- For soft consistency products offered for sale directly from the freezer without any pre-packaging, the type of product shall be displayed in a manner and at a place that is clearly visible to the consumer.
- Every package of Frozen Desert or Frozen Confection shall bear the following label, namely:–"Contains ……. % Milk Fat* Edible Vegetable Oil* and Vegetable Fat* and Vegetable Protein Product" (*strike out whatever is not applicable)

4.2 Food Safety

Part I - General Hygienic and Sanitary practices to be followed by Petty Food Business Operators applying for Registration (See Regulation 2.1.1(2))

SANITARY AND HYGIENIC REQUIREMENTS FOR FOOD MANUFACTURER/ PROCESSOR/HANDLER

The place where food is manufactured, processed or handled shall comply with the following requirements:

1. The premises shall be located in a sanitary place and free from filthy surroundings and shall maintain overall hygienic environment. All new units shall set up away from environmentally polluted areas.

2. The premises to conduct food business for manufacturing should have adequate space for manufacturing and storage to maintain overall hygienic environment.

3. The premises shall be clean, adequately lighted and ventilated and sufficient free space for movement.

4. Floors, Ceilings and walls must be maintained in a sound condition. They should be smooth and easy to clean with no flaking paint or plaster.

5. The floor and skirted walls shall be washed as per requirement with an effective disinfectant the premises shall be kept free from all insects. No spraying shall be done during the conduct of business, but instead fly swats/ flaps should be used to kill spray flies getting into the premises. Windows, doors and other openings shall be fitted with net or screen, as appropriate to make the premise insect free The water used in the manufacturing shall be potable and if required chemical and bacteriological examination of the water shall be done at regular intervals at any recognized laboratory.

6. Continuous supply of potable water shall be ensured in the premises. In case of intermittent water supply, adequate storage arrangement for water used in food or washing shall be made.

7. Equipment and machinery when employed shall be of such design which will permit easy cleaning. Arrangements for cleaning of containers, tables, working parts of machinery, etc. shall be provided.

8. No vessel, container or other equipment, the use of which is likely to cause metallic contamination injurious to health shall be employed in the preparation, packing or storage of food. (Copper or brass vessels shall have proper lining).

9. All equipments shall be kept clean, washed, dried and stacked at the close of business to ensure freedom from growth of mould/ fungi and infestation.

10. All equipments shall be placed well away from the walls to allow proper inspection.

11. There should be efficient drainage system and there shall be adequate provisions for disposal of refuse.

12. The workers working in processing and preparation shall use clean aprons, hand gloves, and head wears.

13. Persons suffering from infectious diseases shall not be permitted to work. Any cuts or wounds shall remain covered at all time and the person should not be allowed to come in direct contact with food.

14. All food handlers shall keep their finger nails trimmed, clean and wash their hands with soap, or detergent and water before commencing work and every time after using toilet. Scratching of body parts, hair shall be avoided during food handling processes.

15. All food handlers should avoid wearing, false nails or other items or loose jewellery that might fall into food and also avoid touching their face or hair.

16. Eating, chewing, smoking, spitting and nose blowing shall be prohibited within the premises especially while handling food.

17. All articles that are stored or are intended for sale shall be fit for consumption and have proper cover to avoid contamination.

18. The vehicles used to transport foods must be maintained in good repair and kept clean.

19. Foods while in transport in packaged form or in containers shall maintain the required temperature.
20. Insecticides / disinfectants shall be kept and stored separately and `away from food manufacturing / storing/ handling areas.

4.3 Labelling Standards

Labeling requirements for packaged food products as laid down in the Part VII of the Prevention of Food Adulteration (PFA) Rules, 1955, and the Standards of Weights and Measures (Packaged Commodities) Rules of 1977, require that the labels contain the following information:

1. Name, trade name or description
2. Name of ingredients used in the product in descending order of their composition by weight or volume
3. Name and complete address of manufacturer/packer, importer, country of origin of the imported food (if the food article is manufactured outside India, but packed in India)
4. Nutritional Information
5. Information Relating to Food Additives, Colours and Flavours
6. Instructions for Use
7. Veg or Non-Veg Symbol
8. Net weight, number or volume of contents
9. Distinctive batch, lot or code number
10. Month and year of manufacture and packaging
11. Month and year by which the product is best consumed

12. Maximum retail price

4.3.1 Wherever applicable, the product label also must contain the following

The purpose of irradiation and license number in case of irradiated food. Extraneous addition of coloring material. Non-vegetarian food – any food which contains whole or part of any animal including birds, fresh water or marine animals, eggs or product of any animal origin as an ingredient, not including milk or milk products – must have a symbol of a brown color-filled circle inside a brown square outline prominently displayed on the package, contrasting against the background on the display label in close proximity to the name or brand name of the food. Vegetarian food must have a similar symbol of green color-filled circle inside a square with a green outline prominently displayed.

All declarations may be: Printed in English or Hindi on a label securely affixed to the package, or Made on an additional wrapper containing the imported package, or Printed on the package itself, or May be made on a card or tape affixed firmly to the package and bearing the required information prior to customs clearance.

Exporters should review the Chapter 2 of the “FSS (Packaging and Labeling) Regulation 2011” and the Compendium of Food Safety and Standards (Packaging and Labeling) Regulation before designing labels for products to be exported to India. FSSAI revised the labeling Regulation and a draft notification to that effect was published on April 11, 2018, inviting comments from WTO member countries and the comments received are under review and the publication date remains unknown.

According to the FSS Packaging and Labeling Regulation 2011, “prepackaged” or “pre packed food” including multi-piece packages, should carry mandatory information on the label.

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