



PM Formalisation of Micro Food Processing Enterprises Scheme

Processing of Chocolate Coated Pomegranate



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Background

The pomegranate (*Punica granatum*) is a fruit-bearing deciduous shrub in the family Lythraceae, subfamily Punicoideae, that grows between 5 and 10 m (16 and 33 ft) tall. The pomegranate originated in the region extending from Iran to northern India and has been cultivated since ancient times throughout the Mediterranean region. It was introduced into Spanish America in the late 16th century and into California by Spanish settlers in 1769.

The fruit is typically in season in the Northern Hemisphere from October to February, and in the Southern Hemisphere from March to May. As intact sarcotestas or juice, pomegranates are used in baking, cooking, juice blends, meal garnishes, smoothies, and alcoholic beverages, such as cocktails and wine.

Today, it is widely cultivated throughout the Middle East and Caucasus region, north and tropical Africa, the Indian subcontinent, Central Asia, the drier parts of Southeast Asia, and parts of the Mediterranean Basin. It is also cultivated in parts of Arizona and the San Joaquin Valley in California. In the 20th and 21st centuries, it has become more common in the shops and markets of Europe and the Western Hemisphere. The pomegranate has been grown since ancient times for its delicious fruits and as an ornamental garden plant for its red, orange or occasionally, creamy yellow flowers. It is also known as the Chinese apple or Apple of Carthage or Apple with many seeds. Pomegranate is known as a super fruit of next generation and is a native of Iran to Himalayan region and is extensively grown in Iran, Spain, India and USA as well as in most Near and Far East countries.

In India, pomegranate is considered as a crop of the arid and semi-arid regions because it withstands different soil and climate stresses. It thrives best under hot dry summer and cold winter provided irrigation facilities are available. Owing to its low maintenance cost, tolerant to biotic and abiotic stresses, high yielding potential, better keeping quality and higher nutraceutical fruit value, popularity of pomegranate is increasing among the growers and consumers worldwide. It is found growing wild in the hills of Himalayas covering the entire hilly tract of Jammu and Kashmir, Himachal

Pradesh and parts of Uttar Pradesh. The main pomegranate growing states in India are Maharashtra, Karnataka, Gujarat, Rajasthan, Uttar Pradesh, Andhra Pradesh and Tamil Nadu. India ranks first in the pomegranate production (8.07 lakh tones) in the world, on an area of 1.09 lakh hectares with productivity of 7.40 t/ha. Maharashtra, a pomegranate basket of India, covers 0.82 lakh ha area (75%) with the production of 5.50 lakh tones (68% of the total pomegranate production in the country). More than 90 percent of the fresh produce is utilized for domestic fresh consumption and export. Spain (45%) and Iran (15%) competes the India in International market.

Cultivation

P. granatum is grown for its fruit crop, and as ornamental trees and shrubs in parks and gardens. Mature specimens can develop sculptural twisted-bark multiple trunks and a distinctive overall form. Pomegranates are drought-tolerant, and can be grown in dry areas with either a Mediterranean winter rainfall climate or in summer rainfall climates. In wetter areas, they can be prone to root decay from fungal diseases. They can be tolerant of moderate frost, down to about -12°C (10°F).

Insect pests of the pomegranate can include the pomegranate butterfly *Virachola isocrates* and the leaf-footed bug *Leptoglossus zonatus*, and fruit flies and ants are attracted to unharvested ripe fruit.[18] Pomegranate grows easily from seed, but is commonly propagated from 25 to 50 cm (10 to 20 in) hardwood cuttings to avoid the genetic variation of seedlings. Air layering is also an option for propagation, but grafting fails.

After the pomegranate is opened by scoring it with a knife and breaking it open, the seeds are separated from the peel and from the internal pulp membranes. Separating the seeds is easier in a bowl of water because the seeds sink and the inedible pulp floats. Freezing the entire fruit also makes it easier to separate. Another effective way of quickly harvesting the seeds is to cut the pomegranate in half, score each half of the exterior rind four to six times, hold the pomegranate half over a bowl, and smack the rind with a large spoon. The seeds should eject from the pomegranate directly into the bowl, leaving only a dozen or more deeply embedded seeds to remove.

Pomegranate juice can be sweet or sour, but most fruits are moderate in taste, with sour notes from the acidic ellagitannins contained in the juice. Pomegranate juice has long been a popular drink in Europe and the Middle East, and is now widely distributed in the United States and Canada.

Pomegranate seeds are used as a spice known as anar dana (from Persian: anar + dana, pomegranate + seed), most notably in Indian and Pakistani cuisine. Dried whole seeds can often be obtained in ethnic Indian markets. These seeds are separated from the flesh, dried for 10–15 days, and used as an acidic agent for chutney and curry preparation. Ground anardana is also used, which results in a deeper flavoring in dishes and prevents the seeds from getting stuck in teeth.

Dried seeds can be used in several culinary applications, such as trail mix, granola bars, or as a topping for salad, yogurt, or ice cream.

In Turkey, pomegranate sauce (Turkish: nar ekşisi) is used as a salad dressing, to marinate meat, or simply to drink straight. Pomegranate seeds are also used in salads and sometimes as garnish for desserts such as güllaç. Pomegranate syrup or molasses is used in muhammara, a roasted red pepper, walnut, and garlic spread popular in Syria and Turkey.

Nutrition

Pomegranates

Nutritional value per 100 g (3.5 oz)

Energy	346 kJ (83 kcal)
Carbohydrates	18.7 g
Sugars	13.67 g
Dietary fiber	4 g
Fat	1.17 g
Protein	1.67 g
<u>Vitamins</u>	<u>Quantity %DV†</u>
Thiamine (B1)	6%0.067 mg
Riboflavin (B2)	4%0.053 mg

Pantothenic acid(B5)	8%0.377 mg
Vitamin B6	6%0.075 mg
Folate (B9)	10%38 µg
Choline	2%7.6 mg
Vitamin C	12%10.2 mg
Vitamin E	4%0.6 mg
Vitamin K	16%16.4 µg
<u>Minerals</u>	<u>Quantity %DV†</u>
Calcium	1%10 mg
Iron	2%0.3 mg
Magnesium	3%12 mg
Manganese	6%0.119 mg
Phosphorus	5%36 mg
Potassium	5%236 mg
Sodium	0%3 mg
Zinc	4%0.35 mg

Units

µg = micrograms • mg = milligrams. IU = International units

†Percentages are roughly approximated using US recommendations for adults.

Source: USDA Nutrient Database

A 100 g (3.5 oz) serving of pomegranate provides 12% of the Daily Value (DV) for vitamin C, 16% DV for vitamin K, and 10% DV for folate.

Pomegranate seeds are a rich source of dietary fiber (20% DV) which is entirely contained in the edible seeds.

Phytochemicals

The most abundant phytochemicals in pomegranate juice are polyphenols, including the hydrolyzable tannins called ellagitannins formed when ellagic acid and gallic acid bind with a carbohydrate to form pomegranate ellagitannins, also known as punicalagins. The red color of the juice is attributed to anthocyanins, such as delphinidin, cyanidin, and pelargonidin glycosides. Generally, an increase in juice pigmentation occurs during fruit ripening. The phenolic content of pomegranate juice is degraded by processing and pasteurization techniques.

Pomegranate peel contains high amounts of polyphenols, condensed tannins, catechins, and prodelphinidins. The higher phenolic content of the peel yields extracts for use in dietary supplements and food preservatives.

Pomegranate seed oil contains punicic acid (65%), palmitic acid (5%), stearic acid (2%), oleic acid (6%), and linoleic acid (7%).

Major health benefits are listed below.

1. Protects us from free radicals
2. It thins your blood
3. Prevention of atherosclerosis
4. It acts like an oxygen mask
5. It prevents arthritis
6. Fights erectile dysfunction
7. Fights heart disease and prostate cancer
8. Pomegranate is loaded with beneficial nutrients
9. It improves memory
10. It lowers blood pressure
11. Helps in digestion
12. Lowers stress levels
13. Prevent plaque formation
14. Strengthen bones and athletic performance
15. A natural fertility booster

Value Added Pomegranate Products

The research on the development of the new pomegranate derived products such as minimally processed pomegranate seeds, jams, marmalades, single strength juices, jellies, juice concentrates, frozen seeds, refrigerated seeds, seeds in syrup, candied arils, arils in brandy and in vinegar, carbonated beverages, pomegranate wine, pomegranate syrup etc. has been carried out.

The processed products such as anardana, juice, concentrate; syrup and jelly were highly acceptable because of their nutritive and dessert qualities and palatability. The modified atmosphere packaging offered an additional innovative tool for the optimal use and value addition of lower grade pomegranate fruits. The minimally processed pomegranate arils and frozen arils packed in punnets and pomegranate juice are the most appealing products to consumers than whole fruit. Pomegranate juice can be used in beverages, for jellies, for preparation of pomegranate juice concentrate, as flavouring and colouring agents and for dietetic and prophylactic treatment purposes. This new sector of pomegranate industrial processing will allow the use of non commercial pomegranate fruits with some physical defects and fruit disorders, having the good quality juice and seeds, to the preparation of these new products, thus improving pomegranate utilization for human health.

Health benefits of Dark Chocolate

- **Nutrition**

It contains a decent amount of soluble fiber and is loaded with minerals.

A 100-gram bar of dark chocolate with 70–85% cocoa contains (1):

- 11 grams of fiber
- 67% of the RDI for iron
- 58% of the RDI for magnesium
- 89% of the RDI for copper
- 98% of the RDI for manganese

It also has plenty of potassium, phosphorus, zinc and selenium

- **Powerful Source of Antioxidants**
- **May Improve Blood Flow and Lower Blood Pressure**
- **Raises HDL and Protects LDL From Oxidation**
- **May Reduce Heart Disease Risk**
- **May Protect Your Skin from the Sun**
- **Could Improve Brain Function**

Pomegranate Processing

Ongoing global drive for a healthier diet has led to a rise in demand for convenient and fresh food produce, with high nutritional value and free of additives. Pomegranate indicates the great scope for the processing into value added products having extended shelf life. The fruit disorders such as sun burnt husks, splits and cracks and husk scald on whole fruit reduces marketability and consumer acceptance. The new sector of pomegranate processing allows the use of the fruits with low quality fruits that cannot be commercialized, for the preparation of the new products. Despite of great potential for pomegranate derived products, the industrial processing of pomegranate is scarce due to peeling difficulties and lack of technological development for industrial processing of pomegranate.

The activity of research and development on pomegranate has aimed at the application of new refrigerated technologies to extend the commercial shelf life of pomegranate to cash the market for export of fresh pomegranates keeping its original quality and at the search of new pomegranate derived products. The pomegranate can be processed into products like minimally processed fresh arils, juice, squash, beverage, molasses, juice concentrates, frozen seeds, jam, jelly, marmalades, grenadine, wine, seeds in syrup, pomegranate spirits, pomegranate powder, pomegranate rind powder, anardana, confectionery, pomegranate seed oil etc.

It is referred as the 'Super fruit' due its high nutritional value, high antioxidant capacity and consumer appeal. But in spite of high nutraceutical value, the consumption of pomegranate is not wide spread due to tedious and time-consuming peeling and irritations and staining of hands during handling of fruits. The pomegranate processing

and product diversification has played important role in the increased consumption and utilization of pomegranate. Last few years, the research and development activities on pomegranate fruit have aimed to develop technologies for new pomegranate derived food products.

The keen and immediate attention is required in meeting the research and developmental gaps for the commercialization and popularization of pomegranate processing technology and pomegranate products. The major aspects which requires

immediate attention in pomegranate processing includes industrial method of peeling, standardization of extraction and proper clarification methods of pomegranate juice, development of standards for packaging and storage of pomegranate derived products, application of the new inline technologies such as MAP, ultra filtration for pomegranate utilization and popularization of pomegranate based products. Hence, for the commercialization and utilization of pomegranate processing technology and pomegranate products, experimental studies should be carried out with more informative output on the metabolic properties of pomegranate and derived products under various conditions in order to develop the scientific database and to enable the successful application of the available technology.

Preservation Techniques

The pomegranate is classified as a non-climacteric fruit. In spite of the non-climacteric nature of the fruit, quantitative and qualitative loss still occur due to postharvest handling processes, resulting in chilling injuries, husk scalding, weight loss and decay of pomegranate.

Physical treatments

The new physical treatment applications have been reported to prolong the shelf life of the fresh pomegranates. These treatments modifies the environmental conditions of pomegranate storage, effecting the fruit physiology and biochemistry and inhibiting the development of micro-organisms contaminating the fruit surface, keeping the original physico-chemical quality of the fruit.

Refrigeration

Kader, et al. and Artes recommended a fast pre-refrigeration using forced air as one of the simplest ways to extend the commercial life of pomegranate up to 2-3 months by keeping storage temperature around 5°C.

MAP

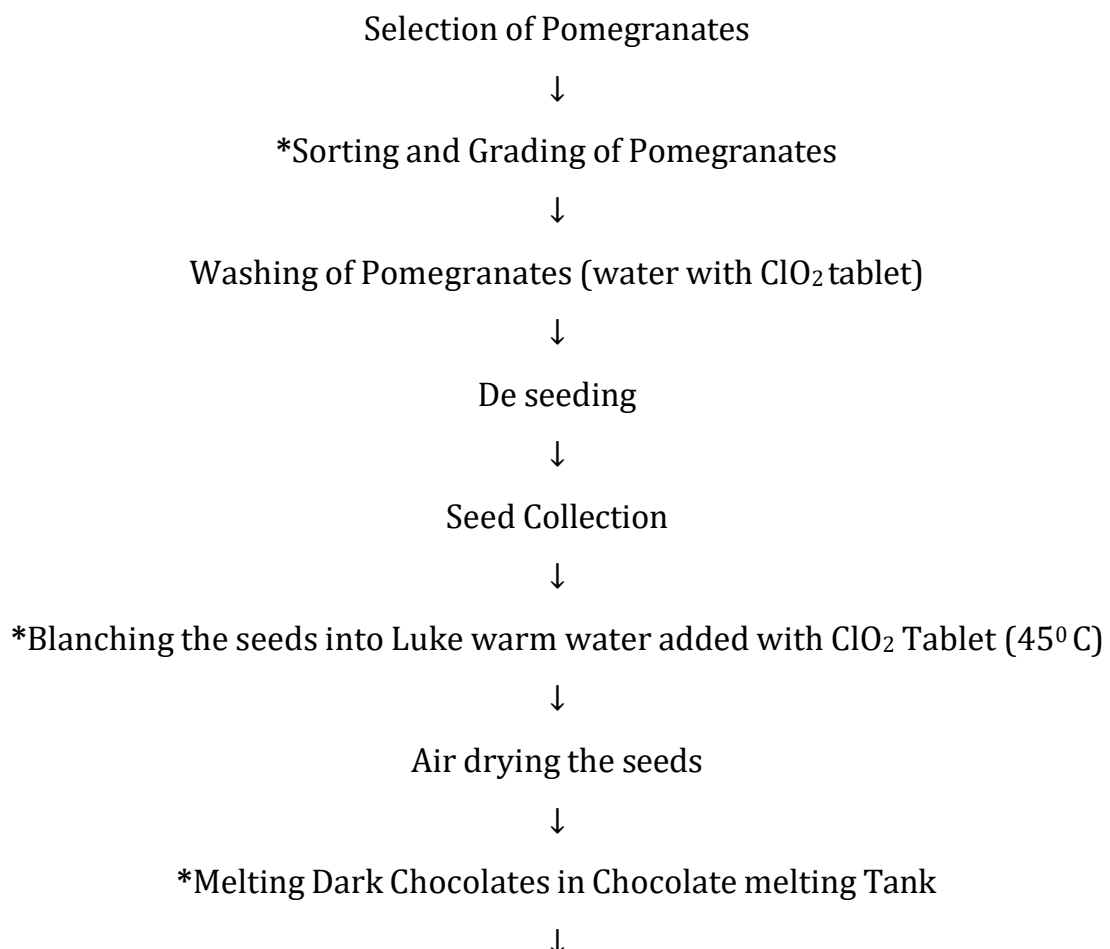
Artes and Tomas Barberan reported the applications of controlled and modified atmospheres (CO₂ enriched and/or reduced O₂), use of the thermal treatments for fruit conditioning and curing and intermittent warming during the cold storage to avoid fungal developments and physiological disorders that develops below 5°C. Active MAP involves a quick process of gas flushing or gas replacement or the use of gas-scavenging agents to establish a desired gas mixture within the package. Studies have shown that modified atmosphere packaging (MAP) and controlled atmosphere storage (CAS) have the ability to delay quality losses and thus extends the shelf life of fresh or minimally processed or fresh-cut produce. Modified atmosphere packaging can result in reduction in the respiratory activity by decreasing O₂ concentration, delay in softening and ripening and a reduced incidence of the various physiological disorders and pathogenic infestations. MAP sensing and Monitoring: 'Smart' or 'active' or 'intelligent' packaging system is introduced to improve the safety of MAP products and to extend the technology to a broader spectrum of products. Summers defined the Smart packaging as an interaction between the packing system and the product itself which confers intelligence appropriate to function and use of the product with the ability to sense or to be sensed and to communicate. Nano biosensors can serve as the best smart packaging tool for MAP sensing and monitoring. Artes, et al. recommended a controlled atmosphere of 5% O₂ + 0% to 5% CO₂ composition for the storage of Mollar pomegranate at 5° C with RH 95% to minimize decay weight loss and chilling injuries. In contrast, Kader recommended a gas composition of 3% to 5% O₂ + 5% to 10% CO₂ for storage of pomegranate at 5° C. Studied also reported the chilling injuries to pomegranates when stored at temperatures lower than 5° C.

Maintaining the nutritional and microbial quality of pomegranate arils is a major challenge as the minimally processed arils easily deteriorate in texture, colour, overall quality and a reduction in shelf life. Minimal processing of pomegranate mainly consists

of washing with the sanitizing agents to reduce the initial microbial load, pH modifications, use of antioxidants, modified atmosphere packaging and temperature control. (Sepulveda, et al.) The best results with the cultivar 'Mollar de Eche' were obtained washing the arils with the chlorine solution, followed by a mixture of ascorbic and citric acids and storing the seeds at 1°C in polypropylene films that allowed the formation of a modified atmosphere appropriate for the conservation of these arils. The preparation of the arils under very clean conditions and at temperatures close to 0°C prolonged the life of this product and maintained its quality. Storage at the higher temperatures (4-8°C) produced the product with lower quality and a shorter commercial life. The novel technologies such as smart packaging offers potential of increase in the shelf life of pomegranate arils by ensuring the microbial safety and monitoring the storage temperature.

Preparation of Chocolate Coated Pomegranate

The typical Procedure for manufacturing of Chocolate coated Pomegranate is as below:



Passing of Pomegranate seeds through Melted Chocolate



Passing through mesh conveyor



*Freezing (Till Complete solidification)



Packing into Pouch (weight basis) and Storage* (0°C to 4°C) till dispatch

Note: * indicates Critical Control Points.

Equipment Employed

Sorting Conveyor



Bubble Washer



De Seeded



Band Sealer for Packing



Chocolate Coating Machine

Chocolate melting Tank

Packaging of Chocolate Coated Pomegranate

When taken by mouth: Pomegranate extract is POSSIBLY SAFE when taken by mouth or applied to the skin. Some people have experienced sensitivity to pomegranate extract. Symptoms of sensitivity include itching, swelling, runny nose, and difficulty breathing.

The root, stem, or peel of pomegranate is POSSIBLY UNSAFE when taken by mouth in large amounts. **The root, stem, and peel contain poisons.**

Low blood pressure: Drinking pomegranate juice can slightly lower blood pressure.

Drinking pomegranate juice might increase the risk of blood pressure dropping too low in people who already have low blood pressure.

Allergies to plants: People with plant allergies seem to be more likely to have an allergic reaction to pomegranate.

Surgery: Pomegranate might affect blood pressure. This might interfere with blood pressure control during and after surgery. Stop taking pomegranate at least 2 weeks before a scheduled surgery.

Common spoilage issues being faced while handling this product are mentioned below.

1. Fungal Growth
2. Other microbial (Pathogen) related issues.
3. Maintaining Storage Temperature of the product

Solutions to overcome the aforesaid issues.

1. A). Suitable preservative addition in prescribed limit will retard the fungal growth.
B). Chocolate quality is also an important factor to be taken care of. As thin chocolate syrup will lead to increase in water activity and thus fungal growth will be there, and much more thickness will create the difficulty while coating.
C). Rotten and Overripe fruit removal is essential for microbes elimination and for good taste and Flavor profile.
2. A). Cleaning with suitable disinfectant (ClO_2) with suitable concentration (10-100 ppm) will almost eliminate all the microbes present, and chlorine itself will be evaporated in gaseous form after killing the bacteria, and traces will not be there at the end.
B). A treatment with ionizing radiation at doses up to 1 KGy is sufficient for fruits and vegetables. It is generally applied to inhibit post-harvest pathogens and to protect product quality. Irradiation may be effective for eliminating pathogenic microorganisms from surfaces of product. An irradiation of 1 KGy has been reported effective for the destruction of listeria monocytogens.

Proper Plant hygiene, machinery and personal hygiene is the most important to achieve the desired quality till full shelf life.

Packaging Material Employed for Such Products

Glass:

Chemically inert and will not affect the quality, odour or taste of the product. It is Strong, rigid and 100% recyclable.

PET (Poly Ethylene terephthalate)

Light weight, flexible and recyclable.

It is considered to be the backbone of packaging films. Since one of the greatest threats to the integrity of coated products comes from moisture, polyethylene with its low water vapour transmission is of definite interest. Polyethylene films are fairly free of plasticizers and other additives and are quite extensively used as a part of lamination. Its ability to heat seal increases its value.

Low Density Polyethylene (LDPE) is an economical material with low WVTR, however, it has high permeabilities to flavours/volatiles, poor grease resistance and are limp. High-density polyethylene (HDPE) is stiffer, more translucent and has better barrier properties but needs higher temperature for sealing.

Later additions include high molecular weight high-density polyethylene (HM HDPE) and linear low-density polyethylene (LLDPE). HM HDPE is a paper like film with high physical strength and barrier properties, but is less transparent than ordinary polyethylenes. HM HDPE is available in twist-wrap grades. Polyethylene films are also suitable for making bags and pouches. A copolymer of polyethylene and poly vinyl alcohol, and EVOH has outstanding gas barrier properties specially when dry.

Polypropylene

Polypropylene films are undergoing a growth trend in the food industry. They have better clarity than polyethylenes and enjoy superior machineability due to stiffness. Lack of good sealability has been a problem, however, PVDC and vinyl coating have been used to overcome this problem. Some varieties of PP have been specially developed for twist-wrap applications as they have the ability to lock in position after twisting. Pearllised polypropylene with an opal finish and attractive gloss is also used. Both as laminates and overwraps, PP film is now widely used for all types of coated foods packaging applications.

Trays can be ordered in bulk in multiple sizes, or they can be custom molded to your products. These are the plastic trays you find inside deluxe two-piece boxes or gift boxes that hold products in place.

Mainly aluminium and steel metal cans are also used for such premium products. The Pomegranates packed in Primary and Secondary packages are finally packed into cartons.

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Aseptic Packages

- Aseptic packages are made by combining thermoplastic with paperboard and aluminum foil.
- Aluminum 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.

Food Safety regulations and Standards for Chocolate Coated Pomegranate.

2.7.4: Chocolate

Chocolate means a homogeneous product obtained by an adequate process of manufacture from a mixture of one or more of the ingredients, namely, cocoa beans, cocoa nib, cocoa mass, cocoa press cake and cocoa dust (cocoa fines/powder), including fat reduced cocoa powder with or without addition of sugars, cocoa butter, milk solids including milk fat. The chocolates shall not contain any vegetable fat other than cocoa butter.

The material shall be free from rancidity or off odour, insect and fungus infestation, filth, adulterants and any harmful or injurious matter.

Filled Chocolates means a product having an external coating of chocolate with a center clearly distinct through its composition from the external coating, but does not include flour confectionery pastry and biscuit products. The coating shall be of chocolate that meets the requirements of one or more of the chocolate types mentioned above. The amount of chocolate component of the coating shall not be less than 25 per cent of the total mass of the finished product.

Composite Chocolate-means a product containing at least 60 per cent of chocolate by weight and edible wholesome substances such as fruits, nuts. It shall contain one or more edible wholesome substances which shall not be less than 10 per cent of the total mass of finished product.

Provided further that in addition to the ingredients mentioned above, the chocolate may contain one or more of the substances as outlined below, under different types of chocolates.

- (a) edible salts
- (b) spices and condiments
- (c) permitted emulsifying and stabilizing agents
- (d) permitted sequestering and buffering agents.

Chocolates shall also conform to the following standards namely: —

Sl. No.	Characteristics	Requirements for				
		Milk Chocolate	Milk Covering Chocolate	Plain Chocolate	Plain Covering Chocolate	White Chocolate
1.	Total fat (on dry basis) per cent by weight. Not less than	25	25	25	25	25
2.	Milk fat (on dry basis) Percent by weight. Not less than	2	2	-	-	2
3.	Cocoa solids (on Moisture-free and fat free basis) percent by weight Not less than	2.5	2.5	12	12	-
4.	Milk Solids (on Moisture-free and fat-free basis) percent by weight.					
	a) Not less than	10.5	10.5	-	-	10.5
	b) Not more than	-	-	-	-	-
5.	Acid insoluble ash (on moisture fat and sugar free basis) percent by weight. Not more than	0.2	0.2	0.2	0.2	0.2

Table 2

List of Food Additives for use in Foods

S. No	Additives	Plain Chocolate
1.	Artificial sweeteners • Aspartame • Acesulphame K • Saccharin Sodium	200ppm Max 500ppm Max 500ppm Max
2.	Polyols (singly or in combination) • Sorbitol • Manitol • Xylitol • Isomalt • Lactitol • Maltitol	GMP

SANITARY AND HYGIENIC REQUIREMENTS FOR FOOD MANUFACTURER/ PROCESSOR/HANDLER

- The place where food is manufactured, processed or handled shall comply with the following requirements:
 - 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.
 - The premises to conduct food business for manufacturing should have adequate space for manufacturing and storage to maintain overall hygienic environment.
 - The premises shall be clean, adequately lighted and ventilated and sufficient free space for movement.
 - 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.
 - 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.
 - 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.
 - 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.
 - 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)

- All equipment's shall be kept clean, washed, dried and stacked at the close of business to ensure freedom from growth of mould/ fungi and infestation.
- All equipment's shall be placed well away from the walls to allow proper inspection.
- There should be efficient drainage system and there shall be adequate provisions for disposal of refuse.
- The workers working in processing and preparation shall use clean aprons, hand gloves, and head wears.
- 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.
- 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.
- All food handlers should avoid wearing, false nails or other items or loose jewelry that might fall into food and also avoid touching their face or hair.
- Eating, chewing, smoking, spitting and nose blowing shall be prohibited within the premises especially while handling food.
- All articles that are stored or are intended for sale shall be fit for consumption and have proper cover to avoid contamination.
- The vehicles used to transport foods must be maintained in good repair and kept clean.
- Foods while in transport in packaged form or in containers shall maintain the required temperature.
- Insecticides / disinfectants shall be kept and stored separately and away from food manufacturing / storing/ handling areas.

Labelling Standards

Labelling 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

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 colouring 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 colour-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 colour-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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