

PM Formalisation of Micro Food Processing Enterprises Scheme

HANDBOOK OF PROCESSING OF GUAVA PULP



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CHAPTER 1

INTRODUCTION

1.1 ABOUT

Guava is a common tropical fruit cultivated in many tropical and subtropical regions. *Psidium guajava* (common guava, lemon guava) is a small tree in the myrtle family (Myrtaceae), native to Mexico, Central America, the Caribbean and northern South America. Guava was adopted as a crop in subtropical and tropical Asia, parts of the United, tropical Africa, South Asia, Southeast Asia, and Oceania. Guavas are cultivated in many tropical and subtropical countries. In tropical regions, some guavas trees can grow to 30 feet tall, but in subtropical regions such as Southern California guava will grow to not more than 10 or 12 feet tall. There are dwarf guava cultivars.

The fruit, has a strong, sweet, musky odour when ripe, may be round, ovoid, or pear-shaped. Next to the skin is a layer of somewhat granular flesh white, yellowish, light- or dark-pink, or near-red, juicy, acid, subacid, or sweet and flavourful. The central pulp is slightly darker in tone, is juicy and normally filled with very hard, yellowish seeds, though some types have soft, chewable seeds. Pink Guava has more water content, less Sugar (Less Brix), less starch content and Vitamin C and less seed or even seedless. It gives good feel while taking as Drink. White Guava has more sugar, starch, Vitamin C and more seed. It has more Vitamin C than any other fruit. When immature and until a very short time before ripening, the fruit is green, hard, gummy within and very astringent.



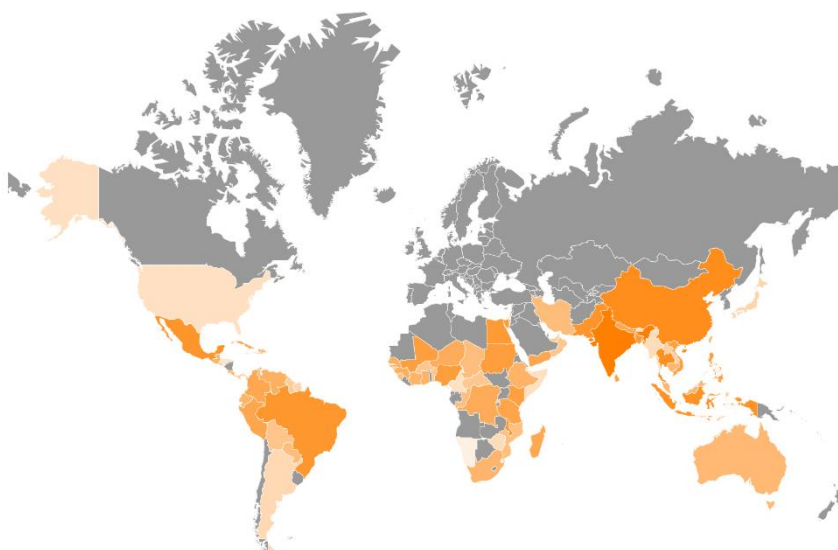
Varieties

The popular varieties of guava grown in India are Sardar, Allahabad Safeda, Lalit, Pant Prabhat, Dhareedar, Arka Mridula, Khaja (Bengal Safeda), Chittidar, Harija etc. Hybrid varieties like Arka Amulya, Safed Jam and Kohir Safeda are also developed.

1.2 MARKET STATUS

World Scenario

India is the leading producer of guavas in the world followed by China with an average of 4366300 metric tons production in 2019. Modern farming methods and use of technology are some of the factors employed by Chinese to improve the yields on their products. Third largest producer of guavas in the world is Thailand with estimated 2550600 metric tonnes. Other leading producer are Pakistan, Mexico, Indonesia, Brazil, Bangladesh etc.



World leading Guava producing countries

Indian Scenario

India is the largest producer of guavas with its 45% share in total production in world.

Leading Indian states in guava production are Uttar Pradesh, Madhya Pradesh, Bihar, Andhra Pradesh, West Bengal, Chhattisgarh.

Guava	2018-19		2019-20 (1st Advance Estimate)		2019-20 (2nd Advance Estimate)	
	Area	Production	Area	Production	Area	Production
	(in '000 Ha)	'000 MT	(in '000 Ha)	'000 MT	(in '000 Ha)	'000 MT
	276	4253	286	4345	287	4304

(Source: NHB)

1.3 HEALTH BENEFITS

1. May Boost Heart Health
2. May Benefit Digestive System
3. May Aid Weight Loss
4. May Help Boost Immunity
5. Good for Skin
6. Lowers Risk of Cancer
7. Diabetes-Friendly
8. Improves Eyesight

Nutritional content

Sl. No.	Nutrient	Amount (100 gm)
1.	Energy	285 kcal
2.	Protein	2.55 gm
3.	Fat	0.95 gm
4.	Carbohydrate	14.32 gm
5.	Dietary Fibre	5.4 gm
6.	Calcium	18 mg
7.	Vitamin C	228.3 mg
8.	Potassium	417 mg

(Source: USDA, FDC 2019)

1.4 VALUE ADDITION

Value addition favours the availability of guava beyond the seasons, geographic areas and provides consumers with innovative and convenient products. Guava is very popular as a fresh fruit because of its excellent taste, high vitamin content and 100% edibility. This fruit is equally important for the processing industry. Several advanced technologies have been developed in guava for value addition and there is immense scope for diversified value-added products of guava. Due to presence of rich amount of pectin, a high-quality natural jelly is obtained from guava. Processed guava pulp is an excellent raw material for preparation of various other guava products. Guava juice, blended RTS beverages, Guava wine, Guava powder, jam, toffee. Cheese, ice cream topping, nectar are some important products of guava.

1.5 GUAVA PULP

Pulp can either mean the soft, moist part of a fruit or is a technical term from the fruit industry. It is a mass of pressed fresh fruit or vegetable matter and not meant for immediate consumption. Pulp is mushy but can contain fruit parts or sometimes even whole fruits. Guava pulp is obtained from ripe guava fruit, one of the highest sources of Vitamin C, guava pulp has potential as commercial source of pectin and is used mainly for conversion into juices, Jams, fruit cheese, fruit bars etc. It is also used to flavour ice creams, sweet Drinks, puddings and yogurts.



CHAPTER 2

PROCESSING

2.1 REQUIREMENTS

Guava Pulp	
Fruit Pulps	Guava Pulp – White/Pink
Ingredients	Ripe Guava
Brix	<25 Degree
TSS	>30%
Acidity % (as citric acid)	0.5 + 0.10
PH	3.8 + 0.3

2.2 PROCESSING OF GUAVA PULP

1) Selection of Fruits

All fruits are not suitable because of difficulties in extracting the juices or due to poor quality pulp. The variety and maturity of the fruit and locality of cultivation influence the flavour and keeping quality of its pulp. It is commonly said that guavas must be tree-ripened to attain prime quality. Only fully ripe fruits are selected. Over ripe and unripe fruits adversely affect the quality of the juice.

2) Sorting

Ripe guavas bruise easily and are highly perishable. The guavas are separated into two or more grades on the basis of the surface colour, shape, size, weight, soundness, firmness, cleanliness, maturity & free from foreign matter /diseases insect damage /mechanical injury. Grading may be done manually or mechanically. Sorting is also done by hand or machine to remove the

guavas which are unsuitable for processing due to mechanical injuries, insects, diseases, immature, over-mature, misshapen etc. By removing damaged produce from the healthy ones, it reduces losses by preventing secondary contamination.

3) Washing

Dirt and spray residues of arsenic, lead etc are removed by washing with water or by using chlorine (10-100 ppm according to batch) followed by washing in plain water. Thorough washing by jet spray is done to remove leftover dust, dirt from guavas before peeling and crushing them into paste.

4) Cutting

The stem and twigs are removed from the guavas mechanically or manually and top and bottom edges of are cut. The bruised or black spots are peeled to obtain fruit which is ready to cut into halves.

5) Pulping

The guavas are then grinded to make a paste. Crushing machine is used to crush the guavas first. It is then put to pulping machine to obtain a pulp of uniform consistency. Automatic Fruit grinding machine can be used for fine semi moist puree and pulp. The pulp obtain at this stage is white creamy in texture and may contain grinded stones.

6) Sieving

Un-clarified fruit pulp contains varying amounts of suspended matter consisting of broken fruit tissue, seed, skin, pectic substances and protein in colloidal suspension. Seeds and skin which adversely affect the quality of pulp are removed by straining through a muslin cloth or sieve. Thus, Sieving becomes a necessary step. Sieve of 0.7mm is used and guava pulp is passed though it for commercial purpose of pulp processing. In large industries, power operated screening system or filter press is used.

7) Homogenisation

The pulp obtained has to be homogenised to get a smooth creamy consistency. For this, pulp received after sieving is fed into homogenisation tank and allowed to run for few minutes depending upon the batch size. At this stage citric acid (0.5%-0.10%) is added to maintain its acidity. For Guava pulp, TSS should be more than 30%. The product received after this is ready to be pasteurized to increase its shelf life.

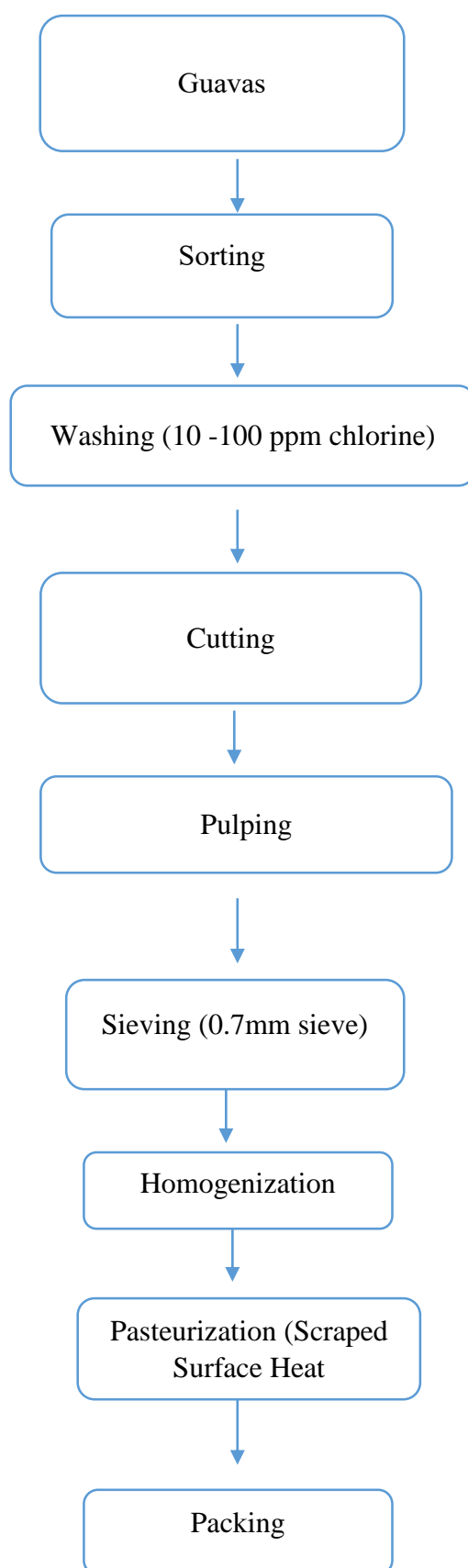
8) Pasteurization (Scraped Surface Heat Exchanger)

Preservation of fruit pulp by application of heat is the most common method used commercially. Scraped Surface Heat Exchanger is used for viscous, thick and sticky food products thus suitable for guava pulp. It is heated from 60°C to 120°C, staying time 30 seconds to 2 minutes (depending on the batch size) and cooled to 20°C with ice water to inactivate/kill the micro-organisms, which cause spoilage.

9) Packaging

Aseptic processing and packaging are defined as the process in which a commercially sterile product is packed into pre-sterilized container in a sterile environment. The system makes use of high temperature short time (HTST) sterilization in the temperature range of 90-110°C for acid products (pH4.6). The commercial aseptic sterilization process takes place in a continuous, closed system. Aseptic processing may produce products with better retention of nutrients and excellent sensory quality.

2.3 FLOW CHART



2.4 MACHINES USED

1. Industrial bubble washing machine



To remove adhering dirt, latex strains, surface organism if any, wash with 50 ppm chlorine to prevent the microbial contamination.

2. Fruit Pulping Machine



Fruit pulp extraction machine applies to stone fruits like mango, guava etc. It can remove stones in fruits, extract pulps, and separate slag. It can separate the fruit pulps and residues automatically.

3. Blending/Batch Mixer (Automatic)



This mixer doesn't simply mix; it emulsifies, homogenizes, solubilizes, suspends, disperses and disintegrates solids.

4. Filter Press



The main operation of filter press is to filter the impure liquid. Arriving on top of each horizontal plate with increasing pressure, the filter media holds back the impurities and allows the filter to pass through centre by interlocking cups, which takes the filtrate to the outlet of the filter.

5. Scraped Surface Heat Exchanger



They are ideally suited for products that are viscous and sticky. The product comes in contact with the heating surface for only a few seconds and high temperature gradients can be used without the danger of causing undesirable reactions in the final product.

6. Packaging machine



For pouch packaging and sealing Guava pulp pouches of variable sizes.

CHAPTER 3

PACKAGING

3.1 PRODUCT CHARACTERISTICS INFLUENCING PACKAGING

The major deterioration that occurs in fruit product is loss of nutrition, physio-chemical changes and microbial growth. The product characteristics to be considered in relation to packaging are:

a. Acidity

All the fruit juices usually maintain an acidic character because they contain organic acids. Enzymes exist in all fruit juices. Sometimes they have to be destroyed and sometimes to be added. Acid causes a delamination within a few days in packaging material.

b. Vitamin C (ascorbic acid) content

The Vitamin C content of a fruit increases until just before ripening, and then decreases due to the action of an enzyme, ascorbic acid oxidase. When fruits are processed, most of the ascorbic acid transfers from the tissue into the liquid or may be oxidized, oxidation occurring more easily in iron, copper or badly tinned vessels. Losses of Vitamin C also occur during storage. Storing at low temperature and preventing contact with air and light reduces this.

c. Colour and Flavour

They are very important, and many fruit drinks contain certain legally permitted colors. These are added to overcome the bleaching effect of the sulphite used as a preservative, and to provide an attractive appearance

3.2 ROLE OF PACKAGING

In addition to its most obvious function of containing the product, a consumer package must protect the specific quality parameters of Guava pulp. Therefore, these quality parameters should be protected during a given shelf life.

- Protect the relevant flavour compounds

- Protect the high vitamin C content
- Prevent colour changes
- Prevent microbial growth

Package properties	Storage conditions
Barrier against	Protection against
1. Time	1. Temperature
2. Light	2. Non-aseptic
3. Flavour losses	3. Oxygen
4. Microorganisms	

3.3 MAJOR CLASSIFICATION OF PACKAGING

- Primary packing
- Secondary packing
- Tertiary packing

Types of Primary Packing Available for Guava Pulp in Market

Primary Packing – is the material that first envelops the product and hold it. This Usually is the smallest unit of distribution or use and is the package which is in direct contact with the contents. For Guava pulp, primary packaging available in the market are:

1. Glass
2. Metal Containers
3. Flexible packaging
4. HDPE bottles
5. PET bottles
6. Carton Based Packages
7. Bag-in-box and bag-in-drum

1. Glass Containers



The use of glass bottles for the packaging hot-fill/hold/cool process. Glass bottles are preferred packaging medium for high quality fruit beverages. More care needed to avoid breakage of the containers.

Advantages

Surface coating to increase abrasion resistance

Use of wide mouth containers fitted with easy-open-caps

2. Metal Containers



Tinplate cans made of low carbon mild steel of 99.75% purity, coated with tin with easy open ends are used. These tinplate containers are either 3 piece or 2-piece containers. They are lacquered internally to prevent corrosion.

Advantages

- Light weight
- Metals like aluminum are very easy to sterilize
- The durability and high barrier protection.
- Convenient

3. Flexible packaging



Flexible packaging minimizes the permeability to oxygen. Flexible laminated pouches like metallized polyester/polyester/ polyethylene are used for hot fill packaging method without retorting for acidic fruit juices. These are used either as flat pouches or stand-up pouches.

Advantages

- Provides resistance to moisture, vapours, dust, and even UV light.
- Modern printing techniques that create crisp, clear imagery.
- Promotes recycling and helps keep used pouches or bags out of landfills

4. HDPE Bottles



As HDPE has a poor oxygen barrier, plain HDPE bottles allow relatively high oxygen ingress and are used for chilled Pulp of short shelf life only (about three weeks). The oxygen barrier can be improved by adding intermediate layers of polymers with superior barrier properties. The most common barrier layers in HDPE bottles for Guava pulp are ethylene vinyl alcohol (EVOH) and polyamide (PA). These also provide an aroma barrier and can allow ambient storage for six months or longer, depending on the choice and thickness of the barrier layer.

5. Pet bottles



Guava pulp packaged in PET bottles is found in both the chilled and ambient segment. Pulp is either filled aseptically or hot filled. The bi-oriented material gives the bottle high tensile strength and an increased gas barrier, which allows for lightweight bottles.

6. Carton-based packages



The laminated carton material normally consists of layers of paperboard coated internally and externally with polyethylene, and a barrier layer. The most commonly used barrier layer today is Al-foil. Other barriers include ethylene vinyl alcohol (EVOH) and polyamide (PA). Depending on the packaging system used, the packaging material is delivered to the Pulp packer as prefabricated carton blanks or printed and creased in rolls. Oxygen-barrier properties of a laminated carton package depend not only on the barrier properties of the packaging material itself, but also on the barrier properties of strips and closures and the tightness of seals.

7. Bag-in-box & Bag-in-drum



In packaging, a type of container, used for both dry and liquid products, in which the contents are placed in a flexible bag which is then placed inside a (typically) cardboard carton or a metal drum. It is most commonly used packaging for guava pulp. It is suitable for bulk packaging and transportation. There are different types and sizes of bags which are suitable for different applications. Bags are available in metalized or coextruded materials and are usually associated with conical or cylindrical drums. Bags up to 220 litres can be adapted for use with various types of box, drum, or even bag. Modern bags guarantee an excellent barrier to oxygen, and are available in a variety of sizes from 5 to 220 litres. Large sized bags up to 1,000 litres have been developed with a particular focus on the practical handling, transport and storage of bulk foodstuffs.

Secondary Packaging

Secondary packaging is used mainly for logistical and storage purposes, to protect and collect individual units. Sometimes is also referred to as grouped or display packaging as they are made to display multiple units of products for sale. This facilitates resupply from the warehouse

to the store and includes shelf-ready packaging (SRP), retail-ready packaging (RRP) or counter display units (CDU).

Secondary Packing Available for Guava pulp in market

- Paper boards
- Cartons
- Reusable Plastic Crates

Tertiary packaging

Tertiary packaging is typically not seen by consumers since it is usually removed by retailers before products are displayed for sale. It is one of the three types of wrapping used to protect manufactured goods for shipping or storing. It is used to protect not only the product but also its secondary and primary packaging.



- Used for handling of bulk during storage and transport.
- Carton palletized unit of secondary package. Package for any product is selected based on their characteristics and stability

CHAPTER 4

FOOD SAFETY REGULATIONS AND STANDARDS

4.1 DEFINITION OF STANDARDS - (FOOD PRODUCTS STANDARDS AND FOOD ADDITIVES. REGULATIONS, 2011)

According to FSSAI Standards (Food Products Standards and Food Additives) Regulations, 2011) 2.3 Fruits and Vegetable Products

Regulation 2.3.17 Concentrated Fruit/ / Puree with Preservatives for Industrial Use Only:

1. Concentrated Fruit /Pulp / Puree with Preservatives for Industrial Use Only means an unfermented product, which is capable of fermentation, obtained from the juice or pulp or puree of fruit(s) from which the water has been removed to the extent that the product has a soluble solids content of not less than double the content of the original juice, pulp, puree prescribed under Regulation 2.3.6 and Regulation 2.3.7. It may be pulpy, turbid or clear.
2. The product may contain food additives permitted in these regulations including Appendix A. The product shall conform to the microbiological requirements given in Appendix B.
3. The container shall be well filled with the product and shall occupy not less than 90.0 percent of the water capacity of the container, when packed in the rigid containers. The water capacity of the container is the volume of distilled water at 20°C which the sealed container is capable of holding when completely filled.
4. For Guava pulp, TSS should be >30%)

Table: Microbial Standards for Fruits and Vegetables and their Products – Process Hygiene

Criteria

Product Category	Aerobic Plate Count		Yeast and Mold Count		<i>Enterobacteriaceae</i>		<i>Staphylococcus aureus</i> (Coagulase +ve)	
	Limits (cfu/g)		Limits (cfu/g)		Limits (cfu/g)		Limits (cfu/g)	
	m	M	m	M	m	M	m	M
Fermented or pickled or acidified or with preservatives	NA	NA	1x10 ² /g	1 x10 ³ /g	1x10 ² /g	1x10 ³ /g	10/g	1x10 ² /g

Table: Microbiological Standards for Fruits and Vegetables and their Products-Food Safety

Criteria

Product Category	<i>Salmonella</i>	<i>Listeria monocytogenes</i>	Sulphite Clostridia Reducing		<i>E. Coli 0157</i> and Vero or Shiga toxin producing <i>E coli</i>	<i>Vibrio cholerae</i>
	Limits (cfu/g)	Limits (cfu/g)	Limits (cfu/g)		Limits (cfu/g)	Limits (cfu/g)
	m M	m M	m	M	m M	M
Fermented or pickled or acidified or with preservatives	Absent/25 g	Absent/25 g	NA	NA	Absent/25 g	Absent/25 g

Use of food additives in food products

Food products may contain additives as specified in these regulations and in the following Table.

Fruits and Vegetables				
Food Category System	Food Category Name	Food Additive	INS No	Recommended maximum level
4.1.2.8	Fruit preparations, including fruit pulp, purees, fruit toppings and coconut milk	Acesulfame potassium	950	350 mg/kg
		Allura red AC	129	100 mg/kg
		Aspartame	962	350 mg/kg
		acesulfame salt	951	1,000 mg/kg
		Annatto	160b(i), (ii)	GMP
		BENZOATES		1,000 mg/kg
		Brilliant blue FCF	133	100 mg/kg
		CAROTENOID S		100 mg/kg
		CHLOROPHYLLS AND CHLOROPHYLLINS, COPPER COMPLEXES		100 mg/kg
		beta-Carotenes, vegetable	160a(ii)	100 mg/kg
		Caramel III - ammonia caramel	150c	7,500 mg/kg
		Caramel IV - sulfite ammonia caramel	150d	7,500 mg/kg
		Curcumin	100	GMP
		Diacetyltartaric and fatty acid esters of glycerol	472e	2,500 mg/kg
		Fast green FCF	143	100 mg/kg
		Grape skin extract	163(ii)	500 mg/kg
		HYDROXYBENZOATES		800 mg/kg

		PARA-		
		Indigotine (Indigo carmine)	132	100 mg/kg
		Neotame	961	100 mg/kg
		PHOSPHATES		350 mg/kg
		Paprika oleoresin	160c(i)	GMP
		SORBATES		1,000 mg/kg
		Ponceau 4R	124	50 mg/kg
		Propylene glycol esters of fatty acids	477	40,000 mg/kg
		RIBOFLAVINS		300 mg/kg
		SACCHARINS		200 mg/kg
		SORBATES		1,000 mg/kg
		POLYSORBATES		1,000 mg/kg
		SULFITES		100 mg/kg
		Steviol glycosides	960	330 mg/kg
		Sucralose (Trichlorogalacto sucrose)	955	400 mg/kg
		Sunset yellow FCF	110	100 mg/kg
		SORBITAN ESTERS OF FATTY ACIDS	5,000 mg/kg	XS314R, XS240
		Sucrose esters of fatty acids	473	1,500 mg/kg

4.2 FOOD SAFETY AND STANDARDS (CONTAMINANTS, TOXINS AND RESIDUES) REGULATIONS, 2011

CONTAMINANTS, TOXINS AND RESIDUES

METAL CONTAMINANTS

1. Chemicals described in monographs of the Indian Pharmacopoeia when used in foods, shall not contain metal contaminants beyond the limits specified in the appropriate monographs of the Indian Pharmacopoeia for the time being in force.
2. Notwithstanding anything contained in clause (1) above, no article of food specified in column (2) of the table below shall contain any metal specified in excess of the quantity specified in column (3) of the said table:

Name of metal contaminant	Article of food	Parts per Million (mg/kg or mg/L)
(1)	(2)	(3)
Copper	Pulp and pulp products of any fruit	5
Arsenic	Pulp and pulp products of any fruit	0.2
Tin	Pulp and pulp products of any fruit	250

Residues

Restriction on the use of insecticides:

- (1) The expression “insecticide” shall have the meaning assigned to it in the Insecticide Act, 1968 (46 of 1968).
- (2) Subject to the provisions of clause (3), no insecticides shall be used directly on articles of food: Provided that nothing in this regulation shall apply to the fumigants which are registered and recommended for use as such on articles of food by the Registration Committee, constituted under section 5 of the Insecticides Act, 1968 (46 of 1968).

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Food	Name of the Insecticide	Maximum Residue Limit (MRL) in mg/kg
Fruits	2,4-Dichlorophenoxy Acetic Acid	2
	Sum of benomyl and carbendazim expressed as carbendazim	5
	Captan	15
	Carbendazim	5
	Carbofuran (sum of carbofuran and 3-hydroxy carbofuran expressed as carbofuran)	0.10
	Chlorpyrifos	0.5
	Dichlorvos (DDVP) (content of di- chloroacetaldehyde (D.C.A.))	0.1
	Dicofol	5
	Dimethoate	2
	Ethylene bis- dithiocarbamates	3
	Ethion	2
	Malathion	1
	Monocrotophos	1
	Paraquat dichloride	0.05
	Phorate	2.0
	Thiometon	0.5
	Trichlorfon	0.1

4.3 FOOD SAFETY AND STANDARDS (PACKAGING AND LABELLING) REGULATIONS, 2011

FSSAI 2.1: Packaging 2.1.1: General Requirements

1. A utensil or container made of the following materials or metals, when used in the preparation, packaging and storing of food shall be deemed to render it unfit for human consumption:— (a) containers which are rusty; (b) enamelled containers which have become chipped and rusty; (c) copper or brass containers which are not properly tinned (d) containers made of aluminium not conforming in chemical composition to IS:20 specification for Cast Aluminium & Aluminium Alloy for utensils or IS:21 specification for Wrought Aluminium and Aluminium Alloy for utensils.

2. Containers made of plastic materials should conform to the following Indian Standards Specification, used as appliances or receptacles for packing or storing whether partly or wholly, food articles namely: —

- (i) IS: 10146 (Specification for Polyethylene in contact with foodstuffs);
- (ii) IS: 10142 (Specification for Styrene Polymers in contact with foodstuffs);
- (iii) IS: 10151 (Specification for Polyvinyl Chloride (PVC), in contact with foodstuffs);
- (iv) IS: 10910 (Specification for Polypropylene in contact with foodstuffs);
- (v) IS: 11434 (Specification for Ionomer Resins in contact with foodstuffs);
- (vi) IS: 11704 Specification for Ethylene Acrylic Acid (EAA) copolymer.
- (vii) IS: 12252 - Specification for Poly alkylene terephthalates (PET).
- (viii) IS: 12247 - Specification for Nylon 6 Polymer;
- (ix) IS: 13601 - Ethylene Vinyl Acetate (EVA);
- (x) IS: 13576 - Ethylene Metha Acrylic Acid (EMAA);
- (xi) Tin and plastic containers once used, shall not be re-used for packaging of edible oils and fats; Provided that utensils or containers made of copper though not properly tinned, may be used for the preparation of sugar confectionery or essential oils and mere use of such utensils or containers shall not be deemed to render sugar confectionery or essential oils unfit for human consumption.

Labelling Requirements

All food products sold in India that are pre-packaged are required to comply with the Food Safety and Standards (Packaging and labelling) Regulations, 2011. The Food Safety and Standards Regulation, 2011 is a notification issued by the Food Safety and Standards Authority of India under the Ministry of Health and Family Welfare.

Applicability of Food Labelling Regulations

The food labelling regulations require all “Pre-packaged” or “Pre-packed food” to comply with the labelling regulations in India. As per the rules, pre-packaged food means food, which is placed in a package of any nature, in such a manner that the contents cannot be changed without tampering it and which is ready for sale to the consumer.

General Labelling Requirements

The following labelling requirements must be complied with by all pre-packaged food sold in India:

- The label must be in English or Hindi or Devnagri language. In addition to the above, the label can contain information in any other language, as required.
- The label must not contain information about the food that could be deemed to be false, misleading, deceptive or otherwise create an erroneous impression regarding the product.
- The label must be affixed to the container in such a manner that it would not easily be separated from the container.
- The contents or information presented in the label should be clear, prominent, indelible and readily legible by the consumer.
- If the container is covered by a wrapper, then the wrapper must contain necessary information or make the label of the product inside readily legible by not obscuring.
- The name of the food must be mentioned along with the trade name and description of the food contained. In case the food contains more than one ingredient, then a list of ingredients must be presented in descending order of their composition by weight or volume, as the case may be, at the time of its manufacture;

Nutritional Information

- Nutritional Information or nutritional facts per 100 gm or 100ml or per serving of the product must be given on the label along with the following information:
- energy value in kcal;
- the amounts of protein, carbohydrate (specify the quantity of sugar) and fat in gram (g) or ml;
- the amount of any other nutrient for which a nutrition or health claim is made:

It is important to note that any “health claim” or “nutrition claim” or “risk reduction” claim made in the label will be thoroughly scrutinized by the FSSAI authorities. Hence, any such claim must be validated by test data. As per the rules, the following is the definition for “health claim”, “nutrition claim” and “risk reduction” claim:

- **“Health claims”** means any representation that states, suggests or implies that a relationship exists between a food or a constituent of that food and health and include nutrition claims which describe the physiological role of the nutrient in growth, development and normal functions of the body, other functional claims concerning specific beneficial effect of the consumption of food or its constituents, in the context of the total diet, on normal functions or biological activities of the body and such claims relate to a positive contribution to health or to the improvement of function or to modifying or preserving health, or disease, risk reduction claim relating to the consumption of a food or food constituents, in the context of the total diet, to the reduced risk of developing a disease or health-related condition;
- **“Nutrition claim”** means any representation which states, suggests or implies that a food has particular nutritional properties which are not limited to the energy value but include protein, fat carbohydrates, vitamins and minerals;
- **“Risk reduction”** in the context of health claims means significantly altering a major risk factor for a disease or health-related condition

Veg or Non-Veg Symbol

All packaged food that is “Non-Vegetarian” must have a symbol that is a brown colour filled circle inside a square with a brown outline. If a food contains only egg as a non-vegetarian ingredient, then the manufacturer may provide a declaration that the product contains only egg and add the non-vegetarian symbol



Non-Veg Symbol

Packaged vegetarian food should have a symbol that consist of green colour filled circle inside a green square.



Vegetarian Symbol

Information Relating to Food Additives, Colours and Flavours

Food additives contained in the food product must be mentioned along with class titles along with the specific names or recognized international numerical identifications. Addition of colouring matter should be mentioned on the label along with certain statements like “CONTAINS PERMITTED NATURAL COLOUR(S)”, just beneath the list of the ingredients on the label. In case of addition of extraneous flavouring agent, then it should be mentioned in a statement like “CONTAINS ADDED FLAVOUR” just beneath the list of ingredients on the label.

Name and Complete Address of the Manufacturer

The name and complete address of the manufacturer must be mentioned on every package of food. In the case of imported food, the package must contain the name and complete address of the importer in India.

Net Quantity

All packaged food must carry the net quantity by weight or volume or number, as the case may be. The net quantity of the commodity contained in the package must exclude the weight of the wrappers and packaging materials.

Lot Number of Batch Identification

A lot number or batch number or code number must be mentioned on all packaged food so that it can be traced while manufacturing and distribution. Only bread and milk including sterilised milk are not required to comply with this regulation.

Date of Manufacture or Packing

The date, month and year in which the commodity is manufactured, packed or pre-packed must be mentioned on the label. In the case of food products having a shelf life of more than three months, then the month and the year of manufacture can be given with the “Best Before Date”. In case of products having a shelf life of fewer than three months, the date, month and year in which the commodity is manufactured or prepared or pre-packed must be mentioned on the label with best before date.

Country of Origin for Imported Food

For imported food, the country of origin of the food should be declared on the label of the food. In case a food product undergoes processing in a second country which changes its nature, the country in which the processing is performed should be considered to be the country of origin for the purposes of labelling.

Instructions for Use

Instructions for use, including reconstitution, should be included on the label, if necessary, to ensure correct utilization of the food.

4.4 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.



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