MINISTRY OF FOOD PROCESSING INDUSTRIES
GOVERNMENT OF INDIA

सत्यमेव जयते

Reading Material for

Fennel Processing

Under PMFME Scheme

National Institute of Food Technology Entrepreneurship and Management
Deemed to be University (De-novo Category) under Section 3 of the UGC Act, 1956
An Autonomous Institution under Ministry of Food Processing Industries, Government of India Plot no 97, Sector 56, HSIIDC, Industrial Estate, Kundli, Sonepat, Haryana – 131028 Website: www.niftem.ac.in, Email: pmfmecell@niftem.ac.in Contact: 0130-2281

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CHAPTER – 1

RAW MATERIAL

1.1 INTRODUCTION

Fennel also called saunf is one of the popular seed spices in India mainly grown in Rabi season. The fennel plant is a perennial herb with yellow flowers and feathery leaves. It is widely used in food industry and has aromatic and medicinal use as well. Fennel originally belongs to Southern Europe and Mediterranean region and is cultivated mainly in the temperate and subtropical regions of the world. It is grown majorly in countries like Romania, Russia, Germany, France, Italy, India, Argentina and USA. Gujarat Rajasthan, Karnataka, Maharashtra, U.P., Punjab and Bihar, Gujarat and Rajasthan are the major fennel producing Indian states being cultivated in Rabi season.

Fennel crop is ready to harvest after 170-180 days. The harvesting is done by plucking when the crop is matured but still green. This is done to reduce the shattering losses. The average yield per hectare is about 9-10 quintals.

Fennel is a very important spice used in both culinary as well as in medicinal purpose. The whole plant is important medicinally. Various parts of the plant are used for different purposes such as vegetables (base), leaves (culinary purpose & dye), flower (dye), seeds (spice & oil extraction). Fennel pollen is the most potent form of fennel, but it is extremely expensive.

Bitter fennel, Florence fennel and sweet fennel are used for its fruits and essential oil. The enlarged leaf base is also utilised as a vegetable from the florence and sweet fennel.

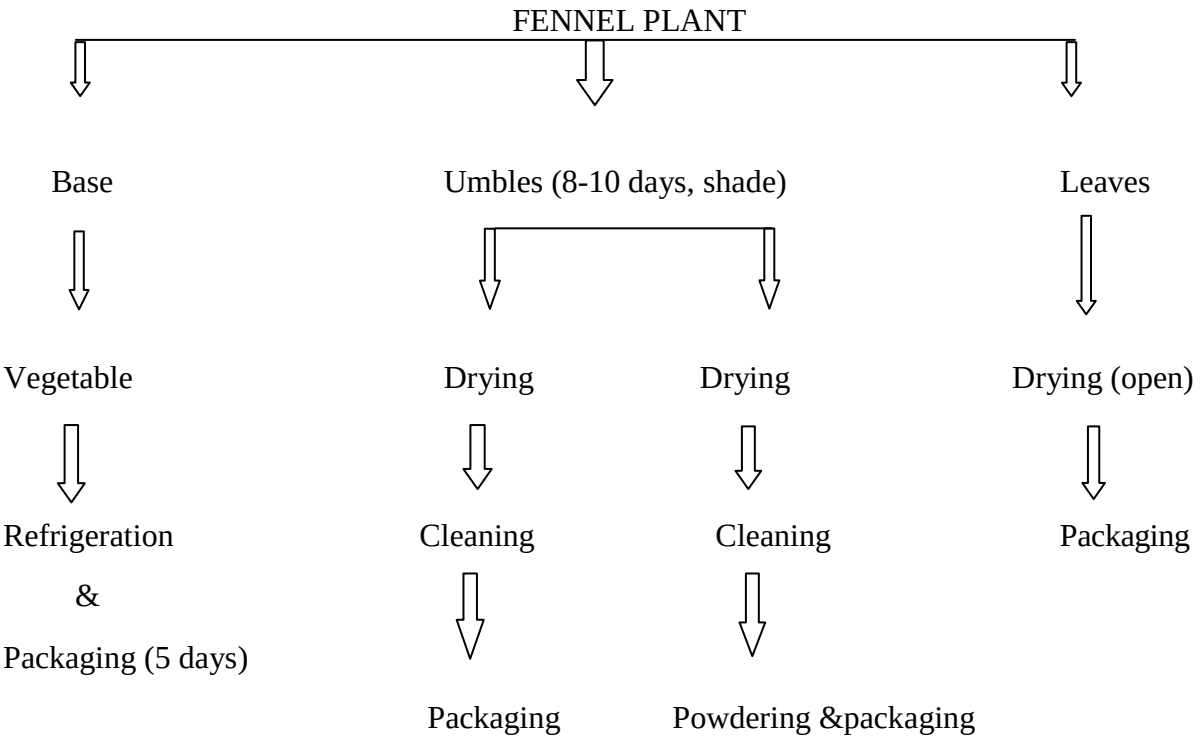
1.2 VARIETIES OF FENNEL

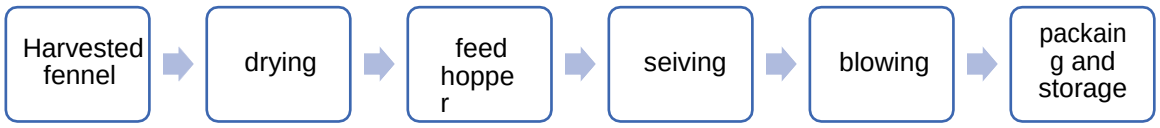
Variety	Specifications	Yield (Quintals/ha)
Gujarat Fennel1	Medium-bold and dark green seeds	16.9
Ajmer fennel 1	Bold, medium sized, fragrant seeds	19 to 25
RF-125	Long, and bold grains	17
RF-101	Long, and bold grains	14
Hisar Swarup	Long, and bold grains	16
PF-35	Medium-sized, hairless and green seeds.	13

CHAPTER – 2

PROCESSING AND MACHINERY

2.1 FENNEL SEED PROCESSING





Flow Chart: Fennel sorting, cleaning and packing

2.2 FENEL DRYING

Harvested fennel seeds are first sun dried for 1-2 days and then are dried in shade for 8-10 days. Caution should be taken not to dry seed for long time in sun as it can reduce the quality of the product.

2.3 FENNEL CLEANING

The freshly harvested seeds contain many impurities like chaff, cobs and other foreign materials. To remove these materials the cleaning operation must be done. The cleaning unit consists of different components as follows

- Feeding hopper: The feeding of seed to the cleaning unit is done by the feed hoppers. The purpose of hopper is to provide continuous supply of mixture of seeds and impurities to the cleaning unit.
- Sieving: The mixture of seed and impurities then go to the sieving unit which generally consists of 2 sieves. The upper sieve is for the separation of bolder and coarser materials and the lower sieve is for relatively small impurities. The lower sieve is further subdivided into multiple sections which allow different sizes of seeds to pass through them. The lower sieve thus also acts as a grading unit.
- Centrifugal blower: The lighter impurities are removed by the blower. It sucks the air out of the cleaning unit and thus sucks out lighter impurities. The centrifugal blower is operated by electric motor.

The cleaned seeds are then obtained from the multiple outlets. Different grades of seeds come out of different outlet. The seeds are then subjected to further operations based on the type of product desired.

The fennel seeds can be cleaned on farm with help of a spiral separator. The spiral separator uses the physical property of the product in separation. The mixture of impurity and seeds are feed in the hopper of the spiral separator. The lighter impurities and the coarser impurities are then segregated separately and the clean grains are obtained from the clean grain outlet.

2.4 FENNEL SEEDS PROCESSING STEPS

Harvesting crop (180 days after sowing)	
The matured seeds are dried under sun for one or two days; and in the shade for eight to ten days	
The seeds are then fed to the upper sieve. The coarse and stony impure materials are separated from the mixture.	
Storage of grains (0.1% solution of sulphuric acid can be sprayed to protect the seeds from frost attack)	
It is then passed through a centrifugal blower which sucks the lighter impurities.	

The clean grains are the obtained and made to pass through the 2nd sieve which grades the seeds according to their size.	
The impurities are obtained at the waste outlet.	
The cleaned grains are then packed and stored in damp free environment.	

2.5 NUTRITIVE VALUE OF FENNEL

Fennel grains are used as spices and condiment, its nutritive value is given below.

Table – Chemical composition of fennel grain/100g

Sr. No.	Composition	Content
1	Moisture	6.3 g
2	Protein	9.5 g
3	Fat	10.0 g
4	Carbohydrate	42.3 g
5	Crude fiber	18.5 g
6	Mineral matters	13.4 g
7	Calcium	1.3 g
8	Phosphorus	0.48 g
9	Iron	0.01 g
10	Sodium	0.09 g
11	Potassium	1.7 g
12	Vitamin A	1040 I.U.
13	Vitamin B-1	0.41 mg
14	Vitamin B-2	0.36 mg
15	Niacin	6.00 mg
16	Vitamin C	12.00 mg
17	Food energy	370lories

2.6 QUALITATIVE ASSESSMENTS OF THE FINISHED PRODUCTS.

According to the FSSAI's Food Products Standards & Food Additives regulations, 2011 following are the standards which are to be adhered to for fennel processing.

1. Fennel (Saunf) It shall have characteristic flavour free from foreign odour, mustiness and rancidity.
2. It shall be free from mould, living and dead insects, insect fragments, rodent contamination.
3. The product shall be free from added colouring matter and any harmful substance.
4. It shall conform to the following standards

Qualitative assessments of the finished products

Quality Parameters	
Extraneous matter	Not more than 2.0 percent by weight
Defective seeds	Not more than 5.0 percent by weight
Moisture	Not more than 12.0 percent by weight
Total ash on dry basis	Not more than 10.0 percent by weight
Ash insoluble in dilute HCl on dry basis	Not more than 2.0 percent by weight
Volatile oil content on dry basis	Not less than 1.0 percent by v/w
Edible seeds other than fennel	Absent
Insect damaged matter	Not more than 1.0 percent by weight

2.7 SUGAR COATED FENNEL SEEDS

Multi-coloured sugar-coated fennel seeds are used as a digestive stimulant and mouth freshener.

Make sugar syrup. It is added to sugar coating machine	
Fennel seeds are added to the sugar-coating machine	
Different food colours can be added to give colour to the fennel seeds	

2.8 FENNEL ESSENTIAL OIL EXTRACTION

Fennel oil is produces by distillation of fennel seed. It is very useful in pharmaceutical industry as a cough medicine, antiseptic, and laxative and as an addictive substance in various types of cuisine, bakery, confectionery, pharmaceuticals, and cosmetics.

The main component of fennel oil is anethole and anise oil. Fennel oil contains of 50-60% anethole, while anise oil contains for about 80-90% anethole. The fennel oil quality is determined by the amount of anethole content. The fennel oil has a better quality if it has higher content of anethole

The recovery process of essential oils is;

- supercritical extraction
- Pressing, extraction with solvent extraction.
- Extraction with fat.
- and distillation (distillation).

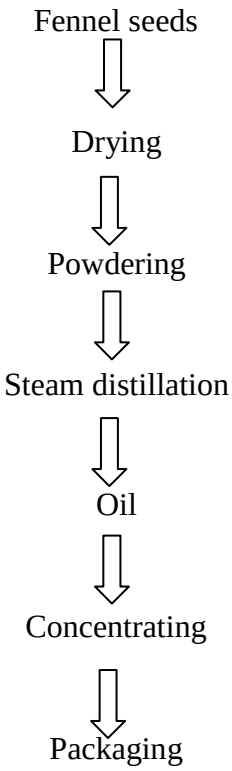
Weaknesses of supercritical extraction process is the price of equipment which is very expensive due to high requirement of the operating pressure. The steam distillation process (direct) is a steam distillation using steam. It flows through a circular pipe which is located below the porous material and the vapor moves upward through the material that is located on the top sieve.

2.9 PHYSICO-CHEMICAL PROPERTIES OF FENNEL OIL

Properties	Value
Colour	Clear, pale yellow
Specific gravity, at 25 º C	0.978 to 0.988
Optical rotation	(-2) -10
Refractive index at 25 ° C	1.55
Solubility in alcohol 90%	perfectly soluble 1:3

Sources: Food Chemical Codex

2.10 FENNEL OIL EXTRACTION PROCESS CHART



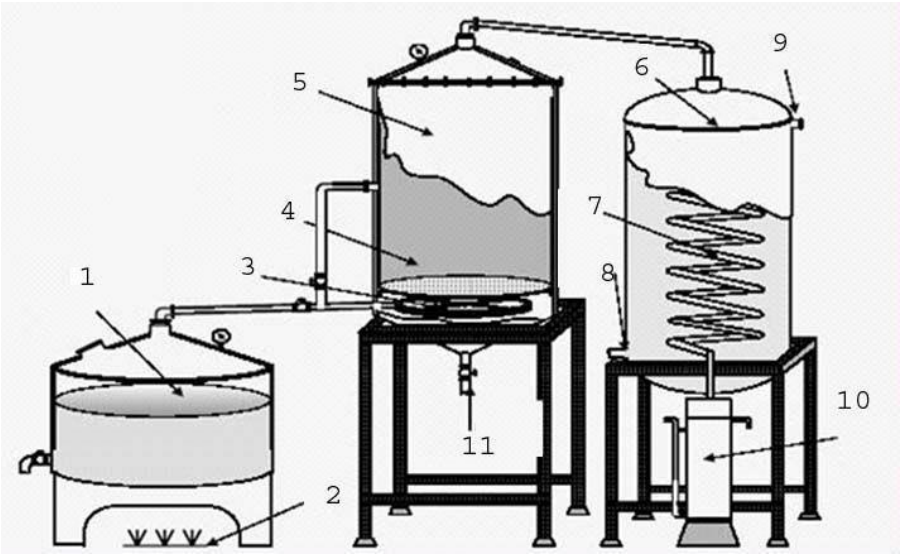


Fig. Steam distillation

1. Boiler, 2. Fire, 3. Steam distributor, 4. Boiler materials with a perforated sieve, 5. Distillation kettle, 6. Condenser, 7. Coil, 8. Water in, 9. Water out, 10. Separator tank.

2.11 FENNEL SEED

The seeds should be devoid of any foreign odour, mouldiness and rancidity. There should be no presence of mould, insects in dead or live form, rodent contamination. It should also be free of added colours and any harmful substance. The fennel seeds should have conformity with the following standards

Extraneous matter	Not more than 2.0% by weight
Defective seeds	Not more than 5.0% by weight
Moisture	Not more than 12.0% by weight
Total ash on dry basis	Not more than 10.0% by weight
Ash insoluble in dilute HCl on dry basis.	Not more than 2.0% by weight
Volatile oil content on dry basis	Not less than 1.0% by v/w
Edible seeds other than fennel	Absent
Insect damaged matter	Not more than 1.0% by weight

2.12 COMPOSITION OF FENNEL SEED

The phytate content in the seed varied from 11.35 to 13.10 mg/g. The main constituent of fennel oil is anethole. The fennel seed has been reported to contain 1 to 6% volatile oil and 10 to 20 % fixed oil. The volatile oil in fennel seeds ranged from 1.0 to 1.5 per cent. The highest volatile oil (1.5 %) was observed in variety PF – 35. East European fennel seeds have been reported to contain 4 to 6 per cent oil. Oil content ranged from 6.8 to 13.58%. The bitter fennel contains 50% trans anethole, and sweeter variety has 50-80% anethole. The bitter and sweet varieties also have fenchone (contributes to bitter flavour in bitter fennel not in sweet variety), limonene, phellandrene, pinene, with thujene, pinene, estragol (methyl chavicol), myrcene, and 1,8-cineole. The Total 20 compounds in fennel essential oil and 18 constituted 96.04% of the total oil and the major components were anethole (68%), limonene (11%), fenchone (3.7%) and few others.

Table: Composition of Fennel Seed

Sr. No.	Composition	Content
1	Moisture	6.3 g
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3	Fat	10.0 g
4	Carbohydrate	42.3 g
5	Crude fibre	18.5 g
6	Mineral matters	13.4g
7.	Calcium	1.3 g
8.	Phosphorus	0.48 g
9.	Iron	0.01 g
10.	Sodium	0.09 g
11.	Potassium	1.7 g
12.	Vitamin A	1040 I.U.
13.	Vitamin B-1	0.41 mg
14	Vitamin B-2	0.36 mg
15	Niacin	6.00 mg
16.	Vitamin C	12.00 mg
17	Food energy	370lories

2.13 FENNEL POWDER

The fennel powder should be devoid of any foreign odour, mouldiness and rancidity. There should be no presence of mould, insects in dead or live form, rodent contamination. It should also be free of added colours and any harmful substance. The fennel powder should have conformity with the following standards

Moisture	Not more than 12.0 % by weight
Total ash on dry basis	Not more than 10.0% by weight
Ash insoluble in dilute HCl on dry basis.	Not more than 2.0% by weight
Volatile oil content on dry basis	Not less than 1.0% by v/w

2.14 FENNEL OLEORESIN

Quality requirements

Botanical name	**Active component**	**Volatile Oil Content (VOC in ml/100g of oleoresin) (Not less than)**
Foeniculumvulgare Mill.	Anethole	3.0

2.15 QUALITY ANALYSIS

As per the required standards specified by FSSAI for fennel seeds, the following characteristics should be analysed:

Characteristics	**Method of Test**
Moisture content	9 of IS 1797
Total ash	7 of IS 1797
Acid insoluble ash	8 of IS 1797
Volatile oil	15 of IS 1797
Salmonella	IS 5887 (Part 3)
Edible seeds other than fennel	Physical separation and weighing
Insect damaged seeds	Physical separation and weighing
Extraneous matter	4 of IS 1797
Defective seeds	Physical separation and weighing

Extraneous matter (for seeds)

100 to 200g of thoroughly mixed sample is taken and any foreign materials are separated from the fennel seeds. Transfer the materials on a tarred watch glass and weigh it. The watch glass should also be weighed separately. The difference between these two weights gives the amount of extraneous matter. It is the divided by total weight to get the proportion of extraneous matter in the sample which when multiplied by 100 gives the percentage.

Preparation of sample for chemical analysis

The sample is ground to make it pass through IS Sieve of size 1mm. The sample after grinding is transferred to an already dried container and should be immediately closed.

Total Ash: The portion obtained after complete combustion of the sample. It indicates the amount of essential minerals (acid soluble) and acid insoluble portion (sand and silica).

Acid insoluble ash: It represents the amount of sand and silica in the sample that is insoluble in acid.

Moisture content: The water content of the sample is analysed by distilling it by an organic liquid, followed by the collection of the distillate.

Volatile oil: Clevenger-type with joints is used for determining volatile oil

Salmonella: Selective enrichment-based test as specified by IS 5887 (Part Microbiological criteria

The microbiological criteria of fennel seed as per FSSAI (Food Products Standards and Food Additives) Regulations, 2011

Requirements	**Specifications**
Salmonella	Absent in 25 gm.

CHAPTER – 3

PACKAGING

3.1 INTRODUCTION

The selection of packaging materials should take care of functional as well as market requirements.

For bulk packaging, there are no specifications. Commonly, jute fabrics such as hessian, light weight DW, A-twill, heavy Cee, Jumbo bags (Flexible Intermediate Bulk Containers) (FIBCs) are used for bulk packaging.

Specification Details for Whole and Ground Spices – Consumer Packs Flexible Pouch Systems:

Laminates / Co-extruded films (up to 500 grams capacity)	**Laminates / Co-extruded films (up to 1000 grams capacity)**
50µ HD – LD	50µ HD – LD 62.5µ HD – LD
50µ HD – LD – HD	62.5µ HD – LD – HD
12µ PET / 37.5µ LD	12µ Polyester / 50µ LD
25µ BOPP / 37.5µ LD	25µ BOPP / 50µ LD
12µ PET / 37.5µ PP	12µ PET / 50µ PP
25µ LD – 7.5µ Tie – 25µ PA – 7.5µ Tie – 25µ LD	30µ LD – 7.5µ Tie – 25µ PA – 7.5µ Tie –30µ LD
The LDPE Inner and Outer layers could also be LLDPE or EAA or LD-HD	The LDPE Inner and Outer layers could also be LLDPE or EAA or LD-HD

Source: (ICPE)Packaging of Spices, Indian Centre for Plastic in the Environment

3.2 PACKAGING MATERIALS USED FOR FENNEL SEEDS

According to Food Safety and Standards (Packaging) Regulation, 2018, the following packaging materials are recommended for spices:

- Glass bottle with metal lid or plastic (polypropylene (PP) or High density polyethylene (HDPE) caps

- Plastic based rigid container with Plastic cap (Polyethylene terephthalate (PET) and High-density polyethylene (HDPE) Containers)
- Paper & Paper board or Aluminium foil or Plastic Film based Composite Container
- Folding cartons with Plastic based flexible laminated structure (heat sealed) pouch placed inside
- Plastic based multi-layered layered laminated pouch (heat sealed) (FSSAI, 2018).

3.3 STORAGE OF FENNEL

Fennel seeds when properly stored may last more than a year under room temperature.

Following steps needs to be taken care while storing fennel seeds:

- Containers should be kept away from sun, rain and moist conditions in covered premises.
- The room where the fennel is to be stored should have dry atmosphere, free from unwanted odour as well as proofed against insects and vermin entry.
- The room should have controllable ventilation where it could be able to give good ventilation in dry conditions and should have fully closed ventilation in damp conditions. Fumigation facilities should also be there.

Chapter – 4

Food Safety Regulations and Standards

4.1 Registration and Licensing of Food Business

All Food Business Operators in the country will be registered or licensed in accordance with the procedures laid down

Registration of Petty Food Business

a. Every petty Food Business Operator shall register themselves with the Registering Authority by submitting
b. An application for registration in Form A under Schedule 2 of these Regulations along with a fee as provided in Schedule 3.
c. The petty food manufacturer shall follow the basic hygiene and safety requirements provided in Part I of Schedule 4 of these Regulations and provide a self-attested declaration of adherence to these requirements with the application in the format provided in Annexure-1 under Schedule 2.
d. The Registering Authority shall consider the application and may either grant registration or reject it with reasons to be recorded in writing or issue notice for inspection, within 7 days of receipt of an application for registration.
e. In the event of an inspection being ordered, the registration shall be granted by the Registering Authority after being satisfied with the safety, hygiene and sanitary conditions of the premises as contained in Part II of Schedule 4 within a period of 30 days.
f. If registration is not granted, or denied, or inspection not ordered within 7 days as provided in above sub regulation (3) or no decision is communicated within 30 days as provided in above sub regulation (4), the petty food manufacturer may start its business, provided that it will be incumbent on the Food Business Operator to comply with any improvement suggested by the Registering Authority even later.
g. Provided that registration shall not be refused without giving the applicant an opportunity of being heard and for reasons to be recorded in writing.
h. The Registering Authority shall issue a registration certificate and a photo identity card, which shall be displayed at a prominent place at all times within the premises or vehicle or cart or any other place where the person carries on sale/manufacture of food in case of Petty Food Business.

i. The Registering Authority or any officer or agency specifically authorized for this purpose shall carry out food safety inspection of the registered establishments at least once in a year. Provided that a producer of milk who is a registered member of a dairy Cooperative Society registered under Cooperative Societies Act and supplies or sells the entire milk to the Society shall be exempted from this provision for registration.

4.2 HYGIENIC, SANITARY AND GOOD MANUFACTURING PRACTICES (GMP/GHP) AND HACCP

Cleaning and Sanitation

i. Cleaning and sanitizing programmes shall be established at facility to ensure that the food-processing equipment and environment are maintained in a hygienic condition to prevent contamination of food, such as from metal shards, flaking plaster, food debris and chemicals and records of the same shall be maintained. The programme should ensure that all parts of the establishment are appropriately clean, and shall include the cleaning of cleaning equipment.

ii. Master sanitation schedule shall be maintained for overall facility through checklists

which includes:

- Areas, items of equipment and utensils to be cleaned;
- Responsibility for particular tasks;
- Cleaning method and frequency of cleaning; and
- Monitoring arrangements for checking effectiveness of cleaning
- Person responsible for cleaning
- Persons responsible for monitoring & verification of effectiveness of cleaning
- In case of any deviation what correction & corrective actions being taken.
- Where ever chances of microbial risk with product air count & swab test being recommended.

iii. Cleaning and disinfection chemicals shall be food grade wherever chances of it may come in direct or indirect contact through equipment's or plant surfaces, handled and used carefully and in accordance with manufacturers' instructions, for example, using the correct dilutions, and stored, where necessary, separated from food, in clearly identified containers to avoid the risk of contaminating food.

iv. Cleaning shall remove food residues and dirt and it can be carried out by the separate or the combined use of physical methods, such as heat, scrubbing, turbulent flow and vacuum cleaning or other methods that avoid the use of water, and chemical methods using appropriate cleaning agents.

v. These facilities should be constructed of corrosion resistant materials, be easy to clean and shall have adequate supply of hot and cold potable water, where appropriate. It is recommended to have different colour for hot and cold pipes. A validation mechanism should be in place for all cleaning programme.

Cleaning procedure should generally involve;

- -Removing gross visible debris from surfaces.
- Applying a detergent solution to loosen soil and bacterial film (cleaning)
- Rinsing with water (hot water where possible) to remove loosened soil and residues of detergent.
- Dry cleaning or other appropriate methods for removing and collecting residues and debris and
- Where necessary, cleaning should be followed by disinfection with subsequent rinsing.

Designated area with lock & key provision should be allocated for cleaning equipment's &

chemicals. Where ever necessary & applicable CIP procedure should be defined for equipment's cleaning.

House keeping

i. A housekeeping schedule covering manufacturing and storage areas shall be maintained.

ii. The surrounding areas including roads, parking lots and drains should be well maintained.

iii. Walls and floors should be maintained neat and clean. Ceilings and light fixtures should be easy to clean.

iv. Drains should be sufficiently sized and well sloped. Drains should have removable grates installed for ease of cleaning.

v. For 3rd party (contract) cleaning companies, the supplier should define clear scope, details of services and responsibilities.

vi. Waste storage areas should be clearly marked and waste shall be disposed of in a timely manner.

4.3 HACCP PROCEDURE

appropriate to the nature and size of the operation and sufficient to assist the business to verify that the HACCP controls are in place and being maintained.

Documentation shall include (as a minimum) the following:

- HACCP team composition;
- Product description;
- Intended use;
- Flow chart;
- Hazard analysis;
- CCP determination;
- Critical limit determination;
- Validation process; and
- HACCP plan

The HACCP plan shall include the following information for each identified CCP:

- Food safety hazard(s) to be controlled at the CCP;
- Control measure(s);
- Critical limit(s);
- Monitoring procedure(s);
- Corrections and corrective action(s) to be taken if critical limits are exceeded;
- Responsibilities and authorities for monitoring, corrective action and verification;
- Record(s) of monitoring.

Records to include

- CCP monitoring activities;
- Deviations and associated corrective actions;
- Disposition of non-conforming products;
- Verification procedures performed;
- Modifications to the HACCP plan;
- Validation record;Product release recordsand Testing records.

4.4 PACKAGING AND LABELLING

General Requirements for Packaging

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) enameled 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 terephathalates (PET).
   vi. IS: 12247 - Specification for Nylon 6 Polymer; (ix) IS: 13601 - Ethylene Vinyl Acetate (EVA);
   vii. IS: 13576 - Ethylene Metha Acrylic Acid (EMAA);
   viii. 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.

3. **General packaging requirements for Canned products,**
   i. All containers shall be securely packed and sealed.

ii. The exterior of the cans shall be free from major dents, rust, perforations and seam distortions.

iii. Cans shall be free from leaks.

General Requirements for Labelling

1. Every prepackaged food shall carry a label containing information as required here under unless otherwise provided, namely;
2. The particulars of declaration required under these Regulations to be specified on the label shall be in English or Hindi in Devnagri script: Provided that nothing herein contained shall prevent the use of any other language in addition to the language required under this regulation.
3. Pre-packaged food shall not be described or presented on any label or in any labelling manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character in any respect;
4. Label in pre-packaged foods shall be applied in such a manner that they will not become separated from the container;
5. Contents on the label shall be clear, prominent, indelible and readily legible by the consumer under normal conditions of purchase and use;
6. Where the container is covered by a wrapper, the wrapper shall carry the necessary information or the label on the container shall be readily legible through the outer wrapper and not obscured by it;

License number shall be displayed on the principal display panel in the following format, namely:-

Declaration regarding Food Additives-

i. For food additives falling in the respective classes and appearing in lists of food additives permitted for use in foods generally, the following class titles shall be used together with the specific names or recognized international numerical identifications:

Acidity Regulator, Acids, Anticaking Agent, Antifoaming Agent, Antioxidant, Bulking Agent, Colour, Colour Retention Agent, Emulsifier, Emulsifying Salt, Firming Agent, Flour Treatment Agent, Flavour Enhancer, Foaming Agent, Gelling Agent, Glazing Agent, Humectant, Preservative, Propellant, Raising Agent, Stabilizer, Sweetener, Thickener:

ii. Addition of colours and/or Flavours—

a. Extraneous addition of colouring matter to be mentioned on the label – Where an extraneous colouring matter has been added to any article of food, there shall be displayed one of the following statements in capital letters, just beneath the list of the ingredients on the label attached to any package of food so coloured, namely:

CONTAINS PERMITTED NATURAL COLOUR(S)

OR

CONTAINS PERMITTED SYNTHETIC FOOD COLOUR(S)

OR

CONTAINS PERMITTED NATURAL AND SYNTHETIC FOOD COLOUR(S)

Provided that where such a statement is displayed along with the name or INS no of the food colour, the colour used in the product need not be mentioned in the list of ingredients.

b) Extraneous addition of flavouring agents to be mentioned on the label.

Where an extraneous flavouring agent has been added to any article of food, there shall be written just beneath the list of ingredients on the label attached to any package of food so flavoured, a statement in capital letters as below:

CONTAINS ADDED FLAVOUR (specify type of flavouring agent as per Regulation 3.1.10(1) of Food Safety and Standards (Food product standards and food additive) Regulation, 2011

c) In case both colour and flavour are used in the product, one of the following combined statements in capital letters shall be displayed, just beneath the list of ingredients on the label attached to any package of food so coloured and flavoured, namely:

CONTAINS PERMITTED NATURAL COLOUR(S) AND ADDED FLAVOUR(S)

OR

CONTAINS PERMITTED SYNTHETIC FOOD COLOUR(S) AND ADDED FLAVOUR(S)

OR

CONTAINS PERMITTED NATURAL AND SYNTHETIC FOOD COLOUR(S) AND ADDED FLAVOUR(S)

Provided that in case of artificial flavouring substances, the label shall declare the common name of the flavours, but in case of the natural flavouring substances or nature identical flavouring substances, the class name of flavours shall be mentioned on the label and it shall comply with the requirement of label declaration as specified under the regulation 2.2.2 (5) (ii)

Note: — When statement regarding addition of colours and/or flavours is displayed on the label in accordance with regulation 2.2.2(5)(ii) and regulation 3.2.1 of Food Safety and Standards (Food Product Standards and Food Additive) Regulation, 2011, addition of such colours and/or flavours need not be mentioned in the list of ingredients. Also, in addition to above statement, the common name or

Name and complete address of the manufacturer

(i) The name and complete address of the manufacturer and the manufacturing unit if these are located at different places and in case the manufacturer is not the packer or bottler, the name and complete address of the packing or bottling unit as the case may be shall be declared on every package of food;

(ii) Where an article of food is manufactured or packed or bottled by a person or a company under the written authority of some other manufacturer or company, under his or its brand name, the label shall carry the name and complete address of the manufacturing or packing or bottling unit as the case may be, and also the name and complete address of the manufacturer or the company, for and on whose behalf, it is manufactured or packed or bottled;

(iii) Where an article of food is imported into India, the package of food shall also carry the name and complete address of the importer in India.

Provided further that where any food article manufactured outside India is packed or bottled in India, the package containing such food article shall also bear on the label, the name of the country of origin of the food article and the name and complete address of the importer and the premises of packing or bottling in India.

Net quantity

i. Net quantity by weight or volume or number, as the case may be, shall be declared on every package of food; and

ii. In addition to the declaration of net quantity, a food packed in a liquid medium shall carry a declaration of the drained weight of the food.

Explanation – 1: For the purposes of this requirement the expression “liquid medium” include water, aqueous solutions of sugar and salt, fruit and vegetable juices or vinegar, either singly or in combination.

Explanation – 2: In declaring the net quantity of the commodity contained in the package, the weight of the wrappers and packaging materials shall be excluded:

iii. Where a package contains a large number of small items of confectionery, each of which is separately wrapped and it is not reasonably practicable to exclude from the net weight of the commodity, the weight of such immediate wrappers of all the items of the confectionery contained in the package, the net weight declared on the package containing such confectionary or on the label thereof may include the weight of such immediate wrapper if the total weight of such immediate wrapper does not exceed –

a) eight per cent, Where such immediate wrapper is a waxed paper or other paper with wax or aluminium foil under strip; or
b) six per cent. In case of other paper of the total net weight of all the items of confectionery contained in the package minus the weight of immediate wrapper.

4.5 EXEMPTIONS FROM LABELLING REQUIREMENTS

Where the surface area of the package is not more than 100 square centimetres, the label of such package shall be exempted from the requirements of list of ingredients, Lot Number or Batch Number or Code Number, nutritional information and instructions for use, but this information shall be given on the wholesale packages or multi piece packages, as the case may be.

1. The date of manufacture' or 'best before date' or 'expiry date' may not be required to be mentioned on the package having surface area of less than 30 square centimetres but this information shall be given on the wholesale packages or multipiece packages, as the case may be;
2. In case of liquid products marketed in bottles, if such bottle is intended to be reused for refilling, the requirement of list of ingredients shall be exempted, but the nutritional information specified in regulation.

3. "To make a fluid not below the composition of toned milk or skimmed milk (as the case may be) with the contents of this package, add (here insert the number of parts) of water by volume to one part by volume of this condensed milk or desiccated (dried) milk".
4. In case of food with shelf-life of not more than seven days, the 'date of manufacture may not be required to be mentioned on the label of packaged food articles, but the 'use by date' shall be mentioned on the label by the manufacturer or packer.
5. In case of multi piece packages the particulars regarding list of ingredients, nutritional information, Date of manufacture/ packing, best before, expiry date labelling of irradiated food and, vegetarian logo/non vegetarian logo, may not be specified.

4.6 DATE OF MANUFACTURE OR PACKING

The date, month and year in which the commodity is manufactured, packed or pre-packed, shall be given on the label:

Provided that the month and the year of manufacture, packing or pre-packing shall be given if the "Best Before Date" of the products is more than three months:

Provided further that in case any package contains commodity which has a short shelf life of less than three months, the date, month and year in which the commodity is manufactured or prepared or pre-packed shall be mentioned on the label.

Best Before and Use By Date

i) the month and year in capital letters upto which the product is best for consumption, in the following manner, namely:

"BEST BEFORE..... MONTHS AND YEAR

OR

"BEST BEFORE..... MONTHS FROM PACKAGING

OR

"BEST BEFORE..... MONTHS FROM MANUFACTURE

(Note: — blank be filled up)

ii) In case of package or bottle containing sterilised or Ultra High Temperature treated milk, soya milk, flavoured milk, any package containing bread, dhokla, bhelpuri, pizza, doughnuts, khoa, paneer, or

any uncanned package of fruits, vegetable, meat, fish or any other like commodity, the declaration be made as follows

"BEST BEFORE ……DATE/MONTH/YEAR"

OR

"BEST BEFORE..... DAYS FROM PACKAGING"

OR

"BEST BEFORE..... DAYS FROM MANUFACTURE"

Note:

a) blanks be filled up

b) Month and year may be used in numerals

c) Year may be given in two digits

iii. On packages of Aspartame, instead of Best Before date, Use by date/recommended last consumption date/expiry date shall be given, which shall not be more than three years from the date of packing;

iv. In case of infant milk substitute and infant foods instead of Best Before date, Use by date/ recommended last consumption date/expiry date shall be given, Provided further that the declaration of best before date for consumption shall not be applicable

4.7 Documentation and Record Keeping

Every organization has to maintain records of raw material procurement, production processes, and sales. This is to ensure that the business runs effectively and is profitable. Listed below are some reasons why there is a need for documentation:

1. It gives detailed knowledge about running the business.
2. It helps to control product quality.
3. It helps to keep track of the money invested in the business.
4. It helps to identify the separate costs of raw material or product ingredients.
5. It helps to identify the production cost of a particular process.
6. It helps to make sure that all the quality assurance practices were followed during the production.

7. It helps to make sure that the production equipment is running smoothly/effectively.
8. It works as an evidence for legal procedures.
9. It helps to set an appropriate product price.
10. It helps to take corrective measures at the right time.

4.9 How to Keep Records?

Every food processing organization follows a more or less similar way of keeping records. Production records keep a log of the following:

- The quantity and type of raw materials received
- The quantity and type of ingredients used during processing
- The processing conditions in which production took place (e.g. the temperature set or the air pressure applied)
- The product quality produced

Product quality can be maintained only when:

- The same quantity and quality of ingredients and raw materials are mixed in every batch
- A standard formulation is used for every batch
- Standard process parameters are applied for every batch

Every batch of food is given a batch number. This number is recorded in:

- Stock control books (where raw material procurement is noted)
- Processing logbooks (where production process is noted)
- Product sales records (where sales and distribution is noted)

The batch number must correlate with the product code number, which is printed on labels. This helps the processor to trace any fault found in a batch back to the raw material used or the production process.