

## **Reading Manual for Bread Under PMFME Scheme**



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## ABBREVIATIONS & ACRONYMS

Sr: No.	Abbreviations & Acronyms	Full Forms
1.	FAO	Food and Agriculture Organization
2.	FBO	Food Business Operator
3.	FLRS	Food Licensing and Registration System
4.	FPOs	Farmer Producer Organizations
5.	FSSAI	Food Safety and Standards Authority of India
6.	GMP	Good manufacturing practice
7.	kcal	kilocalorie
8.	MoFPI	Ministry of Food Processing Industries
9.	PA	Polyamide
10.	PET	Polyesters
11.	PFA	Prevention of Food Adulteration
12.	RF	Refined Wheat Meal
13.	SHGs	Self Help Groups
14.	UAE	United Arab Emirates
15.	UK	United Kingdom
16.	US	United States
17.	WGWF	Whole-Grain Wheat Flour
18.	WVTR	Water Vapour Transmission Rate

# CHAPTER 1

## INTRODUCTION

### 1.1. Industrial Overview:



Bakery goods are an integral component of a modern lifestyle. Bakery products are not limited to, bread, rolls, cookies, pies, pastries and muffins, that are typically prepared from flour or meals derived from some kind of grain and cooked over dry heat, especially in a certain

type of oven. Categories of bakery and baked goods such as bars, breads (bagels, buns, rolls, biscuits and loaf breads), cookies, sweets (cakes, cheesecakes and pies), muffins, pizza, snack cakes, tortillas and tortillas (doughnuts, Danish, sweet rolls, cinnamon rolls and coffee cake). Energy is provided by the food we consume, and our body needs to work. Just like we need to put gasoline in our car or recharge the battery of our cell phone, our body needs to be fed every day with food that provides energy. A balanced diet will give our body the right amount of energy we need to remain healthy, and enough raw materials. Items from bakeries are commonly viewed as detrimental to health. Health-based bakery products are the products which, when consumed in sufficient quantities, result in special health benefits other than the usual nutritional supply.

Bakery owners are also selling bakery items with healthy choices. Bakers are now also taking additional precautions to make it more nutritious and delicious using healthier ingredients. In order to preserve good health while enjoying the taste and comfort provided by bakery items, customers need to become aware of the healthier choices.

### ***1.1.1. Types of Bakery Products***

- Bread
- Cakes
- Bun
- Pastries
- Biscuits
- Cookies
- Doughnuts
- Crackers

### **1.2. Product Description:**

Bread is one of the oldest and largest foodstuffs eaten and is consumed by all age groups all over the world. It has been a popular food in large parts of the world throughout documented history and is one of the oldest man-made foods, having been of great significance since the dawn of agriculture. Bread is a composed of flour, water, salt,



yeast and other ingredients that is the result of baking. From a nutritional viewpoint, good bread has a variety of standards, from wheat production to methods of storage. The basic dietary minerals, mainly magnesium, calcium, potassium, sodium, and iron, are also given by bread. In those instances where it is finally reinforced with them, it may be a perfect supplier of micronutrients. Bread can be represented by a series of processes involving mixing, kneading, proofing, forming, baking as a fermented confectionery product that is produced primarily from wheat flour, yeast, water, sugar, salt and other necessary ingredients.

Bread is a staple food prepared, usually by baking, from flour and water dough. It has been a popular food in large parts of the globe throughout documented history. It is one of the oldest foods produced by man, which has been of major importance since the dawn of agriculture, and plays an important role in both religious rites and secular culture. To make good bread, dough created by any process must be sufficiently extensible to relax and expand while it rises. If it's going to stretch out when pulled, a strong dough is extendable. It must also be elastic, that is, have the power to hold the emitted gases when growing, and stable enough to preserve its shape and cell structure.

Bread may be leavened by naturally occurring bacteria, chemicals, yeast developed industrially, or aeration at high pressure. Commercial bread also includes additives in many countries to enhance taste, texture, color, shelf life, nutrition and ease of production.

### **1.3. Market Potential:**

The global market bread product is divided by product type (Loaves, Baguettes, Rolls, Burger Buns, Sandwich Slices, Ciabatta, Frozen Bread, and Others), Distribution Channel (Convenience Stores, Specialist Retailers, Supermarkets and Hypermarkets, Online Retail, Variety Stores, and Others), and by Geography. Global bread market is projected to register a CAGR of 1.43% during the forecast period, 2019 - 2024. During the forecast period, 2019 - 2024, the global bread market is expected to register a CAGR of 1.43%. Since the nineties, the Indian bread industry has come a long way. For certain clients, bread has progressed from being viewed as a fundamental breakfast food item to being a confectionary item. Rising disposable sales, urbanization, and changing customer tastes and behaviors have provided the bread industry a boost over the years.

The Indian bread market stood at \$640.73 million in 2017, and is projected to rise to \$1024.54 million by 2024 at a CAGR of over 10.70 percent, in value terms, during 2019-2024. Market factors and demographic patterns are increasingly affecting supply and demand; India's bread market is aided by an expanding working population and a rising number of health-conscious consumers. In addition, some of the other factors expected to propel demand for bread over the next five years are rising disposable income along with shifting lifestyle and knowledge of eating a good and safe diet to minimize health problems.

The bread industry in India is dominated by unorganized players, leading to about 55% of the total market.<sup>i</sup>

#### 1.4. Raw Material Description:

In several countries, including developed countries, cereal products, mainly in the form of bread, play an important role in the diet, although some of these are experiencing a slow decline in cereal consumption. Fundamental Structure: Basic Structure: Three main components-

- Water
- Gluten proteins
- Starch granules

The texture of bread and pastries depends 100% on how the "other stuff" interacts with these components.

S.N.	Name
1.	Flour
2.	Gluten powder
3.	Bread Improver
5.	Sugar
6.	Salt
7.	Oil <sup>ii</sup>

Owing to their nutritional benefits, the market for functional ingredients in bakery products is growing.

- Bread has catered to more practical demand, becoming a staple food that is a big part of the regular diet.
- The demand growth was sparked by new low-carb, high-fiber, multigrain, and fortified bread appealing to health-conscious customers.
- In addition to practical health benefits, there is an increase in the incorporation of natural ingredients, such as natural preservatives, antioxidants, and bread enzymes.

- Companies seek to replace Omega-9, Omega-3 shortening and fat, which enhance the profile of fatty acids and support results. Cholesterol reduction, weight loss, high protein, and sugar regulation are the main customer trends.

### **1.5. Types of Raw Material:**

- **White Breads-** White breads are breads made of refined wheat flour. This form is commonly consumed internationally, but individuals have moved to other healthier alternatives with the advent of health care options.
- **Whole-wheat baking goods-** Whole-wheat flour is a powdery material that is obtained by grinding or mashing the whole grain of the wheat. Whole-wheat flour is more nutritious than white flour that has been processed.
- **Multigrain bakery products-** These are bakery products comprising two or more grain varieties, in particular for the provision of health benefits and fibre. Bread generated with multiple grains such as oats, crushed wheat, buckwheat, barley, millet and flax is multigrain bread.
- **Bakery high fibre goods-** Fibre refers to a category of substances that are immune to digestive enzymes, including plant polysaccharides and lignin.
- **Sugar-free baking products-** There is no sugar in sugar-free foods and they are typically chemically sweetened. These need to look like their sugar counterparts, taste like, and have the same consistency in order to please the customer.
- **Natural Sweeteners- Honey:** Honey is 25% to 50% sweeter and has a distinctive taste than sugar. Honey baked goods are damp, dense, and appear to brown faster than those made with granulated sugar.
- **Organic Bakery Goods-** Organic foods are farming system products that prohibit the use of man-made fertilizers, pesticides, growth regulators, and additives for livestock feed.
- **Good Fat Baking Goods-** A healthy substitute such as olive oil, which is healthy, can be substituted by trans-fat containing margarine or butter used in cakes.
- **Food intolerance** is a negative reaction, frequently delayed, to a food, drink, food additive, or compound contained in foods that generates symptoms in one or more body organs and systems, such as gluten, lactose, egg allergy etc.



## CHAPTER 2

### PROCESS & MACHINERY REQUIREMENT

#### 2.1. Raw Material Aspects:

Maida is Indian subcontinent white flour made of wheat. Fine milled, processed, and bleached without any bran, it closely resembles cake flour.

Maida is commonly used for the processing of fast food, baked goods such as pastries, bread, and various forms of sweet foods. It is often labelled and sold as "All-purpose Flour," although distinct from all-purpose Meal, due to this vast range of uses.

The endosperm is Maida and it is formed by the starchy white portion of the grain. The bran is isolated and refined with the germ by passing through 80 mesh per inch (31 mesh per centimetre). Though yellowish by default because of wheat pigments, Midget is normally blanketed by either of the floral bleaching agents, either naturally due to atmospheric oxygen. While it is milled from winter wheat that has a high gluten content, the heat generated during the milling process results in denaturing of the protein, limiting its use in the preparation of leavened bread.

#### 2.2. Source of Raw Material:

Uttar Pradesh is the largest producer of wheat in an area with 9.75 million hectares (32%), followed by Madhya Pradesh (18.75%), Punjab (11.48%), Rajasthan (9.74%), Haryana (8.36%), and Bihar (6.82%). As wheat is a major grown crop the availability of wheat grain is easy in the northern states of India. Various mandis are available in every district for wheat. Raw material can be procured from these local vendors, or direct from the farm milled to form the Maida.

#### 2.3. Technologies:

##### ➤ Whole-meal bread

Breads made of wholemeal and wheat meal are common. Any bread that includes full-meal flour can be called 'total meal,' as long as it is a characteristic ingredient of the bread and is included in the list of ingredients. These vary in the production of white bread in two respects. When mixing the water in order to reach an ideal dough consistency, more water needs to be absorbed by the bran in the whole meal. The dough is weaker as the bran particles

break up the tight protein bonds of the dough, weakening the structure of the dough. This means that as dough could collapse when it rises. The addition of extra protein called gluten strengthens and prevents the dough from collapsing. Wholemeal bread is more mineral and vitamin rich than white bread because of the protection of the wheat bran and germ. It is an outstanding source of nutritional fiber with two times as much white bread as multigrain bread.

➤ **Rye Breads processing technology**




Rye flour is different from ordinary flour. Meal of rye is not popular for daily meal. It only contains small quantities of proteins that reinforce dough, which creates weak dough. Rye meal also has more enzymes of amylase which decompose starch into sugars. Rye dough is made from simple ordinary flour, which means it is steep and forms itself with less water than dough. For the treatment of the thin, sticky dough it is important to mould, test and baked. Just as for most meal breads, white flour or gluten can be used to increase the strength of the dough. The traditional way this bread is made provides various evidence to increase acidity and destroy amylase. The bread is therefore sticky and doughy. The savory approach is the perfect way to make the traditional way of bread.





**2.4. Manufacturing Process:**

- The production of bread begins with mixing of the ingredients. For this purpose, 32-45% Maida, 50-64% water, 2% yeast, 2% salt and optionally fat, emulsifiers and sugar are combined.
- After mixing the ingredients, the dough is kneaded. The dough is kneaded after the components have been combined. The dough creates the gluten network and creates air bubbles that can absorb carbon dioxide (CO<sub>2</sub>), created by fermentation.
- Proofing is the process of leaving the dough in the machine for 30 to 50 minutes at a steady temperature of 27°C.
- The rising of the dough will take about 30 minutes, at a humidity of 85% and a temperature of 34°C. During this process the dough can rest and this will make it easier to (pre) shape later.



- After the folding, the dough is shaped for use in a baking tin. The forming of the dough into a long roll is called shaping. During the shaping process the dough ball is rolled into a slab. This slab is then rolled back up to fit into the backing tin.
  
- The bread needs to cool down before it is cut and packed. Packing it before the bread is cooled down will lead to condensation in the bag.

**2.5. Flow Chart:**

Steps	Machines	Uses	Image
<b>Dough Kneading</b>	Dough Kneader	Kneading machine to knead bread dough for you, or you could go with a heavy duty stand mixer with a dough hook attachment.	
<b>Mixing</b>	Mixer machine	A mixer, depending on the type also called a hand mixer or stand mixer, is a kitchen device that uses a gear-driven mechanism to rotate a set of "beaters" in a bowl.	
<b>Moulding</b>	Moulding frames	The container used to give the dough of the breads, it's shape.	

<b>Leavening</b>	Thermal Chamber	The process of fermenting bread in order to make the dough of bread rise is leavening & appropriate environment control chamber are used for this task.	
<b>Baking</b>	Baking oven	An oven is a thermally insulated chamber used for the heating, baking, or drying of a substance	
<b>Slicing</b>	Bread Slicing machine	Bread slicing machine cuts loaves of bread evenly, thus used for bread slicing. Bread slicing machines represent a milestone in the food processing business.	
<b>Packaging</b>	Impulse sealer	Impulse sealing is typically used to seal the barrier sacks and sack bags with many layers, metal and oxygen.	

## 2.6. Additional Machine & Equipment:

Machine and Equipments	Used	Machine Image
<b>Online Inkjet Printing Machine</b>	Uses ink to print text, graphics, and images onto various types of paper or pouches.	
<b>Conveyor</b>	These are conveyors with food grade belt to maintain food safety standards set by monitoring authorities.	

## 2.7. General Failures & Remedies:

S. No.	General Failures	Remedies
1.	Ball bearing failure of various machine	<ol style="list-style-type: none"> <li>1. Proper periodic lubrication of all bearings in various machines.</li> <li>2. Regular replacement of all bearing to prevent critical failures.</li> </ol>
2.	Power Drive Overload	<ol style="list-style-type: none"> <li>1. Ensure proper weighing &amp; metering specially in case of semi-automatic plant.</li> <li>2. Install warning sensor in buffer region of loading capacity to ensure efficient operation.</li> </ol>
3.	Mechanical Key Failure	<ol style="list-style-type: none"> <li>1. Ensure that mechanical keys are replaced as per there pre-defined operational life.</li> <li>2. Prevent Overloading.</li> </ol>
4.	Loss of Interface	<ol style="list-style-type: none"> <li>1. This problem is dominant in newly established automatic plant, one must learn to maintain rules in plant &amp; ensure no employee goes near transmission lines, unless authorised.</li> <li>2. Provide proper physical shielding for the connections.</li> </ol>

5.	Improperly Cooked Bread	<ol style="list-style-type: none"> <li>1. This problem arises due to improper control over main process driving parameters.</li> <li>2. The solution involves ensuring that all the sensors are functioning properly &amp; without error &amp; must be replaced in case they develop defects.</li> </ol>
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**2.8. Nutritional Information of Product:**

Bread provides a substantial share of nutrients needed for growth, health maintenance, and well-being. The source of protein, vitamins, minerals, fiber, or carbohydrates is excellent. Fat and cholesterol are poor as well. The bread is bulky, and so it takes more time to digest and satisfy. All bread is nutritious and the nutritional value variations are not important when we eat a well-balanced diet. the nutrition content of bread mentioned below:

S. No	White bread 1 slice (25 grams)	
1.	<b>Calories</b>	67
2.	<b>Total fat</b>	1 gram
3.	<b>Carbs</b>	13 grams
4.	<b>Protein</b>	2 grams
5.	<b>Fiber</b>	0.6 grams
6.	<b>Thiamine</b>	8% of the RDI
7.	<b>Folate</b>	7% of the RDI
8.	<b>Sodium</b>	7% of the RDI
9.	<b>Manganese</b>	6% of the RDI
10.	<b>Selenium</b>	6% of the RDI
11.	<b>Riboflavin</b>	5% of the RDI
12.	<b>Niacin</b>	5% of the RDI
13.	<b>Iron</b>	5% of the RDI

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**2.9. Export Potential & Sales Aspect:**

Since the 1990s the Indian bread industry has come a long way since the 1990s. Bread has grown from a simple foodstuff for breakfast to a confectionary item for some customers. In the past few years, the bread industry has been boosted by higher disposable incomes and urbanization, and changing customer demand and lifestyles. Bread has grown from a simple foodstuff for breakfast to a clothing item for some customers. The bread industry has been boosted over the years by increased disposable earnings, urban growth, and changing customer tastes and lifestyles.

The Indian bread sector has risen by ~9 percent in the past three years at an INR 33 billion (USD 0.51 billion) in FY 2015. The industry is forecast to rise by ~10% to INR 53 billion (USD 0.82 billion) by 2020. White bread continues to dominate the market with a market share of 75 percent, while Indians are more health-conscious. Although the demand is expected to increase for brown and nutritious bread, this segment accounts for only 20% of the overall share.

Therefore due to the breads short life & local market in various countries, they are generally not a product which is exported to other countries. Except for some traditional breads.

## **CHAPTER 3**

### **PACKAGING**

#### **3.1. Shelf Life of Product:**

Bread has a short shelf life at room temperature, lasting just 3–7 days. Proper sealing and storage may help avoid mold and increase shelf life, as well as using the refrigerator or freezer when needed. If one finds mold, the whole loaf should be thrown away, as mold can create harmful mycotoxins.

The quality of the product is also established, apart from the basics such as food grade packaging material, the type of process and technology further improves the quality of the product, such as the addition of anti-microbial packaging to the value of the product and thus the quality.

#### ➤ **Proper Storage**

When food products are stored for a long period of time and not stored properly, other food products that are unhealthy are spoiled. As germs start growing on it, food items that have been stored for a long time get spoiled. Until the food is rotten, it cannot be consumed, and needs to be thrown away. Spoilage is a stage in which food items deteriorate to the extent where there is no edible human food. "In most cases it has been seen that these Maida-based instant foods take a toll on the digestive process. Its remnants may reach the appendix area of the body and trigger infection."

#### ➤ **The bad fats:**

Sadly, most processed foods are packed with not-so-good fats, including saturated fatty acids or trans fats. Both monounsaturated fatty acids and polyunsaturated fatty acids are fats that are healthy for you. Edible vegetable oil, sugar, sugar syrup, taste enhancer, and many other agents like these are not ideal for your well-being if you dig deep into food labels and what those words really mean. Instant food has saturated fats that, if consumed heavily or on a regular basis, will raise the amount of cholesterol in the blood. Having high cholesterol increases both type 2 diabetes and heart disease risk.



It is possible to germ-infect food and water. There are germs borne by bees. When they are sitting on our food, they transfer these germs on to our food. There are various factors responsible for food spoilage, such as bacteria, mold, yeast, moisture, light, temperature, and chemical reactions.

### 3.2. Bread Packaging:

The packaging material to be used must be carefully chosen, taking into account both practical and marketing specifications, in order to ensure the consistency of the food shape and size during handling, transport, storage, and delivery. In general, the packaging specifications for Bread are listed below:

- To protect the product from spillage and spoilage.
- To provide protection against atmospheric factors such as light, heat, humidity, and oxygen.
- The selected packaging materials should have high water vapour and oxygen barriers.
- The packaging material should have a high barrier property to prevent aroma/flavour losses and in gross of external odour.
- Therefore, the wrapping material should be resistant to grease and oil and be compliant with the commodity.
- The packaging content should, in addition to the above practical specifications, have good machinability, printability and be readily available and disposable.

### 3.3. Type of Packaging:

- ✓ **Hanging Bags-** Hanging bags in grocery stores and other shopping outlets are commonly used. They are a type of plastic bag that is also sealed with a back-middle seam on both ends as well. Hanging bags have a pre-cut hole that makes it easier for them to hang from hooks so that they can be seen in an attractive way.
- ✓ **Pillow bags** - A pillow bag is another typical type of package. The bags are named for their shape, which is like a cushion. They are found lying flat on grocery store shelves in the grocery store and were known to carry the items.

- ✓ **Gusseted Poly Bags-** Gusseted bags are often called flat-bottom bags because they feature a tucked in pleat that's been pressed flat. It allows the bag to expand for greater carrying capacity and to keep the shape of a box if necessary. These types of poly bags can be heat sealed, tied, stapled, or taped shut. They're the perfect poly bag for anyone looking to get more flour in a single bag.
- ✓ **Flexible Pouches-** Flexible pouches are a perfect way to carry most packaged items. They can be made with zipper-seal closures, which tend to keep the inside contents fresh for use. Flexible pouches offer amazing printing capabilities, many pouches stand up on their own, which helps you improve your shelf appearance.
- ✓ **Paper Bags-** "For crusty bread (used in soups and bruschetta), paper bag is used because the paper allows the air to flow, keeping the bread dry and crisp." It should be avoided to store the crusty bread in a plastic pouch because the moisture gets stuck and the crust becomes soft.

### **Essentials**

- ✓ Shelf-life duration, i.e. the degree of protection required by the commodity against pick-up of moisture, preservation of aroma retention, decolouration, etc (in case taste maker is added)
- ✓ During packaging, transportation, and delivery, environmental conditions
- ✓ Business type/sector
- ✓ Preferences for users
- ✓ Printability and appeal of aesthetics

### **The package types generally used as consumer packs are:**

- ✓ Plastic packages of various sizes and shapes with labels and provided with metal or plastic caps. The plastic lids have added inbuilt features of tamper evidence, dispensing, grinding, etc.
- ✓ Printed tinplate container with/without dispensing systems
- ✓ Printed tinplate container with/without dispensing systems
- ✓ Plastic containers with plugs and caps with dispensing and tamper evidence features
- ✓ Printed flexible pouches – pillow pouch, gusseted pouch, stand-up pouch.
- ✓ Lined cartons

### 3.4. Material of Packaging:

The most common choice of packaging medium is plastic (generally flexible) as it provides the required protection and preservation, grease resistance, physical strength, machinability, and printability. Polythene, polypropylene, laminated pouches, PVC wrapped trays and plastic jars were the various packaging materials used. In terms of preserving consistency during the storage era, the suitability and adoptability of these packaging materials have been examined. Plastic-based packaging materials that can be used for Pasta are listed below.

- **Polyethylene (PE)**- It is considered to be the backbone of packaging films. Since one of the greatest threats to the quality of product comes from moisture, polyethylene with its low water vapor 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 permeability's to flavors/volatiles, poor grease resistance, and are limp. High-density polyethylene (HDPE) is stiffer, more translucent, and has better barrier properties but needs a 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 polyethylene. HM HDPE is available in twist-wrap grades. Polyethylene films are also suitable for making bags. A copolymer of polyethylene and polyvinyl alcohol and EVOH has outstanding gas barrier properties especially when dry.

- **Polypropylene**- Polypropylene films have better clarity than polyethylene and enjoy superior machinability due to stiffness. Lack of good salability 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.

- **Polyesters (PET) and Polyamide (PA)-** Polyethylene terephthalate film has high tensile strength, gloss, and stiffness as well as puncture resistance. It has moderate WVTR but is a good barrier to volatiles and gases. To provide heat seal property, PET is normally laminated to other substrates. Nylons or polyamides are similar to PET but have high WVTR.
  
- **Paper Material-** The paper's properties include the paper's thickness, weight, texture, folding resistance, strength and scale. Some paper grades readily tear, although others avoid tearing. Another significant property of paper is the moisture retention ability. Certain paper grades dry very easily and do not absorb moisture.
  
- **Metallised Films-** When polymeric films are metalized there is an improvement in their barrier properties. Metallization is also used for decorative purposes and aesthetics. The films, which are used for metallization, are PVC, PET, PP, and polyamides.



## **CHAPTER 4**

### **FOOD SAFETY REGULATIONS AND STANDARDS OF BREAD**

#### **4.1. Introduction to FSSAI:**

The Food Safety and Standards Authority of India (FSSAI) has been established under Food Safety and Standards, 2006 which consolidates various acts & orders that have hitherto handled food-related issues in various Departments. The FSSAI is responsible for setting standards for food so that there is one body to deal with and no confusion in the minds of consumers, traders, manufacturers, and investors. The Act aims to establish a single reference point for all matters relating to food safety and standards, by moving from multi-level, multi-departmental control to a single line of command.

#### **Highlights of the Food Safety and Standard Act, 2006-**

Various central Acts like Prevention of Food Adulteration Act, 1954 , Fruit Products Order , 1955, Meat Food Products Order , 1973, Vegetable Oil Products (Control) Order, 1947, Edible Oils Packaging (Regulation) Order 1988, Solvent Extracted Oil, De- Oiled Meal and Edible Flour (Control) Order, 1967, Milk and Milk Products Order, 1992 etc will be repealed after commencement of FSS Act, 2006.

The Act also aims to establish a single reference point for all matters relating to food safety and standards, by moving from multi- level, multi- departmental control to a single line of command. To this effect, the Act establishes an independent statutory Authority – the Food Safety and Standards Authority of India with head office at Delhi. Food Safety and Standards Authority of India (FSSAI) and the State Food Safety Authorities shall enforce various provisions of the Act.

#### **Establishment of the Authority-**

Ministry of Health & Family Welfare, Government of India is the Administrative Ministry for the implementation of FSSAI. The Chairperson and Chief Executive Officer of Food Safety and Standards Authority of India (FSSAI) have already been appointed by Government of India. The Chairperson is in the rank of Secretary to Government of India.

## 4.2. FSSAI Registration & Licensing Process:

According to Section 31(1) of Food Safety and Standards (FSS) Act, 2006, Every Food Business Operator (FBO) in the country is required to be licensed under the Food Safety & Standards Authority of India (FSSAI).

As per FSS (Licensing & Registration) Regulations, 2011, Licenses and Registrations are granted to FBOs in a 3 tier system

- Registration - for petty FBOs with annual turnover less than Rs 12 lakhs
- State license - for medium-scale food manufacturers, processor and transporters
- Central License - for large-scale food manufacturers, processor and transporters

### **FSSAI registration is done online on the FSSAI website through Food Safety Compliance System (FoSCoS)**

- FoSCoS has replaced the Food Licensing and Registration System (FLRS).
- Petty food business operators are required to obtain FSSAI Registration Certificate
- “Petty Food Manufacturer” means any food manufacturer, who manufactures or sells any article of food himself or a petty retailer, hawker, itinerant vendor or temporary stall holder (or) distributes foods including in any religious or social gathering except a caterer;

or

- Other food businesses including small scale or cottage or such other industries relating to food business or tiny food businesses with an annual turnover not exceeding Rs. 12lakhs and/or whose production capacity of food (other than milk and milk products and meat and meat products) does not exceed 100 kg/ltr per day

Any person or entity that does not classify as a petty food business operator is required to obtain an FSSAI license for operating a food business in India.

### **FSSAI License - two types - State FSSAI License and central FSSAI License**

Based on the size and nature of the business, the licensing authority would change.

- Large food manufacturer/processors/transporters and importers of food products require central FSSAI license
- Medium-sized food manufacturers, processor and transporters requires state FSSAI license.

- License period: 1 to 5 years as requested by the FBO.
- A higher fee for obtaining FSSAI license for more years.
- If a FBO has obtained the license for one or two years, renewal may be done, no later than 30 days prior to the expiry date of the license.

### **4.3. Food Safety & FSSAI Standards & Regulations:**

#### **Food Standards**

##### **“2.4.15 Bakery Products: 2.4.15.2: Bread”**

- whether sold as white bread or wheat bread or fancy or fruity bread or bun or masala bread or milk bread or of any other name, shall mean the product prepared from a mixture of wheat atta, maida, water, salt, yeast or other fermented medium containing one or more of the following ingredients, namely: —
- Condensed milk, milk powder (whole or skimmed), whey, curd, gluten, sugar, Gur or jaggery, khandsari, honey, liquid glucose, malt products, edible starches and flour, edible groundnut flour, edible soya flour, protein concentrates and isolates, vanaspati, margarine or refined edible oil of suitable type or butter or ghee or their mixture, albumin, lime water, lysine, vitamins, spices and condiments or their extracts, fruit and fruit product (Candied and crystallized or glazed), nuts, nut products , oligofructose (max 15%) and vinegar:
- Provided further that it may also contain artificial sweetener as provided in regulation 3.1.3 of this regulation and label declaration in Regulation 2.4.5 (24, 25, 26, 28 & 29) of Food Safety and Standards (Packaging and Labelling) Regulations, 2011.
- Provided also that it shall conform to the following standards, namely:—
  - ✓ Alcoholic acidity (with 90 per cent alcohol)- Shall be not more Than equivalent of 7.5 ml. N NaOH per 100 g of dried substances.
  - ✓ ash insoluble in dilute HCL on dry weight basis —
- bread except masala bread or fruit bread- Not more than 0.1 per cent ma sala bread or fruit bread- Not more than 0.2 per cent
- Provided also that it shall be free from dirt, insect and insect fragments, larvae, rodent hairs and added colouring matter except any permitted food colours present as a carryover colour in accordance with the provision in regulation 3.1.17, in raw material used in the products.

- [Provided also that bread may contain baker's yeast at the levels required under "good manufacturing Practices]

It may contain Oligofructose (dietary fibres) up to 15% maximum subject to label declaration under labelling regulation 2.4.5 (43) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011.

## **Food Safety**

Part I - General Hygienic and Sanitary practices to be followed by Petty Food Business Operators applying for Registration.

### **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 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.
10. All equipment's shall be placed well away from the walls to allow proper inspection.
11. There should be efficient drainage system and there shall be adequate provisions for disposal of refuse.
12. The workers working in processing and preparation shall use clean aprons, hand gloves, and head wears.
13. Persons suffering from infectious diseases shall not be permitted to work. Any cuts or wounds shall remain covered at all time and the person should not be allowed to come in direct contact with food.
14. All food handlers shall keep their finger nails trimmed, clean and wash their hands with soap, or detergent and water before commencing work and every time after using toilet. Scratching of body parts, hair shall be avoided during food handling processes.
15. All food handlers should avoid wearing, false nails or other items or loose jewellery that might fall into food and also avoid touching their face or hair.
16. Eating, chewing, smoking, spitting and nose blowing shall be prohibited within the premises especially while handling food.
17. All articles that are stored or are intended for sale shall be fit for consumption and have proper cover to avoid contamination.

18. The vehicles used to transport foods must be maintained in good repair and kept clean.
19. Foods while in transport in packaged form or in containers shall maintain the required temperature.
20. Insecticides / disinfectants shall be kept and stored separately and away from food manufacturing / storing/ handling areas.

#### **4.4. Labelling Standards (Regulation 2.5 of FSS)**

Labelling requirements for packaged food products as laid down in the Part 2.4 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, Colors and Flavors
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

Provided that — (i) the nutritional information may not be necessary, in case of foods such as raw agricultural commodities, like, wheat, rice, cereals, flour, spice mixes, herbs, condiments, table salt, sugar, jaggery, or non –nutritive products, like, soluble tea, coffee, soluble coffee, coffee-chicory mixture, packaged drinking water, packaged mineral water, alcoholic beverages or flour and vegetables, processed and pre-packaged assorted vegetables, flours, vegetables and products that comprise of single ingredient, pickles, papad, or foods served for

immediate consumption such as served in hospitals, hotels or by food services vendors or halwais, or food shipped in bulk which is not for sale in that form to consumers.

**Wherever applicable, the product label also must contains 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 color-filled circle inside a brown square outline prominently displayed on the package, contrasting against the background on the display label in close proximity to the name or brand name of the food.

Vegetarian food must have a similar symbol of green color-filled circle inside a square with a green outline prominently displayed.

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

Exporters should review the Chapter 2 of the “FSS (Packaging and Labelling) Regulation 2011” and the Compendium of Food Safety and Standards (Packaging and Labelling) Regulation before designing labels for products to be exported to India. FSSAI revised the labelling 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 Labelling Regulation 2011, “pre-packaged” or “pre packed food” including multi-piece packages, should carry mandatory information on the label.<sup>iv</sup>

## CHAPTER - 5

### OPPORTUNITIES FOR MICRO/UNORGANIZED ENTERPRISES

#### 5.1. PM-FME Scheme:

Ministry of Food Processing Industries (MoFPI), in partnership with the States, has launched an all India centrally sponsored "PM Formalisation of Micro Food Processing Enterprises Scheme (PM FME Scheme)" for providing financial, technical and business support for up-gradation of existing micro food processing enterprises. The objectives of the scheme are:

- I. Support for capital investment for up-gradation and formalization with registration for GST, FSSAI hygiene standards and Udyog Aadhar;
- II. Capacity building through skill training, imparting technical knowledge on food safety, standards & hygiene and quality improvement;
- III. Hand holding support for preparation of DPR, availing bank loan and up-gradation;
- IV. Support to Farmer Producer Organizations (FPOs), Self Help Groups (SHGs), producers cooperatives for capital investment, common infrastructure and support branding and marketing.<sup>v</sup>

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#### References:

<sup>i</sup> <https://www.mordorintelligence.com/industry-reports/bread-market>

<sup>ii</sup> <https://www.thespruceeats.com/yeast-bread-ingredients-4787>

<sup>iii</sup> <https://fdc.nal.usda.gov/>

<sup>iv</sup> <https://www.fssai.gov.in/cms/food-safety-and-standards-regulations.php>

<sup>v</sup> <https://mofpi.nic.in/pmfme/>