



# PM Formalisation of Micro Food Processing Enterprises Scheme

## Processing of Kodo Millet Cookies



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# CHAPTER 1

## INTRODUCTION

### 1.1 ABOUT

Kodo millet scientifically known as *Paspalum scrobiculatum*, is an annual grain that is grown primarily in India, but also in the Philippines, Indonesia, Vietnam, Thailand, and in West Africa where it originates. It is grown as a minor crop in most of these areas, with the exception of the Deccan plateau in India where it is grown as a major food source. Kodo millet falls in the category of minor millets which are small-seeded species crops, grown around the world for food and fodder. Essential similarities of the members of this group of species are the resilience and ability to thrive in harsh environments, along with nutritious seed content. They have been cultivated since immemorial time. Some of the popular common names of the kodo millet plant are Indian paspalum, Creeping paspalum, Ditch millet, Scrobic paspalum, Water couch, Scorbic, Mau'u-laiki, rice grass, rice grass paspalum, Veld paspalum and native paspalum. Kodo is a popular fast or upvas food in some parts of India. The millet is certainly superior to rice, gluten free and rich in fiber, vitamins and minerals. It has large potential to provide nourishing food to subsistence farmers in Africa and elsewhere.



**Kodo Millet in India** is largely grown in the states of Madhya Pradesh, Chattisgarh, Maharashtra, Tamil-Nadu and Karnataka. It is also cultivated in the Jhum field of Arunachal Pradesh.

## 1.2 Nutrient composition of Kodo Millet (Per 100g)

S.No	Nutrient	Quantity
1	Moisture	12 g
2	Protein	8.3 g
3	Fat	1.4 g
4	Fibre	9.0 g
5	Calorific value	346 kcal
6	Carbohydrate	65.9 g
7	Minerals	2.6 mg
8	Calcium	27 mg
9	Phosphorous	188 mg
10	Iron	0.5mg
11	Thiamine	0.33 mg
12	Riboflavin	0.09 mg
13	Niacin	0.2 gm

Ref: Abdalla et al., 1998; b Barbeau and Hilu, 1993, c Saleh et al., 2013, Obilana, 2003, Léder, 2004, Sokrab et al., 2012.

## 1.3 Health Benefits of Kodo millet

Kodo millet is a good substitute to rice or wheat. Protein, fiber, and mineral content are much higher than the major cereals like rice. It can be cooked just like rice or ground into flour. It provides balanced nutrition, unlike polished white rice. Listed below are some of the popular health benefits of Kodo Millet

### 1. Anti-diabetic

Kodo millet intake is found to reduce fasting blood glucose level and promotes significant increase in serum insulin level. Anti-diabetic compounds in Kodo are quercetin, ferulic acid, p-hydroxybenzoic acid, vanillic acid and syringic acid. Thus, regular use is recommended for diabetic patients.

### 2. Antioxidant and anti-microbial activity

Kodo millet grains consist of polyphenols and antioxidants. The polyphenols possess antimicrobial action against certain bacteria (*Staphylococcus aureus*, *Leuconostoc mesenteroides*, *Bacillus cereus* and *Enterococcus faecalis*).

### **3. Anti-obesity**

Kodo is high in fiber and prevents gain in weight. It also helps to prevent rise in cholesterol and triglyceride levels and is a functional food to manage weight and promotes weight loss.

### **4. Anti-cholesterol and anti-hypertension**

Kodo is very beneficial for post-menopausal women suffering from signs of cardiovascular disease, high blood pressure and high cholesterol levels. Hence, regular consumption of Kodo millets is recommended for all.

### **5. Helps in weight management**

Kodo millet consists of low-fat content and fiber content is higher and makes to feel fuller after consuming less quantity itself, therefore it avoids over eating and lessens the weight, thereby controls obesity. An obese person should include this cereal in their diet and see the difference on their weight.

### **6. Cholesterol reduction**

Regular consumption of Kodo millet helps to lower the triglycerides and C-reactive protein, thus it lowers the bad cholesterol and ideal for your heart. Thus heart protective food too.

### **Traditional uses and benefits of Kodo Millet**

- Regular consumption of kodo millet is very beneficial for postmenopausal women suffering from signs of cardiovascular disease, like high blood pressure and high cholesterol levels.
- Kodo Millet helps hydrate your colon to keep your system regular and keep you from being constipated.
- Kodo Millet helps in controlling Blood sugar and Cholesterol.
- It is easy to digest, contains a high amount of lecithin and is excellent for strengthening the nervous system.
- It is rich in photo chemicals, phytate that helps in reduction of cancer risks.
- It helps to reduce the body weight and beneficial for postmenopausal women.
- It is good for those suffering from signs of cardiovascular disease, like high blood pressure and high cholesterol levels.

- Also, it is good for diabetics, its anti – diabetic compounds like quercetin, ferulic acid, p – hydroxybenzoic acid, vanillic acid and syringic acid from Varagu prevents obesity.
- Kodo millets contain no gluten and are good for people who are gluten intolerant.
- Kodo millets can be used for traditional as well as novel foods.
- Unprocessed or processed grain can be cooked whole or decorticated and if necessary ground to flour by traditional or industrial methods.
- In tribal sectors, it is cooked as rice also and out of flour tribal population prepares different recipes.
- Traditionally the grains of *Paspalum scrobiculatum* are used in the management of diabetes mellitus.
- Grains are also useful in the treatment of inflammation, hemorrhages and general debility.

#### **Other facts**

- In the Southern United States and Hawaii, it is considered to be a noxious weed.
- It may also have potential to be used as grass ties on hillside plots to prevent soil erosion, while also providing a famine food as a secondary purpose.
- It has been noted that it makes a good cover crop.
- Kodo millet is a nutritious grain and a good substitute to rice or wheat.
- It is also a good choice of animal fodder for cattle, goats, pigs, sheep, and poultry.

#### **1.4 WHY THE DECLINE IN MINOR MILLETS?**

The primary factors responsible for the steep decline in the production and consumption of small millets in India are

1. Low productivity, high labour intensity, drudgery of agricultural operations and lack of attractive farm gate prices.
2. Easy availability of rice and wheat through the public distribution system, which led to a shift in food consumption away from small millets in the producing regions.
3. Drudgery related to dehulling of small millets other than finger millet.
4. Inadequate investment in product development and commercialization.

5. Low social status associated with small millet foods, resistance to change in dietary habits and lack of knowledge on the use of small millets in the daily diet.
6. Inadequate availability of small millets in local markets and high prices.
7. Inadequate policy support for small millets when compared to crops like rice and wheat.

### **1.5 MINOR MILLETS' UNDERUTILIZED POTENTIAL**

Madhya Pradesh is one amongst the states in India with the poorest level of nutrition: 60% of the children are underweight compared to 43% at national level. Kodo millets provide good sources of phosphorus and iron and higher protein content than rice. Because of this high nutritional value and their capacity to even thrive on poor quality soils under water-limited conditions, small millets have great potential to help alleviate nutrition insufficiencies in the State. Minor millets have largely been replaced by rice in most parts of India.

Millet crops have recently received a lot of national and international attention as traditional gluten-free superfoods. This renewed perception further enhances the potential for these cereals to be reasonable economic investment for smallholder farmers in India, while improving local livelihoods, nutrition and resilience. Local farmers have the opportunity to take advantage of this momentum before distant suppliers take actions to meet the growing demand.

## **CHAPTER 2**

### **KODO MILLET COOKIES AND ITS PREPARATION**

Cookie is a small flat, baked product, commonly called biscuit. Cookie usually prepared from wheat flour, eggs, sugar and fat, sometimes toppings with raisins, oats or chocolate chips. Generally, wheat is one of the cereals used extensively throughout the world for the preparation of cookie. But cookie from non-wheat cereals like rice, jowar, maize or millet is uncommon. Recently, millets are gaining importance because they can offer several nutraceuticals, and also being rich in protein, minerals and vitamins. Its protein has a beneficial influence on the metabolism of cholesterol. Cereal or millet cookie is made from a fine flour of millet with leavening and shortenings. There exists, however considerable potential for large scale manufacture and marketing of shelf-stable product utilizing underutilized grains like Kodo millet as the demand for ready-to-eat convenience food products has been steadily increasing, consequent to industrialization and convenience in using. The product is made from kodo millet flour and can be consumed during tea time or in between the meal.

#### **2.1 PREPARATION OF KODO MILLET COOKIES**

Kodo millet cookies manufacturing process involves three steps includes

- 1) Mixing
- 2) Shaping or forming
- 3) Baking

##### **2.1.1 Mixing**

Mixing is a process designed to blend different ingredients into a uniform and homogenous mixture. The major ingredients are flour, fat and sugar. All measured ingredients are put together for dough formation. Prepared dough is fed into mixers where mixing is done and dough is prepared for moulding/cutting.

##### **2.1.2 Shaping and Forming**

The forming process is specific for each cookie type. There are three processes by which shaping or forming of cookies is achieved-

- 1) Sheeting and cutting

2) Rotary moulding

3) Extrusion

**1. Sheeting and cutting method:**

This method of forming is used for the production of crackers, semisweet cookies and selected soft doughs.

**2. Rotary moulding:**

The rotary moulding process offers advantages over sheeting and cutting that there is no scrap to recycle and very less labour requirement. This process is used for dry and crumbly doughs only.

**3. Extrusion method:**

In this method of dough forming, the dough is extruded through a row of dies which is cut by a wire or blade mounted on a frame that moves through the dough just below the die nozzle outlet.

### **2.1.3 Baking**

This is the area where we pass these moulded/ formed wet cookie into baking oven. The cookies are baked on desired temperatures (160°C - 220°C).

Various type of heating are available now-a-days as per the convenience and cost. Different types of oven are available for baking products.

### **2.1.4 Cooling**

The hot product obtained from baking must be cooled to room temperature prior to packaging for several reasons-

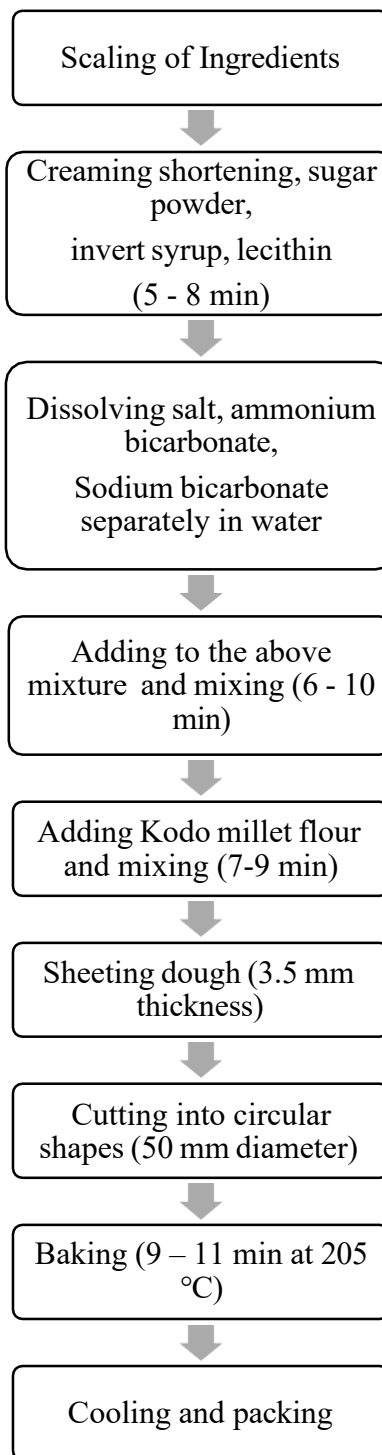
- Being warm, reduced firmness of the baked product so as to withstand packaging process
- Packaging material shrinkage due to contact to hot product
- Hot packed product may continue release some steam causing condensation inside the packaging.

Cooling can be achieved either by placing the baked product at ambient conditions or by forced air cooling.

## 2.2 INGREDIENTS USED

<b>Ingredients</b>	<b>Weight (kg)</b>
Kodo Millet Flour	100
Shortening	13-17
Sugar powder	32-38
Invert Syrup	6-10
Skimmed Milk Powder	0.25-0.75
Salt	1.2-1.5
Sodium Bicarbonate	0.2-0.9
Ammonium Bicarbonate	0.5-0.7
Vanilla essence	0.1-0.2
Water	30-40

## 2.3 FLOW DIAGRAM



## 2.4 MACHINES USED

### 1. Planetary Mixer

It has unique nature of motion around its own axis and throughout the circumference of the utensil in which the dough and baking ingredients are there. All the baked goodies need better and accurate mixing. Better mixing means better taste, better fluff and better raw material utilization.



### 2. Cookie wire cut machine

It is used to give cookies their shape. Die assembly and cutting wire can be changed for a variety of cookie shape and structure.



### 3. Rotary oven

It bakes cookies uniformly from all around. First, the dough prepared and cookie are cut and placed in the tray. Then the trays are placed in the wheeled tray cart and put into the oven.



#### **4. High Speed Biscuit Wrapping Machine**

It is a servo based, form-fill and seal machine, specially engineered for biscuit, cookies, cream, wafer, family pack biscuit wrapping.



## CHAPTER 3

### PACKAGING REQUIREMENTS OF KODO MILLET COOKIES

Packaging is defined as —the enclosure of products, items, or packages in a wrapped pouch, bag, box, cup, tray, can, tube, bottle, or other container to perform the following functions: containment; protection or preservation; communication; and utility or performance. If the device or container performs one or more of these functions, it is considered a package.

#### 3.1 NEEDS OF PACKAGING

- Packaging helps in protecting and containing the products until it reaches the consumers.
- It also provides us with important product information about nutrition and storage.
- To make goods reach safely
- For advertisement or branding
- To prevent contamination

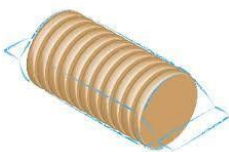
A wide range of packaging materials is used to pack cookies. Since paper cartons, tins have lost out, flexible packaging materials as the packaging medium of cookies is widely popular these days.

#### Advantages of flexible packaging material

- 1) Functionality,
- 2) Lower cost,
- 3) Printability,
- 4) Light weight,
- 5) Savings in freight and other such factors

#### 3.2 MAJOR CLASSIFICATION OF PACKAGING

##### PRIMARY PACKAGING



- Envelops and holds the product.

- Direct contact with the cookies.

**Commonly used primary packaging materials for cookies are**

### **1. Glassine**



- Smooth and glossy paper that is air, water, and grease resistant.
- Offers good resistance against atmospheric elements
- Made with 100% wood pulp
- Naturally biodegradable

### **2. Wax paper**



- Also known as paraffin paper
- It is made moisture-proof by applying wax on the surface.
- It doesn't let the impurities to come in contact with the actual item
- Moreover, wax paper packaging easily flows through the machine while printing due to the presence of wax in it

### **3. Cellophane**



- Excellent gas barrier properties and
- Heat sealability.
- MST, MSAT, Coated Cellophane (MXXT)

#### 4. Tin



- Good sealing property.
- More compressive strength.
- Green and healthy packaging.
- Increased shelf life.
- Easy to handle.

#### 5. Polypropylene Film



Biaxially oriented polypropylene film

- Biaxially Oriented Polypropylene film commonly known as BOPP.
- Good barrier to odour and moisture.
- Maintains product freshness and quality.

## 6. Thermoformed Plastic Trays



- Thermoformed plastic trays of polystyrene or PVC with multiple cavities are used to pack assorted cookies.
- They are closed with a Snap-on lid or overwrapped or sealed with a lidding material.
- The products rest nicely in the compartments and make a good presentation.

## SECONDARY PACKAGING



- Used to group the primary packages
- Present outside the primary unit.

## TERTIARY 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.

#### **PURPOSE SERVED BY PACKAGING**

- No Oxygen exchange from within and outside a package
- Water vapour permeability of packages
- Aroma impermeability characteristics of packaging materials
- Resistance to seepage of fats and oils
- Protection against deteriorative visible and ultra violet radiation
- Good printability and appearance
- Physical, mechanical protection to the products against shocks, crushing and vibrations
- Compatibility and safety of the packages

### **3.3 QUALITY CHECKING OF COOKIES BEFORE PACKAGING**

Quality control covers checks of raw materials, manufacturing process and finished products and packaging. Quality control involves all areas of the company activities: purchasing, warehousing, production, engineering, sales and laboratory testing. There are several standards applied in the cookies manufacturing industry and recognised internationally: HACCP, ISO 9000 series, BS 570.

Quality control functions in a biscuit bakery will cover the following elements:

- Specifications and quality of all raw materials including ingredients and packaging materials

- Production and packaging equipment
- Equipment maintenance
- Process control throughout the manufacturing process
- Production output, downtime and damaged product
- Biscuit dimensions, colour, weight, texture and flavour
- Pack weights, appearance, labelling and security
- Metal detection
- Factory conditions, hygiene, cleaning procedures and services
- Warehousing, storage and despatch of the biscuits
- People and their facilities

### **Important quality parameters of cookies before packaging**

- Cookies weight
- Dimensions: Length, Width and diameter
- Colour top and bottom
- Moisture content

### **3.4 INNOVATIVE PACKAGING STYLE USED IN COOKIES**

Use of active packaging ingredients in cookies helps to significantly increase the shelf-life and maintain the original quality of the product. Commonly used active packaging ingredients act as oxygen absorbent and antimicrobial agents.

#### **Wrapping styles of cookies packaging**

Cookies must be of common size and shape with a certain consistency and rather narrow tolerances in their dimensions. Standard wrapping machines can be used. Cookies are packed using the following two wrapping styles.

#### **ENDFOLD WRAPPING**



- A portion of cookies standing on edge is roll wrapped or fold wrapped into a heat sealable film.
- The longitudinal packet seal is sealed tightly in a fin seal style.
- The packet ends are folded neatly and heat-sealed.
- Due to the neat and tight surrounding of the film, this packet gives utmost mechanical protection and acceptable barrier properties.

### **PILLOW PACK WRAPPING**



- In this type of wrapping configuration, cookies are packed in a primary wrapper and are over-wrapped by a carton to improve presentation and acceptance.
- Offers flexibility and accuracy
- Tightly wrapped than enfold wrap

### **Conclusion**

- Packaging became an important parameter in marketing of any food product.
- Good packaging reflects the sustainability of cookies.
- Hence selection of package is important to contain the cookies in a cost-effective way that satisfies industry requirements.
- It must also satisfy the consumer desires by maintaining cookies safety and minimizes environmental impacts.

## CHAPTER 4

### FOOD SAFETY AND STANDARDS (FOOD PRODUCTS STANDARDS AND FOOD ADDITIVES) REGULATIONS, 2011

#### 4.1 Regulations

##### **FSSAI 2.4.15 BAKERY PRODUCTS:**

1. **Biscuits** including wafer biscuits shall be made from maida, vanaspati or refined edible oil or table butter or desi butter or margarine or ghee or their mixture containing any one or more of the following ingredients, namely: —

Edible common salt, butter, milk powder, cereals and their products, cheese cocoa, coffee extract, edible desiccated coconut, dextrose, fruit and fruits products, dry fruit and nuts, egg, edible vegetable products, ginger, gluten groundnut flour, milk and milk products, honey, liquid glucose, malt products, edible oilseeds, flour and meals, spices and condiments, edible starches such as potato starch and edible flours, sugar and sugar products, invert sugar, jaggery, protein concentrates, oligofructose (max 15%) vinegar and other nutrients and vitamins:

Provided that it may contain food additives specified in these regulations including Appendix A:

Provided further that it may contain artificial sweetener as provided in regulation 3.1.3 of these regulations and label declaration as provided 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 following standards, namely: —

- (i) Ash insoluble in dilute hydrochloric acid (on dry basis): shall not be more than 0.1 percent
- (ii) Acidity of extracted fat (as oleic acid): - not exceeding 1.5 per cent.

45[Provided also that biscuit may contain baker's yeast at the levels required under "Good Manufacturing Practices]

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

##### **FSSAI 7.2.1 Cakes, cookies and pies**

The term “sweet cracker” or “sweet biscuit” used in this category refers to a cookie-like product that may be eaten as a dessert such as butter cake, cheesecake, fruit-filled cereal bars, pound cake, moist cake (type of starchy dessert), western cakes, moon cakes, sponge cake, fruit filled pies (e.g. apple pie), custard types, oatmeal cookies, sugar cookies and British “biscuits” (cookies or sweet crackers).

#### 4.2 Food Additives for Cookies

<b>Bakery products</b>					
<b>Food Category System</b>	<b>Food Category Name</b>	<b>Food Additive</b>	<b>INS No</b>	<b>Recommended maximum level</b>	<b>Note</b>
7.2.1	Cakes, cookies, biscuit, cracker and pies	Acesulfame potassium	950	1,000 mg/kg	165,188
		Allura red AC	129	100 mg/kg	
		Aspartame	951	1,700 mg/kg	191,165
		Aspartame acesulfame salt	962	1,000 mg/kg	77,113
		<b>BENZOATES</b>			
		Beeswax	901	GMP	3
		Brilliant blue FCF	133	100 mg/kg	
		<b>CAROTENOIDS</b>		100 mg/kg	
		<b>CHLOROPHYLLS AND CHLOROPHYLLINS, COPPER COMPLEXES</b>		75 mg/kg	
		Candelilla wax		GMP	3
		Caramel III - ammonia caramel		50,000 mg/kg	
		Caramel IV – sulfite ammonia		1,200 mg/kg	

		caramel			
		beta-Carotenes, vegetable		1,000 mg/kg	
		Diacetyltartaric and fatty acid esters of glycerol		20,000 mg/kg	
		<b>HYDROXYBENZOATES, PARA-</b>		300 mg/kg	27
		<b>IRON OXIDES</b>		100 mg/kg	-
		Indigotine (Indigo carmine)		100 mg/kg	
		Neotame		80 mg/kg	165
		<b>PHOSPHATES</b> 52		9,300 mg/kg	229,33
		<b>RIBOFLAVINS</b>		300 mg/kg	
		<b>SACCHARINS</b>		170 mg/kg	165
		Shellac, bleached	904	GMP	3
		Sucralose (Trichlorogalactosucrose)	955	700 mg/kg	165
		Sucroglycerides	474	10,000 mg/kg	
		52[Omit ]			
		Sucrose esters of Fatty acids	473	GMP	
		Tartaric acid	334	GMP	
		Benzoyl peroxide	928	40 mg/kg	
		Curcumin	100 (i)	GMP	
		Canthaxanthin	161 g	GMP	
		Annatto	160 (b)	GMP	
		Carmoisine	122	100 mg/kg	
		Erythrosine	127	50 mg/kg	
		<b>POLYSORBATES</b>		3,000 mg/kg	
		Tartarazine	102	100 mg/kg	
		Potassium iodate	917	GMP	
		52[Poly glycerol	475	10,000 mg/kg	

		esters of fatty acid			
		TOCOPHEROLS		200 mg/kg	389
		TARTRATES		5,000 mg/kg	45
		Propylene glycol Alginates	405	3,000 mg/kg	

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

### 4.3 PACKAGING AND LABELLING REQUIREMENT

#### 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.

**ANNEXURE: MANUFACTURERS LIST OF FOOD PROCESSING MACHINERIES**

<b>S.no</b>	<b>Name of the company</b>	<b>Machineries</b>
<b>1</b>	Premium Engineers Pvt Ltd Plot No 2009, Phase IV, GIDC Vatva, Ahmedabad 382445 India Tel: +91 79 25830836 Fax: +91 79 25830965	Milling & grinding machinery, Oven
<b>2</b>	Central Institute of Agricultural Engineering, Nabi Bagh Berasia Road Bhopal 462 038 Madhya Pradesh India Tel: +91 755 2737191 Fax: +91 755 2734016	Slicing machinery; Cleaning machinery; Milling & grinding machinery, Mixer
<b>3</b>	Gurdeep Packaging Machines Harichand Mill compound LBS Marg, Vikhroli Mumbai 400 079 India Tel: +91 22 2578 3521/577 5846/579 5982 Fax: +91 22 2577 2846	Packaging and labelling machines
<b>4</b>	Rajan Universal Exports Post Bag no 250 162 Linghi Chetty Street Chennai 600 001 India Tel: +91 44 25341711/25340731/25340751 Fax: +91 44 25342323	Cleaning machinery; Milling & grinding machinery, Oven
<b>5</b>	Gardners Corporation 158 Golf Links New Delhi 110003 India Tel: +91 11 3344287/3363640 Fax: +91 11 3717179	Milling & grinding machinery; Packaging and labelling machines



## Contact Us

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