MINISTRY OF FOOD PROCESSING INDUSTRIES
GOVERNMENT OF INDIA

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PACKAGING OF GROUNDNUT PRODUCTS

AATMANIRBHAR BHARAT

PM Formalisation of Micro Food Processing Enterprises Scheme (PM FME Scheme)

INTRODUCTION

- Groundnut is an important Oilseed crop in the world with over 100 cultivating countries.
- The Groundnut or Peanuts species belongs to the family of *Fabaceae* (commonly known as bean, legume or pea family).
- It is a rich source of all B vitamin except B12, minerals, phosphorus, calcium, iron. The biological value of groundnut protein is the highest among all vegetable proteins.
- Peanuts are proven to be an excellent source of vitamin E various fatty acids, good quality proteins (approx. 28%) and carbohydrates.

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PACKAGING

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Need for Packaging:

It's not possible to imagine food without a packet!

Food packaging is everywhere. Being such a large industry, packaging has its own principles, technology, advantages and disadvantages, processes, toxic effects and cost.

Packaging which used to be a mere necessity few decades back has now turned into an art and a science.

PACKAGING

Need for Packaging:

- It also refers to the process of design, evaluation, and production of packages.
- While appropriate packaging is important to maintain the basic attributes of food (temperature, color, taste, texture, etc.), maintaining food safety is an important function of packaging.

- Convenience in use
- Should be reuse or recyclable
- Compatible with the packaging machine
- Reduction of oxygen in the packaging headspace and light exposure are key factors in lowering lipid oxidation and off-flavor development, thus keeping quality.
- Using of inert gases, as argon and nitrogen, can solve many problems and provide an optimal product storage in several production steps during storage and bottling.

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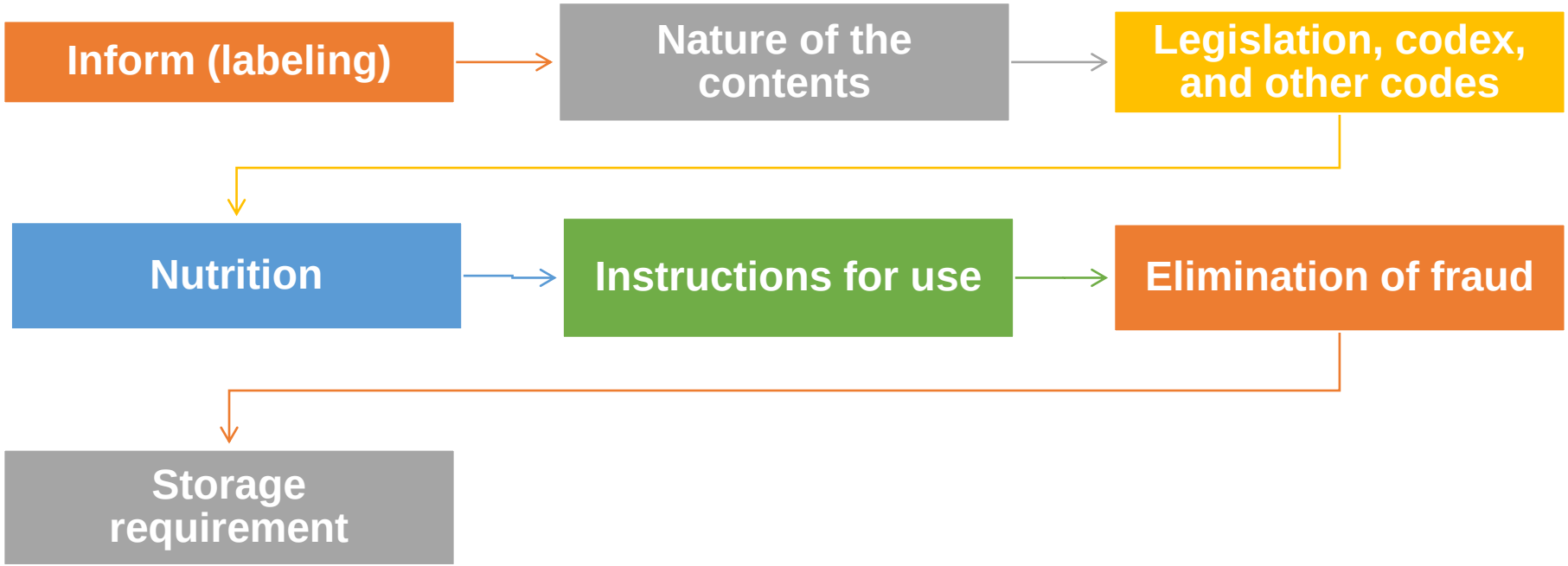
FEATURES OF PACKAGING



DESIRABLE CHARACTERISTICS OF PACKAGING MATERIAL

- Must comply with the provisions made under the food safety and standards (packaging and labeling) regulations, 2011
- Packaging material should not react with products
- Available at low cost
- Non toxic packaging material
- Should not allow printing ink to penetrate into the product
- Protect against tempering
- Protects against spoilage causing agents
- Withstand wear and tear during transportation

TYPES OF PACKAGING

Primary packaging

- It refers to the product's immediate container.
- It is the packaging that most closely protects the product.
- It can also be referred to as retail or consumer packaging.
- E.g. tin cans, glass jar

TYPES OF PACKAGING

Secondary Packaging

- Secondary packaging is the packaging that holds the individual units of package.
- Secondary packaging makes it easier for retailers to display and handle products.
- Secondary packaging may be removed from the item without changing the qualities or attributes of the good.
- Common examples include cardboard cartons, cardboard boxes, paperboard cartons, shrink-wrapped bundles Etc.

TYPES OF PACKAGING

Tertiary packaging

- It refers to the further packaging necessary for storage or transportation.
- It may contain a number of products within a cardboard box for easy transportation.
- Mostly curtain box are used for final packaging

CHARACTERISTICS OF PACKAGING MATERIAL

The material selected must have the following characteristics:

- Must meet tamper-resistance requirements
- Must not reactive with the product
- They must protect the preparation from environmental conditions
- Must be non-toxic
- Must not impart odor/taste to the product
- Must be approved by government body.

PEANUT BUTTER PACKAGING

Shelf Life of Product:

- Compared with other spreads, peanut butter generally has a long shelf life.
- It's manufactured plays a significant role in its shelf life.
- Commercial peanut butters may last 6–24 months unopened and 2–3 months once opened.
- Natural peanut butters may last several months unopened, or up to a month once opened.
- Placing peanut butter in the fridge can extend its shelf life.
- Addition of stabilizers and preservatives can increase the shelf life

PEANUT BUTTER PACKAGING

Shelf Life of Product:

- The shelf life of natural peanut butters can vary considerably among brands due to the addition of different ingredients.
- On the other hand, products labeled as natural peanut butters must contain at least 90% peanuts.
- They have a shorter shelf life because they generally lack preservatives and stabilizers.
- However, some natural peanut butters may contain stabilizers to prevent oil separation.

PEANUT OIL PACKAGING

- The Groundnut or Peanuts species belongs to the family of *Fabaceae .*
- The oil extracted from groundnut/peanuts is also known as Arachis Oil, which is a mild tasting vegetable oil with a light-yellow transparency, clear colour and lustre, mild pleasant fragrance accompanied by a good taste and relatively easy to digest.
- Groundnut oil is generally used in cooking, frying and manufacturing of margarine and shortening throughout the world.

FACTORS AFFECTING KEEPING QUALITY OF PEANUT OIL

The basic factors that may alter the quality of packed peanut oil are:

- Dissolved oxygen in the oil, that is the oxygen that remains in the container free
- Headspace after it is sealed & the oxygen diffused through the walls
- Light, which passes through containers, activates the oxidation process
- Autocatalytic oxidation
- Temperature & Humidity during storage
- Migration of substances from the container to the oil

PACKAGING MARKET SHARE FOR EDIBLE OIL

Quantity of oil in different packaged variants:-

Pouch: 33 Lac MT

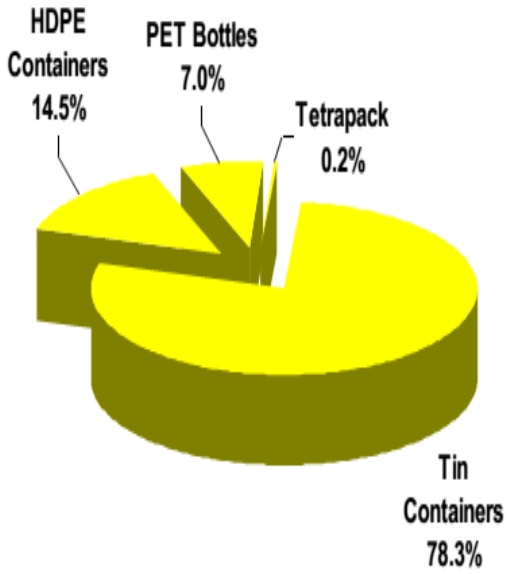
Tin : 40 Lac MT

HDPE : 15 L : 6 Lac MT.

HDPE : 1L,2 L:3 Lac MT, 5L: 6 Lac MT

Tetrapak : 0.50 Lac MT

PET : 7 Lac MT.



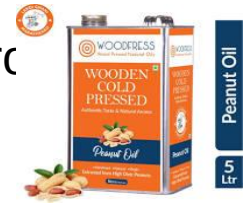
TYPES OF PACKAGING MATERIAL FOR PEANUT OIL

S. No	Type of Packing Material and Standards	Tare Weight/ 1 Kg Pack	Quantity Packed
01	High Density Polyethylene (HDPE) (IS-10840:1994)	40 g	200 g -15 Kg
02	Pet Bottle (IS-12887:1989)	22-28 g	200g- 2Kg
03	Tin Can (IS-10339:1988 & IS-10325:1989)	63 g	1 kg-15 kg
04	Flexible Plastic Pouches (IS-12724:1989)	9-13 g	200g-1 Kg
05	Poly Vinyl Chloride (PVC) Bottles (IS-12883:1989)	22-28 g	200g- 2Kg

PACKAGING MATERIAL FOR PEANUT OIL

1. TIN CANS:

- Used for customized pack of different capacities.
- Properly lacquered tin cans are must be use.
- Must be sealed properly to maintain the quality & oxidation in the pro
- Higher cost is one of the drawback.



PACKAGING MATERIALS FOR GROUNDNUT PRODUCTS

1. LDPE

- Low-density polyethylene is heat sealable, inert, odour free and shrinks when heated.
- It act as a barrier to moisture and has high gas permeability
- It is less expensive, therefore widely used.
- Has ability of fusion welded to itself to give good, tough, liquid-tight seals.

PACKAGING MATERIAL FOR GROUNDNUT PRODUCTS

2. GLASS BOTTLES & JARS:

- Used for Retail Packaging
- Provide excellent protection
- Not in much use because of their fragility and high weight.
- Higher cost is one of the drawback

PACKAGING MATERIAL FOR GROUNDNUT PRODUCTS

3. LINED CARTON OR STAND ALONE PAPER PACK:

- Available in various shape and size.
- Flexible pouch may be made from laminates or Aluminum along with box is widely used.
- Attractive and economical pack

PACKAGING MATERIAL FOR GROUNDNUT PRODUCTS

2. PET :

- PET can be made into film by blowing or casting.
- Melting point of PET is higher than PP which is around 260°C and due to the manufacturing conditions does not shrink below 180°C.
- PET is ideal for high-temperature applications.
- It also act as good barrier of oxygen and water vapor.

PACKAGING MATERIAL FOR GROUNDNUT PRODUCTS

3. 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.

PACKAGING MATERIAL FOR GROUNDNUT PRODUCTS

4. POLY VINYL CHLORIDE (PVC) :

- PVC is a stiff and clear film having a low gas transmission rate.
- PVC can be used as small wraps, bags, and pouches. PVC when co-polymerized with polyvinylidene chloride is known as Saran.
- Since it is a costly material, it is only used as a coating to obtain barrier properties and heat salability.
- PVC film is also used for twist wraps, as it has twist retention properties and is excellent on high-speed machines.

PACKAGING MATERIAL FOR GROUNDNUT PRODUCTS

4. PET or PVC:

- Widely used for Peanut Oil packaging because of excellent odour free and gas barrier properties.
- Blow moulded bottles made up of PET or PVC is used.
- Recyclable

PACKAGING MATERIAL FOR GROUNDNUT PRODUCTS

5. PLEXIBLE FILMS/POUCHES/LAMINATES

- Made from laminates or multi layer films.
- Lamination (bonding together) of two or more films improves the appearance, barrier properties or mechanical strength of a package.
- May be in the form of pillow pouch or as self-standing pouches.
- Cheapest than any other packaging system.
- Selection of laminate or a multi layer film is governed primarily by the compatibility of the contact layer, heat-sealing ability and heat-seal strength and shelf life required.

PACKAGING MATERIAL FOR GROUNDNUT PRODUCTS

RECENT PACKAGING AND FILLING SOLUTIONS

1. Liquid Nitrogen Dosing System

- Nitrogen: completely inert, totally tasteless, odorless.
- Accepted in the food and beverage industry.

Salient Features:

- Liquid nitrogen replaces head-space oxygen.
- Extends shelf life, Addresses rancidity
- Preserves the freshness and taste of product.
- Increases Top load
- Averts bottle paneling or collapsing.
- No deformation of filled container.
- Possible reduction of weight: 2-3 g for 1 L PET.
- Consistent pressure from container to container

2 . Opaque PET:

- Glossy PET: 2 L and 5 L pack.
- ISBM surface advantage,
- Distinct package appeal,
- Enhanced UV resistance.

3. Aesthetics:

- PVC sleeves give impression of seepage in mustard oil
- Feel of ‘sweating effect’ (doesn’t actually happen).
- Use of ‘Pearlised BOPP’ sleeves.
- No ‘sweating effect’ in PET.
- Cost – competitive
- Aesthetics improvement

4. Aspectic Packaging

Aseptic packaging is the filling of sterile containers with a commercially sterile product under aseptic conditions, and then sealing the containers so that re-infection is prevented; that is, so that they are hermetically sealed.

Aseptic packaging are used for :

✓To take advantage of high temperature.

✓Increase shelf life of food products at normal temperature.

✓In package sterilization.

PACKAGING MACHINES

PACKAGING MACHINES

Vacuum packaging machine

Vacuum packed roasted peanut

LABELING

- Labeling is a means of performing the communication function of packaging, informing the consumer about nutritional content, net weight, product use and so on.
  - Labeling acts as a silent salesman of a company
  - Shape and design of the container attracts the customers.

PACKAGING & LABELING LAWS - FSSAI

General requirement for Packaging:

- Every pre packaged food shall carry a label containing information as required here under Food Safety and Standards (Packaging and labelling) Regulations.
- 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.
- Label in pre-packaged foods shall be applied in such a manner that they will not become separated from the container.
- Contents on the label shall be clear, prominent, indelible and readily legible by the consumer under normal conditions of purchase and use.

PACKAGING & LABELING LAWS - FSSAI

PACKAGING & LABELING LAWS - FSSAI

Labeling should contain following information:

- FSSAI License/Registration Number
- Name of the Food
- List of the Ingredients
- Nutritional Information
- Net Weight/Quantity
- Lot/Code/Batch Identification number
- Date/Month/ of Manufacturer
- Best Before or Use by Date or Date of Expiry
- Declaration regarding Vegetarian & Non Vegetarian
- Instruction of Use

LABELING REQUIREMENTS FOR EDIBLE OIL

Nutritional facts per 100g	
Energy	**Kcal**
Protein	gm
Carbohydrates	g
Sugar	g
Fat	g
Saturated fatty acids	g
Monounsaturated fatty acids	g
Polyunsaturated fatty acids	g
Cholestrol	g

LABELING REQUIREMENT FOR EDIBLE

Size of the logo	
Area of the principal display	Minimum size of diameters in mm
Up to 100cms.	Square. 3
Above 100 cms. Square upto 500 cms	Square. 4
Above 500 cms. Square upto 2500 cms.	Square. 6
Above 2500 cms.	Square. 8

LABELING REQUIREMENT FOR EDIBLE OIL

The specifics requirements and restrictions labelling of packages of edible oils and fats are as given below:-

- The words like, “Super Refined”, “Extra- Refined”, “ Micro- Refined”, “ Double- Refined”, “Ultra- Refined”, “ Anti- Cholesterol”, “ Cholesterol Fighter”, “ Soothing to Heart”, “ Cholesterol Friendly”, “ Saturated Fat Free” or any other words which are an exaggeration of the quality of the product are not allowed to be used on the package, label or the advertisement of edible oils and fats.

- The containers of solvent-extracted oil packed for sale shall bear the following additional label declaration:-

- If the oil is not conforming to the standards of “refined” solvent extracted oils specified in regulation of Food Safety and Standards(Food Products Standards and Food Additive) Regulation, 2011 for Edible Vegetable oil Vanaspati, then a declaration as given below shall be given on the label.

- **“NOT FOR DIRECT EDIBLE CONSUMPTION”**
  If the oil is complying with the requirements for the “ semi-refined” or “raw-grade I” grades of oil specified in regulation of Food Safety and Standards(Food Products Standards and Food Additive) Regulation, 2011, then a declaration as given below shall be given on the label.

- **“FOR INDUSTRIAL NON- EDIBLE USES ONLY”**
  Every container of solvent shall bear the Indian Standards Institution certification mark.

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