Ministry of Food Processing Industries
Government of India

NIFTEM
KNOWLEDGE • INNOVATION • OUTREACH

PALM PRODUCTS - PACKAGING

AATMANIRBHAR BHARAT

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

INTRODUCTION

- **Scientific Name :** *Elaeis guineensis*
- **Family**: Arecaceae
- **Common name:** Oil Palm, macaw-fat
- **Origin :** West Africa

INTRODUCTION

- The oil palm (Elaeis guineensis) is grown throughout the humid tropics of West and Central Africa, the Far East, and Central and South America.
- Oil is obtained from both the fleshy mesocarp of the fruit and the central kernel.
- The fleshy pulp or mesocarp of the fruitlet contains approximately 50% palm oil by weight and the kernel between 46 and 57% palm kernel oil.

PACKAGING

- Packaging is an important part of food manufacturing process. It protect the food products from physical ,chemical, biological damages.
- Without packaging, materials handling would be a messy, inefficient and costly exercise and modern consumer marketing would be virtually impossible.
- Packaging Institute International defined packaging as the enclosure of products, items or packages in a wrapped pouch, bag, box, cup, tray, can, tube, bottle or other container form to perform one or more of the following functions: containment, protection, preservation, communication, utility and performance. If the device or container performed one or more of these functions, it was considered a package.

NEED OF PACKAGING

- **CONTAINMENT :** protecting the environment from the myriad of products that are moved from one place to another.

- **PROTECTION :** to protect its contents from outside environmental influences such as water, water vapor, gases, odors, microorganisms, dust, shocks, vibrations and compressive forces.

- **CONVENIENCE :** Products designed to increase convenience include foods that are prepared and can be cooked or reheated in a very short time, preferably without removing them from their primary package.

NEED OF PACKAGING

- **COMMUNICATION :** Packaging contains a lot of information such name of its manufacturer, product name, terms and uses, date of manufacturing, best before. nutritional information thus helping the consumer to be more informed.

TYPES OF PACKAGING

- **PRIMARY PACKAGING :** Primary package are those package which directly came into contact with food products. It provides first or initial layer of protection to the food products. Examples of primary packaging includes Metal cans, tea bag, paperboard cartons, glass bottles and plastic pouches.
- **SECONDARY PACKAGE :** Secondary package are those package which surrounds or contains the primary package. Ex. Corrugated case, Boxes
- **TERTIARY PACKAGE :** It contains number of secondary package together. Mainly used for bulk handling of food products.

PACKAGING OF PALM OIL

- Packaging of palm oil is mainly done to protect the palm oil from outside environment especially after the completion of process so that oil can retain color, flavor, freshness for a longer period of time.
- Packaging of palm oil is also done to increase their shelf life.
- **Hydrolytic rancidity :** As the temperature increases, water holding capacity of oil increase. Hydrolytic rancidity occurs due to presence of moisture, mainly due to hydrolysis of oil to glycerol and free fatty acids results in to off odor. Thus proper packaging prevents the hydrolytic rancidity.

PACKAGING OF PALM OIL

- **Oxidative Rancidity :** Oxidative rancidity in oil caused due to oxidation of unsaturated fatty acids chain. Aldehydes and ketones are the final products of oxidation responsible for the rancid odor of oils. Due to presence of natural antioxidant and pigments, unrefined oil are less prone to oxidation than refined oil.

PACKAGING OF PALM OIL

- **Microbial growth due to increase in water activity:** Microbial growth in oil occurs when moisture content is more than 65%. Thus packaging prevents palm oil from excess moisture content.

- **Packaging protect oil from degradation of color and vitamins** by protecting it from direct exposure of UV light. Thus oil are protected by using opaque and pigmented packaging materials.

PACKAGING MATERIAL FOR PALM OIL

- Packaging of palm oil is mainly done to protect the oil from outside environment especially after the completion of process so that oil can retain flavor, aroma, freshness for a longer period of time.

PACKAGING MATERIAL FOR PALM OIL

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 PALM OIL

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 PALM OIL

3. GLASS : Now a day glass container has been also used for packaging the oil. It has following advantages:

- act as strong barrier to moisture, gases, odours and micro-organisms.
- do not react with food products.
- suitable for heat processing when hermetically sealed.
- glass are re-useable and recyclable.
- they are transparent to display the contents
- they are rigid, to allow stacking without container damage.

PACKAGING MATERIAL FOR PALM OIL

4. FLEXIBLE POUCHES:

The high packaging cost of rigid/semi-rigid packs and lack of assurance on quality and quantity in buying loose oil has led to the introduction of flexible pouches as retail packs. Flexible packaging materials have the following advantages:

- ✓ Optimum balance between cost and benefits.
- ✓ Lower storage and handling costs.
- ✓ Amenable to high-speed FFS machines.

PACKAGING MACHINES

SOME RECENT TRENDS IN PACKAGING :

MODIFIED ATMOSPHERE PACKAGING:

- MAP can be defined as packaging of food items where atmosphere inside the packet has been modified to increase the shelf life of food products. It involves active modification or passive modification.
- In active modification air is displaced with a controlled, desired mixture of gases, and the process is called as gas flushing.
- Passive modification occurs due to respiration and the metabolism of microorganisms associated with the food.

SOME RECENT TRENDS IN PACKAGING :

ACTIVE AND INTELLIGENT PACKAGING :

- Active packaging is defined as packaging in which subsidiary constituents have been deliberately included in or on either the packaging material or the package headspace to enhance the performance of the package system.
- Intelligent packaging is defined as packaging that contains an external or internal indicator to provide information about the history of the package and/or the quality of the food.
- Various functions performed by intelligent packaging includes: Oxygen absorber, Carbon dioxide absorber or emitter, Ethylene absorber, Ethanol emitter, Moisture absorber.

SOME RECENT TRENDS IN PACKAGING :

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 reinfection is prevented; that is, so that they are hermetically sealed.

- **Active packaging are used for :**

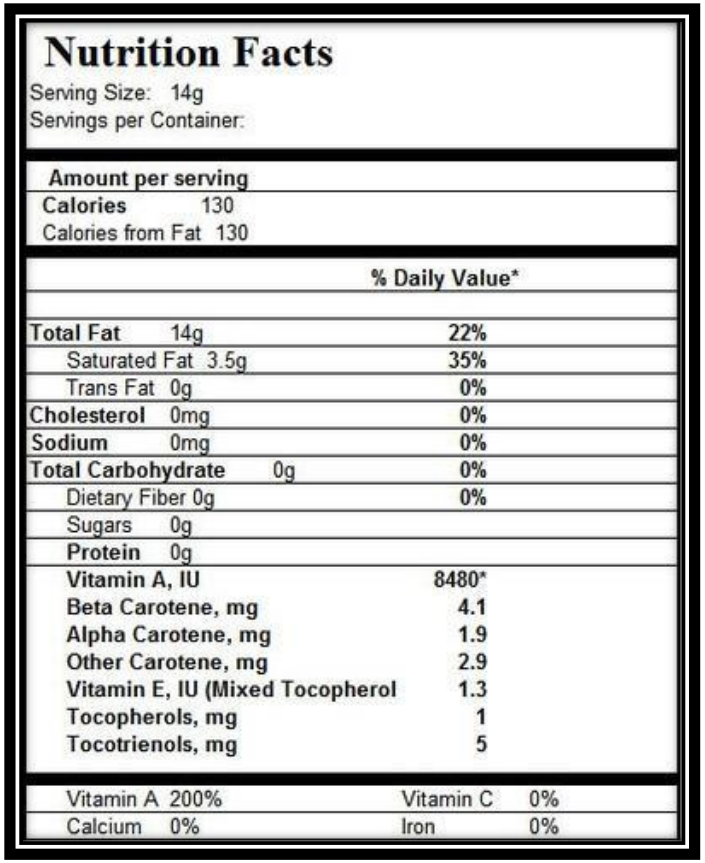
✓ To take advantage of high temperature.

✓ Increase shelf life of food products at normal temperature.

✓ In package sterilization.

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 through distinctive branding, as well as facilitating identification at check-outs through the Universal Product Code (UPC).



Nutrition Facts

Serving Size: 14g
Servings per Container:

Amount per serving	
Calories	130
Calories from Fat	130

	% Daily Value*
Total Fat 14g	22%
Saturated Fat 3.5g	35%
Trans Fat 0g	0%
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 0g	0%
Dietary Fiber 0g	0%
Sugars 0g	
Protein 0g	
Vitamin A, IU	8480*
Beta Carotene, mg	4.1
Alpha Carotene, mg	1.9
Other Carotene, mg	2.9
Vitamin E, IU (Mixed Tocopherol	1.3
Tocopherols, mg	1
Tocotrienols, mg	5

Vitamin A	200%	Vitamin C	0%
Calcium	0%	Iron	0%

PACKAGING & LABELING LAWS - FSSAI

General requirement for packaging:

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

PACKAGING & LABELING LAWS - FSSAI

❖ **Labeling should contain following information:**

✓ Name of the food product.

✓ List of ingredients.

✓ Nutritional information.

✓ Declaration of VEG and NON VEG.

✓ Declaration of added food additives.

✓ Name and address of manufacturer.

PACKAGING & LABELING LAWS - FSSAI

- ✓ Net quantity
- ✓ Code number
- ✓ Lot number/ Batch number.
- ✓ Date of manufacturing.
- ✓ Best before date
- ✓ Country of origin.
- ✓ Instruction for uses.

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