Ministry of Food Processing Industries
Government of India

सत्यमेव जयते

NIFTEM
Knowledge. Innovation. Outreach

# PACKAGING OF FROZEN FISH

AATMANIRBHAR BHARAT

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

# PACKAGING

## Shelf Life of Product:

- Fish freezing is a preservation process. In this process, fish tissue and fishery products are converted into ice within the water at a lower temperature.
- This technique boosts the shelf life of fish and fish products.
- This approach is used internationally to monitor the quality of fish and fish items at the time of conservation.
- If unfrozen fish are merely positioned in a cold store running at -300c, the temperature will decrease rapidly enough and the result will be frozen fish of poor quality; cold stores are built to keep fish already frozen at low temperatures.

- Any frozen fish or shellfish will be healthy indefinitely; after long storage, though, the taste and feel will fade.
- Freeze (0 °F / -17.8 °C or less) cooked fish for up to 3 months, for the highest consistency.
- Frozen raw fish is best used within 3 to 8 months; shellfish, 3 to 12 months.
- Most expiration dates on foods in cans range from 1 to 4 years but keep the food in a cool, dark place and the cans undented and in good condition, and you can likely safely double that shelf life from 3 to up to 6 years.

## ➢ Proper Storage

- When food products are not properly stored, they are spoiled by other food products that are bad for health.
- As germs begin to grow on it, food products stored for a long time get spoiled.
- Spoilage is a phase in which food goods deteriorate to the point that human food is not edible.
- "In most cases it has been seen that these Maida-based instant noodles take a toll on the digestive process.
- Its remnants may reach the appendix area of the body and trigger infection."

# PACKAGING

## ➢ Frozen Fish Packaging:

- Packaging has two key purposes: enticing buyers and retaining materials.
- There is a wide array of packaging choices for food processing plants to pick from, but it mainly depends on the type of product they make.
- There are many factors that need to consider while selecting a suitable type of pack for the product:

- The product contents.
- The application of the product.
- Content stability.
- Protection from any environmental factors
- Acceptability of the pack to the customer.
- Regulatory, legal, and quality issues.

# PACKAGING

## Fish Packaging:

- The packaging material- Both practical and marketing specifications.

- In order to ensure the consistency of the fish shape and size during handling, transport, storage, and delivery.

- Packaging Specifications:
  - 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.

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# 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 odour/taste to the product
- Must be FDA approved.

# TYPES OF PACKAGING

## Fundament classification:

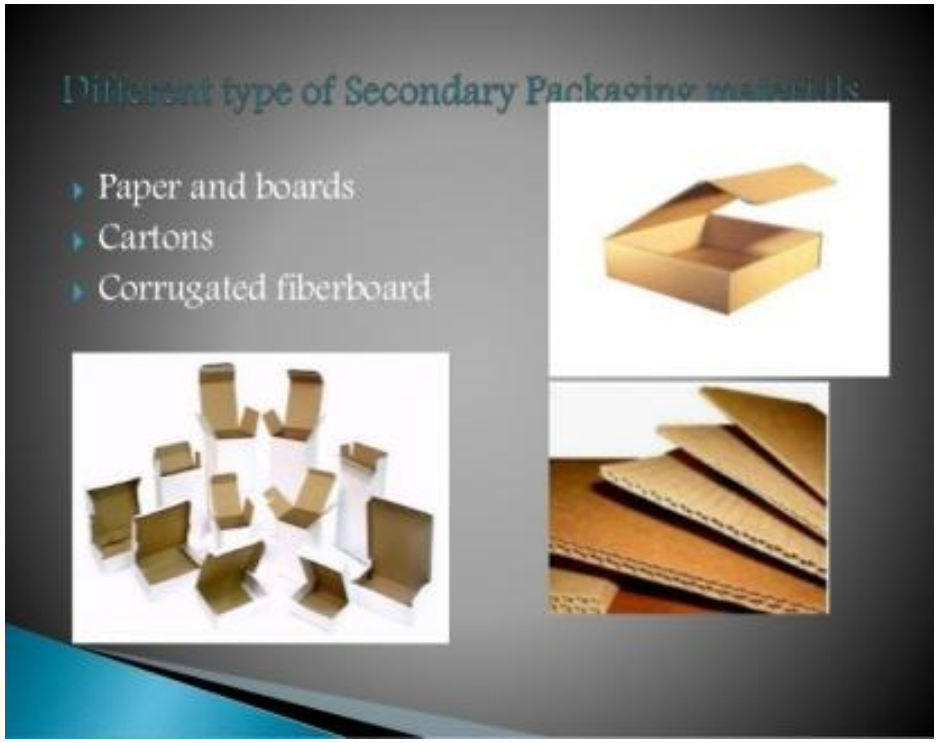
Packaging refers to the act of designing and producing the container or wrapper of a product. It is one of the most important parts of marketing.

- **Primary packaging:**

  Primary packaging is packaging which is in close association with the product itself and is often referred to as a consumer unit.  The main purpose of the primary packaging is to contain, protect and/or conserve the final product, in particular against contamination.

- **Secondary Packaging:**

Secondary packaging is the outer packaging of the main packaging, which connects packages and further covers or marks the prescription component.



- **Tertiary Packaging:**

Tertiary packaging is used for the handling, transportation, and delivery of bulk products

## Classification of Freeze Food:

- There are three basic classification of canned foods based on their acidity, they are classified as low acid canned food, acidified canned food and high acid canned food.

## ➢ Packaging:

Popular kinds of packaging include:

- Stand-up pouches: Attention-grabbing stand-pouches provide ease, reduce the cost of shipping, and keep items new.
- Vacuum skin packaging: To enhance its visual appeal and extend its lifespan, vacuum skin packaging (VSP) forms a tight, clear film over a product**.**

- Multi-layer films: To keep the fish fresh, multi-layer films create a tight seal.
- The product is shown clearly by this type of packaging, and the multiple layers help protect packages from punctures and abrasions.
- Individually fast frozen (IQF) packaging: for frozen fish fillets and other frozen seafood items, IQF packaging is also used.

- In general, IQF is available in bag format and can come in a range of types, such as the shape of the pillow or flat bottom.

- Packaging is often an automated process involving advanced machines which fill and seal containers and bags of goods.

- This process reduces the need for manual labour and speeds up the packaging stage.

## 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 cups 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

# MATERIAL OF PACKAGING

- The most common choice of packaging medium is plastic (generally flexible).
- 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 NOODLES ARE LISTED BELOW.

### ➢ Polyethylene (PE)

- It is considered to be the backbone of packaging films.
- 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.
- 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 saleability 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.

## ➢ 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.

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