TYPE OF MATERIAL PACKAGING

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2021

SPECIFIC LEARNING OBJECTIVE

After learning, the participants are able to understand:

(1). The meaning of material packaging.

(2). The type of material packaging

MATERIAL PACKAGING !

To determine the packaging material must be adjusted to the consumer segment because:

There are segment consumers who like natural packaging materials, modern, or handicrafts

Packaging Materials Can Be Made From:

Plastic, Glass, Paper, Cans (metal) or Combinations of Some Basic Materials

PACKAGING MATERIAL !

Have Your packaging according to the type and material?

Have your Packaging Can Maintain Product Contents??

TYPE OF PACKAGING

1.Glass/Glass Packaging

2.Food Can/Metal Packaging

3.Plastic Packaging

4.Paper and Carton Packaging

5.Wood Packaging

GLASS

1. See-through
2. Strong, warm-up resistant and unformed
3. Non-translucent gases, liquids and solids
4. Reusable
5. Best protection against contamination

Disadvantages

1. Fragile/fragile
2. Large weight, so transport costs are high
3. Need to pack aunder

Used for products that easily change properties, colors etc.

e.g. Fruit juice, jam, softdrink drink.

Glass

- Classified into two groups: Bottles with narrow necks and Jars with wide necks
- Glass is chemically inert and provides nearly absolute protection from oxygen, moisture, microorganisms, rodents, and insects, and, if colored properly (Amber – Orange yellow), can filter out harmful U.V light
- Glass has been used for food packaging for a long time but tougher, light weight plastic containers have replaced them more recently

Glass contd..

- **However, glass is still very popular and is used exclusively for many products. E.g. Jam bottles**

Advantages: Recycling, Consumer attractive presentation of the product

Disadvantages: Heavy weight, Costly and Fragile

TYPES OF GLASS PACKAGING

What are the Types of Packaging Materials Available ?

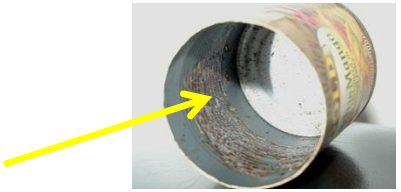
➢ Food Cans

- **Food Canning - Method of preserving food in which the food contents are processed and sealed in an airtight container**
- **First developed in French military by Nicolas Appert in 1810**
- **Cans were traditionally made from tin plate sheet, but now more commonly aluminium is used.**
- **Inside of the can is often sheet coated with lacquers to prevent the cans rusting and reacting with the contents, especially acidic foods**
- **Typical shelf life ranging from one to five years.**

Food Cans/Metal Packaging

ADVANTAGES:

- **Extended shelf-life**
- **Off- season availability**
- **Economical**
- **Less fragile than glass jars**
- **Easy to make**



DISADVANTAGES:

- **Acidic foods can cause corrosion of the tin**
- **Canned foods – Foodborne botulism (*Clostridium botulinum* poisoning due to ineffective sterilization of canned foods)**
- **Migration of toxic compounds (Epoxy resin – Inner coating Of cans) from can.**

Food Cans - Examples

Popular Canned Foods - Examples

Food Cans/METAL PACKAGING

1. CAN,
2. ALUMINIUM FOIL,
3. AEROSOL,

Used for products:
That should not be exposed to sunlight, softdrink, containers / covers of food products, etc.

Plastics

- **Wide range of both rigid and flexible plastic materials including:**

  ***Polythene* – Low density is used as a film wrapping, resistant to water**

  ***High density Polyethtylene* - 'Boil-in-the-bag' products**

  Polyamide (Nylon):

  - **Very good barrier to oxygen**
  - **Used for vacuum packaging**

Plastics contd..

- ***Polyethylene Terephthalate (PET)***
  - **Rigid plastic bottles, light-weight, little risk of breakage and keep the fizz in carbonated drinks.**

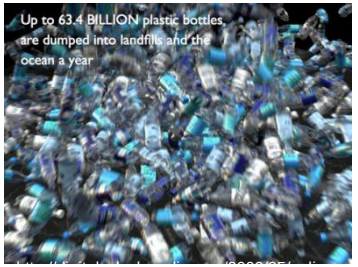
- ***Polystyrene***
  - **Expanded polythene used for trays and insulated containers to keep food products hot or cold.**

  E.g. Ice cream, Sorbets, Coffee, Soups etc.

Plastics contd..

Advantages:

- **Malleable (can be moulded to any shape)**
- **Durable**
- **Economical**



Disadvantages:

- **Plastic pollution**
- **Not environmental friendly**
- **Leach toxins when subjected to temperature abuse**
  E.g. Polycarbonate plastic bottles leach Bisphenol A (BPA)

Plastics contd..

- **Other examples:**

Plastics contd..

- **Other examples:**

PLASTIC cont.

Paper Packaging

- Paper board used for food packaging is often coated with a wax of polythene to prevent interaction with contents
- Polyethylene wax - low molecular weight polyethylene polymer that has wax like physical characteristics
- Most paper or board should be discarded before heating, but some products frozen on specially treated board may be cooked in microwave ovens

  E.g. Heavy weight paperboard coated with a thin layer of polyester (High temperature plastic)

Paper Packaging contd..

Advantages : Economical, Collapsible, Versatility, Excellent handling, Printable, and Recyclable.

Disadvantages: Porous, Poor barrier properties to oxygen, and can be damaged.

Type of paper packaging

1. Kraft Paper
2. Oil Paper and Glasin
3. Parchment Paper
4. Tissue Paper
5. Layer Paper
6. Carton/Paperboard
7. Carton Sheet/Corugated

KRAFT PAPER

Very strong brown Color
Cheap;
For sack bags and wrappers

OIL PAPER AND GLASIN

Slightly brownish-colored Slippery surface. Somewhat translucent Resistant to oil, fat, and water

PARCHMENT PAPERS

Resistant to fat For label making, packing butter and cheese

TISSUE PAPER

TISSUE PAPER
- **light**
- **Very porous**

LAYERED PAPER

- **Surface laminated by plastic, aluminum foil, wax, etc.**
- **Usually made bags / boxes**
- **ETetrapack**

CARTON

- Thickest paper
- For the manufacture of boxes with various shapes

CARTON SHEET / CORRUGATED

- CARTON SHEET Consists of corrugated parts whose 2 sides are covered with cardboard
- Can dampen

WOOD PACKAGING

1. Recyclable
2. Can be used over and over again
3. The shape is thick and wide, it requires a large place
4. Able to withstand products from impact in transportation

Trends in Food Packaging

Active Packaging

Moisture control:

- Use of desiccants to control water vapor in the package.
- They have been used to reduce corrosion of machinery and to extend the shelf life of moisture sensitive foods.

Desiccant (Silica)

Corrosion inhibition:

- Applied to items to help prevent rust and corrosion
- Volatile corrosion inhibitors (VCI) or vapor phase corrosion inhibitors can be provided inside a package in a pouch.

E.g. Organic salts condense on the metal to resist corrosion

VCI Pouch (Organic salts)

What is an Edible Coating ?

- **Thin layer that is deposited on the surface of a food and can be consumed with the food product**

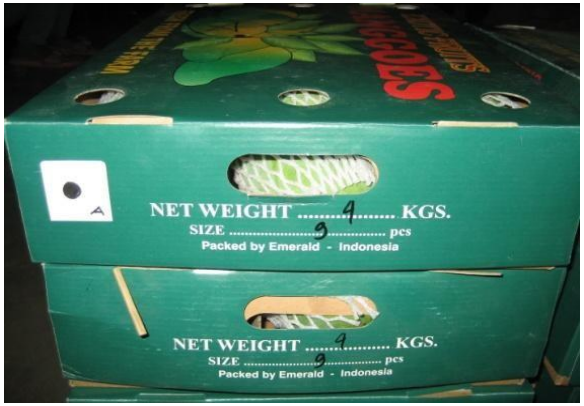
What are The Advantages of Edible Films and Coatings ?

- **Biodegradable**
- **Extend shelf life**
- **Can be consumed with the packaged product**

- **Convenient application by dipping, brushing, spraying etc.**
- **Localized application and control release of active ingredients**
- **Cost effective**
- **Various food and non-food applications**

WAX COATING

- According to Pantastico : wax coating is an effort to delay maturity that aims to extend the shelf life of horticultural products.



- **The wax coating aims to prevent the loss of too much water from commodities due to evaporation so as to slow down the kelayuan because the wax coating partially covers the stomata (pores) of fruits and vegetables, regulate the need for oxygen for respiration so as to reduce the damage to the fruit that has been harvested due to the respiration process, and cover the wounds of small scratches on the fruit.**

Table 1. Optimal wax emulsion concentration in some commodities Horticulture

Commodity	Optimal wax concentration (%)
Avocado	48
Apple	12
Chili	12
Orange	12
Potato	6
Alphonso Mango	6
Pineapple	6
Papaya	6
Plantain	9
Carrot	12

Sumber :Horticulture Research Center

Table 2. The basic composition of wax emulsion 12%

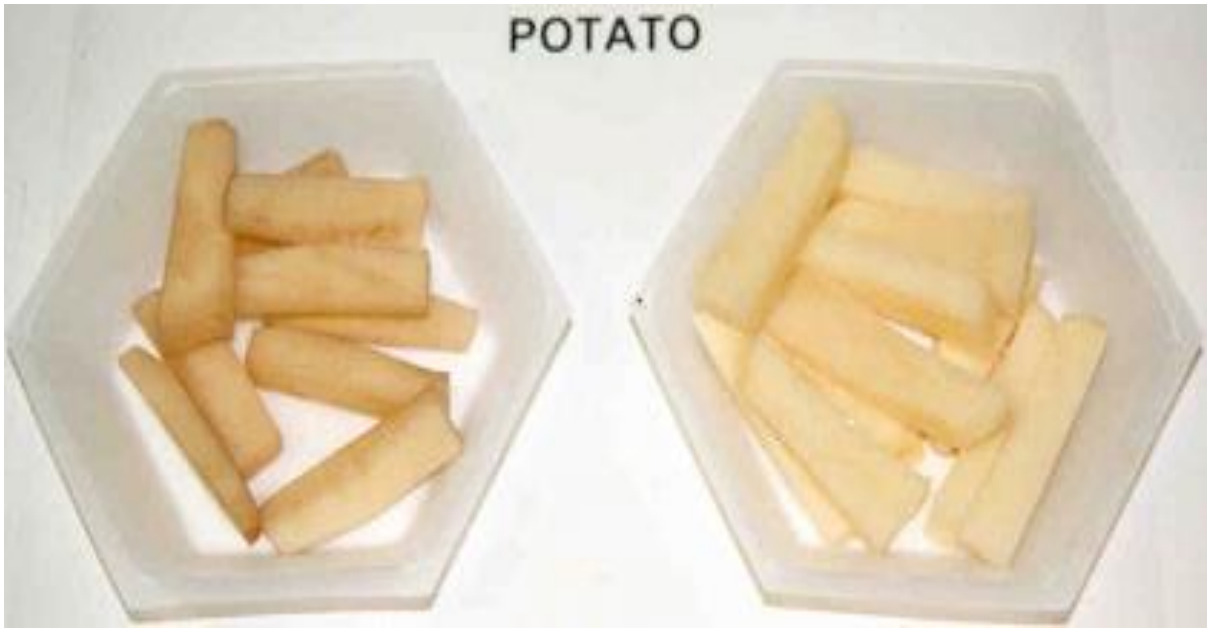
Basic Materials	**Composition**
Lilin lebah	**120 gram**
Trietanolamin	**40 gram**
Asam oleat	**20 gram**
Air panas	**820 gram**

Sumber :Horticulture Research Center

Examples of Film Coated Edible Products

Edible Film Coating contd..

Edible Film Coating contd..



Edible Film Coating contd..

Not coated **Film coated**

Not coated **Film coated**

Sesi: Diskusi & Tanya - Jawab