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सत्यमेव जयते

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PACKAGING OF MINT & MINT PRODUCTS

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FUNCTIONS OF PACKAGING

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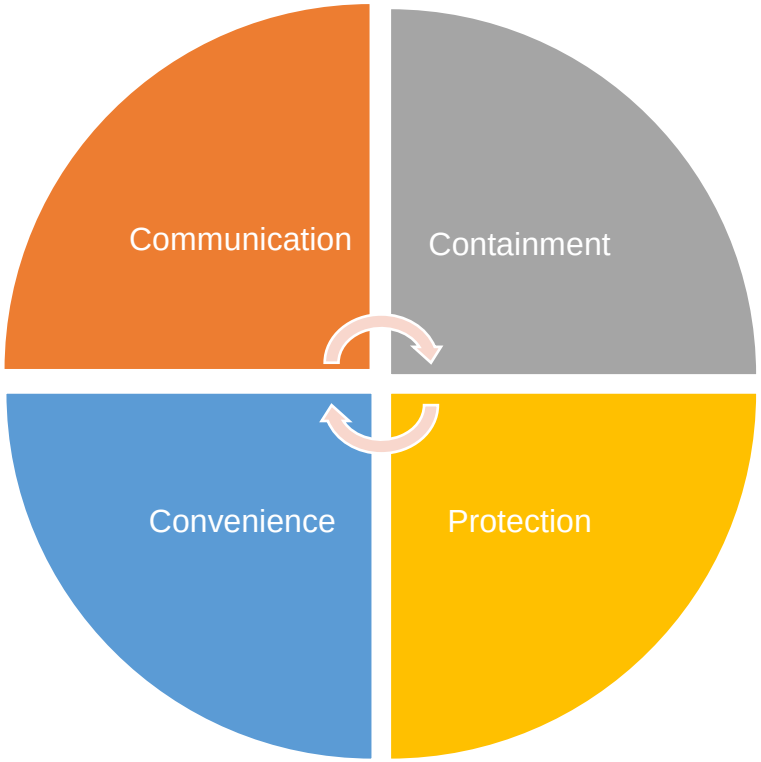

- Ability to protect content from spoilage and Spillage
- Prevent insect infestation and insect damage
- Economical, easily available and easy disposal
- Confirm with food laws

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FUNCTIONS OF PACKAGING

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- Offer Protection against environmental conditions- moisture barrier
- Offer protection against microorganisms- oxygen barrier
- Strength properties to withstand mechanical hazard during transportation and storage
- Have a good printability

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FACTORS TO BE CONSIDERED WHILE CHOOSING PACKING MATERIALS

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Regulation of the moisture level:
Depending on the food product, a high or even a low level of moisture can stabilize the product quality and enhance the shelf life. An adequate choice of packaging material and barrier properties regulates the moisture level and supports the end product quality. The **moisture vapor transmission rate (MVTR)** of the packaging materials (plastic, foil, etc.) is the most important factor and has to fit with the moisture requirements of the food.

Protection from oxygen:
Oxygen causes oxidation and promotes the enzymatic and non-enzymatic phenolic browning and the growth of microorganisms. Packaging without or with less oxygen (e.g. **vacuum or modified-atmosphere packaging**) extends shelf-life and inhibits deterioration. Hermetically sealed packaging requires oxygen-proof materials and seals that do not leak.

Temperature regulation:
A **combination of low temperatures and appropriate packaging** can be used to extend the shelf life of perishable products. However, different mint products need different storage temperatures.

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BULK PACKAGING

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- Woven plastic bags which may be laminated or provided with a lose liner bag and multiwall paper sacks with a plastic liner bag.
- The plastic based alternate packaging materials are used to overcome the contamination problems associated with jute.
- Moreover, plastic bags/liners also help in retaining the quality of the jaggery packed inside for a longer time.

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ADVANTAGES OF BULK PACKAGING

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- Bags are flexible, collapsible and durable
- Can be used for packaging of, powder and any free-flowing material.
- Product wastage/spillage and tampering can be avoided.
- Since the handling is mechanized, less labour is required.
- Saving in time for loading and unloading.
- Bags are light in weight and, therefore, freight costs are reduced.
- Creates eco-friendly, pollution free working atmosphere.

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INSTITUTIONAL PACKAGES

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- Institutional packs of capacities ranging from 2kg to 10 kg are also used.
- Traditional materials used: tinplate containers and jute bags.
- Currently used materials: Laminated flexible pouches and plastic woven sacks.
- BOPP multicolor Printed laminated PP Woven bags.

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CONSUMER PACKAGES

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- The options available to the traders/exporters in the selection of a consumer pack for domestic and export market are quite wide.
- The selection/choice of the packaging material/system depends upon a number of factors.
- Shelf-life period(the degree of protection required by the product against moisture pick-up, aroma retention and discoloration.
- Climatic conditions during storage, transportation and distribution.
- Type/sector of market.
- Consumer preferences.
- Printability and aesthetic appeal.

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MATERIALS USED IN PACKAGING OF MINT & MINT PRODUCTS

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Package design and construction play a significant role in determining the shelf life of a food product. The right selection of packaging materials and technologies maintains product quality and freshness during distribution and storage. Materials that haven traditionally used in packaging include glass, metals (aluminum, foils and laminates, tinplate, and tin-free style), paper and paper boards and plastics. Moreover, a wide variety of plastics have been introduced in both **rigid and flexible forms**. Today's packaging often combine several materials to exploit each material's functional and aesthetic properties.

Processed herbal materials, mint preparations and mint dosage forms should be packaged as quickly as possible to preserve their quality. Packaging should prevent deterioration of the herbal medicines and they should be protected against exposure to pest infestations and other sources of contamination. Continuous in-process QC measures should be implemented to eliminate substandard materials, contaminants and foreign matter prior to and during the final stages of packaging.

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MATERIALS USED IN PACKAGING OF MINT & MINT PRODUCTS

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- Processed mint preparations and herbal dosage forms should be packaged in clean, dry boxes, sacks, breathable bags or other containers in accordance with the SOP and should comply with national and/or regional regulations of the producer and the end-user countries.

- Materials used for packaging should be non-polluted, clean, dry and undamaged, and should conform to the quality requirements for the processed herbal materials, herbal preparations or herbal dosage forms concerned.

- Wherever possible, the packaging used should be agreed upon between the supplier and the buyer.

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MATERIALS USED IN PACKAGING OF MINT & MINT PRODUCTS

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- The type of packaging needed for mint depends on the product, the intended market and the types of climate that the food/ product will be exposed to.
- Mint product that is marketed in a cool dry area may only need simple packaging such as paper.
- The same product sold in a hot, humid area needs considerable protection against moisture pick-up.
- Selection of packaging requires much thought and attention as it represents the final defense for the product in the chain to the customer.

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MATERIALS USED IN PACKAGING OF MINT & MINT PRODUCTS

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- **Stem, heartwood, bark** - Gunny bags and woven sacks
- **Creepers, leaves** - woven sacks with ld liner, high gauge HMHD bags, woven sacks with LD liner, High Gauge polyethylene bags.
- **Fruits and rhizomes** - High gauge HMHD bags, woven sacks with LD liner, Wooden boxes.
- **Flower, anthers, stigma, petals, seed** - Corrugated box with polypropylene woven sacks, HDPE containers, Fiber board's liner.
- **Herbal extracts and compounds** - Air tight HDPE containers, corrugated box with polyethylene woven sacks and fiber board's drums with polyethylene bags separate store for different categories of medicinal and aromatic plants e.g. fresh herb, dry herb, volatile oils.

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TYPES OF PACKAGES

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Blister packs:

Blister packs are often used to hold formed solid unit doses of pharmaceuticals. Solid units of mint doses are packed in blister packaging. Blister packs are pre-formed plastic, paper, or foil. The main element of a blister pack is a cavity or pocket made from a thermoformed plastic. It usually has a backing of paperboard or a lidding seal of aluminum foil or plastic film that can be punctured by hand.

Eg **:** Mint flavored chewing gums, mint candies etc

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TYPES OF PACKAGES

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- ✓ **Sachet packaging** is a square or rectangular sealed pouch, often made of some type of plastic. They are most often used for powder dosages, but can also be used for liquids.
- ✓ They can be re-sealable or single-use sachets and are often perforated so they can be easily torn open by hand. Example: Mint flavoured tea powders, mind hand wash sachet, dried and powdered mint seasonings etc.

TYPES OF PACKAGES

Bottles

❑Bottle are frequently used for liquid pharmaceuticals as well as formed tablets and capsules.

❑Glass is most common for liquids because of its excellent barrier properties. Plastic is often used for tablets and capsules, especially for prescription bottles.

❑They come in different colors, the most common being orange or light brown because these colors prevent ultraviolet light from harming the potentially photosensitive contents, while still letting enough visible light through for the contents to be easily visible.

❑Glass bottles are transparent, they are tough and durable, they can be labeled and identified very easily and they come in a range of different shapes and sizes.

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TYPES OF PACKAGES

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Glass has served Cosmetics industries as an efficient container for many centuries as glass is economical, can be handled at high speed on production lines.

It provides good product presentation (clarity, sparkle, design and shades) and good product identification.

Glass is completely impermeable to all gases, solutions or solvents. Glass can be molded into very attractive designs and provides excellent brand or product image.

Glass is manufactured in many different formulations but the most common in packaging is soda lime glass. Soda lime glass contain Silica (from sand), Calcium Carbonate (Limestone), Sodium Carbonate (soda ash), Aluminum oxide and Trace oxides. It is trace oxide that provide color to glass. The only disadvantage which glass has is that it is fragile and it has weight.

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TYPES OF PACKAGES

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Bottles

Glass is also inert, which facilitates more comprehensive protection, and there is a lower risk of interaction with leachable substances.

*It is very common to come across **amber glass bottles** when looking at pharmaceutical packaging. Amber glass is used more frequently that clear glass because it protects the drug from UV rays, which can damage the product.*

There are three types of glass:

Type I: ultra-resistant borosilicate glass

Type II: surface treated soda lime glass

Type III: soda lime glass

Eg: **Mint flavoured syrups, Mint herbal oil, Mint flavoured balms, Flavouring mint extract etc.**

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TYPES OF PACKAGES

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Pillow bag:

Another common type of packaging is pillow bag. The bags get their name form their shape which resembles the pillow. They are found lying flat on grocery store.

Eg: **Mint tea powder, crushed mint leaves**

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TYPES OF PACKAGES

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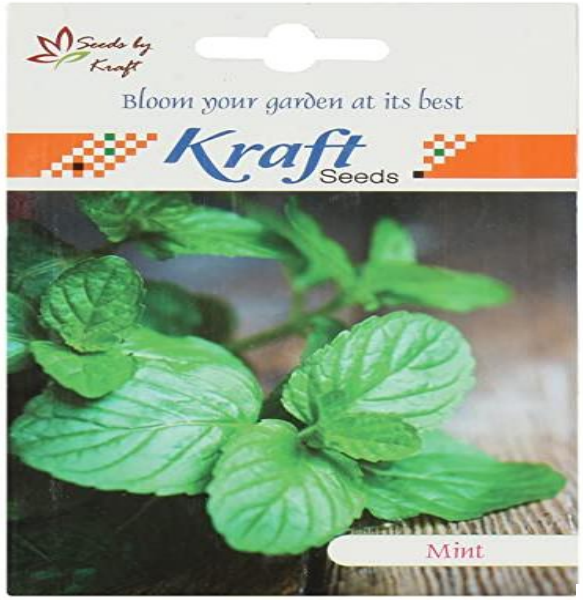
Hanging bags:

- ✓ Hanging bags are frequently seen in grocery stores and other retail locations. They are a type of plastic nag that is sealed on both ends and sometimes with a back-middle seam as well. Hanging bags have a pre-cut hole that allows them to hang easily from hooks, so they can be displayed in an attractive way.
- ✓ Eg: **Mint flavored air fresheners, mint tea powder, dried mint etc.**



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TYPES OF PACKAGES

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Plastic:

It is one of the most versatile substances in the world. Plastic is light in weight, it's flexible, it can be used to produce packaging of all shapes and sizes, cheap in price and it's very difficult to break. These are all advantages when exploring materials for pharmaceutical packaging.

- PET: polyethylene terephthalate
- HDPE: high-density polyethylene
- PP: polypropylene

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TYPES OF PACKAGES

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The use of plastic for producing primary components and point-of-sale material now dominates packaging technology. There are two main groups that are used – Thermoplastic resin and thermosetting resin. Thermoplastics Resins can be extruded at their melt temperature and then blow moulded or injection moulded. After cooling the resin can be re-melted by heating to the limits of thermal fatigue and oxidation. Polyvinyl Chloride (PVC), Low density polyethylene (LDPE), High Density polyethylene (HDPE), Polypropylene and Polystyrene are thermoplastic. Thermosetting resin are moulded using an irreversible chemical reaction and the resins tend to be rigid, hard, insoluble and unaffected by heat up to decomposition temperature. Generic term “amino plastics” is used for plastics produced by reacting formaldehyde with amino compounds. Their applications range from electrical equipment such as switch plates, sockets or circuit breakers, work surface laminates, etc. It is generally processed by compression moulding.

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- ✓ **Lamination** is common process in food manufacturing factories, as aluminum enhances permeable materials and therefore the products are soundly preserved in aseptic package.
- ✓ Aluminum foil is commonly combined with paper and cardboard materials to extend shelf life of products by providing sufficient barrier.
- ✓ ***Essential oils isolated from Mentha plants have a long history of use as improving the flavor of foods like confectionaries (such as candies and chewing gums) and beverages.***
- ✓ ***Mint flavor, which includes spearmint, peppermint, and corn mint, is probably the third most important flavor used after vanilla and citrus.***

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TYPES OF PACKAGES

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- ✓ **Aluminum foil** is more frequently used in food manufacturing than aluminum itself. It can be used in its raw form as for example in chocolate package or included in another type of container as Tetra Pak where one layer of package consists of aluminum. The use of aluminum foil or film for endorsing other materials such as paper or polymer proved to be truly efficient, providing the benefits of aluminum together with low-priced, light materials. Another advantage of foil is that it protects food products from temperature changes as it has thermo-insulation features.

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TYPES OF PACKAGES

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- ✓ **Re-closable Zipper bags and pouches**:

  Reusable bags and pouches are good for flavor because they give customers convenient access to their goodies while preserving freshness

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TYPES OF PACKAGES

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Metals: Today steel, tinplate and aluminum are used for packaging. Metal containers are strong, relatively unbreakable, opaque and impervious to moisture vapor, gases, odors, bacteria; provided they are pinhole free. They are resistant to both high and low temperature. However, metals require the application of coatings and lacquers to prevent chemical reaction and corrosion from the inside or outside. Special coatings and coating techniques have therefore been developed for this purpose. Metal containers are available in a variety of shapes, sizes and styles ranging from small elongated collapsible tubes and shallow drawn containers to large built-up containers including steel-drums.

The use of collapsible aluminium tubes is extremely widespread and almost all varieties of semi-solid products, including emulsions, pastes and gel are marketed in collapsible tubes.

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Paper and Board:

- ✓ It is mainly used for Secondary and Tertiary packaging. Rigid and semi-rigid paper board packages e.g. Cartons, Box, Corrugated Shippers are widely used in cosmetics industries. Plain paper is not used to protect foods for long period of time because it has poor barrier properties and is not heat sealable. When used as primary packaging(when in contact with food), paper is almost treated, coated, laminated, or impregnated with materials such as waxes, resins , or lacquers to improve functional and protective properties.

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TYPES OF PACKAGES

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Aluminium foil packaging material are the best packaging material for long time preservation of dry mint leaves.

In case of retort sterilized cream containing peppermint, **tin cans and glass bottles** are the commonly used packaging formats. A number of different packaging options are available for packaging the UHT cream containing peppermint to pack and the following are some of the packaging options:

Aseptic canning was probably the first to be utilized with creams containing peppermint, Plastic (polythene), paper and foil laminate cartons, Plastic (polystyrene or polypropylene) form-fill-seal packages are also most widely used, Lacquered aluminium or tin-plate cans are used for Aerosol creams, Preformed pots or with laminates and Plastic (polythene) bag contained within a cardboard carton (bag-in-box) is used for bulk packaging of UHT creams containing peppermint with unit volumes are in the range 5-1000 litres.

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TYPES OF PACKAGES

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Collapsible packages like tubes, squeeze tubes, or collapsible tubes can be used for viscous liquids containing peppermint such as toothpaste, ointments, gels, other cosmetics and so on. Basically, a tube is a cylindrical, hollow piece with a round or oval profile, made of plastic, paperboard, aluminium, or other metal.

Sachets (aka packets) and pouches can be used for gel-like products containing peppermint like lotions, shampoos and energy gels. For face washes containing peppermint, materials made from PETG, PVC and PC plastics can be used.

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The most commonly used materials for drug /pharmaceutical products containing peppermint are glass and plastics. Amber glass bottles like ultra-resistant borosilicate glass, surface treated soda lime glass and soda lime glass are the most common ones.

Plastic materials like PET: polyethylene terephthalate, HDPE: high-density polyethylene and PP: polypropylene is also used.

Some of the soap packaging options containing peppermint, that are used by companies in the soap and detergent industry are small sachets, cartons, poly packs, plastic bottles, tubes and paper wrap.

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AATMANIRBHAR BHARAT

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

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Thank you