

## Overview of Packaging Materials

The following document serves as a comprehensive guide for the submission of an Extended Producer Responsibility (EPR) plan pertaining to packaging materials used in industries.

Listed are the detailed descriptions of packaging materials, including *plastic, paper, glass, metal, wood, hazardous materials, foam, textiles, corrugated fiberboard, composite packaging, and hazardous packaging.*

We have also included Specific forms of each packaging material, along with numerous examples for reference.

### **1. Plastic:**

The various types include polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), PET and more. Some examples of plastic packaging are listed below:

- **Plastic Bags:** Plastic bags come in various sizes and thicknesses and are used for packaging items like groceries, clothing, and other retail products.
- **Plastic Pouches:** Flexible plastic pouches are used for packaging items like dairy, snacks, sauces, and personal care products.
- **Plastic Bottles:** Plastic bottles are commonly used for packaging beverages, personal care products, cleaning supplies, and more.
- **Plastic Containers:** Rigid plastic containers, such as jars, tubs, pails and jerrycans, are used for packaging items like food, edible oil, condiments, cosmetics.
- **Plastic Clamshells:** Clamshell packaging is often used for electronics, toys, and consumer goods, providing a clear view of the product.
- **Plastic Blister Packs:** Blister packaging consists of a plastic bubble that holds the product and a cardboard backing. It's used for small items like pills, toys, and hardware.
- **Plastic Trays:** Plastic trays are used for packaging items like fresh produce, meat, and bakery products.
- **Plastic Wraps and Films:** Stretch wrap, shrink film, and cling film are used to bundle products or provide tamper-evident packaging.
- **Plastic Strapping:** Plastic strapping is used to secure boxes and pallets during transportation.
- **Plastic Tubes:** Tubes made of plastic are commonly used for products like cosmetics, toothpaste, and ointments.
- **Plastic Closures:** Plastic caps and closures are used to seal plastic, metal and glass bottles and containers.
- **Plastic Jerrycans:** Larger plastic jerrycans are used for packaging items like industrial chemicals, detergents, and bulk liquids.
- **Plastic Squeeze Bottles:** These are often used for condiments, sauces, and personal care products that need precise dispensing.
- **Plastic Blown Film:** Plastic blown film is used to create bags and packaging materials with various thicknesses and properties.

- **Plastic Zipper Bags:** Ziplock bags and resealable plastic bags are used for food storage, packaging small items, and more.
- **Plastic Bubble Wrap:** Bubble wrap is used for cushioning and protecting fragile items during shipping.
- **Plastic Liners:** Plastic liners are often used for packaging bulk materials in boxes, bags or containers.
- **Plastic Sheets and Rolls:** Plastic sheets and rolls can be used for custom packaging and are often used in manufacturing and industrial applications.
- **Plastic Pallet Wrap:** Used for wrapping and securing pallet loads during transport.
- **Plastic Sachets:** Small, single-use plastic sachets are used for packaging items like condiments, cosmetics, and pharmaceuticals.
- **Plastic Stand-Up Pouches:** Resealable pouches with a gusset at the bottom are used for snacks, pet food, and more.
- **Plastic Woven Polypropylene Bags:** Sturdy and durable bags used for products like grains, pet food, construction materials, bulk/baler bags, retail bags.
- **Vacuum Packaging:** Often used for preserving the freshness of food products by removing air from the package.
- **Aseptic Packaging:** Used for products that need to be stored without refrigeration, like long-life milk and fruit juices.
- **Plastic tapes:** Used for sealing and securing packages.
- **Labels and Adhesive Materials:** Stickers and labels that are attached to packages for branding and information.
- **Shrink Bands and Sleeves:** Applied around bottles or containers for tamper-evident sealing and branding.
- **Thermoformed Trays:** Used for packaging products like meat.
- **Plastic pallets:** used for shipping every product that wood pallets ship.

## 2. Paper:

Paper is used for packaging in the form of:

- **Paper Bags:** Paper bags come in various sizes and are used for packaging groceries, retail items, and takeout food.
- **Paperboard Boxes:** Paperboard boxes, often used for cereal, cosmetics, and pharmaceuticals, are made from thick paper stock.
- **Cardboard Boxes:** Corrugated cardboard boxes are commonly used for shipping and storing products due to their strength and durability.
- **Paper Envelopes:** Paper envelopes are used for mailing letters, documents, and small items.
- **Paper Wrapping Paper:** Used for wrapping gifts, fragile items, and sometimes for protective packaging.

- **Paper Tubes and Cores:** Paper tubes are used for packaging items like films, posters, documents, calendars, and wine bottles. and industrial materials.
- **Paperboard Sleeves:** These are often used for premium packaging of items like chocolates and cosmetics.
- **Paper Labels and Tags:** Paper labels and tags are attached to products for branding, information, and pricing.
- **Paper Pouches:** Paper pouches are used for packaging items like coffee, tea, and snacks.
- **Paper Cups:** Disposable paper cups are used for hot and cold beverages, as well as ice cream.
- **Paper Trays:** Paper trays are used for food packaging, particularly fast food and takeout.
- **Paper Tissue Paper:** Tissue paper is used for wrapping and cushioning delicate items.
- **Paperboard Blister Cards:** Blister cards are used for packaging small consumer items and are often attached to a cardboard backing.
- **Paperboard Clamshell Boxes:** Clamshell boxes made of paperboard are used for packaging electronics, toys, and other retail products.
- **Paperboard Cigarette Packs:** Traditional cigarette packaging is made of paperboard.
- **Paperboard Folding Cartons:** Folding cartons are used for packaging a wide range of retail products, such as cosmetics, electronics, and pharmaceuticals.
- **Paper Shopping Bags:** Sturdy paper bags with handles are often used for retail shopping.
- **Paper Molded Pulp Packaging:** Eco-friendly packaging made from molded paper pulp is used for items like egg cartons and electronics.
- **Paper Sacks and Kraft Bags:** These are used for packaging bulk items like flour, cement, and animal feed.
- **Paper Food Containers:** These include takeout containers and paper plates used in the foodservice industry.
- **Paper Banding and Strapping:** Paper bands and straps are used to bundle products together.
- **Paper Honeycomb Packaging:** Honeycomb paperboard is used for lightweight but sturdy packaging of furniture, electronics, and industrial products.
- **Paper Seals and Bands:** Used for tamper-evident packaging and securing items.

### 3. Glass:

- **Glass Bottles:** Glass bottles come in various shapes and sizes and are used for packaging a wide range of products, including beverages (such as beer, wine, and soft drinks), condiments (like ketchup and salad dressing), and perfumes.
- **Glass Jars:** Glass jars are used for packaging food products, such as jams, pickles, sauces.
- **Glass Tubes:** and baby food. They are also used for cosmetics and skincare products.
- **Glass Vials:** Glass vials are small, narrow containers often used for pharmaceuticals, laboratory samples, and essential oils.

- **Glass tubes:** are used for packaging items like cosmetics, lip balms, and personal care products.
- **Glass Ampoules:** Ampoules are small sealed vials used for storing and dispensing small quantities of pharmaceuticals and chemicals.
- **Glass Dropper Bottles:** These are commonly used for packaging essential oils, fragrances, and medicinal liquids.
- **Glass Growlers:** These are larger glass containers used for transporting and storing draft beer.
- **Glass Cosmetic Containers:** Glass containers for cosmetics and skincare products, such as creams and serums.
- **Glass Perfume Bottles:** Glass bottles specially designed for storing and dispensing perfumes and fragrances.
- **Glass Candle Holders:** Glass containers for packaging candles, including votive and jar candles.
- **Glass Food Storage Containers:** Glass containers for storing and reheating food, often with lids for airtight sealing.

#### 4. **Metal:**

Metal cans and containers are often used for food and beverage products like canned vegetables, soups, and soft drinks.

- **Metal Cans:** Metal cans, typically made of steel or aluminum, are widely used for packaging food and beverages, including canned vegetables, fruits, soups, and soft drinks.
- **Aerosol Cans:** Aerosol cans are used for packaging a variety of products, including deodorants, air fresheners, and spray paints.
- **Metal Drums:** Metal drums are used for packaging bulk liquids, chemicals, and hazardous materials.
- **Metal Bottles:** Metal bottles are used for packaging items like wine, spirits, and certain cosmetics.
- **Metal Tins:** Metal tins are often used for packaging items like candies, mints, paints, and various small goods.
- **Metal Caps and Closures:** Metal caps and closures are used for sealing glass and plastic bottles and jars.
- **Metal Tubes:** Metal tubes are used for packaging items like toothpaste, ointments, and other personal care products.
- **Metal Pails:** Metal pails are used for packaging larger quantities of liquids, paints, adhesives, and more.
- **Metal Trays:** Metal trays are used for packaging frozen foods, ready-to-eat meals, and certain pharmaceutical products.

- **Metal Tubs:** Metal tubs are often used for packaging ice cream and other frozen desserts.
- **Metal Lids:** Metal lids are used as closures for glass and plastic containers, particularly in home canning and preserving.
- **Metal Foil and Wrap:** Metal foil, like aluminum foil, is used for wrapping and preserving food.
- **Metal Bands and Strapping:** Metal bands and strapping are used for securing packages and pallets during shipping.
- **Metal Closures for Cans:** These are the pull-tabs, lids, and easy-open ends used for metal beverage cans.
- **Metal Twist Caps:** Used for sealing bottles, particularly in the beverage industry.
- **Metalized Films:** Flexible packaging materials with a metalized layer for added protection and appearance.
- **Metal Tins with Clear Lids:** Tins with transparent lids are used for packaging items like tea, cosmetics, and gift items.
- **Metal Closures for Glass Jars:** Twist-off and lug caps are used to seal glass jars for products like jams, pickles, and sauces.
- **Metalized Cartons:** Cartons with a metalized layer are used for packaging items like cigarettes and certain confectionery products.
- **Metal Pallets:** Reusable and durable metal pallets are used for transporting and storing heavy loads.

## 5. Wood:

Wooden crates and pallets are used for shipping and storing heavy or fragile products.

- **Wooden Crates:** Wooden crates are sturdy boxes used for packaging and shipping heavy or fragile items. They provide excellent protection and support.
- **Wooden Pallets:** Wooden pallets are used for stacking and transporting goods, making them easy to handle with forklifts and pallet jacks.
- **Wooden Boxes:** Wooden boxes come in various sizes and shapes, and they are used for packaging and storing a wide range of products, from fruits to machinery parts.
- **Wooden Barrels:** Wooden barrels are often used for packaging liquids such as wine, whiskey, and certain chemicals.
- **Wooden Reels and Spools:** Wooden reels and spools are used for winding and storing cables, wires, and other materials.
- **Wooden Skids:** Wooden skids are simple wooden platforms used for supporting machinery, equipment, and other heavy items.
- **Wooden Frames:** Wooden frames are used to protect artwork, mirrors, and other fragile items during transportation and storage.
- **Wooden Pallet Collars:** Wooden pallet collars can be added to pallets to create sides, turning a standard pallet into a crate-like structure.

- **Wooden Dunnage:** Wooden dunnage consists of wooden blocks or supports used to secure and protect items during transport.
- **Wooden Chocks and Blocks:** Wooden chocks and blocks are used to stabilize and secure items on pallets or within packaging.
- **Wooden Cable Reels:** Wooden cable reels are specifically designed for winding and storing cables, wires, and ropes.
- **Wooden Racks and Shelves:** Wooden racks and shelves are used for organizing and storing products in warehouses and retail environments.
- **Wooden Display Crates:** These are decorative wooden crates used for product displays and retail merchandising.
- **Wooden Pallet Collars:** Wooden pallet collars are used to create a crate-like structure on top of pallets for added protection and containment.
- **Wooden Bins and Baskets:** Wooden bins and baskets are used for storing and displaying items, particularly in retail settings.
- **Wooden Pallet Boxes:** Pallet boxes are wooden boxes with a base designed to fit on pallets for easy handling and transportation.
- **Wooden Cases:** Wooden cases are used for packaging and transporting valuable and fragile items, including musical instruments.
- **Wooden Platforms:** Wooden platforms are used to raise items off the ground and provide protection against moisture and contamination.
- **Wooden Dunnage Bags:** Wooden dunnage bags are used for bracing and securing cargo during transport to prevent movement and damage.

## 6. **Foam:**

Foam materials, such as polystyrene and polyurethane foam, are used for protective packaging and insulation.

## 7. **Textiles:**

Fabrics like jute, cotton, and burlap are used for packaging, especially for agricultural and food products.

## 8. **Corrugated Fiberboard:**

This material is commonly used for shipping boxes and has an inner corrugated layer for added strength.

## 9. **Composite Materials:**

Some packages use a combination of materials to provide the best protection and aesthetics.

## 10. Hazardous packaging:

Refers to containers and materials used for packaging and transporting substances that are potentially dangerous to human health, safety, or the environment. These substances may include chemicals, radioactive materials, biohazards, or other dangerous goods.

- **Drums:** Hazardous chemicals and substances are often packaged in steel or plastic drums. These drums are designed to be durable and are available in various sizes to accommodate different volumes of hazardous materials.
- **Intermediate Bulk Containers (IBCs):** IBCs are large containers made of materials such as steel, plastic, or composite materials. They are used to transport and store bulk quantities of hazardous liquids, powders, or granules.
- **Hazardous Material Boxes:** These are specialized boxes designed to contain and protect hazardous materials during transportation. They are often made of heavy-duty corrugated cardboard or other suitable materials.
- **Cylinders:** Gases, such as compressed or liquefied gases, are typically stored in high pressure cylinders designed to withstand the pressure and protect against leaks.
- **Composite Packaging:** Composite packaging combines multiple materials, often including plastics, steel, and other materials, to provide extra protection and containment for hazardous goods.
- **Jerrycans:** Jerrycans are used to package hazardous liquids, including chemicals and solvents. They are usually made of high-density polyethylene (HDPE) and are designed to be leak-resistant.
- **Hazardous Material Bags:** These are heavy-duty plastic bags designed to contain and isolate hazardous powders, chemicals, or contaminated materials.
- **Hazardous Waste Containers:** Special containers are designed for the collection and disposal of hazardous waste materials generated in industrial and healthcare settings.
- **Radioactive Material Containers:** Containers used to transport and store radioactive materials, often made of lead or other materials that block radiation.
- **Biohazard Bags:** Used in healthcare and research settings, these bags are specially designed to contain and dispose of biohazardous waste materials safely.
- **Glass Ampoules and Vials:** Used to store and transport hazardous pharmaceuticals, chemicals, and biological materials in a sealed and tamper-evident form.
- **Lead-Lined Containers:** Containers with lead lining are used to transport and store radioactive materials or other substances that emit radiation.
- **Explosive Material Containers:** Specialized containers are designed for the packaging and transportation of explosive materials, including fireworks and explosive chemicals.
- **Peroxide Forming Chemical Containers:** Certain chemicals, like peroxide-forming compounds, require specialized containers to prevent dangerous reactions.