



Ecodesign for food packaging

Unit 5: Packaging Logistics for Food Systems Marketing



Content Unit 5, Ecodesign for food packaging

5.1 Logistics of packaging, generalities

5.2 Packaging materials and systems

5.2.1 Corrugated cartons and boxes

5.2.2 Stretch plastic strips (stretch films).

5.2.3 Reusable packaging

5.2.4 Palletizing and containerisation

5.3 Ecodesign of Logistics Packages

After learning this unit, the student will be able to:

- Know the logistics packaging materials and systems
- Be informed about the possibilities of Ecodesign of logistics packages.

5.1 Logistics of packaging, generalities

- Logistics is defined by integrated planning, organization, taxation and control of all commodity and material courses along with related information courses, from suppliers through the creation of values (eg production and / or distribution stages) to delivering products to customers, including waste disposal and recycling.
- Logistics packages are science, art, and technology to close or protect products for distribution, storage, sales and use. It also covers the design, evaluation and production of packaging.
- Logistics packages are also referred to as: distribution packaging, transit packaging, industrial packaging, intermediate packaging, packaging and transport containers.
- Logistics Functions: Facilitate distribution; Protecting both the product and the environment; Provides information about conditions and locations; Marketing functions; Graphic design; Formulation of legislative and marketing requirements; Customer requirements / consumer convenience for final use; distribution; Environmental issues; Recovery / recycling, dematerialisation, versus reusable packaging toxicity.

5.2 Packaging materials and systems

5.2.1 Corrugated Containers and Boxes - Containerboard is a type of thick paper specially made to produce corrugated cardboard. It consists of a plate or two of a linear cardboard and a corrugated cardboard. Since the containerboard is made mainly of natural wood fibers, it is generally brown in color.

Corrugated cardboard is easy to recycle, both technically and logistically.

Types of corrugated cardboard:

- Type II (CO2) - consists of a lid and a core paper, joined by gluing lines between the folds of the folds and the lid - the wrapping paper, the backing for storage, is stored in rolls.
- type III (CO3) - a plate composed of a corrugated layer between two smooth layers;
- type V (CO5) - plate composed of two corrugated layers and three smooth layers;
- type VII (CO7) - a plate composed of three corrugated layers and four smooth layers.

Used as separators or processed in the form of packing boxes

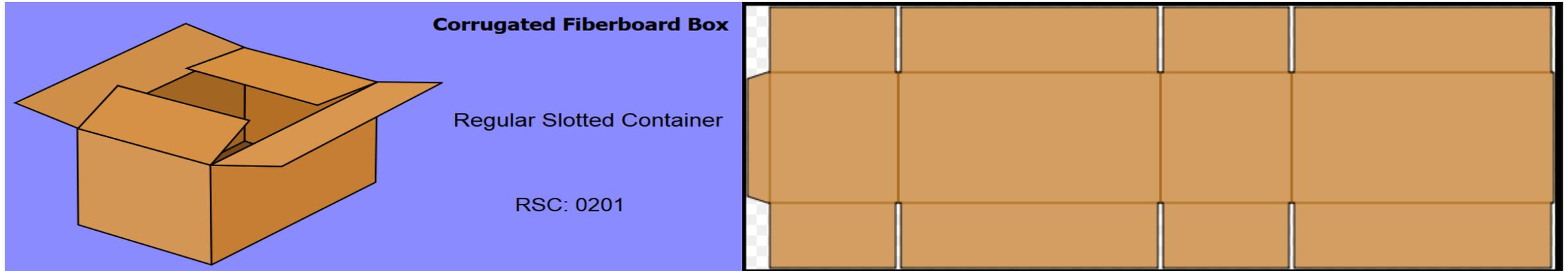


Fig. 1 The classic box (RSC) https://en.wikipedia.org/wiki/Corrugated_fiberboard

5.2.2 Stretch plastic strips (stretch foils)

❑ Products, e.g. cans or bottles are placed in a corrugated cardboard tray (for stability) and the matrix is wound with a thin film layer, e.g. Low Density Polyethylene -LLDPE film. The foil can be applied and stretched manually or automatically with a specialized machine.

❑ Characteristics:

- Width: 500 mm;
- Standard thicknesses: 20, 23 μm , but this may also be 17 μm or 23 μm thick;
- The weight of a hand roller is 2 kg.
- Tensile elongation (length): 600%
- Extension to Break (Width): 780%
- Breaking strength (width): 35 N / mm^2
- Breaking strength (length): 20 N / mm^2
- The roll of the automatic foil roll is min. 17 kg.



Fig 2 Manual stretch film (a) (<http://luckapack.ro>) and automatic(b) www.antal.ro

Containers connected to one another with plastic tape are becoming more popular for compression-resistant products.

5.2.3 Reusable packaging

- ❑ The most used are plastic packaging, although some companies re-use corrugated cardboard boxes, wooden boxes and boxes on pallets.
- ❑ Most reusable packaging applications have one thing in common: a short supply chain, well-managed, with predictable stability. Primary participants are either integrated by the corporation, or enter into partnership contracts, or the packaging is managed under the control of a single firm.
- ❑ The standardized modular nature of reusable packaging (the standard footprint is 600mm × 400mm) allows these containers to be automatically sorted into a distribution center.
- ❑ Modularization facilitates retail sales in stores, where the product is presented in reusable packaging, which can be replaced by a full one.

Packaging materials and systems IV - 5.2.4 Palletizing and containerisation

- ❑ Palletizing - is the handling and transport of goods placed on pallets, moved by means of electro-forklifts.
 - ❑ The name "palletizing" derives from the pallet (PALÉT, pallets, s.m. Packaging, internationally approved, which ensures easier handling of goods by means of mechanical means of loading, unloading or storage - source: GD 114/2001). It is a wood or other material of standard size, with the help of which several packages are made of a handling unit for the entire storage and transport process with a maximum weight of 1000 kg. used for the transport of goods packaged in parallelepiped packages, which have sufficient stability.



Fig. 3. Euro pallet of authorized wood EPAL (UIC 435-2), 1200x800x145 mm



Fig. 4. Euro pallets of plastic 1200x800x160 mm.



Plastic box 535L with 4 legs



Cover for plastic box 120x80 CM



Fig. 5 Containers and crates of plastics

- ✚ Containerisation - For the transport, handling and storage of goods, it uses the unit called container. It is made of resilient, possibly flexible materials or allows folding when not in use. The container offers the advantage of keeping the quality and integrity of goods up to date, even with the removal of individual packaging and repeated handling.

5.3 Ecodesign of Logistics Packages

- ❑ For the design of logistics packages, some free programs offered by PLMPack, <http://www.treedim.com/en/products/15-plm-pack/121-plm-pack-en>, which is a PLM component platform (Product Lifecycle Management) for optimization and Ecodesign systems.
 - ❑ This platform provides:
 - choice of material with PackStress for calculating resistance (this module is no longer freely available, PLM software, PICADOR software, computer-aided design software, which can be purchased in the PLC software, so the free choice of materials has to be done separately) ,
 - the choice and resizing of the primary and secondary packaging with PackLib, <http://www.treedim.com/packlib/en/>, the parametric library of standardized components of palletized packaging,
 - optimizing packaging, palletizing and loading the truck with StackBuilder <http://www.treedim.com/stackbuilder/en/>
- The platform is developed in Open Source

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Thank you!