# Moulded Pulp Manufacturing: Overview and Prospects

## 1. Introduction

Molded pulp products (MPPs), also referred to as molded pulp or molded fiber products, are at present primarily used for the packaging of manufactured products or for food- related carriers, such as food containers and serving trays.

Due to form (geometry) and aesthetic limitations, MPPs have been restricted to the egg tray market for many years. However, demand is now increasing due to their sustainable qualities.

Being made of wood fibers, essentially cellulose, MPPs are in general, totally renewable and biodegradable. These qualities have enabled growing adoption within the packaging industry, with companies eager to embrace alternatives to oil-based forms of packaging due to government regulations as well as customer demands.

Increasing R&D effort with standardized design and testing practices is essential in order to meet the growing demand for eco-packaging with high quality features.


**Figure 1: Three main markets for MPP**

## 2. Process

While most paper-based packaging starts with flat sheets which are assembled into three-dimensional packages, MPP are made from cellulose fibers dispersed in water then formed, drained and dried.

The production process of the different molded pulp product types varies especially in respect of the drying method, which is usually performed in a heated oven.

In general, the production of molded pulp involves a water suspension of fibers being deposited onto a screened mold. A vacuum is then applied and the fiber-mat starts to develop some strength.

Water can be removed by pressure applied to the slurry by means of a matched mold. After this phase, the molded preform usually reaches 50% in consistency (i.e. the mass fraction or percentage of solid in a given slurry) and is then completely dried out in a heated mold or oven.

## 3. Benefits

**Molded Pulp Lowers Costs by 70%**
Costs associated with the price of an item include transportation, warehousing, labor and design. MPP can reduce costs by as much as 70% when compared to other packaging materials. Since molded pulp is made from 100% recycled newspaper and old corrugated waste (mostly post-industrial), the cost for raw materials remain very stable for years.

**Molded Pulp Saves Valuable Space**
MPPs is designed to nest and stack together. This allows for a greater quantity on each and every pallet enabling the users to ship more per truckload. The cost savings for some parts can produce 50% less shipping volume, not to mention the warehouse space required for storage on the factory floor.

**Molded Pulp Saves Valuable Time**
Time is money and MPP saves time at every step in the process. Expensive labor costs for assembly are eliminated. Shipments are less frequent which saves transportation time. Issuing fewer orders and invoices also leads to a reduction in administrative time. MPP is ready to use when it arrives at the point of packaging.

**Molded Pulp Offers Protection and Cushioning**
Some of the best ideas have been around for a while. Molded pulp has provided soft protection for products for over 100 years. It has exhibited superior performance in vibration tests and provides unmatched protection against the damaging effects of vibration and shock. Custom pulp products have passed rigorous tests.
Less breakage equals fewer headaches.

## 4. Why Use Molded Pulp Packaging?

- Molded Pulp is tough and resilient
- Molded Pulp products can be reused
- Molded Pulp Packaging Products protect against shipping damage
- Molded Pulp products are economical
- Molded Pulp interior forms are the best value for shipping damage protection
- Molded Pulp packaging products are easy and ready use
- Molded Pulp packaging resists repeated shocks
- Molded Pulp is appreciated by users customers because of easy disposal
- Molded Pulp packaging can be designed to reduce inventory of packaging materials
- Molded Pulp can be contoured to fit many products.
- Molded Pulp products are environmentally compatible
- Molded Pulp products consume less space in trucks for shipment
- Molded Pulp can be thermoformed to produce a high quality appearance
- Molded Pulp products are produced without the use of toxic materials
- Molded Pulp can be shaped in almost an infinite number of configurations
- Molded Pulp can be molded into complex shapes
- Molded Pulp packaging products can be printed and embossed
- Molded Pulp products can use many types of waste paper materials keeping them from landfills
- Molded Pulp can provide competitively priced environmentally responsible packaging
- Molded Pulp can provide blocking and bracing as well as cushioning
- Molded Pulp designed interior packaging products can reduce packing labor costs
- Molded Pulp is the global solution for environmental packaging material.
- Molded Pulp can be used to protect large heavy items as well as small delicate products
- Molded Pulp disposal costs are minimal
- Molded Pulp is neutral electrically and produces no static electrical discharges
- Molded Pulp packaging is not subject to ridged global environmental restrictions
- Molded Pulp packaging designs can reduce the number of packaging components
- Molded Pulp provides consistent durable high quality protective packaging
- Molded Pulp as interior packaging can aid in reducing corrugated box costs
- Molded Pulp is a true Green packaging material.

## 5. Moulded Pulp Packaging v/s Alternates

| | Molded Pulp | EPS/ Thermocol | Die Cut Corrugated |
|---|---|---|---|
| **Material** | 100% Recycled Paper | Resin Based | Cardboard |
| **Sustainability** | Recyclable, biodegradable & compostable | Non-biodegradable | Recyclable |
| **Price** | Stable | Volatile | Variable |
| **Cushioning** | Excellent vibration & cushioning properties | Good vibration & cushioning properties | Inconsistent vibration & cushioning properties |
| **Shipping & Storage** | Easily nests | Does not nest | Requires labor and assembly |
| **Climate Tolerance** | Unaffected by extreme temperature or humidity | Temperature affects brittleness | Humidity affects performance |
| **Static** | Static neutral | Requires treatment with antistatic agents | Static neutral |
| **Protection** | Geometry | Density | Complicated origami |

## 6. Environmental sustainability

When discussing the environmental sustainability of molded pulp products, it is important to realize that they are part of a bigger product life cycle. This life cycle forms the basis for assessing the environmental sustainability of a product. Not only the production of the MPP, but also the sourcing of the raw material, use and disposal need to be considered.

MPP is produced from 100% discarded post-industrial corrugated waste and newspaper otherwise headed for a landfill. MPP produce environmentally friendly packaging meeting global standards and the expectations of environmentally sensitive consumers. In today's business climate, states and even some European countries are mandating "earth friendly" packaging. Many global companies such as Wal-Mart and IKEA have implemented policies and procedures that foster sustainability. MPP will help us meet those new standards.