

Material Handling

MANAGEMENT

Transport Packaging

Keeping Cargo Dry in Transit



“Active” packaging helps prevent product damage in global supply chains.

Increasing globalization has prompted expansion in trade and commercial activity over longer distribution chains and global supply networks. This globalization has brought a surge in the number of goods being transported over long distances.

With lengthier supply chains come challenges of protecting cargo from damage over longer periods of time, across different regions with varying conditions of temperature and humidity.

Because a significant portion of a product’s lifespan is spent in transport and storage, it is critical to address root causes of product damage during this period. Common in long-distance shipping are variations in temperature and humidity levels within transmodal shipping containers.

Transport Packaging

These variations cause moisture to accumulate, a major threat to product quality, which can lead to damage and malfunction. Inevitably, moisture condenses on every surface within the trailer, railcar or shipboard container. This condensation affects both the products being transported and the packaging or crating designed to protect them.

Since moisture itself is responsible for most forms of product and packaging degradation, it is essential to keep that moisture at moderate levels while product is being transported in shipping containers.

Lengthy periods of high relative humidity prompt the onset of moisture. This can cause “container rain,” a phenomenon in which accumulated condensation falls onto goods within cargo containers during transport by ocean, truck, rail or air.

Container rain is responsible for damage to a wide array of products. Metallic items, such as canned food and steel machinery, are subject to corrosion and rust. Mold and mildew can form on dry goods, such as bulk powders and pet foods. Finished products being shipped overseas in final consumer packaging are also subject to moisture damage that can prevent their final sale in the retail market.

Another cause for concern is “container sweat,” the formation of condensation on the surface of cargo containers. This phenomenon commonly occurs before and after sea transport when a container is exposed to daily temperature cycles from traveling over land or waiting on the dock. Container sweat also occurs as shipments move from tropical regions to cold or temperate areas. When temperatures decrease, the air holds much less moisture. As a result, that moisture is released and condenses onto cargo and interior surfaces of the container.

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Overcoming Problems

A viable option to mitigate moisture concerns is sorbent loading. Today’s sorbents are often described as “active” packaging components. These sorbents sense changes in the internal package or external environment and respond by

actively adsorbing atmospheric moisture buildup and condensation due to temperature variation.

Usually compounded into a granular composition, sorbents can easily be inserted into ergonomic carrier formats, such as bags/sachets, strips and net bags. They provide a safe, cost-effective solution for shippers and manufacturers transporting cargo over long distances.

By countering the threat of moisture accumulation—which can cause rusting, peeling of labels and wrinkled packaging, among other types of damage—manufacturers effectively protect their products and ensure they are ready for the retail shelf.

Use of sorbent technology can also help reduce claims for damages against shippers and forwarders. By keeping products in optimal condition, sorbents provide brand insurance for both manufacturers and brand owner.

Choosing a Sorbent

To effectively protect products and packaging with sorbent technology, manufacturers and shippers must consider the conditions and duration of the shipment and the value of the cargo. These factors help determine the appropriate type, amount and format of sorbent needed for each product type and package presentation. **MHM**

This article was developed in partnership with Multisorb Technologies. For more information, visit the company's Web site at www.multisorb.com.