



LTL FREIGHT

Packaging Guide

Protecting Freight in an LTL Environment

Did you know?

A recent survey of LTL shippers shows when a shipment is damaged, on average companies lose...

TIME

Up to 5 hours of time is spent dealing with a damaged shipment

MONEY

At least 25% of a shipment's value is never recouped when damage occurs

CUSTOMERS

Over 50% of companies have lost a customer or some business due to damages

Our Commitment to Your Freight Protection

We've invested in our SafeStack™ system, onboard safety technology, airbags and professional freight handling training because we are committed to protecting our customers' freight and the safety of the motoring public.

Our Solutions

SAFESTACK

Our best-in-class SafeStack™ system reduces damages and gets shipments to their destination faster and with less handling.

- No double stacking
- Braces each shipment
- Prevents in-transit shifting
- Less freight handling
- Greater efficiency and more direct shipments
- More damage-free, on-time deliveries

AIRBAGS

Prevent the movement and shifting of freight by filling gaps between pallets.

ONBOARD TECHNOLOGY

Our modern fleet is equipped with advanced alert systems, providing improved safety and better freight handling:

- Forward collision warning
- Lane departure warning
- Roll stability control

FREIGHT HANDLING TRAINING

Ongoing coaching and training for our dockworkers and drivers on best practices for freight handling result in fewer exceptions and damages.

AERODYNAMIC TRAILER SIDE SKIRTS

Provide additional stability and safety by reducing sway



Trailer Skirt

The LTL Shipping Environment

DID YOU KNOW?

Dynamic shocks and vibrations caused by road irregularities are two of the leading causes of freight damage during transit. Extreme temperatures and humidity also reduce packaging strength.

EXTREME TEMPERATURES AND HUMIDITY CAN LEAD TO:



A recent transportation study** concluded damages from external forces can be prevented through proper packaging.

*Materials Property Database. Retrieved from <http://www.matweb.com/>
** Marcondes, J., Singh, P., & Burgess, G. (1988). Dynamic analysis of a less than truckload shipment. In American Society of Mechanical Engineers (Paper) Publ by American Soc of Mechanical Engineers (ASME).

Internal Packaging

Some freight will benefit from the use of internal packaging between the product and container to gain adequate protection in an LTL environment.

USE INTERNAL PACKAGING TO:

- Protect products from dynamic shock and vibration
- Prevent shifting of interior materials by occupying empty space
- Shield items from external factors such as weather or changes in temperature

BUBBLE CUSHIONING

With its ability to be flexible and wrap around any object, use this lightweight, shock absorbing cushioning to package sensitive or irregular shaped items.



LOOSE FILL

Loose filling helps stabilize products. Use these materials to fill empty space in your packaging while providing a flexible, protective environment.



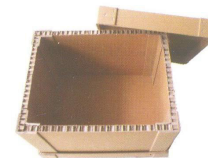
PAPER FILLING

Providing more stabilization than loose fill, use paper to fill, brace and wrap your product to prevent shifting.



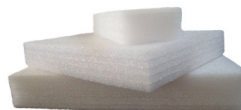
PAPER HONEYCOMB

Paper honeycomb is lightweight, but highly structured, enforced paper formed into hexagonal shapes. Use paper honeycomb to provide additional protection when stacking, layering, blocking, bracing or filling space around products.



FOAM CUSHIONING

Lightweight, dense and often customizable to form fit products, foam cushioning protects against dynamic shock and vibrations, and can brace, stabilize or immobilize freight to reduce damage.



External Packaging

Most commodities require durable external packaging for adequate protection when shipping.

USE EXTERNAL PACKAGING TO:

- Protect freight from external elements such as weather or drastic changes in temperature while in transit
- Prevent shifting and help brace freight by tightly loading and securing your commodity on a pallet
- Promote safe and efficient handling of freight to prevent damage

CONSTRUCT STRONG CRATES

Not all crates are built the same. Construct crates with quality lumber and with attention to strength. It's not the amount of material used, but how it's used.



Strongest Weakest

12X Original strength

Building a crate with two diagonal boards on each side increases original strength by nearly 12 times.

6X Original strength

A single diagonal board on each side of a crate increases original strength by more than six times.

1.5X Original strength

Adding multiple vertical supports increases a crate's strength by about 1.2 times.

Original Strength

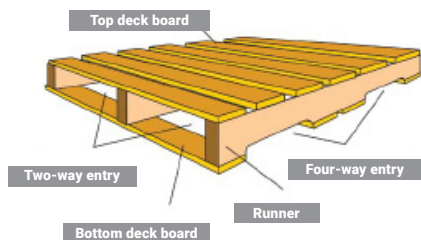
A simple box with supports at all corners qualifies as a crate, but offers little added strength in its construction.

PALLETIZE FREIGHT

Affix freight to a pallet. Pallets help keep loose freight together to prevent shifting on the dock or in transit and allow for the safest and most effective handling of freight.

RECOMMENDED PALLET STRUCTURE

- 40-42" W x 48" L, standard industry size, four-way entry, compatible with common freight handling equipment.
- Lead and inner deck boards: top/bottom deck boards at the front and back; any deck boards located between the lead boards and runners on the sides.
- Do not use pallets which have been damaged or have deteriorated in quality.



FREIGHT HANDLING EQUIPMENT

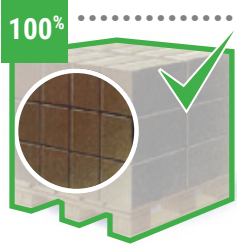


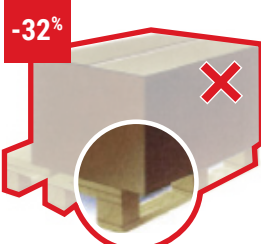
Forklifts and pallet jacks are the most commonly used equipment to load and unload freight in an LTL environment. Shipments built on pallets facilitate safe, efficient and damage-free handling.



BUILD STRONG SHIPMENTS

Compression strength is the resistance of a material to breaking under stress. Not every shipment's freight configuration is prepared the same. Use the following recommended best practices to palletize freight to gain maximum compression strength, securement and protection.

→ Maximum Compression Strength is 100%

			
<p>Perfect pattern Cartons are of high quality and stacked precisely one on top of another in a column pattern to retain greatest strength.</p>	<p>Interlocked pattern Unless the contents of your packages are solid or stiff, interlocking freight can reduce the strength of carton materials up to 50%.</p>	<p>Long-term storage Storage of some materials in varying conditions can weaken packaging strength. Carton materials sitting for six months or longer can lose 50% of strength.</p>	<p>Pallet overhang The bottom and edges of the shipment can be vulnerable when being transported. Pallet overhang makes handling difficult by restricting the use of handling equipment.</p>

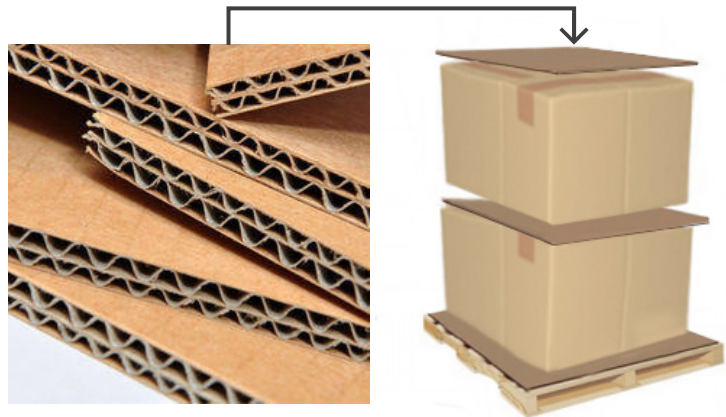
PROTECT MATERIALS WITH CARDBOARD

Corrugated cardboard is a durable and strong material used in LTL shipping freight protection due to its construction of high quality, air-dried paper in a flute or arched pattern layered between smooth sheets. Cardboard is highly customizable, cost-effective and comes in many different shapes and strengths.

Layer cardboard at the bottom of a shipment between freight and the pallet, and between loose shipments or cartons, to provide additional strength within its column stack. Place cardboard on top of a shipment to protect against the external elements.

CORRUGATED CARDBOARD

- Is an effective resource to help stabilize vertically stacked freight or cartons.
- Protects the top, bottom and middle layers of a shipment.
- Stabilizes palletized freight and eliminates shifting that can damage freight in transit.
- Absorbs the impact of vibrations, protects against moisture, provides structural support and prevents compression and bending.

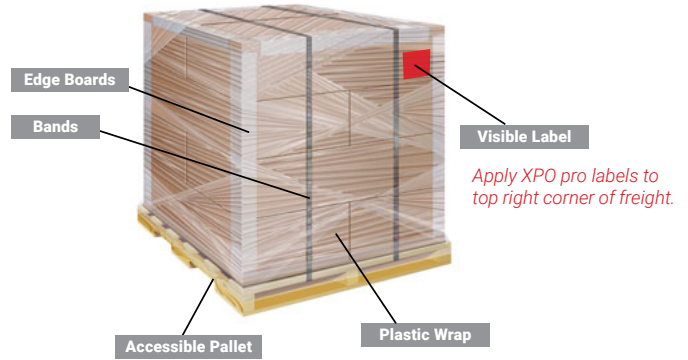


USE EDGE BOARDS, BAND AND WRAP FREIGHT FOR SECUREMENT

Edge boards, bands and plastic wrap are durable freight protection materials which can help enable shipments to be affixed securely to a pallet to stabilize freight, increase compression strength and protect against external elements in the LTL shipping environment.

Use these freight protection materials to:

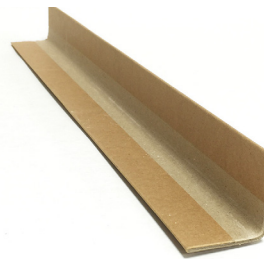
- Prevent freight from shifting when being transported on the dock or in transit in the trailer
- Secure aligned, column stacked packages and corners precisely to retain full strength
- Protect all surfaces – top, bottom, middle and edges – of freight



EDGE BOARDS INCREASE STRENGTH

Apply edge boards, also referred to as corner boards, to palletized freight. These angled pieces of materials which fit over the edges of boxes, crates, bundles and other shipments prevent pressure from bands or other external impacts that can cause damage.

- Help balance and tighten a shipment's column stack structure
- Reduce damages by protecting corners
- Increase overall compression strength of palletized freight



BANDS SECURE FREIGHT TO PALLET

Use quality bands to secure freight tightly to a pallet to help stabilize your shipment. Fasten the bands tightly around the edge boards and thread the band beneath the top deck boards of the pallet to help anchor the shipment to its pallet.

Bands:

- Protect from shortages or losses by keeping loose shipments contained together
- Stabilize cartons and materials on a pallet to prevent damage from shifting
- Immobilize cartons within palletized freight to be more easily handled



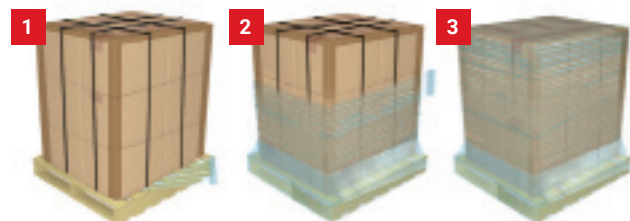
SHRINK WRAP KEEPS FREIGHT TOGETHER

Shrink wrap your freight for additional protection from external elements so it can be delivered safely and in the same condition it was sent.

- Protects against weather damage and shields freight from fluctuating changes in temperatures
- Secures loose packages and helps anchor freight to its pallet
- Can be used along with bands to tightly affix freight to a pallet to prevent the pallet from disconnecting from freight while being handled or transported

Shrink wrap helps adhere freight to a pallet. Tie shrink wrap to the pallet and begin wrapping your freight starting at the bottom of the pallet. Tightly wrap completely around the pallet at the bottom (1), then middle (2), then finish at the top (3).

For the ultimate shrink wrap protection, double wrap freight in the opposite direction, also beginning at the bottom with shrink wrap tied to the pallet.



Labeling

To be accepted for transportation, LTL freight must be marked clearly with shipping labels. Ensure labels are properly affixed to freight.

Clearly label or tag freight

- Affix labels at the top, side or end of freight. Labels should be secured to freight with adhesive or metal staples.
- Each package or loose piece of freight should be marked clearly and indicate the following:
 - Shipper and consignee name, phone number and address

NOTE: Even the most heavy-duty tapes can lose adhesiveness in fluctuating temperatures. Attach a layer of shrink wrap over labels to ensure label does not disconnect.

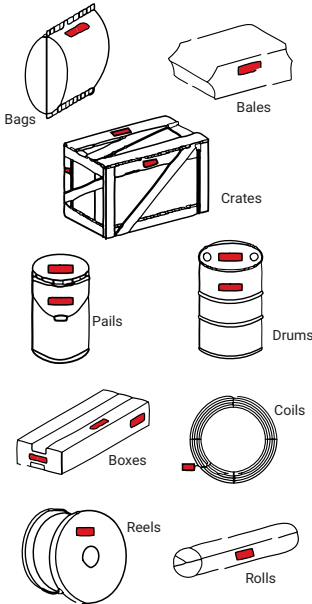
USE TAGS

Tags should be used to label freight which may not allow labels to adhere. Tags can be made of cloth, leather, metal or wooden tagboard with dull edges. Attach tags to freight and secure with strong cords or wire.

METAL FREIGHT

Fluctuating temperatures can cause labels to peel off metal freight and tags may fall off during loading and unloading. Use a metal or paint marker to identify and label steel or other metal freight, and include the PRO number, purchasing order (PO) number or other identifying information to enable all shipment handlers to identify the shipper or consignee information.

Examples of proper labeling locations for freight. →



Use precautionary labeling when necessary

Use precautionary labels when freight requires special handling or storage requirements. Review the labels below for use, when applicable.

FRAGILE

Handle with care
Affix label to top, side or over the area within freight where glass is present.



UP ARROWS

Handle with care
Use when you have preferred option for loading or unloading.



CENTER OF BALANCE

Ensure label is on two opposite sides of freight to indicate balance point.



CAUTION TOP HEAVY



HAND TRUCK OR FORKLIFT

Indicate whether a handling device is required or not.

HAND TRUCK



FORKLIFT



KEEP DRY



PROTECT FROM HEAT



PROTECT FROM FREEZING



MAGNETICALLY SENSITIVE



DO NOT STACK



Preparing for Pickup

Did you know?

...Over 50% of LTL bills of lading (BOLs) have errors in weight or shipment description due to shippers estimating weight or freight class?*

This is the primary cause of what shippers perceive as billing errors.

Accurately complete your bill of lading

- 1 Enter the number of units being shipped: pallets, drums, loose pieces. Loose pieces may be palletized to facilitate safe freight handling. List all hazardous materials on your BOL first.
- 2 Enter the description of shipment unit along with unit's dimensions.
- 3 Provide the National Motor Freight Classification (NMFC®) number. Contact a local service center if NMFC class is unknown.

NOTE: BOLs missing the NMFC class are automatically billed at class 100 unless an inspection is performed.

- 4 Provide the class or density of articles.

NOTE: Pallets and packaging may change a shipment's class and density. Determine class and density **AFTER** packaging and palletizing.

- 5 Provide the shipment weight after packaging and palletizing.

NOTE: Pallets and packaging will impact shipment weight. Weigh your shipment after palletizing and packaging your freight.

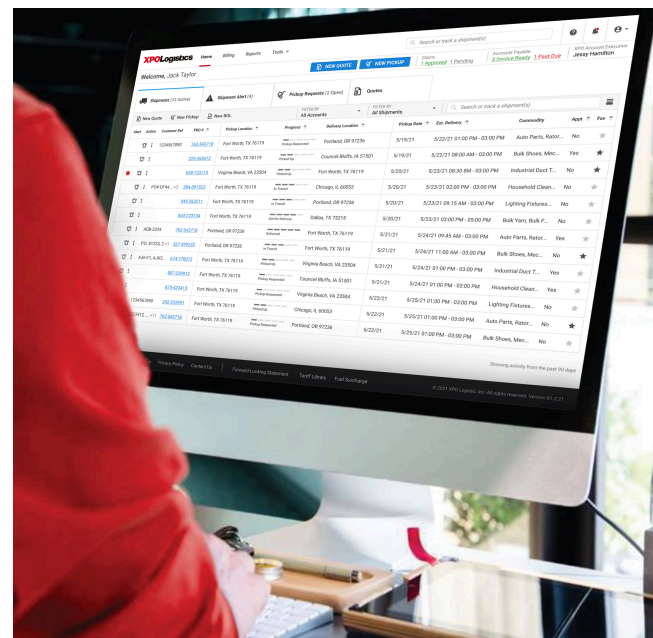
1	2	3	4	5	
NUMBER SHIPPING UNITS	HM	KIND OF PACKAGING, DESCRIPTION OF ARTICLES, SPECIAL MARKS AND EXCEPTIONS Hazardous material sequence (ISHM) must read: UN/NA ID#, proper Shipping name, Hazard class and Packing group (SUBJECT TO INSPECTION AND CORRECTION)	NMFC NO.	CLASS OR DENSITY OF ARTICLES	WEIGHT (Subject to Correction) * lb kg
2		Two pallets of boxed disc brakes (48L x 42W x 48H)	18387	60	1000 lbs

Schedule your pickup request

Most XPO customers use LTL.xpo.com to schedule pickup requests. When completing your pickup request, have the following information available:

- 1 **Pickup location:** Shipper name, address, city, state/province, zip code and shipper phone number
- 2 **Requester information:** Company name, contact name, phone number, email address and role (shipper, consignee, third party)
- 3 **Pickup date/time:** Requested pickup date, pickup ready time, dock close time, special equipment and inside pickup information
- 4 **Contact information for any concerns about the shipment:** Company name, contact name and phone number
- 5 **Destination and commodity information:** Destination zip code, number of pallets and pieces, Saturday or holiday delivery, HazMat, Freezable, or G1, total weight (lbs) and remarks (packaging, special size or handling, etc.)

NOTE: Multiple shipments can be included on a pickup request for the same location.



*Jindel, S. (2016, Dec 03). Contrary to perception, LTL billing accuracy is impressive. Retrieved from www.joc.com.



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This packaging guide is published to help LTL shippers learn more about general and recommended packaging protection for shipping LTL freight. This guide does not provide information to protect against every circumstance which may damage or cause freight loss in LTL shipping. XPO Logistics is not liable for any consequences related to any type of LTL packaging which includes loss or damage of LTL freight for a shipper following these guidelines. Protecting freight adequately for an LTL environment is the sole responsibility of an LTL shipper.