Furniture Packaging Guidelines

Released September 2021

Crate&Barrel CB2 HUDSON | GRACE

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- Updated existing sections to add detailed requirements

- Added truck/container loading requirements
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- Added Packaging For Storage at Crate and Barrel
    - New custom crate requirements
- New guidelines apply for all New Product, starting Fall 2021

General Packaging Requirements

We take steps to protect the product through improved packaging materials and designs, with the expectation that our vendors comply with these standards. Vendors will incur a chargeback fee for non-compliance.

- Vendors shall use sustainable, recycled or easily recyclable packaging materials that meet or exceed all performance and quality standards.
- Polyfoam is an approved packaging material. EPE is the preferred foam. **All EPS should not exceed 12% of the total carton cube.**
- The total amount of packaging material used should not exceed 35% of the total carton cube.
- Reused packaging materials are not acceptable.
- **All products should be in-house drop tested prior to quoting, but not required. All products must pass any applicable transit tests with an approved, certified lab upon PO.**
- Packaging materials must protect the product and not result in an increase in damages.

Unacceptable Packaging Materials

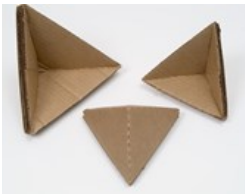
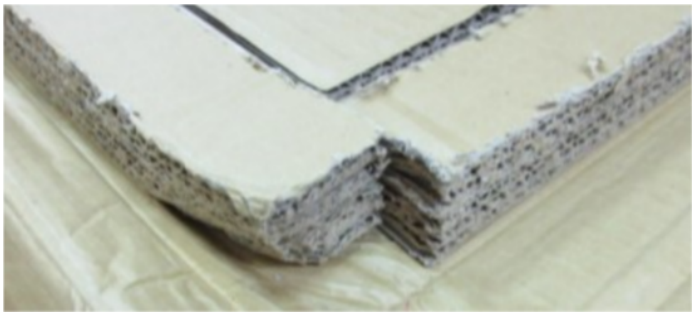
- Polyurethane Cushioning (Foam-in-Place)
- Metal Banding
- Staples (used as a carton closure method)
  - Staples are unacceptable as they can cause injury to our customers and employees.
- Loose fill (i.e. packing peanuts, cornstarch, expandOS®)

Interior Packaging Materials

Listed below are accepted interior packaging options that will maintain product integrity and meet Crate and Barrel's sustainable packaging goals:

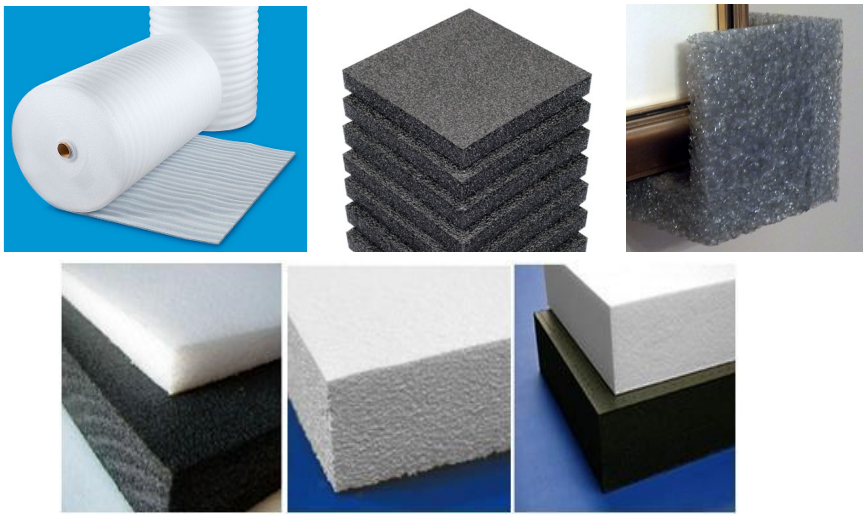
- **Corrugated** - Corrugated is the most common protective packaging component composed of kraft paper liners with a corrugated medium. Corrugated can be produced in variety of styles such as multi-layered, flat, die cut, angled channel, u-channel, and pyramid. Used for load compression protection in cartons, internal blocking and protection for inner components and void fills, and impact protection from drops.



- **Honeycomb -** Honeycomb is a paper based protective material offering a strong, lightweight alternative to standard corrugated and foam. Similar to corrugated, it is composed of two faces and a middle core. Honeycomb can be used for void fillers, blocking and bracing, and die-cut to nest in product.

- **Closed Cell Foam Cushioning** - These types of foams include many used in packaging today including, but not limited to, Polyethylene (PE), recycled Polyethylene (rPET), Polypropylene (PP), Polystyrene (EPS). Types of foam can be seen below; sheets, pads, molded edge and corner cushions, are used for product and impact protection. These types of foams are less sustainable, but are sometimes recommended on highly fragile products. rPET is preferred.



When using foam cushion packaging, taped or glued corrugated to the foam is not allowed. The warehouses cannot recycle each packaging material if taped/glued together. Assure correct foam density is being used to eliminate the need for a corrugated liner.



- **Molded Pulp** - Manufactured molds are created from a variety of recycled fibrous materials, such as corrugated, paper, bamboo, mycelium, and sugarcane.

Silica Gel Desiccants

Silica Gel Desiccants must be used in all master cartons to prevent damage to the product and packaging. Silica Gel packs help prevent any possible rusting on metal products, as well as mold and mildew on textiles, wood and paper products, and packaging. This is of particular concern if products are produced, packaged, or loaded into containers during high humidity seasons. Crate and Kids requires silica gel packs in packaging for all categories **with the exception of baby and kids bedding, throw pillows, and curtain panels.** If you are uncertain about this Crate and Kids requirement, please contact the merchandising team you are working with.

The amount of silica gel required in a package can differ depending on a number of factors, including – but not limited to – product characteristics, container volume, and environmental conditions. **Utilize a usage guide**

from your silica gel supplier. For a general reference, 5 grams of silica gel is needed for 1 cubic foot.

Poly Bags

These requirements apply to all product lines. Approved poly bag materials include PE, PS, and Polyester films, PE foam sheeting and bubble cushioning bags, used for surface protection. Requirements as as follows:

- A minimum thickness of 1.5mil is required for all polybags, with the exception of Kids Items, to which a 2 mil thickness is required.
- A suffocation warning statement is required for all bag sizes with an opening of 5” diameter and larger (measured when flat).
- The warning statement needs to be permanent and legibly printed in either black or red ink directly on the bag, in English, Spanish, and French.
- Print size of suffocation warning:

Total Length and Width of Poly Bag	**Minimum Font Size**
60in or greater	24pt
40in - 59in	18pt
30in - 39in	14pt
29in or less	10pt

Hardware Packaging

When packaging an item that contains hardware, please ensure that the hardware packet is clearly labeled and easy to identify, as it may be inadvertently disposed of or misplaced by the customer when unpacking the carton. By using the packaging method listed below, the likelihood of missing hardware is reduced:

- All product’s hardware should be packaged in a blister pack or red envelope/sleeve/poly bag based on the direction provided by the merchandising team. **Hardware must be labeled with quantities of each piece, printed on packaging or on attached paper or label.**
    - Blister Packaging: Full face seal, thermoformed PE tray adhered to chipboard.
    - Vacuum Packaging: PE film vacuum sealed to chipboard.

- Poly Bag: PE **sealed** bag.

- Attach the hardware packaging and envelope/sleeve to a red ribbon/string.
- Secure the hardware packaging inside the carton in a way that will not damage the merchandise while in-transit and that is easy to identify when the carton is opened.
- Feed the other end of the string/ribbon through the top flap of the carton and secure to the **top or side** of the carton (not on a corner), extending no longer than 2.5".
- Label the end of the ribbon/string "Hardware Enclosed" in English, Spanish, French. Secure the end of the ribbon via tape or sticker.

- Assembly Instructions should be packaged in a red envelope/sleeve, secured in the master carton.

Container & Truck Loading

Containers and trucks should be properly loaded to maximize the space while assuring none to little movement within the vessel. Master cartons and pallets should be shipped following the correct corrugated orientation, marked by Up Arrows on the carton.

Column stacking should be followed to maximize stacking strength of cartons. Stacking quantities printed on the carton must be followed. Heavier cartons should be loaded on the bottom, with lighter cartons on top. Once heavier stacking quantities have been maximized, lighter cartons may be stacked on top. To maximize loading quantities, the top layer can be packed with Up Arrows on their sides. Pallets need to be oriented towards the door, so pallet forks and pallet jacks can enter the pallet for easier unloading. Pallets cannot be shipped on their side. Blocking and bracing is required to secure the container or truck load. Shipping pillows, metal bars, strapping are encouraged, to secure non full loads.

A non-compliance fee will be enforced for inadequate blocking & bracing, and where loads that are identified as unsafe for unloading. **Vendors can be held responsible for products that are damaged and be charged the extra labor hours needed to unload an unsafe container or truck.**

Example of improper loading below, where a container door cannot be opened due to pallets leaning on the door. This imposes a safety risk to both associates and product.

For Custom Pallets, maximizing a full pallet footprint is ideal. If two cartons can fit on a custom pallet, the footprint would be easier to unload at our warehouses when using forklift trucks.

Carton Specifications

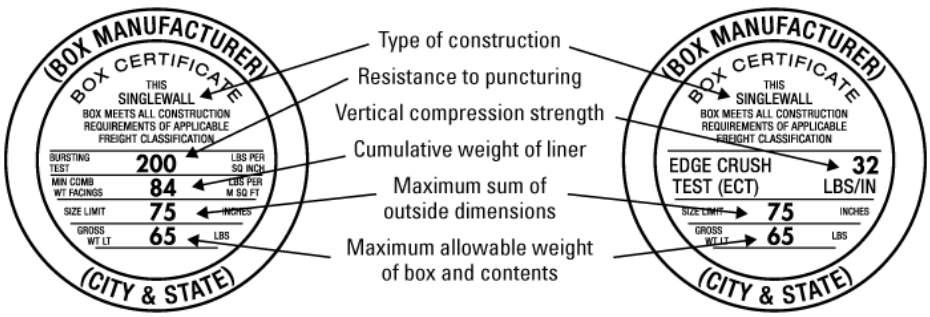
Carton Guidelines

Master cartons should be designed with cubing a standard 48” x 40” pallet footprint in mind.

Cartons being used may have both a master and inner cartons. The inner carton can be considered the carton immediately surrounding the product as well as a graphics display type of carton, intended for store shelves. The master carton is the larger carton containing inner cartons. Both the inner and master cartons must adhere to the requirements listed in this document, including carton strength, void space limits, and flute direction. Inner and master cartons will follow the below guidelines. Each product is slightly different so adjustments to packaging may be required.

Master Shipping Carton

The master shipping carton must provide sufficient strength to protect and contain the product and should be properly sized, allowing for no movement due to excess headspace or void space between the product and packaging components. Excess space leads to damage and increased material and transportation costs. To prevent this, minimize excess space to not exceed ¼” within the package; this allows for ease of packing and unpacking the product. The table below will help to outline the specifications required in designing an adequate master carton. All master cartons must have a **Box Manufacturer Certification (BMC)** stamp providing the ECT or Burst strength of the carton. Below is an example of a BMC stamp:



BMCs must state:

- The name and location of the entity certifying the information.
- The minimum strength material specification being certified (ECT or Burst Strength, and basis weight.
- The gross weight and size limits
- Must be located on an outside surface
- Must be circular, 3in in diameter.
- Rectangular BMCs must be 3.5” x 2”.

Carton Strength

The carton strength must be adequate for the weight and the stacking strength required to support the full weight of the pallet of boxes). The following box strength requirements are based on packaging industry standards. Burst Strength (lbs/in^2, #) or Edge Crush (lbs/in) is accepted as a form of measuring carton strength.

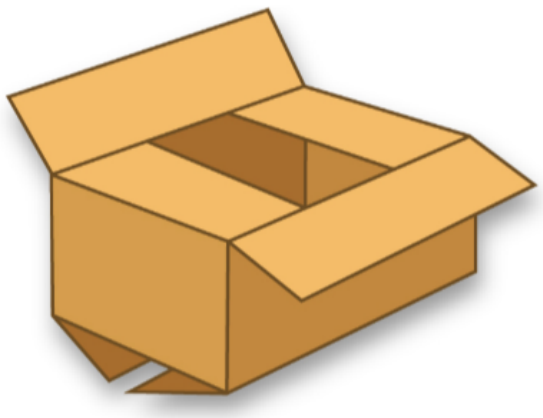
Product Type		Minimum Burst Test	Minimum Edge Crush Test (ECT)	Board Type
Inner Cartons		200 lbs per in^2 14.1 kg per cm^2	32 lbs per in	Single Wall
Textiles, Kitchen, Entertaining, Accessories	Less than 35lbs	150 lbs per in^2 10.5 kg per cm^2	38 lbs per in 6.8 kg per cm	Double Wall
	35lbs - 50lbs	200 lbs per in^2 14.1 kg per cm^2	42 lbs per in 7.5 kg per cm	
	Greater than 50lbs	275 lbs per in^2 19.3 kg per cm^2	48 lbs per in 8.6 kg per cm	
Mirrors, Lighting	Less than 40lbs, 36”	200 lbs per in^2 14.1 kg per cm^2	42 lbs per in 7.5 kg per cm	Double Wall
	Greater than 40lbs, 36”	275 lbs per in^2 19.3 kg per cm^2	48 lbs per in 8.6 kg per cm	
Furniture	Less than 35lbs	200 lbs per in^2 14.1 kg per cm^2	42 lbs per in 7.5 kg per cm	Double Wall
	Greater than 35lbs	275 lbs per in^2 19.3 kg per cm^2	48 lbs per in 8.6 kg per cm	

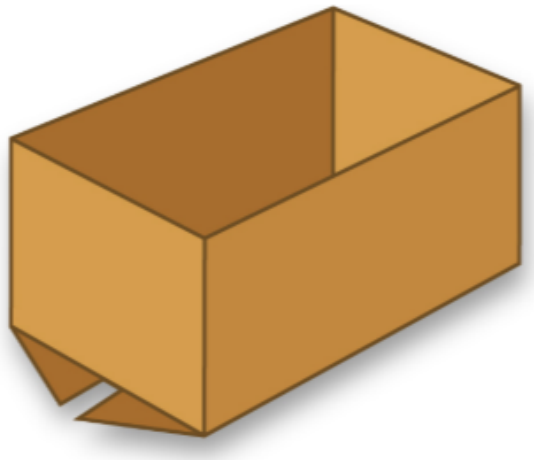
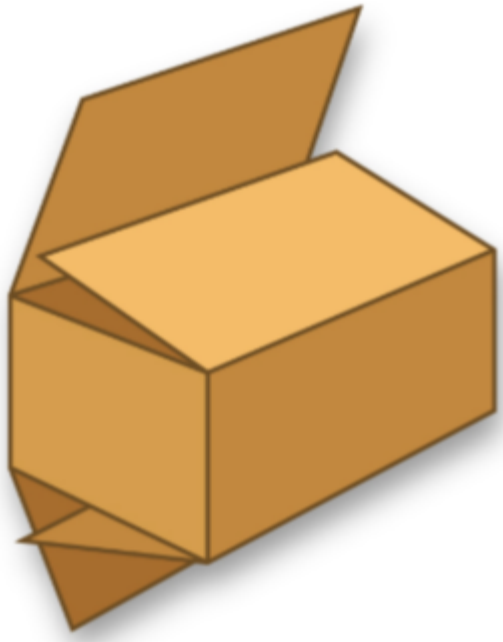
Flute Direction

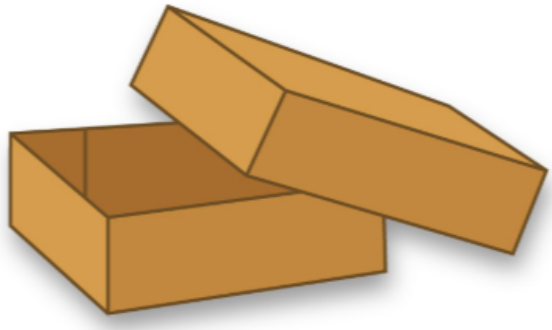
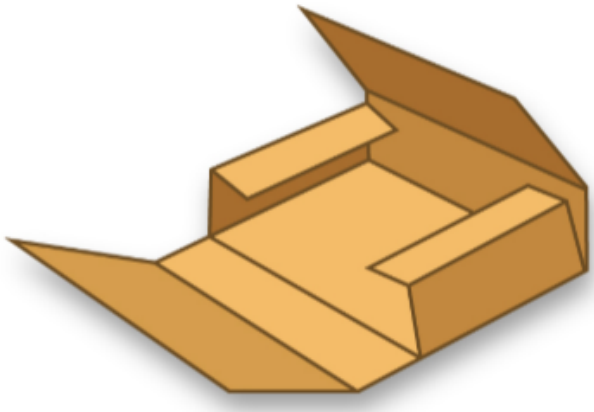
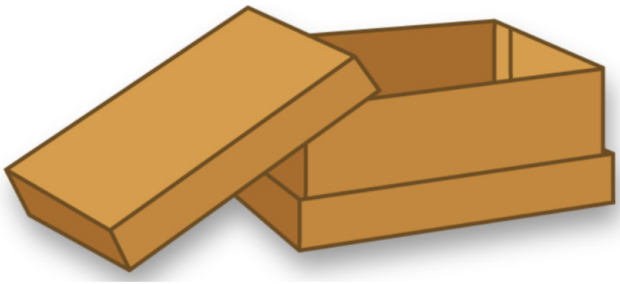
Flutes keep the linerboard sheets of corrugated board separated and provide the rigidity against bending. When pressure is applied to the side of the board, the space between the flutes acts as a cushion to protect the container's contents. Flutes also provide some protection against sudden temperature changes by acting as an insulator. To prevent damages due to compression, containers oriented in their shipping direction should have flutes in the vertical direction. To prevent damages that may occur due to compression, when the carton is positioned in the shipping direction the flute must be in a vertical direction.

Acceptable Shipping Container Style

Selecting the correct shipping container style is an important factor to consider during the packaging design process. Changes in design can have a direct affect on the ability to ship efficiently and effectively. Corrugation direction is typically aligned with the stacking orientation and box depth. Requests to use box styles other than the ones listed in this section **MUST** to be approved prior to quoting. Requests should be emailed to packaging-group@crateandbarrel.com.

*RSC Regular Slotted Container (RSC)***:** All flaps have the same length, and the two outer flaps (normally the lengthwise flaps) are one-half the containers width, so that they meet at the center of the box when folded.	

HSC Half Slotted Container (HSC): Similar to a RSC, but only one set of flaps	
Full Overlap Slotted Container (FOL): All flaps have the same length. The outer flaps come within an inch from overlap when closed. Stacked on its side, the extra board provided added stacking strength.	

Full Telescope Design (FTD) with Design Style Tray (DST): This consists of a separate top and bottom tray that fits within each other. This will provide a double layer of doublewall corrugated around the entire perimeter of the container. FTD will require plastic banding. *Examples: Headboards and Dining Tables*	
One & Five Piece Folder (OPF)(FPF): This consists of a flat bottom with the side and end flaps folding over to meet to close. *Examples: Mirrors, Frames, Wall Decor*	
Double Cover Container (DCC): This consists of two interchangeable partially telescopic covers, when an HSC could not be easily slid over the top of the product.	

Acceptable Carton Closure Methods

The carton closure used should be adequate to secure the contents and prevent shipment shortages or damages. Please use the guidelines below to select the closure method for your package.

Tape - Clear polypropylene pressure sensitive adhesive tape is preferred, but we will also accept the use of water activated reinforced paper tape. Please utilize the taping methods below.

Gross Weight	Tape Width
0 - 30 lbs (0 - 13.6 kg)	2 inches (5.08 cm)
Greater than 30 lbs (13.6 kg)	3 inches (7.62 cm)

- *"H" Method* - Use this method on RSC containers. The "H" taping method is required for any products with a gross weight exceeding 30 pounds and for all furniture items.

- *DSC Method* - Use this method on DSC containers. Tape should first be sealed along the openings at the top and bottom (around the box top and bottom). Additional tape should be applied vertically for reinforcement.

- *FTD Method* - Use this method on FTD style containers. Tape should be sealed horizontally along the opening. Additional tape should be applied vertically over the horizontal tape for reinforcement.

- *FOL Method* - Use this method on FOL style containers. Tape should be applied horizontally along the flaps and reinforced with vertically-applied tape if necessary.

Packaging for Storage at Crate & Barrel

The following considerations should be taken into account as products will be warehoused in any of our four main distribution centers. Internal packaging must protect all corners, edges, and faces of the product along with any internal product components, **regardless of storage or shipping orientation, so that the packaged products can move safely through our distribution network**.

Large, oversized shipping cartons will be stored horizontally on a pallet in the warehouses as shown:

Oversized products shipped flat **can** be stacked on customized pallets. Stack height must be printed on the carton.

Pallets

Accepted pallet styles:

- Standard 4 Way Entry Block Style
- Solid Deck 4 Way Entry Block Style
- Non Solid Wood Block 4 Way Entry Block Style

Wood Screws and Hardened Steel Spiral (Helically Threaded Nail) are the preferred type of fasteners.

Custom Pallets will be required for cartons shipping as singles, weighing greater than 150lbs. Categories needing custom pallets: Casegoods, Storage, Fragile Materials. Knocked Down Table Tops will not require a custom pallet, as these are stored both horizontally and vertically.

Stringer Pallet
Standard 4 Way Entry Pallet

Standard 4 Way Entry Top & Bottom Deck Boards - Solid Wood	
Material	Dimensions
Construction Grade Softwoods, MD Hardwoods, Douglas Fir, Southern Yellow Pine, or similar	Thickness: Min 0.63in, Max 1in Width: Min 3in, Max 6in
Board Spacing: Max 3”	
Pallet wood should not have knots, splits, broken or damaged components, hardware protrusion.	

Standard 4 Way Stringers - Solid Wood	
Material	Dimensions
Construction Grade Softwoods, MD Hardwoods, Douglas Fir, Southern Yellow Pine, or similar	Thickness: Min 3.5in, Max 4in Width: Min 1.5in, Max 2in
Pallet wood should not have knots, splits, broken or damaged components, hardware protrusion.	

Block Pallet
Solid Deck–4 Way Entry Pallet

Solid Deck 4 Way Entry Top & Bottom Deck Boards - Solid Wood	
Material	Dimensions
Top Deck: Construction grade plywood, MDF Bottom Deck: Construction Grade Softwoods, MD Hardwoods, Douglas Fir, Southern Yellow Pine, or similar	Top Deck: Plywood Thickness: Min 0.5in, Max 1in MDF Thickness: Min 0.63in, Max 1in Bottom Deck: Thickness: Min 0.63in, Max 1in Width: Min 3.5in, Max 6in
Board Spacing: Max 3”	
Pallet wood should not have knots, splits, broken or damaged components, hardware protrusion.	

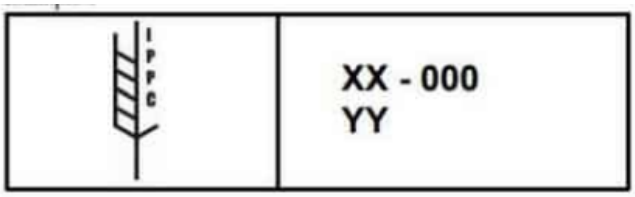
Solid Deck 4 Way Entry Stringers - Solid Wood	
Material	Dimensions
Construction Grade Softwoods, MD Hardwoods, Douglas Fir, Southern Yellow Pine, or similar	Thickness: Min 3.5in, Max 4in Width: Min 1.5in, Max 2in
Pallet wood should not have knots, splits, broken or damaged components, hardware protrusion.	

Wood Block 4 Way Entry Top & Bottom Deck Boards - Non Solid Wood	
Material	Dimensions
Top Deck: Construction grade plywood, MDF Bottom Deck: Construction Grade Plywood, MDF	Top Deck: Plywood Thickness: Min 0.5in, Max 1in MDF Thickness: Min 0.63in, Max 1in Bottom Deck: Plywood Thickness: Min 0.5in, Max 1in MDF Thickness: Min 0.75”, Max 1in Block Spacing: Min 9in, Max 24”
Board Spacing: Max 3”	
Pallet wood should not have knots, splits, broken or damaged components, hardware protrusion.	

Wood Block 4 Way Entry Stringers - Non Solid Wood	
Material	Dimensions
Construction Grade Plywood, Particle Board, MDF	Thickness: Min 0.5in, Max 1in Width: 4in on short side, 6in on long side
Blocks should be 6” x 4”	
Pallet wood should not have knots, splits, broken or damaged components, hardware protrusion.	

- When using a customized pallet, plastic banding is required with non-plastic edge protectors, like fiberboard or corrugated.

All pallets, regardless of origin, will need appropriate sized wood screws or nails that are counter sunk or flush with the deck board, adhering the stringers to the top deck boards.
All non-domestic pallet wood needs to be Heat Treated and comply with USDA, ISPM15 requirements. Each Heat Treated pallet needs the IPPC Certification Stamp that includes the country code, treatment provider code, and treatment code printed in black.



Storage and Handling Labels

Symbol and verbiage are required, printed in black or red ink. At a minimum, Handling Symbols are **required on two minor vertical carton sides**. Center the symbols on the carton panel. Symbols should be proportionate to carton size, ranging from 2”x 3” to 4”x 6” for each symbol.

- **Up Arrow Symbol**
  Required for all master cartons. This arrow will indicate the orientation in which the piece should be shipped and stored. This arrow can be printed or labeled onto the master carton. Corrugation direction is typically aligned with the stacking orientation.
- **Fragile Symbol**
  Required for all Furniture and Glass, Ceramic, Mirror, and Lighting Household items.
- **Stack Height Symbol**
  Required for all master cartons. Usually in congruent with the Fragile Symbol, in addition to master cartons that are prone to compression damage. Corrugation direction is typically parallel with the stacking orientation. It is the vendor's responsibility to calculate appropriate stacking quantities.
- **Recycle Symbol**
  Required for all recyclable packaging materials, not limited to corrugated master cartons.
- **SKU Number**
  Required to be printed on each side of the master carton, as the carton can be stored on any of its sides in the warehouse.
- **2 Person Lift Symbol**
  Required on all master cartons weighing 60lbs or more.

Examples of accepted international Handling Icons:

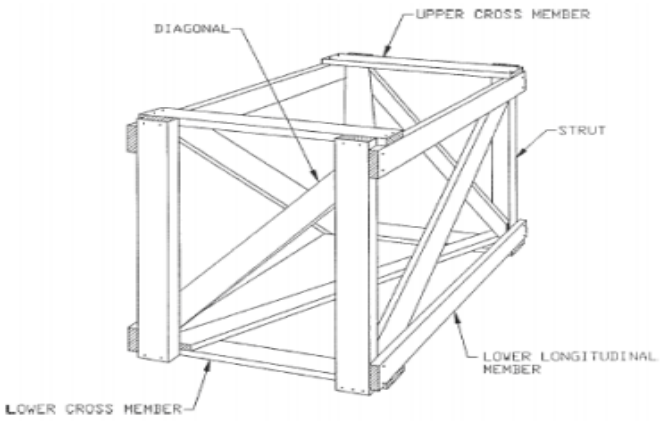
Product/Carton Fit

Products within the carton should be secured so no movement is possible. The maximum amount of void space in any direction should not exceed 1/8". Void space should be considered the space between the edge of the product and the interior wall of the carton. Example of too much void space:

Failure to eliminate void space in cartons will result in chargebacks being issued, as void space can cause stacking instability and lead to damages within our warehouses and distribution center, as well as during transit.

Wooden Crate Specifications

Wooden crates shall be sized to fit the outside dimensions of the corrugated Master Cartons when specified. Use solid, IPPC-certified wood in the construction of any wood crate components. Wood shall be IPPC certified and stamped accordingly. Wood joints shall be half-lap or mitered butt; do NOT use the basic butt-style joints as this method provides weak corners and edges. Fasteners shall be #8 or #10 Phillips-head wood screws, with the screw length depending on the size and/or weight of the product. Do not use staples or nails of any kind.



Left: Crate designs should make use of diagonal members to increase the structures rigidity. Please use screws as fasteners. This will allow our associates to easily remove the crate when needed without damaging the products.

Customized crates need customized 4 way entry block pallets, as outlined above, for easy warehouse handling. Crates can be stacked as shown below, but each crate needs an individual pallet and plastic banding, once unbound by entire load plastic strapping.

Transit Testing

In order to reduce damages during transportation, distribution, handling, and storage, we require certain products to pass a transit test protocol using standards outlined by the International Safe Transit Association (ISTA). Any product shipping one/carton, regardless of weight will require transit testing. Textiles, soft goods, and cartons with inners will not need transit testing.

These laboratory tests focus on four basic types of hazards that occur in distribution:

- Shock
- Vibration
- Compression
- Atmospheric

Test protocols are based on the size and weight of the carton and the type of delivery method being used. Only an ISTA Certified Laboratory can perform these tests for the Company.

Items should be tested **prior** to shipment. Please ensure there is adequate time between transit testing and the ship date to ensure there are no delays. Notify your Merchandising representative if testing will delay ship dates. **Failing to perform any required transit test will result in chargebacks per piece.**

We review damage reporting to maintain customer satisfaction. Products with high damage rates will be re-evaluated for packaging structure design and material recommendations and improvements. **Packaging revisions will require transit retesting to confirm packaging structural changes.**

Bureau Veritas (BV) and Intertek are our primary independent testing labs for both packaging and quality assurance. We have negotiated price discounts for tests performed at both labs for our vendors. Information regarding the locations, the test request form, and other Crate and Barrel program details can be found at www.bureauveritas.com and www.intertek.com. In addition to BV and Intertek, we will accept test reports from other labs; you must confirm with the Packaging team before proceeding with testing.

Our transit-testing requirement is a vendor pay program for Company products. Products are required to be tested by third party testing labs in order to assure compliance with the specified product performance and packaging requirements. The approved test labs will release a copy of the test results to Crate and Barrel. If an item fails testing, the test lab will identify the reason for failure; an item that fails testing must be re-tested until a passing result is received. To ensure testing does not delay shipment, please ensure adequate time between testing and PO ship date.

Before sending product to the testing lab, please ensure the product packaging is in compliance with these guidelines.

Sustainability Goals

All EPS usage is limited to 12% of the carton's total cube. All cushioning materials cannot have attached taped or glued corrugated sheets or pads, as these structures cannot be recycled at our warehouses.
Total packaging material cannot exceed 35% of the carton's total cube.
From January 1, 2021, a transit report not in compliance with the above goals will result in a DATA rating.
From July 1, 2021, a transit report not in compliance with the above goals will result in a CAR rating.
A CAR rating results in new packaging structure design, with vendor paid transit re-testing.

Group Testing

At the Crate and Barrel, we allow for "group testing." This is where, to help control costs, only one or two products of a collection can be tested, provided all are produced with the same materials and processes, and are produced in the same factory. Group testing is applicable for new versions of previously transit tested products such as a sideboard in a new finish or color. The product should be a similar size and weight as what was previously tested. The packaging structure should also be the same as what was previously tested, including its design, the material specifications, etc. The exception to this will be if there are any packaging improvements or revisions that were requested due to damages; in this case, the most recent packaging structure shall be used for testing.
Group Testing of different sizes, same construction in the same collection is allowed.

Category	**Size To Be Tested**
Beds & Bed Components	Queen Size
Dining Chairs	Bar Stool Height Size

Knocked down table and table tops are excluded from Group Testing.
All GTFs need to be pre-approved by the Packaging Team prior to lab submission.

When sending items for transit testing, please ensure that the sample is over-boxed; indicate on the outer carton that the test carton is inside and mark the carton to be tested as "Test Carton" or "Test this Carton". In addition, please attach the test request form on the outside of the carton.

Testing protocols have been consolidated, beginning for the Fall 2021 season. Crate and Barrel reserves the right to use a protocol not listed below if necessary to properly test an item. The Company will require the ISTA 3 Series for all cartons shipping one each per master carton.

Protocol	Description
ISTA 3A Mod	Individual packaged products **weighing less than 150 lbs.** shipped through a parcel delivery system or Home Delivery
ISTA 3B Mod	Individual packaged products **weighing greater than 150 lbs.** shipped through a parcel delivery system or Home Delivery

ISTA 3A Modification

This test is for Individual packaged products weighing less than 150 lbs. shipped through a parcel delivery system or Home Delivery. **No atmospheric conditioning testing is required, unless requested.**

Sequence and drop heights apply to Standard, Flat, and Elongated.]

Flat packaged product is defined as such: shortest dimension is 8in (200mm) or less, the next longest dimension is four or more times greater than the shortest dimension, and the volume is 800 in^3 (13,000 cm^3).

Elongated packaged product is defined as such: longest dimension is 36in (900 mm) or greater, with both of the packaging's other dimensions are 20% or less of that of the longest dimension.

Sequence #	Test Category	Test Type	Test Level	For ISTA Certification
1	Atmospheric Preconditioning	Temperature and Humidity	Ambient	Required
2	Shock	Drop	9 Drops - see chart below	Required
3	Vibration	Random with and without Top Load	Overall G Levels of 0.53 and 0.46	Required
4	Shock	Drop	8 Drops - see chart below	Required

ISTA 3A Drop Heights	
Packaged Product Weight	Drop Height
0 - 70 lbs.	18" for drops , 36" for drops 8, 16
71 - 150 lbs.	12" for drops , 24" for drops 8, 16

ISTA 3B Modification

This test is for individual furniture packaged products weighing greater than 150 lbs. shipped through an LTL Delivery Mode or Home Delivery. If the master carton will ship on a pallet that is the same size as the carton footprint, do not test with the pallet. The procedure follows the ISTA 3B Sequences with the modifications. **No atmospheric conditioning testing is required, unless requested.**

This test is for large items such as, but not limited to; bed frames, dressers, armoires, etc.

Sequence #	Test Category	Test Type	Test Level	For ISTA Certification
1	Atmospheric Preconditioning	Temperature and Humidity	Ambient	Required
2	Shock	Tip/Tip Over	Use a 22 degree tip angle	Required
3	Shock	Rotational Drop	Rotational edge and corner drops, 9” (20cm)	Required
4	Shock	Incline or Horizontal Impact	48in/sec (1.2m/sec) impacts or 3in drops	Required
5	Vertical Vibration	Random with Top Load	Overall Grms level of 0.54	Required
6	Shock	Rotational Drop	9in (230 mm) Rotational edge and corner drops	Required
7	Shock	Incline or Horizontal Impact	48in/sec (1.2m/sec) impacts or 3in drops	Required
8	Shock	Full Rotational Drop	1 Drop	Required only for Elongated packages
9	Shock	Bridged Impact	Hazard Box dropped 16in (410mm)	Required only for Elongated packages
10	Shock	Full Rotational Drop	2 Drops	Required only for Flat packages
11	Shock	Concentrated Edge Impact	Hazard box dropped 16in (410mm)	Required only for Flat packages

Couches, Sofas, Upholstery

Couches and Sofas need to be packed adequately as to protect the product from damage throughout the entire supply chain from the manufacturing facility to the customer's home. Product movement in all directions needs to be taken into account. Domestic vendors do not need transit testing. Please follow the guidelines below when packaging couches and sofa products. **These products will be stored on their ends**. This applies to Sofas, Couches, Upholstery.

- Surface Protection: All upholstery products need to be fully covered to protect products from tears, snags, dust/dirt, moisture, etc. All upholstered and leather furniture shall be wrapped with a non-woven, non-abrasive material (PP, PET). Minimum thickness of 2oz/yd^2 (70g/m^2).

- Outer Film: All upholstery products need to be fully encapsulated in Polyethylene film (6mil) and film should be properly shrink wrapped (via shrink tunnel or other heat shrinking equipment) to tightly hold the inner bag and corrugated tray to the product.

- Void Fill: All sofas need to be fully secure to assure no movement within the shipper. Void fillers need to be added to the end of sofas to help **stabilize the couch when stored on its end**.

- Foam blocks or corrugated triangles or wedges are recommended. Empty cartons with "empty box" verbiage printed can be used for seat void fills in FOL and RSC master cartons. Cross partitions may be added to empty carton for additional strength.

- Legs: Legs should be fully wrapped with a non-woven material (PP, PET) or PE foam sheeting. Minimum thickness of 2oz/yd^2 (70g/m^2). The legs then should be secured into a separate carton for added protection. Cartons need to be labeled with contents. Cartons accepted are doublewall RSC, FOL, FPF.

- Attached Legs: Sofa legs require foam sheeting to protect from abrasion, minimum 0.0625" (1.5mm) thickness. Attached legs should not bear the weight of the load during distribution and storage. Legs need to be suspended and protected from direct contact with the bottom of the

master carton. We suggest **suspending the legs a minimum 1”** off of the master carton. An additional doublewall corrugated pad can be added to the bottom of the carton for extra support for heavier items.
Accepted suspended leg cushion materials: Stacked corrugated layers, EPE//EPS foam blocks, honeycomb.

- Cushions and Pillows: Must be wrapped with a non-woven material (PP, PET). Minimum thickness of 2oz/yd^2 (70g/m^2). Cushions and pillows must be secured within the shipper.

- Master Cartons: Please refer to the “Master Carton Specifications” for corrugated board requirements. If using an RSC style box, an additional flat pad needs to be added to the top and bottom of the carton to prevent accidental cutting. **If using End Caps, the trays must cover both sofa arms and must have 15% coverage for each arm tray, with base tray and back coverage.** Cartons accepted: FOL, RSC, End Caps with Base Tray.

Product	**Required Carton Style**
Less than 75lbs.	RSC
Greater than 75lbs.	FOL or HSC with DST

Case Goods

Case goods need to be packed adequately as to protect the product from damage throughout the entire supply chain from the manufacturing facility to the customer’s home. Product movement in all directions needs to be taken into account. The use of stretch wrap is encouraged to help reduce movement of corner and edge cushions. Please follow the guidelines below when packaging case goods. This includes, but not limited to: Cabinets, Dressers, Storage, Media, Bookcases, Desks, Nightstands, Assembled Tables.

- Surface Protection: All case goods product needs to be fully covered to protect product from dents, scratches, dust/dirt, moisture, etc. Case Goods need to be wrapped with a non-woven material (PP, PE) or PE foam sheeting. Minimum thickness of 2oz/yd^2 (70g/m^2).

- Corner Protection: All corners of the product must be protected using approved cushioning materials. Cushioning must be sufficient for the size and weight of the product. Please follow the general guidelines for cushion thickness on the next page. (NOTE: If handles or other ornamental pieces extend beyond the profile of the frame this is considered the outermost finished surface).

- Edge Protection: It is recommended that **50% of any given length** of the edges be covered with protective material. Edge protection is required on any edge greater than 12". Please refer to the cushion thickness chart below for thickness requirements.

Packaged Product Weight	Edge & Corner Cushion Thickness	Edge Foam Density	Corner Foam Density
Under 75lbs.	Minimum 1"	Minimum 10 kg/m^3	Minimum 16 kg/m^3
75lbs - 150lbs.	Minimum 1.5"	Minimum 12 kg/m^3	Minimum 16 kg/m^3
Over 150lbs.	Minimum 1.5"	Minimum 12 kg/m^3	Minimum 20 kg/m^3

- Attached Legs: All case good legs require foam sheeting to protect from abrasion, minimum 0.0625" (1.5mm) thickness. Attached legs should not bear the weight of the load during distribution and storage. Legs need to be suspended and protected from direct contact with the bottom of the master carton. We suggest suspending the legs a minimum 1" off of the master carton. Accepted suspended leg cushion materials: Corrugated U Boards as shown below, Stacked corrugated layers, EPE foam blocks.

- Doors, Drawers & Glass: Glass, doors, and drawer surfaces must be protected with foam sheeting to protect from abrasion, minimum 0.0625" (1.5mm) thickness. Drawers need additional foam sheeting between drawer and base of product in case drawers and doors open during shipment.

- Shelves: All case goods shelves need to be protected with foam sheeting to protect from abrasion, with a minimum 0.0625" (1.5mm) thickness, then encased in a corrugated box or sleeve. All loose items must be firmly secured in place within the master carton, within the product if can be secured with no movement, or on top of the product, secured with no movement.
- Hardware*:* Pulls and knobs need surface abrasion protection. Please refer to the "Hardware" section of this document for information on how to properly pack and label all loose hardware components.
- Void Fill: All case goods need to be fully secure to assure no movement within the shipper. **Large void areas with more than 12" of empty space require void fill packaging**. Blocking and bracing materials accepted: Corrugated multi-layer pads, honeycomb, empty cartons with "empty box" verbiage printed, EPE, EPS. Cross partitions may be added to empty carton for additional strength.
- Master Cartons: Please refer to the "Master Carton Specifications" for corrugated board requirements. If using an RSC style box, an additional flat pad needs to be added to the top and bottom of the carton to prevent accidental cutting. If using a DCC, a plywood frame is needed on top of the product for extra protection. The following box styles should be used based on product weight:

Product	**Required Carton Style**
Less than 75lbs.	RSC
Greater than 75lbs.	FOL or HSC with DST

Tables

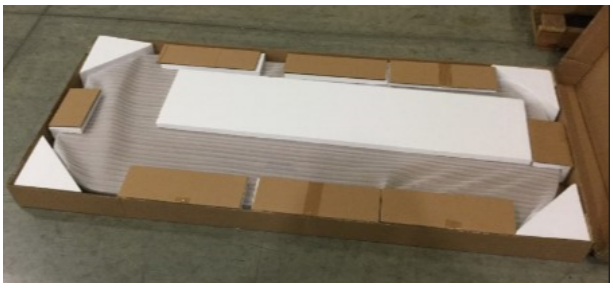
Knocked Down Table Tops

Table Tops need to be packed adequately as to protect the product from damage throughout the entire supply chain from the manufacturing facility to the customer's home. Product movement in all directions needs to be taken into account. Please follow the guidelines below when packaging table tops. This includes, but not limited to: Coffee tables, dining tables, desks, end tables.

- Surface Protection: All table tops need to be fully covered to protect product from dents, scratches, dust/dirt, moisture, etc. Table tops need to be wrapped with a non-woven material (PP, PET) or PE foam sheeting. Minimum thickness of 2oz/yd^2 (70g/m^2). This applies to table top extension pieces.

- Corner Protection: All corners of the product must be protected using approved cushioning materials. Cushioning must be sufficient for the size and weight of the product. Please follow the general guidelines for cushion thickness on the next page, unless cushioning material selected was lab tested and performance can be proven.

  - **Round Tables** must be suspended from the carton walls by use of triangle shaped cushions or cushions that contour to the shape of the table. Cushioning must be the same height as the table top so that there is no opportunity for the table to slip above or below the cushioning. Layered corrugated pads or honeycomb is suggested.



- Edge Protection: It is recommended that **75% of any given length of the edges be covered with protective material.** Edge protection is required on any edge greater than 12". Please refer to the cushion thickness chart below for thickness requirements.

Packaged Product Weight	Edge & Corner Cushion Thickness	Edge Foam Density	Corner Foam Density
Under 75lbs.	Minimum 1"	Minimum 10 kg/m^3	Minimum 16 kg/m^3
75lbs - 150lbs.	Minimum 1.5"	Minimum 12 kg/m^3	Minimum 16 kg/m^3
Over 150lbs.	Minimum 1.5"	Minimum 12 kg/m^3	Minimum 20 kg/m^3

- Table Legs: Legs should be fully wrapped with a non-woven material (PP, PET) or PE foam sheeting. Minimum thickness of 2oz/yd^2 (70g/m^2). The legs then should be secured into a separate carton for added protection. Cartons need to be labeled with contents. Cartons accepted are doublewall RSC, FOL, FPF.

- Void Fill: All table tops need to be fully secure to assure no movement within the shipper. **Large void areas with more than 12" of empty space require void fill packaging**. Blocking and bracing materials accepted: Corrugated multi-layer pads, honeycomb, empty cartons with "empty box" verbiage printed, EPE, EPS. Cross partitions may be added to empty carton for additional strength.

- Master Cartons: Please refer to the "Master Carton Specifications" for corrugated board requirements. Carton Style: DST carton is required. **Master cartons will store flat.**

Chairs

All chairs need to be encased fully in a master carton due to warehouse storage limitations. **All chairs must be protected from surface damage with a non-abrasive material such as foam sheeting, a min 2mil poly bag, or kraft paper** (for non upholstered chairs)**.** Assembled chairs can be packed in quantities of two, inverted, in a master carton. Chairs with arms are typically packed individually. Due to

height, barstools are typically packed in quantities of one. This includes Home Office Chairs, Dining Seating, Outdoor Seating, Upholstered Chairs.

Single Chairs

- Top Rail of the Chair: Use cushioning material, min 1”, such as corrugated U-board, honeycomb, or EPE to protect the chair back.

- Top Edges/Rail of Chair & Arms: Use cushioning material, min 1”, such as multi-wall corrugated board, EPE foam blocks to prevent side impacts.

- Chair Seats: Chairs constructed of velour type fabric (velvet, micro fiber, etc.) are prone to fabric damage from compression. It is not advisable to cover with bubble wrap as the pattern may transfer to the fabric under compression.

- Chair Legs: Suspend all chair legs a minimum of 1” from the bottom of the master carton. Corrugated U boards (as shown), stacked corrugated boards, padded corrugated trays, or EPE foam blocks (as shown) should be used.

- Void Fill: Individual chairs need a void fill placed on the seat of the chair. A carton with “empty box” verbiage printed can be used for seat void fills.

- Hardware*:* Please refer to the “Hardware” section of this document for information on how to properly pack and label all loose hardware components.
- Cushions and Pillows: Must be wrapped with a non-woven material (PP, PET). Minimum thickness of 2oz/yd^2 (70g/m^2). Cushions and pillows must be secured within the shipper.
- Master Cartons: Please refer to the “Master Carton Specifications” for corrugated board requirements. Carton Style: RSC or FOL carton is required.

Chair Pairs

- Chairs packed in quantities of two should mimic single chair pack outs. Additional protection is needed between the inverted chairs. **Corrugated flat pads protecting the chair back, seat, and legs from the second chair is needed.** Depending on the type of chair, two can be stacked or inverted.

- If the height of the seat back (measured from the seat cushion) is greater than the height of the leg use a suspension box between the seats. The suspension box will lift the top of the inverted chair so that it is protected from the master carton. The stacked chairs need to form a rectangular shape – with the legs on the first chair even to the back of the second chair (that way the load is evenly distributed). Recommended construction of the suspension box: corrugated carton, corrugated board/pads, molded pulp, or honeycomb.

Mattresses

All mattresses must be protected from surface damage with two 6mil minimum poly bags.
Similar to Sofas, mattresses require end cap trays for handling and storage.

- Heat sealed closure required.
- Contain silica gel desiccant packs to prevent moisture.

Beds & Bed Components

Beds and Bed Components need to be packed adequately as to protect the product from damage throughout the entire supply chain from the manufacturing facility to the customer's home. Product movement in all directions needs to be taken into account. Please follow the guidelines below when packaging beds and bed components. This includes, but not limited to: Platform Beds, Headboards, Trundles, Day Beds, Storage Beds, Loft Beds, Kids Beds, Cribs. When shipping bed and bed components separately, the cartons must be marked "carton x of x" when multiple boxes apply.

- Surface Protection: All bed components need to be fully covered to protect product from dents, scratches, dust/dirt, moisture, etc. Bed components need to be wrapped with a non-woven material (PP, PET), PE foam sheeting, PE poly bag or non-abrasive kraft paper.

- Packaging Protection: All bed products need to be secure and separated from other components within the shipper. Corners and edges must be protected with a minimum 1.5" thickness, **with a minimum 50% coverage** of the below materials. Impact packaging materials accepted: Corrugated multi layer pads, honeycomb, EPE.

Packaged Product Weight	Edge & Corner Cushion Thickness	Edge Foam Density	Corner Foam Density
Under 75lbs.	Minimum 1"	Minimum 10 kg/m^3	Minimum 16 kg/m^3
75lbs - 150lbs.	Minimum 1.5"	Minimum 12 kg/m^3	Minimum 16 kg/m^3
Over 150lbs.	Minimum 1.5"	Minimum 12 kg/m^3	Minimum 20 kg/m^3

- Void Fill: All bed products need to be fully secure to assure no movement within the shipper. **Large void areas with more than 12" of empty space require void fill packaging**. Blocking and bracing materials accepted: Corrugated multi-layer pads, honeycomb, MDF wood, empty cartons with "empty box" verbiage printed. Cross partitions may be added to empty carton for additional strength.

- Attached Legs: All bed legs require foam sheeting to protect from abrasion, minimum 0.0625” (1.5mm) thickness. Attached legs should not bear the weight of the load during distribution and storage. Legs need to be suspended and protected from direct contact with the bottom of the master carton. We suggest suspending the legs a minimum 1.5” off of the master carton. Accepted suspended leg cushion materials: Corrugated U boards, stacked corrugated boards, padded corrugated trays, or EPE foam blocks should be used.
- Storage Bed Drawers: Drawer surfaces must be protected with foam sheeting to protect from abrasion, minimum 0.0625” (1.5mm) thickness. Drawers need additional foam sheeting between drawer and base of product to prevent drawer opening during shipment.
- Master Cartons: Please refer to the “Master Carton Specifications” for corrugated board requirements. If using an RSC style box, an additional flat pad needs to be added to the top and bottom of the carton to prevent accidental cutting. If using a DCC, a plywood frame is needed on top of the product for extra protection. FTD, DCC cartons required. **Beds will ship flat.**