



# Pallet and Packaging Requirements Lite

Revision Date: March, 24 2023

**This document is only the brief requirements referencing Shaw's complete packaging requirements document. All vendors delivering palletized products to Shaw Industries must meet these requirements detailed below and also in the full Packaging Requirements document.**

*If you have any questions about the details of this document, please connect with us via one of the following options.*

*Email Address:*

*packaging.requirements.group@shawinc.com*

*Business Phone:*

*(423)715-7920*

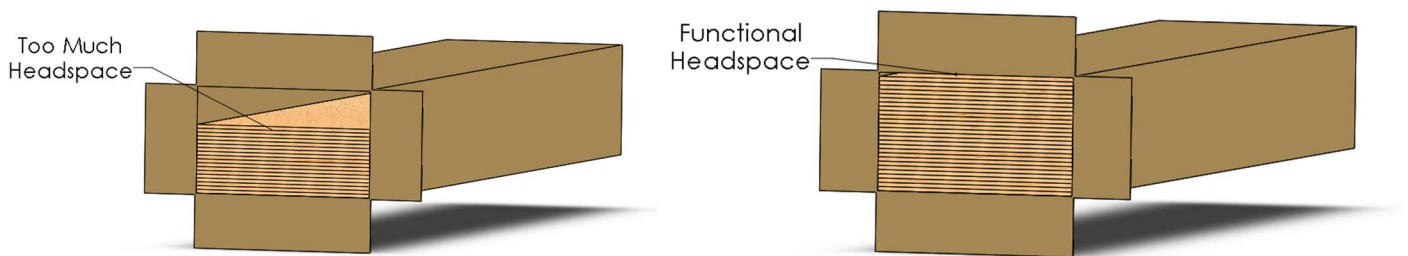
# Primary Packaging Design

The following packaging styles are pre-approved by Shaw. Any alternate packaging styles need Shaw Corporate Quality Systems and Services Group approval.

## Packaging Design Performance

Primary packaging must be sufficient to contain products throughout the entire supply chain from manufacturer to the end user. This includes remaining free of tears, and defects.

Packaging should also be properly sized to fit the product it contains.



## Box/Carton Packaging Testing

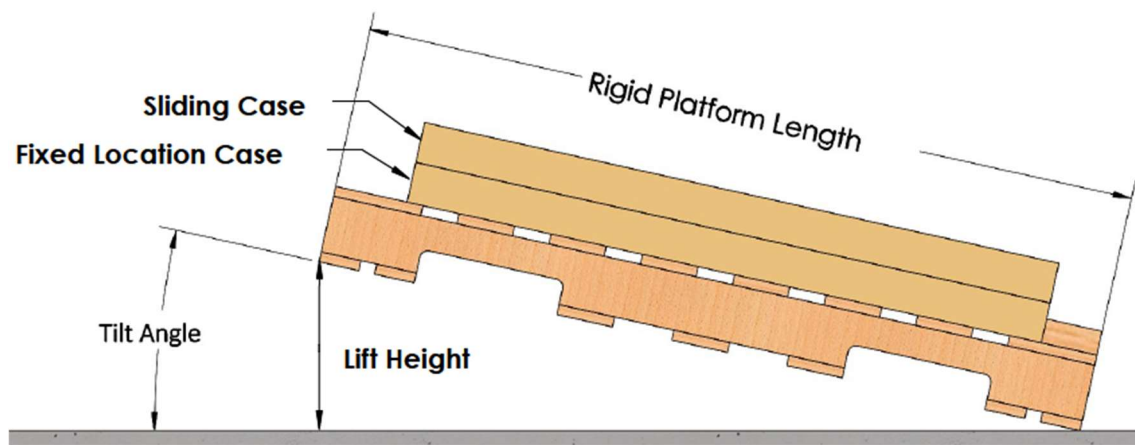
### Primary Package Slide Angle Test

This test should be used to help determine the slipperiness of cases. Case slipperiness is an indicator that a unit load may be unstable.

- Set 1 case of the product on a rigid platform such as a pallet or angle testing surface. Then set another identical case of product on top of the first case. Line up the top case with the bottom case so all sides are flush. If box edges are crushed, or uneven, place the top box offset from the bottom box so the uneven area doesn't affect the slide angle.
- Slowly lift one end of the rigid platform while holding only the bottom case to prevent it from sliding if there is not a fixed stop block. Continue lifting until the top case begins to slide. Record the height the case was lifted when it started to slide and repeat this test 5 more times. If using a protractor phone app or a mechanical angle measurement tool (see images below), record the angle when the top box begins to slide. Repeat this test with 5 additional boxes and then determine the average angle in which the box began to slide.

- c. If not using an angle measurement tool, look at the chart below to determine the slide angle based on the rigid platform length and the average lift height. Record the highest number of degrees that the lift height indicates.
- i. *For Example. If your case is 98cm long and the average lift height was 30cm then you should record that your case has a 15 degree slide angle.*

*\*Note - Cases with a slide angle **under 10°** are unacceptable and Shaw will not accept these cases. Cases with a slide angle **between 10° and 15°** are considered **very unstable** and updating the ink and coatings are highly recommended. Cases with a slide angle **between 15° and 21°** are considered **unstable** and updating the ink and coatings are recommended. Cases with a slide angle **greater than or equal to 22°** are considered **stable and acceptable**.*



Pallet Length (cm)	Lift Height to Achieve Angle (cm)			Pallet Length (inches)	Lift Height to Achieve Angle (inches)		
	10 Degrees (cm)	15 Degrees (cm)	20 Degrees (cm)		10 Degrees (inches)	15 Degrees (inches)	20 Degrees (inches)
56 to 64	11	16	22	22 to 25	4	6	9
66 to 74	12	17	24	26 to 29	5	7	9
76 to 84	13	20	27	30 to 33	5	8	11
86 to 94	15	23	31	34 to 37	6	9	12
97 to 104	17	26	34	38 to 41	7	10	14
107 to 114	19	28	38	42 to 45	7	11	15
124 to 132	22	33	44	49 to 52	9	13	17
135 to 142	24	36	48	53 to 56	9	14	19
145 to 152	25	38	52	57 to 60	10	15	20
155 to 163	27	41	55	61 to 64	11	16	22

165 to 173	29	44	59		65 to 68	11	17	23
175 to 183	31	46	62		69 to 72	12	18	25
185 to 193	33	49	66		73 to 76	13	19	26
196 to 203	34	52	70		77 to 80	14	20	27
206 to 213	36	54	73		81 to 84	14	21	29
216 to 224	38	57	77		85 to 88	15	23	30
226 to 234	40	60	81		89 to 92	16	24	32

## Pallet Design Requirements

The preferred pallet type is a *stringer pallet*. When resources are available at a reasonable cost, stringer pallets must be used.

## Pallet Performance Requirement

Pallets must be able to support their load throughout the supply chain without breaking or becoming damaged and they must pass the mechanical handling testing protocol provided in the full version packaging requirements. Shipments with any of the following issues will be considered non-compliant and may be refused.

- Pallet components are cracked, damaged or deflected 13mm (0.5 inch) from their original plane.
- Pallet components with knots that are 50% or more of their width or height.
- Pallets used for international shipments that are not heat treated or compliant with [ISPM 15](#) standards (an international heat treating standard).
- Shipments that use bolsters rather than a pallet.

## Pallet Minimum Required Strength and Stacking Performance

This section determines the required stacking performance of pallets based on product category and stack height. Follow the step by step process to determine the required compressive stacking performance for any given SKU.

## Step By Step Guidance for Pallet Strength

Use the chart below to determine the expected stack height for your product. Design a pallet that is robust enough to support the stack heights listed below.

<b>Expected Unit Load Floor Stack Heights</b> <i>Total Height should not exceed 508cm (200 inches)</i>		
<b>Product Code</b>	<b>Product Description</b>	<b>Unit Loads Floor Stacked</b>
22 & TS	Carpet Tile Flooring and Wall	1
34	Vinyl Flooring	4
35 & 42	Ceramic Tile	6
37 & 44	Hardwood Flooring	6
38 & 45	Laminate Flooring	5
39, 46, & 4D	Sundries (Hard Surface)	4
41	Resilient Tile & Plank	4
43, 47, 48	Moldings & Trims (All)	3
All Other	Other	3

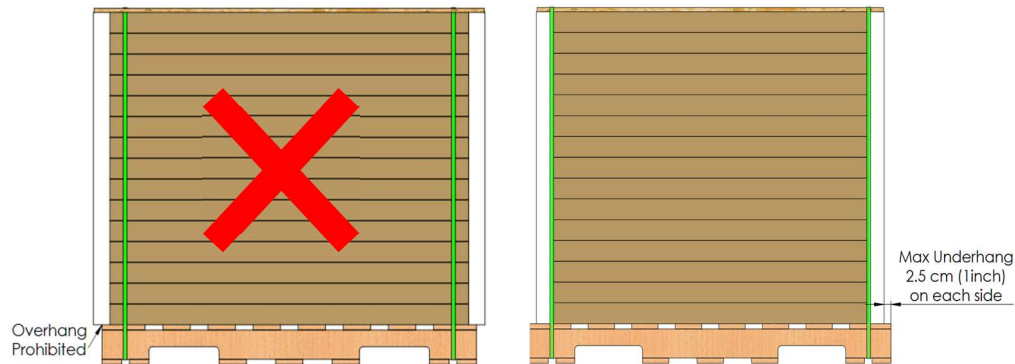
The pallet design details will come from Shaw Industries or from a pallet supplier that uses a pallet design software to determine the desired strength necessary to meet our stack height requirements.

## Pallet Dimensional Requirements

Pallets must be sized appropriately to ensure the following:

- There is no product or package overhang.
- Product packaging is underhanging no more than 2.5cm (1 inch) on any side of the pallet.
- The fork pocket height is 89mm (3.5 inches) tall.
- The width of the pallet no more than 122cm (48 inches)

**NOTE ON OVERALL PALLET LENGTH AND WIDTH:** Ideally, Shaw Industries recommends a minimum of 10mm (0.375-in) under hang on all sides of the pallet but no greater than 25.4mm (1-in), however, due to shipping container limitations on length, width, and height, our goal is to maximize container capacity and the pallet under hang may be 0 (zero) millimeters but in no circumstance shall the pallet size be smaller than the total box footprint area.

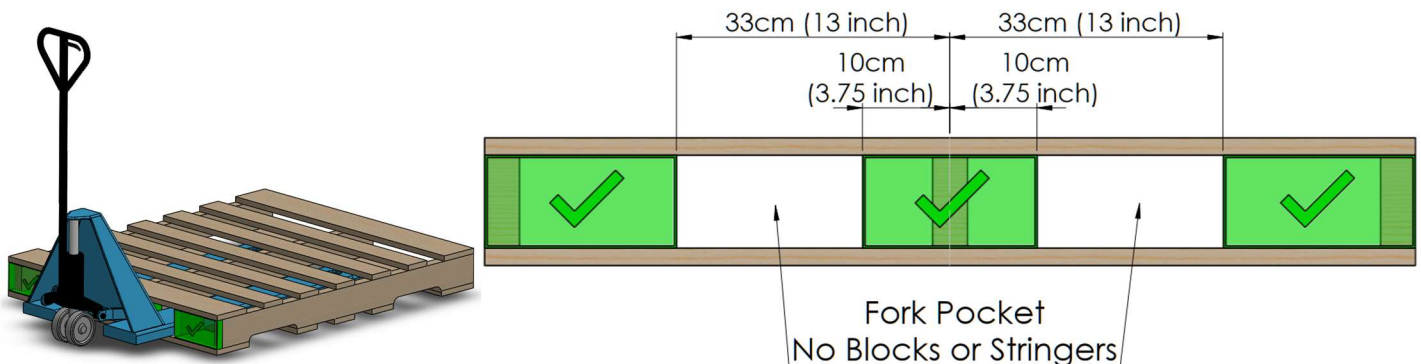


## Pallet Material Requirements

Solid wood is preferred to composite wood products. If solid wood cannot be sourced, the components used must be sufficiently robust enough to safely carry the pallets product throughout the supply chain.

## Fork Pocket Requirements

Pallets must be able to be handled by both forklifts and pallet jacks. In order to accommodate the equipment in the Shaw distribution system the fork pocket below must be maintained.



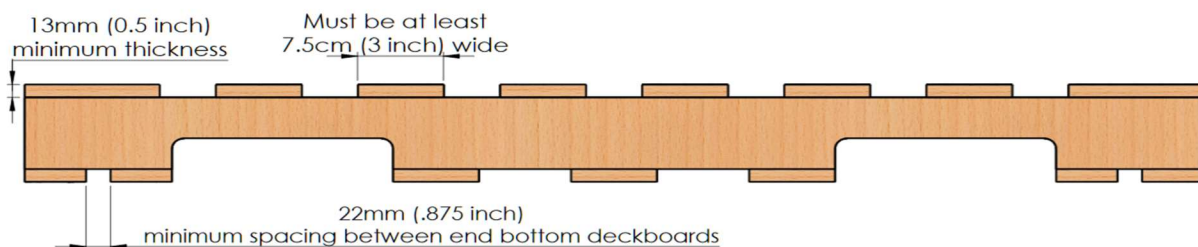
- Stringers and blocks must not be placed between 10cm (3.75 inches) and 33cm (13 inches) from the center of the pallet width. This is considered the fork pocket and must be clear for pallet jacks and fork trucks.

## Deck Board Dimensional Requirements

Top deck boards must withstand mechanised handling with a fork lift and stacking up to “[Expected Unit Load Floor Stack Heights](#)” without breaking, cracking or deflecting more than 13mm (0.5 inch).

- Deck Board sizing must comply with the Pallet Dimensional Requirements in the full version but at a minimum, specific dimensions are defined below:
  - Deck Boards must be a minimum width of 7.5cm (3 inches).
  - Deck Boards must be a minimum thickness of 13mm (0.5 inches).
- 3mm (1/8 inch) notches may be added to the bottom of the bottom deck boards to accommodate banding underneath bottom deck boards.

**NOTE FOR RESILIENT PRODUCT ONLY:** Top deck boards on the pallet must have minimum spacing between top deck boards (solid top) being at least 76mm (3-in) wide with at least 1.6mm (.0625-in) thick veneer sheet (tier sheet) laid directly on the top deck boards to prevent the oscillation (warping) defect on the product due to compression loading when additional unit loads are stacked on top of the first or very bottom unit load in the stack.



## Fastener Requirements

Fasteners must be of sufficient strength to maintain the integrity of pallets throughout the entire distribution process, from manufacturing to the end user.

Plain Shank Nails

Prohibited



Staples

Prohibited



Glue Coated Screw or  
Ring Shank Nails

Acceptable



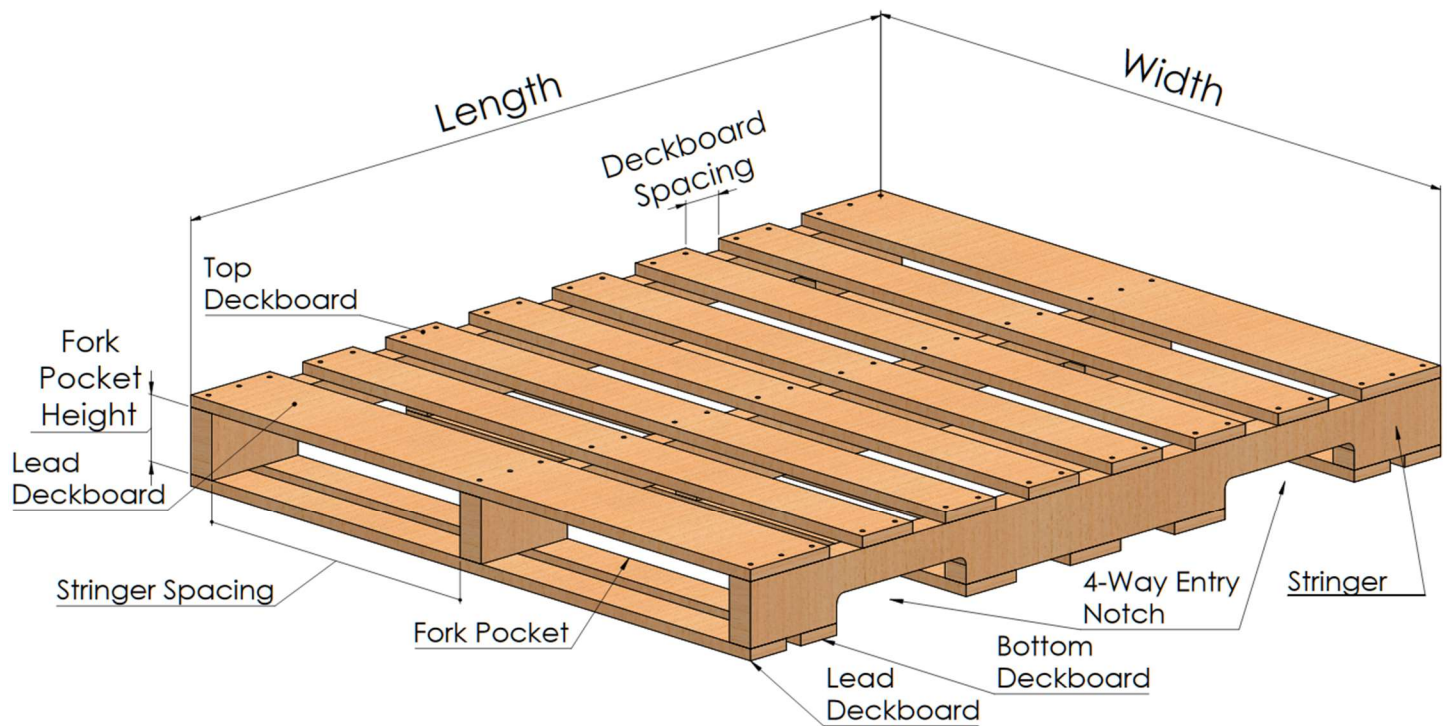
Screws

Acceptable





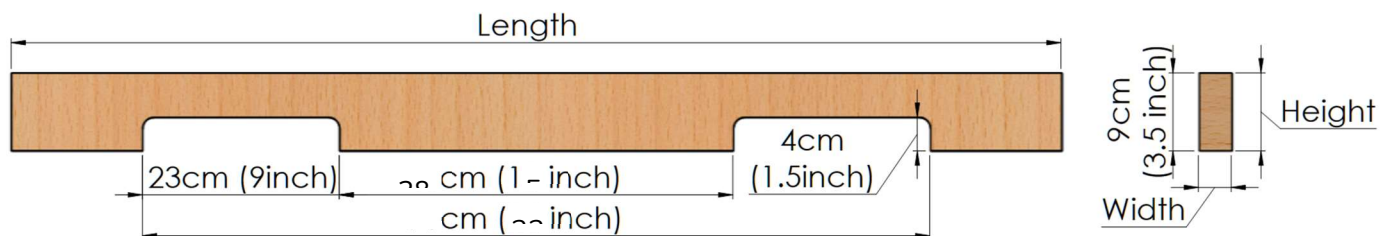
## Stringer Pallet Requirements



- Stringer pallets must have all of the parts shown in the diagram above with very few exceptions.
- Pallet must be designed to safely support their product load when stacked to the desired stack height. Often, this is 4 unit loads high. Review the full "Packaging Requirements Document" for more details.

## Stringer Dimensional Requirements

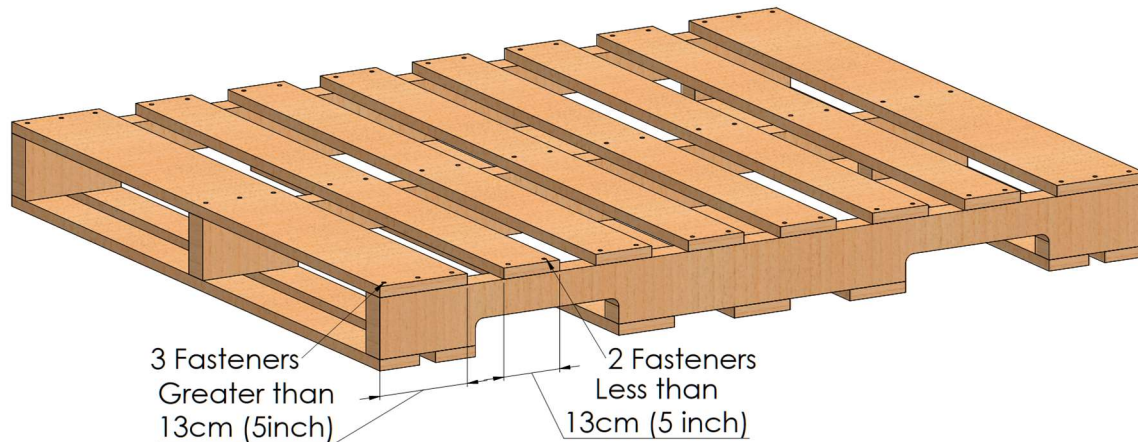
- Stringers must be 9cm (3.5 inches) in height.
- Stringers must be at least 32 mm (1.25 inches) wide





## Number of Fasteners Required

- Deck boards 13cm (5 inches) or wider require at least 3 fasteners at each stringer.
- Deck Boards less than 13cm (5 inches) require at least 2 fasteners at each stringer.



## Unit Load Design

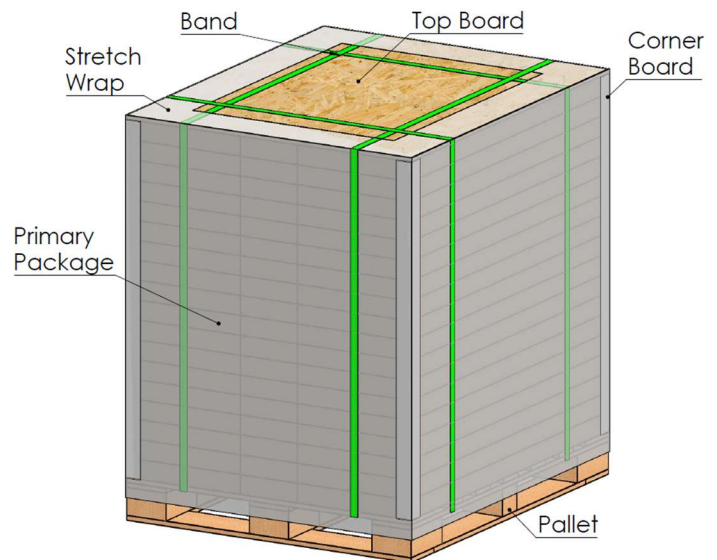
### Unit Load Performance Requirements

The unit load (pallet with packaging) must be designed and assembled in a way that keeps the entire unit load secured as a single unit throughout the supply chain.

- See the full Packaging Requirements Document for proper unit load testing.

### Unit Load Size and Weight

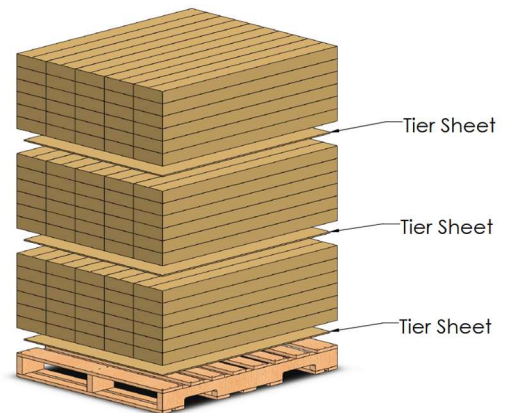
- Maximum Weight - 1,361kg (3,000 pounds)
- Maximum Width - 122cm (48 inches)
- Maximum Unit Load Height - 112cm (44 inches)
  - Unit loads exceeding this need to be approved by **Shaw Corporate Quality Systems and Services Group**.
- Max Number of layers - 18



# Unit Load Layout

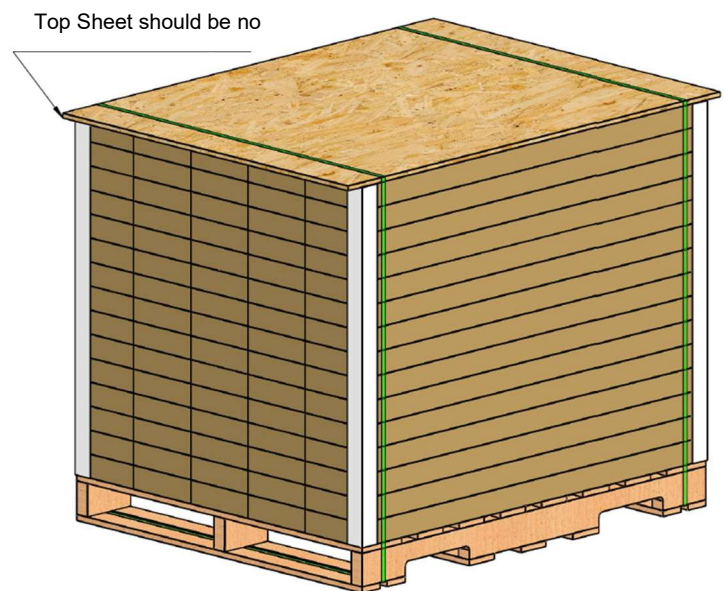
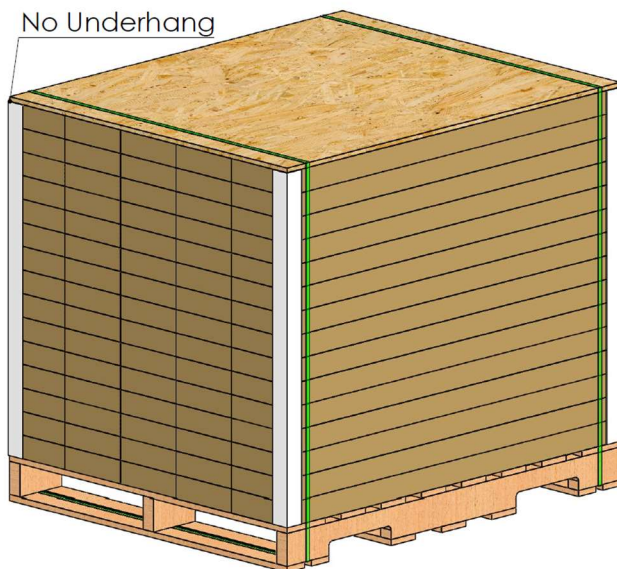
## Tier Sheets

# of Tiers per Unit Load	Minimum # of Tier Sheets
1 to 6	1 tier sheet - Directly on top deck boards
7 to 12	2 tier sheets - One directly on top deck boards and halfway up the load.
12 to 18	3 tier sheets - One directly on top deck boards and the other 2 equally spaced between tiers.



## Unit Load Top Boards

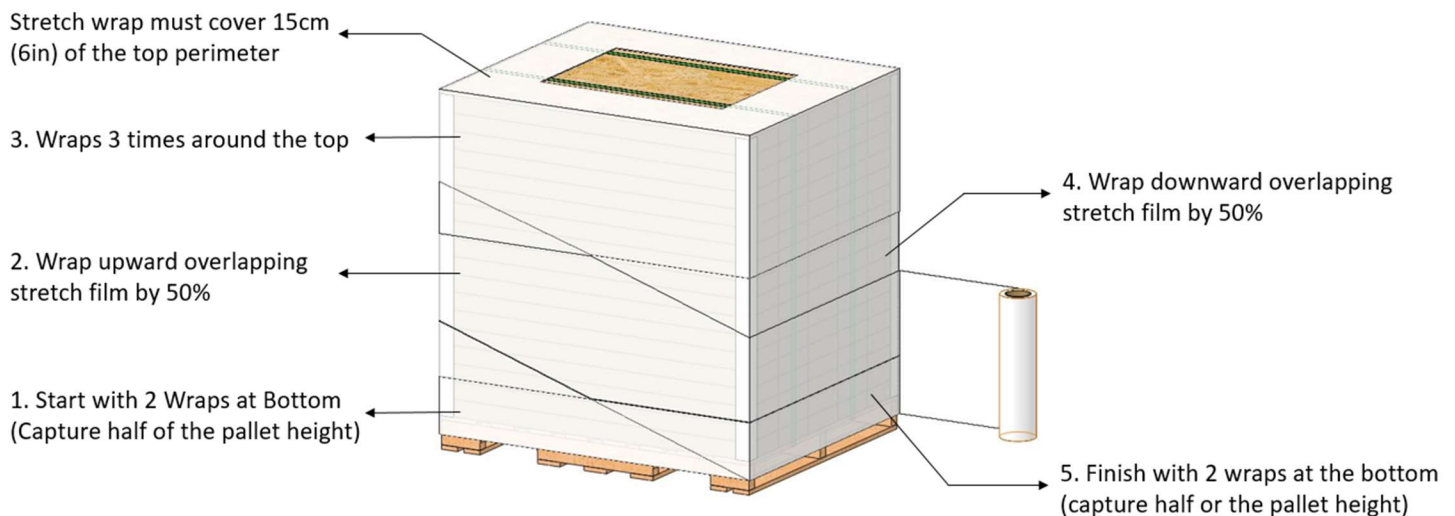
Use top boards as necessary for product protection and load stability. Resilient and Laminate require top boards. The size of the top board is to be no larger than the length and width of the pallet but no less than the product's full footprint on the pallet.



# Stretch Wrap Performance Requirements

Stretch wrap must resist tearing through [normal distribution conditions](#). If a unit load's stretch wrap does not meet the following performance specifications, it will be considered non-compliant and may be refused. Stretch wrap must:

- Be tightly wrapped around the unit load without any bagging or signs of looseness.
- Stretch wrap must capture the pallet and the cases on the pallet.
- Be at least 0.020mm thick (80 gauge).
- Be wrapped with at least as many layers as is detailed on the diagram below.



## Stretch Wrap Containment Force Requirements

Below are shrink wrap tension containment force recommendations to ensure unit loads are properly secured to the pallet and remain secure throughout distribution. A tool such as the Lantech CFT-6 can measure stretch wrap force once applied around the unit load. Measurements should be taken at the midpoint of the longest side of the load at the top, middle, and bottom of the pallet. Containment force should be in the ranges below for each product group.

**Resilient:** 15lbs - 22lbs force (target 18-20lbs)

**Hardwood:** 15lbs - 22lbs force (target 18-20lbs)

**Laminate:** 15lbs - 22lbs force (target 18-20lbs)

**Carpet:** 15lbs - 22lbs force (target 16-18lbs)

Link to Stretch Wrap Containment Force Chart Guidelines

<https://www.ipack.com/solutions/stretch-film-containment-force/>

- Light loads (0-500 lbs.): 2-6 lbs. of force
- Stable mid-weight loads (500-1,100 lbs.): 6-8 lbs. of force
- Heavy loads (1,100-1,700 lbs.): 8-17 lbs. of force
- Very unstable heavy loads (1,700-2,200 lbs.): 15-22 lbs. of force

### Lantech CFT-6 Stretch Wrap Containment Force Tool



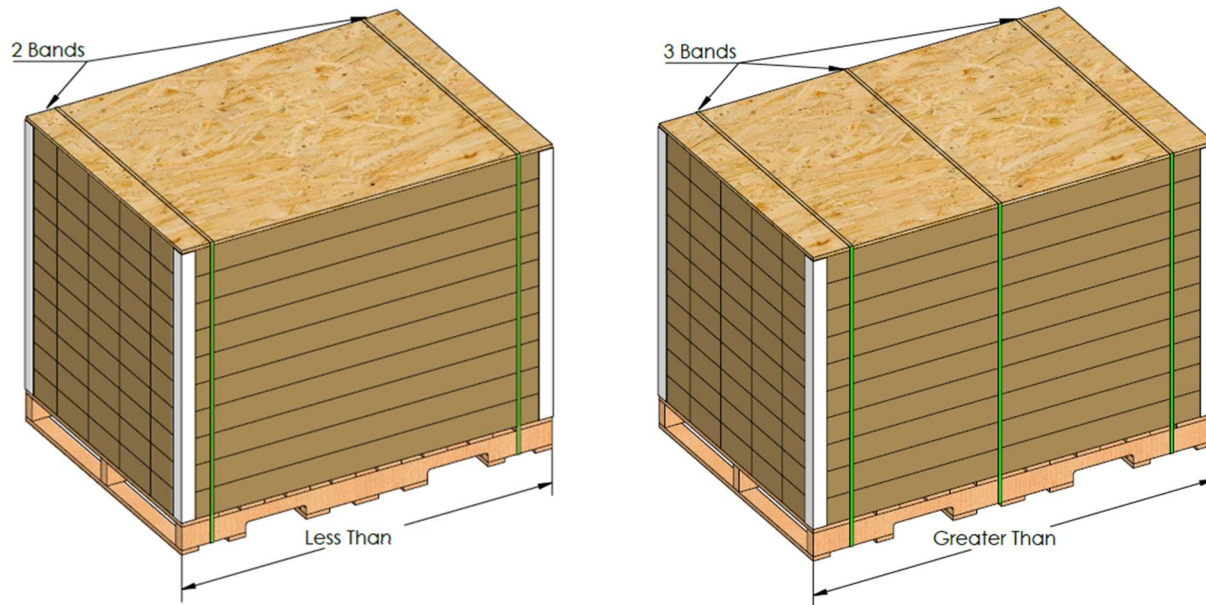


# Banding Requirements

Banding must meet all of the requirements detailed in this section.

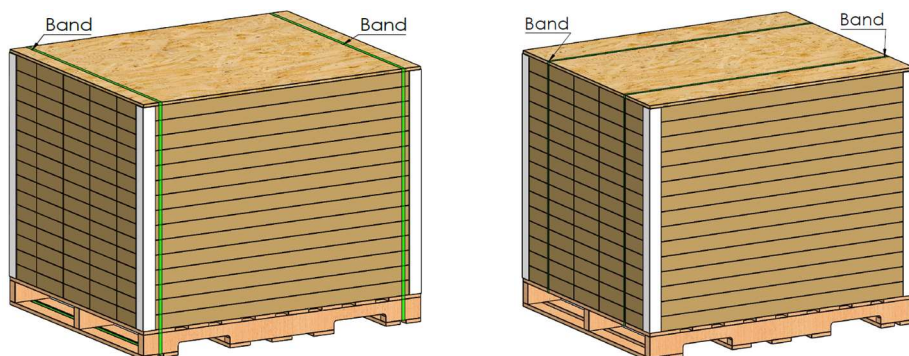
- No metal banding is allowed.
- Banding must be of sufficient strength to maintain tension throughout distribution.

## Minimum Number of Bands



## Banding Location

- Bands must be placed so that they do not interfere with the fork tines and pallet jacks when being mechanically handled.
- Bands should be placed in a location so they cannot easily slip out of place if they become loose. . \**Block Pallets banding details in Packaging Requirements for Palletized Products document .*



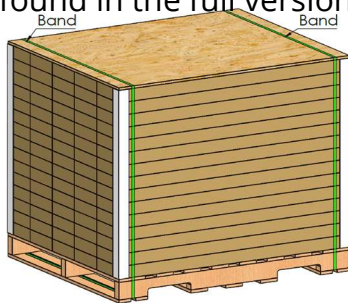
## Primary Package Weight Restrictions

For safety reasons, Shaw restricts the weight of individual primary packages. Vendors must review and comply with the packaging weight restrictions in this section.

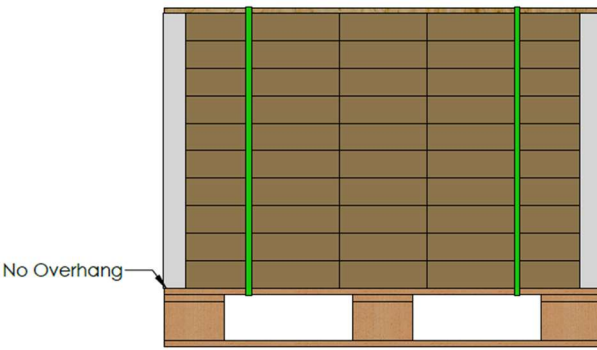
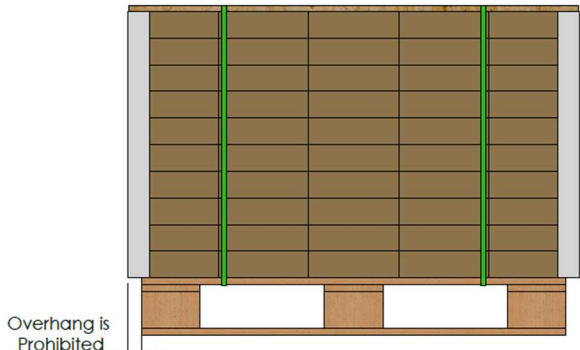
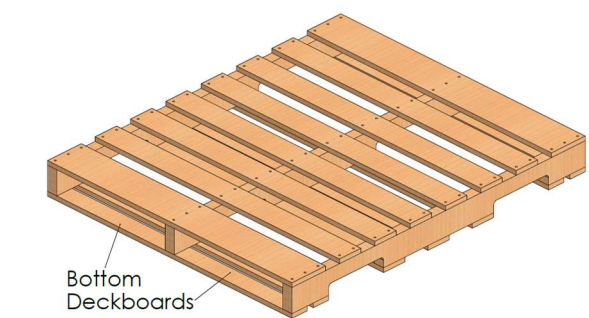
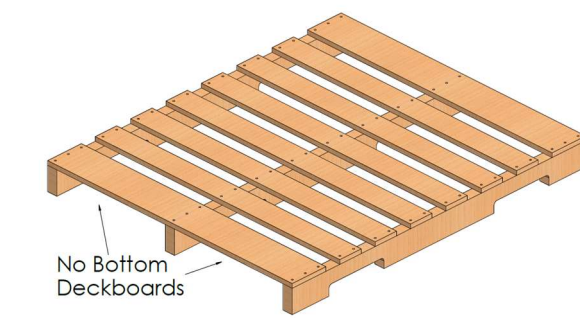
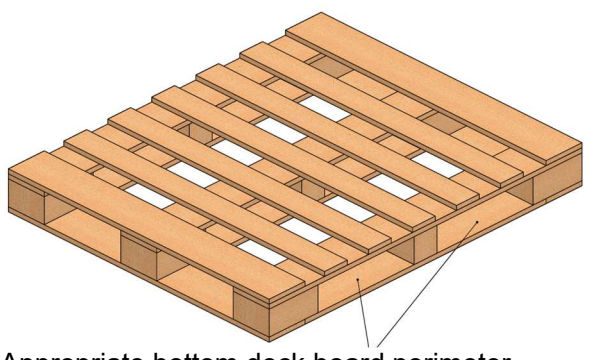
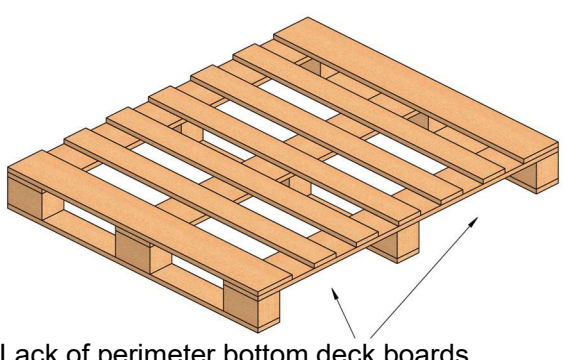
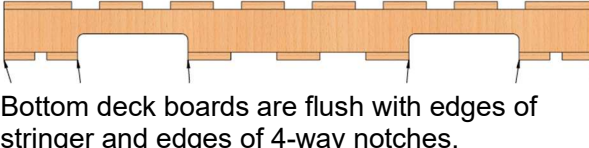
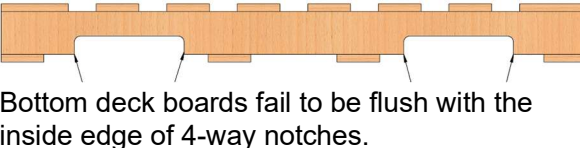
Finished Package Weight	Shaw Restrictions	Labeling Requirements
Less than 23kg (50 pounds)	No Restrictions	No special labeling
23-45kg (50 to 100 pounds)	Need approval from shaw	Need 2 person lift label
More than 45kg (100 pounds)	Prohibited	N/A

## Required Packaging Testing






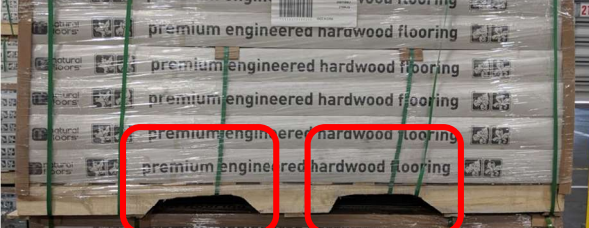
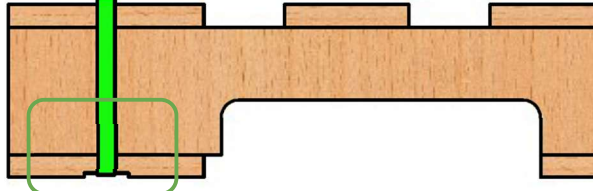
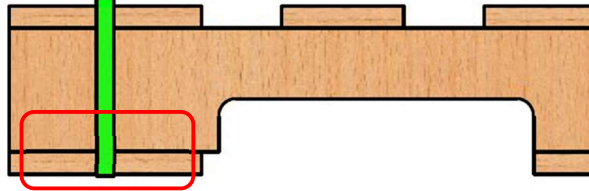
Details for testing are found in the full version: Packaging Requirements for Palletized Products document.



## Pass/Fail Visual Reference

Issue	Pass	Fail
Overhang is prohibited.	 <p>No Overhang</p>	 <p>Overhang is Prohibited</p>
Must have bottom deck boards	 <p>Bottom Deckboards</p>	 <p>No Bottom Deckboards</p>
Lacking Bottom Perimeter Boards	 <p>Appropriate bottom deck board perimeter.</p>	 <p>Lack of perimeter bottom deck boards.</p>
Needs deck boards flush with stringer ends and notch ends.	 <p>Bottom deck boards are flush with edges of stringer and edges of 4-way notches.</p>	 <p>Bottom deck boards fail to be flush with the inside edge of 4-way notches.</p>



<p>Deck board Strength</p>	 <p>Deck boards are not deflected or cracked.</p>	 <p>Deck boards must be robust enough to avoid deflection over 13mm (0.5 inch) and cracking.</p>
<p>Stretch Wrap coverage</p>	 <p>Stretch wrap captures 6cm (2.75 inches) of the pallet height.</p>	 <p>Stretch wrap does not extend downward to capture at least 7cm (2.75 inches) of the pallet.</p>
<p>No Banding In Notches</p>	 <p>Banding avoids 4-way notches and is always between 2 deck boards.</p>	 <p>Banding must not be placed in 4-way notches.</p>
<p>Bands Under Bottom Deck boards</p>	 <p>Bottom deck board has a notch of at least 3mm (<math>\frac{1}{8}</math> inch) for the band.</p>	 <p>Bands placed under bottom deck boards must be located within notches that are at least 3mm (<math>\frac{1}{8}</math> inch) deep.</p>

Unstable



Unit load is stacked vertically, well banded and stretch wrapped. It is secured and moves as one unit.



Unit load is shifted. Cases are displaced from their original location. Bands and stretch wrap are insufficient to maintain stability.

Torn Packaging



Packaging is free of tears.



Packaging is torn.

Poor Glue Flap Securement



Glue flaps are secured and square.



Glue flaps are not secured with glue.



Product not  
contained by  
packaging



Product is entirely contained by packaging.



Product is not contained by packaging.

Metal  
Dunnage  
and  
Packaging  
Components



Unit load doesn't use any metal packaging  
components



Metal corner boards are forbidden.