VICEROY
Marketing Ltd.

Guide to Palletizing

This Guide to Palletizing has been prepared as a general information brochure to help you maximize the stacking and shipping performance of your corrugated containers.

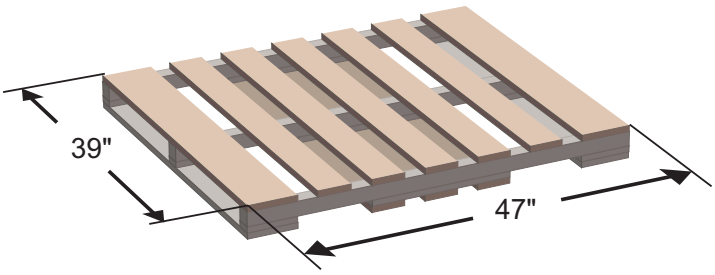
Stacking & Palletizing

Mishandling cartons during warehousing and shipping are real enemies to stacking strength of corrugated containers. This mishandling can result from physical abuse or as a failure to utilize the container's structure in the manner to which it was designed.

The easiest and least costly way to improve stacking strength is to convert regular slotted containers from B to C flute where possible. Depending on size and shape of the container, improvements of up to 15% can be obtained without adding to costs.

Pallet overhang, wide gaps between pallet boards, misalignments within a column stack and incorrect wight and size distribution all contribute to loss of container strength and poor palletization.

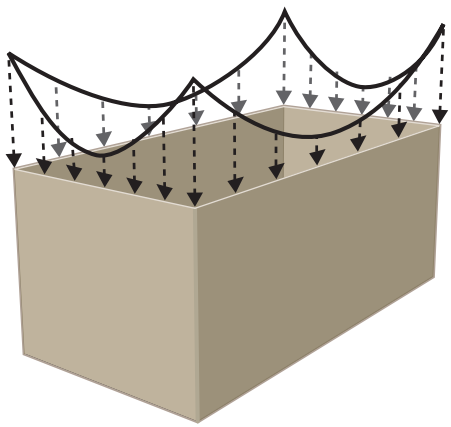
Always measure to confirm a pallets actual size. A standard 40 x 48 CPC or CHEP pallet can measure as little as 47 x 39.



We recommend that the pallet pattern be either printed directly onto the top flaps of the container or provided as a separate sheet for the people involved in the actual palletizing of containers. This will service as a visual reminder to help the experienced or inexperienced staff involved in palletizing and shipping to palletize correctly.

To further stabilize pallet loads, many companies have adopted stretch wrapping to secure loads onto pallets. This can be done by spiral wrapping the top layers of containers, or to simply spiral wrap the whole pallet load. Stretch wrapping can be completed with various levels of automatic systems or by simple hand held devices.

The Distribution of Load Bearing Ability Around Box Perimeter



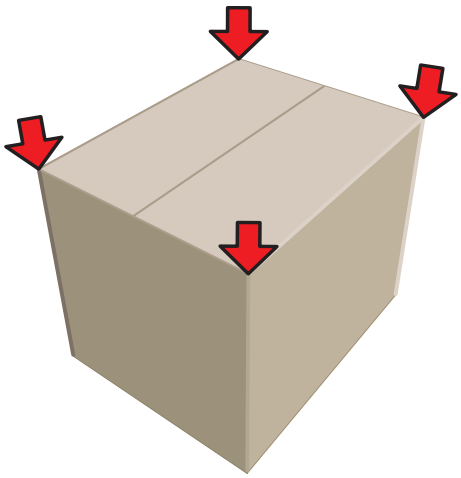
The length of the dotted arrow is proportional to the load bearing ability at that point.

Proper Palletizing

Pallet Overhang can reduce top to bottom compression up to 30%
Wooden pallets can reduce top to bottom compression up to 30%
Interlocked patterns can reduce top to bottom compression up to 50%

Failure to completely utilize the box structure which you have paid for can result in excessive warehouse and shipping damage. The board grade you have purchased from your supplier determines with broad limits the stacking load which the box can support during shipment. However , if you improperly palletize you will not receive the full potential strength of the carton you purchased. In fact, you can lose up to 50% of this value.

Unfortunately , these losses are not just potential but actual. A recent survey of warehouses conducted under the auspices of the Fibre Box Association found many palletizing characteristics at odds with good practice. The most common was pallet overhang, wherein the outer edges of the load projected beyond the area of the pallet. Interlocked stacking patterns were also frequently observed.



Laboratory tests have established that the vertical edges (corners) of a corrugated container contribute approximately 2/3 of the potential compression strength of the box.

= 2/3 Potential Compression Strength

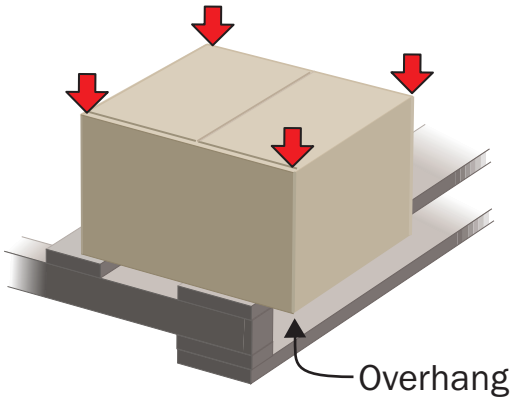
Pallet Overhang

Overhang of a box over the edges of a pallet shifts the other two vertical edges and the three remaining panels.

= 2/3 Potential Compression Strength

You can destroy up to 30% of the top to bottom compression resistance potential if you allow your box to overhang the side of the pallet.

SOLUTION - Select the proper size pallet or proper palletizing pattern to eliminate overhand. If this is not possible, you may be able to reconfigure the dimensions of the carton to fit the pallet without overhang.

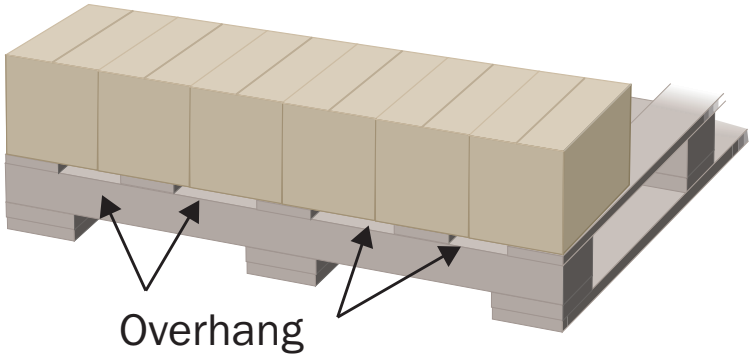


Wooden Pallets

Most wooden pallets have 1-3 inch separation between the deckboards. Some wooden pallets have gaps in the deckboards of 4 inches, and more. If you partially bridge the gap with a corrugated box, you have an overhang situation.

An overhang situation can DESTROY up to 30% of the top to bottom compression resistance potential.

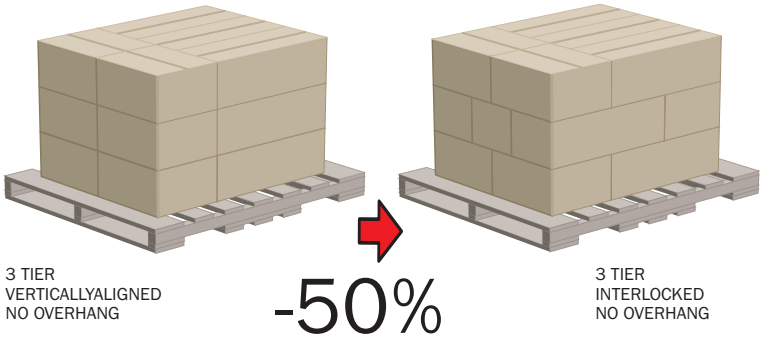
SOLUTION - Select a pallet that has deckboards that do not create an overhang situation. If this is not possible cover the pallet deck with plywood or corrugated sheets. You can also explore the opportunity of eliminating pallets and utilizing corrugated slip sheets.

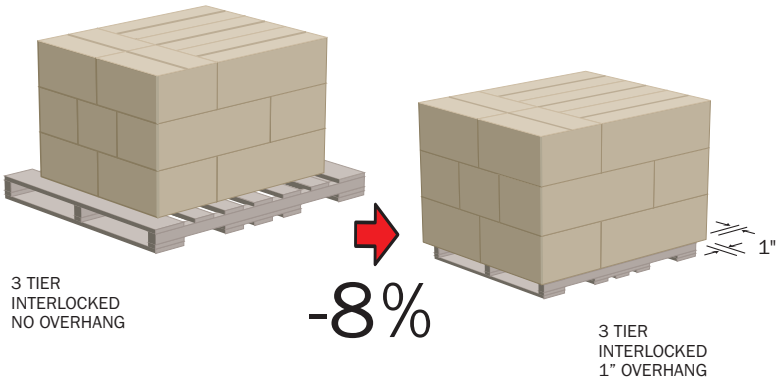


Interlocked Patterns

One of the problems in palletizing corrugated containers when stacking the containers in a vertical configuration is keeping the loads intact during handling. Consequently, many palletized loads are interlocked. Again 2/3 of the potential compression strength is in the vertical edges - only 1/3 is in the four vertical panels.

You can destroy up to 50%
of the top to bottom compression resistance
potential if you interlock your box

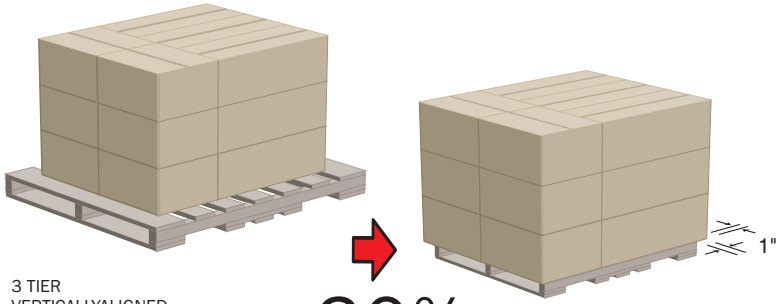




3 TIER
INTERLOCKED
NO OVERHANG

-8%

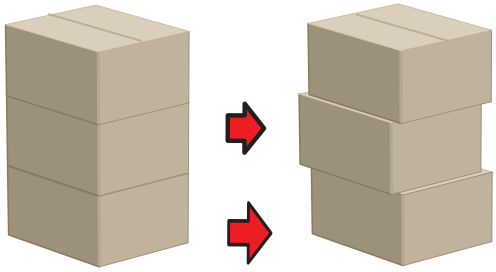
3 TIER
INTERLOCKED
1” OVERHANG



3 TIER
VERTICALLYALIGNED
NO OVERHANG

-30%

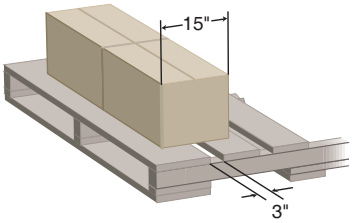
3 TIER
VERTICALLYALIGNED
1” OVERHANG



3 TIER
VERTICALLY
ALIGNED

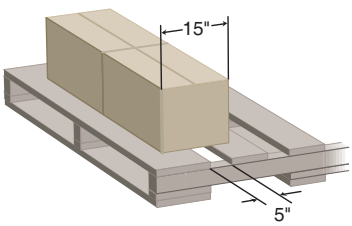
-30%

½”
ADJACENT PANEL
OVERHANG



20%
OF
PANEL
WIDTH

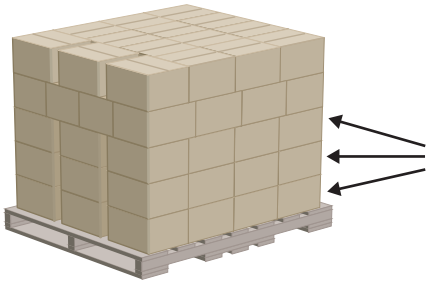
-8%



33%
OF
PANEL
WIDTH

-15%

PARTIAL INTERLOCK



Composed of column lower layers plus an interlocked upper layer.

The strength of each vertically aligned layer is increased by up to 45% vs. totally interlocked.

Summary

Make sure that you get the value from the corrugated product that you purchase. Inspect your pallets to make sure that they do not create an overhang problem. Wherever possible make sure that you utilize VERTICAL STACKING RATHER THAN INTERLOCKED STACKING. Strength losses due to overhand and misalignment are most severe in those cases where all strength is borne by the box structure; less severe if contents or inserts can be manipulated in the distribution of the load.