

The image shows the interior of a large cargo aircraft. The perspective is from the front of the plane looking down a long, narrow aisle. On both sides of the aisle, there are rows of empty metal cargo pallets. The floor is a light-colored, polished surface. The walls and ceiling are white and feature a grid of structural beams and recessed lighting fixtures. At the far end of the aisle, a bright light source, possibly a door or a window, creates a strong glow. The overall atmosphere is clean, organized, and industrial.

Packaging your freight safely:
Lufthansa Cargo guidelines.



Lufthansa Cargo
Networking the world.

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The most important thing when shipping cargo is that it arrives safely and undamaged at its destination. We go all the way to ensure your shipments are handled according to their requirements. But the very best protection for your freight is: **adequate packaging.**

Please check our recommendations for palletizing and securing your standard or unusual cargo – for a smooth transport and goods that arrive in perfect condition.

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The hardships of shipping: General information.

Movement, impact, vibration:

During transport, your freight will be loaded and unloaded and will change transport vehicles and aircraft. Standard handling of heavy shipments also includes the use of forklifts and conveyor belts.

Heat, cold, moisture:

Please note that unless you book temperature-controlled transport options for your temperature-sensitive freight, aircraft, trucks and cargo areas are not climate-controlled. That means that temperatures can vary greatly. Depending on the weather and climate, additional factors like direct sunlight or condensation moisture need to be considered as well.

So while we always handle your freight with appropriate care, it also needs to be packaged appropriately to stay in perfect condition while travelling around the world. And here is how to do it.

Packaging considerations should take into account the nature of the commodity and the need for the application of security measures by the regulated entity.

The basic foundation: Pallets.

Pallets are the stabilizing basis for a great number of cargo shipments. Check out our recommendations to choose a sufficiently stable option for your type of freight.

Pallets we recommend.

EURO Pallet or GMA standard wood pallet.

When shipping with Lufthansa Cargo, EURO Pallets or GMA (Grocery Manufacturers Association) standard wood pallets are the safest choice. They also feature appropriate board spacing and a four-way entry design for safe handling with forklifts.

Pest control and wood regulations: Please note that some countries require your pallets and other wood packaging to be treated against pest infestation prior to shipping.

Reusable plastic pallet.

While plastic pallets tend to be more expensive than standard wood pallets, they make up for it by being reusable for multiple shipments. They stand up very well to forklift handling, and their solid construction supports the weight of your freight.

On the other hand, plastic surfaces offer less friction than wood, making them more slippery. Thus, fixing your goods safely on plastic pallets is more difficult. They are also heavier than wood pallets, adding to the total shipment weight.

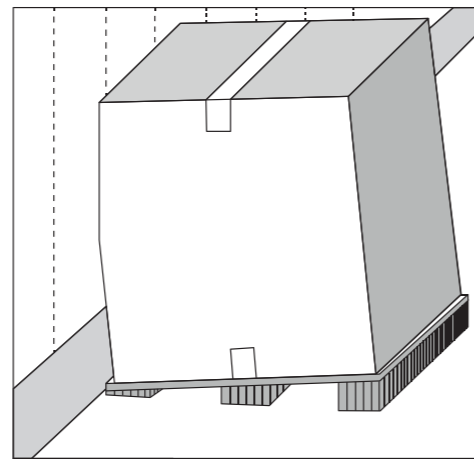
Pallets we do NOT recommend.

Paper-based pallets.

Lightweight, easy to recycle and a good option in countries restricting the use of wood pallets? While paper-based pallets have some benefits, they are simply not suited for the challenges and hardships international transport presents.

Corrugated, paperboard, honeycomb paper and all other types of paper-based pallets will degrade quickly in humid conditions – losing stability and thus compromising the safety of your shipment. They will also not stand up to standard handling with forklifts.

Dangers of using paper-based pallets:



Wood pallets without bottom boards.

They might seem like the lighter and cheaper choice – but wood pallets without bottom boards are not stable enough for international transport requirements. Weight is not distributed evenly, and they warp easily, losing essential side-to-side strength.

Block pallets.

Most block-style pallets are manufactured from processed wood and are thus far less sturdy than standard wood pallets – a suboptimal choice for international transport and heavy goods. Should you still want use them, make sure your choice is suitable for the weight and type of cargo.

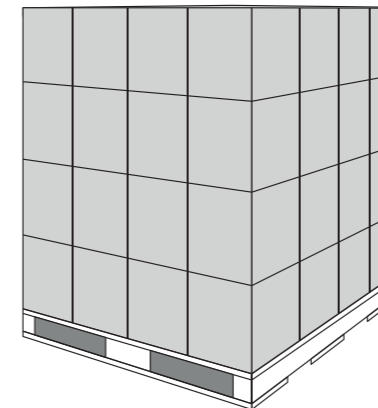
The way to stability: Stacking.

The integrity of your shipments depends largely on the way you stack individual goods packages on your pallets. For maximum stability, use our recommended stacking methods when flying your freight with Lufthansa Cargo.

Stacking methods we recommend.

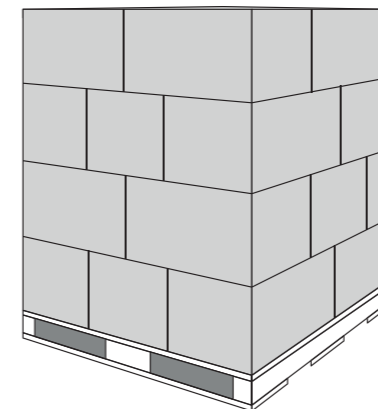
Column stack.

For the majority of palletized shipments, a column stack is the way to go. It improves compression from top to bottom as well as stability.



Interlocking stack.

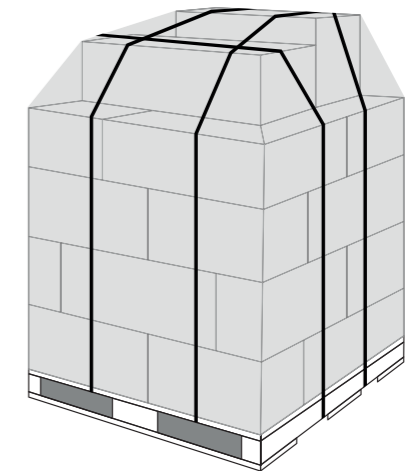
For individual packing units with rigid contents, we recommend an interlocking stack to improve stability. For optimum stacking strength, place the boxes edge-to-edge, corner-to-corner.



Stacking methods we do NOT recommend.

Pyramid stack.

Stacking your palletized shipments pyramid-style makes the top boxes more likely to be damaged by other shipments. Please aim for an even surface when packing your pallets – this improves load distribution and overall stability, especially when double-stacked.



Overhanging stack.

Overhanging boxes put your packaged goods at risk of damage, even during routine handling and loading. They also reduce compression strength significantly.

For even more protection: Crating.

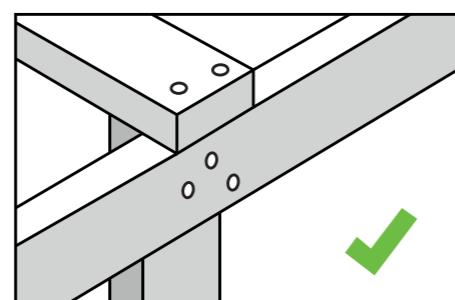
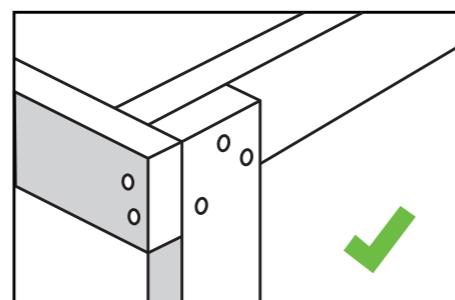
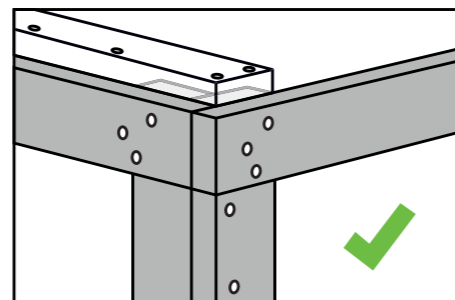
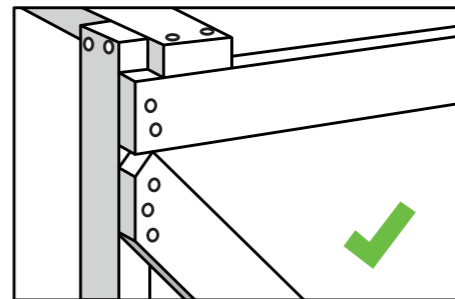
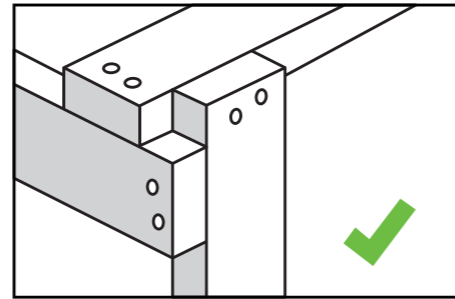
Wooden crates.

Crating is a great way to protect your valuable freight. For good results, the quality of the wood is a decisive factor – which is why we strongly recommend using plywood with few knots for your crates. Please make sure fasteners are not affixed to knots or weak spots in the wood.

OSB, MDF and particle board are not up to the strain of standard handling procedures during international transport.

Diagonal bracing and stable corners.

Diagonal braces on every panel will improve the stability of your crates to a great degree – if you choose a suitably strong construction design. When it comes to corner construction, make sure the nails are placed into the side grain, not the end grain.



Please use only recommended stable crate corner connections

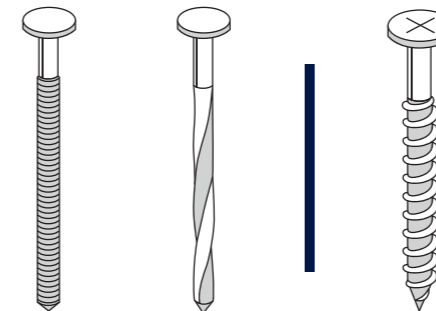
A powerful connection: Fasteners.

Suitable fasteners.

Using appropriate fasteners for your pallets, crates and cargo is fundamental for safe transport. We recommend screw nails (DIN6816), ring shank nails or coil nails (DIN1052) with a wire diameter of at least 2.8 mm and chipboard screws (DIN 7997) or wood screws with a minimum wire diameter of 3.0 mm. The nails or screws must be sunk about 1 mm into the wood but must never protrude, as this can lead to damages or injuries.

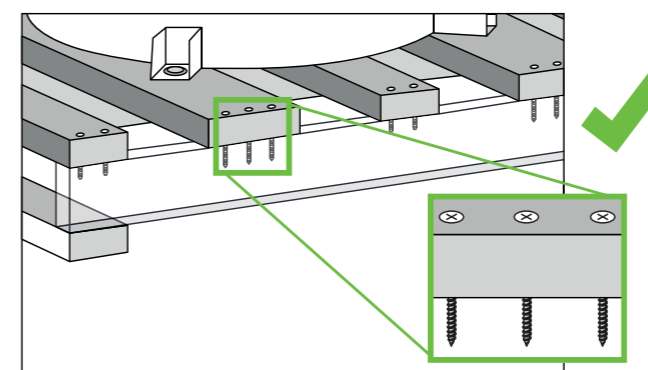
Never use staples or plain shank nails.

Recommended:

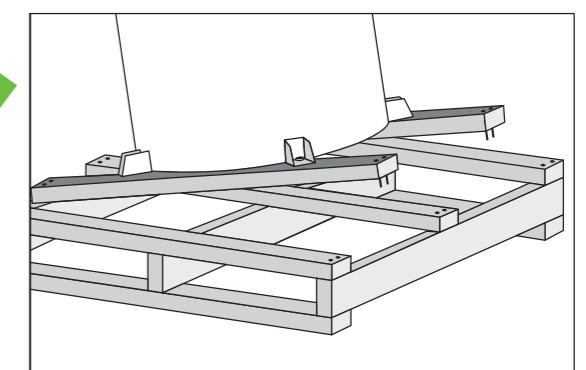


Securing your cargo.

Even when using suitable fasteners to secure your goods on the pallet, the pallet deck fasteners themselves can still break loose. This issue can easily be avoided with wider lumber, a larger number of fasteners and longer screws to secure the top deck boards to the stringer. **Appropriate lumber and fasteners:**



Too short or weak fasteners:



Comfortably secure: Cushioning.

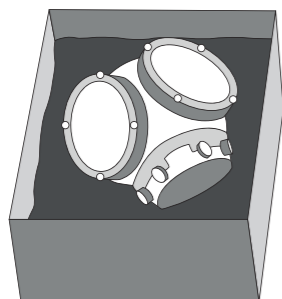
During handling and transport, your cargo is inevitably subject to vibration and shock. That is why most goods need to be protected by cushioning them – preferably with a suitable foam cushioning.

Foam cushioning.

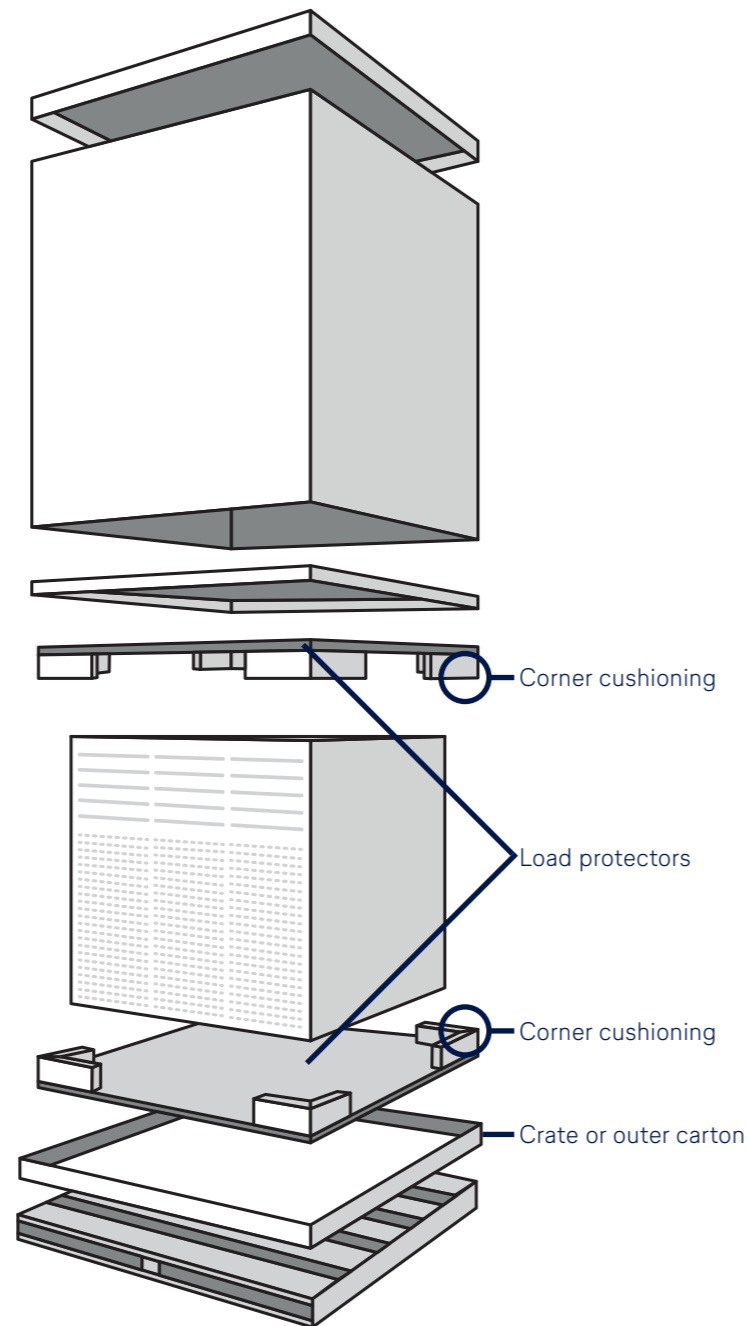
Whether you use wood crates, cartons or any other form of packaging for your palletized shipments, foam cushioning your goods offers reliable additional protection from damage. Depending on the type of cargo, expanded polystyrene, polyurethane and polyethylene are suitable choices.

Recommended types of foam cushioning:

- Simple sheet foam
- Bubble wrap
- Plank foam
- Custom-molded foam
- Foam-in-place for irregularly shaped items



Correct foam cushioning:



Not recommended:

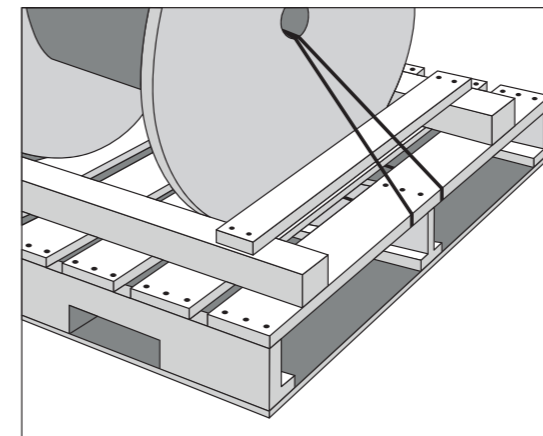
Do not use foam peanuts or other loose fill, as cargo can sink through and get damaged.

That's how we don't roll: Blocking and chocking.

Some goods are too large or unwieldy to be crated or boxed. To stabilize and protect such items, they need to be blocked or chocked – with lumber suitable to the size and weight of your cargo.

Wood blocking.

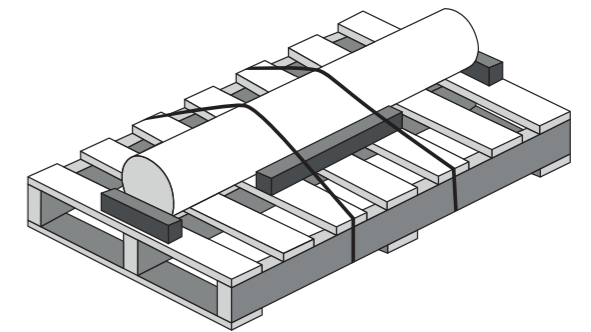
For single heavy items, we recommend wood blocking, fastened in a way that effectively prevents movement. The blocking needs to be placed in direct contact with the item so it cannot shift positions during handling and transport. Please note that you need to use at least two fasteners at each end to ensure stable blocking. **Correct blocking:**



Chocking.

For items predisposed to shift in transit due to shape, chocking on a pallet base that can be forklifted is essential. Chock your shipment on all sides to prevent any horizontal movement. Additionally, load stabilizers are needed to stop vertical movement.

Please note that your chocking lumber must be appropriate to the size and weight of your freight. Utility grade or No.3 lumber is suitable for pallets and regular bracing or chocking. When shipping very heavy or lopsided items, we recommend construction grade lumber, types No.2 or even No.1. **Correct chocking:**



Item is chocked to prevent movement in any direction.

Tight and safe: Banding and wrapping.

Load protection, banding and stretch-wrapping offers additional protection to your shipment of palletized boxes and other items – and that will certainly pay off. Especially when it comes to retail goods like valuable electronics, even slight damage to the cartons is likely to impact sales severely.

Load protectors.

To protect the top and bottom of your freight better, we suggest using load protectors – for example a corrugated tray or pad. Bottom load protectors keep boxes from slipping into gaps between pallet boards and stabilize them by providing a level surface. Top load protectors help distribute the weight of cargo loaded on top of yours.

To protect box edges at load corners and increase stability as well as stacking strength, use edge or corner boards as long as the stack itself.

Banding.

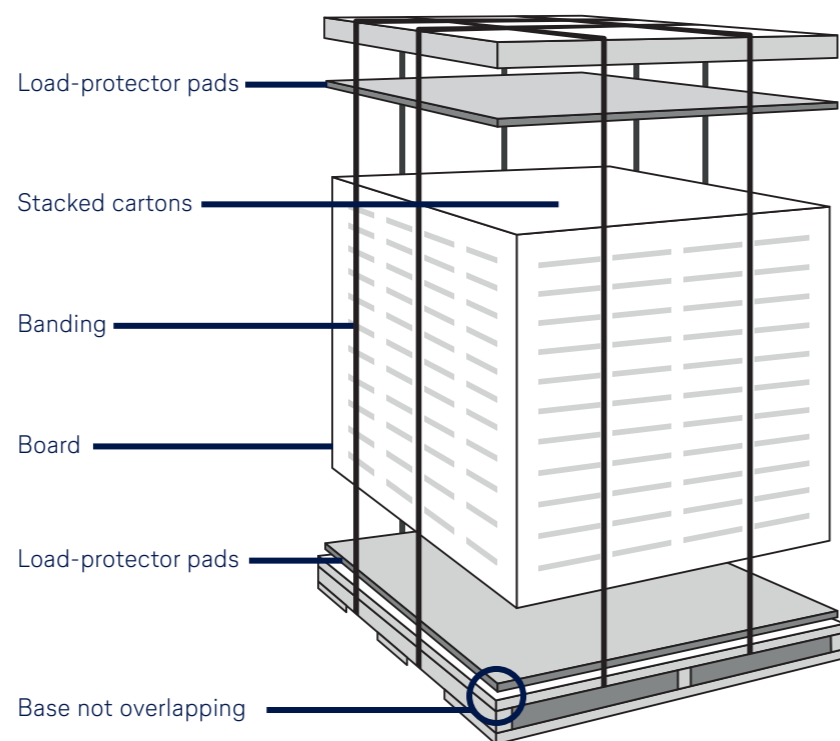
Banding is the most common way to secure freight on the pallet. To minimize damage and avoid breakage, please band corrugated stacks on every side and keep the banding as close as possible to your freight.

Particularly large or heavy items should be banded on every side with heavy-duty rayon, nylon, polypropylene, polyester or steel strapping.

Stretch-wrapping.

Stretch wrap is used to bundle loads safely as well as to protect larger items. Always wrap your cargo tightly to avoid load shift and use sturdy 70-gauge wrap. It should stick to itself and be wipe-sealed as it is wrapped around the stack.

Correct banding with load protectors:

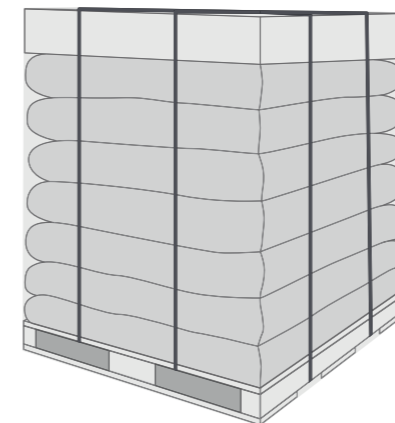


Unique solutions needed: Special freight.

Unusually shaped items like engines, pipes or tires need special handling and packaging to arrive safely. Please test your packaging systems for such freight before shipping it, as suboptimal packaging can lead to damage and flight delays.

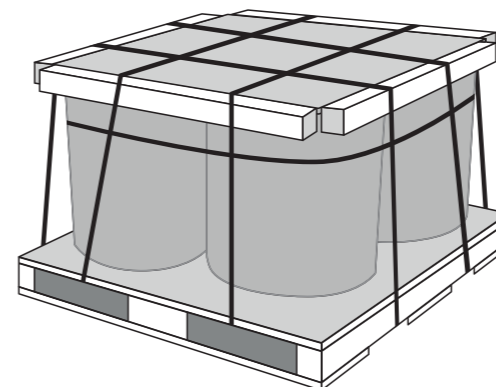
Bags.

To prevent bags from shifting during handling or transport, use interlock stacking. If possible, always use a load protector or adequate bottom cushioning plus cardboard cushioning on the outside of the bags to avoid punctures.



Drums.

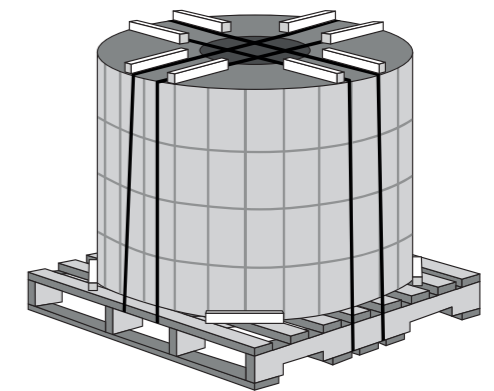
Make sure to only use drums suitable for the type of goods you are shipping. Drums are best shipped on a solid-bottom pallet and secured with banding and stretch-wrapping including edge-protection. Though not recommended, non-palletized drums can be shipped with Lufthansa Cargo.



Spools and reels.

The most important thing when shipping spools and reels is making sure they do not roll or shift. This is why they should always be secured to forkliftable pallets by blocking and chocking. To keep the products on spools and reels from being damaged during transport, please use **added protection like corrugated wrap, plastic lumber lagging or board lagging.**

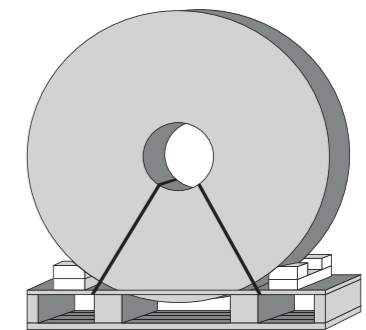
Recommended lying position on pallet:



- Lying position prevents rolling
- Chocked and strapped in all four directions
- Top chocks to keep bands from sliding off
- Minimum of two outside or center stringers for support

It is not recommended to strap over rounded items without chocks to secure the straps. Straps without chocking can slide off reels easily.

Recommended upright position on pallet:



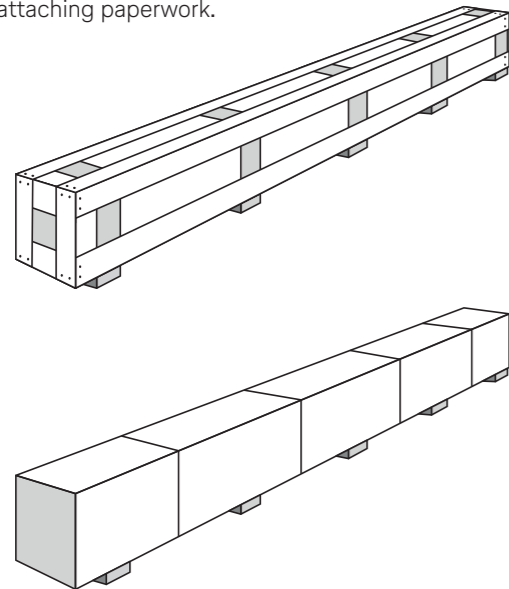
- Reel flange within stringers
- Chocking by top deck in the length direction
- Straps threaded on outside of inner stringers and through closest point on the drum
- Stringers must be spaced in a way that fork tines can enter on the outside of the inner stringer
- Center blocked to avoid forklifting damage

Lone freight.

When shipping long items like pipes and bars, it's very important to make sure they cannot slide and damage the aircraft or truck. Preferably, the freight should be packed form-fitting so that it cannot slide or move within the packing.

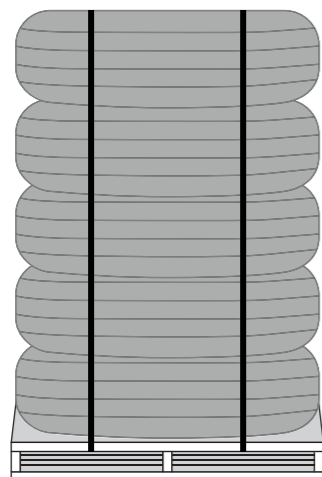
They need to be secured, bundled and crated in a way that allows double-stacking, forklifting and handling without undue risk. Also make sure that the necessary paperwork will stick to the surface and stay in place.

Please note that we do not recommend banding and blocking long freight to a pallet. It lacks the stability and protection for double-stacking, is in danger of shifting and does not offer a level surface for attaching paperwork.



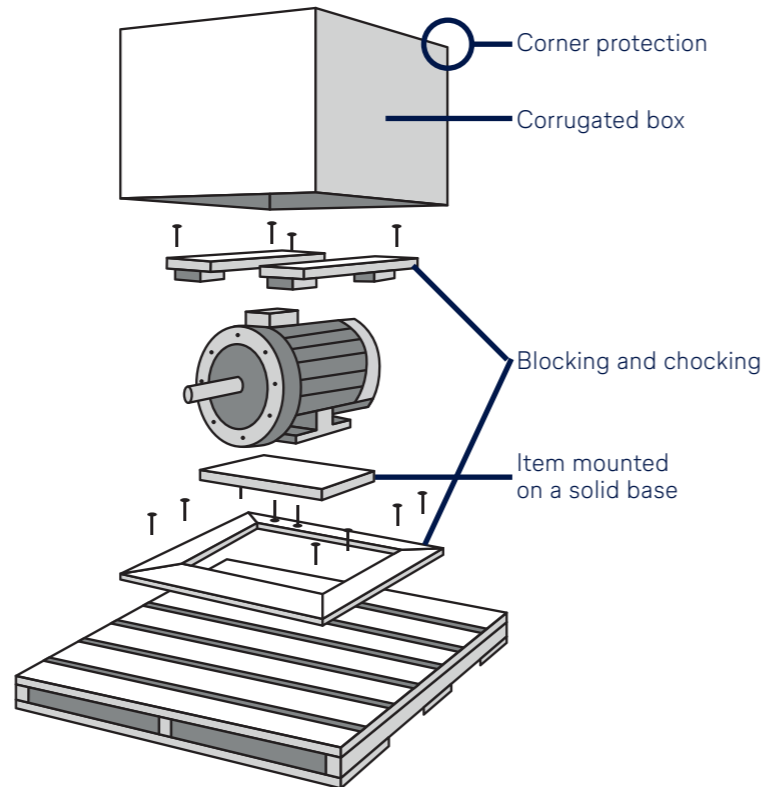
Tires.

For safe transport, band and stretch-wrap tires to a pallet. To reduce the danger of sliding when shipping tall stacks, we recommend an anti-skid surface.



Exposed freight.

When shipping exposed or unregularly shaped items like engines, it's important to first drain them of all fluids. Packaging should include blocking or chocking on a pallet and a corrugated box for added protection. In addition, the item should be banded and stretch-wrapped to the pallet.



Transit cases.

If your transit cases have caster wheels, they need to be palletized for transport. You can either use blocking to keep them from moving or simply remove the wheels. Transit cases with wheels on can only be shipped on solid-bottom pallets - otherwise wheels can go through the slats and be damaged during forklifting. Banding kits make it easy to secure transit cases on the pallet but are not required if the case is locked.

Contact us.

We're happy to help:

We hope the information provided here helps you package your cargo safely. Should you still have questions or need specific advice, simply get in touch with your **local sales contact**. And we will gladly help you figure out the best packaging solution to get your freight to its destination in perfect condition.



