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Revision History

Date	Creation / Modification Purpose of Revision and index numbers:	Established by: (name, department, endorsement stamp)	Validated by: (name, department, date, endorsement stamp)	Approved by: (name, department, date, endorsement stamp)
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Distribution to	All PO sites and Engineering Centers, Toolmaker suppliers and Tool transportation providers.			

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1. Objective

- Define regulations governing transportation of Plant Equipment in containers to ensure safety of personnel and Molds during transportation and any other handling operations involved.
- This procedure is applicable to all parties responsible for mold transportation (Carriers, Plastic Omnium, Mold Makers, Trial Centers, etc.)
- All parties must refuse transportation if all safety regulations described in this document have not been respected

2. Fields of application

This procedure concerns all transportations of Molds and Plant Equipment in containers, whatever the starting point and destination.

3. Definitions

Freighter: company in charge of loading mold into the container, it is not necessarily the company which ordered transportation

Carrier: company in charge to transport the Mold, including their sub-contractors.

Driver: carrier representative mandated to transport the Mold

Mold: injection tool that can be transported in one part or by half (split of the core and cavity sides).

Sender: company which ordered mold transportation

Plant Equipment: any dies, jigs, gauges, assembly equipment, machines, and other and items

Container: Standardized transportation box for unitized freight handling

Wood crate: Wood construction for mold protection during transportation

4. Mold transportation organization

Transportation of molds in containers requires use of a certified transporter, that accepts to follow all recommendations in this procedure.

Inform carrier about special risks and rules inherent to mold transportation

Recommendation sheet to be given to carriers on risks involved when transporting molds, Appendix 1

- Very high risk of shifting or tipping of the load.
- Securement and bracing may not be modified during transportation without the agreement of the Sender.
- It's strictly forbidden to transport goods from another company than PO in a PO mold transportation (Dedicated PO transportation)

Use of a compliant container

Transportation provider (Carrier) must supply a container that is adequate and under no circumstances total weight can exceed authorized truck carrying capacity.

Declaration of the VGM

Since July 1st 2016, all senders have to guarantee the gross mass of the container after loading in order to be in line with the MSC Resolution 380 (94). This mean that the gross mass has to checked and declared before the container is loaded on the boat.

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Responsibility for securement

Mold being transported must be properly secured and validated by Freighter, respecting this procedure. Freighter will be informed of any equipment, securement or weight anomaly ascertained at acceptance.

5. Insurance

All molds being transported for Plastic Omnium are insured for the cost of reconstruction by Plastic Omnium.

The Carrier is under obligation to subscribe a professional civil liability insurance policy appropriate to the type of transportation that is undertaken.

- **Plastic Omnium** has insurance to cover mold transportation for **all following situations:**
  - transit between factories
  - factory / mold maker (journey to and from)
  - factory / subcontractors (journey to and from)
  - etc…
- The Carrier selected by Plastic Omnium must be adequately insured against its own errors.
- The Freighter cannot under any circumstances bill insurance costs to Plastic Omnium.
- The loading and bracing operations must be carried out by the Freighter, regardless where these operations take place: at a PO site, Mold Maker site, Trial Center site, etc.
- Container securement operation on train, truck, and boat must be carried out by the carrier.
- Unloading is always carried out by the consignee.
- In the case of train transportation, the carrier is responsible of all transportation operations from departure to final destination. He commits on respecting all the requirement of this procedure, in particular appendix 1 and 2.

6. Molds loading and securement regulations

GENERAL CONDITIONS FOR MOLD TRANSPORTATION

A. Loading may only be carried out using equipment that is appropriate for the category (regarding truck, straps, anti-slip elastomer plates, chains, etc.), or if not, using equipment of a higher category, and observing the securement specifications.

B. The shipping container must have the following characteristics:

- Container 20 feet Open Top in all cases
  OR
- Container 20 feet Dry if transported by train



Container 20 feet dry on the left and open-top on the right

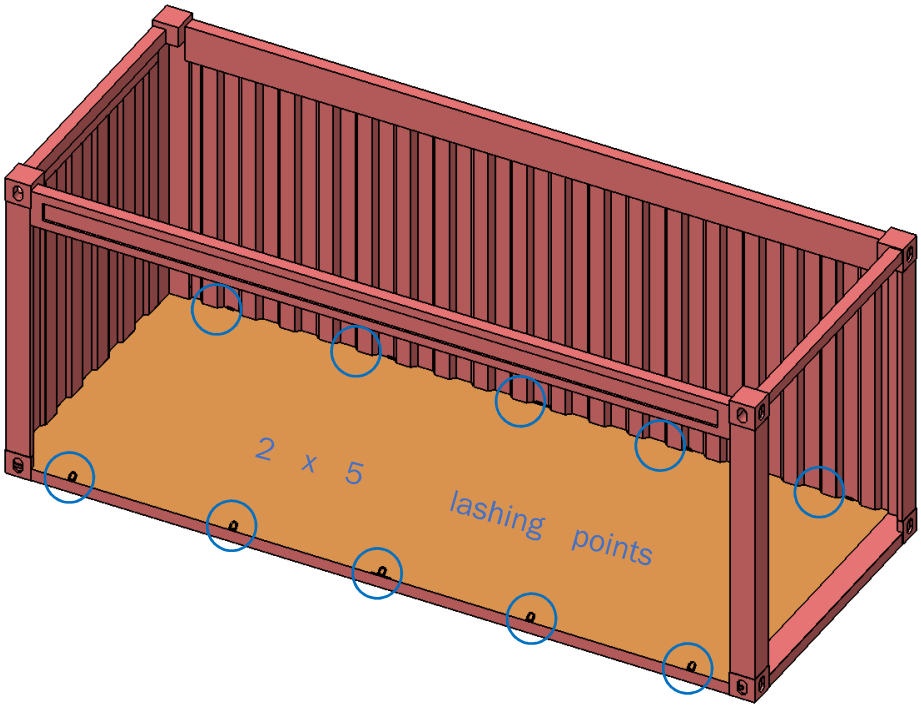
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Before loading the container, it's very important to check that it is in good condition:

- Outside the container:
  - No holes or cracks in walls or roof
  - Doors operate properly
  - Closing devices operate properly
  - No adhesive labels from the previous cargo, e.g. IMO placards
  - For open-top containers: check roof is undamaged, roof locking mechanism fits and operates properly
  - Check validity of the CSC plate

- Inside the container:
  - Container is watertight. Test method: enter container, close both doors tightly and look for incoming light (e.g. through cracks, holes, door gaskets etc.)
  - Container interior is absolutely dry. (Wipe up any condensation or white frost in order to avoid corrosion and moisture damage of the cargo)
  - Container is clean, free of cargo residues and neutral in odor
  - No nails or other protrusions which could damage the cargo
  - Presence of lashing points in good condition and in sufficient numbers on the floor of the container

According to ISO 1496, the container must be equipped with 10 lashing points minimum situated on the floor, whether 5 lashing points on each side of the container. If this condition is not respected, the container must not be used.

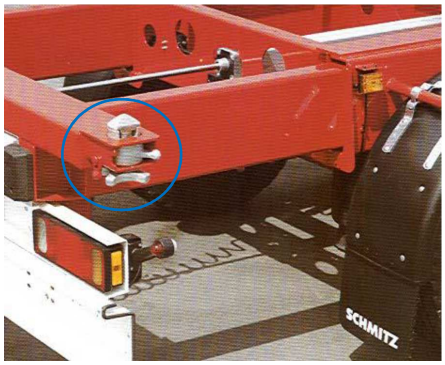


C. The trailer requested must be adapted to container transportation and its weight capacity must be in line with the regulation of the country where it's circulating. In order to secure the container on the trailer, it has to be equipped with twist lock. Check that the twist locks are close off before letting the truck leave.

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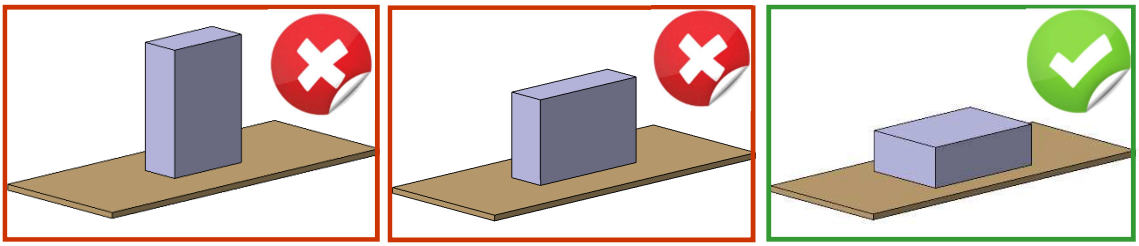
Specific trailer for container transportation



Twist lock system

D. Mold position into the container

Mold should be placed on its largest flat load-bearing surface, and all accessories that prevent it from being placed flat must be disassembled. The center of gravity of the mold must be as close as possible to the container floor. The mold has to be perfectly centered longitudinally and laterally inside the container.

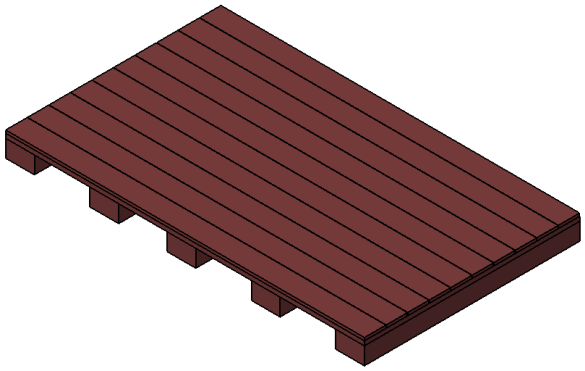


E. Molds must be transported on a clean, non-greasy surface.

F. Molds have to be transported in a heavy packaging crate (ISPM 15 certification mandatory). These packaging has to be strong enough to support molds inside the crates during transportation and normal handling conditions. Recommendations for building crates can be found on www.seila.fr/page/technical-specifications.

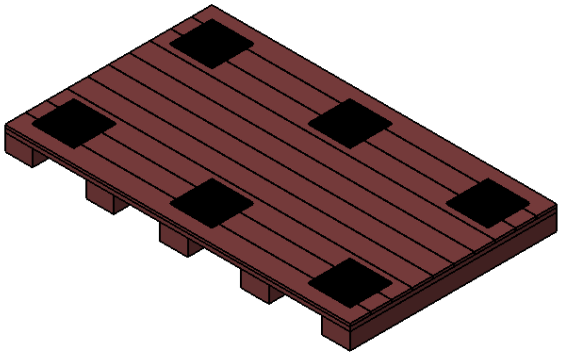
In order to respect this procedure, the following details have to be respected during the mold packaging construction:

1) Construct a strong base of crate able to support the weight of the mold and all dynamics effects induced by the different kind of transportation (road, sea and rail).

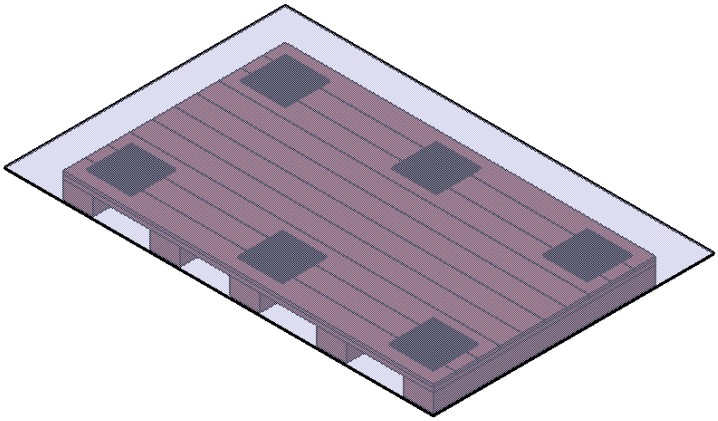


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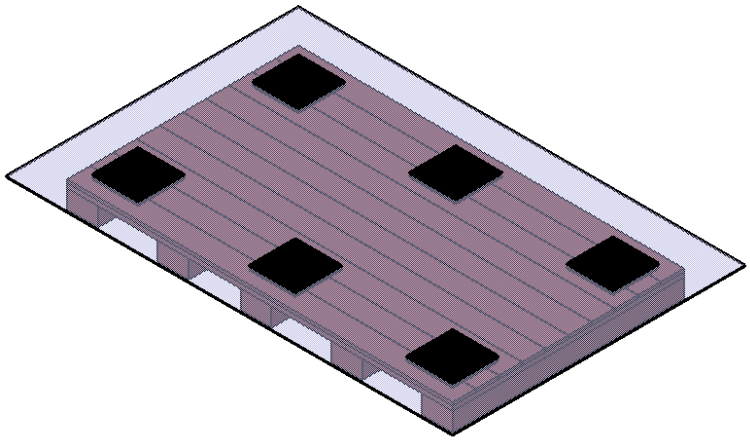
2) Install anti-slip mats on the base of the crate



3) Install the vacuum foil sheet on the base of the crate

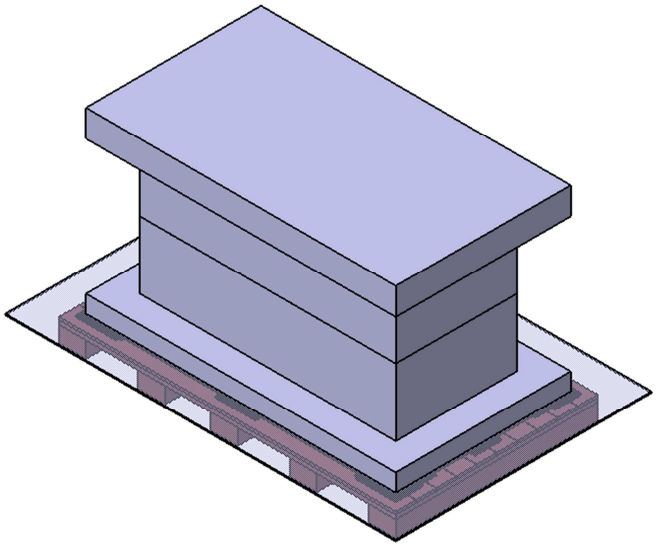


4) Install anti-slip mats on the vacuum foil sheet

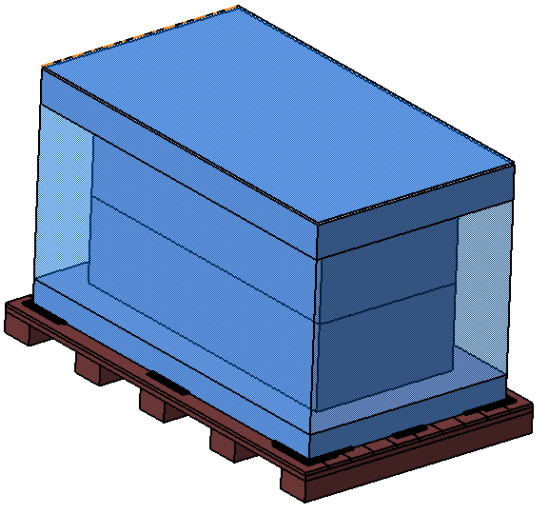


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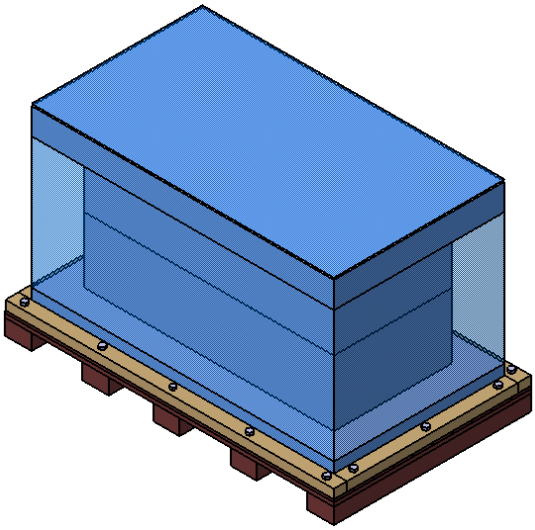
5) Load the mold on the base of the crate



6) Proceed to vaccum

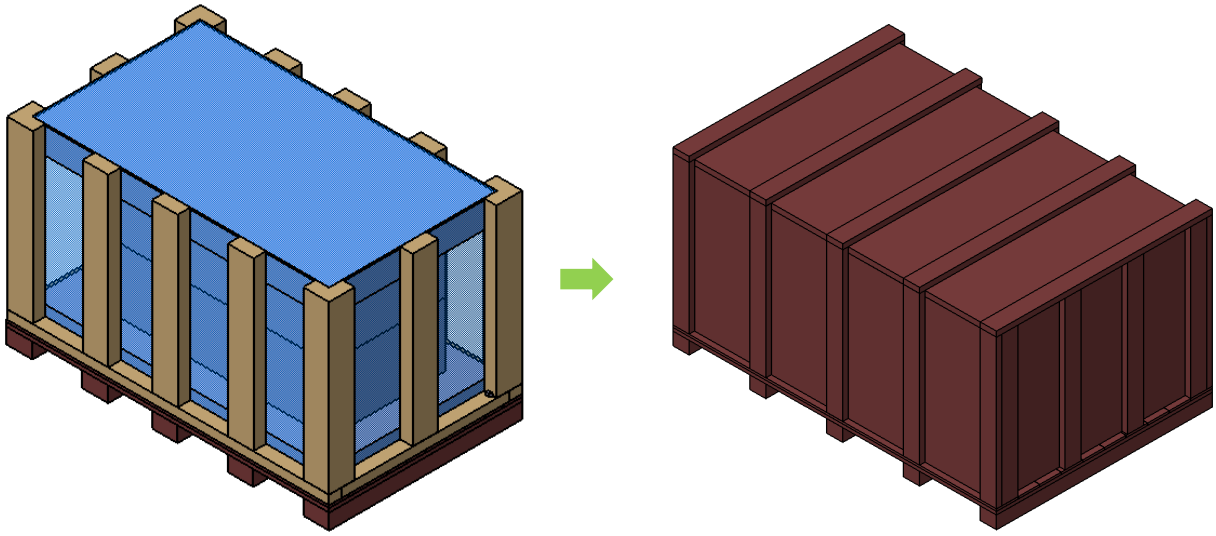


7) Block the mold on the base of the crate using wood screws on crate's beam



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8) Build a strong structure around the mold with a wooden frame to increase crate solidity. A crate without structure can collapse under lashing pressure when the crate is secured into the container. Close the crate, using only ***screws*** to facilitate any Customs inspections.



G. Anti-Slip Plate

Anti-Slip Plates must be placed between the mold and crate base AND between crate base and container floor.

Anti-slip material increases friction between the load (mold) and its support. This is preventing any moving or shifting during transportation.

Anti-slip material, provided by the Shipper, must respect the following specifications:

- Friction factor ≥ 0,6
- Minimal width of each piece = 100 mm
- Thickness ≥ 8 mm
- Maximal load capacity ≥ 200 Tons / m²
- In good condition
- The Shipper shall have a certificate of conformity to EN 12195-1 – see Appendix B or equivalent

To be effective, Anti-slip material needs to respect this procedure's specifications, and has to prevent any movement during transportation.

Use of any non-certified material will create a transportation danger and will be considered as a Supplier Non Conformity as described in POAE's Supplier Quality Management Guide (DIV.S6.GU.01).

Example of approved anti-slip material



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Example of forbidden material





H. Lashing systems

All the lashing systems used to secure the molds must respect the following specifications:

- Maximum Securing Load (MSL) OR Lashing Capacity (LC) ≥ 1500 daN

  OR

- Breaking Strength ≥ 3000 daN OR equivalent depending on local legislation.

The resistance of the strap has to be written on the product in order to be controlled during the transport if it's necessary.

A lashing system is generally composed as following:

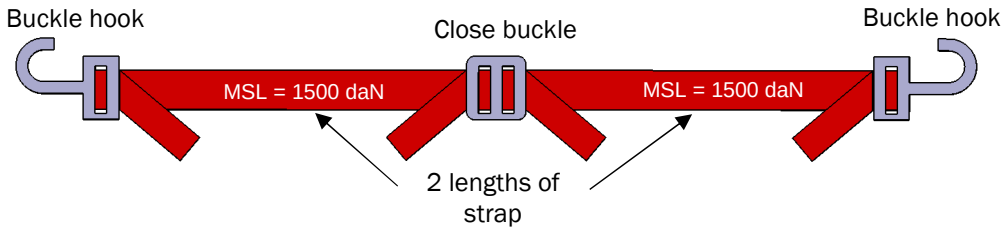

2 x length of strap


2 x buckle hook


1 x close buckle


External tensor

The assembly of the lashing system can be done as following



The Close buckle can be closed with an external tensor, as shown on the picture above.

I. Wood material

In order to block the crate inside the container, a wood structure has to be used. Wooden beams need to have the following specifications:

-Section of the beams: 100 x 100 mm minimum

- ISPM 15 certified phytosanitary treatment



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7. Mold crate loading

a) General recommendations

The mold crate must be centered longitudinally and laterally into the container. Mold will be stowed as a complete unit, if the dimensions and the position of the center of gravity make this possible.

b) Loading of a mold inside an open-top container

If the mold crate is loaded inside an open top container, the loading has to be done by the top of the container. A bridge crane or mobile crane must be used to realize these operations.

c) Loading of a mold crate inside a dry container

If the mold crate is loaded inside a dry container, the loading has to be done by the rear doors of the container. A horizontal loading system can be necessary in order to slide the mold crate inside the container (please see appendix 1).

8. Mold crate securing

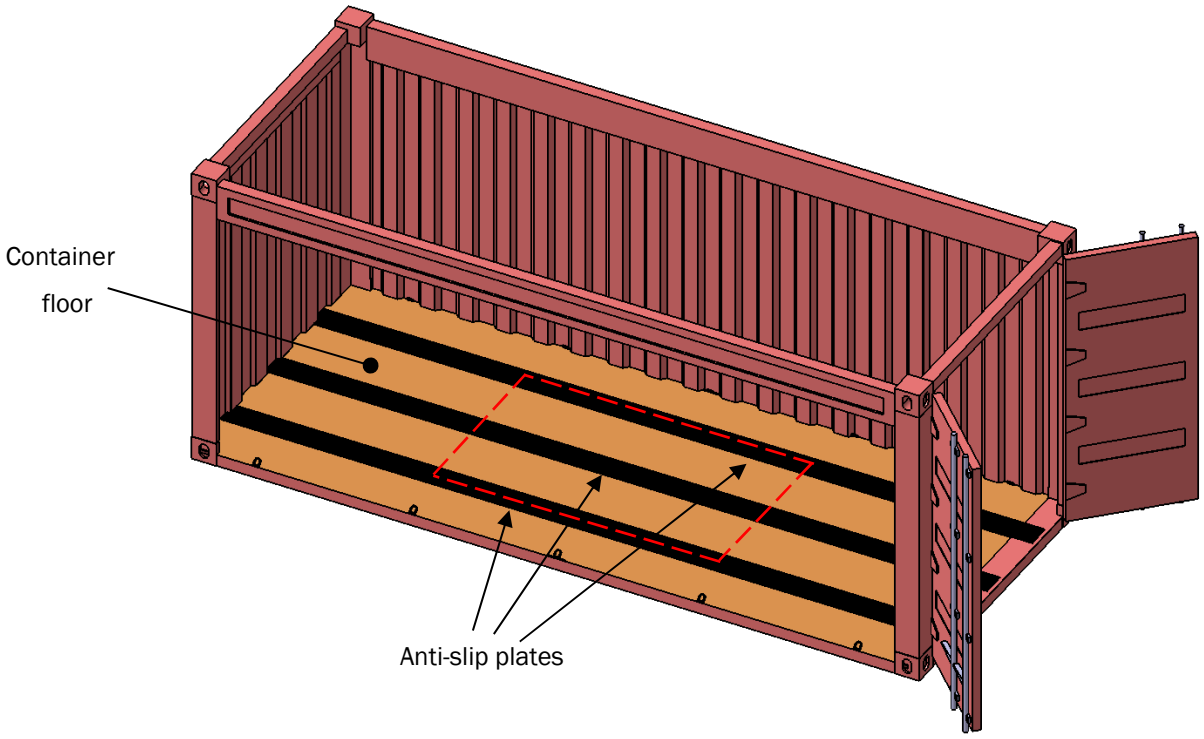
The mold crate is secured partly by its packaging, that is why it has to be strong and of very good quality. Techniques to secure the mold crate are:

- Lashing operations executed with a lashing system (straps and buckles)
- Blocking operations executed by a wood framing in container

In order to secure the mold crate, the following steps have to be followed:

a) Install anti-slip plates on floor container

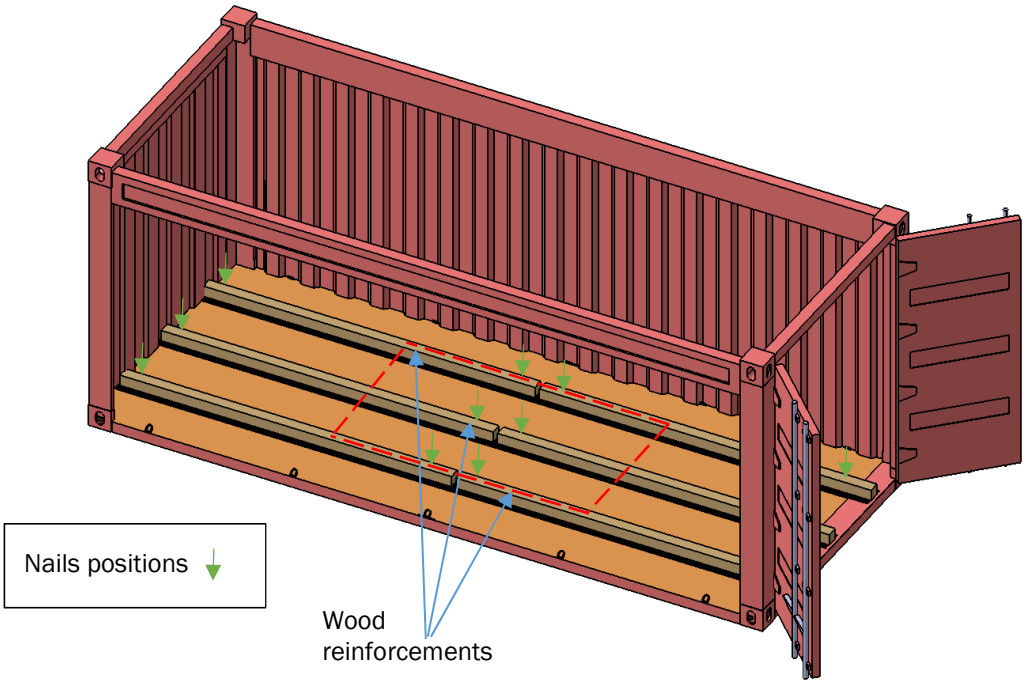
Preinstall anti-slip plates on full length of container floor positioned where floor reinforcement will be positioned.



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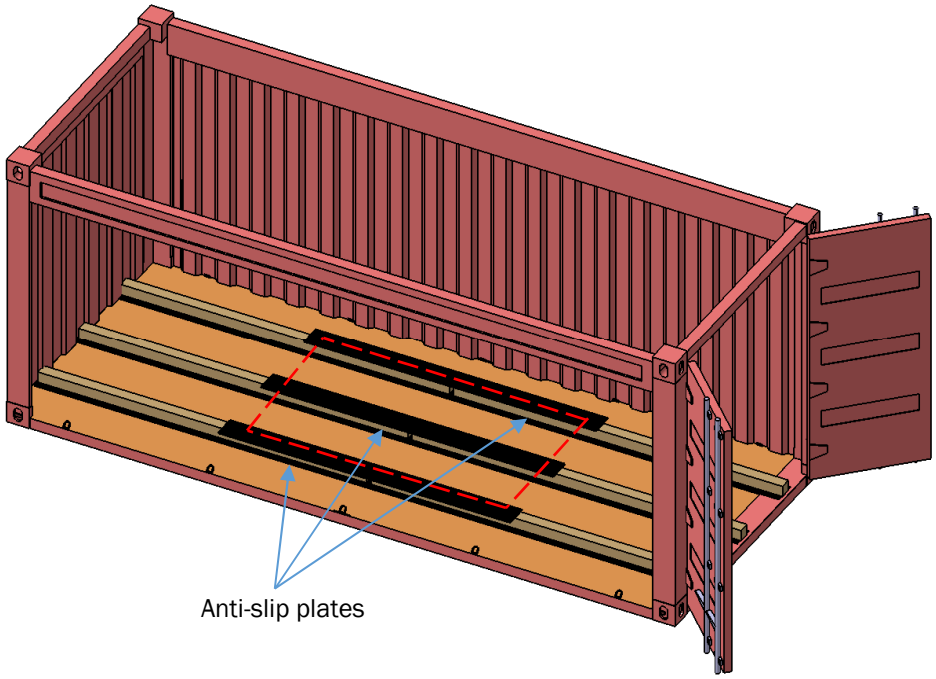
b) Install reinforcements on floor container

Considering that a mold has an important weight to volume ratio, reinforcing container floor is essential. Install 3 lengths of wood beams (100 x 100 x 6000 mm) on full length of the container floor. The 3 reinforcements can be divided in 2 parts if necessary (100 x 100 x 3000 mm). Fix each wooden piece of reinforcement with 2 nails minimum.



c) Install anti-slip plates between wood reinforcements and the mold

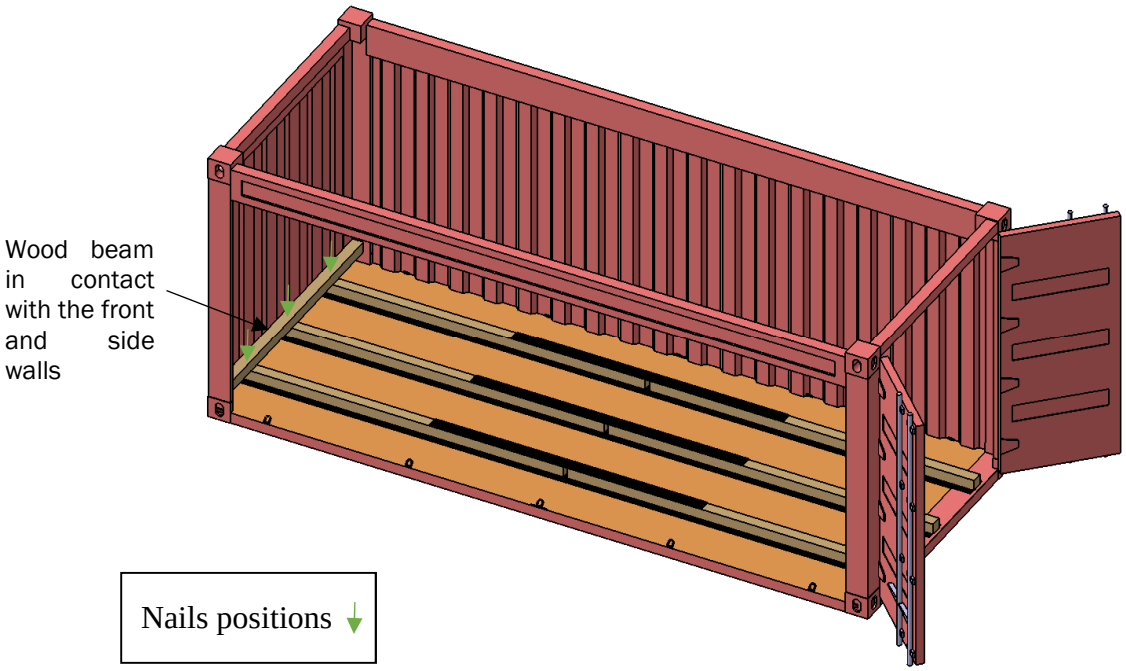
Install anti-slip plates on wood reinforcement, on complete length where the mold will be positioned.



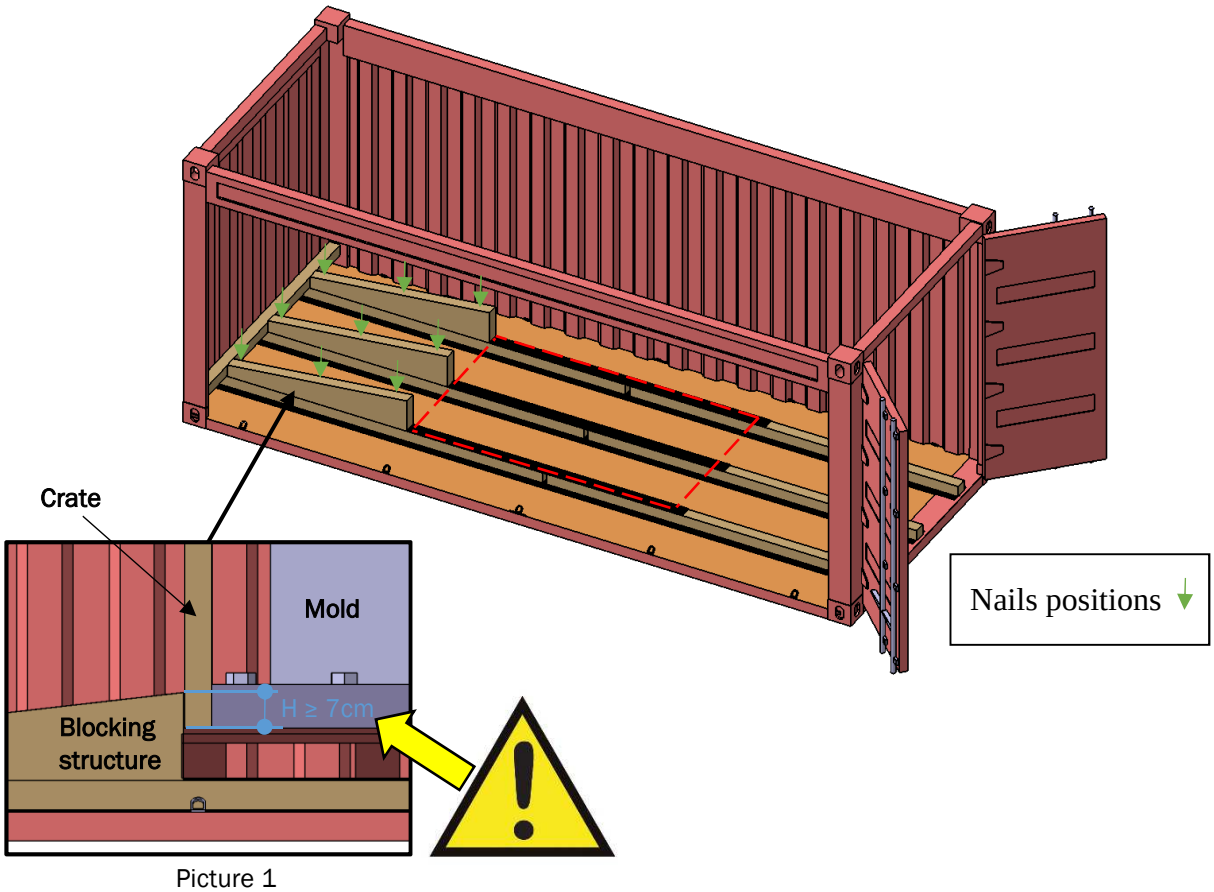
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d) Build a blocking wooden structure in front of mold

a) Install a wood beam, bumper, against the front wall of the container. It is very important for wood parts to be in contact with the front and side walls. Fix the bumper on floor wood reinforcement frame with nails.



b) Install the front blocking structure in contact with the bumper and fix it with nails. Blocking structure must completely fill the gap between the bumper and the mold. <u>The height of the blocking structure must allow to block the mold base and not only the crate (Please see Picture 1 bellow).</u>

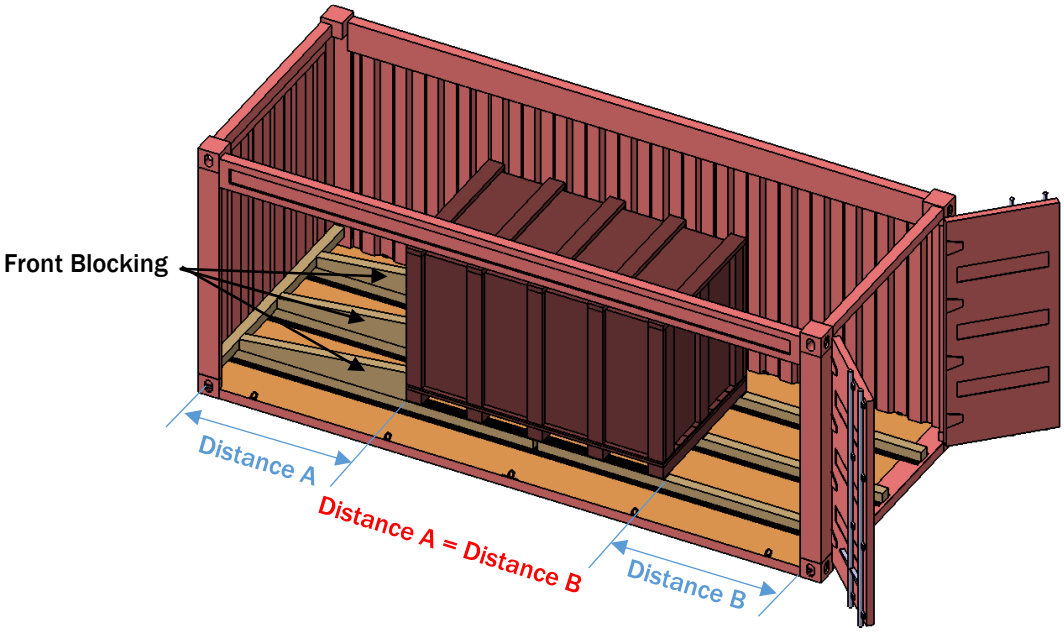


Picture 1

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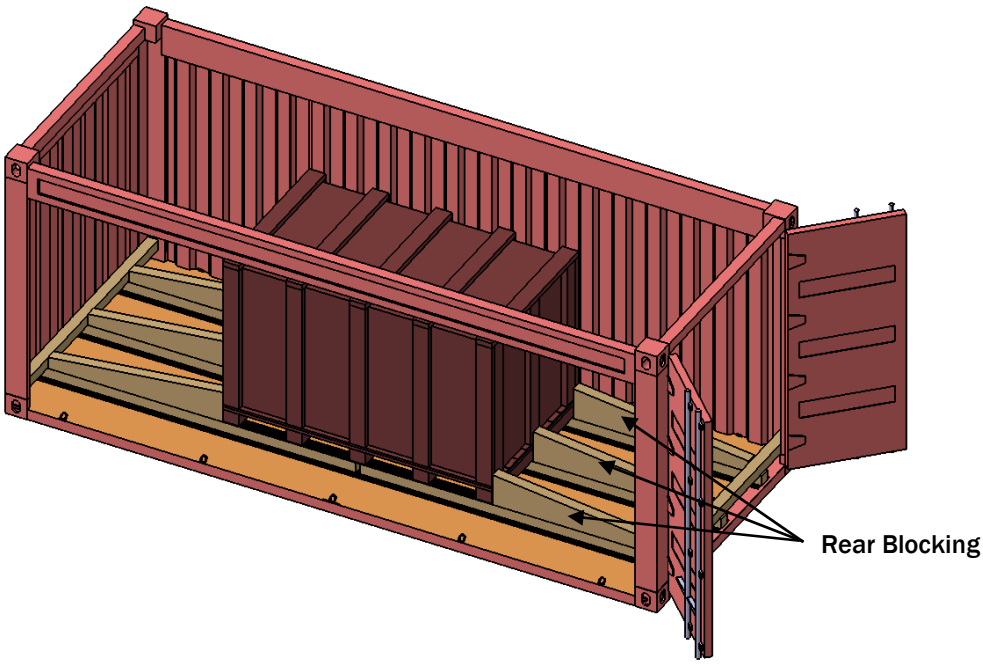
e) Position mold into the container

The mold must be centered longitudinally and laterally into the container. It has to be perfectly in contact with front blocking.



f) Install a rear blocking structure in the container

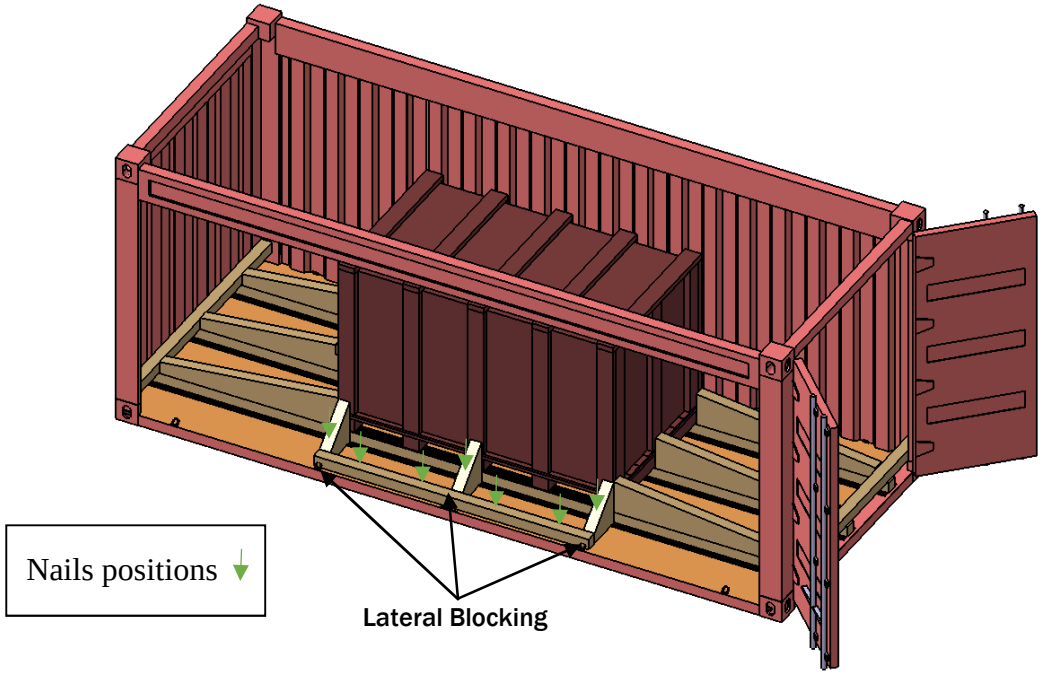
Install a rear blocking beam against rear doors of the container. Nail a second rear blocking frame to create a strong structure and prevent mold form moving.



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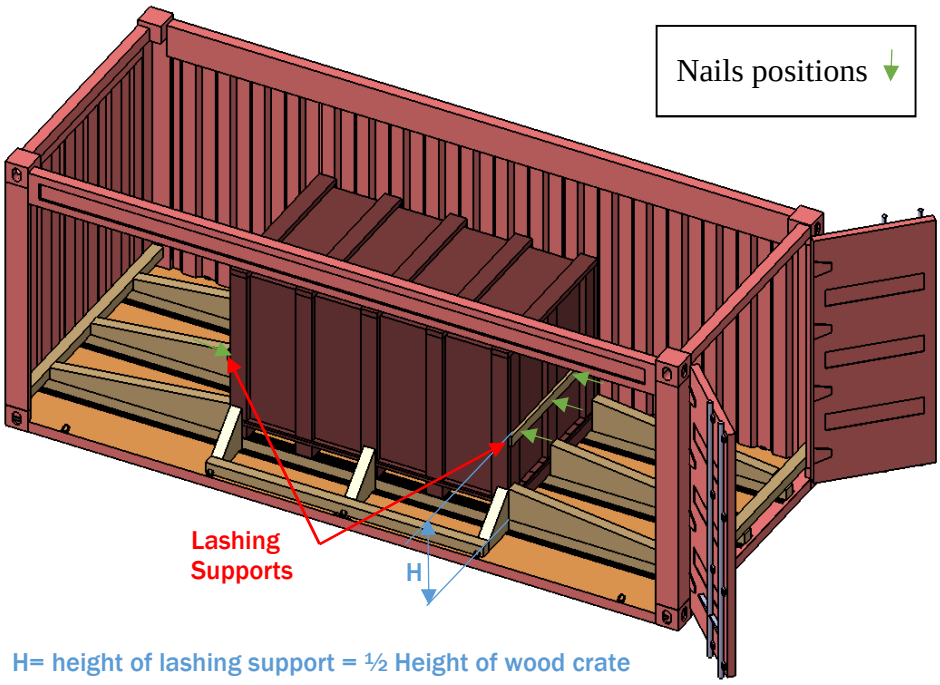
g) Install lateral blocking inside the container

Install lateral blocking against the side walls of the container. The construction has to be the same on the both side and be nailed correctly in order to create a strong structure. First, nail a wood bumper on container's side wall that is the same length as Wood crate. Then build at least three side blocking structures and maintain them with nails. **As for front and rear blocking, lateral blocking has to cover at least the same height as front and rear blocking.** Repeat on the other side of wood crate.



h) Secure mold crate (lashing operations)

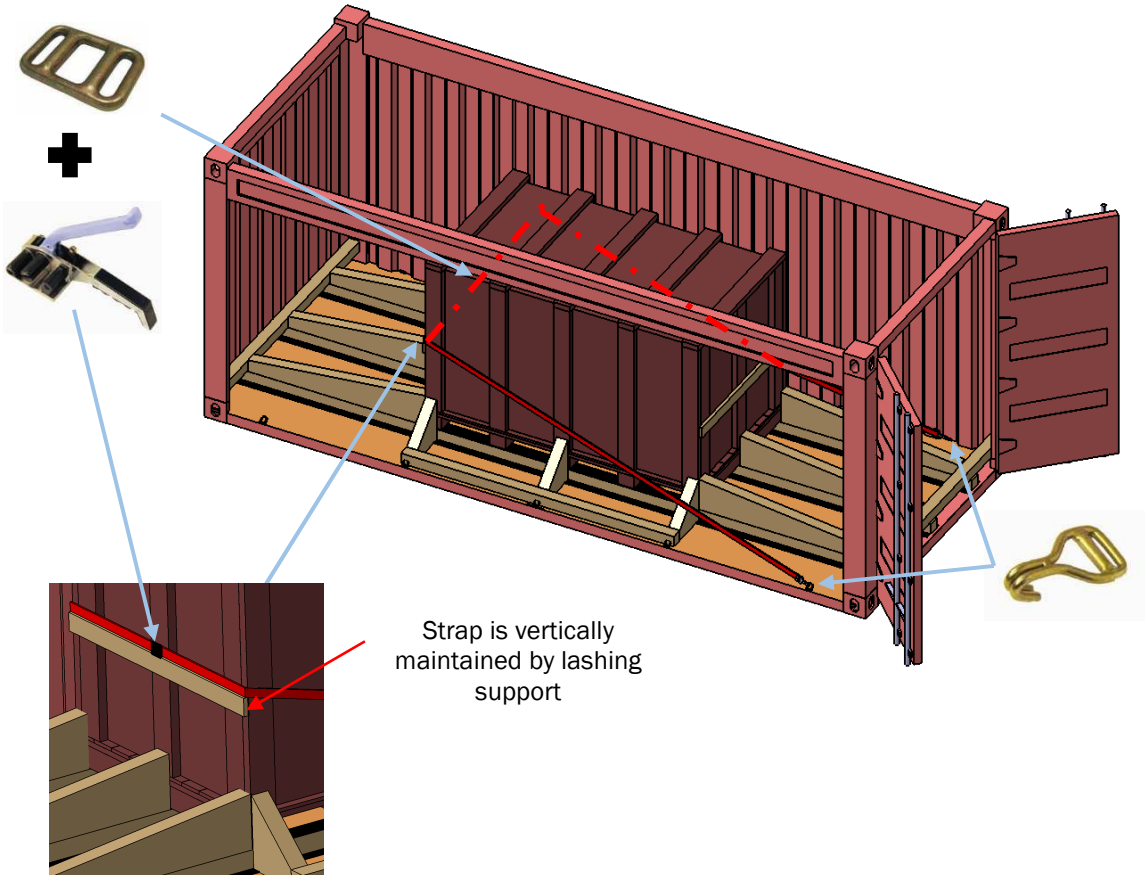
a) Install a wood supports on the crate (front side and back side), and fix it with nails. These supports will help us maintain lashing strap on the middle of the crate. Wood supports must be positioned at half the height of the wood crate.



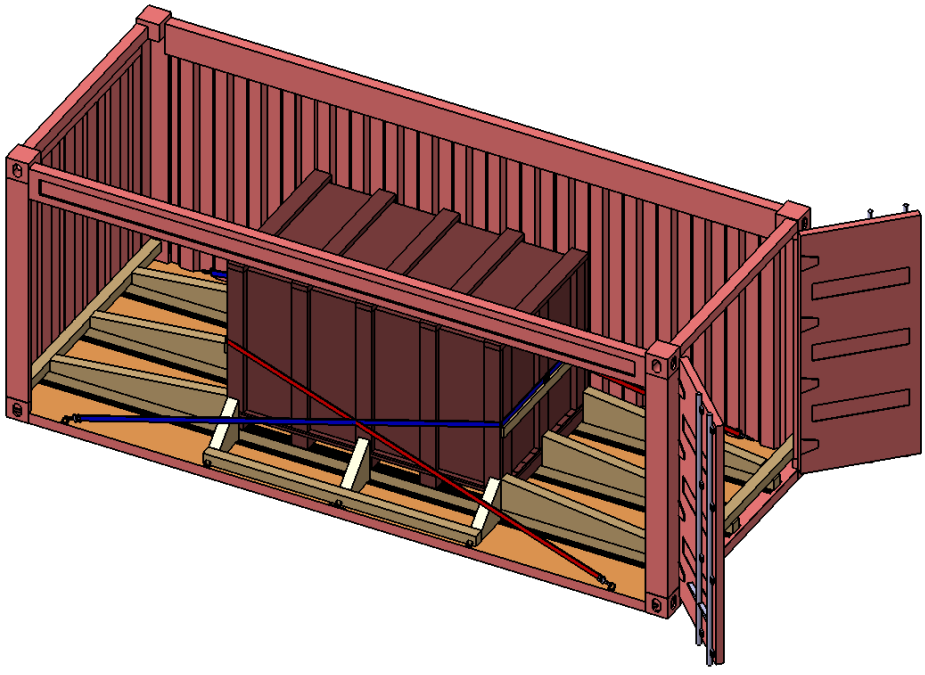
H= height of lashing support = ½ Height of wood crate

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b) Install a front buckle with an assembly of straps. The straps have to be tighten with a manual tensor.

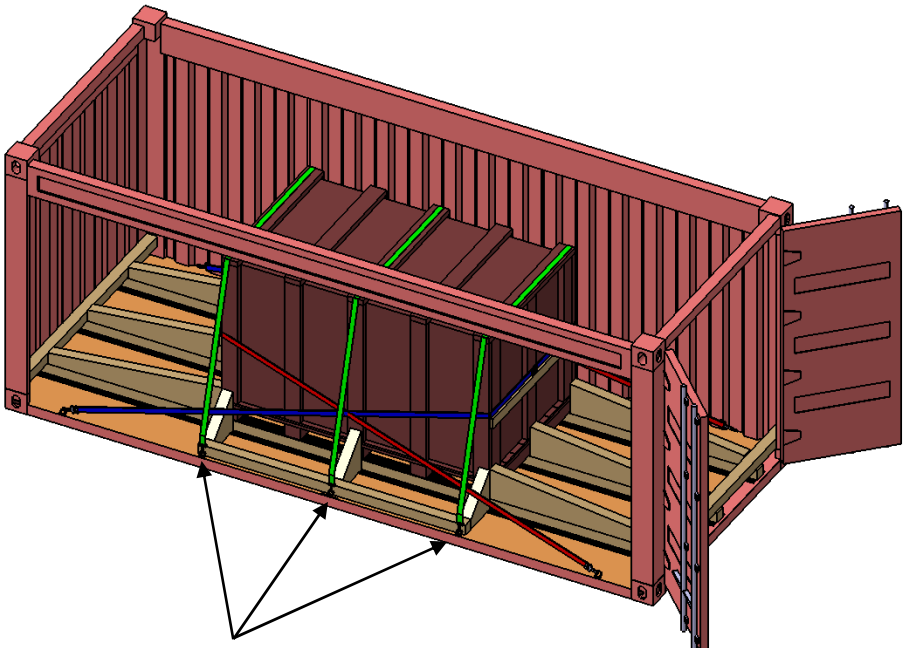


c) Install a rear buckle with an assembly of straps as for front buckle.



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d) Install 3 vertical straps on the crate and tighten straps strongly. If required, straps can be crossed on the crate.

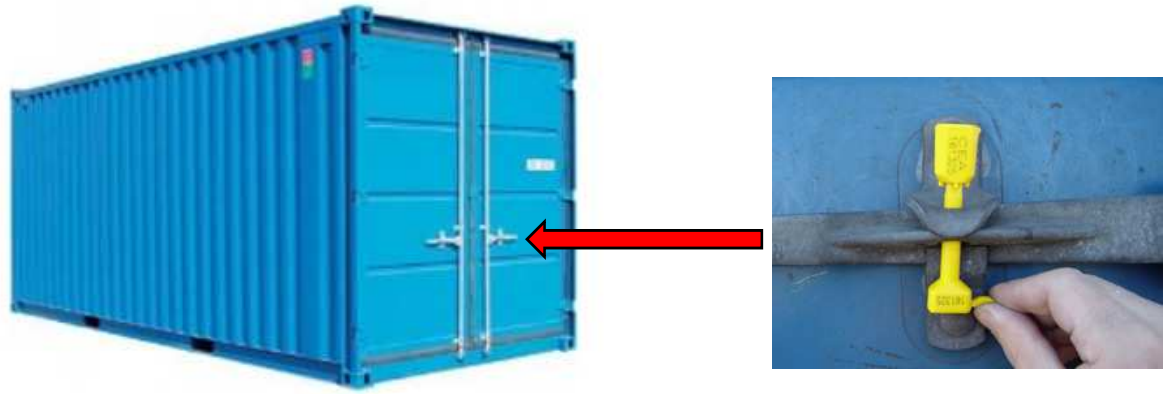


The 3 vertical straps have to be firmly tighten.

e) Ask the quality manager to control the successful completions of the crate's mold securing operation. The checklist in appendix 4 have to be filled by the quality manager and be sent to the customer.

f) The quality manager must:

- close the door of the container after having declared the mold successfully secured
- affix a plumb to secure the doors
- fill the identification number in the checklist



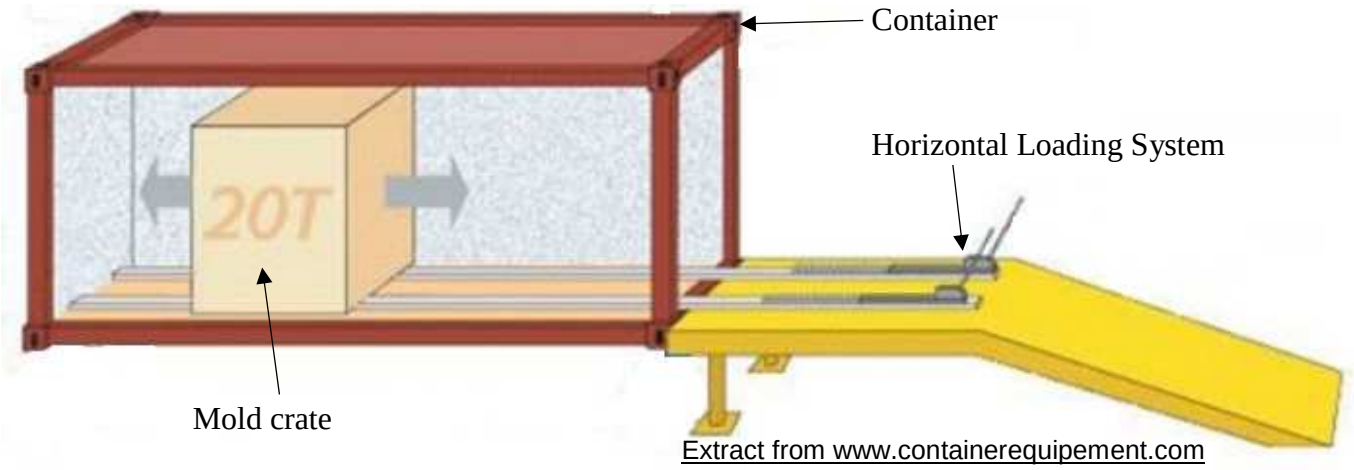
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Appendix 1: Loading and Unloading of the crate into a dry container

We assume that in certain cases, mold transportation cannot be done with an open top container.

Loading the crate into a dry container can be very difficult considering that we impose anti-slip material. Indeed, it's impossible to push or to pull the crate into the container when anti-slip material is positioned. That is why, PLASTIC OMNIUM recommends use of a specific material for this operation.

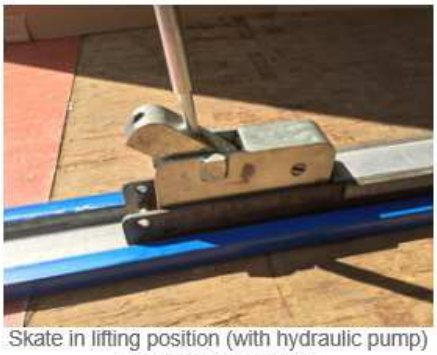
One of the solution is to use a horizontal loading system, see pictures below:



Extract from www.containerequipement.com



Manual hydraulic lifting and rolling SKATES (for 20 tons loads) into removable TRACKS



Skate in lifting position (with hydraulic pump) for horizontal transfer



Pallet transfer by skates into removable tracks

Extract from www.containerequipement.com

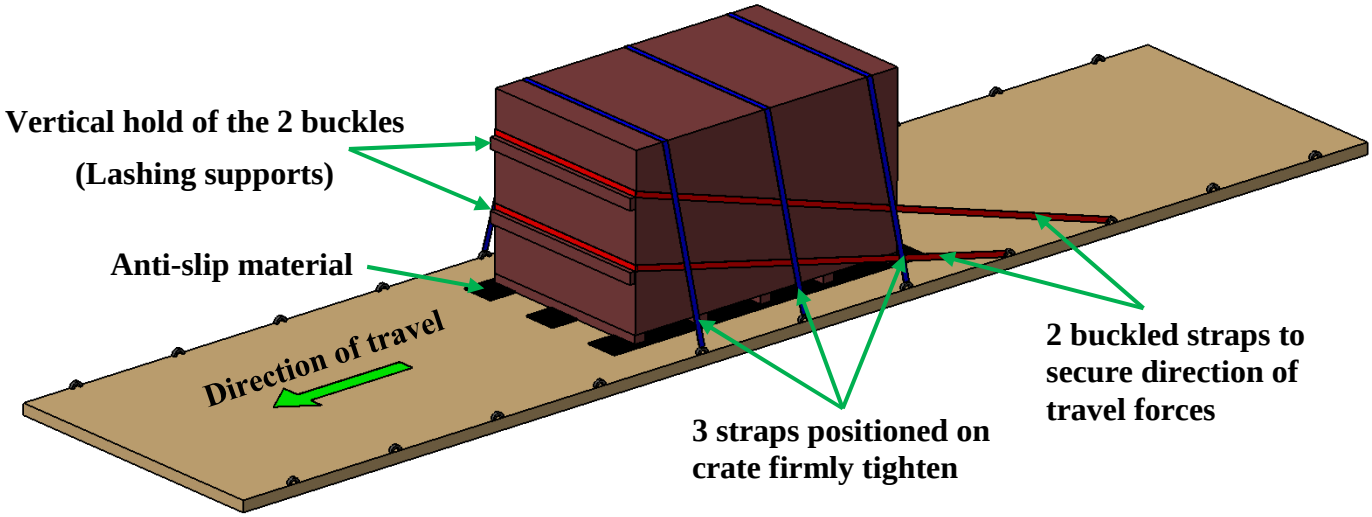
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Appendix 2: Securing wooden transportation crates on a trailer

Considering that PLASTIC OMNIUM and its subcontractors have no equipment to unload mold transportation crates from a dry container, these operations will be done by transportation company.

The mold crate will be loaded on a trailer and transported to a PLASTIC OMNIUM site or Subcontractors sites.

When loading on a trailer, the mold's crates have to be secured as on following drawing.



Descriptions of lashing operations:

1- Position anti-slip material between trailer floor and mold crate

2- Load the crate on the trailer, respecting the mass distribution of the vehicle

3- Position 2 buckled straps (red devices on the above drawing) in order to secure the front direction of mold crate on vehicle's lashing points. The 2 buckles have to be maintained vertically in order not to fall on the ground.

4- Position 3 straps (blue devices on drawing) on mold crate and tighten firmly.

Remarks:

1- The anti-slip material used when loading must be conform with the specifications given in this procedure

2- The 5 straps used to secure mold crate must have the following specifications:

- LC ≥ 2000 daN
- STF ≥ 300 daN

3- You can find more information about straps and mass distribution into the procedure SCPRO-002E-GB-Transporting molds

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Appendix 3: recommendation sheet to be given to carriers

Dear Sirs,

Your company may transport metal molds for Plastic Omnium, either from our own sites or from our suppliers' or subcontractors' premises.

Although legal responsibility and the obligation to have insurance lie with the sender, the fact remains that **this type of transportation carries risks,** and we particularly wish to avoid those problems most likely to have **very serious consequences** (i.e. risk to individuals, replacement value costs, financial risks due to the stoppage of production lines, etc.). It is for this reason that we draw your attention to the following points:

- **The molds are very heavy,** despite an apparently low volume (approximately 7.8 T/m^3)
- Faulty securement engenders **a very high risk of shifting, tipping and falling** of the molds that you transport
- Before setting off, you must ensure that the **bracing and securement** of the molds have been carried out correctly
- You must neither remove nor reduce the effectiveness of items of securement and bracing before setting off
- You must not under any circumstances transfer loaded molds in any container other than that initially intended for the transportation

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Appendix 4: SCREC-067 - MULTIMODAL MOLD TRANSPORTATION CHECKLIST

PLASTIC OMNIUM	**MULTIMODAL MOLD TRANSPORTATION CHECKLIST**	SCREC-067 Revision: A

1. TRANSPORTATION INFORMATION AND PLANNING			
Plant or company contracting carrier		Weight and size of mold are communicated	☐ YES ☐ NO
Person contracting transportation		Contracted carrier	
Reference of the mold		Weight of the mold (kg)	
Site of departure of load		Date of loading	

2. TRANSPORTATION COMPLIANCE (SECURING, EQUIPMENT AND PROCESS)	
A) IMPORTANT : If you answer "NO" to one of the following questions the transportation must be refused	
1- Packaging of the mold	
The mold is loaded into the crate on antislip mats	☐ YES ☐ NO
Vaccum is done around the mold	☐ YES ☐ NO
Mold base is blocked by wood beam screwed on the crate base	☐ YES ☐ NO
A strong structure surrounds the mold under the covering crate	☐ YES ☐ NO
All the wood used to construct the crate is certified ISPM 15	☐ YES ☐ NO
2- Transport container	
The type of the container is 20 feet open top if transported by see and 20 feet dry if transported by rail	☐ YES ☐ NO
The inside and the outside of the container is in good condition according paragraph **6-b** of the procedure	☐ YES ☐ NO
Before the departure, the container is secured on the truck with twist lock systems	☐ YES ☐ NO
3- Securing material	
Anti-slip material is compliant with paragraph **6-g** of the procedure	☐ YES ☐ NO
Assembly of straps are compliant with paragraph **6-h** of the procedure	☐ YES ☐ NO
Wood material is compliant with **6-i** of the procedure	☐ YES ☐ NO
4- Securing and loading operations	
Anti-slip is used under and on the reinforcements before loading the mold crate	☐ YES ☐ NO
The mold crate is centered longitudinally and laterraly into the container	☐ YES ☐ NO
Blocking structure is constructed all around the mold crate and its height is compliant with **8-d-b) Pic 1**	☐ YES ☐ NO
2 Straps are positonned on the front and back side of the mold crate (1 strap by side)	☐ YES ☐ NO
3 Straps are positionned on the mold crate (the straps can be crossed on the crate)	☐ YES ☐ NO
A plumb is affix on the closed doors of the container	☐ YES ☐ NO
Note here the Identification Number of the plumb	Plumb N° =
Gross mass of the container is known and has been certified in compliance with the MSC Resolution 380 (94)	☐ YES ☐ NO
Note here the Verified Gross Mass of the container (Kg)	VGM =

3. TRANSPORTATION AGREEMENT		
Freighter certify multimodal mold transportation procedure has been respected and load can be transported safely		
Loader Name and Signature		Shipping date:
Quality Manager Name and Signature		

4. RECEPTION COMPLIANCE	
The plum is still affixed on the doors of the container and the identification number is the same from the departure If not, container may have been open during transport, special care should be taken when opening the doors	☐ YES ☐ NO
The transportation of the mold is in compliance with PO procedures and the mold in good state? If not, document all non conformities with pictures and communicate with central purchasing	☐ YES ☐ NO

Receiver certify transportation procedure has been respected and load can be unloaded safely. In case of non conformities, they will be documented and transmitted to PO procurement
Receiver hereby takes all responsibility for the load transported for action.

Receptor Name and Signature		Reception date:

* The original will travel with the load, loader will keep a signed copy. Receiver will keep the original.

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Appendix 5: APPROVAL OF THE MULTIMODAL MOLD TRANSPORTATION PROCEDURE

Sign with initials on all the pages of the guide, and sign the last one

SCPRO-024A-GB - MULTIMODAL MOLD TRANSPORTATION has been validated

by: (Supplier contact name) _____ duly empowered and representing the company:

_____.

Date: _____

Location: _____

Name: _____

Signature:

Stamp of the company: