STANDARD OPERATING PROCEDURE

A-FRAME

Loading, Securing & Shipping Procedures

Packaging, load securement, and carrier-specific handling standards for slab shipments via Dry Van, Reefer, Flatbed, Intermodal, and LTL.

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Version: November 2026

1. Purpose and Scope

This procedure establishes standard protocols for shipping slab products using A-Frames via Dry Van, Reefer, Flatbed, Intermodal, and LTL transportation modes. The objective is to ensure product safety, maintain proper load distribution and vehicle weight balance, prevent in-transit movement, and optimize logistics costs across SAV and Canada operations.

This document also incorporates the technical requirements for frame packaging, strapping limitations, and protective crating that apply to each transportation mode.

2. A-Frame Packaging, Loading, and Securing for Shipping

2.1. A-Frame Packaging

2.1.1. Slab Placement on A-Frames

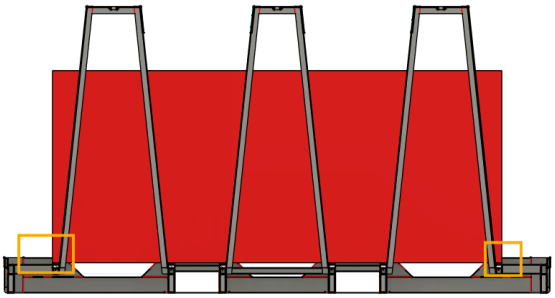
- When Large or Mini Slabs are placed on their respective size A-Frames, they will be centered on the A-Frame.
- The pieces will the placed by alternating between the sides of the A-Frame so that the weights of the pieces would be distributed evenly.



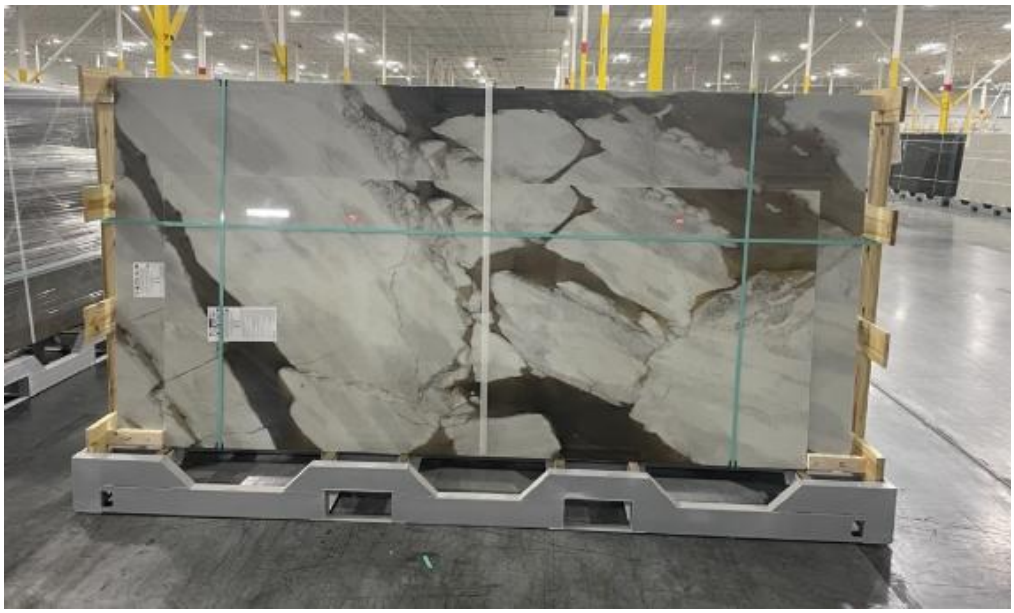
Large and Mini Slab placed on Large A-Frame - Centered

Mixed-Size (Mini and Normal) Packaging Rules

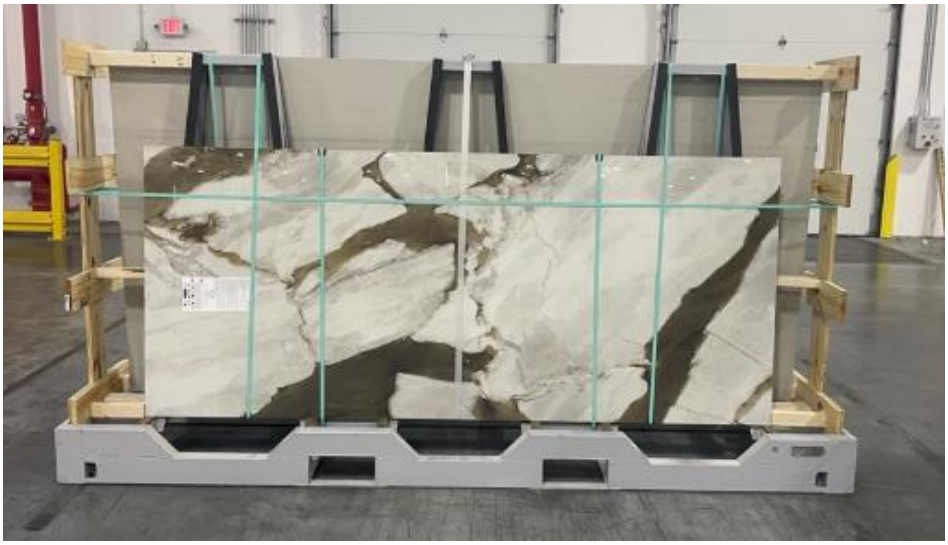
- When a combination of Mini Slabs and Large (Normal) Slabs is loaded onto a single A-Frame (mixed load), the Large Slabs will be placed first on both sides of the A-Frame in an alternating pattern. The Mini Slabs will then be placed after the Large Slabs, also alternating between the two sides of the A-Frame. If there is only one Large Slab, the Mini Slab can be on the first layer.
- Mini Slab will be centered on the A-Frame. The corners of the Mini Slab need to be placed on the bottom supports evenly.



Mini Slab – Large A-Frame Edge Supports



Mini Slab placed on Large Slab – Large A-Frame Edge Supports



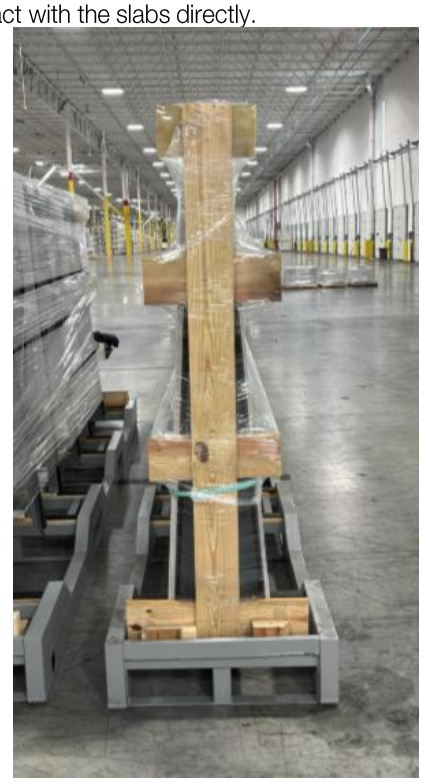
Mini Slab placed on Large Slab A-Frame at first layer

2.1.2. Strapping Standards

- **Strapping tension control:** the most critical factor in both horizontal and vertical strapping is the correct tension setting of the strapping machine. Particular attention shall be given to pallet quantities below a full pallet load, where tension shall be adjusted so that no additional stress is applied to the slabs while maintaining load stability.
- **Vertical strapping technique:** straps must pass over the support structure behind the plate to eliminate empty space. To prevent stress cracks on the corner edges of the slabs, straps must not apply direct pressure to the corner edges.
- **Horizontal strapping restriction:** applying direct horizontal pressure and tension to the slabs can result in product breakage. Horizontal strapping is permitted only for full pallet shipments, or for palletized quantities where the strapping configuration does not transfer direct pressure or tension to the slabs.
- **Mini Slabs on Large A-Frame:** Additional securing straps are required whenever any number of mini slabs are stored on one side of a large A-Frame without a large slab positioned behind them. These straps should be installed first. The straps must pass over the mini slabs and be anchored around the lower support members of the A-Frame to ensure the slabs remain stable and properly secured.
- Wooden protection must be secured using horizontal strapping only, as specified in the standard and shown below.

2.1.3. Wooden Support Application

When both sides of the A-Frame have pieces of the same size, the wooden support application will be applied as shown below. Wooden support will be in contact with the slabs directly.



Wooden protection secured to the A-Frame with horizontal strapping

- For A-Frames with only one piece on it, one side of the A-Frame will be empty. In these cases, wooden protection must be constructed as an impact-prevention support and must be secured to the frame without making contact with the slabs. The protector must be secured to the A-Frame directly with supports cut at 5-degree angles on the A-Frame side.

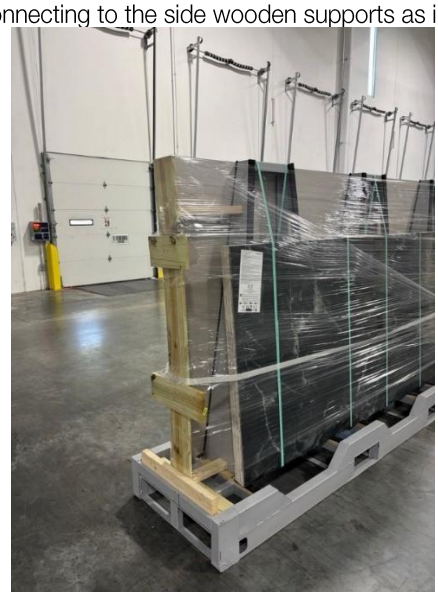


Impact-prevention wooden support built for single-side loading.

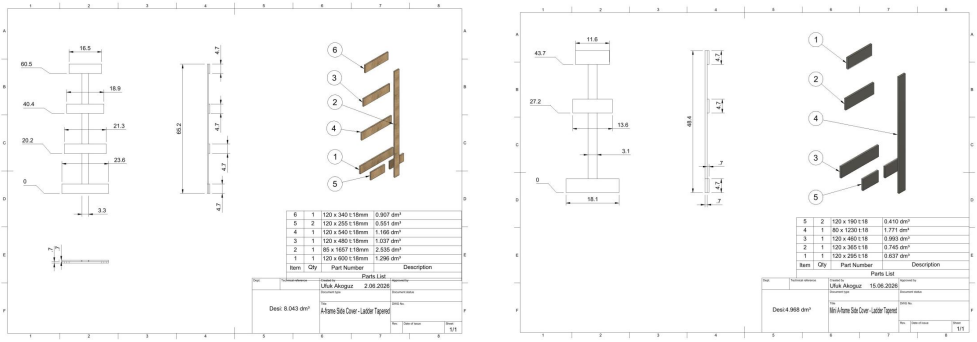
- When Mini Slab is placed on top of the Large Slabs, the regular wooden supports will not be able to support the Mini Slabs. Additional wooden pieces between the Mini Slabs and the wooden side supports need to be placed.



- When Mini Slabs are placed on the Large A-Frame without a Large Slab behind, the Mini Slabs needs to be supported from both sides connecting to the side wooden supports as in the example above.



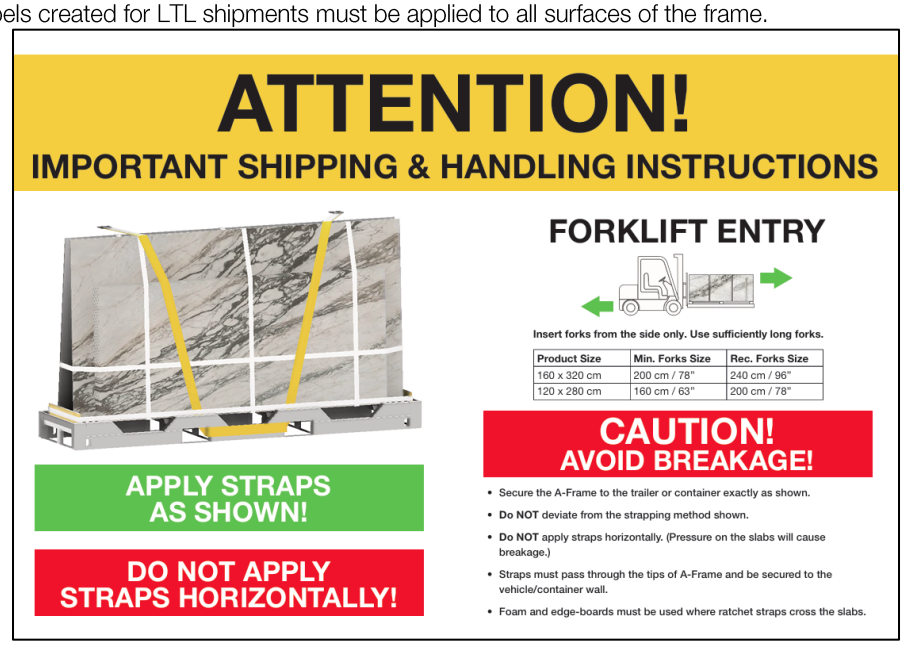
Standard drawings for the wooden protective supports are shown below (full-size drawings are provided in **Appendix A**).



Standard A-Frame side cover (left) and Mini A-Frame side cover (right) — ladder-tapered dr

2.1.4. Packaging Criteria by Transportation Mode

- **LTL (partial) and Flatbed shipments:** applying stretch wrap is mandatory for all LTL and Flatbed shipments, to protect the product from external factors and ensure stabilization.
- Warning labels created for LTL shipments must be applied to all surfaces of the frame.



LTL warning label — apply to all four surfaces of the frame

- The use of wooden crating is mandatory to prevent products from shifting within the frame structure due to sudden longitudinal forces and vibration encountered during transportation.

2.2. Technical Loading Standards

- **Maximum nose load:** the total weight at the front (nose) of the trailer must not exceed 7,000 lbs.
- **Weight distribution (Flatbed trailers only):** cargo must be secured near the middle section or toward the front (nose) of the trailer to maintain proper weight distribution and vehicle stability.
- **Multiple units:** must be strategically spread out along the trailer to balance the load across the axles and ensure transit safety.
- **Space optimization:** when loading a single A-Frame, leave enough width to accommodate 3 standard pallets alongside it.

2.3. Securing and Bracing Protocols

- **Side wall securing:** for all shipments, including single A-Frame shipments, units must be secured to the trailer side walls.
- **Alternating pattern (staggering):** in Dry Van trailers, multiple units should be loaded in an alternating pattern when required based on the weight of the A-Frames — the 1st unit at the front-right, and the 2nd unit offset to the left, with sufficient lineal footage between them.
- **Ratchet strapping technique:** straps must pass over the support behind the plate to eliminate empty space.
  - Ensure ratchet straps do not apply direct pressure to the corner edges of the slabs, to prevent stress cracks. Use two separate ratchet straps to reduce changes in strap tension caused by cargo movement during transportation.

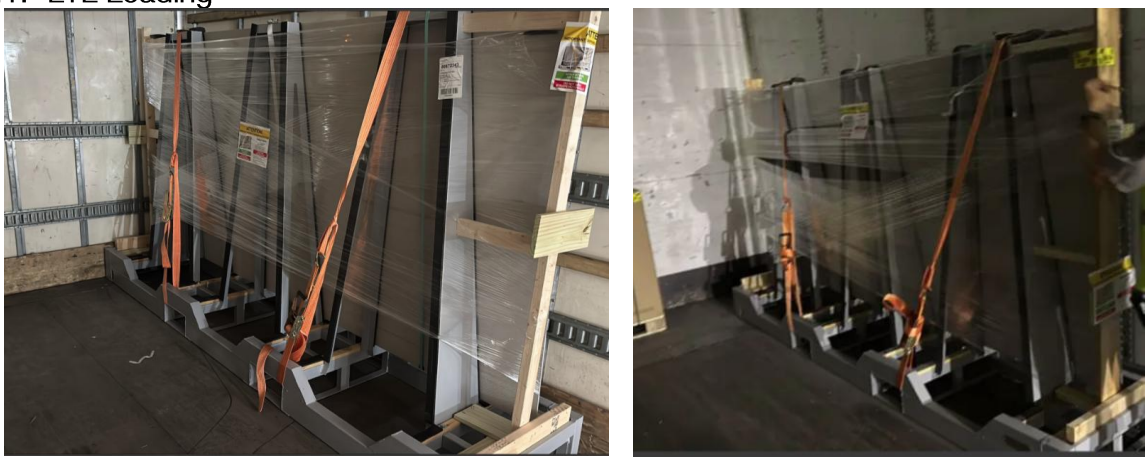
2.4. Rules by Equipment and Shipment Type

Equipment Type	Securing Method	Critical Notes
Dry Van	Sidewall securing + ratchet straps	An alternating (staggered) layout can be used depending on unit weight.
Flatbed	Standard heavy-duty strapping	Tension level may vary depending on unit weight and load configuration.
Reefer	Side/wall securing + pallet support + shoring bars, if available	No floor drilling allowed. Shoring bars must be set at the level of the A-Frame base (touching the metal base).
LTL (Partial)	Side wall + pallet support + ratchet straps	Use surrounding pallets to help stabilize the frame.
Intermodal Container	Sidewall + ratchet straps + floor bracing + dunnage bags	Secure the A-Frame against the container sidewall. Install floor bracing and use dunnage bags to prevent movement during rail and road transport. Give additional attention to longitudinal forces generated during rail transit.

2.5. Example Loading and Securing Images

The following reference photos illustrate the approved loading and securing configuration for each transportation mode.

2.5.1. LTL Loading



Approved LTL frame securing with surrounding pallet support

2.5.2. Dry Van Loading



A-Frame secured against the trailer sidewall







A-frame supported by palletized products

2.5.3. Flatbed Loading



Flatbed securement using heavy-duty strapping, front and mid-trailer positioning



Wide-frame flatbed load, strapped and positioned for transit

2.5.4. Reefer Loading



Reefer trailer securing — side/wall support with pallet backing, no floor drilling

2.5.5. Intermodal Container Loading



Container loading with sidewall securing and floor bracing



Ratchet strap and dunnage bag placement for rail and road transit

2.5.4. Critical Warnings When Loading

> ⚠ IMPORTANT
> When loading a combination of Mini Slabs and Large Slabs on a single A-Frame (mixed load), strap tension can create uneven pressure points. To prevent stress cracks on the corner edges of both sizes:

- Ensure the strapping path is adjusted so it does not pull directly against the unsupported edges of the smaller slabs.
- Use specialized padding or edge protectors to distribute the load evenly.
- Before tightening, make sure that each piece is properly supported by the frame structure.



Corner edges requiring extra protection in a mixed-size (staggered) load

2.6. Loading Recommendation — Trailer Positioning

In a semi-trailer, the front-right side generally moves the least — but only while turning. When the truck is turning, the trailer rotates around a pivot point: the front (especially the inside corner) moves the least, while the rear and outer side move the most. On a straight road at constant speed, all parts of the trailer share the same momentum and motion, so this effect applies specifically to turns.

For example, in a right turn: front-right = least movement, rear-left = most movement.

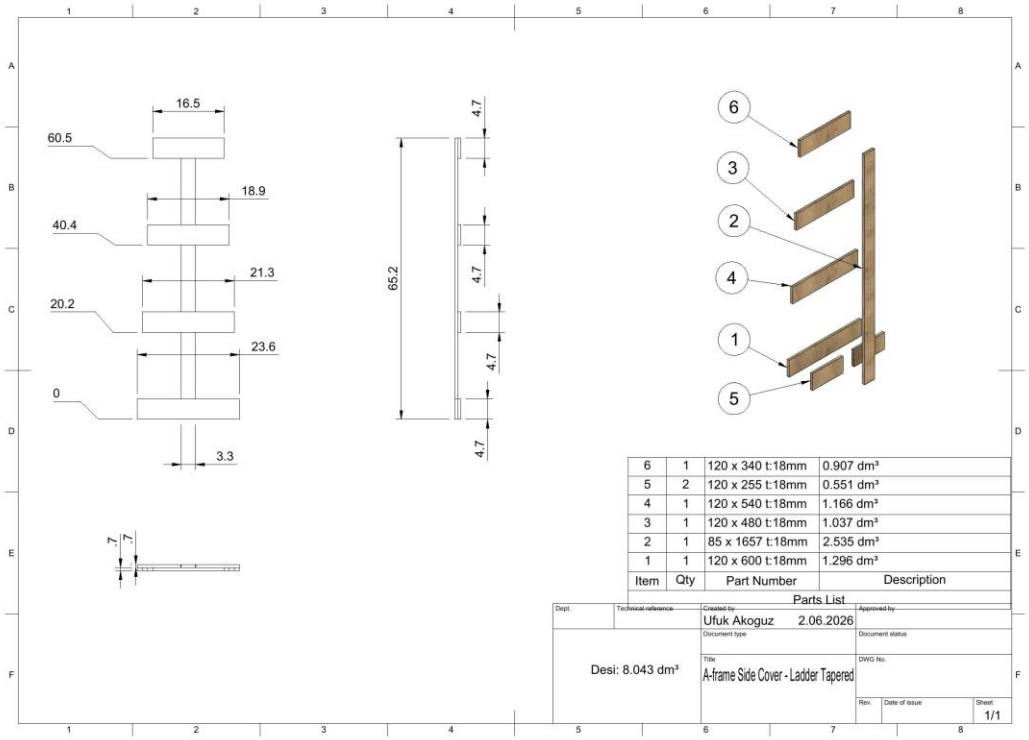
Turn Direction	Least Movement	Most Movement
Right turn	Front-right	Rear-left
Left turn	Front-left	Rear-right

RECOMMENDATION
Since trucks in typical road and distribution operations perform more right turns than left turns, positioning the most fragile or critical cargo on the front-right side of the trailer provides the greatest protection by minimizing lateral movement during the most common turning maneuver. Single loads, or loads considered more sensitive, should be positioned on the front-right side of the trailer whenever possible.

Appendix A — Standard Wooden Protection Drawings

Full-size reference drawings for the standard and mini A-Frame side-cover wooden protection described in Section 2.1.1.

A-Frame Side Cover — Ladder Tapered



Item	Qty	Part Number	Description
6	1	120 x 340 t:18mm	0.907 dm³
5	2	120 x 255 t:18mm	0.551 dm³
4	1	120 x 540 t:18mm	1.166 dm³
3	1	120 x 480 t:18mm	1.037 dm³
2	1	85 x 1657 t:18mm	2.535 dm³
1	1	120 x 600 t:18mm	1.296 dm³

Parts List

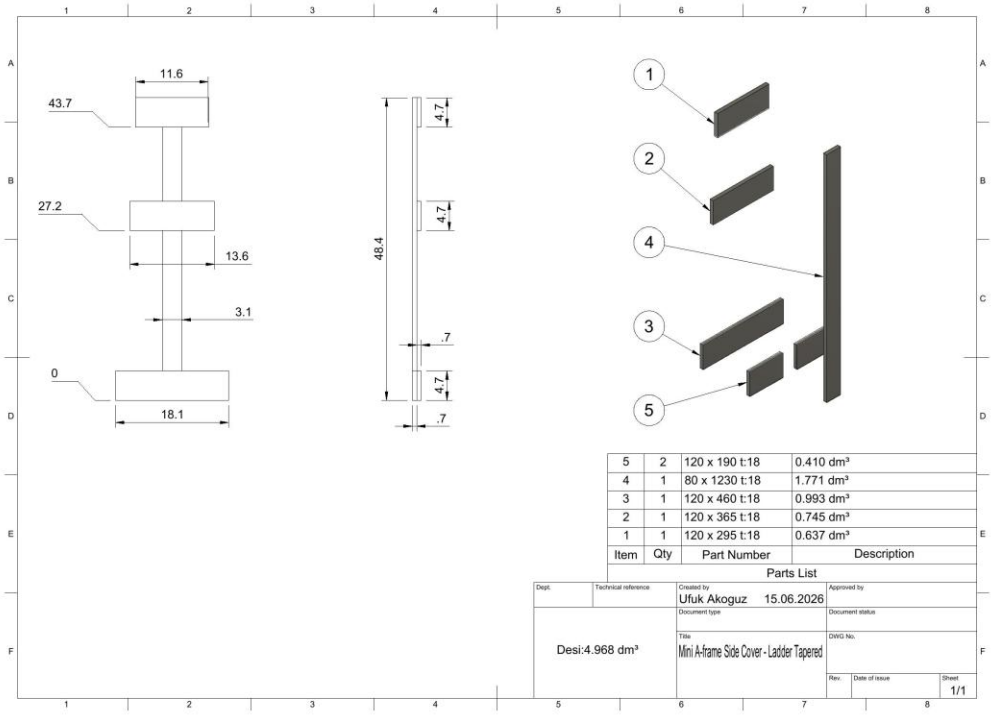
Dept. | Technical reference | Created by: Ufuk Akoguz 2.06.2026 | Approved by

Document type | Document status

Desi: 8.043 dm³ | Title: A-frame Side Cover - Ladder Tapered | DWG No.

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Mini A-Frame Side Cover — Ladder Tapered



Item	Qty	Part Number	Description
5	2	120 x 190 t:18	0.410 dm³
4	1	80 x 1230 t:18	1.771 dm³
3	1	120 x 460 t:18	0.993 dm³
2	1	120 x 365 t:18	0.745 dm³
1	1	120 x 295 t:18	0.637 dm³

Parts List

Dept. | Technical reference | Created by: Ufuk Akoguz 15.06.2026 | Approved by

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