



Processing Guide

Vulcan Thermally Modified Timbers



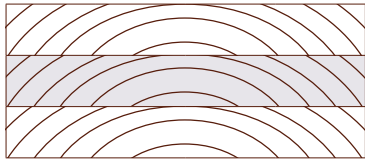


This guide has been developed to aid re-manufacturers to produce Vulcan timber components using the correct techniques. Abodo's unique methodology involves grain orientation, which is critical to the performance of the product. Cutting patterns and grain orientation at installation is important to ensure optimum performance.

Vulcan – Laminated Vertical Grain

Abodo's flagship product is produced from thermally modified radiata pine that has been laminated and grain oriented into large blocks.

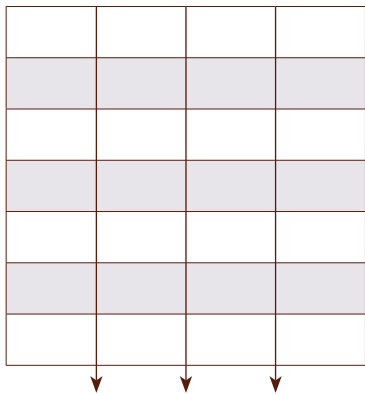
Laminated blocks are formed, which can then be converted into more manageable sizes – and can be cut down into boards for profiling (into a wide variety of finished items). It is critical that the bandsaw runs perpendicular to the glue lines. Some stepping can occur during the glue lamination process – a centre cut through the block allows a square edge to run against guides. Prior to shipment the laminated blocks are squared off to make additional conversion easy.



Quarter sawn grain

Bandsawing

Bandsawing is the first step to process larger pieces known as “laminated block”. It is critical that the bandsaw runs perpendicular to the glue lines. Some stepping can occur during the glue lamination process – a centre cut through the block allows a square edge to run against guides.



Cutting direction

NOTE: It's important that the blocks are cut with the grain set in the direction shown to ensure the boards produced have the grain vertically orientated.



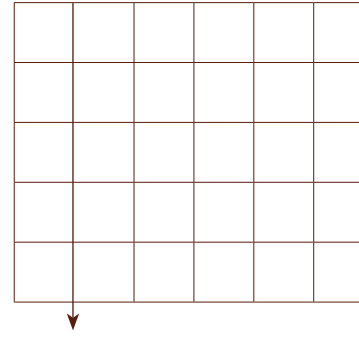
Standard laminated block dimensions

Vulcan laminated block	Grade	Dimension w x h
Laminated vertical grain	Select	146x143mm
Laminated vertical grain	Select	146x147mm
Laminated vertical grain	Select	146x183mm
Laminated vertical grain	Select	146x236mm
Laminated vertical grain	Select	146x295mm
Laminated vertical grain	Select	192x143m
Laminated vertical grain	Select	192x183mm
Laminated vertical grain	Select	192x228mm
Laminated vertical grain	Select	192x295mm

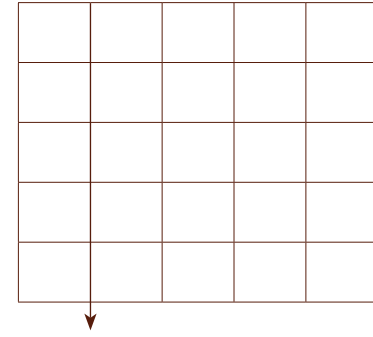
*Dimensions and construction may vary.

Block size 146mm wide

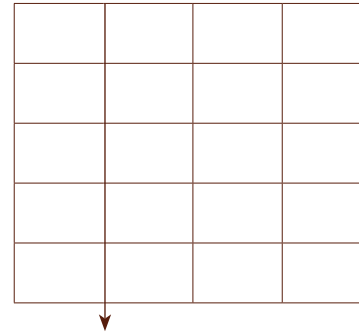
6 out – 23mm blanks



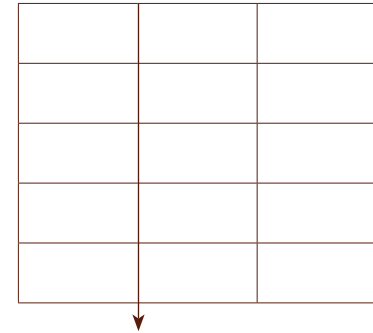
5 out – 28mm blanks



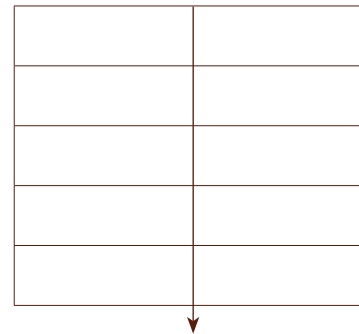
4 out – 35mm blanks



3 out – 47mm blanks



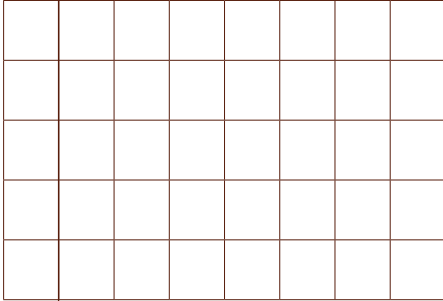
2 out – 72mm blanks



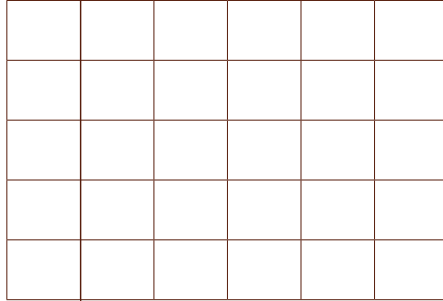
Standard laminated block dimensions

Block size 192mm wide

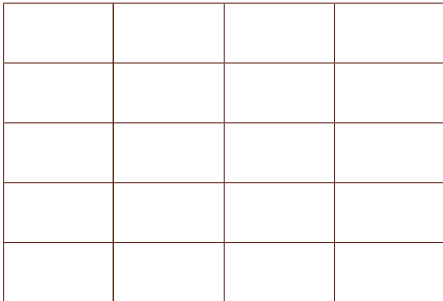
8 out – 23mm blanks



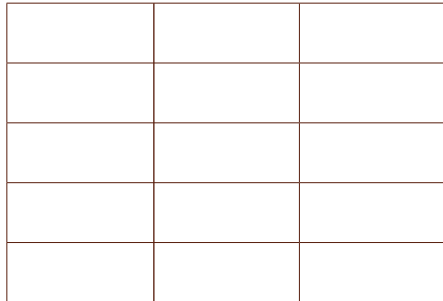
6 out – 30mm blanks



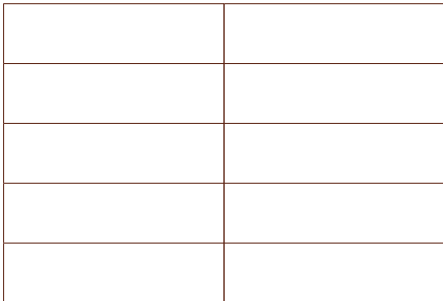
4 out – 47mm blanks



3 out – 63mm blanks



2 out – 96mm blanks



Suggested bandsaw specification

As standard, Vulcan laminated block is available in 3.6, 4.2 and 4.8m solid lengths. Finger jointing to exact length is optional, up to 7.2m.

Manufacturer	Product	Website link
Lenox	Woodmaster B 2" x .050" x .090" x 1/1.3 VT	www.lenoxtools.com/pages/woodmaster-b-band-saw-blades.aspx

Band sawn finish

Should be 'fine sawn'. Use sharp, thin kerf fine tooth saw ensuring consistent finish to faces. Visible saw skip or aggressive cut lines are not acceptable.





Moulding

Vulcan timber machines and moulds very well.

A band sawn face finished product can be created by moulding the back face and edges and leaving the clean sawn face without further finishing.

Lower roller pressures should be used as the thermal modification process does increase the brittleness of the timber.

Sawdust can be fine, good strong dust extraction required in all cases.

Agitation of piping system may be required to prevent settling of dust at junctions.

Operators and others should wear face masks if exposed to dust.

Grade rules

Clear 1 grade feedstock is used to produce Vulcan laminated blocks. However, defects embedded in the wood may arise during resawing and for that reason finished product is sold as Select Grade.

Select Grade

Graded to the Best Face and Two Edges

Specifications

A high appearance grade with front face and edges primarily clear but with some small defects allowed in some boards.

Front face and edges allow isolated defects as follows:

- Birds eye fleck – medium.
- Sap stain – insufficient to obscure grain.
- Edge defect – one tight knot, resin or bark pocket in bottom two thirds of edge only.
- Bow, crook, cup, twist as given in tables 1, 2, 3, 4 of appendix.

In **20% of boards** one defect is allowed on the best face as follows:

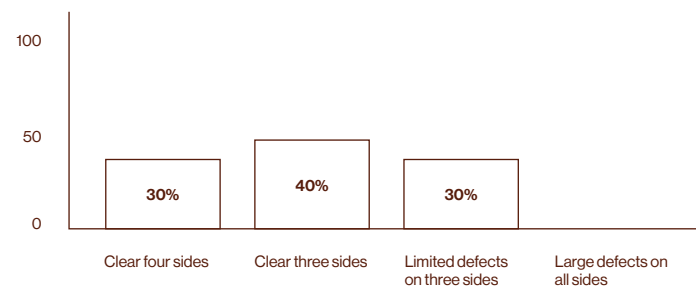
- Small tight knot (inter-grown or tight encased) <5mm diameter.
- Resin or bark pocket <30mm length x 3mm width.
- Kiln check less than 1mm wide x 50mm long.

The reverse face of the board may contain knots and defects as described in Premium Grade.

Cladding profiles may have skip dress present on the back face.

Laminated cladding boards may have one under thickness laminate up to 4mm depth on the back face, provided the function of the product is not compromised ie: boards fit together correctly and will sit flat on a wall.

Indicative percentage of lengths per grade



Best Face



Reverse

Standard profiles



WB10 145x20
(125mm cover) Vertical/Horizontal



WB10 180x20
(160mm cover) Vertical/Horizontal



WB12 138x20
(118mm cover) Vertical



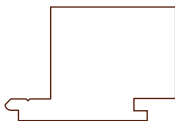
WB12 180x20
(160mm cover) Vertical



WB12 90x40
(70mm cover) Vertical



Fineline WB12F 180x20
(160mm cover) Vertical



WB12 90x60
(70mm cover) Vertical



Bevelback AW62 180x20
(148mm cover) Horizontal

Above profiles generally to be machined with band sawn faces.

Glue specification

New generation polyurethane adhesive – VOC, solvent and formaldehyde free are used.

- Exterior Type 1 – AS/NZS4364.
- Approved for Service Class 3 (exposed exterior applications).
- Complies with EN 15425.

Brands suitable:

Manufacturer	Product	Website link
Jowat	Jowapur 686	jowat.com/technical-data-sheets/686.30/TD68630_Englisch.pdf
Henkel	Purbond HBS	henkel-adhesives.com/au/en/industries/engineered-wood/engineered-wood-product-solutions.html

In general these glues have low abrasiveness against tooling, and are easily worked. We suggest contacting the adhesive manufacturer to confirm your use application.

General processing notes

- Due to the increased stability from thermal modification and lamination significant movement is reduced when resawing.
- Material can contain some resin pockets that will be uncovered after resawing.
- Some glue spill may be evident on the edges of block, this is easily cut.
- Sawdust can be fine, extraction required on bandsaw.
- Dust masks should be worn, along with other PPE.

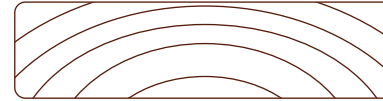
Joinery Design: The long term service life of window and door joinery is highly dependent on how it has been designed, detailed, installed and maintained. Prediction of service life is not precise and is based on the assumption of good design and a regular maintenance regime.

Abodo recommends industry best practice in joinery design including:

- Profiles designed to shed water away from the building by use of a slope on horizontal members with a pitch of not less than 1:8.
- Windows/doors designed to allow free draining of water, and to prevent pooling or entrapment of water on or around timber members and other adjacent materials.
- Rounding arises at edges to 3mm radius to increase performance of paint/film forming coatings.
- Sealing of end grains thoroughly with an appropriate exterior sealant to prevent water ingress at the ends of timber.
- Coating with an appropriate wood coating that is maintained during the lifetime of the joinery.



Vulcan – Flat Sawn



Abodo offers a flat sawn solid thermally modified radiata pine, known as Vulcan flat sawn. This is typically used for the following applications:

- Interior or protected applications.
- Paint finish exterior.
- Specialty finishes, e.g. charred finish.

Grade Rules

Vulcan flat sawn is typically supplied as a Clear 2 or Premium grade sawn timber. These grades allow defects on the back face, and in the case of Premium grade, limited defects on the graded face. In finished product form they are sold as Select Grade and Premium grade respectively.

Also available as finger jointed clears to specified lengths.

Select Grade

Graded to the Best Face and Two Edges

Specifications

A high appearance grade with front face and edges primarily clear but with some small defects allowed in some boards.

Front face and edges allow isolated defects as follows:

- Birds eye fleck – medium.
- Sap stain – insufficient to obscure grain.
- Edge defect – one tight knot, resin or bark pocket in bottom two thirds of edge only.
- Bow, crook, cup, twist as given in tables 1, 2, 3, 4 of appendix.

In **20% of boards** one defect is allowed on the best face as follows:

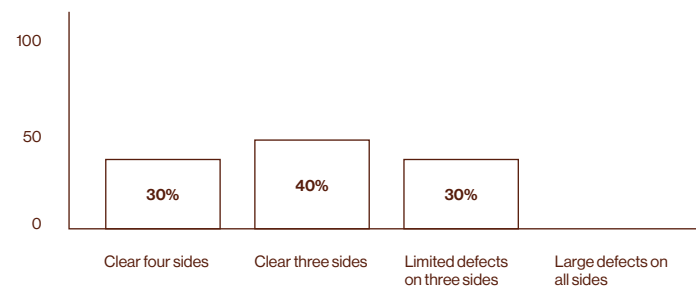
- Small tight knot (inter-grown or tight encased) <5mm diameter.
- Resin or bark pocket <30mm length x 3mm width.
- Kiln check less than 1mm wide x 50mm long.

The reverse face of the board may contain knots and defects as described in Premium Grade.

Cladding profiles may have skip dress present on the back face.

Laminated cladding boards may have one under thickness laminate up to 4mm depth on the back face, provided the function of the product is not compromised ie: boards fit together correctly and will sit flat on a wall.

Indicative percentage of lengths per grade



Best Face



Reverse

Premium

Graded to the Best Face

Specifications

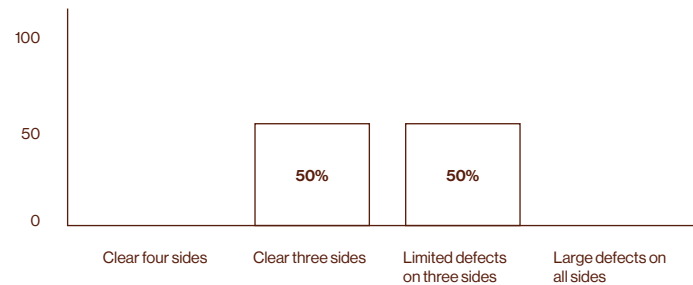
A good appearance grade that combines some clear three sides product, along with some product with small defects.

Front face and edges allow permitted defects as follows:

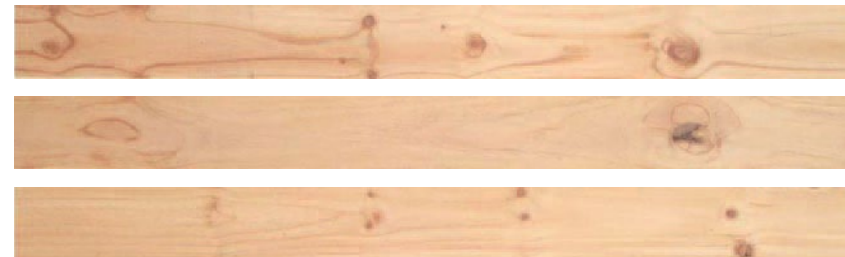
- Sound knots singly and in combination up to one third of the board width only.
- Resin pockets 6mm wide x 50mm long, three per board.
- Surface checks less than 1mm wide x 100mm long.
- Edge defects in bottom two thirds of edge only.
- Spike knots inter grown up to 20mm wide.
- Tight encased knots maximum 10mm wide, three per board.
- Sap stain insufficient to obscure the grain.
- Bow, crook, cup, twist as given in tables 1, 2, 3, 4 of appendix.

The reverse face may contain all permitted defects described in Standard and Better Grade except no pith, holes, wane or want allowed.

Indicative percentage of lengths per grade



Best Face



Reverse

Standard Profiles

Vulcan Primed:



WB10P 135x18
(115mm cover)



WB10P 180x18
(160mm cover)



WB10FP 180x18
(160mm cover)



AW62P 187x18
(155mm cover)

Above profiles generally to be machined with smooth face and eased edges ready for primer plus paint finish.

Vulcan Decking:



DK16V 142x27

General processing notes

- Some minor distortion can be expected in the timber due to the thermal modification process.
- Material can be brittle and lower roller pressures should be used.
- Material can contain some resin pockets that will be uncovered after resawing.
- Sawdust can be fine, extraction required on bandsaw fine, strong extraction required on bandsaw and moulder.
- Dust masks should be worn, along with other PPE.

Coatings

Factory application of Abodo's coating systems are required prior to delivery to site. In all cases timber must be thoroughly sanded and be clean and free of dust prior to application of coating. Note: Band sawn or textured timber does not need sanding.

Cladding and Screening

Protector

Protector is a two coat, water borne penetrating oil. Protector is best applied in a flood/brush type coating line, or alternatively a spray type coating line. Caution should be applied to vacuum or roller coating.

Things to watch:

- When applying Protector in a flood system ensure it is not over applied, excess oil can pool on the surface, causing over-pigmentation or patchiness.
- Ensure that coating sits into the wood surface not on top. Use brush and/or air knife on out-feed to remove excess oil and relieve surface tension.
- Lighter colours like Straw, Patina and Pearl can appear washed out on Vulcan timber. The dark substrate of Vulcan does not initially blend well with lighter pigments. This will quickly change on exposure to UV, when the substrate begins to lighten. End users should be made aware of this in advance.
- Hardwoods: e.g. Kwila. 7-10 sq metres/litre 10-14 sq metres/litre.
Softwoods: e.g. Pine and Macrocarpa. 6-8 sq metres/litre 10-12 sq metres/litre.
Sawn face timber/old dry softwoods: e.g. 5 year old pine. 4-6 sq metres/litre 8-10 sq metres/litre.
- Follow the technical datasheet for application instructions.
- At minimum Abodo recommends coating boards with one coat, four sides prior to site delivery.
- Second and final coat can be applied on site, if required.

Sioo:x

Sioo:x is a reactive coating system that requires two coats of Step 1 "Wood Protector" and one coat if Step 2 "Surface Protector". Sioo:x is best applied in a flood/brush type coating line, or alternatively a spray type coating line.

Things to watch:

- Sioo:x is a clear coating system, and customers may think the product is uncoated. As the cladding is exposed to the atmosphere it will gradually and evenly lighten. End users should be made aware of this in advance.
- Follow the technical datasheet for application instructions.
- It is recommended that Sioo:x is fully coated, with three coats prior to site delivery.
- It is not recommended to use alternative coating systems on Abodo products without consulting with Abodo.

Protector and Sioo:x are exterior coating systems. For interior applications other proprietary specialty coatings should be used specific to the end-use requirements- contact Abodo for advice if required.

Primer

- Oil borne alkyd primers are generally recommended for optimal performance (please consult with Abodo if unsure).
- Apply 2 coats all sides and ends via machine spray, vacuum or flood coat method.
- Spot putty, sand, prime prior to/between coats as appropriate to eliminate defects such as cracks or pinhole.
- Rack dry between coats as appropriate to atmospheric conditions and manufacturers recommendations.



Joinery

Exterior: For weather-exposed applications such as window and door joinery, approved exterior grade semi-transparent coating or paint finish must be applied to all sides and end grains sealed thoroughly.

In fully exposed exterior applications e.g. no eaves, paint finish is recommended.

Paint finish: Factory Prefinished Exterior Vulcan TMT Joinery.

The performance of paint systems on exterior doors and windows is dependent on careful surface preparation and painting. Top and bottom surfaces must have the full coating system applied to them. This is best undertaken before they are hung or fitted.

Particular attention is needed to ensure that there are proper flashings above doors and windows and that the sides of joinery are properly weatherproofed by use of adequate scribes and/or sealants.

All edges of the joinery and future hidden surfaces must be primed before assembly with particular attention to priming the seal end grains.

Attention is needed to ensure all sharp edges on joinery are sanded to a rounded profile before painting.

- Step 1: Ensure any sharp edges are arrissed to a rounded profile.
- Step 2: Ensure all surfaces are clean and free from contamination before painting. All timber faces are to be lightly sanded and the dust removed.
- Step 3: Apply Alkyd Wood Primer to achieve 12 square metres per litre as per manufacturers instructions. (Note: the application rate may vary with timber porosity and application method).
- Step 4: Any nail holes or areas of damaged timber should first be primed with the specified timber primer before filling with a wood filler in accordance with manufacturer's instructions. Sand smooth and spot prime the filled areas, with specified timber primer.
- Step 5: Apply Acrylic Primer Undercoat to achieve 12 square metres per litre as per manufacturers instructions.
- Step 6: Apply semigloss or gloss waterborne enamel to achieve 12 square metres per litre as per manufacturers instructions.
- Step 7: Apply a second coat to achieve 12 square metres per litre as above.

Colour note: Dark colours may be used, however increased maintenance can be expected due to increase.

Semi-transparent finish: Semi-transparent finishes are recommended only in protected or semi-protected applications e.g. under eaves >400mm depth. Semi-transparent finishes will require more regular re-coating throughout the life of the joinery compared to paint. This maintenance regime must be agreed and signed off by the end user prior to supply to ensure.

Care must be taken to ensure that timber profiles are oriented with vertical grain exposed to the weather only.

Specialist exterior joinery finishes must be used. Pigmented, UV stable, film forming or high solids coatings are recommended for UV protection and to maintain colour.

Interior: For interior applications coating is optional, though sealing is recommended to allow for easy cleaning and to maintain colour.

Specialist interior finishes should be used only. Options include high solids hard wax oils for a more natural appearance, or film forming polyurethane or acrylic systems that tend to be harder wearing but less natural in appearance.

Coatings Handling

The most efficient way to purchase and handle Protector is in 200L drums. The drums are best handled with a drum trolley, and required volume can be tapped out as required.



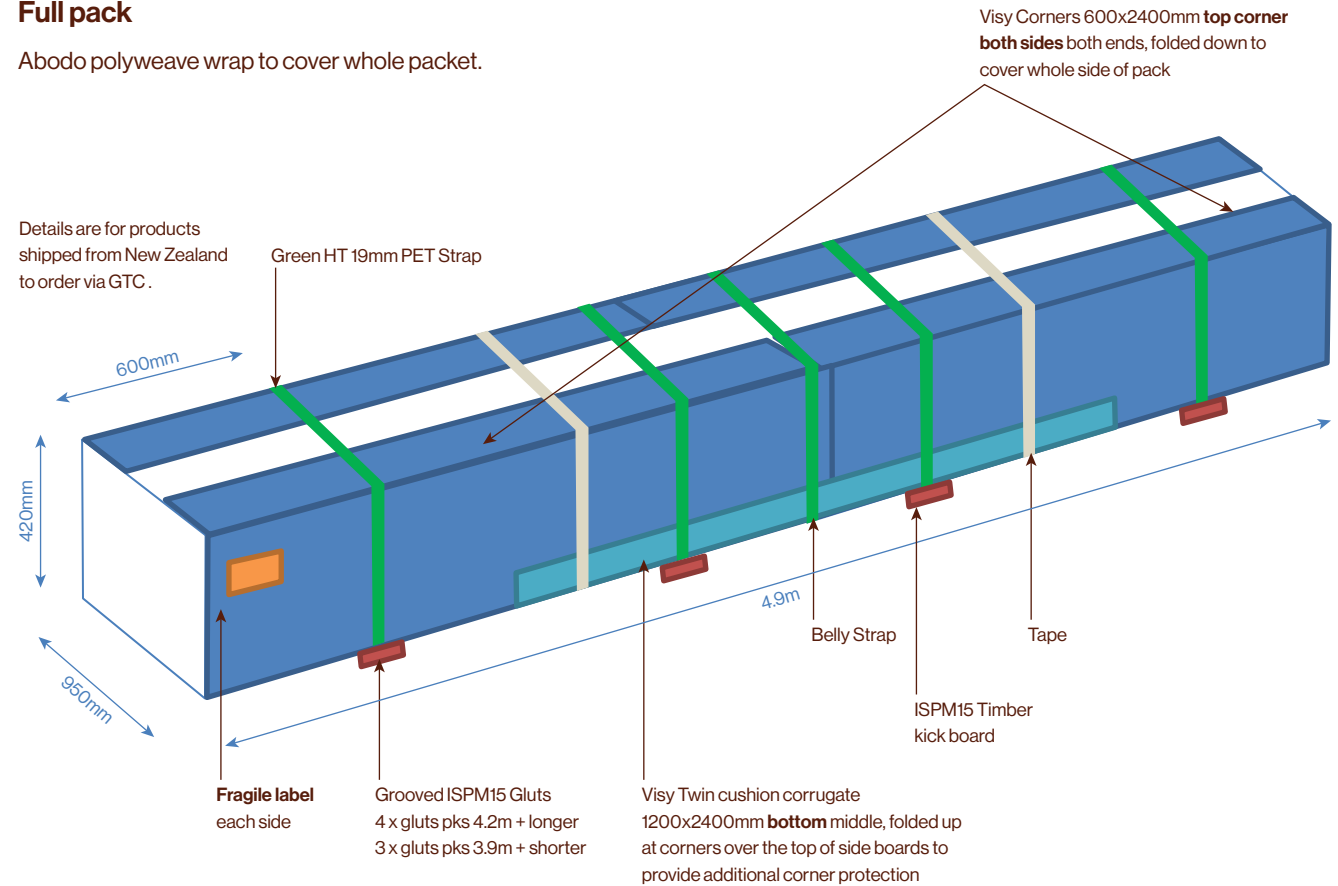
How to handle a **drum trolley**

WATCH VIDEO 

Packaging Specifications

Full pack

Abodo polyweave wrap to cover whole packet.



Band sawn face TMT and coated weatherboards with Visy cardboard **slip sheets** between faces.



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