

Vulcan Laminated Block – Vertical Grain



Overview

Vulcan laminated block is created from thermally modified New Zealand plantation timber and engineered with a vertical grain construction for superior weathering characteristics.

The thermal modification process combined with lamination means Vulcan has enhanced stability, reduced resin content, is a beautiful uniform brown colour, and is naturally durable.

This technical data sheet covers the use of Vulcan Laminated Block for use as cladding, screening, post and beam, internal lining and joinery applications. In some instances there are different requirements for joinery applications as noted throughout this document.

Benefits:

- High durability.
- Engineered with vertical grain for stability.
- Exceptional performance for joinery, cladding and screening applications.
- Excellent workability for resawing and machining.
- Beautiful chocolate brown colour that can be clear coated internally.

Wood species:

Thermally Modified Radiata Pine (Pinus Radiata).

Lengths:

Supply will be a range of lengths in packet lots. 1 length per packet. Length mix supplied will be at Abodo's option.

- Lengths available 2.4m-4.8m.
- Main lengths are 3.6, 4.2 and 4.8m.

*Specified fixed lengths may be available but are subject to conditions including minimum quantity and availability. Please check with Abodo prior to placement of order.

Sizes:

Standard Laminated Block Sizes Available in pack lots only

Approx only (mm)

146x142

146x147*

146x183

146x199*

146x236*

146x298*

Other Laminated Block Sizes

Approx only (mm)

192x142

93x142

192x183

93x183

192x199

93x199

192x298

93x236

Dimensions and construction may vary.

Some stepping up to 4mm depth and glue run-off may be present in the glue line edges of laminated blocks.

Custom laminated sizes >199mm height are subject to prior approval by Abodo, minimum order volume and lead time.

*Non standard product. Please enquire for lead time.

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Product specifications

Name:	Abodo Vulcan.
Quality:	Finished product after machining should be graded to Select Grade /Front face and edges virtually free of any defects but with one edge knot and one small face defect allowed per piece in 20% of boards only. Back side with some defects allowed. See Grade rules on page 3.
Substrate colour:	Chocolate Brown. (Timber will weather to grey when exposed to UV light unless a pigmented coating is applied and maintained).
Finish:	Block sizes stated are nominal/indicative only. Wing boards from the edge of the block with glue spill and stepped backs can be expected as part of the manufacturing process. Allowance for regrading/cut-backs and recovery of product to thinner sizing must be allowed for.
Durability:	Thermally modified – 230 degrees C schedule.
Insect attack:	Thermally modified pine is resistant to many wood boring insects but is not resistant to termites. Available optionally treated H3LOSP (AS1604) for termite zones.
Intended use:	Intended for above ground use in residential and light commercial buildings.
Serviceable life:	30 years or more when maintained according to manufacturer's recommendations.
Warranty:	15 years against fungal decay (subject to terms and conditions).
Moisture content:	Approx. 7% MC (+/-2%) at time of dispatch.
Construction:	Laminated with vertical grain orientation.
Glue:	Polyurethane adhesive - VOC, solvent and formaldehyde free. Exterior Type 1 - AS/NZS4364. Approved for Service Class 3 (exposed exterior applications).
Expected dimensional change in structure:	Tangential 3%
	Radial 1.5%
	Longitudinal 0.25%
<small>*based on 7% MC to fibre saturation point. May vary.</small>	
Average density:	420 kg/m ³ .
Hardness:	Low (2.5kN Janka).
Thermal properties:	-0.095 W/(mK) (EN 12667).
pH (indicative):	3.9.
Compatibility:	Vulcan has little corrosiveness on most metals (though should be separated from zinc) and can be placed in contact with most building materials depending on pH sensitivity. In general cross linking PVA, PU, MUF epoxy glues and RF resins can be used, however a specific adhesive specification may be required considering the low moisture content and unique characteristics of the timber. Please consult with the adhesive supplier and conduct testing prior to commencement of work. Abodo will not be held liable for glue compatibility.
Coating:	Vulcan will take most stains, penetrating oils and paints well, though up-take of coating is generally higher than normal. See separate coating section below.
Quality assurance:	Third party certified to AS/NZS1328.1 and AS/NZS1491.1.
Certification:	FSC®- certified mixed, No.: SGS-COC-004944. Declare Certified - Red List Free.

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Product specifications

Characteristic strength/ stiffness:	Characteristic strengths (MPa)					Elastic moduli (GPa)	
	Gl grade rigidity	Bending (MOR)	Tension parallel to grain	Shear in beam	Compression parallel to grain	Short modulus of elasticity parallel to end grain (MOE)	Short duration modulus for beams
	8	20.50	9.60	-	38.50	10.40	-
Characteristic lateral load strength							
Joint Group							
Nail: JD4							
Screw: JD5							
Storage and handling:	<ul style="list-style-type: none"> – Must be kept clean dry, under cover and out of the weather prior to installation. – Must be stored horizontally on bearers at least 150mm off the ground. – Wear dust mask, eye protection when cutting timber. – Timber may be burnt outside or mulched. 						
Considerations:	<ul style="list-style-type: none"> – Thermal modification increases brittleness. – Not recommended for use in door sills due to softness. This reduced density means the timber is more lightweight and can be easier to damage, but is easier to move around the workshop. 						
General processing notes:	<ul style="list-style-type: none"> – Due to the increased stability from thermal modification and lamination significant movement is reduced when resawing. – The blocks can contain some resin pockets and knots that will be uncovered after resawing. When uncovering resin pockets, one option is to remove the loose material, apply a 2 part filler, and sand back, but not overdoing it. – Some glue spill may be evident on the edges of block, this can be easily cut to square the block for further machining. – Dust masks should be worn, along with other PPE. – The thermal modification process increases brittleness of the timber. Care is required in handling and transport, including use of protective packaging. 						
Grade rules:	<ul style="list-style-type: none"> – Clear 1 grade feedstock is used to produced Vulcan laminated blocks. However, defects embedded in the wood may arise during resawing and for that reason finished product is sold as Select Grade. Refer to Abodo's Appearance Grades Timber Grading Rules. As this is a rough product, some rework may be required by way of cut back to shorter lengths or re-machining to reach the required grade. 						
Machining:	<ul style="list-style-type: none"> – Vulcan timber machines and moulds very well. – A bandsawn 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 extraction required in all cases including the bandsaw. – Agitation of piping system may be required to prevent settling of dust at junctions. 						

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Product specifications

Machining:

- Laminated blocks should be cut using a fine kerf bandsaw perpendicular to the glue line in order to achieve vertical grain orientation in the face of the boards, or otherwise as appropriate to the profile being made.

**Vertical grain oriented
towards the weather**



Weather-exposed face



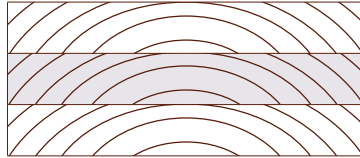
Weather-exposed face

- When manufacturing joinery increased brittleness of the timber should be taken into consideration during execution of joints and junction details.
- Traditional joinery techniques using mortice & tenons can be problematic in some cases, therefore more modern joinery techniques are favoured i.e. Comb joints, Dominoes / Dowels, especially when using smaller sectional sizes.
- Where possible carpets should be laid out on work benches to prevent the timber from marking on uneven surfaces.

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Vulcan – Laminated Vertical Grain

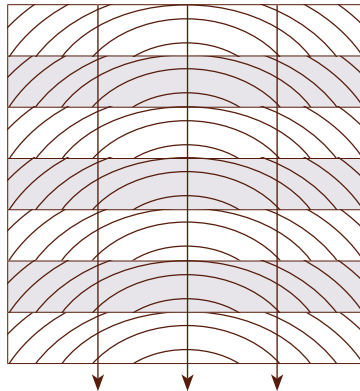
Abodo's flagship product is produced from thermally modified radiata pine that has been laminated and grain oriented into large blocks.



Quarter sawn grain

Bandsawing Laminated Block

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 up to 4mm depth can occur at the glue line edges during the glue lamination process – a centre cut through the block allows a square edge to run against guides.

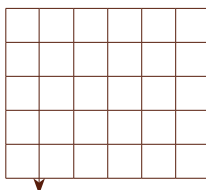


Cutting direction

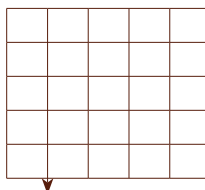
Indicative sawn blank sizes from standard block

Block size 146mm wide

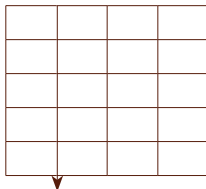
6 out – 22mm blanks



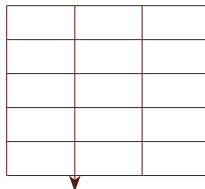
5 out – 28mm blanks



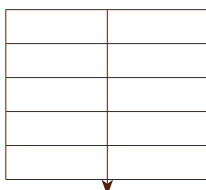
4 out – 35mm blanks



3 out – 47mm blanks



2 out – 72mm blanks



Sizes stated are nominal /indicative only.
Wing boards from the edge of the block with glue spill and stepped backs can be expected as part of the manufacturing process.
Allowance for regrading and recovery product to thinner sizes must be expected.

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Abodo Vulcan Laminated Block Indicative Cutting Guide

Laminated block feedstock	Approx number B saw cuts perp to glue line	Approx Pieces out	Approx Moulder blank size	Maximum expected finish size
146x199	5 (+ split)	12	98x22	93x19
146x143	5	6	143x22	140x19
146x147	5	6	147x22	145x19
146x183	5	6	183x22	180x19
146x199	5	6	199x22	195x19
146x199	3 (+ split)	4	98x35	93x32
146x143	3	4	143x35	140x32
146x147	3	4	147x35	145x32
146x183	3	4	183x35	180x32
146x199	3	4	199x35	195x32
146x199	2 (+ split)	6	98x47	93x42
146x143	2	3	143x47	140x42
146x147	2	3	147x47	145x42
146x183	2	3	183x47	180x42
146x199	2	3	199x47	195x42
146x199	1 (+ split)	4	98x72	93x68
146x143	1	2	143x72	140x68
146x199	1	2	199x72	195x68

Notes:

The number of pieces out is indicative only based on a max 2mm kerf band saw.

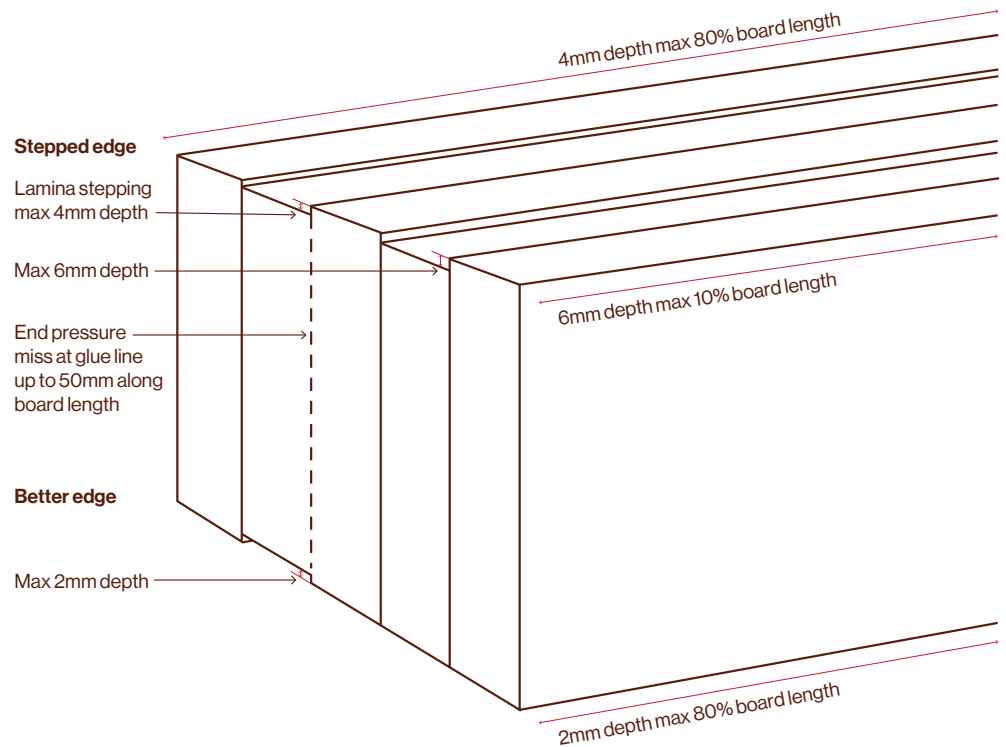
Moulder blanks sizes may need to be adjusted depending on re-manufacturing capabilities.

Fiber recovery will vary depending on thickness of bandsaw, accuracy and variation in block size including lamination stepping at edges of block.

Some allowance for creation of thinner sized 'wing boards' and shorter length cut backs to achieve required grade must be made in the manufacturing process.

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Stepping specifications

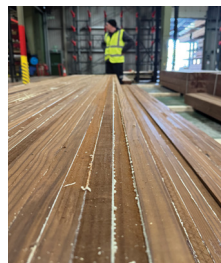


End pressure miss at glue line



Allowed up to 50mm depth along length.

Glue spill



Allowed both sides, will dress off.

Lamina stepping



One edge with stepping up to 4mm 80% block length or 6mm 10% block length.

Second edge can have stepping up to 2mm.

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Product handling

Joinery design:

The long term service life of window and door joinery is dependent on how it has been designed, detailed, manufactured, 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, manufacture and installation 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.
- Minimum 5mm gap from base of door to sill to allow free drain of water.
- Vulcan is not recommend for door sills due to relative softness of the timber.
- Rounding arises at edges to greater than 1mm 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 system that is maintained during the lifetime of the joinery. Refer to coating manufacturers specification.

Fastening

- For exterior appearance applications, high quality stainless steel fixings (screws or nails) are recommended.
- Quality Hot Dip Galvanised may be used in non-appearance or paint finish exterior applications.
- Stainless steel 316 (A4) fixings should be used in areas near the sea.
- Note: Silicone bronze/copper fixings can be subject to oxidation during weathering, resulting in discolouration and weeping around fixing head.
- For interior applications bright or zinc coated fixings may be used.
- Fixings at ends of boards must be at least 12mm from edge, and must be pre-drilled before applying fastener.
- In exterior cladding applications Vulcan should generally be installed minimum 100mm above paved surface or 175mm above un-paved surfaces. Base of posts must finish minimum 35mm above paved surface and be sealed to prevent moisture ingress.
- For joinery a minimum of 150mm ground clearance.

Coating

The below information is given for guidance purposes only. Please refer to coating manufacturer's instructions and project specification prior to commencement of production. In all cases timber must be thoroughly sanded and be clean and free of dust prior to application of coating and end seal application.

To minimise the 'washboard' effect that can occur with some water based coatings, when sanding the timber, either use a hard pad on the orbital, palm sander with hard plate, or a wide belt sander.

Increasing the grit on the sandpaper will lessen the amount of material removed - i.e. 180grit +. Following the grain structure is also beneficial.

Exterior:

For weather-exposed applications such as cladding, screening, post and beam approved exterior grade semi-transparent, micro-porous penetrative erosion stains and oils with mouldicide are recommended. A bandsawn or textured face finish is recommended to increase lifespan of a semi-transparent coating. Stains or oil finish on smooth dressed finish will require re-coating

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	<p>more often.</p> <p>Alternatively a paint finish system can be used. Paint system is to be applied to all sides and end grains sealed thoroughly.</p> <p>For window and door joinery in exterior applications paint finish is recommended.</p>
Paint finish:	<p>Factory Finished Exterior Vulcan TMT Joinery.</p> <p>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 delivered.</p> <p>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.</p> <p>All edges of the joinery and future hidden surfaces must be primed before assembly with particular attention to priming or sealing end grains. Tannin blocking primers are recommended in all cases. If product is being sent to site pre-primed only then alkyd primer is recommended.</p> <p>Attention is needed to ensure all sharp edges on joinery are sanded to a rounded profile, greater than 1mm, before painting.</p> <p>Step 1: Ensure any sharp edges are arressed to a rounded profile.</p> <p>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.</p> <p>Step 3: Apply Alkyd Wood Primer per litre as per manufacturers instructions. (Note: the application rate may vary with timber porosity and application method).</p> <p>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.</p> <p>Step 5: Apply Acrylic Primer Undercoat per manufacturers instructions.</p> <p>Step 6: Apply semigloss or gloss waterborne enamel per manufacturers instructions.</p> <p>Step 7: Apply a second coat per manufacturers instructions.</p>
Colour note:	<p>Dark colours may be used, however due to the high UV they will fade quicker than lighter colours.</p>
Interior:	<p>For interior applications coating is optional, though sealing is recommended to allow for easy cleaning and to maintain colour.</p> <p>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.</p> <p>Maintain all coatings as per manufacturer's recommendation.</p>

Maintenance

- Cladding and joinery to be cleaned regularly, minimum every 12 months. Cleaning and recoat to coating manufacturers instruction.

Note: The above is an overview only. Installers should refer to specific design information on the construction specification for more details.

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