

# Vulcan

## Thermally Modified Timber

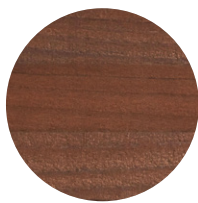
### What is it?

Vulcan products are made from thermally modified (TMT) clears grade FSC® certified New Zealand radiata pine. Thermal modification dramatically increases the durability and stability of wood and results in an aesthetically pleasing brown colouration – effectively creating a new sustainable, environmentally friendly timber species.

Thermal modification is achieved simply by using steam and high temperatures in excess of 200 degrees Celsius. The real trick to the process is in the cooling and reconditioning phase. This is achieved by using purpose-built computer-controlled kilns that ensure every stick of timber is modified to the correct specification and quality. At the end of the process the chemical and physical properties have been permanently changed.

### Thermal modification process in a nutshell

- Phase 1** The kiln is slowly elevated in temperature until the moisture content of the wood is essentially zero %. The wood in the kiln is then heated further until it reaches the desired modification temperature – in most cases 230 degrees Celsius for outdoor end use applications.
- Phase 2** The kiln is held at the modification temperature for a prescribed time to achieve full modification. This time is the critical point in the process.
- Phase 3** The kiln is allowed to cool, and the wood is reconditioned with steam (we bring the moisture content back to around 7%). Once cool enough the wood can be extracted from the kiln.



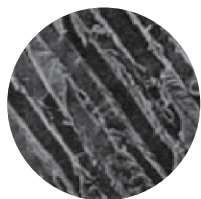
Abodo Vulcan



Timber going into the kiln



Cell structure – normal kiln dried timber



Cell structure – thermally modified timber

### Features

- Beautiful chocolate brown colour (will weather to grey if left uncoated).
- Naturally durable in above ground exterior applications = no chemical preservatives required = friendly to people and the planet.
- 50% less swelling and shrinkage than radiata pine = more stable and less movement in service.
- Extractives and resins driven out of the wood = reduced resin bleed in service.
- Improved thermal properties = 20-30% better thermal performance than radiata pine.
- Clears grade timber in long lengths = less wastage during installation.
- Made from New Zealand plantation timber = a truly renewable, carbon negative building product.

### Quick reference specifications guide

Product options	Vulcan – Vertical Grain (engineered) Vulcan – Flatsawn (solid mixed grain)
Sawn sizes (mm)	100x25, 150x25, 200x25, 150x32, 200x32 (other sizes available on request)
Lengths	3.0, 3.6, 3.9, 4.2, 4.5, 4.8m (subject to availability)
Grade	Select
Species	Radiata Pine
Treatment	Thermally Modified TMT230
Origin	North Island, New Zealand
Sustainability	FSC® certified- mixed, CoC No.: SGS-COC-004944
Average dry density	~420 kg/m3
Moisture content at mill	~7%
Durability	Class 1 (EN350-1). Field tested at SCION Rotorua. More durable than Macrocarpa (Cupressus macrocarpa) heartwood and H3.1 LOSP treated radiata pine. Suitable for exterior above ground vertical applications requiring minimum 15 year service life in low-moderate decay situations eg: joinery, cladding, screening, fascia
Indicative exterior above ground service life	Up to 30 years or more when properly installed and maintained
Warranty	15 years against fungal attack (subject to terms and conditions)
Approx expansion when wet (from 7% MC to fibre saturation point)	Tangential 3-4%, Radial 1.5-2%, Longitudinal 0.25%
Compatibility	Non-corrosive to most metals including aluminium. Use hot dip galvanised or stainless steel fixings for exterior applications
Fixings	Nail hold strength same as for radiata pine (JD4). Screw hold strength reduced by around 20% (JD4-JD5)
Gluing	Most normal PVA, PU, MUF glues and RF resins can be used. Always check compatibility with glue manufacturer and test prior to use.
pH (indicative)	3.9
Hardness	Medium-Low (2.5kN Janka)
Thermal properties	-0.095 W/mK / -R1.35 per 25mm thickness
Characteristic structural properties (clear sap wood)	Stiffness (MoE) 8GPa, Bending strength (MoR) 50MPa
Weathering	Flat sawn boards will exhibit some surface cracking with exposure to weather
Workability	Excellent machinability. Timber exhibits reduced splitting strength, therefore care should be taken to use sharp tools and pre-drill fixings. Fine dust is created from machining so good extraction is required
Coating	Takes most oil and water borne coatings well, absorption rates tend to be higher. Smooth dressed timber must be sanded prior to coating.

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