



Plantation bamboo
NZ's Bamboo Specialists | **Flooring** | **Decking** | **Panels**

Bamboo **X-treme** **DECKING**

The new generation in
sustainable decking

thinking of our **FUTURE**



Plantation Bamboo X-treme Decking

Bamboo X-treme decking is a solid, high density decking board, made from compressed bamboo fibres. A special, patented heat treatment process (at 200°C) provides Bamboo X-treme the highest durability class possible in the appropriate EU norms (see technical characteristics in this brochure) and increases its hardness and stability. A unique feature of Bamboo X-treme decking is the head-side tongue and groove joint: this can only be done with very stable materials and enables connection of an unlimited number of boards in the length.

The special symmetrical shape of the sides offers the possibility to choose between either the ribbed or the flat surface, and allows for quick installation with clips. Like any untreated tropical hardwood species, when exposed to outdoor conditions, Bamboo X-treme decking will turn grey over time creating a very natural look. The decking can be easily oiled to keep a rich, darker colour if desired.

Bamboo X-treme decking is a truly ecological and durable alternative for increasingly scarce tropical hardwood. Our world leading supplier uses a unique patented process to enhance the hardness, dimensional stability, fire safety and durability of bamboo to a level superior to the best tropical hardwood species. Bamboo X-treme decking can be used for decking, cladding, fencing and outdoor furniture.

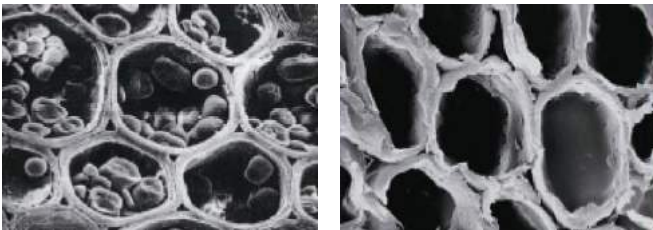
From Bamboo to Bamboo X-treme

For centuries bamboo poles and bamboo components have been used in outdoor applications. Unfortunately many additional protective measures are needed to guarantee a sufficient and acceptable lifetime. In dry environments poles will crack and the bamboo inner wood material, due to its high "sugar" components, will be easily attacked by micro-organisms and fungi. In the land of origin bamboo can be replaced fast and cost efficiently, but in Western countries this is not an option. Therefore, wouldn't it be great to find a way to use one of the fastest growing plants on earth as an alternative for scarce hardwood species and to make the material suitable for outdoor applications?

There has been significant research and various testing methods of how to best protect bamboo in outdoor circumstances. Initial tests (which are also often used by other bamboo suppliers) were found to be unsatisfactory, not performing to Plantation's quality standards. Therefore Plantation looked to a supplier who had developed an alternative way to solve the problem.

By modifying the density of the bamboo and also applying a special heat treatment process, our supplier was able to improve the durability and stability of bamboo. This technique is referred to as "density-thermo treatment". This invention was registered internationally in 2008, with laboratory and practical testing performed the following year. The research proved density-thermo treatment to be the most effective method (and currently the only efficient solution) to ensure bamboo is suitable for outdoor applications.

Density-thermo treatment counters previous problems with using bamboo outdoors, such as cracking in dry conditions, and the inner wood material being subject to attack from micro-organisms and fungi, due to the high sugar content of bamboo.



Bamboo on molecular level before (left) and after (right) the density thermo treatment:

- Before the sugar molecules are still visible
- After the treatment they have disappeared

With this treatment, bamboo is no longer a feeding place for fungi and micro-organisms, resulting in a high performing decking and exterior bamboo product.



Since 2008
over 2
million m²
installed in
over 50
countries

Highest durability class

Untreated bamboo has a durability class 5 according to EN350 (not durable). By modifying the bamboo with the Density-Thermo treatment, the dimensional stability of bamboo is improved by circa 50%. Besides stability improvement, the durability is improved to the best durability class possible, from class 5 to class 1 (CEN/TS 15083-2 class 1 – simulated graveyard test, CEN/TS 15083-1 class 1 according to EN350), unmatched by any other bamboo outdoor product. The density heat treated bamboo is also very well protected against superficial fungi (EN152, Class 0).

This bamboo outdoor product achieved the use/risk class 4 according to the EN335, and is the only bamboo material available on the market that does so. This means it may be used in direct fresh water contact, direct earth contact and it does not need any additional treatment.

Doesn't the Thermo-Density process compromise the environmental sustainability of this product?

No it does not: Our supplier MOSO Bamboo, commissioned Delft University of Technology to execute an official LCA and carbon footprint study according to ISO 14040/44. The report, available on request, concludes that this bamboo outdoor product is CO2 neutral or better over the full life cycle. In fact, because of the superior durability, the product does not have to be replaced as often as other hardwood species while at the same time taking advantage of the enormous growth capacity of giant bamboo. The special high density pressing (increasing the density from 650-700 kg/m³ to approx 1.150 kg/m³) more than compensates for the disadvantage of material brittleness of heat treated bamboo and will strongly improve the hardness of this product. After pressing, the material is stronger and harder than almost any other hardwood in the world. That is why we call it Bamboo X-treme.

Only with Bamboo X-treme decking can you be sure to have the original, patented product. Copies of the original do not offer the same hardness and level of durability, dimensional stability and ecology. With a look-alike product, there is a large risk of issues and claims after installation.



Beach Promenade – Tel Aviv

Discover the Benefits of Bamboo X-Treme Decking



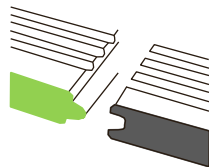
Exceptionally Hard

The only bamboo decking with class 1 durability (EN350) tested following CEN/TS 15083-2 class (simulated graveyard test).

Durability Class 4 in accordance with EN335 (use class).

Class 0 fungi resistance in accordance with EN152.

Exceptionally hard: Brinell >9.5kg/mm² (harder than any tropical wood available)



High Stability

Very stable as a result of the thermo treatment combined with High Density[®] compression.

Far more stable than any other tropical hardwood - enabling head side tongue and groove connection.

Limited tendency to torsion.

No head side gap between boards necessary.

Only 3-5 mm expansion space between (the sides of) the boards.



Easy to Install

Two installation options with just 1 product: (invisible) fixing with fasteners or screw down.

Both sides of the board - ribbed or flat - can be used.

Fixed board length 1850 mm, easy for 1 person to install, no complicated installation plans necessary.

Head side tongue and groove for flexible installation.

Macro bevel on head side, avoiding sharp edges.



Economical

Simple and fast installation: Up to 50% savings in installation costs!

Reduced wastage of material during installation because of the head side tongue and groove.

Every plank has been hand checked after production, therefore no loss due to defective material.

Cost effective transportation because of the fixed 1850 mm length.

Cost effective and space reducing because of unique multi usable board.



Beautiful

A beautiful, natural hardwood look.

Customer choice for flat or ribbed surface.

With fastener installation, no damage to the boards by screw holes.

Free of knots and natural plant resins.

Customer choice for natural greying or keeping brown colour with oil maintenance.



CO² Neutral

Official LCA and carbon footprint studies by Technical University Delft according to ISO 14040/44 confirm that MOSO[®] Bamboo X-treme[®] is CO₂ neutral over the full life cycle.

No use of fungicide in the production.



Fireproof

Reaches fire safety class Bfl-s1 following EN13501-1 without use of fire retardants.

As a result, Bamboo X-treme can be easily applied in public projects without additional measures.



Endless resource

Made from Moso bamboo; With a growing speed of up to 1 metre per day, it is the fastest growing plant on earth.

Ready for harvest after 5 years (compared to up to 100 years for hardwood species) - no deforestation.

Consisting of approx. 90% natural bamboo fibres.

Appearance and Colour

Bamboo X-treme is a natural product, which can vary in colour, grain and appearance. Colour will change over time depending on the maintenance schedule. The boards have a brown to dark brown colour when installed, which turns into a lighter caramel colour several weeks after installation. Without further maintenance the colour gets “greyish” over the coming months (similar to most other wood species). If a brown colour is preferred, maintenance should be carried out with WOCA exterior oil (teak or other preferred colour) or a comparable water based oil/saturator with teak pigments. It is recommended that after installation one layer of Woca (or similar) oil be applied. See the installation and care instructions for further information. Bamboo X-treme decking shows similarity to other hardwoods in grain and structure. The characteristic bamboo nodes however can still be recognized and gives the product a special and natural look. Gradual greying of Bamboo X-treme decking over time: new, non-weathered decking (left); after 3 months of weathering (middle); and after 18 months of weathering (right).



Normal phenomena

Some cracks on the surface and on the end of the boards can arise from the different drying characteristics of the surface and cross cut ends. This does not affect the stability or durability of the board. The surface sides of the boards will get rougher over time and may form (small) splinters as a result of continuous water absorption and desorption due to dry and wet weather periods. Dimensional change or cupping of the boards can occur after installation, but less so than most other decking products. These phenomena are normal for most hardwood species and Bamboo X-treme. However this decking will not leech any colour, warp, crack or splinter to the extent that most other decking products tend to do.

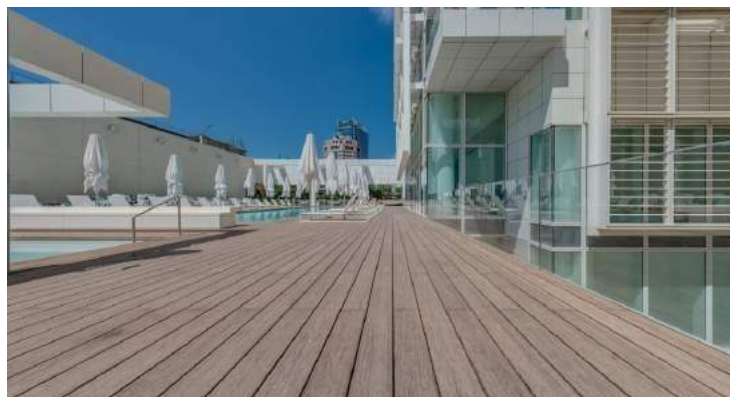
Use of the flat side

When using the flat side of the board as surface side please note that surface deformation (under influence of weather changes) will be significantly more visible compared to the ribbed side. Deformation of the surface is not considered to be a defect of the material. If regular maintenance with Woca oil or a water based decking oil is applied, this will be reduced.

Swimming pool

If Bamboo X-treme decking is to be used around swimming pool areas, the following should be taken into account:

Bamboo X-treme is a natural (wood like) product and can therefore not be referred to as a “bare foot” product. As with any wooden product used outdoors, there is always a risk of formation of splinters, however splinters from Bamboo X-treme are normally smaller than (tropical) hard wood splinters. A regular application of oil (more frequently around swimming pools) is recommended to reduce the formation of splinters. Furthermore, regular maintenance with the silicium carbid broom/disk or brushing/sanding is suggested to effectively remove splinters and smoothen the surface.



Maintenance & Cleaning

To get the most from your Bamboo X-treme decking it is recommended that a regular cleaning and re-oiling maintenance procedure is carried out.

Please see our Bamboo X-treme installation and care instructions for more details

Performance Comparison

Swelling Rate of Water Absorption * immersed in water for 24 hours

No.	Species	Width Swelling Rate of Water Absorption *	Thickness Swelling Rate of Water Absorption *
1	Bamboo X-treme	0.30%	0.50%
2	Teak	0.40%	6.10%
3	Ipe	0.50%	0.70%
4	Red Cedar	0.60%	1.70%
5	Merbau	0.60%	0.60%
6	Red Meranti	0.60%	0.30%
7	Carbonised Pine	1.00%	0.50%
8	CCA Pine	1.30%	1.80%

Elastic Modulus

No.	Species	Elastic modulus (Gpa)
1	Ipe	20.62
2	Merbau	16.23
3	Bamboo X-treme	13.63
4	Teak	11.20
5	Carbonised Pine	11.18
6	CCPA Pine	9.66
7	Red Meranti	7.08
8	Red Cedar	3.76

Hardness/Wear-resistance

No.	Species	Hardness (Gpa)
1	Ipe	119.10
2	Bamboo X-treme	116.60
3	Merbau	61.90
4	Teak	55.80
5	Red Meranti	47.10
6	Carbonised Pine	44.30
7	Red Cedar	44.10
8	CCA Pine	43.10

Technical Characteristics & Certifications

- Density: +/- 1,150 kg/m³
- Dimensional stability: length: + 0.1 %; width + 0.9% (24 hours in water 20°C)
- Resistance to Indentation - Brinell Hardness: ≥ 9.5 kg/mm² (EN1534)
- Reaction to fire: Class Bfl-s1 (EN 13501-1)
- Slip resistance: USRV37(Dry), USRV29(Wet), (CEN/TS 15676) /R 10 (CEN/TS 16165 Annex B - DIN 51130)
- Modulus of Elasticity: 10373 N/mm² (EN 408)
- Breaking strength: 50.30 N/mm² (EN408)
- Biological durability:
 - Class 1 (EN 350 / CEN/TS 15083-2), simulated graveyard test Class 1 (EN 350 / CEN/TS 15083-1)
 - Effectiveness against Blue Stain: Class 0 (EN 152)
 - Use Class: Class 4 (EN 335)
- CO₂ neutral: LCA report TU Delft (ISO 14040/44) (www.moso.eu/lca)
- Environmental Product Declaration - EPD (EN 15804) (www.moso.eu/epd)
- FSC®: Products available with FSC® certification on request.
- Contribution LEEDBD+C- v4: MR 1, MR 2, MR 3 (FSC®) v2009: MR 6, MR 7 (FSC®)
- Contribution BREEAM: MAT1, MAT3 (FSC®), MAT5 (HD)
- Plantation offers a 10-year warranty on our Bamboo X-treme decking. Visit www.plantationbamboo.co.nz to download full warranty information



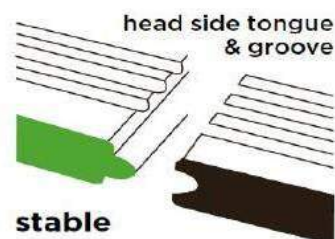
durable



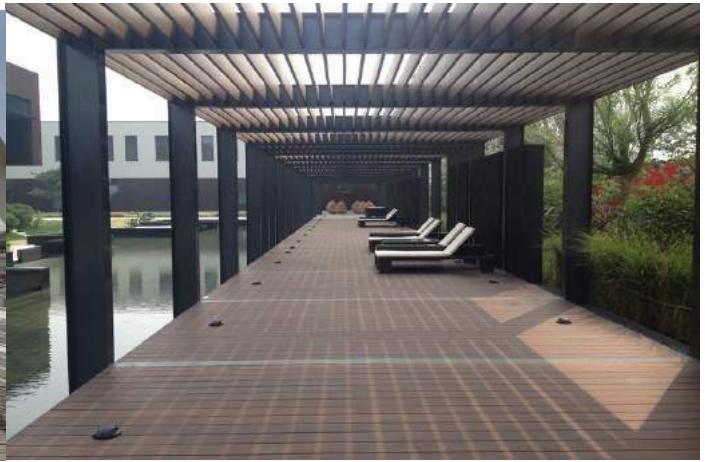
fire resistant



sustainable



International Projects



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