Plantation bamboo

Flooring | Decking | Joinery | Cladding

Bamboo X-treme Decking The next generation in sustainable decking

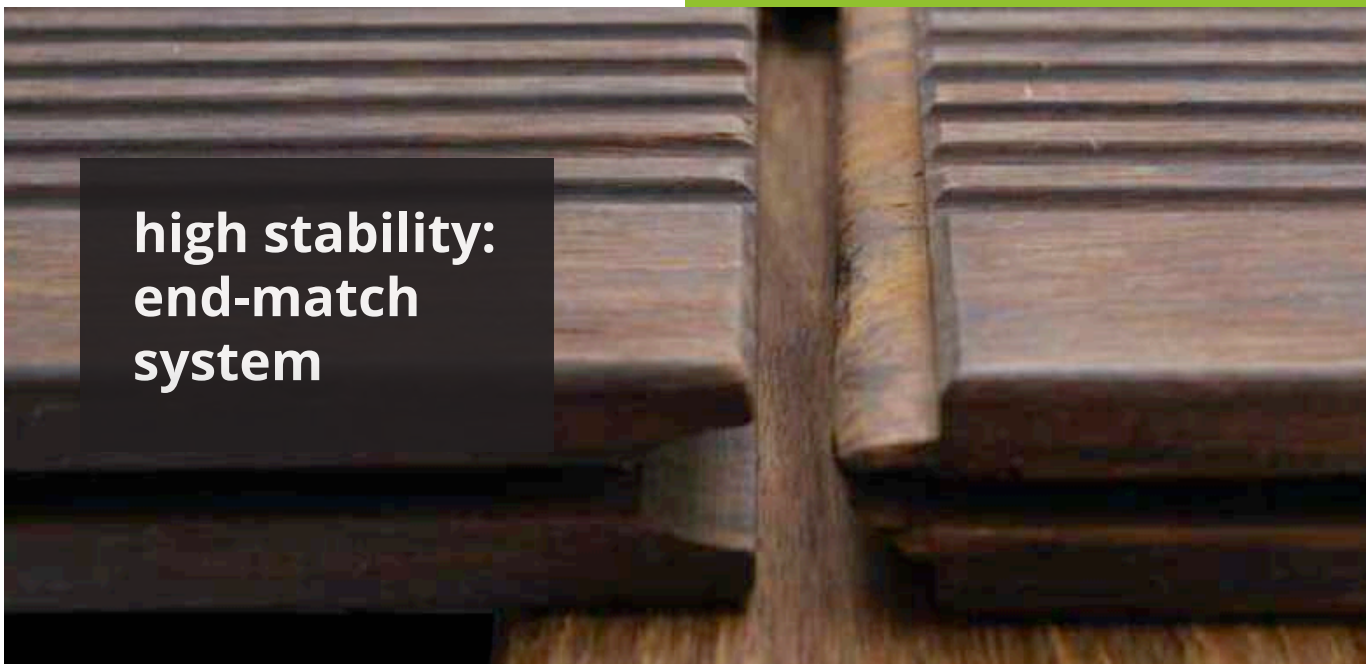
bamboo: the fastest growing plant in the world

MOSO® BAMBOO X-TREME®
certified 100% proven
durable - stable - sustainable

Class 1 EN350
Class 4
Class A
B_{fl}-s1
CO_2

- Certified
- Durable
- Fire resistant
- Sustainable
- Proven

Since 2008 over 3 million m2 installed, in more than 50 countries



high stability: end-match system

Bamboo X-treme® Decking

Plantation Bamboo X-treme® decking is a solid, high density natural 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 join (on ends of boards): 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 board sides offers the option to choose between either the ribbed or the flat surface, allowing for quick and "invisible" installation with the clips and screws provided. Much like timber or any tropical hardwood, when exposed to outdoor conditions, Bamboo X-treme® decking will turn a silver-grey colour 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, providing you with the touch, feel and look of a natural material.

Our world leading supplier, Moso®, uses a unique 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.

Photo Credit: Lior Tietler

From Bamboo to Bamboo X-treme®

For centuries bamboo poles and bamboo components have been used in outdoor applications. To guarantee a long lasting product for outdoor use, many protective measures have to be taken to guarantee a sufficient and acceptable lifetime. In dry environments poles will crack and the bamboo inner wood material, due to its high "sugar" content, 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 Moso® was able to improve the durability and stability of bamboo. This technique is referred to as "Thermo-Density® treatment". This invention was registered internationally in 2008, with laboratory and practical testing performed the following year. The research proved Thermo-Density® treatment to be the most effective method (and currently the only efficient solution) to ensure bamboo is suitable for outdoor applications.

Suitable for X-treme conditions

The Thermo-Density® heat treatment during manufacture 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.

Untreated bamboo has a durability class 5 according to EN350 (not durable). By modifying the bamboo with the Thermo-Density® treatment, the dimensional stability of bamboo is improved by approximately 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). After it is made, the heat treated bamboo is also very well protected against superficial fungi (EN152, Class 0), and achieves the use/risk Class 4 according to EN 335.

This bamboo outdoor product achieved the use/risk class 4 according to the EN335, and is the only bamboo material available 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.

Photo Credit: Lior Tietler

Does 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® decking.

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.

X-tremely Unique

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/ mm 2 (harder than any tropical hardwood available)

Beautiful

- A beautiful, natural hardwood look.
- Customer choice for flat or ribbed surface.
- With clip/screw 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.

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 join.
- Every plank has been hand checked after production, therefore no loss due to defective material.
- Cost effective transportation because of the fixed 1850 mm board length.
- Cost effective and space reducing because of unique multi usable board.

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 (achieved with clips provided).

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

C02 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 protective measures.

MOSO® BAMBOO X-TREME®
certified
100%
proven
durable - stable - sustainable

X-tremely beautiful

Enrich your garden, balcony or backyard with Bamboo X-treme®, the natural fast-growing alternative to hardwood decking.

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 (with preferred colour) or a comparable water-based oil/saturator with colour pigments. 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).

Photo Credit: Iberostar Hotels & Resorts

"Invisible fixing system"

Bamboo X-treme® decking comes with powder-coated stainless steel clip and screw fixings (on left), which means you don't see unsightly nails and screws – as the fastenings are hidden between the boards. There are also edge/starter clips available that are sold separately (on right).

X-tremely well made

Moso bamboo is one of the fastest growing plants on earth. The bamboo stems grow from an underground root system and after 5 years a stem can be harvested, while the others continue to grow. This means the bamboo can be used without destroying the forest. After harvesting, the Moso bamboo stems are split and the outer skin is removed. By modifying the bamboo strips with a special unique Thermo-Density® process, the dimensional stability of bamboo is improved by circa 50%. The heat treatment at 200 C also ensures protection against superficial fungi and provides the highest durability class possible. After compressing the heat treated bamboo strips, the material is stronger and harder than almost any other hardwood.

Harvesting after 5 years

Split the Moso bamboo stems, remove the outer skins and crush the strips

Modify the bamboo strips with a heat treatment at 200 C

Compressing the strips into high density material

Finally creating the final profile and surface

Bamboo X-treme®: material more stable, harder and stronger than most other hardwoods in the world!

Photo Credit: Roberto de Lara

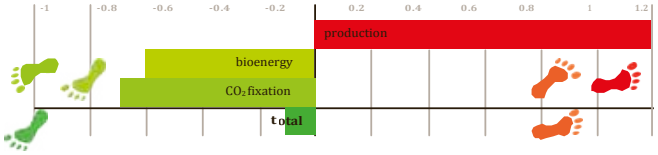
X-tremely sustainable

Bamboo X-treme® offers clear sustainability advantages and is even proven to be CO2 neutral over its full life cycle. The inclusion of Bamboo X-treme® contributes to a higher LEED and BREEAM certification score for green building projects. That's one of the reasons why you can find the decking and other bamboo products in many sustainable reference projects all over the world.

CARBON FOOTPRINT

MOSO® Bamboo X-treme®: CO2 neutral over full life cycle

MOSO® has commissioned Delft University of Technology to conduct an official LCA and carbon footprint study. The report (www.moso.eu/lca) concludes that all assessed MOSO® products (all solid bamboo flooring, decking, beams, panels and veneer) are CO2 negative over the full life cycle ("cradle till grave"). In this result the high growth rate of Moso bamboo (see graph below) has not even been taken into account, and can be perceived as additional environmental benefit. The environmental impact of MOSO® products, excluding carbon sequestration effect, was also published in an official Environmental Product Declaration (EPD) following EN 15804 (www.moso.eu/epd).

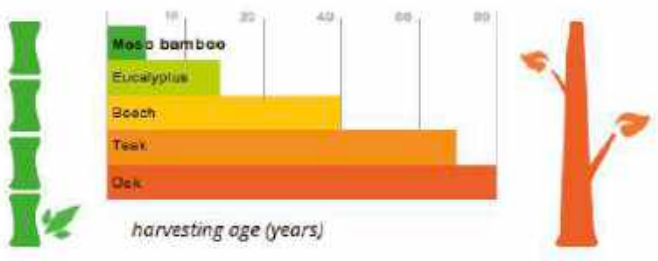


in CO2 eq/kg

UNSURPASSED GROWING SPEED

Bamboo: the fastest growing plant in the world

Because of the fast growth, Moso bamboo is managed as an agricultural crop: the annual harvest of the 5 year old stems – compared to 80 years for tropical hardwood! - provides a steady annual income to farmers and stimulates the bamboo plant to reproduce even faster. Thus, in contrast to tropical hardwood, there is no deforestation taking place for the production of MOSO® Bamboo X-treme®.



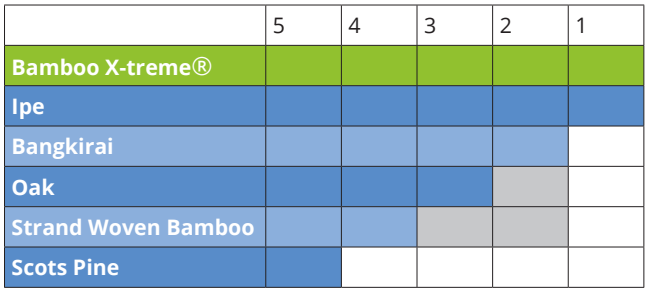
X-tremely tough & durable

Bamboo X-treme® decking is engineered to last for a lifetime. Thanks to the special, unique Thermo-Density® production process, it is very stable, hard and durable. The superior stability has another major advantage: it allows an end-matching tongue and groove connection, where the boards snuggly fit together for a more seamless look, without big gaps. This tongue and groove join cannot be achieved with most other decking products as they are not sufficiently stable (there is too much movement).

Photo Credit: Danielle Kaehr

durability class class 1

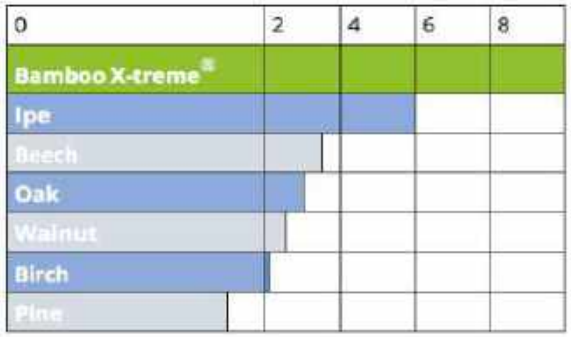
(EN 350 (CEN/TS 15083-2/CEN/TS 15083-1)



Range of durability results

brinell hardness 9.5 kg/mm2

(EN 1534)



Harder and more durable than almost any other hardwood

Classification Durability Class

Use Class	1. very durable	2. durable	3. moderately durable	4. slightly durable	5. not durable
1 interior	O	O	O	O	O
2 moist interior	O	O	O	(O)	(O)
3 exterior, above ground	O	O	(O)	(O)-(X)	(O)-(X)
4 ground contact / fresh water	O	(O)	(X)	X	X
5 salt water	✔	(X)	(X)	X	X

O
Natural durability sufficient.

(O)
Natural durability normally sufficient, but for certain end uses treatment may be advisable.

(O)-(X)
Natural durability may be sufficient, but depending on end use, preservative treatment may be necessary.

(X)
Preservative treatment is normally advisable.

X
Preservative treatment necessary.

✔
Natural durability of Bamboo X-tremeR not tested in salt water

durability
EN 350 (CEN/TS 15083-2 / CEN/TS 15083-1
class 1

use/risk class
EN-350-1
class 1

Other user information

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.

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 colour, warp, or crack to the extent that most other decking products tend to do.

Swimming pools

If Bamboo X-treme® decking is to be used around swimming pool areas, the following should be taken into account: 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 carbide broom/disk or brushing/sanding is suggested to effectively remove splinters and smoothen the surface.

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) may 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.

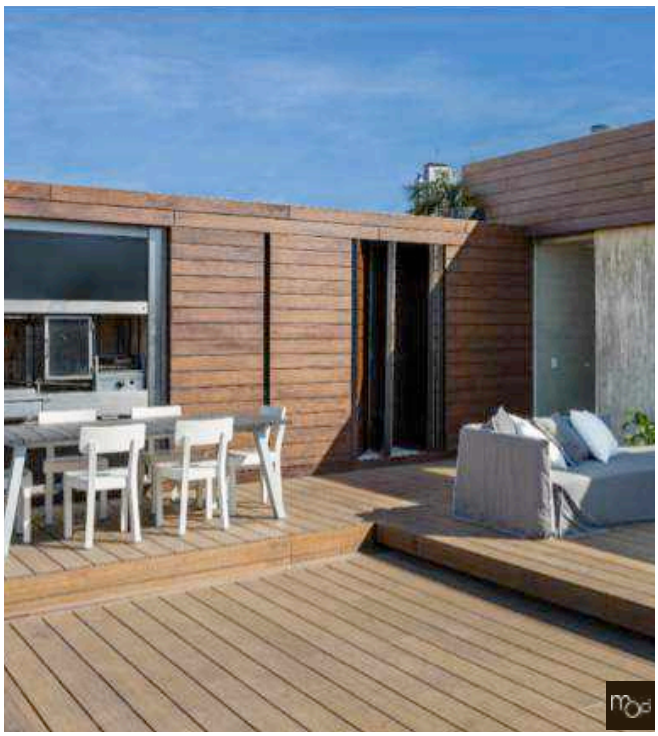


Photo Credit: Michael van Houten

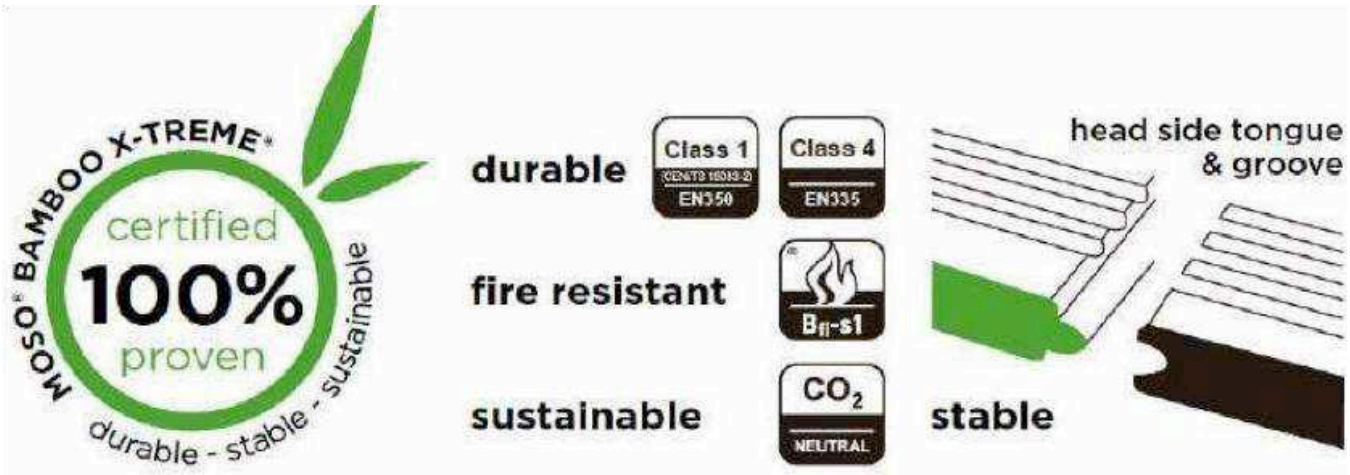
Reversible

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)
- Flame Spread Index Class A (ASTM E84)
- Slip resistance: USRV 55 (Dry), USRV 29 (Wet), (CEN/TS 15676) / R 10 (CEN/TS 16165 Annex B - DIN 51130)
- (Dry)
- Thermal emittance: 0.81 (ASTM C1371)*
- Solar Reflectance (SR) : 32 (ASTM C1549)*
- Solar Reflectance Index (SRI): Low 27, Medium 30, High 33 (ASTM E1980)*
- Modulus of Elasticity: 13565 N/mm2 (mean value -EN408)
- Breaking Strength: 54.4 N/mm2 (characteristic value -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 LEED BD+C- v4: MR 1,MR 2, MR 3
- (FSC®), EQ 2 v2009: MR 6, MR 7 (FSC®), IEQ 4.3, IEQ 4.4
- Contribution BREEAM: MAT1, MAT3(FSC®), MAT5 (HD)
- 25-year warranty on Bamboo X-treme

* Tested on 3 years weathered Bamboo X-treme® decking

Photo Credit: Reilly Imagery



X-tremely stunning international projects

Photo Credit: Ryan Paul Marchese
– The Versailles Apartment Complex, USA

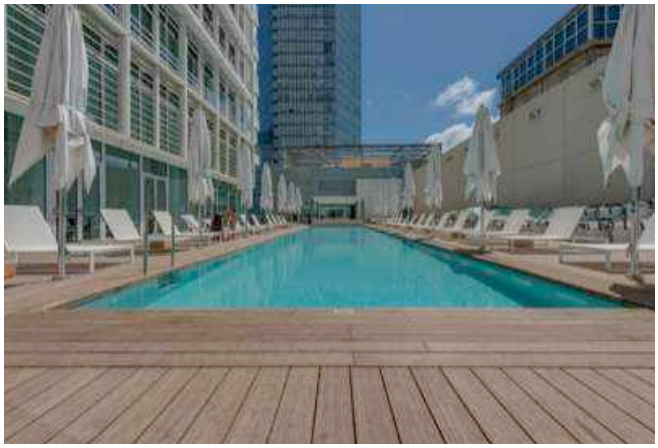


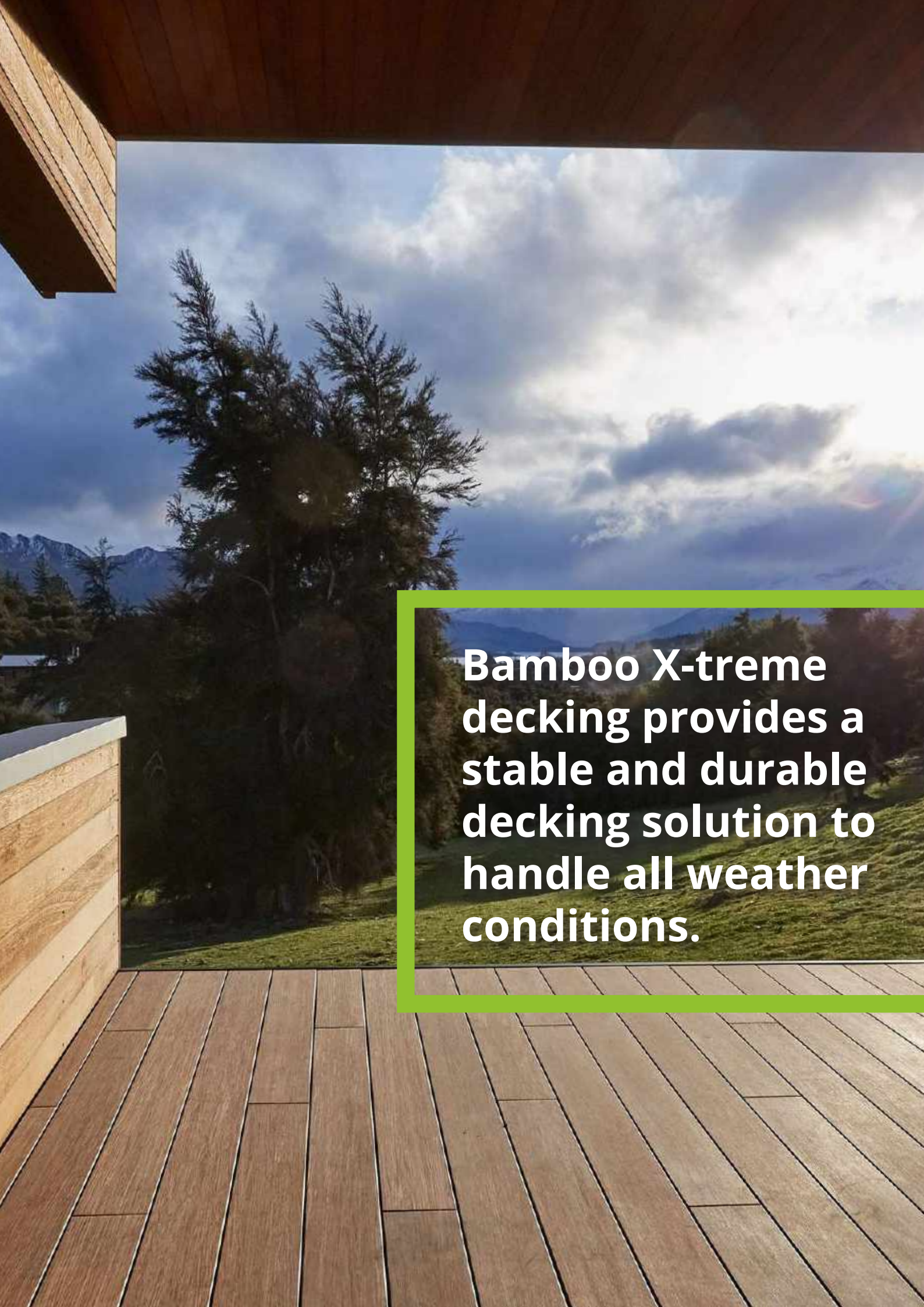
Photo Credit: Lior Teitler
- Apartments Meier On Rothschild, Israel

Photo Credit: Siplast
– Laurent St Jean

Photo Credit: Lior Teitler
- Statue Garden, Israel

Photo Credit: Lior Teitler
- Pedestrian bridge Israel

Photo Credit: Michael van Houten
- Vabali Spa Dusseldorf



Bamboo X-treme decking provides a stable and durable decking solution to handle all weather conditions.

GET IN TOUCH WITH THE TEAM

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Find us online to request a free sample or see more information & photos