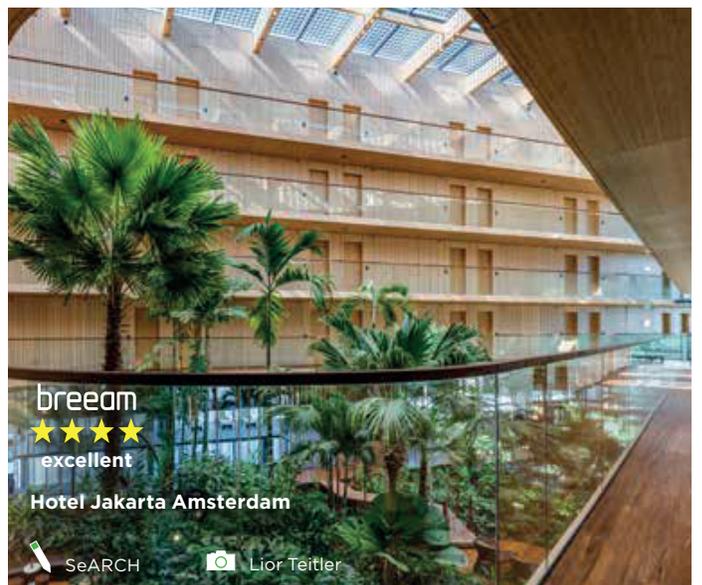




green greener greenest



breeam
★★★★★
excellent

Hotel Jakarta Amsterdam

SeARCH

Lior Teitler



Bamboo Products: a sustainable choice!

To determine the eco-impact of a product, every phase of the life cycle should be taken into account. Bamboo Products offer clear sustainability advantages in each phase and are even proven CO₂ neutral over the full life cycle (see also right page)!

growth phase

- ✓ Made from the extremely rapidly renewable giant bamboo species "Moso", renowned for its CO₂ absorbing and O₂ producing capacity.
- ✓ Abundantly available in China (approx. 7 mio ha) and always sourced from sustainably managed forests and plantations.
- ✓ The Moso bamboo plant consists of multiple stems. As a result, several stems may be harvested each year without killing the mother plant.

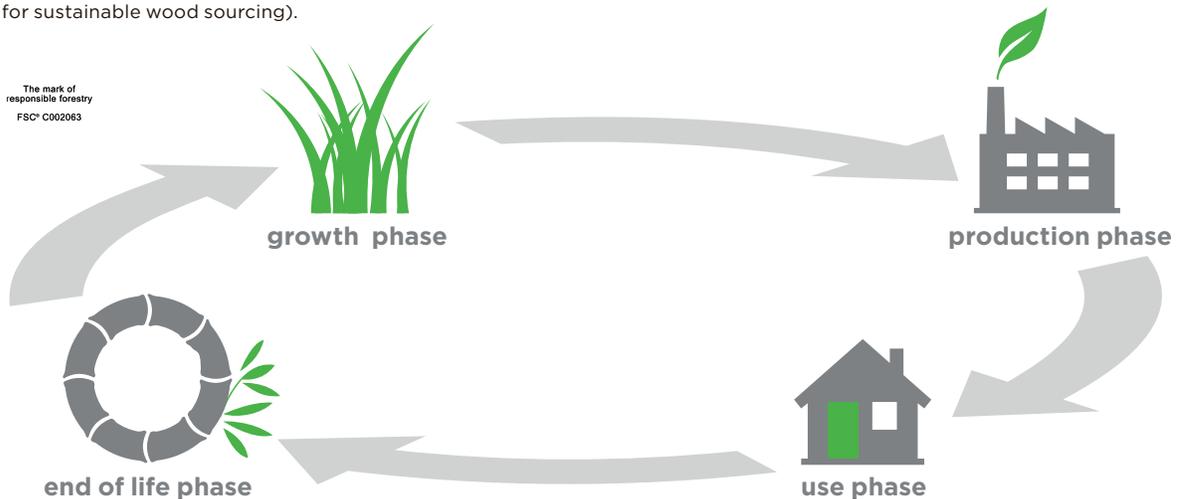


- ✓ **Optional:** Bamboo FSC®-certified (most important ecolabel for sustainable wood sourcing).



production phase

- ✓ The Bamboo Products are made in production facilities that are ISO 9001 and ISO 14001 (important quality standards) certified.
- ✓ **Optional:** use of eco-friendly adhesive with no added formaldehyde, complying with the strictest emissions norm: E0 (EU requisite = E1).



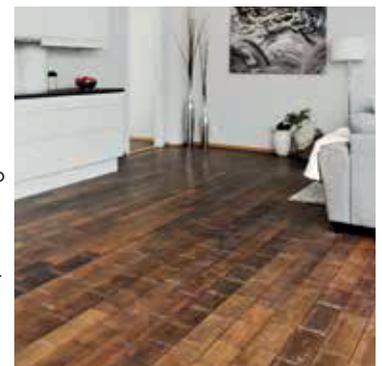
end of life phase

- ✓ As a non toxic, natural material, Bamboo Products offer no restrictions in the end-of-life phase.
- ✓ If maintained well, Bamboo Products may be reused in similar applications (upcycling). If this is not possible, products may be safely used as input material for the chipboard industry (downcycling).
- ✓ If up- or downcycling is not possible, it is recommended to use the bamboo material as sustainable substitute for fossil fuels in a biomass energy plant for the production of green energy.
- ✓ Bamboo Products also fit very well in a Circular Economy concept.



use phase

- ✓ **Durable = Sustainable:** because of the high hardness, density and stability, Bamboo Products last very long (less replacement) even in tough circumstances.
- ✓ **Proven Quality:** all Bamboo Flooring Products meet the requirements of EN 17009 and are guaranteed up to 30 years.
- ✓ **Healthy indoor climate:** very low emissions of volatile organic compounds (VOCs); floors have been rated A and A+ in France
- ✓ with respect to VOC emissions: the best classification possible!
- ✓ Extra credits for sustainable building eco-labels, such as BREEAM and LEED (see backpage for details).



breeam



UltraDensity®



Plain Pressed / Side Pressed



High Density®

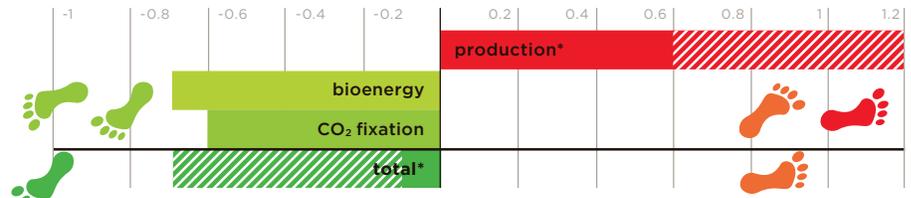


Bamboo X-treme®

Carbon footprint

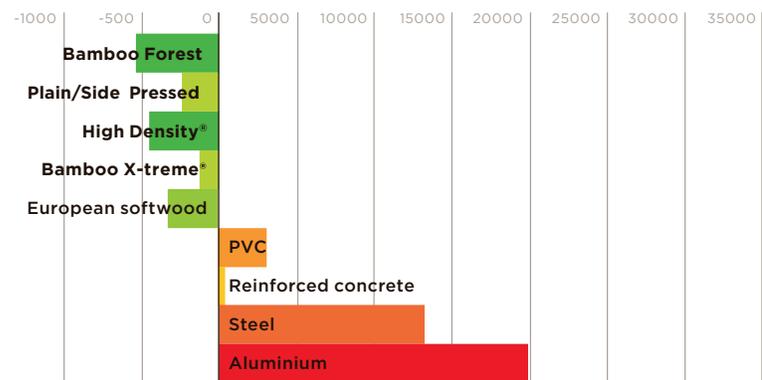
Bamboo Products: CO₂ neutral or better over full life cycle

MOSO has conducted an LCA and carbon footprint study together with Delft University of Technology (TU Delft) and INBAR. The report concludes that all assessed Bamboo 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 growing speed 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 Bamboo products, excluding carbon sequestration effect, was also published in an official Environmental Product Declaration (EPD) following EN 15804.



in CO₂ eq/kg

* result depending on MOSO® product assessed



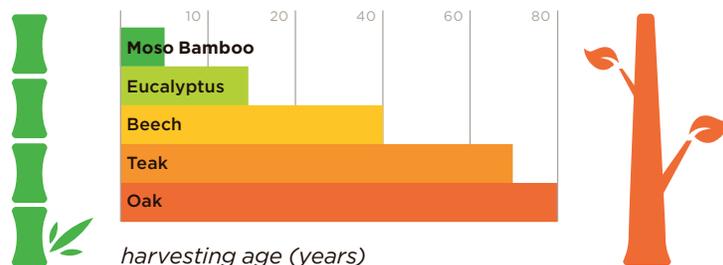
carbon footprint over life cycle (kg CO₂ eq/m³ material)

Data abiotic materials from Idemat 2020 database (TU Delft) (industry averages).

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 4-5 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. Therefore, by default no deforestation occurs with production of Bamboo Products, while large amounts of CO₂ are captured in the bamboo forests and products (www.inbar.int/understanding-bamboos-climate-change-potential).



Bamboo X-treme[®] installed in one click



Frédéric Godard

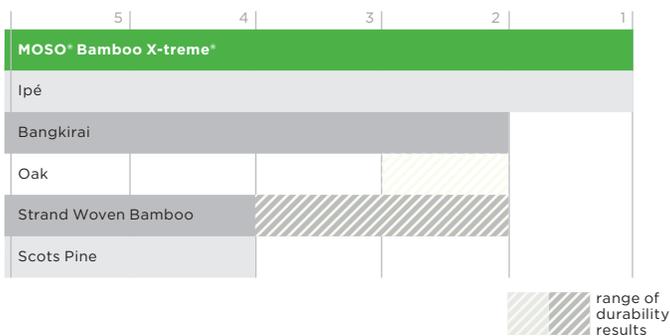


Bamboo X-treme®

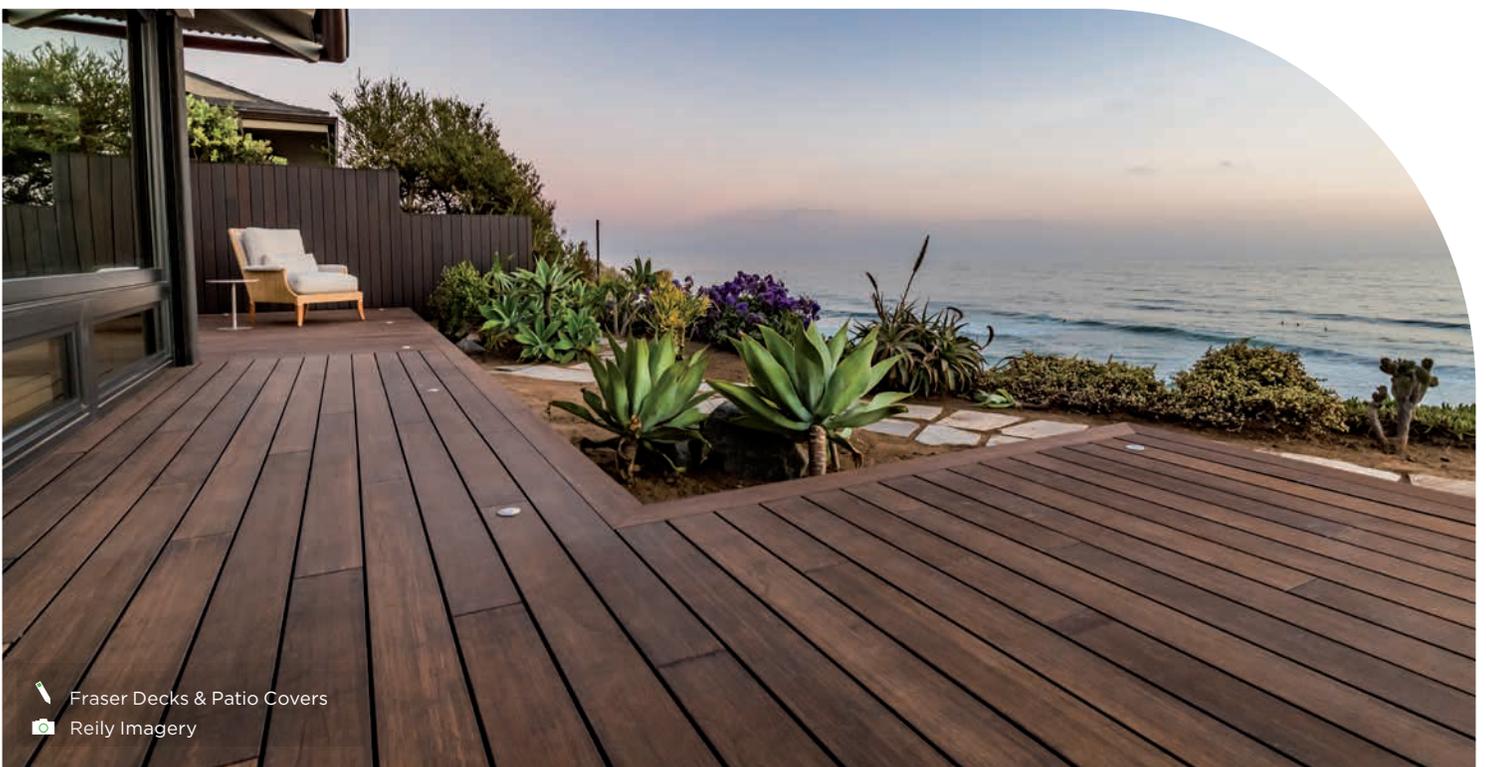
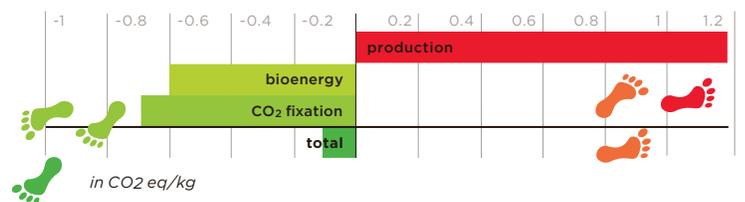


With Bamboo X-treme®, we have developed a truly **ecological** and **durable** decking product. We use a unique process to enhance **hardness**, **dimensional stability**, **fire resistance**, and **durability** to a level **superior** to that of the strongest tropical hardwood species.

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



CO₂ footprint according to LCA by TU Delft (ISO 14040/44)

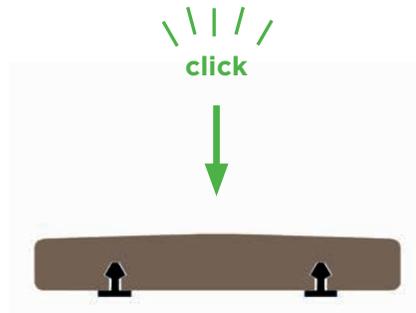
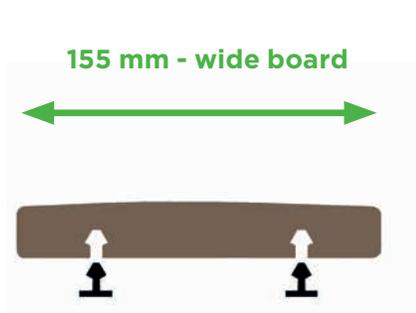


Decking installation system



How it works: **Bamboo X-treme® boards** are snapped onto the **Grad clips** that fit into the **grooves at the backside** of the boards. Grad aluminium rails (available in 4 different heights) with pre-fixed clips, and multiple accessories to finish the deck, allow for a **fast, easy and reliable installation**, and ensure the perfect alignment of the Bamboo X-treme® board to create a decking that lasts.

invisible fasteners on Grad rails with the Grad clips



Grad keys for an easy to remove decking



Bamboo X-treme®



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.



high stability

- The thermo treatment combined with High Density® compression renders the boards far more stable compared with traditional tropical hardwoods and limits its tendency to torsion.
- Aluminium is not subject to corrosion; its properties are not altered over time.
- 155 mm - wide boards with curved surface to allow for water drainage.
- Gaps of 4-5 mm are respected between all boards to ensure continuous ventilation.



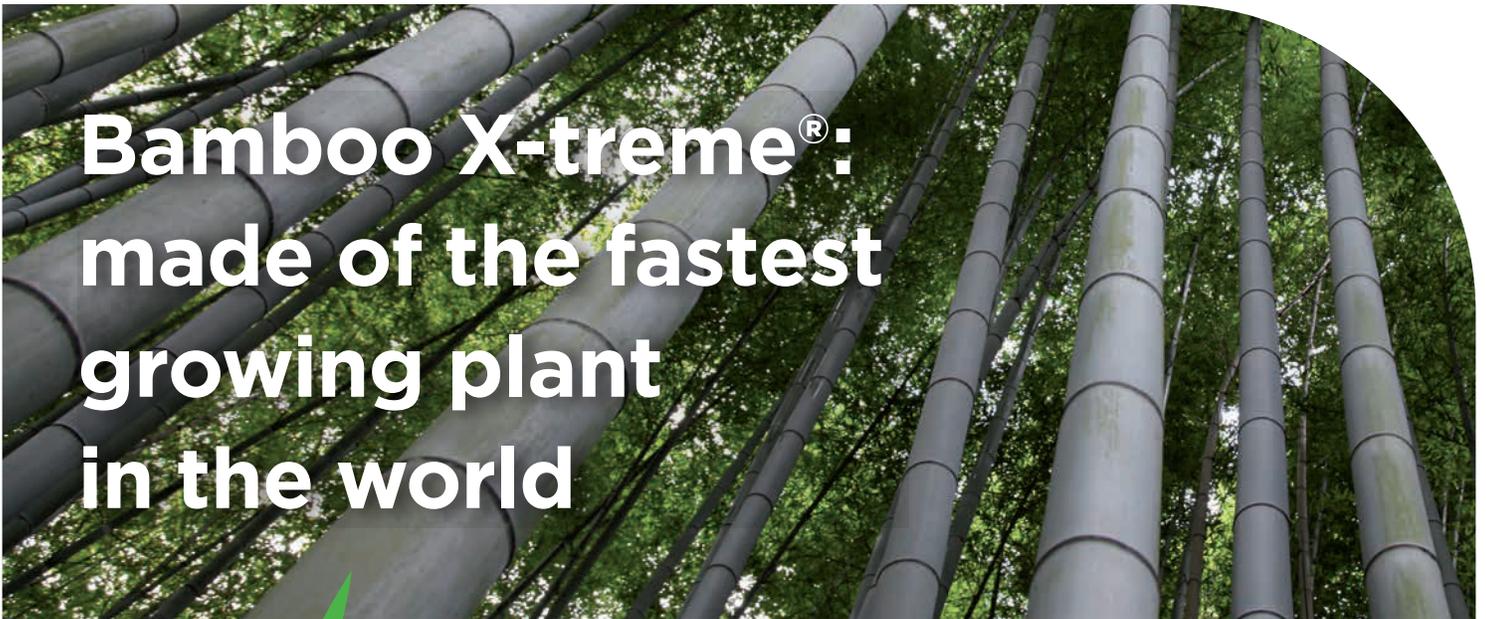
fire resistant

- Meets fire resistance Class Bfl-s1 as per EN 13501-1 without the addition of fire retardant. As a result, MOSO Bamboo X-treme® can be easily applied in public projects without additional protective measures.
- Meets Class A flame spread index as per ASTM E84.



hard & durable

- The bamboo decking with the durability Class 1 (EN 350) tested following CEN/TS 15083-2 class (simulated graveyard test).
- Use Class 4 in accordance with EN 335.
- Class 0 fungi resistance in accordance with EN 152.
- Exceptionally hard: Brinell >9.5 kg/mm² (harder than any tropical hardwood available).



Bamboo X-treme®:
made of the fastest
growing plant
in the world



certified

durable



fire resistant



sustainable



proven

Since 2008 over
3.5 million m²
Bamboo X-treme®
decking installed,
in more than
60 countries.

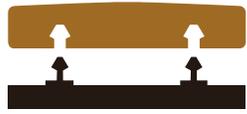


Discover the **benefits**



economical

- 20% faster compare to installation with standard clip.
- Lengths of boards and aluminium rails optimised to minimise transportation costs.
- Tried and tested system offering a 30-year warranty on the subdeck.



easy to install/remove

- Easy set-up thanks to the combination of aluminium rails, clips, and pedestals from the Grad system.
- The aluminium rails are delivered already equipped with the Grad clips spaced at the right distances for first time perfect board alignment and fixed gaps between boards all around.
- The Grad 3D designing software guides all your project creations.
- Boards can be removed and put back effortlessly into place, and the subdeck can be accessed at anytime.



Grad clip

- Fasteners made of 100% recycled polymer (POM).
- Extreme heat and cold resistant (-40°C to 70°C).
- Pull-out resistance of 240 kg per board (fixed by 2 fasteners).



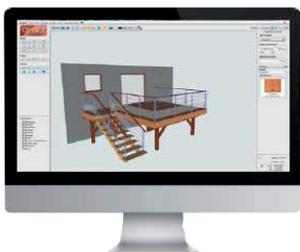
Grad rails

- Extreme stability and durability.
- Up to 90% of the aluminium used in the Grad rails comes from recyclable sources.

Grad installation system: reliable, fast and accurate



quote on request



Lépine gold medal -
Paris + world of the
inventors Geneva -
2008

proven

Since 2006, over
1.4 million m² of
Grad system has
been **installed**,
100% satisfaction
everytime.

30
years of
warranty on the
structure

WARRANTY
25
YEARS



Frédéric GODARD - Grad



Grad (120 mm)



Grad (120 mm)

Bamboo X-treme® Outdoor Decking

for Grad installation system

Bamboo X-treme® is a solid, Thermo-Density® decking board, made from compressed bamboo strips. A special, unique heat-treatment process at 200°C provides Bamboo X-treme® with the highest durability class possible in the appropriate EU norms and increases the hardness and stability. The boards are precisely profiled to be installed on the Grad system. Like any untreated tropical hardwood species, when exposed to outdoor conditions, Bamboo X-treme® will turn grey over time creating a very natural look.

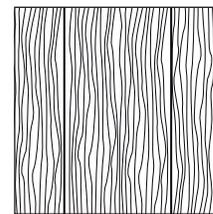
BO-DTHT190-C-BG



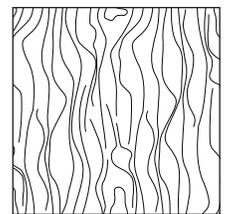
BO-DTHT191-C-BG



Smooth



High Density*



O: Oil Woca, ends of the boards are protected with Sikkens Kodrin WV 456 sealer, **B:** Bevel (also on ends).

Product Code	Surface	Finish	Grooved	End-matched	Edges	Dimensions (mm)
BO-DTHT190-C-BG	Smooth	-	Grad system	No	B	1850x155x21
BO-DTHT191-C-BG	Smooth	O	Grad system	No	B	1850x155x21

installation summary

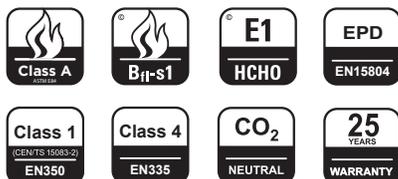
(full version available on www.moso-bamboo.com/x-treme)

- Install a suitable, fixed, stable and durable sub frame and follow Grad's installation instructions:
- Ensure good ventilation of the decking by keeping at least 20 mm gap from walls and objects and avoid closing the decking at the sides. The gap between the boards must be open to ensure unrestricted ventilation.
- When the surface / soil underneath the decking is not fast drying, there should be at least 100 mm distance between the decking and the surface underneath.
- Thanks to the curved surface installing with a slope is not required.
- For further info: please see the general Bamboo X-treme® installation/maintenance instructions:
- After installation: make sure proper cleaning and maintenance is done, according to the chosen finish.
- When not applying outdoor oil regularly, the deck will acquire a grey and the typical bamboo wood grain structure will become less visible.
- Bamboo X-treme® is available pre-oiled or unfinished. In order to maintain the natural brown colour an exterior penetrating oil for hardwoods is recommended to be applied 3 to 4 months after installation. We advise to apply the initial coat 3-4 months after installation.
- Store in a cool and dry place away from direct sunlight, and protected from weather influences, dirt and dust.

technical characteristics and certifications

- Density: +/- 1150 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 (EN 1534)
- 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) ¹⁾
- Solar Reflectance (SR): 0.32 (ASTM C1549) ¹⁾
- Solar Reflectance Index (SRI): Low 27, Medium 30, High 33 (ASTM E1980) ¹⁾
- Modulus of Elasticity: 13565 N/mm² (mean value - EN 408)
- Breaking strength: 54.4 N/mm² (characteristic value - EN 408)
- 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, SS 7 v2009: MR 6, MR 7 (FSC®), IEQ 4.3, IEQ 4.4
- Contribution BREEAM: MAT 1, MAT 3 (FSC®), MAT 5 (HD)
- Guarantee: 25 years

¹⁾ Tested on 3 years weathered Bamboo X-treme®.



The mark of responsible forestry
FSC® C002063



breeam

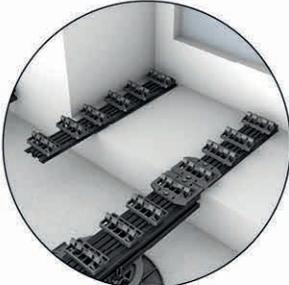
Bamboo X-treme[®] installation system

12 mm Flat Rail to complete
the deck installation

Plot adjustable from
35 to 380 mm

- GRAD1800-FR-155
- GRAD1489-TOP-LINK

- GRAD1181-TOP-LFT
- GRAD1641-TOP-LFT-EX
- GRAD1499-TOP



- GRAD1815-RD
- GRAD1503-BOW

- GRAD1504-ADJUST+

Unique tool
to ensure
fixed
spacings



Various skirtings
available for perfect
decking finishing



Up to 800 kg
per pedestal
(spread load)



- GRAD1505-ADJUST

- GRAD1181-TOP-LFT
- GRAD 1802-PR39-155
- GRAD1816-BANNER
- GRAD1498-TOPCUBE

Installation system

Grad rails including fasteners

With these rails and fasteners, MOSO Bamboo X-treme Decking can be easily installed. When installed correctly, there will be 4 mm gaps between length boards for ventilation.

Product Code	Description	Dimensions (mm)	Effective height	Consumption	Distance between pedestals*	Quantity per pallet (units)
GRAD1800-FR-155	Flat Rail 155 - 55/12 (for 12 boards)	1920 x 63 x 30	18 mm	1,2 rail/m ²	continuous support	216
GRAD1808-TR24-155	TR 24 155 - Top Rail (for 12 boards)	1920 x 63 x 70	35 to 90 mm	1,2 rail/m ²	32 cm	120
GRAD1802-PR39-155	PR39 155 - Perfect Rail (for 12 boards)	1920 x 63 x 57	45 mm	1,2 rail/m ²	65 cm	108
GRAD1803-PR56-155	PR56 155 - Perfect Rail (for 12 boards)	1920 x 63 x 74	62 mm	1,2 rail/m ²	100 cm	108
GRAD1815-RD	DIV 463 - Connector Rail	1910 x 63 x 44	32 mm	0,3 piece/m ²		72

) Distance between plots indicated for residential use. For non-residential use, please contact MOSO.

Flat Rail
GRAD1800-FR-155



Top Rail
GRAD1808-TR24-155



Perfect Rail
GRAD1802-PR39-155



Sub Rail
GRAD1803-PR56-155



Connector Rail
GRAD1815-RD



Grad accessories

Depending on the installation, special Grad accessories are required to install the Bamboo X-treme decking.

Product code	Description	Material	Quantity per box	Quantity per pallet
GRAD1181-TOP-LFT	TOP LIFT	PP - adjustable from 35 to 55 mm without extension.	1	960
GRAD1641-TOP-LFT-EX	UP+	PP - 45 mm height are added per pair of assembled extensions.	2	7680
GRAD1499-TOP	TOP+	PP - to stabilize the plot beyond 3 pairs of extensions.	80	1920
GRAD1489-TOP-LINK	TOP LINK L	POM - Rail connection piece.	20	4800
GRAD1483-CLIPGRAD	CLIP GRAD	POM + stainless steel - removable clip 6cm with lugs for alu rail, bag of 50.	50	16000
GRAD1487-CLIPGRADSE	CLIP GRAD SE	POM + stainless steel - fasteners without lugs for angled segments and screw M5/12, kit of 50.	50	16000
GRAD1503-BOW	BOW	Stainless steel - bracket kit 47/30 including bolts (for attachment of distributors and creation of trimmers), bag of 4.	4	8192
GRAD1505-ADJUST	ADJUST	Stainless steel - adjustable plate 120/30/1.5 mm to connect rails with variable angles including bolts, kit of 2.	2	7680
GRAD1504-ADJUST+	ADJUST+	POM + stainless steel - adjustable plate 120/30/1.5 mm to connect fascias with variable angles including unit clip, kit of 4.	4	5120
GRAD1784-KEY	KEYS M	High strength steel - pair of keys to remove 155 mm boards.	2	2160

Top Lift
GRAD1181-TOP-LFT



Up+
GRAD1641-TOP-LFT-EX



Top+
GRAD1499-TOP



Top Link L
GRAD1489-TOP-LINK



Clip Grad
GRAD1483-CLIPGRAD



Clip Grad SE
GRAD1487-CLIPGRADSE



Bow
GRAD1503-BOW



Adjust
GRAD1505-ADJUST



Adjust+
GRAD1504-ADJUST+



Keys M
GRAD1784-KEY



Grad deck finishing

The Grad system provides unique skirting features for an elegant finish of the decking all around.



Product code	Description	Material	Quantity per box	Quantity per pallet (pieces)
GRAD1498-TOPCUBE	TOP CUBE	POM + stainless steel - to be clipped on the TOP CUBE in order to finalize your decking by adding endprofile board.	4	1920
GRAD1816-BANNER	END1 155	Alu + POM + stainless steel - is fixed on the TOP CUBE, for 1 board with a height of 155 mm.	25	2400
GRAD1817-BANNER	END2 155	Alu + POM + stainless steel - is fixed on the TOP CUBE, for 2 boards with a height of 155 mm.	25	1400
GRAD1486-CALCLIP	CAL CLIP	POM + stainless steel - is used in the case of an edged board with only one groove left.	20	12000

Top Cube
GRAD1498-TOPCUBE

End1 155
GRAD1816-BANNER

End2 155
GRAD1817-BANNER

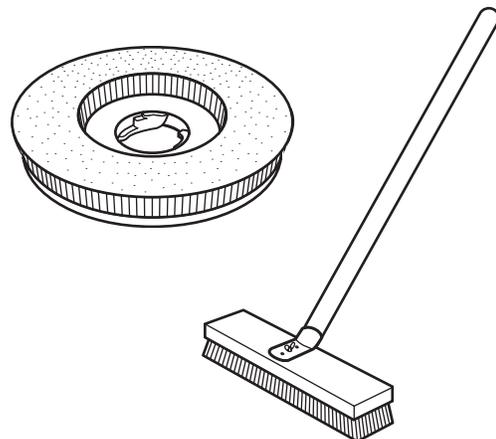
Cal Clip
GRAD1486-CALCLIP



Maintenance & cleaning accessories for Bamboo X-treme® decking

Under the influence of wind, rain, sun and snow the decking will weather. We recommend to impregnate and maintain the pre-oiled decking with Woca Maintenance materials. Unfinished decking must be treated with Sikks Saturator or Woca oil right after installation. The silicium carbid broom and machine disk are perfectly suited to clean and smooth the decking surface of Bamboo X-treme® and to remove splinters due to the capability to sand the surface in addition to cleaning it.

Product Code	Material
DISK-01	16" Silicium carbid disk
BROOM-01	Silicium carbid broom
CLEANER-WOCA-01	WOCA Exterior Cleaner
OIL-WOCA-003	WOCA Maintenance Oil Natural
OIL-WOCA-011	WOCA Exterior Oil Exclusive Teak
WAX-BX-01	Wax to seal board ends
WOCA-APPLICATOR	WOCA Applicator set for oil



MOSO[®] Bamboo N-finity indoor products



Antoine Duhamel



Mathias Kögel





**bamboo:
the fastest
growing plant
in the world**



**patented
finger-jointing
method**

Bamboo N-finity

Bamboo is very **sustainable, ecological** and the **fastest growing** raw material on earth. In addition, this bamboo construction “timber” has very good **mechanical properties**, making it ideal for **structural applications**. Due to its good technical characteristics it is possible to use thinner beams compared to the traditionally used wood species. Examples of applications are: **curtain walls, verandas, roof trusses** and **door- and window frames**. Bamboo N-finity construction beams can therefore replace aluminum, hardwood and glulam.

- ✓ Has very good insulating properties in contrast to e.g. aluminum;
- ✓ Has a much better ecological footprint compared to aluminum;
- ✓ Is less sensitive to moisture than wood;
- ✓ Is very hard and can be delivered with narrow tolerances, therefore little loss in production.



„Bamboo is for us a sustainable material, which even in direct comparison to wood has the better properties in terms of sustainability, CO₂ bond, strength and resistance. Bamboo in the laminated version is ideally suited for construction components in curtain walls or element facades. Bamboo facades create a warm, pleasant atmosphere, especially in office areas. In combination with bamboo panels and veneers or even parquet, there are numerous design possibilities in interior design to tie in with this atmosphere.”

Martin Atzinger - archibrand®
Munich, Germany

► www.archibrand.com

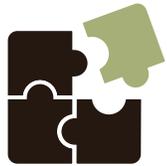
Advantages of Bamboo N-finity indoor construction timber



high stability

Due to the composition of individual strips and multiple cross pressed layers, Bamboo N-finity Beams will shrink and swell less than solid wood species, providing more stability.

Considerably higher stability than all other woods, making it possible to work very thin - with smaller dimensions than before.



multiple solutions

Bamboo N-finity Beams offer multiple solutions for glass facade systems, conservatories, roof trusses and door and window frames, and many more indoor applications.



hard & durable

Brinell hardness > 4 kg/mm². The mechanical properties exceed those of the commonly used hardwoods.



CO₂ neutral

Official LCA and carbon footprint studies by Technical University Delft according to ISO 14040/44 confirm that Bamboo N-finity Beams are CO₂ neutral over the full life cycle. The use of bamboo contributes to a higher score in LEED-, BREEAM and Green Star certified projects.



beautiful appearance

Creates a beautiful, natural look. Final appearance can be determined with many different finishes.



renewable raw material

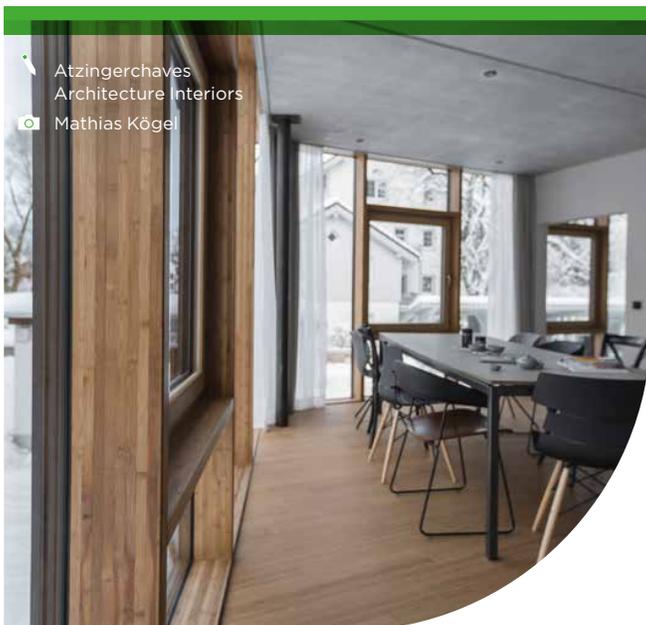
Made from Moso bamboo; with a growing speed of up to 1 metre per day the fastest growing plant on earth. Ready for harvest after 4-5 years (compared to up to 100 years for hardwood species) - no deforestation. Consisting of approx. 97% natural bamboo.





Viguier
Daniel Osso Photographe

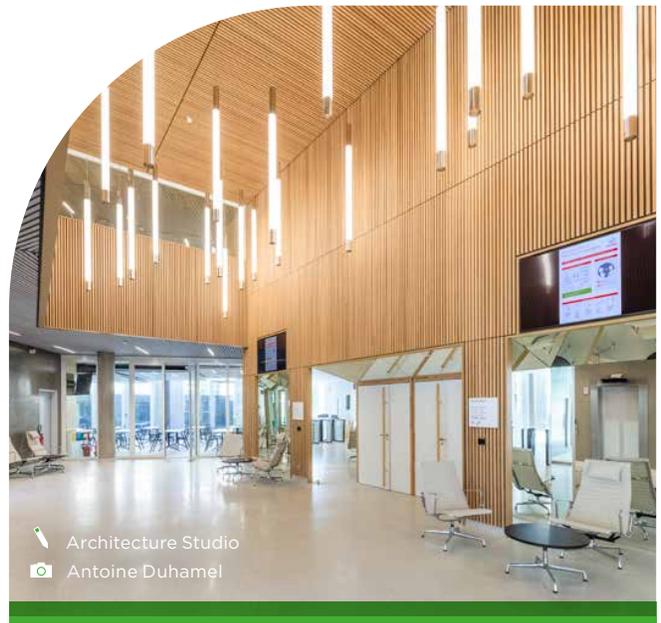
Head Office Bridge Pont d'Issy Orange (20 m³) Issy-les-Moulineaux, France



Atzingerchaves
Architecture Interiors
Mathias Kögel

Private House in Immenstadt i. Allgäu
Immenstadt i. Allgäu, Germany

Schindler Headquarter
(24,839 m²) Vélizy-Villacoublay, France



Architecture Studio
Antoine Duhamel