MOSO® Bamboo UltraDensity®
certified 100% high traffic
durable - hard - stable
**discover the Bamboo UltraDensity® benefits**

With Bamboo UltraDensity®, MOSO has developed a truly ecological and durable solution for heavy duty natural flooring for indoor or semi-outdoor applications (protected from direct rain or sunshine). For Bamboo UltraDensity®, the bamboo stems are split into strips, then crushed and finally compressed into boards. This results in boards with an Ultra-High Density®, which makes the bamboo extremely durable and suitable for almost any high traffic area. **Bamboo UltraDensity®** is the only alternative to stone, ceramic, PVC or other industrial floors!

This unique product is supplied in different thicknesses, from 18 to 38 mm, and formats including flooring boards and stair panels. The flooring can be installed glued down indoors or fixed on sub beams in covered outdoor areas. Certified by the French Wood institute FCBA and the French Building Institute, this product has also received the highest certifications in terms of stability, fire resistance, wear and mark resistance. The mechanical properties allow for intense use with heavy traffic as a solution for railway stations, airports, museums, and any other public area!

**suitable in tough conditions:** very high traffic (covered outdoor areas)

**durable**
- The only ‘woodlike’ material that is **U.P.E.C.** classified by the French wood institute CSTB.
- Use Class 3.1 according to EN 335 when installed screwed down on sub beams.
- Chemical resistance higher than any wood for similar applications, according to XP B 53-669 and EN 13442, when coated with Woca N1 oil.
- Wear layer up to 14 mm.

**hard**
- Exceptionally hard: Brinell ≥ 9.5 kg/mm² (harder than any wood available).
- Mechanical resistance reaches highest class possible according to EN 408 / EN 310.
- Mechanical properties are better than tropical wood.

**high stability**
- Water resistance approx. 15 times higher than any wood for similar applications, according to ISO 24339.
- Far more stable than any hardwood - enabling tongue and groove connection (4 sides).
- No gap necessary between flooring boards and any other public area.
- No expansion gap within a 15 m wide x 100 m long area.

**fireproof**
- Reaches fire safety class Bfl-s1 following EN 13501-1 without use of fire retardants.
- Fire resistance properties are better than any natural material including wood.
- Can be easily used in public projects without additional measures.

The full MOSO® Bamboo UltraDensity® flooring system, to be installed on MOSO® Bamboo X-treme® sub-beams, with peripheral joints and surface finishing with Woca N1 products (oil and soaps), is intended for installation in premises classified up to **U.P.E.C.** within the loading limits corresponding to this classification*. This technical field has been registered at CSTB under the number ATEX 2385.

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**Bamboo UltraDensity® flooring**

(MOSO® Bamboo UltraDensity® is a solid bamboo flooring board made from compressed bamboo strips with an Ultra-High Density®, thanks to its unique production method the material is extremely stable, hard and durable and therefore suitable for the toughest conditions: in very high traffic areas and even in semi-outdoor areas (protected from direct rain or sunshine). The boards are available unfinished, with rough sanded faces and have to be finished on site. The boards come with tongue and groove and a micro bevel on all 4 sides. This flooring type has to be installed screwed down on MOSO® Bamboo X-treme® sub beams or alternative sub beams.

**installation summary**

- **MOSO® Bamboo UltraDensity® flooring** (for semi-outdoor high traffic areas for installation with MOSO® Bamboo X-treme® sub beams)
- **MOSO® Bamboo UltraDensity®** is a solid bamboo flooring board made from compressed bamboo strips with an Ultra-High Density®, thanks to its unique production method the material is extremely stable, hard and durable and therefore suitable for the toughest conditions: in very high traffic areas and even in semi-outdoor areas (protected from direct rain or sunshine). The boards are available unfinished, with rough sanded faces and have to be finished on site. The boards come with tongue and groove and a micro bevel on all 4 sides. This flooring type has to be installed screwed down on MOSO® Bamboo X-treme® sub beams or alternative sub beams.

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**technical characteristics and certifications**

- **MOSO® Bamboo UltraDensity® flooring**
- **MOSO® Bamboo UltraDensity®** is a solid bamboo flooring board made from compressed bamboo strips with an Ultra-High Density®, thanks to its unique production method the material is extremely stable, hard and durable and therefore suitable for the toughest conditions: in very high traffic areas and even in semi-outdoor areas (protected from direct rain or sunshine). The boards are available unfinished, with rough sanded faces and have to be finished on site. The boards come with tongue and groove and a micro bevel on all 4 sides. This flooring type has to be installed screwed down on MOSO® Bamboo X-treme® sub beams or alternative sub beams.

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* (see Note on UPEIC classification and UPEIC classification of premises, c-ABT n°3509 of November 2004) Installation takes place on raw or assistting substrates made of concrete or cement mortart taking into account the humidity and Rainfall conditions defined in NF DTU 51.2. Wood-based substrates and screeds containing calcium sulphate are excluded. The use of this method is limited to Class 2 (according to Eurocode 5) and Class of use 3.1 (according to EN 335).

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**CO₂ neutral**

- Made from Moso bamboo;
- With a growing speed of up to 1 meter per day 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. 93% natural bamboo.

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**CO₂ neutral**

- Official LCA and carbon footprint studies by Technical University Delft, according to ISO 14044/144 confirm that MOSO® Bamboo UltraDensity® is CO₂ neutral over the full life cycle.
- No use of fungicide in the production.

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**covered outdoor areas**

- Can be used installed screwed down on sub beams in semi-outdoor areas (protected from direct rain or sunshine).
- Can withstand high temperature differences, and high moisture differences thanks to its high stability.
installation summary (full version available on www.moso.eu/ultradensity)

- Check room climate conditions (room temp. 18-21°C, air humidity 40-65%).
- Check subfloor: it should be flat/clean/stable and should not exceed the maximum allowed moisture content (for example 1.4% for sand cement).
- After cleaning and drying, apply an appropriate finish (Woca N is advised for heat-treated strips and even with High Density® it can have some open pores).
- The look may be different compared to High Density® flooring, please check before ordering if the products can be combined.
- Because of the High Density® of the UltraDensity® products the surface is very closed.
- For Bamboo X-treme® the material is produced from heat-treated strips and even with High Density® it can have some open pores.

technical characteristics and certifications

Bamboo UltraDensity® Stair Panel

- Density: +/- 150 kg/m³
- Dimensional stability: Results conform to French standard NF B 54008 (ISO 24339)
- Resistance to indentation - Brinell hardness: 9.5 kg/mm² (EN 1354)
- Reaction to fire: Class Bl-1 (EN 13501-1)
- VOC emission: A+ (ISO 16000-9)
- Moisture absorption: / ± 0.6% (24 hours in water 20°C)
- Dimensional stability: length: + 0.1 %; width + 0.9% (24 hours in water 20°C)

Bamboo X-treme® Stair Panel

- Density: +/- 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 (EN 1354)
- Reaction to fire: Class Bl-1 (EN 13501-1)
- VOC emission: A+ (ISO 16000-9)
- Moisture absorption: / ± 0.6% (24 hours in water 20°C)
- Dimensional stability: length: + 0.1 %; width + 0.9% (24 hours in water 20°C)

Environmental Product Declaration - EPD (EN 15804) (www.moso.eu/epd)

- FSC®: Products available with FSC® certification on request.
- Contribution LEXED B+D+C: v1: HR 1, HR 2, HR 3 (FSC®), EDQ v2009: HR 6, HR 7 (FSC®), EDQ 2
- Contribution BREEAM HEA 2.1, MAT 1 (FSC®), MAT 5
- Guarantee: 30 years

technical characteristics and certifications

Bamboo UltraDensity® & x-treme® stair panels

- Density: +/- 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 (EN 1354)
- Reaction to fire: Class Bl-1 (EN 13501-1)
- VOC emission: A+ (ISO 16000-9)
- Moisture absorption: / ± 0.6% (24 hours in water 20°C)
- Dimensional stability: length: + 0.1 %; width + 0.9% (24 hours in water 20°C)

Environmental Product Declaration - EPD (EN 15804) (www.moso.eu/epd)

- FSC®: Products available with FSC® certification on request.
- Contribution LEXED B+D+C: v1: HR 1, HR 2, HR 3 (FSC®), EDQ v2009: HR 6, HR 7 (FSC®), EDQ 2
- Contribution BREEAM HEA 2.1, MAT 1 (FSC®), MAT 5
- Guarantee: 30 years
MOSO® bamboo x-treme® sub beams

MOSO® Bamboo X-treme® sub beams are solid, High Density® beams, made from compressed bamboo strips. A special, patented Thermo-Density® heat treatment process at 200°C gives MOSO® Bamboo X-treme® the highest durability class possible in the appropriate EU norms and increases the hardness and stability. The sub beams are the most suitable under construction for Bamboo UltraDensity® flooring.

- The MOSO® Bamboo X-treme® sub beams can be produced with special profiles on request.
- The MOSO® Bamboo X-treme® sub beams are solid, High Density® beams, made from MOSO® bamboo

**Technical characteristics and certifications**

- **Density:** ≥ 1250 kg/m³
- **Dimensional stability:** length: ± 0.1%; width: ± 0.5% (24 hours in water at 20°C)
- **Resistance to indentation:** Brinell hardness: ≥ 8.7 kg/mm² (EN 15136)
- **Reaction to fire:** Class D (EN 13501-1)
- **Modulus of Elasticity:** ≥ 9232 N/mm² (EN 408)
- **Breaking strength:** ≥ 8.7 kg/mm² (EN 408)
- **Biological durability:** Class 1 (EN 350 / CEN/TS 15083-2), simulated graveyard test
- **Class 1 (EN 350 / CEN/TS 15083-3)**: Effectiveness against Blue Stain; Class 0 (EN 152)
- **FSC®:** Products available with FSC® certification on request.
- **Environmental Product Declaration - EPD (EN 15804)** (www.moso.eu/epd)
- **Guarantee:** 10 years

### Spread load

<table>
<thead>
<tr>
<th>Category of use</th>
<th>Spread load kg/m²</th>
<th>Concentrated load kg/m²</th>
<th>Space between sub beams (z)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - Residential</td>
<td></td>
<td></td>
<td>300 mm</td>
</tr>
<tr>
<td>A1 - Floors</td>
<td>150</td>
<td>200</td>
<td>●</td>
</tr>
<tr>
<td>A2 - Kitchens</td>
<td>250</td>
<td>200</td>
<td>●</td>
</tr>
<tr>
<td>A3 - Stairs</td>
<td>250</td>
<td>200</td>
<td>●</td>
</tr>
<tr>
<td>B - Office areas</td>
<td></td>
<td></td>
<td>250</td>
</tr>
<tr>
<td>C - Areas where people may congregate:</td>
<td></td>
<td></td>
<td>250</td>
</tr>
<tr>
<td>C1 - with tables (e.g. restaurants, cafes, ...)</td>
<td>250</td>
<td>300</td>
<td>●</td>
</tr>
<tr>
<td>C2 - with fixed seats (e.g. in churches, theatres or cinemas)</td>
<td>400</td>
<td>400</td>
<td>●</td>
</tr>
<tr>
<td>C3 - without obstacles for moving people (e.g. museums, exhibition rooms, ...)</td>
<td>400</td>
<td>400</td>
<td>●</td>
</tr>
<tr>
<td>C4 - with possible physical activities (e.g. dance halls, gymnastic rooms, ...)</td>
<td>500</td>
<td>700</td>
<td>●</td>
</tr>
<tr>
<td>C5 - susceptible to large crowds (e.g. train stations, airports, concert halls, ...)</td>
<td>500</td>
<td>450</td>
<td>●</td>
</tr>
<tr>
<td>D1 - General retail shops</td>
<td>500</td>
<td>500</td>
<td>●</td>
</tr>
<tr>
<td>D2 - Department stores</td>
<td>500</td>
<td>700</td>
<td>●</td>
</tr>
</tbody>
</table>

- The MOSO® Bamboo UltraDensity® system has been certified as part of a full system, including:
- **PE (Polyethylene)** film on the ground – moisture barrier.
- Sub-beams Bamboo X-treme® installed floating and levelled on the ground.
- The flooring Bamboo UltraDensity® screwed on sub beams using stainless steel decking screws at a 45° angle.
- Pre-drilling is needed and the screws will be inserted in the tongue of the board.
- Boards will be installed using the tongue and groove system on 4 sides.
- Finishing with Woca N°1 oil and maintained / cleaned with Woca soap.
- Special joints (Veda) to be used for expansion gaps (required from 100 x 15 m – 1500 m²).
- Special Bamboo UltraDensity® skirting boards are available to ensure the right ventilation between the floor and the sub-surface, more information on request.

MOSO® bamboo ultradensity® field of use

MOSO® Bamboo UltraDensity® flooring for installation on sub beams, with a thickness of 32 or 38 mm, can be installed in most areas, depending on the space between the sub beams.

- The mechanical properties of BF-DS1070 and BF-DS1060 are tested following EN 310 and EN 1533.
- Special joints (Veda) to be used for expansion gaps (required from 100 x 15 m – 1500 m²).
- Special Bamboo UltraDensity® skirting boards are available to ensure the right ventilation between the floor and the sub-surface, more information on request.

- The mark for responsible forestry: FSC®
- The mechanical properties of BF-DS1070 and BF-DS1060 are tested following EN 310 and EN 1533.
- This table is not applicable for other flooring products mentioned in this document.
find all the information about MOSO® Bamboo UltraDensity® on:
www.moso.eu/ultradensity

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