MOSO® Bamboo UltraDensity®

certified 100%
durable - hard - stable

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

This unique product is supplied in different thicknesses, from 18 to 32 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 CSTB, this product has achieved 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.

**technical characteristics and certifications**

- **Density (product):** ≤1850 kg/m³
- **Composition:** 93% bamboo strips (lignin/cellulose) and 7% glue
- **Breaking strength:** 95.5 N/mm² (EN 310)
- **Emission of VOC:** A+ (ISO 16000-9)
- **CO₂ neutral:**
- **Reaction to fire 1):** Class Bfl-s1 (EN 13501-1)
- **Slip resistance 1):** USRV 118 (EN 13036-4), R 10 (CEN/TS 16165 Annex B - DIN 51130)
- **Fire resistance properties:**
  - 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.
- **Consisting of approx. 93% natural bamboo.**

**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 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.

**ATex case a n°2385, issued ‘favourably’ by the CSTB (French Construction Institute) with refers to a use in premises classified U.P.E.C.E.; valid until 19/12/2018; under study for obtaining the ATEC.**

**Tested by the FCBA (French Wood Institute).**

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

For further information: please see the installation and maintenance instructions.
MOSO® bamboo ultradensity® flooring
(for high traffic areas for installation with glue)

MOSO® Bamboo UltraDensity® is a solid bamboo flooring board made from compressed bamboo strips with an Ultra-High Density®. With its unique production method the material is extremely stable, hard and durable and therefore suitable for high traffic areas. The boards are available unfinished, and have to be finished on site. The boards come with tongue and groove and a bevel on all 4 sides. This flooring type has to be fully glued down.

**technical characteristics and certifications**
- Density (product): ≤ 150 kg/m³
- Composition: 95% bamboo strips (lignin/cellulose) and 7% glue (outdoor resistance)
- Top layer thickness / Wear layer: approx. 7 mm
- Dimensional stability: Results confirm to French standard Nf S 44006 (ISO 24338)
- Resistance to indentation - Brinell hardness: ≥ 9.5 kg/mm² (EN 1314)
- Reaction to fire: Class A (EN 13501-1)
- Formaldehyde-emission: Class E1 (≤ 0.124 mg/m³, EN 717-1), Class E0 (≤ 0.025 mg/m³)
- Emission of VOC: < 0.034 mg/m³ (ISO 16000-9)
- Biological durability: Class 2 (EN ISO / EN/TS 15083-1)
- Use-class: Class 3 (EN 335 / EN 460)
- UNEC classification according to French standard: Class 1 (UL-C;)
- CO2 neutral LCA report TU Delft (ISO 14040/44) (www.moso.eu/la)
- Environmental Product Declaration - EPD (EN 15804) (www.moso.eu/la)
- FSC®: Products available with FSC® certification on request.
- Contribution LEED BD+C: v4 MR 1, MR 2, MR 3 (FSC®), ESD 2009-9, MR 7 (FSC®), LEED 4.1
- Contribution BREEAM AEA 2, MAT 1, HAT 3 (FSC®), MAT 5
- Guarantee: 30 years

** installation summary**
- 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 1.8% for sand cement).
- The floor should be fully glued.
- MOSO® Bamboo UltraDensity® itself can be installed glued down without expansion gaps/joint, but with minimum 10 mm distance from the wall. When the building, where the floor will be installed, requires expansion gaps (for example in concrete subfloors), these expansion gaps needs to be taken over and also be made in the gap/joint, but with minimum 10 mm distance from the wall. When the building, where the floor will be installed, requires expansion gaps (for example in concrete subfloors), these expansion gaps needs to be taken over and also be made in the gap/joint, but with minimum 10 mm distance from the wall. When the building, where the floor will be installed, requires expansion gaps (for example in concrete subfloors), these expansion gaps needs to be taken over and also be made in the gap/joint, but with minimum 10 mm distance from the wall. When the building, where the floor will be installed, requires expansion gaps (for example in concrete subfloors), these expansion gaps needs to be taken over and also be made in the gap/joint, but with minimum 10 mm distance from the wall. When the building, where the floor will be installed, requires expansion gaps (for example in concrete subfloors), these expansion gaps needs to be taken over and also be made in the gap/joint, but with minimum 10 mm distance from the wall.
- Check room climate conditions (room temp. 18-21°C, air humidity 40-65%) for high traffic areas for installation with glue.
- Use Class: Class 3.1 (EN 335 / EN 460)
- Biological durability: Class 2 (EN ISO / EN/TS 15083-1)
- Resistance to indentation - Brinell hardness: ≥ 9.5 kg/mm² (EN 1314)
- Reaction to fire: Class A (EN 13501-1)
- Formaldehyde-emission: < 0.034 mg/m³ (ISO 16000-9)
- VOC emission: A+ (ISO 16000-9)
- Modulus of Elasticity: ≥ 9.5 kg/mm² (EN 1314)
- Breaking strength: ≥ 9.5 kg/mm² (EN 1314)
- Formaldehyde (NAF) glues. E0 products automatically qualify for the official E1 Class according EN 717-1.
- ** Guarantee: 30 years**

MOSO® bamboo ultradensity® stair panels

The MOSO® Bamboo ultradensity® Stair Panel is a solid bamboo board, made from compressed bamboo strips. The compression process makes the panels very dense, hard and stable. The product has been certified and the mechanical properties allow for structural applications such as stairs. Bamboo UltraDensity® Stair Panel is suitable for semi-outdoor covered areas and indoor applications (Use Class 3 / EN 335).

**technical characteristics and certifications**
- Density: ≤ 150 kg/m³
- Dimensional stability: Results confirm to French standard Nf S 44006 (ISO 24338)
- Resistance to indentation - Brinell hardness: ≥ 9.5 kg/mm² (EN 1314)
- Reaction to fire: Class A (EN 13501-1)
- Formaldehyde-emission: < 0.034 mg/m³ (EN 717-1)
- VOC emission: A+ (ISO 16000-9)
- Modulus of Elasticity: ≥ 9.5 kg/mm² (EN 1314)
- Breaking strength: ≥ 9.5 kg/mm² (EN 1314)
- Formaldehyde (NAF) glues. E0 products automatically qualify for the official E1 Class according EN 717-1.
- ** 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.

Product Code | Material | Finish | Dimensions (mm) |
-------------|----------|--------|-----------------|
BO-SB150     | Thermo Density® bamboo | Unfinished | 2440x70x40 |
BO-SB155     | Thermo Density® bamboo | Unfinished | 2440x60x40 |

- The MOSO® Bamboo X-treme® sub beams can be produced with special profiles on request.

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 - Brussels hardness: >= 8.7 kg/mm² (EN 1534)
- Reaction to fire: Class Bfl-s1 (EN 13501-1)
- Modulus of Elasticity: 10373 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
- Effective against Blue Stain: Class 0 (EN 152)
- Use Class: Class 4 (EN 335 / EN 460)
- 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®)
- Contribution BREEAM: MAT 1, MAT 3 (FSC®), MAT S
- Guarantee: 25 years

MOSO® bamboo ultradensity® system

(specially developed for semi-outdoor covered areas)

MOSO® Bamboo UltraDensity® 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 Diamond Oil Active (Woca N°1) and maintained / cleaned with Woca soap.
- Special joints (Veda, Rehau) to be used for expansion gaps (required from 100 x 15 m - 1500 m²).
- Special Bamboo UltraDensity® skirting boards are available on request 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 mm, can be installed in most areas, depending on the space between the sub beams.

<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</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>300 mm</td>
<td>400 mm</td>
<td>500 mm</td>
</tr>
<tr>
<td>A - Residential</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1 - Floors</td>
<td>150</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>A2 - Balconies</td>
<td>250</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>A3 - Stairs</td>
<td>350</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>B - Office areas</td>
<td>250</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>C - Areas where people may congregate:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1 - with tables (e.g. restaurant, cafes...)</td>
<td>250</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>C2 - with fixed seats (e.g. areas in churches, theaters 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, gymnasium 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 stores</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 mechanical properties of BF-DS1060 are tested following EN 335 and EN 1533.
- For BF-DS2060 (thickness 20 mm) the table is available on request.

- The mark for responsible forestry (FSC® C002063) www.fsc.org Only the products defined as such, are FSC certified.

- The mechanical properties of BF-DS1060 are tested following EN 335 and EN 1533.
find all the information about MOSO® Bamboo UltraDensity® on: www.moso.eu/ultradensity

David Ducastel (Phileas Fotos)
SNCF - Gare du Nord - Paris
(1500 m²) Paris, France