



# SHI-PRODUKTPASS

Produkte finden - Gebäude zertifizieren

SHI-Produktpass-Nr.:

**15475-10-1000**

## MOSO® Outdoorprodukte

Warengruppe: Terrassendielen - Bambusbeläge



MOSO International B.V.  
Adam Smithweg 2  
1689 ZW Zwaag



### Produktqualitäten:



*Köttner*

Helmut Köttner  
Wissenschaftlicher Leiter  
Freiburg, den 27.08.2025



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Wir sind stolz darauf, dass die SHI-Datenbank, die erste und einzige Datenbank für Bauprodukte ist, die ihre umfassenden Prozesse sowie die Aktualität regelmäßig von dem unabhängigen Prüfunternehmen SGS-TÜV Saar überprüfen lässt.





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## SHI-Produktbewertung 2024

Seit 2008 etabliert die Sentinel Holding Institut GmbH (SHI) einen einzigartigen Standard für schadstoffgeprüfte Produkte. Experten führen unabhängige Produktprüfungen nach klaren und transparenten Kriterien durch. Zusätzlich überprüft das unabhängige Prüfunternehmen SGS regelmäßig die Prozesse und Aktualität.

| Kriterium            | Produktkategorie | Bewertung                |
|----------------------|------------------|--------------------------|
| SHI-Produktbewertung | Außenprodukt     | nicht bewertungsrelevant |



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## Qualitätssiegel Nachhaltiges Gebäude

Das Qualitätssiegel Nachhaltiges Gebäude, entwickelt durch das Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen (BMWSB), legt Anforderungen an die ökologische, soziokulturelle und ökonomische Qualität von Gebäuden fest. Das Sentinel Holding Institut prüft Bauprodukte gemäß den QNG-Anforderungen für eine Zertifizierung und vergibt das QNG-ready Siegel. Das Einhalten des QNG-Standards ist Voraussetzung für den KfW-Förderkredit. Für bestimmte Produktgruppen hat das QNG derzeit keine spezifischen Anforderungen definiert. Diese Produkte sind als nicht bewertungsrelevant eingestuft, können jedoch in QNG-Projekten genutzt werden.

| Kriterium                              | Bewertung                                 |
|----------------------------------------|-------------------------------------------|
| ANF2-WG1 Nachhaltige Materialgewinnung | Kann Gesamtbewertung positiv beeinflussen |
| Nachweis: FSC zertifiziert             |                                           |

| Kriterium                                          | Pos. / Bauproduktgruppe | Betrachtete Stoffe | QNG Freigabe                          |
|----------------------------------------------------|-------------------------|--------------------|---------------------------------------|
| 3.1.3<br>Schadstoffvermeidung in<br>Baumaterialien | nicht zutreffend        | nicht zutreffend   | QNG-ready nicht<br>bewertungsrelevant |





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## EU-Taxonomie

Die EU-Taxonomie klassifiziert wirtschaftliche Aktivitäten und Produkte nach ihren Umweltauswirkungen. Auf der Produktebene gibt es gemäß der EU-Verordnung klare Anforderungen zu Formaldehyd und flüchtigen organischen Verbindungen (VOC). Die Sentinel Holding Institut GmbH kennzeichnet qualifizierte Produkte, die diesen Standard erfüllen.

| Kriterium                                                  | Produkttyp | Betrachtete Stoffe   | Bewertung            |
|------------------------------------------------------------|------------|----------------------|----------------------|
| DNSH - Vermeidung und Verminderung der Umweltverschmutzung |            | Stoffe nach Anlage C | EU-Taxonomie konform |

**Nachweis:** Herstellererklärung vom 22.08.2025



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## DGNB Neubau 2023

Das DGNB-System (Deutsche Gesellschaft für Nachhaltiges Bauen) bewertet die Nachhaltigkeit von Gebäuden verschiedener Art. Das System ist sowohl anwendbar für private und gewerbliche Großprojekte als auch für kleinere Wohngebäude. Die Version 2023 setzt hohe Standards für ökologische, ökonomische, soziokulturelle und funktionale Aspekte während des gesamten Lebenszyklus eines Gebäudes.

| Kriterium                                                                                                                                                                               | Bewertung                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| ECO 1.1 Gebäudebezogene Kosten im Lebenszyklus (*)                                                                                                                                      | Kann Gesamtbewertung positiv beeinflussen |
| <b>Nachweis:</b> "Natürliche Dauerhaftigkeit: Klasse 1 (EN 350 / CEN/TS 15083-2), Simulation des Freilandtests / Klasse 1 (EN 350 / CEN/TS 15083-1) Gebrauchsklasse: Klasse 4 (EN 335)" |                                           |

| Kriterium                                                                                 | Bewertung                                 |
|-------------------------------------------------------------------------------------------|-------------------------------------------|
| ECO 2.6 Klimaresilienz (*)                                                                | Kann Gesamtbewertung positiv beeinflussen |
| <b>Nachweis:</b> Index Reflexionsvermögen: Niedrig 27, Mittel 30, Hoch 33 (ASTM E1980) 1) |                                           |

| Kriterium                                                                                                                                                                                                                                                | Bewertung                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| ENV 1.1 Klimaschutz und Energie (*)                                                                                                                                                                                                                      | Kann Gesamtbewertung positiv beeinflussen |
| <b>Nachweis:</b> Yes, less CO <sub>2</sub> than conventional materials such as PVC, WPC, aluminium "Increased durability yes: guarantee of 25 years. durability class1, Use Class 4 so will last long. Brinellhärte: ≥ 9,5 kg/mm <sup>2</sup> (EN 1534)" |                                           |

| Kriterium                                          | Qualitätsstufe                            |
|----------------------------------------------------|-------------------------------------------|
| ENV 1.3 Verantwortungsbewusste Ressourcengewinnung | Kann Gesamtbewertung positiv beeinflussen |
| <b>Nachweis:</b> FSC                               |                                           |

| Kriterium                                                    | Bewertung                                 |
|--------------------------------------------------------------|-------------------------------------------|
| SOC 1.4 Visueller Komfort (*)                                | Kann Gesamtbewertung positiv beeinflussen |
| <b>Nachweis:</b> Aids to the biophillic design of a building |                                           |



| Kriterium                                        | Bewertung                                 |
|--------------------------------------------------|-------------------------------------------|
| SOC 1.3 Schallschutz und akustischer Komfort (*) | Kann Gesamtbewertung positiv beeinflussen |
| <b>Nachweis:</b> Can have acoustic properties    |                                           |

| Kriterium                                                                     | Pos. / Relevante Bauteile /<br>Bau-Materialien / Flächen                                | Betrachtete Stoffe /<br>Aspekte           | Qualitätsstufe    |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------|-------------------|
| ENV 1.2 Risiken für die<br>lokale Umwelt,<br>03.05.2024 (3. Auflage)          | 1 Beschichtungen auf nicht<br>mineralischen Untergründen:<br>Metalle, Holz, Kunststoffe | VVOC, VOC, SVOC<br>Emissionen oder Gehalt | Qualitätsstufe: 4 |
| <b>Nachweis:</b> Beschichtung: VOC max. 50 g/l laut technischen Datenblättern |                                                                                         |                                           |                   |

| Kriterium                                                                     | Pos. / Relevante Bauteile /<br>Bau-Materialien / Flächen                                | Betrachtete Stoffe /<br>Aspekte           | Qualitätsstufe    |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------|-------------------|
| ENV 1.2 Risiken für die<br>lokale Umwelt, 29.05.2025<br>(4. Auflage)          | 1 Beschichtungen auf nicht<br>mineralischen Untergründen:<br>Metalle, Holz, Kunststoffe | VVOC, VOC, SVOC<br>Emissionen oder Gehalt | Qualitätsstufe: 4 |
| <b>Nachweis:</b> Beschichtung: VOC max. 50 g/l laut technischen Datenblättern |                                                                                         |                                           |                   |



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| Kriterium                                | Pos. / Relevante Bauteile /<br>Bau-Materialien / Flächen                                | Betrachtete Stoffe /<br>Aspekte | Qualitätsstufe    |
|------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------|-------------------|
| ENV 1.2 Risiken für die<br>lokale Umwelt | 1 Beschichtungen auf nicht<br>mineralischen Untergründen:<br>Metalle, Holz, Kunststoffe | VOC                             | Qualitätsstufe: 4 |

**Nachweis:** Beschichtung: VOC max. 50 g/l laut technischen Datenblättern



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## **BNB-BN Neubau V2015**

Das Bewertungssystem Nachhaltiges Bauen ist ein Instrument zur Bewertung von Büro- und Verwaltungsgebäuden, Unterrichtsgebäuden, Laborgebäuden sowie Außenanlagen in Deutschland. Das BNB wurde vom damaligen Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB) entwickelt und unterliegt heute dem Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen.

| Kriterium                           | Pos. / Bauprodukttyp | Betrachtete Schadstoffgruppe | Qualitätsniveau          |
|-------------------------------------|----------------------|------------------------------|--------------------------|
| 1.1.6 Risiken für die lokale Umwelt |                      |                              | nicht bewertungsrelevant |



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## BREEAM DE Neubau 2018

BREEAM (Building Research Establishment Environmental Assessment Methodology) ist ein britisches Gebäudebewertungssystem, welches die Nachhaltigkeit von Neubauten, Sanierungsprojekten und Umbauten einstuft. Das Bewertungssystem wurde vom Building Research Establishment (BRE) entwickelt und zielt darauf ab, ökologische, ökonomische und soziale Auswirkungen von Gebäuden zu bewerten und zu verbessern.

| Kriterium                         | Produktkategorie | Betrachtete Stoffe | Qualitätsstufe           |
|-----------------------------------|------------------|--------------------|--------------------------|
| Hea 02 Qualität der Innenraumluft |                  |                    | nicht bewertungsrelevant |



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# Produktsiegel

In der Baubranche spielt die Auswahl qualitativ hochwertiger Materialien eine zentrale Rolle für die Gesundheit in Gebäuden und deren Nachhaltigkeit. Produktlabels und Zertifikate bieten Orientierung, um diesen Anforderungen gerecht zu werden. Allerdings besitzt jedes Zertifikat und Label eigene Prüfkriterien, die genau betrachtet werden sollten, um sicherzustellen, dass sie den spezifischen Bedürfnissen eines Bauvorhabens entsprechen.



Das Zeichen des Forest Stewardship Council zeichnet Holz und holzhaltige (Misch-)Produkte aus, die aus nachhaltiger überwachter Forstwirtschaft stammen. Gesundheitliche Kriterien spielen keine Rolle.



Produkte mit dem QNG-ready Siegel des Sentinel Holding Instituts eignen sich für Projekte, für welche das Qualitätssiegel Nachhaltiges Gebäude (QNG) angestrebt wird. QNG-ready Produkte erfüllen die Anforderungen des QNG Anhangdokument 3.1.3 "Schadstoffvermeidung in Baumaterialien". Das KfW-Kreditprogramm Klimafreundlicher Neubau mit QNG kann eine höhere Fördersumme ermöglichen.



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## Rechtliche Hinweise

(\*) Die Kriterien dieses Steckbriefs beziehen sich auf das gesamte Bauobjekt. Die Bewertung erfolgt auf der Ebene des Gebäudes. Im Rahmen einer sachgemäßen Planung und fachgerechten Installation können einzelne Produkte einen positiven Beitrag zum Gesamtergebnis der Bewertung leisten. Das Sentinel Holding Institut stützt sich einzig auf die Angaben des Herstellers.

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**Alle Kriterien finden Sie unter:**

<https://www.sentinel-holding.eu/de/Themenwelten/Pr%C3%BCfverfahren/kriterien%20f%C3%BCr%20Produkte>

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### Herausgeber

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79111 Freiburg im Breisgau  
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[info@sentinel-holding.eu](mailto:info@sentinel-holding.eu)  
[www.sentinel-holding.eu](http://www.sentinel-holding.eu)



## SAFETY DATA SHEET

### MOSO BAMBOO X-TREME (UNFINISHED)

#### 1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

|               |                                                                                                                                                                           |                                                                         |  |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|--|
| Product name: | MOSO® Bamboo X-Treme (Unfinished)                                                                                                                                         |                                                                         |  |
| Supplier:     | Moso International BV<br>Adam Smithweg 2<br>NL-1689 ZW Zwaag<br>The Netherlands                                                                                           | T +31(0)229 265732<br>F +31(0)229 267759<br>info@moso.eu<br>www.moso.eu |  |
| Description:  | The Moso bamboo products are composed of bamboo strips and possible other materials, bonded with adhesives, finished with coating or oil, from third party manufacturers. |                                                                         |  |

#### 2) HAZARDS IDENTIFICATION

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Important hazards:                 | Sawing, sanding or machining bamboo products can produce dust which can cause an explosion hazard. Dust or splinters may cause upper respiratory tract, eye and skin irritation.                                                                                                                                                                                                                |
| Inhalation:                        | Dust may cause respiratory irritation, nasal dryness, coughing, sneezing, wheezing, headache and sinusitis. Repeated or prolonged exposure at elevated dust levels may result in allergic responses or respiratory sensitization in some individuals.                                                                                                                                           |
| Skin contact:                      | Certain species of bamboo/wood may cause allergic contact dermatitis in sensitized individuals. If an allergy preexists or develops, it may be necessary to remove the sensitized worker from further exposure to dust.                                                                                                                                                                         |
| Eye contact:                       | Dust or splinters may cause irritation or injury to the eyes.                                                                                                                                                                                                                                                                                                                                   |
| Ingestion:                         | Not applicable under normal use. If ingested, may cause gastrointestinal tract irritation.                                                                                                                                                                                                                                                                                                      |
| Chemical product specific hazards: | During manufacturing, there may be a slight release of formaldehyde from uncovered products; however, the tested concentration is at or below the emission class E1. The release of formaldehyde decreases over time according to well established decay dynamics. The concentration will reach its peak value in a confined area. Ventilation in areas where product is stored is recommended. |

Outline of an anticipated emergency:

HMIS rating: Health = 0, Fire = 1, Physical Hazard = 0, Personal Protection = 0

Hazard Scale: 0 = Minimal, 1 = Slight, 2 = Moderate, 3 = Serious, 4 = Severe, \* = Chronic hazard

### 3) COMPOSITION/INFORMATION ON INGREDIENTS

| Name                                      | CAS #     | Content (% Weight) |
|-------------------------------------------|-----------|--------------------|
| Bamboo ( <i>Phyllostachys pubescens</i> ) | n.a.      | 87 - 88 %          |
| Phenol Formaldehyde Resin (PF)            | 9003-35-4 | < 13 %             |

Wood and wood products are manufactured articles and are not considered hazardous under OSHA Hazard Communication Standard 29 CFR 1910.1200. Wood/Bamboo dust, a by-product generated from sawing, sanding or machining bamboo and bamboo products, may be hazardous.

### 4) FIRST-AID MEASURES

|               |                                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inhalation:   | If inhaled, immediately remove the affected person to fresh air. If persistent irritation, severe coughing or breathing difficulty occurs, get medical attention.                                                   |
| Skin contact: | For skin contact, wash immediately with soap and water. If irritation persists, get medical attention.                                                                                                              |
| Eye contact:  | Do not rub your eyes. Particles may cause the eye to be scratched. Remove contact lenses if worn. Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists, contact a physician. |
| Ingestion:    | Not applicable under normal use. If ingested, may cause gastrointestinal tract irritation.                                                                                                                          |

### 5) FIRE-FIGHTING MEASURES

Sawing, sanding or machining bamboo/wood or bamboo/wood products can produce dust which is a strong to severe explosion hazard if a dust "cloud" contacts an ignition source. An airborne concentration of 40 grams of dust per cubic meter of air is often used as the lower explosion limit (LEL) for bamboo/wood dust.

Extinguishing media: Water spray, carbon dioxide or dry chemical

Specific hazards: Burning of bamboo/wood can produce irritating fumes and gases including carbon monoxide, aldehydes and organic acids.

Specific extinguishing methods: Firefighters should wear protective clothing including self-contained breathing apparatus (SCBA) to avoid breathing any wood combustion products. Partially burned dust is especially hazardous if dispersed into the air. Wet down dust to reduce likelihood of ignition or dispersion. Remove burned or wet dust to open, secure area after fire is extinguished.

## 6) ACCIDENTAL RELEASE MEASURES

Not applicable for product in its purchased form. Sweep or vacuum dust generated from sawing, sanding or manufacturing for recovery or disposal. Wet down accumulated wood dust to reduce the likelihood of ignition or dispersion of dust into the air. Use with adequate ventilation. Do not inhale dusts during clean up. Use approved dust mask or filtering face piece where ventilation is not possible and exposure limits could be exceeded.

## 7) HANDLING AND STORAGE

- Handling:** Use this product with adequate ventilation. Avoid frequent or prolonged inhalation of wood dust. Goggles or safety glasses are recommended to protect eyes from flying particles. Avoid contact with skin and wash exposed areas thoroughly. Change protective clothing and gloves when signs of contamination appear. Bamboo and bamboo products are combustible and, therefore, should not be subjected to temperatures exceeding the auto ignition temperature. Wet down bamboo dust generated by sawing, sanding, or machining to reduce the likelihood of ignition or dispersion of dust into the air.
- Storage:** Store flat, supported and protected from direct contact with the ground, in a well-ventilated, cool, dry place, avoid high moisture and humidity, away from open flames or temperatures high enough to ignite or cause smoldering combustion.

## 8) EXPOSURE CONTROLS AND PERSONAL PROTECTION

- Engineering controls:** Due to the explosive potential of dust when suspended in air, precautions should be taken when sawing, sanding, or machining bamboo and bamboo products to prevent sparks or other ignition sources in ventilation equipment. Local exhaust ventilation is recommended when sawing, sanding, machining this product. General dilution ventilation is recommended in processing and storage areas.
- Personal protective equipment:**
- General:** Follow good hygienic and housekeeping practices. Clean up areas where dust settles to avoid excessive accumulation of the combustible material. Minimize generation of airborne dust concentrations.
- Respiratory protection:** An approved dust mask or filtering face piece is recommended in dusty environments and where ventilation is not sufficient to keep dust levels below permissible exposure limits.
- Eye protection:** Goggles or safety glasses are recommended when sawing, sanding or machining this product.
- Skin and body protection:** Protective clothing and gloves are recommended when sawing, sanding, machining or otherwise handling bamboo and bamboo products. Wash exposed area thoroughly after working with the bamboo, before eating, drinking, and use of tobacco products.

## 9) PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Flooring, available in various styles, colors and sizes.  
Physical state: Solid  
Density: approx. 1150 kg/m<sup>3</sup>  
Solubility (H<sub>2</sub>O): Insoluble

## 10) STABILITY AND REACTIVITY

Chemical stability: This product is stable under ordinary conditions of use. There may be a slight release of formaldehyde from uncovered products; however, the tested concentration is at or below the emission class E1. The release of formaldehyde decreases over time according to well established decay dynamics. The concentration will reach its peak value in a confined area.

Conditions to avoid: Avoid excess heat, open flames, and sparks. Avoid contact with incompatible materials.

Hazardous reactions: Will not occur

Incompatible materials: Will not occur

Hazardous decomposition products: Burning of any bamboo/wood can produce irritating fumes and gases including carbon monoxide, carbon dioxide, aldehydes and organic acids.

## 11) TOXICOLOGICAL INFORMATION

Acute and chronic toxicity: Bamboo dust generated from sawing, sanding, or machining may cause temporary nasal dryness, irritation of the eyes and upper respiratory system, coughing. Allergic skin and lung reactions have been reported with exposure to various wood dusts due to the chemicals present in the wood.

Carcinogenicity: Not available for product in purchased form.

Formaldehyde vapor and water solution may irritate the nose, throat, eyes and skin. Formaldehyde solution may cause irritation and skin allergies. The International Agency for Research on Cancer (IARC) has reported that formaldehyde vapor is harmful to human health and may increase the possibility of lung cancer. From animal experiments, it is clear that prolonged exposure to a high concentration of formaldehyde vapor may lead to lung cancer.

Over 150,000 people are involved in occupational disease research, but research can provide limited evidence that formaldehyde emission leads to the increase of lung cancer and rhinal throat cancer.

## 12) ECOLOGICAL INFORMATION

No data available for this product. This product is expected to be inherently biodegradable.

## 13) DISPOSAL CONSIDERATIONS

Dispose of material according to local, state, federal and provincial regulations.

## 14) TRANSPORT INFORMATION

This product is not regulated as a hazardous material by the United States (DOT) or Canadian (TDG) transportation regulations.

## 15) REGULATORY INFORMATION

This list does not represent an all-inclusive-selection of regulations.

**REACH:** Wood and wood products are considered manufactured articles and are exempt under REACH (EU Regulation (EC) No. 1907/2006). None of the components of the product are listed in Annex XIV - List of substances subject to authorization.

**OSHA:** Wood and wood products are considered manufactured articles and are exempt under OSHA's Hazard Communication Standard (29 CFR 1910.1200). Wood dust, a by-product generated from sawing, sanding or machining wood and wood products, is considered hazardous under OSHA's Hazard Communication Standard (29 CFR 1910.1200).

## 16) OTHER INFORMATION

**Disclaimer:** IMPORTANT: The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Moso International BV, makes no warranty of any kind, expressed or implied, concerning the accuracy or completeness of the information and data herein. The implied warranties of merchantability and fitness for a particular purpose are specifically excluded. Moso International BV, will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading.

## SAFETY DATA SHEET

### MOSO BAMBOO N-DURANCE

#### 1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: MOSO® Bamboo N-durance

Supplier: Moso International BV T +31(0)229 265732  
Adam Smithweg 2 F +31(0)229 267759  
NL-1689 ZW Zwaag info@moso.eu  
The Netherlands www.moso.eu

Description: The Moso bamboo products are composed of bamboo strips and possible other materials, bonded with adhesives, finished with coating or oil, from third party manufacturers.

#### 2) HAZARDS IDENTIFICATION

Important hazards: Sawing, sanding or machining bamboo products can produce dust which can cause an explosion hazard. Dust or splinters may cause upper respiratory tract, eye and skin irritation.

Inhalation: Dust may cause respiratory irritation, nasal dryness, coughing, sneezing, wheezing, headache and sinusitis. Repeated or prolonged exposure at elevated dust levels may result in allergic responses or respiratory sensitization in some individuals.

Skin contact: Certain species of bamboo/wood may cause allergic contact dermatitis in sensitized individuals. If an allergy preexists or develops, it may be necessary to remove the sensitized worker from further exposure to dust.

Eye contact: Dust or splinters may cause irritation or injury to the eyes.

Ingestion: Not applicable under normal use. If ingested, may cause gastrointestinal tract irritation.

Chemical product specific hazards: During manufacturing, there may be a slight release of formaldehyde from uncovered products; however, the tested concentration is at or below the emission class E1. The release of formaldehyde decreases over time according to well established decay dynamics. The concentration will reach its peak value in a confined area. Ventilation in areas where product is stored is recommended.

Outline of an anticipated emergency:

HMIS rating: Health = 0, Fire = 1, Physical Hazard = 0, Personal Protection = 0

Hazard Scale: 0 = Minimal, 1 = Slight, 2 = Moderate, 3 = Serious, 4 = Severe, \* = Chronic hazard

### 3) COMPOSITION/INFORMATION ON INGREDIENTS

| Name                                               |              | CAS #       | Content (% Weight) |
|----------------------------------------------------|--------------|-------------|--------------------|
| Bamboo ( <i>Phyllostachys pubescens</i> )          |              | n.a.        | 82 - 83 %          |
| Phenol Formaldehyde Resin (PF)                     |              | 9003-35-4   | < 17 %             |
| Superficial preservative                           | ADBAC        | 68424-85-1  | < 1 %              |
|                                                    | OIT          | 26530-20-1  |                    |
|                                                    | Tebuconazole | 107534-96-3 |                    |
| Woca Exterior Decking Oil / Sikkens Cetol WF771 *) |              | n.a.        | < 1 %              |

\*) Woca Exterior Decking Oil / Sikkens Cetol WF771 contains IPBC (CAS 55406-53-6).

Oil formulations are proprietary. MSDS information is available from the coating manufacturers upon request.

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### 4) FIRST-AID MEASURES

**Inhalation:** If inhaled, immediately remove the affected person to fresh air. If persistent irritation, severe coughing or breathing difficulty occurs, get medical attention.

**Skin contact:** For skin contact, wash immediately with soap and water. If irritation persists, get medical attention.

**Eye contact:** Do not rub your eyes. Particles may cause the eye to be scratched. Remove contact lenses if worn. Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists, contact a physician.

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## **6) ACCIDENTAL RELEASE MEASURES**

Not applicable for product in its purchased form. Sweep or vacuum dust generated from sawing, sanding or manufacturing for recovery or disposal. Wet down accumulated wood dust to reduce the likelihood of ignition or dispersion of dust into the air. Use with adequate ventilation. Do not inhale dusts during clean up. Use approved dust mask or filtering face piece where ventilation is not possible and exposure limits could be exceeded.

## **7) HANDLING AND STORAGE**

**Handling:** Use this product with adequate ventilation. Avoid frequent or prolonged inhalation of wood dust. Goggles or safety glasses are recommended to protect eyes from flying particles. Avoid contact with skin and wash exposed areas thoroughly. Change protective clothing and gloves when signs of contamination appear. Bamboo and bamboo products are combustible and, therefore, should not be subjected to temperatures exceeding the auto ignition temperature. Wet down bamboo dust generated by sawing, sanding, or machining to reduce the likelihood of ignition or dispersion of dust into the air.

**Storage:** Store flat, supported and protected from direct contact with the ground, in a well-ventilated, cool, dry place, avoid high moisture and humidity, away from open flames or temperatures high enough to ignite or cause smoldering combustion.

## **8) EXPOSURE CONTROLS AND PERSONAL PROTECTION**

**Engineering controls:** Due to the explosive potential of dust when suspended in air, precautions should be taken when sawing, sanding, or machining bamboo and bamboo products to prevent sparks or other ignition sources in ventilation equipment. Local exhaust ventilation is recommended when sawing, sanding, machining this product. General dilution ventilation is recommended in processing and storage areas.

**Personal protective equipment:**

**General:** Follow good hygienic and housekeeping practices. Clean up areas where dust settles to avoid excessive accumulation of the combustible material. Minimize generation of airborne dust concentrations.

**Respiratory protection:** An approved dust mask or filtering face piece is recommended in dusty environments and where ventilation is not sufficient to keep dust levels below permissible exposure limits.

**Eye protection:** Goggles or safety glasses are recommended when sawing, sanding or machining this product.



**Skin and body protection:**

Protective clothing and gloves are recommended when sawing, sanding, machining or otherwise handling bamboo and bamboo products. Wash exposed area thoroughly after working with the bamboo, before eating, drinking, and use of tobacco products.

## 9) PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Flooring, available in various styles, colors and sizes.  
Physical state: Solid  
Density: approx. 1200 kg/m<sup>3</sup>  
Solubility (H<sub>2</sub>O): Insoluble

## 10) STABILITY AND REACTIVITY

Chemical stability: This product is stable under ordinary conditions of use. There may be a slight release of formaldehyde from uncovered products; however, the tested concentration is at or below the emission class E1. The release of formaldehyde decreases over time according to well established decay dynamics. The concentration will reach its peak value in a confined area.

Conditions to avoid: Avoid excess heat, open flames, and sparks. Avoid contact with incompatible materials.

Hazardous reactions: Will not occur

Incompatible materials: Will not occur

Hazardous decomposition products: Burning of any bamboo/wood can produce irritating fumes and gases including carbon monoxide, carbon dioxide, aldehydes and organic acids.

## 11) TOXICOLOGICAL INFORMATION

Acute and chronic toxicity: Bamboo dust generated from sawing, sanding, or machining may cause temporary nasal dryness, irritation of the eyes and upper respiratory system, coughing. Allergic skin and lung reactions have been reported with exposure to various wood dusts due to the chemicals present in the wood.

Carcinogenicity: Not available for product in purchased form.

Formaldehyde vapor and water solution may irritate the nose, throat, eyes and skin. Formaldehyde solution may cause irritation and skin allergies. The International Agency for Research on Cancer (IARC) has reported that formaldehyde vapor is harmful to human health and may increase the possibility of lung cancer. From animal experiments, it is clear that prolonged exposure to a high concentration of formaldehyde vapor may lead to lung cancer.

Over 150,000 people are involved in occupational disease research, but research can provide limited evidence that formaldehyde emission leads to the increase of lung cancer and rhinal throat cancer.

## 12) ECOLOGICAL INFORMATION

No data available for this product. This product is expected to be inherently biodegradable.

### 13) DISPOSAL CONSIDERATIONS

Dispose of material according to local, state, federal and provincial regulations.

### 14) TRANSPORT INFORMATION

This product is not regulated as a hazardous material by the United States (DOT) or Canadian (TDG) transportation regulations.

### 15) REGULATORY INFORMATION

This list does not represent an all-inclusive-selection of regulations.

|        |                                                                                                                                                                                                                                                                                                                              |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REACH: | Wood and wood products are considered manufactured articles and are exempt under REACH (EU Regulation (EC) No. 1907/2006). None of the components of the product are listed in Annex XIV - List of substances subject to authorization.                                                                                      |
| BPR:   | Wood and wood products are considered manufactured articles and are exempt under Biocidal Products Regulation (EU regulation 528/2012). Biocidal components of the product are listed as approved under treated article category PT8.                                                                                        |
| CLP:   | Wood and wood products are considered manufactured articles and are exempt under CLP (EU regulation 1272/2008). The biocidal components and adhesives used in the product are listed under section 3.                                                                                                                        |
| OSHA:  | Wood and wood products are considered manufactured articles and are exempt under OSHA's Hazard Communication Standard (29 CFR 1910.1200). Wood dust, a by-product generated from sawing, sanding or machining wood and wood products, is considered hazardous under OSHA's Hazard Communication Standard (29 CFR 1910.1200). |

### 16) OTHER INFORMATION

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disclaimer: | <b>IMPORTANT:</b> The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Moso International BV, makes no warranty of any kind, expressed or implied, concerning the accuracy or completeness of the information and data herein. The implied warranties of merchantability and fitness for a particular purpose are specifically excluded. Moso International BV, will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading. |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SAFETY DATA SHEET

### MOSO BAMBOO X-TREME

#### 1) CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: MOSO® Bamboo X-Treme

Supplier: Moso International BV T +31(0)229 265732  
Adam Smithweg 2 F +31(0)229 267759  
NL-1689 ZW Zwaag info@moso.eu  
The Netherlands www.moso.eu

Description: The Moso bamboo products are composed of bamboo strips and possible other materials, bonded with adhesives, finished with coating or oil, from third party manufacturers.

#### 2) HAZARDS IDENTIFICATION

Important hazards: Sawing, sanding or machining bamboo products can produce dust which can cause an explosion hazard. Dust or splinters may cause upper respiratory tract, eye and skin irritation.

Inhalation: Dust may cause respiratory irritation, nasal dryness, coughing, sneezing, wheezing, headache and sinusitis. Repeated or prolonged exposure at elevated dust levels may result in allergic responses or respiratory sensitization in some individuals.

Skin contact: Certain species of bamboo/wood may cause allergic contact dermatitis in sensitized individuals. If an allergy preexists or develops, it may be necessary to remove the sensitized worker from further exposure to dust.

Eye contact: Dust or splinters may cause irritation or injury to the eyes.

Ingestion: Not applicable under normal use. If ingested, may cause gastrointestinal tract irritation.

Chemical product specific hazards: During manufacturing, there may be a slight release of formaldehyde from uncovered products; however, the tested concentration is at or below the emission class E1. The release of formaldehyde decreases over time according to well established decay dynamics. The concentration will reach its peak value in a confined area. Ventilation in areas where product is stored is recommended.

Outline of an anticipated emergency:

HMIS rating: Health = 0, Fire = 1, Physical Hazard = 0, Personal Protection = 0

Hazard Scale: 0 = Minimal, 1 = Slight, 2 = Moderate, 3 = Serious, 4 = Severe, \* = Chronic hazard

### 3) COMPOSITION/INFORMATION ON INGREDIENTS

| Name                                               | CAS #     | Content (% Weight) |
|----------------------------------------------------|-----------|--------------------|
| Bamboo ( <i>Phyllostachys pubescens</i> )          | n.a.      | 87 - 88 %          |
| Phenol Formaldehyde Resin (PF)                     | 9003-35-4 | < 12 %             |
| Woca Exterior Wood Oil /<br>Sikkens Cetol WF771 *) | n.a.      | < 1 %              |

\*) Woca Exterior Decking Oil / Sikkens Cetol WF771 contains IPBC (CAS 55406-53-6).

Oil formulations are proprietary. MSDS information is available from the coating manufacturers upon request.

Wood and wood products are manufactured articles and are not considered hazardous under OSHA Hazard Communication Standard 29 CFR 1910.1200. Wood/Bamboo dust, a by-product generated from sawing, sanding or machining bamboo and bamboo products, may be hazardous.

### 4) FIRST-AID MEASURES

|               |                                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inhalation:   | If inhaled, immediately remove the affected person to fresh air. If persistent irritation, severe coughing or breathing difficulty occurs, get medical attention.                                                   |
| Skin contact: | For skin contact, wash immediately with soap and water. If irritation persists, get medical attention.                                                                                                              |
| Eye contact:  | Do not rub your eyes. Particles may cause the eye to be scratched. Remove contact lenses if worn. Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists, contact a physician. |
| Ingestion:    | Not applicable under normal use. If ingested, may cause gastrointestinal tract irritation.                                                                                                                          |

### 5) FIRE-FIGHTING MEASURES

Sawing, sanding or machining bamboo/wood or bamboo/wood products can produce dust which is a strong to severe explosion hazard if a dust "cloud" contacts an ignition source. An airborne concentration of 40 grams of dust per cubic meter of air is often used as the lower explosion limit (LEL) for bamboo/wood dust.

Extinguishing media: Water spray, carbon dioxide or dry chemical

Specific hazards: Burning of bamboo/wood can produce irritating fumes and gases including carbon monoxide, aldehydes and organic acids.

Specific extinguishing methods: Firefighters should wear protective clothing including self-contained breathing apparatus (SCBA) to avoid breathing any wood combustion products. Partially burned dust is especially hazardous if dispersed into the air. Wet down dust to reduce likelihood of ignition or dispersion. Remove burned or wet dust to open, secure area after fire is extinguished.

## 6) ACCIDENTAL RELEASE MEASURES

Not applicable for product in its purchased form. Sweep or vacuum dust generated from sawing, sanding or manufacturing for recovery or disposal. Wet down accumulated wood dust to reduce the likelihood of ignition or dispersion of dust into the air. Use with adequate ventilation. Do not inhale dusts during clean up. Use approved dust mask or filtering face piece where ventilation is not possible and exposure limits could be exceeded.

## 7) HANDLING AND STORAGE

- Handling:** Use this product with adequate ventilation. Avoid frequent or prolonged inhalation of wood dust. Goggles or safety glasses are recommended to protect eyes from flying particles. Avoid contact with skin and wash exposed areas thoroughly. Change protective clothing and gloves when signs of contamination appear. Bamboo and bamboo products are combustible and, therefore, should not be subjected to temperatures exceeding the auto ignition temperature. Wet down bamboo dust generated by sawing, sanding, or machining to reduce the likelihood of ignition or dispersion of dust into the air.
- Storage:** Store flat, supported and protected from direct contact with the ground, in a well-ventilated, cool, dry place, avoid high moisture and humidity, away from open flames or temperatures high enough to ignite or cause smoldering combustion.

## 8) EXPOSURE CONTROLS AND PERSONAL PROTECTION

- Engineering controls:** Due to the explosive potential of dust when suspended in air, precautions should be taken when sawing, sanding, or machining bamboo and bamboo products to prevent sparks or other ignition sources in ventilation equipment. Local exhaust ventilation is recommended when sawing, sanding, machining this product. General dilution ventilation is recommended in processing and storage areas.
- Personal protective equipment:**
- General:** Follow good hygienic and housekeeping practices. Clean up areas where dust settles to avoid excessive accumulation of the combustible material. Minimize generation of airborne dust concentrations.
- Respiratory protection:** An approved dust mask or filtering face piece is recommended in dusty environments and where ventilation is not sufficient to keep dust levels below permissible exposure limits.
- Eye protection:** Goggles or safety glasses are recommended when sawing, sanding or machining this product.
- Skin and body protection:** Protective clothing and gloves are recommended when sawing, sanding, machining or otherwise handling bamboo and bamboo products. Wash exposed area thoroughly after working with the bamboo, before eating, drinking, and use of tobacco products.

## 9) PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Flooring, available in various styles, colors and sizes.  
Physical state: Solid  
Density: approx. 1150 kg/m<sup>3</sup>  
Solubility (H<sub>2</sub>O): Insoluble

## 10) STABILITY AND REACTIVITY

Chemical stability: This product is stable under ordinary conditions of use. There may be a slight release of formaldehyde from uncovered products; however, the tested concentration is at or below the emission class E1. The release of formaldehyde decreases over time according to well established decay dynamics. The concentration will reach its peak value in a confined area.

Conditions to avoid: Avoid excess heat, open flames, and sparks. Avoid contact with incompatible materials.

Hazardous reactions: Will not occur

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Carcinogenicity: Not available for product in purchased form.

Formaldehyde vapor and water solution may irritate the nose, throat, eyes and skin. Formaldehyde solution may cause irritation and skin allergies. The International Agency for Research on Cancer (IARC) has reported that formaldehyde vapor is harmful to human health and may increase the possibility of lung cancer. From animal experiments, it is clear that prolonged exposure to a high concentration of formaldehyde vapor may lead to lung cancer.

Over 150,000 people are involved in occupational disease research, but research can provide limited evidence that formaldehyde emission leads to the increase of lung cancer and rhinal throat cancer.

## 12) ECOLOGICAL INFORMATION

No data available for this product. This product is expected to be inherently biodegradable.

## 13) DISPOSAL CONSIDERATIONS

Dispose of material according to local, state, federal and provincial regulations.

#### 14) TRANSPORT INFORMATION

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#### 16) OTHER INFORMATION

- Disclaimer: **IMPORTANT:** The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Moso International BV, makes no warranty of any kind, expressed or implied, concerning the accuracy or completeness of the information and data herein. The implied warranties of merchantability and fitness for a particular purpose are specifically excluded. Moso International BV, will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading.



Result summary

# N-durance (EN15804) (Cladding)

MOSO

|                     |                         |
|---------------------|-------------------------|
| Calculation number: | EPD-NIBE-20210805-20972 |
| Generation on:      | 14-03-2022              |
| Issue date:         | 14-03-2022              |
| Valid until:        | 14-03-2027              |
| Status:             | verified                |

R<THiNK





## 1 N-durance (EN15804) (Cladding)

### 1.1 COMPANY INFORMATION / DECLARATION OWNER

**Manufacturer:** MOSO

**Production Location:** Manufacturing plant CN

**Address:** Adam Smithweg 2, 1689 ZWZwaag

**E-mail:** info@moso.eu

**Website:** www.moso-bamboo.com

### 1.2 EPD INFORMATION

**Calculation number:** EPD-NIBE-20210805-20972

**Date of issue:** 14-03-2022

**End of validity:** 14-03-2027

**Version NIBE's EPD Application:** v2.0

**Version database:** v3.07 (2021-11-08)

**PCR:** EN15804+A2:2019

### 1.3 VERIFICATION OF THE DECLARATION

CEN standard EN 15804:2012 serves as the core PCR.

Independent verification of the declaration. according to EN ISO 14025:2010.

☐ Internal ☒ External

I hereby confirm that, following detailed examination as independent 3rd party verifier, I have not been able to trace any relevant deviations by the report concerning bamboo products by MOSO, and by its project report from the requirements outlined in the corresponding product category regulations based on the EN 15804:2019 and as PCR, the Dutch Assessment (Determination) Method version 1.0 July 2020, including the amendments Hereby the report meets also the standards given in ISO 14040/44 and ISO 21930.

A.K. Jeeninga is recognized by NMD as verifier.



Third party verifier: Anne Kees Jeeninga, Advieslab

### 1.4 DECLARED UNIT

#### ***1 m2 cladding***

A square meter of cladding with the minimum technical thickness required end meets requirements of the Dutch Buildings Decree. Subframe joists and fasteners are not included.

# 1 N-durance (EN15804) (Cladding)

## 1.5 SCOPE OF DECLARATION

| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4  | B5  | B6  | B7  | C1 | C2 | C3 | C4 | D |
|----|----|----|----|----|----|----|----|-----|-----|-----|-----|----|----|----|----|---|
| X  | X  | X  | X  | X  | X  | X  | X  | MND | MND | MND | MND | X  | X  | X  | X  | X |

(X = included, MND = module not declared)

## 1 N-durance (EN15804) (Cladding)

### 1.6 PRODUCT DESCRIPTION

MOSO® Bamboo N-durance goes through a unique process of thermal treatment followed by High Density® compression to enhance the hardness, dimensional stability, fire resistance and durability to a level superior to the best tropical hardwood species.

Bamboo N-durance consists for approx. 85 % of rough strips made from the giant bamboo species “Phyllostachus Pubescens (Edulis)” from China (diameter up to 15 cm, length up to 15 meters) and approx. 15% of glue (phenol formaldehyde), and is also available with FSC certificate on request.

#### Dimensions

Cladding: 1850 x 137/155/178 x 20 mm

#### Biological durability:

Class 1 (EN 350)

#### Hardness (Brinell)

> 9,5 kg / mm<sup>2</sup> (EN 1534)

#### Reaction to fire

Class Bfl-s1 (EN 13501-1)

#### Biogenic CO<sub>2</sub>

|                                                        |               |        |
|--------------------------------------------------------|---------------|--------|
| Density of material kg/m <sup>3</sup> (u=12%)          | ρ             | 1.200  |
| glue content                                           | %             | 17,1%  |
| carbon content                                         | %             | 50,24% |
| Bamboo without glue kg/m <sup>3</sup>                  | Pw            | 995    |
| Density without 12% moisture content kg/m <sup>3</sup> | Pw x Vw*/1,12 | 888    |

|                                     |                    |          |
|-------------------------------------|--------------------|----------|
| kg carbon / m <sup>3</sup>          | cf x Pw x Vw*/1,12 | 446      |
| kg CO <sub>2</sub> / m <sup>3</sup> | 44/12              | 1.637,44 |
| kg CO <sub>2</sub> / m <sup>2</sup> | m2                 | 31,37    |

#### Substances of very high concern

The product does not contain any substances listed in the “Candidate List of Substances” of Very High Concern (SVHC) for authorisation” exceeding 0.1% of the weight of the product.

### 1.7 DESCRIPTION OF THE MANUFACTURING PROCESS

Bamboo strips are double crushed to open up the material for further processing and become bundles of bamboo fibres, called strands. These strip strands are heated up to 140°C in the presence of saturated steam (to protect the bamboo from charring or burning) and cooled down. As a result of the thermal process the colour of the bamboo changes from white/yellow to medium brown. The bamboo strands are then dipped into thermosetting resin. As the strips are double crushed for more surface area, MOSO® Bamboo N-durance has a slightly higher glue content compared to Bamboo X-treme® or High Density®. After drying, the strands are put into a mould and are then compressed under high temperature and pressure to cure the glue. This process increases the density from 650-700 kg/m<sup>3</sup> to approx. 1.200 kg/m<sup>3</sup> and improves the hardness of this product significantly. At the same time, the dimensional stability of bamboo is improved significantly and the durability increases to the highest class possible (class 1 following EN 350), whereas because of the densification the product can reach the European fire class B without the use of fire retardants.

The output is a large panel, which is cut into smaller sections (boards or beams). These are then further processed and profiled to acquire the required shape. Waste created during this process is used in the factory to create energy / heat for the internal processes. For Bamboo N-durance, an extra step is involved which is a superficial anti fungi treatment to increase the resistance to fungi. As a last step, depending on the customer's request, the boards are usually prefinished. This optional step is not included in this LCA.

The final product is a very stable and durable board suitable for outdoor use, typically used as cladding.

## 1 N-durance (EN15804) (Cladding)

## 1.8 RESULTS

| Environmental effects | Unit              | A1       | A2       | A3       | A4       | A5       | B1      | B2      | B3      | C1      | C2       | C3      | C4       | D        | Total    |
|-----------------------|-------------------|----------|----------|----------|----------|----------|---------|---------|---------|---------|----------|---------|----------|----------|----------|
| AP                    | mol H+ eqv.       | 6.72E-2  | 3.62E-3  | 7.38E-2  | 7.32E-2  | 1.15E-2  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.67E-3  | 6.46E-3 | 8.81E-5  | -4.07E-2 | 1.98E-1  |
| GWP-total             | kg CO2 eqv.       | -1.84E+1 | 6.25E-1  | 1.55E+1  | 3.51E+0  | 2.24E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.60E-1  | 3.91E+1 | 1.68E+0  | -1.33E+1 | 3.14E+1  |
| GWP-b                 | kg CO2 eqv.       | -3.15E+1 | 2.88E-4  | -6.27E-1 | -1.56E-3 | -1.94E-2 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.12E-4  | 2.98E+1 | 1.65E+0  | -1.71E-1 | -9.32E-1 |
| GWP-f                 | kg CO2 eqv.       | 1.31E+1  | 6.24E-1  | 1.62E+1  | 3.51E+0  | 2.26E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.60E-1  | 9.33E+0 | 3.13E-2  | -1.31E+1 | 3.24E+1  |
| GWP-luluc             | kg CO2 eqv.       | 9.59E-3  | 2.29E-4  | 3.96E-3  | 3.73E-3  | 9.20E-4  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.68E-4  | 5.93E-5 | 2.94E-6  | -1.51E-2 | 3.56E-3  |
| ETP-fw                | CTUe              | 5.35E+2  | 8.40E+0  | 4.14E+2  | 4.03E+1  | 5.17E+1  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 6.18E+0  | 6.56E+0 | 2.17E-1  | -7.72E+1 | 9.85E+2  |
| PM                    | disease incidence | 6.67E-7  | 5.62E-8  | 9.38E-7  | 2.02E-7  | 9.87E-8  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.14E-8  | 5.21E-8 | 1.83E-9  | -1.06E-7 | 1.95E-6  |
| EP-m                  | kg N eqv.         | 1.46E-2  | 1.28E-3  | 1.61E-2  | 1.88E-2  | 2.76E-3  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 9.39E-4  | 2.99E-3 | 5.94E-5  | -6.14E-3 | 5.13E-2  |
| EP-fw                 | kg P eqv.         | 5.14E-4  | 6.30E-6  | 3.46E-4  | 3.01E-5  | 4.67E-5  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.64E-6  | 4.26E-6 | 1.59E-7  | -6.83E-4 | 2.70E-4  |
| EP-T                  | mol N eqv.        | 1.52E-1  | 1.41E-2  | 1.75E-1  | 2.08E-1  | 3.00E-2  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.04E-2  | 3.42E-2 | 3.53E-4  | -7.38E-2 | 5.51E-1  |
| HTP-c                 | CTUh              | 8.71E-8  | 2.72E-10 | 3.15E-8  | 2.82E-9  | 6.97E-9  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.01E-10 | 1.71E-8 | 7.76E-12 | -2.05E-9 | 1.44E-7  |
| HTP-nc                | CTUh              | 2.12E-7  | 9.19E-9  | 1.86E-7  | 4.17E-8  | 2.59E-8  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 6.76E-9  | 5.28E-8 | 2.47E-10 | -6.17E-8 | 4.72E-7  |
| IR                    | kBq U235 eqv.     | 3.25E-1  | 3.95E-2  | 1.31E-1  | 2.00E-1  | 3.90E-2  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.90E-2  | 5.82E-3 | 1.20E-3  | -1.20E+0 | -4.32E-1 |
| SQP                   | Pt                | 5.88E+3  | 8.17E+0  | 1.67E+3  | 2.21E+1  | 3.79E+2  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 6.01E+0  | 8.51E-1 | 6.72E-1  | -3.31E+1 | 7.93E+3  |
| ODP                   | kg CFC 11 eqv.    | 1.25E-6  | 1.38E-7  | 4.36E-7  | 7.09E-7  | 1.39E-7  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.01E-7  | 2.89E-8 | 3.61E-9  | -1.49E-6 | 1.31E-6  |
| POCP                  | kg NMVOC eqv.     | 5.98E-2  | 4.02E-3  | 5.13E-2  | 5.60E-2  | 9.23E-3  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.96E-3  | 8.87E-3 | 1.28E-4  | -2.01E-2 | 1.72E-1  |
| ADP-f                 | MJ                | 2.69E+2  | 9.42E+0  | 1.62E+2  | 4.76E+1  | 2.54E+1  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 6.93E+0  | 2.43E+0 | 2.65E-1  | -2.41E+2 | 2.83E+2  |
| ADP-mm                | kg Sb-eqv.        | 2.36E-4  | 1.58E-5  | 9.77E-5  | 6.93E-5  | 2.18E-5  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.16E-5  | 1.68E-6 | 9.32E-8  | -1.59E-5 | 4.39E-4  |
| WDP                   | m3 world eqv.     | 1.07E+1  | 3.37E-2  | 4.89E+0  | 1.60E-1  | 8.00E-1  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.48E-2  | 1.99E-2 | 3.10E-3  | -1.46E+0 | 1.52E+1  |

**AP**=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **ETP-fw**=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation,

## 1 N-durance (EN15804) (Cladding)

human health (IR) | **SQP**=Land use (SQP) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

## 1 N-durance (EN15804) (Cladding)

| Parameter | Unit | A1      | A2      | A3       | A4      | A5      | B1      | B2      | B3      | C1      | C2      | C3      | C4      | D        | Total    |
|-----------|------|---------|---------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|
| PERE      | MJ   | 1.13E+1 | 1.18E-1 | 1.21E+1  | 5.90E-1 | 1.27E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 8.68E-2 | 9.53E-2 | 9.36E-3 | -2.30E+1 | 2.64E+0  |
| PERM      | MJ   | 2.67E+2 | 0.00E+0 | 7.48E+1  | 0.00E+0 | 1.71E+1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -3.82E-1 | 3.58E+2  |
| PERT      | MJ   | 2.78E+2 | 1.18E-1 | 8.69E+1  | 5.90E-1 | 1.83E+1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 8.68E-2 | 9.53E-2 | 9.36E-3 | -2.34E+1 | 3.61E+2  |
| PENRE     | MJ   | 2.11E+2 | 1.00E+1 | 1.49E+2  | 5.06E+1 | 2.21E+1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 7.36E+0 | 2.62E+0 | 2.82E-1 | -2.59E+2 | 1.95E+2  |
| PENRM     | MJ   | 7.81E+1 | 0.00E+0 | 2.29E+1  | 0.00E+0 | 5.05E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -3.97E-2 | 1.06E+2  |
| PENRT     | MJ   | 2.89E+2 | 1.00E+1 | 1.72E+2  | 5.06E+1 | 2.72E+1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 7.36E+0 | 2.62E+0 | 2.82E-1 | -2.59E+2 | 3.01E+2  |
| SM        | Kg   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| RSF       | MJ   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| NRSF      | MJ   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| FW        | M3   | 2.73E-1 | 1.15E-3 | 1.21E-1  | 5.24E-3 | 2.09E-2 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 8.44E-4 | 9.50E-3 | 3.19E-4 | -1.12E-1 | 3.20E-1  |
| HWD       | Kg   | 1.65E-4 | 2.39E-5 | 7.37E-5  | 8.52E-5 | 1.97E-5 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.76E-5 | 1.73E-5 | 3.39E-7 | -1.81E-4 | 2.22E-4  |
| NHWD      | Kg   | 1.27E+0 | 5.97E-1 | 1.57E+0  | 1.44E+0 | 3.44E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.40E-1 | 2.72E-1 | 1.15E+0 | -4.62E-1 | 6.63E+0  |
| RWD       | Kg   | 2.88E-4 | 6.18E-5 | 1.30E-4  | 3.16E-4 | 4.47E-5 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.55E-5 | 7.16E-6 | 1.71E-6 | -1.01E-3 | -1.17E-4 |
| CRU       | Kg   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| MFR       | Kg   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 1.58E-3 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 1.58E-3  |
| MER       | Kg   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| EET       | MJ   | 0.00E+0 | 0.00E+0 | -3.21E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -9.44E+1 | -9.76E+1 |
| EEE       | MJ   | 0.00E+0 | 0.00E+0 | -1.87E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -5.48E+1 | -5.67E+1 |
| SP        | s€   | s€ 0,00 | s€ 0,00 | s€ 0,00  | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00  | s€ 0,00  |

PERE=renewable primary energy ex. raw materials | PERM=renewable primary energy used as raw materials | PERT=renewable primary energy total | PENRE=non-renewable primary energy ex. raw materials | PENRM=non-renewable primary energy used as raw materials | PENRT=non-renewable primary energy total | SM=use of secondary material | RSF=use of renewable secondary fuels | NRSF=use of non-renewable secondary fuels | FW=use of net fresh water | HWD=hazardous waste disposed | NHWD=non hazardous waste disposed | RWD=radioactive waste disposed | CRU=Components for re-use | MFR=Materials for recycling | MER=Materials for energy recovery | EET=Exported Energy Thermic | EEE=Exported Energy Electric

## 1.9 ADDITIONAL INFORMATION

## Allocation

There is no allocation applied for the environmental profiles / datasets used in this LCA.



Result summary

# N-durance (EN15804) (Decking)

MOSO

|                     |                         |
|---------------------|-------------------------|
| Calculation number: | EPD-NIBE-20210707-20469 |
| Generation on:      | 14-03-2022              |
| Issue date:         | 14-03-2022              |
| Valid until:        | 14-03-2027              |
| Status:             | verified                |

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## 1 N-durance (EN15804) (Decking)

### 1.1 COMPANY INFORMATION / DECLARATION OWNER

**Manufacturer:** MOSO

**Production Location:** Manufacturing plant CN

**Address:** Adam Smithweg 2, 1689 ZWZwaag

**E-mail:** info@moso.eu

**Website:** www.moso-bamboo.com

### 1.2 EPD INFORMATION

**Calculation number:** EPD-NIBE-20210707-20469

**Date of issue:** 14-03-2022

**End of validity:** 14-03-2027

**Version NIBE's EPD Application:** v2.0

**Version database:** v3.07 (2021-11-08)

**PCR:** EN15804+A2:2019

### 1.3 VERIFICATION OF THE DECLARATION

CEN standard EN 15804:2012 serves as the core PCR.

Independent verification of the declaration. according to EN ISO 14025:2010.

☐ Internal ☒ External

I hereby confirm that, following detailed examination as independent 3rd party verifier, I have not been able to trace any relevant deviations by the report concerning bamboo products by MOSO, and by its project report from the requirements outlined in the corresponding product category regulations based on the EN 15804:2019 and as PCR, the Dutch Assessment (Determination) Method version 1.0 July 2020, including the amendments Hereby the report meets also the standards given in ISO 14040/44 and ISO 21930.

A.K. Jeeninga is recognized by NMD as verifier.



Third party verifier: Anne Kees Jeeninga, Advieslab

### 1.4 DECLARED UNIT

#### **1 m2 decking**

A square meter of decking with the minimum technical thickness required end meets requirements of the Dutch Buildings Decree. Subframe joists and fasteners are not included.



# 1 N-durance (EN15804) (Decking)

## 1.5 SCOPE OF DECLARATION

| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4  | B5  | B6  | B7  | C1 | C2 | C3 | C4 | D |
|----|----|----|----|----|----|----|----|-----|-----|-----|-----|----|----|----|----|---|
| X  | X  | X  | X  | X  | X  | X  | X  | MND | MND | MND | MND | X  | X  | X  | X  | X |

(X = included, MND = module not declared)

## 1 N-durance (EN15804) (Decking)

### 1.6 PRODUCT DESCRIPTION

MOSO® Bamboo N-durance goes through a unique process of thermal treatment followed by High Density® compression to enhance the hardness, dimensional stability, fire resistance and durability to a level superior to the best tropical hardwood species.

Bamboo N-durance consists for approx. 85 % of rough strips made from the giant bamboo species “Phyllostachus Pubescens (Edulis)” from China (diameter up to 15 cm, length up to 15 meters) and approx. 15% of glue (phenol formaldehyde), and is also available with FSC certificate on request.

#### Dimensions

Decking: 1850 x 137/155/178 x 20 mm

#### Biological durability:

Class 1 (EN 350)

#### Hardness (Brinell)

> 9,5 kg / mm<sup>2</sup> (EN 1534)

#### Reaction to fire

Class Bfl-s1 (EN 13501-1)

#### Biogenic CO<sub>2</sub>

|                                                        |               |        |
|--------------------------------------------------------|---------------|--------|
| Density of material kg/m <sup>3</sup> (u=12%)          | ρ             | 1.200  |
| glue content                                           | %             | 17,1%  |
| carbon content                                         | %             | 50,24% |
| Bamboo without glue kg/m <sup>3</sup>                  | Pw            | 995    |
| Density without 12% moisture content kg/m <sup>3</sup> | Pw x Vw*/1,12 | 888    |

|                                     |                    |          |
|-------------------------------------|--------------------|----------|
| kg carbon / m <sup>3</sup>          | cf x Pw x Vw*/1,12 | 446      |
| kg CO <sub>2</sub> / m <sup>3</sup> | 44/12              | 1.637,44 |
| kg CO <sub>2</sub> / m <sup>2</sup> | m2                 | 31,37    |

#### Substances of very high concern

The product does not contain any substances listed in the “Candidate List of Substances” of Very High Concern (SVHC) for authorisation” exceeding 0.1% of the weight of the product.

### 1.7 DESCRIPTION OF THE MANUFACTURING PROCESS

Bamboo strips are double crushed to open up the material for further processing and become bundles of bamboo fibres, called strands. These strip strands are heated up to 140°C in the presence of saturated steam (to protect the bamboo from charring or burning) and cooled down. As a result of the thermal process the colour of the bamboo changes from white/yellow to medium brown. The bamboo strands are then dipped into thermosetting resin. As the strips are double crushed for more surface area, MOSO® Bamboo N-durance has a slightly higher glue content compared to Bamboo X-treme® or High Density®. After drying, the strands are put into a mould and are then compressed under high temperature and pressure to cure the glue. This process increases the density from 650-700 kg/m<sup>3</sup> to approx. 1.200 kg/m<sup>3</sup> and improves the hardness of this product significantly. At the same time, the dimensional stability of bamboo is improved significantly and the durability increases to the highest class possible (class 1 following EN 350), whereas because of the densification the product can reach the European fire class B without the use of fire retardants.

The output is a large panel, which is cut into smaller sections (boards or beams). These are then further processed and profiled to acquire the required shape. Waste created during this process is used in the factory to create energy / heat for the internal processes. For Bamboo N-durance, an extra step is involved which is a superficial anti fungi treatment to increase the resistance to fungi. As a last step, depending on the customer's request, the boards are usually prefinished. This optional step is not included in this LCA.

The final product is a very stable and durable board suitable for outdoor use, typically used as decking.

## 1 N-durance (EN15804) (Decking)

## 1.8 RESULTS

| Environmental effects | Unit              | A1       | A2       | A3       | A4       | A5       | B1      | B2      | B3      | C1      | C2       | C3      | C4       | D        | Total    |
|-----------------------|-------------------|----------|----------|----------|----------|----------|---------|---------|---------|---------|----------|---------|----------|----------|----------|
| AP                    | mol H+ eqv.       | 6.72E-2  | 3.62E-3  | 7.38E-2  | 7.32E-2  | 1.15E-2  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.67E-3  | 6.46E-3 | 8.81E-5  | -4.07E-2 | 1.98E-1  |
| GWP-total             | kg CO2 eqv.       | -1.84E+1 | 6.25E-1  | 1.55E+1  | 3.51E+0  | 2.24E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.60E-1  | 3.91E+1 | 1.68E+0  | -1.33E+1 | 3.14E+1  |
| GWP-b                 | kg CO2 eqv.       | -3.15E+1 | 2.88E-4  | -6.27E-1 | -1.56E-3 | -1.94E-2 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.12E-4  | 2.98E+1 | 1.65E+0  | -1.71E-1 | -9.32E-1 |
| GWP-f                 | kg CO2 eqv.       | 1.31E+1  | 6.24E-1  | 1.62E+1  | 3.51E+0  | 2.26E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.60E-1  | 9.33E+0 | 3.13E-2  | -1.31E+1 | 3.24E+1  |
| GWP-luluc             | kg CO2 eqv.       | 9.59E-3  | 2.29E-4  | 3.96E-3  | 3.73E-3  | 9.20E-4  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.68E-4  | 5.93E-5 | 2.94E-6  | -1.51E-2 | 3.56E-3  |
| ETP-fw                | CTUe              | 5.35E+2  | 8.40E+0  | 4.14E+2  | 4.03E+1  | 5.17E+1  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 6.18E+0  | 6.56E+0 | 2.17E-1  | -7.72E+1 | 9.85E+2  |
| PM                    | disease incidence | 6.67E-7  | 5.62E-8  | 9.38E-7  | 2.02E-7  | 9.87E-8  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.14E-8  | 5.21E-8 | 1.83E-9  | -1.06E-7 | 1.95E-6  |
| EP-m                  | kg N eqv.         | 1.46E-2  | 1.28E-3  | 1.61E-2  | 1.88E-2  | 2.76E-3  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 9.39E-4  | 2.99E-3 | 5.94E-5  | -6.14E-3 | 5.13E-2  |
| EP-fw                 | kg P eqv.         | 5.14E-4  | 6.30E-6  | 3.46E-4  | 3.01E-5  | 4.67E-5  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.64E-6  | 4.26E-6 | 1.59E-7  | -6.83E-4 | 2.70E-4  |
| EP-T                  | mol N eqv.        | 1.52E-1  | 1.41E-2  | 1.75E-1  | 2.08E-1  | 3.00E-2  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.04E-2  | 3.42E-2 | 3.53E-4  | -7.38E-2 | 5.51E-1  |
| HTP-c                 | CTUh              | 8.71E-8  | 2.72E-10 | 3.15E-8  | 2.82E-9  | 6.97E-9  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.01E-10 | 1.71E-8 | 7.76E-12 | -2.05E-9 | 1.44E-7  |
| HTP-nc                | CTUh              | 2.12E-7  | 9.19E-9  | 1.86E-7  | 4.17E-8  | 2.59E-8  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 6.76E-9  | 5.28E-8 | 2.47E-10 | -6.17E-8 | 4.72E-7  |
| IR                    | kBq U235 eqv.     | 3.25E-1  | 3.95E-2  | 1.31E-1  | 2.00E-1  | 3.90E-2  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.90E-2  | 5.82E-3 | 1.20E-3  | -1.20E+0 | -4.32E-1 |
| SQP                   | Pt                | 5.88E+3  | 8.17E+0  | 1.67E+3  | 2.21E+1  | 3.79E+2  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 6.01E+0  | 8.51E-1 | 6.72E-1  | -3.31E+1 | 7.93E+3  |
| ODP                   | kg CFC 11 eqv.    | 1.25E-6  | 1.38E-7  | 4.36E-7  | 7.09E-7  | 1.39E-7  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.01E-7  | 2.89E-8 | 3.61E-9  | -1.49E-6 | 1.31E-6  |
| POCP                  | kg NMVOC eqv.     | 5.98E-2  | 4.02E-3  | 5.13E-2  | 5.60E-2  | 9.23E-3  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.96E-3  | 8.87E-3 | 1.28E-4  | -2.01E-2 | 1.72E-1  |
| ADP-f                 | MJ                | 2.69E+2  | 9.42E+0  | 1.62E+2  | 4.76E+1  | 2.54E+1  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 6.93E+0  | 2.43E+0 | 2.65E-1  | -2.41E+2 | 2.83E+2  |
| ADP-mm                | kg Sb-eqv.        | 2.36E-4  | 1.58E-5  | 9.77E-5  | 6.93E-5  | 2.18E-5  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.16E-5  | 1.68E-6 | 9.32E-8  | -1.59E-5 | 4.39E-4  |
| WDP                   | m3 world eqv.     | 1.07E+1  | 3.37E-2  | 4.89E+0  | 1.60E-1  | 8.00E-1  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 2.48E-2  | 1.99E-2 | 3.10E-3  | -1.46E+0 | 1.52E+1  |

**AP**=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **ETP-fw**=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation,

## 1 N-durance (EN15804) (Decking)

human health (IR) | **SQP**=Land use (SQP) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

## 1 N-durance (EN15804) (Decking)

| Parameter | Unit | A1      | A2      | A3       | A4      | A5      | B1      | B2      | B3      | C1      | C2      | C3      | C4      | D        | Total    |
|-----------|------|---------|---------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|
| PERE      | MJ   | 1.13E+1 | 1.18E-1 | 1.21E+1  | 5.90E-1 | 1.27E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 8.68E-2 | 9.53E-2 | 9.36E-3 | -2.30E+1 | 2.64E+0  |
| PERM      | MJ   | 2.67E+2 | 0.00E+0 | 7.48E+1  | 0.00E+0 | 1.71E+1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -3.82E-1 | 3.58E+2  |
| PERT      | MJ   | 2.78E+2 | 1.18E-1 | 8.69E+1  | 5.90E-1 | 1.83E+1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 8.68E-2 | 9.53E-2 | 9.36E-3 | -2.34E+1 | 3.61E+2  |
| PENRE     | MJ   | 2.11E+2 | 1.00E+1 | 1.49E+2  | 5.06E+1 | 2.21E+1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 7.36E+0 | 2.62E+0 | 2.82E-1 | -2.59E+2 | 1.95E+2  |
| PENRM     | MJ   | 7.81E+1 | 0.00E+0 | 2.29E+1  | 0.00E+0 | 5.05E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -3.97E-2 | 1.06E+2  |
| PENRT     | MJ   | 2.89E+2 | 1.00E+1 | 1.72E+2  | 5.06E+1 | 2.72E+1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 7.36E+0 | 2.62E+0 | 2.82E-1 | -2.59E+2 | 3.01E+2  |
| SM        | Kg   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| RSF       | MJ   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| NRSF      | MJ   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| FW        | M3   | 2.73E-1 | 1.15E-3 | 1.21E-1  | 5.24E-3 | 2.09E-2 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 8.44E-4 | 9.50E-3 | 3.19E-4 | -1.12E-1 | 3.20E-1  |
| HWD       | Kg   | 1.65E-4 | 2.39E-5 | 7.37E-5  | 8.52E-5 | 1.97E-5 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.76E-5 | 1.73E-5 | 3.39E-7 | -1.81E-4 | 2.22E-4  |
| NHWD      | Kg   | 1.27E+0 | 5.97E-1 | 1.57E+0  | 1.44E+0 | 3.44E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.40E-1 | 2.72E-1 | 1.15E+0 | -4.62E-1 | 6.63E+0  |
| RWD       | Kg   | 2.88E-4 | 6.18E-5 | 1.30E-4  | 3.16E-4 | 4.47E-5 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 4.55E-5 | 7.16E-6 | 1.71E-6 | -1.01E-3 | -1.17E-4 |
| CRU       | Kg   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| MFR       | Kg   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 1.58E-3 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 1.58E-3  |
| MER       | Kg   | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| EET       | MJ   | 0.00E+0 | 0.00E+0 | -3.21E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -9.44E+1 | -9.76E+1 |
| EEE       | MJ   | 0.00E+0 | 0.00E+0 | -1.87E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -5.48E+1 | -5.67E+1 |
| SP        | s€   | s€ 0,00 | s€ 0,00 | s€ 0,00  | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00 | s€ 0,00  | s€ 0,00  |

PERE=renewable primary energy ex. raw materials | PERM=renewable primary energy used as raw materials | PERT=renewable primary energy total | PENRE=non-renewable primary energy ex. raw materials | PENRM=non-renewable primary energy used as raw materials | PENRT=non-renewable primary energy total | SM=use of secondary material | RSF=use of renewable secondary fuels | NRSF=use of non-renewable secondary fuels | FW=use of net fresh water | HWD=hazardous waste disposed | NHWD=non hazardous waste disposed | RWD=radioactive waste disposed | CRU=Components for re-use | MFR=Materials for recycling | MER=Materials for energy recovery | EET=Exported Energy Thermic | EEE=Exported Energy Electric

## 1.9 ADDITIONAL INFORMATION

## Allocation

There is no allocation applied for the environmental profiles / datasets used in this LCA.





# CERTIFICATE

**CERTIFICATION CODE: CU-COC-810267**

Field of attention:

**FSC® Chain of Custody (COC)**

Issued to:

**MOSO International B.V.  
Zwaag, NETHERLANDS  
Project in: NETHERLANDS**

Standard:

**FSC-STD-40-003 V2-1 CoC Certification of Multiple Sites;, FSC-STD-40-004 V3-1 Chain of Custody Certification, FSC-STD-50-001 V2-1 Requirements for use of the FSC trademarks by Certificate Holders;**

**Valid until: 23 December 2028**

The validity of this certificate shall be verified on <http://info.fsc.org/>

Control Union Certifications declares to have inspected the unit(s), and/or products of the above mentioned certificate holder, and have found them in accordance with the standards mentioned above.

This certificate covers the unit(s), and/or product(s) as mentioned in the authenticated annex of this certificate. A full list of product groups covered by the certificate can be found on the FSC database of registered certificates (<http://info.fsc.org/>).

This certificate itself does not constitute evidence that a particular product supplied by the certificate holder is FSC-certified [or FSC Controlled Wood]. Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on invoices and shipping documents.

This certificate remains in force until further notice, provided that the participant continues to meet the conditions as laid down in the client contract with Control Union Certifications B.V. and verified in inspections by Control Union Certifications B.V.

Date of certification:  
24 December 2023  
Place and date of issue:  
Zwolle, 16 December 2024

CERTIFICATE No: C 810267CU-  
COC-01.2024

Declared by:

On behalf of the Managing Director

Mevrouw I.J.H. Dijkman

Certifier  
Control Union Certifications B.V.  
Meeuwenlaan 4-6  
8011 BZ ZWOLLE  
The Netherlands  
<http://www.controlunion.com>  
tel.: +31(0)38-4260100



**The mark of  
responsible forestry**





**Annex to  
CERTIFICATION CODE: CU-COC-810267  
FSC® Chain of Custody (COC)**

MOSO International B.V.  
Adam Smithweg 2  
1689 ZW Zwaag  
Nederland

**This certificate gives the right, in accordance with the agreements in the licensee-contract, on the basis of the accreditation of CU by the Forest Stewardship Council (FSC), to use the FSC logo for the unit(s), process(es) and/or product(s) mentioned below. Use of the FSC logo on (trade) products is only allowed for products mentioned under "products" in conformity with the category.**

**This certificate and its copies or reproductions shall be returned to CU immediately on request.  
More information about the client and/or products and/or units can be obtained at the website of CU ([www.controlunion.com/certifications](http://www.controlunion.com/certifications)) or by contacting CU.**

**This certificate, referred to in the client contract as scope certificate, covers the following product(s), which comply(ies) with the latest version of the CU Forestry Standards:**

**Certified products**

| Product no. | Name of product                               | Category          | Processing unit(s)                                                     |
|-------------|-----------------------------------------------|-------------------|------------------------------------------------------------------------|
| P 064121    | N5.4 Bamboo plywood                           | FSC 100%          | PRC 010770, PRC 010771, PRC 010774, PRC 038595, PRC 095073, PRC 101227 |
| P 064122    | N5.5 Bamboo flooring                          | FSC 100%, FSC Mix | PRC 010770, PRC 010771, PRC 010774, PRC 038595, PRC 095073, PRC 101227 |
| P 064123    | N5.6 Bamboo furniture                         | FSC 100%          | PRC 010770, PRC 010771, PRC 010774, PRC 038595, PRC 095073, PRC 101227 |
| P 064124    | N5.7 Bamboo household articles and wickerwork | FSC 100%          | PRC 010770, PRC 010771, PRC 010774, PRC 038595, PRC 095073, PRC 101227 |
| P 063786    | W7 Veneer                                     | FSC 100%, FSC Mix | PRC 010770, PRC 010771, PRC 010774, PRC 038595, PRC 095073, PRC 101227 |

This certificate covers the following Processing Unit(s), which comply(ies) with the latest version of the CU Forestry Standards:

**Processing unit(s)**

| Unit no.   | Name of unit                              | Unit ref. | Address                                                                                                       | Processes                                 |
|------------|-------------------------------------------|-----------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| PRC 010771 | MVP International B.V.                    | D-02      | Adam Smithweg 2<br>Zwaag<br>Nederland                                                                         | Broker/trader without physical possession |
| PRC 010774 | MOSO Europe SLU                           | D-03      | C/ Pau Claris, 83 - Pral 2 <sup>a</sup><br>Barcelona, Andalusia<br>SPAIN                                      | Broker/trader without physical possession |
| PRC 038595 | Anji Moso Bamboo Products Company Ltd     | D-05      | No.2 Building, Tangpu Industrial Zone. Anji Economic Development Area<br>Huzhou City, Zhejiang Sheng<br>CHINA | Broker/trader without physical possession |
| PRC 095073 | MOSO Italia SRL                           | D-06      | Via A. Locatelli, 86<br>Bassano (MB), Lombardia<br>ITALY                                                      | Broker/trader without physical possession |
| PRC 101227 | Shaoxing MOSO Bamboo Products Company LTD | D-07      | Room 401, Building 1, No.125, Wolong Road<br>Shaoxing, Zhejiang Sheng<br>CHINA                                | Broker/trader without physical possession |





Annex to  
CERTIFICATION CODE: CU-COC-810267  
FSC® Chain of Custody (COC)

| Unit no.   | Name of unit            | Unit ref. | Address                                              | Processes                              |
|------------|-------------------------|-----------|------------------------------------------------------|----------------------------------------|
| PRC 010770 | MOSO International B.V. | ICS       | Adam Smithweg 2<br>Zwaag, Noord-Holland<br>Nederland | Broker/trader with physical possession |

This certificate including the annex remains property of Control Union Certifications B.V. and can be withdrawn in case of terminations as mentioned in the licensee contract, or in case changes or deviations of the above mentioned data occur. The licensee is obliged to inform Control Union Certifications B.V. immediately of any changes in the above mentioned data. Only an original and signed certificate with accompanying attachments is valid.

Date of certification:  
24 December 2023

Authenticated by

Place and date of issue:  
Zwolle, 16 December 2024

On behalf of the Managing Director  
Mevrouw I.J.H. Dijkman  
Certifier

**This certificate cannot be used as guarantee certificate for delivered goods!**

# HERSTELLERERKLÄRUNG EU-TAXONOMIE VERORDNUNG

Zur Bestätigung der Konformität gemäß Anlage C zur Vermeidung und Verminderung der Umweltverschmutzung gemäß der Delegierten Verordnung (EU) 2023/2486 der Kommission vom 27. Juni 2023.

Hiermit bestätigen wir:

MOSO International B.V.

Adam Smithweg 2, 1689 ZW, Zwaag

Niederlande

für das folgende Produkt / die folgenden Produkte:

MOSO Bamboo Outdoor products

MOSO Bamboo Solid Panels Veneers and Beams

MOSO Bamboo Flooring

|                                                                                                                                                                                                                |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Das Produkt/ Erzeugnis/ mindestens ein Teilerzeugnis enthält Stoffe der Kandidatenliste (Version zum Ausstellungsdatum) oberhalb 0,1 Massen%:                                                                  | nein |
| Das Produkt/Erzeugnis/mindestens ein Teilerzeugnis enthält weitere CMR-Stoffe der Kategorie 1A oder 1B, die nicht auf der Kandidatenliste stehen, oberhalb von 0,1 Massen-% in mindestens einem Teilerzeugnis: | nein |

22/7/2025 Zwaag  MOSO International B.V.  
Adam Smithweg 2  
1689 ZW Zwaag  
The Netherlands

Ihr Ansprechpartner für Rückfragen:

Name: van Heesch Telefon: +31 6 1342 5509

Mailadresse: evanheesch@moso.eu