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3-layer wooden floorboards



Owner of the EPD:

Moland A/S
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Converting (rebranding) the EPD Declaration
No. 446/2023 to No. 474/2023
only for products covered by that declaration

EPD Program Operator:

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ITB is the verified member of The European Platform for EPD program operators and LCA practitioner www.eco-platform.org

Basic information

This declaration is the Type III Environmental Product Declaration (EPD) based on EN 15804 + A2 and verified according to ISO 14025 by an external auditor. It contains the information on the impacts of the declared construction materials on the environment and their aspects verified by the independent body according to ISO 14025. Basically, comparison or evaluation of EPD data is possible only if all the compared data were created according to EN 15804 + A2.

Life cycle analysis (LCA): A1-A3, B4-B6, C1-C4 and D modules in accordance with EN 15804 + A2
(Cradle-to-Gate with options)

The year of preparing the EPD: 2023

Product standard: EN 13489:2017-11

Service Life: 30 years

PCR: ITB-PCR A

Declared unit: 1 m²

Reasons for performing LCA: B2B

Representativeness: European

MANUFACTURER

Manufacturer distributes its products among 62 countries all over the world. The company was founded 20 years ago and quickly expanded its brand into the international marketplace. Manufacturer declares that has the status of a large enterprise.



Fig. 1 Manufacturer production line.

PRODUCTS DESCRIPTION AND APPLICATION

The wooden floorboards consists of three layers (Figure 2). A layer of usable surface (from 2.7 - 6.6 mm) is covered with varnish seven times or oil twice. Both finishes form a thin, flexible and durable protective layer on the floor surface. The middle layer (from 6.0 mm -16.0 mm) consists of transversely arranged spruce slats that strengthen the flexibility of the floor. The bottom layer (approx. 1.8 mm) is made of a uniform spruce veneer, which stabilizes and stiffens the whole structure. The basic technical parameters and properties of the products are listed in Table 1 and Table 2.



Fig. 2 Construction of a three-layer wooden floorboard offered by Moland A/S.

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Table 1. Specification of 3-layer wooden floorboard offered by Moland A/S.

| Basic technical parameters | Declared values | Tolerances | Requirements specified in the Standard EN 13489:2017 |
|---|---|----------------|---|
| Length [mm] | 2200 2190 1090 1080 | ± 1,0 | +/- 2,2 +/- 2,2 +/- 1,0 +/- 1,0 |
| Width [mm] | 210 182 148 | ± 0,2 | ± 0,2 |
| Thickness [mm] | 10,5 13,3 14,0 14,6 21,3 | ± 0,2 | Not applicable |
| Thickness of usable surface [mm] | 2,7 3,5 6,6 | ± 0,2 | ≥ 2,5 |
| Thickness of middle layer [mm] | 6,0 8,9 16,0 | ± 0,15 | Not applicable |
| Thickness of bottom layer [mm] | 1,8 | ± 0,2 | Not applicable |
| Leveling between elements [mm] | ≤ 0,2 | - | ≤ 0,2 |
| Deviation of rectangularity [mm] (on the item width) | - for width 210 mm ≤ 0,42 - for width 182 mm ≤ 0,36 - for width 148 mm ≤ 0,29 | - | - for width 210 mm ≤ 0,42 - for width 182 mm ≤ 0,36 - for width 148 mm ≤ 0,29 |
| Crosswise warping [mm] (across the item) | - for width 210 mm ≤ 0,42 - for width 182 mm ≤ 0,36 - for width 148 mm ≤ 0,29 | - | - for width 210 mm ≤ 0,42 - for width 182 mm ≤ 0,36 - for width 148 mm ≤ 0,29 |
| Lengthwise sides warping [mm] (along the item) - deviation for the product 2200 mm - deviation for the product 2190 mm - deviation for the product 1090 mm - deviation for the product 1080 mm | ≤ 2,20 ≤ 2,19 ≤ 1,09 ≤ 1,08 | - | ≤ 2,20 ≤ 2,19 ≤ 1,09 ≤ 1,08 |
| Product weight [kg/m ²] | - for thickness 10,5 mm - 5,8 kg/m ² - for thickness 13,3 mm - 6,9 kg/m ² - for thickness 14,0 mm - 7,5 kg/m ² - for thickness 14,6 mm - 7,6 kg/m ² - for thickness 21,3 mm - 10,5 kg/m ² | Not applicable | Not applicable |
| Moisture content [%] | 7,0 | +/- 2,0 | 5,0 – 9,0 |

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Table 2. Basic properties of 3-layer wooden floorboard offered by Moland A/S.

| Basic properties (features) | Declared values | European classification | Requirements specified in a Standardizing document |
|--|---|-------------------------|--|
| Formaldehyde contents [mg/m ³] | 0,02 | E1 | < 0,124 (according to EN 717-1) |
| Fire classification | D _{fl} -s1 C _{fl} -s1 (for products that meet the requirements PN-EN 14342 – top layer thickness above 5 mm) | - | EN 13501-1:2007 |
| Pentachlorophenol content | NPD | Not applicable | ≤ 5 ppm (wg EN 14342:2013) |
| Release of other hazardous substances | NPD | - | EN 14342:2013 |
| Thermal conductivity | - for thickness 10,5 mm ≤ 0,09 W/mK - for thickness 13,3 mm ≤ 0,09 W/mK - for thickness 14,0 mm ≤ 0,12 W/mK - for thickness 14,6 mm ≤ 0,11 W/mK - for thickness 21,3 mm ≤ 0,16 W/mK | Not applicable | EN 12524:2000 |
| Biological durability | Class I | Not applicable | EN 351-1 |

Types of three-layered wooden floor construction

=> three-layered wooden floor – 14,6 mm



Floors of a total thickness of 14.6 mm. Thanks to the renovatable layer of as many as 6.6 mm, this type of flooring may be renovated up to 9 times. The structure is made of spruce wood, which is characterized by high resistance to room humidity and temperature fluctuations throughout the year. The boards are finished with 7 coatings of varnish or 2 coatings of oil. Glued down to the subfloor, in the T&G installation system.

=> three-layered wooden floor – 14 mm / 21,3 mm



Floors with a total thickness of 14 mm and 21,3 mm, with a 3,5 mm-thick renovatable layer, which makes it possible to renovate the floor up to 3 times. They are installed in the 5G, T&G and 2LOC systems. The structure is made of spruce wood, which is characterized by high resistance to room humidity and temperature fluctuations throughout the year. The boards are finished with 7 coatings of varnish or 2 coatings of oil.

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=> three-layered wooden floor – 13,3 mm / 10,5 mm



Floors with a total thickness of 13,3 mm and 10,5 mm, with a 2,7 mm-thick renovatable wood layer. Such a thickness makes it possible to renovate the floor two times. The floors are installed in the 2LOC system. They perform well in interiors fitted with underfloor heating. They are finished with 7 coatings of varnish. The structure is made of spruce wood, which is characterised by high resistance to room humidity and temperature fluctuations throughout the year.

Joint systems

=> joint system 5G



A distinct “click” sound signalling floorboards becoming locked together during installation. No extra tools needed for assembly. Optional locking of 2LOC boards (only on the long side of the board). Installation over an underfloor heating system is possible. Installation in the floating and glue-down systems.

=> joint system 2LOC



Capability to freely expand and contract in the horizontal plane. Possible assembly and disassembly of the floorboards. Optional locking of 5G boards (only on the long side of the board). Installation over an underfloor heating system is possible. Installation in the floating and glue-down systems.

=> joint system T&G



A traditional adhesive-based tongue-and-groove joint. The joint becomes durable after a dedicated engineering adhesive has been applied and has set. The adhesive is applied on the long and short sides of the board, and along the whole of the groove. The durability of the joint will be conditional upon the parameters of the applied adhesive.

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Declared Unit

The declaration refers to declared unit (DU) – 1 m² of 3-layer wooden floorboard

Allocation

The allocation rules used for this EPD are based on general ITB-PCR A. 3-layer wooden floorboard production is a line process with multiple co-products in one factory located in Poland. Allocation is done on product mass basis and volume for wood.

All impacts from raw materials extraction and processing are allocated in A1 module of EPD. 99% of impacts from line production were inventoried and allocated to all 3-layer wooden floorboard production. Municipal waste and waste water of whole factory were allocated to module A3. Energy supply was inventoried for whole production process. Emissions in the manufacturing plant are measured and were allocated to module A3. Packaging materials were taken into consideration. They are recycled in a closed loop.

System limits

The life cycle analysis (LCA) of the declared products covers product stage – modules A1-A3, use stages – modules B4-B6, end of life – modules C1-C4 and benefits and loads beyond the system boundary – module D (cradle-to-gate with options) in accordance with EN 15804 + A2 and ITB-PCR A. The details of systems limits are provided in product technical report. All materials and energy consumption inventoried in factory were included in calculation. Office impacts were also taken into consideration. In the assessment, all significant parameters from gathered production data are considered, i.e. all material used per formulation, utilised thermal energy, internal fuel and electric power consumption, direct production waste, and all available emission measurements. It can be assumed that the total sum of omitted processes does not exceed 5% of all impact categories. In accordance with EN 15804 + A2, machines and facilities (capital goods) required for the production as well as transportation of employees were not included in LCA.

Modules A1 and A2: *Raw materials supply and transport*

Data on transport of the different products to the manufacturing plants is collected and modelled for factory by assessor. Means of transport include small trucks < 10 t (f. ex. vans) and big trucks (16-32 t) are applied. European standards for average combustion were used for calculations.

Module A3: *Production*

The Fig. 3 shows the industrial process during the production of the 3-layer wooden floorboards. The floor manufacturing is basically a few step process including drying, stabilization, planing, cutting, gluing and finishing. Hardwood and softwood are delivered to factory, where they are drying. Then undergoes stabilization, planing, cutting (top layer production) and gluing with middle and purchased bottom layers. Then the flooring product is sorted by grade and type, packaged and then stored prior to the shipment of the final product. The facility is EN ISO 9001 certified.

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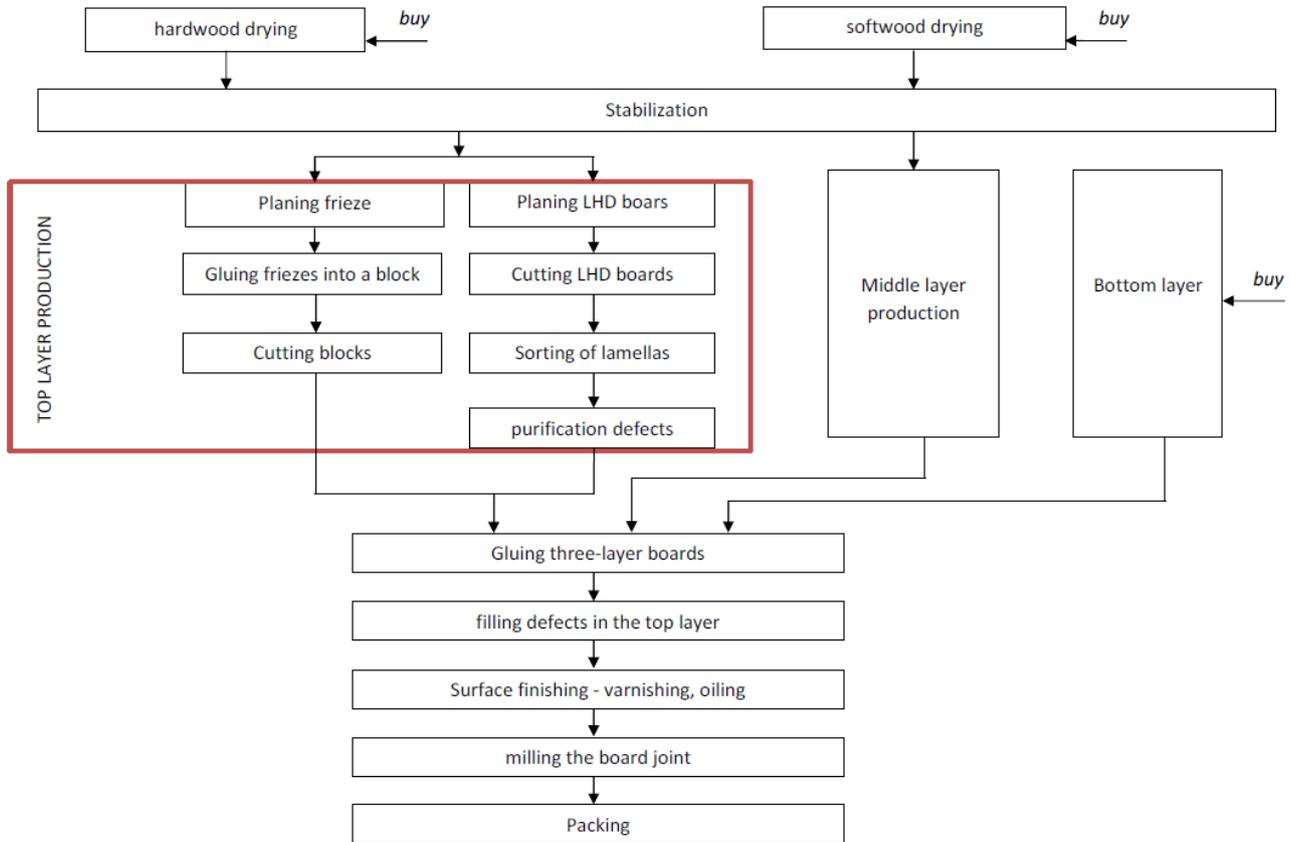


Fig. 3. A scheme of the 3-layer wooden floorboard production.

Modules B4-B6 : Use stages

In the use stage all impacts related to the use of the 3-layer wooden floorboard over its entire life cycle are presented. This includes provisions for the transport of all materials as well as the energy and water impact associated with using it. There are no consumables, repair or replacements related to the use of 3-layer wooden floorboard for the period of the reference service life – module B4 has zero impacts. A scenario was assumed that the floor is oiled/varnished once every two years. These activities are presented in module B5. Moreover, 3-layer wooden floorboards do not use energy or water during their service life and there are no emissions released from the product during the use.

There are no energy uses to operate building integrated technical systems like energy use for electrical components e.g. electrical motors. Therefore, module B6 has zero impacts. Replacement of the product due to aesthetic reasons (change of interior design) and not related to the loss of performance is not taken into account.

Modules C1-C4 and D: End-of-life (EoL)

In the adapted scenario, deconstruction of the 3-layer wooden floorboards is performed with the use of electrical tools (module C1). The resulting waste is transported to a waste processing plant distant 60 km, on 16-32 t lorry EURO 5 (module C2). It is assumed that at the EoL cycle 90%

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of the 3-layer wooden floorboards are recovered in municipal incineration (module C3) while the residues undergo landfilling (10%) of the wooden floorboards are stored in landfills (module C4). Module D presents credits resulting from the benefits from avoided thermal energy production (gas).

Data quality

The data selected for LCA originate from ITB-LCI questionnaires completed by manufacturer using the inventory data, ITB and Ecoinvent v. 3.9 databases. No data collected is older than five years and no generic datasets used are older than ten years. The representativeness, completeness, reliability, and consistency are judged as good. Polish electricity was calculated based on Ecoinvent v 3.9 supplemented by actual national KOBiZE data.

Data collection period

Primary data provided by manufacturer covers a period of 01.01.2021 – 31.12.2021 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

Assumptions and estimates

The impacts of the representative 3-layer wooden floorboard were aggregated using mass average. Impacts were inventoried and calculated for all products in 3-layer wooden floorboard product group.

Calculation rules

LCA was performed using ITB-LCA tool developed in accordance with EN 15804 + A2.

Databases

The data for the processes comes from Ecoinvent v. 3.9 and ITB-Database. Specific data quality analysis was a part of external audit.

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LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit

The declaration refers to declared unit (DU) – 1 m² of 3-layer wooden floorboard offered by Moland A/S.

Table 3. System boundaries for the environmental characteristic for 3-layer wooden floorboard offered by Moland A/S.

| Environmental assessment information (MD – Module Declared, MND – Module Not Declared, INA – Indicator Not Assessed) | | | | | | | | | | | | | | | | |
|--|-----------|---------------|--------------------------------|-----------------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|---------------------------|-----------|------------------|----------|---|
| Product stage | | | Construction process | | Use stage | | | | | | | End of life | | | | Benefits and loads beyond the system boundary |
| Raw material supply | Transport | Manufacturing | Transport to construction site | Construction-installation process | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction demolition | Transport | Waste processing | Disposal | Reuse-recovery-recycling potential |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| MD | MD | MD | MND | MND | MND | MND | MND | MD | MD | MD | MND | MD | MD | MD | MD | MD |

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Table 4. LCA results of 3-layer wooden floorboard offered by Moland A/S - environmental impacts (DU: 1m²)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | B4 | B5 | B6 | C1 | C2 | C3 | C4 | D |
|---|------------------------|-----------|----------|----------|-----------|----------|-----------|----------|----------|----------|----------|----------|-----------|
| Global Warming Potential | eq. kg CO ₂ | -1.31E+01 | 1.55E+00 | 6.27E+00 | -5.26E+00 | 0.00E+00 | 1.78E+01 | 0.00E+00 | 4.65E-02 | 8.31E-02 | 1.10E+01 | 8.86E-03 | -1.12E+01 |
| Greenhouse gas potential - fossil | eq. kg CO ₂ | 6.35E+00 | 1.54E+00 | 6.16E+00 | 1.41E+01 | 0.00E+00 | 1.24E+01 | 0.00E+00 | 4.57E-02 | 8.28E-02 | 1.18E-01 | 1.03E-03 | -5.81E-01 |
| Greenhouse gas potential - biogenic | eq. kg CO ₂ | -1.97E+01 | 6.23E-03 | 1.10E-01 | -1.95E+01 | 0.00E+00 | -6.00E+00 | 0.00E+00 | 8.24E-04 | 2.83E-04 | 1.09E+01 | 7.83E-03 | -1.18E+01 |
| Global warming potential - land use and land use change | eq. kg CO ₂ | 2.26E-01 | 7.23E-04 | 1.43E-03 | 2.28E-01 | 0.00E+00 | 1.14E+01 | 0.00E+00 | 1.07E-05 | 3.25E-05 | 3.06E-05 | 7.57E-07 | -1.43E-02 |
| Stratospheric ozone depletion potential | eq. kg CFC 11 | 8.94E-05 | 3.49E-07 | 1.51E-07 | 8.99E-05 | 0.00E+00 | 7.10E-07 | 0.00E+00 | 8.75E-10 | 1.92E-08 | 1.98E-09 | 2.31E-11 | -1.16E-08 |
| Soil and water acidification potential | eq. mol H ⁺ | 1.79E-02 | 6.16E-03 | 6.42E-02 | 8.82E-02 | 0.00E+00 | 6.95E-02 | 0.00E+00 | 4.84E-04 | 3.36E-04 | 1.21E-03 | 7.08E-06 | -2.97E-03 |
| Eutrophication potential - freshwater | eq. kg P | 1.16E-03 | 1.21E-04 | 1.09E-02 | 1.22E-02 | 0.00E+00 | 2.21E-03 | 0.00E+00 | 8.29E-05 | 5.56E-06 | 5.07E-05 | 1.96E-07 | -3.01E-04 |
| Eutrophication potential - seawater | eq. kg N | 5.39E-03 | 1.80E-03 | 9.24E-03 | 1.64E-02 | 0.00E+00 | 4.01E-02 | 0.00E+00 | 6.88E-05 | 1.01E-04 | 6.45E-04 | 3.13E-05 | -1.11E-03 |
| Eutrophication potential - terrestrial | eq. mol N | 5.14E-02 | 1.96E-02 | 7.87E-02 | 1.50E-01 | 0.00E+00 | 1.36E-01 | 0.00E+00 | 5.90E-04 | 1.11E-03 | 6.18E-03 | 2.81E-05 | -1.13E-02 |
| Potential for photochemical ozone synthesis | eq. kg NMVOC | 2.16E-02 | 6.04E-03 | 2.27E-02 | 5.03E-02 | 0.00E+00 | 7.18E-02 | 0.00E+00 | 1.66E-04 | 3.39E-04 | 1.57E-03 | 1.14E-05 | -7.03E-03 |
| Potential for depletion of abiotic resources - non-fossil resources | eq. kg Sb | 2.58E-05 | 7.07E-06 | 8.88E-06 | 4.18E-05 | 0.00E+00 | 6.06E-05 | 0.00E+00 | 6.59E-08 | 2.93E-07 | 2.30E-07 | 2.13E-09 | -1.64E-06 |
| Abiotic depletion potential - fossil fuels | MJ | 5.10E+01 | 2.27E+01 | 1.01E+02 | 1.75E+02 | 0.00E+00 | 3.30E+02 | 0.00E+00 | 7.45E-01 | 1.23E+00 | 9.92E-01 | 2.15E-02 | -8.94E+00 |
| Water deprivation potential | eq. m ³ | 3.15E+00 | 1.18E-01 | 2.02E+00 | 5.28E+00 | 0.00E+00 | 1.45E+01 | 0.00E+00 | 1.51E-02 | 5.68E-03 | 4.99E-01 | 1.22E-04 | -2.96E-01 |

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Table 5. LCA results of 3-layer wooden floorboard offered by Moland A/S – additional impacts indicators (DU: 1 m²)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | B4 | B5 | B6 | C1 | C2 | C3 | C4 | D |
|--|-------------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| Particulate matter | disease incidence | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Potential human exposure efficiency relative to U235 | eg. kBq U235 | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Potential comparative toxic unit for ecosystems | CTUe | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Potential comparative toxic unit for humans (cancer effects) | CTUh | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Potential comparative toxic unit for humans (non-cancer effects) | CTUh | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |
| Potential soil quality index | dimensionless | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA | INA |

Table 6. LCA results of 3-layer wooden floorboard offered by Moland A/S - the resource use (DU: 1m²)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | B4 | B5 | B6 | C1 | C2 | C3 | C4 | D |
|--|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|
| Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials | MJ | 2.18E+02 | 3.87E-01 | 7.12E+00 | 2.25E+02 | 0.00E+00 | 7.52E+01 | 0.00E+00 | 5.41E-02 | 1.76E-02 | -1.04E+02 | -1.16E+00 | -1.18E+02 |
| Consumption of renewable primary energy resources used as raw materials | MJ | 1.59E+02 | 0.00E+00 | 0.00E+00 | 1.59E+02 | 0.00E+00 | 3.75E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.05E+02 | 1.16E+00 | -9.47E+01 |
| Total consumption of renewable primary energy resources | MJ | 3.77E+02 | 3.87E-01 | 7.13E+00 | 3.85E+02 | 0.00E+00 | 1.42E+02 | 0.00E+00 | 5.41E-02 | 1.76E-02 | 2.24E-02 | 4.15E-04 | -2.12E+02 |
| Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials | MJ | 4.18E+01 | 2.27E+01 | 1.04E+02 | 1.68E+02 | 0.00E+00 | 2.31E+02 | 0.00E+00 | 7.89E-01 | 1.23E+00 | 9.92E-01 | 2.15E-02 | -8.95E+00 |
| Consumption of non-renewable primary energy resources used as raw materials | MJ | 9.44E+00 | 0.00E+00 | 0.00E+00 | 9.44E+00 | 0.00E+00 | 1.08E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total consumption of non-renewable primary energy resources | MJ | 5.07E+01 | 2.27E+01 | 1.07E+02 | 1.81E+02 | 0.00E+00 | 3.09E+02 | 0.00E+00 | 7.89E-01 | 1.23E+00 | 9.92E-01 | 2.15E-02 | -8.95E+00 |
| Consumption of secondary materials | kg | 8.56E-02 | 9.24E-03 | 8.21E-03 | 1.03E-01 | 0.00E+00 | 4.52E-02 | 0.00E+00 | 6.02E-05 | 4.12E-04 | 2.40E-03 | 8.16E-06 | -6.35E-03 |
| Consumption of renewable secondary fuels | MJ | 1.04E-01 | 1.06E-04 | 4.49E-05 | 1.05E-01 | 0.00E+00 | 6.54E-04 | 0.00E+00 | 3.29E-07 | 4.54E-06 | 5.60E-06 | 2.80E-07 | -1.61E-04 |
| Consumption of non-renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Net consumption of freshwater resources | m ³ | 6.79E-02 | 3.19E-03 | 2.92E-02 | 1.00E-01 | 0.00E+00 | 3.43E-01 | 0.00E+00 | 2.42E-04 | 1.55E-04 | -1.68E-03 | 2.14E-05 | -3.50E-03 |

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Table 7. LCA results of 3-layer wooden floorboard offered by Moland A/S - waste categories (DU: 1m²)

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | B4 | B5 | B6 | C1 | C2 | C3 | C4 | D |
|----------------------------------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Hazardous waste. neutralized | kg | 9.56E-02 | 2.94E-02 | 5.93E-04 | 1.26E-01 | 0.00E+00 | 2.93E-01 | 0.00E+00 | 1.54E-07 | 1.38E-03 | 1.34E-02 | 1.92E-05 | -1.17E-02 |
| Non-hazardous waste. neutralised | kg | 3.90E+00 | 5.31E-01 | 5.91E-01 | 5.03E+00 | 0.00E+00 | 7.53E+00 | 0.00E+00 | 4.40E-03 | 2.45E-02 | 7.25E-02 | 5.83E-04 | -5.99E-01 |
| Radioactive waste | kg | 3.56E-05 | 1.55E-04 | 9.50E-05 | 2.86E-04 | 0.00E+00 | 1.43E-04 | 0.00E+00 | 6.41E-07 | 8.46E-06 | 2.88E-07 | 7.13E-09 | -3.75E-06 |
| Components for re-use | kg | 0.00E+00 | 0.00E+00 | 9.46E-08 | 9.46E-08 | 0.00E+00 |
| Materials for recycling | kg | 9.26E-04 | 7.83E-05 | 6.04E-04 | 1.61E-03 | 0.00E+00 | 1.55E-03 | 0.00E+00 | 4.53E-06 | 3.80E-06 | 1.04E-05 | 1.65E-07 | -1.60E-04 |
| Materials for energy recovery | kg | 5.32E-06 | 6.20E-07 | 1.24E-06 | 7.17E-06 | 0.00E+00 | 2.97E-05 | 0.00E+00 | 6.33E-09 | 3.08E-08 | 1.45E-07 | 7.23E-10 | -4.11E-07 |
| Energy exported | MJ | 9.53E-02 | 2.77E-02 | 2.87E-01 | 4.10E-01 | 0.00E+00 | 9.39E-01 | 0.00E+00 | 2.16E-03 | 1.36E-03 | 3.31E-04 | 3.79E-06 | -1.12E-02 |

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Verification

The process of verification of this EPD is in accordance with ISO 14025 and ISO 21930. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly.

| |
|--|
| The basis for LCA analysis was EN 15804 + A2 and ITB PCR A |
| Independent verification corresponding to ISO 14025 (subclause 8.1.3) <input checked="" type="checkbox"/> external <input type="checkbox"/> internal |
| External verification of EPD: Halina Prejzner, PhD Eng. LCA, LCI audit and input data verification: Mateusz Kozicki, PhD Verification of LCA: Michał Piasecki, PhD, D.Sc. Eng. |

Note 1: The declaration owner has the sole ownership, liability and responsibility for the for the information provided and contained in EPD. Declarations within the same product category but from different programs may not be comparable. Declarations of construction products may not be comparable if they do not comply with EN 15804 + A2. For further information about comparability, see EN 15804 + A2 and ISO 14025. Depending on the application, a corresponding conversion factor such as the specific weight per surface area must be taken into consideration.

Note 2: ITB is a public Research Organization and Notified Body (EC Reg. no 1488) to the European Commission and to other Member States of the European Union designated for the tasks concerning the assessment of building products' performance. ITB acts as the independent, third-party verification organization (17065/17025 certified). ITB-EPD program is recognized and registered member of The European Platform – Association of EPD program operators and ITB-EPD declarations are registered and stored in the international ECO-PORTAL.

Normative references

- ITB PCR A General Product Category Rules for Construction Products
- EN 13489:2017 Wood-flooring and parquet - Multi-layer parquet elements
- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
- ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework
- ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation
- EN 15804 + A2: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
- KOBiZE Emissions (CO₂, SO₂, NO_x, CO and total dust) from electricity, 2021
- ISO 14067:2018 Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification
- EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business



Instytut Techniki Budowlanej

00-611 Warsaw, Filtrowa 1

Thermal Physics, Acoustics and Environment Department

02-656 Warsaw, Ksawerów 21

CERTIFICATE No 474/2023 of TYPE III ENVIRONMENTAL DECLARATION

Products:

3-layer wooden floorboards

Manufacturer:

Moland A/S

Strandvejen 16, 7800 Skive, Denmark

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

EN 15804+A2

Sustainability of construction works.

Environmental product declarations.

Core rules for the product category of construction products.

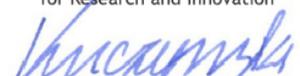
This certificate, issued on 6th September 2023 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics
and Environment Department


Agnieszka Winkler-Skalna, PhD



Deputy Director
for Research and Innovation


Krzysztof Kuczyński, PhD

Warsaw, September 2023