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Three-layer wooden floorboards



Owner of the EPD:

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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, C1-C4 and D modules in accordance with EN 15804 + A2 (Cradle-to-Gate with options)

The year of preparing the EPD: 2024

Product standard: EN 14342: 2013

Service Life: > 30 years

PCR: ITB-PCR A, v. 1.6

Declared unit: 1 m²

Reasons for performing LCA: B2B

Representativeness: Polish, European

MANUFACTURER

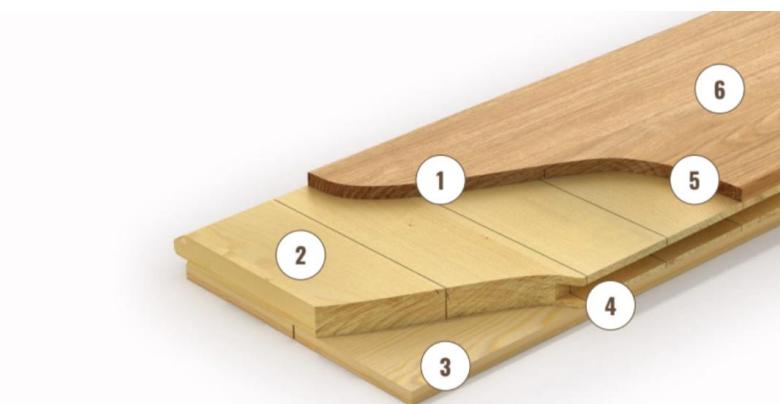
Podłogi Sp. z o.o. is a business operating for over 13 years that specializes in the production and distribution of oak engineered flooring. Every year it produces tens of thousands of square meters of wooden floors that enrich the space of thousands of customers. Podłogi Sp. z o.o. exports over 90% of our products.



Fig. 1 Production line for UV oiling and varnishing (left) and a line for profiling floors (right) of Podłogi Sp. z o.o. production plant located in Łańcut (Poland).

PRODUCTS DESCRIPTION AND APPLICATION

Wooden floor has a three-layer structure and consists of layers of wood connected with each other with water-based glue. The top layer in noble wood is a 3-4 mm thick lamella, which is usually made of European oak. The middle layer is made of a coniferous underlay in the form of slats, while the back-pressure bottom layer is made of 2 mm spruce veneer. The oak top layer is varnished or oiled with natural oil-waxes several times and hardened with UV rays. The boards can be joint with a glueless Click 5G connection or a traditional tongue-and-groove joint.



| | | |
|--|--|---|
| 1. The European noble oak top layer of a 3-6mm thickness | 2. The middle layer made of coniferous underlay in the form of slats | 3. The bottom layer made of 2mm spruce veneer |
| 4. A Tongue-and-groove joint or a Click 5G connection | 5. An option of both brushed and smooth surface as well as 2V/4V bevel | *6. Multiple layers of oil-wax in different colours hardened by UV rays |

Figure 2. Scheme of a cross-section of a three-layer wooden floorboard.

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The product range:

a) dimension:

- thickness: from 14 or 15 mm (14/3 mm, 15/4 mm)
- width: from 90 to 300 mm (90,100, 120, 140, 160, 190, 250, 300 mm)
- length: from 450 to 3000 mm (450, 600, 700, 900, 1080, 1600, 1800, 2000, 2200, 2400, 3000 mm)

b) surface finish option: brushing

c) wood grades: PREMIUM, STANDARD, STYLE

Table 1. Declaration of 3-layer wooden parquet floorboard properties according to EN 14342: 2013 produced by Podłogi Sp. z o.o.

| Property | Results | Declaration according to EN 14342:2013 |
|---|--|---|
| Reaction to fire according to EN ISO 9239-1:2010 and EN ISO 11925-2:2020; Classification according to EN 13501-1:2018 - Critical heat flux - Smoke production - Extent of flame \leq 150 mm | 5,56 kW/m ² 25,6 % x min fulfilled | Reaction to fire class C _{fl} -s1* |
| Formaldehyde emission according to EN 717-1:2004 | < LOD (264 h) | Class E1 |
| Content of PCP according to CEN/TR 14823:2004 | < LOQ | PCP \leq 5 \times 10 ⁻⁶ |
| Anti-skid properties according to CEN/TS 15676:2007 | 58 | USRV 58 |
| Thermal conductivity according to EN 12664:2001 | 0,120 W/(m*K) | 0,12 W/(m*K) |

More information can be found on Podłogi Sp. z o.o. website: www.podlogi.eu.com.

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Declared Unit

The declaration refers to declared unit (DU) – 1 m² of 3-layer wooden floorboard with thickness of 14 mm and 15 mm.

Allocation

The allocation rules used for this EPD are based on general ITB-PCR A, v. 1.6. 3-layer wooden floorboard production is a line process in factory located in Łańcut (Poland). Allocation is done on product mass basis.

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 Podłogi Sp. z o.o. 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, 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, v. 1.6. 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*

Raw materials such as softwood and hardwood logs, plywood, veneer, oils, glues or fillers come from local and foreign suppliers. Data on transport of the different products to the manufacturing plants is collected and modelled for factory by assessor. Means of transport include 16-32 t lorry and small trucks < 10 t (f. ex. couriers) EURO 6 are applied. European standards for average combustion were used for calculations.

Module A3: *Production*

The Fig. 3 shows the working process during the production of 3-layer wooden floorboards. Round wood is delivered to factory located in Łańcut, where is manufacturing in a few step process including sorting, cutting, peeling, drying and gluing. Then the floorboard is sorted by grade and type, packaged and then stored prior to the shipment of the final product.

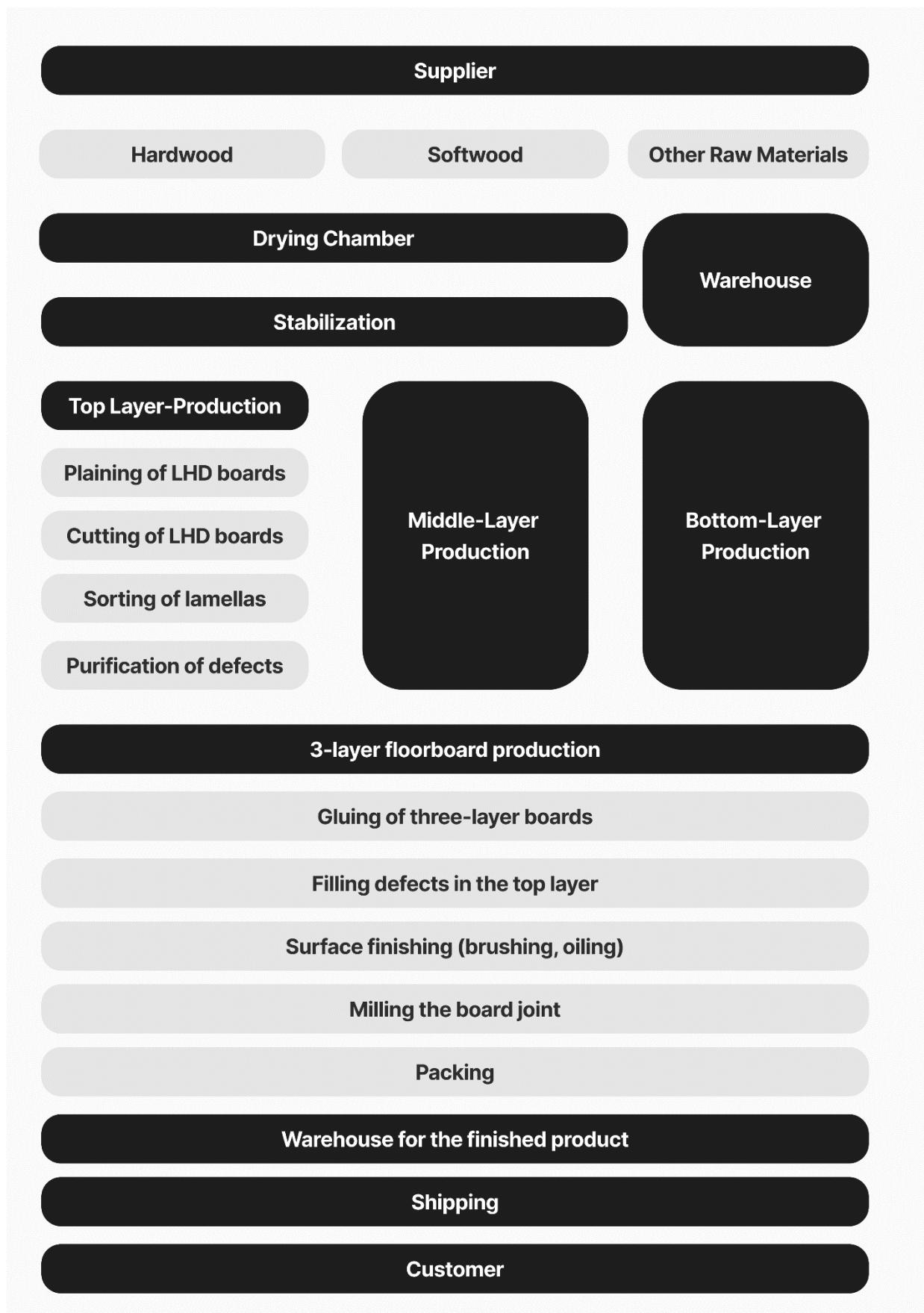


Fig. 3. A scheme of 3-layer wooden floorboards production by Podłogi Sp. z o.o. (Poland)

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

In the adapted scenario, deconstruction of the 3-layer wooden floorboards are performed with the use of electrical tools (module C1). The resulting waste is transported to a waste processing plant distant about 60 km, on 16-32 t lorry EURO 6 (module C2). It is assumed that at the EoL cycle 90% of the floorboard is recovered in municipal incineration (module C3) while 10% undergo landfilling (module C4). Module D presents credits resulting from the benefits from avoided thermal energy production in exchange for using waste from plant (peeling chips) which were used for own production line and central heating.

Data quality

The data selected for LCA originate from ITB-LCI questionnaires completed by Podłogi Sp. z o.o. using the inventory data, ITB database, Ecoinvent database v. 3.10 and KOBiZE. No specific 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 3.10 supplemented by actual national KOBiZE data.

Data collection period

Primary data provided by Podłogi Sp. z o.o. covers a period of 01.01.2023 – 31.12.2023 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

Assumptions and estimates

The impacts of the representative of 3-layer wooden floorboards were aggregated using weighted average. Impacts were inventoried and calculated for all products in 3-layer wooden floorboards product group and they were presented in Tables 3-10.

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. 3.10 and ITB-Database. Specific data quality analysis was a part of external audit. Polish electricity mix used (production) is 0.685 kg CO₂/kWh (KOBiZE 2023).

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LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit

The declaration refers to declared unit (DU) – 1 m² of 3-layer wooden floorboards manufactured by Podłogi Sp. z o.o.

Table 2. System boundaries for the environmental characteristic of 3-layer wooden floorboards manufactured by Podłogi Sp. z o.o.

| 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 | MND | MND | MND | MND | MD | MD | MD | MD | MD | |

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Table 3. LCA results for 1 m² of 3-layer wooden floorboards with thickness of 14 mm - environmental impacts

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|------------------------|-----------|----------|----------|-----------|----------|----------|----------|----------|----------|
| Global Warming Potential | eq. kg CO ₂ | -9.57E+00 | 6.99E-01 | 5.81E+00 | -3.07E+00 | 2.28E-02 | 1.92E-01 | 1.10E+01 | 6.65E-02 | 6.48E+00 |
| Greenhouse gas potential - fossil | eq. kg CO ₂ | 2.31E+00 | 6.97E-01 | 5.76E+00 | 8.77E+00 | 2.27E-02 | 1.92E-01 | 1.14E-01 | 9.10E-03 | 2.28E-01 |
| Greenhouse gas potential - biogenic | eq. kg CO ₂ | -1.26E+01 | 2.28E-03 | 3.97E-02 | -1.26E+01 | 1.45E-04 | 1.06E-04 | 1.05E+01 | 5.74E-02 | 6.25E+00 |
| Global warming potential - land use and land use change | eq. kg CO ₂ | 1.28E-01 | 2.73E-04 | 2.03E-03 | 1.30E-01 | 7.99E-06 | 6.06E-05 | 2.95E-05 | 5.05E-06 | 3.44E-04 |
| Stratospheric ozone depletion potential | eq. kg CFC 11 | 6.94E-08 | 1.53E-07 | 1.11E-07 | 3.34E-07 | 4.38E-10 | 3.83E-09 | 1.91E-09 | 2.31E-10 | 3.28E-09 |
| Soil and water acidification potential | eq. mol H ⁺ | 1.36E-02 | 2.75E-03 | 6.15E-02 | 7.78E-02 | 2.42E-04 | 3.76E-04 | 1.16E-03 | 6.34E-05 | 9.29E-03 |
| Eutrophication potential - freshwater | eq. kg P | 7.50E-04 | 4.72E-05 | 1.05E-02 | 1.13E-02 | 4.15E-05 | 1.26E-05 | 4.89E-05 | 6.94E-06 | 1.19E-04 |
| Eutrophication potential - seawater | eq. kg N | 2.32E-03 | 8.24E-04 | 8.76E-03 | 1.19E-02 | 3.44E-05 | 8.87E-05 | 6.21E-04 | 2.94E-04 | 4.32E-03 |
| Eutrophication potential - terrestrial | eq. mol N | 2.65E-02 | 8.99E-03 | 7.50E-02 | 1.10E-01 | 2.95E-04 | 9.58E-04 | 5.96E-03 | 2.61E-04 | 4.84E-02 |
| Potential for photochemical ozone synthesis | eq. kg NMVOC | 1.35E-02 | 2.82E-03 | 2.16E-02 | 3.80E-02 | 8.28E-05 | 6.35E-04 | 1.51E-03 | 1.06E-04 | 1.20E-02 |
| Potential for depletion of abiotic resources - non-fossil resources | eq. kg Sb | 1.25E-05 | 2.50E-06 | 8.38E-06 | 2.34E-05 | 3.30E-08 | 6.28E-07 | 2.21E-07 | 2.01E-08 | 1.65E-06 |
| Abiotic depletion potential - fossil fuels | MJ | 5.62E+01 | 1.03E+01 | 9.47E+01 | 1.61E+02 | 3.73E-01 | 2.68E+00 | 9.56E-01 | 1.99E-01 | 3.49E+00 |
| Water deprivation potential | eq. m ³ | 2.07E+00 | 4.81E-02 | 1.93E+00 | 4.04E+00 | 7.57E-03 | 1.29E-02 | 4.81E-01 | 9.20E-04 | 1.92E-01 |

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Table 4. LCA results for 1 m² of 3-layer wooden floorboards with thickness of 14 mm - the resource use

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C1 | C2 | C3 | C4 | D |
|--|----------------|----------|----------|----------|----------|----------|----------|-----------|-----------|----------|
| Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials | MJ | 8.87E+01 | 1.53E-01 | 6.87E+00 | 9.57E+01 | 2.70E-02 | 5.17E-02 | -1.01E+02 | -1.35E+01 | 6.71E-01 |
| Consumption of renewable primary energy resources used as raw materials | MJ | 7.33E+01 | 0.00E+00 | 0.00E+00 | 7.33E+01 | 0.00E+00 | 0.00E+00 | 1.01E+02 | 1.35E+01 | 0.00E+00 |
| Total consumption of renewable primary energy resources | MJ | 1.62E+02 | 1.53E-01 | 6.87E+00 | 1.69E+02 | 2.70E-02 | 5.17E-02 | 2.16E-02 | 2.94E-03 | 6.71E-01 |
| Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials | MJ | 4.49E+01 | 1.03E+01 | 1.00E+02 | 1.56E+02 | 3.95E-01 | 2.68E+00 | 9.56E-01 | 1.99E-01 | 3.49E+00 |
| Consumption of non-renewable primary energy resources used as raw materials | MJ | 1.83E+01 | 0.00E+00 | 1.89E-03 | 1.83E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total consumption of non-renewable primary energy resources | MJ | 6.32E+01 | 1.03E+01 | 1.00E+02 | 1.74E+02 | 3.95E-01 | 2.68E+00 | 9.56E-01 | 1.99E-01 | 3.49E+00 |
| Consumption of secondary materials | kg | 9.39E-03 | 3.56E-03 | 7.68E-03 | 2.06E-02 | 3.01E-05 | 1.17E-03 | 2.31E-03 | 7.18E-05 | 3.09E-03 |
| Consumption of renewable secondary fuels | MJ | 4.52E-04 | 3.92E-05 | 4.23E-05 | 5.33E-04 | 1.65E-07 | 1.19E-05 | 5.39E-06 | 1.35E-06 | 3.08E+01 |
| Consumption of non-renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Net consumption of freshwater resources | m ³ | 5.13E-02 | 1.31E-03 | 2.50E-02 | 7.77E-02 | 1.21E-04 | 3.63E-04 | -1.62E-03 | -2.96E-03 | 2.41E-03 |

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Table 5. LCA results for 1 m² of 3-layer wooden floorboards with thickness of 14 mm – additional impacts indicators

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|--|-------------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|
| Particulate matter | disease incidence | 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 |
| Potential comparative toxic unit for ecosystems | CTUe | 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 |
| Potential comparative toxic unit for humans (non-cancer effects) | CTUh | 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 |

Table 6. LCA results for 1 m² of 3-layer wooden floorboards with thickness of 14 mm – waste categories

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C1 | C2 | C3 | C4 | D |
|---------------------------------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Hazardous waste neutralized | kg | 1.20E-01 | 1.18E-02 | 1.85E-04 | 1.32E-01 | 7.71E-08 | 3.50E-03 | 1.29E-02 | 3.47E-04 | 1.32E-02 |
| Non-hazardous waste neutralised | kg | 2.39E+00 | 2.14E-01 | 5.67E+00 | 8.27E+00 | 2.20E-03 | 8.23E-02 | 6.98E-02 | 3.97E+00 | 7.53E-01 |
| Radioactive waste | kg | 1.99E-05 | 6.77E-05 | 8.15E-05 | 1.69E-04 | 3.20E-07 | 1.03E-06 | 2.78E-07 | 4.83E-08 | 1.72E-05 |
| Components for re-use | kg | 0.00E+00 |
| Materials for recycling | kg | 6.06E-04 | 3.50E-05 | 6.37E-04 | 1.28E-03 | 2.26E-06 | 2.06E-05 | 1.00E-05 | 3.35E-06 | 7.92E-04 |
| Materials for energy recovery | kg | 3.96E-06 | 2.59E-07 | 8.07E-07 | 5.02E-06 | 3.17E-09 | 5.99E-08 | 1.40E-07 | 1.37E-08 | 1.33E-07 |
| Energy exported | MJ | 3.14E-02 | 1.19E-02 | 2.75E-01 | 3.18E-01 | 1.08E-03 | 3.88E-03 | 3.19E-04 | 4.16E-05 | 1.29E-02 |

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Table 7. LCA results for 1 m² of 3-layer wooden floorboards with thickness of 15 mm - environmental impacts

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|------------------------|-----------|----------|----------|-----------|----------|----------|----------|----------|----------|
| Global Warming Potential | eq. kg CO ₂ | -1.03E+01 | 6.99E-01 | 5.81E+00 | -3.75E+00 | 2.28E-02 | 1.92E-01 | 1.10E+01 | 6.65E-02 | 6.48E+00 |
| Greenhouse gas potential - fossil | eq. kg CO ₂ | 2.48E+00 | 6.97E-01 | 5.76E+00 | 8.94E+00 | 2.27E-02 | 1.92E-01 | 1.14E-01 | 9.10E-03 | 2.28E-01 |
| Greenhouse gas potential - biogenic | eq. kg CO ₂ | -1.35E+01 | 2.28E-03 | 3.97E-02 | -1.35E+01 | 1.45E-04 | 1.06E-04 | 1.05E+01 | 5.74E-02 | 6.25E+00 |
| Global warming potential - land use and land use change | eq. kg CO ₂ | 1.37E-01 | 2.73E-04 | 2.03E-03 | 1.39E-01 | 7.99E-06 | 6.06E-05 | 2.95E-05 | 5.05E-06 | 3.44E-04 |
| Stratospheric ozone depletion potential | eq. kg CFC 11 | 7.44E-08 | 1.53E-07 | 1.11E-07 | 3.39E-07 | 4.38E-10 | 3.83E-09 | 1.91E-09 | 2.31E-10 | 3.28E-09 |
| Soil and water acidification potential | eq. mol H ⁺ | 1.46E-02 | 2.75E-03 | 6.15E-02 | 7.88E-02 | 2.42E-04 | 3.76E-04 | 1.16E-03 | 6.34E-05 | 9.29E-03 |
| Eutrophication potential - freshwater | eq. kg P | 8.04E-04 | 4.72E-05 | 1.05E-02 | 1.14E-02 | 4.15E-05 | 1.26E-05 | 4.89E-05 | 6.94E-06 | 1.19E-04 |
| Eutrophication potential - seawater | eq. kg N | 2.49E-03 | 8.24E-04 | 8.76E-03 | 1.21E-02 | 3.44E-05 | 8.87E-05 | 6.21E-04 | 2.94E-04 | 4.32E-03 |
| Eutrophication potential - terrestrial | eq. mol N | 2.84E-02 | 8.99E-03 | 7.50E-02 | 1.12E-01 | 2.95E-04 | 9.58E-04 | 5.96E-03 | 2.61E-04 | 4.84E-02 |
| Potential for photochemical ozone synthesis | eq. kg NMVOC | 1.45E-02 | 2.82E-03 | 2.16E-02 | 3.89E-02 | 8.28E-05 | 6.35E-04 | 1.51E-03 | 1.06E-04 | 1.20E-02 |
| Potential for depletion of abiotic resources - non-fossil resources | eq. kg Sb | 1.34E-05 | 2.50E-06 | 8.38E-06 | 2.43E-05 | 3.30E-08 | 6.28E-07 | 2.21E-07 | 2.01E-08 | 1.65E-06 |
| Abiotic depletion potential - fossil fuels | MJ | 6.02E+01 | 1.03E+01 | 9.47E+01 | 1.65E+02 | 3.73E-01 | 2.68E+00 | 9.56E-01 | 1.99E-01 | 3.49E+00 |
| Water deprivation potential | eq. m ³ | 2.22E+00 | 4.81E-02 | 1.93E+00 | 4.19E+00 | 7.57E-03 | 1.29E-02 | 4.81E-01 | 9.20E-04 | 1.92E-01 |

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Table 8. LCA results for 1 m² of 3-layer wooden floorboards with thickness of 15 mm - the resource use

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C1 | C2 | C3 | C4 | D |
|--|----------------|----------|----------|----------|----------|----------|----------|-----------|-----------|----------|
| Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials | MJ | 9,50E+01 | 1.53E-01 | 6.87E+00 | 1,02E+02 | 2.70E-02 | 5.17E-02 | -1.01E+02 | -1.35E+01 | 6.71E-01 |
| Consumption of renewable primary energy resources used as raw materials | MJ | 7,86E+01 | 0.00E+00 | 0.00E+00 | 7,86E+01 | 0.00E+00 | 0.00E+00 | 1.01E+02 | 1.35E+01 | 0.00E+00 |
| Total consumption of renewable primary energy resources | MJ | 1,74E+02 | 1.53E-01 | 6.87E+00 | 1,81E+02 | 2.70E-02 | 5.17E-02 | 2.16E-02 | 2.94E-03 | 6.71E-01 |
| Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials | MJ | 4,81E+01 | 1.03E+01 | 1.00E+02 | 1,59E+02 | 3.95E-01 | 2.68E+00 | 9.56E-01 | 1.99E-01 | 3.49E+00 |
| Consumption of non-renewable primary energy resources used as raw materials | MJ | 1,96E+01 | 0.00E+00 | 1.89E-03 | 1,96E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total consumption of non-renewable primary energy resources | MJ | 6,77E+01 | 1.03E+01 | 1.00E+02 | 1,78E+02 | 3.95E-01 | 2.68E+00 | 9.56E-01 | 1.99E-01 | 3.49E+00 |
| Consumption of secondary materials | kg | 1,01E-02 | 3.56E-03 | 7.68E-03 | 2,13E-02 | 3.01E-05 | 1.17E-03 | 2.31E-03 | 7.18E-05 | 3.09E-03 |
| Consumption of renewable secondary fuels | MJ | 4,84E-04 | 3.92E-05 | 4.23E-05 | 5,66E-04 | 1.65E-07 | 1.19E-05 | 5.39E-06 | 1.35E-06 | 3.08E+01 |
| Consumption of non-renewable secondary fuels | MJ | 0,00E+00 | 0.00E+00 | 0.00E+00 | 0,00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Net consumption of freshwater resources | m ³ | 5,50E-02 | 1.31E-03 | 2.50E-02 | 8,13E-02 | 1.21E-04 | 3.63E-04 | -1.62E-03 | -2.96E-03 | 2.41E-03 |

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Table 9. LCA results for 1 m² of 3-layer wooden floorboards with thickness of 15 mm – additional impacts indicators

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|--|-------------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|
| Particulate matter | disease incidence | 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 |
| Potential comparative toxic unit for ecosystems | CTUe | 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 |
| Potential comparative toxic unit for humans (non-cancer effects) | CTUh | 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 |

Table 10. LCA results for 1 m² of 3-layer wooden floorboards with thickness of 15 mm – waste categories

| Indicator | Unit | A1 | A2 | A3 | A1-A3 | C1 | C2 | C3 | C4 | D |
|---------------------------------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Hazardous waste neutralized | kg | 1.29E-01 | 1.18E-02 | 1.85E-04 | 1.41E-01 | 7.71E-08 | 3.50E-03 | 1.29E-02 | 3.47E-04 | 1.32E-02 |
| Non-hazardous waste neutralised | kg | 2.56E+00 | 2.14E-01 | 5.67E+00 | 8.44E+00 | 2.20E-03 | 8.23E-02 | 6.98E-02 | 3.97E+00 | 7.53E-01 |
| Radioactive waste | kg | 2.14E-05 | 6.77E-05 | 8.15E-05 | 1.70E-04 | 3.20E-07 | 1.03E-06 | 2.78E-07 | 4.83E-08 | 1.72E-05 |
| Components for re-use | kg | 0.00E+00 |
| Materials for recycling | kg | 6.49E-04 | 3.50E-05 | 6.37E-04 | 1.32E-03 | 2.26E-06 | 2.06E-05 | 1.00E-05 | 3.35E-06 | 7.92E-04 |
| Materials for energy recovery | kg | 4.24E-06 | 2.59E-07 | 8.07E-07 | 5.31E-06 | 3.17E-09 | 5.99E-08 | 1.40E-07 | 1.37E-08 | 1.33E-07 |
| Energy exported | MJ | 3.37E-02 | 1.19E-02 | 2.75E-01 | 3.20E-01 | 1.08E-03 | 3.88E-03 | 3.19E-04 | 4.16E-05 | 1.29E-02 |

Type III Environmental Product Declaration No. 725/2024

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)

external

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 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 v. 1.6 General Product Category Rules for Construction Products
- EN 14342:2013 Wood flooring and parquet - Characteristics, evaluation of conformity and marking
- 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
- ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- PN-EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business
- KOBiZE Wskaźniki emisjyjności CO₂, SO₂, NO_x, CO i pyłu całkowitego dla energii elektrycznej, 2023

LCA, LCI audit and input data verification

Mateusz Kozicki, PhD

Head of the Thermal Physic, Acoustics
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Agnieszka Winkler-Skalna, PhD

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CERTIFICATE № 725/2024 of TYPE III ENVIRONMENTAL DECLARATION

Products:

Three-layer wooden floorboards

Manufacturer:

Podłogi Sp. z o.o.

ul. Kolejowa 7, 37-100 Łąńcut, Poland

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 20th December 2024 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physics, Acoustics
and Environment Department

Agnieszka Winkler-Skalna, PhD



Deputy Director
for Research and Innovation

Krzesztof Kuczyński, PhD

Warsaw, December 2024