Type III Environmental Product Declaration No. 446/2023

Issuance date: 16.06.2023
Validity date: 16.06.2028

3-layer wooden floorboards

Owner of the EPD:

Baltic Wood S.A.
Address: Fabryczna 6a
38-200 Jasło, Poland
Website: www.balticwood.pl
Contact: info@balticwood.pl

EPD Program Operator:

Instytut Techniki Budowlanej (ITB)
Address: Filtrowa 1
00-611 Warsaw, Poland
Website: www.itb.pl
Contact: energia@itb.pl

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: 2023
Product standard: EN 13489:2017-11
Service Life: 30 years
PCR: ITB-PCR A
Declared unit: 1 m^2
Reasons for performing LCA: B2B
Representativeness: Polish, European

MANUFACTURER

Baltic Wood S.A. is a polish manufacturer of layered wooden floors. The company distributes its products among 62 countries all over the world. The company was founded over 20 years ago in Poland and quickly expanded its brand into the international marketplace. The modern production plant, the company head office and the sales offices are located in the town of Jasło, Poland. Baltic Wood S.A. declares that has the status of a large enterprise.

Fig. 1 Baltic Wood S.A. production line located in Jasło, Poland.

PRODUCTS DESCRIPTION AND APPLICATION

The Baltic Wood floor 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.

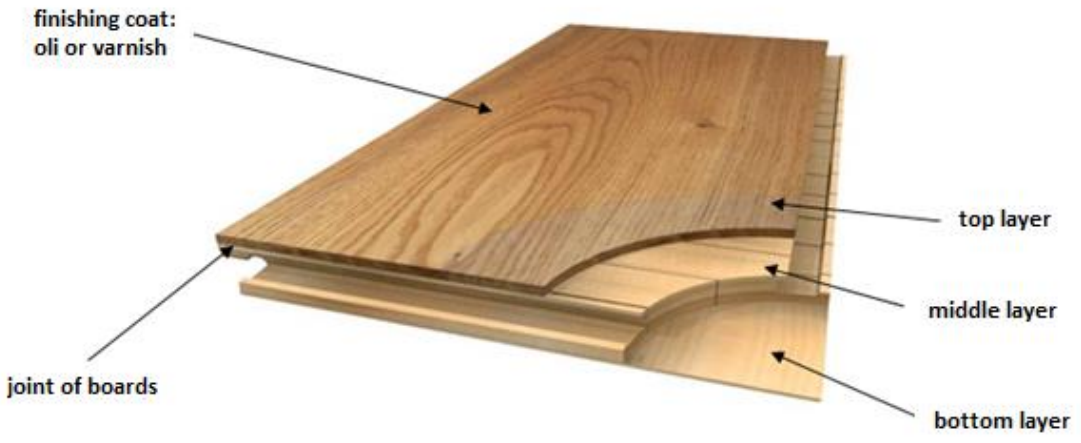

Fig. 2 Construction of a three-layer floor produced by Baltic Wood S.A.

Table 1. Specification of 3-layer wooden floorboard produced by Baltic Wood S.A

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/m2 - for thickness 21,3 mm - 10,5 kg/m^2	Not applicable	Not applicable
Moisture content [%]	7,0	+/- 2,0	5.0 - 9.0

Table 2. Basic properties of 3-layer wooden floorboard produced by Baltic Wood S.A.

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 5mm)	-	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 characterised 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 (14 mm) and T&G system (21,3 mm). The structure is made of spruce wood, which is characterised 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.

=> 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.

More information can be found on the Baltic Wood S.A. website: www.balticwood.pl.

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Declared Unit

The declaration refers to declared unit (DU) – 1 m^2 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 Jasło (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 Baltic Wood S.A. 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. 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, planning, cutting, gluing and finishing. Hardwood and softwood are delivered to factory located in Jasło, 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.

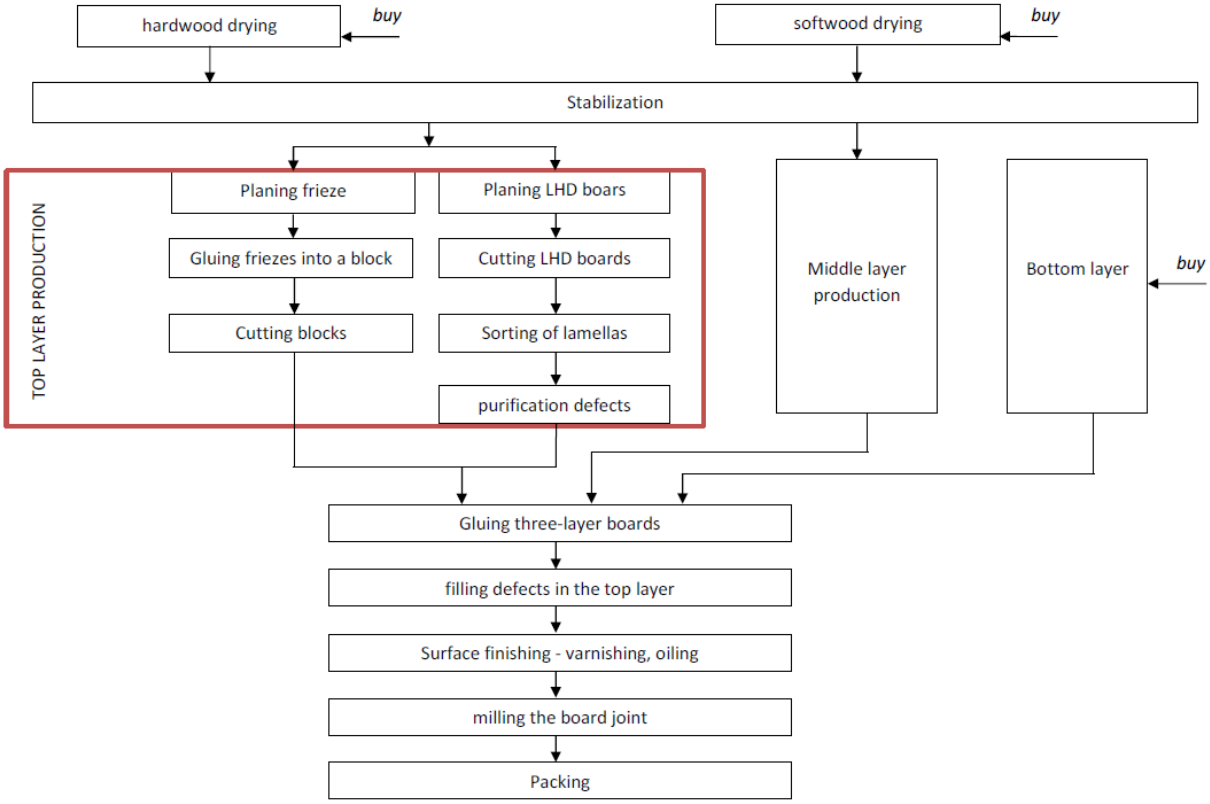

Fig. 3. A scheme of the 3-layer wooden floorboard production by Baltic Wood S.A. factory (Jasło, Poland)

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% 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 Baltic Wood S.A. 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 Baltic Wood S.A. 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.

LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit

The declaration refers to declared unit (DU) – 1 m^2 of 3-layer wooden floorboard manufactured by Baltic Wood S.A.

Table 3. System boundaries for the environmental characteristic for 3-layer wooden floorboard manufactured by Baltic Wood S.A.

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

Table 4. LCA results of 3-layer wooden floorboard manufactured by Baltic Wood S.A.- environmental impacts (DU: 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	-1.31E+01	1.55E+00	6.27E+00	-5.26E+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	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	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	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	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	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	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	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	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	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	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	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	1.51E-02	5.68E-03	4.99E-01	1.22E-04	-2.96E-01

Table 5. LCA results of 3-layer wooden floorboard manufactured by Baltic Wood S.A. – additional impacts indicators (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Particulate matter	disease incidence	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
Potential comparative toxic unit for ecosystems	CTUe	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
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA	INA	INA	INA	INA	INA

Table 6. LCA results of 3-layer wooden floorboard manufactured by Baltic Wood S.A. - the resource use (DU: 1m^2)

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	2.18E+02	3.87E-01	7.12E+00	2.25E+02	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	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	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	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	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	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	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	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	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	6.79E-02	3.19E-03	2.92E-02	1.00E-01	2.42E-04	1.55E-04	-1.68E-03	2.14E-05	-3.50E-03

Table 7. LCA results of 3-layer wooden floorboard manufactured by Baltic Wood S.A. - waste categories (DU: 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste. neutralized	kg	9.56E-02	2.94E-02	5.93E-04	1.26E-01	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	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	9.26E-04	7.83E-05	6.04E-04	1.61E-03	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	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	2.16E-03	1.36E-03	3.31E-04	3.79E-06	-1.12E-02

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) [x] 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 Signature Not Verified Dokument podpisany przez Mateusz Kozicki/ITB Data: 2023.06.16 14:41:33 CEST

Note1: The declaration owner has the sole ownership, liability, and responsibility for the declaration. Declarations within the same product category but from different programmes 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: The declaration owner has the sole ownership, liability, and responsibility for the for the information provided and contained in EPD. 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.

Note 3: Note: 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
- 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
- KOBiZE Wskaźniki emisyjności CO_2, SO_2, NO_x, CO i pyłu całkowitego dla energii elektrycznej, 2021

Instytut Techniki Budowlanej

Elektronicznie podpisany przez Agnieszka Winkler-Skalna; ITB
Data: 2023.06.16 14:51:25 +02'00'

Instytut Techniki Budowlanej
00-611 Warsaw, Filtrowa 1

Thermal Physics, Acoustics and Environment Department
02-656 Warsaw, Ksawerów 21

CERTIFICATE № 446/2023
of TYPE III ENVIRONMENTAL DECLARATION

Products:

3-layer wooden floorboards

Manufacturer:

Baltic Wood S.A.

ul. Fabryczna 6a, 38-200 Jasło, 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 6th June 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

INSTYTUT TECHNIKI BUDOWLANEJ

Deputy Director for Research and Innovation
Krzysztof Kuczyński, PhD

Warsaw, June 2023