Barlinek
FLOORS FOREVER

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ENVIRONMENTAL PRODUCT DECLARATION

3-LAYER WOODEN FLOORBOARDS
1-STRIP AND 3-STRIP

ECO PLATFORM EPD EN 15804 VERIFIED

EPD program operator

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The Barlinek Group is a manufacturer of an engineered flooring. As well as the Barlinek flooring, the Barlinek group also produces certified flooring for sporting facilities, skirting boards and wood biofuels.

ENVIRONMENTAL PRODUCT DECLARATION TYPE III NO. 373/2022

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:	2022
Product standard:	EN 13489:2017-11
Service Life:	5 to 30 years
PCR:	ITB-PCR A
Declared unit:	1 m^2
Reasons for performing LCA:	B2B
Representativeness:	Polish, European

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Manufacturer and Product Information

Barlinek Inwestycje Sp. z o.o. is a Polish manufacturer of layered wooden floors with potential production of 10 mln m^2 per annum. The company distributes its products among 55 countries located in 5 continents. As well as the Barlinek floorboards, the group also produces certified flooring for sporting facilities, skirting boards and wood biofuels – wood pellet and fireplace briquette. Barlinek has also initiated many programmes concerning environmental protection and ecological education. For many years now the company has been conducting its 1 for 1 programme, whereby the planting of one tree is co-financed for each purchased pack of Barlinek floorboards marked with a logo of this pro-ecological initiative.

Barlinek floorboarding:

- possible to lay over underfloor heating
- solid construction
- floor resistant to changes in temperature and humidity
- fast and easy DIY installation
- product ready to use immediately after installation
- possible to renovate

Fig. 1. Cross structure of 3-layer wooden floorboard produced by Barlinek Inwestycje Sp. z o.o.

Barlinek floorboard is made from three layers of real wood arranged in a cross structure (Fig. 1) in order to prevent swelling, squeaking or drying out causing splits. The cross construction reduces natural tension and compression of wood, provides a balance between the layers of the board, and thus guarantees the stability of the floor. The Barlinek floorboard's layered structure is suited for underfloor heating. The floorboards are joined using 5Gc joints and Barclick (Fig. 2) which allow to lay the floor without most of the tools which are usually necessary to install a floor. Specification of the product is shown in Table 1.

Joints – 5Gc BARLOCK & BARCLIK systems provide:

- fast & easy installation
- reductions of contamination
- possibility to lay again
- reduction of damage risk during installation or dismantling

Fig. 2. Views of Barlinek floorboards with 5Gc BARLOCK and BARCLIK systems

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Table 1. Specification of 3-layer wooden floorboard produced by Barlinek Inwestycje Sp. z o.o.

3-LAYER WOODEN FLOORBOARD

Series:	Advance, Décor, Easy Basic, Easy Classic, Life, Pure, Pure Vintage Line, Pure Classico Line, Senses, Sport Extreme, Sport Training, Tastes of Life and others
Wood species:	oak, beech, birch, jatobe, ash, maple, merbau, sapele
Colour:	natural, white, brown, light brown, dark brown, smoked effect, cognac, cream, cream white-wash, espresso, gold, graphite, coffee, creamy-beige, honey, olive, grey, walnut, gold-brown, row effect, extreme white, grey beige, oak effect
Floor board pattern	1-strip, 3-strip, 3-strip, 4-strip, 6-strip
Length [mm]	660, 725, 1092, 1800, 2200
Width [mm]	110, 130, 155, 180, 207, 240
Thickness [mm]	10, 14, 15, 18

The 3-layer wooden flooarboard is offered in two pattern:

- 1-strip: one row of staves along the width of the board (similar appearance to solid floorboard)
- 3-strip: three rows of staves across the width of the board (similar appearance to a traditional floor).

The Barlinek floorboard can be installed in a floating system, that is glueless and based on modern tongue-and-groove joints. It is a method, that allows to install the floor yourself. The floor is also easy to be dismantled or re-installed. An alternative is to install the floor in a traditional way - by gluing the boards to the subfloor, which ensures stability of the installation even on large surfaces. The Barlinek floorboard does not require any additional preservative treatment. The floor is ready for use immediately after installation. The performance of the product is listed in Table 2.

Fig. 3. The view of 3-layer wooden floorboard produced by Barlinek Inwestycje Sp. z o.o. during installation

Characteristics	Declared performance	Harmonized standard
Reaction to fire	D_{fl} – s1, Cfl-s1 for Sport Extreme, finishing with LIF and LIT varnish	EN 14342:2013
Minimal density	500 kg/m^3	
Minimal thickness	10 mm	
Release of formaldehyde	E-1	
Content of pentachlorophenol	≤ 5 ppm	
Thermal conductivity	0,14 W/mK	

Table 2. Performance of 3-layer wooden floorboard produced by Barlinek Inwestycje Sp. z o.o.

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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 Barlinek (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 Barlinek Inwestycje are measured and were allocated to module A3. Packaging materials were not 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

Raw materials such as softwood and hardwood logs come from local suppliers while prefabricated elements come from Ukraine, Germany and Russia. 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. couriers) and average truck (10-16 t) are applied. European standards for average combustion were used for calculations.

Module A3: Production

The Fig. 4 shows the working process during the production of the 3-layer wooden floorboards. The floor manufacturing is basically a three step process including drying, milling and finishing. Green lumber logs are delivered to factory located in Barlinek, where they are fed into a stacking machine prior to kiln drying. Dried lumber then undergoes planning, ripping, trimming and moulding during milling to produce unfinished flooring boards which are future used for the production of 3-layer floorboards. 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 PN-EN ISO 9001 certified.

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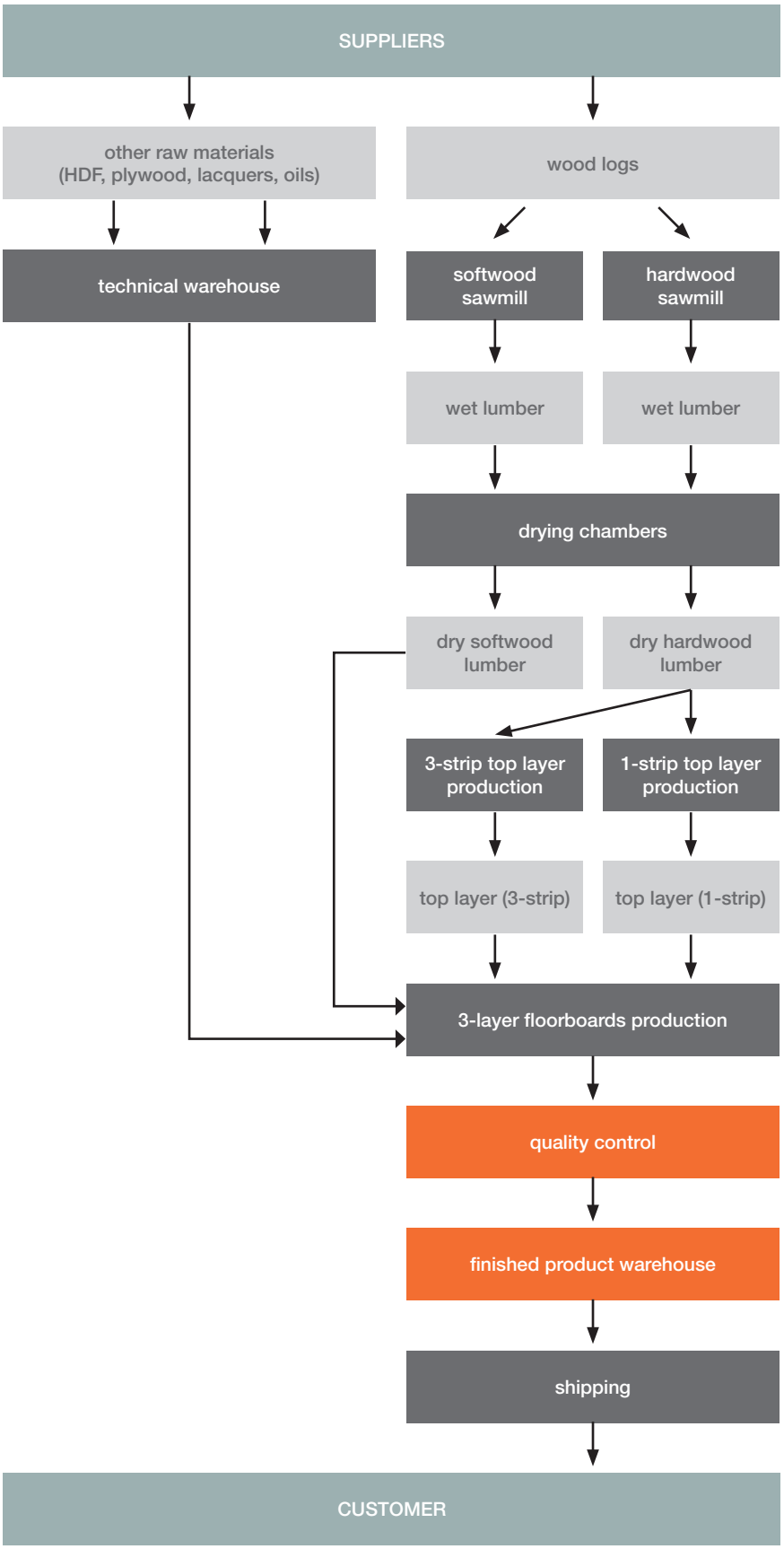

Fig. 4. A scheme of the 3-layer wooden floorboard production by Barlinek factory (Poland) v

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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 about 100 km, on 16-32t 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 Barlinek Inwestycje Sp. z o.o. using the inventory data, ITB and Ecoinvent v. 3.8 databases. 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 3.8. supplemented by actual national KOBiZE data.

Data collection period

Primary data provided by Barlinek Inwestycje Sp. z o.o. 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 weighted 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 EN15804 + A2.

Databases

The data for the processes comes from Ecoinvent v.3.8 and ITB-Database. Specific data quality analysis was a part of external audit.

LIFE CYCLE ASSESSMENT (LCA) - Results

Table 3. System boundaries for the environmental characteristic for 3-layer wooden floorboard manufactured by Barlinek Inwestycje Sp. z o.o.

Environmental assessment information (MNA – Module not assessed, MD – Module 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 floor board with thickness of 10 mm - environmental impacts (DU = 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	-5,62E+00	2,04E+00	4,10E+00	5,19E-01	2,33E-02	1,33E-03	1,06E+01	8,54E-03	5,14E+00
Greenhouse gas potential - fossil	eq. kg CO_2	2,47E+00	2,03E+00	4,03E+00	8,53E+00	2,28E-02	1,33E-03	1,14E-01	9,93E-04	-5,39E+0
Greenhouse gas potential - biogenic	eq. kg CO_2	-8,10E+00	8,85E-03	6,92E-02	-8,03E+00	4,12E-04	4,55E-06	1,05E+01	7,54E-03	1,05E+01
Global warming potential - land use and land use change	eq. kg CO_2	1,95E-01	1,03E-03	1,82E-03	1,98E-01	5,37E-06	5,22E-07	2,95E-05	7,30E-07	-1,87E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	2,99E-07	4,53E-07	1,77E-07	9,30E-07	4,38E-10	3,08E-10	1,91E-09	2,22E-11	-8,59E-07
Soil and water acidification potential	eq. mol H+	1,37E-02	8,03E-03	4,13E-02	6,31E-02	2,42E-04	5,40E-06	1,16E-03	6,83E-06	-4,10E-03
Eutrophication potential - freshwater	eq. kg P	8,32E-04	1,71E-04	6,60E-03	7,60E-03	4,15E-05	8,94E-08	4,89E-05	1,89E-07	-1,98E-05
Eutrophication potential - seawater	eq. kg N	3,02E-03	2,31E-03	6,39E-03	1,17E-02	3,44E-05	1,63E-06	6,21E-04	3,02E-05	-8,91E-04
Eutrophication potential - terrestrial	eq. mol N	3,15E-02	2,51E-02	5,22E-02	1,09E-01	2,95E-04	1,78E-05	5,96E-03	2,71E-05	-1,02E-02
Potential for photochemical ozone synthesis	eq. kg NMVOC	1,19E-02	7,76E-03	1,66E-02	3,63E-02	8,28E-05	5,44E-06	1,51E-03	1,10E-05	-4,08E-03
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	2,86E-05	1,04E-05	4,26E-05	8,16E-05	3,30E-08	4,71E-09	2,21E-07	2,06E-09	-1,64E-06
Abiotic depletion potential - fossil fuels	MJ	4,48E+01	2,98E+01	6,70E+01	1,42E+02	3,73E-01	1,97E-02	9,56E-01	2,07E-02	-9,30E+01
Water deprivation potential	eq. m^3	1,70E+00	1,64E-01	2,05E+00	3,91E+00	7,57E-03	9,13E-05	4,81E-01	1,18E-04	3,40E-01

Table 5. LCA results of 3-layer floor board with thickness of 10 mm - 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	8,98E+01	5,49E-01	2,84E+01	1,19E+02	2,70E-02	2,83E-04	-1,01E+02	-1,12E+00	-1,01E+02
Consumption of renewable primary energy resources used as raw materials	MJ	6,86E+01	0,00E+00	0,00E+00	6,86E+01	0,00E+00	0,00E+00	1,01E+02	1,12E+00	1,01E+02
Total consumption of renewable primary energy resources	MJ	1,58E+02	5,49E-01	2,84E+01	1,87E+02	2,70E-02	2,83E-04	2,16E-02	4,00E-04	-2,27E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1,04E+01	2,98E+01	6,61E+01	1,06E+02	3,95E-01	1,97E-02	9,56E-01	2,07E-02	-9,33E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	6,58E+00	0,00E+00	0,00E+00	6,58E+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	1,70E+01	2,98E+01	7,04E+01	1,17E+02	3,95E-01	1,97E-02	9,56E-01	2,07E-02	-9,33E+01
Consumption of secondary materials	kg	1,34E-02	1,32E-02	1,50E-02	4,16E-02	3,01E-05	6,62E-06	2,31E-03	7,87E-06	-2,42E-03
Consumption of renewable secondary fuels	MJ	2,63E-01	1,54E-04	4,55E-04	2,63E-01	1,65E-07	7,29E-08	5,39E-06	2,70E-07	-9,79E-07
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	3,91E-02	4,39E-03	1,70E-02	6,06E-02	1,21E-04	2,48E-06	-1,62E-03	2,07E-05	-5,25E-03

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Table 6. LCA results of 3-layer floor board with thickness of 10 mm – waste categories (DU = 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste. neutralized	kg	1,44E-01	4,12E-02	3,12E-02	2,16E-01	7,71E-08	2,21E-05	1,29E-02	1,85E-05	-5,41E-03
Non-hazardous waste. neutralised	kg	3,58E+00	7,49E-01	1,67E+00	6,00E+00	2,20E-03	3,93E-04	6,98E-02	5,62E-04	-2,11E-01
Radioactive waste	kg	8,09E-02	2,02E-04	8,99E-05	8,12E-02	3,20E-07	1,36E-07	2,78E-07	6,87E-09	-1,05E-06
Components for re-use	kg	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
Materials for recycling	kg	3,20E-04	1,08E-04	4,87E-03	5,29E-03	2,26E-06	6,11E-08	1,00E-05	1,59E-07	-1,16E-05
Materials for energy recovery	kg	1,32E-02	8,47E-07	2,99E-03	1,62E-02	3,17E-09	4,94E-10	1,40E-07	6,97E-10	-1,84E-07
Energy exported	MJ	1,45E-01	3,78E-02	1,75E-01	3,58E-01	1,08E-03	2,19E-05	3,19E-04	3,65E-06	-3,10E-02

Table 7. LCA results of 3-layer floor board with thickness of 14 mm – environmental impacts (DU = 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	-8,47E+00	2,04E+00	4,10E+00	-2,32E+00	2,33E-02	1,33E-03	1,06E+01	8,54E-03	5,14E+00
Greenhouse gas potential - fossil	eq. kg CO_2	2,63E+00	2,03E+00	4,03E+00	8,70E+00	2,28E-02	1,33E-03	1,14E-01	9,93E-04	-5,39E+0
Greenhouse gas potential - biogenic	eq. kg CO_2	-1,11E+01	8,85E-03	6,92E-02	-1,10E+01	4,12E-04	4,55E-06	1,05E+01	7,54E-03	1,05E+01
Global warming potential - land use and land use change	eq. kg CO_2	1,97E-01	1,03E-03	1,82E-03	2,00E-01	5,37E-06	5,22E-07	2,95E-05	7,30E-07	-1,87E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	3,02E-07	4,53E-07	1,77E-07	9,33E-07	4,38E-10	3,08E-10	1,91E-09	2,22E-11	-8,59E-07
Soil and water acidification potential	eq. mol H+	1,47E-02	8,03E-03	4,13E-02	6,40E-02	2,42E-04	5,40E-06	1,16E-03	6,83E-06	-4,10E-03
Eutrophication potential - freshwater	eq. kg P	8,89E-04	1,71E-04	6,60E-03	7,66E-03	4,15E-05	8,94E-08	4,89E-05	1,89E-07	-1,98E-05
Eutrophication potential - seawater	eq. kg N	3,34E-03	2,31E-03	6,39E-03	1,20E-02	3,44E-05	1,63E-06	6,21E-04	3,02E-05	-8,91E-04
Eutrophication potential - terrestrial	eq. mol N	3,49E-02	2,51E-02	5,22E-02	1,12E-01	2,95E-04	1,78E-05	5,96E-03	2,71E-05	-1,02E-02
Potential for photochemical ozone synthesis	eq. kg NMVOC	1,32E-02	7,76E-03	1,66E-02	3,76E-02	8,28E-05	5,44E-06	1,51E-03	1,10E-05	-4,08E-03
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	2,89E-05	1,04E-05	4,26E-05	8,19E-05	3,30E-08	4,71E-09	2,21E-07	2,06E-09	-1,64E-06
Abiotic depletion potential - fossil fuels	MJ	4,69E+01	2,98E+01	6,70E+01	1,44E+02	3,73E-01	1,97E-02	9,56E-01	2,07E-02	-9,30E+01
Water deprivation potential	eq. m^3	1,76E+00	1,64E-01	2,05E+00	3,97E+00	7,57E-03	9,13E-05	4,81E-01	1,18E-04	3,40E-01

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Table 8. LCA results of 3-layer floor board with thickness of 14 mm - 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	1,23E+02	5,49E-01	2,84E+01	1,52E+02	2,70E-02	2,83E-04	-1,01E+02	-1,12E+00	-1,01E+02
Consumption of renewable primary energy resources used as raw materials	MJ	9,28E+01	0,00E+00	0,00E+00	9,28E+01	0,00E+00	0,00E+00	1,01E+02	1,12E+00	1,01E+02
Total consumption of renewable primary energy resources	MJ	2,16E+02	5,49E-01	2,84E+01	2,45E+02	2,70E-02	2,83E-04	2,16E-02	4,00E-04	-2,27E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1,25E+01	2,98E+01	6,61E+01	1,08E+02	3,95E-01	1,97E-02	9,56E-01	2,07E-02	-9,33E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	6,58E+00	0,00E+00	0,00E+00	6,58E+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	1,91E+01	2,98E+01	7,04E+01	1,19E+02	3,95E-01	1,97E-02	9,56E-01	2,07E-02	-9,33E+01
Consumption of secondary materials	kg	1,52E-02	1,32E-02	1,50E-02	4,34E-02	3,01E-05	6,62E-06	2,31E-03	7,87E-06	-2,42E-03
Consumption of renewable secondary fuels	MJ	2,63E-01	1,54E-04	4,55E-04	2,64E-01	1,65E-07	7,29E-08	5,39E-06	2,70E-07	-9,79E-07
Consumption of non-renewable secondary fuels	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Net consumption of freshwater resources	m^3	3,98E-02	4,39E-03	1,70E-02	6,12E-02	1,21E-04	2,48E-06	-1,62E-03	2,07E-05	-5,25E-03

Table 9. LCA results of 3-layer floor board with thickness of 14 mm – waste categories (DU = 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste. neutralized	kg	1,49E-01	4,12E-02	3,12E-02	2,22E-01	7,71E-08	2,21E-05	1,29E-02	1,85E-05	-5,41E-03
Non-hazardous waste. neutralised	kg	3,75E+00	7,49E-01	1,67E+00	6,17E+00	2,20E-03	3,93E-04	6,98E-02	5,62E-04	-2,11E-01
Radioactive waste	kg	8,09E-02	2,02E-04	8,99E-05	8,12E-02	3,20E-07	1,36E-07	2,78E-07	6,87E-09	-1,05E-06
Components for re-use	kg	INA	INA	INA	INA	INA	INA	INA	INA	INA
Materials for recycling	kg	3,63E-04	1,08E-04	4,87E-03	5,34E-03	2,26E-06	6,11E-08	1,00E-05	1,59E-07	-1,16E-05
Materials for energy recovery	kg	1,32E-02	8,47E-07	2,99E-03	1,62E-02	3,17E-09	4,94E-10	1,40E-07	6,97E-10	-1,84E-07
Energy exported	MJ	1,47E-01	3,78E-02	1,75E-01	3,60E-01	1,08E-03	2,19E-05	3,19E-04	3,65E-06	-3,10E-02

The Barlinek Group is a manufacturer of an engineered flooring. As well as the Barlinek flooring, the Barlinek group also produces certified flooring for sporting facilities, skirting boards and wood biofuels.

Table 10. LCA results of 3-layer floor board with thickness of 15 mm – environmental impacts (DU = 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	-9,24E+00	2,04E+00	4,10E+00	-3,09E+00	2,33E-02	1,33E-03	1,06E+01	8,54E-03	5,14E+00
Greenhouse gas potential - fossil	eq. kg CO_2	2,68E+00	2,03E+00	4,03E+00	8,74E+00	2,28E-02	1,33E-03	1,14E-01	9,93E-04	-5,39E+0
Greenhouse gas potential - biogenic	eq. kg CO_2	-1,19E+01	8,85E-03	6,92E-02	-1,18E+01	4,12E-04	4,55E-06	1,05E+01	7,54E-03	1,05E+01
Global warming potential - land use and land use change	eq. kg CO_2	1,98E-01	1,03E-03	1,82E-03	2,01E-01	5,37E-06	5,22E-07	2,95E-05	7,30E-07	-1,87E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	3,05E-07	4,53E-07	1,77E-07	9,35E-07	4,38E-10	3,08E-10	1,91E-09	2,22E-11	-8,59E-07
Soil and water acidification potential	eq. mol H+	1,49E-02	8,03E-03	4,13E-02	6,43E-02	2,42E-04	5,40E-06	1,16E-03	6,83E-06	-4,10E-03
Eutrophication potential - freshwater	eq. kg P	9,04E-04	1,71E-04	6,60E-03	7,68E-03	4,15E-05	8,94E-08	4,89E-05	1,89E-07	-1,98E-05
Eutrophication potential - seawater	eq. kg N	3,43E-03	2,31E-03	6,39E-03	1,21E-02	3,44E-05	1,63E-06	6,21E-04	3,02E-05	-8,91E-04
Eutrophication potential - terrestrial	eq. mol N	3,58E-02	2,51E-02	5,22E-02	1,13E-01	2,95E-04	1,78E-05	5,96E-03	2,71E-05	-1,02E-02
Potential for photochemical ozone synthesis	eq. kg NMVOC	1,36E-02	7,76E-03	1,66E-02	3,80E-02	8,28E-05	5,44E-06	1,51E-03	1,10E-05	-4,08E-03
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	2,90E-05	1,04E-05	4,26E-05	8,20E-05	3,30E-08	4,71E-09	2,21E-07	2,06E-09	-1,64E-06
Abiotic depletion potential - fossil fuels	MJ	4,75E+01	2,98E+01	6,70E+01	1,44E+02	3,73E-01	1,97E-02	9,56E-01	2,07E-02	-9,30E+01
Water deprivation potential	eq. m^3	1,78E+00	1,64E-01	2,05E+00	3,99E+00	7,57E-03	9,13E-05	4,81E-01	1,18E-04	3,40E-01

Table 11. LCA results of 3-layer floor board with thickness of 15 mm - 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	1,32E+02	5,49E-01	2,84E+01	1,61E+02	2,70E-02	2,83E-04	-1,01E+02	-1,12E+00	-1,01E+02
Consumption of renewable primary energy resources used as raw materials	MJ	9,93E+01	0,00E+00	0,00E+00	9,93E+01	0,00E+00	0,00E+00	1,01E+02	1,12E+00	1,01E+02
Total consumption of renewable primary energy resources	MJ	2,31E+02	5,49E-01	2,84E+01	2,60E+02	2,70E-02	2,83E-04	2,16E-02	4,00E-04	-2,27E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1,31E+01	2,98E+01	6,61E+01	1,09E+02	3,95E-01	1,97E-02	9,56E-01	2,07E-02	-9,33E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	6,58E+00	0,00E+00	0,00E+00	6,58E+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	1,96E+01	2,98E+01	7,04E+01	1,20E+02	3,95E-01	1,97E-02	9,56E-01	2,07E-02	-9,33E+01
Consumption of secondary materials	kg	1,57E-02	1,32E-02	1,50E-02	4,39E-02	3,01E-05	6,62E-06	2,31E-03	7,87E-06	-2,42E-03
Consumption of renewable secondary fuels	MJ	2,63E-01	1,54E-04	4,55E-04	2,64E-01	1,65E-07	7,29E-08	5,39E-06	2,70E-07	-9,79E-07
Consumption of non-renewable secondary fuels	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Net consumption of freshwater resources	m^3	4,00E-02	4,39E-03	1,70E-02	6,14E-02	1,21E-04	2,48E-06	-1,62E-03	2,07E-05	-5,25E-03

Table 12. LCA results of 3-layer floor board with thickness of 15 mm – waste categories (DU = 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste. neutralized	kg	1,51E-01	4,12E-02	3,12E-02	2,23E-01	7,71E-08	2,21E-05	1,29E-02	1,85E-05	-5,41E-03
Non-hazardous waste. neutralised	kg	3,80E+00	7,49E-01	1,67E+00	6,22E+00	2,20E-03	3,93E-04	6,98E-02	5,62E-04	-2,11E-01
Radioactive waste	kg	8,09E-02	2,02E-04	8,99E-05	8,12E-02	3,20E-07	1,36E-07	2,78E-07	6,87E-09	-1,05E-06
Components for re-use	kg	INA	INA	INA	INA	INA	INA	INA	INA	INA
Materials for recycling	kg	3,73E-04	1,08E-04	4,87E-03	5,35E-03	2,26E-06	6,11E-08	1,00E-05	1,59E-07	-1,16E-05
Materials for energy recovery	kg	1,32E-02	8,47E-07	2,99E-03	1,62E-02	3,17E-09	4,94E-10	1,40E-07	6,97E-10	-1,84E-07
Energy exported	MJ	1,48E-01	3,78E-02	1,75E-01	3,61E-01	1,08E-03	2,19E-05	3,19E-04	3,65E-06	-3,10E-02

Table 13. LCA results of 3-layer floor board with thickness of 18 mm – environmental impacts (DU = 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	-1,17E+01	2,04E+00	4,10E+00	-5,56E+00	2,33E-02	1,33E-03	1,06E+01	8,54E-03	5,14E+00
Greenhouse gas potential - fossil	eq. kg CO_2	2,81E+00	2,03E+00	4,03E+00	8,87E+00	2,28E-02	1,33E-03	1,14E-01	9,93E-04	-5,39E+0
Greenhouse gas potential - biogenic	eq. kg CO_2	-1,45E+01	8,85E-03	6,92E-02	-1,45E+01	4,12E-04	4,55E-06	1,05E+01	7,54E-03	1,05E+01
Global warming potential - land use and land use change	eq. kg CO_2	2,00E-01	1,03E-03	1,82E-03	2,03E-01	5,37E-06	5,22E-07	2,95E-05	7,30E-07	-1,87E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	3,17E-07	4,53E-07	1,77E-07	9,47E-07	4,38E-10	3,08E-10	1,91E-09	2,22E-11	-8,59E-07
Soil and water acidification potential	eq. mol H+	1,57E-02	8,03E-03	4,13E-02	6,50E-02	2,42E-04	5,40E-06	1,16E-03	6,83E-06	-4,10E-03
Eutrophication potential - freshwater	eq. kg P	9,56E-04	1,71E-04	6,60E-03	7,73E-03	4,15E-05	8,94E-08	4,89E-05	1,89E-07	-1,98E-05
Eutrophication potential - seawater	eq. kg N	3,69E-03	2,31E-03	6,39E-03	1,24E-02	3,44E-05	1,63E-06	6,21E-04	3,02E-05	-8,91E-04
Eutrophication potential - terrestrial	eq. mol N	3,85E-02	2,51E-02	5,22E-02	1,16E-01	2,95E-04	1,78E-05	5,96E-03	2,71E-05	-1,02E-02
Potential for photochemical ozone synthesis	eq. kg NMVOC	1,49E-02	7,76E-03	1,66E-02	3,92E-02	8,28E-05	5,44E-06	1,51E-03	1,10E-05	-4,08E-03
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	2,94E-05	1,04E-05	4,26E-05	8,24E-05	3,30E-08	4,71E-09	2,21E-07	2,06E-09	-1,64E-06
Abiotic depletion potential - fossil fuels	MJ	4,93E+01	2,98E+01	6,70E+01	1,46E+02	3,73E-01	1,97E-02	9,56E-01	2,07E-02	-9,30E+01
Water deprivation potential	eq. m^3	1,84E+00	1,64E-01	2,05E+00	4,05E+00	7,57E-03	9,13E-05	4,81E-01	1,18E-04	3,40E-01

Table 14. LCA results of 3-layer floor board with thickness of 18 mm - 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	1,60E+02	5,49E-01	2,84E+01	1,89E+02	2,70E-02	2,83E-04	-1,01E+02	-1,12E+00	-1,01E+02
Consumption of renewable primary energy resources used as raw materials	MJ	1,20E+02	0,00E+00	0,00E+00	1,20E+02	0,00E+00	0,00E+00	1,01E+02	1,12E+00	1,01E+02
Total consumption of renewable primary energy resources	MJ	2,80E+02	5,49E-01	2,84E+01	3,09E+02	2,70E-02	2,83E-04	2,16E-02	4,00E-04	-2,27E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1,49E+01	2,98E+01	6,61E+01	1,11E+02	3,95E-01	1,97E-02	9,56E-01	2,07E-02	-9,33E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	6,58E+00	0,00E+00	0,00E+00	6,58E+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	2,15E+01	2,98E+01	7,04E+01	1,22E+02	3,95E-01	1,97E-02	9,56E-01	2,07E-02	-9,33E+01
Consumption of secondary materials	kg	1,72E-02	1,32E-02	1,50E-02	4,54E-02	3,01E-05	6,62E-06	2,31E-03	7,87E-06	-2,42E-03
Consumption of renewable secondary fuels	MJ	2,63E-01	1,54E-04	4,55E-04	2,64E-01	1,65E-07	7,29E-08	5,39E-06	2,70E-07	-9,79E-07
Consumption of non-renewable secondary fuels	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Net consumption of freshwater resources	m^3	4,07E-02	4,39E-03	1,70E-02	6,21E-02	1,21E-04	2,48E-06	-1,62E-03	2,07E-05	-5,25E-03

Table 15. LCA results of 3-layer floor board with thickness of 18 mm – waste categories (DU = 1m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste. neutralized	kg	1,56E-01	4,12E-02	3,12E-02	2,28E-01	7,71E-08	2,21E-05	1,29E-02	1,85E-05	-5,41E-03
Non-hazardous waste. neutralised	kg	3,94E+00	7,49E-01	1,67E+00	6,36E+00	2,20E-03	3,93E-04	6,98E-02	5,62E-04	-2,11E-01
Radioactive waste	kg	8,09E-02	2,02E-04	8,99E-05	8,12E-02	3,20E-07	1,36E-07	2,78E-07	6,87E-09	-1,05E-06
Components for re-use	kg	INA	INA	INA	INA	INA	INA	INA	INA	INA
Materials for recycling	kg	4,00E-04	1,08E-04	4,87E-03	5,37E-03	2,26E-06	6,11E-08	1,00E-05	1,59E-07	-1,16E-05
Materials for energy recovery	kg	1,32E-02	8,47E-07	2,99E-03	1,62E-02	3,17E-09	4,94E-10	1,40E-07	6,97E-10	-1,84E-07
Energy exported	MJ	1,54E-01	3,78E-02	1,75E-01	3,67E-01	1,08E-03	2,19E-05	3,19E-04	3,65E-06	-3,10E-02

The Barlinek Group is a manufacturer of an engineered flooring. As well as the Barlinek flooring, the Barlinek group also produces certified flooring for sporting facilities, skirting boards and wood biofuels.

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 Signature Not Verified Dokument podpisany przez Mateusz Kozicki ITB Data: 2022.11.09 14:34:58 CET **Verification of LCA:** Michał Piasecki, PhD, D.Sc. Eng Signature Not Verified Dokument podpisany przez Michał Piasecki ITB Data: 2022.11.09 14:53:21 CET

Note: 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.

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
- PN-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. Grudzień 2021

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

CERTIFICATE № 373/2022
of TYPE III ENVIRONMENTAL DECLARATION

Product:

3-layer wooden floorboards 1-strip and 3-strip

Manufacturer:

BARLINEK INWESTYCJE Sp. z o.o.
ul. Przemysłowa 1, 74-320 Barlinek, 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

Sustainability of construction works.
Environmental product declarations.
Core rules for the product category of construction products.

This certificate, issued for the first time on 3rd November 2022 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, November 2022


Barlinek
FLOORS FOREVER