SENTINEL HOLDING
INSTITUT

SHI PRODUCT PASSPORT

Find products. Certify buildings.

SHI Product Passport No.:

14296-10-1001

Barlinek Naturholzböden - Wood Floors

Product group: Floor coverings / Wall coverings - Parquet

Barlinek
WOODEN FLOORS

BARLINEK S.A
Al. Solidarności 36
25-323 Kielce

Product qualities:

- SHI Product Assessment 2024
- QNG Qualitätssiegel Nachhaltiges Gebäude
- DGNB NEW CONSTRUCTION 2023.2
- DGNB NEW CONSTRUCTION 2023
- DGNB NEW CONSTRUCTION 2018
- BNB-BN NEUBAU V2015
- EU TAXONOMY
- BREEAM DE NEUBAU 2018
- LEED v4.1 (outside US)

CERTIFIED SUSTAINABLE PRODUCT
SHI PRODUCT PASSPORT
SENTINEL HOLDING INSTITUT
www.sentinel-holding.eu

Köttner

Helmut Köttner
Scientific Director
Freiburg, 17 August 2026

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Product:
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SHI Product Passport no.:
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The SHI Database is the first and only database for construction products whose comprehensive processes and data accuracy are regularly verified by the independent auditing company SGS-TÜV Saar

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SHI Product Assessment 2024

Since 2008, Sentinel Holding Institut GmbH (SHI) has been establishing a unique standard for products that support healthy indoor air. Experts carry out independent product assessments based on clear and transparent criteria. In addition, the independent testing company SGS regularly audits the processes and data accuracy.

Criteria	Product category	Harmful substance limit	Assessment
SHI Product Assessment	Wood-based floor coverings	TVOC ≤ 300 µg/m^3 Formaldehyd ≤ 36 µg/m^3	Indoor Air Quality Certified
Valid untill: 23 April 2028			

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QNG - Qualitätssiegel Nachhaltiges Gebäude

The Qualitätssiegel Nachhaltiges Gebäude (Quality Seal for Sustainable Buildings), developed by the German Federal Ministry for Housing, Urban Development and Building (BMWSB), defines requirements for the ecological, socio-cultural, and economic quality of buildings. The Sentinel Holding Institut evaluates construction products in accordance with QNG requirements for certification and awards the QNG ready label. Compliance with the QNG standard is a prerequisite for eligibility for the KfW funding programme. For certain product groups, the QNG currently has no specific requirements defined. Although classified as not assessment-relevant, these products remain suitable for QNG-certified projects.

Criteria	Pos. / product group	Considered substances	QNG assessment
3.1.3 Schadstoffvermeidung in Baumaterialien	2.3 Multi-layer wood parquet, bamboo coverings, and floor coverings on wood-based panels	VOC / Emissions / hazardous substances	QNG ready
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S vom 27.04.2023. Konformitätserklärung vom 23.02.2026 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.			

Criteria	Assessment
ANF2-WG1 Nachhaltige Materialgewinnung	May positively contribute to the overall building score
Verification: FSC SGSCH-COC-001258 vom 27.December 2022	

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DGNB New Construction 2023.2

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact	47c Parkette, Laminatböden, MMF- und WPC-Bödenbeläge (innen)	VVOC, VOC, SVOC Emissionen und Gehalt an gefährlichen Stoffen	Quality level 3

Verification: Prüfbericht des Instituts Eurofins Product Testing A/S vom 27.04.2023. Konformitätserklärung vom 23.02.2026 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.

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DGNB New Construction 2023

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings. The 2023 version sets high standards for ecological, economic, socio-cultural, and functional aspects throughout the entire life cycle of a building.

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact, 03.05.2024 (3rd edition)	47c Wood-based materials in floor coverings	VVOCs, VOC, SVOC emissions and content of hazardous substances	Quality level 4
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S vom 27.04.2023. Konformitätserklärung vom 23.02.2026 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.			

Criteria	Assessment
ECO1.1 Life cycle cost (*)	May positively contribute to the overall building score

Criteria	Assessment
ENV1.1 Climate action and energy (*)	May positively contribute to the overall building score

Criteria	Assessment
SOC2.1 Barrier-free design (*)	May positively contribute to the overall building score

Criteria	Assessment
SOC1.3 Sound insulation and acoustic comfort (*)	May positively contribute to the overall building score

Criteria	Quality level
ENV1.3 Responsible resource extraction	May positively contribute to the overall building score
Verification: FSC SGSCH-COC-001258 vom 27.December 2022	

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact, 29.05.2025 (4th edition)	47c Floor coverings for indoor use (with wooden components)	VVOCs, VOC, SVOC emissions and content of hazardous substances	Quality level 4
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S vom 27.04.2023. Konformitätserklärung vom 23.02.2026 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.			

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DGNB New Construction 2018

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings.

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact	47a Industrially manufactured products	Formaldehyde	Quality level 4
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S vom 27.04.2023. Konformitätserklärung vom 23.02.2026 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.			

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BNB-BN Neubau V2015

The Bewertungssystem Nachhaltiges Bauen (Assessment System for Sustainable Building) is a tool for evaluating public office and administrative buildings, educational facilities, laboratory buildings, and outdoor areas in Germany. The BNB was developed by the former Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and is now overseen by the Federal Ministry for Housing, Urban Development and Building (BMWSB).

Criteria	Assessment
1.1.7 Nachhaltige Materialgewinnung	May positively contribute to the overall building score
Verification: FSC SGSCH-COC-001258 vom 27.December 2022	

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EU taxonomy

The EU Taxonomy classifies economic activities and products according to their environmental impact. At the product level, the EU regulation defines clear requirements for harmful substances, formaldehyde and volatile organic compounds (VOCs). The Sentinel Holding Institut GmbH labels qualified products that meet this standard.

Criteria	Product type	Considered substances	Assessment
DNSH - Pollution prevention and control	Floor coverings (including associated adhesives and sealants)	Stoffe nach Anlage C, Formaldehyd, Karzinogene VOC Kategorie 1A/1B	compliant
Verification: Herstellererklärung vom 23.02.2026			

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BREEAM DE Neubau 2018

BREEAM (Building Research Establishment Environmental Assessment Methodology) is a UK-based building assessment system that evaluates the sustainability of new constructions, refurbishments, and conversions. Developed by the Building Research Establishment (BRE), the system aims to assess and improve the environmental, economic, and social performance of buildings.

Criteria	Product category	Considered substances	Quality level
Hea 02 Indoor Air Quality	Flooring materials (including floor levelling compounds and resin flooring)	Emissions: Formaldehyde, TVOC, TSVOC, carcinogens	Exemplary quality
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S vom 27.04.2023. Konformitätserklärung vom 23.02.2026 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.			

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LEED v4.1

LEED (Leadership in Energy and Environmental Design) is an internationally recognised building certification system developed by the U.S. Green Building Council. It is one of the most widely used sustainability standards for buildings worldwide and is particularly applied in internationally oriented projects. LEED assesses buildings holistically across categories such as energy efficiency, resource conservation, material selection, indoor environmental quality and site sustainability. Depending on the number of points achieved, projects are awarded one of the certification levels: LEED Certified, Silver, Gold or Platinum.

Criteria	Product category	Considered substances	Assessment
EQ Credit: Low-Emitting Materials	Bodenbeläge	Emissionen: Formaldehyd, VOC, Krebserregende Stoffe	compliant
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S vom 27.04.2023. Konformitätserklärung vom 23.02.2026 bestätigt die materielle Übereinstimmung mit dem geprüften Produkt.			

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Product labels

In the construction industry, high-quality materials are crucial for a building's indoor air quality and sustainability. Product labels and certificates offer guidance to meet these requirements. However, the evaluation criteria of these labels vary, and it is important to carefully assess them to ensure products align with the specific needs of a construction project.



This product is SHI Indoor Air Quality certified and recommended by Sentinel Holding Institut. Indoor-air-focused construction, renovation, and operation of buildings is made possible by transparent and verifiable criteria thanks to the Sentinel Holding concept.



Products bearing the Sentinel Holding Institute QNG-ready seal are suitable for projects aiming to achieve the "Qualitätssiegel Nachhaltiges Gebäude" (Quality Seal for Sustainable Buildings). QNG-ready products meet the requirements of QNG Appendix Document 3.1.3, “Avoidance of Harmful Substances in Building Materials.” The KfW loan program Climate-Friendly New Construction with QNG may allow for additional funding.



The Forest Stewardship Council (FSC) label is awarded to products made wholly or partly from wood sourced from responsibly managed and controlled forestry. Health-related aspects of the final product are not part of the FSC assessment.

The Instytut Techniki Budowlanej (ITB) is Poland’s leading institute for building technology and operates under the authority of the Ministry of Development and Technology of the Republic of Poland. As a notified and accredited testing body, ITB assesses and verifies Environmental Product Declarations (EPDs) in accordance with ISO 14025 and EN 15804. In doing so, the institute makes an important contribution to the transparency and comparability of environmental product information and supports manufacturers and planners in the sustainable assessment of construction products in the European context.

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Legal notices

(*) These criteria apply to the construction project as a whole. While individual products can positively contribute to the overall building score through proper planning, the evaluation is always conducted at the building level. The information was provided entirely by the manufacturer.

Find our criteria here: https://www.sentinel-holding.eu/de/Themenwelten/Pr%C3%BCfkriterien%20f%C3%BCr%20Produkte

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SGS TÜV SAAR

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Barlinek

Kielce 23.02.2026

SUPPLIER'S STATEMENT

We confirm that we do not intentionally add or anticipate the presence of substances subject to the restrictions listed below in the Barlinek products as outlined in the Attachment.

This information is based on current data from our suppliers regarding the product ingredients used in the production of Barlinek floorboards and our understanding of our manufacturing processes. Also, we do not introduce the following restricted substances in our production process, covering both the product itself and its packaging.

However, we would like to clarify that Barlinek does not routinely conduct analyses to detect these substances, so we are unable to formally confirm or guarantee their absence (this applies to both the product itself and its packaging):

If you have any further inquiries, please don't hesitate to contact us at:
dariusz.wojdat@barlinek.com.pl

This declaration applies to the following restricted substances:

REACH

All the products listed above comply with the criteria outlined in Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended. They do not contain any chemicals identified as substances of very high concern (SVHC) listed in the REACH candidate list of restrictions, Annex XVII, and Annex XIV, and specifically they do not contain any authorised chemicals listed in Annex XIV of REACH at a concentration exceeding 0.1% by weight.

a) they do not contain any authorised chemicals listed in Annex XIV of REACH at a concentration exceeding 0.1% by weight.
b) they do not contain any chemicals listed in Annex XVII of REACH at a concentration exceeding 0.1% by weight.

and / or

c) the products listed below contain substances listed in Annex XVII of REACH at a concentration exceeding 0.1% by weight. However, restrictions related to such substances do not apply to the products within the scope and their uses.
Product code / Substance Cas No. / Concentration (by weight %):

.....N/A.....

d) they do not contain any substances at a concentration exceeding 0.1% by weight listed on the REACH list of substances of very high concern (SVHC)

e) they do not contain any substances at a concentration exceeding 0.1% by weight listed on the REACH candidate list of substances of very high concern (SVHC)

TECHNICAL
Adviser Manager
Barlinek S.A.
Dariusz Wojdat

Signature of the Supplier's Representative

BARLINEK S.A.
25-323 Kielce, Al. Solidarnosci 36
NIP 959-08-21-486
tel. +48 41 333-11-11, fax 333-00-00
(MZ-2)

PM/06/02/STA/2026

Certificate SGSCH-COC-001258

The Organization

Barlinek S.A.

Al. Solidarności 36, 25-323 Kielce, PL

has been assessed and certified as meeting the requirements of

FSC™ Chain-of-Custody

The company was assessed against the following standards
FSC-STD-40-004 V3-1 - Chain of Custody Certification
FSC-STD-50-001 Requirements for use of the FSC trademarks by Certificate Holders

for the products detailed in the scope below:

Zakup, zewnętrzne magazynowanie i sprzedaż (system transferowy) drewnianej deski warstwowej, drewnianej deski warstwowej, WSPC, listew podłogowych, pelletu, płyty pilśniowej FSC 100% lub kategorii FSC Mix.

Purchase, outsourced storage and sale (transfer system) of FSC 100% and FSC Mix: multilayer floor boards, WSPC Bonded floor panels, skirting, pellets and fibreboard.

This certificate is valid from 27 December 2022 until 26 December 2027 and remains valid subject to satisfactory surveillance audits.

Issue 7. Certified since 25 December 2002

Authorised by	Authorised by
Sylvie Seisun	Christian Kobel

SGS Société Générale de Surveillance SA
1, Place des Alpes, 1201 Geneva, Switzerland
t +41 (0)22 739 91 11 - www.sgs.com

The validity of this certificate shall be verified on http//info.fsc.org/ For the full list of product groups covered by the certificate see http//info.fsc.org/ This certificate itself does not constitute evidence that a particular product supplied by the certificate holder is FSC-certified [or FSC Controlled Wood]. Products offered shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on sales and delivery documents. The certificate remains the property of SGS . The certificates and all copies or reproductions shall be returned or destroyed if requested by SGS

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Type III Environmental Product Declaration No. 632/2024

Issuance date: 30.04.2024
Validity date: 30.04.2029

Three-layer wooden parquet board



Owner of the EPD :

Barlinek Invest LLC
Address: Hetman Mazepa (Chekhova)
7 V, Vinnytsia
21034 Ukraine
Tel.: +38 0432 55 33 00
Website: www.barlinek.com.ua
Contact: office.ua@barlinek.com

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-A5, B1-B7, C1-C4 and D modules in accordance with EN 15804 + A2 (Cradle to Grave with module D)
Year of EPD preparation:	2024
Product standard:	EN 13489: 2023
Reference Service Life (RSL):	> 30 years
PCR:	ITB-PCR A, v. 1.6
Declared unit:	1 m^2
Reasons for performing LCA:	B2B
Representativeness:	Ukraine, European

MANUFACTURER

Barlinek Invest LLC is a Ukrainian manufacturer of layered wooden floors. As well as the Barlinek parquet boards, the group also produces certified flooring for sporting facilities, skirting boards and wood biofuels – wood pellet. 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 parquet boards marked with a logo of this pro-ecological initiative.

Barlinek parquet boarding:

- ✓ 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 Invest LLC

Barlinek parquet board 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, even under changing weather conditions outside. The Barlinek parquet board's layered structure ensures the floor's stability and is suited for underfloor heating. The parquet boards are joined using 5Gc joints and Barclik (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.



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

Joints – 5Gc BARLOCK & BARCLIK systems provide:

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

PRODUCTS DESCRIPTION AND APPLICATION

Table 1. Specification of 3-layer wooden parquet board produced by Barlinek Invest LLC

3-LAYER WOODEN PARQUET BOARD	
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, ash, maple
Finishing:	Lacquer: standard, matt, high-gloss, structural, economy, investment, professional, ultra matt Oil: UV oil, OXY oil Natural or coloured, unfinished
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
Length [mm]	660, 725, 1092, 1800, 2200
Width [mm]	110, 130, 155, 180, 207
Thickness [mm]	10, 14, 18

The Barlinek parquet board 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 parquet board 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 Invest LLC during installation

Table 2. Performance of 3-layer wooden parquet board produced by Barlinek Invest LLC

Characteristics	**Declared performance**	**Harmonized standard**
Reaction to fire	Dfl – s1	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	

More information can be found on the Barlinek Invest LLC website: www.barlinek.com.ua

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Declared Unit

The declaration refers to declared unit (DU) – 1 m^2 of 3-layer wooden parquet board with thickness of 10 mm, 14 mm and 18 mm

Allocation

The allocation rules used for this EPD are based on general ITB-PCR A, v 1.6. 3-layer wooden parquet board production is a line process with multiple co-products in one factory located in Barlinek (Ukraine). 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 parquet board 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 Invest 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-A5, use stages – modules B1-B7, end of life – modules C1-C4 and benefits and loads beyond the system boundary – module D (Cradle to Grave with module D) 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 come from local suppliers while some additives and ancillary items come from foreign countries. 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), average truck (10-16 t) and big truck (> 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 parquet boards. The floor manufacturing is basically a three step process including drying, milling and finishing. Lumber logs are delivered to factory located in Vinnytsia, where they are fed into a stacking machine prior to 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 parquet

boards. 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.

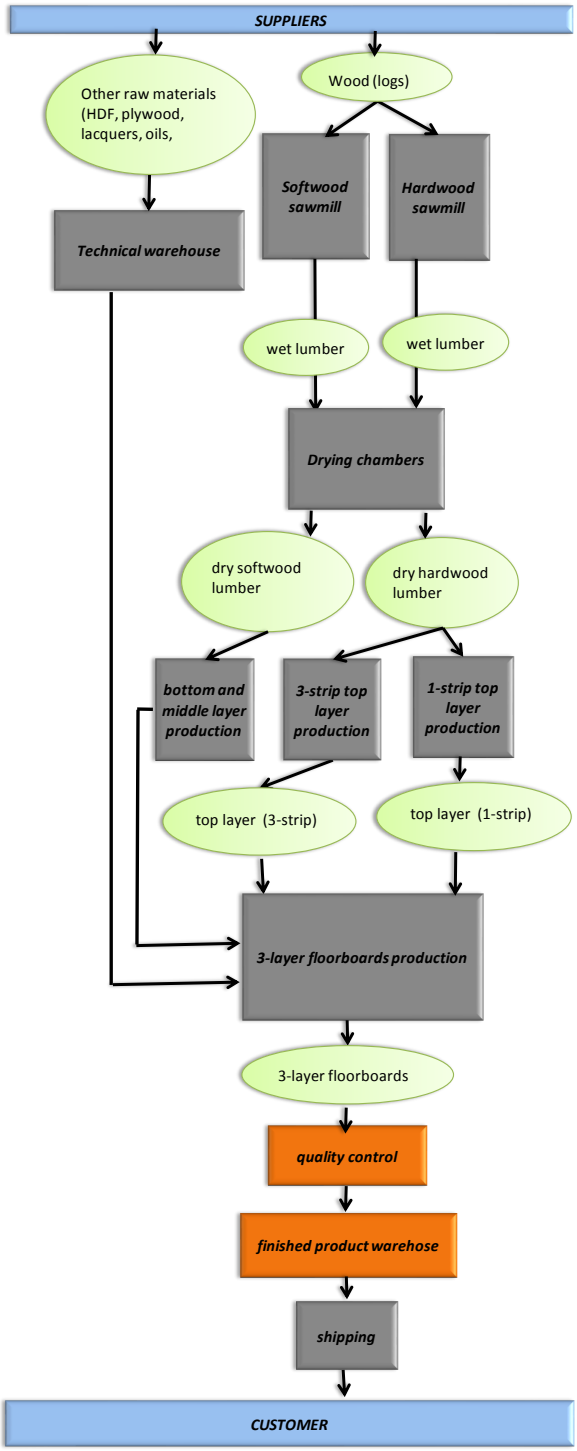


Fig. 4. A scheme of the 3-layer wooden parquet board production by Barlinek Invest factory (Ukraine)

Modules A4-A5: *Construction stage*

Transport of the 3-layer wooden parquet board from factory gate to the place of installation was considered. Parquet boards are delivered to Ukraine as well as foreign recipients. Means of transport

include truck (Euro 6), loaded in 90%, was assumed to cover an average distance of 500 km (module A4).

3-layer wooden parquet boards are delivered to an installation site in the form of elements ready for assembly. The installation process must be performed according to the instruction provided by manufacturer. Considered environmental burdens are associated with the use of ancillary materials (transport of glues, protective tapes or floor underlays) and energy consumption associated the use of power assembly tools (module A5).

Any scenarios included for A4 and A5 shall be based on the specific conditions for the RSL.

Modules B1-B7 : *Use stages*

In the use stage all impacts related to the use of the 3-layer wooden parquet board over it entire life cycle are presented. This includes provisions for the transport of all materials as well as the energy and water impact associated with use it. There are no consumables, repair or replacements related to the use of 3-layer wooden parquet board for the period of the reference service life (RLS), hence module B1 and modules B3-B5 have zero impacts.

A scenario was assumed that the floor is oiled/varnished once every three years assuming RLS of 30 years (i.e. ten cycles) and double oil/varnish application. These activities are presented in module B2. Moreover, 3-layer wooden parquet board 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 use 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. Module B7 covers water consumption in the use phase, i.e. the use of domestic hot water and detergent for washing parquet boards according to floor care instructions recommended by the manufacturer. The scenario assumes washing the floor once a week and using a floor care agent with a capacity of 500 m^2/l. Any scenarios included for B1-B7 shall be based on the specific conditions for the RSL.

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

In the adapted scenario, deconstruction of the 3-layer wooden parquet boards 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 16-32 t lorry EURO 6 (module C2). It is assumed that at the EoL cycle 90% of the 3-layer wooden parquet boards are recovered in municipal incineration (module C3) while the residues undergo landfilling (10%) of the wooden parquet boards 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 Invest LLC using the inventory data, ITB and Ecoinvent v. 3.10 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. Ukrainian electricity was calculated based on Ecoinvent v. 3.10 data.

Data collection period

Primary data provided by Barlinek Invest LLC covers a period of 01.01.2022 – 31.12.2022 (1 year). The life cycle assessments were prepared for Ukraine and Europe as reference area.

Assumptions and estimates

The impacts of the representative 3-layer wooden parquet board were aggregated using weighted average. Impacts were inventoried and calculated for all products in 3-layer wooden parquet board 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. 3.10 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 parquet board with thickness of 10 mm, 14 mm and 18 mm manufactured by Barlinek Invest LLC

Table 3. System boundaries for the environmental characteristic for 3-layer wooden parquet board manufactured by Barlinek Invest LLC

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	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD	MD

Table 4. LCA results of 3-layer parquet board with thickness of 10 mm - environmental impacts (DU = 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
Global Warming Potential	eq. kg CO_2	-5.67E+00	3.31E+00	5.15E+00	2.79E+00	9.95E-01	3.69E-01	0.00E+00	1.26E+01	0.00E+00
Greenhouse gas potential - fossil	eq. kg CO_2	3.46E+00	3.31E+00	5.14E+00	1.19E+01	9.94E-01	3.69E-01	0.00E+00	9.02E+00	0.00E+00
Greenhouse gas potential - biogenic	eq. kg CO_2	-9.15E+00	1.83E-03	-4.27E-03	-9.15E+00	5.49E-04	1.98E-04	0.00E+00	-4.00E+00	0.00E+00
Global warming potential - land use and land use change	eq. kg CO_2	1.28E-01	1.05E-03	8.39E-04	1.30E-01	3.14E-04	1.35E-04	0.00E+00	7.58E+00	0.00E+00
Stratospheric ozone depletion potential	eq. kg CFC 11	3.70E-07	6.61E-08	4.08E-08	4.77E-07	1.99E-08	6.90E-09	0.00E+00	4.07E-07	0.00E+00
Soil and water acidification potential	eq. mol H+	1.92E-02	6.50E-03	4.71E-02	7.28E-02	1.95E-03	8.50E-04	0.00E+00	4.70E-02	0.00E+00
Eutrophication potential - freshwater	eq. kg P	1.25E-03	2.18E-04	3.30E-03	4.77E-03	6.52E-05	3.45E-05	0.00E+00	1.52E-03	0.00E+00
Eutrophication potential - seawater	eq. kg N	4.08E-03	1.53E-03	9.06E-03	1.47E-02	4.60E-04	1.79E-04	0.00E+00	2.68E-02	0.00E+00
Eutrophication potential - terrestrial	eq. mol N	4.11E-02	1.65E-02	8.19E-02	1.40E-01	4.97E-03	1.91E-03	0.00E+00	9.12E-02	0.00E+00
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.57E-02	1.10E-02	2.48E-02	5.14E-02	3.30E-03	1.18E-03	0.00E+00	5.00E-02	0.00E+00
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	3.52E-05	1.09E-05	3.01E-06	4.91E-05	3.26E-06	1.53E-06	0.00E+00	4.29E-05	0.00E+00
Abiotic depletion potential - fossil fuels	MJ	6.16E+01	4.62E+01	1.38E+02	2.46E+02	1.39E+01	5.23E+00	0.00E+00	2.30E+02	0.00E+00
Water deprivation potential	eq. m^3	2.29E+00	2.23E-01	1.13E+00	3.64E+00	6.67E-02	3.07E-02	0.00E+00	9.75E+00	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	1.08E+00	1.73E-02	1.92E-03	1.06E+01	8.54E-02	4.14E+00
Greenhouse gas potential - fossil	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	1.01E+00	1.73E-02	1.92E-03	1.14E-01	9.93E-03	-6.39E+00
Greenhouse gas potential - biogenic	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	-2.49E-01	-3.12E-05	1.06E-06	1.05E+01	7.54E-02	1.05E+01
Global warming potential - land use and land use change	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	7.38E-02	2.82E-06	6.06E-07	2.95E-05	7.30E-06	-4.89E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	0.00E+00	0.00E+00	0.00E+00	8.46E-08	1.37E-10	3.83E-11	1.91E-09	2.22E-10	-1.91E-07
Soil and water acidification potential	eq. mol H+	0.00E+00	0.00E+00	0.00E+00	7.25E-03	1.59E-04	3.76E-06	1.16E-03	6.83E-05	-6.47E-03
Eutrophication potential - freshwater	eq. kg P	0.00E+00	0.00E+00	0.00E+00	3.60E-04	7.27E-06	1.26E-07	4.89E-05	1.89E-06	-9.44E-05
Eutrophication potential - seawater	eq. kg N	0.00E+00	0.00E+00	0.00E+00	2.15E-03	2.66E-05	8.87E-07	6.21E-04	3.02E-04	-2.12E-03
Eutrophication potential - terrestrial	eq. mol N	0.00E+00	0.00E+00	0.00E+00	1.56E-02	2.72E-04	9.58E-06	5.96E-03	2.71E-04	-2.36E-02
Potential for photochemical ozone synthesis	eq. kg NMVOC	0.00E+00	0.00E+00	0.00E+00	4.44E-03	7.84E-05	6.35E-06	1.51E-03	1.10E-04	-1.59E-02
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	0.00E+00	0.00E+00	0.00E+00	1.28E-05	1.01E-08	6.28E-09	2.21E-07	2.06E-08	-5.46E-06
Abiotic depletion potential - fossil fuels	MJ	0.00E+00	0.00E+00	0.00E+00	1.69E+01	4.66E-01	2.68E-02	9.56E-01	2.07E-01	-1.02E+02
Water deprivation potential	eq. m^3	0.00E+00	0.00E+00	0.00E+00	1.54E+00	3.79E-03	1.29E-04	4.81E-01	1.18E-03	3.69E-02

Table 5. LCA results of 3-layer parquet board with thickness of 10 mm - the resource use (DU = 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	9.53E+01	8.96E-01	3.99E+00	1.00E+02	2.68E-01	1.27E-01	0.00E+00	5.04E+01	0.00E+00
Consumption of renewable primary energy resources used as raw materials	MJ	8.11E+01	0.00E+00	0.00E+00	8.11E+01	0.00E+00	0.00E+00	0.00E+00	2.50E+01	0.00E+00
Total consumption of renewable primary energy resources	MJ	1.76E+02	8.96E-01	3.99E+00	1.81E+02	2.68E-01	1.27E-01	0.00E+00	9.50E+01	0.00E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.25E+01	4.62E+01	1.38E+02	2.07E+02	1.39E+01	5.23E+00	0.00E+00	1.64E+02	0.00E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	7.86E+00	0.00E+00	2.25E-02	7.88E+00	0.00E+00	0.00E+00	0.00E+00	7.20E+01	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	3.05E+01	4.62E+01	1.38E+02	2.15E+02	1.39E+01	5.23E+00	0.00E+00	2.16E+02	0.00E+00
Consumption of secondary materials	kg	4.12E-02	2.04E-02	8.84E-03	7.04E-02	6.09E-03	2.64E-03	0.00E+00	3.57E-02	0.00E+00
Consumption of renewable secondary fuels	MJ	4.34E-01	2.07E-04	3.53E-05	4.34E-01	6.18E-05	2.83E-05	0.00E+00	4.92E-04	0.00E+00
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	5.38E-02	6.29E-03	2.34E-02	8.36E-02	1.88E-03	8.60E-04	0.00E+00	2.30E-01	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	4.00E+00	2.70E-02	5.17E-04	-1.01E+02	-1.12E+01	-1.01E+02
Consumption of renewable primary energy resources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	1.89E+00	0.00E+00	0.00E+00	1.01E+02	1.12E+01	1.01E+02
Total consumption of renewable primary energy resources	MJ	0.00E+00	0.00E+00	0.00E+00	5.89E+00	1.34E-02	5.17E-04	2.16E-02	4.00E-03	-3.56E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	1.51E+01	4.66E-01	2.68E-02	9.56E-01	2.07E-01	-1.02E+02
Consumption of non-renewable primary energy resources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	1.93E+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	0.00E+00	0.00E+00	0.00E+00	1.70E+01	4.66E-01	2.68E-02	9.56E-01	2.07E-01	-1.02E+02
Consumption of secondary materials	kg	0.00E+00	0.00E+00	0.00E+00	4.40E-03	2.96E-05	1.17E-05	2.31E-03	7.87E-05	-1.45E-02
Consumption of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	1.40E-04	1.16E-07	1.19E-07	5.39E-06	2.70E-06	-2.26E-05
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	0.00E+00	0.00E+00	0.00E+00	3.37E-02	1.14E-04	3.63E-06	-1.62E-03	2.07E-04	-1.28E-02

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

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
Hazardous waste. neutralized	kg	1.87E-01	6.06E-02	7.70E-01	1.02E+00	1.81E-02	1.00E-02	0.00E+00	2.11E-01	0.00E+00
Non-hazardous waste. neutralised	kg	5.51E+00	1.43E+00	1.96E+01	2.66E+01	4.27E-01	2.16E-01	0.00E+00	5.45E+00	0.00E+00
Radioactive waste	kg	9.36E-03	1.78E-05	1.01E-03	1.04E-02	5.32E-06	5.67E-06	0.00E+00	6.25E-05	0.00E+00
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	1.35E-03	3.57E-04	1.49E-01	1.51E-01	1.07E-04	5.21E-05	0.00E+00	1.16E-03	0.00E+00
Materials for energy recovery	kg	7.98E-03	1.04E-06	1.09E-06	7.98E-03	3.11E-07	1.30E-07	0.00E+00	2.00E-05	0.00E+00
Energy exported	MJ	2.25E-01	6.74E-02	5.33E-02	3.46E-01	2.01E-02	9.55E-03	0.00E+00	6.49E-01	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste. neutralized	kg	0.00E+00	0.00E+00	0.00E+00	4.22E-02	2.60E-03	3.50E-05	1.29E-02	1.85E-04	-5.78E-02
Non-hazardous waste. neutralised	kg	0.00E+00	0.00E+00	0.00E+00	1.48E+00	3.59E-02	8.23E-04	6.98E-02	5.62E-03	-1.15E+00
Radioactive waste	kg	0.00E+00	0.00E+00	0.00E+00	1.74E-05	3.42E-06	1.03E-08	2.78E-07	6.87E-08	-7.86E-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	0.00E+00	0.00E+00	0.00E+00	1.29E-03	8.03E-06	2.06E-07	1.00E-05	1.59E-06	-1.87E-04
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	2.71E-03	3.65E-09	5.99E-10	1.40E-07	6.97E-09	-1.38E-06
Energy exported	MJ	0.00E+00	0.00E+00	0.00E+00	5.24E-02	1.79E-04	3.88E-05	3.19E-04	3.65E-05	-1.47E-02

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

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
Global Warming Potential	eq. kg CO_2	-8.82E+00	3.31E+00	5.15E+00	-3.60E-01	9.95E-01	3.69E-01	0.00E+00	1.26E+01	0.00E+00
Greenhouse gas potential - fossil	eq. kg CO_2	3.63E+00	3.31E+00	5.14E+00	1.21E+01	9.94E-01	3.69E-01	0.00E+00	9.02E+00	0.00E+00
Greenhouse gas potential - biogenic	eq. kg CO_2	-1.25E+01	1.83E-03	-4.27E-03	-1.25E+01	5.49E-04	1.98E-04	0.00E+00	-4.00E+00	0.00E+00
Global warming potential - land use and land use change	eq. kg CO_2	1.31E-01	1.05E-03	8.39E-04	1.32E-01	3.14E-04	1.35E-04	0.00E+00	7.58E+00	0.00E+00
Stratospheric ozone depletion potential	eq. kg CFC 11	3.82E-07	6.61E-08	4.08E-08	4.89E-07	1.99E-08	6.90E-09	0.00E+00	4.07E-07	0.00E+00
Soil and water acidification potential	eq. mol H+	2.02E-02	6.50E-03	4.71E-02	7.38E-02	1.95E-03	8.50E-04	0.00E+00	4.70E-02	0.00E+00
Eutrophication potential - freshwater	eq. kg P	1.32E-03	2.18E-04	3.30E-03	4.83E-03	6.52E-05	3.45E-05	0.00E+00	1.52E-03	0.00E+00
Eutrophication potential - seawater	eq. kg N	4.42E-03	1.53E-03	9.06E-03	1.50E-02	4.60E-04	1.79E-04	0.00E+00	2.68E-02	0.00E+00
Eutrophication potential - terrestrial	eq. mol N	4.47E-02	1.65E-02	8.19E-02	1.43E-01	4.97E-03	1.91E-03	0.00E+00	9.12E-02	0.00E+00
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.72E-02	1.10E-02	2.48E-02	5.30E-02	3.30E-03	1.18E-03	0.00E+00	5.00E-02	0.00E+00
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	3.56E-05	1.09E-05	3.01E-06	4.96E-05	3.26E-06	1.53E-06	0.00E+00	4.29E-05	0.00E+00
Abiotic depletion potential - fossil fuels	MJ	6.40E+01	4.62E+01	1.38E+02	2.48E+02	1.39E+01	5.23E+00	0.00E+00	2.30E+02	0.00E+00
Water deprivation potential	eq. m^3	2.36E+00	2.23E-01	1.13E+00	3.71E+00	6.67E-02	3.07E-02	0.00E+00	9.75E+00	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	1.08E+00	1.73E-02	1.92E-03	1.06E+01	8.54E-02	4.14E+00
Greenhouse gas potential - fossil	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	1.01E+00	1.73E-02	1.92E-03	1.14E-01	9.93E-03	-6.39E+00
Greenhouse gas potential - biogenic	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	-2.49E-01	-3.12E-05	1.06E-06	1.05E+01	7.54E-02	1.05E+01
Global warming potential - land use and land use change	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	7.38E-02	2.82E-06	6.06E-07	2.95E-05	7.30E-06	-4.89E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	0.00E+00	0.00E+00	0.00E+00	8.46E-08	1.37E-10	3.83E-11	1.91E-09	2.22E-10	-1.91E-07
Soil and water acidification potential	eq. mol H+	0.00E+00	0.00E+00	0.00E+00	7.25E-03	1.59E-04	3.76E-06	1.16E-03	6.83E-05	-6.47E-03
Eutrophication potential - freshwater	eq. kg P	0.00E+00	0.00E+00	0.00E+00	3.60E-04	7.27E-06	1.26E-07	4.89E-05	1.89E-06	-9.44E-05
Eutrophication potential - seawater	eq. kg N	0.00E+00	0.00E+00	0.00E+00	2.15E-03	2.66E-05	8.87E-07	6.21E-04	3.02E-04	-2.12E-03
Eutrophication potential - terrestrial	eq. mol N	0.00E+00	0.00E+00	0.00E+00	1.56E-02	2.72E-04	9.58E-06	5.96E-03	2.71E-04	-2.36E-02
Potential for photochemical ozone synthesis	eq. kg NMVOC	0.00E+00	0.00E+00	0.00E+00	4.44E-03	7.84E-05	6.35E-06	1.51E-03	1.10E-04	-1.59E-02
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	0.00E+00	0.00E+00	0.00E+00	1.28E-05	1.01E-08	6.28E-09	2.21E-07	2.06E-08	-5.46E-06
Abiotic depletion potential - fossil fuels	MJ	0.00E+00	0.00E+00	0.00E+00	1.69E+01	4.66E-01	2.68E-02	9.56E-01	2.07E-01	-1.02E+02
Water deprivation potential	eq. m^3	0.00E+00	0.00E+00	0.00E+00	1.54E+00	3.79E-03	1.29E-04	4.81E-01	1.18E-03	3.69E-02

Table 8. LCA results of 3-layer parquet board with thickness of 14 mm - the resource use (DU = 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.31E+02	8.96E-01	3.99E+00	1.36E+02	2.68E-01	1.27E-01	0.00E+00	5.04E+01	0.00E+00
Consumption of renewable primary energy resources used as raw materials	MJ	1.08E+02	0.00E+00	0.00E+00	1.08E+02	0.00E+00	0.00E+00	0.00E+00	2.50E+01	0.00E+00
Total consumption of renewable primary energy resources	MJ	2.39E+02	8.96E-01	3.99E+00	2.44E+02	2.68E-01	1.27E-01	0.00E+00	9.50E+01	0.00E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.49E+01	4.62E+01	1.38E+02	2.09E+02	1.39E+01	5.23E+00	0.00E+00	1.64E+02	0.00E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	7.86E+00	0.00E+00	2.25E-02	7.88E+00	0.00E+00	0.00E+00	0.00E+00	7.20E+01	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	3.29E+01	4.62E+01	1.38E+02	2.17E+02	1.39E+01	5.23E+00	0.00E+00	2.16E+02	0.00E+00
Consumption of secondary materials	kg	4.32E-02	2.04E-02	8.84E-03	7.24E-02	6.09E-03	2.64E-03	0.00E+00	3.57E-02	0.00E+00
Consumption of renewable secondary fuels	MJ	4.34E-01	2.07E-04	3.53E-05	4.34E-01	6.18E-05	2.83E-05	0.00E+00	4.92E-04	0.00E+00
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	5.47E-02	6.29E-03	2.34E-02	8.44E-02	1.88E-03	8.60E-04	0.00E+00	2.30E-01	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	4.00E+00	2.70E-02	5.17E-04	-1.01E+02	-1.12E+01	-1.01E+02
Consumption of renewable primary energy resources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	1.89E+00	0.00E+00	0.00E+00	1.01E+02	1.12E+01	1.01E+02
Total consumption of renewable primary energy resources	MJ	0.00E+00	0.00E+00	0.00E+00	5.89E+00	1.34E-02	5.17E-04	2.16E-02	4.00E-03	-3.56E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	1.51E+01	4.66E-01	2.68E-02	9.56E-01	2.07E-01	-1.02E+02
Consumption of non-renewable primary energy resources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	1.93E+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	0.00E+00	0.00E+00	0.00E+00	1.70E+01	4.66E-01	2.68E-02	9.56E-01	2.07E-01	-1.02E+02
Consumption of secondary materials	kg	0.00E+00	0.00E+00	0.00E+00	4.40E-03	2.96E-05	1.17E-05	2.31E-03	7.87E-05	-1.45E-02
Consumption of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	1.40E-04	1.16E-07	1.19E-07	5.39E-06	2.70E-06	-2.26E-05
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	0.00E+00	0.00E+00	0.00E+00	3.37E-02	1.14E-04	3.63E-06	-1.62E-03	2.07E-04	-1.28E-02

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

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
Hazardous waste. neutralized	kg	1.93E-01	6.06E-02	7.70E-01	1.02E+00	1.81E-02	1.00E-02	0.00E+00	2.11E-01	0.00E+00
Non-hazardous waste. neutralised	kg	5.70E+00	1.43E+00	1.96E+01	2.68E+01	4.27E-01	2.16E-01	0.00E+00	5.45E+00	0.00E+00
Radioactive waste	kg	9.37E-03	1.78E-05	1.01E-03	1.04E-02	5.32E-06	5.67E-06	0.00E+00	6.25E-05	0.00E+00
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	1.38E-03	3.57E-04	1.49E-01	1.51E-01	1.07E-04	5.21E-05	0.00E+00	1.16E-03	0.00E+00
Materials for energy recovery	kg	7.98E-03	1.04E-06	1.09E-06	7.98E-03	3.11E-07	1.30E-07	0.00E+00	2.00E-05	0.00E+00
Energy exported	MJ	2.31E-01	6.74E-02	5.33E-02	3.51E-01	2.01E-02	9.55E-03	0.00E+00	6.49E-01	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste. neutralized	kg	0.00E+00	0.00E+00	0.00E+00	4.22E-02	2.60E-03	3.50E-05	1.29E-02	1.85E-04	-5.78E-02
Non-hazardous waste. neutralised	kg	0.00E+00	0.00E+00	0.00E+00	1.48E+00	3.59E-02	8.23E-04	6.98E-02	5.62E-03	-1.15E+00
Radioactive waste	kg	0.00E+00	0.00E+00	0.00E+00	1.74E-05	3.42E-06	1.03E-08	2.78E-07	6.87E-08	-7.86E-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	0.00E+00	0.00E+00	0.00E+00	1.29E-03	8.03E-06	2.06E-07	1.00E-05	1.59E-06	-1.87E-04
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	2.71E-03	3.65E-09	5.99E-10	1.40E-07	6.97E-09	-1.38E-06
Energy exported	MJ	0.00E+00	0.00E+00	0.00E+00	5.24E-02	1.79E-04	3.88E-05	3.19E-04	3.65E-05	-1.47E-02

Table 10. LCA results of 3-layer parquet board with thickness of 18 mm – environmental impacts (DU = 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
Global Warming Potential	eq. kg CO_2	-1.20E+01	3.31E+00	5.15E+00	-3.51E+00	9.95E-01	3.69E-01	0.00E+00	1.26E+01	0.00E+00
Greenhouse gas potential - fossil	eq. kg CO_2	3.80E+00	3.31E+00	5.14E+00	1.23E+01	9.94E-01	3.69E-01	0.00E+00	9.02E+00	0.00E+00
Greenhouse gas potential - biogenic	eq. kg CO_2	-1.58E+01	1.83E-03	-4.27E-03	-1.58E+01	5.49E-04	1.98E-04	0.00E+00	-4.00E+00	0.00E+00
Global warming potential - land use and land use change	eq. kg CO_2	1.33E-01	1.05E-03	8.39E-04	1.35E-01	3.14E-04	1.35E-04	0.00E+00	7.58E+00	0.00E+00
Stratospheric ozone depletion potential	eq. kg CFC 11	3.94E-07	6.61E-08	4.08E-08	5.01E-07	1.99E-08	6.90E-09	0.00E+00	4.07E-07	0.00E+00
Soil and water acidification potential	eq. mol H+	2.12E-02	6.50E-03	4.71E-02	7.48E-02	1.95E-03	8.50E-04	0.00E+00	4.70E-02	0.00E+00
Eutrophication potential - freshwater	eq. kg P	1.38E-03	2.18E-04	3.30E-03	4.90E-03	6.52E-05	3.45E-05	0.00E+00	1.52E-03	0.00E+00
Eutrophication potential - seawater	eq. kg N	4.77E-03	1.53E-03	9.06E-03	1.54E-02	4.60E-04	1.79E-04	0.00E+00	2.68E-02	0.00E+00
Eutrophication potential - terrestrial	eq. mol N	4.83E-02	1.65E-02	8.19E-02	1.47E-01	4.97E-03	1.91E-03	0.00E+00	9.12E-02	0.00E+00
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.88E-02	1.10E-02	2.48E-02	5.46E-02	3.30E-03	1.18E-03	0.00E+00	5.00E-02	0.00E+00
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	3.60E-05	1.09E-05	3.01E-06	5.00E-05	3.26E-06	1.53E-06	0.00E+00	4.29E-05	0.00E+00
Abiotic depletion potential - fossil fuels	MJ	6.63E+01	4.62E+01	1.38E+02	2.51E+02	1.39E+01	5.23E+00	0.00E+00	2.30E+02	0.00E+00
Water deprivation potential	eq. m^3	2.44E+00	2.23E-01	1.13E+00	3.79E+00	6.67E-02	3.07E-02	0.00E+00	9.75E+00	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	1.08E+00	1.73E-02	1.92E-03	1.06E+01	8.54E-02	4.14E+00
Greenhouse gas potential - fossil	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	1.01E+00	1.73E-02	1.92E-03	1.14E-01	9.93E-03	-6.39E+00
Greenhouse gas potential - biogenic	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	-2.49E-01	-3.12E-05	1.06E-06	1.05E+01	7.54E-02	1.05E+01
Global warming potential - land use and land use change	eq. kg CO_2	0.00E+00	0.00E+00	0.00E+00	7.38E-02	2.82E-06	6.06E-07	2.95E-05	7.30E-06	-4.89E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	0.00E+00	0.00E+00	0.00E+00	8.46E-08	1.37E-10	3.83E-11	1.91E-09	2.22E-10	-1.91E-07
Soil and water acidification potential	eq. mol H+	0.00E+00	0.00E+00	0.00E+00	7.25E-03	1.59E-04	3.76E-06	1.16E-03	6.83E-05	-6.47E-03
Eutrophication potential - freshwater	eq. kg P	0.00E+00	0.00E+00	0.00E+00	3.60E-04	7.27E-06	1.26E-07	4.89E-05	1.89E-06	-9.44E-05
Eutrophication potential - seawater	eq. kg N	0.00E+00	0.00E+00	0.00E+00	2.15E-03	2.66E-05	8.87E-07	6.21E-04	3.02E-04	-2.12E-03
Eutrophication potential - terrestrial	eq. mol N	0.00E+00	0.00E+00	0.00E+00	1.56E-02	2.72E-04	9.58E-06	5.96E-03	2.71E-04	-2.36E-02
Potential for photochemical ozone synthesis	eq. kg NMVOC	0.00E+00	0.00E+00	0.00E+00	4.44E-03	7.84E-05	6.35E-06	1.51E-03	1.10E-04	-1.59E-02
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	0.00E+00	0.00E+00	0.00E+00	1.28E-05	1.01E-08	6.28E-09	2.21E-07	2.06E-08	-5.46E-06
Abiotic depletion potential - fossil fuels	MJ	0.00E+00	0.00E+00	0.00E+00	1.69E+01	4.66E-01	2.68E-02	9.56E-01	2.07E-01	-1.02E+02
Water deprivation potential	eq. m^3	0.00E+00	0.00E+00	0.00E+00	1.54E+00	3.79E-03	1.29E-04	4.81E-01	1.18E-03	3.69E-02

Table 11. LCA results of 3-layer parquet board with thickness of 18 mm - the resource use (DU = 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.67E+02	8.96E-01	3.99E+00	1.72E+02	2.68E-01	1.27E-01	0.00E+00	5.04E+01	0.00E+00
Consumption of renewable primary energy resources used as raw materials	MJ	1.34E+02	0.00E+00	0.00E+00	1.34E+02	0.00E+00	0.00E+00	0.00E+00	2.50E+01	0.00E+00
Total consumption of renewable primary energy resources	MJ	3.01E+02	8.96E-01	3.99E+00	3.06E+02	2.68E-01	1.27E-01	0.00E+00	9.50E+01	0.00E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.72E+01	4.62E+01	1.38E+02	2.12E+02	1.39E+01	5.23E+00	0.00E+00	1.64E+02	0.00E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	7.86E+00	0.00E+00	2.25E-02	7.88E+00	0.00E+00	0.00E+00	0.00E+00	7.20E+01	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	3.52E+01	4.62E+01	1.38E+02	2.20E+02	1.39E+01	5.23E+00	0.00E+00	2.16E+02	0.00E+00
Consumption of secondary materials	kg	4.51E-02	2.04E-02	8.84E-03	7.43E-02	6.09E-03	2.64E-03	0.00E+00	3.57E-02	0.00E+00
Consumption of renewable secondary fuels	MJ	4.34E-01	2.07E-04	3.53E-05	4.34E-01	6.18E-05	2.83E-05	0.00E+00	4.92E-04	0.00E+00
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	5.56E-02	6.29E-03	2.34E-02	8.53E-02	1.88E-03	8.60E-04	0.00E+00	2.30E-01	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	4.00E+00	2.70E-02	5.17E-04	-1.01E+02	-1.12E+01	-1.01E+02
Consumption of renewable primary energy resources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	1.89E+00	0.00E+00	0.00E+00	1.01E+02	1.12E+01	1.01E+02
Total consumption of renewable primary energy resources	MJ	0.00E+00	0.00E+00	0.00E+00	5.89E+00	1.34E-02	5.17E-04	2.16E-02	4.00E-03	-3.56E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	1.51E+01	4.66E-01	2.68E-02	9.56E-01	2.07E-01	-1.02E+02
Consumption of non-renewable primary energy resources used as raw materials	MJ	0.00E+00	0.00E+00	0.00E+00	1.93E+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	0.00E+00	0.00E+00	0.00E+00	1.70E+01	4.66E-01	2.68E-02	9.56E-01	2.07E-01	-1.02E+02
Consumption of secondary materials	kg	0.00E+00	0.00E+00	0.00E+00	4.40E-03	2.96E-05	1.17E-05	2.31E-03	7.87E-05	-1.45E-02
Consumption of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	1.40E-04	1.16E-07	1.19E-07	5.39E-06	2.70E-06	-2.26E-05
Consumption of non-renewable secondary fuels	MJ	INA	INA	INA	INA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net consumption of freshwater resources	m^3	0.00E+00	0.00E+00	0.00E+00	3.37E-02	1.14E-04	3.63E-06	-1.62E-03	2.07E-04	-1.28E-02

Table 12. LCA results of 3-layer parquet board with thickness of 18 mm – waste categories (DU = 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
Hazardous waste. neutralized	kg	1.99E-01	6.06E-02	7.70E-01	1.03E+00	1.81E-02	1.00E-02	0.00E+00	2.11E-01	0.00E+00
Non-hazardous waste. neutralised	kg	5.88E+00	1.43E+00	1.96E+01	2.70E+01	4.27E-01	2.16E-01	0.00E+00	5.45E+00	0.00E+00
Radioactive waste	kg	9.37E-03	1.78E-05	1.01E-03	1.04E-02	5.32E-06	5.67E-06	0.00E+00	6.25E-05	0.00E+00
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	1.42E-03	3.57E-04	1.49E-01	1.51E-01	1.07E-04	5.21E-05	0.00E+00	1.16E-03	0.00E+00
Materials for energy recovery	kg	7.98E-03	1.04E-06	1.09E-06	7.98E-03	3.11E-07	1.30E-07	0.00E+00	2.00E-05	0.00E+00
Energy exported	MJ	2.36E-01	6.74E-02	5.33E-02	3.57E-01	2.01E-02	9.55E-03	0.00E+00	6.49E-01	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste. neutralized	kg	0.00E+00	0.00E+00	0.00E+00	4.22E-02	2.60E-03	3.50E-05	1.29E-02	1.85E-04	-5.78E-02
Non-hazardous waste. neutralised	kg	0.00E+00	0.00E+00	0.00E+00	1.48E+00	3.59E-02	8.23E-04	6.98E-02	5.62E-03	-1.15E+00
Radioactive waste	kg	0.00E+00	0.00E+00	0.00E+00	1.74E-05	3.42E-06	1.03E-08	2.78E-07	6.87E-08	-7.86E-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	0.00E+00	0.00E+00	0.00E+00	1.29E-03	8.03E-06	2.06E-07	1.00E-05	1.59E-06	-1.87E-04
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	2.71E-03	3.65E-09	5.99E-10	1.40E-07	6.97E-09	-1.38E-06
Energy exported	MJ	0.00E+00	0.00E+00	0.00E+00	5.24E-02	1.79E-04	3.88E-05	3.19E-04	3.65E-05	-1.47E-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) ☒ 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 13489:2023 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

Instytut Techniki Budowlanej

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

CERTIFICATE № 632/2024
of TYPE III ENVIRONMENTAL DECLARATION

Products:

Three-layer wooden parquet board

Manufacturer:

Barlinek Invest LLC

Hetman Mazepa (Chekhova) 7 V, Vinnysia, Ukraine

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 30th April 2024 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, April 2024