SENTINEL HOLDING
INSTITUT

SHI PRODUCT PASSPORT

Find products. Certify buildings.

SHI Product Passport No.:

14326-10-1021

Rigid Aquastop

Product group: Underlay

LOGOCLIC®

LOGOCLIC / BAUHAUS
Gutenbergstraße 21
68167 Mannheim

Product qualities:

- **SHI** Product Assessment 2024
- **QNG** Qualitätssiegel Nachhaltiges Gebäude
- **DGNB** NEW CONSTRUCTION 2023
- **DGNB** NEW CONSTRUCTION 2018
- **BNB-BN** NEUBAU V2015
- **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, 22 June 2026

SENTINEL HOLDING
INSTITUT

Product:
Rigid Aquastop

SHI Product Passport no.:
14326-10-1021

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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

SGS TÜV SAAR

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Product:
Rigid Aquastop

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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	Other products	TVOC ≤ 300 µg/m^3 Formaldehyd ≤ 24 µg/m^3	Indoor Air Quality Certified
Valid untill: 07 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	2.4 Underlays for floor coverings	VOC/ emissions / hazardous substances / polycyclic aromatic hydrocarbons (PAH) / nitrosamines	QNG ready
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S vom 28.04.2023 / Prüfbericht Nr. 392-2023-00128501_A_EN. Konformitätserklärung vom 16.06.2026 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)	not applicable		Not relevant for assessment

Criteria	Assessment
SOC1.2 Indoor air quality (*)	May positively contribute to the overall building score
Verification: SHI-Schadstoffgeprüft	

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact, 29.05.2025 (4th edition)	not applicable		Not relevant for assessment

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Product:
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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	not applicable	not applicable	Not relevant for assessment

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Product:
Rigid Aquastop

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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	Pos. / product type	Considered substance group	Quality level
1.1.6 Risiken für die lokale Umwelt			Not relevant for assessment

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Product:
Rigid Aquastop

SHI Product Passport no.:
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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			Not relevant for assessment

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Product:
Rigid Aquastop

SHI Product Passport no.:
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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			Not relevant for assessment

SENTINEL HOLDING
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Product:
Rigid Aquastop

SHI Product Passport no.:
14326-10-1021

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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.

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Product:
Rigid Aquastop

SHI Product Passport no.:
14326-10-1021

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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

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

SGS

SGS TÜV SAAR

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LOGOCLIC®

EDLE FUßBÖDEN

RIGID AQUASTOP

Produkt:	Rigidunterlage, 1.1mm
Produktname:	Rigid Aquastop
Kundenteilenummer:	LO LO98533N
EAN:	4005705008067

Anwendung:

Unterlage bei Einsatz von schwimmend verlegten ElementPro und Aquaprotect Böden verwenden. Nicht geeignet für Parkettboden, Fliesen- oder Natursteinbeläge, die vollflächig mit dem Unterboden verklebt werden.

Material:	PU/Mineral+PET

1. Abmessungen:

Dicke	*(d)*	1,1 mm	+/- 0,1	EN 823:2013
Länge	*(l)*	6000 mm	-0% +5%	EN 822:2013
Breite	*(w)*	1000 mm	-1%/+2,5%	EN 822:2013

2. Technische Daten

Unterboden / Konstruktion:				
Thermische Anforderung Wärmedämmung	$R\lambda$	0,01 m²K/W	+/- 0,003	EN 12664:2002
Eignung für Bodenheizung		Ja, wenn der Wärmedurchlasswiderstand im gesamten Aufbau (also Unterlage + Oberboden) nicht höher als 0,15 m² K/W ist.		
Unebenheiten	*PC*	0,7 mm	+/- 10%	EN ISO 868:2005
Feuchtigkeit	*SD*	> 75 m		EN 12086:2013
Nutzung:				
Dynamische Beanspruchung	DL_{25}	>500 000 Zyklen		EN 13793:2014
Statische Beanspruchung	*CS*	700 kPa	+/- 10%	EN 826:2013
Statische Dauerbeanspruchung	*CC*	-		EN 1606:2013
Stoßbeanspruchung	*RLB*	≤1100 mm		EN 438-2:2016
Akustik:				
Trittschallminderung	IS_{Lam}	15 dB	+/- 2	EN ISO 10140:2007
Gehschallemission	*RWS*	-		CEN/TS 16354:2013, EPLF 021029-3

LOGOCLIC®

EDLE FUßBÖDEN

RIGID AQUASTOP

Produkt:	Rigidunterlage, 1.1mm
Produktname:	Rigid Aquastop
Kundenteilenummer:	LO LO98533N
EAN:	4005705008067

3. Umwelt:

Die Unterlage ist FCKW-frei, problemlos entsorgbar über den Hausmüll, recyclebar, gewässerneutral, toxikologisch unbedenklich. Die Materialbasis ist verträglich mit Bitumen, PVC, Linoleum, Zement, Kunst- und Naturharzen sowie Magnesit.

4. Besondere Hinweise

Kühl, trocken und vor UV-Strahlung schützen. Bei Einsatz von empfindlichen elektronischen Geräten (Computer etc.) wird grundsätzlich empfohlen, auf Unterlagsmaterialien mit antistatischen Eigenschaften zurückzugreifen.
Alle Angaben auf dieser Seite entsprechen dem gegenwärtigen Kenntnisstand und informieren über unsere Produkte sowie deren Anwendungsmöglichkeiten. Sie sichern keine bestimmten Eigenschaften der Produkte oder deren Eignung für einen konkreten Einsatzzweck zu. Aus diesem Grund können aus diesen Angaben keine Rechtsverbindlichkeiten abgeleitet werden. Technische Änderungen, Druckfehler und Irrtümer bleiben vorbehalten.

5. Verlegeanleitung:

Vor dem Verlegen ist sicherzustellen, dass der Unterboden normgerecht vorbereitet ist, insbesondere eben, sauber, trocken, rissfrei, zug- und druckfest ist und den Handwerks- und Innungsrichtlinien entsprechenden Anforderungen genügt. Das Verwenden einer zusätzlichen Dampfbremse ist aufgrund der oberseitig aufkaschierten Folie nicht notwendig. Bei der Verlegung muss sichergestellt sein, dass die Fugen der Dämmunterlagen nicht mit den Stößen der Fussbodendielen aufeinander treffen. Optimal ist eine diagonale Verlegung der Unterlagen gegenüber dem Boden. Die Unterlage wird auf dem Boden ausgerollt (aluminisierte Folienseite nach oben). Vor der Verlegung des Oberbodens sind die einzelnen Bahnen stumpf aneinander zu stoßen und die Stösse mittels Klebeband (Zubehör) zu verschliessen.

Decora S.A
Ignacego Prądzyńskiego 24 a,
63-000 Środa Wielkopolska
Poland

Re: Declaration of conformity with the regulation (EC) n° 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

Dear,

I, Krzysztof Anioł declare that the information in this document is compliant for the products listed below. This information is for both the article supplied and its packaging.

Name of the Product	Brand	EAN code
LOGOCLIC RIGID AQUASTOP 1,1MM	Logoclic / Decora S.A	4005705008067

1. What is your status (several choices possible)*?*

■ Manufacturer

☐ Importer

☐ Downstream user

☐ Distributor

☐ Producer of an article

2. Do you use a substance in a nanomaterial form *?*

☐ Yes

■ No

If yes, please complete this table*:*

Name of the Product *Description produit*	**Name of the substance** *Nom de la substance*	**CAS/EC number** *Numéro CAS/EC*	**the amount of substance in the product (in gram)** *Quantité de la substance dans le produit (en gramme)*

3. Do you use a SVHC: Substance of Very High Concern in the article or its packaging?

☐ Yes

■ No

If yes, please complete this table & add a column for the packaging.

Name of the Product	Name of the substance	CAS/EC number	the amount of substance in the product (in gram)	Localization of the substance in the product

Środa Wielkopolska, 14.11.2023

Director of Quality and Process Development

Krzysztof Anioł

DECORA S.A.
ul. Prądzyńskiego 24a
63-000 Środa Wlkp.
NIP: 786-10-00-577

Issuance date: 02.09.2022

Validity date: 02.09.2027

LAMINATE POLYURETHANE-MINERAL (PUM) UNDERLAYS



EPD PROGRAM OPERATOR:

Instytut Techniki Budowlanej (ITB)

Address: Filtrowa 1, 00-611 Warsaw, Poland

Website: www.itb.pl

Contact: Michał Piasecki, PhD. D.Sc. Eng.

m.piasecki@itb.pl, energia@itb.pl

OWNER OF THE EPD:

Decora S.A.

ul. Prądzyńskiego 24a

63-000 Środa Wielkopolska, Poland

Contact: +48 507 112 372

office@decora.pl

ITB is the verified member of The European Platform for EPD program operators and LCA practitioner (Eco-Platform)

BASIC INFORMATION

This declaration is the Type III Environmental Product Declaration (EPD) based on EN 15804 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. Their aspects were verified by the independent body according to ISO 14025. Basically, a comparison or evaluation of EPD data is possible only if all the compared data were created according to EN 15804 (see point 5.3 of the standard).

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

The year of preparing the EPD: 2022

Product standard: EN 16354:2018

Service Life: 50 years, SL shall vary depending on a specific scenario of application

PCR: ITB-PCR A (PCR based on EN 15804)

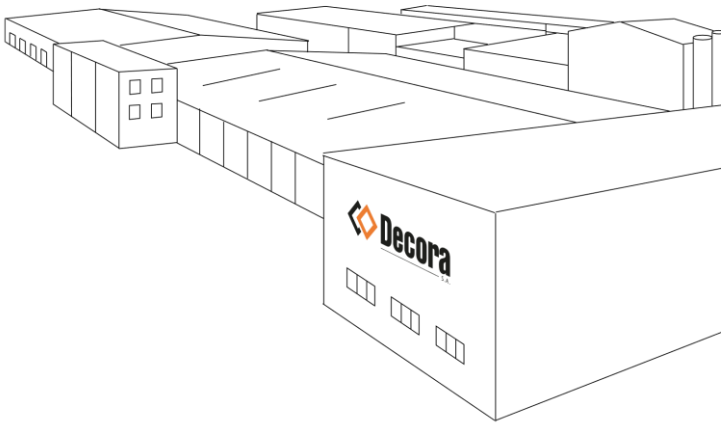
Declared unit: 1 m^2, PU laminated underlays, from 1.1 mm to3,0mm thickness

Reasons for performing LCA: B2B

Representativeness: manufactured in Poland, year 2021

BASIC INFORMATION

Decora S.A. is an international production company with a manufacturing plant located in Środa Polska (Poland). Company is the European leader in the production of floor underlays and the only company in Europe that produces floor underlays in 3 different technologies; PUM, XPS and PEHD Aquastop. The company sells its products on 5 continents, although it focuses on European Union markets. The company has implemented a zero-waste policy.



PRODUCTS DESCRIPTION

This environmental declaration type III covers products from the polyurethane-mineral (PUM) underlays group. The products are made of polyurethane foam with a mineral filling and laminated with PET. The underlay for floor panels is an important element of the new floor, which significantly affects its durability, improves the acoustic comfort by high level of noise reduction. Products (figure 1) are intended to be used for rooms with high traffic intensity and provide heavy load resistance. The products are manufactured in three basic thicknesses from 1.1 to 3.0 mm. The basic products are 1,1mm, 1,5mm, 2,0mm and 3,0mm. All products have a set of tests in accordance with the EN 16354 standard.



Thickness: 1,1 mm



Thickness: 1,5 mm



Thickness 2,0 mm



Thickness: 3,0 mm

Figure 1. Specific products covered by EPD.

All specific product technical data is available at manufacturer website. The products may be available under the Decora brands.

Arbiton FLOOR EXPERT

Leading european brand for floors and accessories, real FLOOR EXPERT, a synonym of high quality and technologically advanced products.

ewifoam® PROFESSIONAL FLOOR EXPERT

German brand of floor underlays for professionals

AFIRMAX

Mineral core floors and underlays for DIY

LIFE CYCLE ASSESSMENT (LCA) – GENERAL RULES APPLIED

Declared Unit

1 m^2, PU laminated underlays, from1.1 mm to– 3,0mm thickness

System boundary

The life cycle analysis of the declared product covers “Product Stage” A1-A3, C1-C4+D modules in accordance with EN 15804 and ITB PCR A (cradle to gate with options).

Allocation

The allocation rules used for this EPD are based on general ITB PCR A. The EPD is representative for all PUM underlay products (production impacts are allocated the same way, mass based). Allocation covers 100% of production, where production of PUM products is 25%. In collaborative processes (all products), e.g. energy consumption for a production hall or offices, impacts were allocated on the basis of total mass allocation.

System limits

Minimum 99.0% input materials and 100% energy consumption (electricity, gas) were inventoried in manufacturing plant and were included in the calculation. In the assessment, all significant parameters from gathered production data are considered, i.e. all material used per formulation, utilized thermal energy, and electric power consumption, direct production waste and available emission measurements. Tires consumption for transport was not taken into account. Limited number of substances with a percentage share of less than 0.1% of total mass might be excluded from the calculations. It is assumed that the total sum of omitted processes does not exceed 1% of all impact categories. Wooden packaging products are excluded in the analysis (considered as closed loop products). In accordance with EN 15804 machines and facilities required for and during production are excluded, as is transportation of employees.

A1 and A2 Modules: Raw materials supply and transport

All resource products (used for a production) were inventoried. A vast majority of components necessary for chemical reactions are sourced from foreign chemical production suppliers (not providing specific impacts) so the general data for these product was used in LCA. The transport to the factory has been fully inventoried (LCI questionnaire) taking into account the number of deliveries: type of vehicles, the size of the delivery and the distance from the manufacturer to the factory for all input sources and raw materials. Packing (e.g. wooden pallets) circulates almost in a closed cycle (therefore it is not included in LCA). For A2 calculation purposes, manufactured inventory data is analysed and European averages for fuel data are applied.

A3: Production

Polyurethane underlays are formed as a product of a chemical reaction. The main ingredients are polyols, isocyanate, modifiers and mineral filler. To control reaction speed catalysts are being used. All components (including minerals) according to formulation are being dosed and mixed in a liquid form.

Then the mixture is laminated with a PET film, hardened and foamed under the influence of temperature.

The product is cooled down, cut and rolled into rolls. The products are packed in boxes.

Finally, the products are loaded on trucks and delivered to the customer.

End of life scenarios (C and D modules)

The end-of-life scenario for all products has been generalized based on actual state of the art. It is assumed that in the end of life stage (C1), some electric/mechanical energy is needed to remove products from installation place, the transport distance for waste to waste processing (C2) is 100 km on > 10t loaded lorry with 75% capacity utilization and fuel consumption of 20 l per 100 km. At the end of life, the underlays are dismantled and the materials recycled according to the national treatment practice of waste what is

presented in Table 1. It is assumed that 20% of the product can be recovered in the recycling process. The remaining 40% may be designated for incineration and the remaining 40% for landfill. The reuse, recovery and recycling stage are considered beyond the system boundaries (D) (reuse potential and incineration – gained heat). The end of life scenario for PUM underlays is provided in Table 1.

Table 1. End-of-life scenario (C modules) for PUM underlays

Parameter	Contribution
Collection rate	100%
Recycling	20%
Incineration	40%
Landfilling	40%

Electricity at end-of-life (module C) has been modelled using an average Polish electricity mix as the location where the product reaches end-of-life is unknown.

Data collection period

The data for manufacture of the declared products refer to period between 01.01.2021 – 31.12.2021 (1 year). The life cycle assessments were done for Poland as reference area.

Calculation rules

LCA was done in accordance with ITB PCR a document. Characterization factors are CML ver. 4.2 based.

ITB-LCA algorithms were used for impact calculations. A1 was calculated based on data from the database, A2 and A3 are calculated based on the LCI questionnaire provided by the manufacturer. Emission of greenhouse gases was calculated using the IPCC 2013 GWP method with a 100-year horizon. Emission of acidifying substances, Emission of substances to water contributing to oxygen depletion, Emission of gases that contribute to the creation of ground-level ozone, Abiotic depletion, and ozone depletion emissions where all calculated with the CML-IA baseline method.

Data quality - production

The values determined to calculate A1-A3 originate from verified process LCI inventory data form production plant. A1 values for inputs were prepared considering input products characteristics based on Eco invent data. The energy consumption of production and its impact on the production lines were separately inventoried and calculated. In accordance with Annex E of the EN 15804 + A2, a data quality assessment was performed with a quality level of " good".

Assumptions and estimates

According to the data adopted from the Ecoinvent 3.8 database, the post-consumer scrap is not burdened with the environmental impacts.

Databases

The background data for the processes come from the following databases: Ecoinvent v.3.8 (polyol, isocyanate, minerals, catalyst, pigment, modifiers, PET, transport, energy carriers, heat, diesel, gas, paper, foils, other, waste processing, incineration, landfill) and KOBiZE (Polish electricity mix and combustion factors for fuels). KOBIZE data is supplemented with Ecoinvent data on the Polish electricity mix impact where no specific indicator data is provided. Specific (LCI) data quality analysis was a part of the input data verification. The time related quality of the data used is valid (5 years).

Additional information

Polish electricity mix used is 0.698 kg CO2/kWh (KOBiZE, 2021). The product has the Blauer Engel ecolabel.

LIFE CYCLE ASSESSMENT (LCA) – RESULTS

Declared unit

The declaration refers to the declared unit DU – 1 m^2 of PUM underlays. The following life cycle modules are included in the declaration (Table 2). Tables 3-18 provides the environmental impacts of 1 m^2 of product with specific thickness (1.1, 1.5, 2 and 3 mm).

Table 2. System boundaries (life stage modules included) in a product environmental assessment

Environmental assessment information (MA – Module assessed, MNA – Module not assessed, 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**
MA	**MA**	**MA**	**MNA**	**MNA**	**MNA**	**MNA**	**MNA**	**MNA**	**MNA**	**MNA**	**MNA**	**MA**	**MA**	**MA**	**MA**	**MA**

The conversion coef. can be used for specific product densities and thicknesses. The impact values given in Table 3-6 should then be multiplied by the conversion coef. in the table below for each specific product.

No	Thickness [mm]:	Gęstość [kg/m^3]	Coef.
1.	1.1	1000	1.0
2.	1.1	1150	1.2
3.	1.4	1000	1.4
4.	1.5	1000	1.5
5.	1.5	600	0.9
6.	1.5	800	1.2
7.	1.6	1000	1.6
8.	1.8	800	1.4
8.	1.8	1000	1.8
9.	1.8	1150	2.1
10.	2	780	1.6
11.	2.1	900	1.9
12.	2.2	700	1.5
13.	2.4	800	1.9
14.	2.6	840	2.2
15.	3	600	1.9

Table 3. Life cycle assessment (LCA) results of PUM underlay– the environmental impacts (DU: 1 m^2; 1.1 mm; approx.1.1 kg)

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
Global Warming Potential*	eq. kg CO_2	1.00E+00	4.60E-02	3.28E-01	7.68E-02	7.51E-04	7.55E-01	8.53E-02	-2.79E-01
Greenhouse gas potential - fossil	eq. kg CO_2	1.02E+00	4.55E-02	3.14E-01	7.53E-02	7.43E-04	7.34E-01	8.53E-02	-2.79E-01
Greenhouse gas potential - biogenic	eq. kg CO_2	-1.47E-02	1.42E-04	9.25E-03	2.20E-03	2.31E-06	2.04E-02	7.70E-04	-1.01E-03
Global warming potential - land use and land use change	eq. kg CO_2	5.11E-04	1.65E-05	1.10E-04	2.64E-05	2.69E-07	1.26E-05	6.22E-06	-1.28E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	7.78E-08	1.10E-08	6.50E-09	1.54E-09	1.79E-10	2.57E-09	1.77E-09	-2.31E-08
Soil and water acidification potential	eq. mol H+	5.33E-03	1.87E-04	3.48E-03	8.36E-04	3.05E-06	1.57E-03	5.06E-05	-1.02E-03
Eutrophication potential - freshwater	eq. kg P	2.94E-04	2.97E-06	5.95E-04	1.43E-04	4.83E-08	6.19E-06	8.97E-07	-1.78E-04
Eutrophication potential - seawater	eq. kg N	1.70E-03	5.57E-05	5.12E-04	1.21E-04	9.08E-07	5.34E-04	3.85E-04	-3.34E-04
Eutrophication potential - terrestrial	eq. mol N	9.80E-03	6.07E-04	4.26E-03	1.02E-03	9.90E-06	1.35E-03	1.82E-04	-1.53E-03
Potential for photochemical ozone synthesis	eq. kg NMVOC	4.80E-03	2.02E-04	1.19E-03	2.86E-04	3.30E-06	3.55E-04	7.15E-05	-8.66E-04
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	1.80E-05	1.08E-07	1.53E-06	3.67E-07	1.76E-09	4.09E-07	2.02E-08	-3.93E-06
Abiotic depletion potential - fossil fuels	MJ	8.70E+00	7.03E-01	5.32E+00	1.28E+00	1.15E-02	9.52E-02	1.32E-01	-3.66E+00
Water deprivation potential	eq. m^3	1.15E+00	3.24E-03	1.12E-01	2.64E-02	5.28E-05	2.83E-02	7.70E-04	-2.34E-01

*The value of the carbon footprint of the product in the product stage A1-A3 is 1.38 kg CO_2/kg

Table 4. Life cycle assessment (LCA) results of PUM underlay – the environmental aspects (DU: 1 m^2; 1.1 mm; 1.1 kg)

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.26E+00	9.11E-03	3.94E-01	9.46E-02	1.49E-04	1.60E-02	2.53E-03	-5.34E-01
Consumption of renewable primary energy resources used as raw materials	MJ	7.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.57E-01
Total consumption of renewable primary energy resources	MJ	3.04E+00	9.11E-03	3.94E-01	9.46E-02	1.49E-04	1.60E-02	2.53E-03	-6.91E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.60E+01	7.03E-01	5.33E+00	1.28E+00	1.15E-02	-8.33E+00	-2.11E+01	-5.13E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	4.46E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.51E+00	2.13E+01	-8.92E-01
Total consumption of non-renewable primary energy resources	MJ	2.05E+01	7.03E-01	5.33E+00	1.28E+00	1.15E-02	1.79E-01	1.36E-01	-6.02E+00
Consumption of secondary materials	kg	1.74E-03	1.97E-04	4.94E-04	1.17E-04	3.22E-06	2.42E-04	4.83E-05	-5.18E-04
Consumption of renewable secondary fuels	MJ	4.01E-04	1.75E-06	2.72E-06	6.50E-07	2.85E-08	1.37E-05	1.86E-06	-8.09E-05
Consumption of non-renewable secondary fuels	MJ	5.67E-11	0.00E+00	4.30E-03	1.03E-03	0.00E+00	0.00E+00	0.00E+00	-8.59E-04
Net consumption of freshwater resources	m^3	3.40E-02	9.11E-05	1.48E-03	3.47E-04	1.49E-06	3.51E-04	1.43E-04	-6.69E-03

Table 5. Life cycle assessment (LCA) results of PUM underlay – the environmental impacts relate to waste management (DU: 1 m^2; 1.1 mm; 1.1 kg)

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
Hazardous waste, neutralized	kg	5.21E-02	7.59E-04	6.37E-04	1.32E-05	1.24E-05	3.85E-03	2.75E-04	-9.76E-03
Non-hazardous waste, neutralised	kg	7.75E-01	1.32E-02	5.39E-02	6.86E-04	2.15E-04	2.66E-01	5.54E-01	-1.68E-01
Radioactive waste	kg	3.69E-06	4.79E-04	3.98E-06	9.57E-07	7.81E-06	5.18E-07	8.03E-09	-9.74E-05
Materials for recycling	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
Materials for energy recovery	kg	8.61E-05	2.28E-06	5.51E-03	1.32E-06	3.71E-08	5.28E-01	3.49E-07	-1.12E-03
Exported energy	MJ	5.90E-07	1.61E-08	4.84E-08	1.16E-08	2.63E-10	2.63E-08	4.58E-09	-1.23E-07

Table 6. Life cycle assessment (LCA) results of PUM underlay – the environmental additional information (DU: 1 m^2; 1.1 mm; approx.1.1 kg)

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

Table 7. Life cycle assessment (LCA) results of PUM underlay– the environmental impacts (DU: 1 m^2; 1.5 mm; approx.1.5 kg)

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	1,37E+00	6,28E-02	4,47E-01	1,05E-01	1,02E-03	1,03E+00	1,16E-01	-3,81E-01
Greenhouse gas potential - fossil	eq. kg CO_2	1,38E+00	6,21E-02	4,28E-01	1,03E-01	1,01E-03	1,00E+00	1,16E-01	-3,81E-01
Greenhouse gas potential - biogenic	eq. kg CO_2	-2,00E-02	1,93E-04	1,26E-02	3,00E-03	3,15E-06	2,78E-02	1,05E-03	-1,38E-03
Global warming potential - land use and land use change	eq. kg CO_2	6,96E-04	2,25E-05	1,50E-04	3,60E-05	3,67E-07	1,72E-05	8,48E-06	-1,75E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	1,06E-07	1,50E-08	8,87E-09	2,10E-09	2,44E-10	3,50E-09	2,41E-09	-3,15E-08
Soil and water acidification potential	eq. mol H+	7,26E-03	2,55E-04	4,75E-03	1,14E-03	4,16E-06	2,14E-03	6,90E-05	-1,39E-03
Eutrophication potential - freshwater	eq. kg P	4,01E-04	4,04E-06	8,12E-04	1,95E-04	6,59E-08	8,45E-06	1,22E-06	-2,43E-04
Eutrophication potential - seawater	eq. kg N	2,32E-03	7,59E-05	6,99E-04	1,65E-04	1,24E-06	7,28E-04	5,25E-04	-4,56E-04
Eutrophication potential - terrestrial	eq. mol N	1,34E-02	8,28E-04	5,81E-03	1,40E-03	1,35E-05	1,85E-03	2,48E-04	-2,08E-03
Potential for photochemical ozone synthesis	eq. kg NMVOC	6,54E-03	2,76E-04	1,62E-03	3,90E-04	4,50E-06	4,84E-04	9,75E-05	-1,18E-03
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	2,46E-05	1,47E-07	2,09E-06	5,01E-07	2,40E-09	5,58E-07	2,75E-08	-5,36E-06
Abiotic depletion potential - fossil fuels	MJ	1,19E+01	9,59E-01	7,25E+00	1,74E+00	1,56E-02	1,30E-01	1,80E-01	-4,99E+00
Water deprivation potential	eq. m^3	1,56E+00	4,42E-03	1,52E-01	3,60E-02	7,20E-05	3,86E-02	1,05E-03	-3,18E-01

Table 8. Life cycle assessment (LCA) results of PUM underlay – the environmental aspects (DU: 1 m^2; 1.5 mm; 1.5 kg)

Indicator	Unit	**A1**	**A2**	**A3**	**C1**	**C2**	**C3**	**C4**	**D**
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	3.08E+00	1.24E-02	5.37E-01	1.29E-01	2.03E-04	2.19E-02	3.45E-03	-7.28E-01
Consumption of renewable primary energy resources used as raw materials	MJ	1.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.14E-01
Total consumption of renewable primary energy resources	MJ	4.15E+00	1.24E-02	5.37E-01	1.29E-01	2.03E-04	2.19E-02	3.45E-03	-9.42E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.19E+01	9.59E-01	7.27E+00	1.75E+00	1.56E-02	-1.14E+01	-2.88E+01	-6.99E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	6.08E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E+01	2.90E+01	-1.22E+00
Total consumption of non-renewable primary energy resources	MJ	2.79E+01	9.59E-01	7.27E+00	1.75E+00	1.56E-02	2.44E-01	1.85E-01	-8.21E+00
Consumption of secondary materials	kg	2.37E-03	2.69E-04	6.73E-04	1.59E-04	4.39E-06	3.30E-04	6.59E-05	-7.06E-04
Consumption of renewable secondary fuels	MJ	5.46E-04	2.38E-06	3.71E-06	8.86E-07	3.88E-08	1.87E-05	2.54E-06	-1.10E-04
Consumption of non-renewable secondary fuels	MJ	7.73E-11	0.00E+00	5.86E-03	1.41E-03	0.00E+00	0.00E+00	0.00E+00	-1.17E-03
Net consumption of freshwater resources	m^3	4.63E-02	1.24E-04	2.01E-03	4.73E-04	2.03E-06	4.79E-04	1.95E-04	-9.13E-03

Table 9. Life cycle assessment (LCA) results of PUM underlay – the environmental impacts relate to waste management (DU: 1 m^2; 1.5 mm; 1.5 kg)

Indicator	**Unit**	**A1**	**A2**	**A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste, neutralized	kg	7.11E-02	1.04E-03	8.69E-04	1.80E-05	1.69E-05	5.25E-03	3.75E-04	-1.33E-02
Non-hazardous waste, neutralised	kg	1.06E+00	1.79E-02	7.35E-02	9.36E-04	2.93E-04	3.63E-01	7.55E-01	-2.29E-01
Radioactive waste	kg	5.03E-06	6.53E-04	5.43E-06	1.31E-06	1.07E-05	7.07E-07	1.10E-08	-1.33E-04
Materials for recycling	kg	1.17E-04	3.11E-06	7.51E-03	1.80E-06	5.06E-08	7.20E-01	4.76E-07	-1.53E-03
Materials for energy recovery	kg	8.05E-07	2.20E-08	6.60E-08	1.58E-08	3.59E-10	3.59E-08	6.24E-09	-1.67E-07
Exported energy	MJ	1.30E+00	1.19E-03	2.17E-02	5.19E-03	1.95E-05	4.46E+00	3.75E-04	-2.64E-01

Table 10. Life cycle assessment (LCA) results of PUM underlay – the environmental additional information (DU: 1 m^2; 1.5 mm; approx.1.5 kg)

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

Table 11. Life cycle assessment (LCA) results of PUM underlay – the environmental impacts (DU: 1 m^2; 2.0 mm; approx.1.6 kg)

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	1.46E+00	6.70E-02	4.77E-01	1.12E-01	1.09E-03	1.10E+00	1.24E-01	-4.06E-01
Greenhouse gas potential - fossil	eq. kg CO_2	1.48E+00	6.62E-02	4.57E-01	1.10E-01	1.08E-03	1.07E+00	1.24E-01	-4.06E-01
Greenhouse gas potential - biogenic	eq. kg CO_2	-2.13E-02	2.06E-04	1.35E-02	3.20E-03	3.36E-06	2.96E-02	1.12E-03	-1.47E-03
Global warming potential - land use and land use change	eq. kg CO_2	7.43E-04	2.40E-05	1.60E-04	3.84E-05	3.91E-07	1.83E-05	9.04E-06	-1.87E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	1.13E-07	1.60E-08	9.46E-09	2.24E-09	2.60E-10	3.74E-09	2.57E-09	-3.36E-08
Soil and water acidification potential	eq. mol H+	7.75E-03	2.72E-04	5.06E-03	1.22E-03	4.44E-06	2.28E-03	7.36E-05	-1.48E-03
Eutrophication potential - freshwater	eq. kg P	4.27E-04	4.31E-06	8.66E-04	2.08E-04	7.03E-08	9.01E-06	1.30E-06	-2.59E-04
Eutrophication potential - seawater	eq. kg N	2.47E-03	8.10E-05	7.45E-04	1.76E-04	1.32E-06	7.77E-04	5.60E-04	-4.86E-04
Eutrophication potential - terrestrial	eq. mol N	1.42E-02	8.83E-04	6.20E-03	1.49E-03	1.44E-05	1.97E-03	2.64E-04	-2.22E-03
Potential for photochemical ozone synthesis	eq. kg NMVOC	6.98E-03	2.94E-04	1.73E-03	4.16E-04	4.80E-06	5.16E-04	1.04E-04	-1.26E-03
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	2.62E-05	1.57E-07	2.23E-06	5.34E-07	2.56E-09	5.96E-07	2.94E-08	-5.72E-06
Abiotic depletion potential - fossil fuels	MJ	1.27E+01	1.02E+00	7.74E+00	1.86E+00	1.67E-02	1.38E-01	1.92E-01	-5.32E+00
Water deprivation potential	eq. m^3	1.67E+00	4.71E-03	1.63E-01	3.84E-02	7.68E-05	4.11E-02	1.12E-03	-3.40E-01

Table 12. Life cycle assessment (LCA) results of PUM underlay – the environmental aspects (DU: 1 m^2; 2.0 mm; approx.1.6 kg)

Indicator	Unit	**A1**	**A2**	**A3**	**C1**	**C2**	**C3**	**C4**	**D**
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	3.29E+00	1.32E-02	5.73E-01	1.38E-01	2.16E-04	2.33E-02	3.68E-03	-7.77E-01
Consumption of renewable primary energy resources used as raw materials	MJ	1.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.28E-01
Total consumption of renewable primary energy resources	MJ	4.43E+00	1.32E-02	5.73E-01	1.38E-01	2.16E-04	2.33E-02	3.68E-03	-1.00E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.33E+01	1.02E+00	7.76E+00	1.86E+00	1.67E-02	-1.21E+01	-3.07E+01	-7.46E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	6.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E+01	3.09E+01	-1.30E+00
Total consumption of non-renewable primary energy resources	MJ	2.98E+01	1.02E+00	7.76E+00	1.86E+00	1.67E-02	2.60E-01	1.98E-01	-8.76E+00
Consumption of secondary materials	kg	2.53E-03	2.87E-04	7.18E-04	1.70E-04	4.68E-06	3.52E-04	7.03E-05	-7.53E-04
Consumption of renewable secondary fuels	MJ	5.83E-04	2.54E-06	3.96E-06	9.45E-07	4.14E-08	1.99E-05	2.70E-06	-1.18E-04
Consumption of non-renewable secondary fuels	MJ	8.24E-11	0.00E+00	6.25E-03	1.50E-03	0.00E+00	0.00E+00	0.00E+00	-1.25E-03
Net consumption of freshwater resources	m^3	4.94E-02	1.32E-04	2.15E-03	5.04E-04	2.16E-06	5.10E-04	2.08E-04	-9.74E-03

Table 13. Life cycle assessment (LCA) results of PUM underlay – (DU: 1 m^2; 2.0 mm; approx.1.6 kg)- environmental information describing waste categories

Indicator	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D
Hazardous waste, neutralized	kg	7.58E-02	1.10E-03	9.27E-04	1.92E-05	1.80E-05	5.60E-03	4.00E-04	-1.42E-02
Non-hazardous waste, neutralised	kg	1.13E+00	1.91E-02	7.84E-02	9.98E-04	3.12E-04	3.87E-01	8.06E-01	-2.44E-01
Radioactive waste	kg	5.36E-06	6.97E-04	5.79E-06	1.39E-06	1.14E-05	7.54E-07	1.17E-08	-1.42E-04
Materials for recycling	kg	1.25E-04	3.31E-06	8.01E-03	1.92E-06	5.40E-08	7.68E-01	5.08E-07	-1.63E-03
Materials for energy recovery	kg	8.58E-07	2.35E-08	7.04E-08	1.68E-08	3.83E-10	3.82E-08	6.66E-09	-1.79E-07
Exported energy	MJ	1.38E+00	1.27E-03	2.32E-02	5.54E-03	2.08E-05	4.76E+00	4.00E-04	-2.82E-01

Table 14. Life cycle assessment (LCA) results of PUM underlay additional indicators (DU: 1 m^2; 2.0 mm; approx.1.6 kg)

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

Table 15. Life cycle assessment (LCA) results of PUM underlay– the environmental impacts (DU: 1 m²; 3.0 mm; approx.1.9 kg)

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	1.73E+00	7.95E-02	5.66E-01	1.33E-01	1.30E-03	1.30E+00	1.47E-01	-4.82E-01
Greenhouse gas potential - fossil	eq. kg CO_2	1.75E+00	7.87E-02	5.43E-01	1.30E-01	1.28E-03	1.27E+00	1.47E-01	-4.82E-01
Greenhouse gas potential - biogenic	eq. kg CO_2	-2.53E-02	2.45E-04	1.60E-02	3.80E-03	3.99E-06	3.52E-02	1.33E-03	-1.75E-03
Global warming potential - land use and land use change	eq. kg CO_2	8.82E-04	2.85E-05	1.90E-04	4.56E-05	4.65E-07	2.18E-05	1.07E-05	-2.22E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	1.34E-07	1.90E-08	1.12E-08	2.66E-09	3.09E-10	4.44E-09	3.05E-09	-3.99E-08
Soil and water acidification potential	eq. mol H+	9.20E-03	3.23E-04	6.01E-03	1.44E-03	5.27E-06	2.71E-03	8.74E-05	-1.76E-03
Eutrophication potential - freshwater	eq. kg P	5.07E-04	5.12E-06	1.03E-03	2.47E-04	8.35E-08	1.07E-05	1.55E-06	-3.08E-04
Eutrophication potential - seawater	eq. kg N	2.94E-03	9.61E-05	8.85E-04	2.09E-04	1.57E-06	9.22E-04	6.65E-04	-5.77E-04
Eutrophication potential - terrestrial	eq. mol N	1.69E-02	1.05E-03	7.36E-03	1.77E-03	1.71E-05	2.34E-03	3.14E-04	-2.63E-03
Potential for photochemical ozone synthesis	eq. kg NMVOC	8.28E-03	3.50E-04	2.06E-03	4.94E-04	5.70E-06	6.13E-04	1.24E-04	-1.50E-03
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	3.11E-05	1.86E-07	2.65E-06	6.35E-07	3.04E-09	7.07E-07	3.49E-08	-6.79E-06
Abiotic depletion potential - fossil fuels	MJ	1.50E+01	1.21E+00	9.19E+00	2.20E+00	1.98E-02	1.64E-01	2.28E-01	-6.31E+00
Water deprivation potential	eq. m^3	1.98E+00	5.59E-03	1.93E-01	4.56E-02	9.12E-05	4.88E-02	1.33E-03	-4.03E-01

Table 16. Life cycle assessment (LCA) results of PUM underlay – the environmental aspects (DU: 1 m²; 3.0 mm; approx.1.9 kg)

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	3.91E+00	1.57E-02	6.80E-01	1.63E-01	2.57E-04	2.77E-02	4.37E-03	-9.22E-01
Consumption of renewable primary energy resources used as raw materials	MJ	1.35E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.71E-01
Total consumption of renewable primary energy resources	MJ	5.26E+00	1.57E-02	6.80E-01	1.63E-01	2.57E-04	2.77E-02	4.37E-03	-1.19E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.77E+01	1.21E+00	9.21E+00	2.21E+00	1.98E-02	-1.44E+01	-3.65E+01	-8.86E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	7.70E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+01	3.67E+01	-1.54E+00
Total consumption of non-renewable primary energy resources	MJ	3.54E+01	1.21E+00	9.21E+00	2.21E+00	1.98E-02	3.09E-01	2.35E-01	-1.04E+01
Consumption of secondary materials	kg	3.01E-03	3.41E-04	8.53E-04	2.01E-04	5.56E-06	4.18E-04	8.35E-05	-8.94E-04
Consumption of renewable secondary fuels	MJ	6.92E-04	3.02E-06	4.70E-06	1.12E-06	4.92E-08	2.37E-05	3.21E-06	-1.40E-04
Consumption of non-renewable secondary fuels	MJ	9.79E-11	0.00E+00	7.42E-03	1.78E-03	0.00E+00	0.00E+00	0.00E+00	-1.48E-03
Net consumption of freshwater resources	m³	5.87E-02	1.57E-04	2.55E-03	5.99E-04	2.57E-06	6.06E-04	2.47E-04	-1.16E-02

Table 17. Life cycle assessment (LCA) results of PUM underlay – the environmental impacts relate to waste management (DU: 1 m²; 3.0 mm; approx.1.9 kg)

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
Hazardous waste, neutralized	kg	9.00E-02	1.31E-03	1.10E-03	2.28E-05	2.14E-05	6.65E-03	4.75E-04	-1.69E-02
Non-hazardous waste, neutralised	kg	1.34E+00	2.27E-02	9.30E-02	1.19E-03	3.71E-04	4.60E-01	9.57E-01	-2.90E-01
Radioactive waste	kg	6.37E-06	8.28E-04	6.88E-06	1.65E-06	1.35E-05	8.95E-07	1.39E-08	-1.68E-04
Materials for recycling	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
Materials for energy recovery	kg	1.49E-04	3.93E-06	9.51E-03	2.28E-06	6.41E-08	9.12E-01	6.03E-07	-1.93E-03
Exported energy	MJ	1.02E-06	2.79E-08	8.36E-08	2.00E-08	4.55E-10	4.54E-08	7.90E-09	-2.12E-07

Table 18. Life cycle assessment (LCA) results of PUM underlay – the environmental additional information (DU: 1 m^2; 3.0 mm; approx.1.9 kg)

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

VERIFICATION

The process of verification of this EPD was 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 AND ITB PCR A
Independent verification corresponding to ISO 14025 (sub clause 8.1.3.)
☒ EXTERNAL ☐ INTERNAL
External verification of EPD: Ph.D. Eng. Halina Prejzner
LCA. LCI audit and input data verification: Ph.D, D.Sc.Eng. Michał Piasecki. m.piasecki@itb.pl

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. For further information about comparability, see EN 15804 and ISO 14025

Normative references

- ITB PCR A General Product Category Rules for Construction Products
- EN 16354:2018 Laminate floor coverings - Underlays - Specification, requirements and test methods
- 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
- EN 15804+A2 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- CRU Group. Carbon footprint by cold metal by country - https://www.crugroup.com/about-cru/
- European Life Cycle Database. ELCD 3.2. http://eplca.jrc.ec.europa.eu/ELCD3/index.xhtml?stock=default
- Ecoinvent Database. http://www.ecoinvent.org/database/.
- KOBiZE Wskaźniki emisyjności CO_2, SO2, NOx, CO i pyłu całkowitego dla energii elektrycznej, 2021

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CERTIFICATE № 364/2022
of TYPE III ENVIRONMENTAL DECLARATION

Product:

Polyurethane-mineral (PUM) underlays

Manufacturer:

Decora S.A.

ul. Prądzyńskiego 24, 63-000 Środa Wielkopolska, 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 2nd September 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, September 2022