SENTINEL HOLDING
INSTITUT

SHI PRODUCT PASSPORT

Find products. Certify buildings.

SHI Product Passport No.:

12065-10-1036

ZERO SOUND

Product group: Floor coverings / Wall coverings

Kährs

Kährs Parkett Deutschland GmbH & Co. KG
Konrad-Adenauer-Str. 15
72072 Tübingen

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

SENTINEL HOLDING
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Product:
ZERO SOUND

SHI Product Passport no.:
12065-10-1036

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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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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 floor coverings	TVOC ≤ 160 µg/m^3 Formaldehyd ≤ 10 µg/m^3	Indoor Air Quality Certified
Valid untill: 24 January 2027			

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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	2.2 Resilient floor coverings – including multilayer systems	VOC / Emissions / hazardous substances / polycyclic aromatic hydrocarbons (PAH) / SVHC / heavy metals	QNG ready
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S (Prüfbericht Nr. 392-2023-00026802_A_EN) vom 01.03.2023. Herstellererklärung vom 02.05.2024.			

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Product:
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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			Not relevant for assessment

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SHI Product Passport no.:
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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)	7 Floor coverings (Resilient floor coverings)	VVOCs, VOC, SVOC emissions and content of hazardous substances	Quality level 3
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S (Prüfbericht Nr. 392-2023-00026802_A_EN) vom 01.03.2023. Herstellererklärung vom 02.05.2024.			

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

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

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

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

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

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact, 29.05.2025 (4th edition)	7 Floor coverings for indoor use (elastic floor coverings)	VVOCs, VOC, SVOC emissions and content of hazardous substances	Quality level 3
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S (Prüfbericht Nr. 392-2023-00026802_A_EN) vom 01.03.2023. Herstellererklärung vom 02.05.2024.			

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Product:
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SHI Product Passport no.:
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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	7 Floor coverings (Resilient floor coverings)	VOC / SVOC / hazardous substances	Quality level 4

Verification: Prüfbericht des Instituts Eurofins Product Testing A/S (Prüfbericht Nr. 392-2023-00026802_A_EN) vom 01.03.2023. Herstellererklärung vom 02.05.2024.

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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	2a Elastic floor coverings – with and without bonded underlay or insulation layer	VOC / hazardous substances / heavy metals	Quality level 3
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S (Prüfbericht Nr. 392-2023-00026802_A_EN) vom 01.03.2023. Herstellererklärung vom 02.05.2024. Kein PVC.			

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Product:
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SHI Product Passport no.:
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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: Prüfbericht des Instituts Eurofins Product Testing A/S (Prüfbericht Nr. 392-2023-00026802_A_EN) vom 01.03.2023. Herstellererklärung vom 02.05.2024.			

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Product:
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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	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 (Prüfbericht Nr. 392-2023-00026802_A_EN) vom 01.03.2023.			

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Product:
ZERO SOUND

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	Bodenbeläge	Emissionen: Formaldehyd, VOC, Krebserregende Stoffe	compliant
Verification: Prüfbericht des Instituts Eurofins Product Testing A/S (Prüfbericht Nr. 392-2023-00026802_A_EN) vom 01.03.2023.			

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Product:
ZERO SOUND

SHI Product Passport no.:
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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.

EPD Hub is a global EPD program that digitizes and streamlines the entire process from data collection and verification to the publication of Environmental Product Declarations (EPDs). EPD Hub operates in accordance with internationally recognized standards such as ISO 14025, EN 15804 + A2, and ISO 21930, and uses its own established rule sets (GPI and PCR) to ensure a consistent methodology.

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Product:
ZERO SOUND

SHI Product Passport no.:
12065-10-1036

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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www.sentinel-holding.eu

TECHNISCHE DATEN
ZERO SOUND
BODENBELAG AUS ENOMER®

DGNB NAVIGATOR
Registrierungs-Code
WUATNX
www.dgnb-navigator.de

PRODUKT

Zero Sound	EN 14565	Aus natürlichen Mineralien und reinen thermoplastischen Polymeren. Frei von Chlor und Weichmachern. Mit Trittschalldämmung.
Klassifizierung	EN ISO 10874	23/33/42 

SPEZIFIKATIONEN

Dicke	EN ISO 24346	3,6 mm
Gewicht	EN ISO 23997	3800 g/m²
Rollenlänge	EN ISO 24341	8 - 16 m
Breite	EN ISO 24341	145 cm

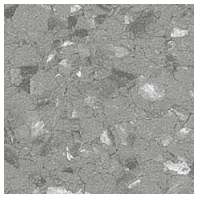
PRODUKTEIGENSCHAFTEN

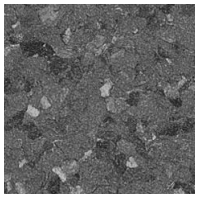
EIGENSCHAFT	TESTMETHODE	ERGEBNIS
Umwelt- und Raumluftzertifizierungen		M1, Floorscore
Brandverhalten	EN 13501-1	C_{fl}-s1
Resteindruck	EN ISO 24343-1 (2,5 h)	ca. 0,13 mm
Gleitreibungswiderstand Rutschsicherheit / -hemmung	EN 13893 DIN 51130	DS (> 0,3) Gruppe R9
Elektrostatisches Verhalten	EN 1815	≤ 2 kV (antistatisch)
Chemische Beständigkeit	EN ISO 26987	Hervorragend
Fußbodenheizung		Geeignet (bis max. +28 °C Oberflächentemperatur bei Warmwasserheizung)
Isolationswiderstand	EN 1081	> 100 GΩ
Wärmeleitfähigkeit	EN 12667	R = 0,030 [m²K/W]
Trittschalldämmung	SO 717-2	ΔL_w ~ 16 dB
Beständigkeit gegen Bakterien- und Pilzwachstum	ISO 846	Gut

ISO 9001 ISO 14001 BUREAU VERITAS Certification
EN 14041
PHTHALATE FREE
floor score
M1 EMISSION CLASS FOR BUILDING MATERIAL
TEHTY SUOMESSA MADE IN FINLAND

TECHNISCHE DATEN
ZERO SOUND
BODENBELAG AUS ENOMER®


NCS S 2500-N
5802 CAPE COD


NCS S 4500-N
5803 PEWTER

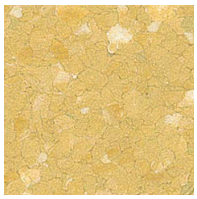

NCS S 7500-N
5805 GRAPHITE

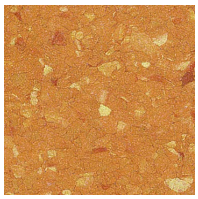

NCS S 3000-N
5811 SILVER GREY


NCS S 2005-Y30R
5822 DUSTY

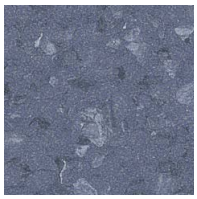

NCS S 4010-Y30R
5823 MOROCCO

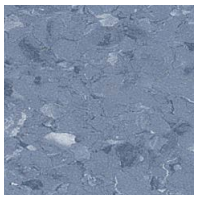

NCS S 6005-Y50R
5824 CORUNDUM

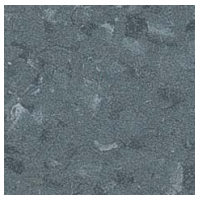

NCS S 2030-Y20R
5829 SUNBEAM

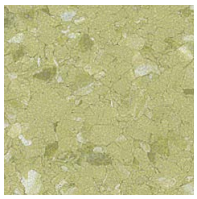

NCS S 2060-Y40R
5832 CAROTENE

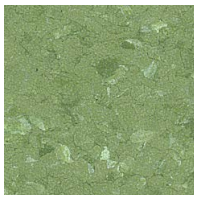

NCS S 2060-Y80R
5843 TERRACOTTA


NCS S 5020-R80B
5852 BLUE MOON

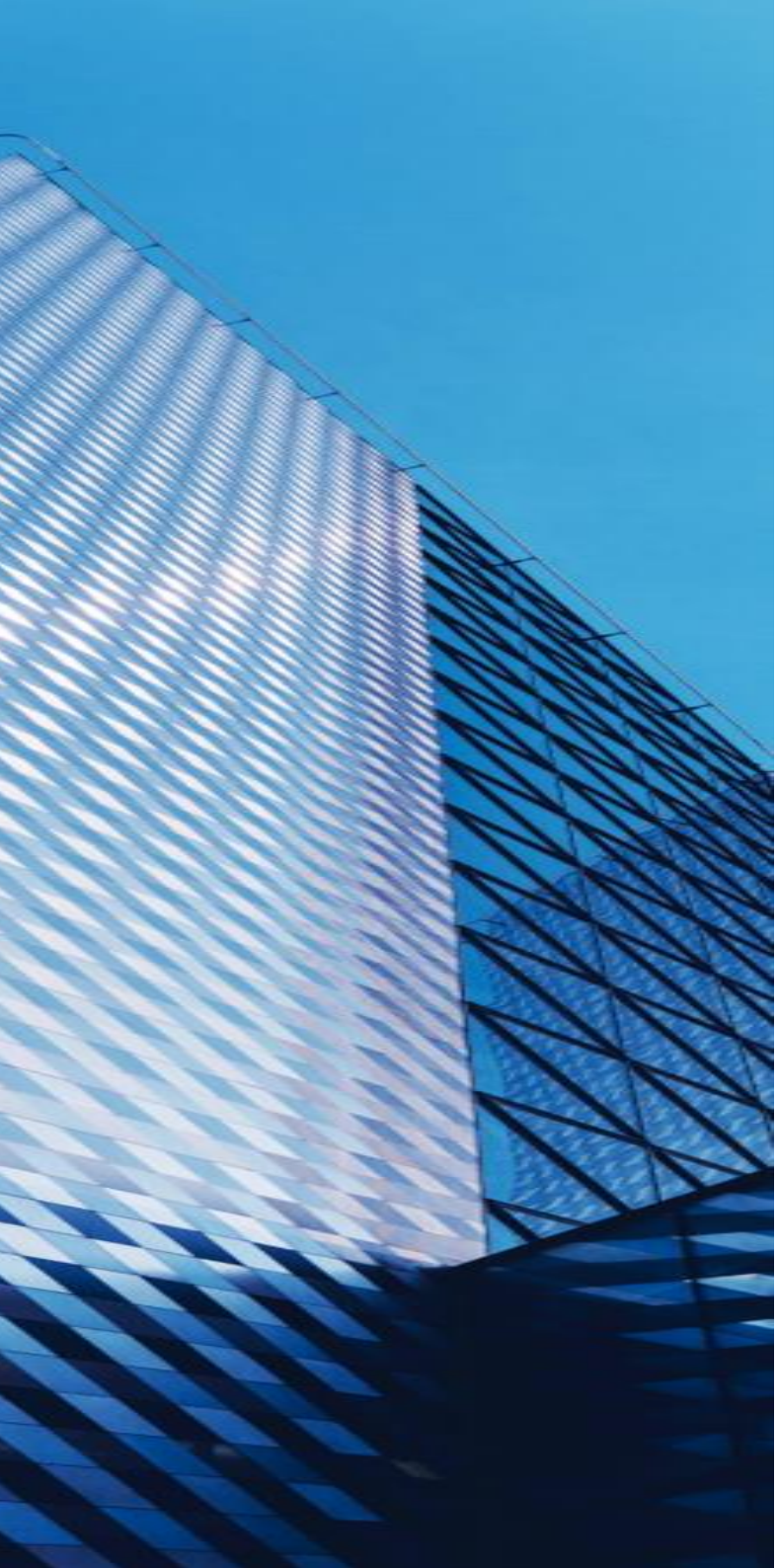

NCS S 4020-R90B
5858 BLUE ORCHID


NCS S 6020-B
5859 DENIM


NCS S 2030-G60Y
5862 THORN APPLE


NCS S 3040-G30Y
5863 SPRUCE


NCS S 2005-G30Y
5864 AMBROSIA



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Zero Sound
Kährs Group



EPD HUB, HUB-1229
Publishing on 11.03.2024, last updated on 11.03.2024, valid until 11.03.2029.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Kährs Group
Address	Ångbåtsbron 1 SE-201 21 Malmö
Contact details	info@kahrs.com
Website	www.kahrs.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022 EN 16810 Product category rules for resilient, textile and laminate floor coverings
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Tomi Tehomaa, Kährs
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Elma Avdyli, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Zero Sound
Additional labels	
Product reference	105800 - 105899
Place of production	Kährs Finland Oy, Ikaalinen
Period for data	01.03.2022 - 28.02.2023 (12 months)
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m2
Declared unit mass	3.82 kg
GWP-fossil, A1-A3 (kgCO2e)	6,18E+00
GWP-total, A1-A3 (kgCO2e)	6,02E+00
Secondary material, inputs (%)	0.193
Secondary material, outputs (%)	32.5
Total energy use, A1-A3 (kWh)	28.6
Total water use, A1-A3 (m3e)	6,69E-02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Kährs Group is a world-leading flooring manufacturer in hardwood and resilient flooring with a number of strong brands in its product portfolio. The company is dedicated to providing the market with innovative new flooring solution. Kährs Group, which delivers products to more than 70 countries, is the market leader in Sweden and Finland and holds a strong position in other key markets, such as Norway, the UK, US, Germany, and Switzerland.

PRODUCT DESCRIPTION

This applies to Zero Sound product range manufactured by Kährs, Ikaalinen, Finland. Products are based upon synthetic thermoplastic polymers according to /EN14565/ and are supplied in roll form. Zero floor coverings do not include any PVC and plasticizers and therefore they are safest choice for indoor use. For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland)/Regulation (EU) No. 305/2011 (CPR)/ applies. The product needs a declaration of performance taking into consideration /EN 14041:2004/: Resilient, textile, laminate and modular multilayer floor coverings -Essential characteristics/ and the CE-marking. For application and use the respective national provisions apply.This EPD follows the rules according standard EN 16810 Product category rules for resilient, textile and laminate floor coverings.

Further information can be found at www.kahrs.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals		
Minerals	52	Limestone, Color Pigments
Fossil materials	48	Plastics
Bio-based materials	0	

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	
Biogenic carbon content in packaging, kg C	0.052

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m2
Mass per declared unit	3.82 kg
Functional unit	
Reference service life	40

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The product considered in this EPD is made in the Kährs manufacturing plant in Ikaalinen, Finland. Data is collected at 12 months period from 1/3/2022 - 28/2/2023.

Raw materials are transported from suppliers. At first step of production raw materials are mixed and compounded to granules. Second step is scattering and melting granules to sheet form. At the end surface treatment has been applied on top of the sheet.

Products are rolled around cardboard tube and packed into craft paper with cardboard end plates. Rolls are placed into pallets wrapped with plastic films.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Zero Sound is made in Finland, where it is transported into different markets.The estimated average distribution distance between the factory and the installation site is 500 km. This is presenting typical average delivery distance at north Europe. The distribution is made by truck.

Product is installed manually by using water based acrylic dispersion adhesive about 200 g/m2. Material lost during installation is 5%. This installation waste is handled by recycling, incineration or landfill. A taking back program has been started to be able to re-use installation waste . European waste classification EWC 17 02 03.

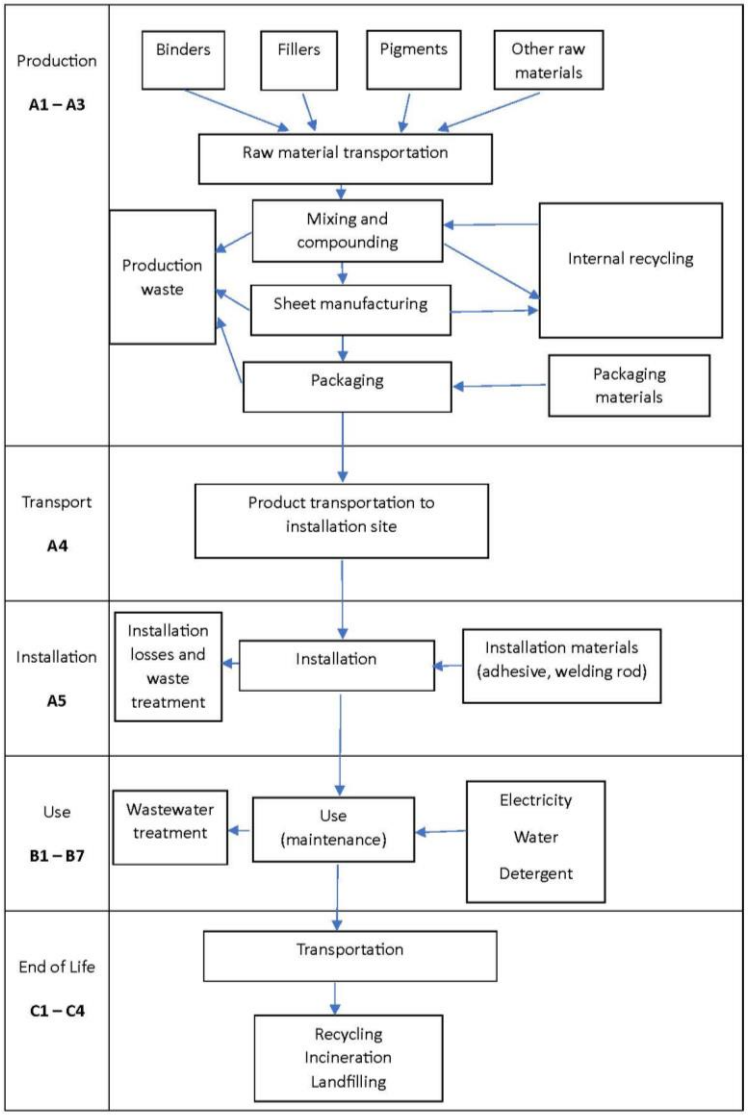
PRODUCT USE AND MAINTENANCE (B1-B7)

In this scenario product is cleaned once a week by scrubber dryer and twice a week by manual mopping.
Scrubber drier causes water and electricity consumption. Manual mopping causes water, electricity and detergent consumption as mops are washed after every use.
As a summary:
Electricity 0,0468 kWh/year/m2
Water: 2,6 kg/year/m2
Detergent 0,00364 kg/year/m2:
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

It should be noted that service life RSL of floor covering may vary depending the amount and nature of traffic on the floor. Manufacturer has stated service life on basis of wear resistance tests and experience. End of Life Waste scenario is based to EU statistic: https://www.europarl.europa.eu/news/en/headlines/society/20181212STO21610/plastic-waste-and-recycling-in-the-eu-facts-and-figures
Additionally also different scenarios: 100% landfill, 100% incineration and 100% recycling are calculate separately.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	%

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	5,01E+00	5,02E-01	5,04E-01	6,02E+00	2,58E-01	1,16E+00	MND	5,55E-01	MND	MND	MND	MND	MND	0,00E+00	3,83E-02	4,70E+00	1,78E+00	-2,51E+00
GWP – fossil	kg CO_2e	4,99E+00	5,02E-01	6,91E-01	6,18E+00	2,58E-01	9,75E-01	MND	5,45E-01	MND	MND	MND	MND	MND	0,00E+00	3,83E-02	4,71E+00	1,78E+00	-2,57E+00
GWP – biogenic	kg CO_2e	2,19E-02	1,86E-05	-1,87E-01	-1,66E-01	0,00E+00	1,83E-01	MND	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-1,30E-02	-4,30E-03	6,27E-02
GWP – LULUC	kg CO_2e	1,85E-03	2,18E-04	6,57E-04	2,72E-03	1,05E-04	2,76E-04	MND	9,91E-03	MND	MND	MND	MND	MND	0,00E+00	1,41E-05	3,00E-04	1,26E-05	-8,97E-05
Ozone depletion pot.	kg CFC_{-11}e	5,27E-07	1,13E-07	8,77E-08	7,28E-07	6,05E-08	4,52E-08	MND	4,39E-08	MND	MND	MND	MND	MND	0,00E+00	8,81E-09	3,76E-07	4,68E-09	-3,65E-08
Acidification potential	mol H^+e	2,39E-02	4,66E-03	5,56E-03	3,41E-02	1,46E-03	3,25E-03	MND	4,24E-03	MND	MND	MND	MND	MND	0,00E+00	1,62E-04	5,29E-03	3,33E-04	-9,33E-03
EP-freshwater[2)]	kg Pe	8,76E-05	3,42E-06	2,31E-05	1,14E-04	1,90E-06	6,47E-06	MND	2,14E-04	MND	MND	MND	MND	MND	0,00E+00	3,13E-07	9,37E-06	3,11E-07	-3,90E-05
EP-marine	kg Ne	6,05E-03	1,24E-03	1,01E-03	8,30E-03	5,26E-04	7,85E-04	MND	4,83E-03	MND	MND	MND	MND	MND	0,00E+00	4,82E-05	9,07E-04	1,56E-04	-1,54E-03
EP-terrestrial	mol Ne	5,92E-02	1,37E-02	1,24E-02	8,53E-02	5,79E-03	8,49E-03	MND	8,83E-03	MND	MND	MND	MND	MND	0,00E+00	5,32E-04	9,99E-03	1,60E-03	-1,80E-02
POCP ("smog")[3)]	kg NMVOCe	2,11E-02	3,88E-03	3,09E-03	2,80E-02	1,65E-03	2,66E-03	MND	2,23E-03	MND	MND	MND	MND	MND	0,00E+00	1,70E-04	3,16E-03	4,77E-04	-8,74E-03
ADP-minerals & metals[4)]	kg Sbe	2,50E-05	1,25E-06	5,09E-06	3,13E-05	8,82E-07	2,05E-06	MND	1,50E-05	MND	MND	MND	MND	MND	0,00E+00	8,98E-08	3,43E-06	9,99E-08	-1,56E-05
ADP-fossil resources	MJ	1,17E+02	7,31E+00	7,73E+00	1,32E+02	3,90E+00	1,61E+01	MND	2,82E+01	MND	MND	MND	MND	MND	0,00E+00	5,75E-01	2,31E+01	3,80E-01	-8,97E+01
Water use[5)]	m^3e depr.	2,63E+00	3,14E-02	4,61E-01	3,12E+00	1,87E-02	3,00E-01	MND	1,81E+00	MND	MND	MND	MND	MND	0,00E+00	2,57E-03	2,09E-01	4,94E-02	-1,12E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	6,96E-07	4,63E-08	5,47E-08	7,97E-07	2,86E-08	5,20E-08	MND	5,30E-08	MND	MND	MND	MND	MND	0,00E+00	4,41E-09	4,53E-08	6,72E-09	-8,46E-08
Ionizing radiation[6)]	kBq U235e	1,79E-01	3,60E-02	6,19E-02	2,77E-01	2,05E-02	1,81E-02	MND	1,35E+00	MND	MND	MND	MND	MND	0,00E+00	2,74E-03	1,15E-01	1,46E-03	-6,21E-02
Ecotoxicity (freshwater)	CTUe	1,06E+02	6,05E+00	1,17E+01	1,23E+02	3,28E+00	7,88E+00	MND	9,92E+01	MND	MND	MND	MND	MND	0,00E+00	5,17E-01	1,83E+01	1,67E+00	-2,27E+01
Human toxicity, cancer	CTUh	7,83E-09	1,96E-10	1,17E-09	9,20E-09	1,25E-10	6,13E-10	MND	1,86E-09	MND	MND	MND	MND	MND	0,00E+00	1,27E-11	1,14E-09	2,75E-10	-7,41E-10
Human tox. non-cancer	CTUh	1,17E-07	5,84E-09	2,43E-08	1,47E-07	3,66E-09	9,29E-09	MND	4,14E-08	MND	MND	MND	MND	MND	0,00E+00	5,12E-10	1,32E-08	3,39E-09	-1,56E-08
SQP[7)]	-	1,10E+01	6,34E+00	1,94E+01	3,67E+01	3,39E+00	2,40E+00	MND	6,90E+00	MND	MND	MND	MND	MND	0,00E+00	6,63E-01	4,27E+00	3,96E-01	-1,25E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	2,43E+00	8,54E-02	1,95E+01	2,20E+01	5,70E-02	2,29E+00	MND	8,03E+00	MND	MND	MND	MND	MND	0,00E+00	6,48E-03	2,15E-01	6,98E-03	-5,18E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,72E+00	1,72E+00	0,00E+00	-1,72E+00	MND	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,43E+00	8,54E-02	2,13E+01	2,38E+01	5,70E-02	5,76E-01	MND	8,03E+00	MND	MND	MND	MND	MND	0,00E+00	6,48E-03	2,15E-01	6,98E-03	-5,18E-01
Non-re. PER as energy	MJ	6,58E+01	7,31E+00	7,67E+00	8,08E+01	3,90E+00	9,36E+00	MND	2,39E+01	MND	MND	MND	MND	MND	0,00E+00	5,75E-01	2,31E+01	3,81E-01	-3,34E+01
Non-re. PER as material	MJ	6,03E+01	0,00E+00	-1,01E+01	5,02E+01	0,00E+00	-5,90E-02	MND	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-3,17E+01	-1,05E+01	-6,20E+01
Total use of non-re. PER	MJ	1,26E+02	7,31E+00	-2,40E+00	1,31E+02	3,90E+00	9,30E+00	MND	2,39E+01	MND	MND	MND	MND	MND	0,00E+00	5,75E-01	-8,57E+00	-1,01E+01	-9,54E+01
Secondary materials	kg	7,35E-03	2,34E-03	2,94E-02	3,91E-02	1,31E-03	2,21E-03	MND	1,09E-02	MND	MND	MND	MND	MND	0,00E+00	1,60E-04	7,31E-03	3,18E-04	1,41E+00
Renew. secondary fuels	MJ	3,67E-04	2,02E-05	3,00E-02	3,03E-02	1,36E-05	1,52E-03	MND	5,05E-05	MND	MND	MND	MND	MND	0,00E+00	1,61E-06	5,23E-05	2,63E-06	-4,71E-06
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	6,09E-02	8,66E-04	5,14E-03	6,69E-02	5,19E-04	7,16E-03	MND	4,38E-02	MND	MND	MND	MND	MND	0,00E+00	7,45E-05	2,57E-03	2,46E-04	-2,83E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	7,42E-01	8,99E-03	2,04E-01	9,55E-01	4,51E-03	5,30E-02	MND	5,42E-02	MND	MND	MND	MND	MND	0,00E+00	7,63E-04	8,31E-01	1,22E-02	-8,26E-02
Non-hazardous waste	kg	7,47E+00	1,39E-01	2,43E+00	1,00E+01	7,99E-02	7,00E-01	MND	1,11E+00	MND	MND	MND	MND	MND	0,00E+00	1,25E-02	1,13E+00	8,54E-01	-1,48E+00
Radioactive waste	kg	8,44E-05	5,00E-05	4,12E-05	1,76E-04	2,68E-05	1,77E-04	MND	2,97E-04	MND	MND	MND	MND	MND	0,00E+00	3,85E-06	3,01E-06	1,74E-06	-2,37E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	MND	MND	MND	MND	MND	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	0,00E+00	0,00E+00	5,35E-02	MND	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	1,33E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,10E-02	MND	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,16E-01	MND	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	3,65E-01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	4,79E+00	4,97E-01	7,25E-01	6,01E+00	2,56E-01	6,23E-01	MND	5,43E-01	MND	MND	MND	MND	MND	0,00E+00	3,79E-02	4,70E+00	1,77E+00	-2,39E+00
Ozone depletion Pot.	kg CFC_{-11}e	4,03E-07	8,98E-08	7,18E-08	5,65E-07	4,79E-08	3,54E-08	MND	4,10E-08	MND	MND	MND	MND	MND	0,00E+00	6,98E-09	2,98E-07	3,82E-09	-3,12E-08
Acidification	kg SO_2e	1,93E-02	3,68E-03	4,44E-03	2,74E-02	1,10E-03	1,62E-03	MND	3,41E-03	MND	MND	MND	MND	MND	0,00E+00	1,26E-04	4,41E-03	2,38E-04	-7,78E-03
Eutrophication	kg PO_4^3e	3,03E-02	5,65E-04	5,43E-03	3,63E-02	2,57E-04	2,85E-03	MND	3,70E-03	MND	MND	MND	MND	MND	0,00E+00	2,87E-05	1,53E-03	5,22E-03	-1,54E-03
POCP (“smog”)	kg C_2H_4e	1,66E-03	1,13E-04	2,83E-04	2,05E-03	3,57E-05	1,24E-04	MND	1,62E-04	MND	MND	MND	MND	MND	0,00E+00	4,92E-06	1,79E-04	5,08E-05	-7,76E-04
ADP-elements	kg Sbe	2,77E-05	1,22E-06	4,88E-06	3,38E-05	8,61E-07	2,00E-06	MND	1,46E-05	MND	MND	MND	MND	MND	0,00E+00	8,69E-08	3,35E-06	9,04E-08	-1,55E-05
ADP-fossil	MJ	1,26E+02	7,31E+00	7,73E+00	1,41E+02	3,90E+00	8,29E+00	MND	2,81E+01	MND	MND	MND	MND	MND	0,00E+00	5,75E-01	2,31E+01	3,80E-01	-8,97E+01

EOL SCENARIO : 100% RECYCLING

Impact category	Unit	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	0,00E+00	3,83E-02	6,70E-01	-4,30E-03	-9,80E+00
GWP – fossil	kg CO_2e	0,00E+00	3,83E-02	6,83E-01	0,00E+00	-9,77E+00
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-1,30E-02	-4,30E-03	-1,84E-02
GWP – LULUC	kg CO_2e	0,00E+00	1,41E-05	4,16E-04	0,00E+00	-3,61E-03
Ozone depletion pot.	kg CFC_{-11}e	0,00E+00	8,81E-09	1,39E-08	0,00E+00	-1,81E-07
Acidification potential	mol H^+e	0,00E+00	1,62E-04	1,12E-03	0,00E+00	-3,90E-02
EP-freshwater[2)]	kg Pe	0,00E+00	3,13E-07	8,84E-06	0,00E+00	-1,97E-04
EP-marine	kg Ne	0,00E+00	4,82E-05	3,25E-04	0,00E+00	-6,85E-03
EP-terrestrial	mol Ne	0,00E+00	5,32E-04	3,40E-03	0,00E+00	-7,57E-02
POCP (“smog”)[3)]	kg NMVOCe	0,00E+00	1,70E-04	1,04E-03	0,00E+00	-3,24E-02
ADP-minerals & metals[4)]	kg Sbe	0,00E+00	8,98E-08	3,99E-06	0,00E+00	-5,84E-05
ADP-fossil resources	MJ	0,00E+00	5,75E-01	2,03E+00	0,00E+00	-2,96E+02
Water use[5)]	m^3e depr.	0,00E+00	2,57E-03	8,82E-02	0,00E+00	-3,85E+00

EOL SCENARIO: 100% INCINERATION

Impact category	Unit	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	0,00E+00	3,83E-02	1,05E+01	-4,30E-03	-4,30E-02
GWP – fossil	kg CO_2e	0,00E+00	3,83E-02	1,05E+01	0,00E+00	-4,29E-02
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-1,30E-02	-4,30E-03	-4,39E-05
GWP – LULUC	kg CO_2e	0,00E+00	1,41E-05	3,86E-04	0,00E+00	-7,79E-05
Ozone depletion pot.	kg CFC_{-11}e	0,00E+00	8,81E-09	8,73E-07	0,00E+00	-5,77E-09
Acidification potential	mol H^+e	0,00E+00	1,62E-04	1,16E-02	0,00E+00	-6,66E-05
EP-freshwater[2)]	kg Pe	0,00E+00	3,13E-07	1,53E-05	0,00E+00	-3,62E-07
EP-marine	kg Ne	0,00E+00	4,82E-05	1,88E-03	0,00E+00	-1,50E-05
EP-terrestrial	mol Ne	0,00E+00	5,32E-04	2,08E-02	0,00E+00	-1,70E-04
POCP (“smog”)[3)]	kg NMVOCe	0,00E+00	1,70E-04	6,62E-03	0,00E+00	-5,29E-05
ADP-minerals & metals[4)]	kg Sbe	0,00E+00	8,98E-08	5,00E-06	0,00E+00	-4,55E-08
ADP-fossil resources	MJ	0,00E+00	5,75E-01	5,27E+01	0,00E+00	-8,35E-01
Water use[5)]	m^3e depr.	0,00E+00	2,57E-03	4,23E-01	0,00E+00	-6,37E-03

EOL SCENARIO : 100% LANDFILL

Impact category	Unit	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	0,00E+00	3,83E-02	-1,30E-02	7,16E+00	-2,29E-02
GWP – fossil	kg CO_2e	0,00E+00	3,83E-02	0,00E+00	7,17E+00	-2,28E-02
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-1,30E-02	-4,30E-03	-2,34E-05
GWP – LULUC	kg CO_2e	0,00E+00	1,41E-05	0,00E+00	5,07E-05	-4,15E-05
Ozone depletion pot.	kg CFC_{-11}e	0,00E+00	8,81E-09	0,00E+00	1,88E-08	-3,07E-09
Acidification potential	mol H^+e	0,00E+00	1,62E-04	0,00E+00	1,34E-03	-3,55E-05
EP-freshwater[2)]	kg Pe	0,00E+00	3,13E-07	0,00E+00	1,25E-06	-1,93E-07
EP-marine	kg Ne	0,00E+00	4,82E-05	0,00E+00	6,26E-04	-8,00E-06
EP-terrestrial	mol Ne	0,00E+00	5,32E-04	0,00E+00	6,41E-03	-9,08E-05
POCP (“smog”)[3)]	kg NMVOCe	0,00E+00	1,70E-04	0,00E+00	1,92E-03	-2,82E-05
ADP-minerals & metals[4)]	kg Sbe	0,00E+00	8,98E-08	0,00E+00	4,01E-07	-2,42E-08
ADP-fossil resources	MJ	0,00E+00	5,75E-01	0,00E+00	1,53E+00	-4,45E-01
Water use[5)]	m^3e depr.	0,00E+00	2,57E-03	0,00E+00	1,98E-01	-3,39E-03

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Elma Avdyli, as an authorized verifier acting for EPD Hub Limited

11.03.2024

