



SHI PRODUCT PASSPORT

Find products. Certify buildings.

SHI Product Passport No.:

14498-10-1001

Bodencouture SofTEC

Product group: WPC flooring

BARTH & CO
MARKETERS SINCE 1873

F.W. Barth & Co. GmbH
Fuggerstraße 25
41352 Korschenbroich



Product qualities:



Köttner

Helmut Köttner
Scientific Director

Freiburg, 17 December 2025



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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	Other floor coverings	TVOC $\leq 160 \mu\text{g}/\text{m}^3$ Formaldehyd $\leq 10 \mu\text{g}/\text{m}^3$	Indoor Air Quality Certified
Valid untill: 16 February 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: Eurofins IACG Zertifikat. Herstellererklärung.			



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

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

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

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, 03.05.2024 (3rd edition)	7 Floor coverings (Resilient floor coverings)	VVOCs, VOC, SVOC emissions and content of hazardous substances	Quality level 3
Verification: Eurofins IACG Zertifikat. Herstellererklärung.			



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: Eurofins IACG Zertifikat. Herstellererklärung.			



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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: Eurofins IACG Zertifikat. Herstellererklärung.			



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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: Eurofins IACG Zertifikat. Herstellererklärung.



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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)	Substances according to Annex C, formaldehyde, carcinogenic VOCs category 1A/1B	EU taxonomy compliant

Verification: Eurofins IACG Zertifikat. Herstellererklärung.



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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: Eurofins IACG Zertifikat.			



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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.



The International EPD® System is a globally recognised programme for the creation and publication of Environmental Product Declarations (EPDs). It enables companies to transparently present the environmental impacts of their products, based on international standards such as ISO 14025 and EN 15804 for construction products. The system provides a standardised method for assessing the environmental performance of products throughout their entire life cycle and promotes sustainable business practices and ecological transparency across various industries.



Eurofins Indoor Air Comfort® confirms compliance with requirements for low VOC emissions. The standard level covers all mandatory VOC regulations in the EU, while the Gold level additionally takes into account emission criteria from voluntary ecolabels and building certifications.



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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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%BCfverfahren/C3%BCr%20Produkte>

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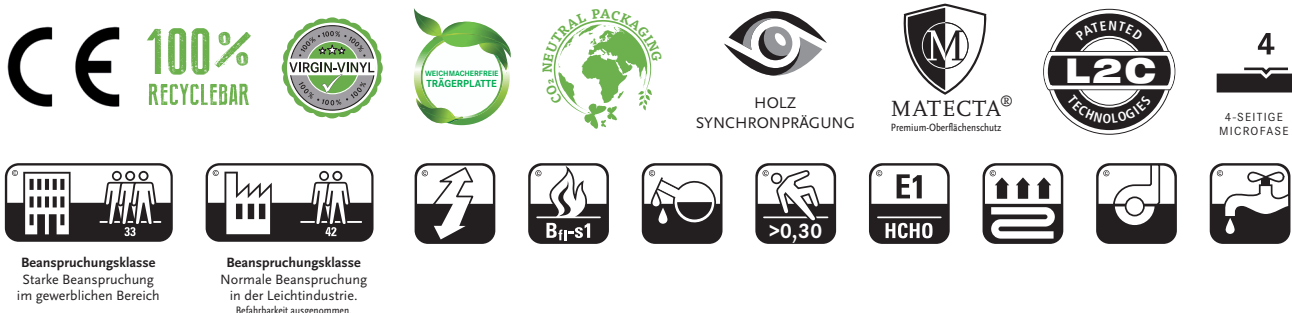
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www.sentinel-holding.eu

BESCHREIBUNG	NORM	STANDARDWERTE	WERT
Länge Diele	EN 426	± 0,5 mm	1.220 mm
Breite Diele	EN 426	± 0,1 mm	225 mm
Länge Fliese	EN 426	± 0,5 mm	940 mm
Breite Fliese	EN 426	± 0,1 mm	470 mm
Dicke	EN 10582	0,5 mm	8,0 mm
Nutzschicht	EN 426	± 0,1 mm	0,5 mm
Rechtwinkligkeit	EN 427	≤ 0,25 mm	0,17 mm
Höhenunterschied (zusammengebaut)	EN 427	≤ 0,1 mm	0,06 mm
Öffnung zwischen den Elementen (zusammengebaut)	EN 427	≤ 0,1 mm	0,05 mm
Verzug nach Hitzeeinwirkung	EN 434	≤ 2,0 mm	0,25 mm
Dichte (Kompakträgerplatte)	EN 436	Kompakträgerplatte: ≥ 1.000 kg/m ³	1.045 kgs/m ³
Dichte	EN 436	Fertiges Produkt: ≥ 1.000 kg/m ³	1.080 kgs/m ³
Dimensionsstabilität	EN 434	70°C 6 Stunden Breite/Länge ≤ 2,5 %	0,40 %
Klick-Verriegelungsstärke	EN 433	≥ 3 N/mm	6,0 N/mm
Schälfestigkeit	EN 431	Ablösekraft zwischen Printfilm-Nutzschicht und LVT ≥ 75 N/50 mm	86 N/mm
Stuhlrolleneignung	EN 425	1. mit Trittschall IXPE oder Kork ≥ 15.000 2. ohne Trittschall ≥ 25.000"	15.600
Farbbeständigkeit	EN ISO 105-Bo2		Stufe 6
Abriebsfestigkeit	EN 660-2	Fv/mm ²	T
Brandverhalten	EN 13501-1		Bf1 S1
Formaldehyd-Emissionen	EN 717-1	E1	E1
Rutschfestigkeit	DIN 51130	R10	R10
Rutschhemmung	EN 13893	DS	DS
Trittschallverbesserungsmaß	EN ISO 10140-3		16 DB
Wärmeleitfähigkeit	EN 12664:2001		0,088 W/(m x K)
Wärmedurchlasswiderstand	EN 12664:2001		0,091 (m ² x K)/W
Verpackungseinheiten Dielen		1 Paket = 10 Planken = 2,745 m ² 1 Palette = 33 Pakete = 90,585 m ²	
Verpackungseinheiten Fliesen		1 Paket = 6 Fliesen = 2,6508 m ² 1 Palette = 33 Pakete = 87,4764 m ²	
Schwermetallbelastung	EN71-3	Total Lead (Pb)	≤ 100 ND
		SOL. Lead (Pb)	≤ 90 ND
		SOL. Mercury (Hg)	≤ 60 ND
		SOL. Chromium (Cr)	≤ 60 ND
		SOL. Arsenic (As)	≤ 25 ND
		SOL. Antimony (Sb)	≤ 60 ND
		SOL. Barium (Ba)	≤ 1.000 ND
		SOL. Selenium (Se)	≤ 500 ND
		SOL. Cadmium (Cd)	≤ 75 ND

Verlegetechnologie SofTEC®

Das patentierte L2C-Klicksystem überzeugt durch einfache Winkelmechanik, bei der die Planken schnell, sauber und problemlos ineinander gesteckt werden.





Beschreibung	Norm	KlebeSHEETS	SolidCORE®
Belagsart	EN ISO 10582	Heterogen, PVC	Heterogen, PVC
Oberflächenvergütung		PUR	PUR
Flächengewicht	EN ISO 23997	4,8 kg/m²	9,3 kg/m²
Klassifizierung	EN ISO 10874	33/42	33/42**
Gesamtdicke	EN ISO 24346	2,5 mm	6,0 mm
Nutzschichtdicke	EN ISO 24340	0,5 mm	0,5 mm
Lieferform Planken	EN ISO 24342	150 mm x 600 mm	150 mm x 600 mm
Maßbeständigkeit	EN ISO 23999	0,05 % quer	0,05 % quer
Resteindruck	EN ISO 24343-1	0,05 mm	0,05 mm
Farbbeständigkeit	EN ISO 105-Bo2	Stufe >6	Stufe >6
Brandverhalten	EN 13501-1	Bfl-S1	Bfl-S1
Rutschhemmung	EN 13893	0,35 / DS	0,35 / DS
Rutschhemmung	DIN 51130	R10	R10
Trittschallverbesserungsmaß	EN ISO 10140-3	ca. 5 dB	20 dB
Wärmedurchlasswiderstand	ASTM-C518-17	0,017 m² K/W	0,038 m² K/W
Chemikalienbeständigkeit	EN ISO 26987	Ja*	Ja*
Verschleißgruppe	EN ISO 10582	Typ 1	Typ 1
Stuhlrolleneignung	ISO 4918	Ja, Typ W, EN12529	Ja, Typ W, EN12529
Fußbodenheizung	EN1264-2	geeignet, max. 28°	geeignet, max. 28°
Emissionstest nach AgBB-Schema		Sehr emissionsarm	Sehr emissionsarm
Verpackungseinheiten		1 Pk.= 28 Planken=2,52 m² 1 Pal.=72 Pk.= 181,44 m²	1 Pk.= 18 Planken=1,62 m² 1 Pal.=60 Pk.= 97,2 m²

* Beständig in Abhängigkeit von Konzentration und Einwirkzeit, bei haushaltstypischen Chemikalien.

** Befahrbarkeit ausgenommen.

Verlegetechnologie KlebeSHEETS

Vollständige Verklebung mit handelsüblichen Nassbettklebstoffen.



Verlegetechnologie SolidCORE®

Das patentierte Unizip-Klicksystem überzeugt durch einfache Verlegetechnik, bei der die Planken schnell, sauber und problemlos ineinander gesteckt werden.

Classic Vinyl

KlebeSHEETS

2,5/0,5 x 150 x 600 mm



zur Verklebung



Rigid Vinyl

SolidCORE® inside

inklusive Trittschall

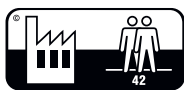
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Holz-Synchronprägung



Beanspruchungsklasse
Starke Beanspruchung
im gewerblichen Bereich.



Beanspruchungsklasse
Normale Beanspruchung
in der Leichtindustrie.
Befahrbarkeit ausgenommen.



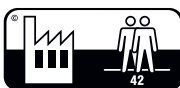
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Verpackungseinheiten Fischgrat Stäbe*		1 Paket = 20 Planken = 1,8 m ² 1 Palette = 36 Pakete = 64,8 m ²	
Schwermetallbelastung	EN71-3	Total Lead (Pb)	≤ 100 ND
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Verlegetechnologie SofTEC®

Das patentierte L2C-Klicksystem überzeugt durch einfache Winkelmechanik, bei der die Planken schnell, sauber und problemlos ineinander gesteckt werden. * Beim Fischgrat ist eine Unizip Klickverbindung.



Beanspruchungsklasse
Starke Beanspruchung
im gewerblichen Bereich.



Beanspruchungsklasse
Normale Beanspruchung
in der Leichtindustrie.
Befahrbarkeit ausgenommen.



Bfl-s1



>0,30



4-SEITIGE
MICROFASSE



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SHI

Sentinel Holding Institut

Kontakt Markus Föhles
E-Mail mf@barth1873.de
Telefon +49 (0) 2161-995-535
Datum 01.01.2022
Thema **Herstellererklärung**

Sehr geehrter Damen Und Herren,

Herstellererklärungen zu AgBB-Schema und REACH Verordnung

Konformität AgBB-Bewertungsschema 2024

Hiermit bestätigen wir Ihnen, dass die von uns gelieferten Produkte der gesamten Barth Kollektion Bodencouture besonders emissionsarm sind und dem aktuellen AgBB-Standard (Ausschuss zur gesundheitlichen Bewertung von Bauprodukten) entsprechen.

VO (EG) Nr. 1907/2006 (REACH-Verordnung), Informationspflichten nach Art. 33

Hiermit teilen wir Ihnen mit, dass in dem/n folgenden von uns gelieferten Erzeugnis/Erzeugnissen, kein/e besonders besorgniserregenden/r Stoff/e (SVHC) der Kandidatenliste des aktuellen Stands über 0,1 % gemäß Art. 33 der REACH-Verordnung (Verordnung (EG) Nr. 1907/2006) enthalten ist/sind:

Gesamte Barth Kollektion Bodencouture

Die EU-Lieferanten von Erzeugnissen, die in unseren Produkten in relevanter Größenordnung verarbeitet werden, sind ebenso verpflichtet, uns unaufgefordert zu informieren, sofern in den von ihnen gelieferten Produkten ein SVHC-Stoff über 0,1 % enthalten ist. Sofern wir eine diesbezügliche Information von unseren Lieferanten erhalten und dadurch Kenntnis erlangen, dass damit auch in unseren Produkten die 0,1 Massenprozentschwelle für einen SVHC-Stoff überschritten wird, werden wir Sie informieren.

Von allen relevanten EU-Lieferanten lassen wir uns darüber hinaus noch einmal schriftlich versichern, dass keine SVHC-Stoffe > 0,1 % in den gelieferten Produkten enthalten sind.

Mit allen Nicht-EU-Lieferanten von Erzeugnissen, die in unseren Produkten in relevanter Größenordnung verarbeitet werden, treffen wir gesonderte Vereinbarungen. Darin lassen wir uns schriftlich versichern, dass wir unmittelbar informiert werden, sofern in einem an uns gelieferten Produkt die 0,1 Massenprozentschwelle für einen SVHC-Stoff überschritten wird.

Gleichzeitig bestätigen wir, dass die genannten Artikel der gesamten Barth Kollektion

Seite 2/2 zum Brief vom 03.11.2025

Bodencouture frei von Blei – Zink und Cadmium Stabilisatoren sind und keine CMR Stoffe der Kategorie 1A/1B > 0,1% oder Chlorparaffine > 0,1 % enthalten sind.

Mit freundlichen Grüßen

A handwritten signature in black ink, appearing to read 'Föhles', with a stylized flourish extending to the right.

Korschenbroich den 03.11.2025
Markus Föhles

Leiter Technik / Technical Director

Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

WPC flooring

from

ZHANGJIAGANG K&C TECH CO., LTD.



Programme:

Programme operator:

EPD registration number:

Publication date:

Valid until:

The International EPD® System, www.environdec.com

EPD International AB

EPD-IES-0015813

2024-12-04

2029-12-03

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com





General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): *PCR 2019:14 Construction products (version 1.3.4) and c-PCR-004 Resilient, textile and laminate floor covering (EN 16810:2017), version 2024-04-30*
UN CPC code: 36910 Floor coverings of plastics, in rolls or in the form of tiles

PCR review was conducted by: *The Technical Committee of the International EPD® System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.*

Life Cycle Assessment (LCA)

LCA accountability: *Sally Xie, Intertek*
sally.xie@intertek.com

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☒ EPD verification by individual verifier

Third-party verifier: *Rui Wang, IVL Swedish Environmental Research Institute*
Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.



Company information

Owner of the EPD:

ZHANGJIAGANG K&C TECH CO., LTD.

Contact:

Ward Liu

sales@kctiles.com

Description of the organisation:

Founded in 2005, K&C developed a new factory: Zhangjiagang K&C Tech Co., LTD in 2015, which is located in new energy Industrial Park, Tangqiao Town, Zhangjiagang City, Jiangsu Province.

The company specializes in the production and sales of PVC flooring, including LVT/WPC/SPC, and now PP product is coming soon. The factory covers an area of 45000m², equipped with the industry's advanced production line and related supporting equipment, mainly including backing material production line; SPC extrusion lines; WPC extrusion lines; semi-automatic hot-pressing machines; UV coating lines; profiling lines, imported from Germany and Japan; IXPE/Cork padding lines, painting line; glue backing machine; automatic package machine and etc.

With full capacity around 400 containers per month, our existing products are 100% exported, mainly distributed to Germany, Belgium, Romania, Portugal, Netherland, Poland, America, south-east Asian markets and etc. From 2020, the company's sales reached to 40 million US dollars.

Certificated with ISO 9001 quality management system, CE certification. K&C takes quality into first consideration, and we assure advanced technology, standard management, high-level quality control system and customer satisfaction.

Product-related or management system-related certifications:

ISO 9001, EN 14041:2004/AC:2006(CE)

Name and location of production site(s):

Zhangjiagang K&C Tech Co., Ltd.

No.225 Shangcheng road, Miaoqiao, Tangqiao, Zhangjiagang, Jiangsu, China

Product information

Product name:

WPC flooring



Figure 1 Image of the product



Physical properties of the product:

Characteristics	Test Method	Properties
Reaction to fire	EN 13501-1	Class B _{fl} -s1
Formaldehyde emissions	EN 14041, EN 717-1	Class E1
Slip resistance	EN 14041, EN 13893	Class DS

Product description:

WPC flooring product is made primarily from polyvinyl chloride (PVC), calcium carbonate (limestone), plasticizers and some additives. It is composed of one clear PVC embossed wear layer with a final UV coating, printing film layer for décor, substrate layer for structural strength and stability, and cork layer to improve acoustic performance and increase comfort underfoot. The product is waterproof, easy to install and maintain. It is a lighter, quieter and high-level product, and environmentally friendly.

Characteristics		Nominal value
Product thickness, mm		8.0
Wear layer thickness, mm		0.5
Backing layer (Cork) thickness, mm		1.5
Product weight, kg/m ²		8.329
Product form, tiles or planks	Width, mm	120~470
	Length, mm	600~2400

Products application:

The products provide the primary function of flooring for interior applications. The flooring products are used in various residential and commercial applications including retail, healthcare, education, and hospitality.

UN CPC code:

36910 Floor coverings of plastics, in rolls or in the form of tiles

Geographical scope:

A1-A3 China; A4 From China to EU; A5 EU; B EU; C EU; D EU.

LCA information

Functional unit:

1 m² of installed WPC flooring

The conversion factor is 8.329 kg per m² (0.120 m²/kg) based on the product of WPC flooring.

Reference service life:

15 years

Time representativeness:

1st January 2023 to 31st December 2023 (12 months)

Database(s) and LCA software used:

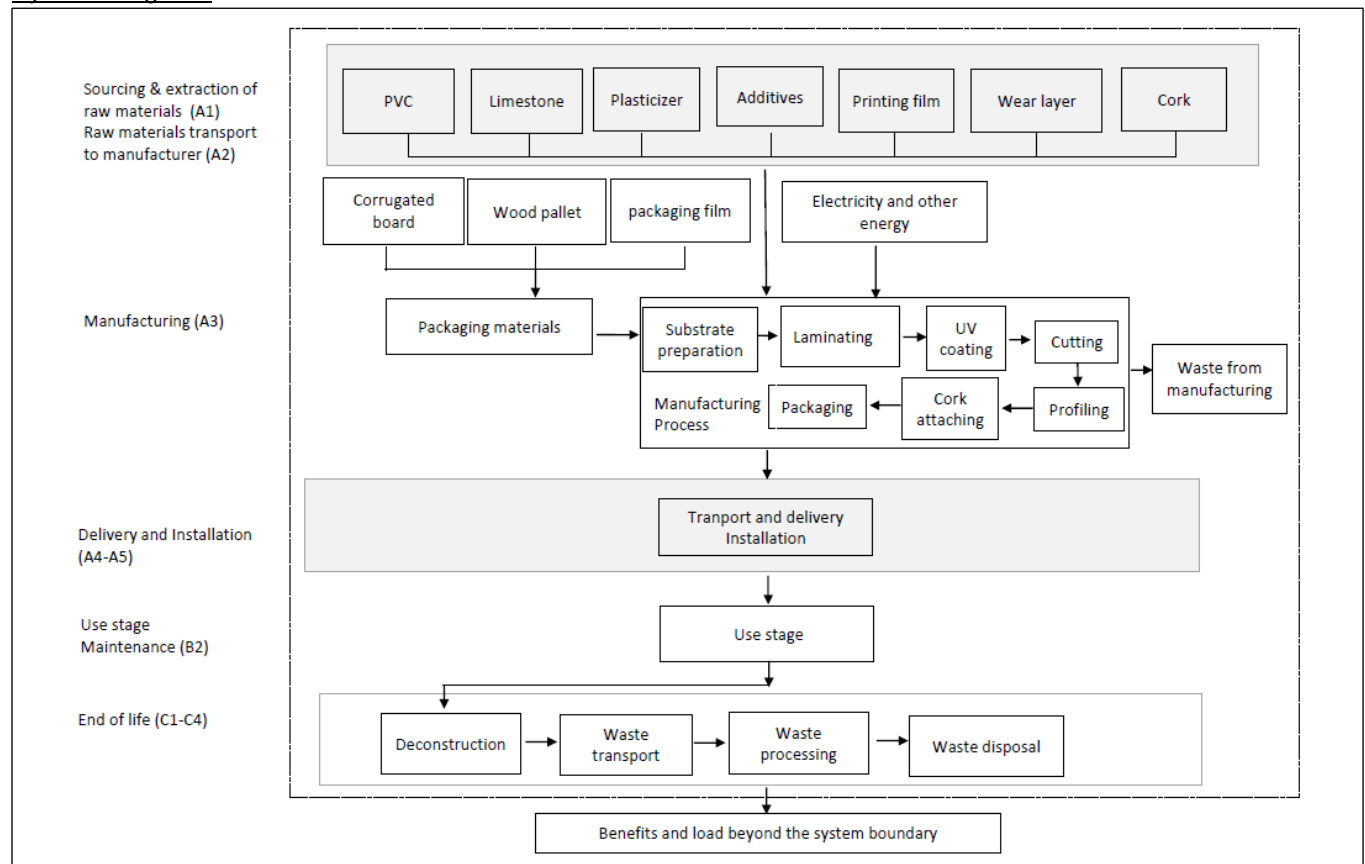
Ecoinvent 3.10 (Allocation, cut-off by classification) and Simapro 9.6.0.1 software



Description of system boundaries:

The system boundary is type c) cradle to grave and module D. All life cycle stages are analysed in the study, including: A1-A3 product stage, A4-A5 construction process stage, B use stage, C1-C4 end-of-life stage, and D benefits and loads beyond the system boundary.

System diagram:





Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	CN	CN	CN	CN to EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU
Specific data used	28%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

More information:

Electricity data source used in the manufacturing process in A3: Market group for electricity, low voltage, CN-ECGC, in Ecoinvent 3.10 (cut-off)

Climate impact: 0.884 kg CO₂ eq./kWh



Product stage (A1-A3)

A1, Raw material supply takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process. Specifically, raw material supply covers sourcing of PVC resin, calcium carbonate (limestone), plasticizers, additives (such as stabilizers, lubricants, foaming agent, etc.), wear layer, printing film, and cork backing layer.

A2, Transport to the manufacturer. The transportation of the raw materials to the manufacturing site is studied in this module.

A3, Manufacturing. The manufacturing process of WPC flooring product mainly includes:

Substrate preparation, the raw materials are first mixed and heated. Mixtures are then calendared or extruded into a sheet for surface layer substrate and base layer substrate respectively.

Laminating, the surface layer substrate is laminated with printing film and wear layer, then is coated with a lacquer through UV coating. Then it is laminated with the base layer substrate.

Cutting, the semi-finished product is cut into tiles or planks.

Profiling, the edge treatment is processed.

Backing attaching, an acoustic backing (cork) is bonded on the back side of the product.

Packaging, the finished product is packed into the corrugated board box, stacked on the wood pallet, and wrapped around with packaging film.

Quality checks are made at each step of the production process.

Packaging-related flows in the production process are included in the manufacturing module, i.e. packaging film, wood pallet and corrugated board box. Apart from production of packaging material, the supply and transport of packaging material are also considered in the LCA model.

Construction process stage (A4-A5)

A4, Transport to the building site. This module includes transport from the production gate to the building site. Transport is calculated on the basis of a scenario with the parameters described. The average transportation distance from production plant to building site is 473 km transported by lorry and 10530 nautical miles (i.e., 19502 km) transported by ship.

A5, Installation into the buildings. Installation of the vinyl flooring is accomplished using hand tools with no energy consumption and associated emissions. During installation, approximately 5% of the vinyl flooring is lost as off-cuts. The additional production processes to compensate the loss is considered in this study. So the elementary flow with 5% waste should be 1.05m² when the functional unit is defined as 1m² of installed WPC flooring. All flooring losses are collected for landfill disposal.

The impacts associated with packaging disposal are included with the installation phase. The packaging waste includes wood pallet, packaging film, and corrugated board box in A5. The end-of-life scenario of packaging is followed EU 27 waste management scenario.

Packaging	Recycling	Landfill	Incineration
Wood pallet	32.0%	38.4%	29.6%
Packaging film	40.7%	22.4%	36.9%
Corrugated board box	82.5%	9.3%	8.2%

Use and maintenance (B1-B7):

This comprises the stages B1 to B7, but for floor coverings only stage B2 is considered as specified in the c-PCR. For B1, and B3-B7, they are neither not applicable nor negligible.

The reference service life (RSL) of the vinyl flooring product is 15 years for commercial general use as stated by the owner. The service life of the flooring may vary depending on the amount and nature of flooring traffic and the type and frequency of maintenance. This RSL is applicable as long as the product use complies with that defined by EN ISO 10582:2018 and EN ISO 10874:2012 for commercial general use.



B2, Maintenance stage. According to the owner, typical maintenance involves regular sweeping and damp mopping. The present assessment is based on a recommended weekly cleaning schedule including sweeping and mopping with a neutral detergent. The B2 scenario is as below, and the impact is studied with RSL of 15 years.

Parameter	Value	Unit
Maintenance process	weekly damp mopping	-
Water consumption	5.2	L/m ² /year
Clean detergent consumption	0.0104	kg/m ² /year

End-of-Life Stage (C1-C4):

C1, De-construction. According to the owner, the flooring product can be manually removed from the floor. Hence no impact is considered during demolition.

C2, Transport to waste processing. It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight with the declared product. All of the end-of-life product is assumed to be transported as separate construction waste to the closest facilities. Transportation distance to the closest disposal area is estimated as 100 km and the transportation method is lorry which is the most common.

C3, Waste processing for reuse, recovery and/or recycling. It is assumed 100% of the deconstructed products (C1) to be sent to landfill. Hence, no waste processing is required.

C4, Disposal. The 100% of the deconstructed products are assumed to be sent to landfill.

Resource Recovery Stage (D)

D, Reuse/recovery/recycling potential.

100% of the products are assumed to be sent to landfill.

No benefit or load resulting from reuse/recovery/recycling beyond the product system boundary.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 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.

No cut-off criteria has been taken into account in this study.

ALLOCATION

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.



Allocation used in Ecoinvent 3.10 environmental data sources follows the methodology “allocation, cut-off by classification”. This methodology is in line with the requirements of the EN 15804 standard.

For data sets in this study, the allocation of the inputs is generally carried out via the mass. The consumption and transportation of raw materials was allocated by mass ratio.

In this study one allocation occurs on product production, in allocating the input and output, i.e. energy within the production site such as electricity, heat and auxiliary material such as water, and waste water, among the various series of flooring products, allocation is done via total production (floor area with the unit as m²) of all products produced on a yearly average.

During the production process of the flooring product, there are no other by-products produced from the production line, hence there is no occasion that requires allocation for multi-output processes.

For this project, there is only one production site. So, there is no allocation among plants.

Key assumptions

1. 100 km transportation distance is assumed for the disposal of the deconstructed products.
2. The 100% of the deconstructed products are assumed to be sent to landfill.

Inclusion or exclusion of Infrastructure and/or Capital goods

Depending on the PCR, in general, the production and end-of-life processes of infrastructure or capital goods used in the product system should be excluded, unless there is evidence that they are relevant in terms of their environmental impact, or when a generic LCI dataset includes infrastructure/capital goods, and it is not possible, within reasonable effort, to subtract the data on infrastructure/capital goods from this dataset (directly citation from section 4.3.2 of PCR 1.3.4). In this study, the infrastructure and capital goods are not included in the LCA analysis since they are used plenty of times for several years for the product manufacturing.



Content information

Product components		Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/ functional unit
UV coating		0.013	0%	0%
Wear layer		0.630	0%	0%
Printing film		0.100	0%	0%
Substrate	PVC	2.697	0%	0%
	Calcium carbonate	3.825	0%	0%
	Plasticizer	0.140	0%	0%
	Additives	0.489	0%	0%
Adhesive for substrate		0.085	0%	0%
Adhesive for Cork		0.045	0%	0%
Backing – Cork		0.305	0%	100% 0.1647 kg C/functional unit
TOTAL		8.329	0%	3.6619% 0.1647 kg C/functional unit
Packaging materials		Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/ functional unit
Wood pallet		0.2435	2.9235%	0.0954
Corrugated board box		0.1690	2.0291%	0.0719
Packaging film		0.00796	0.0956%	0
TOTAL		0.42046	5.0482%	0.1673

Substances, REACH – Very High Concern

The products do not contain any REACH SVHC substances in amounts greater than 0.1% (1000ppm).



Results of the environmental performance indicators

This LCA analysis applied the EN 15804+A2, EF3.1 was used

Mandatory impact category indicators according to EN 15804

Results per functional unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	1.82E+01	2.19E+00	1.10E+00	0.00E+00	5.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.93E-02	0.00E+00	5.21E-02	0.00E+00
GWP-biogenic	kg CO ₂ eq.	-1.25E+00	3.38E-04	6.47E-01	0.00E+00	6.32E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-05	0.00E+00	6.87E-01	0.00E+00
GWP-luluc	kg CO ₂ eq.	6.06E-01	1.10E-03	3.04E-02	0.00E+00	3.98E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.06E-05	0.00E+00	2.68E-05	0.00E+00
GWP-total	kg CO ₂ eq.	1.76E+01	2.20E+00	1.77E+00	0.00E+00	6.24E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.94E-02	0.00E+00	7.39E-01	0.00E+00
ODP	kg CFC 11 eq.	4.47E-06	3.17E-08	2.26E-07	0.00E+00	1.35E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-09	0.00E+00	1.51E-09	0.00E+00
AP	mol H ⁺ eq.	8.24E-02	5.29E-02	7.01E-03	0.00E+00	3.88E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.88E-04	0.00E+00	3.69E-04	0.00E+00
EP-freshwater	kg P eq.	4.66E-03	9.04E-05	2.45E-04	0.00E+00	2.98E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.07E-06	0.00E+00	4.33E-06	0.00E+00
EP-marine	kg N eq.	1.91E-02	1.33E-02	1.76E-03	0.00E+00	2.55E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.80E-05	0.00E+00	1.41E-04	0.00E+00
EP-terrestrial	mol N eq.	1.69E-01	1.47E-01	1.67E-02	0.00E+00	8.50E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-03	0.00E+00	1.54E-03	0.00E+00
POCP	kg NMVOC eq.	7.42E-02	4.07E-02	6.11E-03	0.00E+00	2.54E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.70E-04	0.00E+00	5.50E-04	0.00E+00
ADP-minerals&metals*	kg Sb eq.	1.48E-04	2.90E-06	7.79E-06	0.00E+00	6.25E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.41E-07	0.00E+00	8.14E-08	0.00E+00
ADP-fossil*	MJ	3.29E+02	2.79E+01	1.87E+01	0.00E+00	9.32E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+00	0.00E+00	1.28E+00	0.00E+00
WDP*	m ³	6.71E+00	8.24E-02	3.29E-01	0.00E+00	4.97E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.17E-03	0.00E+00	5.58E-02	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Statement: The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Additional mandatory impact category indicators

Results per functional unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	1.89E+01	2.20E+00	1.16E+00	0.00E+00	6.24E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.94E-02	0.00E+00	5.21E-02	0.00E+00

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.



Resource use indicators

Results per functional unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	5.79E+01	2.35E-01	8.64E+00	0.00E+00	2.73E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E-02	0.00E+00	1.15E-02	0.00E+00
PERM	MJ	5.44E+00	0.00E+00	-5.44E+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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	6.34E+01	2.35E-01	3.21E+00	0.00E+00	2.73E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E-02	0.00E+00	1.15E-02	0.00E+00
PENRE	MJ	2.46E+02	2.79E+01	1.91E+01	0.00E+00	9.32E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+00	0.00E+00	8.32E+01	0.00E+00
PENRM	MJ	8.23E+01	0.00E+00	-3.38E-01	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	0.00E+00	-8.19E+01	0.00E+00
PENRT	MJ	3.29E+02	2.79E+01	1.87E+01	0.00E+00	9.32E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+00	0.00E+00	1.28E+00	0.00E+00
SM	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m³	1.33E-01	2.53E-03	6.59E-03	0.00E+00	1.62E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.94E-04	0.00E+00	1.33E-03	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

Waste indicators

Results per functional unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.17E-02	4.79E-04	1.58E-03	0.00E+00	1.25E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.62E-05	0.00E+00	1.79E-05	0.00E+00
Non-hazardous waste disposed	kg	2.61E+00	5.82E-01	7.18E-01	0.00E+00	6.76E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.11E-01	0.00E+00	8.33E+00	0.00E+00
Radioactive waste disposed	kg	2.71E-04	3.77E-06	1.43E-05	0.00E+00	1.23E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.89E-07	0.00E+00	1.99E-07	0.00E+00

Output flow indicators

Results per functional unit																
Indicator	Unit	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	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
Material 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	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Disclaimer: it is discouraging the use of the results of modules A1-A3 (A1-A5 for services) without considering the results of module C.



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declarations – Core rules for the product category of construction products.

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