

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



In accordance with ISO 14025:2006 and EN15804:2012+A2:2019/AC:2021 for:

Homogenous Vinyl wall coverings from **TARKETT**

EPD OF MULTIPLE PRODUCTS BASED ON WORST CASE RESULTS.



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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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
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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 version 1.3.3 and c-PCR-004 Resilient textile and laminate floor coverings (EN 16810)
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: Juliette Pouansi, Tarkett
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification Third party verifier: Anni Oviir , Rangi Maja OÜ. Approved by: The International EPD® System Procedure for follow-up of data during EPD validity involves third party verifier: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

This EPD is an EPD of multiple products.

Company information

Owner of the EPD: Tarkett

Contact: Myriam Tryjefaczka , myriam.tryjefaczka@tarkett.com Tarkett La Défense, 1 Terrasse Bellini 92400 Paris

Description of the organisation:

With an international coverage and a wide range of products, Tarkett has over 130 years of experience in providing integrated solutions for floorings to professionals and end users.

Many of the most important architectural firms in the world and building professionals have chosen Tarkett for the value of its products and for its consultation and service abilities. Therefore, Tarkett floorings and sport surfaces are present in several prestigious architectural reference points. Tarkett offers integrated solutions for floorings, able to meet the particular needs of customers. Our wide range of designs, colours and models provides an infinite series of possibilities, contributing to create a positive environment and a better quality of life for people.

Tarkett operates with the utmost respect for the environment towards the realization of eco-friendly products.

Tarkett's commitment to the environment is woven throughout its business. Cradle-to-Cradle principles are, in fact, the basis of the design and production of every solution. Particularly, the lifecycle analysis is used to continuously improve the production process, and so the products until their use stage, disposal, and recycling. The commitment to the environment is also proven by the accession to the Circular Economy 100 program, where Tarkett group, with a network of companies, is working to develop a circular economy model based on the reuse of materials and preservation of natural resources. The development of products that can be reused within internal production cycles, or external ones in case of other individuals, has been an integral part of the business strategy aimed at sustainability for many years. The WCM (World Class Manufacturing) management system has been developed in 2009, and it includes the environmental pillar aimed to the elimination of losses and to the growth of process efficiency.

Product-related or management system-related certifications: ISO 9001, ISO 14001, ISO 50001, WCM manufacturing site.

Name and location of production site(s): Ronneby, Sweden

Product information

Product name: Surface Wall, Wallgard 1,3mm, Wallgard 2mm.

Declared Product : Surface wall, results based on worst case scenario.

Product identification: Homogeneous poly (vinyl chloride) wall coverings (EN ISO 10581).

Product description: Wall products are homogeneous vinyl floorings. They are tough and ultra-durable solutions for heavy and very heavy traffic areas, especially recommended for applications in education, and retail for their cost-effective and ease of cleaning. Composed of a single compact layer of vinyl, homogeneous vinyl floors are glued to the sub-floor and welded for optimal durability and hygiene. The service lifetime recommended by Tarkett is 20 years

Geography: European technology and process coverage.

UN CPC code: APE/NAF - 2223Z

LCA information

Functional unit / declared unit: 1m² of wall covering with a reference service life (RSL) of 1 year for specified characteristics application and use areas according to ISO 10581 and EN ISO 10874.

Reference service life: 1 year.

Time representativeness: 2023.

Database(s) and LCA software used: Ecoinvent 3.9.1, SimaPro 9.6

Description of system boundaries: Cradle to gate with modules C1-C4, module D and optional modules.

Cut-off criteria : The cut-off criteria used for this study follow the guidelines set out in the PCR which conform to the EN 15804-A2, as following:

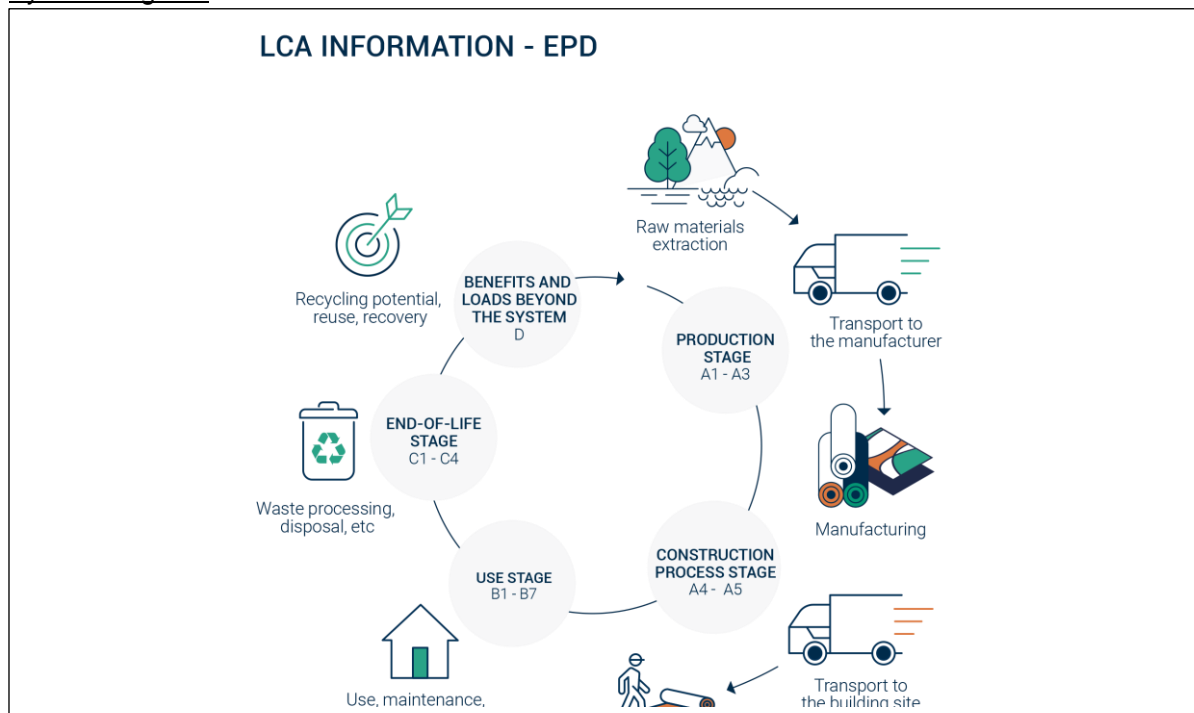
- All inputs and outputs to a (unit) process are included in the calculation where the data is available.
- A maximum of 1% of the total mass per unit process may be omitted.
- A maximum of 1% of the total renewable and non-renewable energy for a unit process may be omitted.
- A maximum of 5% of the total energy usage and mass per module may be omitted.

All input and output flows have been considered, including raw materials as per the product composition provided by the manufacturer and packaging of raw materials as well as the final product. Energy and water consumptions have also been considered at 100% according to the data provided.

Mass balance approaches (MBAs), to claim, for example, biobased, renewable, and/or recycled product content, are not applied.

EN 15804 reference package” based on EF 3.1 has been used.

System diagram:



More information: The product is classified in accordance with EN ISO 10874, EN 685, EN ISO 10581 and in reference to the FCSS (Floor Covering Standard Symbols) to be installed in various areas of application, such as: healthcare, education, commercial, education. The area of use according to the ISO 10874 is very heavy (34) for commercial classification and heavy (43) for industrial classification,.

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

	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	MND	X	MND	MND	MND	MND	MND	X	X	X	X	X
Geography	EU	EU	EU	EU	EU	-	EU	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data used	60%			100%	100%	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	3-35%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			European average for Tarkett		-	-	-	-	-	-	-	-	-	-	-	-

Content information

According to PCR 2019:14 v1.3.3 , several sets of results, reflecting different products, are not allowed to be declared in the same EPD. However, similar products from a single or several manufacturing sites covered by the same PCR and manufactured by the same company with the same major steps in the core processes may be grouped and thereby included in the same EPD;

The results of a worst-case product Surface wall will be declared in this EPD.

The variation in GWP-GHG results for modules A1-A3 between included products and the declared product goes from 3-35%.

The components for Surface wall are detailed here:

Surface wall				
Product components	Weight, kg/m ²	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg	
PVC Suspension	1.02E+00	0%	0%	
Plasticizers	3.10E-01	0%	0%	
Epoxidised soya bean oil	1.00E-01	0%	83%	0.007
Mineral fillers	1.12E-01	0%	0%	
Stabilizer CaZn	3.00E-02	0%	0%	
Pigments	1.50E-02	0%	0%	
Surface Treatment	1.50E-02	0%	0%	
Flame Retardant	1.77E+00	0%	0%	
Titanium Dioxide	1.50E-02	0%	0%	
Processing aid	1.50E-02	0%	0%	
TOTAL	3.40E+00	0%	2.44%	0.007
Packaging materials	Weight, kg/m ²	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg	
Product Packaging Cardboard	4.02E-02	1.2%	0.012	
Product Packaging HDPE (Foil)	1.52E-02	0.45%	-	
Product Packaging LDPE (End caps)	5.20E-03	0.15%	-	
TOTAL	6.06E-02	1.8%	0.012	

Product manufacturing

Production process

The production of the homogeneous resilient flooring is divided into the following stages:

- Extrusion: Raw materials is blended and extruded to obtain a malleable material.
- Calendaring: Rolls are then calendered to get the desired shape.
- Pressing: Rolls are cut at the desired characteristics.
- Packaging: The final product is placed into cardboard cases with discs and plastic hangers positioned at the ends. The cardboard cases are then wrapped in plastic film.

Production waste

Waste type	Amount	Unit
Non-hazardous waste to external recycling	5.33E-02	kg/m ²
Hazardous waste to external recycling	2.31E-03	kg/m ²
Hazardous wastewater to external treatment	2.04E-03	kg/m ²
Non-Hazardous wastewater to external treatment	7.37E-03	kg/m ²
Non-Hazardous waste to landfill	1.26E-05	kg/m ²
Hazardous waste to incineration with energy recovery	8.84E-05	kg/m ²
Non-Hazardous waste to incineration with energy recovery	1.79E-01	kg/m ²
Internal recycling – Post manufacturing - Own production	9.36E-01	kg/m ²

NB: Post manufacturing recycling concerns the recycling of the losses inside the plant production. Therefore, there is no end-of-life impact on losses (except the recycling preparation). Post manufacturing recycled content is 25%.

Electricity GWP-GHG

Plant	Ecoinvent Module	KgCO ₂ eq/kWh
Ronneby	Electricity, medium voltage {SE} electricity, medium voltage, residual mix Cut-off, U	1.93E-02

Health, safety, and environmental aspects during production

HO Wall production site complies with the ISO 14001 Environmental Management System and the ISO 9001 Quality Management System.

Delivery and installation

Delivery

The average distribution distance between the factory and the installation site is 1958 km. It has been calculated considering the average distance between European countries where Tarkett is selling the wall products and the factory plant in Ronneby (Sweden). The distribution is made by truck.

Installation

The different parts of the flooring are cut to fit the surface to be covered and they are arranged together so that they can fit perfectly between them on the floor. The different parts of the flooring are glued on the subfloor then they are welded together.

Description	Amount	Unit
Electricity consumption	4.00E-02	kWh/m ²
Acrylic adhesive	2.50E-01	kg/m ²

Waste

During the installation approximately 10% of the flooring is lost as off-cuts. All flooring losses are sent to recycling. Thanks to the ReStart program. Tarkett offers to all its customer flooring installers a free take-back system for installation off-cuts including equipment, logistics and recycling. This analysis therefore considers a recycling scenario of the offcut.

Packaging

50 % of the packaging materials goes to incineration and 50 % goes to landfill.

Use Stage

Reference Service Life (RSL)

For this product, the stated RSL is 1 year. It should be noted, however, that the service life of a Homogenous polyvinylchloride floor covering may vary depending on the amount and nature of floor traffic and the type and frequency of maintenance. The manufacturer has provided this service life on the basis of his experience of flooring manufacture and supply. This RSL is applicable as long as the product use complies with that defined by ISO 14041 and ISO10874 in accordance with the product's classification. **The service lifetime recommended by Tarkett is 20 years.**

Cleaning and maintenance

Cleaning regime is based on traditional cleaning protocol integrating manual and mechanical operations. Depending on premises considered, these consumptions may vary. The considered regime fits high traffic areas. The maintenance scenario is :

- **Wet mopping: two times per year.**
- **Spot & stain removal: once per year**

Description	Amount	Unit
Water consumption	4.10E-01	L/year/m ²
Detergent consumption	7.00E-03	L/year/m ²

Prevention of structural damage

To avoid excessive wear, usage should be restricted to the stated areas of application as outlined by the norm ISO 10874.

End of Life

3 distinct End-of-Life scenarios have been modeled for Wall products. Tarkett recommend using the ReStart program at End-of-Use to recycle the product. However, to showcase the value of Tarkett's recycling activities, environmental impacts of two alternative scenarios have been calculated.

Recycling /R

100% of the HO wall products can be recycled at its end of use stage, thanks to the ReStart® program, enabling Tarkett to collect installation losses and post-use flooring from construction sites to recycle it and/or re-use it as high-quality raw material back in Tarkett plants. Tarkett has developed a new technology that cleans, shreds, and recycles previously unusable post-consumer vinyl. Thus, Wall products are recycled back at the Ronneby plant and the transport between construction site and recycling facility is 1958km by truck. Environmental impacts of recycling are presented in module **C/R**.

Incineration with energy recovery /I

Incineration with energy recovery is a rising waste management method in many of the countries in which HO wall is sold. While Tarkett wishes to recycle 100% of sold HO wall, incineration with energy recovery is an alternative option if recycling is impossible. Environmental impacts of incineration with energy recovery are presented as additional information in module C/I.

Landfilling /L

Landfilling waste is still a prominent waste management scenario. This option is however not recommended by Tarkett. Environmental impacts of landfilling are presented as additional information in module C/L.

Benefits and loads beyond system boundary.

Recycling /R

The benefit is due to the recycling post-use flooring that allows avoiding the emissions of virgin materials. HO wall products can be 100% recycled at post-installation and post-consumer stage. Post-consumer recycling process currently has an efficiency of 90%. Benefits from avoided raw material production and avoided transport are calculated in module **D/R**.

Landfilling /L

Benefits accounted in this scenario exclusively come from installation offcuts recycling and are presented as additional information in module D/L.

Incineration with energy recovery /I

Benefits from installation offcuts recycling and incineration energy recovery are calculated as additional information in module D/I.

Results

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.

Disclaimer: *The results of modules A1-A3 should not be used without considering the results of module C.*

Environmental Information

Potential environmental impact

Results per functional or declared unit in case of Recycling - Surface wall																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1/1	C2/1	C3/1	C4/1	D/1
GWP-total	kg CO ₂ eq.	4.60E+00	1.27E+00	1.40E+00	MND	8.07E-03	MND	MND	MND	MND	MND	0.00E+00	1.35E+00	3.63E-01	5.86E-01	-4.32E+00
GWP-fossil	kg CO ₂ eq.	4.79E+00	1.27E+00	1.12E+00	MND	7.45E-03	MND	MND	MND	MND	MND	0.00E+00	1.35E+00	7.96E-02	5.86E-01	-4.73E+00
GWP- biogenic	kg CO ₂ eq.	-2.88E-01	4.05E-04	2.71E-01	MND	4.88E-05	MND	MND	MND	MND	MND	0.00E+00	4.28E-04	2.58E-01	1.74E-05	5.07E-01
GWP- Luluc	kg CO ₂ eq.	1.00E-01	6.24E-04	1.05E-02	MND	5.67E-04	MND	MND	MND	MND	MND	0.00E+00	6.58E-04	2.53E-02	1.24E-05	-9.94E-02
ODP	kg CFC 11 eq.	8.40E-07	2.77E-08	9.56E-08	MND	2.88E-10	MND	MND	MND	MND	MND	0.00E+00	2.93E-08	1.18E-08	3.45E-09	-8.39E-07
AP	mol H ⁺ eq.	2.62E-02	4.09E-03	5.12E-03	MND	5.08E-05	MND	MND	MND	MND	MND	0.00E+00	4.39E-03	6.72E-04	1.48E-04	-2.61E-02
EP-freshwater	kg P eq	1.09E-03	8.92E-05	2.44E-04	MND	2.63E-06	MND	MND	MND	MND	MND	0.00E+00	9.42E-05	4.30E-05	3.29E-06	-1.13E-03
EP-freshwater	kg PO ₄ eq	3.34E-03	2.74E-04	7.49E-04	MND	8.08E-06	MND	MND	MND	MND	MND	0.00E+00	2.89E-04	1.32E-04	1.01E-05	-3.45E-03
EP-marine	kg N eq.	7.27E-03	1.40E-03	1.37E-03	MND	2.43E-05	MND	MND	MND	MND	MND	0.00E+00	1.51E-03	2.92E-04	7.61E-05	-7.04E-03
EP-terrestrial	mol N eq.	3.54E-02	1.47E-02	9.74E-03	MND	1.25E-04	MND	MND	MND	MND	MND	0.00E+00	1.59E-02	1.79E-03	6.80E-04	-3.41E-02
POCP	kg NMVOC eq.	1.85E-02	6.11E-03	4.53E-03	MND	3.21E-05	MND	MND	MND	MND	MND	0.00E+00	6.55E-03	2.90E-04	1.78E-04	-1.83E-02
ADP-minerals&metals*	kg Sb eq.	5.20E-05	4.20E-06	9.24E-06	MND	7.96E-08	MND	MND	MND	MND	MND	0.00E+00	4.43E-06	8.70E-07	1.23E-07	-5.03E-05
ADP-fossil*	MJ	1.40E+02	1.80E+01	2.57E+01	MND	1.51E-01	MND	MND	MND	MND	MND	0.00E+00	1.91E+01	1.37E+01	1.12E-01	-1.08E+02
WDP	m ³	2.32E+00	7.47E-02	5.59E-01	MND	3.63E-03	MND	MND	MND	MND	MND	0.00E+00	7.88E-02	1.28E-01	6.35E-03	-1.87E+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.

Environmental Information

Potential Environmental impact

Results per functional or declared unit in case of Recycling - Surface wall

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1/1	C2/1	C3/1	C4/1	D/1
PERE	MJ	1.29E+01	2.80E-01	1.79E+00	MND	4.62E-02	MND	MND	MND	MND	0.00E+00	0.00E+00	2.96E-01	3.07E+00	1.10E-02	-1.29E+01
PERM	MJ	1.31E+00	0.00E+00	1.31E-01	MND	1.05E-02	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-1.31E+00	0.00E+00	-7.20E-01
PERT	MJ	1.42E+01	2.80E-01	1.92E+00	MND	5.67E-02	MND	MND	MND	MND	0.00E+00	0.00E+00	2.96E-01	1.77E+00	1.10E-02	-1.36E+01
PENRE	MJ	8.69E+01	1.80E+01	2.05E+01	MND	1.51E-01	MND	MND	MND	MND	0.00E+00	0.00E+00	1.91E+01	1.37E+01	1.12E-01	-5.58E+01
PENRM	MJ	1.25E+00	0.00E+00	1.25E-01	MND	5.90E-02	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-1.25E+00	0.00E+00	-3.77E-01
PENRT	MJ	8.81E+01	1.80E+01	2.06E+01	MND	2.10E-01	MND	MND	MND	MND	0.00E+00	0.00E+00	1.91E+01	1.24E+01	1.12E-01	-5.62E+01
SM	kg	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-01
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	MND	MND	MND	MND	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	MND	0.00E+00	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	8.10E-02	2.57E-03	1.24E-02	MND	-2.03E-04	MND	MND	MND	MND	0.00E+00	0.00E+00	2.71E-03	1.45E-02	2.71E-04	-6.71E-02

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 production and output flows

Waste production

Results per functional or declared unit in case of Recycling - Surface wall																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1/1	C2/1	C3/1	C4/1	D/1
Hazardous waste disposed	kg	1.13E+00	1.72E-02	1.29E-01	MND	3.72E-04	MND	MND	MND	MND	MND	0.00E+00	1.82E-02	7.70E-03	8.37E-03	-1.07E+00
Non-hazardous waste disposed	kg	1.47E+00	1.03E+00	5.69E-01	MND	4.06E-03	MND	MND	MND	MND	MND	0.00E+00	1.08E+00	5.53E-02	6.58E-03	-1.39E+00
Radioactive waste disposed	kg	5.79E-04	5.87E-06	7.04E-05	MND	1.65E-07	MND	MND	MND	MND	MND	0.00E+00	6.20E-06	1.67E-04	2.23E-07	-6.42E-05

Output flows

Results per functional or declared unit in case of Recycling - Surface wall																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1/1	C2/1	C3/1	C4/1	D/1
Components for re-use	kg	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
Material for recycling	kg	9.89E-01	0.00E+00	4.39E-01	MND	0.00E+00	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	3.06E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	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
Exported energy	MJ	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	1.76E+00	0.00E+00

Additional indicator

Results per functional or declared unit in case of Recycling - Surface wall																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1/1	C2/1	C3/1	C4/1	D/1
GWP-fossil	kg CO ₂ eq.	4.89E+00	1.27E+00	1.13E+00	MND	8.02E-03	MND	MND	MND	MND	MND	0.00E+00	1.35E+00	1.05E-01	5.86E-01	-4.83E+00

¹ GWP-GHG is the sum of GWP-Fossil and GWP-LULUC indicator

Variability of LCA results

The declared environmental impacts are the impacts of the worst-case product. The data was collected for the site of production. The variability of the results was calculated by doing a sensitivity analysis as recommended by the EN15804+A2/CN.

Variation of environmental impacts for all indicators greater than 10% for A1-C modules

Impact Category	min	max
Climate change - total	2%	24%
Climate change - Fossil	2%	25%
Climate change - biogenic	0%	-45%
Climate change - land use and change	0%	39%
Ozone Depletion	3%	37%
Acidification	2%	29%
Eutrophication, freshwater	1%	29%
Eutrophication, marine	0%	28%
Eutrophication, terrestrial	3%	25%
Photochemical ozone formation	1%	26%
Resource use, minerals, and metals	0%	30%
Resource use, fossils	2%	25%
Water use	-2%	24%
Particulate matter	1%	25%
Ionising radiation	1%	11%
Ecotoxicity, freshwater	0%	31%
Human toxicity, cancer	3%	37%
Human toxicity, non-cancer	2%	33%
Land use	2%	24%
Renewable primary energy excl. RM	-4%	31%
Renewable primary energy used as RM	0%	225%
Total renewable primary energy	-4%	33%
Nonrenewable primary energy excl. RM	1%	20%
Nonrenewable primary energy used as RM	75%	75%
Total non renewable primary energy	1%	20%
Net use of fresh water	-2%	27%
Hazardous waste disposed	2%	34%
Non hazardous waste disposed	1%	22%
Materials for recycling	2%	26%

Additional information – Potential impacts and flows in case of incineration.

Results per functional or declared unit in case of incineration – Surface wall						
Indicator	Unit	C1/l	C2/l	C3/l	C4/l	D/l
GWP-total	kg CO ₂ eq.	0.00E+00	6.88E-02	0.00E+00	8.70E+00	-1.83E+00
GWP-Fossil	kg CO ₂ eq.	0.00E+00	6.87E-02	0.00E+00	8.43E+00	-2.09E+00
GWP- biogenic	kg CO ₂ eq.	0.00E+00	2.19E-05	0.00E+00	2.60E-01	2.77E-01
GWP- Luluc	kg CO ₂ eq.	0.00E+00	3.36E-05	0.00E+00	4.05E-03	-1.11E-02
ODP	kg CFC 11 eq.	0.00E+00	1.50E-09	0.00E+00	1.17E-06	-1.52E-07
AP	mol H ⁺ eq.	0.00E+00	2.24E-04	0.00E+00	1.31E-02	-8.20E-03
EP-freshwater	kg P eq.	0.00E+00	4.81E-06	0.00E+00	9.62E-04	-6.52E-04
EP-freshwater	kg PO ₄ ³⁻ eq.	0.00E+00	3.37E-07	0.00E+00	6.73E-05	-4.56E-05
EP-marine	kg N eq.	0.00E+00	7.71E-05	0.00E+00	3.07E-03	-1.64E-03
EP-terrestrial	mol N eq.	0.00E+00	8.14E-04	0.00E+00	3.14E-02	-1.28E-02
POCP	kg NMVOC eq.	0.00E+00	3.35E-04	0.00E+00	9.34E-03	-5.59E-03
ADP-minerals&metals*	kg Sb eq.	0.00E+00	2.26E-07	0.00E+00	3.99E-05	-6.66E-06
ADP-Fossil*	MJ	0.00E+00	9.74E-01	0.00E+00	2.78E+01	-3.60E+01
WDP	m ³	0.00E+00	4.03E-03	0.00E+00	1.94E+00	-3.14E-01

Results per functional or declared unit in case of incineration – Surface wall						
Indicator	Unit	C1/l	C2/l	C3/l	C4/l	D/l
PERE	MJ	0.00E+00	1.51E-02	0.00E+00	3.40E+00	-3.27E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	-1.31E+00	-7.20E-02
PERT	MJ	0.00E+00	1.51E-02	0.00E+00	2.10E+00	-3.34E+00
PENRE	MJ	0.00E+00	9.74E-01	0.00E+00	2.78E+01	-3.07E+01
PENRM	MJ.	0.00E+00	0.00E+00	0.00E+00	-1.25E+00	-3.77E-02
PENRT	MJ	0.00E+00	9.74E-01	0.00E+00	2.66E+01	-3.08E+01
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-01
RSF	MJ	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
FW	m ³	0.00E+00	1.39E-04	0.00E+00	5.20E-02	-1.55E-02

Results per functional or declared unit in case of incineration – Surface wall						
Indicator	Unit	C1/l	C2/l	C3/l	C4/l	D/l
Hazardous waste disposed	kg	0.00E+00	9.28E-04	0.00E+00	4.28E-01	-1.24E-01
Non-hazardous waste disposed	kg	0.00E+00	5.53E-02	0.00E+00	1.94E+00	-3.76E-01
Radioactive waste disposed	kg	0.00E+00	3.17E-07	0.00E+00	7.14E-05	-7.69E-05

Results per functional or declared unit in case of incineration – Surface wall						
Indicator	Unit	C1/l	C2/l	C3/l	C4/l	D/l
Components for re-use	kg	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
Materials for energy recovery	kg	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	2.13E+01	0.00E+00

Additional information – Potential impacts and flows in case of landfilling.

Results per functional or declared unit in case of landfilling – Surface wall						
Indicator	Unit	C1/L	C2/L	C3/L	C4/L	D/L
GWP-total	kg CO ₂ eq.	0.00E+00	2.06E-02	0.00E+00	5.23E-01	-1.66E-01
GWP-Fossil	kg CO ₂ eq.	0.00E+00	2.06E-02	0.00E+00	2.69E-01	-4.35E-01
GWP- biogenic	kg CO ₂ eq.	0.00E+00	6.56E-06	0.00E+00	2.54E-01	2.79E-01
GWP- Luluc	kg CO ₂ eq.	0.00E+00	1.01E-05	0.00E+00	8.44E-06	-9.92E-03
AP	mol H ⁺ eq.	0.00E+00	4.49E-10	0.00E+00	1.08E-09	-8.28E-08
ODP	kgCFC11 eq	0.00E+00	6.72E-05	0.00E+00	2.44E-04	-2.48E-03
EP-freshwater	kg P eq	0.00E+00	1.44E-06	0.00E+00	2.51E-06	-1.01E-04
EP-freshwater	kg PO ₄ eq	0.00E+00	4.43E-06	0.00E+00	7.72E-06	-3.11E-04
EP-marine	kg N eq.	0.00E+00	2.31E-05	0.00E+00	1.87E-03	-6.83E-04
EP-terrestrial	mol N eq.	0.00E+00	2.44E-04	0.00E+00	1.09E-03	-3.21E-03
POCP	kg NMVOC eq.	0.00E+00	1.00E-04	0.00E+00	4.73E-04	-1.74E-03
ADP-minerals&metals*	kg Sb eq.	0.00E+00	6.79E-08	0.00E+00	7.59E-08	-5.00E-06
ADP-Fossil*	MJ	0.00E+00	2.92E-01	0.00E+00	8.49E-01	-1.03E+01
WDP	m ³	0.00E+00	1.21E-03	0.00E+00	3.83E-03	-1.85E-01
Results per functional or declared unit in case of landfilling – Surface wall						
Indicator	Unit	C1/L	C2/L	C3/L	C4/L	D/L
PERE	MJ	0.00E+00	4.53E-03	0.00E+00	3.66E-02	-1.24E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	-1.31E+00	-7.20E-02
PERT	MJ	0.00E+00	4.53E-03	0.00E+00	-1.27E+00	-1.31E+00
PENRE	MJ	0.00E+00	2.92E-01	0.00E+00	8.49E-01	-4.99E+00
PENRM	MJ.	0.00E+00	0.00E+00	0.00E+00	-1.25E+00	-3.77E-02
PENRT	MJ	0.00E+00	2.92E-01	0.00E+00	-4.05E-01	-5.03E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-01
RSF	MJ	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
FW	m ³	0.00E+00	4.16E-05	0.00E+00	1.04E-03	-6.52E-03
Results per functional or declared unit in case of landfilling – Surface wall						
Indicator	Unit	C1/L	C2/L	C3/L	C4/L	D/L
Hazardous waste disposed	kg	0.00E+00	2.78E-04	0.00E+00	9.78E-04	-1.06E-01
Non-hazardous waste disposed	kg	0.00E+00	1.66E-02	0.00E+00	3.66E+00	-1.34E-01
Radioactive waste disposed	kg	0.00E+00	9.50E-08	0.00E+00	4.81E-07	-4.80E-06
Results per functional or declared unit in case of landfilling – Surface wall						
Indicator	Unit	C1/L	C2/L	C3/L	C4/L	D/L
Components for re-use	kg	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
Materials for energy recovery	kg	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

References

There is no specific PCR for wall coverings. We assume that a wall covering is like a floor covering but installed on a wall. Therefore the PCR and sub PCR for resilient textile and laminate floor coverings have been used.

General Program Instructions of the International EPD® System. Version 4.0.

PCR 2019:14. Version 1.3.3 and c-PCR-004 Resilient textile and laminate floor coverings (EN 16810)

