ENVIRONMENTAL PRODUCT DECLARATION

ARMONIA 520

LOOSE-LAID CARPET TILES

MARKET: EUROPE

Our mission at Gerflor: make our customers and users' lives easier with sustainable innovative, healthy, and less impactful products.

When it comes to sustainability, we set ourselves to the highest standards. As part of this commitment, Gerflor has decided to take a leadership position with a goal of publishing a third-party independently verified EPD for each of its product ranges.

The product covered by this EPD is ARMONIA 520.
It is a tufted carpet tile flooring product. Yarn is made of 100% Nylon. It is REACH compliant.
The product emission rate of organic compounds is < 100 micrograms/m3 (TVOC < 28 days – EN 16516).

Since 2011, Gerflor offers an innovative program in select countries for collecting installation waste and end-of-life products.

CERTIFIED
ENVIRONMENTAL PRODUCT DECLARATION
UL.COM/EPD

ENVIRONMENTAL PRODUCT DECLARATION

Gerflor ARMONIA 520

According to ISO 14025 and EN 15804

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Solutions 333 Pfingsten Road, Northbrook, IL 60611 https://www.ul.com/ https://spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	General Program Instructions v.2.7 March 2022
MANUFACTURER NAME AND ADDRESS	GERFLOR 1 Place Verrazzano, CS 20458, 69258 Lyon CEDEX 09
DECLARATION NUMBER	4791509685.114.1
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	ARMONIA 520 The functional unit is one square meter of installed product. The reference service life considered is 10 years.
REFERENCE PCR AND VERSION NUMBER	PCR -Part A: Life Cycle Assessment Calculation Rules and Report Requirements. Version 4.0, UL Environnment. PCR - Part B: Flooring EPD Requirements, Second Edition, Dated September 28, 2018, UL Environnment.
DESCRIPTION OF PRODUCT APPLICATION/USE	The product is to be installed in various areas of application including commercial and industrial applications. It is classified in accordance with EN ISO 10874 and in reference to the FCSS (Floor Covering Standard Symbols).
PRODUCT RSL DESCRIPTION (IF APPL.)	The product service life recommended is 10 years. According to UL PCR, the building Estimated Service Life (ESL) is 75 years. For this duration, 6.5 replacements are required. Environmental impacts are calculated for two different Service Life assumptions: 1 year and 75 years.
MARKETS OF APPLICABILITY	European Commercial market
DATE OF ISSUE	February 7, 2025
PERIOD OF VALIDITY	5 years
EPD TYPE	Product-specific
VARIABILITY OF REPORTED DATA	1 product(s) is considered in this EPD.
EPD SCOPE	Cradle to Grave
YEAR(S) OF REPORTED PRIMARY DATA	2023
LCA SOFTWARE & VERSION NUMBER	Simapro 9
LCI DATABASE(S) & VERSION NUMBER	Ecoinvent 3.8 – allocution cut-off by classification
LCIA METHODOLOGY & VERSION NUMBER	Method EN 15804 A2 EPD Ev-DEC 1.11 (EVEA)

The PCR review was conducted by:	UL Solutions PCR Review Panel epd@ul.com
This declaration was independently verified in accordance with ISO 14025: 2006. ☐ INTERNAL ☒EXTERNAL	Cooper McCollum, UL Solutions *Cooper McCollum*
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	EVEA

LIMITATIONS

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: EPDs from different programs may not be comparable.
Comparison of the environmental performance of flooring products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR.
Full conformance with the PCR for "Building-Related Products and Services" allows EPD comparability only when all stages of a life cycle have been considered, when they comply with all referenced standards, use the same sub-category PCR, and use equivalent scenarios with respect to construction works. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

TABLE OF CONTENTS

1. Product Definition and Information

1.1. Company Description and production site information

The products are commercialized by Gerflor.
For over 80 years, the Gerflor Group has been developing, manufacturing, and selling innovative, decorative, and eco-responsible solutions. Its product portfolio encompasses flexible floors, wall protection and finishes. Gerflor supports professionals and individuals every day in every phase of their project, from product selection to end-of-life management and recycling solutions. As a European manufacturer, the Group employs more than 5000 people and distributes its products and services in over 100 countries.

Gerflor solutions can be found in Education, Healthcare, Retail, Sports, Hospitality, Industry, Offices, Transport, Public buildings and Housing.

Faced with the climate emergency and the scarcity of raw materials, the Group's ambition is now more than ever to reconcile sustainable and profitable growth with resolute and innovative approaches to reduce our environmental impact.

1.2. Product Description

This environmental product declaration covers Armonia 520.
The product is a tufted carpet tile made of Nylon yarn and a bitumen backing. The tiles can be installed glue free, with tackifier or with B-Connect connectors.
The tuft has a loop pile to offer a high-quality design feeling. The tuft density enables the product to reach 22 dB impact sound reduction and 0,15 αω noise reduction.

The following figure shows the product construction:

1. **Polyamide tufted loop pile on polyester layer**
2. **Base layer with latex coating**
3. **Bitumen backing**

1.3. Technical Specifications

The product considered in this EPD meets or exceeds all technical requirements in EN 1307 Textile floor coverings – Classification.
The product meets the following technical specifications:

Name	Value	Unit
Product thickness	5.6	mm
Product Weight	4	kg/m²
Stitch Density	142 200	tufts/m²
Pile Weight	520	g/m³
Surface Pile Weight	280	g/m²
Size	500 x 500	mm

1.4. Product Certifications

The products declared in this document complies with the following codes or regulations:

- **Label GuT**

Specification Fire Testing:

- Bfl-S1, when tested in accordance with EN 13501-1.

Slip Resistance: $\mu \geq 0{,}30$

1.5. Product Classifications

The product is loose-laid carpet tile flooring, classified in accordance with EN ISO 10874: Resilient, textile and laminate floor coverings, and in reference to the FCSS (Floor Covering Standard Symbols) to be installed in various areas of application including offices, hospitality and commercial environments.

The product is classified according to the United Nations Standard Products and Service Code (UNSPSC) as « Tufted carpeting »: UNSPSC Code 30161709, and according to Construction Specification Institute (CSI) as « Carpeting »: CSI Code 09 68 00.

2. Life Cycle Assessment General Information

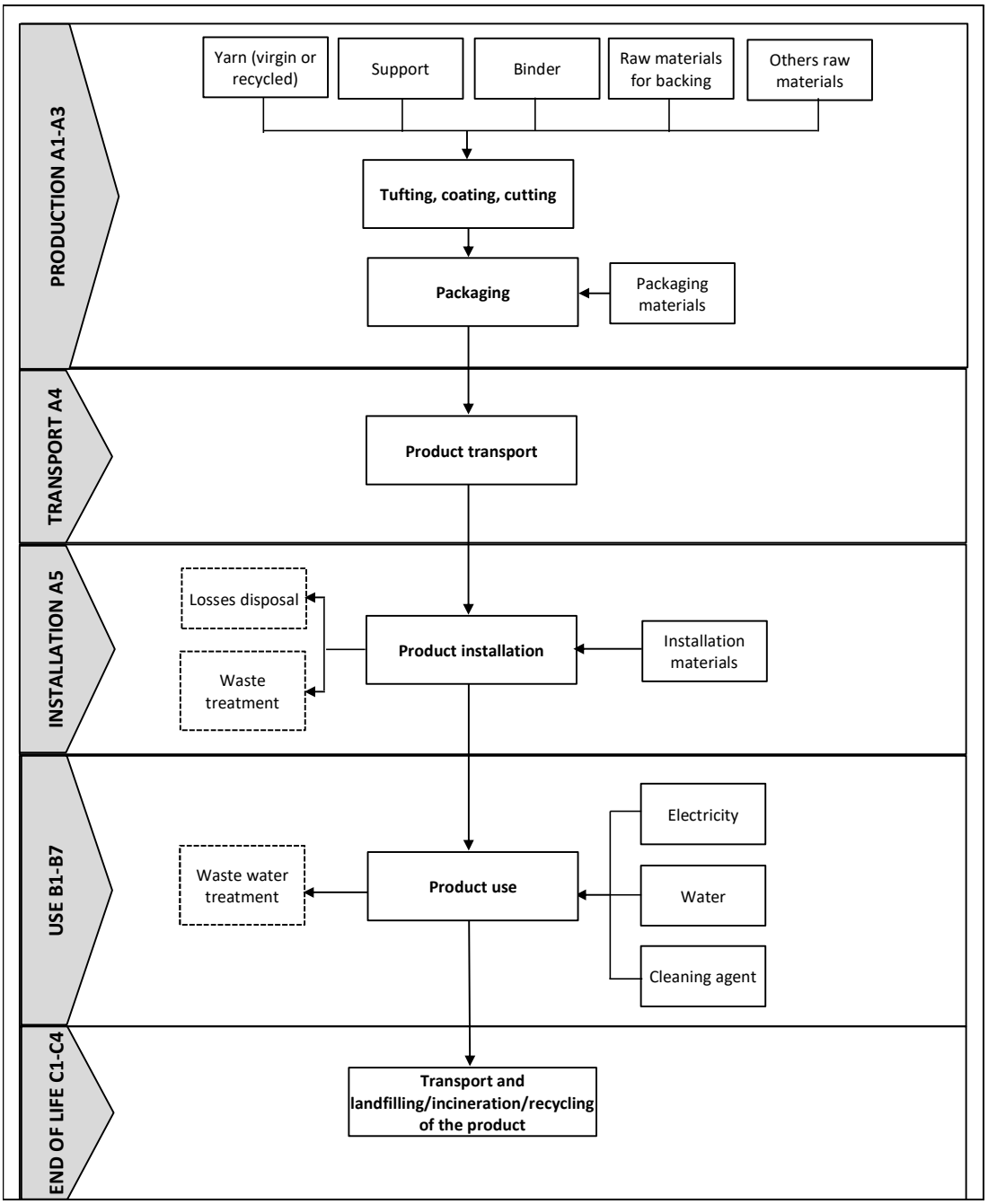
2.1. Methodological Framework

A full Life Cycle Assessment has been performed according to ISO 14040, ISO 14044 and in compliance with EN15804.

This EPD covers the entire life cycle of the products from cradle to grave (modules A1 to D) excluding modules for which there are no inputs/outputs.

No known flows are deliberately excluded from this EPD. For these products, the stated Reference Service Life (RSL) is 10 years (see section 3.5).

Flow Diagram:



2.2. Declared Unit

The functional unit is one square meter of installed product. The reference service life considered is 10 years.

	Value	Unit
Functional Unit	1	m^2
Mass	4	kg/m^2

2.3. System Boundary

EPD is declared from cradle to grave, including the following stages:
A1 – A3: includes the provision of all raw materials and their packaging, transport to the production site and energy consumption during the manufacturing of the product, as well as processing of waste generated by the factory.
A4 – A5: includes the transport from the factory to the final customer, packaging of the final product and the installation of the product, as well as all consumables and energy required, and processing of waste generated during the installation.
B1 – B7: includes provision and transport of all materials, products and services related to the use phase of the product, as well as their related energy and water consumption, and the processing of any resulting waste.
C1 – C4: includes provision and transport of all materials, products and services related to the end-of-life phase of the product, including energy and water consumption, as well as the end-of-life processing of the product.
D: includes benefits coming from the wastes' end of life.

Scope of study: modules with no "X" in the table below have been considered but have no associated inputs/outputs, therefore do not appear in the results:

	Production Stage			Construction Process Stage		Use Stage							End-of-Life Stage				Benefits& loads beyond syst. Bound.
	Raw material supply	Transport to manufacturer	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use duringproduct use	Operational water use during product use	Deconstruction	Transport	Waste processing	Disposal	Reuse, recovery or recycling potential
Modules	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Accounted for:	X	X	X	X	X	X*	X	X*	X	X*	X*	X*	X	X	X*	X	X

*Module has been considered but has no associated inputs/outputs, therefore does not appear in the results.

2.4. Estimates and Assumptions

Estimates and assumptions are made for transport, installation, and deconstruction procedure. Details are provided in section 3.

2.5. Cut-off Criteria

The cut -off criteria shall be 1% of renewable and non-renewable primary energy usage and 1% of the total mass of that unit process. The total neglected input flows per module shall be a maximum of 5% of energy usage and mass. For this study, all input and output flows have been considered. Raw materials are included as per the product composition provided by the manufacturer and the packaging of the final product. Energy and water consumptions have also been considered at 100% according to the data provided.

2.6. Data Sources

As a rule, specific data derived from specific production processes or average data derived from specific production processes have been used as the first choice as a basis for calculating an EPD.
To model the life cycle of the product in question, the software SimaPro 9, developed by PRé, has been used in conjunction with the LCA database ecoinvent v3.8.

2.7. Data Quality

The requirements for data quality and LCA data are in accordance with the specifications of the PCR.

Temporal Coverage: producer specific data is averaged over 1 year of production and from within the last 5 years. Generic data is taken from the ecoinvent 3.8 database, the entirety of which was updated in 2021. Inputs and outputs from the system are accounted for over a period of 100 years from the year for which the data set is deemed relevant.
Technological Coverage: the technological coverage of the data reflects the physical reality of the declared product.
Geographical Coverage: whenever possible, country specific data reflecting the reality of the Gerflor supply chain has been used. If country specific data is unavailable, European regional data is used in preference to global data sources.

A third party verified ISO 14040/44 secondary LCI data sets contribute more than 67% of total impact (either at the unit process level or in aggregate) to any of the required impact categories identified by the applicable PCR.

2.8. Period under Review

Data have been reviewed for the production year 2023.

2.9. Allocation

Allocations when using secondary materials as raw materials:
The recycled content comes from external sources (offcuts from installation and removal of old coatings), the end-of- waste status is considered at the level of the sorted material stock and no impact is assigned to the production of these offcuts.

Allocations in the plant (differentiation from other products manufactured in the plant):
The overall values for the factory's material and energy consumptions during a period of one year have been divided by the annual production of each product to supply a value per square meter of flooring produced. All factory data is measured in square meters, and it is assumed that the process consumptions are governed by area of flooring processed rather than mass.

Allocation of multi-input processes if performed during modelling:
Production offcuts: the scraps are components reintegrated into other products on other process lines. Since these scraps are not sold externally, a physical allocation is made between the main product and the scraps.
Thus, the overproduction to produce these losses is not considered in this case. The impacts of the production of these scraps are assigned to the system that uses them (other Gerflor products), so no impact is omitted.

Allocations of reuse, recycling, and energy recovery:
Not relevant here.

2.10. Comparability (Optional)

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are considered.

3. Life Cycle Assessment Background Information & Scenarios

3.1. Material Composition & packaging (A1)

Product:

Component	Materials	Mass (%)
Pile Material	100% polyamide	13%
Base layer	Latex coating / PES non-woven	15%
Backing	Bitumen	72%
Packaging	Wood, polyethylene, cardboard, glue	<6%

Packaging:

The tiles are packed in cardboard boxes, which are stored on wooden pallets. The pallets are wrapped in polyethylene film and are stacked for transport using a wooden interlayer.

As described in ULE Part A Requirements, the packaging waste scenario for European market is:

- 76.4% recycling, 16.4% landfilling and 7.2% incineration for carboard.
- 24.8% recycling, 54.8% landfilling and 20.4% incineration for wood.
- 37% recycling, 35% landfilling and 28% incineration for plastic.

3.2. Manufacturing (A3)

The product is made in France. The production process is divided into the following stages:

- Tufting
- Coating
- Shaping: products are cut at the desired dimensions, in tiles
- Packaging

3.3. Delivery (transport from the factory to the building site) (A4)

The product is made in France and sent to the European market, by truck. Distances considered are described below.

Truck	VALUE	UNIT
Fuel type	Diesel, low sulfur	
Liters of fuel	26	l/100km
Vehicle type	16-32 metric ton EURO 6	
Transport distance	1300	km
Capacity utilization (including empty runs, mass based	36	%
Gross density of products transported	714	kg/m3
Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products)	<1	-

3.4. Installation (A5)

The product is installed by hand, using a tackifier glue applied directly on the subfloor. During the installation, approximately 3% of the product is lost as off cuts; this waste is mainly sent to landfill.

Installation into the building (A5) - Scenario	VALUE	UNIT
Ancillary materials - Tackifier	0.1	kg/m²
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	-	m3
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Product loss per functional unit	0.12	kg
Waste materials at the construction site before waste processing, generated by product installation	0.2305	kg
Output materials resulting from on-site waste processing (specified by route, e.g. for recycling, energy recovery and/or disposal)	-	kg
Biogenic carbon contained in packaging	0.0991	kg CO2
Direct emissions to ambient air, soil, and water	-	kg
VOC emissions	-	kg/m²

3.5. Use - Reference Service Life and Building Estimated Service Life (B2)

Service Life	VALUE	UNIT
Product Reference Service Life (RSL)	10	years
Building estimated Service Life (ESL)	75	years

It should be noted that the service life 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 based on his experience of flooring manufacture and supply. This RSL is applicable as long as the product use complies with ISO 14041 in accordance with the product's classification.

Declared product properties (at the gate) and finishes, etc.	Declared product properties are described in Declaration of Performance (DOP), in accordance with EN 14041
Design application parameters (if instructed by the manufacturer), including references to the appropriate practices and application codes)	Products in accordance with EN 14041 and technical prescription of the manufacturer
An assumed quality of work, when installed in accordance with the manufacturer instructions	Assumed to be installed according to the manufacturer instructions
Outdoor environment, (if relevant for outdoor applications), e.g. weathering, pollutants, UV, and wind exposure, building orientation, shading, temperature	Not relevant
Indoor environment, (if relevant for indoor applications), e.g. temperature, moisture, chemical exposure)	Use conditions in accordance with manufacturer prescriptions: see technical datasheet
Use conditions, e.g. frequency of use, mechanical exposure.	Use conditions in accordance with manufacturer prescriptions: see technical datasheet
Maintenance, e.g. required frequency, type and quality of replacement components	Maintenance scenario is defined in the table above

3.6. Use – Cleaning (B2)

Maintenance (B2) - Scenario	VALUE	UNIT
Maintenance process information (cite source in report)	- Current dry cleaning using a vacuum brush: 4/week - Periodic wet cleaning by injection-extraction: 1,5/year	-
Maintenance cycle	5237.5	Number/RSL
Maintenance cycle	15712.5	Number/ESL
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	4	L/year
Ancillary materials specified by type (e.g. cleaning agent)	0.135	L/year
Other resources	-	kg
Energy input, specified by activity, type and amount	0.314	kWh/year
Other energy carriers specified by type	-	kWh
Power output of equipment	-	kW
Waste materials from maintenance (specify materials)	-	kg
Direct emissions to ambient air, soil, and water	-	kg
Further assumptions for scenario development (e.g. frequency and time period of use, number of occupants)	-	

3.7. Repair, replacement, refurbishment, reuse (B3-B5)

Repair (B3): no data.

Replacement (B4): product's life expectancy being 10 years and building's life expectancy being 75 years, 6.5 product replacements will be necessary. The impact of these replacements can be found in indicator B4 “Replacement”. B2 “Maintenance” is also proportional to the number of years considered.

Replacement (B4) – Scenario	VALUE	UNIT
Reference Service Life	10	Years
Number of replacements over building estimated service life (75 years)	6.5	(ESL/RSL)-1
Energy input, specified by activity, type and amount	-	kWh
Net freshwater consumption specified by water source and fate (e.g., X m3 river water evaporated, X m3 city water disposed to sewer)	-	m3
Ancillary materials specified by type and amount: - Tackifier	0.65	Kg/m²
Replacement of worn parts, specify parts/materials	-	kg
Direct emissions to ambient air, soil, and water	-	kg
Further assumptions for scenario development, e.g. frequency and time period of use	-	As appropriate

Refurbishment (B5): no data.

3.8. Operational energy use (B6) and Operational water use (B7)

No data.

3.9. Deconstruction (C1)

Product deconstruction is carried out manually.

3.10. Transport (C2) and end-of-life (C3-C4)

In this EPD, we address two end-of-life scenarios: landfill and incineration. Please note it is also possible to recycle used carpets in the cement industry through Gerflor's Second Life Collection Program.

END-OF-LIFE SCENARIO	VALUE	UNIT
Distance to end-of-life center treatment	161	km
Truck	16-32 metric ton Euro6	-
Recovery - Product: - Tackifier:	 4 0.1	kg
Disposal	-	

BIOGENIC CARBON	VALUE	UNIT
Removals of biogenic carbon (excluding packaging)	0	kg CO_2

3.11. Benefits and loads beyond system boundary (D)

Reuse, recovery and/or recycling potentials (D) - Scenarios	VALUE for landfill scenario	VALUE for incineration scenario	UNIT
Net energy benefit from energy recovery from waste treatment declared as exported energy in C3 (R>0.6)	-	-	MJ
Net energy benefit from thermal and electrical energy due to treatment of waste declared as exported energy in C4 (R<0.6)	-	2.88E+1	MJ
Net energy benefit from material flow declared in C3 for energy recovery	-	-	MJ
Process and conversion efficiencies	-	-	
Further assumptions for scenario development (e.g. further processing technologies, assumptions on correction factors);	-	-	

4. Life Cycle Assessment Results

The following results are given for a service life of 1 year and 75 years.
75 years results include 6.5 replacements based on a product reference service life of 10 years.

LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. All results should be used with caution because the uncertainties in the results are high.

2 end-of-life scenarios are therefore proposed in this EPD to address the different cases: landfill (1), or incineration (2).
Results only vary in C phase.

4.1. Summary of key GWP results

For convenience, here is a summary of the key GWP results:

GLOBAL WARMING POTENTIAL (GWP) kg CO2 eq./m²	Total GWP, with landfill scenario	Total GWP, with incineration scenario
Use 1 year	1.07E+01	2.00E+01
Use 10 years	**1.20E+01**	**2.13E+01**
Use 75 years	8.99E+01	1.60E+02

4.2. Life Cycle Assessment – Environmental impacts

4.2.1. Environmental impacts for 1 year

4.2.1.1. Potential environmental impact in case of LANDFILL at end of use

POTENTIAL ENVIRONMENTAL IMPACT - LANDFILL - 1 YEAR - per m²

Impacts CML v4.3	Units	Total	Production	Construction		Use	End-of-life			D Benefits & load beyond system boundaries
			A1 – A3 Total Production.	A4 Transport	A5 Installation	B2 Maintenance (1 year)	C2 Transport	C3 Waste processing	C4 Disposal	
Climate change - GWP total	*kg CO2 eq*	1,07E+01	8.36E+0	8.87E-1	8.90E-1	1.45E-1	1.07E-1	0.00E+0	2.89E-1	0.00E+0
Climate change - GWP fossil	*kg CO2 eq*	1,06E+01	8.65E+0	8.86E-1	5.48E-1	1.44E-1	1.07E-1	0.00E+0	2.89E-1	0.00E+0
Climate change - GWP biogenic	*kg CO2 eq*	4,83E-02	-2.94E-1	2.80E-4	3.41E-1	7.18E-4	3.37E-5	0.00E+0	4.19E-5	0.00E+0
Climate change -GWP land use and change	*kg CO2 eq*	4,39E-03	3.34E-3	3.61E-4	3.19E-4	3.10E-4	4.35E-5	0.00E+0	8.94E-6	0.00E+0
Ozone depletion	*kg CFC11 eq*	4,21E-06	3.80E-6	2.07E-7	1.49E-7	9.64E-9	2.49E-8	0.00E+0	1.27E-8	0.00E+0
Acidification	*mol H+ eq*	4,61E-02	3.72E-2	2.54E-3	4.69E-3	1.06E-3	3.05E-4	0.00E+0	3.04E-4	0.00E+0
Eutrophication, freshwater (P)	*kg P eq*	3,56E-04	3.11E-4	6.37E-6	2.01E-5	1.78E-5	7.67E-7	0.00E+0	2.95E-7	0.00E+0
Eutrophication, freshwater (PO4)	*kg PO4 eq*	6,06E-03	5.78E-3	1.95E-5	2.07E-4	5.48E-5	2.35E-6	0.00E+0	9.06E-7	0.00E+0
Eutrophication, marine	*kg N eq*	1,31E-02	1.14E-2	5.04E-4	6.31E-4	2.75E-4	6.07E-5	0.00E+0	2.06E-4	0.00E+0
Eutrophication, terrestrial	*mol N eq*	8,91E-02	7.42E-2	5.62E-3	4.91E-3	2.46E-3	6.76E-4	0.00E+0	1.23E-3	0.00E+0
Photochemical ozone formation	*kg NMVOC eq*	3,41E-02	2.90E-2	2.16E-3	1.91E-3	3.57E-4	2.60E-4	0.00E+0	4.22E-4	0.00E+0
Resource use, minerals, and metals	*kg Sb eq*	3,67E-05	2.70E-5	3.24E-6	4.66E-6	1.31E-6	3.90E-7	0.00E+0	1.20E-7	0.00E+0
Resource use, fossils	*MJ*	2,16E+02	1.87E+2	1.35E+1	1.02E+1	2.91E+0	1.63E+0	0.00E+0	9.17E-1	0.00E+0
Water use	*m3 depriv.*	6,92E+00	6.33E+0	4.05E-2	4.50E-1	9.45E-2	4.88E-3	0.00E+0	4.33E-3	0.00E+0
Particulate matter	*disease inc.*	4,67E-07	3.45E-7	7.19E-8	3.00E-8	5.29E-9	8.65E-9	0.00E+0	6.62E-9	0.00E+0
Ionising radiation	*kBq U-235 eq*	5,53E-01	4.29E-1	5.88E-2	2.94E-2	2.47E-2	7.08E-3	0.00E+0	4.22E-3	0.00E+0
Ecotoxicity, freshwater	*CTUe*	5,02E+01	2.76E+1	3.96E+0	2.74E+0	5.45E-1	4.76E-1	0.00E+0	1.49E+1	0.00E+0
Human toxicity, cancer	*CTUh*	1,42E-09	1.12E-9	1.59E-10	8.59E-11	2.36E-11	1.92E-11	0.00E+0	8.93E-12	0.00E+0
Human toxicity, non-cancer	*CTUh*	5,60E-09	4.32E-9	4.03E-10	4.26E-10	5.45E-11	4.85E-11	0.00E+0	3.46E-10	0.00E+0
Land use	*Pt*	5,36E+01	3.62E+1	9.44E+0	3.25E+0	1.20E+0	1.14E+0	0.00E+0	2.39E+0	0.00E+0

4.2.1.2. Potential environmental impact in case of INCINERATION at end of use

POTENTIAL ENVIRONMENTAL IMPACT – INCINERATION - 1 YEAR - per m²

Impacts CML v4.3	Units	Total	Production	Construction		Use	End-of-life			D Benefits & load beyond system boundaries
			A1 – A3 Total Production	A4 Transport	A5 Installation	B2 Maintenance (1 year)	C2 Transport	C3 Waste processing	C4 Disposal	
Climate change - GWP total	*kg CO2 eq*	2,00E+01	8.36E+0	8.87E-1	8.90E-1	1.45E-1	1.07E-1	0.00E+0	9.61E+0	-5.21E+0
Climate change - GWP fossil	*kg CO2 eq*	1,99E+01	8.65E+0	8.86E-1	5.48E-1	1.44E-1	1.07E-1	0.00E+0	9.61E+0	-5.19E+0
Climate change - GWP biogenic	*kg CO2 eq*	4,85E-02	-2.94E-1	2.80E-4	3.41E-1	7.18E-4	3.37E-5	0.00E+0	2.91E-4	-1.88E-2
Climate change -GWP land use and change	*kg CO2 eq*	4,58E-03	3.34E-3	3.61E-4	3.19E-4	3.10E-4	4.35E-5	0.00E+0	2.03E-4	-8.70E-3
Ozone depletion	*kg CFC11 eq*	4,26E-06	3.80E-6	2.07E-7	1.49E-7	9.64E-9	2.49E-8	0.00E+0	6.44E-8	-4.74E-7
Acidification	*mol H+ eq*	4,83E-02	3.72E-2	2.54E-3	4.69E-3	1.06E-3	3.05E-4	0.00E+0	2.45E-3	-2.75E-2
Eutrophication, freshwater (P)	*kg P eq*	3,62E-04	3.11E-4	6.37E-6	2.01E-5	1.78E-5	7.67E-7	0.00E+0	5.90E-6	-3.93E-4
Eutrophication, freshwater (PO4)	*kg PO4 eq*	6,08E-03	5.78E-3	1.95E-5	2.07E-4	5.48E-5	2.35E-6	0.00E+0	1.81E-5	-1.21E-3
Eutrophication, marine	*kg N eq*	1,39E-02	1.14E-2	5.04E-4	6.31E-4	2.75E-4	6.07E-5	0.00E+0	1.03E-3	-3.30E-3
Eutrophication, terrestrial	*mol N eq*	9,90E-02	7.42E-2	5.62E-3	4.91E-3	2.46E-3	6.76E-4	0.00E+0	1.11E-2	-3.76E-2
Photochemical ozone formation	*kg NMVOC eq*	3,65E-02	2.90E-2	2.16E-3	1.91E-3	3.57E-4	2.60E-4	0.00E+0	2.84E-3	-1.08E-2
Resource use, minerals, and metals	*kg Sb eq*	3,92E-05	2.70E-5	3.24E-6	4.66E-6	1.31E-6	3.90E-7	0.00E+0	2.59E-6	-9.11E-6
Resource use, fossils	*MJ*	2,17E+02	1.87E+2	1.35E+1	1.02E+1	2.91E+0	1.63E+0	0.00E+0	1.85E+0	-1.01E+2
Water use	*m3 depriv.*	7,03E+00	6.33E+0	4.05E-2	4.50E-1	9.45E-2	4.88E-3	0.00E+0	1.12E-1	-8.58E-1
Particulate matter	*disease inc.*	4,77E-07	3.45E-7	7.19E-8	3.00E-8	5.29E-9	8.65E-9	0.00E+0	1.66E-8	-1.11E-7
Ionising radiation	*kBq U-235 eq*	5,55E-01	4.29E-1	5.88E-2	2.94E-2	2.47E-2	7.08E-3	0.00E+0	6.66E-3	-7.59E-1
Ecotoxicity, freshwater	*CTUe*	5,84E+01	2.76E+1	3.96E+0	2.74E+0	5.45E-1	4.76E-1	0.00E+0	2.31E+1	-6.88E+0
Human toxicity, cancer	*CTUh*	2,57E-09	1.12E-9	1.59E-10	8.59E-11	2.36E-11	1.92E-11	0.00E+0	1.16E-9	-4.98E-10
Human toxicity, non-cancer	*CTUh*	5,41E-09	4.32E-9	4.03E-10	4.26E-10	5.45E-11	4.85E-11	0.00E+0	1.48E-10	-7.67E-10
Land use	*Pt*	5,18E+01	3.62E+1	9.44E+0	3.25E+0	1.20E+0	1.14E+0	0.00E+0	5.51E-1	-1.30E+1

4.2.2. Environmental impacts for 75 years

4.2.2.1. Potential environmental impact in case of LANDFILL at end of use

POTENTIAL ENVIRONMENTAL IMPACT - LANDFILL - 75 YEARS - per m²

Impacts CML v4.3	Units	Total	Production	Construction		Use		End-of-life			D Benefits & load beyond system boundaries
			A1 – A3 Total Production	A4 Transport	A5 Installation	B2 Mainten. (75 years)	B4 Replace (75 years)	C2 Transport	C3 Waste processing	C4 Disposal	
Climate change - GWP total	*kg CO2 eq*	8,99E+01	8.36E+0	8.87E-1	8.90E-1	1.09E+1	6.85E+1	1.07E-1	0.00E+0	2.89E-1	0.00E+0
Climate change - GWP fossil	*kg CO2 eq*	8,94E+01	8.65E+0	8.86E-1	5.48E-1	1.08E+1	6.81E+1	1.07E-1	0.00E+0	2.89E-1	0.00E+0
Climate change - GWP biogenic	*kg CO2 eq*	4,11E-01	-2.94E-1	2.80E-4	3.41E-1	5.38E-2	3.10E-1	3.37E-5	0.00E+0	4.19E-5	0.00E+0
Climate change -GWP land use and change	*kg CO2 eq*	5,39E-02	3.34E-3	3.61E-4	3.19E-4	2.33E-2	2.65E-2	4.35E-5	0.00E+0	8.94E-6	0.00E+0
Ozone depletion	*kg CFC11 eq*	3,22E-05	3.80E-6	2.07E-7	1.49E-7	7.23E-7	2.73E-5	2.49E-8	0.00E+0	1.27E-8	0.00E+0
Acidification	*mol H+ eq*	4,18E-01	3.72E-2	2.54E-3	4.69E-3	7.96E-2	2.93E-1	3.05E-4	0.00E+0	3.04E-4	0.00E+0
Eutrophication, freshwater (P)	*kg P eq*	3,88E-03	3.11E-4	6.37E-6	2.01E-5	1.34E-3	2.20E-3	7.67E-7	0.00E+0	2.95E-7	0.00E+0
Eutrophication, freshwater (PO4)	*kg PO4 eq*	4,92E-02	5.78E-3	1.95E-5	2.07E-4	4.11E-3	3.91E-2	2.35E-6	0.00E+0	9.06E-7	0.00E+0
Eutrophication, marine	*kg N eq*	1,16E-01	1.14E-2	5.04E-4	6.31E-4	2.06E-2	8.31E-2	6.07E-5	0.00E+0	2.06E-4	0.00E+0
Eutrophication, terrestrial	*mol N eq*	8,35E-01	7.42E-2	5.62E-3	4.91E-3	1.85E-1	5.63E-1	6.76E-4	0.00E+0	1.23E-3	0.00E+0
Photochemical ozone formation	*kg NMVOC eq*	2,80E-01	2.90E-2	2.16E-3	1.91E-3	2.68E-2	2.19E-1	2.60E-4	0.00E+0	4.22E-4	0.00E+0
Resource use, minerals, and metals	*kg Sb eq*	3,64E-04	2.70E-5	3.24E-6	4.66E-6	9.85E-5	2.30E-4	3.90E-7	0.00E+0	1.20E-7	0.00E+0
Resource use, fossils	*MJ*	1,82E+03	1.87E+2	1.35E+1	1.02E+1	2.19E+2	1.39E+3	1.63E+0	0.00E+0	9.17E-1	0.00E+0
Water use	*m3 depriv.*	5,83E+01	6.33E+0	4.05E-2	4.50E-1	7.09E+0	4.44E+1	4.88E-3	0.00E+0	4.33E-3	0.00E+0
Particulate matter	*disease inc.*	3,86E-06	3.45E-7	7.19E-8	3.00E-8	3.97E-7	3.00E-6	8.65E-9	0.00E+0	6.62E-9	0.00E+0
Ionising radiation	*kBq U-235 eq*	5,82E+00	4.29E-1	5.88E-2	2.94E-2	1.85E+0	3.44E+0	7.08E-3	0.00E+0	4.22E-3	0.00E+0
Ecotoxicity, freshwater	*CTUe*	4,14E+02	2.76E+1	3.96E+0	2.74E+0	4.09E+1	3.23E+2	4.76E-1	0.00E+0	1.49E+1	0.00E+0
Human toxicity, cancer	*CTUh*	1,22E-08	1.12E-9	1.59E-10	8.59E-11	1.77E-9	9.08E-9	1.92E-11	0.00E+0	8.93E-12	0.00E+0
Human toxicity, non-cancer	*CTUh*	4,56E-08	4.32E-9	4.03E-10	4.26E-10	4.09E-9	3.60E-8	4.85E-11	0.00E+0	3.46E-10	0.00E+0
Land use	*Pt*	4,83E+02	3.62E+1	9.44E+0	3.25E+0	8.98E+1	3.41E+2	1.14E+0	0.00E+0	2.39E+0	0.00E+0

4.2.2.2. Potential environmental impact in case of INCINERATION at end of use

POTENTIAL ENVIRONMENTAL IMPACT – INCINERATION - 75 YEARS - per m²

Impacts CML v4.3	Units	Total	Production	Construction		Use		End-of-life			D Benefits & load beyond system boundaries
			A1 – A3 Total Production	A4 Transport	A5 Installation	B2 Mainten. (75 years)	B4 Replace (75 years)	C2 Transport	C3 Waste processing	C4 Disposal	
Climate change - GWP total	*kg CO2 eq*	1,60E+02	8.36E+0	8.87E-1	8.90E-1	1.09E+1	1.29E+2	1.07E-1	0.00E+0	9.61E+0	-5.21E+0
Climate change - GWP fossil	*kg CO2 eq*	1,60E+02	8.65E+0	8.86E-1	5.48E-1	1.08E+1	1.29E+2	1.07E-1	0.00E+0	9.61E+0	-5.19E+0
Climate change - GWP biogenic	*kg CO2 eq*	4,14E-01	-2.94E-1	2.80E-4	3.41E-1	5.38E-2	3.12E-1	3.37E-5	0.00E+0	2.91E-4	-1.88E-2
Climate change -GWP land use and change	*kg CO2 eq*	5,53E-02	3.34E-3	3.61E-4	3.19E-4	2.33E-2	2.77E-2	4.35E-5	0.00E+0	2.03E-4	-8.70E-3
Ozone depletion	*kg CFC11 eq*	3,26E-05	3.80E-6	2.07E-7	1.49E-7	7.23E-7	2.76E-5	2.49E-8	0.00E+0	6.44E-8	-4.74E-7
Acidification	*mol H+ eq*	4,34E-01	3.72E-2	2.54E-3	4.69E-3	7.96E-2	3.07E-1	3.05E-4	0.00E+0	2.45E-3	-2.75E-2
Eutrophication, freshwater (P)	*kg P eq*	3,92E-03	3.11E-4	6.37E-6	2.01E-5	1.34E-3	2.24E-3	7.67E-7	0.00E+0	5.90E-6	-3.93E-4
Eutrophication, freshwater (PO4)	*kg PO4 eq*	4,93E-02	5.78E-3	1.95E-5	2.07E-4	4.11E-3	3.92E-2	2.35E-6	0.00E+0	1.81E-5	-1.21E-3
Eutrophication, marine	*kg N eq*	1,23E-01	1.14E-2	5.04E-4	6.31E-4	2.06E-2	8.84E-2	6.07E-5	0.00E+0	1.03E-3	-3.30E-3
Eutrophication, terrestrial	*mol N eq*	9,10E-01	7.42E-2	5.62E-3	4.91E-3	1.85E-1	6.28E-1	6.76E-4	0.00E+0	1.11E-2	-3.76E-2
Photochemical ozone formation	*kg NMVOC eq*	2,98E-01	2.90E-2	2.16E-3	1.91E-3	2.68E-2	2.35E-1	2.60E-4	0.00E+0	2.84E-3	-1.08E-2
Resource use, minerals, and metals	*kg Sb eq*	3,82E-04	2.70E-5	3.24E-6	4.66E-6	9.85E-5	2.46E-4	3.90E-7	0.00E+0	2.59E-6	-9.11E-6
Resource use, fossils	*MJ*	1,82E+03	1.87E+2	1.35E+1	1.02E+1	2.19E+2	1.39E+3	1.63E+0	0.00E+0	1.85E+0	-1.01E+2
Water use	*m3 depriv.*	5,91E+01	6.33E+0	4.05E-2	4.50E-1	7.09E+0	4.51E+1	4.88E-3	0.00E+0	1.12E-1	-8.58E-1
Particulate matter	*disease inc.*	3,94E-06	3.45E-7	7.19E-8	3.00E-8	3.97E-7	3.07E-6	8.65E-9	0.00E+0	1.66E-8	-1.11E-7
Ionising radiation	*kBq U-235 eq*	5,83E+00	4.29E-1	5.88E-2	2.94E-2	1.85E+0	3.45E+0	7.08E-3	0.00E+0	6.66E-3	-7.59E-1
Ecotoxicity, freshwater	*CTUe*	4,75E+02	2.76E+1	3.96E+0	2.74E+0	4.09E+1	3.76E+2	4.76E-1	0.00E+0	2.31E+1	-6.88E+0
Human toxicity, cancer	*CTUh*	2,09E-08	1.12E-9	1.59E-10	8.59E-11	1.77E-9	1.66E-8	1.92E-11	0.00E+0	1.16E-9	-4.98E-10
Human toxicity, non-cancer	*CTUh*	4,42E-08	4.32E-9	4.03E-10	4.26E-10	4.09E-9	3.48E-8	4.85E-11	0.00E+0	1.48E-10	-7.67E-10
Land use	*Pt*	4,69E+02	3.62E+1	9.44E+0	3.25E+0	8.98E+1	3.29E+2	1.14E+0	0.00E+0	5.51E-1	-1.30E+1

4.3. Life Cycle Assessment – Resources, wastes categories and outgoing flows

4.3.1. Resources, wastes categories and outgoing flows for 1 year

4.3.1.1. Resources, waste categories and outgoing flows in case of LANDFILL at end of use

RESOURCES, WASTES CATEGORIES AND OUTGOING FLOWS - LANDFILL - 1 YEAR - per m²

Impacts CML v4.3	Units	Total	Production	Construction		Use	End-of-life			D Benefits & load beyond system boundaries
			A1 – A3 Total Production	A4 Transport	A5 Installation	B2 Mainten. (1 year)	C2 Transport	C3 Waste processing	C4 Disposal	
Renewable primary energy excl. RM	*kg CO2 eq*	7,28E+00	5.12E+0	1.94E-1	1.01E+0	8.95E-1	2.33E-2	0.00E+0	4.01E-2	0.00E+0
Renewable primary energy used as RM	*kg CO2 eq*	1,37E+00	3.37E+0	0.00E+0	-2.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	*kg CO2 eq*	8,65E+00	8.48E+0	1.94E-1	-9.88E-1	8.95E-1	2.33E-2	0.00E+0	4.01E-2	0.00E+0
Non-renewable primary energy excl. RM	*kg CO2 eq*	1,87E+02	1.62E+2	1.35E+1	5.98E+0	2.91E+0	1.63E+0	0.00E+0	9.17E-1	0.00E+0
Non-renewable primary energy used as RM	*kg CFC11 eq*	2,97E+01	2.54E+1	0.00E+0	4.26E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total Non-renewable primary energy	*mol H+ eq*	2,16E+02	1.87E+2	1.35E+1	1.02E+1	2.91E+0	1.63E+0	0.00E+0	9.17E-1	0.00E+0
Use of secondary material	*kg P eq*	8,24E-02	8.00E-2	0.00E+0	2.40E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	*kg PO4 eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of Non-renewable secondary fuels	*kg N eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Recovered energy	*mol N eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Net use of fresh water	*kg NMVOC eq*	1,73E-01	1.55E-1	1.53E-3	1.14E-2	3.76E-3	1.84E-4	0.00E+0	1.16E-3	0.00E+0
Hazardous waste disposed	*kg Sb eq*	1,88E-01	1.31E-1	9.92E-3	4.03E-2	4.96E-3	1.19E-3	0.00E+0	1.06E-3	0.00E+0
Non-hazardous waste disposed	*MJ*	7,54E+00	1.44E+0	7.87E-1	1.04E+0	6.33E-2	9.48E-2	0.00E+0	4.11E+0	0.00E+0
Radioactive waste disposed (High)	*m3 depriv.*	2,06E-04	1.93E-4	1.01E-6	7.53E-6	4.12E-6	1.21E-7	0.00E+0	1.06E-7	0.00E+0
Radioactive waste disposed (Inter-Low)	*disease inc.*	6,98E-04	5.41E-4	9.05E-5	3.34E-5	1.67E-5	1.09E-5	0.00E+0	5.82E-6	0.00E+0
Components for re-use	*kBq U-235 eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	*CTUe*	1,68E-01	6.55E-2	0.00E+0	1.02E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	*CTUh*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported energy	*CTUh*	2,19E-01	3.77E-2	0.00E+0	1.81E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

4.3.1.2. Resources, waste categories and outgoing flows in case of INCINERATION at end of use

RESOURCES, WASTES CATEGORIES AND OUTGOING FLOWS – INCINERATION - 1 YEAR - per m²

Impacts CML v4.3	Units	Total	Production	Construction		Use	End-of-life			D Benefits & load beyond system boundaries
			A1 – A3 Total Production	A4 Transport	A5 Installation	B2 Mainten. (1 year)	C2 Transport	C3 Waste processing	C4 Disposal	
Renewable primary energy excl. RM	*kg CO2 eq*	7,41E+00	5.12E+0	1.94E-1	1.01E+0	8.95E-1	2.33E-2	0.00E+0	1.72E-1	-1.40E+1
Renewable primary energy used as RM	*kg CO2 eq*	1,37E+00	3.37E+0	0.00E+0	-2.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	*kg CO2 eq*	8,78E+00	8.48E+0	1.94E-1	-9.88E-1	8.95E-1	2.33E-2	0.00E+0	1.72E-1	-1.40E+1
Non-renewable primary energy excl. RM	*kg CO2 eq*	2,72E+02	1.62E+2	1.35E+1	5.98E+0	2.91E+0	1.63E+0	0.00E+0	8.56E+1	-1.01E+2
Non-renewable primary energy used as RM	*kg CFC11 eq*	-5,41E+01	2.54E+1	0.00E+0	4.26E+0	0.00E+0	0.00E+0	0.00E+0	-8.38E+1	0.00E+0
Total Non-renewable primary energy	*mol H+ eq*	2,17E+02	1.87E+2	1.35E+1	1.02E+1	2.91E+0	1.63E+0	0.00E+0	1.85E+0	-1.01E+2
Use of secondary material	*kg P eq*	8,24E-02	8.00E-2	0.00E+0	2.40E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	*kg PO4 eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of Non-renewable secondary fuels	*kg N eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Recovered energy	*mol N eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Net use of fresh water	*kg NMVOC eq*	1,76E-01	1.55E-1	1.53E-3	1.14E-2	3.76E-3	1.84E-4	0.00E+0	4.70E-3	-6.69E-2
Hazardous waste disposed	*kg Sb eq*	3,25E-01	1.31E-1	9.92E-3	4.03E-2	4.96E-3	1.19E-3	0.00E+0	1.38E-1	-8.13E-2
Non-hazardous waste disposed	*MJ*	3,53E+00	1.44E+0	7.87E-1	1.04E+0	6.33E-2	9.48E-2	0.00E+0	1.01E-1	-1.05E+0
Radioactive waste disposed (High)	*m3 depriv.*	2,07E-04	1.93E-4	1.01E-6	7.53E-6	4.12E-6	1.21E-7	0.00E+0	9.00E-7	-1.22E-4
Radioactive waste disposed (Inter-Low)	*disease inc.*	6,97E-04	5.41E-4	9.05E-5	3.34E-5	1.67E-5	1.09E-5	0.00E+0	5.36E-6	-5.44E-4
Components for re-use	*kBq U-235 eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	*CTUe*	1,68E-01	6.55E-2	0.00E+0	1.02E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	*CTUh*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported energy	*CTUh*	2,90E+01	3.77E-2	0.00E+0	1.81E-1	0.00E+0	0.00E+0	0.00E+0	2.88E+1	0.00E+0

4.3.2. Resources, waste categories and outgoing flows for 75 years

4.3.2.1. Resources, waste categories and outgoing flows in case of LANDFILL at end of use

RESOURCES, WASTES CATEGORIES AND OUTGOING FLOWS - LANDFILL - 75 YEARS - per m²

Impacts CML v4.3	Units	Total	Production	Construction		Use		End-of-life			D Benefits & load beyond system boundaries
			A1 – A3 Total Production	A4 Transport	A5 Installation	B2 Mainten. (75 years)	B4 Replace (75 years)	C2 Transport	C3 Waste processing	C4 Disposal	
Renewable primary energy excl. RM	*kg CO2 eq*	1,15E+02	5.12E+0	1.94E-1	1.01E+0	6.71E+1	4.15E+1	2.33E-2	0.00E+0	4.01E-2	0.00E+0
Renewable primary energy used as RM	*kg CO2 eq*	1,03E+01	3.37E+0	0.00E+0	-2.00E+0	0.00E+0	8.91E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	*kg CO2 eq*	1,25E+02	8.48E+0	1.94E-1	-9.88E-1	6.71E+1	5.04E+1	2.33E-2	0.00E+0	4.01E-2	0.00E+0
Non-renewable primary energy excl. RM	*kg CO2 eq*	1,59E+03	1.62E+2	1.35E+1	5.98E+0	2.19E+2	1.19E+3	1.63E+0	0.00E+0	9.17E-1	0.00E+0
Non-renewable primary energy used as RM	*kg CFC11 eq*	2,23E+02	2.54E+1	0.00E+0	4.26E+0	0.00E+0	1.93E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total Non-renewable primary energy	*mol H+ eq*	1,82E+03	1.87E+2	1.35E+1	1.02E+1	2.19E+2	1.39E+3	1.63E+0	0.00E+0	9.17E-1	0.00E+0
Use of secondary material	*kg P eq*	6,18E-01	8.00E-2	0.00E+0	2.40E-3	0.00E+0	5.36E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	*kg PO4 eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of Non-renewable secondary fuels	*kg N eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Recovered energy	*mol N eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Net use of fresh water	*kg NMVOC eq*	1,55E+00	1.55E-1	1.53E-3	1.14E-2	2.82E-1	1.10E+0	1.84E-4	0.00E+0	1.16E-3	0.00E+0
Hazardous waste disposed	*kg Sb eq*	1,75E+00	1.31E-1	9.92E-3	4.03E-2	3.72E-1	1.19E+0	1.19E-3	0.00E+0	1.06E-3	0.00E+0
Non-hazardous waste disposed	*MJ*	6,08E+01	1.44E+0	7.87E-1	1.04E+0	4.75E+0	4.86E+1	9.48E-2	0.00E+0	4.11E+0	0.00E+0
Radioactive waste disposed (High)	*m3 depriv.*	1,82E-03	1.93E-4	1.01E-6	7.53E-6	3.09E-4	1.31E-3	1.21E-7	0.00E+0	1.06E-7	0.00E+0
Radioactive waste disposed (Inter-Low)	*disease inc.*	6,36E-03	5.41E-4	9.05E-5	3.34E-5	1.25E-3	4.43E-3	1.09E-5	0.00E+0	5.82E-6	0.00E+0
Components for re-use	*kBq U-235 eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	*CTUe*	1,26E+00	6.55E-2	0.00E+0	1.02E-1	0.00E+0	1.09E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	*CTUh*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported energy	*CTUh*	1,64E+00	3.77E-2	0.00E+0	1.81E-1	0.00E+0	1.42E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

4.3.2.2. Resources, waste categories and outgoing flows in case of INCINERATION at end of use

RESOURCES, WASTES CATEGORIES AND OUTGOING FLOWS - INCINERATION - 75 YEARS - per m²

Impacts CML v4.3	Units	Total	Production	Construction		Use		End-of-life			D Benefits & load beyond system boundaries
			A1 – A3 Total Production	A4 Transport	A5 Installation	B2 Mainten. (75 years)	B4 Replace (75 years)	C2 Transport	C3 Waste processing	C4 Disposal	
Renewable primary energy excl. RM	*kg CO2 eq*	1,16E+02	5.12E+0	1.94E-1	1.01E+0	6.71E+1	4.23E+1	2.33E-2	0.00E+0	1.72E-1	-1.40E+1
Renewable primary energy used as RM	*kg CO2 eq*	1,03E+01	3.37E+0	0.00E+0	-2.00E+0	0.00E+0	8.91E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	*kg CO2 eq*	1,26E+02	8.48E+0	1.94E-1	-9.88E-1	6.71E+1	5.12E+1	2.33E-2	0.00E+0	1.72E-1	-1.40E+1
Non-renewable primary energy excl. RM	*kg CO2 eq*	2,23E+03	1.62E+2	1.35E+1	5.98E+0	2.19E+2	1.74E+3	1.63E+0	0.00E+0	8.56E+1	-1.01E+2
Non-renewable primary energy used as RM	*kg CFC11 eq*	-4,05E+02	2.54E+1	0.00E+0	4.26E+0	0.00E+0	-3.51E+2	0.00E+0	0.00E+0	-8.38E+1	0.00E+0
Total Non-renewable primary energy	*mol H+ eq*	1,82E+03	1.87E+2	1.35E+1	1.02E+1	2.19E+2	1.39E+3	1.63E+0	0.00E+0	1.85E+0	-1.01E+2
Use of secondary material	*kg P eq*	6,18E-01	8.00E-2	0.00E+0	2.40E-3	0.00E+0	5.36E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	*kg PO4 eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of Non-renewable secondary fuels	*kg N eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Recovered energy	*mol N eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Net use of fresh water	*kg NMVOC eq*	1,57E+00	1.55E-1	1.53E-3	1.14E-2	2.82E-1	1.12E+0	1.84E-4	0.00E+0	4.70E-3	-6.69E-2
Hazardous waste disposed	*kg Sb eq*	2,77E+00	1.31E-1	9.92E-3	4.03E-2	3.72E-1	2.08E+0	1.19E-3	0.00E+0	1.38E-1	-8.13E-2
Non-hazardous waste disposed	*MJ*	3,08E+01	1.44E+0	7.87E-1	1.04E+0	4.75E+0	2.26E+1	9.48E-2	0.00E+0	1.01E-1	-1.05E+0
Radioactive waste disposed (High)	*m3 depriv.*	1,83E-03	1.93E-4	1.01E-6	7.53E-6	3.09E-4	1.32E-3	1.21E-7	0.00E+0	9.00E-7	-1.22E-4
Radioactive waste disposed (Inter-Low)	*disease inc.*	6,35E-03	5.41E-4	9.05E-5	3.34E-5	1.25E-3	4.42E-3	1.09E-5	0.00E+0	5.36E-6	-5.44E-4
Components for re-use	*kBq U-235 eq*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	*CTUe*	1,26E+00	6.55E-2	0.00E+0	1.02E-1	0.00E+0	1.09E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	*CTUh*	0,00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported energy	*CTUh*	2,18E+02	3.77E-2	0.00E+0	1.81E-1	0.00E+0	1.89E+2	0.00E+0	0.00E+0	2.88E+1	0.00E+0

5. Life Cycle Assessment – Carbon emissions and removals

Carbon Emissions and Removals over the ESL of 75 years

PARAMETER	A1	A2	A3	A4	A5	B1	B2	B4	C2	C4	TOTAL LIFE CYCLE (A1-C4)
BCRP [kg CO2]	0	-	-	-	-	-	-	0	-	-	0
BCEP [kg CO2]	-	-	-	-	-	-	-	0	-	0	0
BCRK [kg CO2]	-	-	0.0991	-	-	-	-	0.1982	-	-	0.2973
BCEK [kg CO2]	-	-	-	-	0.0991	-	-	0.1982	-	-	0.2973
BCEW [kg CO2]	-	-	-	-	-	-	-	-	-	-	-
CCE [kg CO2]	-	-	-	-	-	-	-	-	-	-	-
CCR [kg CO2]	-	-	-	-	-	-	-	-	-	-	-
CWNR [kg CO2]	-	-	-	-	-	-	-	-	-	-	-

BCRP: Biogenic Carbon Removal from Product / BCEP: Biogenic Carbon Emission from Product / BCRK: Biogenic Carbon Removal from Packaging / BCEK: Biogenic Carbon Emission from Packaging / BCEW: Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes / CCE: Calcination Carbon Emissions / CCR: Carbonation Carbon Removals / CWNR: Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes

6. LCA Interpretation

As the product must be replaced 6.5 times during its life cycle, the replacement stage is the most important because it covers all the stages of the life cycle twice.
The production of raw materials has the greatest impact on results.

7. Additional Environmental Information

7.1. Environment and Health During Manufacturing

The factory conforms to:

- ISO 9001 Quality Management System,
- ISO 14001 Environmental Management System.

7.2. Environment and Health During Installation

The manufacturer's guidelines should be adhered to during the installation of this product.

7.3. Environment and Health During the use stage

The product is GUT-certified:

- free of toxic substances (benzene, vinyl acetate, formaldehyde, CFCs, heavy metals, pesticides)
- very low emissions and are highly safe to use (Total VOCs< 300 µ/m3, Aromatics< 150 µ/m3)

Compliance with these criteria is checked annually.
The product is not exposed to soil and water during the use stage.

8. Further Information

Additional information can be found on the Gerflor website: **www.gerflor.com**.

9. References

ISO 14025
ISO 14025:2006: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804
EN 15804:2012-04+A2 2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

UL Environment
UL Environment General Program Instructions March 2022 Version 2.7

Ecoinvent V3.8
Ecoinvent Life Cycle Inventory Database Version 3.8
http://www.ecoinvent.org

UL Standard 10010. PCR Part A
PCR -Part A: Life Cycle Assessment Calculation Rules and Report Requirements. Version 4.0. UL Environment.
https://industries.ul.com/environment

UL 10010-7. PCR Part B
PCR - Part B: Flooring EPD Requirements. Second Edition. Dated September 28. 2018. UL Environment.
https://www.ul.com/