

SPM PROTECTION AND DECORATION PANELS PVC-FREE CLADDING, PROTECTION AND DECORATION PANELS FOR INSIDE WALLS



Because we think actions speak louder than words, SPM Gerflor Group has always been willing to act and to develop wall covering solutions that meet the most challenging requirements in term of design, durability, easy installation, ...

When it comes to sustainability, we also set ourselves to the highest standards. We believe in developing great products that not only perform but also contribute to achieving high indoor air quality and top contribution to all green building certification schemes.

Protection and decoration PVC-free panels collection:

- The products emission rate of volatile organic compounds are $< 15 \mu\text{g}/\text{m}^3$ (TVOC after 28 days – ISO 16000 -6).
- They have the AgBB certification.

ENVIRONMENTAL PRODUCT DECLARATION

According to ISO 14025
and EN 15804



PROTECTION AND DECORATION PVC-FREE PANELS

Manufacturer Name and Address	SPM International S.A.S - Gerflor Groupe, 16 rue Isabelle Eberhardt, 31200 Toulouse, France	
Declared Product & Functional Unit or Declared Unit	Decochoc Staro, Decoprint The functional unit used for this study is 1m ² of PVC-free wall cladding, protection and decoration panels, for a 25 years service life, and for a building estimated life of 75 years.	
Reference PCR and Version Number	PCR -Part A: Life Cycle Assessment Calculation Rules and Report Requirements. Version 4.0, UL Environment. PCR - Part B: Wall and Door Protection EPD Requirements, First Edition, Dated May 22, 2019. UL Environment,	
Description of product application/use	The products are classified in accordance with EN 17104 to protect walls from possible impacts, and facilitate cleaning.	
Product RSL Description (if Appl.)	The stated RSL is 25 years. The manufacturer has provided this service life on the basis of his experience of wall protection panels. The ESL is 75 years, so two replacements are required.	
Markets of Applicability	European Commercial market	
Date of Issue	October 23, 2025	
EPD Scope	Cradle to Grave	
Year(s) of reported primary data	2023	
LCA Software & Version Number	Simapro 9	
LCI Database(s) & Version Number	Ecoinvent 3.11 – allocation cut-off by classification	
LCIA Methodology & Version Number	Method EN 15804 A2 EPD Ev-DEC 1.11 (EVEA)	
This declaration was independently verified in accordance with ISO 14025: 2006.		Philippe MAGRO, Technical Product Manager
<input checked="" type="checkbox"/> INTERNAL <input type="checkbox"/> EXTERNAL		
<p>LIMITATIONS</p> <p><u>Exclusions:</u> 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.</p> <p><u>Accuracy of Results:</u> EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.</p> <p><u>Comparability:</u> EPDs from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. 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.</p>		

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1. Product Definition and Information

1.1. Company Description and production site information

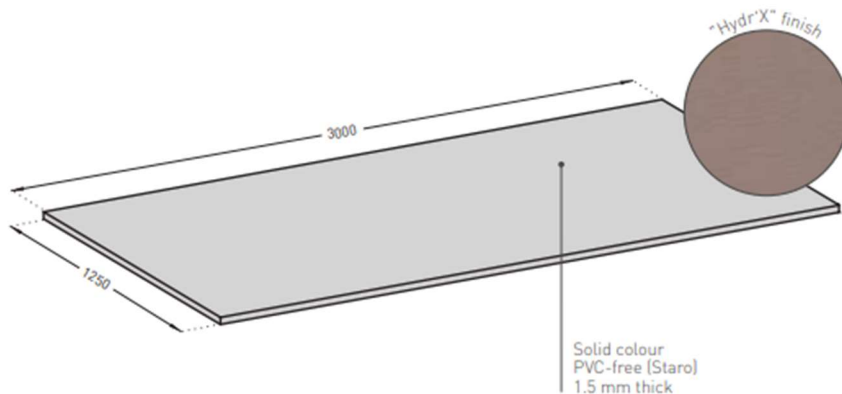
The products are commercialized by SPM Gerflor Group and made in Toulouse manufacturing plant in France.

1.2. Product Description

This environmental product declaration covers SPM collection of PVC-Free cladding, protection and decoration panels for inside walls. The products studied are stiff PVC-Free panels, without heavy metals. Their main function is the protection of inside walls against mechanical and chemical assaults. They are mainly used in the health sector (hospitals, nursing homes, ...). In addition to their aesthetic feature, they have the ability of protecting walls against impacts and allow easy cleaning. Several references with different shades are available in order to facilitate the support position for the visually impaired, by reinforcing the differentiation of shade between these products and the handrails.

The standard dimensions are:

- 1,5mm thick
- 3m long
- 1,25m wide



1.3. Technical Specifications

The products meet requirements of the standard EN 17104 – Thermoplastics rigid protective wallcovering panels for internal use in buildings - Performance characteristics.

Specification Fire Testing:

- Ignitability of products test according to NF EN 11925-2 (2013)
- Reaction to fire test according to NF EN 12823 (2015)

All products have a fire resistance of Bs1d0.

The product contains no substance listed in the "Candidate List of Substances of Very High Concern for Authorization" with a content exceeding the limits for registration with the European Chemical Agency.

There isn't SDS for this product.

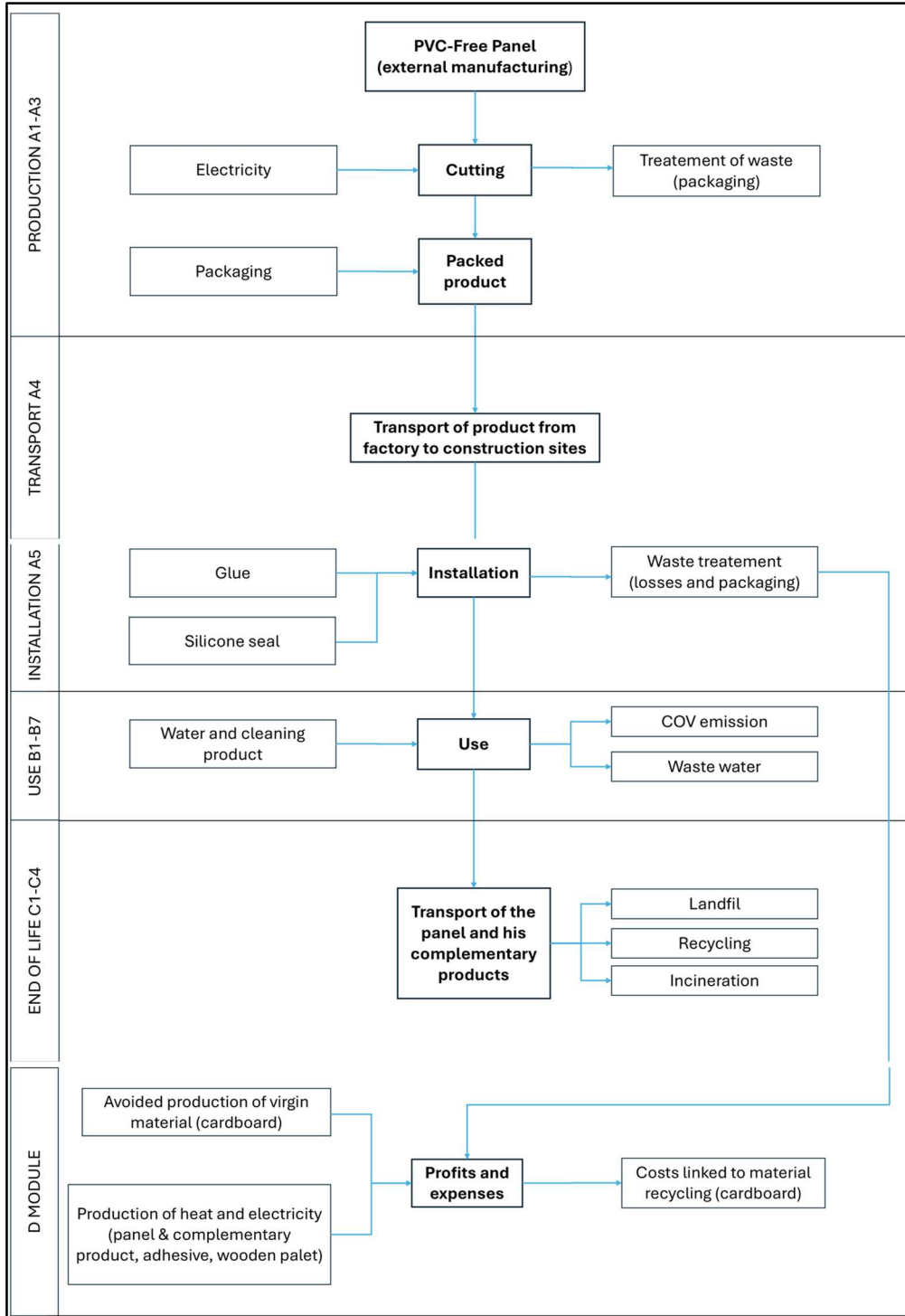
2. Life Cycle Assessment General Information

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.

Flow Diagram:



2.2. Declared Unit

The functional unit is one square meter of installed product. The reference service life considered is 25 years.

	Value	Unit
Functional Unit	1	m ²
Mass	1.9	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 waste’s 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 during product 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. 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 v3.11.

2.6. 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 (2023). Generic data is taken from the ecoinvent 3.11 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.

2.7. 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: PVC-free panel

Packaging: the product packaging depends on the format of the panel (whether the panels are delivered in full size or custom cut). For full-size panels: they are stacked on a wooden pallet, which is protected by cardboard guards’ protectors and PE film. For custom cut panels: they are placed in a cardboard box, which is set on a wooden pallet; the whole package is surrounded with a PET strap.

The packaging waste scenario for European market is:

- 76.4% recycling, 16.4% landfilling and 7.2% incineration for cardboard.
- 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)

SPM wall protection panel collections are made in the SPM manufacturing plant in Toulouse, in France. The panels arrive at the order-picking site in their standard dimension. Some of them are cut to meet custom dimensions. Complementary installation products (glue, joint) are delivered to the site with the panels. Their impact is therefore allocated to A3 phase.

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

The product is made in France and sent to the European market. The distance was calculated by taking the weighted average of the distances per country, based on sales volumes. 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	1094	km
Capacity utilization (including empty runs, mass based)	36	%
Gross density of products transported	1267	kg/m3
Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products)	<1	-

3.4. Installation (A5)

There are two possible ways to install the product, as described in the following table:

Scenario’s name	% of installed products	Complementary laying products
Edge-to-edge laying	70%	Glue (2,85E-01 kg/m ²)
Laying with joints	30%	Glue and Silicon joint (5.67E-03 kg/m ²)

Therefore, the following fictive average scenario has been used for the modelling:

Complementary product / Energy consumption	Unit	Quantity
Binder	kg/m ²	2.85E-01
Silicon joint	kg/m ²	1.70E-03

The drop rate during installation depends on the format of the panel (whether the panels are delivered in full size or custom cut). The chosen scenario corresponds to a mix of these two formats, based on the sales distribution. During the installation approximately 4,5% of the material is lost as off-cuts; this waste is mainly sent to landfill.

Installation into the building (A5) - Scenario	VALUE	UNIT
Ancillary materials	0.2850	kg/m ²
- Glue	0.0017	
- Silicone seal		
Product loss per functional unit	0.0855	kg
Waste materials at the construction site before waste processing, generated by product installation	0,01612	kg
Biogenic carbon contained in packaging	0.0075	kg CO2

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

Service Life	VALUE	UNIT
Product Reference Service Life (RSL)	25	years
Building estimated Service Life (ESL)	75	years

3.6. Use – Cleaning (B2)

As cleaning requirements depend on the application (operating theatre, bedrooms, emergency room, etc.), an average scenario was determined based on the manufacturer's recommendations and those of regional health agencies.

The following scenario has been used for the study: 2 wet cleaning by hand with water and detergent per year.

Maintenance (B2) - Scenario	VALUE	UNIT
Maintenance cycle	50	Number/RSL
Maintenance cycle	150	Number/ESL
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	0.1	L/year
Ancillary materials specified by type (e.g. cleaning agent)	0.00025	kg/year

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

Repair (B3): no data.

Replacement (B4): product life expectancy being 25 years and building's life expectancy being 75 years, 2 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	25	Years
Number of replacements over building estimated service life (75 years)	2	(ESL/RSL)-1
Ancillary materials specified by type and amount:		
- Acrylic glue	0.57	Kg/m ²
- Silicone seal	0.0034	

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)

3 end-of-life scenarios are proposed in this EPD to address the different cases: recycling, landfill, or incineration.

END-OF-LIFE SCENARIO	VALUE	UNIT
Distance to recycling center	161	km
Truck	16-32 metric ton Euro6	-
Recovery		
- Product:	1.9	Kg/m ²
- Glue:	0.285	
- Silicone seal	0.0017	

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 recycling scenario	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)	-	-	1.62E+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 2 replacements based on a product reference service life of 25 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.

3 end-of-life scenarios are proposed in this EPD to address the different cases: recycling (1), landfill (2), or incineration (3). 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./m ²	Total GWP, with recycling scenario	Total GWP, with landfill scenario	Total GWP, with incineration scenario
Use 1 year	9.43	9.57	14.6
Use 25 years	9.44	9.58	14.6
Use 75 years	28.3	28.8	43.8

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 RECYCLING at end of use

POTENTIAL ENVIRONMENTAL IMPACT - RECYCLING - 1 YEAR - per m ²										
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	9.43E+0	7.74E+0	3.92E-1	1.22E+0	5.64E-4	6.58E-2	3.81E-2	0.00E+0	-1.66E+0
Climate change - GWP fossil	kg CO2 eq	9.33E+0	7.67E+0	3.91E-1	1.19E+0	4.51E-4	6.57E-2	3.81E-2	0.00E+0	-1.80E+0
Climate change - GWP biogenic	kg CO2 eq	9.71E-2	6.75E-2	8.36E-5	2.95E-2	7.63E-6	1.40E-5	7.14E-6	0.00E+0	1.41E-1
Climate change -GWP land use and change	kg CO2 eq	7.05E-3	5.88E-3	1.33E-4	8.61E-4	1.06E-4	2.23E-5	1.63E-5	0.00E+0	6.61E-4
Ozone depletion	kg CFC11 eq	3.03E-5	2.89E-5	1.95E-10	1.43E-6	1.31E-12	3.27E-11	2.67E-11	0.00E+0	-4.26E-7
Acidification	mol H+ eq	5.24E-2	3.94E-2	8.40E-4	1.19E-2	2.58E-6	1.41E-4	2.21E-4	0.00E+0	-5.58E-3
Eutrophication, freshwater (P)	kg P eq	3.15E-4	2.64E-4	2.91E-6	4.57E-5	1.36E-7	4.89E-7	8.25E-7	0.00E+0	-3.43E-5
Eutrophication, freshwater (PO4)	kg PO4 eq	2.66E-1	2.55E-1	8.94E-6	1.16E-2	4.18E-7	1.50E-6	2.53E-6	0.00E+0	-1.05E-4
Eutrophication, marine	kg N eq	9.02E-3	7.74E-3	1.97E-4	1.03E-3	3.40E-6	3.32E-5	4.55E-5	0.00E+0	-5.07E-4
Eutrophication, terrestrial	mol N eq	9.80E-2	8.46E-2	2.18E-3	1.07E-2	6.76E-6	3.67E-4	5.00E-4	0.00E+0	-6.35E-3
Photochemical ozone formation	kg NMVOC eq	3.49E-2	2.84E-2	1.33E-3	4.90E-3	1.70E-6	2.24E-4	1.32E-4	0.00E+0	-1.00E-2
Resource use, minerals, and metals	kg Sb eq	9.07E-5	7.71E-5	1.38E-6	1.20E-5	5.54E-9	2.31E-7	3.44E-8	0.00E+0	-2.72E-5
Resource use, fossils	MJ	1.69E+2	1.57E+2	4.43E-1	1.11E+1	2.33E-3	7.45E-2	3.61E-1	0.00E+0	-4.62E+0
Water use	m3 depriv.	3.88E+0	3.08E+0	2.22E-2	7.64E-1	2.28E-4	3.73E-3	4.98E-3	0.00E+0	-1.26E+0
Particulate matter	disease inc.	4.30E-7	3.27E-7	2.92E-8	6.78E-8	2.90E-11	4.91E-9	3.14E-9	0.00E+0	-8.09E-10
Ionising radiation	kBq U-235 eq	2.64E-1	2.19E-1	2.43E-3	3.89E-2	2.06E-5	4.08E-4	5.74E-4	0.00E+0	-6.18E-2
Ecotoxicity, freshwater	CTUe	1.18E+2	1.03E+2	7.46E-1	1.33E+1	9.33E-3	1.25E-1	1.10E-1	0.00E+0	-1.79E+1
Human toxicity, cancer	CTUh	4.86E-9	4.20E-9	6.53E-11	5.82E-10	3.45E-13	1.10E-11	4.09E-12	0.00E+0	-1.33E-9
Human toxicity, non-cancer	CTUh	1.16E-7	8.15E-8	3.49E-9	3.05E-8	1.60E-11	5.86E-10	2.28E-10	0.00E+0	-1.04E-8
Land use	Pt	3.12E+1	2.20E+1	3.34E+0	5.24E+0	9.58E-3	5.61E-1	8.18E-2	0.00E+0	7.08E-1

4.2.1.2. 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	9.57E+0	7.74E+0	3.92E-1	1.22E+0	5.64E-4	6.58E-2	0.00E+0	1.54E-1	0.00E+0
Climate change - GWP fossil	kg CO2 eq	9.47E+0	7.67E+0	3.91E-1	1.19E+0	4.51E-4	6.57E-2	0.00E+0	1.53E-1	0.00E+0
Climate change - GWP biogenic	kg CO2 eq	9.80E-2	6.75E-2	8.36E-5	2.95E-2	7.63E-6	1.40E-5	0.00E+0	9.37E-4	0.00E+0
Climate change -GWP land use and change	kg CO2 eq	7.01E-3	5.88E-3	1.33E-4	8.61E-4	1.06E-4	2.23E-5	0.00E+0	5.24E-6	0.00E+0
Ozone depletion	kg CFC11 eq	3.03E-5	2.89E-5	1.95E-10	1.43E-6	1.31E-12	3.27E-11	0.00E+0	1.76E-11	0.00E+0
Acidification	mol H+ eq	5.25E-2	3.94E-2	8.40E-4	1.19E-2	2.58E-6	1.41E-4	0.00E+0	1.50E-4	0.00E+0
Eutrophication, freshwater (P)	kg P eq	3.13E-4	2.64E-4	2.91E-6	4.57E-5	1.36E-7	4.89E-7	0.00E+0	2.01E-7	0.00E+0
Eutrophication, freshwater (PO4)	kg PO4 eq	2.66E-1	2.55E-1	8.94E-6	1.16E-2	4.18E-7	1.50E-6	0.00E+0	6.18E-7	0.00E+0
Eutrophication, marine	kg N eq	9.11E-3	7.74E-3	1.97E-4	1.03E-3	3.40E-6	3.32E-5	0.00E+0	1.08E-4	0.00E+0
Eutrophication, terrestrial	mol N eq	9.86E-2	8.46E-2	2.18E-3	1.07E-2	6.76E-6	3.67E-4	0.00E+0	6.67E-4	0.00E+0
Photochemical ozone formation	kg NMVOC eq	3.51E-2	2.84E-2	1.33E-3	4.90E-3	1.70E-6	2.24E-4	0.00E+0	2.74E-4	0.00E+0
Resource use, minerals, and metals	kg Sb eq	9.08E-5	7.71E-5	1.38E-6	1.20E-5	5.54E-9	2.31E-7	0.00E+0	4.80E-8	0.00E+0
Resource use, fossils	MJ	1.69E+2	1.57E+2	4.43E-1	1.11E+1	2.33E-3	7.45E-2	0.00E+0	3.46E-2	0.00E+0
Water use	m3 depriv.	3.86E+0	3.08E+0	2.22E-2	7.64E-1	2.28E-4	3.73E-3	0.00E+0	-1.16E-2	0.00E+0
Particulate matter	disease inc.	4.33E-7	3.27E-7	2.92E-8	6.78E-8	2.90E-11	4.91E-9	0.00E+0	3.54E-9	0.00E+0
Ionising radiation	kBq U-235 eq	2.61E-1	2.19E-1	2.43E-3	3.89E-2	2.06E-5	4.08E-4	0.00E+0	3.40E-4	0.00E+0
Ecotoxicity, freshwater	CTUe	1.30E+2	1.03E+2	7.46E-1	1.33E+1	9.33E-3	1.25E-1	0.00E+0	1.20E+1	0.00E+0
Human toxicity, cancer	CTUh	4.86E-9	4.20E-9	6.53E-11	5.82E-10	3.45E-13	1.10E-11	0.00E+0	5.96E-12	0.00E+0
Human toxicity, non-cancer	CTUh	1.17E-7	8.15E-8	3.49E-9	3.05E-8	1.60E-11	5.86E-10	0.00E+0	5.43E-10	0.00E+0
Land use	Pt	3.24E+1	2.20E+1	3.34E+0	5.24E+0	9.58E-3	5.61E-1	0.00E+0	1.24E+0	0.00E+0

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

POTENTIAL ENVIRONMENTAL IMPACT – INCINERATION - 1 YEAR - per m ²										
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	1.46E+1	7.74E+0	3.92E-1	1.22E+0	5.64E-4	6.58E-2	0.00E+0	5.18E+0	-2.72E+0
Climate change - GWP fossil	kg CO2 eq	1.45E+1	7.67E+0	3.91E-1	1.19E+0	4.51E-4	6.57E-2	0.00E+0	5.18E+0	-2.71E+0
Climate change - GWP biogenic	kg CO2 eq	9.71E-2	6.75E-2	8.36E-5	2.95E-2	7.63E-6	1.40E-5	0.00E+0	6.24E-5	-4.09E-3
Climate change -GWP land use and change	kg CO2 eq	7.02E-3	5.88E-3	1.33E-4	8.61E-4	1.06E-4	2.23E-5	0.00E+0	2.01E-5	-5.26E-3
Ozone depletion	kg CFC11 eq	3.03E-5	2.89E-5	1.95E-10	1.43E-6	1.31E-12	3.27E-11	0.00E+0	3.14E-10	-1.75E-9
Acidification	mol H+ eq	5.34E-2	3.94E-2	8.40E-4	1.19E-2	2.58E-6	1.41E-4	0.00E+0	1.11E-3	-1.28E-2
Eutrophication, freshwater (P)	kg P eq	3.14E-4	2.64E-4	2.91E-6	4.57E-5	1.36E-7	4.89E-7	0.00E+0	1.13E-6	-1.73E-4
Eutrophication, freshwater (PO4)	kg PO4 eq	2.66E-1	2.55E-1	8.94E-6	1.16E-2	4.18E-7	1.50E-6	0.00E+0	3.48E-6	-5.30E-4
Eutrophication, marine	kg N eq	9.55E-3	7.74E-3	1.97E-4	1.03E-3	3.40E-6	3.32E-5	0.00E+0	5.42E-4	-1.58E-3
Eutrophication, terrestrial	mol N eq	1.03E-1	8.46E-2	2.18E-3	1.07E-2	6.76E-6	3.67E-4	0.00E+0	5.56E-3	-1.77E-2
Photochemical ozone formation	kg NMVOC eq	3.62E-2	2.84E-2	1.33E-3	4.90E-3	1.70E-6	2.24E-4	0.00E+0	1.38E-3	-6.68E-3
Resource use, minerals, and metals	kg Sb eq	9.10E-5	7.71E-5	1.38E-6	1.20E-5	5.54E-9	2.31E-7	0.00E+0	3.25E-7	-4.19E-6
Resource use, fossils	MJ	1.69E+2	1.57E+2	4.43E-1	1.11E+1	2.33E-3	7.45E-2	0.00E+0	1.42E-1	-3.03E+1
Water use	m3 depriv.	3.90E+0	3.08E+0	2.22E-2	7.64E-1	2.28E-4	3.73E-3	0.00E+0	2.28E-2	-4.01E-1
Particulate matter	disease inc.	4.34E-7	3.27E-7	2.92E-8	6.78E-8	2.90E-11	4.91E-9	0.00E+0	4.84E-9	-6.03E-8
Ionising radiation	kBq U-235 eq	2.62E-1	2.19E-1	2.43E-3	3.89E-2	2.06E-5	4.08E-4	0.00E+0	1.04E-3	-3.67E-1
Ecotoxicity, freshwater	CTUe	1.29E+2	1.03E+2	7.46E-1	1.33E+1	9.33E-3	1.25E-1	0.00E+0	1.10E+1	-4.32E+0
Human toxicity, cancer	CTUh	5.15E-9	4.20E-9	6.53E-11	5.82E-10	3.45E-13	1.10E-11	0.00E+0	2.90E-10	-4.52E-10
Human toxicity, non-cancer	CTUh	1.28E-7	8.15E-8	3.49E-9	3.05E-8	1.60E-11	5.86E-10	0.00E+0	1.18E-8	-1.49E-8
Land use	Pt	3.13E+1	2.20E+1	3.34E+0	5.24E+0	9.58E-3	5.61E-1	0.00E+0	1.86E-1	-6.25E+0

4.2.2. Environmental impacts for 75 years

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

POTENTIAL ENVIRONMENTAL IMPACT - RECYCLING - 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	2.83E+1	7.74E+0	3.92E-1	1.22E+0	4.23E-2	1.89E+1	6.58E-2	3.81E-2	0.00E+0	-1.66E+0
Climate change - GWP fossil	kg CO2 eq	2.80E+1	7.67E+0	3.91E-1	1.19E+0	3.38E-2	1.87E+1	6.57E-2	3.81E-2	0.00E+0	-1.80E+0
Climate change - GWP biogenic	kg CO2 eq	2.92E-1	6.75E-2	8.36E-5	2.95E-2	5.72E-4	1.94E-1	1.40E-5	7.14E-6	0.00E+0	1.41E-1
Climate change -GWP land use and change	kg CO2 eq	2.88E-2	5.88E-3	1.33E-4	8.61E-4	7.93E-3	1.39E-2	2.23E-5	1.63E-5	0.00E+0	6.61E-4
Ozone depletion	kg CFC11 eq	9.10E-5	2.89E-5	1.95E-10	1.43E-6	9.82E-11	6.07E-5	3.27E-11	2.67E-11	0.00E+0	-4.26E-7
Acidification	mol H+ eq	1.57E-1	3.94E-2	8.40E-4	1.19E-2	1.93E-4	1.05E-1	1.41E-4	2.21E-4	0.00E+0	-5.58E-3
Eutrophication, freshwater (P)	kg P eq	9.54E-4	2.64E-4	2.91E-6	4.57E-5	1.02E-5	6.29E-4	4.89E-7	8.25E-7	0.00E+0	-3.43E-5
Eutrophication, freshwater (PO4)	kg PO4 eq	7.99E-1	2.55E-1	8.94E-6	1.16E-2	3.13E-5	5.32E-1	1.50E-6	2.53E-6	0.00E+0	-1.05E-4
Eutrophication, marine	kg N eq	2.73E-2	7.74E-3	1.97E-4	1.03E-3	2.55E-4	1.80E-2	3.32E-5	4.55E-5	0.00E+0	-5.07E-4
Eutrophication, terrestrial	mol N eq	2.95E-1	8.46E-2	2.18E-3	1.07E-2	5.07E-4	1.96E-1	3.67E-4	5.00E-4	0.00E+0	-6.35E-3
Photochemical ozone formation	kg NMVOC eq	1.05E-1	2.84E-2	1.33E-3	4.90E-3	1.28E-4	6.98E-2	2.24E-4	1.32E-4	0.00E+0	-1.00E-2
Resource use, minerals, and metals	kg Sb eq	2.73E-4	7.71E-5	1.38E-6	1.20E-5	4.15E-7	1.81E-4	2.31E-7	3.44E-8	0.00E+0	-2.72E-5
Resource use, fossils	MJ	5.07E+2	1.57E+2	4.43E-1	1.11E+1	1.75E-1	3.38E+2	7.45E-2	3.61E-1	0.00E+0	-4.62E+0
Water use	m3 depriv.	1.16E+1	3.08E+0	2.22E-2	7.64E-1	1.71E-2	7.75E+0	3.73E-3	4.98E-3	0.00E+0	-1.26E+0
Particulate matter	disease inc.	1.29E-6	3.27E-7	2.92E-8	6.78E-8	2.17E-9	8.59E-7	4.91E-9	3.14E-9	0.00E+0	-8.09E-10
Ionising radiation	kBq U-235 eq	7.93E-1	2.19E-1	2.43E-3	3.89E-2	1.54E-3	5.28E-1	4.08E-4	5.74E-4	0.00E+0	-6.18E-2
Ecotoxicity, freshwater	CTUe	3.54E+2	1.03E+2	7.46E-1	1.33E+1	7.00E-1	2.35E+2	1.25E-1	1.10E-1	0.00E+0	-1.79E+1
Human toxicity, cancer	CTUh	1.46E-8	4.20E-9	6.53E-11	5.82E-10	2.59E-11	9.72E-9	1.10E-11	4.09E-12	0.00E+0	-1.33E-9
Human toxicity, non-cancer	CTUh	3.50E-7	8.15E-8	3.49E-9	3.05E-8	1.20E-9	2.32E-7	5.86E-10	2.28E-10	0.00E+0	-1.04E-8
Land use	Pt	9.42E+1	2.20E+1	3.34E+0	5.24E+0	7.19E-1	6.23E+1	5.61E-1	8.18E-2	0.00E+0	7.08E-1

4.2.2.2. 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	2.88E+1	7.74E+0	3.92E-1	1.22E+0	4.23E-2	1.91E+1	6.58E-2	0.00E+0	1.54E-1	0.00E+0
Climate change - GWP fossil	kg CO2 eq	2.84E+1	7.67E+0	3.91E-1	1.19E+0	3.38E-2	1.89E+1	6.57E-2	0.00E+0	1.53E-1	0.00E+0
Climate change - GWP biogenic	kg CO2 eq	2.95E-1	6.75E-2	8.36E-5	2.95E-2	5.72E-4	1.96E-1	1.40E-5	0.00E+0	9.37E-4	0.00E+0
Climate change -GWP land use and change	kg CO2 eq	2.86E-2	5.88E-3	1.33E-4	8.61E-4	7.93E-3	1.38E-2	2.23E-5	0.00E+0	5.24E-6	0.00E+0
Ozone depletion	kg CFC11 eq	9.10E-5	2.89E-5	1.95E-10	1.43E-6	9.82E-11	6.07E-5	3.27E-11	0.00E+0	1.76E-11	0.00E+0
Acidification	mol H+ eq	1.58E-1	3.94E-2	8.40E-4	1.19E-2	1.93E-4	1.05E-1	1.41E-4	0.00E+0	1.50E-4	0.00E+0
Eutrophication, freshwater (P)	kg P eq	9.50E-4	2.64E-4	2.91E-6	4.57E-5	1.02E-5	6.26E-4	4.89E-7	0.00E+0	2.01E-7	0.00E+0
Eutrophication, freshwater (PO4)	kg PO4 eq	7.99E-1	2.55E-1	8.94E-6	1.16E-2	3.13E-5	5.32E-1	1.50E-6	0.00E+0	6.18E-7	0.00E+0
Eutrophication, marine	kg N eq	2.76E-2	7.74E-3	1.97E-4	1.03E-3	2.55E-4	1.82E-2	3.32E-5	0.00E+0	1.08E-4	0.00E+0
Eutrophication, terrestrial	mol N eq	2.96E-1	8.46E-2	2.18E-3	1.07E-2	5.07E-4	1.97E-1	3.67E-4	0.00E+0	6.67E-4	0.00E+0
Photochemical ozone formation	kg NMVOC eq	1.06E-1	2.84E-2	1.33E-3	4.90E-3	1.28E-4	7.03E-2	2.24E-4	0.00E+0	2.74E-4	0.00E+0
Resource use, minerals, and metals	kg Sb eq	2.73E-4	7.71E-5	1.38E-6	1.20E-5	4.15E-7	1.82E-4	2.31E-7	0.00E+0	4.80E-8	0.00E+0
Resource use, fossils	MJ	5.06E+2	1.57E+2	4.43E-1	1.11E+1	1.75E-1	3.38E+2	7.45E-2	0.00E+0	3.46E-2	0.00E+0
Water use	m3 depriv.	1.16E+1	3.08E+0	2.22E-2	7.64E-1	1.71E-2	7.72E+0	3.73E-3	0.00E+0	-1.16E-2	0.00E+0
Particulate matter	disease inc.	1.30E-6	3.27E-7	2.92E-8	6.78E-8	2.17E-9	8.66E-7	4.91E-9	0.00E+0	3.54E-9	0.00E+0
Ionising radiation	kBq U-235 eq	7.85E-1	2.19E-1	2.43E-3	3.89E-2	1.54E-3	5.22E-1	4.08E-4	0.00E+0	3.40E-4	0.00E+0
Ecotoxicity, freshwater	CTUe	3.90E+2	1.03E+2	7.46E-1	1.33E+1	7.00E-1	2.59E+2	1.25E-1	0.00E+0	1.20E+1	0.00E+0
Human toxicity, cancer	CTUh	1.46E-8	4.20E-9	6.53E-11	5.82E-10	2.59E-11	9.73E-9	1.10E-11	0.00E+0	5.96E-12	0.00E+0
Human toxicity, non-cancer	CTUh	3.51E-7	8.15E-8	3.49E-9	3.05E-8	1.20E-9	2.33E-7	5.86E-10	0.00E+0	5.43E-10	0.00E+0
Land use	Pt	9.78E+1	2.20E+1	3.34E+0	5.24E+0	7.19E-1	6.47E+1	5.61E-1	0.00E+0	1.24E+0	0.00E+0

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

POTENTIAL ENVIRONMENTAL IMPACT – INCINERATION - 75 YEARS - per m ²											
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 CO ₂ eq	4.38E+1	7.74E+0	3.92E-1	1.22E+0	4.23E-2	2.92E+1	6.58E-2	0.00E+0	5.18E+0	-2.72E+0
Climate change - GWP fossil	kg CO ₂ eq	4.35E+1	7.67E+0	3.91E-1	1.19E+0	3.38E-2	2.90E+1	6.57E-2	0.00E+0	5.18E+0	-2.71E+0
Climate change - GWP biogenic	kg CO ₂ eq	2.92E-1	6.75E-2	8.36E-5	2.95E-2	5.72E-4	1.94E-1	1.40E-5	0.00E+0	6.24E-5	-4.09E-3
Climate change -GWP land use and change	kg CO ₂ eq	2.87E-2	5.88E-3	1.33E-4	8.61E-4	7.93E-3	1.38E-2	2.23E-5	0.00E+0	2.01E-5	-5.26E-3
Ozone depletion	kg CFC11 eq	9.10E-5	2.89E-5	1.95E-10	1.43E-6	9.82E-11	6.07E-5	3.27E-11	0.00E+0	3.14E-10	-1.75E-9
Acidification	mol H+ eq	1.61E-1	3.94E-2	8.40E-4	1.19E-2	1.93E-4	1.07E-1	1.41E-4	0.00E+0	1.11E-3	-1.28E-2
Eutrophication, freshwater (P)	kg P eq	9.53E-4	2.64E-4	2.91E-6	4.57E-5	1.02E-5	6.28E-4	4.89E-7	0.00E+0	1.13E-6	-1.73E-4
Eutrophication, freshwater (PO4)	kg PO ₄ eq	7.99E-1	2.55E-1	8.94E-6	1.16E-2	3.13E-5	5.32E-1	1.50E-6	0.00E+0	3.48E-6	-5.30E-4
Eutrophication, marine	kg N eq	2.89E-2	7.74E-3	1.97E-4	1.03E-3	2.55E-4	1.91E-2	3.32E-5	0.00E+0	5.42E-4	-1.58E-3
Eutrophication, terrestrial	mol N eq	3.11E-1	8.46E-2	2.18E-3	1.07E-2	5.07E-4	2.07E-1	3.67E-4	0.00E+0	5.56E-3	-1.77E-2
Photochemical ozone formation	kg NMVOC eq	1.09E-1	2.84E-2	1.33E-3	4.90E-3	1.28E-4	7.25E-2	2.24E-4	0.00E+0	1.38E-3	-6.68E-3
Resource use, minerals, and metals	kg Sb eq	2.74E-4	7.71E-5	1.38E-6	1.20E-5	4.15E-7	1.82E-4	2.31E-7	0.00E+0	3.25E-7	-4.19E-6
Resource use, fossils	MJ	5.07E+2	1.57E+2	4.43E-1	1.11E+1	1.75E-1	3.38E+2	7.45E-2	0.00E+0	1.42E-1	-3.03E+1
Water use	m ³ depriv.	1.17E+1	3.08E+0	2.22E-2	7.64E-1	1.71E-2	7.79E+0	3.73E-3	0.00E+0	2.28E-2	-4.01E-1
Particulate matter	disease inc.	1.30E-6	3.27E-7	2.92E-8	6.78E-8	2.17E-9	8.68E-7	4.91E-9	0.00E+0	4.84E-9	-6.03E-8
Ionising radiation	kBq U-235 eq	7.87E-1	2.19E-1	2.43E-3	3.89E-2	1.54E-3	5.24E-1	4.08E-4	0.00E+0	1.04E-3	-3.67E-1
Ecotoxicity, freshwater	CTUe	3.87E+2	1.03E+2	7.46E-1	1.33E+1	7.00E-1	2.57E+2	1.25E-1	0.00E+0	1.10E+1	-4.32E+0
Human toxicity, cancer	CTUh	1.55E-8	4.20E-9	6.53E-11	5.82E-10	2.59E-11	1.03E-8	1.10E-11	0.00E+0	2.90E-10	-4.52E-10
Human toxicity, non-cancer	CTUh	3.85E-7	8.15E-8	3.49E-9	3.05E-8	1.20E-9	2.56E-7	5.86E-10	0.00E+0	1.18E-8	-1.49E-8
Land use	Pt	9.46E+1	2.20E+1	3.34E+0	5.24E+0	7.19E-1	6.26E+1	5.61E-1	0.00E+0	1.86E-1	-6.25E+0

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 RECYCLING at end of use

RESOURCES, WASTES CATEGORIES AND OUTGOING FLOWS - RECYCLING - 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	8.00E+0	6.44E+0	9.17E-2	1.37E+0	4.30E-3	1.54E-2	4.53E-2	0.00E+0	-1.11E+0
Renewable primary energy used as RM	kg CO2 eq	3.77E-1	4.87E-1	0.00E+0	-1.11E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	kg CO2 eq	8.38E+0	6.93E+0	9.17E-2	1.26E+0	4.30E-3	1.54E-2	4.53E-2	0.00E+0	-1.11E+0
Non-renewable primary energy excl. RM	kg CO2 eq	1.65E+2	1.63E+2	4.44E-1	6.72E-1	4.04E-4	7.45E-2	3.61E-1	0.00E+0	1.59E+1
Non-renewable primary energy used as RM	kg CFC11 eq	1.63E+1	5.27E+0	0.00E+0	1.10E+1	9.55E-3	0.00E+0	0.00E+0	0.00E+0	-2.05E+1
Total Non-renewable primary energy	mol H+ eq	1.81E+2	1.69E+2	4.44E-1	1.16E+1	9.95E-3	7.45E-2	3.61E-1	0.00E+0	-4.62E+0
Use of secondary material	kg P eq	2.97E-3	2.84E-3	0.00E+0	1.28E-4	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+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+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+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	-2.85E-3	2.01E-4	6.95E-4	-4.06E-3	-1.93E-5	1.17E-4	1.20E-4	0.00E+0	-3.20E-2
Hazardous waste disposed	kg Sb eq	2.27E-3	4.25E-4	1.73E-4	1.63E-3	1.52E-6	2.91E-5	1.55E-5	0.00E+0	1.55E-3
Non-hazardous waste disposed	MJ	3.37E+0	1.14E+0	3.32E-1	1.84E+0	3.47E-4	5.58E-2	5.40E-2	0.00E+0	3.37E-1
Radioactive waste disposed (High)	m3 depriv.	2.46E-4	2.29E-4	4.08E-7	1.56E-5	3.76E-9	6.85E-8	1.12E-7	0.00E+0	-1.29E-5
Radioactive waste disposed (Inter-Low)	disease inc.	3.86E-5	1.67E-5	1.25E-6	1.85E-5	1.26E-8	2.10E-7	3.27E-7	0.00E+0	-5.09E-5
Components for re-use	kBq U-235 eq	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	2.19E+0	1.32E-4	0.00E+0	5.34E-3	0.00E+0	0.00E+0	2.19E+0	0.00E+0	0.00E+0
Materials for energy recovery	CTUh	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	1.21E-2	0.00E+0	0.00E+0	1.21E-2	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 LANDFILL at end of use

RESOURCES, WASTES CATEGORIES AND OUTGOING FLOWS - LANDFILL - 1 YEAR - per m ²										
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	7.94E+0	6.44E+0	9.17E-2	1.37E+0	4.30E-3	1.54E-2	0.00E+0	1.36E-2	0.00E+0
Renewable primary energy used as RM	kg CO2 eq	3.77E-1	4.87E-1	0.00E+0	-1.11E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	kg CO2 eq	8.31E+0	6.93E+0	9.17E-2	1.26E+0	4.30E-3	1.54E-2	0.00E+0	1.36E-2	0.00E+0
Non-renewable primary energy excl. RM	kg CO2 eq	1.65E+2	1.63E+2	4.44E-1	6.72E-1	4.04E-4	7.45E-2	0.00E+0	3.47E-2	0.00E+0
Non-renewable primary energy used as RM	kg CFC11 eq	1.63E+1	5.27E+0	0.00E+0	1.10E+1	9.55E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total Non-renewable primary energy	mol H+ eq	1.81E+2	1.69E+2	4.44E-1	1.16E+1	9.95E-3	7.45E-2	0.00E+0	3.47E-2	0.00E+0
Use of secondary material	kg P eq	2.97E-3	2.84E-3	0.00E+0	1.28E-4	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+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+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+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	-1.29E-2	2.01E-4	6.95E-4	-4.06E-3	-1.93E-5	1.17E-4	0.00E+0	-9.83E-3	0.00E+0
Hazardous waste disposed	kg Sb eq	2.31E-3	4.25E-4	1.73E-4	1.63E-3	1.52E-6	2.91E-5	0.00E+0	5.14E-5	0.00E+0
Non-hazardous waste disposed	MJ	5.56E+0	1.14E+0	3.32E-1	1.84E+0	3.47E-4	5.58E-2	0.00E+0	2.19E+0	0.00E+0
Radioactive waste disposed (High)	m3 depriv.	2.45E-4	2.29E-4	4.08E-7	1.56E-5	3.76E-9	6.85E-8	0.00E+0	4.23E-8	0.00E+0
Radioactive waste disposed (Inter-Low)	disease inc.	3.69E-5	1.67E-5	1.25E-6	1.85E-5	1.26E-8	2.10E-7	0.00E+0	1.49E-7	0.00E+0
Components for re-use	kBq U-235 eq	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	5.47E-3	1.32E-4	0.00E+0	5.34E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	CTUh	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	1.21E-2	0.00E+0	0.00E+0	1.21E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

4.3.1.3. 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	7.97E+0	6.44E+0	9.17E-2	1.37E+0	4.30E-3	1.54E-2	0.00E+0	4.73E-2	-9.30E+0
Renewable primary energy used as RM	kg CO2 eq	3.77E-1	4.87E-1	0.00E+0	-1.11E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	kg CO2 eq	8.35E+0	6.93E+0	9.17E-2	1.26E+0	4.30E-3	1.54E-2	0.00E+0	4.73E-2	-9.30E+0
Non-renewable primary energy excl. RM	kg CO2 eq	2.13E+2	1.63E+2	4.44E-1	6.72E-1	4.04E-4	7.45E-2	0.00E+0	4.89E+1	-3.03E+1
Non-renewable primary energy used as RM	kg CFC11 eq	-3.25E+1	5.27E+0	0.00E+0	1.10E+1	9.55E-3	0.00E+0	0.00E+0	-4.88E+1	0.00E+0
Total Non-renewable primary energy	mol H+ eq	1.81E+2	1.69E+2	4.44E-1	1.16E+1	9.95E-3	7.45E-2	0.00E+0	1.42E-1	-3.03E+1
Use of secondary material	kg P eq	2.97E-3	2.84E-3	0.00E+0	1.28E-4	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+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+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+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	2.81E-3	2.01E-4	6.95E-4	-4.06E-3	-1.93E-5	1.17E-4	0.00E+0	5.88E-3	-2.56E-2
Hazardous waste disposed	kg Sb eq	7.83E-2	4.25E-4	1.73E-4	1.63E-3	1.52E-6	2.91E-5	0.00E+0	7.60E-2	-1.47E-3
Non-hazardous waste disposed	MJ	3.43E+0	1.14E+0	3.32E-1	1.84E+0	3.47E-4	5.58E-2	0.00E+0	5.99E-2	-5.89E-1
Radioactive waste disposed (High)	m3 depriv.	2.45E-4	2.29E-4	4.08E-7	1.56E-5	3.76E-9	6.85E-8	0.00E+0	1.67E-7	-6.67E-5
Radioactive waste disposed (Inter-Low)	disease inc.	3.73E-5	1.67E-5	1.25E-6	1.85E-5	1.26E-8	2.10E-7	0.00E+0	6.03E-7	-2.31E-4
Components for re-use	kBq U-235 eq	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	5.47E-3	1.32E-4	0.00E+0	5.34E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	CTUh	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	1.62E+1	0.00E+0	0.00E+0	1.21E-2	0.00E+0	0.00E+0	0.00E+0	1.62E+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 RECYCLING at end of use

RESOURCES, WASTES CATEGORIES AND OUTGOING FLOWS - RECYCLING - 75 YEARS - per m ²											
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	2.43E+1	6.44E+0	9.17E-2	1.37E+0	3.22E-1	1.60E+1	1.54E-2	4.53E-2	0.00E+0	-1.11E+0
Renewable primary energy used as RM	kg CO2 eq	1.13E+0	4.87E-1	0.00E+0	-1.11E-1	0.00E+0	7.53E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	kg CO2 eq	2.54E+1	6.93E+0	9.17E-2	1.26E+0	3.22E-1	1.67E+1	1.54E-2	4.53E-2	0.00E+0	-1.11E+0
Non-renewable primary energy excl. RM	kg CO2 eq	4.94E+2	1.63E+2	4.44E-1	6.72E-1	3.03E-2	3.30E+2	7.45E-2	3.61E-1	0.00E+0	1.59E+1
Non-renewable primary energy used as RM	kg CFC11 eq	4.94E+1	5.27E+0	0.00E+0	1.10E+1	7.16E-1	3.25E+1	0.00E+0	0.00E+0	0.00E+0	-2.05E+1
Total Non-renewable primary energy	mol H+ eq	5.44E+2	1.69E+2	4.44E-1	1.16E+1	7.47E-1	3.62E+2	7.45E-2	3.61E-1	0.00E+0	-4.62E+0
Use of secondary material	kg P eq	8.90E-3	2.84E-3	0.00E+0	1.28E-4	0.00E+0	5.93E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	kg PO4 eq	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	0.00E+0
Use of Non-renewable secondary fuels	kg N eq	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	0.00E+0
Recovered energy	mol N eq	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	0.00E+0
Net use of fresh water	kg NMVOC eq	-9.94E-3	2.01E-4	6.95E-4	-4.06E-3	-1.45E-3	-5.66E-3	1.17E-4	1.20E-4	0.00E+0	-3.20E-2
Hazardous waste disposed	kg Sb eq	6.92E-3	4.25E-4	1.73E-4	1.63E-3	1.14E-4	4.54E-3	2.91E-5	1.55E-5	0.00E+0	1.55E-3
Non-hazardous waste disposed	MJ	1.01E+1	1.14E+0	3.32E-1	1.84E+0	2.60E-2	6.75E+0	5.58E-2	5.40E-2	0.00E+0	3.37E-1
Radioactive waste disposed (High)	m3 depriv.	7.37E-4	2.29E-4	4.08E-7	1.56E-5	2.82E-7	4.91E-4	6.85E-8	1.12E-7	0.00E+0	-1.29E-5
Radioactive waste disposed (Inter-Low)	disease inc.	1.17E-4	1.67E-5	1.25E-6	1.85E-5	9.41E-7	7.72E-5	2.10E-7	3.27E-7	0.00E+0	-5.09E-5
Components for re-use	kBq U-235 eq	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	0.00E+0
Materials for recycling	CTUe	6.58E+0	1.32E-4	0.00E+0	5.34E-3	0.00E+0	4.38E+0	0.00E+0	2.19E+0	0.00E+0	0.00E+0
Materials for energy recovery	CTUh	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	0.00E+0
Exported energy	CTUh	3.63E-2	0.00E+0	0.00E+0	1.21E-2	0.00E+0	2.42E-2	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 LANDFILL at end of use

RESOURCES, WASTES CATEGORIES AND OUTGOING FLOWS - LANDFILL - 75 YEARS - per m ²											
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 CO ₂ eq	2.41E+1	6.44E+0	9.17E-2	1.37E+0	3.22E-1	1.59E+1	1.54E-2	0.00E+0	1.36E-2	0.00E+0
Renewable primary energy used as RM	kg CO ₂ eq	1.13E+0	4.87E-1	0.00E+0	-1.11E-1	0.00E+0	7.53E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	kg CO ₂ eq	2.53E+1	6.93E+0	9.17E-2	1.26E+0	3.22E-1	1.66E+1	1.54E-2	0.00E+0	1.36E-2	0.00E+0
Non-renewable primary energy excl. RM	kg CO ₂ eq	4.94E+2	1.63E+2	4.44E-1	6.72E-1	3.03E-2	3.29E+2	7.45E-2	0.00E+0	3.47E-2	0.00E+0
Non-renewable primary energy used as RM	kg CFC11 eq	4.94E+1	5.27E+0	0.00E+0	1.10E+1	7.16E-1	3.25E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total Non-renewable primary energy	mol H+ eq	5.43E+2	1.69E+2	4.44E-1	1.16E+1	7.47E-1	3.62E+2	7.45E-2	0.00E+0	3.47E-2	0.00E+0
Use of secondary material	kg P eq	8.90E-3	2.84E-3	0.00E+0	1.28E-4	0.00E+0	5.93E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	kg PO ₄ eq	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	0.00E+0
Use of Non-renewable secondary fuels	kg N eq	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	0.00E+0
Recovered energy	mol N eq	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	0.00E+0
Net use of fresh water	kg NMVOC eq	-4.01E-2	2.01E-4	6.95E-4	-4.06E-3	-1.45E-3	-2.58E-2	1.17E-4	0.00E+0	-9.83E-3	0.00E+0
Hazardous waste disposed	kg Sb eq	7.04E-3	4.25E-4	1.73E-4	1.63E-3	1.14E-4	4.62E-3	2.91E-5	0.00E+0	5.14E-5	0.00E+0
Non-hazardous waste disposed	MJ	1.67E+1	1.14E+0	3.32E-1	1.84E+0	2.60E-2	1.11E+1	5.58E-2	0.00E+0	2.19E+0	0.00E+0
Radioactive waste disposed (High)	m ³ depriv.	7.36E-4	2.29E-4	4.08E-7	1.56E-5	2.82E-7	4.90E-4	6.85E-8	0.00E+0	4.23E-8	0.00E+0
Radioactive waste disposed (Inter-Low)	disease inc.	1.11E-4	1.67E-5	1.25E-6	1.85E-5	9.41E-7	7.37E-5	2.10E-7	0.00E+0	1.49E-7	0.00E+0
Components for re-use	kBq U-235 eq	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	0.00E+0
Materials for recycling	CTUe	1.64E-2	1.32E-4	0.00E+0	5.34E-3	0.00E+0	1.09E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	CTUh	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	0.00E+0
Exported energy	CTUh	3.63E-2	0.00E+0	0.00E+0	1.21E-2	0.00E+0	2.42E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0

4.3.2.3. 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	2.42E+1	6.44E+0	9.17E-2	1.37E+0	3.22E-1	1.59E+1	1.54E-2	0.00E+0	4.73E-2	-9.30E+0
Renewable primary energy used as RM	kg CO2 eq	1.13E+0	4.87E-1	0.00E+0	-1.11E-1	0.00E+0	7.53E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total renewable primary energy	kg CO2 eq	2.54E+1	6.93E+0	9.17E-2	1.26E+0	3.22E-1	1.67E+1	1.54E-2	0.00E+0	4.73E-2	-9.30E+0
Non-renewable primary energy excl. RM	kg CO2 eq	6.40E+2	1.63E+2	4.44E-1	6.72E-1	3.03E-2	4.27E+2	7.45E-2	0.00E+0	4.89E+1	-3.03E+1
Non-renewable primary energy used as RM	kg CFC11 eq	-9.69E+1	5.27E+0	0.00E+0	1.10E+1	7.16E-1	-6.51E+1	0.00E+0	0.00E+0	-4.88E+1	0.00E+0
Total Non-renewable primary energy	mol H+ eq	5.43E+2	1.69E+2	4.44E-1	1.16E+1	7.47E-1	3.62E+2	7.45E-2	0.00E+0	1.42E-1	-3.03E+1
Use of secondary material	kg P eq	8.90E-3	2.84E-3	0.00E+0	1.28E-4	0.00E+0	5.93E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	kg PO4 eq	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	0.00E+0
Use of Non-renewable secondary fuels	kg N eq	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	0.00E+0
Recovered energy	mol N eq	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	0.00E+0
Net use of fresh water	kg NMVOC eq	7.05E-3	2.01E-4	6.95E-4	-4.06E-3	-1.45E-3	5.66E-3	1.17E-4	0.00E+0	5.88E-3	-2.56E-2
Hazardous waste disposed	kg Sb eq	2.35E-1	4.25E-4	1.73E-4	1.63E-3	1.14E-4	1.57E-1	2.91E-5	0.00E+0	7.60E-2	-1.47E-3
Non-hazardous waste disposed	MJ	1.03E+1	1.14E+0	3.32E-1	1.84E+0	2.60E-2	6.85E+0	5.58E-2	0.00E+0	5.99E-2	-5.89E-1
Radioactive waste disposed (High)	m3 depriv.	7.36E-4	2.29E-4	4.08E-7	1.56E-5	2.82E-7	4.90E-4	6.85E-8	0.00E+0	1.67E-7	-6.67E-5
Radioactive waste disposed (Inter-Low)	disease inc.	1.13E-4	1.67E-5	1.25E-6	1.85E-5	9.41E-7	7.46E-5	2.10E-7	0.00E+0	6.03E-7	-2.31E-4
Components for re-use	kBq U-235 eq	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	0.00E+0
Materials for recycling	CTUe	1.64E-2	1.32E-4	0.00E+0	5.34E-3	0.00E+0	1.09E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	CTUh	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	0.00E+0
Exported energy	CTUh	4.86E+1	0.00E+0	0.00E+0	1.21E-2	0.00E+0	3.24E+1	0.00E+0	0.00E+0	1.62E+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]	-	-	0.0075	-	-	-	-	0.0150	-	-	0.0226
BCEK [kg CO2]	-	-	-	-	0.0075	-	-	0.0150	-	-	0.0226
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. Additional Environmental Information

6.1. Environment and Health During Manufacturing

SPM Gerflor Group factory conforms to the ISO 14001 Environmental Management System and the ISO 50001 Energy Management System.

No substances required to be reported as hazardous are associated with the production of this product.

6.2. Environment and Health During Installation

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

6.3. Environment and Health During the Use Stage

COV and formaldehyde emissions have been tested according to standard ISO 16000. The product is certified AgBB. The measured concentration of total volatile organic compounds (TVOC) after 28 days is less than 1000 µg/m³. No formaldehyde has been introduced in the formula. The measured quantity is less than 10 µg/m³. The product is not exposed to soil and water during the use stage.

7. Further Information

Additional information can be found on the Gerflor website: www.spm-international.com.

8. 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

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 10010-10. PCR Part B

PCR - Part B: Wall and Door Protection EPD Requirements. First Edition. Dated May 22. 2019. UL Environment.
<https://www.ul.com/>