

ENVIRONMENTAL PROFILE

IN ACCORDANCE WITH EN15804+A2
MASTER3PLUS FITTINGS



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1. GENERAL INFORMATION

1.1 PRODUCT

PIPELIFE Master3Plus soil and waste pipe fittings

1.2 PRODUCT UNIT

1 kg PIPELIFE Master3Plus soil and waste pipe fittings

1.3 PRODUCT SYSTEM DESCRIPTION

Soil and waste pipe systems are essential service technology in buildings, but they can be noisy and disruptive. Our state-of-the-art acoustic soil and waste pipe system, Master3Plus, is made to meet today's construction and housing challenges in terms of quality, sound insulation, ease of installation and service life. Three functional pipe layers, engineered to achieve specific properties and hydraulically optimized fittings made of top-quality material, combined with a well-thought-out product design deliver tangible benefits for designers, installers, investors and residents. Master3Plus, effectively reduces airborne and structure-borne sound.

1.4 LCA STANDARDS

This Environmental Profile is generated according to the following standards and requirements EN ISO 14040 [1], EN ISO 14044 [2], EN ISO 14025 [3] and EN15804+A2:2019 [4]

1.5 CALCULATION METHOD

LCA standard: EN15804+A2 (2019)

Database: Worldwide — Ecoinvent v 3.8 Cut-Off

PCR: CEN standard 15804+A2 serves as the core Product Category Rules (PCR)

1.6 STATEMENT COMPARABILITY ENVIRONMENTAL PROFILE

Environmental Profiles within the same product category but from different programs may not be comparable. Environmental Profiles of construction products may not be comparable if they do not comply with the requirements in EN15804+A2. Environmental Profile data may not be comparable if the datasets used are not developed in accordance with EN15804+A2 and if the background processes are not based on the same database.

1.7 LCA MODULES

The following modules are included in the Environmental Profile: A1-A3, A4, A5, C1-4, D.

The following modules are not declared in this Environmental Profile: B1-B7.

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transportation	Manufacturing	Transportation	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transportation	Waste processing	Disposal	Reuse-Recovery- Recycling potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X								X	X	X	X	X

1.8 VERIFICATION STATEMENT

This Environmental Profile is not externally verified.

1.9 COMPANY INFORMATION

Owner of the Environmental Profile: Wienerberger AG, Wienerbergerplatz 1, 1100 Vienna, Austria

Name and location of the production site: PIPELIFE Polska SA, Torfowa 4, 84-110 Krokowa, Kartoszyno, Poland

1.10 EPD DETAILS

Author of the LCA: Ieke Bak, Luis Antonio Pittí

LCA software: Ecochain Helix

Helix account: PIPELIFE Poland (2022)

Developed by: Ecochain Technologies B.V.

H.J.E. Wenckebachweg 123 | 1096 AM Amsterdam (Netherlands)

The LCA background information and the project file are registered in the online application of Ecochain.

2. PRODUCT INFORMATION

2.1 DECLARED PRODUCT

1 kg PIPELIFE Master3Plus soil and waste pipe fittings

2.2 PRODUCT DESCRIPTION

PIPELIFE Master3Plus acoustic soil and waste pipe fittings comprise three carefully matched layers that are engineered to effectively suppress noise from soil and waste activity in buildings below 10 decibels. The product is intended for the European market. The reference service life of the product is a minimum of 50 years.

2.3 PRODUCTION PROCESS DESCRIPTION

Production process of 1 kg Master3Plus soil and waste pipe fittings

2.4 PRODUCTION YEAR UNDER STUDY

2022

2.5 PRODUCT IMAGE



2.6 HAZARDOUS SUBSTANCES

The product “1 kg Master3Plus soil and waste pipe fittings” contains no substances listed on the REACH Candidate List.

3. LCA CALCULATION RULES

3.1 REFERENCE UNIT

1 kg Master3Plus soil and waste pipe fittings

3.2 CUT-OFF CRITERIA

All major raw materials and all essential energy is included. The production processes for raw materials and energy flows of less than 1% are not included. These cut-off criteria do not apply for hazardous materials and substances.

3.3 ALLOCATION

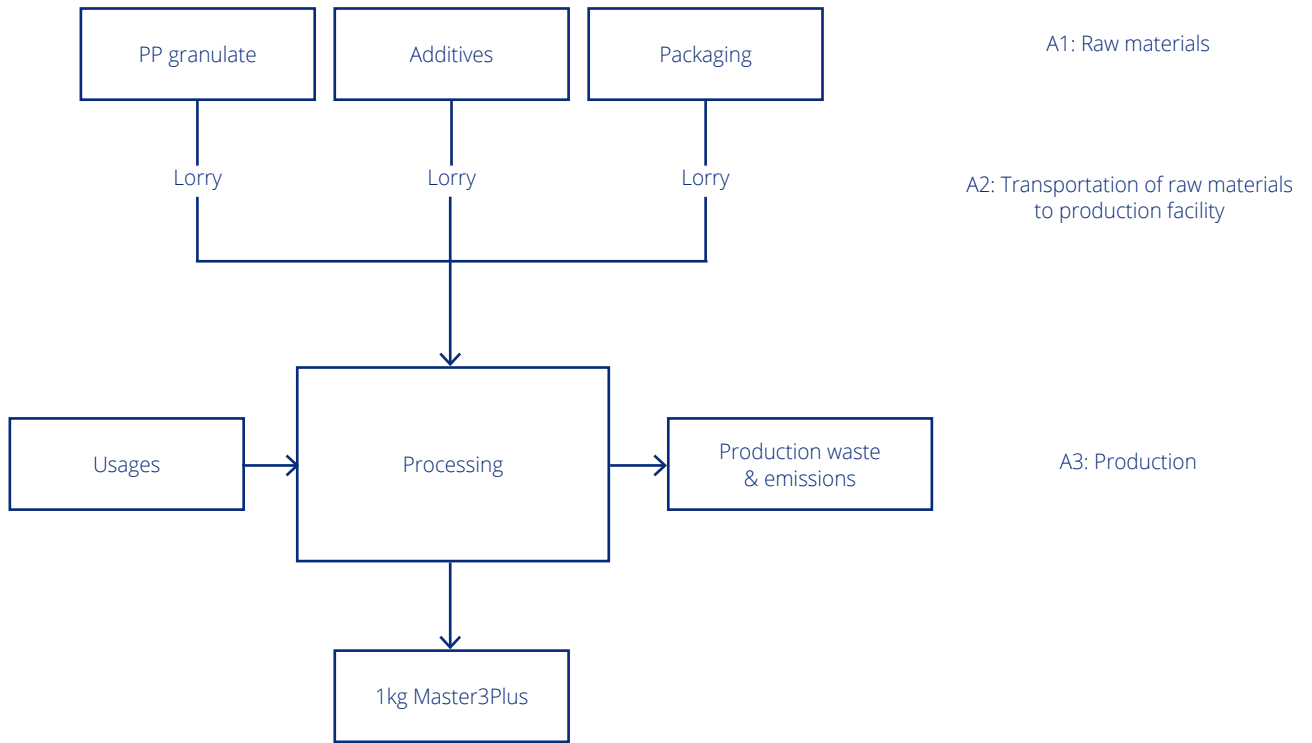
The allocation is made in accordance with the provisions of EN 15804. In-house energy, water and waste production is allocated equally among all products through mass allocation. The effects of the primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

3.4 DATA QUALITY

Specific data for the product composition were provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background information is based on the Ecoinvent database 3.8.

3.5 PROCESS FLOWCHART

A simplified overview of the LCA under study can be seen in the following flowchart:



Conversion factors for specific Master3Plus Poland products.

Material	Weight per piece	Unit	Material	Weight per piece	Unit	Material	Weight per piece	Unit
3496100971	0.010	kg	3496102588	0.053	kg	3496102694	0.915	kg
3496100972	0.041	kg	3496102589	0.067	kg	3496102695	0.911	kg
3496100973	0.056	kg	3496102590	0.067	kg	3496102696	0.978	kg
3496100974	0.061	kg	3496102591	0.063	kg	3496102697	1.353	kg
3496100976	0.032	kg	3496102592	0.111	kg	3496102698	1.345	kg
3496100977	0.032	kg	3496102593	0.110	kg	3496102699	1.420	kg
3496100978	0.032	kg	3496102594	0.120	kg	3496102700	1.149	kg
3496100979	0.031	kg	3496102595	0.120	kg	3496102701	1.142	kg
3496101195	0.033	kg	3496102596	0.152	kg	3496102702	1.280	kg
3496102491	0.092	kg	3496102597	0.152	kg	3496102703	1.657	kg
3496102492	0.093	kg	3496102598	0.176	kg	3496102704	1.638	kg
3496102493	0.097	kg	3496102599	0.180	kg	3496102705	1.412	kg
3496102494	0.098	kg	3496102601	0.232	kg	3496102706	1.412	kg
3496102495	0.102	kg	3496102602	0.235	kg	3496102707	1.983	kg
3496102496	0.103	kg	3496102603	0.246	kg	3496102708	2.420	kg
3496102497	0.445	kg	3496102604	0.250	kg	3496102709	2.421	kg
3496102498	0.439	kg	3496102605	0.389	kg	3496102710	2.028	kg
3496102499	0.467	kg	3496102606	0.394	kg	3496102711	2.027	kg
3496102500	0.095	kg	3496102607	0.293	kg	3496102712	0.033	kg
3496102501	0.350	kg	3496102608	0.298	kg	3496102713	0.033	kg
3496102502	0.521	kg	3496102609	0.668	kg	3496102714	0.075	kg
3496102503	0.521	kg	3496102610	0.668	kg	3496102715	0.083	kg
3496102504	0.187	kg	3496102611	0.673	kg	3496102716	0.131	kg
3496102506	0.348	kg	3496102612	0.670	kg	3496102717	0.128	kg
3496102508	0.155	kg	3496102613	0.073	kg	3496102718	0.039	kg
3496102509	0.159	kg	3496102614	0.176	kg	3496102719	0.039	kg
3496102510	0.172	kg	3496102615	0.246	kg	3496102720	0.076	kg
3496102511	0.499	kg	3496102616	0.522	kg	3496102721	0.076	kg
3496102512	0.501	kg	3496102617	0.900	kg	3496102722	0.108	kg
3496102513	0.544	kg	3496102618	0.087	kg	3496102723	0.108	kg
3496102514	0.448	kg	3496102619	0.087	kg	3496102724	0.073	kg
3496102515	0.450	kg	3496102620	0.119	kg	3496102750	0.170	kg
3496102516	0.491	kg	3496102621	0.119	kg	3496102754	0.349	kg
3496102517	0.838	kg	3496102622	0.245	kg	3496102755	0.253	kg
3496102518	0.838	kg	3496102623	0.245	kg	3496102756	1.978	kg
3496102519	0.886	kg	3496102624	0.352	kg	3496102757	0.336	kg
3496102520	0.065	kg	3496102625	0.357	kg	3496102758	0.072	kg
3496102521	0.072	kg	3496102626	0.147	kg	3496102759	0.065	kg

Material	Weight per piece	Unit	Material	Weight per piece	Unit	Material	Weight per piece	Unit
3496102522	0.065	kg	3496102627	0.268	kg	3496102760	0.066	kg
3496102523	0.092	kg	3496102628	0.459	kg	3496102761	0.018	kg
3496102524	0.091	kg	3496102629	0.458	kg	3496102763	0.018	kg
3496102525	0.067	kg	3496102630	0.612	kg	3496102764	0.022	kg
3496102526	0.104	kg	3496102631	0.612	kg	3496102765	0.046	kg
3496102527	0.103	kg	3496102632	0.904	kg	3496102766	0.147	kg
3496102528	0.063	kg	3496102633	1.543	kg	3496102767	0.249	kg
3496102529	0.064	kg	3496102634	0.105	kg	3496102768	0.520	kg
3496102530	0.068	kg	3496102635	0.100	kg	3496102769	0.894	kg
3496102531	0.068	kg	3496102636	0.118	kg	3496102859	0.033	kg
3496102532	0.078	kg	3496102637	0.118	kg	3496102860	0.031	kg
3496102533	0.073	kg	3496102638	0.147	kg	3496102861	0.032	kg
3496102534	0.075	kg	3496102639	0.111	kg	3496102862	0.032	kg
3496102535	0.075	kg	3496102640	0.111	kg	3496102863	0.032	kg
3496102536	0.085	kg	3496102641	0.120	kg	3496102864	0.010	kg
3496102537	0.110	kg	3496102642	0.134	kg	3496102865	0.041	kg
3496102538	0.100	kg	3496102643	0.119	kg	3496102866	0.056	kg
3496102539	0.118	kg	3496102644	0.153	kg	3496102867	0.061	kg
3496102540	0.164	kg	3496102645	0.143	kg	3496102880	0.241	kg
3496102541	0.172	kg	3496102646	0.169	kg	3496103031	0.062	kg
3496102542	0.180	kg	3496102647	0.173	kg	3496103032	0.064	kg
3496102543	0.184	kg	3496102648	0.188	kg	3496103033	0.093	kg
3496102544	0.203	kg	3496102649	0.164	kg	3496103034	0.094	kg
3496102545	0.189	kg	3496102650	0.302	kg	3496103035	0.168	kg
3496102546	0.204	kg	3496102651	0.304	kg	3496103036	0.176	kg
3496102547	0.208	kg	3496102652	0.325	kg	3496103037	0.244	kg
3496102548	0.249	kg	3496102653	0.253	kg	3496103038	0.253	kg
3496102549	0.250	kg	3496102654	0.249	kg	3496103039	0.360	kg
3496102550	0.259	kg	3496102655	0.266	kg	3496103103	0.998	kg
3496102551	0.277	kg	3496102656	0.352	kg	3496103104	1.068	kg
3496102552	0.271	kg	3496102657	0.372	kg	3496103105	0.269	kg
3496102553	0.303	kg	3496102658	0.316	kg	3496103106	1.543	kg
3496102554	0.293	kg	3496102659	0.328	kg	3496103107	0.992	kg
3496102555	0.329	kg	3496102660	0.354	kg	3496103108	0.992	kg
3496102556	0.330	kg	3496102661	0.355	kg	3496103112	0.072	kg
3496102557	0.356	kg	3496102662	0.333	kg	3496103113	0.073	kg
3496102558	0.360	kg	3496102663	0.334	kg	3496103114	0.101	kg
3496102559	0.385	kg	3496102664	0.450	kg	3496103115	0.193	kg
3496102560	0.385	kg	3496102665	0.453	kg	3496103116	0.287	kg
3496102561	0.464	kg	3496102666	0.408	kg	3496103117	0.465	kg
3496102562	0.510	kg	3496102667	0.411	kg	3496103118	0.515	kg
3496102563	0.504	kg	3496102668	0.536	kg	3496103119	0.557	kg

Material	Weight per piece	Unit	Material	Weight per piece	Unit	Material	Weight per piece	Unit
3496102564	0.542	kg	3496102669	0.531	kg	3496103120	0.062	kg
3496102565	0.518	kg	3496102670	0.556	kg	3496103121	0.150	kg
3496102566	0.560	kg	3496102671	0.518	kg	3496103122	0.900	kg
3496102567	0.641	kg	3496102672	0.519	kg	3496103123	0.106	kg
3496102568	0.637	kg	3496102674	0.498	kg	3496103124	0.101	kg
3496102569	0.700	kg	3496102676	0.489	kg	3496103125	0.135	kg
3496102570	0.742	kg	3496102678	0.622	kg	3496103126	0.120	kg
3496102571	0.739	kg	3496102679	0.617	kg	3496103127	0.156	kg
3496102572	0.798	kg	3496102680	0.551	kg	3496103128	0.146	kg
3496102573	0.998	kg	3496102681	0.537	kg	3496103129	0.168	kg
3496102574	1.068	kg	3496102682	0.534	kg	3496103130	0.484	kg
3496102575	1.164	kg	3496102683	0.778	kg	3496103131	0.537	kg
3496102576	1.163	kg	3496102684	0.778	kg	3496103132	0.819	kg
3496102577	1.500	kg	3496102685	0.710	kg	3496103138	0.252	kg
3496102578	1.498	kg	3496102686	0.711	kg	3496103139	0.282	kg
3496102579	0.022	kg	3496102687	0.820	kg	3496103140	0.656	kg
3496102580	0.043	kg	3496102688	0.820	kg	3496103141	0.700	kg
3496102583	0.102	kg	3496102689	0.820	kg	3496103142	0.249	kg
3496102584	0.102	kg	3496102690	0.862	kg	3496103143	0.664	kg
3496102585	0.146	kg	3496102691	1.137	kg	3496103144	0.169	kg
3496102586	0.246	kg	3496102692	1.133	kg	3496103145	0.187	kg
3496102587	0.054	kg	3496102693	1.191	kg			

3.6 SYSTEM BOUNDARIES AND LCA SCENARIOS

The system boundaries of the EPD follow the modular construction system described by EN15804+A2. The LCA considers the following modules:

3.6.1 CRADLE TO GATE (A1-A3)

This includes the following 3 modules:

A1: Extraction and processing of raw materials. This stage includes raw material extraction and manufacturing based on the relative proportion of ingredients in the mix design.

A2: Transportation to the manufacturer. This stage includes the transportation of raw materials to the production facility based on actual transportation distances and modes for ingredients in the mix design.

A3: Manufacturing process. This stage comprises plant operations involved in the production, including the generation of electricity and heat used during production (e.g., the extraction, refinement and transportation of fuels).

CONSTRUCTION PROCESS STAGE (A4-A5)

This includes the following 2 modules:

A4: Transportation to the building site. This stage includes the transportation of products to the building site based on actual transportation distances. In this study, a distance of 1500 km by truck is assumed for the transportation of products within Europe.

A5: Installation at the construction site. This stage includes the product installation, including the energy use of tools and machinery, as well as losses during the installation process.

However, since this study is only based on 1 kilogram of the product, it is not compatible. Waste disposal of packaging materials is also considered in this scenario.

Waste processing scenarios packaging materials in A5

Material category	Landfill	Incineration	Recycling	Reuse
Packaging, pallets	0%	10%	10%	80%
Packaging, paper/cardboard	0%	28%	72%	0%
Transportation distance to waste processing facility (km)	50	100	250	50

END OF LIFE STAGE (C1-C4)

This includes the following 4 modules:

C1: Deconstruction/demolition. This stage includes the demolition and removal of the product, including impacts from any processes and tools or machinery used in deconstruction. However, since this study is based on 1 kilogram of the product, it is not compatible.

C2: Transportation to the waste treatment facility. This stage includes the transportation of the demolished product to waste treatment facilities based on actual transportation distances.

C3: Waste processing for reuse, recovery and/or recycling. This stage includes the required waste processing for the product's region.

C4: Disposal. This stage includes processes for components and waste that could not be recycled in module C3.

Waste processing scenarios for product materials in C1, C2, C3 and C4

Material category	Landfill	Incineration	Recycling
PP, including additives	10%	20%	70%
Rubber (EPDM)	10%	85%	5%
Transport distance to waste processing facility (km)	50	100	250

BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY, INFORMATION MODULE (D)

D: Reuse, recovery and/or recycling potential, expressed as net impacts and benefits.

Material category	Landfill	Incineration	Recycling	Reuse	Recycling/ reuse quality factor	Incineration LHV
Packaging, pallets	0%	10%	10%	80%	100%	13.99
Packaging, paper/cardboard	0%	28%	72%	0%	100%	15.92
PP, including additives	10%	20%	70%	0%	67%	32.78*
Rubber (EPDM)	10%	85%	5%	0%	67%	27.19

*Additives have a lower heating value than PP, but these are not shown here for confidentiality purposes.

3.7 DATA QUALITY

For module A1, specific data provided by the manufacturer regarding product compositions was used. For module A2, data regarding the transportation of raw materials to the production site was collected. For module A3, energy consumption and waste production data were collected for production year 2022. The background processes used were derived from Worldwide — Ecoinvent v 3.8 Cut-Off.

3.8 ALLOCATION

Allocation was carried out in accordance with the provisions of the EN15804+A2. All manufacturing inputs (energy and auxiliary materials) at the production site level are allocated to different production processes, followed by allocation of the production processes to the products that are produced using these processes through mass allocation. No secondary materials have been used in the production process.

3.9 CUT-OFF CRITERIA

All relevant inputs and outputs — like emissions, energy and materials — have been taken into account in this LCA. In accordance with EN15804+A2, the total neglected input flows per module do not exceed 5% of energy usage and mass.

ENERGY EFFICIENCY

We are making huge strides in the energy efficiency of our production processes by reusing industrial off-heat, installing photovoltaic systems and utilizing closed cooling circuits. We are also using renewable energy sources to heat office buildings and increasing the number of electric vehicles in our warehouses and distribution centers.

BIODIVERSITY

As part of the world of wienerberger, PIPELIFE is working toward self-imposed Environmental, Social and Corporate Governance Goals. Accordingly, biodiversity measures are implemented at all our production sites to encourage flora and fauna to flourish in the area.

REDUCED WASTE

As well as reusing scrap wherever suitable in our production processes, our prefab designs ensure your on-site waste is kept to the absolute minimum and can be seamlessly installed without the need for extra fittings, labor or energy. The Master3Plus assortment is 100% recyclable. Our cradle-to-cradle designs ensure that pipes and fittings can be reproduced into new quality-assured products, keeping waste to a minimum.

MEASURING AND IMPROVING EFFICIENCY

We deploy industry 4.0 technologies to measure and reduce our energy and raw material consumption, as well as their related CO₂ emissions. Quality management systems and environmental measures are implemented at all PIPELIFE production sites, meeting national as well as international standards such as ISO 9001 (Quality Management System) and ISO 14001 standards (Environmental Management System).

4. LCA RESULTS

The tables below show the results of “1 kg Master3Plus fittings” according to EN15804 +A2 (2019).

Mandatory impact category indicators according to EN15804+A2

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	1.12E+00	1.97E-01	5.13E-01	0	0	1.79E-02	5.40E-01	5.36E-03	-9.47E-01
GWP-bio-genic	kg CO ₂ eq	1.34E+00	1.97E-01	1.42E-02	0	0	1.78E-02	5.40E-01	5.35E-03	-6.89E-01
GWP-LULUC	kg CO ₂ eq	-2.20E-01	1.92E-04	4.99E-01	0	0	1.74E-05	-1.81E-04	9.20E-06	-2.58E-01
GWP-fossil	kg CO ₂ eq.	1.77E-03	8.01E-05	5.92E-06	0	0	7.26E-06	1.09E-04	1.66E-07	-3.34E-04
ODP	kg CFC 11 eq.	1.21E-07	4.62E-08	2.66E-09	0	0	4.18E-09	1.27E-08	2.22E-10	-4.99E-08
AP	mol H ⁺ eq.	6.32E-03	1.12E-03	9.25E-05	0	0	1.01E-04	5.30E-04	5.24E-06	-1.73E-03
EP-fresh-water	kg P eq.	3.40E-05	1.45E-06	1.83E-07	0	0	1.31E-07	2.60E-06	5.32E-09	-7.51E-06
EP-marine	kg N eq.	1.56E-03	4.01E-04	3.50E-05	0	0	3.64E-05	1.56E-04	3.51E-06	-3.50E-04
EP-terrestrial	mol N eq.	1.55E-02	4.42E-03	3.81E-04	0	0	4.00E-04	1.70E-03	2.15E-05	-4.04E-03
POCP	kg NMVOC eq.	2.25E-02	1.26E-03	1.14E-04	0	0	1.14E-04	5.38E-04	7.26E-06	-1.61E-03
ADP-minerals & metals	kg Sb eq.	1.00E-05	6.59E-07	7.42E-08	0	0	5.98E-08	8.56E-07	2.02E-09	-2.74E-06
ADP-fossil	MJ	3.59E+01	3.03E+00	1.78E-01	0	0	2.75E-01	1.71E+00	1.60E-02	-1.58E+01
WDP	m ³	5.34E-01	9.95E-03	1.43E-03	0	0	9.01E-04	3.61E-02	9.47E-05	-2.76E-01
Land use	Pt	2.60E+01	2.59E+00	1.02E-01	0	0	2.34E-01	1.33E+00	4.17E-02	-2.36E+01
Acronyms	<p>GWP-fossil = global warming potential fossil fuels; GWP-biogenic = global warming potential biogenic; GWP-LULUC = global warming potential land use and land use change; ODP = depletion potential of the stratospheric ozone layer; AP = acidification potential, accumulated exceedance; EP-freshwater = eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = eutrophication potential, accumulated exceedance; POCP = formation potential of tropospheric ozone; ADP-minerals & metals = abiotic depletion potential for non-fossil resources; ADP-fossil = abiotic depletion for fossil resources potential; WDP = water (user) deprivation potential, deprivation-weighted water consumption</p>									

Health impact indicators

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	disease inc.	7.06E-08	2.17E-08	1.54E-09	0	0	1.97E-09	1.02E-08	1.16E-10	-1.72E-08
Ionizing radiation	kBq U-235 eq	4.07E-02	1.32E-02	7.85E-04	0	0	1.19E-03	5.06E-03	7.34E-05	-1.30E-02
Ecotoxicity, freshwater	CTUe	1.85E+01	2.40E+00	3.20E-01	0	0	2.17E-01	2.03E+00	1.38E-02	-4.46E+00
Human toxicity, cancer	CTUh	9.24E-10	9.57E-11	2.92E-11	0	0	8.67E-12	2.41E-10	4.74E-13	-3.03E-10
Human toxicity, non-cancer	CTUh	2.58E-08	2.76E-09	2.84E-10	0	0	2.50E-10	2.13E-09	7.27E-12	-4.30E-09

Resource use indicators

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	9.46E+00	4.35E-02	5.38E-03	0	0	3.95E-03	8.36E-02	6.86E-04	-4.99E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	9.46E+00	4.35E-02	5.38E-03	0	0	3.95E-03	8.36E-02	6.86E-04	-4.99E+00
PENRE	MJ	3.84E+01	3.22E+00	1.89E-01	0	0	2.92E-01	1.82E+00	1.70E-02	-1.71E+01
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	3.84E+01	3.22E+00	1.89E-01	0	0	2.92E-01	1.82E+00	1.70E-02	-1.71E+01
SM	kg	4.79E+01	3.26E+00	1.94E-01	0	0	2.96E-01	1.91E+00	1.77E-02	-2.21E+01
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acronyms	PERE = use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = use of renewable primary energy resources used as raw materials; PERT = total use of renewable primary energy resources; PENRE = use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = use of non-renewable primary energy resources used as raw materials; PENRT = total use of non-renewable primary energy resources; SM = use of secondary material; RSF = use of renewable secondary fuels; NRSF = use of non-renewable secondary fuels; FW = use of net fresh water									

Waste indicators

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.42E-05	7.73E-06	4.71E-07	0	0	7.00E-07	2.98E-06	1.95E-08	-6.56E-06
Non-hazardous waste disposed	kg	2.70E-01	2.02E-01	8.27E-03	0	0	1.83E-02	9.11E-02	7.16E-02	-2.67E-02
Radioactive waste disposed	kg	5.16E-05	2.04E-05	1.13E-06	0	0	1.85E-06	6.42E-06	1.03E-07	-1.44E-05

Output flow indicators

Results per functional or declared unit										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0

5. REFERENCES

[1] "ISO 14040: Environmental Management — Life Cycle Assessment — Principles and Framework", International Organization for Standardization, ISO14040:2006

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[4] "NEN-EN15804+A2:2012+A2:2019: Sustainability of Construction Works — Environmental Product Declarations — Core Rules for the Product Category of Construction Products", NEN-EN15804+A2:2012+A2:2019



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PIPELIFE International GmbH, Wienerbergerplatz 1, 1100 Vienna
T +43 1 602 2030 0, E info@pipelife.com, pipelife.com

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