ENVIRONMENTAL PRODUCT DECLARATION

Waterproofing system - Liquid membrane from Centro Kakel och Klinker

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

Products included in the EPD:

Waterproofing system - Liquid membrane from Centro Kakel och Klinker

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

EPD of multiple products based on the average results of the product group

EPD Owner
Centro Kakel och Klinker AB

Programme
International EPD System
www.environdec.com

Programme operator
EPD International AB

Registration number
EPD-IES-0035605:001

Version date
2026-10-13

Validity date
2031-10-13



EPD INTERNATIONAL EPD SYSTEM

ECO PLATFORM EPD VERIFIED

CENTRO KAKEL & KLINKER

GENERAL INFORMATION

Programme information

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

Product category rules

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)	
Product Category Rules (PCR)	2019:14 Construction products (EN 15804+A2) (version 2.0.1) 2.0.1
PCR review was conducted by	The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/support.

Verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via	☐ EPD verification through an individual EPD verification ☐ EPD verification through EPD Process Certification* ☑ Fully pre-verified EPD tool
Tool name and version	Tyréns EPD generator - Centro Kakel and Klinker, version 4.0.0
Third-party verifier, accountable for the tool and EPD verification	Nikolay Minkov, Greentability
Approved by	The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier	☑ Yes ☐ No

*EPD Process Certification involves an accredited certification body certifying and periodically auditing the EPD process and conducting external and independent verification of EPDs that are regularly published. More information can be found in the General Programme Instructions on www.environdec.com.

Ownership and limitations on use of EPD

Limitations

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

Ownership

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

INFORMATION ABOUT EPD OWNER

EPD Owner	Centro Kakel och Klinker AB
Contact person name	Niklas Lövfors
Contact person e-mail	miljo@centro.se
Organisation address	Girovägen 3 175 62 Järfälla Sweden
LCA Practitioner	Johan Albihn, johan.albihn@tyrens.se

Description of the organisation of the EPD Owner

Big or small, we deliver on every tile project. Since 1968, we have supported professionals, architects and DIYers with everything related to tile. We supply porcelain stoneware, ceramic tiles, along with grout, tools and accessories – everything needed for professional tile installation. We support every step – from the first tile to the final grout line.

PRODUCT INFORMATION

Product name	Waterproofing system - Liquid membrane from Centro Kakel och Klinker
Product identification	Group Waterproofing system - liquid membrane
Product description	The waterproofing system - liquid membrane group comprises liquid-applied and cement-based waterproofing and sealing products for the water sealing of floors and walls in wet rooms prior to the installation of ceramic finishes. The group includes FF M-1 Membran, FF M-10 Secure Ångspärr, FF M-1C Folielim, FF M-2K (cement and dispersion components), FF M-2K Longlife and FF M-Diffusionsöppen. FF M-1 Membran is a ready-mixed, dispersion-based rubber membrane for waterproofing in liquid-applied systems and for bonding FF M-Folie. FF M-10 Secure is a ready-mixed vapour barrier used to seal against vapour in wet rooms. FF M-1C Folielim is a one-component cement-based bonding and sealing adhesive, while FF M-2K and FF M-2K Longlife are two-component cement-based bonding and sealing products, the latter with extended open time. FF M-Diffusionsöppen is a two-component cement-based membrane for heavy constructions subject to rising and residual moisture. Products are components of the FF M-System.
Technical purpose of product	Tile installation materials
Manufacturing or service provision description	Repackaging and distribution of tile installation materials.
Material properties	Volumetric mass density: 1300 kg/m^3
Manufacturing site	Centro Kakel och Klinker AB Centro Central Storage c/o Beijer Byggmaterial Centrallager Flygbasvägen 7 63506 Eskilstuna Sweden
UN CPC code	37510. Non-refractory mortars and concretes
Geographical scope(s)	Sweden

PRODUCT IMAGES



CONTENT DECLARATION

Content declaration of multiple products	The content declaration is based on the average content of the product group, distributed based on sales volumes. For distribution percentages, see Product description.
Hazardous and toxic substances	The product does not contain any substances from the SVHC candidate list in concentrations exceeding 0.1% of its weight.

PRODUCT CONTENT

Content name	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material[1], kg C/declared unit
Styrene acrylate polymer	0.125	0	0	0
Water	0.291	0	0	0
Quartz sand	0.023	0	0	0
Portland cement	0.015	0	0	0
Aluminate cement	0.199	0	0	0
Calcium sulfate	0.015	0	0	0
Calcium carbonate	0.044	0	0	0
Dolomite	0.074	0	0	0
Acrylic acid copolymer	0.012	0	0	0
Blast furnace slag	0.003	0	0	0
Additive	0.001	0	0	0
Vinyl acrylate polymer	0.003	0	0	0
Barium sulfate	0.178	0	0	0
Total	**0.983**	**0**	**0**	**0**
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2			

PACKAGING MATERIALS

Material name	Mass, kg	Mass-% (versus the product)	Biogenic material[1], kg C/declared unit
Plastic	0.051	5.159	0
Paper bag	0.007	0.723	0.004
Pallet	0.056	5.702	0.028

Total	**0.114**	**11.584**	**0.032**
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2		

LCA INFORMATION

EPD based on declared or functional unit	Declared unit
Declared unit and reference flow	Waterproofing system - Liquid membrane from Centro Kakel och Klinker Mass: 1 kg
Conversion factor to mass	1
Are infrastructure or capital goods included in any upstream, core or downstream processes?	☑ Yes ☐ No
Do infrastructure and capital goods contribute more than 10% to the A1-A3 (A1-A5 for services) results of any environmental impact indicator declared in the EPD?	☐ Yes ☑ No
Data sources used for this EPD	ecoinvent database (general) ecoinvent 3.11 database
LCA Software	SimaPro 9.6
Additional information about the underlying LCA-based information	This EPD is generated with a fully pre-verified tool. All processes are fixed and variable input data for each product group i.e constituent material/components (Items) is governed by a menu. The review of the EPD-generator its constituent processes and the fixed content of the EPD is accepted based on the verification of the tool and the first EPD verification by the tool. Identification name and version number of the EPD-generator: Tyréns EPD-generator 4.0.0 - Centro Kakel & Klinker. The verifier is Nikolay Minkov, Greentability Ltd. In this study, a cut-off threshold of 1% is applied to both the energy consumption and material usage of each unit process. Energy used in pre-packaging of products at the producer has been cut-off, as well as the waste processing of the included packaging after the product has left the system boundary. Inputs and outputs flows from the factories are allocated using mass allocation per kg of product based on the total amount handled product per year. Primary energy use indicators has been calculated according to PCR 2019:14 Annex 3 option B.
Version of the EN 15804 reference package	EF Reference Package 3.1
Characterisation methods	Environmental Footprint 3.1
Technology description including background system	The raw material in A1 is cement compounds. The transport distance in A2 is fixed and the transport modes are trucks. In A3 the production consists of bulk repackaging of products for distribution, as well as transport to retail locations.
Scrap (recycled material) inputs contribution level	Less than 10% of the GWP-GHG results in modules A1-A3 come from scrap inputs

Data quality assessment

Description of data quality assessment and reference years	When modeling in Simapro, Ecoinvent data (released November 2024) has been used for secondary data. The database is considered to be of high quality. The percentage primary data is estimated in this EPD for module A1-A3. Indata gathered from the actual manufacturing plant with product-specific processes, specific amounts, specific waste, and spillage %, specific energy mix, specific transportation distances and transportation type and EPD's from some of the suppliers are primary data. Primary data are collected directly from supplier and production site. For some material supplier's product specific and third party verified EPD's has been used. In cases where the share of primary data not has been stated in underlying EPD´s, it has been assumed that the share of primary data would be similar to other products of the same type. Therefore an average value of primary data from EPD´s of similar products has been assumed. The reference year is 2025 and the year is deemed to be representative of an average year of production. Note: No datasets classified as poor or very poor were used in this study. Datasets classified as fair quality do not contribute more than 30% of the environmental impact.

DATA QUALITY ASSESSMENT

Process name	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of product, inclusive generation of electricity used in manufacturing of product	Collected production data (EPD owner) & Electricity data	Ecoinvent v. 3.11	2025	Primary data	7%
Transport of materials & packaging to manufacturing site	Databases & EPD owner	Ecoinvent v. 3.11	2025	Primary data	18%
Production of ingoing materials and packaging	EPDs & Databases	Ecoinvent v. 3.11	< 5 years old	Primary data, secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					**25%**
Note	The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.				

ELECTRICITY USED IN THE MANUFACTURING PROCESS IN A3 (A5 FOR SERVICES)

Type of electricity mix	Residual electricity mix on the market	
Energy sources	Hydro	16%
	Wind	8%
	Solar	17%
	Biomass	10%
	Geothermal	0%

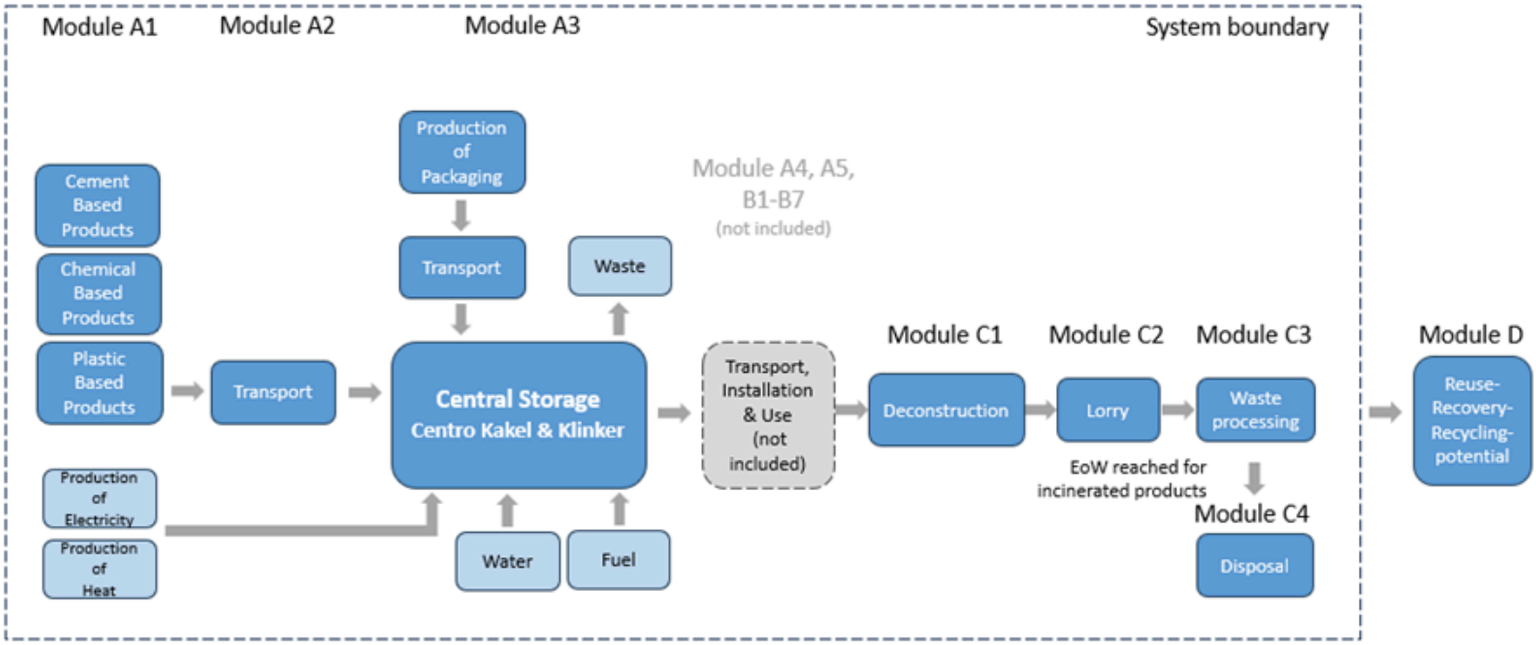
	Waste	0%
	Nuclear	36%
	Natural gas	2%
	Coal	1%
	Oil	1%
	Peat	0%
	Other	9%
Climate impact (GWP-GHG):	0.05 kg CO_2 eq./kWh	

SYSTEM BOUNDARY

Description of the System boundary	a) Cradle to gate with modules C1-C4 and module D (A1-A3 + C + D).
Excluded modules	Yes, there is an excluded module, or there are excluded modules
Justification for omission of modules	Module A4 and A5 is not declared due to the uncertainty of any data. The products are sold and transported in packages not exceeding 25 kg a piece, and are installed by hand by the end customer. A reliable transport mode and distance, as well as installation energy requirements, are therefore hard to determine. Module B1-B7 is not declared due to the product being an inactive building component after installation, requiring no further use, maintenance or treatment.

	Product stage			**Construction process stage**		**Use stage**							**End of life stage**				**Beyond product life cycle**
	Raw material supply	Transport	Manufacturing	Transport to site	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	Europe	Europe	Sweden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Sweden	Sweden	Sweden	Sweden	Sweden
Share of specific data	26%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	54%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disclaimer	The share of specific/primary data and both variations (products and sites) refer to GWP-GHG results only.																

Process flow diagram(s) related images



DEFAULT SCENARIO

Name of the default scenario	Recycling and landfilling of sealant layer.
Description of the default scenario	The sealant layer is applied before the the tiles are mounted, and follow the underlying construction (i.e. conctrete) through end-of-life. The cement compound is ground up, either to make clinker or before disposal on landfill.

Module C: End-of-life

Explanatory name of the default scenario in module C	Module C
Description of the default scenario in module C	The consumption of diesel for demolition in C1 is assumed to be 5 kWh/tonne which is based on PCR 2019:14 ver 2.0.1. The transport distance in C2 is 80 km for all transports to recycling or landfill. Cement products that are not directly applied to tiles are assumed to follow the underlying construction material (i.e. concrete) through end-of-life, C-D. 53% of cement is assumed to be recycled or reused, and 47% is assumed to be landfilled. Recycled material is assumed to be crushed into clinker.

Module D: Beyond product life cycle

Explanatory name of the default scenario in module D	Module D
Description of the default scenario in module D	For calculations in Module D following assumptions have been made: The recycled cement is crushed into clinker and is replacing clinker production.

ENVIRONMENTAL PERFORMANCE

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

Mandatory environmental performance indicators according to EN 15804

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - total	GWP-total	kg CO_2 eq.	1.81E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81E-3	1.82E-2	7.55E-1	1.48E-2	-4.83E-1
Climate change - fossil	GWP-fossil	kg CO_2 eq.	1.80E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81E-3	1.82E-2	7.54E-1	1.48E-2	-4.82E-1
Climate change - biogenic	GWP-biogenic	kg CO_2 eq.	5.20E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.67E-7	1.25E-5	7.86E-5	7.40E-6	0.00E+0
Climate change - land use and land-use change	GWP-luluc	kg CO_2 eq.	1.83E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.85E-7	6.03E-6	1.33E-6	2.19E-6	-7.62E-4
Ozone depletion	ODP	kg CFC-11 eq.	3.30E-8	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.69E-11	3.98E-10	9.04E-11	1.04E-10	-3.32E-9
Acidification	AP	mol H^+ eq.	1.18E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.62E-5	5.85E-5	6.32E-5	2.41E-5	-1.55E-3
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	4.04E-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.84E-8	1.24E-6	1.12E-6	1.85E-5	-1.27E-4
Eutrophication aquatic marine	EP-marine	kg N eq.	1.43E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.54E-6	1.97E-5	2.98E-5	9.30E-6	-4.46E-4
Eutrophication terrestrial	EP-terrestrial	mol N eq.	1.43E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.25E-5	2.14E-4	3.26E-4	1.01E-4	-4.79E-3
Photochemical ozone formation	POCP	kg NMVOC eq.	6.76E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.47E-5	8.87E-5	8.26E-5	3.86E-5	-1.38E-3
Depletion of abiotic resources - minerals and metals	ADP-minerals&metals[1], [2]	kg Sb eq.	1.18E-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.47E-10	6.14E-8	1.37E-8	6.97E-9	-4.65E-7
Depletion of abiotic resources - fossil fuels	ADP-fossil[1]	MJ, net calorific value	6.62E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.18E-4	2.03E-2	1.09E-2	5.91E-3	-2.65E+0
Water use	WDP[1]	m^3 world eq. deprived	1.07E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.83E-5	1.30E-3	6.77E-3	-1.07E-2	-9.57E-2
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption																
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																
Disclaimer 1	The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator																
Disclaimer 2	The results of the impact categories abiotic depletion of minerals and metals may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.																

Additional mandatory environmental performance indicators

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - GWP-GHG	GWP-GHG[1]	kg CO_2 eq.	1.81E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81E-3	1.82E-2	7.54E-1	1.48E-2	-4.83E-1
Acronyms	GWP-GHG = Global warming potential greenhouse gas.																
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																
Disclaimer 1	The GWP-GHG indicator is termed GWP-IOBC/GHG in the ILCD+EPD+ data format. The indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.																

Additional voluntary environmental performance indicators according to EN 15804

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter emissions	PM	Disease incidence	9.45E-8	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.62E-10	1.46E-9	5.79E-10	5.49E-10	-3.67E-8
Ionizing radiation - human health	IRP[1]	kBq U235 eq.	1.41E-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.01E-5	3.08E-4	1.61E-4	7.44E-5	-9.86E-2
Eco-toxicity - freshwater	ETP-fw[2, 3]	CTUe	9.46E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.28E-3	3.42E-2	2.03E-1	3.72E-2	-4.45E-1
Human toxicity - cancer effects	HTP-c[2, 3]	CTUh	5.17E-10	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84E-13	3.09E-12	5.11E-10	1.05E-11	-8.63E-11
Human toxicity - non-cancer effects	HTP-nc[2, 3]	CTUh	2.92E-8	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.90E-12	1.61E-10	2.19E-9	4.56E-10	-3.54E-9
Land-use related impacts/soil quality	SQP[2, 3]	Dimensionless	1.08E+1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.57E-3	1.53E-1	1.79E-2	2.64E-1	-5.51E+0
Acronyms	PM = Potential incidence of disease due to particulate matter emissions; IRP = Potential human exposure efficiency relative to U235; ETP-fw = Potential comparative toxic unit for ecosystems; HTP-c = Potential comparative toxic unit for humans; HTP-nc = Potential comparative toxic unit for humans; SQP = Potential soil quality index.																
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																
Disclaimer 1	This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.																
Disclaimer 2	The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.																
Disclaimer 3	The results of the impact categories land use, human toxicity (cancer), human toxicity, noncancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.																

Resource use indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ, net calorific value	2.14E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.48E-4	4.21E-3	2.38E-3	1.11E-3	-3.34E+0
PERM	MJ, net calorific value	1.18E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ, net calorific value	3.32E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.48E-4	4.21E-3	2.38E-3	1.11E-3	-3.34E+0
PENRE	MJ, net calorific value	6.88E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.62E-4	2.12E-2	1.14E-2	6.19E-3	-2.72E+0
PENRM	MJ, net calorific value	1.66E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ, net calorific value	8.54E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.62E-4	2.12E-2	1.14E-2	6.19E-3	-2.72E+0
SM	kg	5.38E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ, net calorific value	0.00E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ, net calorific value	0.00E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	m^3	4.64E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.80E-6	4.85E-5	3.33E-4	4.49E-4	-3.20E-3
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.															
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).															

Waste indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0.00E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NHWD	kg	0.00E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RWD	kg	0.00E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed.															
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).															

Output flow indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	kg	0.00E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	kg	0.00E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	4.38E-1	0.00E+0	0.00E+0
MER	kg	0.00E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	MJ, net calorific value	2.99E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	1.39E+0	0.00E+0	0.00E+0
EET	MJ, net calorific value	9.99E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	4.64E+0	0.00E+0	0.00E+0
Acronyms	CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.															
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).															

Results of an alternative modelling approach

Description of the scenario/method	100% of production go to energy or material recycling for module C.

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - fossil	GWP-fossil	kg CO2 eq.	1.80E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81E-3	2.47E-2	1.08E+0	0.00E+0	-1.06E+0
Climate change - biogenic	GWP-biogenic	kg CO2 eq.	5.20E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.67E-7	1.70E-5	1.12E-4	0.00E+0	0.00E+0
Climate change - land use and land-use change	GWP-luluc	kg CO2 eq.	1.83E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.85E-7	8.19E-6	1.90E-6	0.00E+0	-2.21E-3
Climate change - total	GWP-total	kg CO2 eq.	1.81E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81E-3	2.48E-2	1.08E+0	0.00E+0	-1.12E+0
Ozone depletion	ODP	kg CFC-11 eq.	3.30E-8	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.69E-11	5.40E-10	1.29E-10	0.00E+0	-1.10E-8
Acidification	AP	mol H+ eq.	1.18E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.62E-5	7.94E-5	9.00E-5	0.00E+0	-4.07E-3
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	4.04E-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.84E-8	1.69E-6	1.59E-6	0.00E+0	-5.27E-4
Eutrophication aquatic marine	EP-marine	kg N eq.	1.43E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.54E-6	2.67E-5	4.23E-5	0.00E+0	-9.67E-4
Eutrophication terrestrial	EP-terrestrial	mol N eq.	1.43E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.25E-5	2.91E-4	4.64E-4	0.00E+0	-9.68E-3
Photochemical ozone formation	POCP	kg NMVOC eq.	6.76E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.47E-5	1.20E-4	1.17E-4	0.00E+0	-2.88E-3
Depletion of abiotic resources - minerals and metals	ADP-minerals&metals	kg Sb eq.	1.18E-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.47E-10	8.34E-8	1.96E-8	0.00E+0	-1.47E-6
Depletion of abiotic resources - fossil fuels	ADP-fossil	MJ, net calorific value	6.62E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.18E-4	2.76E-2	1.56E-2	0.00E+0	-1.02E+1
Water use	WDP	m3 world eq. deprived	1.07E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.83E-5	1.77E-3	9.67E-3	0.00E+0	-3.36E-1
Acronyms																	
Disclaimers																	
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																

Results of an alternative modelling approach

Description of the scenario/method	100% of the product go to landfill in module C.

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - fossil	GWP-fossil	kg CO2 eq.	1.80E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81E-3	1.52E-2	0.00E+0	4.65E-2	0.00E+0
Climate change - biogenic	GWP-biogenic	kg CO2 eq.	5.20E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.67E-7	1.04E-5	0.00E+0	2.27E-5	0.00E+0
Climate change - land use and land-use change	GWP-luluc	kg CO2 eq.	1.83E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.85E-7	5.04E-6	0.00E+0	5.34E-6	0.00E+0
Climate change - total	GWP-total	kg CO2 eq.	1.81E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.81E-3	1.52E-2	0.00E+0	4.65E-2	0.00E+0

Ozone depletion	ODP	kg CFC-11 eq.	3.30E-8	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.69E-11	3.32E-10	0.00E+0	2.62E-10	0.00E+0
Acidification	AP	mol H+ eq.	1.18E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.62E-5	4.89E-5	0.00E+0	6.00E-5	0.00E+0
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	4.04E-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.84E-8	1.04E-6	0.00E+0	3.51E-5	0.00E+0
Eutrophication aquatic marine	EP-marine	kg N eq.	1.43E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.54E-6	1.65E-5	0.00E+0	2.32E-5	0.00E+0
Eutrophication terrestrial	EP-terrestrial	mol N eq.	1.43E-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.25E-5	1.79E-4	0.00E+0	2.53E-4	0.00E+0
Photochemical ozone formation	POCP	kg NMVOC eq.	6.76E-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.47E-5	7.41E-5	0.00E+0	9.90E-5	0.00E+0
Depletion of abiotic resources - minerals and metals	ADP-minerals&metals	kg Sb eq.	1.18E-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.47E-10	5.13E-8	0.00E+0	1.70E-8	0.00E+0
Depletion of abiotic resources - fossil fuels	ADP-fossil	MJ, net calorific value	6.62E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.18E-4	1.70E-2	0.00E+0	1.47E-2	0.00E+0
Water use	WDP	m3 world eq. deprived	1.07E+0	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.83E-5	1.09E-3	0.00E+0	-3.96E-2	0.00E+0
Acronyms																	
Disclaimers																	
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																

INFORMATION RELATED TO EPDS OF MULTIPLE PRODUCTS

Description of how the averages have been determined	Averaged based on percentage of sales for product group.

ABBREVIATIONS

General Abbreviations

Abbreviation	Definition
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative

Other Relevant Terms

SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m^3	Cubic Meter
NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents

P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared

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VERSION HISTORY

Original Version of the EPD, 2026-10-13

PDF template version 1