Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019/AC:2021 for:

Ultipro Finbetong KF

from

Saint-Gobain Building Distribution (SGDS)

Program:	The International EPD® System, www.environdec.com
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General information

Program information

Program:	The International EPD® System
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CEN standard EN 15804:2012 +A2 (2019) v1.3.4 serves as the Core Product Category Rules (PCR), and c-PCR-003 Concrete and Concrete Elements

PCR review was conducted by: *The Technical Committee of the International EPD® System. Chair: Claudia A. Peña. Contact via info@environdec.com. The review panel may be contacted via the Secretariat https://www.environdec.com/contact-us.*

LCA accountability: *Amy Stockwell, Carbonzero AB, Amy.Stockwell@carbonzero.se*

Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☐ EPD process certification ☒ EPD verification

Third-party individual verifier: *Stephen Forson, Viridis Pride Ltd, S.Forson@virdispride.com*

The procedure for follow-up of data during EPD validity involves third party verifier:

☐ Yes ☒ No

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD	Saint-Gobain Distribution Sweden (SGDS)
Contact	SGDS- Beriar Maroof (beriar.maroof@sgdsgruppen.se) Optimera - Henrik Björk (henrik.bjork@optimera.se)
Description of the organisation	SGDS Gruppen - specialists in collaboration for more efficient business in construction and installation. SGDS Gruppen AB is the head company of some of Sweden's leading trading companies in construction, sheet metal, tiles and installation. All the companies have a long and solid industry experience and provide most of Sweden's craftsmen with materials for various projects. Customers in different companies can also buy support items from the sister companies in the group. In selected cases, we take joint projects to facilitate the logistics of the supply of goods, which is then often critical for a smooth construction project. • Optimera – construction trade for professional carpenters • Dahl – heat, plumbing and sanitary specialist • Bevego – building sheet metal, ventilation and technical insulation • Kakelspecialisten and Konradsson's Tiles – tiles, tiling and bathroom fittings The company focuses on sales and services, with direct contact with about 150,000 customers regularly. SGDS group is owned by Saint-Gobain with a presence in 64 countries and over 190 000 employees worldwide.
Location of production site	Riksten, Sweden

Product information

Product name	Optimera Ultipro Finbetong KF
Product identification	Dry concrete
Product description	Ultipro Finbetong KF is a dry concrete product. It is concrete for most types of casting work. High viscous consistency provides compressive strength class C32/40. When mixed with water, 1 kg of dry concrete product makes approximately 1.1kg of solid concrete.
UN CPC code	375 Articles of concrete, cement and plaster
Use	Ultipro Finbetong KF is used for most types of casting works.

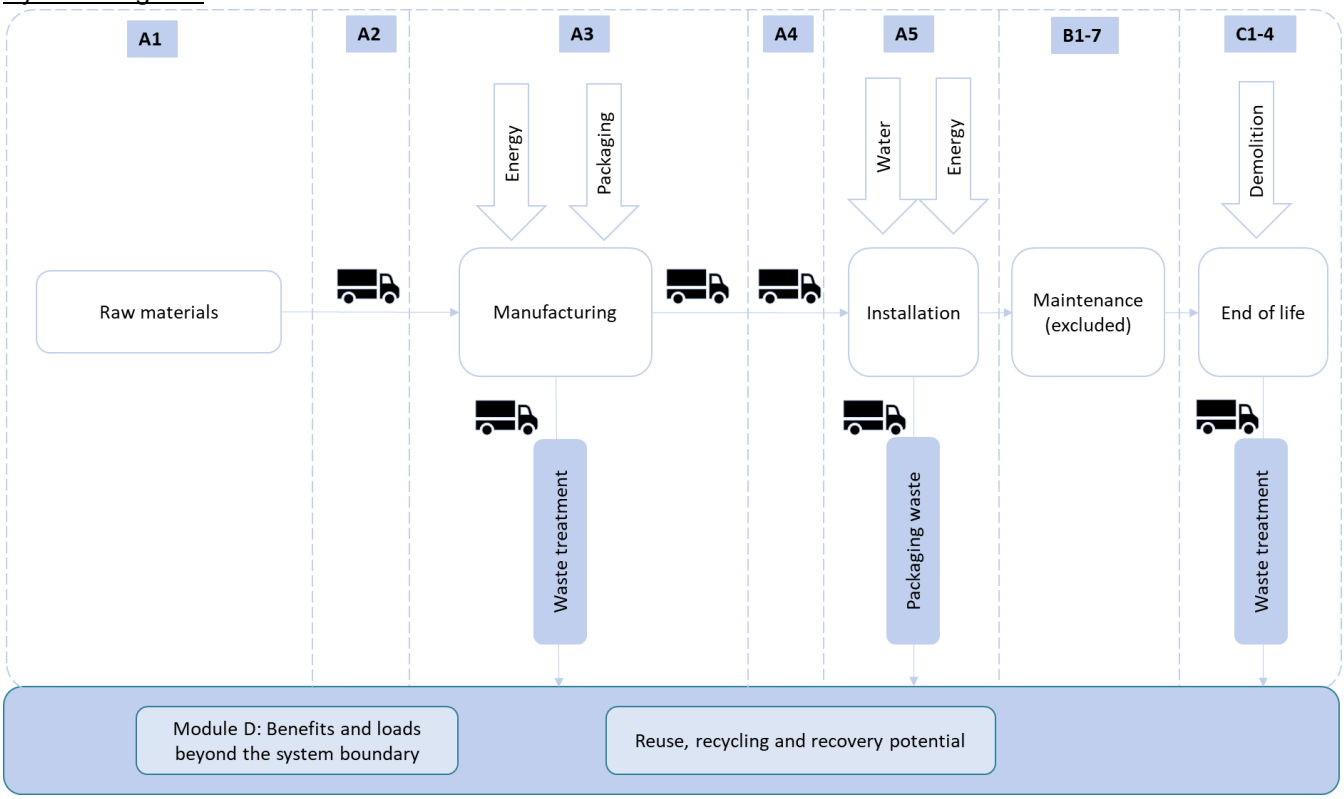
Technical Specification

Properties	Specified performance	Standard
Material Consumption	20 kg/m2 and 10 mm thickness	n/a
Comprehensive Strength	C32/40	n/a
Operating time	Ca 2 h	n/a
Exposure class	X0 XC4 XF3 XA1	SS EN 206-1
Frost resistance	XF3	SS 137244
VCT/VBT	0.55	n/a

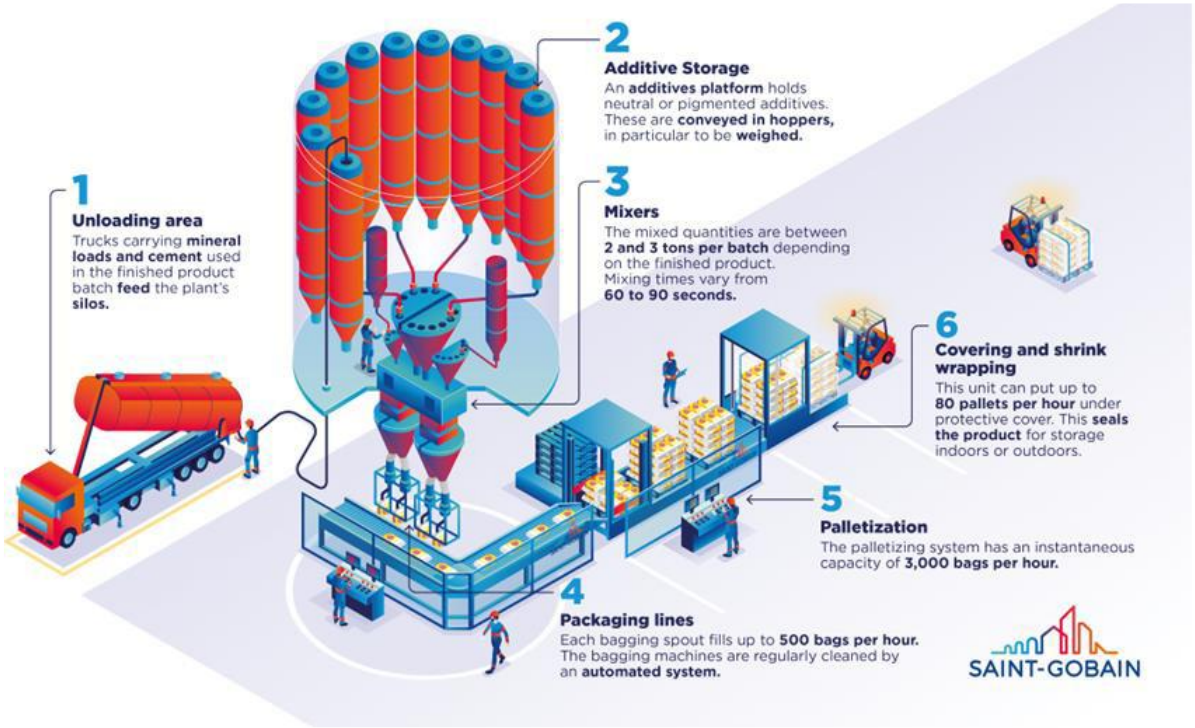
LCA information

Declared unit	1 kg of product as it leaves the factory gate
Reference service life	The Reference Service Life (RSL) of the product is 50 years. This 50-year value is the amount of time that we recommend our products last for without refurbishment and corresponds to standard building design life.
Geographic scope of the EPD	Sweden
Database(s) and LCA software used	Calculation completed in Sphera LCA for Experts (formally GaBi) v10.9.1.10 with an integrated ecoinvent database v3.9 (cut-off) and Sphera Managed LCA Content (2024)
System boundaries	Cradle to gate with options (A1-A3, A4, A5, C1-C4, D).

System diagram:



A3: manufacturing process flow diagram



During the manufacturing process, electricity based on 100% renewable electricity bought with Guarantee of Origin (GO) has been used. The amount of electricity purchases with GO's correspond to 100% of the electricity consumed at the manufacturing sites, leaving 0% to be covered by Swedish national grid mix. The electricity has a GHG-GWP of 0.037 kg CO2e per kWh.

A4 transport to customer was assumed to be within Sweden, using the data below.

A4 scenario information	
Transportation	GLO: Truck-trailer, Euro 0 - 6 mix, 34 - 40t gross weight 27t payload capacity
Fuel type	RER: Diesel (6.35% bio-content)
Fuel consumption	0.0167 kg/tkm
Distance	500 km
Capacity utilisation (including returns)	61 %
Bulk density of transported products	470 kg/m^3
Volume capacity utilisation factor	1

A5 installation of concrete requires water and energy. The packaging is assumed to be reused (pallet) or recycled (plastic).

A5 scenario information	
Product wastage	5 %
Water	0.11 kg SE: tap water from groundwater
Electricity for mixing	0.00396 MJ/kg S: electricity grid mix
Pallet to reuse	0.026 kg
Plastic to recycling	0.004 kg RER: plastic granulate secondary
Waste concrete to landfill	0.05 kg RER: inert matter (glass) on landfill
Assumptions	Transport assumed 100km by truck

B modules: EN 16757 describes how to calculate the carbon dioxide absorbed during the curing of the concrete. It was decided to assume the worst case scenario that none is absorbed. This is because the concrete can be used in a range of situations, some of which may have limited surface area with air contact ie touching the ground.

Swedish government statistics from 2022, show that 80% of construction mineral waste is recycled (including backfilling) and 20% is landfilled.
Note that as in A5 water is added and 5% of the product is assumed wasted (and disposed of), the mass of product disposed of is not 1 kg as may be expected.

C and D scenario information	
Collection process	1.1kg
Recovery system	0.87 kg to recycling RER:construction waste treatment
Disposal	0.22 kg RER:inert matter (glass) on landfill
Assumptions	Transport assumed to be 100km by truck
Benefits beyond the system	Recycling concrete assumed to replace RER:crushed rock 16-32 mm

Modules declared

X = modules included, ND = not declared, Specific data used and variations are based on the GWP-GHG indicator.

	Product stage			Assembly stage		Use stage							End of life stage				Benefits & loads beyond system boundary
	Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	SE	SE	SE	SE	SE	-	-	-	-	-	-	-	SE	SE	SE	SE	SE
Specific data used	60%			-													
Variation-Products	0 %			-													
Variation-Sites	0 %			-													

Data

Quantitative and qualitative data were collected for all processes within the system boundary and these data were used to compile the LCI. These comprised specific data (primary data) and generic data (secondary data). Generic database data from Sphera and ecoinvent were used for the production of raw materials, energy, transportation, packaging and end-of-life. Specific data were collected from the factory manufacturing this product.

Time representativeness

The site-specific data used for the product manufacturing corresponds to 2023.

Data quality

All datasets used came from reputable databases Sphera and ecoinvent, with good technological representativeness. Secondary/generic data were chosen to be to be as geographically specific as possible, however, this was not always possible. In these cases, a geography was selected to match the technology, feedstock source etc., as closely as possible.

Allocation

In this study a “cut-off” method was applied to all cases of end-of-life allocation, including in the case of generic data, where the ecoinvent v3.8 with a cut-off by classification end-of-life allocation method was used. In this approach, environmental burdens and benefits of recycled / reused materials and recovered energy are given to the product system consuming them, rather than the system providing them and are quantified based on recycling content of the material under investigation. The cut-off point is where an end-of-waste state is reached, including any sorting, cleaning, and processing of waste prior to recycling, reuse, or energy recovery, following the “polluter pays principle”.

Cut-off criteria

The general rules for the exclusion of inputs and outputs follow the requirements in EN 15804, whereby a process can be excluded if it contributes to <1% of the total mass or energy input of a unit process, up to a maximum of the total mass or energy of the lifecycle. The plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the potential environmental impacts through the life cycle of the product, as well as flows related to human activities, such as employee transport.

Content declaration

Product components	Weight kg	Post-consumer materials weight %	Biogenic materials weight % and kg C/kg
Sand	75-100%	0	0
Portland cement	10-20%	0	0
Additives	5-10%	0	0
Total	1 kg	0	0
Packaging materials	**Weight kg/m^3**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
LDPE	0.004	0.4 %	0
Pallet	0.026	2.6%	0.011
Total	0.030	3%	0.011

No substances that appear in the REACH candidate list of SVHC (Candidate List of Substances of Very High Concern) are present or used in the product concerning this EPD.

Information on the biogenic carbon content

Biogenic carbon content	Unit per FU	Amount
Biogenic carbon content in the product	kg C	0
Biogenic carbon content in packaging	kg C	1.08E-02

1 kg biogenic carbon is equivalent to 44/12 kg CO2.

Disclaimers

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.

Using the results of modules A1-A3 without considering the results of module C is discouraged.

ILCD classification	Indicator	Disclaimer
ILCD Type 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD Type 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD Type 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2
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 on these results are high or as there is limited experienced with the indicator.		

Results of the environmental performance indicators

Potential environmental impact – indicators according to EN 15804+A2 EF 3.1

		Results per declared unit: 1 kg							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq	1.17E-01	4.14E-02	4.21E-02	7.24E-04	4.37E-03	2.42E-03	3.35E-03	-2.91E-02
GWP-fossil	kg CO2 eq	1.41E-01	4.09E-02	2.39E-03	7.15E-04	4.32E-03	2.39E-03	3.33E-03	-2.91E-02
GWP-biogenic	kg CO2 eq	-2.38E-02	9.79E-05	3.96E-02	1.69E-06	1.03E-05	7.70E-06	9.31E-06	0.00E+00
GWP-luluc	kg CO2 eq	7.26E-04	4.20E-04	1.87E-05	7.24E-06	4.44E-05	2.06E-05	1.36E-05	-3.78E-05
ODP	kg CFC-11 eq	3.37E-10	6.77E-15	1.86E-14	1.17E-16	7.15E-16	4.70E-15	9.26E-15	-1.12E-13
AP	mole H+ eq	5.64E-04	5.79E-05	7.91E-06	3.62E-06	6.13E-06	1.21E-05	2.35E-05	-3.59E-05
EP-freshwater	kg P eq	4.72E-06	1.10E-07	1.35E-08	1.90E-09	1.16E-08	5.98E-09	4.95E-09	-2.52E-08
EP-marine	kg N eq	8.68E-05	2.36E-05	2.17E-06	1.73E-06	2.49E-06	5.63E-06	6.15E-06	-1.24E-05
EP-terrestrial	mole N eq	1.65E-03	2.45E-04	2.36E-05	1.87E-05	2.59E-05	6.10E-05	6.71E-05	-1.39E-04
POCP	kg NMVOC eq	4.47E-04	5.26E-05	6.01E-06	4.68E-06	5.56E-06	1.50E-05	1.84E-05	-3.63E-05
ADP-minerals & metals	kg Sb eq	2.98E-07	2.71E-09	3.73E-10	4.68E-11	2.87E-10	2.43E-09	2.06E-10	-2.02E-09
ADP-fossil	MJ	1.54E+00	5.22E-01	3.55E-02	9.02E-03	5.52E-02	4.41E-02	4.37E-02	-5.88E-01
WDP	m3	1.27E-02	1.86E-04	7.98E-04	3.22E-06	1.97E-05	4.25E-04	3.60E-04	-2.71E-03
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							

Use of resources

		Results per declared unit: 1 kg							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	8.84E-01	3.94E-02	1.66E-02	6.80E-04	4.16E-03	4.33E-03	8.42E-03	-6.35E-02
PERM	MJ	5.20E-01	0.00E+00	-5.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.40E+00	3.94E-02	-5.03E-01	6.80E-04	4.16E-03	4.33E-03	8.42E-03	-6.35E-02
PENRE	MJ	1.98E+00	5.22E-01	3.55E-02	9.02E-03	5.52E-02	4.41E-02	4.37E-02	-5.88E-01
PENRM	MJ	1.68E-01	0.00E+00	-1.68E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.14E+00	5.22E-01	-1.33E-01	9.02E-03	5.52E-02	4.41E-02	4.37E-02	-5.88E-01
SM	kg	3.67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	3.32E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	1.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	7.12E-04	1.95E-05	1.25E-04	3.36E-07	2.06E-06	1.15E-05	1.05E-05	-1.04E-04
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

The primary energy indicators were calculated following method B from Annex 3 of construction products PCR v 1.3.4

It is surprising to see SM in A1 when there is no post-consumer recycled content. This has come from the EPD data of raw materials and likely refers to the packaging as neither of them specify containing post-consumer recycled content. The Portland cement has an SM of 28%, which is more than the mass of packaging and we query if this is an error. Fly ash has an SM of 0.1%.

Waste and output flows

Waste

		Results per declared unit: 1 kg							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	2.19E-04	2.10E-11	4.75E-10	3.62E-13	2.22E-12	6.08E-12	9.55E-12	-1.33E-10
NHWD	kg	4.65E-02	7.29E-05	4.95E-02	1.26E-06	7.71E-06	1.11E-05	2.18E-01	-1.73E-04
RWD	kg	1.53E-05	9.86E-07	3.54E-06	1.70E-08	1.04E-07	5.60E-07	4.63E-07	-1.16E-05
Acronyms		HW Hazardous waste disposed; NHW Non-hazardous waste disposed; RW Radioactive waste disposed							

Output flows

		Results per declared unit: 1 kg							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
CRU	kg	0.00E+00	0.00E+00	2.55E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	4.42E-04	0.00E+00	4.00E-03	0.00E+00	0.00E+00	8.71E-01	0.00E+00	0.00E+00
MER	kg	1.66E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acronyms		CRU Components for reuse; MFR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy							

Additional mandatory and voluntary indicators

		Results per declared unit: 1 kg							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO2 eq	1.57E-01	4.14E-02	2.43E-03	7.24E-04	4.38E-03	2.42E-03	3.35E-03	-2.93E-02
PM	Disease incidence	7.75E-09	5.34E-10	8.88E-11	4.22E-11	5.64E-11	2.32E-10	2.93E-10	-6.91E-10
IRP	kBq U235 eq.	1.40E-02	1.42E-04	5.12E-04	2.44E-06	1.50E-05	8.89E-05	5.12E-05	-1.79E-03
ETP-fw	CTUe	6.83E-01	6.79E-01	1.95E-02	1.17E-02	7.18E-02	4.41E-02	3.38E-02	-2.12E-01
HTP-c	CTUh	2.06E-10	9.16E-12	6.04E-13	1.58E-13	9.69E-13	7.03E-13	5.81E-13	-5.57E-12
HTP-nc	CTUh	7.37E-09	5.12E-10	1.88E-11	8.86E-12	5.42E-11	2.92E-11	2.17E-11	-1.05E-10
SQP	Dimensionless	3.82E+00	2.31E-01	1.37E-02	3.99E-03	2.44E-02	1.25E-02	1.08E-02	-5.10E-02
Acronyms		GWP-GHG global warming potential - greenhouse gases; PM: Particulate matter emissions; IRP: Ionising radiation, human health; ETP-fw: Ecotoxicity (freshwater); ETP-c: Human toxicity, cancer effects; HTP-nc: Human toxicity, non-cancer effects; SQP: Land use related impacts / soil quality							

[1]This 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.

References

c-PCR-003 (2023)	Concrete and concrete elements, version 2023-01-02
EN 15804:2012+A2	Sustainability of construction works – Environmental product declaration – Core rules for the product category of constructions products
EN 16757:2022	Sustainability of construction works – Environmental product declarations – Product Category Rules for concrete and concrete elements
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