

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Porcelain Tiles produced by RAK Ceramics



RAK
CERAMICS

EPD-Global

Owner of the declaration:

RAK Ceramics P.J.S.C

Product:

Porcelain Tiles produced by RAK Ceramics

Declared unit:

1 m²

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR

IBU PCR Part B: Requirements on the EPD for Ceramic tiles and panels

Program operator:

EPD-Global

Declaration number:

NEPD-15792-19766

Issue date:

05.06.2026

Valid to:

05.06.2031

EPD software:

LCAno EPD generator ID: 1501250

General information

Product

Porcelain Tiles produced by RAK Ceramics

Program operator:

EPD-Global
 Post Box 5250 Majorstuen, 0303 Oslo, Norway
 Phone: +47 977 22 020
 web: www.epd-global.com

Declaration number:

NEPD-15792-19766

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
 IBU PCR Part B: Requirements on the EPD for Ceramic tiles and panels

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD-Global shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

1 m² Porcelain Tiles produced by RAK Ceramics

Declared unit with option:

A1, A2, A3, A4, A5, B2, C1, C2, C3, C4, D

Functional unit:

Not relevant.

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Global's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Global, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Global's General Programme Instructions for further information on EPD tools

Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPD-Global's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Alexander Borg, Asplan Viak AS

(no signature required)

Owner of the declaration:

RAK Ceramics P.J.S.C
 Contact person: Randel Joseph Despi & Elias Hallegado Jr.
 Phone: +971 7 2467000
 e-mail: info@rakceramics.com

Manufacturer:

RAK Ceramics P.J.S.C

Place of production:

RAK Ceramics P.J.S.C
 PO Box
 4714 Ras Al Khaimah, United Arab Emirates

Management system:

Organisation no:

Issue date:

05.06.2026

Valid to:

05.06.2031

Year of study:

2024

Comparability:

EPDs of construction products may not be comparable if they do not comply with EN 15804 and are not viewed in a building context.

Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD-Global.

Developer of EPD: Eren Yaman - ERKE Sustainability Consultancy

Reviewer of company-specific input data and EPD: Børge Heggen Johansen, Energiråd AS

Approved:

Håkon Hauan, CEO EPD-Global

Product

Product description:

Porcelain tiles are used for floor and wall coverings in residential, commercial, institutional and other construction areas. Specific products can be used for either internal or external applications.

Product specification

The declared product is porcelain tiles produced by RAK Ceramics. The porcelain tiles produced by RAK Ceramics are shaped by a dry-pressed process, manufactured by using inorganic natural raw materials such as ball clay, feldspar, silica sand, kaolin, etc. RAK Ceramics produces single fired tiles in various groups (BIa, BIb, BIIa and BIII) as per International Standard ISO 13006 and European Norm EN 14411. Different surface finishes such as glazed, unglazed, glossy, matt, polished, lappato, rustic, wood and antiskid are available to choose from in order to satisfy customers' choice, preference and requirement.

Materials	kg	%
Additives	0.57	2.03
Aggregate	19.25	68.54
Clay	2.18	7.77
Emissions and waste streams	5.30	18.86
Glaze	0.785	2.80
Total	28.08	100.00

Packaging	kg	%
Packaging - Cardboard	0.002709	0.847
Packaging - Pallet	0.2429	75.94
Packaging - Plastic	0.0203	6.35
Packaging - Recycled paper	0.05393	16.86
Total incl. packaging	28.40	100.00

Technical data:

Water absorption acc. to EN ISO 10545-3	≤ 0.4	%
Break load acc. to DIN EN ISO 10545-4	≥ 1600	N
Flexural strength acc. to DIN EN ISO 10545-4	≥ 40	N/mm ²
Resistance to chemicals and staining acc. to DIN EN ISO 10545-13 (optional)	Class A	-
Non-slip properties (class A, B or C acc. to DIN 51130 (only floor coverings))	-	-
Resistance to deep abrasion acc. to DIN EN ISO 10545-6 (unglazed floor coverings)	-	-
Resistance to surface wear (class) acc. to DIN EN ISO 10545-7 (only floor coverings)	PEI Class 2-5	-
Impact resistance acc. to DIN EN ISO 10545-5 (only floor coverings)	No visible crack	-

Market:

Global

Reference service life, product

The lifetime of the product.

Reference service life, building or construction works

Not relevant.

LCA: Calculation rules

Declared unit:

1 m² Porcelain Tiles produced by RAK Ceramics

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of 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.

Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

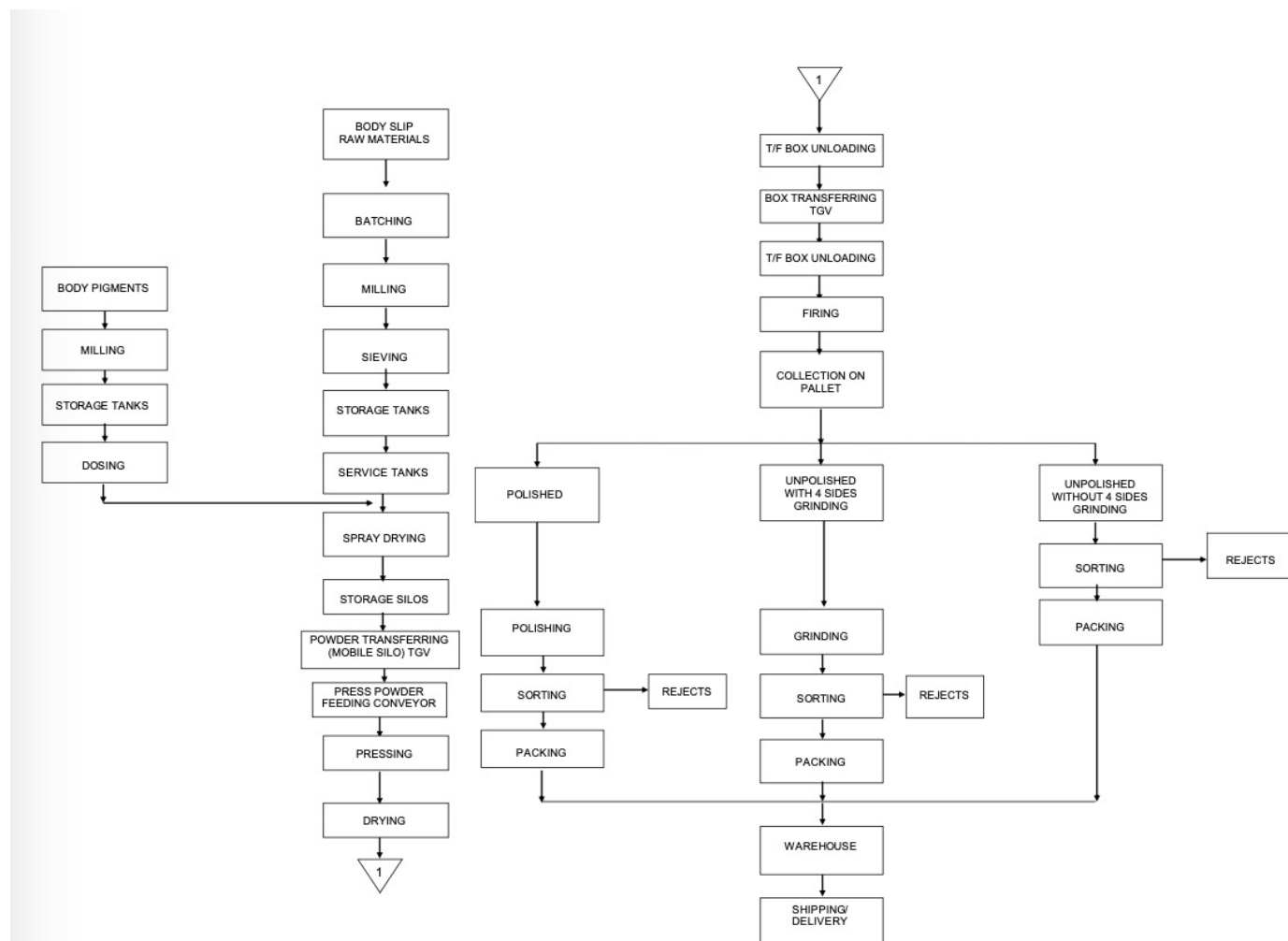
Materials	Source	Data quality	Year
Additives	ecoinvent 3.10.1	Database	2023
Aggregate	ecoinvent 3.10.1	Database	2023
Clay	ecoinvent 3.10.1	Database	2023
Emissions and waste streams	LCA.no	Database	2024
Glaze	ecoinvent 3.10.1	Database	2023
Packaging - Cardboard	Modified ecoinvent 3.10.1	Database	2023
Packaging - Pallet	ecoinvent 3.10.1	Database	2023
Packaging - Plastic	ecoinvent 3.10	Database	2023
Packaging - Recycled paper	ecoinvent 3.10.1	Database	2023

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
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
X	X	X	X	X	MNR	X	MNR	MNR	MNR	MNR	MNR	X	X	X	X	X

System boundary:

cradle to grave



Additional technical information:

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

The scenario covers modules A1–A5, C1–C4 and D for ceramic and porcelain tiles produced by RAK Ceramics.

For the transport stage (A4), an average distance of 300 km is assumed between the manufacturing facility and the construction site. Transportation is carried out by Euro 5 diesel trucks with typical load capacity.

During installation (A5), ceramic tiles are installed using cement-based adhesive systems in accordance with standard industry practices. Based on manufacturer recommendations, an average adhesive consumption of 4–5 kg/m² is assumed. A material loss of 5% is considered during installation. Packaging materials, including cardboard boxes, polyethylene film, plastic straps and wooden pallets, are assumed to be collected and treated according to local waste management practices.

The use stage (B modules) is not considered, as ceramic tiles are inert materials and do not require maintenance, nor do they emit substances harmful to human health or the environment during use.

At the end-of-life stage (C1–C4), tiles are assumed to be removed mechanically, with negligible energy consumption. Waste is transported to a treatment or disposal facility over an average distance of 50 km. Approximately 70% of the porcelain tile waste is assumed to be recycled and 30% disposed of in landfill as inert waste at the end of life.

In module D, potential benefits from recycling are considered, where recovered ceramic material substitutes natural aggregates in construction applications.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Ship, Tanker, Transoceanic (km)	50.0 %	6520.00	0.002	l/tkm	13.04
Truck, 16-32 tonnes, EURO 5 (km) - RER	38.8 %	300.00	0.045	l/tkm	13.50
Assembly (A5)	Unit	Value			
Mortar (kg)	kg	3.30			
Water (L)	kg	0.80			
Waste, packaging, cardboard and paper, to average treatment (kg)	kg	0.05393			
Maintenance (B2)	Unit	Value			
Water (L)	kg	0.10			
Activa Daily Allrent (kg)	kg	0.20			
Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	38.8 %	50.00	0.044	l/tkm	2.20
Waste processing (C3)	Unit	Value			
Clay-based product after demolition to recycling (kg)	kg	19.88			
Disposal (C4)	Unit	Value			
Waste, inert waste, to landfill (kg)	kg	8.52			
Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of primary aggregates, gravel round (kg)	kg	19.88			

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact							
Indicator	Unit	A1	A2	A3	A4	A5	
 GWP-total	kg CO ₂ -eq	4.11E+00	2.50E-01	5.67E+00	3.17E+00	7.49E-01	
 GWP-fossil	kg CO ₂ -eq	4.13E+00	2.50E-01	5.67E+00	3.17E+00	6.17E-01	
 GWP-biogenic	kg CO ₂ -eq	-3.00E-02	1.90E-04	4.89E-04	1.53E-03	1.32E-01	
 GWP-luluc	kg CO ₂ -eq	2.95E-03	8.83E-05	4.24E-04	1.50E-03	1.55E-04	
 ODP	kg CFC11 -eq	5.24E-08	5.16E-09	1.18E-07	3.41E-08	1.77E-09	
 AP	mol H ⁺ -eq	1.47E-02	7.85E-04	6.43E-03	4.58E-02	1.70E-03	
 EP-FreshWater	kg P -eq	7.10E-04	1.66E-05	1.55E-04	1.61E-04	9.05E-05	
 EP-Marine	kg N -eq	2.83E-03	2.64E-04	1.64E-03	1.13E-02	4.68E-04	
 EP-Terrestrial	mol N -eq	3.05E-02	2.88E-03	1.76E-02	1.26E-01	5.35E-03	
 POCP	kg NMVOC -eq	1.24E-02	1.23E-03	1.28E-02	3.74E-02	1.52E-03	
 ADP-minerals&metals ¹	kg Sb-eq	2.98E-04	8.17E-07	1.30E-05	7.06E-06	1.95E-06	
 ADP-fossil ¹	MJ	4.74E+01	3.51E+00	8.95E+01	4.17E+01	2.61E+00	
 WDP ¹	m ³	9.13E-01	1.72E-02	2.19E-01	1.69E-01	1.16E-01	

Indicator	Unit	B2	C1	C2	C3	C4	D
 GWP-total	kg CO ₂ -eq	2.86E-02	0	2.70E-01	3.25E-02	9.72E-02	-4.56E-02
 GWP-fossil	kg CO ₂ -eq	2.11E-01	0	2.70E-01	3.16E-02	9.68E-02	-4.44E-02
 GWP-biogenic	kg CO ₂ -eq	-4.64E-01	0	2.08E-04	7.95E-04	2.69E-04	-1.26E-03
 GWP-luluc	kg CO ₂ -eq	2.81E-01	0	9.68E-05	7.36E-05	6.22E-05	-2.04E-05
 ODP	kg CFC11 -eq	5.18E-09	0	5.68E-09	5.57E-10	2.42E-09	-6.36E-10
 AP	mol H ⁺ -eq	2.81E-03	0	5.61E-04	2.01E-04	1.03E-03	-3.66E-04
 EP-FreshWater	kg P -eq	8.20E-05	0	1.81E-05	2.42E-05	1.49E-04	-5.93E-06
 EP-Marine	kg N -eq	2.72E-03	0	1.35E-04	4.92E-05	2.57E-04	-1.40E-04
 EP-Terrestrial	mol N -eq	9.98E-03	0	1.45E-03	4.91E-04	2.77E-03	-1.62E-03
 POCP	kg NMVOC -eq	1.41E-03	0	9.33E-04	1.52E-04	9.74E-04	-4.64E-04
 ADP-minerals&metals ¹	kg Sb-eq	3.75E-06	0	8.97E-07	3.42E-07	2.19E-07	-4.17E-07
 ADP-fossil ¹	MJ	2.11E+00	0	3.79E+00	6.53E-01	2.12E+00	-6.88E-01
 WDP ¹	m ³	1.09E+00	0	1.88E-02	6.27E-03	1.10E-02	-3.07E-02

GWP-total = Global Warming Potential total; 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

"Reading example: 9.0 E-03 = 9.0*10⁻³ = 0.009"

1. 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

Remarks to environmental impacts

The LCA results in the EPD are calculated using a specific methodological approach for accounting energy resources, see the additional requirements section for more information. In this EPD the following approach was used: Location-based approach.

Additional environmental impact indicators

Indicator	Unit	A1	A2	A3	A4	A5
 PM	Disease incidence	1.64E-07	1.94E-08	3.70E-08	1.28E-07	2.04E-08
 IRP ²	kgBq U235 -eq	1.25E-01	4.47E-03	1.98E-02	3.86E-02	3.15E-02
 ETP-fw ¹	CTUe	1.06E+01	4.60E-01	5.04E+00	4.46E+00	5.70E-01
 HTP-c ¹	CTUh	1.49E-09	0.00E+00	6.38E-10	0.00E+00	7.90E-11
 HTP-nc ¹	CTUh	2.89E-08	2.58E-09	1.58E-08	1.70E-08	3.45E-09
 SQP ¹	dimensionless	6.40E+01	2.09E+00	1.81E+00	1.52E+01	5.24E+00

Indicator	Unit	B2	C1	C2	C3	C4	D
 PM	Disease incidence	4.73E-08	0	1.99E-08	2.17E-09	1.56E-08	-9.46E-09
 IRP ²	kgBq U235 -eq	7.86E-03	0	4.89E-03	1.57E-02	1.85E-03	-9.70E-03
 ETP-fw ¹	CTUe	1.08E+01	0	5.04E-01	8.86E-02	2.07E+00	-1.13E-01
 HTP-c ¹	CTUh	7.22E-10	0	0.00E+00	0.00E+00	5.10E-11	-2.00E-11
 HTP-nc ¹	CTUh	1.40E-08	0	2.84E-09	3.98E-10	2.75E-09	-4.37E-10
 SQP ¹	dimensionless	2.12E+01	0	2.29E+00	4.13E-01	4.94E+00	-1.32E+00

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9.0 E-03 = 9.0*10⁻³ = 0.009"

1. 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
2. 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.

Resource use							
Indicator		Unit	A1	A2	A3	A4	A5
	PERE	MJ	5.94E+00	6.06E-02	9.97E-01	5.55E-01	9.89E-01
	PERM	MJ	7.57E-01	0.00E+00	0.00E+00	0.00E+00	-7.57E-01
	PERT	MJ	6.69E+00	6.06E-02	9.97E-01	5.55E-01	2.32E-01
	PENRE	MJ	4.66E+01	3.51E+00	8.95E+01	4.17E+01	2.61E+00
	PENRM	MJ	2.31E+00	0.00E+00	0.00E+00	0.00E+00	-3.68E-03
	PENRT	MJ	4.89E+01	3.51E+00	8.95E+01	4.17E+01	2.60E+00
	SM	kg	5.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	RSF	MJ	1.18E-01	2.03E-05	2.93E-05	1.54E-04	3.56E-03
	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	FW	m ³	3.10E-02	4.72E-04	1.23E-02	4.45E-03	6.25E-03

Indicator		Unit	B2	C1	C2	C3	C4	D
	PERE	MJ	7.92E+00	0	6.64E-02	1.50E-01	3.11E-02	-2.14E-01
	PERM	MJ	3.59E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	PERT	MJ	1.15E+01	0	6.64E-02	1.50E-01	3.11E-02	-2.14E-01
	PENRE	MJ	2.50E+00	0	3.79E+00	6.53E-01	2.12E+00	-6.88E-01
	PENRM	MJ	0.00E+00	0	0.00E+00	-2.31E+00	0.00E+00	0.00E+00
	PENRT	MJ	2.50E+00	0	3.79E+00	-1.65E+00	2.12E+00	-6.88E-01
	SM	kg	1.45E-03	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	RSF	MJ	4.26E-05	0	2.23E-05	0.00E+00	1.45E-05	-5.69E-06
	NRSF	MJ	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	FW	m ³	2.55E-02	0	5.17E-04	3.69E-04	0.00E+00	-2.83E-02

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 materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9.0 E-03 = 9.0*10⁻³ = 0.009"

End of life - Waste							
Indicator		Unit	A1	A2	A3	A4	A5
	HWD	kg	1.96E-01	5.03E-03	4.74E-02	5.95E-02	1.12E-02
	NHWD	kg	5.67E+00	1.06E-01	1.01E+00	1.06E+00	4.80E-01
	RWD	kg	2.85E-05	1.11E-06	4.61E-06	9.56E-06	7.24E-06

Indicator		Unit	B2	C1	C2	C3	C4	D
	HWD	kg	5.95E-02	0	5.51E-03	9.12E-04	0.00E+00	-2.89E-03
	NHWD	kg	5.83E-01	0	1.16E-01	6.74E-03	8.52E+00	-4.74E-02
	RWD	kg	1.99E-06	0	1.22E-06	0.00E+00	0.00E+00	-2.21E-06

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9.0 E-03 = 9.0×10^{-3} = 0.009"

End of life - Output flow							
Indicator		Unit	A1	A2	A3	A4	A5
	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.02E-02
	MER	kg	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	6.67E-07
	EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.49E-07

Indicator		Unit	B2	C1	C2	C3	C4	D
	CRU	kg	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MFR	kg	0.00E+00	0	0.00E+00	1.99E+01	0.00E+00	0.00E+00
	MER	kg	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EEE	MJ	0.00E+00	0	0.00E+00	0.00E+00	6.21E-04	0.00E+00
	EET	MJ	0.00E+00	0	0.00E+00	0.00E+00	2.33E-04	0.00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9.0 E-03 = 9.0×10^{-3} = 0.009"

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in accompanying packaging	kg C	2.12E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂

Additional requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3). Location-based approach.

Electricity mix	Source	Amount	Unit	GWPtotal [kg CO ₂ /Unit]	SUM [kg CO ₂]
Location-based approach.					
Electricity, United Arab Emirates (kWh) - ecoinvent 3.10.1	ecoinvent 3.10.1	2.74E+00	kWh	6.28E-01	1.72E+00
Market-based approach.					

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0.009"

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

Not relevant.

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products							
Indicator	Unit	A1	A2	A3	A4	A5	
GWPIOBC	kg CO ₂ -eq	4.18E+00	2.50E-01	5.67E+00	3.17E+00	6.71E-01	
Indicator	Unit	B2	C1	C2	C3	C4	D
GWPIOBC	kg CO ₂ -eq	4.94E-01	0	2.70E-01	3.17E-02	9.75E-02	-4.45E-02

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

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