ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Concrete and precast concrete elements

from

UAB “Kauno gelžbetonis“

Programme operator	**Rakennustieto EPD**
EPD number	**RTS_409_25**
Publishing date	**18.8.2025**
EPD valid until	**18.8.2030**

GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	UAB “Kauno gelžbetonis”
Address	Pramonės pr.8, Kaunas, Lithuanian
Contact details	info@kaunogelzbetonis.lt
Website	https://www.kaunogelzbetonis.lt/

PRODUCT IDENTIFICATION

Product name	Concrete and precast concrete elements
Products covered by this EPD	Product 1 – Concrete elements Product 2 – Hollow - Core slabs Product 3 – Precast concrete elements (reinforcement content < 50 kg/m^3) Product 4 – Precast concrete elements (reinforcement content < 100 kg/m^3) Product 5 – Precast concrete elements (reinforcement content < 150 kg/m^3) Product 6 – Precast concrete elements (reinforcement content < 200 kg/m^3)
Place(s) of roduction	Kaunas, Lithuania
CPC code	37550

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

EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must comply with EN15804, 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.

Jukka Seppänen
RTS EPD Committee Secretary

Laura Apilo
Managing Director

EPD INFORMATION

EPD program operator	Rakennustieto EPD, Rakennustietosäätiö RTS sr, Malminkatu 16 A, 00100 Helsinki, Finland https://ymparisto.rakennustieto.fi/en/rakennustietoepds
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS PCR (English version, 121124) is used.
EPD author	Sigita Židonienė, Vesta Consulting UAB
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
Verification date	4.7.2025
EPD verifier	Mari Kirss, Meetripuu OÜ
EPD number	RTS_409_25
Publishing date	18.8.2025
EPD valid until	18.8.2030

PRODUCT INFORMATION

PRODUCT DESCRIPTION & APPLICATION

This EPD covers multiple products produced by UAB “Kauno gelžbetonis”.

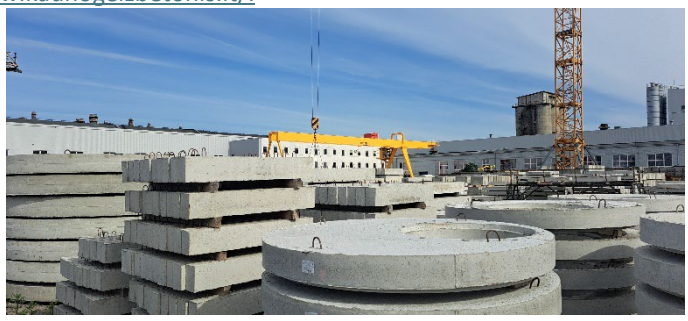
Product 1 – Concrete elements: This product group covers concrete paving blocks (tiles and borders) that are durable and versatile elements used in landscaping and outdoor surface finishing. They are ideal for pavements, driveways, walkways, patios, and public spaces. Made from high-quality concrete, these blocks offer excellent resistance to weather, loads, and wear. The blocks are available in different shape and size. The variety of shapes and sizes are available at https://www.kaunogelzbetonis.lt/.

Product 2 – Hollow-Core Slabs: These slabs have a wide range of applications, including floor structures between levels, roofing, parking decks, and other load-bearing components. The prestressed, hollow-core concrete slabs are produced using continuous casting technology based on the customer’s drawings or specifications.
Slabs are custom-made according to the required height and length, depending on the load-bearing requirements. The standard width is 1200 mm, but slabs can be longitudinally cut into narrower sections. Ends of the slabs may also be cut at specific angles. Openings can be formed within the slabs based on customer drawings, provided their number and dimensions are structurally feasible.
The standard fire resistance of these slabs is 60 minutes. Depending on the project and client needs, fire resistance can be increased to 90 or 120 minutes by modifying the slab cross-section and protective concrete layer thickness.

Precast concrete elements with reinforcement content <50 kg/m³ to < 200 kg/m³. Reinforced concrete products are categorized into four groups based on reinforcement density, ranging from light to heavy reinforcement. These products serve various structural and infrastructure applications:

- **Product 3** (up to 50 kg/m³ of reinforcement): Includes foundation elements, concrete pipes, multi-purpose channels, underground waste containers, components for wastewater treatment systems, manhole adjustment rings, and ring elements.
- **Product 4** (up to 100 kg/m³): Covers lintel elements, reinforced concrete pipes, channels with covers, and rings with bottoms.
- **Product 5** (up to 150 kg/m³): Includes lintel elements, base panels, stair and landing elements, linear components such as columns and beams, ring covers and bottoms, and wall panels.
- **Product 6** (up to 200 kg/m³): Designed for structurally demanding components such as lintel elements, stair and landing components, and linear elements like columns, beams, and girders.

These products are designed to meet a wide range of construction needs, from basic utility infrastructure to load-bearing architectural components. Products are available in different dimensions, based on customers needs. More information could be found at https://www.kaunogelzbetonis.lt/.



PRODUCT STANDARDS

UAB “Kauno gelžbetonis” focuses on the quality and control of production. To ensure the quality of the manufactured products, UAB “Kauno gelžbetonis” has equipped a laboratory where the properties of precast concrete and concrete products, concrete mixtures, reinforcement and building aggregates are determined and checked. The laboratory performs adjustments to concrete compositions and tests the effectiveness of new chemical additives. The properties of the manufactured products are constantly tested at the KTU “Construction and Materials Research Center”.

UAB “Kauno gelžbetonis” has certified its products in certification centers. This is evidenced by the certificates available for columns, perforated floor slabs, stair elements, beams, environmental management elements and other building structures and building aggregates. Valid product standards could be accessed https://www.kaunogelzbetonis.lt/kokybe/.

ABOUT MANUFACTURER

UAB "Kauno Gelžbetonis" is a building materials and structures manufacturing company that has been successfully operating for more than six decades. The company produces prefabricated concrete and reinforced concrete products, concrete mixtures. The nomenclature of products reaches 500 types.

In order to meet the needs of the market and produce products that meet European quality standards, the company pays a lot of attention to the search and implementation of new technologies. Currently, UAB "Kauno Gelžbetonis" manages the automatic production line of concrete environmental management elements of the German company "HESS", a modern and highly efficient concrete production line of the company "Stetter". Semi-automatic technological lines of the Austrian company "SCHLUSSELBAUER" for the production of well rings. The equipment of the German companies "MBK" and "EVG" for the production of rebar blanks and rebar nets. The Finnish company ELEMATIC is creating a production line for hollow overlay panels with integrated digital control of the automatic concrete assembly and line.

PRODUCT RAW MATERIAL COMPOSITION

Materials	Quantity* per declared unit, %						Renewable	Non renewable	Recycled
	Product 1	Product 2	Product 3	Product 4	Product 5	Product 6			
Ready mix concrete, C30/37	100%	-	-					x	
Ready mix concrete, C35/45	-	-	97,84%	95,75%	93,72%	91,75%		x	
Ready mix concrete, C45/55	-	98,43%						x	
Reinforcement	-	1,57%	2,16%	4,25%	6,28%	8,25%		x	x
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**			

*Order of magnitude, not exact composition

MASS INPUTS FOR THE PACKAGING

Packaging material	Weight, kg per declared unit						Material origin	Biogenic carbon content, C kg
	Product 1	Product 2	Product 3	Product 4	Product 5	Product 6		
PET film	0,08						EU	-
Wood		0,095	0,095	0,095	0,095	0,095	EU	0,04
Metal		0,03	0,03	0,03	0,03	0,03	EU	-
Total	**0,08**	**0,125**	**0,125**	**0,125**	**0,125**	**0,125**		**0,04**

PRODUCT MAIN COMPOSITION

Raw material category	Quantity* per declared unit, %						Origin of the raw materials
	Product 1	Product 2	Product 3	Product 4	Product 5	Product 6	
Metals	-	1,57%	2,16%	4,25%	6,28%	8,25%	GLO
Stone based materials (minerals)	79,75%	76,78%	75,13%	73,53%	71,97%	70,45%	EU
Fossil materials	15,87%	17,47%	18,40%	18,01%	17,63%	17,26%	EU
Bio based materials	-	-	-	-	-	-	EU
Other (water)	4,38%	4,18%	4,30%	4,21%	4,12%	4,04%	EU
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	

*Order of magnitude, not exact composition

SUBSTANCES, REACH - VERY HIGH CONCERN

The products do not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2024
Declared unit	1 m^3
Mass per declared unit	Product 1 – 2283,44 kg Product 2 – 2384,14 kg Product 3 – 2309,12 kg Product 4 – 2344,64 kg Product 5 – 2380,16 kg Product 6 – 2415,67 kg

SYSTEM BOUNDARY

The scope of EPD is cradle to gate, modules C1–C4 and module D and covers impacts of raw materials' production, their transportation to the production plant, manufacturing process, and end-of-life stage, also considering benefits beyond system boundaries.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = ND.

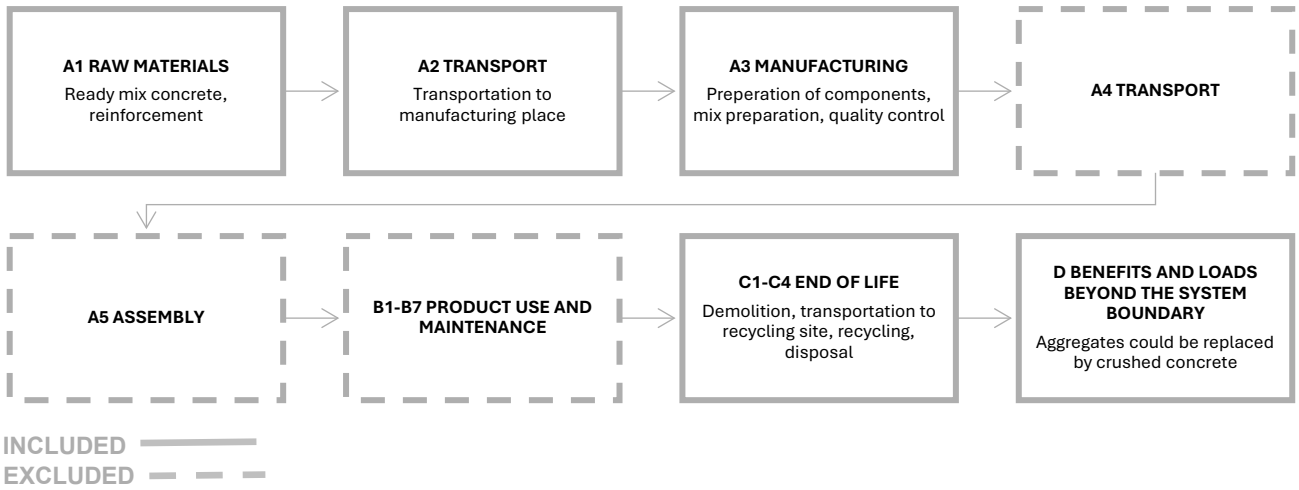


Figure 1. The process diagram

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	For all products: 0
Biogenic carbon content in packaging, kg C	Product 1: 0 Product 2-6: 0,04

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass. Materials not considered in this study: oil used for moulds preparation and the Euro pallets used multiple times for outside storage of Product 1 (the amount used is less than 0,01% per DU for both materials)

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per EN 15804, allocation is conducted in the following order:

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

The allocations in the Ecoinvent 3.10.1.1 datasets used in this study follow the Ecoinvent system model 'Allocation, cut-off, EN15804'. During calculations these allocations were made:

Module A3

- Electricity, fuel consumptions reason for allocation: only measured on factory level.
- Waste and wastewater from production, reason for allocation: only measured on factory level.

Energy and waste have been allocated based on production volume.

DATA QUALITY

The quality requirements for the life cycle assessment were set according to the EN ISO 14044 standard (4.2.3.6) and EN 15804 standard (6.3.7). This LCA study follows the standard EN 15804:2012+A2:2019 and RTS PCR and no decisions are made based on the values. The study does not consider long-term emissions (i.e. over 100 years). Impact assessment characterization factors are aligned with EF 3.1. The calculations were conducted using One Click LCA -tool which is a cloud-based LCA software in compliancy with EN 15804 -standard.

PROCEDURES FOR COLLECTION PROCESS SPECIFIC DATA

Production specific data was collected directly from the manufacturer's production plant. The data represents the production of the studied product at the plant from the materials transported to the facility and represents 1 year average. The data represents the year 2024, which was the latest year with full year data. All gathered data was used without excluding categories in advance following the system boundaries set in earlier chapters.

CRITERIA FOR CHOOSING THE GENERIC DATA

Generic data that was used for upstream and downstream processes represents complementary data from Ecoinvent 3.10.1 database. The datasets were chosen to represent the studied system as closely as possible. When available supplier specific information was used for instance in form of EN 15804 EPDs. When supplier-specific information was not available the information sources were chosen based on their technical and geographical representativeness. Only when country specific or European data has not been available global level data has been used (concerns mainly data from EcoInvent 3.10.1.) As up-to-date data as possible was chosen and no more than five years old for producer specific data and ten years for generic data was used. No fair, poor or very poor data was found during the assessment of relevant data.

PRODUCT LIFE-CYCLE

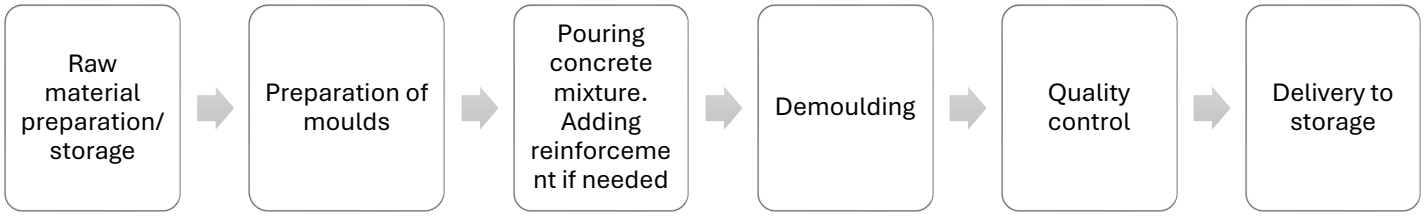
MANUFACTURING AND PACKAGING (A1-A3)

A1: This module considers the extraction and processing of raw materials.
A2: The raw materials are transported to the manufacturing plant. In this case the model includes road transportation of each raw material.
A3: This module includes the manufacture of products. It has considered all the energy consumption and waste generated in the production plant.

MANUFACTURING PROCESS

The production of concrete and concrete elements consists of these steps:

1. Storage of raw materials: ready mix concrete, reinforcement
2. Preparation of moulds
3. Automated dosing and mixing of materials
4. Demoulding
5. Quality control
6. Storage



TRANSPORT AND INSTALLATION (A4-A5)

This EPD does not cover the transport and installation stage. The GWP (global warming potential) of A4 stage is less than 20% of the GWP of modules A1–A3 and less than 1000 km, so it is not mandatory to declare.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

PRODUCT END OF LIFE (C1-C4, D)

Concrete elements and precast concrete elements have a reference service life (RSL) that depends on their specific application, typically, this is assumed to be around 50 years, though it may vary based on factors like environmental exposure, maintenance, and design quality. When products reach the EoL and are no longer functional for its original purpose, it must undergo deconstruction, reuse, recycling, or disposal.

Energy consumption for demolition is 10 kWh/1 t (Bozdağ, Ö & Seçer, M (2007). According to European commission Waste Framework Directive by 2020, the preparing for re-use, recycling and other material recovery of non-hazardous construction and demolition waste shall be increased to a minimum of 70% by weight. It is assumed that 70% of the concrete waste is recycled. The remaining 30% of concrete is assumed to be sent to the landfill. Moreover, it is assumed that 90% of steel is transformed into secondary material in a recycling plant, based on Europe average from Metal Recycling Factsheet by EuRIC. 10% goes to final deposition. Transportation distance to the closest recycling facility or landfill is estimated as 50 km and the transportation method is lorry which is the most common. Study evaluates end of life scenarios for EU location. The scenarios included are currently in use and are representative for one of the most probable alternatives.

Benefits and loads beyond the system boundary (D):

Benefits of recyclable waste generated in phase C3 are considered in the phase D. The recycled concrete has been modelled to avoid gravel production. The impact of concrete crushing for use as gravel is also considered. The recycled steel has been modelled to avoid use of primary materials. The recycled content of steel is assumed as EU average (56 %).

Calculation rules for averaging data

This EPD covers multiple products. Product 1 - is based on the average results of the product group. The only feature that differs between the products in the group is the size of one piece: tile or border, but as the DU is 1 m^3 no variation occurs. Product 2 – represents only one product - hollow core slabs, that are available in different size and dimensions, but as the composition is stable, that does not affect the environmental impacts per 1 m^3. No variation declared. Products 3-6 represents precast concrete elements with different reinforcement content. As in these products different concrete classes could be used and variation between these classes is more than 10% in GWP-GHG, the “worst case” scenario was considered.

The products do not contain GWP-biogenic, the energy as material indicators related with raw materials were balanced at the EoL. All other inputs GWP-biogenic and energy as material were balance in the same stage where inputs occur.

ENVIRONMENTAL IMPACT DATA

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.

PRODUCT 1: CONCRETE ELEMENTS, EF 3.1

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	2,89E+02	8,72E+00	1,23E+01	6,99E+00	4,28E+00	-1,60E+01
GWP – fossil	kg CO_2e	2,89E+02	8,72E+00	1,23E+01	6,99E+00	4,27E+00	-1,60E+01
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	1,39E-01	8,94E-04	5,50E-03	7,17E-04	2,44E-03	-1,45E-02
Ozone depletion pot.	kg CFC_{-11}e	4,78E-06	1,34E-07	1,81E-07	1,07E-07	1,24E-07	-1,25E-07
Acidification potential	mol H^+e	7,74E-01	7,87E-02	4,19E-02	6,31E-02	3,03E-02	-9,77E-02
EP-freshwater[2)]	kg Pe	7,08E-03	2,52E-04	9,57E-04	2,02E-04	3,51E-04	-4,88E-03
EP-marine	kg Ne	1,76E-01	3,65E-02	1,38E-02	2,93E-02	1,16E-02	-2,31E-02
EP-terrestrial	mol Ne	1,98E+00	4,00E-01	1,50E-01	3,21E-01	1,26E-01	-2,80E-01
POCP ("smog")[3)]	kg NMVOCe	5,44E-01	1,19E-01	6,17E-02	9,56E-02	4,52E-02	-7,75E-02
ADP-minerals & metals[4)]	kg Sbe	4,47E-04	3,13E-06	3,43E-05	2,51E-06	6,79E-06	-8,56E-05
ADP-fossil resources	MJ	1,53E+03	1,14E+02	1,78E+02	9,15E+01	1,05E+02	-1,92E+02
Water use[5)]	m^3e depr.	1,76E+04	2,85E-01	8,81E-01	2,29E-01	3,03E-01	-2,40E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Particulate matter	Incidence	8,54E-06	2,24E-06	1,23E-06	1,37E-05	6,90E-07	-1,49E-06
Ionizing radiation[6)]	kBq U235e	1,54E+01	5,06E-02	1,55E-01	4,05E-02	6,59E-02	-1,35E+00
Ecotoxicity (freshwater)	CTUe	4,01E+03	6,28E+00	2,52E+01	5,04E+00	8,80E+00	-4,58E+01
Human toxicity, cancer	CTUh	7,85E-08	8,97E-10	2,03E-09	7,19E-10	7,88E-10	-4,28E-09
Human tox. non-cancer	CTUh	2,64E-06	1,42E-08	1,15E-07	1,14E-08	1,81E-08	-1,25E-07
SQP[7)]	-	1,65E+03	8,00E+00	1,80E+02	6,41E+00	2,07E+02	-1,80E+02

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.
Note: for additional environmental indicators the secondary data was used for calculations, as Ready Mix concrete EPD does not declare these indicators.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	1,23E+02	7,23E-01	2,44E+00	5,79E-01	1,01E+00	-1,75E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	1,23E+02	7,23E-01	2,44E+00	5,79E-01	1,01E+00	-1,75E+01
Non-re. PER as energy	MJ	1,54E+03	1,14E+02	1,78E+02	9,15E+01	1,05E+02	-1,92E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	1,54E+03	1,14E+02	1,78E+02	9,15E+01	1,05E+02	-1,92E+02
Secondary materials	kg	1,81E-01	4,74E-02	7,59E-02	3,80E-02	2,64E-02	1,60E+03
Renew. secondary fuels	MJ	2,33E+01	1,24E-04	9,64E-04	9,93E-05	5,46E-04	-1,48E-03
Non-ren. secondary fuels	MJ	1,98E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	3,83E-01	7,54E-03	2,64E-02	6,05E-03	1,09E-01	-5,69E-01

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	6,23E-01	1,27E-01	3,02E-01	1,02E-01	1,16E-01	-1,50E+00
Non-hazardous waste	kg	8,90E+01	1,73E+00	5,59E+00	1,39E+00	6,85E+02	-2,67E+01

Radioactive waste	kg	2,56E-03	1,24E-05	3,80E-05	9,94E-06	1,61E-05	-3,25E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	2,38E+01	0,00E+00	0,00E+00	1,60E+03	0,00E+00	0,00E+00
Materials for energy rec	kg	2,10E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total	kg CO_2e	1,27E-01	3,82E-03	5,38E-03	3,06E-03	1,87E-03	-7,02E-03
ADP-minerals & metals	kg Sbe	1,19E-09	1,33E-09	1,46E-08	1,07E-09	2,91E-09	-3,69E-08
ADP-fossil	MJ	8,34E-03	4,96E-02	7,70E-02	3,98E-02	4,55E-02	-7,47E-02
Water use	m^3e depr.	7,70E+00	1,25E-04	3,86E-04	1,00E-04	1,33E-04	-1,05E-02
Secondary materials	kg	7,94E-05	2,08E-05	3,32E-05	1,66E-05	1,15E-05	7,00E-01
Biog. C in product[9)]	kg C	0,00E+00	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	0,00E+00	N/A	N/A	N/A	N/A	N/A

9) Biog. C in product = Biogenic carbon content in product

PRODUCT 2: HOLLOW-CORE SLABS, EF 3.1

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	4,73E+02	8,59E+00	1,28E+01	7,97E+00	4,42E+00	-4,06E+01
GWP – fossil	kg CO_2e	4,72E+02	8,59E+00	1,28E+01	7,96E+00	4,42E+00	-4,06E+01
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	9,37E-02	8,80E-04	5,74E-03	1,70E-03	2,52E-03	-1,77E-02
Ozone depletion pot.	kg CFC_{-11}e	5,33E-06	1,32E-07	1,89E-07	1,20E-07	1,28E-07	-2,08E-07
Acidification potential	mol H^+e	7,15E-01	7,76E-02	4,37E-02	7,41E-02	3,13E-02	-1,96E-01
EP-freshwater[2)]	kg Pe	2,39E-02	2,48E-04	9,99E-04	7,09E-04	3,63E-04	-1,54E-02
EP-marine	kg Ne	7,04E-01	3,60E-02	1,44E-02	3,21E-02	1,19E-02	-4,50E-02
EP-terrestrial	mol Ne	1,93E+00	3,94E-01	1,56E-01	3,53E-01	1,30E-01	-5,21E-01
POCP ("smog")[3)]	kg NMVOCe	7,27E-01	1,17E-01	6,45E-02	1,05E-01	4,67E-02	-1,59E-01
ADP-minerals & metals[4)]	kg Sbe	2,22E-03	3,08E-06	3,58E-05	5,78E-05	7,02E-06	-3,22E-04
ADP-fossil resources	MJ	3,57E+03	1,12E+02	1,86E+02	1,04E+02	1,08E+02	-4,17E+02
Water use[5)]	m^3e depr.	1,75E+04	2,81E-01	9,20E-01	4,23E-01	3,13E-01	-2,87E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Particulate matter	Incidence	2,03E-02	2,20E-06	1,28E-06	1,42E-05	7,13E-07	-3,12E-06
Ionizing radiation[6)]	kBq U235e	1,80E+01	4,98E-02	1,62E-01	1,30E-01	6,81E-02	-4,80E-01
Ecotoxicity (freshwater)	CTUe	7,43E+03	6,19E+00	2,63E+01	1,13E+01	9,09E+00	-1,06E+02
Human toxicity, cancer	CTUh	2,96E-07	8,84E-10	2,12E-09	1,43E-09	8,14E-10	-8,26E-09
Human tox. non-cancer	CTUh	5,59E-06	1,40E-08	1,21E-07	5,89E-08	1,87E-08	-3,19E-07
SQP[7)]	-	2,46E+03	7,88E+00	1,88E+02	2,69E+01	2,13E+02	-2,55E+02

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality. Note: for additional environmental indicators the secondary data was used for calculations, as Ready Mix concrete EPD does not declare these indicators

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	2,31E+02	7,12E-01	2,55E+00	2,54E+00	1,05E+00	-3,31E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,31E+02	7,12E-01	2,55E+00	2,54E+00	1,05E+00	-3,31E+01
Non-re. PER as energy	MJ	3,51E+03	1,12E+02	1,86E+02	1,04E+02	1,08E+02	-4,17E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	3,51E+03	1,12E+02	1,86E+02	1,04E+02	1,08E+02	-4,17E+02
Secondary materials	kg	2,81E+01	4,67E-02	7,93E-02	5,18E-02	2,73E-02	1,66E+03
Renew. secondary fuels	MJ	7,85E-03	1,22E-04	1,01E-03	6,94E-04	5,64E-04	-3,51E-03
Non-ren. secondary fuels	MJ	3,46E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,13E+00	7,43E-03	2,75E-02	1,18E-02	1,13E-01	-6,38E-01

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	3,83E+01	1,25E-01	3,15E-01	1,73E-01	1,20E-01	-9,53E+00
Non-hazardous waste	kg	4,82E+02	1,71E+00	5,84E+00	3,89E+00	7,08E+02	-8,96E+01
Radioactive waste	kg	2,93E-03	1,22E-05	3,97E-05	3,29E-05	1,66E-05	-9,85E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	5,26E+01	0,00E+00	0,00E+00	1,68E+03	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total	kg CO_2e	1,98E-01	3,61E-03	5,39E-03	3,34E-03	1,85E-03	-1,71E-02
ADP-minerals & metals	kg Sbe	1,20E-07	1,26E-09	1,46E-08	2,41E-08	2,89E-09	-1,34E-07
ADP-fossil	MJ	2,62E-01	4,68E-02	7,70E-02	4,29E-02	4,50E-02	-1,73E-01
Water use	m^3e depr.	7,33E+00	1,18E-04	3,86E-04	1,77E-04	1,31E-04	-1,20E-02
Secondary materials	kg	1,18E-02	1,96E-05	3,32E-05	2,17E-05	1,14E-05	5,50E-03
Biog. C in product[9)]	kg C	0,00E+00	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	3,88E-02	N/A	N/A	N/A	N/A	N/A

9) Biog. C in product = Biogenic carbon content in product

PRODUCT 3: PRECAST CONCRETE ELEMENTS (REINFORCEMENT CONTENT < 50 KG/M^3), EF 3.1

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	4,22E+02	8,32E+00	1,24E+01	7,94E+00	4,26E+00	-4,45E+01
GWP – fossil	kg CO_2e	4,22E+02	8,32E+00	1,24E+01	7,94E+00	4,26E+00	-4,45E+01
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	2,17E-01	8,53E-04	5,56E-03	1,96E-03	2,44E-03	-1,77E-02
Ozone depletion pot.	kg $CFC_{-11}e$	6,29E-06	1,27E-07	1,83E-07	1,20E-07	1,23E-07	-2,18E-07
Acidification potential	mol H^+e	1,20E+00	7,51E-02	4,24E-02	7,46E-02	3,02E-02	-2,10E-01
EP-freshwater[2)]	kg Pe	4,38E-02	2,40E-04	9,68E-04	8,55E-04	3,50E-04	-1,71E-02
EP-marine	kg Ne	2,67E-01	3,49E-02	1,39E-02	3,17E-02	1,15E-02	-4,81E-02
EP-terrestrial	mol Ne	2,96E+00	3,82E-01	1,52E-01	3,48E-01	1,26E-01	-5,54E-01
POCP ("smog")[3)]	kg NMVOCe	8,85E-01	1,14E-01	6,25E-02	1,04E-01	4,51E-02	-1,71E-01
ADP-minerals & metals[4)]	kg Sbe	9,96E-04	2,98E-06	3,47E-05	7,46E-05	6,77E-06	-3,63E-04
ADP-fossil resources	MJ	2,78E+03	1,09E+02	1,80E+02	1,04E+02	1,05E+02	-4,50E+02
Water use[5)]	m^3e depr.	2,08E+04	2,72E-01	8,91E-01	4,72E-01	3,02E-01	-2,85E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Particulate matter	Incidence	1,71E-05	2,13E-06	1,24E-06	1,37E-05	6,88E-07	-3,37E-06
Ionizing radiation[6)]	kBq U235e	2,69E+01	4,82E-02	1,57E-01	1,56E-01	6,58E-02	-2,60E-01
Ecotoxicity (freshwater)	CTUe	6,07E+03	5,99E+00	2,55E+01	1,29E+01	8,77E+00	-1,15E+02
Human toxicity, cancer	CTUh	2,57E-07	8,56E-10	2,05E-09	1,62E-09	7,86E-10	-8,82E-09
Human tox. non-cancer	CTUh	4,58E-06	1,36E-08	1,17E-07	7,30E-08	1,81E-08	-3,49E-07
SQP[7)]	-	2,40E+03	7,63E+00	1,82E+02	3,29E+01	2,06E+02	-2,61E+02

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality. Note: for additional environmental indicators the secondary data was used for calculations, as Ready Mix concrete EPD does not declare these indicators.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	2,53E+02	6,90E-01	2,47E+00	3,12E+00	1,01E+00	-3,53E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,53E+02	6,90E-01	2,47E+00	3,12E+00	1,01E+00	-3,53E+01
Non-re. PER as energy	MJ	2,78E+03	1,09E+02	1,80E+02	1,04E+02	1,05E+02	-4,50E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	2,78E+03	1,09E+02	1,80E+02	1,04E+02	1,05E+02	-4,50E+02
Secondary materials	kg	3,88E+01	4,52E-02	7,68E-02	5,43E-02	2,63E-02	1,60E+03
Renew. secondary fuels	MJ	2,77E+01	1,18E-04	9,75E-04	8,72E-04	5,44E-04	-3,83E-03
Non-ren. secondary fuels	MJ	2,34E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,46E+00	7,20E-03	2,67E-02	1,32E-02	1,09E-01	-6,26E-01

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	3,72E+01	1,21E-01	3,06E-01	1,90E-01	1,16E-01	-1,10E+01
Non-hazardous waste	kg	2,72E+02	1,65E+00	5,65E+00	4,60E+00	6,83E+02	-1,00E+02
Radioactive waste	kg	4,82E-03	1,18E-05	3,85E-05	3,95E-05	1,60E-05	-4,22E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	4,87E+01	0,00E+00	0,00E+00	1,63E+03	0,00E+00	0,00E+00
Materials for energy rec	kg	2,48E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total	kg CO_2e	1,83E-01	3,61E-03	5,39E-03	3,44E-03	1,85E-03	-1,93E-02
ADP-minerals & metals	kg Sbe	2,02E-07	1,26E-09	1,46E-08	3,22E-08	2,87E-09	-1,56E-07
ADP-fossil	MJ	3,97E-01	4,68E-02	7,70E-02	4,40E-02	4,48E-02	-1,94E-01
Water use	m^3e depr.	9,02E+00	1,18E-04	3,86E-04	2,04E-04	1,31E-04	-1,23E-02
Secondary materials	kg	1,68E-02	1,96E-05	3,32E-05	2,35E-05	1,14E-05	6,92E-01
Biog. C in product[9)]	kg C	0,00E+00	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	3,88E-02	N/A	N/A	N/A	N/A	N/A

9) Biog. C in product = Biogenic carbon content in product

PRODUCT 4: PRECAST CONCRETE ELEMENTS (REINFORCEMENT CONTENT < 100 KG/M^3), EF3.1

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D

GWP – total[1)]	kg CO_2e	4,97E+02	8,09E+00	1,26E+01	8,91E+00	4,27E+00	-7,31E+01
GWP – fossil	kg CO_2e	4,96E+02	8,09E+00	1,26E+01	8,91E+00	4,27E+00	-7,31E+01
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	2,70E-01	8,29E-04	5,65E-03	3,21E-03	2,44E-03	-2,10E-02
Ozone depletion pot.	kg CFC_{-11}e	6,87E-06	1,24E-07	1,86E-07	1,33E-07	1,24E-07	-3,11E-07
Acidification potential	mol H^+e	1,49E+00	7,30E-02	4,30E-02	8,63E-02	3,02E-02	-3,23E-01
EP-freshwater[2)]	kg Pe	7,90E-02	2,34E-04	9,83E-04	1,51E-03	3,51E-04	-2,94E-02
EP-marine	kg Ne	3,32E-01	3,39E-02	1,41E-02	3,42E-02	1,15E-02	-7,31E-02
EP-terrestrial	mol Ne	3,65E+00	3,71E-01	1,54E-01	3,76E-01	1,26E-01	-8,28E-01
POCP ("smog")[3)]	kg NMVOCe	1,14E+00	1,11E-01	6,34E-02	1,12E-01	4,51E-02	-2,64E-01
ADP-minerals & metals[4)]	kg Sbe	1,46E-03	2,90E-06	3,52E-05	1,47E-04	6,78E-06	-6,40E-04
ADP-fossil resources	MJ	3,67E+03	1,06E+02	1,83E+02	1,17E+02	1,05E+02	-7,09E+02
Water use[5)]	m^3e depr.	2,07E+04	2,64E-01	9,05E-01	7,16E-01	3,02E-01	-3,31E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Particulate matter	Incidence	2,26E-05	2,08E-06	1,26E-06	1,38E-05	6,88E-07	-5,25E-06
Ionizing radiation[6)]	kBq U235e	3,36E+01	4,69E-02	1,60E-01	2,71E-01	6,58E-02	8,24E-01
Ecotoxicity (freshwater)	CTUe	5,81E+03	5,83E+00	2,59E+01	2,09E+01	8,78E+00	-1,85E+02
Human toxicity, cancer	CTUh	4,01E-07	8,32E-10	2,08E-09	2,52E-09	7,87E-10	-1,34E-08
Human tox. non-cancer	CTUh	5,06E-06	1,32E-08	1,19E-07	1,35E-07	1,81E-08	-5,75E-07
SQP[7)]	-	2,49E+03	7,42E+00	1,84E+02	5,94E+01	2,06E+02	-3,42E+02

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality. Note: for additional environmental indicators the secondary data was used for calculations, as Ready Mix concrete EPD does not declare these indicators.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	3,58E+02	6,70E-01	2,51E+00	5,66E+00	1,01E+00	-5,31E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	3,59E+02	6,70E-01	2,51E+00	5,66E+00	1,01E+00	-5,31E+01
Non-re. PER as energy	MJ	3,67E+03	1,06E+02	1,83E+02	1,17E+02	1,05E+02	-7,09E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	3,67E+03	1,06E+02	1,83E+02	1,17E+02	1,05E+02	-7,09E+02
Secondary materials	kg	7,75E+01	4,40E-02	7,80E-02	7,07E-02	2,63E-02	1,61E+03
Renew. secondary fuels	MJ	2,75E+01	1,15E-04	9,90E-04	1,65E-03	5,45E-04	-6,18E-03
Non-ren. secondary fuels	MJ	2,33E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	2,48E+00	7,00E-03	2,71E-02	2,04E-02	1,09E-01	-6,86E-01

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	7,38E+01	1,18E-01	3,10E-01	2,79E-01	1,16E-01	-2,04E+01
Non-hazardous waste	kg	4,57E+02	1,61E+00	5,74E+00	7,81E+00	6,83E+02	-1,74E+02
Radioactive waste	kg	6,70E-03	1,15E-05	3,90E-05	6,91E-05	1,61E-05	2,39E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Materials for recycling	kg	5,09E+01	0,00E+00	0,00E+00	1,66E+03	0,00E+00	0,00E+00
Materials for energy rec	kg	2,47E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total	kg CO_2e	2,12E-01	3,45E-03	5,39E-03	3,80E-03	1,82E-03	-3,12E-02
ADP-minerals & metals	kg Sbe	3,96E-07	1,20E-09	1,46E-08	6,23E-08	2,83E-09	-2,72E-07
ADP-fossil	MJ	7,19E-01	4,48E-02	7,70E-02	4,80E-02	4,42E-02	-3,11E-01
Water use	m^3e depr.	8,84E+00	1,13E-04	3,86E-04	3,05E-04	1,29E-04	-1,41E-02
Secondary materials	kg	3,30E-02	1,88E-05	3,33E-05	3,01E-05	1,12E-05	6,85E-01
Biog. C in product[9)]	kg C	0,00E+00	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	3,88E-02	N/A	N/A	N/A	N/A	N/A

9) Biog. C in product = Biogenic carbon content in product

PRODUCT 5: PRECAST CONCRETE ELEMENTS (REINFORCEMENT CONTENT < 150 KG/M^3), EF 3.1

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	5,71E+02	2,38E+00	1,28E+01	9,89E+00	4,27E+00	-1,02E+02
GWP – fossil	kg CO_2e	5,71E+02	2,38E+00	1,28E+01	9,88E+00	4,27E+00	-1,02E+02
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	3,22E-01	2,44E-04	5,73E-03	4,47E-03	2,44E-03	-2,43E-02
Ozone depletion pot.	kg CFC_{-11}e	7,44E-06	3,65E-08	1,89E-07	1,46E-07	1,24E-07	-4,05E-07
Acidification potential	mol H^+e	1,79E+00	2,15E-02	4,37E-02	9,80E-02	3,03E-02	-4,36E-01
EP-freshwater[2)]	kg Pe	1,14E-01	6,88E-05	9,97E-04	2,16E-03	3,51E-04	-4,16E-02
EP-marine	kg Ne	3,97E-01	9,98E-03	1,44E-02	3,67E-02	1,15E-02	-9,82E-02
EP-terrestrial	mol Ne	4,34E+00	1,09E-01	1,56E-01	4,04E-01	1,26E-01	-1,10E+00
POCP ("smog")[3)]	kg NMVOCe	1,39E+00	3,26E-02	6,44E-02	1,20E-01	4,52E-02	-3,58E-01
ADP-minerals & metals[4)]	kg Sbe	1,93E-03	8,55E-07	3,57E-05	2,19E-04	6,79E-06	-9,17E-04
ADP-fossil resources	MJ	4,55E+03	3,12E+01	1,86E+02	1,30E+02	1,05E+02	-9,68E+02
Water use[5)]	m^3e depr.	2,06E+04	7,79E-02	9,18E-01	9,59E-01	3,02E-01	-3,78E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Particulate matter	Incidence	2,87E-05	6,11E-07	1,28E-06	1,39E-05	6,89E-07	-7,14E-06
Ionizing radiation[6)]	kBq U235e	4,10E+01	1,38E-02	1,62E-01	3,87E-01	6,59E-02	1,91E+00
Ecotoxicity (freshwater)	CTUe	5,99E+03	1,72E+00	2,63E+01	2,88E+01	8,79E+00	-2,55E+02
Human toxicity, cancer	CTUh	5,52E-07	2,45E-10	2,11E-09	3,43E-09	7,87E-10	-1,79E-08
Human tox. non-cancer	CTUh	5,81E-06	3,88E-09	1,20E-07	1,96E-07	1,81E-08	-8,00E-07
SQP[7)]	-	2,73E+03	2,18E+00	1,87E+02	8,59E+01	2,06E+02	-4,24E+02

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality. Note: for additional environmental indicators the secondary data was used for calculations, as Ready Mix concrete EPD does not declare these indicators.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	4,62E+02	1,97E-01	2,55E+00	8,20E+00	1,01E+00	-7,10E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Total use of renew. PER	MJ	4,62E+02	1,97E-01	2,55E+00	8,20E+00	1,01E+00	-7,10E+01
Non-re. PER as energy	MJ	4,55E+03	3,12E+01	1,86E+02	1,30E+02	1,05E+02	-9,68E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	4,55E+03	3,12E+01	1,86E+02	1,30E+02	1,05E+02	-9,68E+02
Secondary materials	kg	1,16E+02	1,29E-02	7,91E-02	8,71E-02	2,64E-02	1,61E+03
Renew. secondary fuels	MJ	2,73E+01	3,38E-05	1,01E-03	2,42E-03	5,46E-04	-8,54E-03
Non-ren. secondary fuels	MJ	2,31E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	3,51E+00	2,06E-03	2,75E-02	2,76E-02	1,09E-01	-7,45E-01

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	1,10E+02	3,47E-02	3,15E-01	3,67E-01	1,16E-01	-2,99E+01
Non-hazardous waste	kg	6,42E+02	4,73E-01	5,83E+00	1,10E+01	6,84E+02	-2,47E+02
Radioactive waste	kg	8,59E-03	3,39E-06	3,96E-05	9,86E-05	1,61E-05	5,21E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	5,31E+01	0,00E+00	0,00E+00	1,70E+03	0,00E+00	0,00E+00
Materials for energy rec	kg	2,45E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total	kg CO_2e	2,40E-01	1,00E-03	5,39E-03	4,15E-03	1,79E-03	-4,27E-02
ADP-minerals & metals	kg Sbe	5,84E-07	3,49E-10	1,46E-08	9,16E-08	2,79E-09	-3,84E-07
ADP-fossil	MJ	1,03E+00	1,30E-02	7,70E-02	5,20E-02	4,36E-02	-4,23E-01
Water use	m^3e depr.	8,66E+00	3,27E-05	3,86E-04	4,03E-04	1,27E-04	-1,59E-02
Secondary materials	kg	4,88E-02	5,44E-06	3,33E-05	3,66E-05	1,11E-05	6,77E-01
Biog. C in product[9)]	kg C	0,00E+00	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	3,88E-02	N/A	N/A	N/A	N/A	N/A

9) Biog. C in product = Biogenic carbon content in product

PRODUCT 6: PRECAST CONCRETE ELEMENTS (REINFORCEMENT CONTENT < 200 KG/M^3), EF 3.1

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	6,46E+02	2,42E+00	1,30E+01	1,09E+01	4,28E+00	-1,30E+02
GWP – fossil	kg CO_2e	6,46E+02	2,42E+00	1,30E+01	1,09E+01	4,28E+00	-1,30E+02
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	3,75E-01	2,48E-04	5,82E-03	5,72E-03	2,44E-03	-2,76E-02
Ozone depletion pot.	kg $CFC_{-11}e$	8,03E-06	3,70E-08	1,92E-07	1,59E-07	1,24E-07	-4,98E-07
Acidification potential	mol H^+e	2,08E+00	2,18E-02	4,43E-02	1,10E-01	3,03E-02	-5,48E-01
EP-freshwater[2)]	kg Pe	1,49E-01	6,98E-05	1,01E-03	2,82E-03	3,51E-04	-5,39E-02
EP-marine	kg Ne	4,63E-01	1,01E-02	1,46E-02	3,91E-02	1,16E-02	-1,23E-01
EP-terrestrial	mol Ne	5,03E+00	1,11E-01	1,59E-01	4,32E-01	1,26E-01	-1,38E+00
POCP ("smog")[3)]	kg NMVOCe	1,65E+00	3,31E-02	6,54E-02	1,29E-01	4,52E-02	-4,51E-01
ADP-minerals & metals[4)]	kg Sbe	2,39E-03	8,67E-07	3,63E-05	2,91E-04	6,79E-06	-1,19E-03
ADP-fossil resources	MJ	5,44E+03	3,16E+01	1,89E+02	1,43E+02	1,05E+02	-1,23E+03
Water use[5)]	m^3e depr.	2,06E+04	7,91E-02	9,32E-01	1,20E+00	3,03E-01	-4,24E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Particulate matter	Incidence	3,48E-05	6,21E-07	1,30E-06	1,39E-05	6,90E-07	-9,03E-06
Ionizing radiation[6)]	kBq U235e	4,83E+01	1,40E-02	1,64E-01	5,02E-01	6,60E-02	2,99E+00
Ecotoxicity (freshwater)	CTUe	6,18E+03	1,74E+00	2,67E+01	3,67E+01	8,80E+00	-3,25E+02
Human toxicity, cancer	CTUh	7,03E-07	2,49E-10	2,15E-09	4,33E-09	7,88E-10	-2,25E-08
Human tox. non-cancer	CTUh	6,57E-06	3,94E-09	1,22E-07	2,58E-07	1,81E-08	-1,02E-06
SQP[7)]	-	2,96E+03	2,22E+00	1,90E+02	1,12E+02	2,07E+02	-5,06E+02

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality. Note: for additional environmental indicators the secondary data was used for calculations, as Ready Mix concrete EPD does not declare these indicators.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	5,67E+02	2,00E-01	2,59E+00	1,07E+01	1,01E+00	-8,88E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	5,67E+02	2,00E-01	2,59E+00	1,07E+01	1,01E+00	-8,88E+01
Non-re. PER as energy	MJ	5,44E+03	3,16E+01	1,89E+02	1,43E+02	1,05E+02	-1,23E+03
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	5,44E+03	3,16E+01	1,89E+02	1,43E+02	1,05E+02	-1,23E+03
Secondary materials	kg	1,55E+02	1,31E-02	8,03E-02	1,03E-01	2,64E-02	1,62E+03
Renew. secondary fuels	MJ	2,72E+01	3,44E-05	1,02E-03	3,19E-03	5,46E-04	-1,09E-02
Non-ren. secondary fuels	MJ	2,30E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	4,54E+00	2,09E-03	2,79E-02	3,49E-02	1,09E-01	-8,05E-01

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	1,47E+02	3,52E-02	3,20E-01	4,56E-01	1,16E-01	-3,94E+01
Non-hazardous waste	kg	8,26E+02	4,80E-01	5,92E+00	1,42E+01	6,84E+02	-3,21E+02
Radioactive waste	kg	1,05E-02	3,44E-06	4,02E-05	1,28E-04	1,61E-05	8,03E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	5,53E+01	0,00E+00	0,00E+00	1,73E+03	0,00E+00	0,00E+00
Materials for energy rec	kg	2,44E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
GWP – total	kg CO_2e	2,67E-01	1,00E-03	5,39E-03	4,49E-03	1,77E-03	-5,40E-02
ADP-minerals & metals	kg Sbe	7,66E-07	3,49E-10	1,46E-08	1,20E-07	2,76E-09	-4,93E-07
ADP-fossil	MJ	1,33E+00	1,30E-02	7,71E-02	5,58E-02	4,30E-02	-5,33E-01
Water use	m^3e depr.	8,51E+00	3,27E-05	3,86E-04	4,98E-04	1,25E-04	-1,76E-02
Secondary materials	kg	6,40E-02	5,44E-06	3,33E-05	4,28E-05	1,09E-05	6,70E-01
Biog. C in product[9)]	kg C	0,00E+00	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	3,88E-02	N/A	N/A	N/A	N/A	N/A

9) Biog. C in product = Biogenic carbon content in product

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation (A3)

Scenario parameter	Value	Source
Residual mix (Lithuania)	0.58 kg CO2e/kWh	Electricity, Lithuania, residual mix, 2023 (One Click LCA, based on AIB)

Diesel, burned in building machine	0.1 kg CO_2e / MJ	Diesel, burned in building machine (Reference product: diesel, burned in building machine). Ecoinvent 3.10.1.1 (2024)
Heat production, natural gas	0.0773 kg CO_2e / MJ	Heat production, natural gas, at industrial furnace >100kW (Reference product: heat, district or industrial, natural gas). Ecoinvent 3.10.1.1 (2024)
Propane, burned in building machine	0.0944 kg CO_2e / MJ	Market for propane, burned in building machine (Reference product: propane, burned in building machine) Ecoinvent 3.10.1.1 (2024)

End of life scenario documentation

Scenario parameter	Value, kg					
	Product 1	Product 2	Product 3	Product 4	Product 5	Product 6
Collection process – kg collected separately	2283,44	2384,14	2309,12	2344,64	2380,16	2415,67
Collection process – kg collected with mixed waste						
Recovery process – kg for re-use						
Recovery process – kg for recycling	1598,41	1676,56	1626,53	1661,35	1696,53	1731,53
Recovery process – kg for energy recovery						
Disposal (total) – kg for final deposition	685,03	707,58	682,59	683,29	683,63	684,14
Scenario assumptions e.g. transportation	End-of-life product is transported 50 km with average lorry					

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