Environmental Product Declaration

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

Precast concrete hollow core slab

from

INHUS Prefab, UAB

Programme:	The International EPD® System, www.environdec.com
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

Company information

Owner of the EPD:
INHUS Prefab, UAB
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https://www.inhusprefab.eu/en

Description of the organisation: INHUS Prefab is a manufacturing company implementing various architectural ideas of buildings, producing brick, coloured, matrix and graphic concrete facade elements, which make every building unique. The company has extensive experience in developing a variety of concrete structures and elements, including prefabricated wall elements, hollow core and balcony slabs, stair and linear structural elements.

Key facts about INHUS Prefab:

- 2 factories in Vilnius and Kaunas (Žarijų str. 6, 02300 Vilnius and Bituko str. 5, 52366 Kaunas)
- 200 000 m^2 of wall panel produced annually
- 200 000 m^2 of hollow core slabs produced annually
- 6 500 m^3 of frame constructions produced annually

INHUS Prefab is a part of INHUS - one of the leading “design-build” project developers in the Nordic region with sales of 60 million Euro and approximately 550 employees in 2021. INHUS cooperates with the largest Lithuanian and Scandinavian building enterprises and real estate developers to bring simplicity to “design-build” delivery.

INHUS vision is to build buildings without using construction sites - a world where clients only have to worry about their ideas and not the technical execution. Sustainability is at the core of this vision, because it requires to rethink the construction process, materials and the role of their employees. The company currently makes progress with a holistic approach, making net-positive investments into all three dimensions of sustainability - social, environmental and economical.

To create maximum value to their customers and to the environment, INHUS takes full responsibility for the entire production process; from the design and manufacturing of building components, to the development of logistic solutions and finally the construction itself. The company innovates in production methods, implements modern technologies, ensures efficient use of resources and invests in its employee’s development. INHUS has also developed a carbon reduction strategy, outlining its planned steps and obligations up to 2030.

Finally, the company is a member of Lithuanian Builders Association, Lithuanian Construction Industry Association, Lithuanian Construction Product Testing Laboratory and is recognized for meeting the management system standards - ISO 9001: 2015 (quality standard) and ISO 14001: 2015 (environmental protection standard).

Visit https://www.inhusprefab.eu/en to learn more.

Name and location of production site(s):
INHUS Prefab, UAB, Žarijų str. 6, 02300 Vilnius, Lithuania.

Product information

Product name: Precast concrete hollow core slab

Product identification: Hollow core slabs are certified and manufactured in accordance with the harmonized European standard EN 1168 Precast concrete products - Hollow core slabs. It holds the CE mark and the declaration of performance issued by the manufacturer in accordance with requirements of Regulation (EU) No. 305.2011 of the European Parliament and of the Council issued on 2011 March 9th.

Product description: Hollow core slab is a monolithic prestressed element with a constant overall depth divided into an upper and lower flange, linked by vertical webs, so constituting cores as longitudinal voids the cross section of which is constant and presents one vertical symmetrical axis.

Prestressed hollow core slabs (HCS) can be manufactured in various shapes and sizes, with or without loops. Resistance to fire is up to REI 90.

The products are manufactured in the following dimensions and technical features:

- Thicknesses: 200, 265, 320 and 400 mm,
- Width ranges from 260 mm up to 1200 mm,
- Max length: 18000 mm,
- Concrete type: C 40/50 - C 60/75.

Extruded, prestressed hollow core slabs are used for floors and roofs of buildings.

UN CPC code: 375

Geographical scope: Lithuania, Sweden, Denmark, Poland, United Kingdom

LCA information

Functional unit / declared unit: In accordance with the PCR the declared unit is 1 metric tonne of the product.

Reference service life: The reference service life for the precast concrete hollow core slab is set at 50 years.

Time representativeness: Primary data was collected internally. The production data refers to the average of the year 2020.

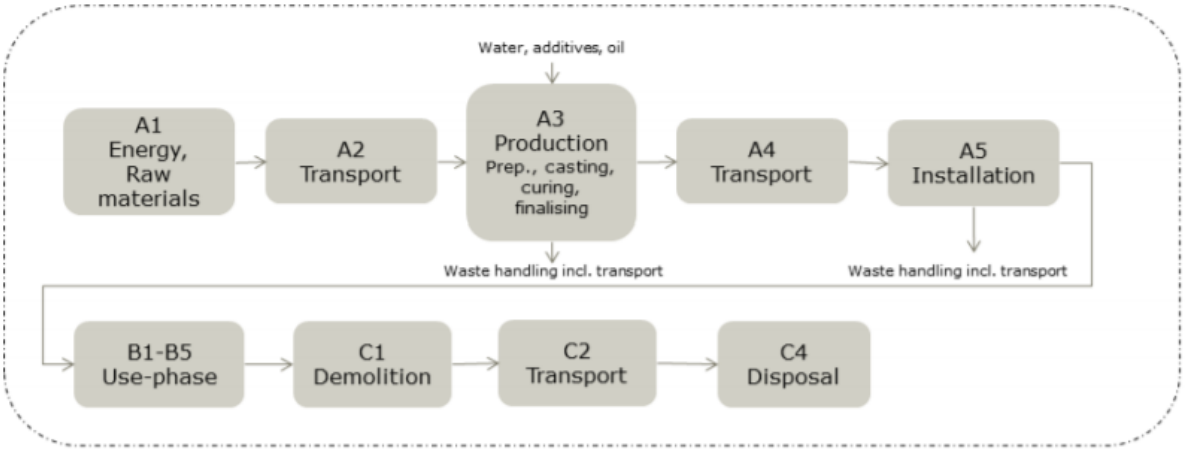
Database(s) and LCA software used: The Ecoinvent database provides the life cycle inventory data for the raw and process materials obtained from the background system. The used database is Ecoinvent 3.6. The LCA software used is One Click LCA.

Description of system boundaries: Cradle to gate with options, modules C1-C4 and module D. The LCA was carried out considering the Product stage phases (A1, A2, A3), Distribution (A4), Installation (A5), End of life (C1, C2, C3, C4), Potential environmental benefits (D) in accordance with EN 15804.

Data quality: The foreground data collected internally is based on yearly production amounts and extrapolations of measurements on specific machines and plants. Overall, the data quality can be described as good. The primary data collection has been done thoroughly.

Cut-off criteria: Life cycle inventory data for a minimum of 99% of total material and energy input flows have been included in the life cycle analysis. Although, only materials having in summa less than 1% of weight of product were not used in calculations.

System diagram:



System boundary:

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

Description of the system boundary (X = Included in LCA; MND = Module Not declared; MNR = Module Not relevant)

Product stage:

A1: This stage 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 stage includes the manufacture of products and packaging. It has considered all the energy consumption and waste generated in the production plant.

Production process description

Hollow core slabs are produced on 115 m length heated pallets. Strands are dragged through the pallet and prestressed. Concrete produced in concrete batching plant is transported to the production bar by dolly for extrusion. The machine-extruder forms the hollow core slab. Concrete is protected from drying. After the concrete has reached the strength of not less than 70%, the hollow core slab is cut to various shapes and lengths according to the project requirements. Hollow core slabs are inspected and transported to the warehouse by trolly.

Construction process stage:
A4: This stage includes transport from the production gate to the construction site where the product shall be installed. Transportation distances has been calculated using a most likely scenarios, an export to Lithuania, Sweden, Denmark, Poland, United Kingdom with the parameters described in the following table. The transportation doesn't cause losses as products are packaged properly.

Scenario parameter	Distance, km	Value kgCO2e/tonkm
1) Lithuania		
Truck, Euro 5	30	0.0909
Ferry	-	-
2) Lithuania		
Truck, Euro 5	100	0.0909
Ferry	-	-
3) Sweden		
Truck, Euro 6	200	0.0863
Ferry	413	0.0094
4) Sweden		
Truck, Euro 6	300	0.0863
Ferry	413	0.0094
5) Denmark		
Truck, Euro 6	400	0.0863
Ferry	862	0.0094
6) Denmark		
Truck, Euro 6	500	0.0863
Ferry	862	0.0094
7) United Kingdom		
Truck, Euro 6	400	0.0863
Ferry	2070	0.0094
8) United Kingdom		
Truck, Euro 6	500	0.0863
Ferry	2070	0.0094
9) Poland		
Truck, Euro 5	500	0.0909
Ferry		-
10) Poland		
Truck, Euro 5	800	0.0909
Ferry	-	-

Capacity of utilization for truck is 56% of the capacity in volume. Capacity of utilization for ferry is 50% of the capacity in volume.

A5: This stage considers the installation of the product into the building.

Tower cranes powered by electricity are used for the installation work. Hollow core slabs (HCS) are delivered to the construction site by truck and installed directly from the truck platform. They are erected according to the design in the space allocated for these structures. These structures are installed on top of existing walls on which a layer of ready-mixed concrete is laid before the product is placed. Once the HCS are installed according to the design, joints between the products and the ends and sides of the HCS are concreted around the full circumference of the HCS.

Use stage:
In normal use scenario, it is assumed that no maintenance (B2), repair (B3), replacement (B4) and refurbishment (B5) is needed.

End of Life stage:
This stage includes the following modules:

C1, Deconstruction, dismantling, demolition

Consumption of fuel in demolition process is calculated according to transported mass. Energy consumption demolition is 10 kWh/1000 kg = 0,01 kWh/kg. The source of energy is diesel fuel used by work machines.

C2, Transport of the discarded product to the processing site

It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight with the declared product. All of the end-of-life product is assumed to be sent to the closest facilities such as recycling and landfill. Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is lorry which is the most common.

C3, Waste processing for reuse, recovery and/or recycling

Based on Europe average 90% of steel are transformed into secondary material in a recycling plant. According to European commision 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.

C4, Discharge (disposal)

The remaining 30 % of concrete and 10 % of steel are assumed to be sent to the landfill.

Benefits and loads beyond the system boundary (D):

Benefits of recyclable waste generated in the phase C3 are taken into account in the phase D. The recycled steel has been modelled to avoid use of primary materials. The scrap content in the studied product has been acknowledged and only the mass of primary steel in the product provides the benefit in order to avoid double counting. 70 % of concrete is assumed to be converted into a raw material.

Content information

Product components	Weight, kg	Weight, %

Sand	338.9	33.9
Stone	477.8	47.8
Cement	120.0	12.0
Water	48.7	4.9
Reinforcement	14.2	1.4
Embedded details	0.2	0.0
Additives	0.2	0.0
TOTAL	1000.0	100.0

No dangerous substances from the candidate list of SVHC for Authorisation are used in the product.

Packaging

Distribution packaging: wooden gaskets

After use, packaging materials can be re-used or recycled.

Environmental Information

Note: Environmental impacts according to EN 15804+A1, CML/ISO 21930 are presented below

Potential environmental impact – mandatory indicators according to 15804:2012+A2:2019

Results per functional or declared unit												
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	1,35E+02	4,05E+00	1,51E+01	1,55E+02	See below	3,74E+01	3,30E+00	4,55E+00	3,06E+00	1,57E+00	−5,778E0
GWP-fossil	kg CO_2 eq.	1,34E+02	4,05E+00	1,09E+01	1,49E+02	See below	3,73E+01	3,30E+00	4,54E+00	3,08E+00	1,57E+00	−5,7E0
GWP-biogenic	kg CO_2 eq.	1,33E+00	4,494E−5	4,23E+00	5,56E+00	See below	1,285E−1	9,168E−4	3,3E−3	−1,731E−2	3,103E−3	−7,04E−2
GWP-luluc	kg CO_2 eq.	6,093E−2	2,235E−3	7,727E−3	7,089E−2	See below	3,562E−2	2,785E−4	1,368E−3	5,913E−4	4,647E−4	−7,4E−3
ODP	kg CFC 11 eq.	6,863E−6	8,432E−7	1,696E−6	9,402E−6	See below	2,678E−6	7,119E−7	1,068E−6	6,416E−7	6,444E−7	−5,17E−7
AP	mol H^+ eq.	4,536E−1	9,685E−2	6,598E−2	6,165E−1	See below	1,642E−1	3,448E−2	1,909E−2	3,27E−2	1,485E−2	−3,73E−2
EP-freshwater	kg P eq.	2,55E−3	2,35E−5	6,332E−4	3,207E−3	See below	1,227E−3	1,333E−5	3,697E−5	3,292E−5	1,891E−5	−3,66E−4
EP-marine	kg N eq.	1,264E−1	2,434E−2	3,364E−2	1,844E−1	See below	4,437E−2	1,523E−2	5,752E−3	1,36E−2	5,114E−3	−7,86E−3
EP-terrestrial	mol N eq.	1,47E+00	2,705E−1	2,734E−1	2,01E+00	See below	4,956E−1	1,67E−1	6,352E−2	1,497E−1	5,633E−2	−1,04E−1
POCP	kg NMVOC eq.	3,927E−1	7,065E−2	7,774E−2	5,411E−1	See below	1,555E−1	4,592E−2	2,042E−2	4,114E−2	1,636E−2	−2,62E−2
ADP-minerals & metals*	kg Sb eq.	1,183E−2	5,909E−5	5,699E−5	1,195E−2	See below	1,881E−3	5,034E−6	7,754E−5	2,168E−5	1,43E−5	−6,29E−4
ADP-fossil*	MJ	8,34E+02	5,46E+01	1,60E+02	1,05E+03	See below	3,34E+02	4,54E+01	7,07E+01	4,24E+01	4,38E+01	−8,171E1
WDP	m^3	4,42E+01	1,357E−1	9,37E+00	5,37E+01	See below	1,41E+01	8,462E−2	2,629E−1	1,329E−1	2,02E+00	−1,019E1
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										

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Potential environmental impact – mandatory indicators according to 15804:2012+A2:2019

Results per functional or declared unit (only scenarios of A4 stage)											
		Lithuania		Sweden		Denmark		UK		Poland	
		30 km	100 km	613 km	713 km	1262 km	1362 km	2470 km	2570 km	500 km	800 km
Indicator	Unit	A4 LT (1)	A4 LT (2)	A4 SWE (3)	A4 SWE (4)	A4 DK (5)	A4 DK (6)	A4 UK (7)	A4 UK (8)	A4 PL (9)	A4 PL (10)
GWP-total	kg CO_2 eq.	2,73E+00	9,11E+00	2,14E+01	3,01E+01	4,31E+01	5,18E+01	5,45E+01	6,32E+01	4,55E+01	7,29E+01
GWP-fossil	kg CO_2 eq.	2,73E+00	9,11E+00	2,14E+01	3,01E+01	4,30E+01	5,18E+01	5,44E+01	6,32E+01	4,55E+01	7,28E+01
GWP-biogenic	kg CO_2 eq.	7,739E−5	2,58E−4	−1,58E−3	−1,32E−3	−3,35E−3	−3,00E−3	−9,5E−3	−9,24E−3	1,29E−3	2,064E−3
GWP-luluc	kg CO_2 eq.	8,221E−4	2,74E−3	8,145E−3	1,089E−2	1,652E−2	1,926E−2	2,431E−2	2,705E−2	1,37E−2	2,192E−2
ODP	kg CFC 11 eq.	6,421E−7	2,14E−6	5,066E−6	7,208E−6	1,02E−5	1,234E−5	1,249E−5	1,463E−5	1,07E−5	1,712E−5
AP	mol H^+ eq.	6,418E−3	2,139E−2	1,694E−1	1,908E−1	3,497E−1	3,712E−1	7,199E−1	7,413E−1	1,07E−1	1,711E−1
EP-freshwater	kg P eq.	1,948E−4	6,492E−4	1,453E−3	2,102E−3	2,919E−3	3,569E−3	3,371E−3	4,02E−3	3,246E−3	5,194E−3
EP-marine	kg N eq.	9,182E−4	3,061E−3	3,722E−2	4,029E−2	7,716E−2	8,022E−2	1,681E−1	1,712E−1	1,53E−2	2,449E−2
EP-terrestrial	mol N eq.	9,806E−3	3,269E−2	4,109E−1	4,436E−1	8,519E−1	8,846E−1	1,86E+00	1,90E+00	1,634E−1	2,615E−1
POCP	kg NMVOC eq.	5,412E−3	1,804E−2	1,252E−1	1,432E−1	2,583E−1	2,763E−1	5,192E−1	5,372E−1	9,02E−2	1,443E−1
ADP-minerals & metals*	kg Sb eq.	4,661E−5	1,554E−4	3,397E−4	4,951E−4	6,819E−4	8,373E−4	7,665E−4	9,218E−4	7,769E−4	1,243E−3
ADP-fossil*	MJ	4,20E+01	1,40E+02	3,30E+02	4,70E+02	6,635E	8,04E+02	8,08E+02	9,48E+02	7,00E+02	1,12E+03
WDP	m^3	3,26E+01	1,09E+02	2,271E	3,36E+02	4,55E+02	5,64E+02	4,84E+02	5,93E+02	5,43E+02	8,69E+02
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										

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Use of resources

Results per functional or declared unit												
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5,66E+01	5,28E−1	7,38E+01	1,31E+02	See below	5,55E+01	2,454E−1	8,897E−1	8,913E−1	3,537E−1	−6,977E0
PERM	MJ	0,00E+00	0,00E+00	6,17E+01	6,17E+01	See below	2,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,66E+01	5,28E−1	1,36E+02	1,93E+02	See below	7,84E+01	2,454E−1	8,897E−1	8,913E−1	3,537E−1	−6,977E0
PENRE	MJ	8,34E+02	5,46E+01	1,60E+02	1,05E+03	See below	3,34E+02	4,54E+01	7,07E+01	4,24E+01	4,38E+01	−8,171E1
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	See below	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	8,34E+02	5,46E+01	1,60E+02	1,05E+03	See below	3,34E+02	4,54E+01	7,07E+01	4,24E+01	4,38E+01	−8,171E1
SM	kg	1,30E+01	0,00E+00	0,00E+00	1,30E+01	See below	3,58E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	See below	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	See below	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,28E+00	6,636E−3	5,378E−1	2,83E+00	See below	6,993E−1	4,007E−3	1,472E−2	5,14E−3	4,786E−2	−8,14E−1
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										

Use of resources

Results per functional or declared unit (only scenarios of A4 stage)											
		Lithuania		Sweden		Denmark		UK		Poland	
		30 km	100 km	613 km	713 km	1262 km	30 km	100 km	613 km	713 km	1262 km
Indicator	Unit	A4 LT (1)	A4 LT (2)	A4 SWE (3)	A4 SWE (4)	A4 DK (5)	DK (6)	A4 UK (7)	A4 UK (8)	A4 PL (9)	A4 PL (10)
PERE	MJ	5,348E−1	1,78E+00	3,90E+00	5,69E+00	7,83E+00	9,62E+00	8,81E+00	1,06E+01	8,91E+00	1,43E+01
PERM	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	0,00E+00	0,00E+00
PERT	MJ	5,348E−1	1,78E+00	3,90E+00	5,69E+00	7,83E+00	9,62E+00	8,81E+00	1,06E+01	8,91E+00	1,43E+01
PENRE	MJ	4,28E+01	1,43E+02	3,35E+02	4,78E+02	6,75E+02	8,18E+02	8,20E+02	9,63E+02	7,13E+02	1,14E+03
PENRM	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	0,00E+00	0,00E+00
PENRT	MJ	4,28E+01	1,43E+02	3,35E+02	4,78E+02	6,75E+02	8,18E+02	8,20E+02	9,63E+02	7,13E+02	1,14E+03
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	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	0,00E+00	0,00E+00
NRSF	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	0,00E+00	0,00E+00
FW	m^3	8,846E−3	2,949E−2	6,367E−2	9,317E−2	1,278E−1	1,573E−1	1,415E−1	1,709E−1	1,474E−1	2,359E−1
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										

Waste production and output flows

Waste production

Results per functional or declared unit												
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	6,06E+00	6,012E−2	2,835E−1	6,40E+00	See below	4,67E+00	4,882E−2	6,869E−2	0,00E+00	4,081E−2	−4,26E−1
Non-hazardous waste disposed	kg	1,23E+02	1,87E+00	1,14E+01	1,36E+02	See below	6,16E+01	5,218E−1	7,60E+00	0,00E+00	2,97E+02	−1,74E1
Radioactive waste disposed	kg	3,555E−3	3,794E−4	5,38E−4	4,472E−3	See below	1,258E−3	3,177E−4	4,852E−4	0,00E+00	2,894E−4	−3,77E−4

Waste production

Results per functional or declared unit (only scenarios of A4 stage)											
		Lithuania		Sweden		Denmark		UK		Poland	
		30 km	100 km	613 km	713 km	1262 km	30 km	100 km	613 km	713 km	1262 km
Indicator	Unit	A4 LT (1)	A4 LT (2)	A4 SWE (3)	A4 SWE (4)	A4 DK (5)	DK (6)	A4 UK (7)	A4 UK (8)	A4 PL (9)	A4 PL (10)
Hazardous waste disposed	kg	4,129E−2	1,376E−1	3,334E−1	4,711E−1	6,719E−1	8,096E−1	8,419E−1	9,795E−1	6,882E−1	1,10E+00
Non-hazardous waste disposed	kg	4,57E+00	1,52E+01	3,12E+01	4,64E+01	6,24E+01	7,77E+01	6,46E+01	7,98E+01	7,61E+01	1,22E+02
Radioactive waste disposed	kg	2,917E−4	9,723E−4	2,296E−3	3,269E−3	4,622E−3	5,595E−3	5,643E−3	6,616E−3	4,861E−3	7,778E−3

Output flows

Results per functional or declared unit												
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4 (all)	A5	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	7,35E+01	7,35E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,03E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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Results per functional or declared unit												
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4 SWE (3)**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP	kg CO_2 eq.	1,32E+02	4,02E+00	1,07E+01	1,47E+02	2,12E+01	3,66E+01	3,27E+00	4,50E+00	3,05E+00	1,54E+00	−5,579E0
ODP	kg CFC 11 eq.	5,659E−6	6,69E−7	1,341E−6	7,669E−6	4,025E−6	2,232E−6	5,634E−7	8,491E−7	5,104E−7	5,106E−7	−4,72E−7
AP	mol H^+ eq.	3,209E−1	7,584E−2	2,493E−2	4,217E−1	1,385E−1	1,084E−1	4,866E−3	9,246E−3	6,452E−3	6,192E−3	−2,2E−2
EP	kg PO_4^{3-} eq.	1,136E−1	8,801E−3	1,322E−2	1,356E−1	1,876E−2	5,171E−2	8,573E−4	1,868E−3	1,688E−3	1,198E−3	−1,23E−2
POCP	kg Ethenee	1,635E−2	2,049E−3	1,824E−3	2,022E−2	4,772E−3	9,571E−3	5,011E−4	5,858E−4	5,311E−4	4,54E−4	−1,87E−3
ADP-minerals & metals*	kg Sb eq.	1,183E−2	5,909E−5	5,699E−5	1,195E−2	3,397E−4	1,881E−3	5,034E−6	7,754E−5	2,168E−5	1,43E−5	−6,29E−4
ADP-fossil*	MJ	8,34E+02	5,46E+01	1,60E+02	1,05E+03	3,33E+02	3,34E+02	4,54E+01	7,07E+01	4,24E+01	4,38E+01	−8,171E1
Acronyms		GWP = Global Warming Potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential; EP = Eutrophication potential; POCP = Formation of ozone of lower atmosphere; 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										

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

General information

Programme information

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

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction products (version 1.1); Complementary PCR (c-PCR):C-PCR-003 (TO PCR 2019:14) - Concrete and concrete elements, version: 2019-12-20;
PCR review was conducted by: The International EPD® System
Independent third-party verification of the declaration and data, according to ISO 14025:2010 ☐ EPD process certification ☒ EPD verification
Third party verifier: Silvia Vilčeková, Silcert, s.r.o Approved by: The International EPD® System 
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 from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

During revision (2022-01-03) A5 stage calculations were added to the EPD.

References

- General Programme Instructions of the International EPD® System. Version 3.01;
- PCR 2019:14 Construction products (version 1.1);
- C-PCR-003 (TO PCR 2019:14) - Concrete and concrete elements, version: 2019-12-20;
- EN 15804:2012+A2:2019 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products;
- ISO 14044:2006/Amd 2:2020 Environmental management. Life Cycle Assessment. Requirements and guidelines.
- ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations. Principles and procedures.

Tools and database

- One Click LCA tool;
- Ecoinvent 3.6 database

Contact information

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LCA author:	Vesta Consulting, UAB https://www.vestaconsulting.lt/
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