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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	SKONTO PREFAB SIA
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2061-930-EN
Registration number:	NEPD-2061-930-EN
ECO Platform reference number:	-
Issue date:	05.03.2020
Valid to:	05.03.2025

Precast Concrete Sandwich Walls

Skonto Prefab SIA

www.epd-norge.no

SKONTO PREFAB member of SKONTO GROUP

General information

Product:
Precats concrete sandwich walls

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Declaration number:
NEPD-2061-930-EN

Place of production:
33/4 Granita street, Acone, Salaspils area, Latvia

ECO Platform reference number:

Management system:
ISO 9001:2015
ISO 14001:2015

This declaration is based on Product Category Rules:
CEN Standard EN 15804 serves as core PCR
The NPCR 020 version 2 .0. PCR - Par B for concrete and concrete elements.

Organisation no:
LV40003610650

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

Issue date: 05.03.2020

Valid to: 05.03.2025

Declared unit:
Production of 1 ton of prefabricated concrete elements

Year of study:
2018

Declared unit with option:

Comparability:
EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

Functional unit:

The EPD has been worked out by:
Bureau Veritas Latvia SIA
Iveta Lazdiņa

Verification:
The CEN Norm EN 15804 serves as the core PCR. Independent verification of the declaration and data, according to ISO14025:2010

☐ internal ☒ external

Third party verifier:
Michael M. Jensen
(Independent verifier approved by EPD Norway)

Approved
Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:
Precast concrete sandwich walls are used in construction of different building types - starting from single-story and high rise residential buildings to extensive administrative and public buildings and complexes. The wide range of complexity and design of sandwich walls produced by SKONTO PREFAB allows to decrease construction time of one object significantly.
Precast concrete sandwich walls (SW) of different design in wide range of complexity are included in this EPD:
1. Sandwich wall
2. Sandwich wall with brick cladding
3. Sandwich wall with paper matrix
4. Sandwich wall with rubber matrix

In picture: Sandwich wall with brick cladding

Technical data:
Length – up to 14 m, Width – up to 4 m, Thickness – up to 0.6 m
Weight from 0.878 T to 12.2 T
Density 812.50 kg/m3
Specific surface 6.87 cm2/g
Surface density 145.66 kg/m2
Lifetime 50 years
Approximate depths of wall elements are 80 to 410 mm
Depth of heat insulation is 100 to 150 mm
Inner layer is 80 to 180 mm

Precast concrete sandwich walls are produced in accordance with EN 13369 and EN 14992. Compressive strength and exposure class is provided according to project documentation.
Information on fire protection according to EN 13501 – 1. Class of construction material: A1, A2, B, C, D, E and F.
Flaming dripping: d0, d1 and d2.
Smoke development: s1, s2, and s3.

Product specification:
Composition: Concrete, reinforced steel, insulation, plastic, additives and for design products - brick tiles are as well.
Sandwich walls are composed of several concrete layers with installed heat insulation between them, which is very important from the perspective of energy saving.

Market:
Nordic countries

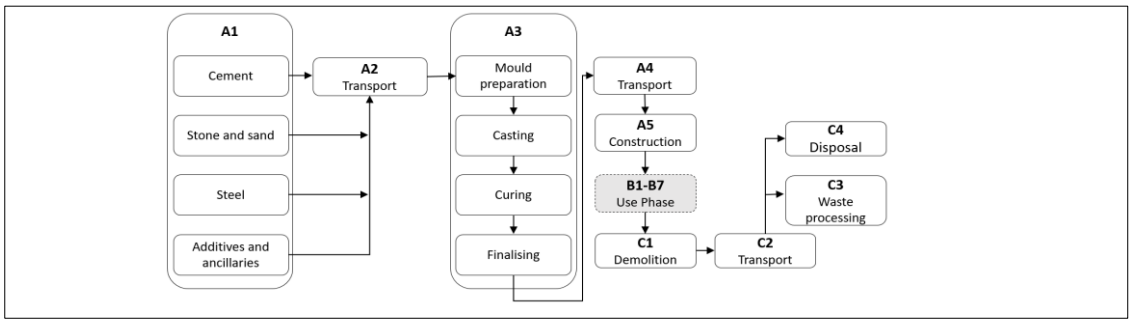
Product	Sandwich wall		Sandwich wall with brick cladding		Sandwich wall with paper matrix		Sandwich wall with rubber matrix	
Materials	kg	%	kg	%	kg	%	kg	%
Stone	453	45	408	41	426	43	451	45
Sand	295	29	305	31	299	30	302	30
Cement	140	14	139	14	150	15	135	14
Water	58	6	68	7	77	8	58	6
Steel	39	4	37	4	37	4	39	4
Brick tiles	0	0	37	3	0	0	0	0
Insulation	12	1	9	<1	7	<1	12	1
Additives	2	<1	3	<1	1	<1	1	<1

LCA: Calculation rules

Declared unit:
Production of 1 ton of prefabricated concrete elements

System boundary:

LCA is made in “Cradle-to-gate with options” form. All major materials, production energy use and waste are included for phases A1, A2, A3, A4, A5, C1, C2, C4. Use stage B1-B7 is not relevant for this type of product and is not declared. All life cycle impacts are included, see flowchart above.



Data quality:
Product specific data is from 2018, the database data are from 2011 – 2018 i.e. no data is older than 10 years.
Database used: Ecoinvent 3.5. The LCA software used is SimaPro 9.0

Cut-off criteria:
All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that have very small amounts (<1%) are not included. This cut-off rule does 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 balance allocation. Effects of primary production of recycled materials allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

LCA: Scenarios and additional technical information

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

Transportation from SKONTO PREFAB production sites in Latvia to customer in Sweden, Stockholm. Product is shipped without return of transport.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	46 %	Lorry, >32t, EURO4	214	0,019 l/tkm	4,066
Boat	46 %	Ferry	333	0,003 l/tkm	0,999

Construction installation on construction site for typical concrete product. Only fossil fuel use during installation and additional cement mortar with reinforcing steel is included.

Assembly (A5)

	Unit	Sandwich wall	Sandwich wall with brick cladding	Sandwich wall with paper matrice	Sandwich wall with rubber matrice
Auxiliary	kg	6	4	4	5
Water consumption	m^3	-	-	-	-
Electricity consumption	kWh	-	-	-	-
Other energy carriers	MJ	42	42	42	42
Material loss	kg	-	-	-	-
Output materials from waste treatment	kg	-	-	-	-
Dust in the air	kg	0,012	0,012	0,012	0,012

End of Life (C1, C3, C4)

	Unit	Sandwich wall	Sandwich wall with brick cladding	Sandwich wall with paper matrice	Sandwich wall with rubber matrice
Hazardous waste disposed	kg	0	0	0	0
Collected as mixed construction waste	kg	0	0	0	0
Reuse	kg	0	0	0	0
Recycling	kg	857	835	864	857
Energy recovery	kg	0	0	0	0
To landfill	kg	143	165	136	143

No significant interaction with the environment in use stage modules, because there is no need for maintenance, repair or refurbishment in the use stage.

The waste is separated on site and therefore waste processing stage C3 has no activity, as waste processing takes place in C1. Energy for material separation is included in C1. 99% of Steel and 90% concrete is recycled and sent to local landfill for disposal.

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	46 %	Lorry, 16-32t	15	0,036 l/tkm	0,54

Modules describing the use stage of product B6-B7 are not relevant according to NPCR020 and are not included. Module D describing Reuse-Recovery-Recycling potential are not included.

The life cycle starts by extracting raw materials used for the products, which is defining the boundary towards the nature. Materials less than 1% weight in the concrete product are not taken into account.

Carbonation is not taken into account in the calculations. Carbonation is a natural process occurring when carbon dioxide is emitted during cement production is rebound to the concrete during use and end of life stages of a building.

Additional technical information

Heat, electricity and other energy use as well as waste in production are calculated as a weight average per produced tonne of all products using yearly production data and rate for 2018. For manufacturing processes and raw materials respective country mix of heat and electricity was considered. For less important flows of materials generic data have been used from Ecoinvent 3.5 database.

LCA: Results

Results for 1 ton of prefabricated concrete elements

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

Product stage			Assemby 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	MND	MND	MND	MND	MND	MNR	MNR	X	X	X	X	MND

Environmental impact of sandwich wall

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
GWP	kg CO_2 -eqv	2,38E+02	1,81E+01	4,69E+01	7,29E+00	1,06E+00	7,61E+00	1,50E-01
ODP	kg CFC11-eqv	1,42E-05	3,34E-06	3,31E-06	1,36E-06	1,95E-07	1,35E-06	2,80E-08
POCP	kg C_2H_4 -eqv	7,69E-01	1,01E-01	1,44E-01	9,04E-02	3,33E-03	8,76E-02	8,90E-04
AP	kg SO_2 -eqv	7,58E-01	1,20E-01	1,44E-01	6,40E-02	3,11E-03	6,92E-02	7,23E-04
EP	kg PO_4^{3-}-eqv	1,37E-01	1,30E-03	2,00E-02	1,08E-02	4,66E-04	1,11E-02	1,17E-04
ADPM	kg Sb-eqv	7,82E-04	3,55E-08	2,89E-05	1,67E-07	2,07E-09	1,92E-07	2,97E-10
ADPE	MJ	2,10E+03	2,58E+02	3,75E+02	1,06E+02	1,51E+01	1,11E+02	2,16E+00

Environmental impact of sandwich wall with brick cladding

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
GWP	kg CO_2 -eqv	2,41E+02	1,81E+01	8,52E+00	7,24E+00	1,06E+00	7,66E+00	1,73E-01
ODP	kg CFC11-eqv	1,44E-05	3,34E-06	1,14E-06	1,35E-06	1,95E-07	1,36E-06	3,23E-08
POCP	kg C_2H_4 -eqv	7,61E-01	1,01E-01	3,30E-02	9,00E-02	3,33E-03	8,79E-02	1,03E-03
AP	kg SO_2 -eqv	7,79E-01	1,20E-01	3,13E-02	6,37E-02	3,11E-03	6,95E-02	8,34E-04
EP	kg PO_4^{3-}-eqv	1,47E-01	1,30E-03	1,07E-02	1,07E-02	4,66E-04	1,12E-02	1,35E-04
ADPM	kg Sb-eqv	8,94E-04	3,55E-08	1,72E-05	1,67E-07	2,07E-09	1,92E-07	3,42E-10
ADPE	MJ	2,12E+03	2,58E+02	1,40E+02	1,05E+02	1,51E+01	1,12E+02	2,50E+00

Environmental impact of sandwich wall with paper matrices

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
GWP	kg CO_2 -eqv	2,41E+02	1,81E+01	4,69E+01	7,29E+00	1,06E+00	7,61E+00	1,43E-01
ODP	kg CFC11-eqv	1,44E-05	3,34E-06	3,31E-06	1,36E-06	1,95E-07	1,35E-06	2,67E-08
POCP	kg C_2H_4 -eqv	7,26E-01	1,01E-01	1,44E-01	9,04E-02	3,33E-03	8,76E-02	8,47E-04
AP	kg SO_2 -eqv	7,46E-01	1,20E-01	1,44E-01	6,40E-02	3,11E-03	6,92E-02	6,88E-04
EP	kg PO_4^{3-}-eqv	1,41E-01	1,30E-03	2,00E-02	1,08E-02	4,66E-04	1,11E-02	1,11E-04
ADPM	kg Sb-eqv	8,85E-04	3,55E-08	2,89E-05	1,67E-07	2,07E-09	1,92E-07	2,82E-10
ADPE	MJ	1,99E+03	2,58E+02	3,75E+02	1,06E+02	1,51E+01	1,11E+02	2,06E+00

Environmental impact of sandwich wall with rubber matrice

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
GWP	kg CO_2 -eqv	2,53E+02	1,81E+01	9,31E+00	5,24E+00	1,06E+00	7,61E+00	1,50E-01
ODP	kg CFC11-eqv	1,62E-05	3,34E-06	1,21E-06	9,91E-07	1,95E-07	1,35E-06	2,80E-08
POCP	kg C_2H_4 -eqv	8,30E-01	1,01E-01	3,62E-02	7,60E-02	3,33E-03	8,76E-02	8,90E-04
AP	kg SO_2 -eqv	8,19E-01	1,20E-01	3,46E-02	5,26E-02	3,11E-03	6,92E-02	7,23E-04
EP	kg PO_4^{3-}-eqv	1,51E-01	1,30E-02	5,39E-03	8,92E-03	4,66E-04	1,11E-02	1,17E-04
ADPM	kg Sb-eqv	9,83E-04	3,55E-08	2,65E-05	1,62E-07	2,07E-09	1,92E-07	2,97E-10
ADPE	MJ	2,35E+03	2,58E+02	1,49E+02	7,70E+01	1,51E+01	1,11E+02	2,16E+00

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Resource use for sandwich wall

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
RPEE	MJ	1,21E+02	3,99E-01	1,11E+01	2,81E-01	2,36E-02	4,84E+00	3,39E-03
RPEM	MJ	1,80E+02	2,33E-01	2,81E+00	6,39E-02	1,51E-02	7,86E+00	2,16E-03
TPE	MJ	3,02E+02	6,32E-01	1,39E+01	3,45E-01	3,87E-02	1,27E+01	5,56E-03
NRPE	MJ	2,30E+03	2,59E+02	3,94E+02	1,07E+02	1,52E+01	1,14E+02	2,18E+00
NRPM	MJ	2,45E-02	1,19E-04	4,44E-04	4,69E-05	7,16E-06	9,97E-04	1,03E-06
TRPE	MJ	2,30E+03	2,59E+02	3,94E+02	1,07E+02	1,52E+01	1,14E+02	2,18E+00
SM	kg	6,81E+01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m^3	6,90E+01	5,96E-01	3,17E+01	3,79E-01	2,98E-02	5,39E-01	4,29E-03

Resource use for sandwich wall with brick cladding

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
RPEE	MJ	1,30E+02	3,99E-01	3,45E+00	2,79E-01	2,36E-02	4,84E+00	3,92E-03
RPEM	MJ	1,86E+02	2,33E-01	1,64E+00	6,43E-02	1,51E-02	7,86E+00	2,50E-03
TPE	MJ	3,16E+02	6,32E-01	5,08E+00	3,44E-01	3,87E-02	1,27E+01	6,41E-03
NRPE	MJ	2,32E+03	2,59E+02	1,48E+02	1,06E+02	1,52E+01	1,15E+02	2,51E+00
NRPM	MJ	2,73E-02	1,19E-04	2,33E-04	4,67E-05	7,16E-06	9,98E-04	1,19E-06
TRPE	MJ	2,32E+03	2,59E+02	1,48E+02	1,06E+02	1,52E+01	1,15E+02	2,51E+00
SM	kg	8,13E+01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m^3	7,44E+01	5,96E-01	5,70E+00	3,75E-01	2,98E-02	5,41E-01	4,94E-03

Resource use for sandwich wall with paper matrices

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
RPEE	MJ	1,30E+02	3,99E-01	3,45E+00	2,86E-01	2,36E-02	4,83E+00	3,23E-03
RPEM	MJ	1,82E+02	2,33E-01	1,64E+00	6,60E-02	1,51E-02	7,86E+00	2,06E-03
TPE	MJ	3,12E+02	6,32E-01	5,08E+00	3,52E-01	3,87E-02	1,27E+01	5,29E-03
NRPE	MJ	2,19E+03	2,59E+02	1,48E+02	1,07E+02	1,52E+01	1,14E+02	2,07E+00
NRPM	MJ	2,48E-02	1,19E-04	2,33E-04	4,72E-05	7,16E-06	9,97E-04	9,77E-07
TRPE	MJ	2,19E+03	2,59E+02	1,48E+02	1,07E+02	1,52E+01	1,14E+02	2,07E+00
SM	kg	8,26E+01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m^3	7,02E+01	5,96E-01	5,70E+00	3,78E-01	2,98E-02	5,38E-01	4,08E-03

Resource use for sandwich wall with rubber matrices

Parameter	Unit	A1- A3	A4	A5	C1	C2	C3	C4
RPEE	MJ	1,35E+02	3,99E-01	4,48E+00	1,22E-01	2,36E-02	4,84E+00	3,39E-03
RPEM	MJ	1,86E+02	2,33E-01	2,01E+00	3,60E-02	1,51E-02	7,86E+00	2,16E-03
TPE	MJ	3,21E+02	6,32E-01	6,49E+00	1,58E-01	3,87E-02	1,27E+01	5,56E-03
NRPE	MJ	2,57E+03	2,59E+02	1,58E+02	7,73E+01	1,52E+01	1,14E+02	2,18E+00
NRPM	MJ	2,52E-02	1,19E-04	2,83E-04	3,35E-05	7,16E-06	9,97E-04	1,03E-06
TRPE	MJ	2,57E+03	2,59E+02	1,58E+02	7,73E+01	1,52E+01	1,14E+02	2,18E+00
SM	kg	8,08E+01	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
W	m^3	7,77E+01	5,96E-01	6,43E+00	2,62E-01	2,98E-02	5,39E-01	4,29E-03

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE 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; W Use of net fresh water

End of life - Waste from sandwich wall								
Parameter	**Unit**	**A1- A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
HW	kg	1,53E-03	4,77E-05	1,91E-04	2,11E-05	2,74E-06	3,88E-05	3,94E-07
NHW	kg	2,15E-04	4,93E-05	1,93E-04	1,87E-05	2,70E-06	1,93E-05	3,87E-07
RW	kg	7,67E-03	1,88E-03	1,92E-03	7,63E-04	1,10E-04	7,39E-04	1,58E-05

End of life - Waste from sandwich wall with brick cladding								
Parameter	**Unit**	**A1- A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
HW	kg	1,80E-03	4,77E-05	6,36E-05	2,09E-05	2,74E-06	3,90E-05	4,54E-07
NHW	kg	2,34E-04	4,93E-05	6,41E-05	1,85E-05	2,70E-06	1,94E-05	4,47E-07
RW	kg	8,50E-03	1,88E-03	6,41E-04	7,58E-04	1,10E-04	7,45E-04	1,82E-05

End of life - Waste from sandwich wall with paper matrices								
Parameter	**Unit**	**A1- A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
HW	kg	1,68E-03	4,77E-05	6,36E-05	2,12E-05	2,74E-06	3,87E-05	3,75E-07
NHW	kg	2,21E-04	4,93E-05	6,41E-05	1,87E-05	2,70E-06	1,93E-05	3,68E-07
RW	kg	7,93E-03	1,88E-03	6,41E-04	7,65E-04	1,10E-04	7,37E-04	1,50E-05

End of life - Waste from sadnwich wall with rubber matrice								
Parameter	**Unit**	**A1- A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
HW	kg	1,72E-03	4,77E-05	8,15E-05	1,44E-05	2,74E-06	3,88E-05	3,94E-07
NHW	kg	2,36E-04	4,93E-05	8,20E-05	1,37E-05	2,70E-06	1,93E-05	3,87E-07
RW	kg	8,91E-03	1,88E-03	6,82E-04	5,56E-04	1,10E-04	7,39E-04	1,58E-05

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

End of life - Output flow sandwich wall								
Parameter	**Unit**	**A1- A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
CR	kg	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	2,61E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,56E+02	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

End of life - Output flow sandwich v								
Parameter	**Unit**	**A1- A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
CR	kg	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	5,42E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,34E+02	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

End of life - Output flow sandwich v								
Parameter	**Unit**	**A1- A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
CR	kg	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	1,73E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,64E+02	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

End of life - Output flow sandwich v								
Parameter	**Unit**	**A1- A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**
CR	kg	1,10E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	6,25E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,57E+02	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: 9,0 E-03 = $9{,}0*10^{-3}$ = 0,009

Additional Norwegian requirements

Greenhous gas emission from the use of electricity in the manufacturing phase
Latvian electricity mix is used for production site. Data are based on transmission system operator statistics for 2018. The main electricity sources are heat and power cogeneration (27%) from natural gas, hydro power (24%), imports from Estonia (23%) and Russia (12 %), small scale biomass (10%) and biogas (3%) cogeneration plants and wind energy (1%). The impacts of this electricity mix are:
Greenhouse gas emissions per MJ: 0.132 kg CO2-eqv/MJ
Greenhouse gas emissions per kWh: 0.475 kg CO2-eqv/kWh

Data source	Amount	Unit
Transmission system operator data for 2018	0,475	kg CO_2-eqv/kWh

Dangerous substances

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list
- The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiften, Annex III), see table.

Indoor environment
The product meets the requirements for low emissions (M1) according to EN15251: 2007 Appendix E.

Carbon footprint
Carbon footprint has not been worked out for the product.

Bibliography

ISO 14025:2010	*Environmental labels and declarations - Type III environmental declarations - Principles and procedures*
ISO 14044:2006	*Environmental management - Life cycle assessment - Requirements and guidelines*
EN 15804:2012+A1:2013	*Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products*
ISO 21930:2007	*Sustainability in building construction - Environmental declaration of building products*
The NPCR 020 version 2 .0.	*PCR - Part B for concrete and concrete elements.*
LCA report no. 281019-2	*LCA report for Skonto Prefab SIA, Precast concrete products, Bureau Veritas Latvia, Report No. 281019-2*

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