

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Con-Form Group AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2951-1643-EN
Registration number:	NEPD-2951-1643-EN
ECO Platform reference number:	-
Issue date:	05.07.2021
Valid to:	05.07.2026

Skallvegg (Strömstad)

Con-Form Group AS



www.epd-norge.no



General information

Product:

Skallvegg (Strömstad)

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-2951-1643-EN

ECO Platform reference number:**This declaration is based on Product Category Rules:**

CEN Standard EN 15804:2012+A1:2013 serves as core PCR
NPCR 020:2018 Part B for Concrete and concrete elements

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.

Declared unit:

1 m2 Skallvegg (Strömstad)

Declared unit with option:

A1,A2,A3,A4,A5

Functional unit:

1 m2 shell wall consisting of 2 composite plates that are cast completed on site after installation of technical installations

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPDNorway, and iii) the process is reviewed annually. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

Verification of EPD tool:

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

Anne Rønning, Norsus AS

(no signature required)

Owner of the declaration:

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Manufacturer:

Con-Form Group AS
Østensjøveien 36 0667 OSLO
Norway

Place of production:

Con-Form Strömstad AB
Norra Båleröd 1 452 94 Strömstad
Sweden

Management system:

Con-Forms miljøstyringssystem er basert på ISO 14001

Organisation no:

976 736 311

Issue date: 05.07.2021**Valid to:** 05.07.2026**Year of study:**

2020

Comparability:

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

Development and verification of EPD:

The declaration has been developed and verified using EPD tool lca.tools ver EPD2020.11, developed by LCA.no AS. The EPD tool is integrated into the company's environmental management system, and has been approved by EPD-Norway

Developer of EPD:

Tore Aasen

Reviewer of company-specific input data and EPD:

Urban Holme

Approved:

Sign



Håkon Hauan, CEO EPD-Norge

Product

Product description:

Shell wall for use in all types of concrete buildings. The elements have high mechanical strength, large capacity and durability against climate stress. Shell wall is used as a starting point for compact wall. Easy technical installations before final casting.

Product specification

Shell wall with concrete B45 M60. 1 m² shell wall contains this percentage distribution of sub-materials:

Materials	kg	%
Cement	43,87	16,26
Aggregate	191,93	71,13
Water	21,93	8,13
Chemicals	1,16	0,43
Reinforcement	3,03	1,12
Steel	7,92	2,94
Total:	269,85	

Technical data:

Shell wall consists of 60 mm outer layer and 50 mm inner layer. Manufactured according to SSEN 14992, SSEN 13369. Concrete is manufactured in accordance with the requirements of SS-EN-206.

Can be manufactured at different distances between the layers. Inner walls typically 200mm

Weight of shell wall in 50/60 mm layer is about 270 kg / m². Layer thickness can also vary based on requirements for exposure class and design description

Market:

South-west of Sweden and eastern part of Norway (Oslo-area)

Reference service life, product

100 år according to normal standard

Reference service life, building

100 år according to normal standard

LCA: Calculation rules

Declared unit:

1 m² Skallvegg (Strömstad)

Cut-off criteria:

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

Data quality:

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

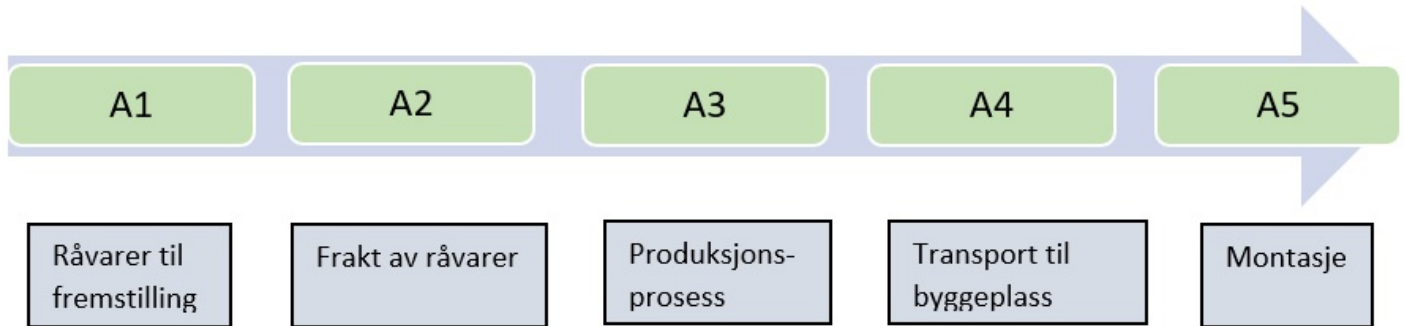
Materials	Source	Data quality	Year
Aggregate	EcoInvent 3	Database	0
Aggregate	Modified EcoInvent	Database	2012
Reinforcement	Østfoldforskning	Database	2012
Chemicals	EPD-EFC-20150091-IAG1-EN	EPD	2015
Water	ecoinvent 3.4	Database	2017
Chemicals	EPD-BAS-20170089-IBC1-EN	EPD	2017
Steel	EPD-BMG-GB-10.2	EPD	2018
Cement	EPD-HCG-20190140-CAA1-EN	EPD	2019

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

System boundary:

Final casting of concrete between the layers is not included in the declaration as the volume of this depends on several project-specific conditions. Modules A1-A4 are included in the analysis. It includes all processes from extraction and production of raw materials, transport to the factory, the production process itself. In addition, transport to the construction site (150 km) has been included in accordance with guidelines from EPD-Norway



Additional technical information:

Con-Form has established and follows its own Quality System / Production Description as a basis for the certification by Nordcerts and an Environmental Management System based on NS-EN 14001

LCA: Scenarios and additional technical information

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

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck	55,0 %	Lastebil med henger, EURO 6	150	0,022606	l/tkm	3,39
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Assembly (A5)

	Unit	Value
Auxiliary	kg	2,8228
Water consumption	m ³	
Electricity consumption	kWh	0,7108
Other energy carriers	MJ	
Material loss	kg	
Output materials from waste treatment	kg	0,4183
Dust in the air	kg	
VOC emissions	kg	

LCA: Results

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

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

Product stage					Construction installation stage		User 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	MND	MND	MND	MND	MND	MND	MND		

Environmental impact

Parameter	Unit	A1	A2	A3	A4	A5
GWP	kg CO ₂ -eq	4,36E+01	1,86E+00	4,16E+00	3,35E+00	1,17E+00
ODP	kg CFC11 -eq	1,10E-06	3,83E-07	9,54E-07	6,88E-07	5,20E-08
POCP	kg C ₂ H ₄ -eq	6,67E-03	2,92E-04	6,37E-04	5,24E-04	1,15E-04
AP	kg SO ₂ -eq	1,01E-01	4,81E-03	1,32E-02	8,65E-03	3,47E-03
EP	kg PO ₄ ³⁻ -eq	2,15E-02	6,63E-04	2,31E-03	1,19E-03	8,35E-04
ADPM	kg Sb -eq	2,33E-05	4,44E-06	4,26E-06	7,97E-06	1,03E-06
ADPE	MJ	1,73E+02	3,06E+01	5,29E+01	5,50E+01	7,15E+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

Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009

*INA Indicator Not Assessed

Resource use

Parameter	Unit	A1	A2	A3	A4	A5
RPEE	MJ	4,79E+01	5,56E-01	2,02E+01	1,00E+00	7,80E+00
RPEM	MJ	6,70E-01	0,00E+00	0,00E+00	0,00E+00	2,44E-01
TPE	MJ	6,63E+01	5,56E-01	2,02E+01	1,00E+00	8,04E+00
NRPE	MJ	1,67E+02	3,15E+01	9,18E+01	5,67E+01	8,61E+00
NRPM	MJ	2,05E+00	0,00E+00	0,00E+00	0,00E+00	5,40E-02
TRPE	MJ	2,21E+02	3,15E+01	9,18E+01	5,67E+01	8,66E+00
SM	kg	1,37E+01	0,00E+00	0,00E+00	0,00E+00	9,09E-01
RSF	MJ	1,18E+01	0,00E+00	1,69E-02	0,00E+00	7,22E-04
NRSF	MJ	2,58E+01	0,00E+00	0,00E+00	0,00E+00	8,24E-01
W	m ³	4,99E+01	7,46E-03	6,72E-02	1,34E-02	3,71E-02

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

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

*INA Indicator Not Assessed

End of life - Waste

Parameter	Unit	A1	A2	A3	A4	A5
HW	kg	4,13E-01	1,68E-05	1,69E-02	3,02E-05	1,43E-04
NHW	kg	1,96E+01	2,88E+00	2,89E+00	5,18E+00	5,04E-01
RW	kg	INA*	INA*	INA*	INA*	INA*

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

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

*INA Indicator Not Assessed

End of life - Output flow

Parameter	Unit	A1	A2	A3	A4	A5
CR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MR	kg	5,14E-01	0,00E+00	1,05E+00	0,00E+00	3,34E-01
MER	kg	0,00E+00	0,00E+00	2,71E-01	0,00E+00	2,12E-01
EEE	MJ	INA*	INA*	INA*	INA*	INA*
ETE	MJ	INA*	INA*	INA*	INA*	INA*

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 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

Additional Norwegian requirements

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

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

Electricity mix	Data source	Amount	Unit
El-mix, Sweden (kWh)	ecoinvent 3.4 Alloc Rec	42,67	g CO ₂ -ekv/kWh

Dangerous substances

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

Indoor environment

No impact on indoor climate

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 Environmental product declaration - Core rules for the product category of construction products.

ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.


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Iversen et al., (2018) eEPD v3.0 - Background information for EPD generator system. LCA.no report number 04.18

Vold, M. og Edvardsen, T. (2014) EPD-generator for betongindustrien, bakgrunnsinformasjon for verifisering, OR 04.14.

NPCR Part A: Construction products and services. Ver. 1.0. April 2017, EPD-Norge.

NPCR 020 Part B for Concrete and concrete elements. Ver. 2.0 October 2018, EPD-Norge.

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