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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:	Finja AB
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-1463-486-EN
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Valid to:	01.12.2022

Murblokk fördel, Lightweight Concrete Block

Finja Betong AB

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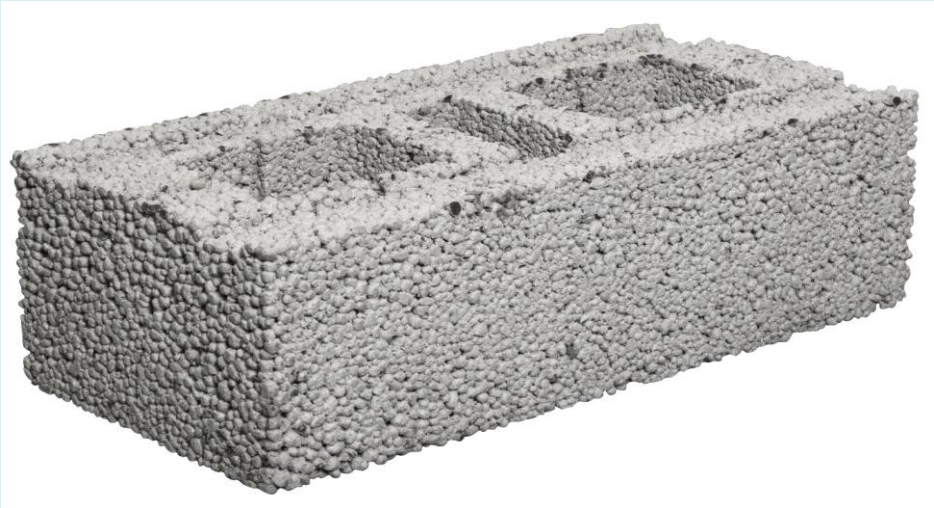

General information

Product:
Murblokk fördel, Lightweight Concrete Block

Owner of the declaration:
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Declaration number:
NEPD-1463-486-EN

Place of production:
Strängnäs, Sweden

ECO Platform reference number:
-

Management system:
ISO 14001

This declaration is based on Product Category Rules:
CEN Standard EN 15804 serves as core PCR

Organisation no:
556101-6840

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:
01.12.2017

Valid to:
01.12.2022

Declared unit:
1 kg Murblokk fördel, Lightweight Concrete Block

Year of study:
2017

Declared unit with option:
A1-A4

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:
Ulf Liljenroth

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:

Martin Erlandsson, IVL Swedish Environmental Research Inst.
(Independent verifier approved by EPD Norway)

Approved

Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:
Fördel walling blocks have a cavity and weigh up to 20% less than blocks without cavities. The cavity in the block makes them more easily used and ergonomic and also simplifies future installations. The blocks also have clear cutting guides for simpler and faster cutting. The blocks are made from light clinker pellets, which in turn are made from low-lime clay, which is shaped into small balls that are then fired in rotating kilns. The light clinker pellets are bound with cement, sand and water and shaped into blocks.

Product specification:
The composition of the product is described in the table below

Materials	kg	%
Cement		16
Fly ash		1
Leca aggregate		39
Gravel		32
Water		12
Packaging		<1

Technical data:
Hullblokk, kategori 1 (SS-EN 771-3).
For further information see www.finja.no

Market:
Nordic countries

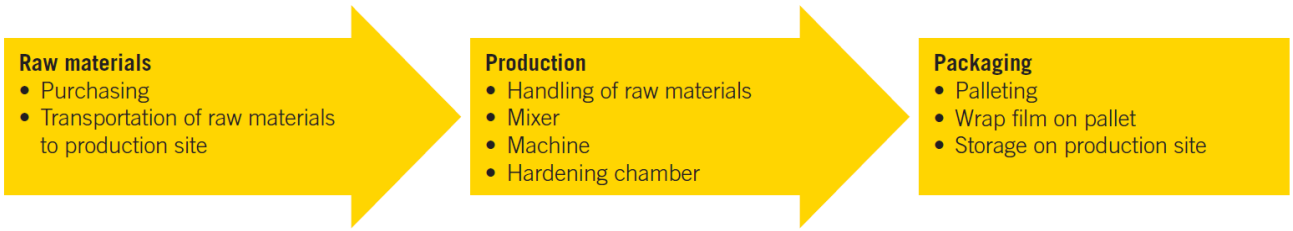
Reference service life,
Same as for the wall it is part of

LCA: Calculation rules

Declared unit:
1 kg Murblokk fördel, Lightweight Concrete Block

System boundary:
All processes from raw material extraction to product from the factory gate are included in the analysis (A1-A3). In addition, transportation to a central warehouse placed in accordance with guidelines issued by the EPD Norway (A4) is included.

Flow Chart



Data quality:

Materials	Data quality	Source	Year
Cement	Specific EPD	EPD-HCG-20140205-CAA1-EN	2014
Fly ash	Specific EPD	EPD from manufacturer, Emineral a/s	2013
Leca aggregate	Specific EPD	NEPD 00120E	2013
Gravel	Industry data	Ecoinvent v3.3	
Water	Industry data	Ecoinvent v3.3	
Packaging	Industry data	Ecoinvent v3.3	

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 allocated to the main product in which the material was used.

Cut-off criteria:
All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that are included with very small amounts (<0,2%) are not included (except packaging). This cut-off rule does not apply for hazardous materials and substances.

LCA: Scenarios and additional technical information

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

Products are transported from manufacturing unit in Strängnäs to warehouse in Oslo.

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption, l/tkm	Value (l/t)
Truck (50% biodiesel)	85%	Lorry	450	0.02	13.8

LCA: Results

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impact

Parameter	Unit	A1	A2	A3	A1- A3	A4			
GWP*	kg CO_2 -eqv				1.85E-01	2.41E-02			
ODP	kg CFC11-eqv				2.45E-09	7.31E-09			
POCP	kg C_2H_4 -eqv				3.66E-05	7.46E-06			
AP	kg SO_2 -eqv				2.22E-04	2.61E-04			
EP	kg PO_4^{3-}-eqv				4.09E-04	6.07E-05			
ADPM	kg Sb-eqv				3.57E-07	0			
ADPE	MJ				8.85E-01	6.84E-01			

* Emission and uptake of biogenic carbon as CO_2 is not accounted for as in accordance to EN 15804.

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

Parameter	Unit	A1	A2	A3	A1-A3	A4			
RPEE	MJ				4.16E-01	9.24E-03			
RPEM	MJ				0	0			
TPE	MJ				4.16E-01	9.24E-03			
NRPE	MJ				1.20E+00	6.83E-01			
NRPM	MJ				2.10E-02	0			
TRPE	MJ				1.22E+00	6.83E-01			
SM	kg				1.98E-02	0			
RSF	MJ				9.71E-02	0			
NRSF	MJ				4.08E-01	0			
W	m^3				2.49E-02	4.00E-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

Parameter	Unit	A1	A2	A3	A1- A3	A4			
HW	kg				1.63E-06	0			
NHW	kg				1.48E-02	0			
RW	kg				2.70E-05	0			

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

End of life - Output flow

Parameter	Unit	A1	A2	A3	A1- A3	A4			
CR	kg				0	0			
MR	kg				8.24E-05	0			
MER	kg				0	0			
EEE	MJ				0	0			
ETE	MJ				0	0			

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

Key figures to define the impact for different blocks

In order to calculate environmental impact for different blocks use the following table with weight information

Varetekst	Finja Art.nr	Høyde, m	Bredde, m	Lengde, m	Vekt, kg	Volum, m3
MURBLOKK FORDEL 25X19X59 CM	11252063	0.1900	0.2500	0.5900	19.0000	0.028025
MURBLOKK FORDEL 29X19X59 CM	11292063	0.1900	0.2900	0.5900	21.5000	0.032509

Additional Norwegian requirements

Greenhous gas emission from the use of electricity in the manufacturing phase

Electricity use in production is based on consumption figures for 2016. Emission data is taken from Ecoinvent 3.3 “Electricity, medium voltage {SE}| market for | Alloc Rec, S” (2016).

Data source	Amount	Unit
Econinvent v3.3 (2016)	48 gram	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 emission test is based on a representative block (250x250x500 mm) and meets the requirements for Emicode EC1PLUS. EMICODE EC1PLUS includes the strongest requirements on low VOC emissions compared to EMICODE EC1 and Blue Angel, AgBB, DIBt and California (Section 01350). The product has no detectable impact on the indoor environment.

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*

LCI Report — *LCA Report Finja Lightweight concrete blocks. Ulf Liljenroth, WSP 2017.*

Emicode EC1PLUS — *www.emicode.com/fileadmin/redaktion/Service/Downloads_GB/GEV-Green_Building.pdf*

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