

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN15804 +A2

Mørtel (dry mortar)



Owner of the declaration:
Steinhardt AS

Product name:
Mørtel (dry mortar)

Declared unit:
1 kg of Mørtel (dry mortar)

Product category /PCR:
NPCR 009 Part B for Technical - Chemical products for building and construction industry (references to EN15804+A2)

Programme operator and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-8033-7707-EN

Registration number:
NEPD-8033-7707-EN

Issue date: 14.11.2024

Valid to: 14.11.2029

General information

Product:

Mørtel (dry mortar)

Programme Operator:

The Norwegian EPD Foundation
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Declaration Number:

NEPD-8033-7707-EN

This declaration is based on Product Category Rules:

NPCR 009 Part B for Technical - Chemical products for building and construction industry (references to EN15804+A2)

Statements:

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

Declared unit:

1 kg of Mørtel (dry mortar)

Functional unit:

Not relevant

Conversion factor to mass:

Not relevant

Verification:

Independent verification of the declaration and data, according to ISO14025:2006

internal external



Julie Lyslo Skullestad

Independent verifier approved by EPD Norway

Owner of the declaration:

Steinhardt AS
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Manufacturer:

Steinhardt AS
Pir 2 nr 10, 7010 Trondheim, Norway

Place of production:

Follummoveien 38, 3516 Hønesfoss, Norway

Management system:

N/A

Organization no:

915 496 059

Issue date:

14.11.2024

Valid to:

14.11.2029

Year of study:

2021/2022

Comparability:

EPDs from other programmes than EPD-Norway may not be comparable.

The EPD has been worked out by:

Modi Elisa & Johansen B.H. of Energiråd AS

Approved



Manager of EPD Norway

Product

Product description

Steinhardt AS is a supplier of products and product systems, like mortars, screeds, membranes, tile adhesive and grout, for new buildings and renovations. We are a Norwegian-owned company with head office in Trondheim. After over 6 years of industry experience, we are concerned with good customer service, high product quality and delivery efficiency.

Mørtel (dry mortar) includes the B20 and B30. The Mortar is a premixed dry mortar based on cement and sand. When mixed with water, The mortar is a ready-to-use mortar for indoor and outdoor concrete work. Specific technical data is specified in the product sheets.

Product specification

The material inputs (average) used for the analysis are shown below.

Morter type	B20	B30
Sand	83,0 %	80,0 %
Cement	17,0 %	20,0 %
Additives	-	-
Packaging	<1.00%	<1.00%

Technical data:

Technical data is to be found at <https://www.mortelverket.no/>

Market:

Norway, Sweden

Reference service life, product:

Not relevant

Reference service life, building:

Not relevant

LCA: Calculation rules

Declared unit

1 kg of Mørtel (dry mortar)

Data quality

Both primary and secondary data were used in the LCA. Site-specific foreground data were provided by Steinhardt AS for its production in Kilemoen near Hønefoss - Norway and is based on the production activities of 2022. These data were obtained from the bill of materials. For materials with valid EPDs that conform to the EN15804+A2, environmental impacts for the respective materials were used for the analysis. For all processes for which primary data was not available, generic data from the ecoinvent database v3.8 (2021) were assumed. All generic data used for the analysis are not older than 10 years old. Where necessary, the used generic data were modified to ensure technological, temporal, and geographical consistency. Modelling and calculations were conducted via OpenLCA equipped with v.3.8 of the Ecoinvent database with LCIA and classification factors conforming to EN 15804+A2.

Allocation

The allocation is made in accordance with the requirements of EN 15804: A2. Energy and water inputs and waste generation during production were allocated equally among all products on mass basis. Effect of primary production of recycled materials were allocated to the main product in which the material is used. No recycled materials are used in the manufacture of this product.

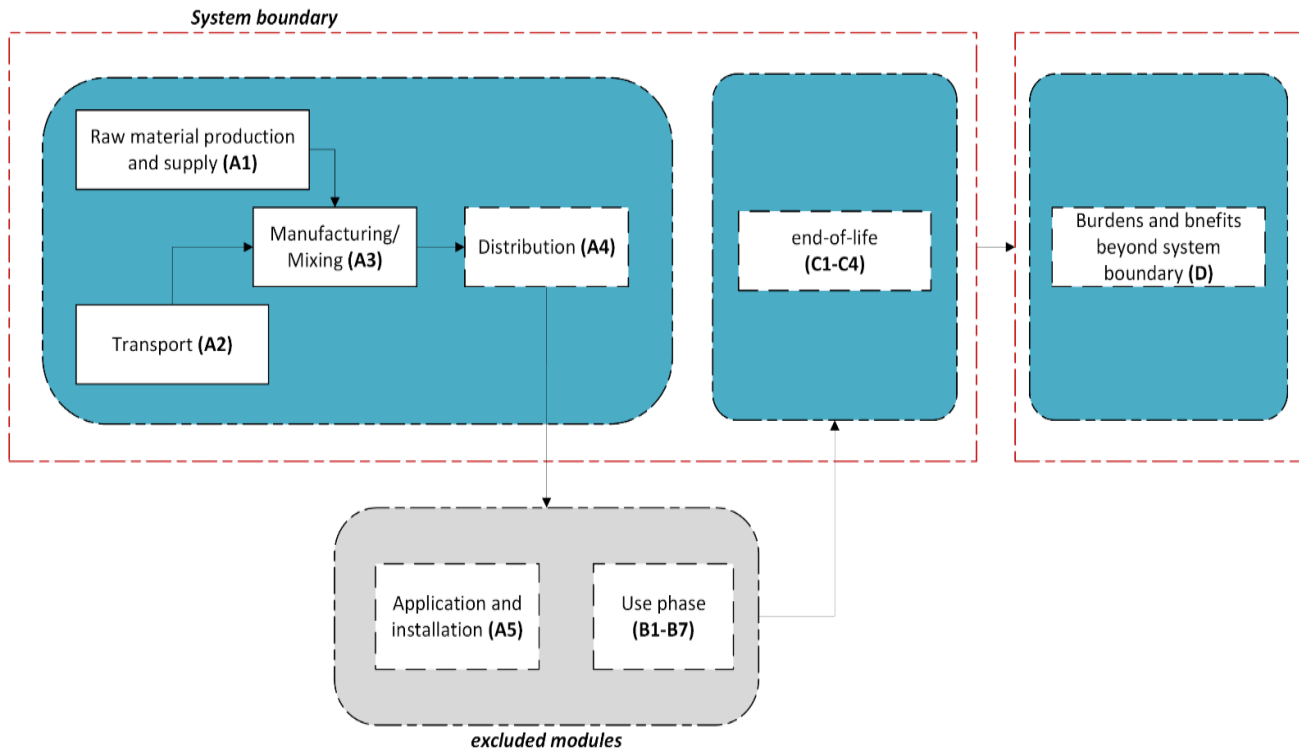
Cut-off criteria

All major raw materials and essential energy are included. The production processes for raw materials and energy flows with less than 1% contributions are excluded. This cut-off criteria do not apply for hazardous materials and substances. Machines and facilities or capital goods required to produce the declared unit are excluded.

System boundary

The scope of this analysis is cradle-to-grave. The modules covered include extraction and semi-processing of raw required raw materials (A1), transportation of the materials to production site (A2), processing/production of the studied products (A3), transportation of finished products to potential customers (A4), handling of waste at end-of-life (C1-C4), and potential loads and benefits associated with the products (D). The end-of-life impacts are described in the Norwegian context.

Figure 1 System boundaries (cradle-to-fate with options)



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

Product stage			Assembly stage		Use stage								End of life stage			Benefits & loads beyond system boundary
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	X	X	X	X	X

LCA: Scenarios and additional technical information

Product stage is reported in one model A1-A3. The considered scenarios after gate are described as follows. It is assumed that the manufactured products are transported by truck to a potential customer located 300 km away. The recovered material is transported by truck to a waste processing facility 50 km from the demolition site. The collected waste is managed according to the Norwegian management practices of construction and demolition waste such as bricks and concrete and other heavy building materials ([Statistics Norway, 2021](#)). Detailed information for the scenarios is summarized as follows.

Transport from production site to potential customer (A4)	Capacity (%)	Distance (km)	Fuel/Energy efficiency	Unit	Value (L/t)
truck, over 32 tons, EURO 5	53.30%	100	0.023	l/tkm	2.30

Deconstruction/Demolition (C1)	Unit	Value
Demolition of building per kg of product	kg	1.00

Transport from production site to potential customer (C2)	Capacity (%)	Distance (km)	Fuel/Energy efficiency	Unit	Value (L/t)
truck, over 32 tons, EURO 5	53.30%	20.00	0.023	l/tkm	0.46

Waste Processing (C3)	Unit	Value
Waste treatment of products after demolition	kg	0.70

Disposal (C4)	Unit	Value
Substitution of primary aggregates with crushed recycled inert products	kg	0.30

Re-use, recovery, and recycling potential (D)	Unit	Value
gravel, crushed, production (avoided)	kg	0.70

LCA: Results

The LCA results are per 1 kg of Mørtel (dry mortar) i.e., the declared unit on page 2.

Core environmental impacts

Indicator	Unit	B20	B30	B20/B30					
		A1-A3	A1-A3	A4	C1	C2	C3	C4	D
GWP - total	kg CO2 eq	1.48E-01	1.59E-01	4.89E-02	2.25E-04	1.76E-02	4.12E-03	6.94E-04	-2.23E-03
GWP - fossil	kg CO2 eq	1.51E-01	1.62E-01	4.88E-02	2.25E-04	1.75E-02	4.10E-03	6.88E-04	-2.15E-03
GWP - biogenic	kg CO2 eq	-3.30E-03	-3.29E-03	8.65E-05	1.85E-07	5.39E-05	1.33E-05	5.09E-06	-7.91E-05
GWP - luluc	kg CO2 eq	1.48E-04	1.48E-04	2.02E-05	2.43E-08	4.77E-06	9.01E-07	7.14E-08	-1.79E-06
ODP	kg CFC11 eq	1.33E-08	1.34E-08	1.13E-08	4.79E-11	1.73E-08	8.85E-10	1.47E-10	-2.90E-10
AP	molc H+ eq	3.84E-04	3.98E-04	1.39E-04	2.28E-06	1.36E-04	4.25E-05	7.03E-06	-1.89E-05
EP - freshwater	kg P eq	1.17E-05	1.17E-05	3.22E-06	1.09E-08	1.08E-06	1.91E-07	2.22E-08	-4.99E-07
EP - marine	kg N eq	1.39E-04	1.47E-04	2.82E-05	1.00E-06	1.75E-05	1.86E-05	3.10E-06	-5.42E-06
EP - terrestrial	molc N eq	5.19E-03	5.72E-03	3.07E-04	1.10E-05	1.91E-04	2.03E-04	3.40E-05	-7.26E-05
POCP	kg NMVOC eq	6.90E-04	7.46E-04	1.15E-04	2.99E-06	7.54E-05	5.53E-05	9.26E-06	-1.66E-05
ADP - M&M	kg Sb-Eq	3.42E-07	3.51E-07	1.66E-07	1.45E-10	3.65E-08	1.24E-08	3.66E-10	-4.20E-08
ADP - fossil	MJ	2.98E+00	3.21E+00	7.45E-01	3.09E-03	1.03E+00	5.65E-02	9.40E-03	-3.55E-02
WDP	m3	8.92E-02	9.36E-02	3.59E-03	9.41E-06	8.96E-04	4.86E-03	2.58E-05	-9.95E-03

GWP-total: Global Warming Potential; 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; See "additional requirements" for indicator given as PO4 eq. EP-marine: Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-terrestrial: Eutrophication potential, Accumulated Exceedance; POCP: Formation potential of tropospheric ozone; ADP-M&M: Abiotic depletion potential for non-fossil resources (minerals and metals); ADP-fossil: Abiotic depletion potential for fossil resources; WDP: Water deprivation potential, deprivation weighted water consumption.

Additional environmental impact indicators

Indicator	Unit	B20	B30	B20/B30					
		A1-A3	A1-A3	A4	C1	C2	C3	C4	D
PM	Disease incidence	2.94E-11	1.80E-11	5.25E-12	9.28E-14	8.69E-13	1.04E-12	1.78E-13	-2.41E-11
IRP	kBq U235 eq.	5.45E-03	4.18E-03	1.27E-03	1.41E-05	2.00E-04	2.60E-04	4.37E-05	-2.33E-03
ETP-fw	CTUe	3.16E-02	2.65E-02	8.23E-03	1.77E-05	1.60E-03	3.00E-04	5.26E-05	-1.43E-02
HTP-c	CTUh	2.94E-11	1.80E-11	5.25E-12	9.28E-14	8.69E-13	1.04E-12	1.78E-13	-2.41E-11
HTP-nc	CTUh	1.38E-09	9.89E-10	3.06E-10	1.25E-12	5.31E-11	1.57E-11	3.00E-12	-3.18E-09
SQP	Dimensionless	5.31E-09	4.25E-09	1.03E-09	6.00E-11	1.73E-10	5.06E-09	1.89E-10	-8.90E-11

PM: Particulate matter emissions; IRP: Ionising radiation, human health; ETP-fw: Ecotoxicity (freshwater); ETP-c: Human toxicity, cancer effects; HTP-nc: Human toxicity, non-cancer effects; SQP: Land use related impacts / soil quality.

Resource use

Indicator	Unit	B20	B30	B20/B30					
		A1-A3	A1-A3	A4	C1	C2	C3	C4	D
RPEE	MJ	2.41E-01	2.52E-01	7.97E-03	2.01E-05	2.63E-03	1.52E-02	6.07E-05	-8.08E-03
RPEM	MJ	1.90E-01	1.90E-01	2.62E-03	5.39E-06	9.73E-04	2.13E-04	2.23E-04	-2.41E-03
TPE	MJ	4.31E-01	4.42E-01	1.06E-02	2.55E-05	3.61E-03	1.54E-02	2.84E-04	-1.05E-02
NRPE	MJ	2.12E+00	2.36E+00	7.21E-02	2.63E-04	2.48E-02	4.51E-03	5.37E-04	-1.66E-02
NRPM	MJ	8.55E-01	8.51E-01	6.73E-01	2.83E-03	1.01E+00	5.20E-02	8.86E-03	-1.90E-02
TRPE	MJ	2.98E+00	3.21E+00	7.45E-01	3.09E-03	1.03E+00	5.65E-02	9.40E-03	-3.55E-02
SM	kg	9.11E-03	9.78E-03	7.59E-04	3.51E-06	2.25E-04	7.44E-05	8.40E-06	-7.00E-04
RSF	MJ	1.51E-01	1.68E-01	2.26E-04	3.89E-07	6.53E-05	1.29E-05	1.56E-06	-2.28E-04
NRSF	MJ	2.16E-01	2.41E-01	9.18E-04	5.86E-07	2.29E-04	5.74E-05	1.10E-06	-3.07E-05
W	m3	2.09E-03	2.19E-03	8.55E-05	2.24E-07	2.14E-05	3.99E-05	6.12E-07	-2.33E-04

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	B20	B30	B20/B30					
		A1-A3	A1-A3	A4	C1	C2	C3	C4	D
HW	kg	3.29E-02	3.29E-02	1.66E-02	5.09E-05	5.33E-03	1.02E-03	1.02E-04	-2.71E-03
NHW	kg	3.74E-02	3.75E-02	3.84E-02	3.27E-06	4.36E-04	1.30E-04	7.71E-06	-4.43E-04
RW	kg	2.89E-05	2.89E-05	1.49E-05	4.22E-08	1.10E-05	1.23E-06	1.19E-07	-5.28E-06

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

End-of-life outflows

Parameter	Unit	B20	B30	B20/B30					
		A1-A3	A1-A3	A4	C1	C2	C3	C4	D
CR	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
MR	kg	1.23E-03	1.23E-03	6.31E-04	2.55E-06	1.84E-04	7.00E-01	5.77E-06	-4.37E-04
MER	kg	2.14E-04	2.14E-04	1.74E-04	2.04E-06	5.90E-05	2.11E-05	3.38E-06	-7.35E-05
EEE	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
ETE	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

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

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

Biogenic carbon content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	Kg C	0.00E+00
Biogenic carbon content in packaging	Kg C	1.04E-03

Note – 1 kg of carbon is equivalent to 44/12 kg CO₂.

Additional Norwegian requirements

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

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

National electricity grid	Unit	Value
Norwegian mix (market for electricity, ecoinvent 3.8)	g CO ₂ -eq/kWh	28.53

Dangerous substances

The product does not contain substances from the REACH candidate list (per 6.7.2013) of substances of very high concern, substances on the Norwegian priority list (as of 6/7/2013) and substances that cause the product to be classified as hazardous waste (Avfallsforskriften, Annex III). The chemical content of the product is in accordance with the Norwegian product regulations.

Name	CAS/ EC no.	Value
Portland cement (in B20)	65997-15-1/266-043-4	17.00%
Portland cement (in B30)	65997-15-1/266-043-4	20.00%

Hazardous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.

- 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 contains dangerous substances, more than 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 (Avfallsforskriften, Annex III), see table.

Indoor environment

Not relevant for outdoor products.






Additional environmental information

Indicator	Unit	B20	B30	B20/B30					
		A1-A3	A1-A3	A4	C1	C2	C3	C4	D
GWP-IOBC	kg CO2 eq	1.44E-01	1.55E-01	4.51E-02	-3.59E-03	1.37E-02	3.03E-04	-3.12E-03	-6.04E-03

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation

Bibliography

ISO 14025:2006	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+A2:2019	Sustainability of construction works - 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 and services
NPCR PART A	Construction products and services (v.2.0)
NPCR 009	Part B for Technical - Chemical products for building and construction industry
Statistics Norway	Waste from building and construction (https://www.ssb.no/en/statbank/table/09781/)
NEPD-3948-2907-NO	Norcem Standardsement FA, Brevik - CEM II/B-M (V-L) 42,5 R, Norcem AS, 2022

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