epd-norge
Global program operatør

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Protecta EX Mortar (bag) for Sweden



Polyseam

The Norwegian EPD Foundation

Owner of the declaration:
Polyseam AS

Product:
Protecta EX Mortar (bag) for Sweden

Declared unit:
1 kg

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

Program operator:
The Norwegian EPD Foundation

Declaration number:

Registration number:

Issue date:

Valid to:

EPD software:
LCAno EPD generator ID: 416704

General information

Product

Protecta EX Mortar (bag) for Sweden

Owner of the declaration:

Polyseam AS
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Program operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
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Manufacturer:

Polyseam Ltd

Declaration number:

Place of production:

Polyseam Ltd
St Andrews Road 15
HD1 6SB Huddersfield, West Yorkshire, United Kingdom

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

Management system:

ISO 9001, ISO 14001

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.

Organisation no:

986 426 051

Declared unit:

1 kg Protecta EX Mortar (bag) for Sweden

Issue date:

Declared unit with option:

A1,A2,A3,A4,A5

Valid to:

Year of study:

2022

Functional unit:

Comparability:

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

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. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Norway, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway.

Developer of EPD: Andrea Bogstad

Reviewer of company-specific input data and EPD: Jørn Davidsen

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. NEPDT73

Approved:

Third party verifier:

Linda Høibye, Life Cycle Assessment Consulting

(no signature required)

Product

Product description:

Protecta EX Mortar is a dry, white powder which consists of inorganic components and perlite. When mixed with water, the compounds form a highly thermal insulating fire sealing compound to prevent the spread of fire and smoke through openings in fire rated walls and floors around building penetrations. EX Mortar will also maintain the acoustic design performance in walls and floors.

EX Mortar expands approximately 1% by hydraulic action during curing to ensure a very tight seal around the service penetrations and surrounding opening apertures. The mortar hardens to an off-white, dry compound of approximately 1050kg/m3 which may be sanded or drilled.

EX Mortar is suitable for most surfaces including concrete, brick, Leca, steel and plastic but is not suitable to fitting of doors or in service openings that involve movement. No priming is necessary prior to application in most building substrates, however metal services in contact with the seal must be corrosion protected.

Product specification

Materials	Value	Unit
MATERIALS		
Filler	0-1	%
Binder	1-10	%
Cement	18-20	%
Mineral	70-80	%
PACKAGING		
Packaging - Wood	0,03	kg
Packaging - Paper	0,01	kg
Packaging - Plastic	0,00	kg

Technical data:

The product has third-party verified ETAs issued in accordance with regulation (EU) No 305/2011 on the basis of EAD 350454-00-1104, tested to EN 1366-1, -3, -4 & -12 in conjunction with EN 1363-1. The product is CE-marked for Europe.

For more information, please see https://www.protecta.no/sv/product/ex-mortar/

Market:

Sweden.

Reference service life, product

The reference service life of the product depends on its application area.

Reference service life, building

60 years.

LCA: Calculation rules

Declared unit:

1 kg Protecta EX Mortar (bag) for Sweden

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.

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.

Data quality:

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

Materials	Source	Data quality	Year
Binder	ecoinvent 3.6	Database	2019
Cement	ecoinvent 3.6	Database	2019
Filler	ecoinvent 3.6	Database	2019
Mineral	ecoinvent 3.6	Database	2019
Packaging - Paper	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Packaging - Wood	Modified ecoinvent 3.6	Database	2019

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

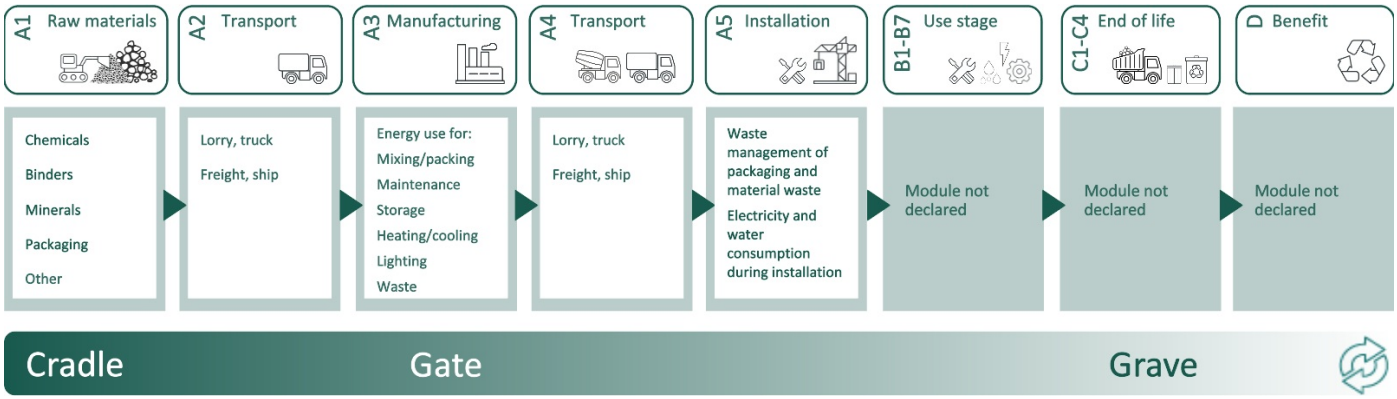
Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	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	MND	MND	MND	MND	MND	MND	MND

System boundary:

The life cycle analysis is a cradle-to-gate (A1 - A3) study, with options A4 and A5 for transport to the market and installation, respectively. It includes the extraction and production of raw materials and packaging, transportation to the manufacturing site, the production process itself, transport to the construction site, and waste management during product installation.

A4: Transport from the factory in England to Sweden is included. Additionally, 300 km of transport from our warehouse to the construction site is accounted for, in accordance with the PCR.

A5: Electricity consumption for the mortar mixer and water usage are included in the module. A 5% material waste during installation is included. All packaging is sent to average waste management.



Additional technical information:

Protecta EX Mortar can be removed with a hammer drill and disposed of at an approved waste facility.

Polyseam's factory is certified according to the ISO 14001 Environmental Management Systems (EMS). It provides a framework for organisations to design and implement an EMS, and continually improve their environmental performance.

Learn more: https://www.polyseam.com/sustainability/

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)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Ship, Ferry, Sea (km)	50,0 %	1322	0,034	l/tkm	44,95
Truck, 16-32 tonnes, EURO 6 (km) - Europe	36,7 %	457	0,043	l/tkm	19,65
Truck, 16-32 tonnes, EURO 6 (km) - Europe	36,7 %	300	0,043	l/tkm	12,90
Truck, 16-32 tonnes, EURO 6 (km) - Europe	36,7 %	138	0,043	l/tkm	5,93

Assembly (A5)	Unit	Value			
Electricity, Sweden (kWh)	kWh/DU	0,03			
Material loss during instalation (kg)	Units/DU	0,05			
Waste treatment of material lost during instalation (kg)	kg/DU	0,05			
Waste, packaging, kraft paper bag, unbleached, to average treatment (kg)	kg	0,01			
Waste, packaging, pallet, EUR wooden pallet, reusable, to average treatment (kg)	kg	0,03			
Waste, packaging, plastic film (LDPE), to average treatment (kg)	kg	0,00			
Water, tap water (kg)	kg/DU	0,67			

LCA: Results

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

Environmental impact							
	Indicator	**Unit**	A1	A2	A3	A4	A5
	GWP-total	kg CO_2 -eq	2,30E-01	3,44E-02	5,40E-02	3,14E-01	1,11E-01
	GWP-fossil	kg CO_2 -eq	2,80E-01	3,43E-02	5,23E-02	3,14E-01	6,08E-02
	GWP-biogenic	kg CO_2 -eq	-4,95E-02	1,85E-05	1,68E-03	1,06E-04	5,00E-02
	GWP-luluc	kg CO_2 -eq	1,30E-04	3,01E-05	5,97E-05	1,53E-04	1,42E-04
	ODP	kg CFC11 -eq	1,74E-08	7,20E-09	4,67E-09	6,70E-08	7,29E-09
	AP	mol H+ -eq	9,67E-04	2,93E-04	1,83E-04	5,58E-03	1,12E-04
	EP-FreshWater	kg P -eq	5,57E-06	3,19E-07	1,34E-06	1,86E-06	1,57E-06
	EP-Marine	kg N -eq	2,10E-04	9,98E-05	3,70E-05	1,37E-03	2,32E-05
	EP-Terrestial	mol N -eq	2,55E-03	1,10E-03	4,03E-04	1,52E-02	2,63E-04
	POCP	kg NMVOC -eq	8,53E-04	3,01E-04	1,05E-04	4,06E-03	8,00E-05
	ADP-minerals&metals[1]	kg Sb-eq	1,80E-06	5,55E-07	6,49E-07	5,40E-06	2,96E-07
	ADP-fossil[1]	MJ	3,68E+00	4,99E-01	1,07E+00	4,38E+00	4,62E-01
	WDP[1]	m^3	5,39E+00	5,22E-01	4,62E+00	2,69E+00	1,92E+01

GWP-total = Global Warming Potential total; 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

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

Remarks to environmental impacts

Additional environmental impact indicators							
Indicator		Unit	A1	A2	A3	A4	A5
	PM	Disease incidence	8,42E-09	2,11E-09	7,27E-10	1,39E-08	1,64E-09
	IRP[2]	kgBq U235 -eq	5,98E-03	2,21E-03	1,72E-02	1,90E-02	7,30E-03
	ETP-fw[1]	CTUe	4,91E+00	3,66E-01	7,72E-01	2,90E+00	1,31E+00
	HTP-c[1]	CTUh	2,05E-10	0,00E+00	1,90E-11	0,00E+00	7,10E-11
	HTP-nc[1]	CTUh	2,37E-09	2,86E-10	6,56E-10	3,35E-09	5,59E-10
	SQP[1]	dimensionless	2,56E+00	4,35E-01	8,97E-01	1,92E+00	2,95E-01

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Resource use							
Indicator		Unit	A1	A2	A3	A4	A5
	PERE	MJ	3,79E-01	8,34E-03	2,94E-01	4,67E-02	1,40E-01
	PERM	MJ	4,46E-01	0,00E+00	0,00E+00	0,00E+00	-4,46E-01
	PERT	MJ	8,25E-01	8,34E-03	2,94E-01	4,67E-02	-3,06E-01
	PENRE	MJ	1,80E+00	4,99E-01	1,07E+00	4,38E+00	4,62E-01
	PENRM	MJ	1,89E+00	0,00E+00	0,00E+00	0,00E+00	-4,03E-03
	PENRT	MJ	3,68E+00	4,99E-01	1,07E+00	4,38E+00	4,58E-01
	SM	kg	3,57E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	RSF	MJ	4,92E-03	3,99E-04	4,26E-04	1,54E-03	1,31E-03
	NRSF	MJ	8,60E-04	1,09E-03	4,96E-04	4,36E-03	4,12E-03
	FW	m^3	2,41E-03	6,51E-05	4,30E-04	3,51E-04	1,10E-03

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 resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Waste

Indicator		Unit	A1	A2	A3	A4	A5
	HWD	kg	2,51E-04	2,82E-05	3,21E-03	2,04E-04	5,00E-02
	NHWD	kg	1,34E-02	2,40E-02	6,31E-03	1,20E-01	7,59E-03
	RWD	kg	6,73E-06	3,39E-06	8,58E-06	3,02E-05	2,71E-06

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Output flow

Indicator		Unit	A1	A2	A3	A4	A5
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,52E-02
	MFR	kg	8,17E-06	0,00E+00	1,10E-02	0,00E+00	1,58E-02
	MER	kg	3,19E-07	0,00E+00	8,75E-08	0,00E+00	2,56E-02
	EEE	MJ	2,60E-06	0,00E+00	8,41E-03	0,00E+00	1,26E-03
	EET	MJ	3,93E-05	0,00E+00	1,27E-01	0,00E+00	1,91E-02

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

Biogenic Carbon Content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in accompanying packaging	kg C	1,36E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2

Additional 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	Source	Amount	Unit
Electricity, United Kingdom, Market mix (kWh)	ecoinvent 3.6	386,67	g CO2-eq/kWh
Electricity, United Kingdom, Solar (kWh)	ecoinvent 3.6	78,98	g CO2-eq/kWh

Dangerous substances

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

Indoor environment

Protecta EX Mortar has been emission tested by Normec Product Testing. Meets the exemplary level criteria for indoor air quality as specified in BREEAM-SE Nybyggnad v6.0.

Properties for item EX Mortar have been declared in the Nordic Ecolabelling Building Products Portal (generation 3) and Supply Chain Declaration Portal (generation 4).

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products						
Indicator	**Unit**	A1	A2	A3	A4	A5
GWPIOBC	kg CO_2 -eq	3,81E-01	3,44E-02	6,15E-02	3,14E-01	6,09E-02

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 14025:2010 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+A2:2019 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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