

Environmental Product Declaration

in accordance with ISO 14025 and EN 15804+A2

Protecta EX Plaster mortar (paper bag)



Polyseam

Business and Industry
Foundation for
Environmental
Product Declarations

Owner of the declaration:

Polyseam AS

Product:

Protecta EX Plaster mortar (paper bag)

Declared device:

1 kg

The declaration is based on PCR:

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

Programme operator: The
Business and Industry
Foundation for Environmental
Product Declarations

Declaration number:

NEPD-5178-4504-EN

Publication number:

NEPD-5178-4504-EN

Approved Date: 10/17/2023

Valid until: 10/17/2028

EPD Software:

LCA.no EPD generator ID: 81303

General information

Product

Protecta EX Plaster mortar (paper bag)

Program operator:

P.O. Box 5250 Majorstuen, 0303 Oslo, Norway The Business and Industry Foundation for Environmental Product Declarations Phone: +47 23 08 80 00 Web: post@epd-norge.no

Declaration number:

NEPD-5178-4504-EN

The declaration is based on PCR:

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

Statement of Liability:

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

Declared device:

1 kg Protecta EX Plaster mortar (paper bag)

Declared device with option:

A1,A2,A3,A4,A5

Functional unit:

General information about verification of EPD from tools:

Independent verification of data, other environmental information and EPD has been carried out in accordance with ISO 14025:2010, chapters 8.1.3 and 8.1.4. Verification of each EPD is carried out in accordance with the EPD Norway's guidelines for verification and approval which require EPD tools to be i) integrated into the company's environmental management system, ii) procedures for use of EPD tools approved by the EPD Norway and iii) the process is reviewed annually by an independent 3rd party verifier. See Appendix G of the EPD-Norway guidelines for more information about EPD tools.

Verification of EPD tools:

Independent third-party verification of tools, background data and test EPDs is done in accordance with EPD-Norway's procedures and guidelines for verification and approval of EPD tools. NEPDT73
Third-party verifier:

Linda Høbye - Life Cycle Assessment Consulting
(does not require signature)

Owner of the declaration:

Polyseam AS
Contact person: Andrea Bogstad
Phone: +47 33 30 67 00
Email: post.no@polyseam.com

Producer:

Polyseam Ltd

Production site:

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

Quality/Environmental System:

ISO 9001, ISO 14001

Org. en.:

986 426 051

Approved Date: 10/17/2023

Valid until: 10/17/2028

Year of study:

2022

Comparability:

EPDs of construction products are not necessarily comparable if they do not comply with NS-EN 15804 and are seen in a building context.

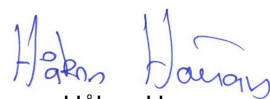
Preparation and verification of environmental product

declaration: The declaration has been prepared and verified using the EPD tool [lca.tools](https://www.lca.tools) ver EPD2022.03, developed by LCA.no. The EPD tool is integrated into the company's environmental management system, and

approved by the EPD Norway EPD is prepared by: Andrea Bogstad

Company-specific data and EPD controlled by: Wol Hluchan

Approved:



Håkon Hauan
Daglig leder av EPD-Norge

Product

Product Description:

Protecta EX Gypsum mortar is a dry white powder, consisting of inorganic components and perlite. When mixed with water, a thermally hardening fireproofing compound is formed for use in sealing technical penetrations that break fire-rated walls and coverings. EX Gypsum mortar will also maintain acoustic requirements in walls and covers.

EX Gypsum mortar expands approximately 1% during curing, therefore ensuring that technical penetrations and adjacent wall or covering are sealed. The mortar dries to an "off-white", dry mass of about 1050kg/m³ that can be sanded down or drilled in.

EX Gypsum mortar fits most surfaces including concrete, masonry, Leca, steel and plastic, but not suitable for mounting doors or in other structures with a lot of movement. No primer is required for application to most materials, but metal must be protected from rust formation.

Product specification:

Materials	Value	Unit
MATERIALS		
Filler	0-1	%
Bind	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 a third party approved European Technical Assessment issued in accordance with Regulation (EU) No 305/2011 based on EAD 350454-00-1104. The product is CE marked for Europe.

For more information see [https:// www.protecta.co.uk/no/product/ex-mortar/](https://www.protecta.co.uk/no/product/ex-mortar/)

Market Area:

Norway.

Lifetime, product:

The reference lifetime of the product depends on the application.

Lifetime, building or construction:

60 years.

LCA: Calculation rules

Declared device:

1 kg Protecta EX Plaster mortar (paper bag)

Cut-off criteria:

All important raw materials and energy use are included. The production process for the raw materials and energy flows included in very small amounts (less than 1%) is not included. These cut-off criteria do not apply to hazardous materials and substances.

Allocation:

Allocation is made in accordance with provisions of EN 15804. Incoming energy and water, as well as the production of waste in own production, are allocated equally between all products through mass allocation. The environmental impact and resource consumption of the primary production of recycled materials is allocated to the original product system. The processing process and transportation of the material to the production site are allocated to the analysis in this EPD.

Data quality:

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

Materials	Source	Data quality	Year
Bind	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 limits (X=included, MND=module not declared, MNR=module not)

Product phase			Assembly phase		Applicatio							Final			Gains and loads at end of life (D)	
Raw	Transport	Manufact	Transport	Construction/in stallation phase	Cust	Maintenanc	Repair	Replaceme	Renovatio	Operational energy use	Operational water use	Disassembly	Transport	Waste treatment	Waste for final treatment	Reuse/recovery/recycli ng potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MONTH	MONTH	MONTH	MONTH	MONTH	MONTH	MONTH	MONTH	MONTH	MONTH	MONTH	MONTH
																H

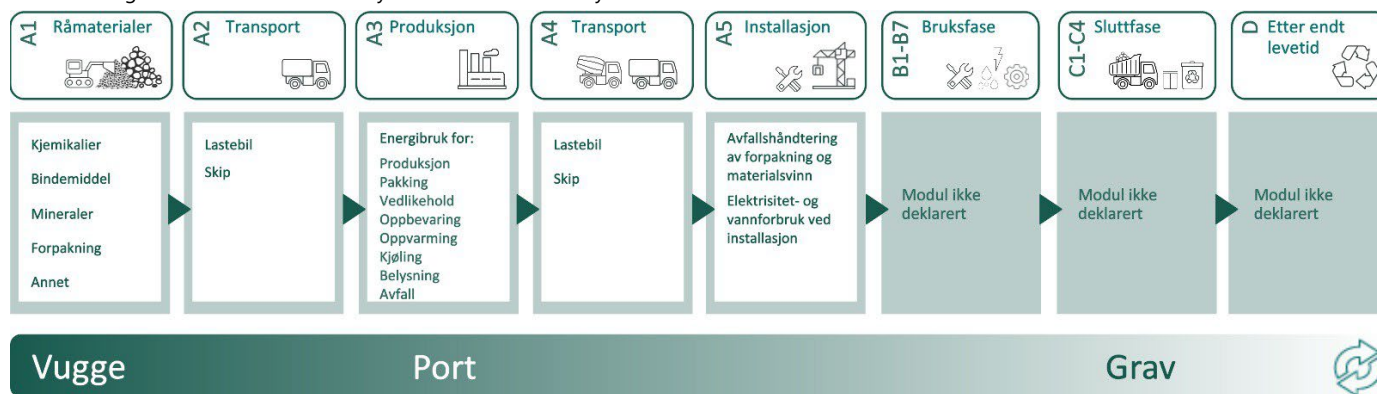
System limits:

The LCA is a cradle-to-gate (A1 - A3) study, with alternative A4 transport to market and A5 installation. It includes the extraction and production of raw materials and packaging, transportation to the production site, the production process itself, transportation to the construction site, as well as waste disposal upon installation of the product.

A4: Transport from factory in England to Norway is included. 300km of transport from our warehouse to construction site is also added according to PCR.

A5: Electricity consumption on mortar mixer and water consumption are included in the module. 5% material wastage is included at installation. All packaging is sent to average waste disposal.

The following flowchart illustrates the system limits of the analysis:



Additional technical information:

Protecta EX Gypsum mortar can be removed with a drill hammer and sorted as hazardous waste at approved waste facilities.

Polyseam's factory is certified according to the ISO 14001 Environment Management (EMS) Standard. This framework guides in reducing and managing the impact of production on the environment.

Read more here [https:// www.polyseam.com/sustainability/](https://www.polyseam.com/sustainability/)

LCA: Scenarios and other technical














The following information describes the scenarios for the modules in the EPD.

Transport from production site to user (A4)	Capacity utilisation incl. returns (%)	Distance (km)	Fuel/Energy consumption	Unit	Value (litres/tonne)
Ship, Ferry, Sea (km)	50,0 %	1117	0,034	L/TKM	37,98
Truck, 16-32 tonnes, EURO 6 (km) - Europe	36,7 %	69	0,043	L/TKM	2,97
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

Construction phase (A5)	Unit	Value			
Electricity, Norway (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 unit defined on page 2 of the EPD document.

Environmental impact							
Indicator	Unit	A1	A2	A3	A4	A5	
 GWP Total	kg CO2 -eq	2.30E-01	3.44E-02	5.40E-02	2.22E-01	1.10E-01	
 GWP fossil	kg CO2 -eq	2.80E-01	3.43E-02	5.23E-02	2.21E-01	6.00E-02	
 GWP-biogenic	kg CO2 -eq	-4.95E-02	1.85E-05	1.68E-03	7.11E-05	5.00E-02	
 GWP-luluc	kg CO2 -eq	1.30E-04	3.01E-05	5.97E-05	1.14E-04	4.64E-05	
 ODP	kg CFC11 -eq	1.74E-08	7.20E-09	4.67E-09	4.67E-08	6.59E-09	
 AP	mol H+ -eq	9.67E-04	2.93E-04	1.83E-04	4.59E-03	1.08E-04	
 EP-FreshWater	kg P-eq	5.57E-06	3.19E-07	1.34E-06	1.22E-06	1.51E-06	
 EP-Marine	kg N-eq	2.10E-04	9.98E-05	3.70E-05	1.13E-03	2.22E-05	
 EP-Terrestrial	mol N -eq	2.55E-03	1.10E-03	4.03E-04	1.26E-02	2.49E-04	
 POCP	kg NMVOC -eq	8.53E-04	3.01E-04	1.05E-04	3.32E-03	7.71E-05	
 ADP-minerals&metals1	kg Sb-eq	1.80E-06	5.55E-07	6.49E-07	3.35E-06	2.88E-07	
 ADP-fossil1	MJ	3.68E+00	4.99E-01	1.07E+00	3.04E+00	2.94E-01	
 WDP1	m3	5.39E+00	5.22E-01	4.62E+00	1.63E+00	2.85E+00	







GWP total = Global warming potential overall; GWP fossil = Global warming potential fossil fuels; GWP biogenic = Global warming potential biogenic sources; GWP-luluc = Global warming potential land use and land use changes; ODP = Potential for stratospheric ozone depletion; AP = Acidification potential for sources on land and water; EP = eutrophication potential of freshwater, oceans and soil; POCP = Potential for photochemical oxidant formation; ADP-minerals&metals = Abiotic depletion potential of non-fossil resources, minerals and metals; ADP-fossil = Abiotic depletion potential of fossil resources, fossil fuels; WDP = Depletion potential of water resources

"Reading example: 9.0 E-03 = 9.0*10⁻³ = 0.009"

*iNA Indicator Not Assessed

1. The results of this environmental impact indicator should be used with caution as the uncertainty of the results is high or there is limited experience in the use of the indicator.

Environmental impact note











Supplementary indicators of environmental impact							
Indicator	Unit	A1	A2	A3	A4	A5	
 PM	Disease incidence	8.42E-09	2.11E-09	7.27E-10	9.07E-09	1.61E-09	
 IRP2	kgBq U235 -eq	5.98E-03	2.21E-03	1.72E-02	1.32E-02	1.37E-03	
 ETP-fw1	CTUe	4.91E+00	3.66E-01	7.72E-01	1.96E+00	1.26E+00	
 HTP-c1	CTUh	2.05E-10	0.00E+00	1.90E-11	0.00E+00	7.00E-11	
 HTP-nc1	CTUh	2.37E-09	2.86E-10	6.56E-10	2.30E-09	5.43E-10	
 SQP1	dimensionless	2.56E+00	4.35E-01	8.97E-01	1.16E+00	2.21E-01	

PM = Particulate emissions; IRP = Ionizing radiation (health effect); ETP-fw = Ecotoxicity (fresh water); HTP-c = Toxicity impact on humans, cancer; htp-nc= Toxicity effects on humans, effects other than cancer; SQP = Impacts on land use change/soil quality

"Reading example: 9.0 E-03 = $9.0 \cdot 10^{-3} = 0.009$ "

*INA Indicator Not Assessed




1. The results of this environmental impact indicator should be used with caution as the uncertainty of the results is high or there is limited experience with the use of the indicator.
2. This category of influence deals mainly with the eventual effect of low-dose ionizing radiation on human health in the nuclear fuel cycle. It does not take into account effects due to possible nuclear accidents, occupational exposures or due to the removal of radioactive waste in underground facilities. Potential ionizing radiation from the soil, from radon and from some building 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	2.99E-02	1.80E-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	2.99E-02	-2.66E-01
	PENRE	MJ	1.80E+00	4.99E-01	1.07E+00	3.04E+00	2.94E-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	3.04E+00	2.90E-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	9.59E-04	1.08E-03
	NRSF	MJ	8.60E-04	1.09E-03	4.96E-04	2.47E-03	3.32E-03
	FW	m ³	2.41E-03	6.51E-05	4.30E-04	2.25E-04	1.84E-03

PERE = Renewable primary energy used as an energy carrier; PERM = Renewable primary energy used as raw material; PERT = Total use of renewable primary energy; PENRE = Non-renewable primary energy used as an energy carrier; PENRM = Non-renewable primary energy used as raw material; PENRT = Total use of non-renewable primary energy; 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	1.38E-04	5.00E-02
	NHWD	Kg	1.34E-02	2.40E-02	6.31E-03	6.92E-02	7.74E-03
	RWD	Kg	6.73E-06	3.39E-06	8.58E-06	2.10E-05	1.09E-07

HWD = Disposed of hazardous waste; NHWD = Disposed of non-hazardous waste; RWD = Disposed of radioactive waste

"Reading example: 9.0 E-03 = $9.0 \cdot 10^{-3} = 0.009$ "

*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
	MORE	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 reuse, MFR Materials for recycling, MER = Materials for energy recovery, EEE = Exported electrical energy; EET = Exported thermal energy

"Reading example: 9.0 E-03 = $9.0 \cdot 10^{-3} = 0.009$ "

*INA Indicator Not Assessed

Biogenic carbon content information		
Indicator	Unit	At port
Content of biogenic carbon in product	kg C	0.00E+00
Content of biogenic carbon in packaging	kg C	1.36E-02

Note: 1 kg of biogenic carbon corresponds to 44/12 kg of CO₂

Additional requirements

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

The national production mix from imports, low voltage (including production of transmission lines, as well as direct emissions and losses in grids) is used for applied electricity in the production process (A3). Background data are presented in the table below. Characterization factors from EN15804:2012+A2:2019 are used.

Electricity mix	Data source	Amount	Unit
Electricity, United Kingdom, Market mix (kWh)	ecoinvent 3.6	386,67	g CO ₂ -eq/kWh
Electricity, United Kingdom, Solar (kWh)	ecoinvent 3.6	78,98	g CO ₂ -eq/kWh

Dangerous substances

The product has not been supplied with substances from the REACH Candidate List or the Norwegian priority list.

Indoor environment

Protecta EX Gypsum mortar is emission tested by Normec Product Testing. Satisfies minimum requirements for contaminants as well as the pattern valid level for indoor air quality as stated in the BREEAM-NOR Manual 2022 v6.0 - New building.

EX Gypsum mortar is also listed in the Nordic Ecolabel portal for construction products that can be used in Nordic Swan ecolabelled buildings generation 3.

Additional environmental information

Additional indicators of environmental impact needed 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	2.22E-01	5.99E-02

GWPI-IOBC: Global warming potential calculated on the principle of immediate oxidation. To increase the clarity 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 the context of the Swedish Public Procurement Act.

Bibliography

NS-EN ISO 14025:2010 Environmental labels and declarations - Environmental product declarations type III - Principles and procedures. NS-EN ISO 14044:2006 Environmental management - Life cycle assessments - Requirements and guidelines.

NS-EN 15804:2012+A2:2019 Sustainable buildings - Environmental product declarations - Basic product category rules for construction products. ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services.

ecoinvent v3, (2019) Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.






Iversen et al., (2021) eEPD v2021.09 Background information for EPD generator tool system verification, LCA.no Report number: 07.21

Ruttenborg, M. and Iversen, O.M.K., (2023) EPD generator for NPCR009:2021, Part B for Technical - Chemical products, Background information for EPD generator application and LCA data, LCA.no report number: 05.23.

NPCR Part A: Construction products and services. Ver. 2.0, 24.03.2021 EPD Norway.

NPCR 009 Part B for Technical - Chemical products for building and construction industry, Ver. 3.0, 06.10.2021, EPD Norway.

Testrapport SPT2023-R077 - VOC Emission Test Report

 Global program operator	Program operator and publisher Business Foundation for Environmental Product Declarations P.O. Box 5250 Majorstuen, 0303 Oslo, Norway	Phone: +47 23 08 80 00 email: post@epd-norge.no web: www.epd-norge.no
	Owner of the declaration: Polyseam AS Raven Road 7, 3174 Revetal	Phone: +47 33 30 67 00 email: post.no@polyseam.com web: https://www.polyseam.com/
	Author of the Life Cycle Report LCA.no AS Dokka 6B, 1671	Phone: +47 916 50 916 email: post@lca.no web: www.lca.no
	EPD generator developer LCA.no AS Dokka 6B,1671 Kråkerøy	Phone: +47 916 50 916 email: post@lca.no web: www.lca.no
	ECO Platform ECO Portal	web: www.eco-platform.org web: ECO Portal