

Environmental Product Declaration

in accordance with ISO 14025 and EN 15804+A2

Protecta FR Acrylic (plastic cartridge)



Polyseam.

Business and Industry
Foundation for
Environmental
Product Declarations

Owner of the declaration:

Polyseam AS

Product:

Protecta FR Acrylic (plastic cartridge)

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-5259-4590-EN

Publication number:

NEPD-5259-4590-EN

Approved Date: 25/10/2023

Valid until: 25/10/2028

EPD Software:

LCA.no EPD generator ID: 81301

General information

Product

Protecta FR Acrylic (plastic cartridge)

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-5259-4590-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 FR Acrylic (plastic cartridge)

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. NEPD73
Third-party verifier:

Linda Høibye - 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: 25/10/2023

Valid until: 25/10/2028

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 FR Acrylic is designed to prevent the spread of fire and smoke through joints and openings in fire-rated walls and coverings, including openings around technical penetrations. FR Acrylic will also maintain acoustic ratings with a lifespan of up to 30 years.

When exposed to climatic conditions, the sealant hardens and will retain a degree of elasticity for joint movement. When exposed to fire, FR Acrylic changes into a robust fire seal that forms a durable expanding mass.

FR Acrylic can be used with appropriate back push to ensure proper width and depth ratio, as well as to reduce shrinkage of the joint during curing. When exposed to fire, the joint will expand at approximately 180°C and effectively prevent burn-through for up to 4 hours.

Product specification:

Materials	Value	Unit
MATERIALS		
Pigments	0-1	%
Bind	30-40	%
Preservative	0,03	%
Chemical	1-10	%
Mineral	55-80	%
Solvent	0-1,25	%
PACKAGING		
Packaging - Cardboard	0,02	Kg
Packaging - Plastic	0,08	Kg
Packaging - Wood	0,03	Kg

Technical data:

The product has a third party approved European Technical Assessment issued in accordance with Regulation (EU) No. 305/2011 on the basis of EAD 350454-00-1104, based on tests carried out according to EN 1366-3, -4 & -12 in conjunction with EN 1363-1. The product is CE marked for Europe.

For more information, see [https:// www.protecta.co.uk/no/product/fr-acrylic/](https://www.protecta.co.uk/no/product/fr-acrylic/)

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 FR Acrylic (plastic cartridge)

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
Chemical	ecoinvent 3.6	Database	2019
Mineral	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Pigments	ecoinvent 3.6	Database	2019
Preservative	ecoinvent 3.6	Database	2019
Solvent	ecoinvent 3.6	Database	2019
Bind	Modified ecoinvent 3.6	Database	2019
Chemical	Modified ecoinvent 3.6	Database	2019
Packaging - Cardboard	Modified ecoinvent 3.6	Database	2019
Packaging - Wood	Modified ecoinvent 3.6	Database	2019

System limits (X=included, MND=module not declared, MNR=module not applicable)

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

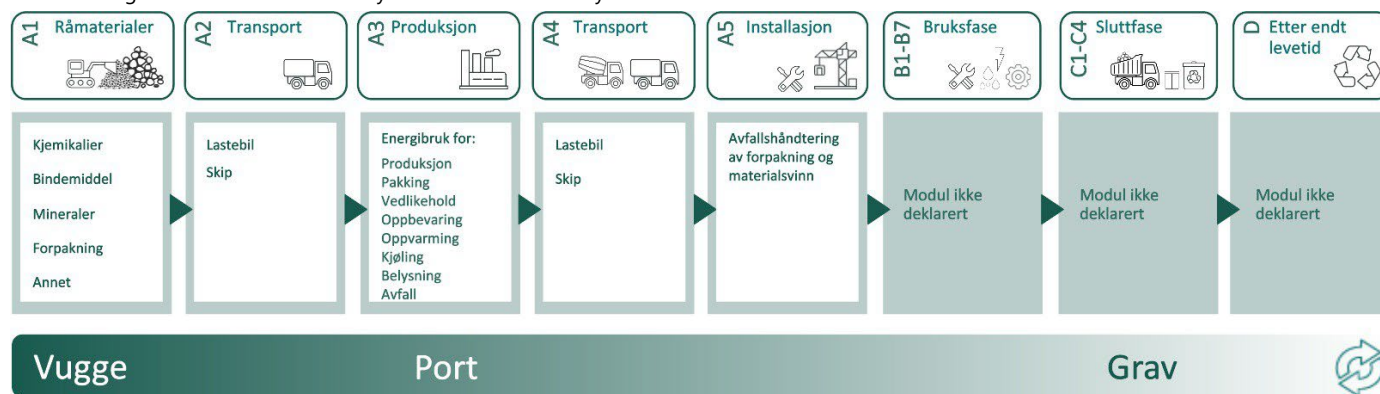
System limits:

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: Manual installation is taken as a basis, electricity is not taken into account. 3% material wastage is included at installation. Emissions of VOCs upon installation are included. All packaging is sent to average waste disposal.

The following flowchart illustrates the system limits of the analysis:



Additional technical information:

Protecta FR Acrylic can be removed with a knife/scrapper 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 information














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			
Material loss during instalation (kg)	Units/DU	0,03			
Volatile organic compounds (VOCs) to air (kg)	kg/DU	0,00			
Waste treatment of material lost during instalation (kg)	kg/DU	0,03			
Waste, packaging, cardboard, to average treatment (kg)	Kg	0,02			
Waste, packaging, pallet, EUR wooden pallet, reusable, to average treatment (kg)	Kg	0,03			
Waste, packaging, Plastic cartridges, HDPE, to average treatment (kg)	Kg	0,08			
Waste, packaging, plastic film (LDPE), to average treatment (kg)	Kg	0,00			

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	1.59E+00	6.17E-02	5.40E-02	2.32E-01	1.41E-01	
 GWP fossil	kg CO2 -eq	1.67E+00	6.16E-02	5.23E-02	2.32E-01	5.23E-02	
 GWP-biogenic	kg CO2 -eq	- 8.36E-02	3.23E-05	1.68E-03	7.44E-05	8.83E-02	
 GWP-luluc	kg CO2 -eq	9.95E-04	5.46E-05	5.97E-05	1.19E-04	2.65E-05	
 ODP	kg CFC11 -eq	1.30E-07	1.25E-08	4.67E-09	4.89E-08	4.35E-09	
 AP	mol H+ -eq	7.19E-03	8.62E-04	1.83E-04	4.80E-03	6.96E-05	
 EP-FreshWater	kg P-eq	4.98E-05	5.40E-07	1.34E-06	1.28E-06	8.82E-07	
 EP-Marine	kg N-eq	1.10E-03	2.54E-04	3.70E-05	1.18E-03	2.01E-05	
 EP-Terrestrial	mol N -eq	1.38E-02	2.82E-03	4.03E-04	1.32E-02	1.76E-04	
 POCP	kg NMVOC -eq	5.70E-03	7.49E-04	1.05E-04	3.48E-03	6.43E-04	
 ADP-minerals&metals1	kg Sb-eq	3.40E-05	7.38E-07	6.49E-07	3.51E-06	1.78E-07	
 ADP-fossil1	MJ	3.59E+01	8.60E-01	1.07E+00	3.18E+00	1.98E-01	
 WDP1	m3	6.38E+01	8.33E-01	4.62E+00	1.71E+00	7.51E-01	







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	5.65E-08	3.03E-09	7.27E-10	9.50E-09	1.10E-09	
 IRP2	kgBq U235 -eq	5.15E-02	3.81E-03	1.72E-02	1.38E-02	8.33E-04	
 ETP-fw1	CTUe	2.62E+01	6.05E-01	7.72E-01	2.05E+00	7.59E-01	
 HTP-c1	CTUh	1.72E-09	0.00E+00	1.90E-11	0.00E+00	4.10E-11	
 HTP-nc1	CTUh	2.07E-08	4.55E-10	6.56E-10	2.40E-09	4.47E-10	
 SQP1	dimensionless	9.58E+00	6.41E-01	8.97E-01	1.21E+00	1.75E-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	1.91E+00	1.40E-02	2.94E-01	3.13E-02	3.32E-02	
 PERM	MJ	8.17E-01	0.00E+00	0.00E+00	0.00E+00	-8.17E-01	
 PERT	MJ	2.72E+00	1.40E-02	2.94E-01	3.13E-02	-7.83E-01	
 PENRE	MJ	3.28E+01	8.61E-01	1.07E+00	3.18E+00	1.98E-01	
 PENRM	MJ	3.20E+00	0.00E+00	0.00E+00	0.00E+00	-3.20E+00	
 PENRT	MJ	3.61E+01	8.61E-01	1.07E+00	3.18E+00	-3.00E+00	
 SM	Kg	2.45E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
 RSF	MJ	3.93E-02	6.92E-04	4.26E-04	1.00E-03	5.82E-04	
 NRSF	MJ	9.05E-03	1.57E-03	4.96E-04	2.59E-03	1.88E-03	
 FW	m ³	2.45E-02	1.06E-04	4.30E-04	2.36E-04	1.56E-04	

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	2.96E-03	4.76E-05	3.21E-03	1.44E-04	3.00E-02
	NHWD	Kg	1.52E-01	3.28E-02	6.31E-03	7.24E-02	1.01E-01
	RWD	Kg	4.87E-05	5.87E-06	8.58E-06	2.20E-05	0.00E+00

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	2.97E-02
	MFR	Kg	5.49E-04	0.00E+00	1.10E-02	0.00E+00	6.72E-02
	MORE	Kg	3.35E-05	0.00E+00	8.75E-08	0.00E+00	1.59E-02
	EEE	MJ	1.64E-04	0.00E+00	8.41E-03	0.00E+00	2.94E-03
	EET	MJ	2.48E-03	0.00E+00	1.27E-01	0.00E+00	4.45E-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	2.41E-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 FR Acrylic 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.

FR Acrylic 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	1.66E+00	6.17E-02	6.15E-02	2.32E-01	3.54E-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

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

Testrapport SPT2023-R074 - VOC Emission Test Report

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