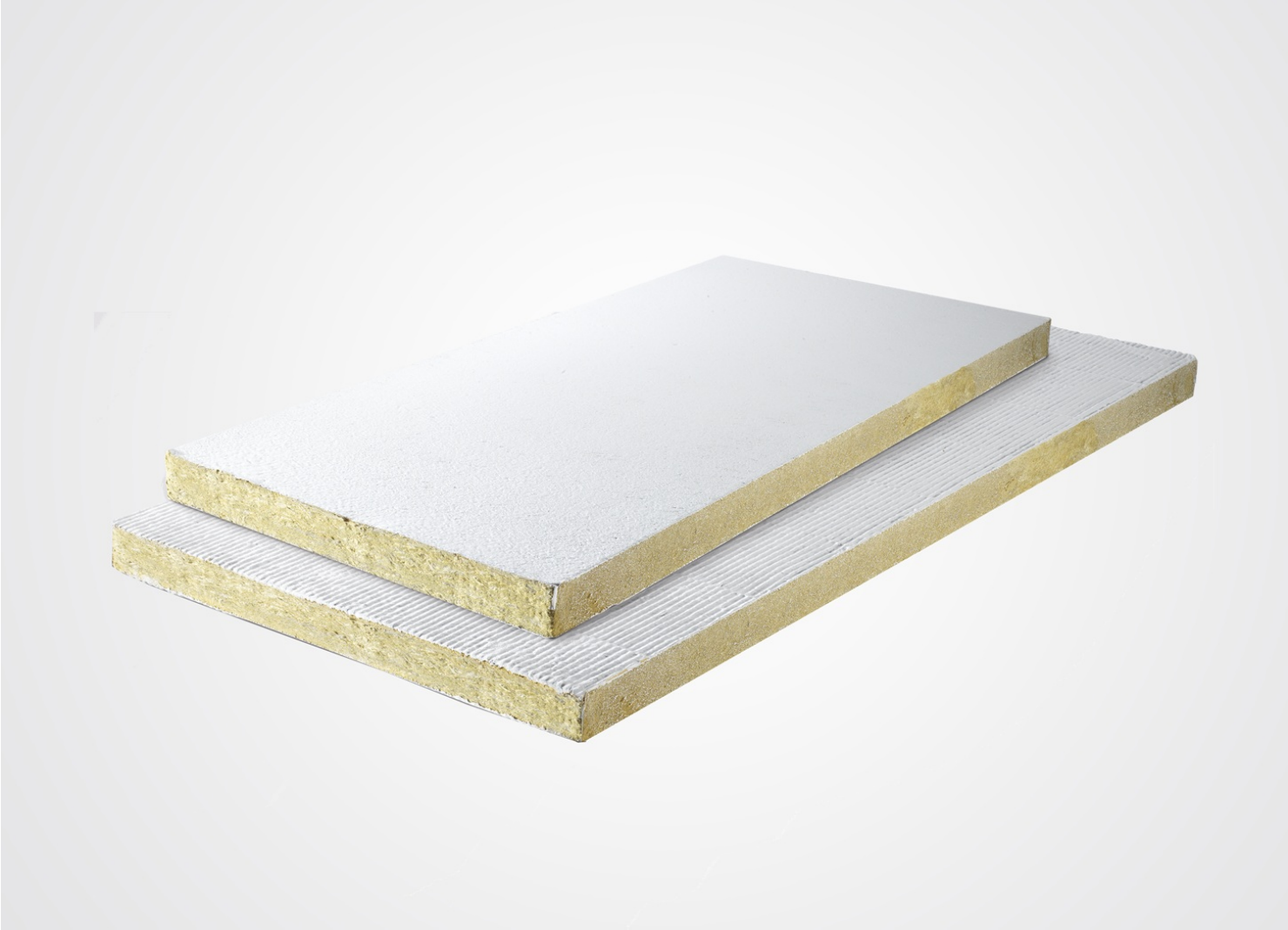
epd-norge
Global program operatør

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Protecta FR Board 1-S for Sweden



The Norwegian EPD Foundation

Owner of the declaration:
Polyseam AS

Product:
Protecta FR Board 1-S for Sweden

Declared unit:
1 m2

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 serves as core PCR.
NPCR 012:2022 Part B for Thermal insulation products

Program operator:
The Norwegian EPD Foundation

Declaration number:

Registration number:

Issue date:

Valid to:

EPD software:
LCAno EPD generator ID: 415265

General information

Product

Protecta FR Board 1-S for Sweden

Owner of the declaration:

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

Program operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
web: www.epd-norge.no

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 012:2022 Part B for Thermal insulation products

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 m2 Protecta FR Board 1-S for Sweden

Issue date:

Declared unit with option:

A1,A2,A3,A4,A5,C1,C2,C3,C4,D

Valid to:

Year of study:

2022

Functional unit:

1 m2 Protecta FR Board with top coating on one side. The board is 50mm thick and has a 160 kg/m3 density. Density of coating: 1,3-1,4 kg/ltr. Thermal conductivity: 0,038 W/mK.

Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804:2012+A2:2019 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.

Approved:

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

Product

Product description:

Protecta FR Board is designed to prevent the spread of fire and smoke through openings in fire rated walls and floors where openings are formed to allow the installation of multiple building services. FR Board will also maintain the acoustic designed performance in fire rated walls and floors.

FR Board consists of a high density, stone wool core which is over-coated with FR Coating. The top coating provides additional protection by significantly reducing the permeability of the stone wool core and prevents the passage of hot gases, thus reducing the temperature rise on the unexposed side and reducing heat conduction through the building services.

FR Board is available with top coating on one or two sides, selected on the basis of installation considerations and fire resistance. On site, FR Board must be used together with FR Acrylic for sealing around building services and the surrounding construction.

Product specification

Materials	Value	Unit
MATERIALS		
Paint	15-20	%
Mineral	80-90	%
PACKAGING		
Packaging - Wood	0,19	kg
Packaging - Plastic	0,09	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/fr-board/

Market:

Sweden.

Reference service life, product

60 years, if installed correctly.

Reference service life, building or construction works

60 years.

LCA: Calculation rules

Declared unit:

1 m2 Protecta FR Board 1-S 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+A2. 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
Mineral	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Packaging - Wood	Modified ecoinvent 3.6	Database	2019
Chemical	ecoinvent 3.6	Database	2019
Chemical	Modified ecoinvent 3.6	Database	2019
Solvent	ecoinvent 3.6	Database	2019
Binder	ecoinvent 3.6	Database	2019
Pigments	ecoinvent 3.6	Database	2019
Packaging - Paper	ecoinvent 3.6	Database	2019
Preservative	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	X	X	X	X	X

System boundary:

The life cycle analysis is a cradle-to-grave study, excluding the use phase (B1-B7). It includes the extraction and production of raw materials and packaging, transportation to the manufacturing site, the production process itself, transportation to the construction site, waste management during product installation, demolition, transportation to waste treatment, the waste treatment process, landfill of materials, as well as avoided emissions and resource use in a new product.

A4: Transportation from the factory in England to Sweden is included. Additionally, 300 km of transportation from our warehouse to the construction site is added according to the PCR.

A5: Manual installation is assumed, and electricity is not accounted for. No sealants/adhesives are included. Our fire-rated products are system-approved and have EPDs for the necessary products. We expect the EPDs for the used products to be attached as documentation. 2% material waste is included during installation. All packaging is sent for average waste management.

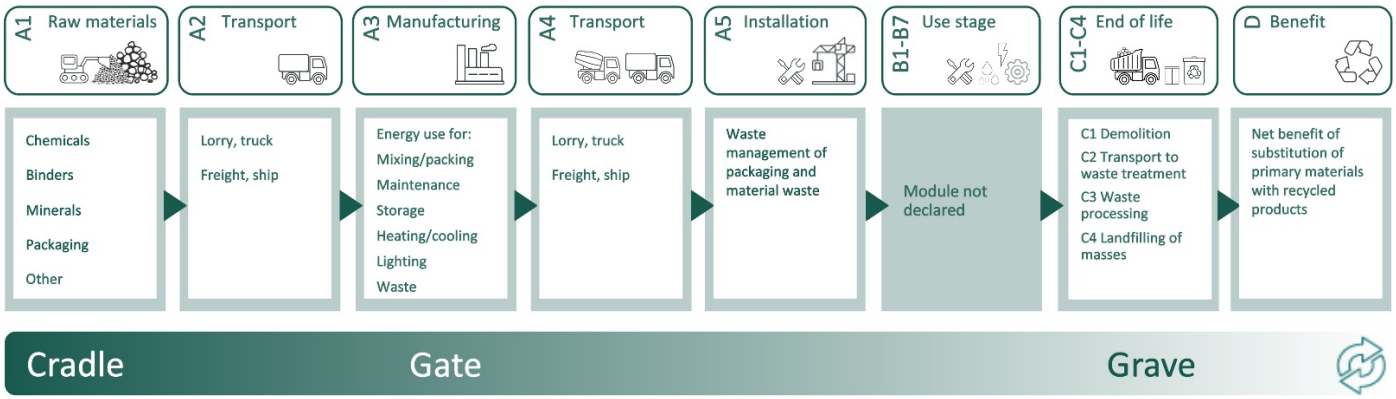
C1: Average datasets are used for demolition.

C2: 50 km of transportation to the nearest waste treatment facility is assumed.

C3: No part of the product is assumed to be sent for incineration.

C4: The entire product is assumed to be sent to landfill. The stone wool can be recycled if the paint is removed. However, we consider the likelihood of this practice being carried out to be minimal.

D: Reuse, recovery, and recycling are set to zero.



Additional technical information:

Protecta FR Board can be easily removed by unscrewing the attached screws. If the product is undamaged, it can be reused. In case of paint flaking, it can be repaired using Protecta FR Coating.

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			
Material loss during instalation (kg)	Units/DU	0,18			
Waste treatment of material lost during instalation (kg)	kg/DU	0,18			
Waste, packaging, pallet, EUR wooden pallet, reusable, to average treatment (kg)	kg	0,19			
Waste, packaging, plastic film (LDPE), to average treatment (kg)	kg	0,09			

De-construction demolition (C1)	Unit	Value			
Demolition of building and mixed material collection, 0,012kWh per kg demolished material (kg)	kg/DU	9,17			

Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tonnes, EURO 6 (km) - Europe	53,3 %	50	0,023	l/tkm	1,15

Disposal (C4)	Unit	Value			
Waste, paint, to landfill (kg)	kg/DU	1,39			
Waste, stone wool, to landfil (kg)	kg/DU	7,50			

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	C1	C2	C3	C4	D
	GWP-total	kg CO_2 -eq	9,85E+00	1,52E-01	4,80E-01	2,67E+00	5,07E-01	3,67E-02	4,00E-02	0	2,02E-01	0
	GWP-fossil	kg CO_2 -eq	1,02E+01	1,52E-01	4,65E-01	2,67E+00	2,17E-01	3,67E-02	3,99E-02	0	2,02E-01	0
	GWP-biogenic	kg CO_2 -eq	-3,71E-01	6,28E-05	1,50E-02	8,99E-04	2,90E-01	6,88E-06	1,71E-05	0	4,01E-05	0
	GWP-luluc	kg CO_2 -eq	7,67E-03	5,36E-05	5,30E-04	1,31E-03	1,54E-04	2,89E-06	1,22E-05	0	1,39E-05	0
	ODP	kg CFC11 -eq	6,83E-07	3,44E-08	4,15E-08	5,70E-07	2,36E-08	7,92E-09	9,63E-09	0	2,06E-08	0
	AP	mol H+ -eq	9,38E-02	4,39E-04	1,63E-03	4,75E-02	3,67E-04	3,84E-04	1,29E-04	0	4,76E-04	0
	EP-FreshWater	kg P -eq	3,71E-04	1,21E-06	1,19E-05	1,58E-05	5,15E-06	1,34E-07	3,18E-07	0	5,74E-07	0
	EP-Marine	kg N -eq	9,08E-03	8,78E-05	3,29E-04	1,16E-02	8,38E-05	1,69E-04	2,82E-05	0	1,67E-04	0
	EP-Terrestial	mol N -eq	1,58E-01	9,81E-04	3,58E-03	1,29E-01	8,80E-04	1,83E-03	3,14E-04	0	1,84E-03	0
	POCP	kg NMVOC -eq	4,85E-02	3,75E-04	9,31E-04	3,45E-02	2,74E-04	5,11E-04	1,23E-04	0	5,67E-04	0
	ADP-minerals&metals[1]	kg Sb-eq	8,79E-05	4,12E-06	5,74E-06	4,60E-05	8,47E-07	5,63E-08	7,11E-07	0	4,65E-07	0
	ADP-fossil[1]	MJ	1,53E+02	2,30E+00	9,48E+00	3,73E+01	1,02E+00	5,05E-01	6,49E-01	0	1,42E+00	0
	WDP[1]	m^3	1,66E+03	2,20E+00	4,10E+01	2,29E+01	4,00E+00	1,07E-01	4,97E-01	0	2,38E+00	0

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	C1	C2	C3	C4	D
	PM	Disease incidence	5,12E-07	9,48E-09	6,45E-09	1,18E-07	5,70E-09	4,64E-08	3,67E-09	0	9,44E-09	0
	IRP[2]	kgBq U235 -eq	3,89E-01	1,00E-02	1,53E-01	1,62E-01	4,28E-03	2,20E-03	2,83E-03	0	5,98E-03	0
	ETP-fw[1]	CTUe	2,09E+02	1,70E+00	6,86E+00	2,47E+01	4,32E+00	2,76E-01	4,74E-01	0	8,48E-01	0
	HTP-c[1]	CTUh	3,86E-08	0,00E+00	1,72E-10	0,00E+00	2,41E-10	9,00E-12	0,00E+00	0	3,20E-11	0
	HTP-nc[1]	CTUh	1,29E-07	1,85E-09	5,83E-09	2,85E-08	1,73E-09	2,57E-10	4,58E-10	0	6,73E-10	0
	SQP[1]	dimensionless	1,01E+02	1,65E+00	7,95E+00	1,63E+01	8,12E-01	6,13E-02	7,43E-01	0	3,46E+00	0

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	C1	C2	C3	C4	D
	PERE	MJ	1,96E+01	3,27E-02	2,60E+00	3,97E-01	1,94E-01	2,75E-03	8,16E-03	0	2,06E-02	0
	PERM	MJ	3,59E+00	0,00E+00	0,00E+00	0,00E+00	-2,65E+00	0,00E+00	0,00E+00	0	0,00E+00	0
	PERT	MJ	2,32E+01	3,27E-02	2,60E+00	3,97E-01	-2,46E+00	2,75E-03	8,16E-03	0	2,06E-02	0
	PENRE	MJ	1,31E+02	2,30E+00	9,48E+00	3,73E+01	1,02E+00	5,05E-01	6,49E-01	0	1,42E+00	0
	PENRM	MJ	2,41E+01	0,00E+00	0,00E+00	0,00E+00	-3,74E+00	0,00E+00	0,00E+00	0	0,00E+00	0
	PENRT	MJ	1,55E+02	2,30E+00	9,48E+00	3,73E+01	-2,71E+00	5,05E-01	6,49E-01	0	1,42E+00	0
	SM	kg	1,72E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	2,99E-04	0
	RSF	MJ	2,61E-01	1,17E-03	3,79E-03	1,31E-02	3,36E-03	0,00E+00	2,85E-04	0	4,50E-04	0
	NRSF	MJ	8,06E-02	4,17E-03	4,41E-03	3,71E-02	1,09E-02	0,00E+00	9,56E-04	0	1,56E-03	0
	FW	m^3	1,14E-01	2,47E-04	3,82E-03	2,99E-03	8,48E-04	2,60E-05	7,38E-05	0	1,57E-03	0

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	C1	C2	C3	C4	D
	HWD	kg	1,89E-02	1,19E-04	2,85E-02	1,73E-03	1,78E-01	1,49E-05	3,55E-05	0	8,56E-05	0
	NHWD	kg	8,55E-01	1,16E-01	5,61E-02	1,02E+00	9,76E-02	5,98E-04	5,64E-02	0	8,89E+00	0
	RWD	kg	3,02E-04	1,57E-05	7,63E-05	2,57E-04	0,00E+00	3,51E-06	4,43E-06	0	7,25E-06	0

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	C1	C2	C3	C4	D
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,81E-01	0,00E+00	0,00E+00	0	0,00E+00	0
	MFR	kg	5,78E-02	0,00E+00	9,80E-02	0,00E+00	8,26E-02	0,00E+00	0,00E+00	0	2,81E-04	0
	MER	kg	2,18E-02	0,00E+00	7,78E-07	0,00E+00	9,44E-02	0,00E+00	0,00E+00	0	2,27E-06	0
	EEE	MJ	4,22E-02	0,00E+00	7,48E-02	0,00E+00	6,70E-03	0,00E+00	0,00E+00	0	1,96E-05	0
	EET	MJ	6,39E-01	0,00E+00	1,13E+00	0,00E+00	1,01E-01	0,00E+00	0,00E+00	0	2,97E-04	0

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	1,06E-01

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 FR Board 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 FR Board 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	C1	C2	C3	C4	D
GWPIOBC	kg CO_2 -eq	1,02E+01	1,52E-01	5,47E-01	2,67E+00	2,17E-01	3,67E-02	4,00E-02	0	3,95E-02	0

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.

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NPCR 012 Part B for Part B for Thermal insulation products, Ver. 2.0, 31.03.2022, EPD Norway.

SPT2023-R076 - VOC Emission Test Report

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