

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Envistar Top 28 with counter-flow heat exchanger and controls



The Norwegian EPD Foundation

Owner of the declaration:

IV Produkt AB

Product:

Envistar Top 28 with counter-flow heat exchanger and controls

Declared unit:

1 pcs

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 030:2021 Part B for ventilation components

Program operator:

The Norwegian EPD Foundation

Declaration number:

NEPD-9367-8956

Registration number:

NEPD-9367-8956

Issue date: 10.03.2025

Valid to: 10.03.2030

EPD software:

LCAno EPD generator ID: 805243

General information

Product

Envistar Top 28 with counter-flow heat exchanger and controls

Program operator:

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

Declaration number:

NEPD-9367-8956

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 030:2021 Part B for ventilation components

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.

Declared unit:

1 pcs Envistar Top 28 with counter-flow heat exchanger and controls

Declared unit with option:

A1-A3,A4,C1,C2,C3,C4,D

Functional unit:

N/A

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

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.

Third party verifier:

Alexander Borg, Asplan Viak AS

(no signature required)

Owner of the declaration:

IV Produkt AB
Contact person:
Phone: + 46 70 758800
e-mail: info@ivprodukt.se

Manufacturer:

IV Produkt AB

Place of production:

IV Produkt AB
Sjöddevägen 7
352 46 Växjö, Sweden

Management system:

ISO 14001 and 9001

Organisation no:

556129-1559

Issue date:

10.03.2025

Valid to:

10.03.2030

Year of study:

2023

Comparability:

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

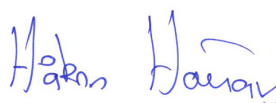
Development and verification of EPD:

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. NEPDT144

Developer of EPD: Linnea Schindelar

Reviewer of company-specific input data and EPD: Axel bergstrand

Approved:



Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:

Air Handling Unit (AHU) for non residential building.

Product specification

Envistar Top air handling unit for non residential buildings.

Bi-directional including counter-flow heat exchanger and integrated controls, damper and LPHW coil.

Materials	kg	%
Adhesive	2,091	0,16
Aluminium foil, with plastic	0,018	0,0014
Electronic - Unspecified	6,92	0,54
Electronic - Wire	3,34	0,26
Filter, plastic based	5,70	0,44
Glass fibre reinforced plastic, polyamide	32,22	2,51
Insulation	46,64	3,64
Motor	32,56	2,54
Plastic - Polyamide	0,11	0,0093
Plastic - Polyethylene (HDPE)	0,060	0,0046
Plastic - Polystyrene (PS)	0,16	0,012
Rubber, synthetic	0,041	0,0032
Steel and rubber	2,91	0,22
Ventilation components	43,20	3,37
Metal	3,33	0,26
Metal - Aluminium	409,66	32,035
Metal - Brass	0,44	0,035
Metal - Steel	35,99	2,81
Metal - Steel with aluzinc coating	652,67	51,039
Plastic - Polyethylene terephthalate (PET)	0,62	0,048
Plastic - Acrylonitrile butadiene styrene (ABS)	0,0060	0,00046
Total	1278,78	100,00
Packaging	kg	%
Packaging - PET Film	3,50	100,00
Total incl. packaging	1282,28	100,00

Technical data:

According to printout from IVP Designer (selection program).

Market:

Europe

Reference service life, product

25 years

Reference service life, building or construction works

N/A

LCA: Calculation rules

Declared unit:

1 pcs Envistar Top 28 with counter-flow heat exchanger and controls

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. Energy, 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:

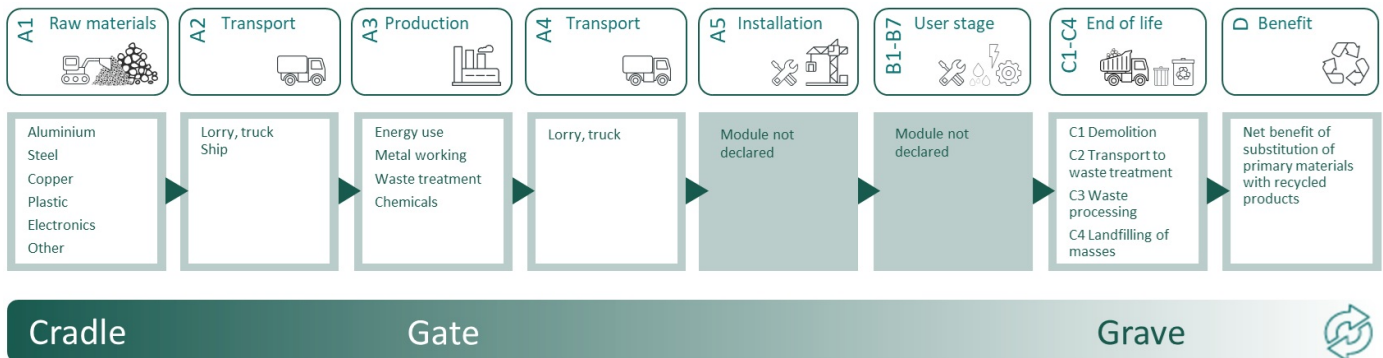
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the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

Materials	Source	Data quality	Year
Adhesive	ecoinvent 3.6	Database	2019
Aluminium foil, with plastic	ecoinvent 3.6	Database	2019
Electronic - Unspecified	ecoinvent 3.6	Database	2019
Electronic - Wire	ecoinvent 3.6	Database	2019
Filter, plastic based	S-P-03432	EPD	2022
Glass fibre reinforced plastic, polyamide	ecoinvent 3.6	Database	2019
Insulation	ecoinvent 3.6	Database	2019
Metal	ecoinvent 3.6	Database	2019
Metal - Aluminium	ecoinvent 3.6	Database	2019
Metal - Aluminium	Modified ecoinvent 3.6	Database	2019
Metal - Brass	ecoinvent 3.6	Database	2019
Metal - Steel	ecoinvent 3.6	Database	2019
Metal - Steel with aluzinc coating	Modified ecoinvent 3.6	Database	2019
Motor	ecoinvent 3.6	Database	2019
Packaging - PET Film	Ecoinvent 3.6	Database	2019
Plastic - Acrylonitrile butadiene styrene (ABS)	ecoinvent 3.6	Database	2019
Plastic - Polyamide	ecoinvent 3.6	Database	2019
Plastic - Polyethylene (HDPE)	ecoinvent 3.6	Database	2019
Plastic - Polyethylene terephthalate (PET)	ecoinvent 3.6	Database	2019
Plastic - Polystyrene (PS)	ecoinvent 3.6	Database	2019
Rubber, synthetic	ecoinvent 3.6	Database	2019
Steel and rubber	ecoinvent 3.6	Database	2019
Ventilation components	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	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

System boundary:



Additional technical information:

The unit is made up of frameworks in aluminium profiles. Panels and hatches are in double sheet construction of aluminium/zinc-treated steel sheet with protective coating (ALC) that meets the requirements for corrosion class C4 according to SS-EN ISO 12944-2.

Development and manufacture of our products takes place with the help of our environmental and quality management system certified according to ISO 14001 and ISO 9001.

Units delivered are CE-marked.

IV Produkt AB's unit series are certified by Eurovent as standard.

Complete project specific technical documentation is generated using our selection software, IVP Designer. Please refer to our website www.ivprodukt.se for more information.

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Module A4 = A generic transportation distance (EURO6 truck) of 378 km is declared. True transportation distance can be provided in project specific EPD.

Module A5 = Not declared.

Module C1 = The de-installation of the air handling unit (AHU) is carried out manually, with the assistance of electrical tools. The energy consumption of portable electrical devices (e.g., drills) is typically low, falling below the 1% cut-off criterion, and is therefore disregarded.

Module C2 = A generic transportation distance (EURO6 truck) of 80 km is declared. True transportation distance can be provided in project specific EPD.

Modules C3 and C4 = Waste treatment of the product follows the default values provided in EN 15804:2012+A2:2019 and EN 50693, Product Category Rules for life cycle assessments of electronic and electrical products and systems, table G.4. This table specified how different types of raw materials used in A1 will likely be treated during the end-of-life of the product. Waste treatments in C3 include material recycling and incineration with and without energy recovery and fly ash extraction. Disposal in C4 consist of landfilling of different waste fractions and of ashes.

Module D = The recyclability of metals, plastics, and electronic components allows the producers a credit for the net scrap that is produced at the end of a product's life. The benefits from recycling of net scrap are described in formula from EN 15804:2012+A2:2019. Substitution of heat and electricity generated by the incineration with energy recovery of plastic insulation and other parts is also calculated in module D.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	378	0,043	l/tkm	16,25
Truck, over 32 tonnes, EURO 6 (km)	53,3 %	378	0,023	l/tkm	8,69

Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	80	0,043	l/tkm	3,44

Waste processing (C3)	Unit	Value			
Waste treatment per kg Non-hazardous waste, incineration with fly ash extraction (kg)	kg	32,22			
Waste treatment per kg electronics scrap from PWB, with components, recycling of metals C3 (kg)	kg	3,46			
Waste treatment per kg wire plastic, municipal incineration (kg)	kg	0,55			
Materials to recycling (kg)	kg	1075,97			
Waste treatment per kg Polypropylene (PP), incineration (kg)	kg	0,31			
Aluminium to recycling (kg)	kg	0,011			
Waste treatment per kg Polyethylene terephthalate (PET), incineration with fly ash extraction (kg)	kg	0,082			
Waste treatment per kg Hazardous waste, incineration (kg)	kg	54,44			
Waste treatment per kg Rubber, municipal incineration with fly ash extraction (kg)	kg	0,041			
Waste treatment per kg used PWB, shredding and separation - C3 (kg)	kg	6,92			
Waste treatment per kg bulk waste, excluding reinforcement, sorting plant (kg)	kg	32,56			
Waste treatment per kg Plastics, from incineration (kg)	kg	0,062			
Waste treatment per kg Polyethylene, PE, incineration with fly ash extraction (kg)	kg	0,060			
Waste treatment of plastic mixture, incineration with energy recovery and fly ash extraction (kg)	kg	0,72			

Disposal (C4)	Unit	Value			
Waste, copper, to landfill (kg)	kg	0,74			
Waste, aluminium, to landfill (kg)	kg	28,88			
Landfilling of ashes from incineration of Plastics, process per kg ashes and residues (kg)	kg	0,026			
Waste, scrap steel, to landfill (kg)	kg	75,94			
Landfilling of ashes from incineration of Non-hazardous waste process per kg ashes and residues (kg)	kg	7,64			
Waste, plastic, mixture, to landfill (kg)	kg	1,73			
Landfilling of ashes from incineration of Polyethylene (PE), process per kg ashes and residues (kg)	kg	0,0021			
Landfilling of ashes from incineration per kg wire plastic, from municipal incineration - RoW	kg	0,082			
Landfilling of hazardous waste (kg)	kg	3,46			
Landfilling of ashes from incineration of Polypropylene (PP), process per kg ashes and residues (kg)	kg	0,0092			
Waste treatment per kg Brass slag, to landfill, residual material landfill (kg)	kg	0,044			
Landfilling of ashes from incineration per kg Hazardous waste, from incineration (kg)	kg	10,28			
Landfilling of ashes from incineration of Polyethylene terephthalate (PET), process per kg ashes and residues (kg)	kg	0,0018			
Landfilling of ashes from incineration of Rubber, municipal incineration with fly ash extraction (kg)	kg	0,0021			
Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of primary Brass with net scrap (kg)	kg	0,40			
Substitution of electricity (MJ)	MJ	21,78			
Substitution of thermal energy, district heating (MJ)	MJ	329,54			
Substitution of primary aluminium with net scrap (kg)	kg	382,029			
Substitution of primary metals with net scrap from PWB, with components (kg)	kg	1,018			
Substitution of primary copper with net scrap (kg)	kg	3,72			
Substitution of primary steel with net scrap (kg)	kg	400,81			

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-A3	A4	C1	C2	C3	C4	D	
 GWP-total	kg CO ₂ -eq	7,69E+03	5,37E+01	0,00E+00	1,68E+01	2,03E+02	6,29E+00	-3,98E+03	
 GWP-fossil	kg CO ₂ -eq	7,58E+03	5,37E+01	0,00E+00	1,68E+01	2,02E+02	6,28E+00	-3,90E+03	
 GWP-biogenic	kg CO ₂ -eq	6,53E+01	2,26E-02	0,00E+00	6,93E-03	3,06E-01	4,96E-03	-1,61E+01	
 GWP-luluc	kg CO ₂ -eq	4,90E+01	1,76E-02	0,00E+00	5,96E-03	3,62E-02	7,22E-03	-6,48E+01	
 ODP	kg CFC11 -eq	6,55E-04	1,26E-05	0,00E+00	3,79E-06	1,45E-05	5,49E-07	-1,39E-01	
 AP	mol H ⁺ -eq	6,18E+01	1,64E-01	0,00E+00	4,81E-02	1,95E-01	1,93E-02	-3,05E+01	
 EP-FreshWater	kg P -eq	4,31E-01	4,28E-04	0,00E+00	1,34E-04	2,97E-03	8,80E-05	-1,90E-01	
 EP-Marine	kg N -eq	7,87E+00	3,45E-02	0,00E+00	9,53E-03	4,22E-02	5,74E-03	-3,61E+00	
 EP-Terrestrial	mol N -eq	1,29E+02	3,85E-01	0,00E+00	1,07E-01	4,70E-01	6,27E-02	-4,02E+01	
 POCP	kg NMVOC -eq	2,91E+01	1,50E-01	0,00E+00	4,08E-02	1,31E-01	1,93E-02	-1,40E+01	
 ADP-minerals&metals ¹	kg Sb-eq	1,56E+00	1,20E-03	0,00E+00	4,63E-04	4,66E-04	2,00E-05	-1,08E-01	
 ADP-fossil ¹	MJ	9,64E+04	8,44E+02	0,00E+00	2,53E+02	5,34E+02	5,07E+01	-4,77E+04	
 WDP ¹	m ³	1,29E+06	7,22E+02	0,00E+00	2,45E+02	1,98E+03	8,18E+02	-1,92E+06	

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-A3	A4	C1	C2	C3	C4	D
 PM	Disease incidence	6,26E-04	4,18E-06	0,00E+00	1,03E-06	2,83E-06	2,54E-07	-2,85E-04
 IRP ²	kgBq U235 -eq	4,18E+02	3,69E+00	0,00E+00	1,11E+00	2,45E+00	2,45E-01	-1,89E+02
 ETP-fw ¹	CTUe	3,01E+05	6,21E+02	0,00E+00	1,88E+02	2,73E+03	1,80E+04	-1,17E+05
 HTP-c ¹	CTUh	2,74E-05	0,00E+00	0,00E+00	0,00E+00	1,81E-07	2,59E-08	-1,10E-05
 HTP-nc ¹	CTUh	4,12E-04	6,35E-07	0,00E+00	2,05E-07	4,29E-06	1,42E-06	-8,08E-05
 SQP ¹	dimensionless	2,48E+04	8,02E+02	0,00E+00	1,77E+02	2,08E+02	1,48E+02	-1,57E+03

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-A3	A4	C1	C2	C3	C4	D	
 PERE	MJ	2,86E+04	1,13E+01	0,00E+00	3,63E+00	9,54E+01	6,98E+00	-1,62E+04	
 PERM	MJ	1,23E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PERT	MJ	2,86E+04	1,13E+01	0,00E+00	3,63E+00	9,54E+01	6,98E+00	-1,62E+04	
 PENRE	MJ	9,75E+04	8,44E+02	0,00E+00	2,53E+02	5,38E+02	5,07E+01	-4,77E+04	
 PENRM	MJ	1,41E+03	0,00E+00	0,00E+00	0,00E+00	-9,64E+02	0,00E+00	0,00E+00	
 PENRT	MJ	9,89E+04	8,44E+02	0,00E+00	2,53E+02	-4,27E+02	5,07E+01	-4,77E+04	
 SM	kg	3,90E+02	0,00E+00	0,00E+00	0,00E+00	3,59E-04	7,49E-02	2,47E+00	
 RSF	MJ	1,51E+02	3,98E-01	0,00E+00	1,30E-01	2,07E+00	8,59E-02	9,73E+00	
 NRSF	MJ	1,27E+03	1,38E+00	0,00E+00	4,64E-01	-3,12E-03	1,13E+00	4,77E+02	
 FW	m ³	2,13E+02	9,35E-02	0,00E+00	2,71E-02	5,39E-01	6,81E-02	-8,72E+01	

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-A3	A4	C1	C2	C3	C4	D	
	HWD	kg	5,14E+01	4,50E-02	0,00E+00	1,31E-02	1,77E-03	5,18E+00	1,17E+01
	NHWD	kg	2,24E+03	5,92E+01	0,00E+00	1,23E+01	8,90E+01	1,18E+02	-1,18E+03
	RWD	kg	3,90E-01	5,76E-03	0,00E+00	1,73E-03	9,01E-05	9,25E-06	-1,78E-01

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

*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-A3	A4	C1	C2	C3	C4	D	
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	7,60E+01	0,00E+00	0,00E+00	0,00E+00	1,08E+03	2,29E-04	-1,20E-01
	MER	kg	2,48E+01	0,00E+00	0,00E+00	0,00E+00	8,84E+01	6,40E-06	-1,55E-02
	EEE	MJ	1,46E+01	0,00E+00	0,00E+00	0,00E+00	2,64E+00	2,56E-04	-4,63E-02
	EET	MJ	2,21E+02	0,00E+00	0,00E+00	0,00E+00	4,00E+01	3,87E-03	-7,00E-01

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 = $9,0 \cdot 10^{-3} = 0,009$

*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	0,00E+00

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, Sweden (kWh)	ecoinvent 3.6	54,94	g CO ₂ -eq/kWh

Dangerous substances

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

Indoor environment






Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWPIOBC	kg CO ₂ -eq	7,67E+03	5,37E+01	0,00E+00	1,68E+01	1,68E+02	6,55E+00	-4,04E+03

GWPIOBC: 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

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