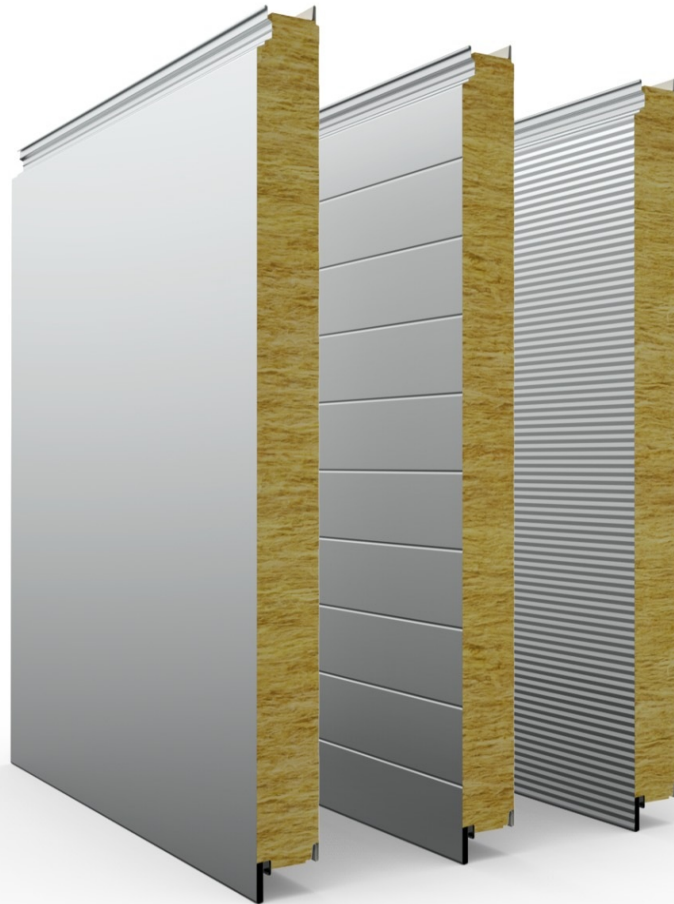


Environmental product declaration

In accordance with ISO 14025 and EN15804+A2

Promirock® S D=100mm



The Norwegian EPD Foundation

Owner of the declaration:

ArcelorMittal Construction Norge AS

Product:

Promirock® S D=100mm

Declared unit:

1 m²

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR

NPCR 013:2021 Part B for Steel and aluminium construction products

Program operator:

The Norwegian EPD Foundation

Declaration number:

NEPD-7944-7607-EN

Registration number:

NEPD-7944-7607-EN

Issue date: 28.10.2024

Valid to:

28.10.2029

EPD software:

LCAno EPD generator ID: 471238

General information

Product

Promirock® S D=100mm

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-7944-7607-EN

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 013:2021 Part B for Steel and aluminium construction products

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 m² Promirock® S D=100mm

Declared unit with option:

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

Functional unit:

1 m² of Promirock® S double skin steel faced sandwich panel with a thickness of 100mm. Thickness of steel facing is 0.6mm for external and 0.5mm for internal.

In case a LCA calculation for different sandwich panel thickness is required, please contact the Owner of the declaration.

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 EPD Norway'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:

ArcelorMittal Construction Norge AS
Contact person: Stig Tore Sjaastad
Phone: +47 41 723939
e-mail: stig-tore.sjaastad@arcelormittal.com

Manufacturer:

ArcelorMittal Construction Belgium
, Belgium

Place of production:

ArcelorMittal Construction Belgium – Fleurus
, Belgium

Management system:

Organisation no:

976289862

Issue date:

28.10.2024

Valid to:

28.10.2029

Year of study:

2023

Comparability:

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

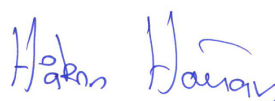
Development and verification of EPD:

The declaration is created using EPD tool lca.tools NEPDT038, 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: Laura Descos

Reviewer of company-specific input data and EPD: Stig Tore Sjaastad

Approved:



Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:

Promirock® S from ArcelorMittal Construction Belgium is a double skin, organic coated steel faced sandwich panel solution with a core of mineral wool. The EPD contains several different panel types: Promirock® S and Promirock® V. Promirock® sandwich panels can be used for facades, inner walls / partition walls and ceiling applications in buildings, such as industrial, warehouse, commercial or sports facilities. With a wide choice of coatings the panels even can be used for food industry application and buildings with high demand for cleanliness.

Product specification

Promirock® double skin steel faced sandwich panels consists of a profiled internal and external face made of a steel core according to EN 10346, Steel grade is S320 GD, which is protected against corrosion with Zinc-Magnesium and organic coatings (Polyester or equivalent coating). The thermal insulating core material is made of mineral wool according to EN 13162 with sealing tapes and is bonded with a non-combustible adhesive according to EN 13501-1 to both sides of the steel sheets.

Promirock® sandwich panels are manufactured in different thicknesses between 60 to 240mm. The density of the mineral wool is 100 kg/m³. Promirock® sandwich panels can be used as normal or fire-resistant facade, inner walls / partition walls and ceiling applications.

Materials	kg	%
Binders and Resins	0,42	2,16
Insulation - stone wool	9,13	47,01
Metal - Steel	9,87	50,82
Total	19,42	100,00

Packaging	kg	%
Packaging - Paper	0,01	6,67
Packaging - Polystyrene	0,04	26,67
Packaging - Wood	0,10	66,67
Total incl. packaging	19,57	100,00

Technical data:

Promirock sandwich panels fulfills the requirement of the harmonized standard EN 14509.

Market:

The main market areas is all Europe

Reference service life, product

The reference service life of Promirock® is 50 years.

Reference service life, building or construction works

The expected service life is set to 50 years for the building in all calculations.

LCA: Calculation rules

Declared unit:

1 m² Promirock® S D=100mm

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
Binders and Resins	EPD-FEI-20220107-IBG1-EN	EPD	2022
Insulation - stone wool	ecoinvent 3.6	Database	2019
Metal - Steel	not yet published	EPD	0
Packaging - Paper	ecoinvent 3.6	Database	2019
Packaging - Polystyrene	ecoinvent 3.6	Database	2019
Packaging - Wood	ecoinvent 3.6	Database	2019

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

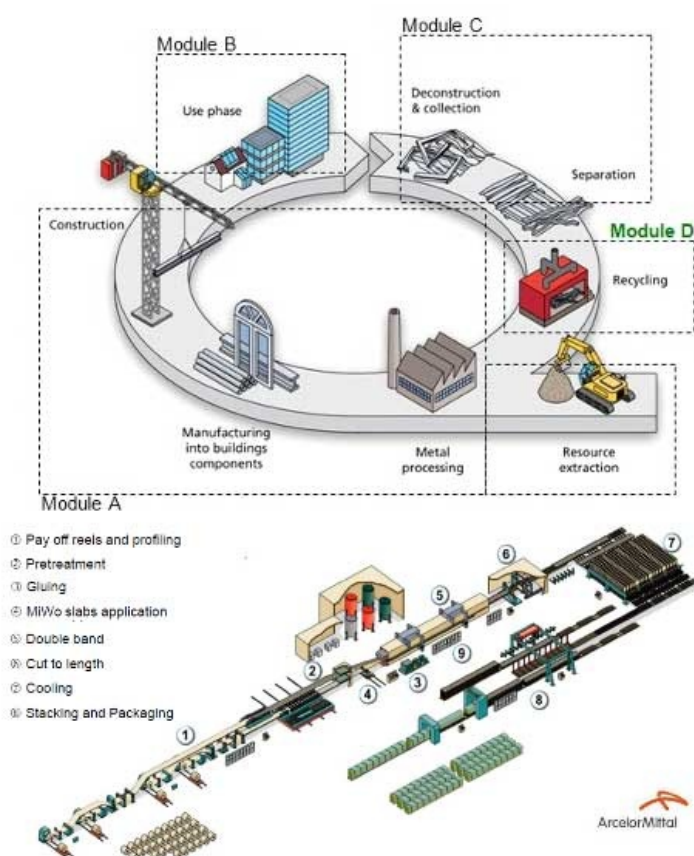
Product stage			Construction installation stage		Use stage								End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport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

Type of EPD: cradle to gate - with options. All relevant life cycle stages are covered.

The product stage A1-A3 include the following:

- Transporting and Receiving the raw material to the fabrication plant
- All relevant production processes in the plant including energy inputs, emissions and the electricity consumptions
- Waste processing until end of waste state or disposal of any waste residues during the production of the sandwich panels.
- Production a of packaging
- Manufacturing of the sandwich panel products



Additional technical information:

Simplified Manufacturing process of Sandwich panels (see Manufacturing process):

In the manufacturing process the raw materials are received and loaded on the production line. The colour and organic coated steel sheets undergo a rollforming process and the mineral wool slabs are prepared through separation and sawing accordingly as lamellas. Both components are assembled together during the glueing process and undergo afterwards a pressing process, where pressure and heat with high temperature are added. Afterwards the established sandwich panel undergo a cooling process, where sealing tapes are added and the sandwich panel will be cut to the desired length ordered by the customer. Finally, the sandwich panel go through the stapling and packaging process and the final inspection of the finished goods, before it will be stored for pick-up by the transport.

LCA: Scenarios and additional technical information

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

The construction installation stage A4-A5 include the following:

- For the transport to the construction site an assumption of an average truck trailer of 16-32 tonnes payload has been taken into consideration. Transport distance of the finished product to the customer is calculated for 100kms.
- For the assembly stage average values been taken. Accessories, such as fasteners, sealing materials and flashings, used in the phase A5 to complete the installation of the sandwich panels are not included in the life cycle assessment

The end of life stage C1-C4 include the following:














- Stages C1-C4 include average assumptions, provision for all materials and transports, and use of related energy and water
- Assumption is made that steel and mineral wool are separated
- Mineral wool is disposed, 100% landfill
- Steel is mainly recycled (90%), rest is send to landfill

The use stage B1-B7 have not been included. In addition, module D (Beyond the system boundaries) is included.

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 %	100	0,043	l/tkm	4,30
Assembly (A5)					
	Unit	Value			
Waste, packaging, paper printed, to average treatment - A5, inkl. transp. (kg)	kg	0,01			
Waste, municipal solid waste, to average treatment - A3, A5, inkl. transp. (kg)	kg	0,04			
Waste, packaging, wood beam, softwood, raw, dried, u=20%, average treatment (kg) - A5, inkl. 85 km transp.	kg	0,10			
Waste, plastic, mixture, to average treatment - A5, inkl. transp. (kg)	kg/DU	0,11			
De-construction demolition (C1)					
	Unit	Value			
Demolition of building per kg (kg)	kg/DU	19,43			
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			
Materials to recycling (kg)	kg	8,89			
Disposal (C4)					
	Unit	Value			
Waste, scrap steel, to landfill (kg)	kg	0,99			
Waste, inert waste, to landfill (kg)	kg	0,42			
Waste, mineral wool, to landfill (kg) - Europe without Switzerland	kg	9,13			
Benefits and loads beyond the system boundaries (D)					
	Unit	Value			
Substitution of primary steel with net scrap (kg)	kg	8,40			

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	A5	C1	C2	C3	C4	D	
 GWP-total	kg CO ₂ -eq	4,48E+01	3,11E-01	2,05E-01	7,77E-02	2,49E-01	0,00E+00	5,58E-02	-9,25E+00	
 GWP-fossil	kg CO ₂ -eq	4,48E+01	3,11E-01	3,05E-02	7,77E-02	2,49E-01	0,00E+00	5,57E-02	-9,24E+00	
 GWP-biogenic	kg CO ₂ -eq	4,77E-02	1,29E-04	1,74E-01	1,46E-05	1,03E-04	0,00E+00	3,99E-05	-5,10E-03	
 GWP-luluc	kg CO ₂ -eq	1,65E-02	1,11E-04	1,90E-06	6,13E-06	8,85E-05	0,00E+00	1,51E-05	-4,14E-03	
 ODP	kg CFC11 -eq	1,06E-06	7,04E-08	1,28E-09	1,68E-08	5,63E-08	0,00E+00	2,32E-08	-2,93E-07	
 AP	mol H+ -eq	1,79E-01	8,93E-04	4,68E-05	8,13E-04	7,15E-04	0,00E+00	5,28E-04	-4,59E-02	
 EP-FreshWater	kg P -eq	5,55E-04	2,48E-06	1,01E-07	2,83E-07	1,99E-06	0,00E+00	6,09E-07	-5,69E-04	
 EP-Marine	kg N -eq	2,69E-02	1,77E-04	3,13E-05	3,59E-04	1,41E-04	0,00E+00	1,84E-04	-9,50E-03	
 EP-Terrestrial	mol N -eq	3,66E-01	1,98E-03	1,98E-04	3,89E-03	1,58E-03	0,00E+00	2,03E-03	-9,71E-02	
 POCP	kg NMVOC -eq	1,15E-01	7,57E-04	5,49E-05	1,08E-03	6,06E-04	0,00E+00	5,87E-04	-4,63E-02	
 ADP-minerals&metals ¹	kg Sb-eq	7,65E-04	8,59E-06	1,20E-07	1,19E-07	6,87E-06	0,00E+00	5,09E-07	-1,59E-04	
 ADP-fossil ¹	MJ	5,10E+02	4,70E+00	9,11E-02	1,07E+00	3,76E+00	0,00E+00	1,58E+00	-7,78E+01	
 WDP ¹	m ³	2,40E+02	4,55E+00	2,55E-01	2,27E-01	3,64E+00	0,00E+00	1,29E+00	4,79E+02	







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	A5	C1	C2	C3	C4	D	
 PM	Disease incidence	7,32E-07	1,90E-08	6,07E-10	9,84E-08	1,52E-08	0,00E+00	1,04E-08	-7,67E-07	
 IRP ²	kgBq U235 -eq	4,61E-01	2,05E-02	3,63E-04	4,66E-03	1,64E-02	0,00E+00	6,54E-03	3,32E-02	
 ETP-fw ¹	CTUe	3,17E+02	3,48E+00	1,73E-01	5,85E-01	2,79E+00	0,00E+00	9,14E-01	-5,15E+02	
 HTP-c ¹	CTUh	4,93E-08	0,00E+00	1,00E-11	1,90E-11	0,00E+00	0,00E+00	2,20E-11	-4,44E-08	
 HTP-nc ¹	CTUh	1,75E-07	3,81E-09	4,18E-10	5,44E-10	3,05E-09	0,00E+00	6,79E-10	9,66E-07	
 SQP ¹	dimensionless	8,76E+01	3,29E+00	9,92E-02	1,30E-01	2,63E+00	0,00E+00	3,61E+00	-5,82E+00	

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	A5	C1	C2	C3	C4	D	
 PERE	MJ	2,47E+01	6,73E-02	2,27E-03	5,83E-03	5,38E-02	0,00E+00	1,64E-02	-6,31E+00	
 PERM	MJ	1,79E+00	0,00E+00	-1,54E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PERT	MJ	2,65E+01	6,73E-02	-1,54E+00	5,83E-03	5,38E-02	0,00E+00	1,64E-02	-6,31E+00	
 PENRE	MJ	4,95E+02	4,70E+00	9,11E-02	1,07E+00	3,76E+00	0,00E+00	1,58E+00	-7,77E+01	
 PENRM	MJ	1,56E+01	0,00E+00	-1,55E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PENRT	MJ	5,11E+02	4,70E+00	-1,46E+00	1,07E+00	3,76E+00	0,00E+00	1,58E+00	-7,77E+01	
 SM	kg	5,06E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 RSF	MJ	1,80E-01	2,41E-03	6,45E-05	0,00E+00	1,93E-03	0,00E+00	3,66E-04	3,34E-01	
 NRSF	MJ	4,62E-01	8,61E-03	3,65E-04	0,00E+00	6,88E-03	0,00E+00	1,57E-03	9,71E+00	
 FW	m ³	1,71E-01	5,03E-04	8,62E-05	5,51E-05	4,02E-04	0,00E+00	1,71E-03	-1,94E-02	

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	A5	C1	C2	C3	C4	D	
 HWD	kg	1,54E-01	2,42E-04	7,66E-03	3,15E-05	1,94E-04	0,00E+00	1,04E-04	-4,80E-02	
 NHWD	kg	2,14E+00	2,29E-01	2,28E-01	1,27E-03	1,83E-01	0,00E+00	1,05E+01	-3,78E+00	
 RWD	kg	9,11E-03	3,20E-05	1,08E-07	7,43E-06	2,56E-05	0,00E+00	8,83E-06	2,55E-05	

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

*Reading example: 9,0 E-03 = $9,0 \times 10^{-3} = 0,009$

*INA Indicator Not Assessed

End of life - Output flow										
Indicator	Unit	A1-A3	A4	A5	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	0,00E+00	
 MFR	kg	3,37E-01	0,00E+00	6,55E-02	0,00E+00	0,00E+00	8,89E+00	3,42E-04	0,00E+00	
 MER	kg	6,05E-01	0,00E+00	1,35E-01	0,00E+00	0,00E+00	0,00E+00	2,76E-06	0,00E+00	
 EEE	MJ	3,60E-01	0,00E+00	9,08E-02	0,00E+00	0,00E+00	0,00E+00	2,39E-05	0,00E+00	
 EET	MJ	5,44E+00	0,00E+00	1,37E+00	0,00E+00	0,00E+00	0,00E+00	3,62E-04	0,00E+00	

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

*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	4,64E-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, Belgium (kWh)	ecoinvent 3.6	248,03	g CO ₂ -eq/kWh

Dangerous substances

The product contains substances given by the REACH Candidate list that are less than 0,1 % by weight.

Indoor environment

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO ₂ -eq	4,49E+01	3,11E-01	3,39E-02	7,77E-02	2,49E-01	0,00E+00	5,58E-02	-1,38E+01

GWPI-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 Part A: Construction products and services. Ver. 2.0. April 2021, EPD-Norge.

NPCR 013 Part B for Steel and Aluminium Construction Products , Ver. 4.0, 06.10.2021, EPD Norway.

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	ECO Platform ECO Portal	web: www.eco-platform.org web: ECO Portal