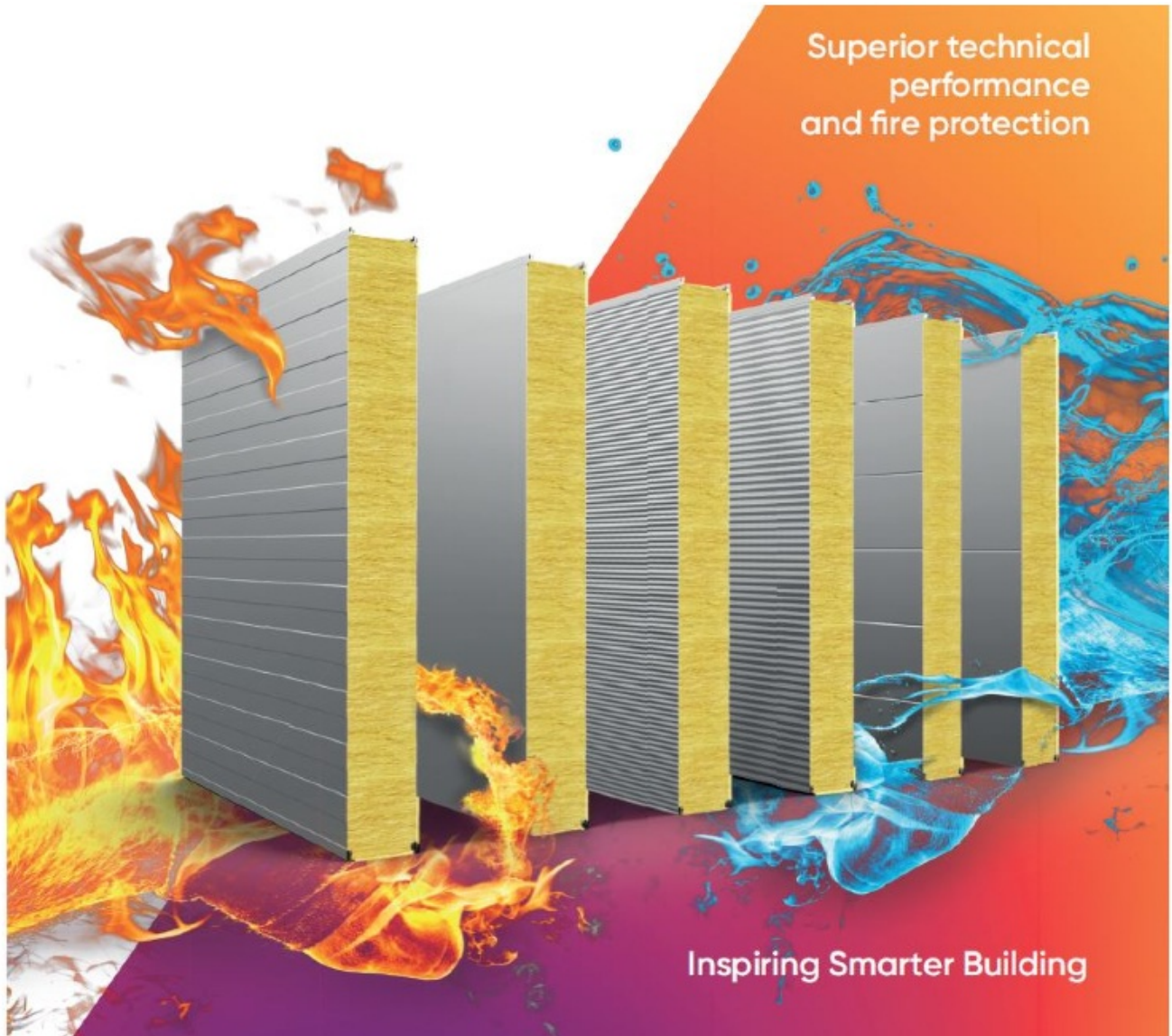


Environmental product declaration

In accordance with 14025 and EN15804+A2

ArcelorMittal Construction Promirock N



The Norwegian EPD Foundation

Owner of the declaration:

ArcelorMittal Construction Norge AS

Product:

ArcelorMittal Construction Promirock N

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-4198-3423-EN

Registration number:

NEPD-4198-3423-EN

Issue date: 13.02.2023

Valid to: 13.02.2028

EPD Software:

LCA.no EPD generator ID: 57539

General information

Product

ArcelorMittal Construction Promirock N

Program operator:

Post Box 5250 Majorstuen, 0303 Oslo, Norway
The Norwegian EPD Foundation
Phone: +47 23 08 80 00
web: post@epd-norge.no

Declaration number:

NEPD-4198-3423-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 ArcelorMittal Construction Promirock N

Declared unit with option:

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

Functional unit:

1 m² covering surface of Promirock N double skin steel faced sandwich panel
The EPD and LCA calculation is based on a standard sandwich panel Promirock N 100 mm thickness.
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. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPDNorway, and iii) the process is reviewed annually. 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:

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

Manufacturer:

ArcelorMittal Construction Sverige AB
Västanvindsgatan 13
SE-652 21 Karlstad, Sweden

Place of production:

ArcelorMittal Construction Sverige AB - Kungshamn
Televerksvägen 5
456 33 Kungshamn, Sweden

Management system:

ISO 9001, ISO 14001, ISO 45001

Organisation no:

976289862

Issue date: 13.02.2023

Valid to: 13.02.2028

Year of study:

2022

Comparability:

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

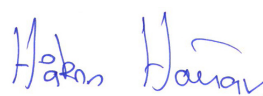
Development and verification of EPD:

The declaration is created using EPD tool lca.tools 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: Stig Tore Sjaastad

Reviewer of company-specific input data and EPD: Bendik Hovde

Approved:



Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:

Promirock N from ArcelorMittal Construction Sverige AB 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 N85 and Promirock N125. Promirock N 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 N 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 from S280 GD to S350 GD, which is protected against corrosion with Zinc or 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 N sandwich panels are manufactured in different thicknesses between 100-300mm in two different mineral wool densities.

Promirock N sandwich panels can be used as normal or fire-resistant facade, inner walls / partition walls and ceiling applications.

The products are wrapped to protect them during handling and loading.

Packaging

A typical bundle with sandwich panels consists of EPS spacer, honeycomb cardboard, a plastic wrapping foil and corner pads made of cardboard if required. Sandwich panel facings are protected with a plastic strip foil (PE) to protect the steel facings from mechanical damage during loading, unloading, storage and installation.

Packaging material is recyclable or alternatively utilised as waste to energy. Packaging materials are sorted at construction sites according to local regulations by the customer.

Materials	kg	%
Binders and Resins	0,38	2,06
Insulation - stone wool	10,12	54,76
Metal - Steel	7,98	43,18
Total	18,48	

Packaging	kg	%
Packaging - Paper	0,15	52,90
Packaging - Plastic	0,09	32,61
Packaging - Polystyrene	0,04	14,49
Total incl. packaging	18,76	

Technical data:

Promirock N sandwich panels fulfills the requirement of the harmonized standard EN 14509 and EN 13162.

Market:

The main market areas are Nordic countries.

Reference service life, product

The expected aesthetic service life of Promirock N is up to 20 years when the coating surface and selected colourtype is undamaged under normal environment.

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 ArcelorMittal Construction Promirock N

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
Packaging - Paper	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Packaging - Polystyrene	ecoinvent 3.6	Database	2019
Binders and Resins	EPD-FEI-20220107-IBG1-EN	EPD	2022
Metal - Steel	Supplier	EPD (EN15804A1) + company dataset (EN15804A2)	2020
Insulation - stone wool	Supplier	Specific	2022

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

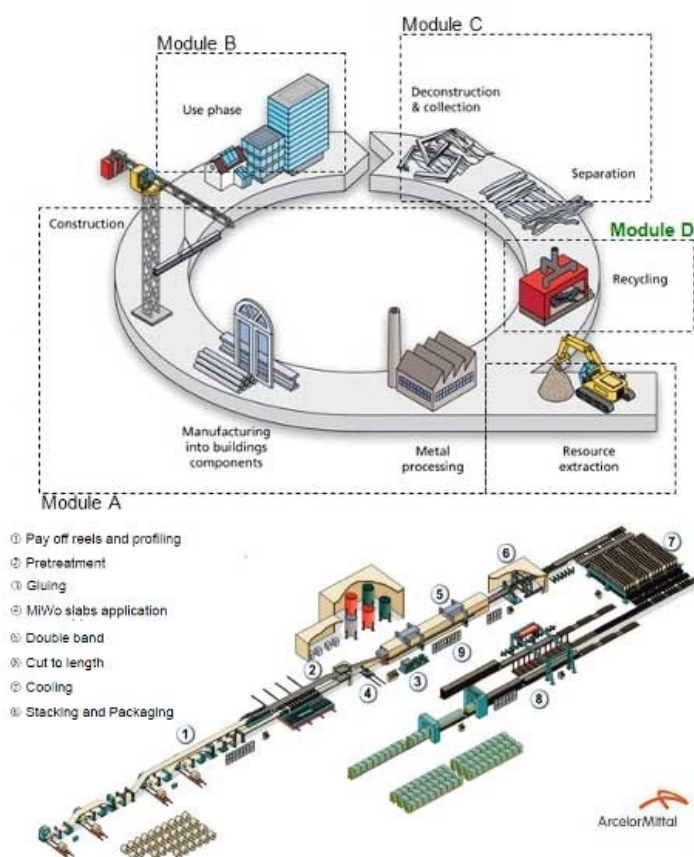
Product stage			Construction installation stage		Use stage								End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	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. For the mineral wool used product take-back system is agreed with the supplier, which enable the recycling of old stone wool slabs, wool dust, boards and cut-offs. Sandwich panel steel sheet is a fully recyclable material and scrap steel has a strong market position and can be re-used
- Production and recycling 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 gluing 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 has been estimated with approximate 300km. All values are based on annual average delivery data
- 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 the sandwich panels will be disposed 100% to landfill
- The Steel is fully recyclable in form of scrap by separating the steel sheets from the insulation core
- Packaging waste is recycled by the customers through their waste management system and cardboards can be re-used or recycled

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, HVO, EURO 6 (kgkm) - RER	36,7 %	300	0,043	l/tkm	12,90
Assembly (A5)					
	Unit	Value			
Waste, municipal solid waste, to average treatment - A3, A5, inkl. transp. (kg)	kg	0,04			
Waste, packaging, paper printed, to average treatment - A5, inkl. transp. (kg)	kg	0,15			
Waste, plastic, mixture, to average treatment - A5, inkl. transp. (kg)	kg	0,09			
De-construction demolition (C1)					
	Unit	Value			
Demolition of building per kg of steel, C1 (kg)	kg/DU	18,61			
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	7,18			
Disposal (C4)					
	Unit	Value			
Waste, inert waste, to landfill (kg)	kg	10,50			
Waste, scrap steel, to landfill (kg)	kg	0,80			
Benefits and loads beyond the system boundaries (D)					
	Unit	Value			
Substitution of primary steel with net scrap (kg)	kg	5,59			

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	3,15E+01	2,19E-01	2,85E-01	7,44E-02	2,45E-01	0,00E+00	8,97E-02	-6,15E+00	
 GWP-fossil	kg CO ₂ -eq	3,22E+01	2,18E-01	2,84E-02	7,44E-02	2,45E-01	0,00E+00	8,96E-02	-6,15E+00	
 GWP-biogenic	kg CO ₂ -eq	-8,08E-01	3,70E-04	2,57E-01	1,40E-05	1,01E-04	0,00E+00	1,03E-04	-3,39E-03	
 GWP-luluc	kg CO ₂ -eq	2,47E-02	3,40E-04	1,82E-06	5,87E-06	8,72E-05	0,00E+00	2,18E-05	-2,75E-03	
 ODP	kg CFC11 -eq	2,14E-07	4,50E-08	1,22E-09	1,61E-08	5,55E-08	0,00E+00	3,43E-08	-1,95E-07	
 AP	mol H+ -eq	1,23E-01	1,53E-03	3,37E-05	7,79E-04	7,04E-04	0,00E+00	7,99E-04	-3,06E-02	
 EP-FreshWater	kg P -eq	1,67E-04	8,01E-06	8,38E-08	2,71E-07	1,96E-06	0,00E+00	1,00E-06	-3,78E-04	
 EP-Marine	kg N -eq	2,47E-02	4,05E-04	2,37E-05	3,44E-04	1,39E-04	0,00E+00	2,97E-04	-6,32E-03	
 EP-Terrestrial	mol N -eq	3,86E-01	4,53E-03	1,29E-04	3,72E-03	1,56E-03	0,00E+00	3,28E-03	-6,46E-02	
 POCP	kg NMVOC -eq	7,01E-02	1,66E-03	3,77E-05	1,04E-03	5,97E-04	0,00E+00	9,39E-04	-3,08E-02	
 ADP-minerals&metals ¹	kg Sb -eq	1,51E-03	2,65E-05	1,21E-07	1,14E-07	6,77E-06	0,00E+00	8,06E-07	-1,06E-04	
 ADP-fossil ¹	MJ	4,32E+02	4,62E+00	8,37E-02	1,02E+00	3,71E+00	0,00E+00	2,48E+00	-5,17E+01	
 WDP ¹	m ³	1,08E+03	1,37E+01	2,22E-01	2,18E-01	3,58E+00	0,00E+00	1,49E+01	3,19E+02	







GWP total Global Warming Potential total; GWP fossil Global Warming Potential fossil fuels; GWP biogenic Global Warming Potential biogenic; GWP luluc Global W Potential land use change; ODP Ozone Depletion; AP Acidification; EP freshwater Eutrophication aquatic freshwater; EP marine Eutrophication aquatic marine; EP terrestrial Eutrophication terrestrial ;POCP Photochemical zone formation; ADPE Abiotic Depletion Potential minerals and metals; ADPf Abiotic Depletion Potential fossil fuels;

"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	1,15E-06	5,06E-08	4,61E-10	9,43E-08	1,50E-08	0,00E+00	1,71E-08	-5,10E-07	
 IRP ²	kgBq U235 -eq	1,11E+00	1,51E-02	3,51E-04	4,47E-03	1,62E-02	0,00E+00	1,13E-02	2,21E-02	
 ETP-fw ¹	CTUe	1,14E+02	6,74E+00	1,72E-01	5,60E-01	2,75E+00	0,00E+00	1,35E+00	-3,43E+02	
 HTP-c ¹	CTUh	1,29E-08	0,00E+00	7,00E-12	1,90E-11	0,00E+00	0,00E+00	5,50E-11	-2,96E-08	
 HTP-nc ¹	CTUh	2,48E-07	1,13E-08	2,71E-10	5,21E-10	3,00E-09	0,00E+00	9,67E-10	6,43E-07	
 SQP ¹	dimensionless	2,04E+02	8,61E+00	9,07E-02	1,25E-01	2,59E+00	0,00E+00	9,53E+00	-3,87E+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 Soil Quality (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	7,91E+01	2,09E-01	1,96E-03	5,58E-03	5,30E-02	0,00E+00	8,66E-02	-4,20E+00	
 PERM	MJ	5,83E+00	0,00E+00	-5,58E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PERT	MJ	1,04E+02	2,09E-01	-5,58E+00	5,58E-03	5,30E-02	0,00E+00	8,66E-02	-4,20E+00	
 PENRE	MJ	1,30E+02	4,62E+00	8,37E-02	1,02E+00	3,71E+00	0,00E+00	2,48E+00	-5,17E+01	
 PENRM	MJ	2,00E+01	0,00E+00	-1,55E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PENRT	MJ	4,32E+02	4,62E+00	-1,46E+00	1,02E+00	3,71E+00	0,00E+00	2,48E+00	-5,17E+01	
 SM	kg	1,75E+00	0,00E+00	3,91E-04	5,03E-04	0,00E+00	0,00E+00	1,06E-03	2,91E+00	
 RSF	MJ	5,79E-02	6,80E-03	5,80E-05	1,36E-04	1,90E-03	0,00E+00	1,80E-03	2,22E-01	
 NRSF	MJ	7,73E-02	2,34E-02	2,07E-04	-2,05E-03	6,79E-03	0,00E+00	3,90E-03	6,46E+00	
 FW	m ³	1,75E-01	1,89E-03	7,43E-05	5,27E-05	3,96E-04	0,00E+00	3,05E-03	-1,29E-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 Use of net 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	7,39E-01	6,48E-04	7,82E-03	3,02E-05	1,91E-04	0,00E+00	1,70E-04	-3,19E-02	
 NHWD	kg	1,93E+00	6,87E-01	5,39E-02	1,21E-03	1,80E-01	0,00E+00	1,13E+01	-2,51E+00	
 RWD	kg	7,69E-03	1,85E-05	5,24E-07	7,12E-06	2,52E-05	0,00E+00	1,62E-05	1,70E-05	

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	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	1,01E+00	0,00E+00	1,82E-01	4,94E-04	0,00E+00	7,18E+00	9,64E-04	2,91E+00	
 MER	kg	1,19E-04	0,00E+00	6,19E-07	1,53E-06	0,00E+00	0,00E+00	1,80E-05	1,85E-03	
 EEE	MJ	5,18E-01	0,00E+00	2,96E-02	5,25E-06	0,00E+00	0,00E+00	1,46E-03	-2,11E-03	
 EET	MJ	7,84E+00	0,00E+00	4,47E-01	7,95E-05	0,00E+00	0,00E+00	2,21E-02	-3,20E-02	

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; 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	2,59E-01

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂

Additional Norwegian 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	Data 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 or the Norwegian priority list.

Indoor environment

Additional Environmental Information

Environmental impact indicators EN 15804+A1 and NPCR Part A v2.0									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq	2,39E+01	2,10E-01	2,98E-02	7,35E-02	2,43E-01	0,00E+00	8,77E-02	-5,76E+00
ODP	kg CFC11 -eq	1,91E-07	3,38E-08	9,91E-10	1,28E-08	4,50E-08	0,00E+00	2,76E-08	-1,98E-07
POCP	kg C ₂ H ₄ -eq	5,36E-03	7,66E-05	2,25E-06	1,13E-05	2,96E-05	0,00E+00	2,07E-05	-3,80E-03
AP	kg SO ₂ -eq	5,36E-02	8,50E-04	1,86E-05	1,09E-04	4,84E-04	0,00E+00	2,44E-04	-2,31E-02
EP	kg PO ₄ ³⁻ -eq	6,20E-03	1,26E-04	9,50E-06	1,21E-05	5,15E-05	0,00E+00	2,88E-05	-3,42E-03
ADPM	kg Sb -eq	1,51E-03	2,65E-05	1,21E-07	1,14E-07	6,77E-06	0,00E+00	8,06E-07	-1,06E-04
ADPE	MJ	2,89E+02	4,23E+00	8,12E-02	1,02E+00	3,63E+00	0,00E+00	2,38E+00	-5,62E+01
GWPIOBC	kg CO ₂ -eq	1,18E+00	2,19E-01	0,00E+00	9,99E+01	2,45E-01	0,00E+00	0,00E+00	-9,21E+00

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources; GWP-IOBC/GHG Global warming potential calculated according to the principle of instantaneous oxidation (except emissions and uptake of biogenic carbon)

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