epd-norge
Global program operatør

Environmental product declaration

In accordance with ISO 14025 and EN 15804 +A2

NorDan NTech Villa Topswing reversible - BG 105/80 (With Aluminium Cladding)

The Norwegian EPD Foundation

Owner of the declaration:
NorDan AS

Declared unit:
1 pcs NorDan NTech Villa Topswing reversible - BG 105/80 (With Aluminium Cladding)

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NCPR 014:2019 Part B for Windows and doors

Program operator:
The Norwegian EPD Foundation

Declaration number:

NEPD-4000-3040-EN

Registration number:

NEPD-4000-3040-EN

Issue date: 05.12.2022

Valid to: 05.12.2027

EPD Software:
LCA.no EPD generator

System ID:
50906

General information

Product

NorDan NTech Villa Topswing reversible - BG 105/80 (With Aluminium Cladding)

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-4000-3040-EN

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NCPR 014:2019 Part B for Windows and doors

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 NorDan NTech Villa Topswing reversible - BG 105/80 (With Aluminium

Declared unit with option:

A1-A3,A4,A5,B1,B2,B3,B4,B5,C1,C2,C3,C4,D
Cladding)

Functional unit:

1 window with aluminium cladding measuring 1.23 m x 1.48 m (reference window based on EN 14351-1) with an expected service life of 60 yrs.

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. Individualthird 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 proccess is reviewed annualy. 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:

Gaylord K. Booto, NILU

(no signature required)

Owner of the declaration:

NorDan AS
Contact person: Fredrik Jonsson
Phone: +46 (0) 10-130 01 78
e-mail: fredrik.jonsson@nordan.se

Manufacturer:

NorDan AS
Stasjonsveien 46 , 4460 Moi
Norway

Place of production:

Otta Nordan AS
Skansen 30 , 2670 Otta
Norway

Management system:

NS-ISO 9001:2015, NS-EN ISO 14001:2015

Organisation no:

979 776 233

Issue date: 05.12.2022

Valid to: 05.12.2027

Year of study:

2020

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:

Linda Jonsson

Reviewer of company-specific input data and EPD:

Fredrik Jonsson

Approved:

Håkon Hauan, CEO EPD-Norge

Product

Product description:

Window with outward opening fully reversible opening sash for use in exterior walls of domestic and commercial buildings.

Product specification

25% of aluminium and 18% of glass is produced from recycled material.
Product NorDan Ntech Villa Topswing reversible - BG in size 1230x1480 mm is covered in this EPD.

Materials	kg	%
Absorbent - IGU	0,02	0,03
Adhesive and sealant	0,05	0,07
Aluminium	3,54	5,13
Argon gas - IGU	0,07	0,10
Coating materials	0,88	1,28
Gasket	0,34	0,49
Glass	40,86	59,29
Insulation	0,10	0,14
Metal	4,03	5,85
Plastic	1,12	1,62
Sealant - IGU	1,10	1,59
Wood	16,81	24,39
Total	68,91	

Packaging	kg	%
Packaging - Plastic	0,13	3,47
Packaging - Steel	0,05	1,33
Packaging - Wood	3,59	95,20
Total incl. packaging	72,69	

Technical data:

Outward opening window. Triple glazed, 105mm frame with 8mm aluminium clad, 80mm sash. Uwin 0,83W/m2K. Certified: BBA - Bristish Board of Agrément, Secured by Design, NDVK.
The total weight of the product is 68,91 kg. The packaging has a average weight of 3,77 kg.
Conversion factor is 72,69 [Kg/DU].

Market:

Europe, but scenarios beyond cradle-to-gate are based on the situation in the Norwegian market.

Reference service life, product

The reference service life is 60 years for aluminium cladding timber frame.

Reference service life, building or construction works

60 years.

LCA: Calculation rules

Declared unit:

1 pcs NorDan NTech Villa Topswing reversible - BG 105/80 (With Aluminium Cladding)

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. 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. The PCR specific background data follow the allocation rules in the Ecoinvent v3.7.1 Cut-off database version. The allocation of water, energy and waste flows within the production facilities for windows and doors follows unit-based allocation adjusted with a point system to different product groups or products. This score system is regulated by a factor which increases with the resource intensity of each product. The unit-based allocation is adjusted by the weight of the product, excluding the weight of glass.

Data quality:

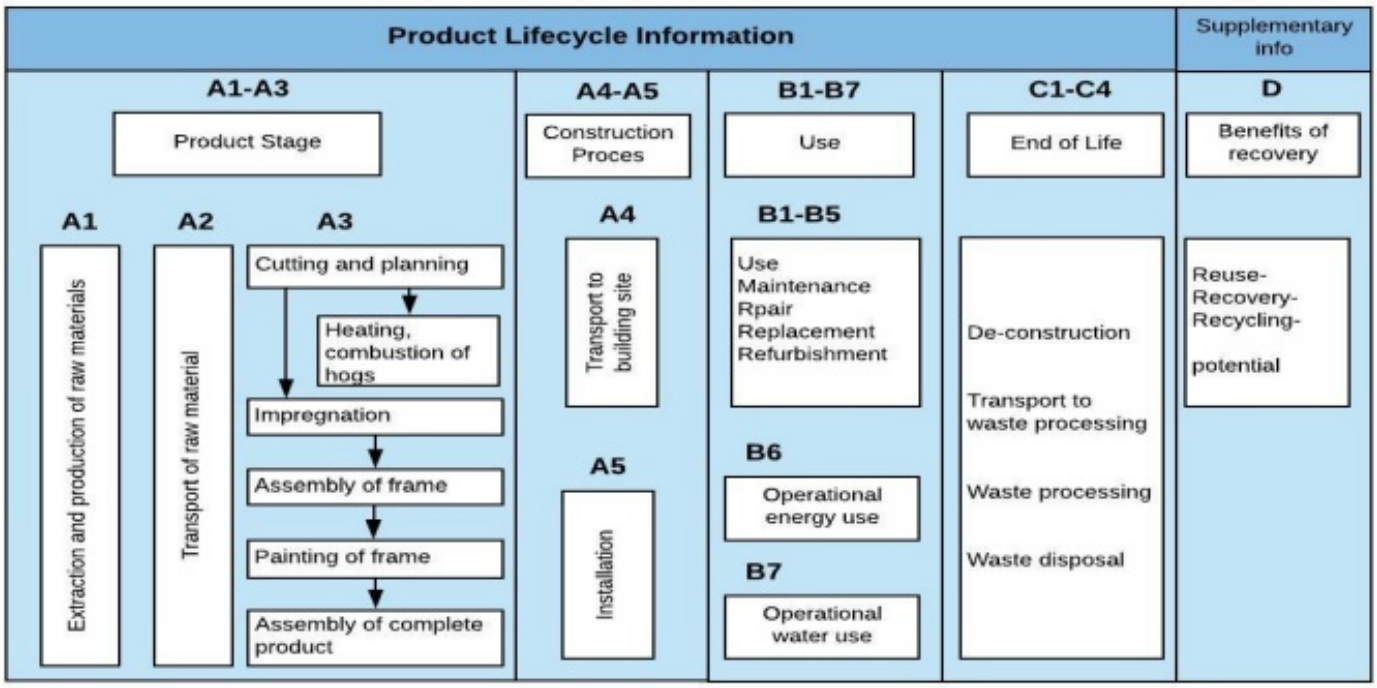
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.
The production data was collected in 2021 and is an average for 2020.

Materials	Source	Data quality	Year
Packaging - Plastic	ecoinvent 3.6	Database	2019
Packaging - Steel	ecoinvent 3.6	Database	2019
Packaging - Wood	ecoinvent 3.6	Database	2019
Argon gas - IGU	ecoinvent 3.7.1	Database	2020
Glass	ecoinvent 3.7.1	Database	2020
Insulation	ecoinvent 3.7.1	Database	2020
Absorbent - IGU	ecoinvent 3.7.1	Specific	2020
Adhesive and sealant	ecoinvent 3.7.1	Specific	2020
Aluminium	ecoinvent 3.7.1	Specific	2020
Coating materials	ecoinvent 3.7.1	Specific	2020
Gasket	ecoinvent 3.7.1	Specific	2020
Metal	ecoinvent 3.7.1	Specific	2020
Plastic	ecoinvent 3.7.1	Specific	2020
Sealant - IGU	ecoinvent 3.7.1	Specific	2020
Wood	ecoinvent 3.7.1	Specific	2020

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	X	X	X	X	X	MNR	MNR	X	X	X	X	X

System boundary:



Additional technical information:

For the products with different sizes from the declared unit, the environmental impacts must be converted by using a conversion factor. The Norwegian EPD Foundation has published instructions on how to interpret EPDs for windows on its website (www.epdnorge.no) where different calculation methods have been stated. (Document: Bruksanvisninger i hvordan tolke EPD'er - Vinduer).

LCA: Scenarios and additional technical information

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

A4

The transportation from production to construction site is based on a scenario where the product is transported on a large lorry from Otta to warehouse in Oslo, Norway (291 km) . Transport from warehouse to a construction site is assumed to be 50 km on a medium truck.

A5

According to the report from EPD-Norge Harmonising the documentation of scenarios beyond cradle to gate, EN 15804 there is no loss on site during construction activities. The window products in this EPD are painted and surface treated in the production and not at the building site. Therefore, there is only 2 items left in this module. 1) Waste treatment of packaging which is considered in the EPD calculations. 1) Energy use during installation. This can be varied depending on the floor, type of building and several other unknown parameters, and therefore ignored in the calculation.

B2/B3

The maintenance scenario included cleaning, painting and change of IGU. Cleaning is performed three times per year. It is calculated with 1,5 dl of detergent and 3 litres of water each year. Windows with aluminium cladding are assumed to be painted 3 times during its lifetime from inside. It is assumed that 5 gr of lubricating oil is used every year for fittings and moving parts. The glazing unit is changed once during the lifetime for the windows with aluminium cladding. No repair is assumed during the product lifetime.

B4/B5

* Number or RSL (Reference Service Life). The window has RSL of 60 years. Therefore, it is assumed to replace the insulated glass unit after 30 years (See Module B2). The RSL is determined by using SINTEF design guide 700.320. There is no need for refurbishment during the product lifetime.

C1

As there are no data for de-construction, it is assumed no activites in C1 in this study. The windows are assumed to be treated as mixed waste and sent to incineration. The combustible materials are then energy recovered, while glass is assumed to end up in the bottom ash and then landfilled. The metals are usually sorted out of the bottom ash and then recycled, but there is no data of the share which are recycled and therefore standard values from Ecoinvent is utilized.

C2

The transport of window as waste is calculated based on a scenario with 50 km distance.

C3

Windows are assumed to be sorted as mixed construction waste and treated with incineration with energy recovery. However, the manufacturer has documented the recycling potentials for its product in the Construction Product Declaration eBVD NorDan BG Vridf?nster Tr?/Alu 105, ID: C-SE556294452901-67 URL:https://www.ebvd.org/BMI/Document/Export/2952/0/Pdf In the documentation, Chapter 10, the specific material recovery, and energy recovery potential is reported for the product.

D

The benefits beyond life cycle has been modelled based on the output flows from module C3. This includes energy from incineration and scrap metal recovered from the ashes. The amount recovered metal is assumed to avoid production of primary metals in accordance to 6.4.3.3 in EN 15804. The exported energy is substituting Norwegian district heating mix and electricity mix. Inventory processes causing substitution of avoided virgin raw materials has be constructed for each material.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tonnes, EURO 5 (kgkm) - RER	53,3 %	291	0,023	l/tkm	6,69
Truck, 16-32 tonnes, EURO 5 (kgkm) - RER	36,7 %	50	0,044	l/tkm	2,20

Assembly (A5)	Unit	Value			
Waste, metal, average treatment (kg)	kg	0,05			
Waste, packaging, pallet, EUR wooden pallet, reusable, average treatment (kg) A5	kg	3,59			
Waste, packaging, plastic film (LDPE), to average treatment (kg)	kg	0,13			

Maintenance (B2)	Unit	Value			
Waste treatment per kg Paint, hazardous waste incineration (kg)	kg	0,55			
Waste, glass, incineration (kg)	kg	40,86			
Waste, plastic, mixture, for incineration (kg)	kg	0,34			
110 Plastic parts, gasket, Ethylene propylene diene monomer (EPDM), Europe (kg)	kg/DU	0,34			
179 Uncoated flat glass, Europe (kg)	kg/DU	13,62			
180 Coated flat glass, Europe (kg)	kg/DU	27,24			
193 Spacer for IGU, Europe (kg)	kg/DU	0,74			
194 Argon gas for IGU, liquid, global (kg)	kg/DU	0,06			
208 Sealant for IGU, generic, global (kg)	kg/DU	1,10			
209 Absorbent for IGU, generic, global (kg)	kg/DU	0,02			
Detergent, Husvask (kg)	kg/DU	9,00			
Lubricating oil (kg) - RER	kg/DU	0,30			
Paint, 50% water, wet mass (kg)	kg/DU	0,55			
Water, tap water (kg) - Europe without Switzerland	kg/DU	180,00			
Truck, over 32 tonnes, EURO 5 (kgkm) - RER	kgkm/DU	2955,50			

Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, unspecified (kgkm) - RER	48,7 %	50	0,051	l/tkm	2,55

Waste processing (C3)	Unit	Value			
Materials to recycling (kg)	kg	0,37			
Waste treatment per kg Glass, incineration with fly ash extraction (kg) - CH - C3	kg	42,55			
Waste treatment per kg Hazardous waste, incineration (kg)	kg	0,01			
Waste treatment per kg Paint, hazardous waste incineration (kg)	kg	0,79			
Waste treatment per kg Paint, hazardous waste incineration (kg) - C3	kg	0,01			
Waste treatment per kg Plastic, Mixture, municipal incineration with fly ash extraction (kg)	kg	0,75			
Waste treatment per kg Polyurethane (PU), incineration (kg)	kg	0,55			
Waste treatment per kg Scrap aluminium, incineration with fly ash extraction (kg) - CH - C3	kg	3,54			
Waste treatment per kg Scrap steel, incineration with fly ash extraction (kg) - CH - C3	kg	4,03			
Waste treatment per kg Wood, from incineration (kg)	kg	18,10			

Disposal (C4)	Unit	Value			
Landfilling of ashes from incineration of Glass, process of ashes and residues (kg) - CH - C4	kg	49,15			
Landfilling of ashes from incineration of Plastics, Mixture, municipal incineration with fly ash extraction, process per kg ashes and residues (kg)	kg	0,03			
Landfilling of ashes from incineration of Polyurethane (PU), process per kg ashes and residues - C4 (kg)	kg	0,02			
Landfilling of ashes from incineration of Scrap aluminium, process of ashes and residues (kg) - CH - C4	kg	3,17			
Landfilling of ashes from incineration of Scrap steel, process of ashes and residues (kg) - CH - C4	kg	2,66			
Landfilling of ashes from incineration of Wood, process per kg ashes and residues - C4 (kg)	kg	0,21			
Landfilling of ashes from incineration per kg Paint, hazardous waste incineration (kg)	kg	0,02			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of primary aluminium with net scrap (kg)	kg	0,28			
Substitution of primary steel with net scrap (kg)	kg	0,06			
Substitution of electricity, in Norway (MJ)	MJ	16,38			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	247,77			

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3
GWP-total	kg CO_2 -eq	1,06E+02	2,53E+00	5,55E+00	0	6,27E+01	0
GWP-fossil	kg CO_2 -eq	1,37E+02	2,53E+00	1,08E-01	0	6,18E+01	0
GWP-biogenic	kg CO_2 -eq	-3,15E+01	1,04E-03	5,44E+00	0	4,82E-01	0
GWP-luluc	kg CO_2 -eq	5,05E-01	7,73E-04	2,58E-05	0	4,76E-01	0
ODP	kg CFC11 -eq	1,36E-05	5,82E-07	1,62E-08	0	6,93E-06	0
AP	mol H+ -eq	1,04E+00	1,06E-02	7,92E-04	0	5,44E-01	0
EP-FreshWater	kg P -eq	5,36E-03	1,94E-05	1,18E-06	0	1,75E-03	0
EP-Marine	kg N -eq	1,79E-01	3,16E-03	3,46E-04	0	9,02E-02	0
EP-Terrestial	mol N eq	2,03E+00	3,50E-02	3,63E-03	0	1,06E+00	0
POCP	kg NMVOC -eq	5,89E-01	1,11E-02	9,36E-04	0	2,91E-01	0
ADP-minerals&metals[1]	Kg Sb-eq	1,54E-03	4,92E-05	1,64E-06	0	8,25E-04	0
ADP-fossil[1]	MJ	1,78E+03	3,90E+01	1,19E+00	0	8,69E+02	0
WDP[1]	m^3	3,44E+03	3,17E+01	1,91E+00	0	9,97E+01	0

Parameter	Unit	B4	B5	C1	C2	C3	C4	D
GWP-total	kg CO_2 -eq	0	0	0	4,79E-01	3,26E+01	6,34E-01	-4,12E+00
GWP-fossil	kg CO_2 -eq	0	0	0	4,78E-01	6,33E+00	6,33E-01	-4,01E+00
GWP-biogenic	kg CO_2 -eq	0	0	0	2,05E-04	2,63E+01	4,23E-04	-1,40E-02
GWP-luluc	kg CO_2 -eq	0	0	0	1,69E-04	3,66E-04	1,57E-04	-9,67E-02
ODP	kg CFC11 -eq	0	0	0	1,09E-07	2,09E-07	1,80E-07	-1,05E-01
AP	mol H+ -eq	0	0	0	2,73E-03	7,95E-03	4,51E-03	-2,90E-02
EP-FreshWater	kg P -eq	0	0	0	3,94E-06	1,56E-05	5,04E-06	-2,28E-04
EP-Marine	kg N -eq	0	0	0	9,75E-04	3,06E-03	1,66E-03	-6,07E-03
EP-Terrestial	mol N eq	0	0	0	1,07E-02	3,22E-02	1,83E-02	-6,60E-02
POCP	kg NMVOC -eq	0	0	0	3,07E-03	8,75E-03	5,22E-03	-1,98E-02
ADP-minerals&metals[1]	Kg Sb-eq	0	0	0	1,24E-05	5,11E-06	1,03E-05	-1,17E-05
ADP-fossil[1]	MJ	0	0	0	7,34E+00	1,47E+01	1,40E+01	-5,30E+01
WDP[1]	m^3	0	0	0	6,96E+00	5,88E+01	2,80E+01	-1,74E+03

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

Global warming potential in A1-A3 includes sequestration of carbon in the wood. This amount is accounted as an emission in module C3. Additionally, it is included sequestration in the wood packaging. This is accounted as an emission in module A5.

Additional environmental impact indicators

Parameter		Unit	A1-A3	A4	A5	B1	B2	B3
	PM	Disease incidence	1,32E-05	2,13E-07	9,78E-09	0	5,48E-06	0
	IRP[2]	kgBq U235 eq.	6,37E+00	1,71E-01	4,36E-03	0	2,21E+00	0
	ETP-fw[1]	CTUe	3,71E+03	2,86E+01	1,34E+00	0	1,50E+03	0
	HTP-c[1]	CTUh	3,04E-07	0,00E+00	1,45E-10	0	9,69E-08	0
	HTP-nc[1]	CTUh	2,82E-06	2,84E-08	6,95E-09	0	8,66E-07	0
	SQP[1]	Pt	7,57E+03	4,06E+01	7,18E-01	0	3,33E+02	0

Parameter		Unit	B4	B5	C1	C2	C3	C4	D
	PM	Disease incidence	0	0	0	4,36E-08	1,76E-07	7,99E-08	-8,97E-07
	IRP[2]	kgBq U235 eq.	0	0	0	3,21E-02	5,90E-02	5,57E-02	-2,75E-01
	ETP-fw[1]	CTUe	0	0	0	5,49E+00	4,79E+01	7,14E+00	-1,53E+02
	HTP-c[1]	CTUh	0	0	0	0,00E+00	7,56E-09	2,39E-10	-8,65E-09
	HTP-nc[1]	CTUh	0	0	0	7,27E-09	6,03E-08	9,72E-09	-1,73E-07
	SQP[1]	Pt	0	0	0	6,28E+00	6,08E+00	3,05E+01	-1,38E+02

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

Parameter		Unit	A1-A3	A4	A5	B1	B2	B3
	PERE	MJ	5,74E+02	5,05E-01	2,46E-02	0	5,08E+01	0
	PERM	MJ	3,39E+02	0,00E+00	-4,98E+01	0	0,00E+00	0
	PERT	MJ	9,14E+02	5,05E-01	-4,98E+01	0	5,08E+01	0
	PENRE	MJ	1,67E+03	3,90E+01	1,19E+00	0	8,67E+02	0
	PENRM	MJ	1,10E+02	0,00E+00	-5,56E+00	0	2,80E+00	0
	PENRT	MJ	1,78E+03	3,90E+01	-4,37E+00	0	8,70E+02	0
	SM	kg	1,08E+00	0,00E+00	4,31E-06	0	1,34E-02	0
	RSF	MJ	1,15E+00	1,78E-02	7,14E-04	0	5,35E-01	0
	NRSF	MJ	9,42E-01	6,06E-02	7,84E-03	0	1,10E-01	0
	FW	m^3	3,14E+00	4,37E-03	8,50E-04	0	7,63E-01	0

Parameter		Unit	B4	B5	C1	C2	C3	C4	D
	PERE	MJ	0	0	0	1,05E-01	2,45E+00	2,39E-01	-1,43E+02
	PERM	MJ	0	0	0	0,00E+00	-2,89E+02	0,00E+00	0,00E+00
	PERT	MJ	0	0	0	1,05E-01	-2,87E+02	2,38E-01	-1,43E+02
	PENRE	MJ	0	0	0	7,34E+00	1,47E+01	1,40E+01	-5,30E+01
	PENRM	MJ	0	0	0	0,00E+00	-1,05E+02	0,00E+00	0,00E+00
	PENRT	MJ	0	0	0	7,34E+00	-9,02E+01	1,40E+01	-1,42E+02
	SM	kg	0	0	0	0,00E+00	5,00E-05	3,61E-05	3,57E-01
	RSF	MJ	0	0	0	3,75E-03	5,07E-02	6,29E-03	-2,84E-02
	NRSF	MJ	0	0	0	1,32E-02	-1,30E-01	2,76E-01	-7,44E+00
	FW	m^3	0	0	0	8,31E-04	1,20E-02	1,46E-02	-2,53E-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 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

Parameter		Unit	A1-A3	A4	A5	B1	B2	B3
	HWD	kg	1,49E+00	2,10E-03	3,71E-02	0	4,78E+01	0
	NHWD	kg	2,99E+01	3,04E+00	1,25E-01	0	8,25E+00	0
	RWD	kg	6,62E-03	2,66E-04	6,55E-06	0	2,66E-03	0

Parameter		Unit	B4	B5	C1	C2	C3	C4	D
	HWD	kg	0	0	0	3,96E-04	3,19E-02	5,52E+01	9,12E-03
	NHWD	kg	0	0	0	4,55E-01	1,88E-01	4,64E-01	-1,26E+00
	RWD	kg	0	0	0	4,99E-05	8,53E-05	8,63E-05	-2,39E-04

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

Parameter		Unit	A1-A3	A4	A5	B1	B2	B3
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0
	MFR	kg	5,02E-01	0,00E+00	1,42E+00	0	2,12E-02	0
	MER	kg	9,77E-03	0,00E+00	6,75E-06	0	4,91E-03	0
	EEE	MJ	6,76E-01	0,00E+00	1,56E+00	0	1,07E+00	0
	EET	MJ	9,58E+00	0,00E+00	2,36E+01	0	1,62E+01	0

Parameter		Unit	B4	B5	C1	C2	C3	C4	D
	CRU	kg	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	0	0	0	0,00E+00	3,97E-01	3,00E+00	3,26E-01
	MER	kg	0	0	0	0,00E+00	4,24E-04	6,62E-05	-6,10E-04
	EEE	MJ	0	0	0	0,00E+00	1,53E+01	1,43E+00	1,79E-02
	EET	MJ	0	0	0	0,00E+00	2,32E+02	2,16E+01	2,71E-01

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*10-3 = 0,009"
*INA Indicator Not Assessed

Biogenic Carbon Content

Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	7,47E+00
Biogenic carbon content in accompanying packaging	kg C	1,56E+00

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, Poland (kWh)	ecoinvent 3.6	1060,47	g CO2-eq/kWh
Electricity, Norway (kWh)	ecoinvent 3.6	24,33	g CO2-eq/kWh

Dangerous substances

The product contains no substances on the REACH Candidate list or the Norwegian priority list at or above 100 ppm, 0,01 % by weight.

Indoor environment

The product has not been tested for emissions to indoor environments.

Additional Environmental Information

Environmental impact indicators EN 15804+A1 and NPCR Part A v2.0

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3
GWP	kg CO_2 -eq	1,58E+01	2,50E+00	1,05E-01	0	1,21E+01	0
ODP	kg CFC11 -eq	1,45E-06	4,69E-07	1,33E-08	0	7,09E-07	0
POCP	kg C_2H_4-eq	5,14E-03	3,28E-04	2,19E-05	0	5,15E-03	0
AP	kg SO_2 -eq	7,16E-02	5,03E-03	4,97E-04	0	4,95E-02	0
EP	kg PO_4^{3-} -eq	8,09E-03	5,46E-04	1,49E-04	0	6,16E-03	0
ADPM	kg Sb -eq	2,05E-04	4,92E-05	1,64E-06	0	1,65E-04	0
ADPE	MJ	1,78E+02	3,83E+01	1,16E+00	0	2,29E+02	0
GWPIOBC	kg CO_2 -eq	1,37E+02	2,53E+00	0,00E+00	0	6,19E+01	0

Parameter	Unit	B4	B5	C1	C2	C3	C4	D
GWP	kg CO_2 -eq	0	0	0	4,73E-01	5,62E+01	1,33E-02	-4,01E+00
ODP	kg CFC11 -eq	0	0	0	8,72E-08	2,90E-08	1,14E-09	-3,53E-07
POCP	kg C_2H_4-eq	0	0	0	6,75E-05	8,44E-05	1,53E-06	-2,99E-03
AP	kg SO_2 -eq	0	0	0	9,62E-04	3,12E-03	2,37E-05	-2,25E-02
EP	kg PO_4^{3-} -eq	0	0	0	1,00E-04	1,16E-03	3,21E-06	-3,56E-03
ADPM	kg Sb -eq	0	0	0	1,24E-05	1,43E-06	7,31E-08	-1,17E-05
ADPE	MJ	0	0	0	7,19E+00	2,69E+00	1,18E-01	-4,38E+01
GWPIOBC	kg CO_2 -eq	0	0	0	4,79E-01	3,00E+01	1,33E-02	-4,02E+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 instantanious oxidation (except emissions and uptake of biogenic carbon)

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