epd-norge

# Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 +A1

## ND NTech patio door 164/80 - 2P (with aluminium cladding)


**Owner of the declaration:**
NorDan AS

**Program holder and publisher:**
The Norwegian EPD foundation

**Declaration number:**
NEPD-3461-2057-EN

**Registration Number:**
NEPD-3461-2057-EN

**Issue date:** 02.05.2022
**Valid to:** 02.05.2027

The Norwegian
EPD Foundation


Product name:
ND NTech patio door 164/80 - 2P (with aluminium cladding)

Manufacturer:
NorDan AS

## General information

**Product:**
ND NTech patio door 164/80 - 2P (with aluminium cladding)

**Owner of the declaration:**
NorDan AS
Kontaktperson: Fredrik Jonsson
Tlf: +46 (0) 10-130 01 78
e-post: fredrik.jonsson@nordan.se

**Program holder:**
The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo
Tlf: +47 977 22 020
e-mail: post@epd-norge.no

**Manufacturer:**
NorDan sp. z o.o.
Fabryczna 16, PL-64-200 Wolsztyn, Poland

Phone: +48 68 34 70 500
Fax: 048 68 34 73 541

**Declaration number:**
NEPD-3461-2057-EN

**Place of production:**
Powodowo, Poland

**ECO Platform registration number:**

**Management system:**
NorDan sp. z o.o. Works with EN ISO 9001:2015, ISO 14001:2015

**This declaration is based on Product Category Rules:**
CEN Standard EN 15804 serves as core PCR NPCR014:2019 version 3.0 Part B for Windows and doors

**Org. no.:**
NO 979 776 233 MVA

**Declaration of responsibility:**
The owner of the declaration shall be responsible for the underlying information and evidence. EPD Norway shall not be responsible with regard to manufacturer information, life cycle data and evidence.

**Issue date:**
02.05.2022

**Valid to:**
02.05.2027

**Declared unit:**

**Year of study:**
2021

**Declared unit with option:**

**Comparability:**
EPD of construction products may not be comparable if they are not comply with NS-EN 15804 and seen in a building context.

**Functional unit:**
1 door height sliding/folding elements set measuring 3.00 m x 2.18 m (reference door based on prEN 17213) with an essential parameter U-value = 0,88 and with an expected service life of 60 years with alu clad. Conversion factor is 245.89 [Kg/FU].

**The EPD has been worked out by:**
Roja Modaresi
Norsk Treteknisk Institutt

**Verification:**
Independent verification of the declaration and data, according to ISO14025:2010

☐ internal ☑ external

Third party verifier:
signiture
Gaylord K. Booto PhD., Senior Research Scientist, NORSUS AS
(Independent verifier approved by EPD Norway)

Approved
Håkon Hauan
Managing Director of EPD-Norway

## Product

**Product description:**
Slinding door for use in exterior walls of domestic and commercial buildings. The scope is NorDan 165mm frame with 80mm doorleaf and timber frame with aluminium cladding.

**Product specification:**
25% of aluminium and 18% of glass is produced from recycled material.

| Materialer | | kg | % |
|---|---|---|---|
| Pine timber | | 57.80 | 23.51 |
| Triple glazed unit | Glass | 160.11 | 65.12 |
| | Spacer | 2.07 | 0.84 |
| | Butyl | 0.07 | 0.03 |
| | Sealant | 3.05 | 1.24 |
| | Argon gas | 0.27 | 0.11 |
| | Absorbent | 0.07 | 0.03 |
| Paint | | 1.21 | 0.49 |
| Aluminium | | 9.49 | 3.86 |
| Plastic | | 0.31 | 0.12 |
| Gasket | | 1.15 | 0.47 |
| Metal- Steel alloys | | 4.16 | 1.69 |
| Sealant and Glue | | 0.15 | 0.06 |
| Additional for alu clad | Aluminium | 5.88 | 2.39 |
| | Plastic | 0.05 | 0.02 |
| | Metals | 0.06 | 0.02 |
| **Total weight of the product** | | **245.89** | **100** |
| Wood packaging | | 8.73 | |
| Steel packaging | | 0.08 | |
| Plastic packaging | | 0.24 | |
| ***Total weight with packaging*** | | ***254.94*** | |

**Technical data:**
Slinding door. Triple glazed, 165mm frame with 8mm aluminium cladding, 80mm doorleaf. Manufactured in accordance with ISO9001:2015 and ISO 14001. The product complies with the requirements of the Norwegian Door and Window control. Uwin 0,88W/m2K. Certified: BBA, Secured by Design, SP Sitac “P”.
The total weight of the product is 245.89 kg. 6.0 kg of material is used for aluminium cladding. The packaging has an average weight of 9.0 kg.

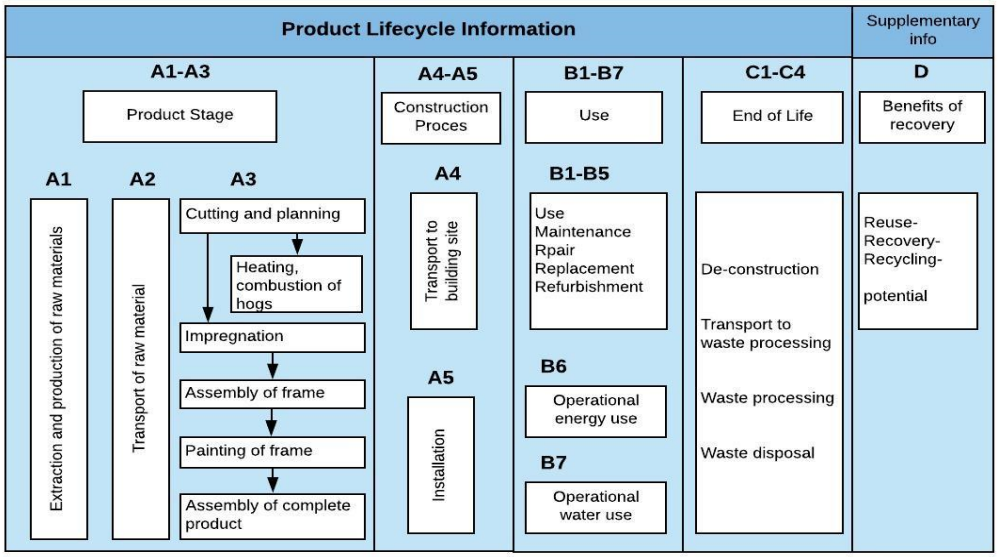
**Market:**
Europe, but scenarios beyond cradle to gate are based on the situation in the Norwegian market.

**Reference service life:**
The reference service life is 60 years for alu clad timber frame.

## LCA: Calculation rules

**Functional unit:**
1 door height sliding/folding elements set measuring 3.00 m x 2.18 m (reference door based on prEN 17213) with an essential parameter U-value = 0,88 and with an expected service life of 60 years with alu clad. Conversion factor is

**System boundary:**
All modules are included. Below is a technical flowchart for the production line at NorDan. Modul D is calculated with energy substitution and explained in the scenarios.



**Data quality**
Data is representative of year 2019 and was collected in 2020-2021. Data is taken from processes from Ecoinvent 3.1-3.7. Some processes are based on Ecoinvent v3.1 (2014) and v3.2 (2015), but all upstream processes are v3.4 (2017)-3.5 (2018). Remaining data is based on Ecoinvent v3.7 (2020). "Allocation cut-off by classification" adjusted to improve representativeness.

**Cut-off criteria:**
All raw materails and energy use is included. Where data was available for infrastructure from Ecoinvent, it is included. Example: 'Metal working factory'. In the production process, raw materials and energy of low amounts are not included (<1%). These cut-off rules do not apply to dangerous substances.

**Allocation:**
Allocation is done in accordance with the provisions of EN 15804. Allocation of energy, water and waste from production is calculated by a physical allocation factor based on the manufacturer input. For waste produced at the manufacturing, the burdens for reuse, recycling and recovery is allocated by using this allocation factor.

**Calculations of biogenic carbon:**
Sequestration and release of biogenic carbon is included according to EN 16485:2014. This is based on the modularity principle in EN 15804:2012 that specifies that the emissions shall be accounted in the module that they occur. The amount of carbon dioxide sequestrated is calulated in accordance to EN 16449:2014. Timber comes from sustainable forestry and has FSC certified traceability.

## LCA: Scenarios and additional technical information

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

The transportation from production to construction site is based on a scenario where the product is transported on a large lorry from Poland to Oslo, Norway (1250 km) and then to a warehouse which is assumed to be in a 250 km radius from Oslo. Transport from warehouse to a construction site is assumed to be 50 km on a medium truck.

**Transport from production place to assembly/user (A4)**

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption pr tkm | Fuel/Energy consumption pr km |
|---|---|---|---|---|---|
| Truck | 53 | EURO5, >32 tonn | 1500 | 0.023 l/tkm | 0.31 l/km |
| Truck | 26 | EURO5, 16-32 tonn | 50 | 0.045 l/tkm | 0.25 l/km |

**Installation (A5)**

| | Unit | Value |
|---|---|---|
| Auxiliary | kg | 0 |
| Water consumption | $m^3$ | 0 |
| Electricity consumption | MJ | 0 |
| Other energy carriers | MJ | 0 |
| Material loss | kg | 0 |
| Output materials from waste treatment | kg | 9.05 |
| Dust in the air | kg | 0 |

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.

**Maintenance (B2)/Repair (B3)**

| | Unit | Value |
|---|---|---|
| Detergents | kg | 9 |
| Water consumption | l | 180 |
| Lubricating oil | kg | 0.30 |
| Paint | kg | 0.91 |
| Transport | tkm | 3.06 |
| Glazing unit | kg | 165.63 |
| Synthetic rubber | kg | 1.15 |
| Transport (IGU) | tkm | 48.03 |

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.

**Replacement (B4)/Refurbishment (B5)**

| | Unit | Value |
|---|---|---|
| Replacement cycle* | yr | 60 |
| Electricity consumption | kWh | 0 |
| Replacement of worn parts | 0 | 0 |

* Number or RSL (Reference Service Life). The window has RSL of 60 years for with aluminium cladding. Therefore, it is assumed to replace the insulated glass unit after 30 years (See Module B4). 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.

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

**Transport to waste processing (C2)**

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption pr tkm | Fuel/Energy consumption pr km |
|---|---|---|---|---|---|
| Truck | 44 | Unspecified | 50 | 0.03l/tkm | 0.28 l/km |

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 2P Skjutdörr Trä/Alu, ID: C-SE556294452901-88
URL: https://www.ebvd.org/BMI/Document/Export/4416/0/Pdf
In the documentation, Chapter 10, the specific material recovery, and energy recovery potential is reported for the product.

**End of Life (C1, C3, C4)**

| | Unit | Value |
|---|---|---|
| Hazardous waste disposed | kg | 0 |
| Collected as mixed construction waste | kg | 245.89 |
| Reuse | kg | 0 |
| Recycling | kg | 7.62 |
| Energy recovery | kg | 238.26 |
| To landfill | kg | 0.00 |

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.

**Benefits and loads beyond the system boundaries (D)**

| | Unit | Value |
|---|---|---|
| Substitution of electricity | MJ | 90.6 |
| Substitution of thermal energy | MJ | 862.2 |
| Substitution of raw materials | kg | 8.4 |

## LCA: Results

Global warming potential in A1-A3 includes sequestration of CO2 as 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. The flow of biogenic carbon for the system is presented in page 9.

### System boundaries (X = included)

| Product stage | | | Construction and installation stage | | Use stage | | | | | | | End of Life stage | | | | Beyond the system boundaries |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Raw materials | Transport | Manufacturing | Transport | Construction installation stage | 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 | X | X | X | X | X | X | X |

### Environmental impact With alu clad

| Parameter | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 |
|---|---|---|---|---|---|---|---|---|---|
| GWP | kg $CO_2$ -ekv | 5.66E+02 | 3.38E+01 | 1.28E+01 | 0.00E+00 | 3.03E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| ODP | kg CFC11-ekv | 4.50E-05 | 6.59E-06 | 0.00E+00 | 0.00E+00 | 2.46E-05 | 1.00E+00 | 0.00E+00 | 0.00E+00 |
| POCP | kg $C_2H_4$ -ekv | 7.02E-01 | 4.13E-03 | 0.00E+00 | 0.00E+00 | 9.07E-02 | 2.00E+00 | 0.00E+00 | 0.00E+00 |
| AP | kg $SO_2$ -ekv | 4.37E+00 | 8.91E-02 | 0.00E+00 | 0.00E+00 | 2.18E+00 | 3.00E+00 | 0.00E+00 | 0.00E+00 |
| EP | kg $PO_4^{3-}$-ekv | 4.48E-01 | 1.25E-02 | 0.00E+00 | 0.00E+00 | 2.09E-01 | 4.00E+00 | 0.00E+00 | 0.00E+00 |
| ADPM | kg Sb-ekv | 6.35E-03 | 8.39E-05 | 0.00E+00 | 0.00E+00 | 1.21E-03 | 5.00E+00 | 0.00E+00 | 0.00E+00 |
| ADPE | MJ | 7.86E+03 | 5.76E+02 | 0.00E+00 | 0.00E+00 | 3.66E+03 | 6.00E+00 | 0.00E+00 | 0.00E+00 |

| Parameter | Unit | B6 | B7 | C1 | C2 | C3 | C4 | | D |
|---|---|---|---|---|---|---|---|---|---|
| GWP | kg $CO_2$ -ekv | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.54E+00 | 1.16E+02 | 2.01E+00 | | -1.31E+02 |
| ODP | kg CFC11-ekv | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.83E-07 | 1.51E-07 | 5.19E-07 | | -4.00E-06 |
| POCP | kg $C_2H_4$ -ekv | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.95E-04 | 9.60E-04 | 3.95E-04 | | -4.66E-02 |
| AP | kg $SO_2$ -ekv | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.88E-03 | 1.39E-02 | 1.10E-02 | | -7.31E-01 |
| EP | kg $PO_4^{3-}$-ekv | 0.00E+00 | 0.00E+00 | 0.00E+00 | 8.06E-04 | 4.25E-03 | 2.07E-03 | | -6.78E-02 |
| ADPM | kg Sb-ekv | 0.00E+00 | 0.00E+00 | 0.00E+00 | 5.22E-06 | 3.80E-06 | 6.38E-06 | | -1.82E-04 |
| ADPE | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.48E+01 | 2.52E+02 | 5.05E+01 | | -1.32E+03 |

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.

| Resource use | with alu clad | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **A1-A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** |
| RPEE | MJ | 1.6E+03 | 6.6E+00 | 0.0E+00 | 0.0E+00 | 2.3E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| RPEM | MJ | 1.1E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| TPE | MJ | 2.7E+03 | 6.6E+00 | 0.0E+00 | 0.0E+00 | 2.3E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| NRPE | MJ | 8.5E+03 | 5.9E+02 | 0.0E+00 | 0.0E+00 | 3.8E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| NRPM | MJ | 2.7E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | -3.0E+01 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| TRPE | MJ | 8.8E+03 | 5.9E+02 | 0.0E+00 | 0.0E+00 | 3.8E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| SM | kg | 4.8E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| RSF | MJ | 2.6E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.5E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| NRSF | MJ | 1.7E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.3E-01 | 0.0E+00 | 0.0E+00 | 0.0E+00 |
| W | $m^3$ | 1.1E+01 | 6.3E-02 | 0.0E+00 | 0.0E+00 | 3.1E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 |

| Resource use | with alu clad | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | | **D** |
| RPEE | MJ | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.2E-01 | 9.7E+02 | 9.1E-01 | | -5.7E+02 |
| RPEM | MJ | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | -9.7E+02 | 0.0E+00 | | 0.0E+00 |
| TPE | MJ | 0.0E+00 | 0.0E+00 | 0.0E+00 | 3.2E-01 | 2.2E+00 | 9.1E-01 | | -5.7E+02 |
| NRPE | MJ | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.5E+01 | 2.5E+02 | 5.2E+01 | | -1.3E+03 |
| NRPM | MJ | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | -2.4E+02 | 0.0E+00 | | 0.0E+00 |
| TRPE | MJ | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.5E+01 | 1.7E+01 | 5.2E+01 | | -1.3E+03 |
| SM | kg | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | | 0.0E+00 |
| RSF | MJ | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 1.4E+00 | 0.0E+00 | | -3.6E+02 |
| NRSF | MJ | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 9.5E-01 | 0.0E+00 | | -2.3E+02 |
| W | $m^3$ | 0.0E+00 | 0.0E+00 | 0.0E+00 | 2.5E-03 | 4.4E-02 | 4.4E-02 | | -1.8E+00 |

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE 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; W Use of net fresh water.

| End of life-Waste | with alu clad | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **A1-A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** |
| HW | kg | 1.42E+01 | 2.98E-02 | 0.00E+00 | 0.00E+00 | 1.78E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| NHW | kg | 1.27E+02 | 4.68E+01 | 0.00E+00 | 0.00E+00 | 5.03E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| RW | kg | 2.38E-02 | 3.78E-03 | 0.00E+00 | 0.00E+00 | 1.13E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

| End of life-Waste | with alu clad | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | | **D** |
| HW | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.24E-03 | 2.07E-02 | 1.92E+02 | | -1.17E+00 |
| NHW | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.53E+00 | 5.22E-01 | 1.46E+00 | | -2.42E+01 |
| RW | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.63E-04 | 5.50E-05 | 3.00E-04 | | -1.67E-03 |

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

| End of life- Output flow | with alu clad | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **A1-A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** |
| CR | 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 |
| MR | kg | 3.62E+00 | 0.00E+00 | 3.20E-01 | 0.00E+00 | 8.56E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| MER | kg | 0.00E+00 | 0.00E+00 | 8.73E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| EEE | MJ | 2.57E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.60E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| ETE | MJ | 2.84E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.11E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

| End of life- Output flow | with alu clad | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | | **D** |
| CR | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | | 0.00E+00 |
| MR | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 7.62E+00 | 0.00E+00 | | -8.37E+00 |
| MER | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | | 0.00E+00 |
| EEE | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 9.96E+01 | 0.00E+00 | | -9.06E+01 |
| ETE | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.87E+02 | 0.00E+00 | | -8.62E+02 |

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

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

## Norwegian additional requirements

**Greenhouse gas emissions from the use of electricity in the production phase**
National (Poland) market with low-voltage, including production of transmission lines and grid losses, has been used for electricity in the production process (A3).

| Data source | Quantity | Unit |
|---|---|---|
| Ecoinvent v3.7 (september 2020) | 1030 | gram $CO_2$-ekv./kWh |

**Hazardous substances**

The product contains no substances from REACH Candidate List or the Norwegian Priority List

☑ The product contains substances below 0.1% by weight on the REACH Candidate List

The product contains substances from REACH Candidate List or the Norwegian Priority List, see table under Specific Norwegian requirements.

The product does not contain any substances on the REACH Candidate List or the Norwegian Priority List. The product can be characterized as hazardous waste (according to the Waste Shift, Appendix III), see table under Specific Norwegian requirements.

**Transport**
Transport from production site to construction site according to scenario in A4: 1500+50 km

**Indoor air quality**
The product has not been tested for emissions to indoor environments.

**Carbon footprint**
To increase the transparency of the climate impacts, the GWP indicator has been divided into sub-indicators:
GWP-IOBC Climate impacts calculated according to instant oxidation principle
GWP-BCIP Climate impacts calculated from the net impacts of sequestration and emission of biogenic carbon

Climate impact with alu clad

| Parameter | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 |
|---|---|---|---|---|---|---|---|---|---|
| GWP-IOBC | kg $CO_2$-ekv | 6.71E+02 | 3.38E+01 | 0.00E+00 | 0.00E+00 | 3.03E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| GWP-BCIP | kg $CO_2$-ekv | -1.05E+02 | 0.00E+00 | 1.28E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| GWP | kg $CO_2$-ekv | 5.66E+02 | 3.38E+01 | 1.28E+01 | 0.00E+00 | 3.03E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

Climate impact with alu clad

| Parameter | Unit | B6 | B7 | C1 | C2 | C3 | C4 | | D |
|---|---|---|---|---|---|---|---|---|---|
| GWP-IOBC | kg $CO_2$-ekv | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.54E+00 | 2.36E+01 | 2.01E+00 | | -1.31E+02 |
| GWP-BCIP | kg $CO_2$-ekv | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 9.22E+01 | 0.00E+00 | | 0.00E+00 |
| GWP | kg $CO_2$-ekv | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.54E+00 | 1.16E+02 | 2.01E+00 | | -1.31E+02 |

## Bibliografi


| | |
|---|---|
| NS-EN ISO 14025:2010 | *Miljømerker og deklarasjoner - Miljødeklarasjoner type III - Prinsipper og prosedyrer.* |
| NS-EN ISO 14044:2006 | *Miljøstyring - Livsløpsvurderinger - Krav og retningslinjer* |
| NS-EN 15804:2012+A1:2013 | *Bærekraftig byggverk - Miljødeklarasjoner - Grunnleggende produktkategoriregler for byggevarer* |
| ISO 21930:2007 | *Sustainability in building construction - Environmental declaration of building products* |
| Modaresi, R. 2020 | *LCA-report for Nordan LCA-report nr. 325039-2 from Norwegian Institute of Wood Technology, Oslo, Norway.* |
| NPCR014 (04/2019) | *Product category rules for windows and doors, rev3, April 2019* |
| NS-EN 16485:2014 | *Tømmer og skurlast - Miljødeklarasjoner - Produktkategoriregler for tre og trebaserte produkter til bruk i byggverk* |
| NS-EN 16449:2014 | *Tre og trebaserte produkter - Beregning av biogent karboninnhold i tre og omdanning til karbondioksid* |
| Ecoinvent v3.0-3.7 | *Ecoinvent database version 3.0-3.7 Centre for Life Cycle Inventories.* |
| Statistisk sentralbyrå | *Tabell 04727: Fjernvarmebalansen, 2015* |
| Statistisk sentralbyrå | *Tabell 09469: Nettoproduksjon av fjernvarme, 2015* |
| NEPD-307-179-NO | *EPD for skurlast av gran eller furu. Treindustrien* |



| | | | |
|---|---|---|---|
| epd-norge The Norwegian EPD Foundation | **Program operator and publisher**<br>The Norwegian EPD Foundation<br>Postboks 5250 Majorstuen, 0303 Oslo<br>Norway | Tlf:<br><br>e-post:<br>web | +47 23 08 80 00<br><br>post@epd-norge.no<br>www.epd-norge.no |
| NorDan | **Owner of the declaration**<br>NorDan AS<br>Stasjonsveien 46, N-4460 Moi<br>Norway | Tlf:<br><br>e-post:<br><br>web | +47 51 40 40 00<br><br>firmapost@nordan.no<br><br>www.nordan.no |
| Treteknisk | **Author of the Life Cycle Assessment**<br>Roja Modaresi<br>Norsk Treteknisk Instiutt<br>Postboks 113 Blindern, 0314 Oslo, Norway | Tlf:<br><br>e-post:<br>web | +47 98 85 33 33<br><br>firmapost@treteknisk.no<br>www.treteknisk.no |

# EPD for the best environmental decision

Global Program Operator

The Norwegian EPD foundation
www.epd-norge.no

epd-norge