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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Nordic Dørfabrikk AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-1535-525-EN
Registration number:	NEPD-1535-525-EN
ECO Platform reference number:	-
Issue date:	08.03.2018
Valid to:	08.03.2023

Climate door / interior door

Nordic Dørfabrikk AS

nordicdoor
KVALITET | KOMPETANSE | SERVICE | MILJØ

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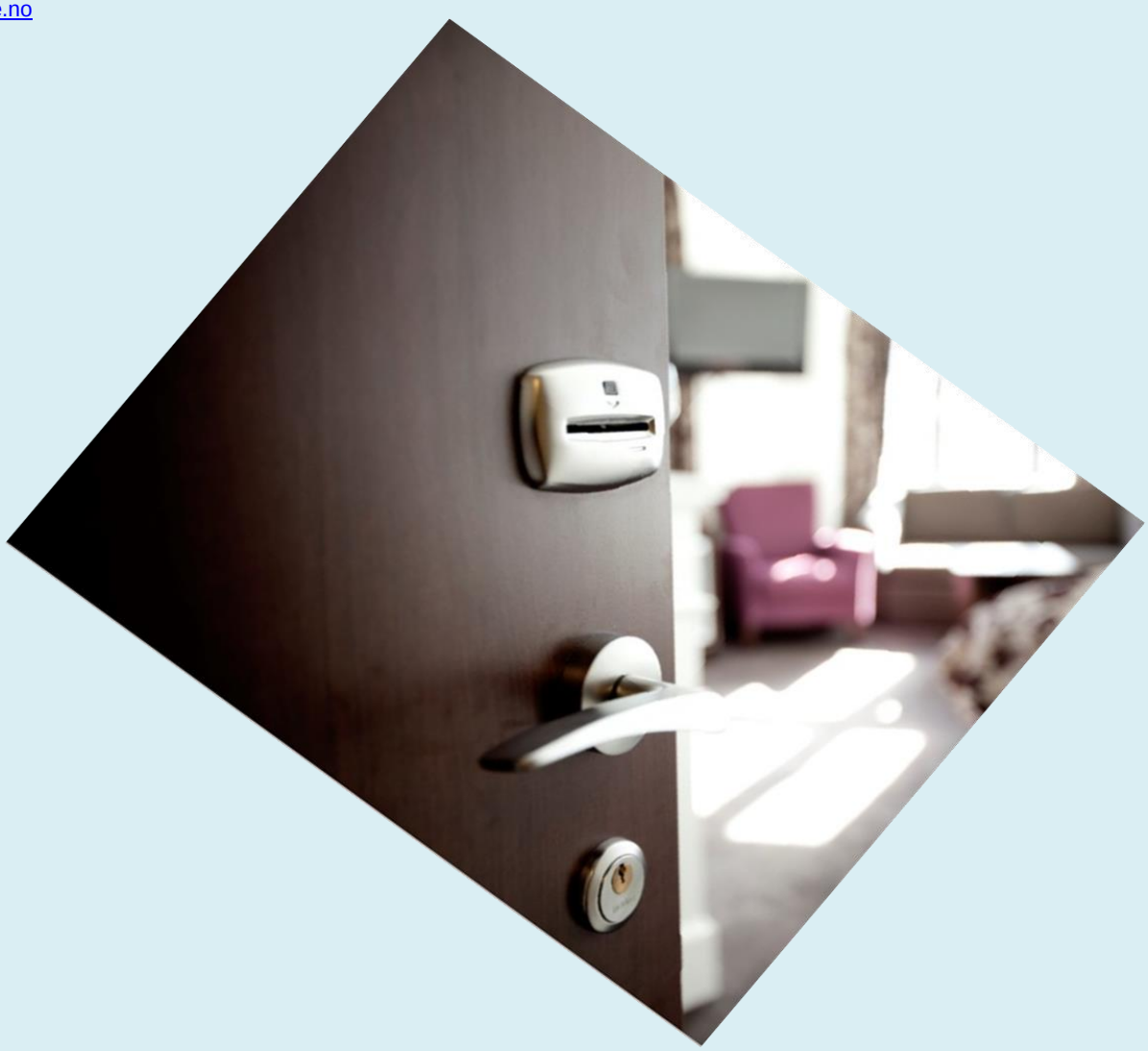

General information

Product:
Climate door / interior door

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Declaration number:
NEPD-1535-525-EN

Place of production:
Lyngdal, Norway

ECO Platform reference number:
-

Management system:

This declaration is based on Product Category Rules:
CEN Standard EN 15804 serves as core PCR
NPCR014rev 1 Windows and doors March 2013

Organisation no:
948007029

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.

Issue date:
08.03.2018

Valid to:
08.03.2023

Scope:
Cradle to Gate with option (A1-A4)

Year of study:
2017-2018

Declared unit with option:
1 produced climate door / interior door measuring 825 x 2040mm, with a fire class and noise reduction of B30/35dB.

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

Functional unit:

The EPD has been worked out by:
Selamawit Mamo Fufa
Selamawit M. Fufa
SINTEF

Verification:
The CEN Norm EN 15804 serves as the core PCR. Independent verification of the declaration and data, according to ISO14025:2010

☐ internal ☑ external

Third party verifier:
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Oddbjørn Dahlstrøm, Asplan Viak AS
(Independent verifier approved by EPD Norway)

Approved
Håkon Hauan
Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:
Doorset for use in interior walls of houses, public and commercial buildings. Climate door has double layers of aluminum inserts, whilst interior door is without aluminium inserts.

Product specification:
The calculations are based on 1 painted climate door / interior door measuring 809x2053 mm, 42x92 mm frame, one lock and 3 hinges.

Technical data:
The dimension of the declared unit is 809x2053 mm and a mass of 64,01/60,37 kg (climate door / interior door), excluding packaging materials of 4,4 kg. The door is with 42 x 92 mm frame and 52 mm door leaf. The door has fire class B30 in accordance with EN 1634-1 and a noise reduction of 35dB according to EN ISO 10140. For climate door, the calculated U value is 1,5W/m2K.

More information on technical properties can be found in http://www.nordicdoor.no/sider/tekst.asp?side=82 & http://www.nordicdoor.no/sider/tekst.asp?side=86

Market
Main market areas are Norway and other Nordic countries.

Reference service life, product:
Not relevant for cradle to gate with option

Composition of the final product

Materials (climate door)	**kg**	**%**
Wooden stile and frame	10,70	16,7
Particleboard core	33,16	51,8
Hard fibreboard	11,11	17,4
Treshold	1,30	2,0
Aluminium	3,64	3,1
Paint	1,99	3,1
Additives	0,83	1,3
Lock and hinges	1,28	2,0
Sum of materials	**64,01**	**100,0**
Packaging		
Wood packaging	4,20	
Plastic packaging	0,09	
Packing strip	0,02	
Carton	0,09	
Total with packaging	***68,41***	

Materials (interior door)	**kg**	**%**
Wooden stile and frame	10,70	17,7
Particleboard core	33,16	54,9
Hard fibreboard	11,11	18,4
Treshold	1,30	2,2
Paint	1,99	3,3
Additives	0,83	1,4
Lock and hinges	1,28	2,1
Sum of materials	***60,37***	***100,0***
Packaging		
Wooden pallet	4,2	
Plastics	0,09	
Packing strip	0,02	
Carton	0,09	
Total with packaging	***64,77***	

Deviation from PCR:
An average door size (809x2053 mm) based on the actual width and height of doors produced in the factory is used as declared unit (DU). This differes from the definition of DU in the PCR, which specifies that DU should be given per 1.23x2.18 m. A conversion factor is given in the EPD in order to enable to recalculate the environmental performance of the product using DU given in the PCR.

Conversion factor	Value	Unit
DU (809x2053 mm)	1	-
Conversion factor to 1.23x2.18 m	1,614	-

LCA: Calculation rules

Declared unit:
1 produced painted climate door/ interior door measuring 52x825x2040 mm, with fire class B30 and noise reduction 35dB

System boundary:
Moduels A1-A4 are included, but Moduels A5, B2-B5 are not declared. Moduels B1, B6 and B7 are not relevant according to NPCR014 Windows and doors. Figure 1 shows technical flowsheet of production (A3) of the doors, while the system boundaries for the rest of the modules are shown on page 6.

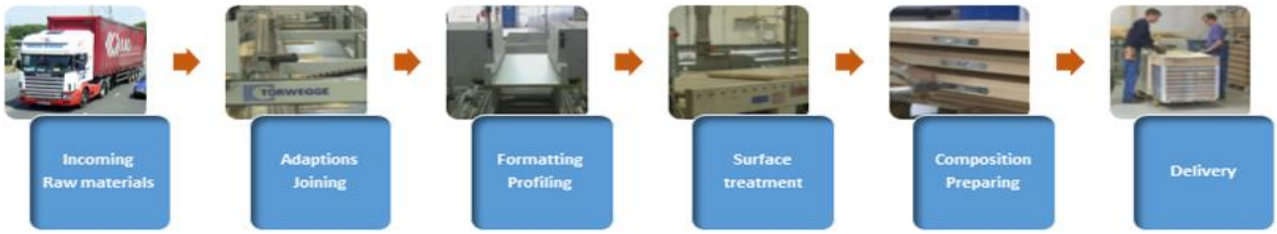

Figure 1: A flow diagram of Classified compact inner door production (A3).

Data quality:
The data quality requirements are according to NPCR 014 rev1 Windows and doors clause 6.3.7. Specific data collected from manufacturer is applied for the most important raw materials in A1-A2. Specific data from the 2016 production at the manufacturing site is applied in A3. The production data is from one production site, Lyngdal in Norway, so no average data has been used for different locations. Data for Wooden stile and frame is based on NEPD-307-179-NO and for Aluminium plate is based on EPD-GDA-20130259-IBG1-EN. Missing data were susbtituted with generic data from Ecoinvent v.3.3. No data are more than 5 years old.

Allocation:
The allocation is made in accordance to EN 15804:2012+A1:2013. Energy, water and waste consumption in the factory is allocated to the DU by mass allocation.

Cut-off criteria:
General cut-off criteria are given in standard EN 15804 clause 6.3.5. In compliance with these criteria, all major raw materials and all the essential energy are included. The infrastructure of the manufacturing site,with very small amounts (<1%) are not included. This cut-off rule does not apply for hazardous materials and substances.

Calculation of biogenic carbon content:
Sequestration and emissions of biogenic carbon is calculated according to EN16485:2014. This approach is based on the modularity principle in EN15804:2012 that states that all environmental aspects and impacts are declared in the life cycle where they appear. The calculation of biogenic carbon content and conversion to carbon dioxide is done according to NS-EN 16449:2014. Net contribution to GWP from biogenic carbon is shown on page 5. The wood products come from sustainable forestry and have PEFC certification.

LCA: Scenarios and additional technical information

Scenarios for transport from the production gate to the construction site (A4) is included for beyond the cradle to gate system boundary as described in NPCR014rev 1 clauses 6.3.4.3. The following information describes the transport scenario in A4.

Three transport scenarios are provided in the EPD for Norwegian (NO), Swedish (SE) and Danish (DK) market.

Transport from production plase to the construction site (A4) in Norway (NO)

Type	Destination	Capacity utilisation (incl. return) %*	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	Oslo, Norway	26,3	Lorry 16-32 tons, EURO5	400	0,044 l/tkm	17,6

Transport from production place to the construction site (A4) in Sweden (SE)

Type	Destination	Capacity utilisation (incl. return) %*	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	Horten harbour, Norway	26,3	Lorry 16-32 tons, EURO5	317	0,044 l/tkm	13,948
Boat	Moss harbour, Sweden	65	Freight ship	14	0,003 l/tkm	0,042
Truck	Lidkøping, Sweden	26,3	Lorry 16-32 tons, EURO5	243	0,044 l/tkm	10,692
Truck	Stockholm, Sweden	26,3	Lorry 16-32 tons, EURO5	350	0,044 l/tkm	15,4

Transport from production place to the construction site (A4) in Denmark (DK)

Type	Destination	Capacity utilisation (incl. return) %*	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	Kristiansand, Norway	26,3	Lorry 16-32 tons, EURO5	90	0,044 l/tkm	3,96
Boat	Hirtshals, Denmark	65	Freight ship	140	0,003 l/tkm	0,42
Truck	Sikeborg, Denmark	26,3	Lorry 16-32 tons, EURO5	170	0,044 l/tkm	7,48

* The capacity utilization factors for truck are calculated from Ecoinvent v3.1. Capacity utilisation factors for boat are from Ecoinvent v2.2 report 14: Transport Services (Kolle et al., 1991) (Knørr et al., 2000)

LCA: Results

The Global warming potential results in A1-A3 includes uptake of 97,3 $kgCO_{2eq}$ biogenic carbon in the product and 6,9 $kgCO_{2eq}$ biogenic carbon in the packaging.

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

Product stage			Assemby stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	MNR	MND	MND	MND	MND	MNR	MNR	MND	MND	MND	MND	MND

Environmental impact Climate door

Parameter	Unit	A1-A3	A4 NO	A4 SE	A4 DK						
GWP	kg CO_2-eqv	-8,00E+00	4,46E+00	1,02E+01	3,01E+00						
ODP	kg CFC11-eqv	6,89E-06	8,38E-07	1,81E-06	5,32E-07						
POCP	kg C_2H_4-eqv	2,36E-01	7,39E-04	1,60E-03	5,25E-04						
AP	kg SO_2-eqv	3,80E-01	1,44E-02	3,13E-02	1,10E-02						
EP	kg PO_4^{3-}-eqv	1,23E-01	3,18E-03	6,87E-03	2,18E-03						
ADPM	kg Sb-eqv	4,51E-03	1,35E-05	2,91E-05	8,33E-06						
ADPE	MJ	1,28E+03	6,73E+01	1,45E+02	4,29E+01						

Environmental impact Interior door

Parameter	Unit	A1-A3	A4 NO	A4 SE	A4 DK						
GWP	kg CO_2-eqv	-4,82E+01	4,22E+00	9,62E+00	2,85E+00						
ODP	kg CFC11-eqv	5,75E-06	7,94E-07	1,81E-06	5,32E-07						
POCP	kg C_2H_4-eqv	3,88E-02	6,99E-04	1,60E-03	5,25E-04						
AP	kg SO_2-eqv	3,67E-01	1,37E-02	3,13E-02	1,10E-02						
EP	kg PO_4^{3-}-eqv	1,10E-01	3,01E-03	6,87E-03	2,18E-03						
ADPM	kg Sb-eqv	4,48E-03	1,28E-05	2,91E-05	8,33E-06						
ADPE	MJ	8,35E+02	6,37E+01	1,45E+02	4,29E+01						

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 Climate door

Parameter	Unit	A1-A3	A4 NO	A4 SE	A4 DK						
RPEE	MJ	2,11E+03	9,45E-01	2,15E+00	6,52E-01						
RPEM	MJ	1,19E+03	0,00E+00	0,00E+00	0,00E+00						
TPE	MJ	3,30E+03	9,45E-01	2,15E+00	6,52E-01						
NRPE	MJ	1,45E+03	6,91E+01	1,57E+02	4,65E+01						
NRPM	MJ	INA	0,00E+00	0,00E+00	0,00E+00						
TRPE	MJ	1,45E+03	6,91E+01	1,57E+02	4,65E+01						
SM	kg	INA	INA	INA	INA						
RSF	MJ	INA	INA	INA	INA						
NRSF	MJ	INA	INA	INA	INA						
W	m3	2,98E+02	3,69E+00	8,41E+00	2,56E+00						

Resource use Interior door

Parameter	Unit	A1-A3	A4 NO	A4 SE	A4 DK						
RPEE	MJ	1,92E+03	8,94E-01	2,04E+00	6,17E-01						
RPEM	MJ	1,19E+03	0,00E+00	0,00E+00	0,00E+00						
TPE	MJ	3,11E+03	8,94E-01	2,04E+00	6,17E-01						
NRPE	MJ	9,30E+02	6,55E+01	1,49E+02	4,40E+01						
NRPM	MJ	INA	0,00E+00	0,00E+00	0,00E+00						
TRPE	MJ	9,34E+02	6,55E+01	1,49E+02	4,40E+01						
SM	kg	INA	INA	INA	INA						
RSF	MJ	INA	INA	INA	INA						
NRSF	MJ	INA	INA	INA	INA						
W	m3	2,97E+02	3,49E+00	7,97E+00	2,43E+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

INA = Indicator not assessed

End of life - Waste Climate door

Parameter	Unit	A1-A3	A4 NO	A4 SE	A4 DK						
HW	kg	3,67E-02	0,00E+00	0,00E+00	0,00E+00						
NHW	kg	1,19E+01	0,00E+00	0,00E+00	0,00E+00						
RW	kg	3,28E-02	0,00E+00	0,00E+00	0,00E+00						

End of life - Waste Interior door

Parameter	Unit	A1-A3	A4 NO	A4 SE	A4 DK						
HW	kg	6,75E-04	0,00E+00	0,00E+00	0,00E+00						
NHW	kg	2,49E+00	0,00E+00	0,00E+00	0,00E+00						
RW	kg	2,68E-05	0,00E+00	0,00E+00	0,00E+00						

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

End of life - Output flow Climate door											
Parameter	**Unit**	**A1-A3**	**A4 NO**	**A4 SE**	**A4 DK**						
CR	kg	INA	INA	INA	INA						
MR	kg	INA	INA	INA	INA						
MER	kg	INA	INA	INA	INA						
EEE	MJ	INA	INA	INA	INA						
ETE	MJ	INA	INA	INA	INA						

End of life - Output flow Interior door											
Parameter	**Unit**	**A1-A3**	**A4 NO**	**A4 SE**	**A4 DK**						
CR	kg	INA	INA	INA	INA						
MR	kg	INA	INA	INA	INA						
MER	kg	INA	INA	INA	INA						
EEE	MJ	INA	INA	INA	INA						
ETE	MJ	INA	INA	INA	INA						
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

Additional Norwegian requirements

Greenhous gas emission from the use of electricity in the manufacturing phase
Norwegian Electricity 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 prosess (A3).

Data source	Amount	Unit
Econinvent v3.3 (2016)	36,8	gCO_2-eqv/kWh

Dangerous substances

- ☑ The product contains no substances given by the REACH Candidate list or the Norwegian priority list
- ☐ The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- ☐ The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- ☐ The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiften, Annex III), see table.

Transport
Transport from production site to construction site in Norway is 400 km. This is declared in Modul A4.

Indoor environment
Emission tests have been performed on the door after 28 days according to SS-EN ISO 16000-9:2006. The results from the tested product was 130µg/m2h TVOC, < 2 µg/m2h formaldehyde and no carcenogenic substance.

Carbon footprint
Carbon footprint has not been worked out for the product.The table below shows the contribution of biogenic and fossil emissions to the carbon footprint for each module.

Global warming potential (GWP) Climate door									
Parameter	**Unit**	**A1-A3**	**A4 NO**	**A4 SE**	**A4 DK**				
GWP	kg CO_2-ekv	-8,00E+00	4,46E+00	1,02E+01	3,01E+00				
- biogenic	kg CO_2-ekv	-1,04E+02	0,00E+00	0,00E+00	0,00E+00				
- fossil	kg CO_2-ekv	9,62E+01	4,46E+00	1,02E+01	3,01E+00				

Global warming potential (GWP) Interior door									
Parameter	**Unit**	**A1-A3**	**A4 NO**	**A4 SE**	**A4 DK**				
GWP	kg CO_2-ekv	-4,82E+01	4,22E+00	9,62E+00	2,85E+00				
- biogenic	kg CO_2-ekv	-1,04E+02	0,00E+00	0,00E+00	0,00E+00				
- fossil	kg CO_2-ekv	5,60E+01	4,22E+00	9,62E+00	2,85E+00				

Bibliography

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