epddanmark

ECO PLATFORM EPD VERIFIED

Owner: Lacuna A/S
No.: MD-23016-EN
Issued: 20-03-2023
Valid to: 20-03-2028

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Owner of declaration
Lacuna A/S
Industrivej 2, 5550 Langeskov
30545249

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

Declared product
Exterior facade folding doors with thermally modified beech and triple glazing, painted

Number of declared datasets/product variations: 1

Production site
Industrivej 2, 5550 Langeskov

Product use
Folding door in the facade of buildings, for renovation and in new buildings

Declared unit
1 m^2

Year of data
2021

EPD version
1

Issued: 20-03-2023
Valid to: 20-03-2028

Basis of calculation
This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☐Cradle-to-gate with modules C1-C4 and D
☒Cradle-to-gate with options, modules C1-C4 and D
☐Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

3. parts verifikator:

Ninkie Bendtsen

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and 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

Product information

Product description

The product materials are shown in the table below.

Material	Weight-% of declared product
Wood	29
Glass	59
Metal	7
Glass fiber	2
Additives (glue, paint..)	2
Plastic, rubber, silicone	1

Product packaging:

The sales packaging materials used are specified in the table below.

Packaging	Weight (kg)
Pallet (recycled wood)	4.3
OSB plates	2.3
Cardboard	0.7
PE foil	0.1
EPS	0.1

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of folding doors from the production site located in Langeskov. Product specific data are based on average values collected in the period 2021. Background data are based on a combination of GaBi data and supplier EPD's and are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Picture of product(s)

Hazardous substances

The folding doors do not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

(http://echa.europa.eu/candidate-list-table)

Essential characteristics

For technical specifications of the folding door please refer to the product declaration according to EN 14351-1, which can be obtained on request from Lacuna A/S. Further technical information can be obtained at the manufacturers website:

https://lacunaofdenmark.com/

Reference Service Life (RSL)

No reference service life is defined because the use stage is not declared.

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to one m^2 folding door.

Name	Value	Unit
Declared unit	1	m^2
Density	39	kg/m^2
Conversion factor to 1 kg.	0,026	-

Functional unit

Not defined

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804, and EN 17213.

Guarantee of Origin – certificates

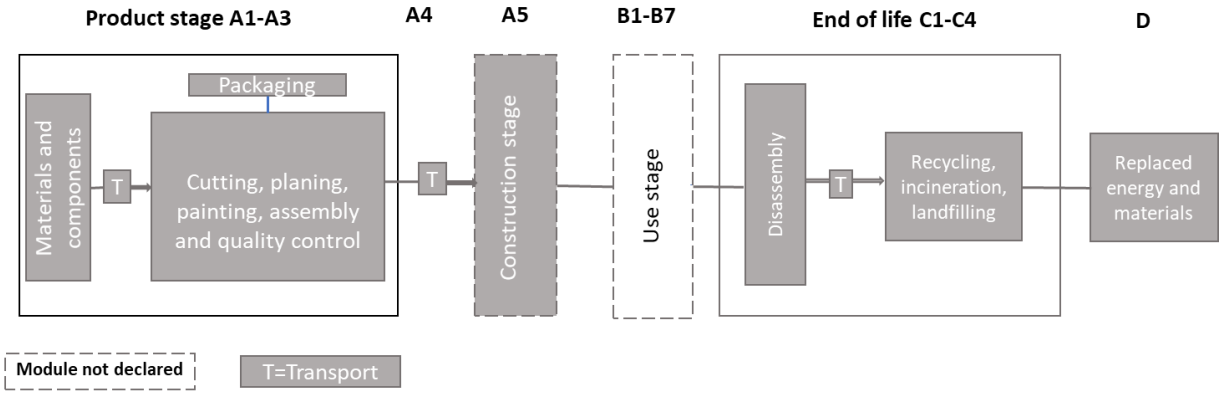
Foreground system:

The product is produced using national electricity grid mix.

Background system:

Upstream and downstream processes are modelled using the electricity sources, which the applied datasets are based on. This information is rarely specified in the background documentation of the Sphera and eco-invent datasets. However, it is typically based on national electricity grid mix.

Flowdiagram



System boundary

This EPD is based on a cradle-to-gate with options LCA including modules A1-A5, C1-C4 and D, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging and waste processing up to the ”end-of-waste” state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

In the production, the thermotreated wood profiles are cut, planed and painted. Other parts are received from suppliers. Finally, the doors are assembled and packed for shipping.

Construction process stage (A4-A5) includes:

The products are transported directly from Lacuna to the end customers.

In module A5, the sales packaging is disposed of and the folding doors are installed manually.

End of Life (C1-C4) includes:

The scenario for end-of-life is based on the standard scenario from the PCR EN 17213.

Dismantling of the doors is primarily a manual process. The distance to disposal facilities is 50 km.

Re-use, recovery and recycling potential (D) includes:

For recycled materials, an efficiency of max 90% is applied in accordance with PCR EN17213 and avoided materaials are only considered for primary materials in the product. Materials, which are incinerated with energy recovery at the end-of-life, replaces average Danish electricity production and thermal energy.

LCA results

ENVIRONMENTAL IMPACTS PER M²									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	5,86E+01	4,87E-01	1,57E+01	0,00E+00	6,69E-02	2,49E+01	2,59E+00	-2,98E+01
GWP-fossil	[kg CO_2 eq.]	8,95E+01	4,78E-01	2,87E+00	0,00E+00	6,57E-02	6,04E+00	3,42E-01	-2,97E+01
GWP-biogenic	[kg CO_2 eq.]	-3,12E+01	5,15E-03	1,28E+01	0,00E+00	7,07E-04	1,88E+01	2,25E+00	-4,04E-02
GWP-luluc	[kg CO_2 eq.]	1,75E-01	3,96E-03	1,63E-04	0,00E+00	5,43E-04	4,36E-04	1,18E-03	-1,42E-02
ODP	[kg CFC 11 eq.]	1,51E-06	6,17E-17	1,81E-15	0,00E+00	8,48E-18	6,67E-09	1,07E-15	-2,23E-12
AP	[mol H^+ eq.]	4,16E-01	1,55E-03	6,33E-03	0,00E+00	2,14E-04	1,08E-02	2,18E-03	-9,22E-02
EP-freshwater	[kg P eq.]	1,46E-03	1,43E-06	3,92E-07	0,00E+00	1,97E-07	1,69E-05	2,45E-06	-2,79E-05
EP-marine	[kg N eq.]	9,11E-02	7,18E-04	2,81E-03	0,00E+00	9,86E-05	4,76E-03	6,41E-04	-2,07E-02
EP-terrestrial	[mol N eq.]	1,04E+00	8,02E-03	3,43E-02	0,00E+00	1,10E-03	5,79E-02	6,86E-03	-2,29E-01
POCP	[kg NMVOC eq.]	2,66E-01	1,40E-03	7,19E-03	0,00E+00	1,92E-04	1,22E-02	2,16E-03	-5,17E-02
ADPm[1]	[kg Sb eq.]	2,86E-04	3,68E-08	3,16E-08	0,00E+00	5,05E-09	2,46E-07	3,01E-08	-3,13E-05
ADPf[1]	[MJ]	1,24E+03	6,43E+00	3,39E+00	0,00E+00	8,83E-01	7,19E+00	4,57E+00	-4,28E+02
WDP[1]	[m^3 world eq. deprived]	3,74E+01	4,19E-03	1,33E+00	0,00E+00	5,76E-04	2,30E+00	3,17E-02	-2,05E+00
Caption	GWP-total = Globale 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 = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER M²									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	ND	ND	ND	ND	ND	ND	ND	ND
IRP[2]	[kBq U235 eq.]	ND	ND	ND	ND	ND	ND	ND	ND
ETP-fw[1]	[CTUe]	ND	ND	ND	ND	ND	ND	ND	ND
HTP-c[1]	[CTUh]	ND	ND	ND	ND	ND	ND	ND	ND
HTP-nc[1]	[CTUh]	ND	ND	ND	ND	ND	ND	ND	ND
SQP[1]	-	ND	ND	ND	ND	ND	ND	ND	ND
Caption	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)								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								
Disclaimers	[1] The results of this environmental 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 PER M²									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1,11E+03	3,59E-01	1,22E+02	0,00E+00	4,93E-02	1,95E+02	1,07E+01	-1,33E+02
PERM	[MJ]	3,24E+02	0,00E+00	-1,21E+02	0,00E+00	0,00E+00	-1,93E+02	-1,02E+01	0,00E+00
PERT	[MJ]	1,43E+03	3,59E-01	1,01E+00	0,00E+00	4,93E-02	2,09E+00	5,24E-01	-1,33E+02
PENRE	[MJ]	1,21E+03	6,44E+00	6,70E+00	0,00E+00	8,84E-01	1,72E+01	4,57E+00	-4,29E+02
PENRM	[MJ]	3,55E+01	0,00E+00	-3,31E+00	0,00E+00	0,00E+00	-1,00E+01	0,00E+00	0,00E+00
PENRT	[MJ]	1,24E+03	6,44E+00	3,39E+00	0,00E+00	8,84E-01	7,19E+00	4,57E+00	-4,29E+02
SM	[kg]	3,78E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	2,86E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	2,97E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m^3]	8,48E+00	4,11E-04	3,13E-02	0,00E+00	5,64E-05	5,41E-02	9,80E-04	-1,68E-01
Caption	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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

WASTE CATEGORIES AND OUTPUT FLOWS PER M²									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1,18E-01	3,24E-10	1,29E-09	0,00E+00	4,46E-11	4,87E-09	4,93E-10	-4,77E-07
NHWD	[kg]	1,46E+01	9,56E-04	1,08E-01	0,00E+00	1,31E-04	1,68E+01	1,73E+01	-3,30E+00
RWD	[kg]	4,65E-02	7,79E-06	5,92E-05	0,00E+00	1,07E-06	1,19E-04	4,23E-05	-1,12E-02
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]	6,38E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,58E+00	0,00E+00	0,00E+00
MER	[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
EEE	[MJ]	0,00E+00	0,00E+00	1,86E+01	0,00E+00	0,00E+00	3,10E+01	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	5,92E+01	0,00E+00	0,00E+00	1,30E+02	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Eksporteret elektrisk energi; EET = Eksporteret termisk energi								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

BIOGENIC CARBON CONTENT PER M²		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	5,1
Biogenic carbon content in accompanying packagaing	[kg C]	3,7
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Additional information

LCA interpretation

The materials, which are most important for the results, are the glass, the alu top frame and the thermowood.

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck, 27t payload capacity	-
Transport distance	150	km
Capacity utilisation (including empty runs)	61	%

Installation of the product in the building (A5)

Scenario information	Value	Unit
Sales packaging for incineration with energy recovery	7,4	kg

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	39	Kg
Glass recycling	30	%
Glass for landfill	70	%
Wood for incineration with energy recovery	95	%
Wood for landfill	5	%
Metals for recycling	95	%
Metals for landfill	5	%
Synthetic materials for recycling	95	%
Synthetic materials for landfill	5	%

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Value	Unit
Avoided materials	7,9	Kg
Electrical energy recovered	49,6	MJ
Thermal energy recovered	189,2	MJ

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.

References

Publisher	epddanmark www.epddanmark.dk
Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	FORCE TECHNOLOGY FORCE Technology Applied Environmental Assessment Park Allé 345 DK-2605 Brøndby https://forcetechnology.com/da
LCA software /background data	GaBi ts database version 2021.2 incl. databases + Ecoinvent 8.3
3rd party verifier	Ninkie Bendtsen NIRAS A/S Sortemosevej 19 3450 Allerød www.niras.dk

General programme instructions
General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804
DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 17213
EN 17213:2020 "Windows and doors – Environmental Product Declarlations – Product category ruels for windows and pedestrian doorsets"

EN 15942
DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025
DS/EN ISO 14025:2010 – ” Environmental labels and declarations – Type III environmental declarations – Principles and procedures”

ISO 14040
DS/EN ISO 14040:2008 – ” Environmental management – Life cycle assessment – Principles and framework”

ISO 14044
DS/EN ISO 14044:2008 – ” Environmental management – Life cycle assessment – Requirements and guidelines”