epddanmark

ECO PLATFORM EPD VERIFIED

Owner: Idealcombi A/S
No.: MD-24151-EN
Issued: 10-12-2024
Valid to: 10-12-2029

3rd PARTY **VERIFIED**

EPD

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

Owner of declaration
Idealcombi A/S
Nørre Allé 51
7760 Hurup
VAT no. 25829328

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

Declared product(s)
The EPD covers 1 specific product variation from Idealcombi A/S. The declared product is listed below as a specific model type of window:

- Frame I / Nation I Turn/Tilt window with triple glazed unit

Number of declared datasets/product variations: 1

Production site
Idealcombi A/S
Nørre Allé 51
7760 Hurup
Denmark

Use of Guarantees of Origin
☐ No certificates used.
☒ Electricity covered by GoO
☐ Biogas covered by GoO

Declared unit
1 m^2 of window.

Year of production site data (A3)
2023/2024

EPD version
1

Issued: 10-12-2024
Valid to: 10-12-2029

Basis of calculation
This EPD is developed and verified 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

Third party verifier:

Kim Christiansen

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 LCA contains data for Frame I Turn/Tilt window with 122 mm frame and triple glazed unit.

This EPD will reflect both Frame I and Nation I design as the only minor difference is in the aluminium weight. The LCA include weights for Frame I as Frame I contains approx. 30 grams more aluminium than Nation I per m^2 window. This EPD represent this product group in a worst-case scenario.

The Frame I / Nation I windows are the inward opening addition to the traditional, low-maintenance designed Frame IC / Nation IC windows. Frame I / Nation I consists of finger jointed pine wood on the inside and an external aluminium cladding. The windows are triple glazed.

The main product components are shown in the table below.

Material	Weight-% of declared product
Insulated Glass Unit	65%
Wood	19%
Aluminium (5.86% post-consumer and 84.70% pre-consumer scrap)	6%
Plastics	0%
EPDM rubber	1%
Steel and other metal components	8%
Surface treatments	1%

The Frame I / Nation I windows come in different opening functions and with different sizes, colours, frame dimensions and accessories.

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Weight of packaging material (kg)	Weight-% of packaging
Pallet and board	2.9	100%
Total	2.9	

Representativity

This declaration, including data collection and the modelled foreground system including results, represents the production of Frame IC / Nation IC on the production site located in Hurup, Denmark. Product specific data are based on average values collected in the period 2023/2024. Background data are based on Ecoinvent v. 3.10 and product specific EPD's that 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.

The parameter results are calculated for a standard sized element of 1.23 m x 1.48 m and then scaled to the declared unit of 1 m^2 window.

Hazardous substances

Frame IC / Nation IC does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation" exceeding 0.1% by weight.

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

Danish Indoor Climate Labelling certifies that the product group "Windows and external doors of wood/aluminium and composite" from Idealcombi A/S has been approved and awarded a labelling licence.

(https://indeklimamaerket.dk)

Product use

Windows designed for both renovation and new buildings mainly in Denmark, UK, Iceland and Ireland.

Essential characteristics

Windows and external pedestrian door sets are covered by harmonised technical specification EN 14351-1. Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

Further technical information can be obtained by contacting the manufacturer or on the

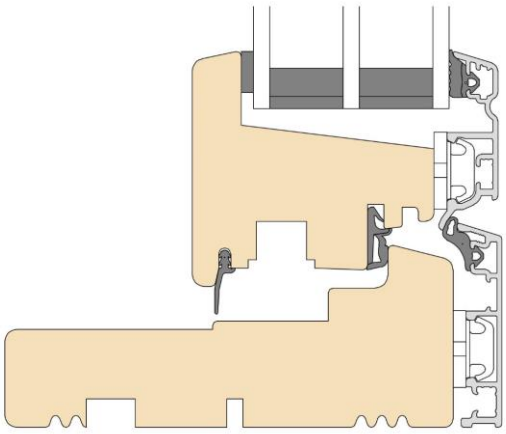
manufacturers website: https://idealcombi.dk/ or https://idealcombi.com/.

Reference Service Life (RSL)

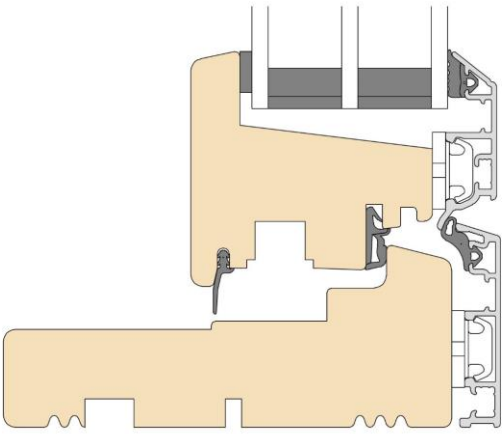
A RSL value has not been set, as the use phase is not declared.

Picture of products

Frame I
TGU

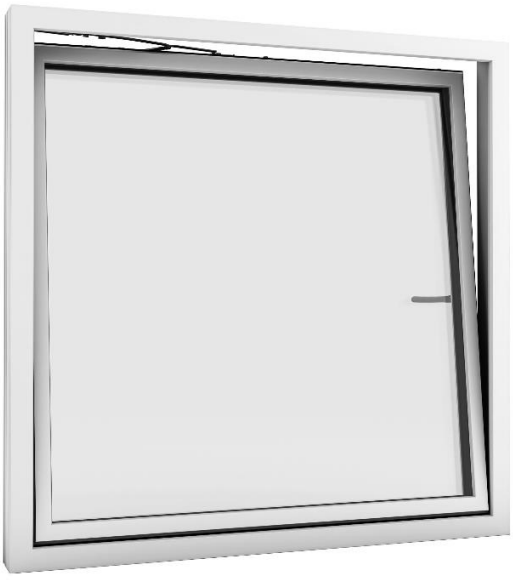


Nation I
TGU



Frame I

Nation I



LCA background

Declared unit

The LCI and LCIA results in this EPD relates to 1 m^2 of window.

Frame I / Nation I window with triple glazed unit

Name	Value	Unit
Declared unit	1	m^2
Density	36.21	kg/ m^2
Conversion factor to 1 kg.	0.0276	-

Functional unit

Not defined

PCR

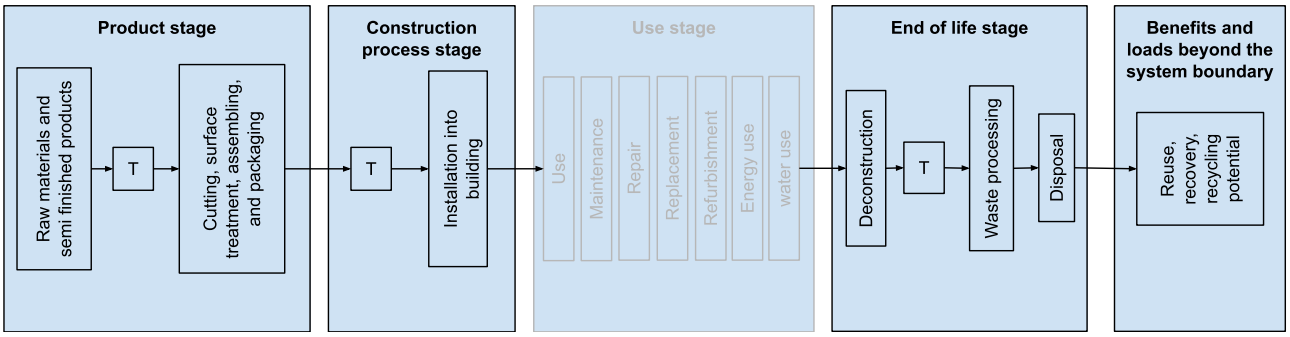
This EPD is developed according to the Core rules for the product category of construction products in EN 15804, and EN 17213:2020 Product category rules for windows and pedestrian door sets.

Energy modelling principles

Foreground system: The product is produced using energy covered by GO in production.

Background system: Ecoinvent 3.10 database is used in the background system. Up- and downstream processes are modelled using an average electricity grid mix depending on the specific datasets geography.

Flow diagram



System boundary

This EPD is based on a cradle-to-gate LCA with options module A4-A5, C1-C4 and D, in which all relevant and crucial processes have 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.

The main raw materials and semi-finished products used in the production of windows and doors are wood, glass, and aluminium. There are also used surface treatments for the wood and small plastic and metal bits. The main raw materials and semi-finished products are mainly produced in EU.

Transport of the raw materials and semi-finished products are conducted mainly by truck or ship.

The production of the windows and doors take place in Hurup in Denmark. The production includes finger jointing of the wood, cutting to length, profiling wood, surface treatment, assemble products and packaging.

Construction process stage (A4-A5) includes:

The transportation from the manufacturer to the building site is conducted by trucks. It is assumed that the window is installed at a building site in Denmark. The distance from manufacturer to building site is assumed to be 150 km in accordance with DS/EN 17213:2020.

Installation of the window is assumed to be a manual process. Product packaging is disposed.

End of Life (C1-C4) includes:

The window is removed from the building. Deconstruction and demolition of the window is assumed to be a manual process.
The transportation from the deconstruction and demolition site to waste processing and disposal is done by truck. The window is disassembled into material fractions of glass, metal, wood, and plastic. The waste treatment of each material is modelled according to average Danish waste handling procedures[1]. 100 % of glass and metal is recycled, 91% of plastic is recycled, 9% of plastic is landfilled, and 100% of wood is used for energy recover.

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

The materials that are recycled in all modules replace other materials and those that are incinerated replace energy production. The recycled glass is assumed to replace virgin glass. The metal is assumed to replace virgin metals. The plastic is assumed to replace virgin plastic. The recovered energy is used for heat and electricity. The energy used for electricity is assumed to replace the market mix of electricity. The energy used for heat is assumed to replace the heat mix in the capital region of Denmark.

[1] https://www.ads.mst.dk/Forms/Reports/ReportsBehandledeMaengderOverview.aspx

LCA results

ENVIRONMENTAL IMPACTS PER m^2									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	5.35E+01	8.98E-01	4.85E+00	0.00E+00	5.55E-01	1.20E+01	0.00E+00	-6.94E+01
GWP-fossil	[kg CO_2 eq.]	6.75E+01	8.97E-01	4.41E-01	0.00E+00	5.54E-01	2.21E+00	0.00E+00	-6.89E+01
GWP-biogenic	[kg CO_2 eq.]	-1.42E+01	5.14E-04	4.41E+00	0.00E+00	3.17E-04	9.81E+00	0.00E+00	-1.36E-03
GWP-luluc	[kg CO_2 eq.]	2.14E-01	3.05E-04	1.22E-03	0.00E+00	1.88E-04	4.41E-04	0.00E+00	-4.36E-01
ODP	[kg CFC 11 eq.]	4.39E-06	1.80E-08	7.59E-09	0.00E+00	1.11E-08	1.04E-08	0.00E+00	-1.16E-06
AP	[mol H^+ eq.]	4.24E-01	4.03E-03	3.46E-03	0.00E+00	2.49E-03	2.29E-02	0.00E+00	-4.77E-01
EP-freshwater	[kg P eq.]	1.82E-02	6.16E-05	2.41E-04	0.00E+00	3.80E-05	2.82E-04	0.00E+00	-2.34E-02
EP-marine	[kg N eq.]	9.42E-02	1.58E-03	6.76E-04	0.00E+00	9.78E-04	1.05E-02	0.00E+00	-7.96E-02
EP-terrestrial	[mol N eq.]	1.09E+00	1.73E-02	6.96E-03	0.00E+00	1.07E-02	1.17E-01	0.00E+00	-8.73E-01
POCP	[kg NMVOC eq.]	3.10E-01	6.20E-03	2.12E-03	0.00E+00	3.83E-03	2.84E-02	0.00E+00	-2.75E-01
ADPm[1]	[kg Sb eq.]	1.28E-03	2.85E-06	1.64E-05	0.00E+00	1.76E-06	1.48E-05	0.00E+00	-4.22E-04
ADPf[1]	[MJ]	9.74E+02	1.28E+01	5.95E+00	0.00E+00	7.92E+00	8.92E+00	0.00E+00	-9.07E+02
WDP[1]	[m^3 world eq. deprived]	3.81E+01	6.39E-02	3.05E-01	0.00E+00	3.95E-02	5.31E-01	0.00E+00	-4.71E+01
Caption	GWP-total = Global 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 = Acidification; 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 depletion potential								
	The numbers are declared in scientific notation, e.g. 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 m^2									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	8.42E-06	8.70E-08	3.23E-08	0.00E+00	5.37E-08	2.55E-07	0.00E+00	-5.30E-06
IRP[2]	[kBq U235 eq.]	6.92E+00	1.70E-02	4.47E-02	0.00E+00	1.05E-02	1.42E-01	0.00E+00	-8.75E+00
ETP-fw[1]	[CTUe]	7.71E+02	3.34E+00	1.23E+01	0.00E+00	2.06E+00	1.01E+01	0.00E+00	-5.29E+02
HTP-c[1]	[CTUh]	1.02E-06	6.06E-09	1.71E-08	0.00E+00	3.74E-09	7.46E-09	0.00E+00	-7.43E-07
HTP-nc[1]	[CTUh]	1.38E-06	9.16E-09	2.07E-08	0.00E+00	5.65E-09	5.71E-08	0.00E+00	-7.03E-07
SQP[1]	-	4.51E+03	9.60E+00	2.33E+00	0.00E+00	5.93E+00	8.70E+00	0.00E+00	-2.19E+02
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, e.g. 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 m^2									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	2.75E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERM	[MJ]	1.32E+02	0.00E+00	-3.62E+01	0.00E+00	0.00E+00	-9.59E+01	0.00E+00	0.00E+00
PERT	[MJ]	4.07E+02	0.00E+00	-3.62E+01	0.00E+00	0.00E+00	-9.59E+01	0.00E+00	0.00E+00
PENRE	[MJ]	9.74E+02	1.28E+01	5.95E+00	0.00E+00	7.92E+00	8.92E+00	0.00E+00	-9.07E+02
PENRM	[MJ]	1.86E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.82E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.16E+03	1.28E+01	5.95E+00	0.00E+00	7.92E+00	-9.33E+00	0.00E+00	-9.07E+02
SM	[kg]	1.76E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m^3]	3.24E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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, e.g. 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 m^2									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[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
NHWD	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.51E-02	0.00E+00
RWD	[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
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]	4.85E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.88E+01	0.00E+00	0.00E+00
MER	[kg]	1.19E+00	0.00E+00	2.88E+00	0.00E+00	0.00E+00	7.39E+00	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	-8.19E+00	0.00E+00	0.00E+00	-2.17E+01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	-2.44E+01	0.00E+00	0.00E+00	-6.47E+01	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 = Exported electrical energy; EET = Exported thermal energy								
	The numbers are declared in scientific notation, e.g. 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 m^2		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	3.96E+00
Biogenic carbon content in accompanying packaging	[kg C]	1.20E+00
Note		1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

Additional information

LCA interpretation

The most significant contribution to the impact category GWP-total come from the input of materials. Especially the glass contributes to the GWP-total impact category.

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Lorry	-
Transport distance (150 km and 150 km return empty)	300	km
Capacity utilisation (including empty runs)	50	%

Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials	0.2	kg/m^2
Waste materials	2.9	kg/m^2

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	36.2	kg/m^2
Collected with mixed waste	0	kg/m^2
% of glass for recycling	100	%
% of wood for energy recovery	100	%
% of metal for recycling	100	%
% of plastic for recycling	91	%
% of plastic for landfilling	9	%

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Value	Unit
Displaced material	26.3	kg/m^2
Energy recovery from waste incineration	103.4	MJ/m^2

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A2 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A2 chapter 7.4.2.

References

Publisher	epddanmark www.epddanmark.dk Template version 2024.1
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	NORDIC LCA Nordic LCA ApS C.A Olesens Gade 4 9000, Aalborg, Denmark LCA-specialist: Emil Pedersen
LCA software /background data	Idealcombi LCA-tool by Nordic LCA v.1.0 and Ecoinvent v. 3.10 EN 15804 reference package 3.1
3rd party verifier	Kim Christiansen Kimconsult.dk Marienborg Alle 91C 2860, Søborg, Denmark

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
DS/EN17213:2020 – "Windows and doors – Environmental Product Declaration – Product category rules for windows and pedestrian door sets"

EN 15942
DS/EN 15942:2021 – " 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”