

Owner: Living Better A/S  
No.: MD-24009-EN  
Issued: 15-03-2024  
Valid to: 15-03-2029

3<sup>rd</sup> PARTY VERIFIED

**EPD**

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804





**Owner of declaration**

Living Better A/S  
Borupvej 1c  
DK-7330 Brande  
CVR: 32 31 72 86



LIVING BETTER

**Issued:**

15-03-2024

**Valid to:**

15-03-2029

**Basis of calculation**

This EPD is developed and verified in accordance with the European standard EN 15804+A2.

**Programme**

EPD Danmark  
[www.epddanmark.dk](http://www.epddanmark.dk)



- Industry EPD
- Product EPD

**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.

**Declared product(s)**

The EPD covers 6 specific product variations from Living Better A/S. The declared products are listed below as specific model types of windows.

- Top slide window, wood/aluminium
- Top slide window, pine wood
- Turn-tilt window, wood/aluminium
- Turn-tilt window, pine wood
- Ventilation window (CWT), top swing, wood/aluminium
- Ventilation window (CWT), top swing, pine wood

**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

Number of declared datasets/product variations: 6

**Production site**

RODA, UAB, Gireles g. 20 in Kaiadorys, Lithuania

**Use of Guarantees of Origin**

- No certificates used
- Electricity covered by GoO
- Biogas covered by GoO

**Declared/ functional unit**

1 m<sup>2</sup> of windows

**Year of production site data (A3)**

2022

**EPD version**

1

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:

David Althoff Palm, Dalemarken AB

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	X	X	X	X	X	X	X	X	X	X	X	X



# Product information

## Product description

This declaration describes a total of 6 products all within the segment windows from Living Better A/S. The windows are split into 3-layer glass windows (St.) and 2+1 layer glass ventilation (Vt.) window CWT (Clima Win Tech). Additionally, each window is grouped in relation to the construction which is divided into 2 subgroups: Pine and pine/aluminum.

A top slide window is a type of window where the sash is hinged at the top and opens outward from the bottom. The operation is similar to that of a casement window. A casement window is hinged either on the left or right side and when the window is opened, it swings outward like a door. This top slide window opens by pivoting at the top, allowing the bottom of the window to swing outward. This design provides ventilation while preventing rain from entering the space, as the open window acts as a canopy. Additionally, this type of window saves space since the window opens outward and therewith doesn't encroach on the interior space, making it suitable for areas with limited space.

A turn-tilt window is a type of window that combines two primary functions: turning (swinging) and tilting. This versatile design allows the window to be opened in two different ways, providing flexibility in terms of ventilation and cleaning.

A top swing window is an outward-opening window with a handle at the bottom that opens from the bottom and swings outward. Top swing windows have hinges on the sides, allowing the window sash to tilt 170 degrees outside the frame around a horizontal axis. This provides easy access to the exterior of the window from inside the residence when it needs cleaning. Top swing windows are a popular and highly suitable choice for multi-story buildings.

The ventilation window differs from the 3-layer glass window, as it consists of a 6mm internal glass pane and a 2 layer energy glass pane facing the exterior, in which valves are milled discreetly into the frame/sash of the gap between the 6mm internal glass pane and the 2 layer energy window glass facing the exterior. The air valves have been developed and tested in Denmark so that they

specifically fit the Danish building regulations and adapt themselves to the severe Danish weather conditions. The fresh air enters through the air valves in the bottom frame of the outer frame. From here, the air is preheated as it moves up between the inner glass pane and the outer 2-layer glass. The gap between the inner glass pane and the outer 2-layer glass is called the ventilation chamber. A set of valves which automatically regulate the air flow into the building are installed in the upper frame. The valves do not require electricity. They are controlled by wax thermostats - called actuators - which adjust themselves according to the outside temperature and the temperature in the ventilation chamber. They expand in heat and contract in cold and thereby open and close the valves depending on the outside temperature and the temperature in the ventilation chamber. The thermostat is sealed with a membrane, so it requires no maintenance.

The main product components are shown in the table below.

Material	Weight-% of declared product					
	St. window (W/A), top-slide	St. window (P), top-slide	St. window (W/A), turn-tilt	St. window (P), turn-tilt	Vt. Window (W/A), top swing	Vt. Window (P), top swing
Actuator	0.0	0.0	0.0	0.0	0.2	0.3
Aluminium	8.5	1.2	6.2	1.0	8.5	2.7
Adhesive	3.0	2.6	3.6	3.8	3.1	3.0
Glass	54.6	58.5	44.4	47.0	44.7	47.0
Magnet	0.0	0.0	0.0	0.0	0.01	0.01
Plastic	1.4	1.3	1.5	1.2	1.6	1.3
Rubber	0.1	0.1	0.1	0.1	0.1	0.1
Stainless steel	0.1	0.5	0.4	0.5	0.0	0.3
Steel	1.9	2.1	2.5	2.7	4.1	4.8
Wood	30.4	33.8	41.3	43.7	37.4	40.3
Zinc	0.0	0.0	0.0	0.0	0.2	0.2
<b>Sum</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

## 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	2.5-3.6	99.2
PVC film	0.02-0.03	0.8
Total	2.5-3.6	100



## Representativity

This declaration, including data collection and the modeled foreground system and results, represents the production of 6 variations of energy windows varying from 3-layer glass windows to 2+1 layer glass ventilation windows using specific material composition based on set dimensions of 1.23m x 1.48m with data provided from the production site located in Lithuania. The ventilation windows cover the Vent-2000 models from Living Better A/S. Product specific data are based on average values collected in the period 2022. Background data are based on datasets from LCA for experts 10.7 and Ecoinvent v3.8. Some datasets are more than 10 years old but included to avoid datagaps. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

## Hazardous substances

The windows from Living Better A/S does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

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

## Product(s) use

Windows are installed into the walls of buildings to ensure that natural light enters the building. Additionally, ventilation windows aim to create better ventilation. Therefore, they utilize thermal heating of the air between the window layers, which also results in sound-absorbing effect and sound insulation of the windows.

## Essential characteristics

The following Technical Specifications are determined for each declared product:

Specification	St. window (W/A), top-slide	St. window (P), top-slide	St. window (W/A), turn-tilt	St. window (P), turn-tilt	Vt. Window (W/A), top swing	Vt. Window (P), top swing
Glass type	Energy glass (T4-16A. TPS-F4-18A. TPS-T4)	Energy glass (4NRG-12A. TPS-F4-12A. TPD-4NRG)	Energy glass (4NRG-16A. TPS-F4-16A. TPD-4NRG)	Energy glass (4NRG-16A. TPS-F4-16A. TPS-4NRG)	ECLAZ (F4-20A. TGI CZ-[SGG]T4 ECLAZ)	Energy glass (T4-16A. TGI CZ-[SGG]T4 ECLAZ)
Glass layer	3	3	3	3	2+1	2+1
U value: Uw [W/m <sup>2</sup> k]	0.82	1,00	0.89	0.89	0.98	0.98
g <sub>g</sub> value	0,55	0,63	0,62	0,62	0,63	0,63
Fr value	0.75	0.75	0.68	0.68	0.73	0.73
Eref value [kWh/m <sup>2</sup> ]	6.9	2.9	2.1	2.1	1.8	1.8

The windows are additionally covered by harmonised technical specification EN 14351-1, 4.8, EN 10077-2, EN410, EN12210 and EN12207. Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

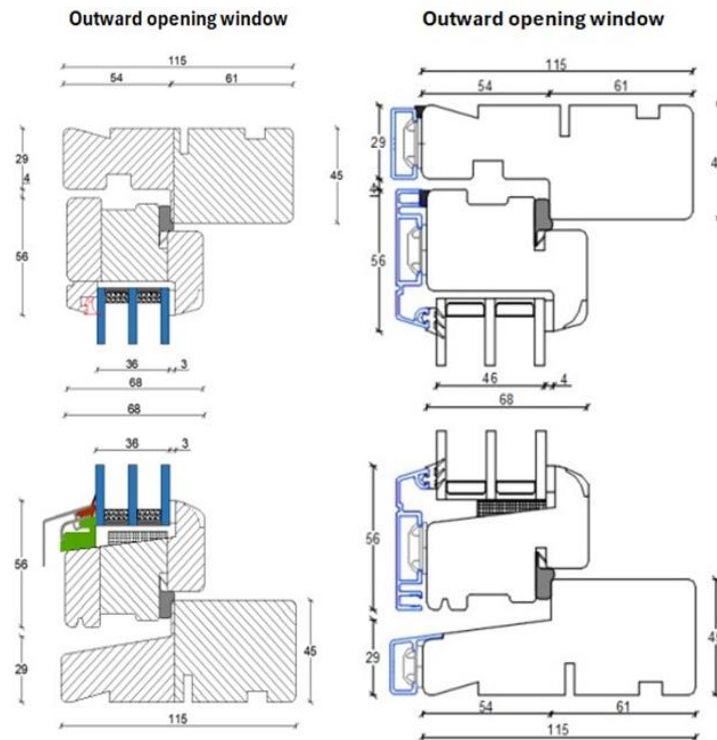
Further technical information can be obtained by contacting the manufacturer or on the manufacturer's website: <https://livingbetter.dk/>

## Reference Service Life (RSL)

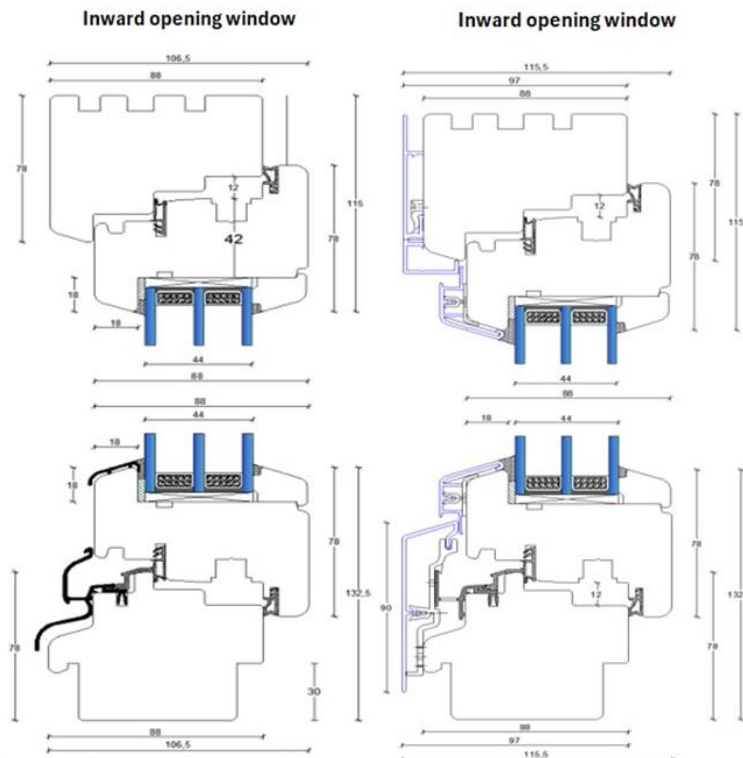
The reference service life (RSL) of the product is set to 50 years for the pine windows and 60 years for the aluminum and wood windows according to the main product equivalent to "Windows, outer walls" in the lifetime table of [LCABuild](#).



Picture of product(s)

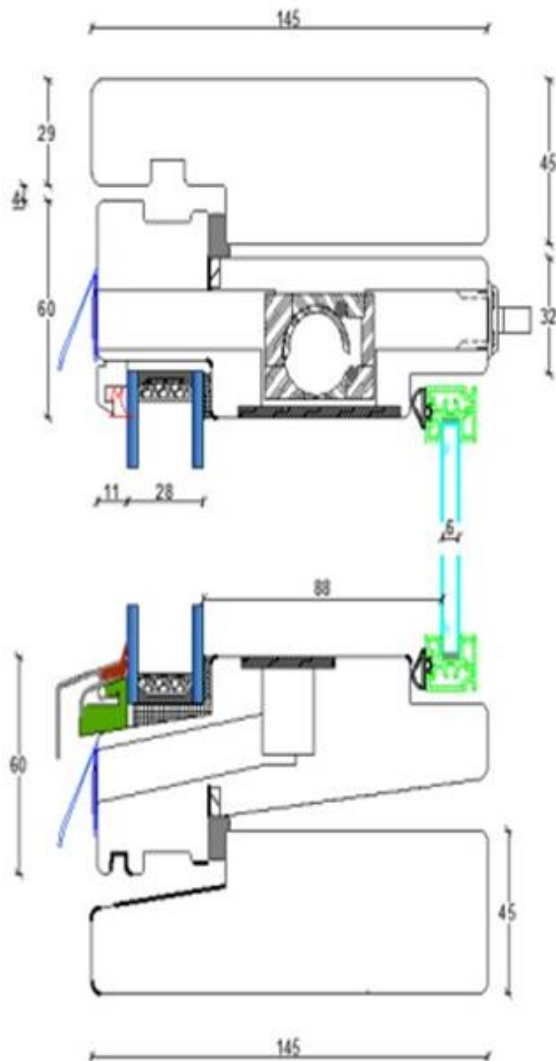


**Cross section of an outward opening top slide window, pine (left) and wood/aluminium (right). The figures show a vertical section of the elements with the upper frame and sash and bottom frame and sash. The cross-sectional drawings depict outdoor conditions to the left and indoor conditions to the right.**

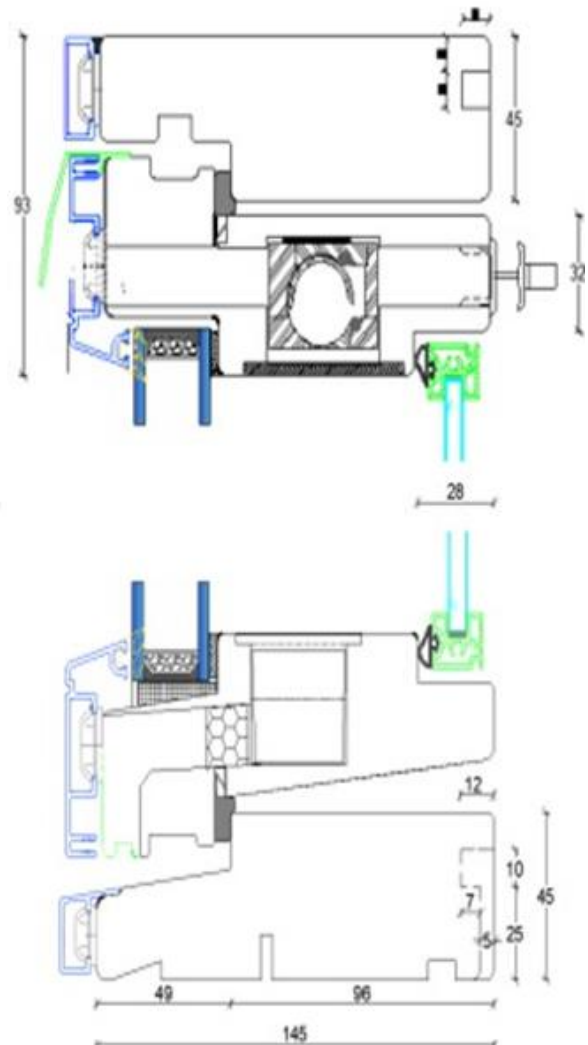


**Cross section of an inward opening turn-tilt window, pine (left) and wood/aluminium (right). The figures show a vertical section of the elements with the upper frame and sash and bottom frame and sash. The cross-sectional drawings depict outdoor conditions to the left and indoor conditions to the right.**

**Outward opening Ventilation window**



**Outward opening Ventilation window**



**Cross section of an outward opening top swing ventilation window, pine (left) and wood/aluminium (right). The figures show a vertical section of the elements with the upper frame and sash and bottom frame and sash. The cross-sectional drawings depict outdoor conditions to the left and indoor conditions to the right.**



# LCA background

## Declared unit

The LCI and LCIA results in this EPD relate to 1 m<sup>2</sup> of energy windows in the form of a 3-layer glass window and 2+1 layer glass ventilation window with the standard dimensions 1.23m x 1.48m based on *DS/EN 17213:2020 for Windows and doors* at 1.23m x 1.48m.

Name	St. window (W/A), top-slide	St. window (P), top-slide	St. window (W/A), turn-tilt	St. window (P), turn-tilt	Vt. Window (W/A), top swing	Vt. Window (P), top swing
Declared unit, m <sup>2</sup>	1	1	1	1	1	1
Area density, kg/m <sup>2</sup>	43.12	40.23	47.94	45.27	58.72	55.83
Conversion to kg	0.0232	0.0249	0.0209	0.0221	0.0170	0.0179

## Functional unit

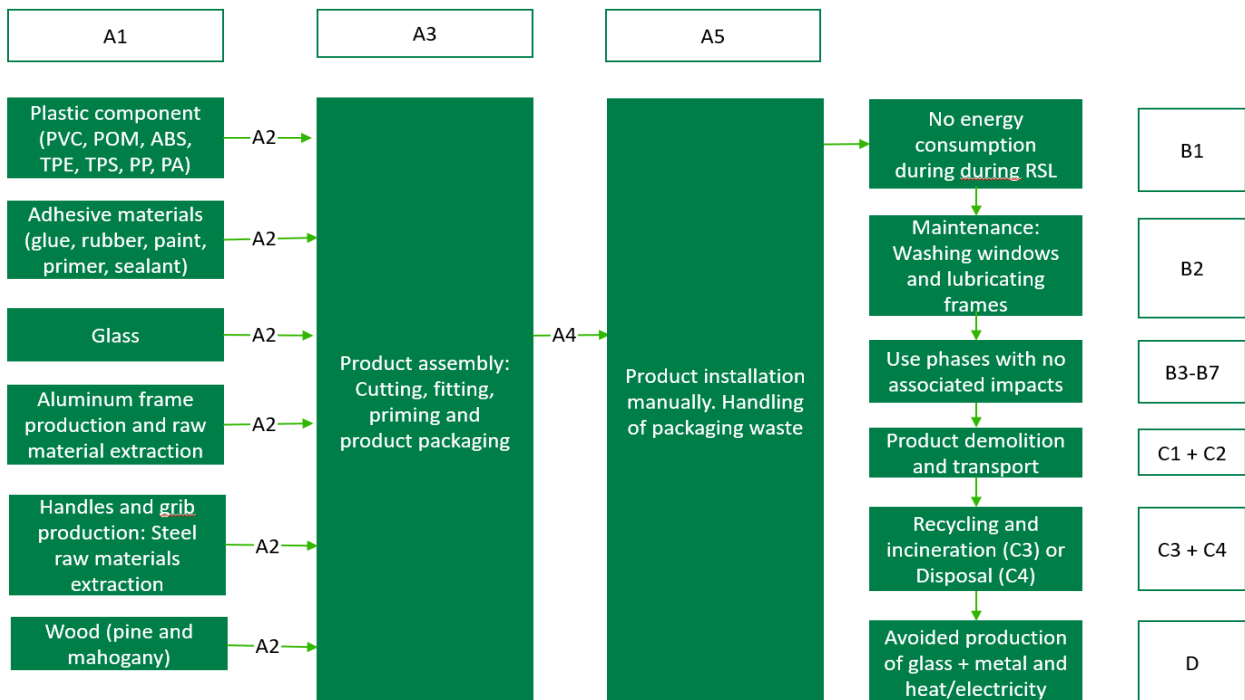
Not defined.

## PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804 and follows the principles

## Flowdiagram

The process diagram below represents the life cycle of a window product from Living Better A/S.



of the DS/EN 17213:2020 for Windows and Doors as well as *NPCR 014 PART B for Windows and doors* as it is not updated for the +A2 version.

## Energy modelling principles

Foreground system:

No guarantees of origin or certificate for green electricity or energy production are used in manufacturing. Consumption of electricity is modelled with the country specific residual electricity grid mix. Consumption of heat is modelled with average data, representative for the geographical area, which in this case is Lithuania.

Background system:

Other processes upstream and downstream from the production are modelled with processes from the LCA for experts database 2023.2 that is based on average data.



**System boundary**

This EPD is based on a cradle-to-grave LCA, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follow 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.

Wood and aluminum for the frame are delivered to RODA, where they are cut into the correct size. The frames are then primed and painted. Additionally, glass, fittings and brackets are delivered in the correct size and are thus ready to be directly assembled with the frame using a variety of adhesives.

For the ventilation windows Living Better A/S purchase and assemble the valves and ventilation unit which consists of an actuator among other parts. This is stored at Living Better A/S before being sent to RODA in Lithuania.

Only windows and doors are produced at the RODA factory, and thus factory data for energy is based on the measured annual energy consumption. Despite factors such as the produced amount of product per time influencing the energy consumption, the chosen allocation is done per m<sup>2</sup>, which is a measured constant for the whole production, and which better relates to the declared unit. For the outgoing packaging, pallets and PVC film is fitted to each set of windows that is shipped to customers, it is assumed legitimate

to allocate the mass of packaging based on the window mass.

The windows from Living Better A/S are installed in Northern Europe.

**Construction process stage (A4-A5) includes:**

In the construction phase, it is assumed that the transport to the customer (A4) consists of smaller deliveries through direct sales at a distance of 2000 km with empty driving remaining. The assembly (A5) is expected to be done manually (<2.5 meter height) with few auxiliary tools. As detailed in the cPCR EN 17213:2020, the use of materials during installation should be calculated for the individual building and thus falls under the cut-off criterion for the system boundary. For this reason, the results in the EPD relate mainly to waste treatment of the product packaging.

**Use stage (B1-B7) includes:**

The use phase includes the total period from installation (A5) to end of life (C1-C4), during which the product is active. As defined in the standard EN 17213:2020, the thermal energy balance should be calculated for the individual building based on the technical specifications that appear in this EPD.

Furthermore, the use phase is largely defined by maintenance (B2), which is based on the standard scenario described in EN 17213:2020. The specific consumption of water (0.4 l) and soap (0.02 l) per year is based on the specific maintenance requirements for the Living Better A/S windows. It is specified in cPCR EN 17213:2020, section 6.3.4.4.2, that the maintenance (B2) should include the replacement and repair of worn or damaged components. The following table indicates the replacement of components over the lifetime of the window (50 - 60 years).

Component	Unit	Value
Sealing strip (15 years)	Times/RSL	3
Fittings and brackets (25 years)	Times/RSL	1
Glazing (25 years)	Times/RSL	1

Modules B3, B4, and B5 do contribute to the environmental impacts, as it is estimated that there is no need for replacement or repair during the products' lifetime as well as renovation of the





building in which the product is placed during the product's expected lifetime. The declared products do not contain any electrical devices, e.g. motor for shutters. For this reason, there is neither operational energy nor water consumption (B6-B7) associated with the use phase. These modules therefore all appear empty.

**End of Life (C1-C4) includes:**

This EPD is aimed at a Northern European market. Municipal incineration, landfill and recycling are therefore expected to be carried out in each respective country.

Dismantling (C1) of windows is a manual process (<2.5 meter height) and the use of tools other than ordinary tools is therefore not expected. After demolition, 100% of the windows are sent to a recycling facility where they are crushed and sorted and then sent to additional waste handling. According to the PCR DS-EN 17213:2020, disposal of glass must be modelled as 30% recycling and 70% landfill, while for the non-glass components 95% recycled and 5% landfilled, see Figure B.1 and B.3. The process of recycling is modelled in C3 while landfilling is modelled in C4.

The actuator and the magnet are destroyed in the crushing, and is therefore landfilled 100% (C4).

Plastic, wood, paint, and the various adhesives are all incinerated and are assumed to be processed at a municipal incineration plant (C3).

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

According to EN 17213:2020, Annex B.3, 70% of glass and 5% of non-glass is landfilled, while the remaining fractions are either incinerated or recycled.

In Northern Europe, crushed glass shards are mainly used in the production of new glass, but also in the production of glass wool. In both the production of new glass and glass wool, glass shards from the energy windows replace virgin raw materials in production. Recycled glass thus replaces lime, soda ash, clay and dolomite since these are the most used materials in the production of new glass and glass wool. Sorted steel and aluminum, and zinc, which is also part of the window material composition, is used as an input in the production of new metals. Only virgin materials are credited in D.

The incineration plant for combustible components have an end-of-life energy utilization with a distribution of 20% electricity, 75% district heating and a waste of 5%. Electricity is assumed to replace an average supply mix in Europe, while the production of district heating entails an avoided production and burning of natural gas at a cogeneration plant.



# LCA results

## Top slide window, wood/aluminium

ENVIRONMENTAL IMPACTS PER m2												
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	6,74E+01	1,09E-02	4,22E+00	0,00E+00	3,83E+01	0,00E+00	0,00E+00	8,12E-01	2,55E+01	1,48E+00	-2,32E+01
GWP-fossil	kg CO <sub>2</sub> eq.	9,29E+01	1,08E-02	1,13E-01	0,00E+00	3,78E+01	0,00E+00	0,00E+00	8,03E-01	5,80E+00	2,99E-01	-2,32E+01
GWP-bio-genic	kg CO <sub>2</sub> eq.	-2,55E+01	2,46E-05	4,10E+00	0,00E+00	4,65E-01	0,00E+00	0,00E+00	1,84E-03	1,97E+01	1,18E+00	-7,08E-03
GWP-luluc	kg CO <sub>2</sub> eq.	5,21E-02	1,01E-04	2,05E-05	0,00E+00	2,04E-02	0,00E+00	0,00E+00	7,54E-03	6,58E-04	8,02E-04	1,60E-03
ODP	kg CFC 11 eq.	3,79E-10	1,42E-15	4,58E-13	0,00E+00	8,40E-11	0,00E+00	0,00E+00	1,06E-13	7,97E-12	7,15E-13	1,44E-09
AP	mol H <sup>+</sup> eq.	4,82E-01	1,61E-05	7,07E-04	0,00E+00	2,79E-01	0,00E+00	0,00E+00	2,74E-03	1,26E-02	2,04E-03	-3,95E-02
EP-freshwater	kg P eq.	6,62E-04	3,98E-08	1,49E-07	0,00E+00	5,78E-04	0,00E+00	0,00E+00	2,98E-06	1,53E-06	3,69E-06	3,68E-05
EP-marine	kg N eq.	1,12E-01	5,82E-06	2,05E-04	0,00E+00	6,66E-02	0,00E+00	0,00E+00	1,23E-03	5,67E-03	8,76E-04	-8,00E-03
EP-terrestrial	mol N eq.	1,24E+00	6,90E-05	2,94E-03	0,00E+00	7,40E-01	0,00E+00	0,00E+00	1,40E-02	6,60E-02	6,09E-03	-3,88E-02
POCP	kg NMVOC eq.	2,72E-01	1,41E-05	5,63E-04	0,00E+00	1,35E-01	0,00E+00	0,00E+00	2,47E-03	1,48E-02	2,07E-03	-3,12E-02
ADPm <sup>1</sup>	kg Sb eq.	3,05E-05	7,22E-10	4,30E-09	0,00E+00	2,08E-05	0,00E+00	0,00E+00	5,40E-08	1,70E-07	1,28E-08	-8,89E-07
ADPf <sup>1</sup>	MJ	1,36E+03	1,48E-01	1,15E+00	0,00E+00	5,36E+02	0,00E+00	0,00E+00	1,11E+01	2,37E+01	4,12E+00	-3,72E+02
WDP <sup>1</sup>	m <sup>3</sup> world eq. deprived	7,99E+00	1,32E-04	4,73E-01	0,00E+00	3,19E+00	0,00E+00	0,00E+00	9,84E-03	2,53E+00	3,14E-02	-4,48E-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 use											
Disclaimer	<sup>1</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	9,09E-06	1,38E-10	5,13E-09	0,00E+00	1,65E-06	0,00E+00	0,00E+00	1,79E-08	5,51E-08	2,42E-08	-3,52E-07
IRP <sup>2</sup>	[kBq U235 eq.]	1,12E+01	4,16E-05	9,87E-03	0,00E+00	1,95E+00	0,00E+00	0,00E+00	3,11E-03	3,25E-01	5,81E-03	-6,27E+00
ETP-fw <sup>1</sup>	[CTUe]	8,08E+02	1,06E-01	4,95E-01	0,00E+00	6,46E+02	0,00E+00	0,00E+00	7,95E+00	7,01E+00	3,18E+00	6,23E+02
HTP-c <sup>1</sup>	[CTUh]	6,75E-08	2,16E-12	4,70E-11	0,00E+00	1,47E-08	0,00E+00	0,00E+00	1,61E-10	3,23E-10	3,08E-10	-1,00E-08
HTP-nc <sup>1</sup>	[CTUh]	2,62E-06	9,59E-11	2,62E-09	0,00E+00	1,28E-06	0,00E+00	0,00E+00	7,17E-09	7,72E-09	3,32E-08	-1,77E-07
SQP <sup>1</sup>	-	7,79E+03	6,20E-02	3,48E-01	0,00E+00	7,44E+01	0,00E+00	0,00E+00	4,63E+00	3,89E+00	8,60E-01	-2,23E+01
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											
Disclaimers	<sup>1</sup> 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. <sup>2</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	3,79E+02	1,08E-02	2,89E-01	0,00E+00	5,71E+01	0,00E+00	0,00E+00	8,07E-01	3,33E+00	6,05E-01	-9,15E+01
PERM	[MJ]	2,77E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	6,56E+02	1,08E-02	2,89E-01	0,00E+00	5,71E+01	0,00E+00	0,00E+00	8,07E-01	3,33E+00	6,05E-01	-9,15E+01
PENRE	[MJ]	1,34E+03	1,49E-01	1,15E+00	0,00E+00	5,36E+02	0,00E+00	0,00E+00	1,11E+01	2,38E+01	4,12E+00	-3,73E+02
PENRM	[MJ]	1,94E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,36E+03	1,49E-01	1,15E+00	0,00E+00	5,36E+02	0,00E+00	0,00E+00	1,11E+01	2,38E+01	4,12E+00	-3,73E+02
SM	[kg]	1,07E-01	0,00E+00	0,00E+00	0,00E+00	2,62E-03	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	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	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	6,30E-01	1,18E-05	1,11E-02	0,00E+00	1,01E-01	0,00E+00	0,00E+00	8,84E-04	6,13E-02	9,55E-04	-1,63E-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											



WASTE CATEGORIES AND OUTPUT FLOWS PER m2 of Window_ST. top W/A												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	8,32E-06	4,61E-13	2,35E-11	0,00E+00	8,99E-05	0,00E+00	0,00E+00	3,45E-11	1,09E-09	1,46E-10	-2,72E-08
NHWD	[kg]	1,49E+01	2,27E-05	1,05E-01	0,00E+00	3,90E+00	0,00E+00	0,00E+00	1,70E-03	2,74E-01	1,68E+01	-3,78E+00
RWD	[kg]	6,12E-02	2,79E-07	6,28E-05	0,00E+00	1,25E-02	0,00E+00	0,00E+00	2,08E-05	2,16E-03	4,73E-05	-3,33E-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	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,40E-01	0,00E+00	0,00E+00	0,00E+00	2,29E+01	0,00E+00	0,00E+00	0,00E+00	1,11E+01	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	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	1,21E+00	0,00E+00	5,87E+00	0,00E+00	1,56E+00	0,00E+00	0,00E+00	0,00E+00	2,99E+01	0,00E+00	0,00E+00
EET	[MJ]	1,62E+01	0,00E+00	1,06E+01	0,00E+00	1,72E+01	0,00E+00	0,00E+00	0,00E+00	5,43E+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											

BIOGENIC CARBON CONTENT PER m2		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	6,15E+00
Biogenic carbon content in accompanying packaging	kg C	1,19E+00



**Top slide window, pine wood**

ENVIRONMENTAL IMPACTS PER m2												
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	4,23E+01	1,02E-02	3,93E+00	0,00E+00	3,36E+01	0,00E+00	0,00E+00	7,68E-01	2,53E+01	1,51E+00	-7,10E+00
GWP-fossil	kg CO <sub>2</sub> eq.	6,83E+01	1,00E-02	1,08E-01	0,00E+00	3,32E+01	0,00E+00	0,00E+00	7,60E-01	4,91E+00	2,92E-01	-7,09E+00
GWP-bio-genic	kg CO <sub>2</sub> eq.	-2,60E+01	2,30E-05	3,83E+00	0,00E+00	4,17E-01	0,00E+00	0,00E+00	1,74E-03	2,04E+01	1,22E+00	-8,23E-03
GWP-luluc	kg CO <sub>2</sub> eq.	3,63E-02	9,41E-05	1,93E-05	0,00E+00	1,85E-02	0,00E+00	0,00E+00	7,13E-03	6,21E-04	7,92E-04	3,62E-03
ODP	kg CFC 11 eq.	1,47E-10	1,32E-15	4,29E-13	0,00E+00	6,57E-11	0,00E+00	0,00E+00	1,00E-13	7,64E-12	7,02E-13	1,46E-09
AP	mol H <sup>+</sup> eq.	4,12E-01	1,50E-05	6,60E-04	0,00E+00	2,72E-01	0,00E+00	0,00E+00	2,57E-03	1,23E-02	2,02E-03	1,46E-02
EP-freshwater	kg P eq.	5,97E-04	3,71E-08	1,39E-07	0,00E+00	5,34E-04	0,00E+00	0,00E+00	2,82E-06	1,47E-06	3,52E-06	4,44E-05
EP-marine	kg N eq.	1,02E-01	5,43E-06	1,91E-04	0,00E+00	6,47E-02	0,00E+00	0,00E+00	1,16E-03	5,53E-03	8,83E-04	2,31E-03
EP-terrestrial	mol N eq.	1,13E+00	6,43E-05	2,74E-03	0,00E+00	7,20E-01	0,00E+00	0,00E+00	1,31E-02	6,44E-02	6,05E-03	7,34E-02
POCP	kg NMVOC eq.	2,42E-01	1,31E-05	5,25E-04	0,00E+00	1,30E-01	0,00E+00	0,00E+00	2,32E-03	1,44E-02	2,07E-03	-7,22E-04
ADPm <sup>1</sup>	kg Sb eq.	4,73E-05	6,73E-10	4,02E-09	0,00E+00	1,64E-05	0,00E+00	0,00E+00	5,11E-08	1,60E-07	1,26E-08	-4,19E-06
ADPf <sup>1</sup>	MJ	9,49E+02	1,38E-01	1,08E+00	0,00E+00	4,57E+02	0,00E+00	0,00E+00	1,05E+01	2,27E+01	4,01E+00	-1,49E+02
WDP <sup>1</sup>	m <sup>3</sup> world eq. deprived	7,28E+00	1,23E-04	4,42E-01	0,00E+00	2,65E+00	0,00E+00	0,00E+00	9,31E-03	2,52E+00	3,16E-02	3,92E-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 use											
Disclaimer	<sup>1</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	8,56E-06	1,29E-10	4,79E-09	0,00E+00	1,57E-06	0,00E+00	0,00E+00	1,69E-08	5,33E-08	2,40E-08	2,09E-07
IRP <sup>2</sup>	[kBq U235 eq.]	2,18E+00	3,88E-05	9,21E-03	0,00E+00	1,77E+00	0,00E+00	0,00E+00	2,94E-03	3,08E-01	5,62E-03	-2,73E+00
ETP-fw <sup>1</sup>	[CTUe]	6,99E+02	9,91E-02	4,64E-01	0,00E+00	6,06E+02	0,00E+00	0,00E+00	7,52E+00	6,76E+00	3,17E+00	6,75E+02
HTP-c <sup>1</sup>	[CTUh]	3,64E-07	2,01E-12	4,39E-11	0,00E+00	1,26E-08	0,00E+00	0,00E+00	1,52E-10	3,15E-10	3,04E-10	-3,77E-09
HTP-nc <sup>1</sup>	[CTUh]	2,44E-06	8,95E-11	2,45E-09	0,00E+00	1,12E-06	0,00E+00	0,00E+00	6,78E-09	7,63E-09	3,28E-08	-4,67E-08
SQP <sup>1</sup>	-	7,91E+03	5,78E-02	3,25E-01	0,00E+00	6,10E+01	0,00E+00	0,00E+00	4,38E+00	3,77E+00	8,48E-01	-8,04E+00
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											
Disclaimers	<sup>1</sup> 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. <sup>2</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	1,93E+02	1,01E-02	2,70E-01	0,00E+00	4,64E+01	0,00E+00	0,00E+00	7,63E-01	3,23E+00	5,95E-01	-2,19E+01
PERM	[MJ]	2,83E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	4,75E+02	1,01E-02	2,70E-01	0,00E+00	4,64E+01	0,00E+00	0,00E+00	7,63E-01	3,23E+00	5,95E-01	-2,19E+01
PENRE	[MJ]	9,34E+02	1,39E-01	1,08E+00	0,00E+00	4,57E+02	0,00E+00	0,00E+00	1,05E+01	2,27E+01	4,01E+00	-1,50E+02
PENRM	[MJ]	1,56E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	9,49E+02	1,39E-01	1,08E+00	0,00E+00	4,57E+02	0,00E+00	0,00E+00	1,05E+01	2,27E+01	4,01E+00	-1,50E+02
SM	[kg]	2,29E-01	0,00E+00	0,00E+00	0,00E+00	2,71E-03	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	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	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	3,28E-01	1,10E-05	1,04E-02	0,00E+00	8,20E-02	0,00E+00	0,00E+00	8,36E-04	6,10E-02	9,56E-04	-2,69E-02
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											



WASTE CATEGORIES AND OUTPUT FLOWS PER m <sup>2</sup>												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	8,05E-06	4,30E-13	2,19E-11	0,00E+00	5,61E-05	0,00E+00	0,00E+00	3,26E-11	1,04E-09	1,38E-10	-1,71E-08
NHWD	[kg]	8,30E+00	2,12E-05	9,94E-02	0,00E+00	3,71E+00	0,00E+00	0,00E+00	1,61E-03	2,88E-01	1,66E+01	-3,84E-01
RWD	[kg]	1,61E-02	2,60E-07	5,86E-05	0,00E+00	1,11E-02	0,00E+00	0,00E+00	1,97E-05	2,04E-03	4,60E-05	-1,68E-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	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,95E-02	0,00E+00	0,00E+00	0,00E+00	2,29E+01	0,00E+00	0,00E+00	0,00E+00	8,24E+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	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	1,23E+00	0,00E+00	5,47E+00	0,00E+00	7,54E-01	0,00E+00	0,00E+00	0,00E+00	2,93E+01	0,00E+00	0,00E+00
EET	[MJ]	1,66E+01	0,00E+00	9,87E+00	0,00E+00	8,51E+00	0,00E+00	0,00E+00	0,00E+00	5,31E+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											

BIOGENIC CARBON CONTENT PER m <sup>2</sup>		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	6,38E+00
Biogenic carbon content in accompanying packaging	kg C	1,11E+00



## Turn-tilt window, wood/aluminium

ENVIRONMENTAL IMPACTS PER m2												
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	1,10E+02	1,21E-02	4,69E+00	0,00E+00	3,34E+01	0,00E+00	0,00E+00	8,90E-01	3,70E+01	2,08E+00	-2,40E+01
GWP-fossil	kg CO <sub>2</sub> eq.	1,47E+02	1,20E-02	1,21E-01	0,00E+00	3,29E+01	0,00E+00	0,00E+00	8,80E-01	7,28E+00	3,00E-01	-2,40E+01
GWP-bio-genic	kg CO <sub>2</sub> eq.	-3,70E+01	2,74E-05	4,57E+00	0,00E+00	4,65E-01	0,00E+00	0,00E+00	2,02E-03	2,98E+01	1,78E+00	-7,02E-03
GWP-luluc	kg CO <sub>2</sub> eq.	5,53E-02	1,12E-04	2,25E-05	0,00E+00	1,77E-02	0,00E+00	0,00E+00	8,26E-03	7,75E-04	7,49E-04	7,55E-04
ODP	kg CFC 11 eq.	2,13E-10	1,58E-15	5,06E-13	0,00E+00	6,79E-11	0,00E+00	0,00E+00	1,16E-13	9,90E-12	6,96E-13	1,28E-09
AP	mol H <sup>+</sup> eq.	8,42E-01	1,79E-05	7,86E-04	0,00E+00	2,51E-01	0,00E+00	0,00E+00	3,03E-03	1,75E-02	2,02E-03	-3,76E-02
EP-freshwater	kg P eq.	7,34E-04	4,43E-08	1,65E-07	0,00E+00	6,36E-04	0,00E+00	0,00E+00	3,26E-06	1,98E-06	4,97E-06	3,18E-05
EP-marine	kg N eq.	1,89E-01	6,48E-06	2,28E-04	0,00E+00	6,04E-02	0,00E+00	0,00E+00	1,37E-03	7,90E-03	1,05E-03	-8,00E-03
EP-terrestrial	mol N eq.	2,07E+00	7,67E-05	3,26E-03	0,00E+00	6,66E-01	0,00E+00	0,00E+00	1,55E-02	9,21E-02	6,19E-03	-4,33E-02
POCP	kg NMVOC eq.	5,05E-01	1,56E-05	6,26E-04	0,00E+00	1,23E-01	0,00E+00	0,00E+00	2,73E-03	2,05E-02	2,30E-03	-3,05E-02
ADPm <sup>1</sup>	kg Sb eq.	1,14E-04	8,03E-10	4,76E-09	0,00E+00	1,72E-05	0,00E+00	0,00E+00	5,91E-08	1,99E-07	1,23E-08	-1,22E-05
ADPf <sup>1</sup>	MJ	1,73E+03	1,65E-01	1,27E+00	0,00E+00	4,56E+02	0,00E+00	0,00E+00	1,22E+01	2,92E+01	4,17E+00	-3,96E+02
WDP <sup>1</sup>	m <sup>3</sup> world eq. deprived	1,96E+01	1,46E-04	5,27E-01	0,00E+00	2,64E+00	0,00E+00	0,00E+00	1,08E-02	3,69E+00	3,15E-02	-6,33E-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 use											
Disclaimer	<sup>1</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	2,31E-05	1,54E-10	5,69E-09	0,00E+00	1,47E-06	0,00E+00	0,00E+00	1,98E-08	7,37E-08	2,36E-08	-3,52E-07
IRP <sup>2</sup>	[kBq U235 eq.]	2,72E+00	4,62E-05	1,10E-02	0,00E+00	1,64E+00	0,00E+00	0,00E+00	3,40E-03	3,82E-01	6,03E-03	-6,29E+00
ETP-fw <sup>1</sup>	[CTUe]	9,01E+02	1,18E-01	5,46E-01	0,00E+00	5,75E+02	0,00E+00	0,00E+00	8,71E+00	8,94E+00	3,70E+00	5,61E+02
HTP-c <sup>1</sup>	[CTUh]	5,83E-07	2,40E-12	5,21E-11	0,00E+00	1,36E-08	0,00E+00	0,00E+00	1,77E-10	4,32E-10	2,98E-10	-1,04E-08
HTP-nc <sup>1</sup>	[CTUh]	5,09E-06	1,07E-10	2,90E-09	0,00E+00	1,26E-06	0,00E+00	0,00E+00	7,86E-09	1,07E-08	3,25E-08	-1,63E-07
SQP <sup>1</sup>	-	1,16E+04	6,89E-02	3,86E-01	0,00E+00	5,98E+01	0,00E+00	0,00E+00	5,08E+00	5,04E+00	8,16E-01	-2,47E+01
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											
Disclaimers	<sup>1</sup> 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. <sup>2</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	3,09E+02	1,20E-02	3,20E-01	0,00E+00	4,58E+01	0,00E+00	0,00E+00	8,84E-01	4,33E+00	5,87E-01	-8,10E+01
PERM	[MJ]	4,00E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	7,09E+02	1,20E-02	3,20E-01	0,00E+00	4,58E+01	0,00E+00	0,00E+00	8,84E-01	4,33E+00	5,87E-01	-8,10E+01
PENRE	[MJ]	1,71E+03	1,66E-01	1,27E+00	0,00E+00	4,57E+02	0,00E+00	0,00E+00	1,22E+01	2,93E+01	4,17E+00	-3,96E+02
PENRM	[MJ]	2,34E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,73E+03	1,66E-01	1,27E+00	0,00E+00	4,57E+02	0,00E+00	0,00E+00	1,22E+01	2,93E+01	4,17E+00	-3,96E+02
SM	[kg]	3,80E-01	0,00E+00	0,00E+00	0,00E+00	6,67E-03	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	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	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	6,47E-01	1,32E-05	1,24E-02	0,00E+00	9,06E-02	0,00E+00	0,00E+00	9,68E-04	8,88E-02	9,50E-04	-1,47E-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											



WASTE CATEGORIES AND OUTPUT FLOWS PER m2												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	5,17E-07	5,13E-13	2,61E-11	0,00E+00	9,96E-05	0,00E+00	0,00E+00	3,78E-11	1,35E-09	1,69E-10	-3,16E-08
NHWD	[kg]	2,22E+01	2,52E-05	1,16E-01	0,00E+00	3,92E+00	0,00E+00	0,00E+00	1,86E-03	5,19E-01	1,54E+01	-3,09E+00
RWD	[kg]	2,09E-02	3,10E-07	6,97E-05	0,00E+00	1,05E-02	0,00E+00	0,00E+00	2,28E-05	2,53E-03	4,80E-05	-3,50E-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	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	5,08E-01	0,00E+00	0,00E+00	0,00E+00	2,07E+01	0,00E+00	0,00E+00	0,00E+00	1,03E+01	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	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	2,04E+00	0,00E+00	6,53E+00	0,00E+00	9,89E-01	0,00E+00	0,00E+00	0,00E+00	4,32E+01	0,00E+00	0,00E+00
EET	[MJ]	2,75E+01	0,00E+00	1,18E+01	0,00E+00	1,12E+01	0,00E+00	0,00E+00	0,00E+00	7,80E+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											

BIOGENIC CARBON CONTENT PER m2		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	9,30E+00
Biogenic carbon content in accompanying packaging	kg C	1,33E+00



## Turn-tilt window, pine wood

ENVIRONMENTAL IMPACTS PER m2												
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	3,81E+01	1,14E-02	4,42E+00	0,00E+00	3,30E+01	0,00E+00	0,00E+00	8,48E-01	3,65E+01	2,07E+00	-1,18E+01
GWP-fossil	kg CO <sub>2</sub> eq.	7,45E+01	1,13E-02	1,17E-01	0,00E+00	3,25E+01	0,00E+00	0,00E+00	8,39E-01	6,87E+00	2,93E-01	-1,18E+01
GWP-bio-genic	kg CO <sub>2</sub> eq.	-3,66E+01	2,58E-05	4,31E+00	0,00E+00	4,37E-01	0,00E+00	0,00E+00	1,92E-03	2,96E+01	1,77E+00	-8,91E-03
GWP-luluc	kg CO <sub>2</sub> eq.	4,53E-02	1,06E-04	2,14E-05	0,00E+00	1,74E-02	0,00E+00	0,00E+00	7,87E-03	7,15E-04	7,40E-04	2,37E-03
ODP	kg CFC 11 eq.	1,90E-10	1,49E-15	4,79E-13	0,00E+00	6,71E-11	0,00E+00	0,00E+00	1,11E-13	9,32E-12	6,83E-13	1,30E-09
AP	mol H <sup>+</sup> eq.	4,25E-01	1,68E-05	7,42E-04	0,00E+00	2,50E-01	0,00E+00	0,00E+00	2,87E-03	1,72E-02	1,99E-03	4,95E-03
EP-freshwater	kg P eq.	6,83E-04	4,18E-08	1,56E-07	0,00E+00	6,01E-04	0,00E+00	0,00E+00	3,11E-06	1,86E-06	4,82E-06	3,77E-05
EP-marine	kg N eq.	1,09E-01	6,11E-06	2,15E-04	0,00E+00	6,01E-02	0,00E+00	0,00E+00	1,29E-03	7,80E-03	1,04E-03	-3,02E-05
EP-terrestrial	mol N eq.	1,20E+00	7,23E-05	3,08E-03	0,00E+00	6,65E-01	0,00E+00	0,00E+00	1,47E-02	9,10E-02	6,11E-03	4,34E-02
POCP	kg NMVOC eq.	2,66E-01	1,47E-05	5,90E-04	0,00E+00	1,22E-01	0,00E+00	0,00E+00	2,59E-03	2,03E-02	2,27E-03	-6,95E-03
ADPm <sup>1</sup>	kg Sb eq.	1,12E-04	7,57E-10	4,50E-09	0,00E+00	1,65E-05	0,00E+00	0,00E+00	5,64E-08	1,87E-07	1,21E-08	-1,18E-05
ADPf <sup>1</sup>	MJ	1,03E+03	1,56E-01	1,20E+00	0,00E+00	4,44E+02	0,00E+00	0,00E+00	1,16E+01	2,77E+01	4,06E+00	-2,28E+02
WDP <sup>1</sup>	m <sup>3</sup> world eq. deprived	7,92E+00	1,38E-04	4,97E-01	0,00E+00	2,50E+00	0,00E+00	0,00E+00	1,03E-02	3,64E+00	3,14E-02	6,11E-02
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 use											
Disclaimer	<sup>1</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	1,08E-05	1,45E-10	5,37E-09	0,00E+00	1,49E-06	0,00E+00	0,00E+00	1,88E-08	7,07E-08	2,33E-08	9,30E-08
IRP <sup>2</sup>	[kBq U235 eq.]	2,46E+00	4,36E-05	1,03E-02	0,00E+00	1,59E+00	0,00E+00	0,00E+00	3,24E-03	3,63E-01	5,84E-03	-3,52E+00
ETP-fw <sup>1</sup>	[CTUe]	7,02E+02	1,11E-01	5,17E-01	0,00E+00	5,66E+02	0,00E+00	0,00E+00	8,30E+00	8,27E+00	3,65E+00	6,03E+02
HTP-c <sup>1</sup>	[CTUh]	3,94E-07	2,26E-12	4,92E-11	0,00E+00	1,33E-08	0,00E+00	0,00E+00	1,68E-10	4,08E-10	2,93E-10	-5,66E-09
HTP-nc <sup>1</sup>	[CTUh]	4,37E-06	1,01E-10	2,74E-09	0,00E+00	1,25E-06	0,00E+00	0,00E+00	7,49E-09	9,30E-09	3,20E-08	-6,19E-08
SQP <sup>1</sup>	-	1,15E+04	6,50E-02	3,65E-01	0,00E+00	5,93E+01	0,00E+00	0,00E+00	4,84E+00	4,79E+00	8,04E-01	-1,33E+01
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											
Disclaimers	<sup>1</sup> 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. <sup>2</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	2,62E+02	1,13E-02	3,02E-01	0,00E+00	4,52E+01	0,00E+00	0,00E+00	8,43E-01	4,09E+00	5,76E-01	-2,59E+01
PERM	[MJ]	3,97E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	6,60E+02	1,13E-02	3,02E-01	0,00E+00	4,52E+01	0,00E+00	0,00E+00	8,43E-01	4,09E+00	5,76E-01	-2,59E+01
PENRE	[MJ]	1,01E+03	1,56E-01	1,20E+00	0,00E+00	4,44E+02	0,00E+00	0,00E+00	1,16E+01	2,77E+01	4,06E+00	-2,28E+02
PENRM	[MJ]	2,02E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,03E+03	1,56E-01	1,20E+00	0,00E+00	4,44E+02	0,00E+00	0,00E+00	1,16E+01	2,77E+01	4,06E+00	-2,28E+02
SM	[kg]	3,71E-01	0,00E+00	0,00E+00	0,00E+00	7,06E-03	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	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	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	3,61E-01	1,24E-05	1,17E-02	0,00E+00	8,65E-02	0,00E+00	0,00E+00	9,23E-04	8,74E-02	9,44E-04	-3,88E-02
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											



WASTE CATEGORIES AND OUTPUT FLOWS PER m2												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	5,00E-07	4,84E-13	2,46E-11	0,00E+00	6,27E-05	0,00E+00	0,00E+00	3,60E-11	1,31E-09	1,61E-10	-2,49E-08
NHWD	[kg]	1,05E+01	2,38E-05	1,10E-01	0,00E+00	3,90E+00	0,00E+00	0,00E+00	1,77E-03	3,85E-01	1,52E+01	-4,08E-01
RWD	[kg]	1,88E-02	2,92E-07	6,58E-05	0,00E+00	1,02E-02	0,00E+00	0,00E+00	2,18E-05	2,40E-03	4,67E-05	-2,22E-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	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	9,18E-03	0,00E+00	0,00E+00	0,00E+00	2,07E+01	0,00E+00	0,00E+00	0,00E+00	8,03E+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	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	2,02E+00	0,00E+00	6,15E+00	0,00E+00	9,59E-01	0,00E+00	0,00E+00	0,00E+00	4,25E+01	0,00E+00	0,00E+00
EET	[MJ]	2,73E+01	0,00E+00	1,11E+01	0,00E+00	1,09E+01	0,00E+00	0,00E+00	0,00E+00	7,68E+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											

BIOGENIC CARBON CONTENT PER m2		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	9,30E+00
Biogenic carbon content in accompanying packaging	kg C	1,25E+00



## Ventilation top swing window, wood/aluminium

ENVIRONMENTAL IMPACTS PER m2												
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	8,62E+01	1,48E-02	5,75E+00	0,00E+00	4,35E+01	0,00E+00	0,00E+00	1,09E+00	4,15E+01	2,36E+00	-4,02E+01
GWP-fossil	kg CO <sub>2</sub> eq.	1,28E+02	1,47E-02	1,59E-01	0,00E+00	4,29E+01	0,00E+00	0,00E+00	1,07E+00	8,34E+00	3,74E-01	-4,02E+01
GWP-bio-genic	kg CO <sub>2</sub> eq.	-4,15E+01	3,36E-05	5,59E+00	0,00E+00	5,95E-01	0,00E+00	0,00E+00	2,46E-03	3,32E+01	1,99E+00	-7,78E-03
GWP-luluc	kg CO <sub>2</sub> eq.	8,70E-02	1,38E-04	2,84E-05	0,00E+00	2,23E-02	0,00E+00	0,00E+00	1,01E-02	9,12E-04	9,32E-04	-3,00E-04
ODP	kg CFC 11 eq.	5,79E-08	1,93E-15	6,27E-13	0,00E+00	9,76E-10	0,00E+00	0,00E+00	1,42E-13	1,15E-11	8,66E-13	1,58E-09
AP	mol H <sup>+</sup> eq.	6,58E-01	2,19E-05	9,65E-04	0,00E+00	3,11E-01	0,00E+00	0,00E+00	3,70E-03	2,02E-02	2,49E-03	-8,25E-02
EP-freshwater	kg P eq.	1,12E-03	5,43E-08	2,04E-07	0,00E+00	7,79E-04	0,00E+00	0,00E+00	3,98E-06	2,26E-06	5,63E-06	3,47E-05
EP-marine	kg N eq.	1,78E-01	7,94E-06	2,80E-04	0,00E+00	7,51E-02	0,00E+00	0,00E+00	1,67E-03	9,14E-03	1,23E-03	-1,69E-02
EP-terrestrial	mol N eq.	1,73E+00	9,40E-05	4,00E-03	0,00E+00	8,28E-01	0,00E+00	0,00E+00	1,89E-02	1,06E-01	7,56E-03	-1,30E-01
POCP	kg NMVOC eq.	3,99E-01	1,92E-05	7,68E-04	0,00E+00	1,52E-01	0,00E+00	0,00E+00	3,34E-03	2,37E-02	2,75E-03	-5,85E-02
ADPm <sup>1</sup>	kg Sb eq.	2,11E-04	9,84E-10	5,89E-09	0,00E+00	2,48E-05	0,00E+00	0,00E+00	7,22E-08	2,38E-07	1,53E-08	-1,12E-06
ADPf <sup>1</sup>	MJ	1,82E+03	2,02E-01	1,57E+00	0,00E+00	6,06E+02	0,00E+00	0,00E+00	1,48E+01	3,43E+01	5,20E+00	-6,23E+02
WDP <sup>1</sup>	m <sup>3</sup> world eq. deprived	1,64E+01	1,79E-04	6,46E-01	0,00E+00	3,66E+00	0,00E+00	0,00E+00	1,32E-02	4,14E+00	3,79E-02	-1,18E+00
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 use											
Disclaimer	<sup>1</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	1,43E-05	1,89E-10	7,01E-09	0,00E+00	1,83E-06	0,00E+00	0,00E+00	2,42E-08	8,45E-08	2,91E-08	-8,04E-07
IRP <sup>2</sup>	[kBq U235 eq.]	1,56E+01	5,67E-05	1,35E-02	0,00E+00	2,24E+00	0,00E+00	0,00E+00	4,16E-03	4,58E-01	7,53E-03	-9,93E+00
ETP-fw <sup>1</sup>	[CTUe]	1,10E+03	1,45E-01	6,81E-01	0,00E+00	7,29E+02	0,00E+00	0,00E+00	1,06E+01	1,02E+01	4,38E+00	6,60E+02
HTP-c <sup>1</sup>	[CTUh]	2,55E-07	2,94E-12	6,43E-11	0,00E+00	1,74E-08	0,00E+00	0,00E+00	2,16E-10	4,90E-10	3,69E-10	-1,76E-08
HTP-nc <sup>1</sup>	[CTUh]	4,00E-06	1,31E-10	3,59E-09	0,00E+00	1,58E-06	0,00E+00	0,00E+00	9,60E-09	1,14E-08	4,00E-08	-2,86E-07
SQP <sup>1</sup>	-	1,20E+04	8,45E-02	4,76E-01	0,00E+00	8,08E+01	0,00E+00	0,00E+00	6,20E+00	5,80E+00	1,01E+00	-3,76E+01
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											
Disclaimers	<sup>1</sup> 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. <sup>2</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	4,91E+02	1,47E-02	3,95E-01	0,00E+00	6,42E+01	0,00E+00	0,00E+00	1,08E+00	4,96E+00	7,30E-01	-1,45E+02
PERM	[MJ]	4,51E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	9,42E+02	1,47E-02	3,95E-01	0,00E+00	6,42E+01	0,00E+00	0,00E+00	1,08E+00	4,96E+00	7,30E-01	-1,45E+02
PENRE	[MJ]	1,79E+03	2,03E-01	1,58E+00	0,00E+00	6,07E+02	0,00E+00	0,00E+00	1,49E+01	3,43E+01	5,20E+00	-6,24E+02
PENRM	[MJ]	2,66E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,82E+03	2,03E-01	1,58E+00	0,00E+00	6,07E+02	0,00E+00	0,00E+00	1,49E+01	3,43E+01	5,20E+00	-6,24E+02
SM	[kg]	2,49E-01	0,00E+00	0,00E+00	0,00E+00	3,19E-03	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	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	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	9,90E-01	1,61E-05	1,52E-02	0,00E+00	1,18E-01	0,00E+00	0,00E+00	1,18E-03	9,98E-02	1,15E-03	-2,70E-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											



WASTE CATEGORIES AND OUTPUT FLOWS PER m2												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	1,91E-04	6,29E-13	3,20E-11	0,00E+00	8,15E-05	0,00E+00	0,00E+00	4,61E-11	1,61E-09	2,13E-10	-4,35E-08
NHWD	[kg]	2,16E+01	3,09E-05	1,46E-01	0,00E+00	4,80E+00	0,00E+00	0,00E+00	2,27E-03	4,31E-01	1,93E+01	-6,19E+00
RWD	[kg]	8,25E-02	3,80E-07	8,58E-05	0,00E+00	1,44E-02	0,00E+00	0,00E+00	2,79E-05	3,03E-03	5,99E-05	-5,26E-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	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	2,96E-01	0,00E+00	0,00E+00	0,00E+00	2,55E+01	0,00E+00	0,00E+00	0,00E+00	1,48E+01	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	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	1,29E+00	0,00E+00	8,00E+00	0,00E+00	1,86E+00	0,00E+00	0,00E+00	0,00E+00	4,86E+01	0,00E+00	0,00E+00
EET	[MJ]	1,77E+01	0,00E+00	1,44E+01	0,00E+00	2,07E+01	0,00E+00	0,00E+00	0,00E+00	8,81E+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											

BIOGENIC CARBON CONTENT PER m2		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	1,03E+01
Biogenic carbon content in accompanying packaging	kg C	1,62E+00





Ventilation top swing window, pine wood

ENVIRONMENTAL IMPACTS PER m2												
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	5,43E+01	1,41E-02	5,47E+00	0,00E+00	3,94E+01	0,00E+00	0,00E+00	1,04E+00	4,14E+01	2,40E+00	-2,12E+01
GWP-fossil	kg CO <sub>2</sub> eq.	9,64E+01	1,39E-02	1,54E-01	0,00E+00	3,88E+01	0,00E+00	0,00E+00	1,03E+00	7,47E+00	3,68E-01	-2,12E+01
GWP-bio-genic	kg CO <sub>2</sub> eq.	-4,22E+01	3,19E-05	5,31E+00	0,00E+00	5,53E-01	0,00E+00	0,00E+00	2,37E-03	3,40E+01	2,03E+00	-8,56E-03
GWP-luluc	kg CO <sub>2</sub> eq.	6,34E-02	1,31E-04	2,72E-05	0,00E+00	2,15E-02	0,00E+00	0,00E+00	9,69E-03	8,75E-04	9,25E-04	1,93E-03
ODP	kg CFC 11 eq.	5,76E-08	1,84E-15	5,98E-13	0,00E+00	9,16E-10	0,00E+00	0,00E+00	1,36E-13	1,12E-11	8,55E-13	1,61E-09
AP	mol H <sup>+</sup> eq.	5,59E-01	2,08E-05	9,17E-04	0,00E+00	3,07E-01	0,00E+00	0,00E+00	3,54E-03	1,99E-02	2,47E-03	-1,72E-02
EP-freshwater	kg P eq.	1,05E-03	5,16E-08	1,95E-07	0,00E+00	7,37E-04	0,00E+00	0,00E+00	3,82E-06	2,21E-06	5,47E-06	4,40E-05
EP-marine	kg N eq.	1,64E-01	7,55E-06	2,66E-04	0,00E+00	7,36E-02	0,00E+00	0,00E+00	1,59E-03	9,01E-03	1,24E-03	-4,59E-03
EP-terrestrial	mol N eq.	1,58E+00	8,94E-05	3,81E-03	0,00E+00	8,13E-01	0,00E+00	0,00E+00	1,81E-02	1,05E-01	7,53E-03	4,16E-03
POCP	kg NMVOC eq.	3,56E-01	1,82E-05	7,30E-04	0,00E+00	1,47E-01	0,00E+00	0,00E+00	3,19E-03	2,34E-02	2,75E-03	-2,23E-02
ADPm <sup>1</sup>	kg Sb eq.	2,31E-04	9,36E-10	5,62E-09	0,00E+00	2,09E-05	0,00E+00	0,00E+00	6,94E-08	2,28E-07	1,52E-08	-4,08E-06
ADPf <sup>1</sup>	MJ	1,33E+03	1,92E-01	1,50E+00	0,00E+00	5,40E+02	0,00E+00	0,00E+00	1,43E+01	3,33E+01	5,10E+00	-3,57E+02
WDP <sup>1</sup>	m <sup>3</sup> world eq. deprived	1,50E+01	1,71E-04	6,14E-01	0,00E+00	3,32E+00	0,00E+00	0,00E+00	1,26E-02	4,14E+00	3,82E-02	-1,41E-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 use											
Disclaimer	<sup>1</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	1,30E-05	1,79E-10	6,68E-09	0,00E+00	1,79E-06	0,00E+00	0,00E+00	2,31E-08	8,28E-08	2,89E-08	-1,31E-07
IRP <sup>2</sup>	[kBq U235 eq.]	5,94E+00	5,39E-05	1,28E-02	0,00E+00	2,09E+00	0,00E+00	0,00E+00	3,99E-03	4,40E-01	7,36E-03	-5,57E+00
ETP-fw <sup>1</sup>	[CTUe]	9,67E+02	1,38E-01	6,50E-01	0,00E+00	6,97E+02	0,00E+00	0,00E+00	1,02E+01	9,95E+00	4,39E+00	7,24E+02
HTP-c <sup>1</sup>	[CTUh]	5,51E-07	2,79E-12	6,12E-11	0,00E+00	1,55E-08	0,00E+00	0,00E+00	2,07E-10	4,82E-10	3,66E-10	-1,10E-08
HTP-nc <sup>1</sup>	[CTUh]	3,77E-06	1,24E-10	3,42E-09	0,00E+00	1,43E-06	0,00E+00	0,00E+00	9,22E-09	1,13E-08	3,97E-08	-1,24E-07
SQP <sup>1</sup>	-	1,22E+04	8,03E-02	4,53E-01	0,00E+00	6,86E+01	0,00E+00	0,00E+00	5,95E+00	5,68E+00	1,01E+00	-1,95E+01
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											
Disclaimers	<sup>1</sup> 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. <sup>2</sup> 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	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	2,90E+02	1,40E-02	3,77E-01	0,00E+00	5,49E+01	0,00E+00	0,00E+00	1,04E+00	4,86E+00	7,22E-01	-5,86E+01
PERM	[MJ]	4,56E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	7,46E+02	1,40E-02	3,77E-01	0,00E+00	5,49E+01	0,00E+00	0,00E+00	1,04E+00	4,86E+00	7,22E-01	-5,86E+01
PENRE	[MJ]	1,31E+03	1,93E-01	1,50E+00	0,00E+00	5,41E+02	0,00E+00	0,00E+00	1,43E+01	3,33E+01	5,10E+00	-3,57E+02
PENRM	[MJ]	2,10E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,34E+03	1,93E-01	1,50E+00	0,00E+00	5,41E+02	0,00E+00	0,00E+00	1,43E+01	3,33E+01	5,10E+00	-3,57E+02
SM	[kg]	3,87E-01	0,00E+00	0,00E+00	0,00E+00	3,38E-03	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	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	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	6,49E-01	1,53E-05	1,44E-02	0,00E+00	1,01E-01	0,00E+00	0,00E+00	1,14E-03	9,97E-02	1,16E-03	-1,02E-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											



WASTE CATEGORIES AND OUTPUT FLOWS PER m2												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	1,90E-04	5,98E-13	3,04E-11	0,00E+00	7,75E-05	0,00E+00	0,00E+00	4,43E-11	1,56E-09	2,05E-10	-3,16E-08
NHWD	[kg]	1,35E+01	2,94E-05	1,40E-01	0,00E+00	4,65E+00	0,00E+00	0,00E+00	2,18E-03	4,49E-01	1,91E+01	-2,00E+00
RWD	[kg]	3,38E-02	3,61E-07	8,16E-05	0,00E+00	1,33E-02	0,00E+00	0,00E+00	2,68E-05	2,91E-03	5,87E-05	-3,23E-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	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,49E-01	0,00E+00	0,00E+00	0,00E+00	2,55E+01	0,00E+00	0,00E+00	0,00E+00	1,18E+01	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	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	1,30E+00	0,00E+00	7,61E+00	0,00E+00	1,05E+00	0,00E+00	0,00E+00	0,00E+00	4,80E+01	0,00E+00	0,00E+00
EET	[MJ]	1,80E+01	0,00E+00	1,37E+01	0,00E+00	1,20E+01	0,00E+00	0,00E+00	0,00E+00	8,69E+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											

BIOGENIC CARBON CONTENT PER m2		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	1,06E+01
Biogenic carbon content in accompanying packaging	kg C	1,54E+00



# Additional information

## LCA interpretation

The results show that the production of primary aluminum and glass are the dominating processes in most of the environmental impact categories. The environmental impact of windows varies based on window dimensions.

The datasets used to model the processes that contribute the most to the overall impacts are all considered to be "good/very good" in regard to their representativity. The overall uncertainty of the results is thus considered to be low.

## Technical information on scenarios

### Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck (7.5-16 ton) EURO 6	-
Transport distance	2000	km
Capacity utilisation (including empty runs)	0.61	%
Gross density of products transported	48.52	kg/m <sup>2</sup>

### Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials	0	kg
Water use	0	m <sup>3</sup>
Other resource use	0	kg
Energy type and consumption	0	kWh
Waste materials: Packaging	2.5-3.6	kg
Output materials	0	kg
Direct emissions to air, soil or water	0	kg

## Reference service life

RSL information	Value	Unit
Reference service Life	50-60	Years
Declared product properties	Technical specifications and guidance can be obtained from direct contact to Living Better at +45 8181 8110 or info@livingbetter.dk	
Design application parameters		
Assumed quality of work		
Outdoor environment		
Indoor environment		
Usage conditions		
Maintenance		

**Use (B1-B7)**

Scenario information	Value	Unit
<b>B1 – Use</b>		
<b>B2 - Maintenance</b>		
Maintenance process	Washing	-
Maintenance cycle for washing	4	cycles/year
Ancillary materials for maintenance: Cleaning agent	0.005	l/cycle
Waste materials resulting from maintenance (specify which)	0	kg
Net freshwater consumption during maintenance per year	0.4	l
Energy input during maintenance	0	kWh
Maintenance process	Lubrication	
Maintenance cycle for lubricating	1	cycle/year
Ancillary materials for maintenance: Lubricant	0.02	kg/cycle
Ancillary materials for maintenance: Paint	0.05-0.08	kg/cycle
Ancillary materials for maintenance: Primer	0.05-0.07	kg/cycle
Waste materials resulting from maintenance (specify which)	0	kg
Net freshwater consumption during maintenance per year	0	l
Energy input during maintenance	0	kWh
Maintenance process	Wear of glazing and fitting	
Maintenance cycle for glazing and fitting	2	cycles/RSL
Ancillary materials for maintenance: Glazing	21.3 - 26.3	kg/RSL
Ancillary materials for maintenance: Fitting	1.5 - 6.9	kg/RSL
Maintenance process	Sealing strips	
Maintenance cycle for sealing strips	2 - 3	cycle/RSL
Ancillary materials for maintenance: Sealing strips	0.8 - 3.2	kg/RSL
Waste materials resulting from maintenance, cardboard	0.03 - 0.06	kg
Net freshwater consumption during maintenance per year	0	l
Energy input during maintenance	0	kWh
<b>B3 – Repair</b>		
Repair process	Description or reference	-
Inspection process	Description or reference	-
Repair cycle	-	/year
Ancillary materials (specify which)	-	kg/cycle
Waste materials (specify which)	-	kg
Net freshwater consumption during repair	-	m <sup>3</sup>
Energy input during repair	-	kg/cycle
<b>B4 – Replacement</b>	-	
Replacement cycle	-	/year
Energy input during replacement	-	kWh
Exchange of worn parts during products life cycle	-	kg
<b>B5 - Refurbishment</b>	-	
Refurbishment process	-	
Refurbishment cycle	-	/year
Energy input during refurbishment	-	kWh
Material input for refurbishment (specify which)	-	kg/cycle
Waste materials resulting from refurbishment	-	kg
Further assumptions for scenario development	-	As appropriate
<b>B6 + B7 – Use of energy and water</b>	-	
Ancillary materials specified by material	-	kg
Net freshwater consumption	-	m <sup>3</sup>
Type of energy carrier	-	kWh
Power output of equipment	-	kW
Characteristic performance	-	As appropriate
Further assumptions for scenario development	-	As appropriate

**End of life (C1-C4)**

Scenario information	Value	Unit
Collected separately	40.3 - 58.7	kg
Collected with mixed waste	0	kg
For reuse	0	kg
For recycling	8.2 - 15.0	kg
For energy recovery	14.3 - 23.7	kg
For final disposal	17.2 - 21.5	kg
Assumptions for scenario development	Based on EN 17213:2020 annex B.3	As appropriate

**Transport to the waste handling facility (C2)**

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck (7.5-16 ton) EURO 6	-
Transport distance	50	km
Capacity utilisation (including empty runs)	0.61	%
Gross density of products transported	48.52	kg/m <sup>2</sup>

**Credited materials (D)**

Scenario information on material/ component	St. window (W/A), top-slide	St. window (P), top-slide	St. window (W/A), turn-tilt	St. window (P), turn-tilt	Vt. Window (W/A), top swing	Vt. Window (P), top swing	Unit
Aluminium	2.22	0.39	1.79	0.35	3.51	1.25	kg
Steel	0.67	0.59	0.97	1.00	1.73	2.09	kg
Stainless steel	0.01	0.06	0.17	0.17	0.00	0.06	kg
Quartz sand	19.41	19.39	17.57	17.55	21.74	21.74	kg
Soda	3.79	3.78	3.42	3.42	4.22	4.22	kg
Limestone	2.43	2.43	2.20	2.20	2.71	2.71	kg
Dolomite	1.09	1.08	0.98	0.98	1.21	1.21	kg
Electricity	38.47	36.03	51.23	50.07	59.66	56.78	MJ
Heat	93.70	76.37	105.80	103.00	135.20	113.00	MJ

The avoided production is only calculated on the virgin fraction of the type of input material in A1.

**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

<b>Publisher</b>	epddanmark www.epddanmark.dk Template version 2023.2
<b>Programme operator</b>	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
<b>LCA-practitioner</b>	Maria Preilev Hansen Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
<b>LCA software / background data</b>	Thinkstep LCA for experts version 10.7.1.28, 2023 including databases <a href="https://sphaera.com/">https://sphaera.com/</a> EN 15804 reference package 3.1
<b>3<sup>rd</sup> party verifier</b>	David Althoff Palm Dalemarken AB www.dalemarken.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"

## Product-specific cPCR

DS/EN 17213:2020 for Windows and Doors as well as NPCR 014 PART B for Windows and doors.

## 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”