SENTINEL HOLDING
INSTITUT

SHI PRODUCT PASSPORT

Find products. Certify buildings.

SHI Product Passport No.:

15305-10-1003

VELUX Modular skylights HFC, HFS, HVC, HFS

Product group: Skylight - Window - Roofing

VELUX®

VELUX A/S
Aadalsvej 99
2970 Hørsholm

Product qualities:

- QNG Qualitätssiegel Nachhaltiges Gebäude ✓
- DGNB NEW CONSTRUCTION 2023 ✓
- DGNB NEW CONSTRUCTION 2018 ✓
- BNB-BN NEUBAU V2015 ✓
- BREEAM DE NEUBAU 2018 ✓

CERTIFIED SUSTAINABLE PRODUCT
SHI PRODUCT PASSPORT
SENTINEL HOLDING INSTITUT
www.sentinel-holding.eu

Köttner

Helmut Köttner
Scientific Director
Freiburg, 26 November 2025

SENTINEL HOLDING
INSTITUT

Product:
VELUX Modular skylights HFC, HFS, HVC, HFS

SHI Product Passport no.:
15305-10-1003

VELUX®

Content

QNG - Qualitätssiegel Nachhaltiges Gebäude	1
DGNB New Construction 2023	2
DGNB New Construction 2018	5
BNB-BN Neubau V2015	6
BREEAM DE Neubau 2018	7
Product labels	8
Legal notices	9
Technical data sheet/attachments	8

The SHI Database is the first and only database for construction products whose comprehensive processes and data accuracy are regularly verified by the independent auditing company SGS-TÜV Saar

SGS TÜV SAAR

SENTINEL HOLDING
INSTITUT

Product:

VELUX Modular skylights HFC, HFS, HVC, HFS

SHI Product Passport no.:

15305-10-1003

VELUX®

QNG - Qualitätssiegel Nachhaltiges Gebäude

The Qualitätssiegel Nachhaltiges Gebäude (Quality Seal for Sustainable Buildings), developed by the German Federal Ministry for Housing, Urban Development and Building (BMWSB), defines requirements for the ecological, socio-cultural, and economic quality of buildings. The Sentinel Holding Institut evaluates construction products in accordance with QNG requirements for certification and awards the QNG ready label. Compliance with the QNG standard is a prerequisite for eligibility for the KfW funding programme. For certain product groups, the QNG currently has no specific requirements defined. Although classified as not assessment-relevant, these products remain suitable for QNG-certified projects.

Criteria	Pos. / product group	Considered substances	QNG assessment
3.1.3 Schadstoffvermeidung in Baumaterialien	not applicable	not applicable	QNG ready - Not relevant for assessment

Product:

VELUX Modular skylights HFC, HFS, HVC, HFS

SHI Product Passport no.:

15305-10-1003

VELUX®

DGNB New Construction 2023

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings. The 2023 version sets high standards for ecological, economic, socio-cultural, and functional aspects throughout the entire life cycle of a building.

Criteria	Assessment
ECO1.1 Life cycle cost (*)	May positively contribute to the overall building score
Verification: An improved u-value can contribute to more energy efficient building components. Sloped roof windows, flat roof windows and other Velux windows can result in less frequent use of electric light. Use of window's opening can also increase ventilation. Further detailing can be completed with more case-to-case information.	

Criteria	Assessment
ECO2.6 Climate resilience (*)	May positively contribute to the overall building score
Verification: Velux Products provide natural cooling and ventilation, see documentation of windows application. Materials providing heat protection are the individual window's glazing and implementation of various accessories. / With the use of the Velux windows and the ventilation, improves the wind circulation in the area of the building, which could mitigate the facts of radon.	

Criteria	Assessment
ENV1.1 Climate action and energy (*)	May positively contribute to the overall building score
Verification: Some of the products include PV cells. This generates PV panels on both the roof and in the product./ We offer products which operated through electric/solar powered sources, which results in an automised product package./ The product is charaterised for its high durability (see life time test attached), but is not characterised for its recyclability. /Connected to ECO 1.1 as well as an implementation of the automation of the windows and Velux Active.	

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact, 03.05.2024 (3rd edition)	32 All of the shell's aluminium and stainless steel building components.	Chromium VI	Quality level 4
Verification: Herstellererklärung vom 04.08.2025			

Criteria	Assessment
SOC1.1 Thermal comfort (*)	May positively contribute to the overall building score
Verification: The opening of the windows introduce fresh air into the building + offering of various shading and glazing materials resulting in a solar protection	

Criteria	Assessment
SOC1.3 Sound insulation and acoustic comfort (*)	May positively contribute to the overall building score
Verification: We offer some products with high sound properties as well as external accessories	

Criteria	Assessment
SOC1.4 Visual comfort (*)	May positively contribute to the overall building score
Verification: Connected to ECO 1.1	

Criteria	Assessment
TEC1.3 Quality of the building envelope (*)	May positively contribute to the overall building score
Verification: We offer some products with higher insulation properties with various glazings and an addition of various accessories	

Criteria	Assessment
TEC1.4 Use and integration of building technology (*)	May positively contribute to the overall building score
Verification: we offer products which can integrate automation systems. /Some of the products include PV cells. This generates PV panels on both the roof and in the product.	

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact, 29.05.2025 (4th edition)	32 All of the shell's aluminium and stainless steel building components	Chromium VI	Quality level 4
Verification: Herstellererklärung vom 04.08.2025			

Product:

VELUX Modular skylights HFC, HFS, HVC, HFS

SHI Product Passport no.:

15305-10-1003

VELUX®

DGNB New Construction 2018

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings.

Criteria	No. / Relevant building components / construction materials / surfaces	Considered substances / aspects	Quality level
ENV 1.2 Local environmental impact	32 All aluminium and stainless steel components in the building envelope	Chromium VI	Quality level 4
Verification: Herstellererklärung vom 04.08.2025			

Product:

VELUX Modular skylights HFC, HFS, HVC, HFS

SHI Product Passport no.:

15305-10-1003

VELUX®

BNB-BN Neubau V2015

The Bewertungssystem Nachhaltiges Bauen (Assessment System for Sustainable Building) is a tool for evaluating public office and administrative buildings, educational facilities, laboratory buildings, and outdoor areas in Germany. The BNB was developed by the former Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and is now overseen by the Federal Ministry for Housing, Urban Development and Building (BMWSB).

Criteria	Pos. / product type	Considered substance group	Quality level
1.1.6 Risiken für die lokale Umwelt	27 Anodized aluminum and passivated stainless steel surfaces	Heavy metals (chromium VI)	Quality level 5
Verification: Herstellererklärung vom 04.08.2025			

Product:
VELUX Modular skylights HFC, HFS, HVC, HFS

SHI Product Passport no.:
15305-10-1003

VELUX®

BREEAM DE Neubau 2018

BREEAM (Building Research Establishment Environmental Assessment Methodology) is a UK-based building assessment system that evaluates the sustainability of new constructions, refurbishments, and conversions. Developed by the Building Research Establishment (BRE), the system aims to assess and improve the environmental, economic, and social performance of buildings.

Criteria	Product category	Considered substances	Quality level
Hea 02 Indoor Air Quality			Not relevant for assessment

Product:
VELUX Modular skylights HFC, HFS, HVC, HFS

SHI Product Passport no.:
15305-10-1003

VELUX®

Product labels

In the construction industry, high-quality materials are crucial for a building's indoor air quality and sustainability. Product labels and certificates offer guidance to meet these requirements. However, the evaluation criteria of these labels vary, and it is important to carefully assess them to ensure products align with the specific needs of a construction project.

Products bearing the Sentinel Holding Institute QNG-ready seal are suitable for projects aiming to achieve the "Qualitätssiegel Nachhaltiges Gebäude" (Quality Seal for Sustainable Buildings). QNG-ready products meet the requirements of QNG Appendix Document 3.1.3, "Avoidance of Harmful Substances in Building Materials." The KfW loan program Climate-Friendly New Construction with QNG may allow for additional funding.

The IBU ("Institut Bauen und Umwelt e.V.") is an initiative of building product manufacturers committed to sustainability in construction. It serves as the programme operator for Environmental Product Declarations (EPDs) in accordance with the EN 15804 standard. The IBU EPD programme provides comprehensive life cycle assessments and environmental impact data for construction products, supported by independent third-party verification.

Product:
VELUX Modular skylights HFC, HFS, HVC, HFS

SHI Product Passport no.:
15305-10-1003

Legal notices

(*) These criteria apply to the construction project as a whole. While individual products can positively contribute to the overall building score through proper planning, the evaluation is always conducted at the building level. The information was provided entirely by the manufacturer.

Find our criteria here: https://www.sentinel-holding.eu/de/Themenwelten/Pr%C3%BCfkriterien%20f%C3%BCr%20Produkte

The SHI Database is the first and only database for construction products whose comprehensive processes and data accuracy are regularly verified by the independent auditing company SGS-TÜV Saar

Publisher

Sentinel Holding Institut GmbH
Bötzinger Str. 38
79111 Freiburg im Breisgau
Tel.: +49 761 59048170
info@sentinel-holding.eu
www.sentinel-holding.eu

To whom it may concern

VELUX A/S
Ådalsvej 99
DK-2970 Hørsholm
Denmark
Telephone +45 45 16 40 00
www.velux.com

Date: 04 August 2025

Sentinel Haus criteria

VOC content

We can confirm that the plants performing the factory coating of our products are operated in accordance with or (for smaller companies) in accordance with the 31st Ordinance of the Federal Emission Control Act or by the Europe-wide regulation Regulation 2010/75/EU - Industrial Emissions Directive (IED), (formerly Regulation 1999/13/EU).

We are working with our supplier base to investigate means of reducing the VOC content of the applied coating materials.

We are continuously working on reducing our negative social and environmental impact. Information on this work can be found in our Sustainability Report 2023 (link).

Chemical content
We hereby declare that all products comply with the following criteria.

- No use of halogenated blowing agents
- No use of brominated flame retardants (HBCD)
- No use of reproduction toxic boron compounds in quantities of more than 0.1% (w/w)
- No use of chrome VI oxide surface treatment (passivation)
- No use of lead, tin and cadmium compounds in quantities of more than 0,1% in our windows, except for MSL awning blind and KFX smoke ventilation control unit, both contains lead ((CAS no 743-92-1) in quantities of more than 0,1%.
- No use of chrome VI compounds
- None of our products contain any substances (incl. reproductive-toxic phthalates) of very high concern or substances from the candidate list in quantities of more than 0.1 % (w/w)
- No use of cadmium in PVC components in quantities of more than 0.01%

Yours sincerely,
Birthe Uldahl Kjeldsen

Senior manager,
Product Specification and Documentation
Product Regulatory Affairs

To Whom it May Concern

Ådalsvej 99
DK-2970 Hørsholm
Denmark
+45 45 16 40 00 Telephone
+45 45 16 40 01 Telefax

Valid: 22 January 2025 – 21 January 2026

VELUX A/S is aware of REACH regulation and acknowledge the obligations which derive from the regulation.

We can confirm that none of the VELUX products, packaging etc. are covered by the obligation to register in accordance to REACH.

Furthermore, we can confirm that none[1] of our products contain any Substances of Very High Concern or substances at the Candidate list in quantities of more than 0,1% (w/w).

We can also confirm that we are in contact with our suppliers to ensure that they are aware of REACH.

Birthe Uldahl Kjeldsen
Senior manager
Technical Values
Standardisation & Technical Performance
VELUX A/S
Ådalsvej 99, DK 2970 Hørsholm

[1] Apart from backup batteries for smoke ventilation products (KFX) and small PV modules used in VELUX MSL awning blinds, please see separate certificate.

ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	VELUX Group
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-VEL-20210075-CCI3-EN
Issue date	04.05.2021
Valid to	03.05.2026

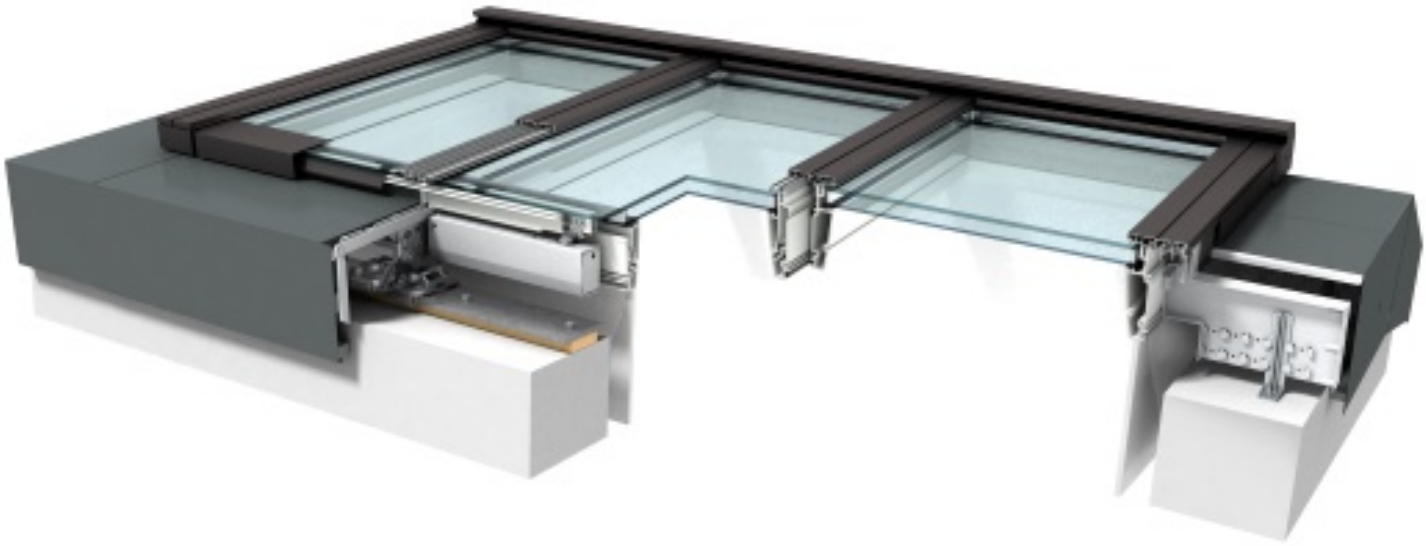
VELUX Modular Skylight (double glazing configuration)

VELUX Group

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

www.ibu-epd.com | https://epd-online.com



VELUX® Commercial

General Information

VELUX Group

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-VEL-20210075-CCI3-EN

This declaration is based on the product category rules:

Windows and doors , 01.08.2021
(PCR checked and approved by the SVR)

Issue date

04.05.2021

Valid to

03.05.2026

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

VELUX Modular Skylight (double glazing configuration)

Owner of the declaration

VELUX Group
Ådalsvej 99
2970 Hørsholm
Denmark

Declared product / declared unit

The declared unit is a window of one square meter (m^2) with double glazing configuration.
The declared unit is based on the configuration of a standard size window measuring 1.23 m * 1.48 m.

Scope:

The EPD is a representative EPD covering VELUX Modular System (VMS) products. The products are manufactured by VELUX Group in Østbirk, Denmark for sale throughout Europe.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Juliane Franze,
(Independent verifier)

Product

Product description/Product definition

VELUX Modular Skylights (VMS) are sash-frame constructed single roof windows. The modules fit together and can be configured in several predefined daylight solutions. All individual skylights are delivered as prefabricated modules with dedicated factory finished flashings to ensure watertightness in every solution.
The VMS include modules, which can be opened (venting) as well as modules, which cannot be opened (fixed). The EPD covers VMS modules in sizes from 0.405 m^2 up to 2.3 m^2.

The glass panes are with double glazing and different glass configurations are covered by the EPD. The glass thickness ranges from 12 to 18 mm. The glass panes have cavities filled with Argon gas. The representative glass configuration used for the EPD calculations has 8 mm toughened glass, 16mm space and 10mm laminated glass. This configuration is conservative with regards to the environmental impact results. For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) *Regulation (EU) No. 305/2011* (CPR) applies. The product needs a declaration of performance taking into consideration *EN 14351-1:2006+A2:2016*, Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets. For the application and use, the respective national provisions apply.

Application

VELUX Modular Skylight consists of modules, that are built together to form a long band of window modules in several predefined solutions such as a longlight or ridgelight. The length of the band of modules is determined by the need of the individual building.

Technical Data

The Declaration of Performance including relevant technical specifications and test methods/test standards can be downloaded from the website www.velux.com/ce-marking.

The performance values are specific for the specific VMS variants covered by the EPD.

The declared values in below table relate to the reference product incl. the pane variant 10T. For other VMS product variants, specific values can be selected at the bottom of the above-mentioned download page.

Constructional data (Reference product incl. pane variant 10T)

Name	Value	Unit
Fire resistance class § 4.4.1	B-s1.d0	class
Air permeability , § 4.14	4	class
Resistance to wind load, § 4.2 (for window width >1000 mm or height > 2400 mm no performance is determined)	C5	class
Resistance to snow loads, § 4.3	8 mm toughened - 16 mm -10.76 mm (55.2) laminated float	mm
Watertightness, § 4.5	E1200	class
Impact resistance, § 4.7 (for window width >550 mm or height > 778 mm no performance is determined)	test is passed	-
Load bearing capacity of safety devices, § 4.8	test is passed	-
Acoustic performance, § 4.11	38 (-1; -4)	-
Thermal transmittance, § 4.12 , 90 degree installation acc. to EN 10077-1/2	1,4	W/(m^2K)
Solar factor, § 4.13	0.51	-
Light transmittance, § 4.13	0.73	-

Product performance data in accordance with *DS/EN 14351-1:2006+A2:2016*, Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets.

Base materials/Ancillary materials

Name	Value	Unit
Glass pane	72	%
Composite frame of glass fibre reinforced polyurethane	17	%
Metals	9	%
Other materials	3	%

Recycled content

Name	Value	Unit
Aluminum	30	%
Glass	12	%
Steel	10	%
Others	0	%

The values stated in the table relate to the recycled material streams in VELUX production.

Reference service life

No reference service life (RSL) is defined for the VMS products because the use stage modules are not included in the EPD.

LCA: Calculation rules

Declared Unit

Multiple product dimensions are represented by this EPD as specified in the product description.

The declared unit is 1 m^2 window calculated based on one representative window module measuring 1.23 m * 1.48 m (reference window based on *EN 14351-1*) with double glazed window panes.

Declared unit

Name	Value	Unit
Declared unit	1	m^2

A data quality and a sensitivity analysis shows that the results are robust with regards to data quality and appropriateness. There is low variability of production processes and product variations have a limited influence on the results. This also applies with regards to the size of the windows where larger sizes have slightly lower environmental impacts compared with smaller sizes and the other way around.

System boundary

Type of EPD: Cradle to gate - with options. The following life cycle phases were considered:
Product stage:

- A1 - Raw material extraction and processing: production of the pre-products (e.g. glass pane profiles, covers, brackets, sealant...) and packaging components (primarily wood)
- A2 - Transport to the manufacturer: Transport of pre-products and packaging components to the manufacturing site
- A3 - Manufacturing: The composite profiles for the products are produced at VELUX production site in Grindsted in Denmark in a pultrusion process. The final assembly and production of the VMS modules takes place at the VELUX production site in Østbirk in Denmark. The final production processes include shortening of profiles, drilling of holes, clamping and glueing, mounting of gaskets, brackets, panes etc. as well as stacking on pallets.

End of life stage:

- C1 - De-construction: de-construction of the window with the use of a screwdriver
- C2 - Transport: transport of window materials to incineration and recycling
- C3 - Waste processing: sorting of glass waste, incineration of plastic and rubber parts
- C4 - Disposal: disposal of all materials

Benefits and loads beyond the system boundaries:

- D - Reuse, recovery and recycling potential: benefits from plastic incineration processes and recycling of metal and glass. For details, see scenario information under 'Scenarios and additional technical information'.

Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Denmark

Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

2.3 kg wood packaging is used per declared unit. This is the only biogenic material used.

Information describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	1	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

The construction process stage and the use stage modules are not declared. However, the quantity of packaging generated in module A5 is declared as scenario information.

Installation into the building (A5)

Name	Value	Unit
Wood packaging for waste treatment	2.3	kg
Plastic packaging for waste treatment	0.07	kg
Metal screws for waste treatment	0.02	kg

End of life (C1-C4)

Name	Value	Unit
Collected as mixed construction waste	105	kg
Recycling	31	kg
Energy recovery	3	kg
Landfilling	71	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

The recycling efficiency for all materials is maximum 90% in accordance with *EN 17213*. This means that only 90% of the recycled materials substitute primary materials. Secondary materials in the VMS modules do not substitute primary materials in the end-of-life scenario. The recycled glass is used as container glass in the end-of-life scenario.

Name	Value	Unit
Glass recycled	30	%
Metal recycled	95	%
Plastic incinerated with energy recovery	95	%

LCA: Results

Disclaimer:

EP-freshwater: This indicator has been calculated as 'kg P eq' as required in the characterization model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml)

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m2 VMS with double glazing

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.74E+02	3.86E+00	3.93E+00	1.85E-03	1.02E-01	3.38E+00	1.21E+00	-2.48E+01
GWP-fossil	kg CO_2 eq	1.74E+02	3.84E+00	7.8E+00	1.84E-03	1.01E-01	3.38E+00	1.26E+00	-2.48E+01
GWP-biogenic	kg CO_2 eq	1.94E-01	-6.54E-03	-3.88E+00	6.14E-06	-1.72E-04	8.53E-04	-5.68E-02	-2.88E-02
GWP-luluc	kg CO_2 eq	4.35E-02	3.1E-02	1.16E-02	2.67E-06	8.15E-04	1.12E-04	2.79E-03	-7.8E-03
ODP	kg CFC11 eq	8.4E-08	4.6E-16	3.61E-09	4.05E-17	1.21E-17	1.34E-08	3.26E-15	-3.28E-14
AP	mol H^+ eq	3.21E+01	1.27E-02	1.21E-02	4.07E-06	3.33E-04	2.25E-03	5.7E-03	-1.24E-01
EP-freshwater	kg P eq	2.21E+00	1.16E-05	4.36E-05	4.92E-09	3.06E-07	3.24E-05	1.3E-04	-1.15E-05
EP-marine	kg N eq	3.84E-02	5.73E-03	4.27E-03	9.04E-07	1.51E-04	9.71E-04	1.47E-03	-2.75E-02
EP-terrestrial	mol N eq	4.09E-01	6.4E-02	4.44E-02	9.49E-06	1.68E-03	1.13E-02	1.61E-02	-3.09E-01
POCP	kg NMVOC eq	1.51E+00	1.12E-02	1.13E-02	2.48E-06	2.94E-04	2.56E-03	4.36E-03	-6.58E-02
ADPE	kg Sb eq	1.81E-03	2.75E-07	6.64E-06	5.33E-10	7.22E-09	1.13E-07	9.57E-08	-8.27E-06
ADPF	MJ	2.51E+03	5.1E+01	9.79E+01	3.24E-02	1.34E+00	2.32E+00	1.75E+01	-3.1E+02
WDP	m^3 world eq deprived	4.35E+00	3.42E-02	-5.58E-02	4.02E-04	9E-04	3.84E-01	3.97E-02	-1.93E+00

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m2 VMS with double glazing

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	5.48E+02	2.87E+00	9.14E+01	1.44E-02	7.54E-02	2.33E-01	1.56E+00	-5.72E+01
PERM	MJ	0	0	3.92E+01	0	0	0	0	0
PERT	MJ	5.48E+02	2.87E+00	1.31E+02	1.44E-02	7.54E-02	2.33E-01	1.56E+00	-5.72E+01
PENRE	MJ	2.78E+03	5.1E+01	9.51E+01	3.24E-02	1.34E+00	7.74E+01	1.75E+01	-3.1E+02
PENRM	MJ	1.47E+02	0	2.83E+00	0	0	-7.51E+01	0	0
PENRT	MJ	2.93E+03	5.1E+01	9.8E+01	3.24E-02	1.34E+00	2.32E+00	1.75E+01	-3.1E+02
SM	kg	2.78E+00	0	2.32E-02	0	0	0	0	0
RSF	MJ	1.52E-12	0	0	0	0	0	0	0
NRSF	MJ	1.78E-11	0	0	0	0	0	0	0
FW	m^3	7.02E+02	3.32E-03	4.07E-02	1.66E-05	8.73E-05	9.04E-03	1.69E-03	-1.47E-01

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 = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m2 VMS with double glazing

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	3.48E-03	2.38E-06	2.17E-07	1.34E-11	6.25E-08	1.65E-09	1.97E-07	-2.46E-07
NHWD	kg	6.04E+01	7.81E-03	3.44E-01	2.3E-05	2.05E-04	3.93E+01	3.9E+01	-3.65E+00
RWD	kg	1.92E-01	6.32E-05	3.33E-03	4.92E-06	1.66E-06	3.72E-05	1.9E-04	-1.06E-02
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	6.24E+00	0	0	0	0	1.71E+01	0	0

MER	kg	0	0	0	0	0	1.4E+00	0	0
EEE	MJ	0	0	0	0	0	6.1E+00	0	0
EET	MJ	0	0	0	0	0	1.1E+01	0	0

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

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m2 VMS with double glazing

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	Disease incidence	2E-06	6.8E-08	5.93E-07	3.41E-11	1.79E-09	1.34E-08	6.23E-08	-1.04E-06
IR	kBq U235 eq	3.94E+00	9.13E-03	3.52E-01	8.07E-04	2.4E-04	2.16E-02	2.44E-02	-2.05E+00
ETP-fw	CTUe	4.57E+02	3.6E+01	2.56E+01	1.39E-02	9.47E-01	1.33E+00	1.45E+01	-2.44E+02
HTP-c	CTUh	3.04E-07	7.55E-10	4.9E-08	3.83E-13	1.98E-11	6.01E-11	9.67E-10	-1.42E-08
HTP-nc	CTUh	1.34E-06	4.43E-08	5.12E-08	1.41E-11	1.16E-09	2.65E-09	9.19E-08	-2.29E-07
SQP	SQP	1.33E+02	1.79E+01	1.09E+03	1.03E-02	4.7E-01	1.98E+00	2.46E+00	-1.34E+01

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator IRP. 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.

Disclaimer 2 – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

References

EN 14351-1
EN 14351-1:2006+A2:2016, Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets.

EN 15804
EN 15804:2019+A2: Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products.

EN 17213
EN 17213:2020: 'Windows and doors – Environmental Product Declarations – Product category rules for windows and pedestrian doorsets'.

IBU PCR Part A
IBU PCR Part A: Institut Bauen und Umwelt e.V., Product Category Rules for Building-Related Products and Services. Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019.

ISO 10077-1
ISO 10077-1:2017, Thermal performance of windows, doors and shutters - Calculation of termal transmittance - Part 1: General.

ISO 10077-2
ISO 10077-2:2017, Thermal performance of windows, doors and shutters - Calculation of termal transmittance - Part 2: Numerical method for frames.

ISO 14025
DIN EN ISO 14025:2011-10, Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

Regulation (EU) No. 305/2011
REGULATION (EU) No 305/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC.

GaBi LCA software and database
The LCA modelling software is GaBi program version 9.5.2.49 with corresponding databases from Sphera Solutions GmbH. Documentation hyperlink www.gabi-software.com/support/gabi.

IBU 2016
Institut Bauen und Umwelt e.V.: General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V. Version 1., Berlin: Institut Bauen und Umwelt e.V., 2016. Hyperlinks: http://www.ibu-epd, www.ibu-epd.com.

Publisher

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Programme holder

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Author of the Life Cycle Assessment

FORCE Technology
Park Alle 345
2605 Brøndby
Denmark

+4543250856
chme@force.dk
www.forcetechnology.com

Owner of the Declaration

VELUX Group
Ådalsvej 99
2970 Hørsholm
Denmark

+4545164726
jakob.roerbech@velux.com
www.velux.com

ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	VELUX Group
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-VEL-20210076-CCI3-EN
Issue date	04.05.2021
Valid to	03.05.2026

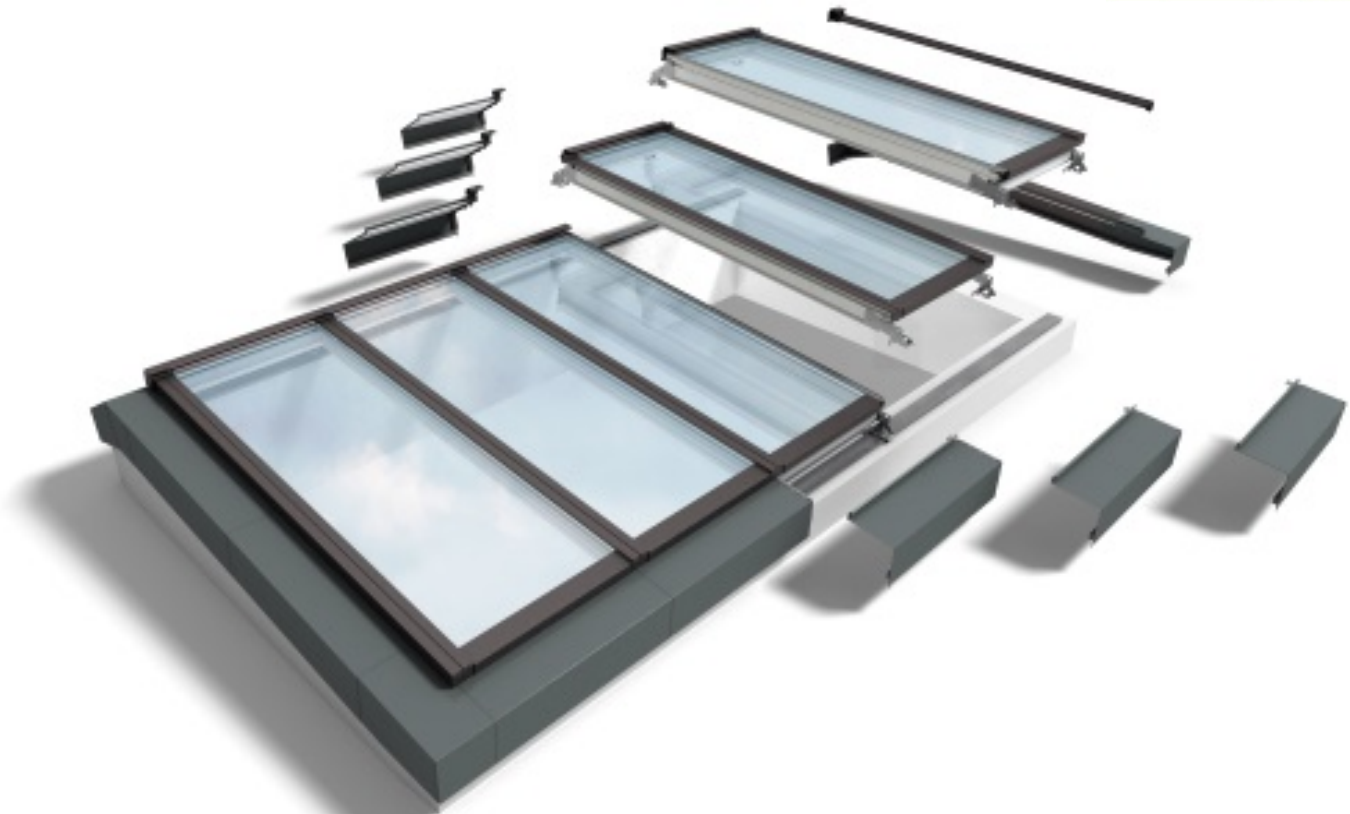
VELUX Modular Skylight (triple glazing configuration)

VELUX Group

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

www.ibu-epd.com | https://epd-online.com



General Information

VELUX Group

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-VEL-20210076-CCI3-EN

This declaration is based on the product category rules:

Windows and doors , 01.08.2021
(PCR checked and approved by the SVR)

Issue date

04.05.2021

Valid to

03.05.2026

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

VELUX Modular Skylight (triple glazing configuration)

Owner of the declaration

VELUX Group
Ådalsvej 99
2970 Hørsholm
Denmark

Declared product / declared unit

The declared unit is a window of one square meter (m^2) with triple glazing configuration.

The declared unit is based on the configuration of a standard size window measuring 1.23 m * 1.48 m.

Scope:

The EPD is a representative EPD covering VELUX Modular System (VMS) products. The products are manufactured by VELUX Group in Østbirk, Denmark for sale throughout Europe.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR			
Independent verification of the declaration and data according to ISO 14025:2011			
	☐	internally	☒ externally

Juliane Franze,
(Independent verifier)

Product

Product description/Product definition

VELUX Modular Skylights (VMS) are sash-frame constructed single roof windows. The modules fit together and can be configured in several predefined daylight solutions. All individual skylights are delivered as prefabricated modules with dedicated factory finished flashings to ensure watertightness in every solution.
The VMS include modules, which can be opened (venting) as well as modules, which cannot be opened (fixed). The EPD covers VMS modules in sizes from 0.405 m^2 up to 2.3 m^2.

The glass panes are with triple glazing and different glass configurations are covered by the EPD. The glass thickness ranges from 18 to 22 mm. Some glass panes have cavities filled with Argon gas others with Krypton. The representative glass configuration used for the EPD calculations has 8 mm toughened glass, 12 mm space, 4 mm toughened glass, 12 mm space and 10 mm laminated glass. This configuration is conservative with regards to the environmental impact results. For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) *Regulation (EU) No. 305/2011* (CPR) applies. The product needs a declaration of performance taking into consideration *EN 14351-1:2006+A2:2016*, Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets. For the application and use, the respective national provisions apply.

Application

VELUX Modular Skylight consists of modules, that are built together to form a long band of window modules in several predefined solutions such as a longlight or ridgelight. The length of the band of modules is determined by the need of the individual building.

Technical Data

The Declaration of Performance including relevant technical specifications and test methods/test standards can be downloaded from the webpage www.velux.com/ce-marking.

The performance values are specific for the specific VMS variants covered by the EPD.

The declared values in below table relate to the reference product incl. the pane variant 16T. For other VMS product variants, specific values can be selected at the bottom of the above-mentioned download page.

Constructional data (Reference product incl. pane variant 16T)

Name	Value	Unit
Fire resistance class § 4.4.1	B-s1.d0	class
Air permeability , § 4.14	4	class
Resistance to wind load, § 4.2 (for window width >1000 mm or height > 2400 mm no performance is determined)	C5	class
Resistance to snow loads, § 4.3	8 mm toughened -12 mm- 4 mm heat strengthened 12 mm - 10.76 mm (55.2) laminated heat strengthened	mm
Watertightness, § 4.5	E1200	class
Impact resistance, § 4.7 (for window width >550 mm or height > 778 mm no performance is determined)	test is passed	-
Load bearing capacity of safety devices, § 4.8	test is passed	-
Acoustic performance, § 4.11	38 (-1; -4)	-
Thermal transmittance, § 4.12 , 90 degree installation acc. to EN 10077-1/2	1,1	W/(m^2K)
Solar factor, § 4.13	0.50	-
Light transmittance, § 4.13	0.71	-

Product performance data in accordance with *DS/EN 14351-1:2006+A2:2016*, Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets.

Base materials/Ancillary materials

Name	Value	Unit
Glass pane	75	%
Composite frame of glass fibre reinforced polyurethane	14	%
Metals	8	%
Other materials	3	%

Recycled content

Name	Value	Unit
Aluminum	30	%
Glass	12	%
Steel	10	%
Others	0	%

The values stated in the table relate to the recycled material streams in VELUX production.

Reference service life

No reference service life (RSL) is defined for the VMS products because the use stage modules are not included in the EPD.

LCA: Calculation rules

Declared Unit

Multiple product dimensions are represented by this EPD as specified in the product description.

The declared unit is 1 m2 window calculated based on one representative window module measuring 1.23 m * 1.48 m (reference window based on *EN 14351-1*) with triple glazed

window panes.

Declared unit

Name	Value	Unit
Declared unit	1	m^2

A data quality and a sensitivity analysis shows that the results are robust with regards to data quality and appropriateness. There is low variability of production processes and product variations have a limited influence on the results. This also applies with regards to the size of the windows where larger sizes have slightly lower environmental impacts compared with smaller sizes and the other way around.

System boundary

Type of EPD: Cradle to gate - with options. The following life cycle phases were considered:
Product stage:

- A1 - Raw material extraction and processing: production of the pre-products (e.g. glass pane profiles, covers, brackets, sealant...) and packaging components (primarily wood)
- A2 - Transport to the manufacturer: Transport of pre-products and packaging components to the manufacturing site
- A3 - Manufacturing: The composite profiles for the products are produced at VELUX production site in Grindsted in Denmark in a pultrusion process. The final assembly and production of the VMS modules takes place at the VELUX production site in Østbirk in Denmark. The final production processes include shortening of profiles, drilling of holes, clamping and glueing, mounting of gaskets, brackets, panes etc. as well as stacking on pallets.

End of life stage:

- C1 - De-construction: de-construction of the window with the use of a screwdriver
- C2 - Transport: transport of window materials to incineration and recycling
- C3 - Waste processing: sorting of glass waste, incineration of plastic and rubber parts
- C4 - Disposal: disposal of all materials

Benefits and loads beyond the system boundaries:

- D - Reuse, recovery and recycling potential: benefits from plastic incineration processes and recycling of metal and glass. For details, see scenario information under “Scenarios and additional technical information”.

Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Denmark

Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

2.3 kg wood packaging is used per declared unit. This is the only biogenic material used.

Information describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	1	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

The construction process stage and the use stage modules are not declared. However, the quantity of packaging generated in module A5 is declared as scenario information.

Installation into the building (A5)

Name	Value	Unit
Wood packaging for waste treatment	2.3	kg
Plastic packaging for waste treatment	0.07	kg
Metal screws for waste treatment	0.02	kg

End of life (C1-C4)

Name	Value	Unit
Collected as mixed construction waste	105	kg
Recycling	31	kg
Energy recovery	3	kg
Landfilling	71	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

The recycling efficiency for all materials is maximum 90% in accordance with *EN 17213*. This means that only 90% of the recycled materials substitute primary materials. Secondary materials in the VMS modules do not substitute primary materials in the end-of-life scenario. The recycled glass is used as container glass in the end-of-life scenario.

Name	Value	Unit
Glass recycled	30	%
Metal recycled	95	%
Plastic incinerated with energy recovery	95	%

LCA: Results

Disclaimer:

EP-freshwater: This indicator has been calculated as 'kg P eq' as required in the characterization model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml)

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m2 VMS with triple glazing

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.87E+02	4.5E+00	3.93E+00	1.85E-03	1.19E-01	3.49E+00	1.32E+00	-2.75E+01
GWP-fossil	kg CO_2 eq	1.87E+02	4.47E+00	7.8E+00	1.84E-03	1.18E-01	3.49E+00	1.38E+00	-2.75E+01
GWP-biogenic	kg CO_2 eq	1.95E-01	-7.62E-03	-3.88E+00	6.14E-06	-2.01E-04	1.03E-03	-6.44E-02	-3.13E-02
GWP-luluc	kg CO_2 eq	4.41E-02	3.61E-02	1.16E-02	2.67E-06	9.55E-04	1.24E-04	3.21E-03	-8.53E-03
ODP	kg CFC11 eq	8.71E-08	5.36E-16	3.61E-09	4.05E-17	1.42E-17	1.63E-08	3.61E-15	-3.67E-14
AP	mol H^+ eq	1.37E+00	1.47E-02	1.21E-02	4.07E-06	3.89E-04	2.32E-03	6.44E-03	-1.39E-01
EP-freshwater	kg P eq	5.4E-02	1.36E-05	4.36E-05	4.92E-09	3.58E-07	3.93E-05	1.3E-04	-1.28E-05
EP-marine	kg N eq	3.9E-02	6.67E-03	4.27E-03	9.04E-07	1.76E-04	9.76E-04	1.67E-03	-3.18E-02
EP-terrestrial	mol N eq	4.15E-01	7.46E-02	4.44E-02	9.49E-06	1.97E-03	1.14E-02	1.84E-02	-3.58E-01
POCP	kg NMVOC eq	1.87E-01	1.3E-02	1.13E-02	2.48E-06	3.44E-04	2.58E-03	4.95E-03	-7.49E-02
ADPE	kg Sb eq	2.42E-03	3.2E-07	6.64E-06	5.33E-10	8.45E-09	1.36E-07	1.06E-07	-8.81E-06
ADPF	MJ	2.8E+03	5.94E+01	9.79E+01	3.24E-02	1.57E+00	2.61E+00	1.9E+01	-3.45E+02
WDP	m^3 world eq deprived	4.28E+00	3.99E-02	-5.56E-02	4.02E-04	1.05E-03	4E-01	4.97E-02	-2.03E+00

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m2 VMS with triple glazing

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	5.87E+02	3.34E+00	9.14E+01	1.44E-02	8.82E-02	2.52E-01	1.74E+00	-5.84E+01
PERM	MJ	0	0	3.92E+01	0	0	0	0	0
PERT	MJ	5.87E+02	3.34E+00	1.31E+02	1.44E-02	8.82E-02	2.52E-01	1.74E+00	-5.84E+01
PENRE	MJ	3.11E+03	5.95E+01	9.51E+01	3.24E-02	1.57E+00	7.69E+01	1.9E+01	-3.45E+02
PENRM	MJ	1.52E+02	0	2.83E+00	0	0	-7.43E+01	0	0
PENRT	MJ	3.26E+03	5.95E+01	9.79E+01	3.24E-02	1.57E+00	2.61E+00	1.9E+01	-3.45E+02
SM	kg	3.3E+00	0	2.32E-02	0	0	0	0	0
RSF	MJ	2.33E-12	0	0	0	0	0	0	0
NRSF	MJ	2.74E-11	0	0	0	0	0	0	0
FW	m^3	8.05E+02	3.87E-03	4.07E-02	1.66E-05	1.02E-04	9.41E-03	2.02E-03	-1.5E-01

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 = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m2 VMS with triple glazing

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	5.26E-03	2.77E-06	2.17E-07	1.34E-11	7.31E-08	1.61E-09	2.28E-07	-2.79E-07
NHWD	kg	7.19E+01	9.1E-03	3.44E-01	2.3E-05	2.4E-04	4.56E+01	4.53E+01	-3.91E+00
RWD	kg	2.08E-01	7.36E-05	3.33E-03	4.92E-06	1.94E-06	3.76E-05	2.05E-04	-1.12E-02
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	7.51E+00	0	0	0	0	2.01E+01	0	0

MER	kg	0	0	0	0	0	1.43E+00	0	0
EEE	MJ	0	0	0	0	0	6.29E+00	0	0
EET	MJ	0	0	0	0	0	1.13E+01	0	0

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

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 m2 VMS with triple glazing

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	Disease incidence	2.03E-06	7.92E-08	5.93E-07	3.41E-11	2.09E-09	1.47E-08	7.11E-08	-1.15E-06
IR	kBq U235 eq	3.92E+00	1.06E-02	3.52E-01	8.07E-04	2.81E-04	2.52E-02	2.59E-02	-2.15E+00
ETP-fw	CTUe	4.62E+02	4.2E+01	2.56E+01	1.39E-02	1.11E+00	1.52E+00	1.54E+01	-2.86E+02
HTP-c	CTUh	3.21E-07	8.8E-10	4.9E-08	3.83E-13	2.32E-11	6.76E-11	1.08E-09	-1.54E-08
HTP-nc	CTUh	1.29E-06	5.16E-08	5.12E-08	1.41E-11	1.36E-09	2.79E-09	1.04E-07	-2.52E-07
SQP	SQP	1.31E+02	2.08E+01	1.09E+03	1.03E-02	5.51E-01	2.36E+00	2.81E+00	-1.49E+01

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator IRP. 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.

Disclaimer 2 – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

References

EN 14351-1
EN 14351-1:2006+A2:2016, Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets.

EN 15804
EN 15804:2019+A2: Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products.

EN 17213
EN 17213:2020: 'Windows and doors – Environmental Product Declarations – Product category rules for windows and pedestrian doorsets'.

IBU PCR Part A
IBU PCR Part A: Institut Bauen und Umwelt e.V., Product Category Rules for Building-Related Products and Services. Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019.

ISO 10077-1
ISO 10077-1:2017, Thermal performance of windows, doors and shutters - Calculation of termal transmittance - Part 1: General.

ISO 10077-2
ISO 10077-2:2017, Thermal performance of windows, doors and shutters - Calculation of termal transmittance - Part 2: Numerical method for frames.

ISO 14025
DIN EN ISO 14025:2011-10, Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

Regulation (EU) No. 305/2011
REGULATION (EU) No 305/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC.

GaBi LCA software and database
The LCA modelling software is GaBi program version 9.5.2.49 with corresponding databases from Sphera Solutions GmbH. Documentation hyperlink www.gabi-software.com/support/gabi.

IBU 2016
Institut Bauen und Umwelt e.V.: General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V. Version 1., Berlin: Institut Bauen und Umwelt e.V., 2016. Hyperlinks: http://www.ibu-epd, www.ibu-epd.com.

Publisher

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Programme holder

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Author of the Life Cycle Assessment

FORCE Technology
Park Alle 345
2605 Brøndby
Denmark

+4543250856
chme@force.dk
www.forcetechnology.com

Owner of the Declaration

VELUX Group
Ådalsvej 99
2970 Hørsholm
Denmark

+4545164726
jakob.roerbech@velux.com
www.velux.com