

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) |
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**VELUX polyurethane roof windows GPU, GTU, GXU, GLU, VIU, GIU
(double glazing configuration)
VELUX Group**

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General Information**VELUX Group****Programme holder**

IBU – Institut Bauen und Umwelt e.V.
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Declaration number

EPD-VEL-20250344-CBI1-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

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Valid to

10/07/2030



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VELUX polyurethane roof windows GPU, GTU, GXU, GLU, VIU, GIU (double glazing configuration)**Owner of the declaration**

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Declared product / declared unit

The declared unit is 1 m² of a polyurethane roof window with double glazing configuration (2-layer). The declared unit is based on the size 1.14 m x 1.60 m (SK10), which is the closest available size to the standard size 1.23 m x 1.48 m (DS/EN 17213:2020).

Scope:

The EPD is a representative EPD covering part of VELUX polyurethane roof windows as specified in detail in the product description. The products are manufactured by the VELUX Group at different production sites in Europe for sale throughout Europe. The windows' production take place in Germany, Denmark and Poland.

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 | | |
| <input type="checkbox"/> | internally | <input checked="" type="checkbox"/> externally |



Dr.-Ing. Nikolay Minkov,
(Independent verifier)










Product

Product description/Product definition

The VELUX polyurethane roof windows are skylight window products for sale in the European market. The product family covers a range of product varieties as specified in the table below. All windows have a polyurethane and wooden frame/sash. Some windows can be opened (venting), while others cannot be opened (fixed). In addition, the windows consist of 3 different hinge-functionalities (pivot-hung, top-hung, side-hung, bottom-hung). The handles and handlebars are made of aluminium, while the hinges are made of steel (galvanised, stainless). Some of the window varieties can be used in conjunction with electric or solar window operators for automatic opening and closing, while other windows are opened and closed manually. The calculations are based on the representative window type named GPU. In the LCA, the GPU was assessed to be a conservative choice for a representative window type.

The glass panes are with double glazing (2-layer), and different glazing configurations are covered by the EPD. The EPD is based on the following glazing unit configuration: 50/51, 70, 70 Q, 76.

Only the window modules are included, and any applied window operators, installation products, accessories, etc., are not part of the EPD. These are available as separate EPDs, that can be used in combination with this EPD.

| Window type | | | Glazing options | Description |
|--------------|---|-----------------|---------------------|--|
| GPU |  | GPU -K-- 20-- | --70, --70Pro, --76 | White lacquered top-hung window with manual bottom operation, ventilation flap and integrated handlebar along the top sash and pivot-hinge for cleaning. Due to the additional pivot-hinge it is heavier than GGU. |
| GTU |  | GTU -K-- 20-- | --70 | White lacquered top-hung window for rescue opening with manual bottom operation, Like GPU, but with gas springs in order to enable extra opening height and additional handles on the side sash. |
| GPU Electric |  | GPU -K-- 20--21 | --70, --76, | White lacquered GPU window with remote operation - mains motor. Like GPU, but with an electrical window opener. |
| GPU Solar |  | GPU -K-- 20--30 | --70 | White lacquered GPU window with remote operation - mains motor. Like GPU, but with a solar window opener. |
| GXU |  | GXU -K-- 20-- | --70 | White lacquered manual side-opening window with ventilation flap along top sash and handle bar in the side. |
| GLU |  | GLU -K-- 20-- | --51 | White lacquered top-hung window with manual bottom operation, ventilation flap and integrated handlebar along the top sash and pivot-hinge for cleaning. Similar to GGU, but with simplified ventilation flap/handlebar. |
| GLU-B |  | GLU -K-- 20--B | --51 | White lacquered manual bottom operation window, with ventilation slats and handle on bottom sash. Similar to GGU, but ventilation flap/handlebar is replaced by ventilation slats and a handle on the bottom sash. |
| VIU |  | VIU -K-- 20-- | --70 | White lacquered vertical extension fixed window. Fixed without opening mechanism or ventilation flap. |
| GIU |  | GIU -K-- 20-- | --70 | White lacquered sloped extension fixed window. Fixed without opening mechanism or ventilation flap. |

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 polyurethane roof windows are used in renovation and new builds. Either installed as a single window or in a combination of multiple windows.

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.

The performance values are specific for each polyurethane roof window variant covered by the EPD. The declared values in the table relate to the reference product variant GPU with double-glazed configuration 70 (GPU --70).

Constructional data

| Name | Value | Unit |
|---|---|---------|
| Reaction to fire | D-s2,d2 | class |
| Air permeability acc. EN 12207 | 4 | class |
| Resistance to wind load, (for window width >1140 mm or height > 1398 mm no performance is determined) | C3 | class |
| Resistance to snow loads | 4 mm toughened - 16 mm - 6.8 mm laminated float | mm |
| Water tightness acc. EN 12208 unprotected / protected | E900 | class |
| Impact resistance (for window width<550mm or height<778mm no performance is determined) | 3 | class |
| Acoustic performance | 35 (-1; -3) | - |
| Load-bearing capacity of safety devices | passed | - |
| Thermal transmittance, 90 degree installation acc. to EN 10077-1/2 | 1.3 | W/(m²K) |
| Solar factor | 0.46 | - |
| Light transmittance | 0.68 | - |

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

The main components of the polyurethane roof window are the glazing unit (made of mainly laminated and tempered glass), frames/sashes (made of polyurethane and wood), hinges (made of steel) and handles/handlebars (made of iron). The packaging of the products consists mostly of cardboard with paper inserts and galvanised steel.

| Name | Value | Unit |
|---|-------|------|
| Glazing unit (2-layer) | 41 | % |
| Wooden frame/sash | 15 | % |
| Polyurethane frame/sash | 10 | |
| Steel components (galvanised and stainless) | 18 | % |
| Aluminium components | 4 | % |
| Other components (including packaging) | 5 | % |
| Packaging | 7 | % |

The polyurethane components are produced internally in VELUX facilities, located in Poland, Denmark, Slovakia and Germany. The wooden components (sashes, frames) are produced internally in VELUX facilities, located in Hungary, Poland, and Denmark. VELUX receives sawn pine wood (dried) and processes it (sawing, cutting, etc.) into lamellas of different quality. The lamellas are then glued together (lamination) and processed into profiles (cutting them into the correct size,

cladding, drilling, etc.). VELUX produces the glazing units in sites located in Hungary, Denmark, France, and Germany. After their production, the glazing units join the window assembly process. Finally, the frames/sashes, glazing unit and the rest of the components (delivered by suppliers) are transported to VELUX assembly sites in Germany, Denmark and Poland where they are assembled into the final window product.

This product/article/at least one partial article contains substances listed in *the candidate list* (date: 23.08.2023) exceeding 0.1 percentage by mass: **NO**.

Reference service life

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

LCA: Calculation rules

Declared Unit

Multiple product dimensions are represented by this EPD (see product description). The declared unit is 1 m² polyurethane roof window and calculated based on the size 1.14 m x 1.60 m (SK10), which is the closest available size to the reference window size (1.23 m x 1.48 m based on EN 14351-1). The GPU variant has the largest weight per m² in the product group. Since the frame/sash construction is alike across all variants in the product group, the parts that set the variants apart are primarily the window-operation components, such as hinges, handles and ventilation flaps. These components are to a high degree metal-based, and the worst-case product can thus be identified by the weight of products with a similar size and glazing unit. The heavier the product, the larger the content of metal. Therefore, the GPU variant can be considered more representative as a worst-case scenario for the windows group.

Declared unit and mass reference

| Name | Value | Unit |
|---------------|-------|-------------------|
| Declared unit | 1 | m ² |
| Grammage | 44.08 | kg/m ² |

Data quality and a sensitivity analysis show that the results are robust with regard to data quality and appropriateness. There is low variability of production processes, and product variations have a limited influence on the results.

System boundary

The type of the EPD is "cradle to gate - with options" including the modules C1-C4 and D. The following life cycle phases were considered:

Product stage:

- A1 - Raw material supply: extraction and processing, production of the pre-products (e.g. laminated glass, sawn pine wood, metal/plastic components, sealants etc.) and sales packaging components (e.g., cardboard).
- A2 - Transport: Transport of pre-products and packaging components to the processing or assembly sites, as well as internal transportation of components between sites.
- A3 - Manufacturing: The wooden frames/sashes and glazing units are produced internally at VELUX

production sites. Subsequently, the final production and assembly of the windows takes place, which involves activities such as shortening of profiles, drilling of holes, clamping and glueing, mounting of gaskets, brackets, panes etc.

End of life stage:

- C1 - De-construction/demolition: deconstruction of the window with the use of an electric screwdriver and manual work.
- C2 - Transport: transport of window materials to Material Recovery Facilities (MRF) and then to incineration, landfill or recycling facilities.
- C3 - Waste processing: sorting of waste, recycling (metal and glass waste), incineration (plastic and wood waste) and landfill (metal, glass, wood and plastic waste).
- C4 - Disposal: disposal of all materials

Benefits and loads beyond the system boundaries:

- D - Reuse, recovery and recycling potential: benefits from plastic and wood waste incineration processes and material recycling of metal and glass.

For the environmental impact, the use of green electricity was calculated. The proportion of the electricity demand covered by green electricity in the total electricity demand is 100 %. The source of electricity is wind energy and the emission factor used is 0.014 kg CO₂ eq. / kWh.

Geographic Representativeness

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

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. Average secondary datasets were retrieved from the Managed LCA Content (v2024.2) and Ecoinvent (v3.10) databases.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

6.92 kg of wood is used in window frames/sashes and 0.05 kg of paper inlet is used per declared unit. For the packaging, 3.10



kg of cardboard and 0.008 kg of paper insert are used per declared unit.

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

Information on describing the biogenic carbon content at factory gate

| Name | Value | Unit |
|---|-------|------|
| Biogenic carbon content in product | 3.18 | kg C |
| Biogenic carbon content in accompanying packaging | 2.48 | kg C |

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

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.

Scenario information for packaging generated in module A5

| Name | Value | Unit |
|--|-------|------|
| Cardboard packaging for waste treatment | 3.10 | kg |
| Paper packaging for waste treatment | 0.008 | kg |
| Steel packaging for waste treatment (galvanised) | 0.005 | kg |
| EPS packaging for waste treatment | 0.29 | kg |
| LD PE film packaging for waste treatment | 0.011 | kg |

End of life (C1-C4)

| Name | Value | Unit |
|---------------------------------------|-------|------|
| Collected as mixed construction waste | 44.08 | kg |
| Recycling | 16.44 | kg |
| Energy recovery | 12.7 | kg |
| Landfilling | 14.93 | kg |

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

| Name | Value | Unit |
|---------------------|-------|------|
| Wood incinerated | 95 | % |
| Plastic incinerated | 95 | % |
| Paper incinerated | 95 | % |
| Metal recycled | 95 | % |
| Glass recycled | 30 | % |

LCA: Results

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 VELUX polyurethane roof window

| Parameter | Unit | A1 | A2 | A3 | C1 | C2 | C3 | C4 | D |
|----------------|----------------------------------|-----------|----------|----------|----------|----------|-----------|----------|-----------|
| GWP-total | kg CO ₂ eq | 1.04E+02 | 4.21E+00 | 2.46E+01 | 1.34E-03 | 1.35E+00 | 2.47E+01 | 1.45E+00 | -3.96E+01 |
| GWP-fossil | kg CO ₂ eq | 1.31E+02 | 4.13E+00 | 8.37E+00 | 1.33E-03 | 1.33E+00 | 1.5E+01 | 2.33E-01 | -3.95E+01 |
| GWP-biogenic | kg CO ₂ eq | -2.68E+01 | 9.85E-03 | 1.62E+01 | 1.19E-05 | 3.17E-03 | 9.68E+00 | 1.22E+00 | -4.47E-02 |
| GWP-luluc | kg CO ₂ eq | 7.22E-02 | 6.93E-02 | 3.73E-02 | 2.02E-07 | 2.23E-02 | 1.15E-03 | 1.26E-03 | -1.23E-02 |
| ODP | kg CFC11 eq | 5.57E-07 | 6.08E-13 | 1.25E-09 | 3.01E-14 | 1.96E-13 | -5.34E-09 | 6.15E-13 | -4.69E-11 |
| AP | mol H ⁺ eq | 4.45E-01 | 5.62E-03 | 2.69E-02 | 2.57E-06 | 7.72E-03 | 1.03E-02 | 1.62E-03 | -1.29E-01 |
| EP-freshwater | kg P eq | 3.44E-04 | 1.76E-05 | 9.64E-05 | 5.51E-09 | 5.68E-06 | -1.17E-05 | 7.44E-06 | -2.21E-05 |
| EP-marine | kg N eq | 9.93E-02 | 2.03E-03 | 1.2E-02 | 6.41E-07 | 3.76E-03 | 4.64E-03 | 4.39E-04 | -3.06E-02 |
| EP-terrestrial | mol N eq | 1.11E+00 | 2.42E-02 | 1.23E-01 | 6.71E-06 | 4.18E-02 | 5.51E-02 | 4.71E-03 | -3.37E-01 |
| POCP | kg NMVOC eq | 3.06E-01 | 5.59E-03 | 3.69E-02 | 1.69E-06 | 7.25E-03 | 1.2E-02 | 1.52E-03 | -8.57E-02 |
| ADPE | kg Sb eq | 1.02E-03 | 3.59E-07 | 6.3E-06 | 2.49E-10 | 1.16E-07 | -4.27E-08 | 1.45E-08 | -1.32E-05 |
| ADPF | MJ | 1.85E+03 | 5.43E+01 | 1.32E+02 | 2.79E-02 | 1.75E+01 | 7.49E+00 | 3.14E+00 | -4.66E+02 |
| WDP | m ³ world eq deprived | 1.38E+01 | 6.39E-02 | 5.26E-01 | 3.67E-04 | 2.06E-02 | 2.68E+00 | 2.69E-02 | -5.85E+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 VELUX polyurethane roof window

| Parameter | Unit | A1 | A2 | A3 | C1 | C2 | C3 | C4 | D |
|-----------|----------------|----------|----------|----------|----------|----------|-----------|----------|-----------|
| PERE | MJ | 3.85E+02 | 4.68E+00 | 3.23E+02 | 2.01E-02 | 1.51E+00 | 1.08E+02 | 5.18E-01 | -1.09E+02 |
| PERM | MJ | 2.64E+02 | 0 | 4.19E+01 | 0 | 0 | -1.06E+02 | 0 | 0 |
| PERT | MJ | 6.5E+02 | 4.68E+00 | 3.65E+02 | 2.01E-02 | 1.51E+00 | 1.76E+00 | 5.18E-01 | -1.09E+02 |
| PENRE | MJ | 1.66E+03 | 5.43E+01 | 1.17E+02 | 2.79E-02 | 1.75E+01 | 2E+02 | 3.14E+00 | -4.66E+02 |
| PENRM | MJ | 1.93E+02 | 0 | 1.48E+01 | 0 | 0 | -1.92E+02 | 0 | 0 |
| PENRT | MJ | 1.85E+03 | 5.43E+01 | 1.32E+02 | 2.79E-02 | 1.75E+01 | 7.49E+00 | 3.14E+00 | -4.66E+02 |
| SM | kg | 4.6E+00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FW | m ³ | 6.31E-01 | 5.22E-03 | 3.54E-02 | 1.54E-05 | 1.68E-03 | 6.32E-02 | 8.1E-04 | -2.24E-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 VELUX polyurethane roof window

| Parameter | Unit | A1 | A2 | A3 | C1 | C2 | C3 | C4 | D |
|-----------|------|----------|----------|----------|----------|----------|----------|----------|-----------|
| HWD | kg | 2.32E-03 | 2.08E-09 | 2.35E-06 | 4.03E-11 | 6.7E-10 | 3.69E-09 | 7.56E-10 | -7.99E-08 |
| NHWD | kg | 1.38E+01 | 8.87E-03 | 2.89E-01 | 2.3E-05 | 2.86E-03 | 9.62E-01 | 1.38E+01 | -5.67E+00 |
| RWD | kg | 4E-02 | 9.9E-05 | 1.76E-03 | 4.45E-06 | 3.19E-05 | 3.13E-04 | 3.42E-05 | -1.7E-02 |
| CRU | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MFR | kg | 1.74E-02 | 0 | 1.57E+01 | 0 | 0 | 1.63E+01 | 0 | 0 |
| MER | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EEE | MJ | 3.45E-02 | 0 | 0 | 0 | 0 | 4.28E+01 | 0 | 0 |
| EET | MJ | 5.03E-02 | 0 | 0 | 0 | 0 | 7.74E+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 VELUX polyurethane roof window

| Parameter | Unit | A1 | A2 | A3 | C1 | C2 | C3 | C4 | D |
|-----------|-------------------|----------|----------|----------|----------|----------|----------|----------|-----------|
| PM | Disease incidence | 9.37E-06 | 5.67E-08 | 2.88E-07 | 2.15E-11 | 4.24E-08 | 4.28E-08 | 1.97E-08 | -1.85E-06 |
| IR | kBq U235 eq | 5.13E+00 | 1.44E-02 | 2.87E-01 | 7.34E-04 | 4.63E-03 | 4.2E-02 | 4.16E-03 | -2.52E+00 |
| ETP-fw | CTUe | 1.68E+03 | 4.03E+01 | 4.39E+01 | 8.08E-03 | 1.3E+01 | 3.47E+00 | 2.05E+00 | -1.36E+02 |
| HTP-c | CTUh | 1.77E-06 | 8.15E-10 | 1.17E-08 | 4.54E-13 | 2.62E-10 | 2.23E-10 | 4.75E-11 | -4.15E-08 |
| HTP-nc | CTUh | 9.71E-07 | 3.66E-08 | 1.05E-07 | 6.95E-12 | 1.18E-08 | 9.88E-09 | 2.46E-09 | -1.42E-07 |
| SQP | SQP | 4.99E+03 | 2.67E+01 | 2.68E+02 | 1.17E-02 | 8.61E+00 | 1.42E+00 | 7.82E-01 | -2.86E+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 'Potential Human exposure efficiency relative to U235'. 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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

The results show that module A1 has the highest impact across all environmental impact indicators (except GWP – biogenic). Module A3 has the second highest impact in most impact indicators due to the energy consumption. All main components in the windows contribute significantly to some of the environmental indicators. The glass in the glazing units has the highest contribution in most impact categories among all material types. The galvanised steel components contribute significantly to the results due to their high weight contribution to the product. The aluminium components are also significant for the WDP indicator, although the weight of the aluminium components is notably lower in comparison with the galvanised steel components. This is most likely due to the relatively high energy and water consumption in the production of aluminium.

References

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, version 1.4.

IBU PCR Part B

IBU PCR Part B: Institut Bauen und Umwelt e.V., Requirements on the EPD for Windows and doors, version 10: 2024.

IBU 2021

IBU 2021 Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V. Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021. www.ibu-epd.com.

EN 12207

EN 12207:2016 Windows and doors - Air permeability - Classification

EN 12208

EN 12208:2000 Windows and doors. Watertightness. Classification is classified in these ICS categories: 91.060.50 Doors and windows

EN 13501-1

EN 13501-1 EN13501-1, 2018: Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests.

ISO 14025

DIN EN ISO 14025:2011-10, Environmental labels and

declarations - Type III environmental declarations - Principles and procedures.

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 15804:2012+A2:2019+AC:2021, 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.

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

Candidate list

ECHA Candidate list of substances of very high concern, status 23.08.2023

ISO 10077-1

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

**ISO 10077-2**

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

LCA for Experts (GaBi) LCA software, Managed LCA

Content and Ecoinvent databases

The LCA modelling software is LCA for Experts with corresponding databases from Sphera Solutions GmbH (Managed LCA Content) and Ecoinvent. Documentation hyperlink www.gabisoftware.com/support/gabi.



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