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-20230188-IBB1-EN
Issue date	10.08.2023
Valid to	09.08.2028

VELUX Interior roller blinds

VELUX A/S

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



1. General Information

VELUX A/S

Programme holder

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

Declaration number

EPD-VEL-20230188-IBB1-EN

This declaration is based on the product category rules:

Sun protection systems, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

10.08.2023

Valid to

09.08.2028



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



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

VELUX Interior roller blinds

Owner of the declaration

VELUX Group
Ådalsvej 99
2970 Hørsholm
Denmark

Declared product / declared unit

1 m² of VELUX interior roller blinds

Scope:

100 % of the production volume of the current collection of VELUX interior roller blinds produced at the production sites in Denmark (Gåsdal Bygningsindustri A/S), France (Velsol France) and the Czech Republic (BKR ČR, s.r.o.), covering the variants DKL and RFL
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



Dr. Matthew Fishwick,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Manually operated blackout roller blinds (DKL) and translucent roller blinds (RFL) are made for installation in VELUX roof windows. VELUX interior blinds are available in a wide range of colours and designs. In both blinds, the cloth is made of coated polyester. The control bar, top fascia and side rails are made of anodised or white-painted aluminium.
The two blinds are of the size 1178 mm x 780 mm = 0.929 m^2
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 1873:2005*, Prefabricated accessories for roofing - Individual rooflights of plastics - Product specification and test methods and the CE-marking. For the application and use the respective national provisions apply.

2.2 Application

The blinds are made for installation in VELUX roof windows. The VELUX blackout roller blind offers blackout for darkness anytime. Ideal for bedrooms to ensure a good night's sleep or a daytime nap. VELUX translucent roller blind provides basic privacy whilst still allowing in natural light. Perfect for living rooms, offices and playrooms. The blinds can be combined with exterior sun screening products, electric or solar window operators and interior insect screens.

2.3 Technical Data

The declared values in the table relate to the reference product DKL (dark variant) in combination with VELUX roof window with 2-layer insulating glass unit (--70, Uw = 1.3 [W/(m^2K)]). For other covered product combination specific values please contact epd.support@velux.com.

Name	Value	Unit
U-value reduction ΔU	0.27	W/(m²K)
Improved insulation	20	%
Solar energy transmittance (gtot)	0.38	-
Improved g-value	17	%
Shading factor (Fc-value)	0.83	-

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to

- *EN 1873:2005*, Prefabricated accessories for roofing - Individual rooflights of plastics - Product specification and test methods

2.4 Delivery status

The product is available in pre-defined sizes covering 0.55 m x 0.7 m to 1.34 m x 1.6 m.

2.5 Base materials/Ancillary materials

Composition of the VELUC interior roller blind DKL (size 1178 mm x 780 mm = 0.929 m^2):
Aluminium 0.972 kg
Steel 0.073 kg
Polyester cloth 0.150 kg
other plastic parts 0.102 kg

1) 'This product/article/at least one partial article contains substances listed in the *candidate list* (date: 02.03.2022) exceeding 0.1 percentage by mass:

- no

2) 'This product/article/at least one partial article contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the *candidate list*, exceeding 0.1 percentage by mass:

- not investigated with suppliers

3) 'Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) *Regulation on Biocidal Products No. 528/2012)*:

- no

2.6 Manufacture

Extruded aluminium profiles that are either anodised or coated, are bought from external suppliers. Depending on the size of the interior roller blinds, they are either bought cut-to-length or as profiles to be cut before assembly. The other parts are also bought from other internal suppliers or external suppliers. The main production process then consists in assembling the final product and its packaging before shipment.

The factories are ISO 9001 certified.

2.7 Environment and health during manufacturing

All factories are *ISO 14001* and *ISO 45001* certified.

2.8 Product processing/Installation

Interior roller blinds are for installation in VELUX roof windows. It is easily clicked onto the top brackets pre-fitted on the window, leaving both hands free during the remaining part of the installation.

2.9 Packaging

The packaging usually consists of:
- cardboard
- paper insert

The use of other packaging materials is possible, but insignificant in terms of quantity.
Cardboard and paper are usually recycled.

2.10 Condition of use

The material composition of VELUX interior roller blinds does not change over their service life.

2.11 Environment and health during use

VELUX interior roller blinds do not contain any pollutants that could be released during use.

Environmental protection: According to current knowledge, hazards to water, air and soil cannot arise when the products are used as intended.

Health protection: According to current knowledge, no health hazards or impairments are to be expected.

2.12 Reference service life

It is not possible to calculate the reference service life according to *ISO 15686*. The service life based on a manufacturer's testing is 10 years. The corresponding utilization scenario is declared in Chapter 4.

2.13 Extraordinary effects

Fire
Not classified for fire performance.
Water
In the event of unforeseen exposure to water (flood), no adverse effects on human health or the environment are to be expected.

Mechanical destruction
In the event of unforeseen mechanical destruction, VELUX interior roller blinds must be replaced; no adverse effects on human health or the environment are to be expected.

2.14 Re-use phase
VELUX interior roller blinds can be dismantled manually without any problems. The metal parts are usually recycled, and the plastic parts are sent for thermal recycling for energy recovery.

2.15 Disposal
VELUX interior roller blinds are mostly inert and can be disposed of in an appropriate landfill. However, due to the value of the materials or the carbon content of the plastic parts, recycling or energy recovery is preferable and common.

Waste code according to the *European Waste List* (Regulation on the European Waste List):
17 02 03 plastics
17 04 14 mixed metals

2.16 Further information
Further documentation on the products, technical data sheets, BIM files, etc. can be found at:
www.velux.com

3. LCA: Calculation rules

3.1 Declared Unit
The declared unit for interior roller blinds is *1 m²*.

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Grammage	1.4	kg/m^2

In addition to the declared product DKL, the lighter version RFL (related to the amount of aluminium and cloth) is included in the EPD, hence following a conservative approach for the version RFL.

3.2 System boundary
Type of EPD: Cradle to gate with options, with modules C1 – C4, and module D (A1-A3, C1-C3, D and additional modules).

The production of VELUX interior roller blinds (**modules A1-A3**) includes raw material extraction, energy generation, waste treatment and all transports up to the factory gate. In accordance with *COUNCIL REGULATION (EU) No 333/2011*, secondary metals are modeled as part of the product system from the moment they are available as unmixed scrap.
Waste or secondary fuels are not used for production.

Module A4 is not declared due to large variances in transport distances between the production site and the construction site, where the product is installed.

Module A5: The products are delivered to the construction site ready to be installed. Manual installation is assumed; electricity consumption related to electric drilling machines, screw drivers, etc. is considered to be negligible. Paper and cardboard are recycled; it is assumed that these fractions reach the end-of-waste state after having been sorted and transported to a recycler (as a conservative choice). No packaging waste is landfilled.

Modules B1 to B7 are not relevant for the product under consideration or no significant environmental impacts occur.

Module C1 includes manual dismantling, with no significant environmental impact.

Module C2 comprises the transport of the dismantled VELUX interior roller blind to a sorting plant and then to a waste incineration plant for the thermally treated plastic fraction.

Modules C3/C4: given the complexity of the inventoried products, a mixed end-of-life scenario is modelled, allowing the different materials to follow their most likely path. As a rule of thumb, metals are recycled and plastics are incinerated (also due to the very limited data availability on plastics recycling and its benefits). Metals are recycled; it is assumed that these fractions reach the end-of-waste state after having been sorted and transported to a recycler. The combustible material (plastics) is assumed to be thermally treated in a municipal waste incineration plant.

Module D includes the benefits and burdens associated with recycling metals beyond the system boundary, resulting from the treatment of recycled materials from the point of end-of-waste to the point of substitution (as loads) and substitution of primary resources (as benefits).
It also includes the benefits and burdens associated with energy recovery from plastic waste in a municipal waste incineration plant, as modelled in Module C3.
In Module D, only net flows of metals leaving the product system are considered.

3.3 Estimates and assumptions
No further assumptions and estimates relevant to the result had to be made beyond the points made in this chapter 3 and in chapter 4.

3.4 Cut-off criteria
No data available from the company survey was neglected. These include, among other things, material use, energy demand (heat, electricity), packaging materials of raw materials (insofar as they are generated as waste) and product packaging, consumables in production, waste treatment and the transport of all inputs and outputs.
With this approach, mass and energy flows below 1 % were also accounted for. No processes were neglected that would have been known to the project managers and would have contributed significantly to the indicators of the impact assessment.

3.5 Background data
Ecoinvent v3.8 (2021, cut-off) is used as the background database.

3.6 Data quality
The foreground data are based on extensive and detailed data collection at the production site. The foreground data could be fully linked with corresponding data records from the background database *Ecoinvent v3.8 (2021, cut-off).*
The background data was updated in 2021. Thus, the quality of the foreground and background data can be rated as very good.

3.7 Period under review
The LCA data represents the production conditions for the year 2021.

3.8 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

3.9 Allocation

No co-products are generated during the production of the VELUX products. Sorted production scrap of the different metals, notably aluminium, is considered a secondary material with no economic value (so no burdens allocated) and considered in the quantification of net flows leaving the product system. This approach is chosen to ensure a coherent quantification of net flows entering module D.

No processes were modelled as part of the foreground model that would have required an allocation of multi-input processes. Background datasets on municipal waste incineration plants were taken from ecoinvent without any modification.

Allocation of reuse, recycling and recovery was avoided by the cut-off approach in the foreground model in line with *DIN EN 15804*.

3.10 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.
Ecoinvent v3.8 (2021, cut-off) has been used as the background database.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	n.a.	kg C

Module A5
The products are delivered to the construction site ready to be installed. Manual installation is assumed; electricity consumption related to electric drilling machines, screwdrivers, etc. is considered to be negligible.
Paper and cardboard are recycled; it is assumed that these fractions reach the end-of-waste state after having been sorted and transported to a recycler over 150 km with a lorry of 16-32 metric tons, EURO6 (as a conservative choice).
No packaging waste is landfilled.
The use of multi-way pallets is not taken into account as packaging material.

Reference service life

Name	Value	Unit
Reference service life according to manufacturer's declaration	10	a
Reference service life	-	a
Declared product properties (at the gate) and finishes	The product has passed internal quality controls	-
Design application parameters (if instructed by the manufacturer), including the references to the appropriate practices and application codes	Installation according to assembly instructions and state of the art.	-
An assumed quality of work, when installed in accordance with the manufacturer's instructions	Carried out in accordance with the manufacturer's instructions.	-
Outdoor environment, (for outdoor applications), e.g. weathering, pollutants, UV and wind exposure, building orientation, shading, temperature	Not applicable	-
Indoor environment (for indoor applications), e.g. temperature, moisture, chemical exposure	The declared products are intended for installation inside a building.	-
Usage conditions, e.g. frequency of use, mechanical exposure	Standard use in any type of building, i.e. opening/closing 2 times a day	-
Maintenance e.g. required frequency, type and quality and replacement of components	The declared products are designed for a reference life of 10 years. They are maintained by cleaning water at the discretion of the building occupants.	-

Module B1
The products are assumed to have no direct emissions during the use phase. The indicator values of Module B1 are thus 0. For biogenic carbon storage, see the table above.

Module B2
For interior roller blinds, no impacts related to maintenance are inventoried in module B2. Annual cleaning is neglected.

Module B6
Interior roller blinds do not consume operational energy.

Module C1
Manual de-installation is assumed, electricity consumption

related to electric screw drivers, etc. is considered to be negligible. Thus, no environmental impacts are declared in module C1.

Module C2
Given the complexity of the inventoried products, a mixed end-of-life scenario is modelled, allowing the different materials to follow their most likely path. It should also be noted that the deconstruction and waste treatment scenario can vary a lot, depending on the actual situation. Thus, a generic end-of-life scenario is assumed. As a rule of thumb, metals are recycled, plastics are incinerated (also due to the very limited availability of information on plastics recycling and its benefits).
The combustible material (mainly plastics) is assumed to be transported 50 km with a lorry of 16-32 metric tons, EURO6 to an incineration plant.
Metals are recycled; it is assumed that these fractions reach the end-of-waste state after having been sorted and transported to a recycler over 150 km with a lorry of 16-32 metric tons, EURO6.

Module C3
A consumption of 0.03 kWh/kg of electricity for shredding and sorting and 0.437 MJ/kg of diesel fuel for internal logistics are taken into account to disassemble the product. The recovered material leaves the product system as 'materials for recycling'.
The net amounts of the metals leaving the product system are considered as 'use of secondary material' in Module D.

Module C4
As stated above, it is assumed that 100 % of the plastic parts are treated in a waste incineration plant with an efficiency R1 < 0.6 (according to the ecoinvent dataset used); 25.57 % of the lower heating value of the plastic parts are recovered as heat and 13.0 % as electricity. Recovered energy is reported as 'exported energy' and considered in Module D.

Module D
Module D contains the benefits and loads beyond the system boundary related to the recycling of metals, which result from the treatment of recycled materials from the point of end-of-waste status to the point of substitution (as loads) and the substitution of primary resources (as benefits).
It also includes the benefits and loads related to the energy recovery from plastic wastes in a municipal waste incineration plant (MWIP) as modelled in Modules A3, A5 and C3. Due to a lack of data for plastics from de-construction activities, the substitution potential of recycled plastics is not taken into account.
Only net flows leaving the product system are considered in module D.

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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	X	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 interior roller blind DKL

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	2.01E+01	6.62E-01	0	2.4E-02	4.87E-02	5.98E-01	-1.43E+01
GWP-fossil	kg CO_2 eq	2.06E+01	1.83E-01	0	2.4E-02	2.89E-02	5.98E-01	-1.42E+01
GWP-biogenic	kg CO_2 eq	-4.99E-01	4.79E-01	0	0	1.98E-02	0	0
GWP-luluc	kg CO_2 eq	5.12E-02	5.88E-06	0	9.77E-06	3.21E-05	1.04E-05	-5.23E-02
ODP	kg CFC11 eq	2.25E-06	3.3E-09	0	5.63E-09	1.78E-09	3.57E-09	-4.8E-07
AP	mol H^+ eq	1.3E-01	9.57E-05	0	1.36E-04	1.1E-04	1.44E-04	-9.09E-02
EP-freshwater	kg P eq	8.24E-04	1.15E-07	0	1.77E-07	3.74E-06	3.27E-07	-5.35E-04
EP-marine	kg N eq	2.14E-02	3.63E-05	0	4.89E-05	3.53E-05	6.05E-05	-1.35E-02
EP-terrestrial	mol N eq	2.29E-01	4.03E-04	0	5.39E-04	4.01E-04	6.57E-04	-1.49E-01
POCP	kg NMVOC eq	6.71E-02	1.13E-04	0	1.54E-04	1.07E-04	1.67E-04	-4.4E-02
ADPE	kg Sb eq	1.11E-04	4.89E-08	0	8.04E-08	5.03E-08	8.64E-08	1.23E-04
ADPF	MJ	2.32E+02	2.16E-01	0	3.7E-01	3.99E-01	1.12E-01	-1.29E+02
WDP	m^3 world eq deprived	4.25E+00	9.57E-04	0	1.21E-03	9.92E-04	6.8E-03	-1.9E+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 interior roller blind DKL

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	MJ	2.42E+01	5.51E+00	0	5.22E-03	5.04E-02	9.49E-03	-1.72E+01
PERM	MJ	5.76E+00	-5.51E+00	0	0	-2.55E-01	0	0
PERT	MJ	3E+01	3.37E-03	0	5.22E-03	-2.04E-01	9.49E-03	-1.72E+01
PENRE	MJ	2.22E+02	2.64E+00	0	3.7E-01	3.18E-07	7.44E+00	-1.3E+02
PENRM	MJ	9.93E+00	-2.6E+00	0	0	0	-7.33E+00	0
PENRT	MJ	2.32E+02	2.16E-01	0	3.7E-01	3.18E-07	1.13E-01	-1.3E+02
SM	kg	1.47E-01	0	0	0	0	0	1.12E+00
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m^3	1.64E-01	5.21E-05	0	4.03E-05	9.52E-05	3.01E-04	-9.35E-02

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 interior roller blind DKL

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
HWD	kg	3.22E-03	5.77E-07	0	9.42E-07	3.18E-07	4.55E-07	1.85E-03
NHWD	kg	5.08E+00	1.59E-02	0	2.48E-02	1.62E-03	2E-02	-3.43E+00
RWD	kg	1.09E-03	3.05E-06	0	5.34E-06	3.6E-06	7.31E-07	-4.02E-04
CRU	kg	0	0	0	0	0	0	0
MFR	kg	1.46E-01	3.25E-01	0	0	3.25E-01	0	0
MER	kg	0	0	0	0	0	0	0
EEE	MJ	2.72E-02	3.38E-01	0	0	0	3.38E-01	0
EET	MJ	5.36E-02	6.66E-01	0	0	0	6.66E-01	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 interior roller blind DKL

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
PM	Disease incidence	1.51E-06	1.65E-09	0	2.65E-09	1.74E-09	9.72E-10	-1.18E-06
IR	kBq U235 eq	5.56E-01	9.25E-04	0	1.6E-03	1.38E-03	3.87E-04	-1.5E-01
ETP-fw	CTUe	5.04E+02	2.05E-01	0	2.93E-01	2.35E-01	1.49E+00	-2.88E+02
HTP-c	CTUh	3E-08	2.71E-11	0	1.17E-11	6.34E-12	1.21E-10	-1.58E-08
HTP-nc	CTUh	4.82E-07	3.45E-10	0	3.37E-10	2.06E-10	1.05E-09	-2.45E-07
SQP	SQP	7.16E+01	1.81E-01	0	3.15E-01	5.39E-02	3.77E-02	-1.87E+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.

6. LCA: Interpretation

Figure 1 illustrates the relative contributions of the different modules along the life cycle of thecdeclared products.

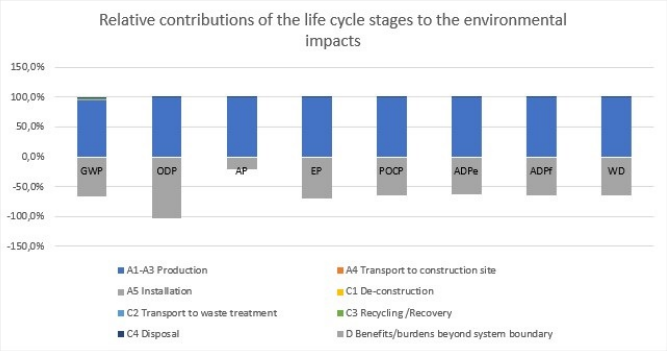


Figure 1: Relative environmental impacts of the different life cycle stages for the VELUX interior roller blind DKL (Modules A1-C4 = 100%)

The largest part of environmental impacts is caused during production (modules A1-A3) of the interior roller blind. The contributions of the other modules of the product life cycle are not significant.

Benefits and burdens beyond the system boundary (module D) are in the order of 20 % to 60% (with the exception of the ODP) of the impacts over the product life cycle (modules A1-C4) and mainly related to the recycling potential of aluminium.

The use of renewable primary energy is mainly caused by the share of renewable energy in the electricity mix, thus the production stage is the main driver of this impact category; the same holds also for the use of non-renewable primary energy. Material use of primary energy is negligible and related to plastic parts of the product and packaging material. The material use of primary energy is transferred to its energy use when the materials containing primary energy are incinerated with energy recovery.

Non-hazardous waste as the quantitatively most relevant waste flows is mainly caused in upstream processes (mining and processing of aluminium); hazardous and radioactive waste are mainly caused by the European electricity mix used during the use phase.

In addition to the declared product DKL, the lighter version RFL (related to the amount of aluminium and cloth) is included in the EPD. LCAs for these versions have not been calculated specifically. Hence, no statement can be made on the variance regarding these products.

7. Requisite evidence

7.1 Formaldehyde
Not tested based on applicable product standard.

7.2 MDI
Not tested based on applicable product standard.

7.3 Checking of pre-treatment of substances used according to AltholzVO
Not applicable; not tested based on applicable product standard.

7.4. Fire gas toxicity
Not tested based on applicable product standard.

7.5 VOC emissions
Not tested based on applicable product standard.

8. References

IBU programme documents

IBU (2021)
IBU (2021): General Instructions for the EPD Programme of the Institut Bauen & Umwelt e.V. (General Instructions for the IBU EPD Programme). Version 2.0, Institut Bauen & Umwelt, Berlin.

IBU (2017)
IBU (2007): PCR Teil A: PCR Part A: Calculation rules for the life cycle assessment and requirements for the project report. Version 1.8., Institut Bauen & Umwelt, Berlin.

IBU (2023)
IBU (2023): PCR Part B: Requirements on the EPD for sun protection systems. Version 2023/04, Institut Bauen & Umwelt, Berlin.

Standards and legal documents

EN 15804
EN 15804:2012+A2:2019 + AC:2021, Sustainability of construction works - Environmental product declarations - Core rules for the product category construction products.

ISO 14025
DIN EN ISO 14025:2006-07, Environmental labels and declarations - Type III Environmental declarations - Principles and procedures.

ISO 14044
DIN EN ISO 14044:2006-07, Environmental management - Life cycle assessment - Requirements and guidance (ISO 14044:2006); German and English versions EN ISO 14044:2006.

ISO 9001
DIN EN ISO 9001:2015, Quality management systems - Requirements.

ISO 14001
DIN EN ISO 14001:2015: Environmental management systems - Requirements with guidance for use.

ISO 45001
ISO 45001:2018-03, Occupational health and safety management systems - Requirements with guidance for use.

ECHA-List
The Candidate List of substances of very high concern, available via https://echa.europa.eu/nl/-/four-newsubstances-added-to-the-candidate-list.

Regulation on biocidal products
REGULATION (EU) No 528/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 May 2012 concerning the making available on the market and use of biocidal products.

Regulation (EU) Nr. 305/2011(CPR)
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.

COUNCIL REGULATION (EU) No 333/2011
COUNCIL REGULATION (EU) No 333/2011 of 31 March 2011 establishing criteria determining when certain types of scrap metal cease to be waste under Directive 2008/98/EC of the European Parliament and of the Council.

European Waste List (Waste index)
http://www.gesetze-im-internet.de/avv/anlage.htm

Additional references

Weidema et al. (2013)
Weidema, B., C. Bauer, R. Hischier, C. Mutel, T. Nemecek, J. Reinhard, C.O. Vadenbo, G. Wernet (2013): Overview and methodology, Data quality guideline for the ecoinvent database version 3. ecoinvent report no. 1
(v3), St. Gallen, Schweiz.

ecoinvent 3.8
ecoinvent 3.8, LCA database, 12/2021. Ecoinvent centre, Zürich.
The literature referred to in the Environmental Product Declaration must be listed in full.Standards already fully quoted in the EPD do not need to be listed here again.
The current version of PCR Part A and PCR Part B of the PCR document on which they are based must be referenced.

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

Dr. Frank Werner - Umwelt & Entwicklung
Kammelenbergstrasse 30
9011 St. Gallen
Switzerland

+ 41 (0)44 241 39 06
frank@frankwerner.ch
http://www.frankwerner.ch/

Owner of the Declaration

VELUX Group
Ådalsvej 99
2970 Hørsholm
Denmark

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