

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	IVRSA e.V.
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-IVR-20240103-CBA1-EN
Issue date	16.04.2024
Valid to	15.04.2029

External Venetian Blind
Industrievereinigung Rollladen,
Sonnenschutz und Automation – IVRSA e.V.

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General Information

Industrievereinigung Rollladen,
Sonnenschutz und Automation – IVRSA e.V.

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

Declaration number
EPD-IVR-20240103-CBA1-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
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Valid to
15.04.2029


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


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

External Venetian Blind

Owner of the declaration
IVRSA e.V.
Heinrichstraße 79
36037 Fulda
Germany

Declared product / declared unit
1 m² External Venetian Blind

Scope:
In this association EPD, a specific product configuration of external Venetian blinds is declared. This external Venetian blinds system is produced by manufacturers that are members of IVRSA. Data are based on production during 2020 – 2022 in Central Europe.
Data have been provided by 5 companies that produce ready-to-install sun protection systems (Alulux GmbH, Beck+Heun GmbH, REFLEXA-WERKE Albrecht GmbH, HELLA Sonnenschutztechnik GmbH and WAREMA Renkhoff SE). Additional data have been provided by companies producing specific parts and pre-fabricated products (Somfy GmbH and VEKA AG). The configuration of the external Venetian blinds components is based on the overall bestselling/ most relevant product.
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*.

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


Mrs Kim Allbury,
(Independent verifier)

Product

Product description/Product definition

External Venetian blinds are external sunblind products. The blind consists of horizontal slats. The slats are mounted laterally in guide rails or guided by ropes and can be aligned by the user, depending on the position of the sun. The external Venetian blind is stowed in a box system when folded. The product can be operated manually or by power.

Thermal protection can be achieved in summer by using external Venetian blinds. With this system, the absorption heat resulting from the solar radiation is already dissipated externally in front of the window components to be shaded. The ingress of undesired solar heat in the building interior can be minimised. The respective blinds can achieve almost complete darkening depending on the slat shape. The setting options allow a balance to be established between transparency, daylight utilisation and shading, depending on the position of the sun. This reduces the overheating of buildings and minimises the cooling energy required and the energy used for artificial lighting.

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 13659:2004+A1:2008*, *Shutters and external Venetian blinds - Performance requirements including safety and the CE-marking*.

For the application and use the respective national provisions apply.

Product configuration

The configuration of the product declared in the EPD consists of the following main components:

- External Venetian blind box front-mounted (aluminium, coated)
- External Venetian blind slats (aluminium coated, width 80 mm)
- Guiding rails (aluminium, coated)
- Motor (cable controlled, incl. 1.2 m cable)
- Headpiece/ single components

LCA-results of variants or varying dimensions of the declared product can be provided upon request by the member companies that participated in this EPD-study.

Application

External Venetian blinds are external sunblind systems used for shading. The usage of these products is subject to the respective national regulations.

Technical Data

The applicable data are based on the declaration of performance in accordance with the CPR and the harmonised standards based on the machinery directive. Performance values of the product according to the declaration of performance (CPR) with regard to its essential features in accordance with *EN 13659:2004+A1:2008*.

Constructional data

Wind resistance in accordance with *EN 1932* is not applicable. The manufacturer's recommendations for application are used to assess the suitability of the sun protection system. Heat transfer coefficients, sound level differences, and other product properties are dependent on the specific installation situation, color and size of the sun protection system.

Name	Value	Unit
temperature factor (fRSI)	≥0,7	-
Reduction factor of energy transmittance (Fc)	0.25	-

Base materials/Ancillary materials

The declared sun protection system consists of the following materials in terms of percentage.

Name	Value	Unit
Aluminium	72	%
Steel	16	%
PVC	3	%
Metals (Others)	2	%
PA	2	%
Others	5	%

This product contains substances listed in the 'Candidate List of Substances of Very High Concern for Authorisation' (SVHC) (date: 06.12.2023) exceeding 0.1 percentage by mass: **no**.

Reference service life

The service life of the product is determined essentially by the frequency of application/operation. The number of operating cycles in the highest service life class 3 according to the product standard *EN 13659* is 10,000 raising and lowering processes, 20,000 turns (1 cycle = 1 raising/lowering process with 2 turns).

LCA: Calculation rules

Declared Unit

The declared unit is 1 m² of sun protection system according to the PCR.

The representative size of the sun protection system refers to a standard window size according to *EN 14351-1* with a surface of 1.82 m² and a width-height ratio of 1.23 m by 1.48 m. For the calculation of the LCA, processes and masses were scaled accordingly from the representative size to the declared unit.

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	m ²
Grammage	7.84	kg/m ²
Layer thickness	not relevant	m

The EPD declares an average of a specific product from factories of several manufacturers of sun-protection systems. The averaging was done by weighting according to the total production quantities of the manufacturers. The EPD is representative for the association IVRSA. Regarding the variability of production data of the individual manufacturers, slight fluctuations can occur due to different production technologies, supply chains and locations.

System boundary

Declaration type with respect to life cycle stages covered according to clause 5.2 of *EN 15804+A2*: cradle to gate (A1-A3) with options A4, A5, module B6, modules C1-C4, and

module D.

Modules A1 to A3: These modules consider the manufacturing of all system components including the provision of all raw materials, semi-finished products and energy, as well as waste processing up to the end-of-waste state or disposal of production waste that occur during manufacturing. The impact of packaging materials is included.

Module A4: This module considers 100 km transport to the construction site (Truck transport, diesel, EURO 6) The transport distance can be modified project specific if required by linear scaling of the LCA results of module A4.

Module A5: This module considers treatment of packaging material in the installation phase by energy recovery. Thermal treatment in municipal waste incineration (MWI) plants, assuming an R1 value of >0,6. Installation efforts are not declared as installation is assumed to be done manually.

Module B6:

Calculation of the scenarios according to the PCR Part B: 20,000 cycles for Venetian blinds, whereby a cycle comprises one-time tilting and turning.

Module C1: It is assumed, that the deinstallation of the product is done manually. No environmental impacts are therefore assigned to module C1.

Module C2: This module considers 50 km transport to the site of waste treatment/ disposal (Truck transport, diesel, EURO 6).

Module C3: The end-of-life scenario considers the recycling of metals, which reach the end-of-waste status after de-installation. It is assumed that materials with a calorific value do not reach the end-of-waste status before an incineration

process. Thermal treatment of materials in MWI plants, assuming an R1 value of >0,6. Collection rate is set to 100%.

Module C4: Regarding disposal an European scenario for average landfill emissions is declared in module C4 for inert materials without a calorific value (e.g. glass fibre).

Module D: Module D includes benefits from recycling and incineration of occurring production waste in module A3 and the incineration of packaging materials in module A5 along with benefits from recyclable materials that occur at the end-of-life and benefits related to the incineration processes in module C3. For the thermal and electrical energy generated in modules A3, A5 and C3 due to the thermal treatment of production, packaging and product waste, avoided burdens have been calculated by the inversion of electricity grid mix and thermal energy from natural gas, using European datasets.

Period under review

The period under review for the collection of production data and resulting averages refers to 2020-2022.

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. The background data has been taken from the *Sphera MLC-databases*; Version *CUP 2023.1*.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The product itself does not contain any biogenic Carbon. Packaging material contain biogenic carbon from the use of wood and cardboard/ paper.

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	-	kg C
Biogenic carbon content in accompanying packaging	0.37	kg C

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel (per kg transported goods)	0.0025	l/100km
Transport distance	100	km
Capacity utilisation (including empty runs)	61	%
Capacity utilisation volume factor	1	-

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (packaging waste - total)	1.02	kg
Packaging waste (wood)	0,22	kg
Packaging waste (cardboard)	0,66	kg
Packaging waste (plastics)	0,14	kg

Operational energy use (B6)

The electricity consumption and the LCA results for module B6 refer to a number of 20,000 operating cycles, whereby a cycle comprises one-time tilting and turning. As the motor in the representative system is wirebound, standby energy does not occur (the given energy amount refers 100 % to the energy demand during operating cycles).

Name	Value	Unit
Electricity consumption	15.4	kWh

End of Life (C1-C4)

Collection rate of scrap at the end of life is set to 100 %. Transport in module C2 considers a transport distance of 50 km (identical characteristics as for transport in module A4). The following table displays the gross scrap amounts at the end of life.

Name	Value	Unit
Collected separately waste type	7.84	kg
Recycling	7	kg
Energy recovery	0.8	kg
Landfilling	0.04	kg

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

Recycling potentials for metals are calculated for the amount of the net scrap flows and are declared in module D. Potential benefits from energy recovery processes in modules A3, A5 and C3 are declared in module D.

LCA: Results

LCA results of variants or varying dimensions of the declared product can be provided upon request by the member companies participating in this EPD.

The LCA results for module B6 are based on 20,000 operating cycles as described in the LCA scenario section of this EPD.

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	X	X	MND	MND	MNR	MNR	MNR	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² External Venetian Blind (specific weight 7.84 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	6.27E+01	6.6E-02	1.85E+00	6.51E+00	0	2.92E-02	1.66E+00	6.71E-04	-3.04E+01
GWP-fossil	kg CO ₂ eq	6.39E+01	6.52E-02	4.92E-01	6.51E+00	0	2.89E-02	1.66E+00	6.69E-04	-3.03E+01
GWP-biogenic	kg CO ₂ eq	-1.29E+00	1.93E-04	1.36E+00	3.24E-03	0	8.53E-05	1.93E-04	0	-8.7E-02
GWP-luluc	kg CO ₂ eq	3.15E-02	6.05E-04	4.18E-05	5.95E-04	0	2.67E-04	3.54E-05	2.08E-06	-5.95E-03
ODP	kg CFC11 eq	1.51E-10	8.49E-15	1.69E-13	6.4E-11	0	3.76E-15	4.45E-13	1.7E-15	-2.27E-10
AP	mol H ⁺ eq	2.41E-01	8.65E-05	3.61E-04	9.91E-03	0	3.82E-05	9.68E-04	4.74E-06	-1.16E-01
EP-freshwater	kg P eq	1.1E-04	2.39E-07	6.4E-08	6.44E-06	0	1.06E-07	1.29E-07	1.35E-09	-1.54E-05
EP-marine	kg N eq	4.3E-02	2.98E-05	1.2E-04	2.8E-03	0	1.32E-05	4.38E-04	1.23E-06	-1.53E-02
EP-terrestrial	mol N eq	4.63E-01	3.57E-04	1.63E-03	2.95E-02	0	1.58E-04	5.2E-03	1.35E-05	-1.66E-01
POCP	kg NMVOC eq	1.95E-01	7.5E-05	3.23E-04	7.73E-03	0	3.32E-05	1.13E-03	3.7E-06	-4.84E-02
ADPE	kg Sb eq	4.52E-04	4.3E-09	1.8E-09	3.15E-07	0	1.9E-09	3.85E-09	3.08E-11	-2.92E-04
ADPF	MJ	9.2E+02	8.89E-01	4.83E-01	1.43E+02	0	3.93E-01	1.04E+00	8.9E-03	-4.23E+02
WDP	m ³ world eq deprived	7.44E+00	7.89E-04	1.94E-01	5.47E-01	0	3.49E-04	1.69E-01	7.34E-05	-1.48E+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 External Venetian Blind (specific weight 7.84 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	MJ	3.08E+02	6.47E-02	1.52E+01	1.96E+01	0	2.86E-02	2.34E-01	1.45E-03	-1.94E+02
PERM	MJ	1.51E+01	0	-1.51E+01	0	0	0	0	0	0
PERT	MJ	3.23E+02	6.47E-02	1.1E-01	1.96E+01	0	2.86E-02	2.34E-01	1.45E-03	-1.94E+02
PENRE	MJ	8.97E+02	8.93E-01	7.09E+00	1.43E+02	0	3.95E-01	1.87E+01	8.91E-03	-4.23E+02
PENRM	MJ	2.42E+01	0	-6.61E+00	0	0	0	-1.76E+01	0	0
PENRT	MJ	9.21E+02	8.93E-01	4.84E-01	1.43E+02	0	3.95E-01	1.04E+00	8.91E-03	-4.23E+02
SM	kg	2.38E+00	0	0	0	0	0	0	0	5.79E+00
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m ³	6.62E-01	7.09E-05	4.57E-03	3.28E-02	0	3.14E-05	4.05E-03	2.25E-06	-3.4E-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 External Venetian Blind (specific weight 7.84 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	kg	1.13E-06	2.76E-12	1.26E-11	8.29E-09	0	1.22E-12	3.27E-11	1.94E-13	-1.81E-07
NHWD	kg	1.41E+01	1.36E-04	3.78E-02	3.15E-02	0	6.02E-05	1.87E-01	4.45E-02	-7.69E+00
RWD	kg	4.44E-02	1.67E-06	2.37E-05	2.23E-02	0	7.39E-07	3.07E-05	1.02E-07	-4.59E-02
CRU	kg	0	0	0	0	0	0	0	0	0

MFR	kg	5.45E-01	0	0	0	0	0	7E+00	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	1.43E+00	0	0	0	2.03E+00	0	0
EET	MJ	0	0	2.56E+00	0	0	0	3.81E+00	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 External Venetian Blind (specific weight 7.84 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	Disease incidence	2.65E-06	6.24E-10	2.07E-09	8.96E-08	0	2.76E-10	4.78E-09	5.83E-11	-1.83E-06
IR	kBq U235 eq	8.14E+00	2.49E-04	3.78E-03	3.35E+00	0	1.1E-04	3.93E-03	1.17E-05	-9.3E+00
ETP-fw	CTUe	3.44E+02	6.32E-01	2.39E-01	4.1E+01	0	2.79E-01	5.46E-01	4.86E-03	-1.59E+02
HTP-c	CTUh	5E-08	1.29E-11	1.49E-11	7.39E-10	0	5.72E-12	2.88E-11	7.48E-13	-1.06E-08
HTP-nc	CTUh	1E-06	6.88E-10	6.74E-10	3.78E-08	0	3.05E-10	2.21E-09	8.22E-11	-1.69E-07
SQP	SQP	2.36E+02	3.72E-01	1.5E-01	1.93E+01	0	1.64E-01	2.27E-01	2.16E-03	-1.5E+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.

References

Standards

EN 13659

EN 13659:2015 Shutters and external venetian blinds - Performance requirements including safety; German version EN 13659:2015

ISO 14025

EN ISO 14025:2011, 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 1932

EN 1932:2013 External blinds and shutters - Resistance to wind loads - Method of testing and performance criteria; German version EN 1932:2013

Further References

CPR

Regulation (EU) No. 305/2011 (CPR) — construction products, 2011.

IBU PCR Part A

PCR - Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019, version 1.3, Institut Bauen und Umwelt e.V., <https://ibu-epd.com/>, 2022.

IBU PCR Part B

PCR – Part B: Requirements on the EPD for sun protection systems, version v8, 19.10.2023, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, 2023.

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

LCAfE software and MLC databases

LCAfE and MLC databases (f.k.a. GaBi) by Sphera. Version CUP 2023.1. Sphera Solutions GmbH, <https://sphera.com/product-sustainability-gabi-data-search/>, 2023.

SVHC

Candidate List of substances of very high concern for Authorisation (SVHC), European Chemicals Agency (ECHA), 2023.



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

Sphera Solutions GmbH
Hauptstraße 111- 113
70771 Leinfelden-Echterdingen
Germany

+49 711 341817-0
info@sphera.com
www.sphera.com



Owner of the Declaration

IVRSA e.V.
Heinrichstraße 79
36037 Fulda
Germany

0661 – 90196011
nfo@ivrsa.de
<https://ivrsa.de/>