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-20240104-CBA1-EN
Issue date	16.04.2024
Valid to	15.04.2029

Roller Shutter

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

Institut Bauen und Umwelt e.V.

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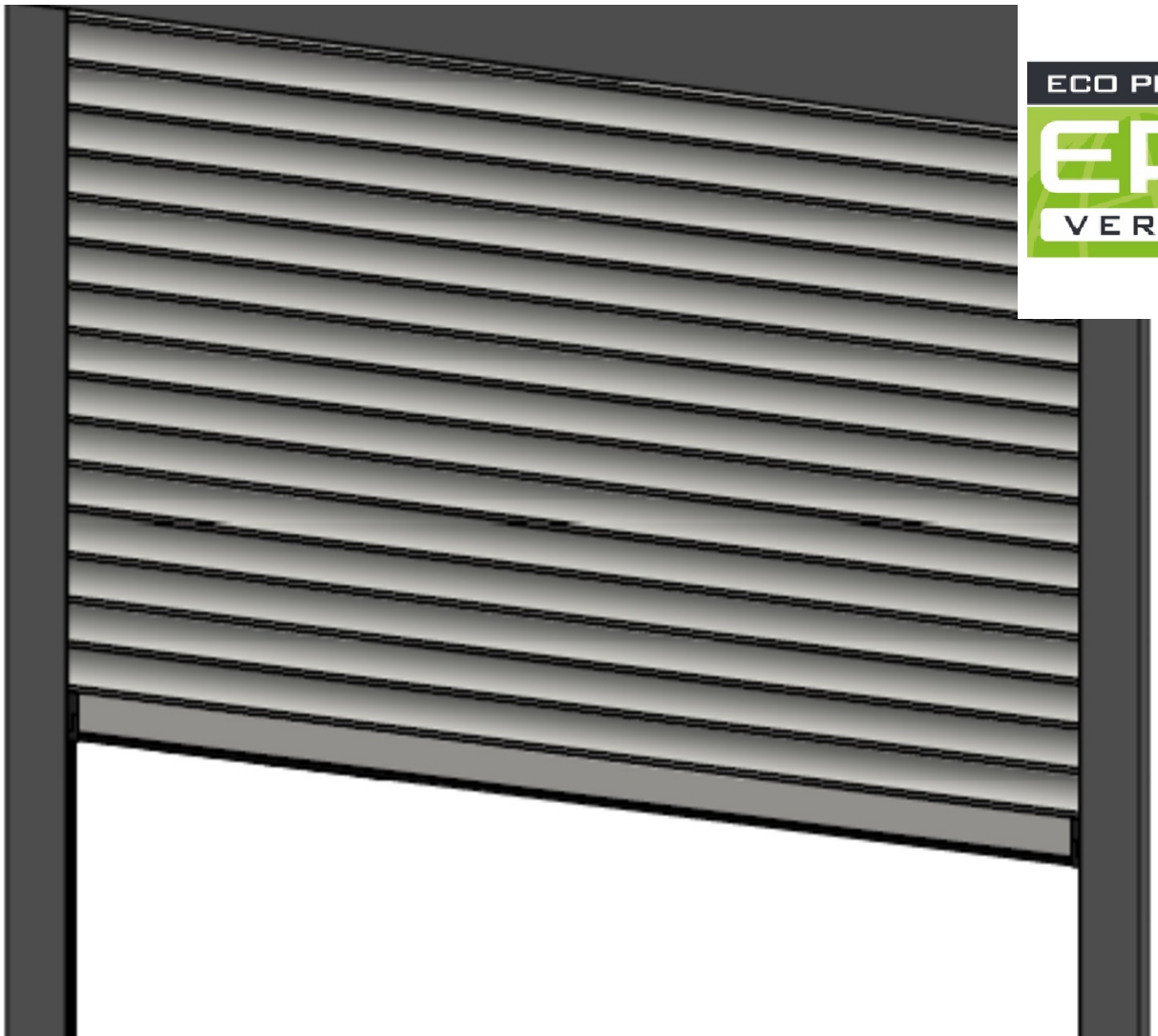

General Information

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-20240104-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

16.04.2024

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.)

Roller Shutter

Owner of the declaration

IVRSA e.V.
Heinrichstraße 79
36037 Fulda
Germany

Declared product / declared unit

1 m² Roller Shutter

Scope:

In this association EPD, a specific product configuration of Roller shutter is declared. This Roller shutter 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 Roller shutter 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*.

Verification

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)

IVRSA
INDUSTRIEVEREINIGUNG
Rollladen-Sonnenschutz-Automation

Product

Product description/Product definition

The declared product is a roller shutter with box system. The blind consists of roller shutter bars connected to each other in an articulated manner (also referred to as roller shutter profiles). The product is used for the external darkening and shading of windows. The blind profiles consist of an aluminium jacket (Al) with a polyurethane filling (PUR) or of extruded PVC bars.
The blind is rolled onto a shaft and is accommodated in the box system above the window when retracted. The blind may consist of profiles with or without light slots. The incidence of light and the ventilation can be regulated by the light slots. The product can be operated manually or by power.

CE marking is required to launch the product in the EU/EFTA market (except for Switzerland). The product requires, on the one hand, a declaration of performance in accordance with the construction products ordinance (EU) 305/2011 (CPR) based on the harmonised product standard *EN 13659:2004+A1:2008 (Shutters – Performance requirements including safety)* and, on the other hand, additionally for power-operated systems, verification of compliance with the applicable harmonised standards, in particular with *EN 13659:2015* based on the machinery directive 2006/42/EC.

Product configuration

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

- Roller shutter box front-mounted (aluminium, coated)
- Roller shutter curtain (aluminium, foamed and coated)
- Guiding rails (aluminium, coated)
- Motor (cable controlled, incl. 1.2 m cable)
- Bearings
- 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

The roller shutter is used as a shading solution in front of window surfaces for thermal protection in the summer and winter, and as a screen and means of weather protection. The blind facilitates sound insulation and has a burglary-inhibiting effect. Furthermore, it can make a contribution to improving security and protecting privacy. 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 class is between 1-6 depending on the product size and version / test conducted in accordance with *EN 1932*.
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	-
Wind resistance class according EN 1932	1 - 6	-
Reduction factor of energy transmittance (Fc)	0.15	-

Base materials/Ancillary materials

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

Name	Value	Unit
Aluminium	64	%
Steel	16	%
Metals (Others)	5	%
PA	4	%
PVC	3	%
PUR/PIR foam	2	%
Others	6	%

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 cycles, whereby a cycle comprises one-time extension and retraction.

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	7.61	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: 10,000 cycles, whereby a cycle comprises one-time extension and retraction.

Module C1: It is assumed, that the de-installation 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 CO_2.

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 10,000 operating cycles, whereby a cycle comprises one-time extension and retraction.
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	8.5	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 waste type	7.61	kg
Recycling	6.5	kg
Energy recovery	1.05	kg
Landfilling	0.06	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 10,000 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 Roller Shutter (specific weight 7.61 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	6.08E+01	6.44E-02	1.85E+00	3.6E+00	0	2.84E-02	2.29E+00	8.49E-04	-2.72E+01
GWP-fossil	kg CO_2 eq	6.2E+01	6.36E-02	4.92E-01	3.59E+00	0	2.8E-02	2.29E+00	8.46E-04	-2.71E+01
GWP-biogenic	kg CO_2 eq	-1.28E+00	1.88E-04	1.36E+00	1.79E-03	0	8.28E-05	2.69E-04	0	-7.69E-02
GWP-luluc	kg CO_2 eq	3.09E-02	5.89E-04	4.18E-05	3.29E-04	0	2.6E-04	4.19E-05	2.63E-06	-5.47E-03
ODP	kg CFC11 eq	1.64E-10	8.28E-15	1.69E-13	3.53E-11	0	3.65E-15	5.56E-13	2.15E-15	-2E-10
AP	mol H^+ eq	2.2E-01	8.43E-05	3.61E-04	5.47E-03	0	3.72E-05	1.78E-03	6E-06	-1.03E-01
EP-freshwater	kg P eq	1.19E-04	2.33E-07	6.4E-08	3.55E-06	0	1.03E-07	1.63E-07	1.7E-09	-1.4E-05
EP-marine	kg N eq	4.1E-02	2.91E-05	1.2E-04	1.54E-03	0	1.28E-05	8.47E-04	1.55E-06	-1.36E-02
EP-terrestrial	mol N eq	4.4E-01	3.48E-04	1.63E-03	1.63E-02	0	1.53E-04	9.77E-03	1.71E-05	-1.48E-01
POCP	kg NMVOC eq	2.05E-01	7.31E-05	3.23E-04	4.26E-03	0	3.22E-05	2.18E-03	4.68E-06	-4.32E-02
ADPE	kg Sb eq	4.52E-04	4.19E-09	1.8E-09	1.74E-07	0	1.85E-09	4.86E-09	3.9E-11	-2.85E-04
ADPF	MJ	9.14E+02	8.67E-01	4.83E-01	7.89E+01	0	3.82E-01	1.38E+00	1.13E-02	-3.77E+02
WDP	m^3 world eq deprived	6.67E+00	7.69E-04	1.94E-01	3.02E-01	0	3.39E-04	2.33E-01	9.29E-05	-1.35E+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 Roller Shutter (specific weight 7.61 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	MJ	2.84E+02	6.31E-02	1.52E+01	1.08E+01	0	2.78E-02	2.95E-01	1.84E-03	-1.7E+02
PERM	MJ	1.51E+01	0	-1.51E+01	0	0	0	0	0	0
PERT	MJ	2.99E+02	6.31E-02	1.1E-01	1.08E+01	0	2.78E-02	2.95E-01	1.84E-03	-1.7E+02
PENRE	MJ	8.84E+02	8.7E-01	7.09E+00	7.89E+01	0	3.84E-01	2.63E+01	1.13E-02	-3.77E+02
PENRM	MJ	3.15E+01	0	-6.61E+00	0	0	0	-2.49E+01	0	0
PENRT	MJ	9.16E+02	8.7E-01	4.84E-01	7.89E+01	0	3.84E-01	1.38E+00	1.13E-02	-3.77E+02
SM	kg	2.37E+00	0	0	0	0	0	0	0	5.2E+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	5.9E-01	6.91E-05	4.57E-03	1.81E-02	0	3.05E-05	5.56E-03	2.85E-06	-2.99E-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 Roller Shutter (specific weight 7.61 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	kg	1.33E-06	2.69E-12	1.26E-11	4.58E-09	0	1.19E-12	6.42E-11	2.45E-13	-1.58E-07
NHWD	kg	1.3E+01	1.33E-04	3.78E-02	1.74E-02	0	5.85E-05	2.19E-01	5.64E-02	-6.73E+00
RWD	kg	4.18E-02	1.63E-06	2.37E-05	1.23E-02	0	7.18E-07	3.97E-05	1.29E-07	-4.04E-02
CRU	kg	0	0	0	0	0	0	0	0	0

MFR	kg	4.29E-01	0	0	0	0	0	6.5E+00	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	1.43E+00	0	0	0	3.1E+00	0	0
EET	MJ	0	0	2.56E+00	0	0	0	5.72E+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 Roller Shutter (specific weight 7.61 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	Disease incidence	2.39E-06	6.08E-10	2.07E-09	4.95E-08	0	2.68E-10	7.1E-09	7.38E-11	-1.61E-06
IR	kBq U235 eq	7.54E+00	2.43E-04	3.78E-03	1.85E+00	0	1.07E-04	5.17E-03	1.48E-05	-8.19E+00
ETP-fw	CTUe	3.52E+02	6.16E-01	2.39E-01	2.26E+01	0	2.71E-01	6.77E-01	6.14E-03	-1.41E+02
HTP-c	CTUh	5.62E-08	1.26E-11	1.49E-11	4.08E-10	0	5.55E-12	3.67E-11	9.46E-13	-9.72E-09
HTP-nc	CTUh	1.01E-06	6.71E-10	6.74E-10	2.09E-08	0	2.96E-10	2.71E-09	1.04E-10	-1.53E-07
SQP	SQP	2.37E+02	3.62E-01	1.5E-01	1.07E+01	0	1.6E-01	2.87E-01	2.74E-03	-1.45E+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 13569
EN 13659:2015 Shutters and external venetian blinds - Performance requirements including safety; German version EN 13659:2015

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

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

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/