

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025 and EN 15804

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|--------------------------|---|
| Owner of the Declaration | Schüco International KG |
| Created by | Duo Fasadsystem AB; Customer no.: 71260 |
| Programme holder | Institut Bauen und Umwelt e.V. (IBU) |
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Schüco AWS 75.SI+/AD UP 75 W x H: 1230 mm x 1480 mm

for project: EPDer ByggfaktaDOCU - Item: AWS 75.SI

Schüco International KG

Created by: Duo Fasadsystem AB



www.ibu-epd.com / <https://epd-online.de>



1. General Information

Schueco International KG
Created by: Duo Fasadsystem AB;
Customer no.: 71260

Programme holder

IBU - Institut Bauen und Umwelt e.V.
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Germany

Declaration number

EPD 20223-202211-20221129134512-EN

This Declaration is based on the Product Category Rules

PCR windows and doors:12/2018
(PCR tested and approved by the independent advisory board (SVR))

Issue date

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Valid to

2027-11-28



Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)



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Schüco AWS 75.SI+/AD UP 75

Owner of the Declaration

Schüco International KG
Karolinenstr. 1-15
33609 Bielefeld
Germany

Created by

Duo Fasadsystem AB; Customer no.: 71260

Declared product / Declared unit

Schüco AWS 75.SI+/AD UP 75 W x H: 1230 mm x 1480 mm
EPDer ByggfaktaDOCU

Scope

This environmental product declaration relates to a window of type Schüco AWS 75.SI+/AD UP 75 with specific dimensions of width x height. The key values used for the system components Schüco AWS 75.SI+/AD UP 75 in the lifecycle assessment are provided by Schüco International KG. The production location is the window manufacturer's location. The window manufacturer is responsible for the specification described in this EPD and the manufacture of the window. The owner of the declaration is liable for the information and evidence used as a basis; the IBU cannot be held liable for manufacturer information, lifecycle assessment data and evidence.

This document is an Environmental Product Declaration which has been translated from German to English. It is based on this German original: EPD 2081-201710-20171127133953-DE. The verifier has no influence on the quality of the translation.

Verification

CEN standard /EN 15804/ serves as the core PCR

Independent verification of the declaration and data according to ISO 14025

internally externally



Matthias Schulz,
Independent tester appointed by a committee of experts.

2. Product description / Product definition

2.1 Product description

The Schüco AWS window system consists of insulated aluminium composite profiles.

The Schüco AWS window system offers functional benefits combined with architectural and design features. Benefits such as high thermal insulation, narrow face widths, concealed, classic manual or integrated mechatronic fittings are combined in components that are tailored to one another. The system consists of the basic depths of 50, 60, 65, 70, 75, 90, 112 and 120 mm. Different opening types can be combined with fixed fields of the system. The profile surfaces of the window units can either be anodised or wet or powder coated.

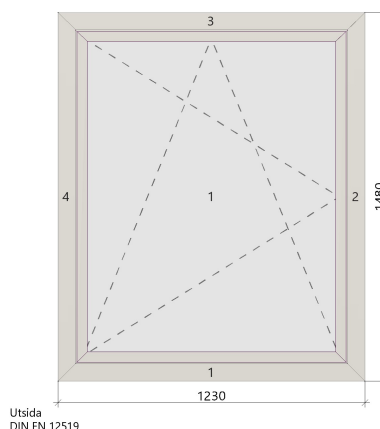
The subject of this declaration, the AWS window unit, consists of the following elements:

- **Main profiles**, consisting of:
 - Aluminium
 - PT (Polythermid)
- **Fittings**, consisting of:
 - Aluminium/stainless steel
 - Aluminium/steel
 - Die-cast zinc
 - INOX (stainless steel)
 - INOX A2 (stainless steel A2)
 - PVC-U
- **Accessories**, consisting of:
 - Aluminium
 - Die-cast aluminium
 - Die-cast zinc
 - INOX (stainless steel)
 - INOX A2 (stainless steel A2)
 - PA (polyamide)
 - PA6 (polyamide)
 - PE foam (polyethylene)
- **Accessory profiles**, consisting of:
 - Aluminium
 - PE foam (polyethylene)
- **Gaskets**, consisting of:
 - EPDM (ethylene-propylene-diene)
- **Glazing**, consisting of:
 - Triple glazing
- **Coating**, consisting of:
 - Powder

The Schüco AWS window system consists of the following variants:

- AWS 50
- AWS 60
- AWS 60 FR 30
- AWS 65
- AWS 70
- AWS 70 FR 30
- AWS 75
- AWS 90
- AWS 120

This declaration describes the following unit from the Schüco AWS window system:



System design: Schüco AWS 75.SI+/AD UP 75

W x H: 1230 mm x 1480 mm

Surface finish of profiles: Powder-coated

Appendices: Unit overview

EU Regulation no. 305/2011 (CPR) applies to placement on the market in EU/EFTA states (with the exception of Switzerland). The product requires a Declaration of Performance taking account of the harmonised product standard DIN EN 14351-1: 2016-12 for windows and doors and CE labelling. The respective national regulations apply to use

2.2 Application

The product lets light in and an exchange of air if the windows can be opened. The window can be installed in the walls of buildings or in curtain walling. Windows can be combined with fixed glazed panels.

2.3 Technical Data

In accordance with CE labelling, the following technical data must be stated for the unit:

| Name | Value | Unit |
|---|-------|---------|
| Heat transfer coefficient glass acc. to /DIN EN 673/ | 0,60 | W/(m²K) |
| Heat transfer coefficient frame acc. to /DIN EN 10077-2/ | 1,3 | W/(m²K) |
| Heat transfer coefficient of the window/door acc. to /DIN EN 10077-1/ | 1,1 | W/(m²K) |
| Total solar energy transmittance glazing acc. to /EN 410/ | npd | - |
| Joint permeability coefficient acc. to /EN 14351-1/ | 4 | Class |
| Driving rain impermeability acc. to /EN 14351-1/ | 9A | Class |
| Exterior sound reduction acc. to /DIN EN ISO 10140/ and /DIN EN ISO 717/ | *) | dB |
| Deflection as a result of wind loads acc. to /EN 14351/ | C3 | Class |
| Deformation as a result of vertical loads acc. to /EN 947/ | *) | mm |
| Fire resistance class (for fire-resistant windows and fire-resistant doors) | *) | - |
| Installation depth | 75 | mm |
| Sound insulation class (SSK 1 - SSK 6), optional | *) | - |
| Airborne sound reduction, R_w , (c, ctr), optional | *) | dB |
| Burglar protection class WK 1 - WK 4 (optional) | *) | - |

*) Omitted as there are no mandatory properties in accordance with product standard EN 14351.

Performance data for the product according to the declaration of performance in relation to its main characteristics in accordance with DIN EN 14351-1:2016-12, Windows and doors - Product standard, performance characteristics.

2.4 Delivery status

The window unit is supplied to the construction site ready for installation in the dimensions provided under 2.1.

2.5 Basic materials / Ancillary materials

The window considered here consists of the following:

| | |
|---------------------------|-----------------|
| Aluminium | 16,35 kg |
| Aluminium/stainless steel | 1,59 kg |
| Aluminium/steel | 0,15 kg |
| Die-cast aluminium | 0,36 kg |
| Die-cast zinc | 0,48 kg |
| EPDM | 3,03 kg |
| INOX | 0,10 kg |
| INOX A2 | 0,01 kg |
| PA | 0,01 kg |
| PA6 | 0,24 kg |
| PE foam | 0,20 kg |
| PT | 3,73 kg |
| PVC-U | 0,17 kg |
| Powder | 0,57 kg |
| Triple glazing | 45,66 kg |
| Total weight | 72,71 kg |

2.6 Manufacture

The unit is produced by the originator stated above: Duo Fasadsystem AB; Customer no.: 71260

The surface of the aluminium profiles can be finished with powder coating, wet-painted or anodised. The surface-finished aluminium profiles and the insulating bars with which they are joined together are cut to size and assembled for the appropriate frame size. The resulting off-cuts from the aluminium profiles are recycled. The profiles on the building structure are then securely fastened to the frame and the gaskets are inserted in the appropriate grooves. The movable window frames are connected to the fitting components. Then the glazing is inserted and secured with glazing profiles. A functional check is then carried out and units are labelled.

2.7 Environment and health during manufacturing

For the production of windows, no regulations are required beyond those that apply in Germany or measures beyond the provisions of the European Union on health and safety or environmental protection. Schüco International KG's environmental management system at its head office in Bielefeld is certified to the international ISO 14001 environmental management standard and quality management is certified to the ISO 9001 quality management standard.

2.8 Product processing / Installation

The Schüco notes on construction and installation for the Schüco AWS 75.SI+/AD UP 75 system must be observed for production, installation and commissioning. No measures beyond standard health and safety measures have to be taken for installation and commissioning.

2.9 Packaging

Generally, the window is not packed. In rare cases a PE foil is used as protection for the window. The surfaces of the

aluminium profiles are often covered with protective foil. The plastic foil is conveyed to a regional waste separation system. The windows are prepared on transport frames and these are put on euro pallets. Reusable frames are used to transport them to the building site.

2.10 Condition of use

No changes occur to the material composition during use.

2.11 Environment and health during use

There are no emissions during the period of use. Therefore, no negative impacts on health are expected during the period of use.

If used as intended, no risk to soil, air or water is to be expected.

2.12 Reference service life

In accordance with the useful life of components for the lifecycle analyses pursuant to the evaluation system for sustainable building (BNB), the useful life of windows with an aluminium frame is over 50 years. The useful life given is independent of the warranty of the manufacturer. The actual useful life could be much longer. Prerequisites for a long useful life are regular maintenance and care of the product.

2.13 Extraordinary effects

Fire

Information on the building material class in accordance with /EN 13501-1/

Fire protection

| Name | Building material class in accordance with DIN EN 13501-1 |
|--------------------|---|
| Aluminium profiles | A1 |
| EPDM gaskets | E |
| Glass | A1 |

Water

No effects on the environment are known due to the effects of flooding. No substances are released in the process.

Environmental impact

Schüco surface finish coating contains no chrome (VI). Schüco powder coatings are generally free of heavy metals. Furthermore, Schüco powder coatings contain no volatile organic compounds (VOC).

Mechanical destruction

No dangerous substances are released in case of mechanical destruction.

2.14 Re-use phase

The end-of-life processes consist of three steps:

- Dismantling
- Shredding and/or sorting
- Remelting / incineration / dumping in landfill

Dismantling either takes place on the construction site or at the recycling plant after transportation of the removed windows. After separation, the material is used as follows:

- Metals: material recycling
- Plastics: thermal recycling
- Glass: Disposal in landfill

2.15 Disposal

The materials are separated after the grinding process. Aluminium residues are remelted and turned into ingots. Extrusion billets are made from the ingots which are subsequently reused for profile extrusion. An average recycling quota of 96% is achieved for aluminium profiles.

Steel parts are removed in a magnetic sorting process which is 95% efficient.

Plastics are separated in a cyclone plant which is 90% efficient and then thermally recycled to produce energy. The glazing is removed from the windows, crushed and then disposed of in landfill.

The waste code according to the European Waste Catalogue is:

| Material | Waste code |
|-----------|------------|
| Aluminium | 17 04 02 |
| Steel | 17 04 05 |
| Glass | 17 02 02 |
| Plastics | 17 02 03 |

2.16 Further information

You can find additional information on the products and safety data sheets on the Schüco homepage (www.schueco.com).

3. LCA: Calculation rules

3.1 Declared Unit

The unit which is the subject of this declaration is a window of type Schüco AWS 75.SI+/AD UP 75 with specific dimensions of 1230 mm x 1480 mm. Profile surfaces: Powder-coated.

Declared Unit

| Name | Value | Unit |
|--|-------------|-----------|
| Declared Unit | 1230 x 1480 | [mm x mm] |
| Conversion factor for 1 kg | 1/72,71 | 1/kg |
| Conversion factor for reference window 1.23 m x 1.48 m | 1,000 | - |
| Frame proportion | 31,82 | % |

For non-homogeneous building components made from different materials, conversion to other dimensions using factors leads to variances compared to the exact calculation.

3.2 System boundary

This is a cradle-to-gate EPD with options. The lifecycle assessment takes into account the product stage (modules A1-A3 including provision of raw materials, transport to the factory and manufacture), transport to the construction site (module A4), Module B6 (use of energy during operation) and also the end-of-life modules (C3: waste treatment) and D (credit notes and loads beyond the system boundaries).

3.3 Estimates and assumptions

A recycling proportion of 42% is included for the production of the aluminium profiles (Module A1) (European Aluminium specification for aluminium profiles in building). For steel and zinc fittings however, it is assumed that everything is completely recycled. Plastic parts are thermally recycled (module C4) to produce energy. Credits from recycling for electricity and steam are allocated to module D. A distance of 500 km is assumed for transporting the raw materials to the factory (module A2). Material recycling (module D) is modelled for disposing of metals (e.g. aluminium profiles). A collection rate of 96% is assumed for aluminium. Disposal in landfill is assumed for the remainder (module C4). Disposal in landfill is modelled for glass. The packaging materials are not considered in this study due to their negligible effect on the results.

3.4 Cut-off criteria

All materials contained in the parts list from SchüCal are taken into consideration in calculating the lifecycle assessment. Packaging is disregarded due to different options and their low contribution to the results.

The total of neglected materials is thus less than 1% of the renewable and non-renewable use of primary energy and 1% of the total volume.

3.5 Background data

All background data used is taken from the databases of the GaBi ts software. The consistent datasets contained in the GaBi ts database are documented in the online GaBi ts documentation.

For some pre-products, existing EPDs which were created in accordance with the current EN 15804 standard are used where available. All upstream processes are depicted with background data.

3.6 Data quality

The GaBi ts background data was last revised in 2019. The quality and representative nature of the data from SchüCal can be considered to be high.

3.7 Period under review

This declaration was created on 29.11.2022 and is based on version 2022 R3 of SchüCal.

3.8 Allocation

The lifecycle assessment takes into account the recycling potential of the metal parts used. The required quantity of secondary aluminium is recycled for production from the metal scrap created in the system during production and at the end of the useful life of the metal parts (closed loop). A credit is then allocated for the remaining net scrap quantity. Environmental impacts from the combustion of plastic parts in the end-of-life scenario are ascribed to module C3. The resulting credit notes for thermal and electrical energy are declared in module D. Credits are issued using average European data for the environmental impacts of generating electrical and thermal energy from natural gas.

3.9 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 and/or the product-specific characteristics of performance are taken into account.

4. LCA: Scenarios and additional technical information

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 if modules are not declared (MND).

Transportation to the building site (A4)

| Name | Value | Unit |
|---|----------|----------|
| Litres of fuel | | |
| Lorry, payload up to 12t | 0,0042 | l/100 km |
| Lorry, payload up to 28t | 0,00169 | l/100 km |
| Lorry, payload up to 40t | 0,00135 | l/100 km |
| Train (Diesel) | 0,00112 | l/100 km |
| Aeroplane (Kerosene) | 0,021 | l/100 km |
| Ship (Heavy heating oil) | 0,000395 | l/100 km |
| Transport distance | | |
| Lorry, payload up to 12t | 0 | km |
| Lorry, payload up to 28t | 10 | km |
| Lorry, payload up to 40t | 0 | km |
| Train | 0 | km |
| Aeroplane | 0 | km |
| Ship | 0 | km |
| Capacity utilisation (including empty runs) | | |
| Lorry, payload up to 12t | 85 | % |
| Lorry, payload up to 28t | 85 | % |
| Lorry, payload up to 40t | 85 | % |
| Train | 40 | % |
| Aeroplane | 66 | % |
| Ship | 48 | % |
| Volume usage factor | 1 | - |

Reference service life

| Name | Value | Unit |
|------------------------|-------|------|
| Reference service life | 50 | a |

Operational energy (B6)

| Name | Value | Unit |
|-------------------------|-------|------|
| Electricity consumption | 0,00 | kWh |

The product contains no electrical components.

The electricity consumption possibly stated above relates to the standby operation of the electronic components which the product may contain. A scenario for one year was calculated, although power consumption for trigger pulses is negligible in each case.

End of life (C1-C4)

| Name | Value | Unit |
|---|-------|------|
| Collected separately acc. to waste type | 72,71 | kg |
| Collected as mixed construction waste | 0 | kg |
| Reuse | 0 | kg |
| Recycling (D) | 64,02 | kg |
| Energy recovery (C3) | 0 | kg |
| Landfilling (C4) | 1,30 | kg |
| Thermal recycling (C4) | 0 | kg |

5. LCA: Results

In the following section, the results of the indicators of the assessment of the effect, the use of resources and also waste and other output streams are displayed in reference to a single window of type Schüco AWS 75.SI+/AD UP 75 in specific dimensions of 1230 mm x 1480 mm. See chapter 3.1 for the conversion.

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

| 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 | Deconstruction 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 | MND | MND | MND | MND | MND | MND | X | MND | MND | MND | X | X | X |

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT:

Schüco AWS 75.SI+/AD UP 75 W x H: 1230 mm x 1480 mm

| Parameter | Unit | A1-A3 | A4 | B6 | C3 | C4 | D |
|-----------|---|---------|----------|------|----------|----------|-----------|
| GWP | [kg CO ₂ -Eq.] | 220,72 | 5,84E-2 | 0,00 | 17,44 | 1,77E-2 | -74,75 |
| ODP | [kg CFC ₁₁ -Eq.] | 1,56E-8 | 0,00 | 0,00 | 3,40E-15 | 9,76E-17 | -9,49E-10 |
| AP | [kg SO ₂ -Eq.] | 6,14E-1 | 1,91E-5 | 0,00 | 5,68E-3 | 1,13E-4 | -2,34E-1 |
| EP | [kg (PO ₄) ³ -Eq.] | 9,55E-2 | 4,89E-6 | 0,00 | 1,44E-3 | 1,27E-5 | -1,48E-2 |
| POCP | [kg Ethen Eq.] | 6,63E-2 | -7,41E-6 | 0,00 | 3,73E-4 | 8,55E-6 | -1,45E-2 |
| ADPE | [kg Sb Eq.] | 2,06E-3 | 0,00 | 0,00 | 4,39E-8 | 1,79E-9 | -1,75E-3 |
| ADPF | [MJ] | 2966,00 | 0,00 | 0,00 | 4,31 | 2,52E-1 | -812,06 |
| Caption | 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; | | | | | | |

RESULTS OF THE LCA - RESOURCE USE:

Schüco AWS 75.SI+/AD UP 75 W x H: 1230 mm x 1480 mm

| Parameter | Unit | A1-A3 | A4 | B6 | C3 | C4 | D |
|-----------|--|---------|------|------|---------|---------|----------|
| PERE | [MJ] | 794,38 | 0,00 | 0,00 | 7,67E-1 | 3,39E-2 | -490,75 |
| PERM | [MJ] | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| PERT | [MJ] | 794,38 | 0,00 | 0,00 | 7,67E-1 | 3,39E-2 | -490,75 |
| PENRE | [MJ] | 3117,79 | 0,00 | 0,00 | 302,15 | 2,59E-1 | -1112,72 |
| PENRM | [MJ] | 297,34 | 0,00 | 0,00 | -297,34 | 0,00 | 0,00 |
| PENRT | [MJ] | 3415,13 | 0,00 | 0,00 | 4,81 | 2,59E-1 | -1112,72 |
| SM | [kg] | 7,31 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| RSF | [MJ] | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| NRSF | [MJ] | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| FW | [m ³] | 1,35 | 0,00 | 0,00 | 4,35E-2 | 6,54E-5 | -8,55E-1 |
| Caption | PERE = Renewable primary energy as energy carrier; PERM = Renewable primary energy resources as material utilisation; PERT = Total use of renewable primary energy resources; PENRE = Non renewable primary energy as energy carrier; PENRM = Non renewable primary energy as material utilisation; 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 - OUTPUT FLOWS AND WASTE CATEGORIES:

Schüco AWS 75.SI+/AD UP 75 W x H: 1230 mm x 1480 mm

| Parameter | Unit | A1-A3 | A4 | B6 | C3 | C4 | D |
|-----------|--|---------|------|------|---------|---------|----------|
| HWD | [kg] | 8,99E-5 | 0,00 | 0,00 | 8,79E-9 | 3,95E-9 | -7,93E-7 |
| NHWD | [kg] | 29,38 | 0,00 | 0,00 | 6,28E-1 | 1,30 | -19,31 |
| RWD | [kg] | 1,77E-1 | 0,00 | 0,00 | 1,97E-4 | 2,95E-6 | -1,19E-1 |
| CRU | [kg] | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| MFR | [kg] | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 64,02 |
| MER | [kg] | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| EEE | [MJ] | 0,00 | 0,00 | 0,00 | 38,16 | 0,00 | 0,00 |
| EET | [MJ] | 0,00 | 0,00 | 0,00 | 69,00 | 0,00 | 0,00 |
| Caption | 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; | | | | | | |

6. LCA: Interpretation

Production (Modules A1-A3) has a significant influence on the lifecycle assessment results. The figures during the manufacturing phase are significantly affected by the aluminium frame and the amount of glass in the window. Renewable energies are often used for the production of aluminium which is why the proportion of primary energy from renewable energy sources in the tables above is comparatively high.

Module C4 shows the expenses relating to thermal recycling of the utilised plastics with a small contribution.

The recycling of aluminium is depicted in module D and displays relevant credits as the recycled aluminium and the additional metal parts installed in the product can be used again in the next product system. Credits from thermal recycling of the plastic parts of the window are also shown in module D.

7. Requisite evidence

7.1 Flammable gas toxicity

Aluminium windows and doors consist of 97-98% non-flammable material. Verification of flammable gas toxicity is therefore not relevant for aluminium windows and doors.

7.2 Leaching out

Aluminium windows and doors curtain walling consist of 99% glass and hard profile surfaces. Verification of leaching out is therefore not relevant for aluminium windows and doors.

8. References

IBU 2016

IBU (2016): General EPD programme instructions from the Institut Bauen und Umwelt e.V. (IBU). Version 1.1, Institut Bauen und Umwelt e.V., Berlin

/EN ISO 14025/

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

/EN 15804/

DIN EN 15804:2022-03, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

Calculation rules for the ecobalance and requirements of the background report, 2013-04.

Product category rules for building-related products and services. Part A: Calculation rules for the lifecycle assessment and requirements of the background report, 1.7. Berlin: Institut Bauen und Umwelt e.V. (ed.), 2019.

Product category rules for construction products - Part B

Product category rules for building-related products and services. Part B: Requirements of the environmental product declaration for curtain walling, Version X.X. Berlin: Institut Bauen und Umwelt e.V. (ed.), 2019

EU Regulation No. 305/2011

EU Regulation No. 305/2011 of the European Parliament and Council from 9 March 2011 defining harmonised conditions for marketing building products and revoking the Council's Guideline 89/106/EEC (CPR)

/BNB/

BMVBS (ed.): Useful life of components for lifecycle analyses in accordance with the evaluation system for

sustainable construction (BNB),

<http://www.nachhaltigesbauen.de/baustoff-undgebaeuedaten/nutzungsdauern-von-bauteilen.html>, 2011-11

TU Delft (Ed.)

COLLECTION OF ALUMINIUM FROM BUILDINGS IN EUROPE - A Study by Delft University of Technology - 2004, available at <http://www.europeanaluminium.eu/publications-building/>

GaBi ts Software:

GaBi ts 9.2 (Service Pack 39): Software and database for integrated balancing, 2019

/GaBi documentation - GaBi ts/

Documentation on GaBi ts records from the database on lifecycle engineering, thinkstep, <https://gabi.sphera.com/deutsch/my-gabi/gabi-documentation/gabi-database-2020-lci-documentation/>

SchüCal

Calculation software for quotation and order processing and for the work preparation of Schüco window, door, façade and conservatory systems, Schüco Digital GmbH

/DIN EN ISO 14044: 2018-05/

Environmental management - Life cycle assessment - Requirements and guidelines (ISO 14044:2006+Amd 1: 2017); German and English version EN ISO 14044:2006+A1: 2018

/EN 14351/

DIN EN 14351-1: 2016-12 Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets - not including fire and/or smoke protection properties; German version EN 14351-1:2006+A2:2016.

ISO 14001

DIN EN ISO 14001:2015-11 Environmental management systems - Requirements with guidance for use DIN EN ISO 9001:2015-11 Quality management systems - Requirements

/EN 410/

DIN EN 410: 2011- 04, Glass in building - Determination of luminous and solar characteristics of glazing; German version EN 410:2011

/EN 673/

DIN EN 673: 2011- 04, Glass in building - Determination of thermal transmittance (U value) - Calculation method; German version EN 673:2011.

/DIN EN ISO 10077-1 2010-05/

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/DIN EN ISO 10077-2: 2018-01/

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