

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A1

Owner of the Declaration	Griesser AG
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Lamisol, Aluflex, Grinotex and Solomatic external venetian blinds with aluminium slats

GRIESSER AG

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



1. General Information

<p>GRIESSER AG</p> <hr/> <p>Programme holder IBU – Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p> <hr/> <p>Declaration number EPD-GRI-20210133-ICC2-EN</p> <hr/> <p>This declaration is based on the product category rules: Sun protection systems, 30.11.2017 (PCR checked and approved by the SVR)</p> <hr/> <p>Issue date 06.07.2021</p> <hr/> <p>Valid to 05.07.2026</p> <hr/> <p></p> <hr/> <p>Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)</p> <hr/> <p></p> <hr/> <p>Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.)</p>	<p>External venetian blinds with aluminium slats</p> <hr/> <p>Owner of the declaration GRIESSER AG Tänikonnerstrasse 3 CH-8355 Aadorf Schweiz</p> <hr/> <p>Declared product / declared unit 1 m² self-supporting motorised blinds with aluminium slats from the Lamisol, Aluflex, Grintex and Solomatic product groups</p> <hr/> <p>Scope: GRIESSER Lamisol, Aluflex, Grintex and Solomatic self-supporting motorised blinds with aluminium slats are produced at the production facility in Aadorf. The EPD covers 100 % of the production volume.</p> <p>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.</p> <p>The EPD was created according to the specifications of <i>EN 15804+A1</i>. In the following, the standard will be simplified as <i>EN 15804</i>.</p> <hr/> <p>Verification</p> <table border="1"> <tr> <td colspan="2">The standard <i>EN 15804</i> serves as the core PCR</td> </tr> <tr> <td colspan="2">Independent verification of the declaration and data according to <i>ISO 14025:2010</i></td> </tr> <tr> <td><input type="checkbox"/> internally</td> <td><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <p></p> <hr/> <p>Angela Schindler (Independent verifier)</p>	The standard <i>EN 15804</i> serves as the core PCR		Independent verification of the declaration and data according to <i>ISO 14025:2010</i>		<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally
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2. Product

2.1 Product description/Product definition

The slatted blinds consist of the main components of guide profiles, carrying channels and hangings. The slats of the venetian blinds are typically connected to a stainless steel or textile adjusting belt. This is used to adjust the slat angle and the amount of daylight.

Lamisol® is the best-selling GRIESSER venetian blind. It is often deployed on office buildings due to its excellent dimming but is also extremely well suited to residential premises.

Grintex® is a robust high-performance adjustable solar shade which is especially suitable for large windows and darkening large rooms efficiently. An encased stainless steel cable without textiles guarantees high durability.

Solomatic® is Griesser's historic venetian blind in the original design which is highly popular especially in the northern hemisphere.

With especially flat and thin slats, **Aluflex®** is extremely flexible and light and also suitable for tight spaces and renovation.

EU regulation no. /305/2011/ (CPR) applies for putting the product on the market in the EU/EFTA (with the exception of Switzerland). The product requires a declaration of performance in compliance with / *EN 13659/ Shutters and external venetian blinds - Performance requirements including safety* and CE labelling.

The respective national regulations apply to use.

2.2 Application

Motorised external venetian blinds are destined for use as solar shades in all types of building: residential buildings, offices, shops, schools, industrial and agricultural buildings and other public buildings, etc.

2.3 Technical Data

Constructional data

Name	Value	Unit
Wind resistance class tests in accordance with product standard EN 13659	2 - 7	-
Sun shade solar reflection coefficient (facing the sun); /EN 13659/	0.07-0.75	-
Solar transmission coefficient glazing /EN 13659/	0.01-0.11	-
Solar radiation absorption coefficient /EN 13659/	0.22-0.92	-
Heat conductance /EN 13659/	0.88	-
Additional thermal resistance /EN 13659/	0.08	m2K/W
Overall thermal transmittance in accordance with /EN 13659/	0.04-0.1	-

Performance values of the product according to the declaration of performance in relation to its main features in accordance with /EN 13659/, *Shutters and external venetian blinds - Performance requirements including safety*.

Figures with glazing C in accordance with /EN 14501/.

2.4 Delivery status

GRIESSER aluminium blinds are sized according to customer wishes. Depending on the type, surface areas between 0.4 m² and 16.3 m² in size are possible.

2.5 Base materials/Ancillary materials

GRIESSER aluminium blinds are made of the following materials:

- Aluminium (slats and other components): approx. 30 %
- Electric motor: approx. 30 %
- Low-alloy steel: approx. 20 %
- Polystyrene: approx. 10 %
- PVC: approx. 3 %
- Further plastics, partly glass-fibre-reinforced: approx. 3 %
- Chromium steel: approx. 1 %

The percentages relate to the most frequently sold product with an opening of 4.5 m². The percentages stated may vary depending on the product type and dimensions.

1) Does the product or at least one part product contain materials from the *ECHA candidate list of materials* which are especially problematic for approval: Substances of Very High Concern – SVHC (date 15/02/2021) above a mass % of 0.1:

- no.

2) Does the product or at least one part of the product contains further CMR Category 1A or 1B substances which are not on the candidate list in doses above 0.1 mass- in at least one part product:

- no.

3) Were biocidal products added to this building product or was it treated with biocidal products (is this

therefore a processed product in terms of /EU Biocide Product Directive 528/2012/):

- no.

2.6 Manufacture

Aluminium belts are either bought in already coated in the colours most frequently used or bought as raw belts. In the case of the raw belts, these are coated in a colour according to customer wishes in a coil coating process. Further parts which need to be coloured are powder-coated in a single-piece coating process. The remaining components required are bought in ready to use.

As the next step, the aluminium belt is shaped to the specific form of the slats of the product type, cut to length and drilled in a continuous process. The slats are then fitted with mechanical fixings and other components in a mechanical process.

The end product is then assembled by hand, checked for quality and then packaged.

The quality management system in force at GRIESSER AG facilities is certified to /ISO 9001/.

2.7 Environment and health during manufacturing

The health of staff is protected by suitable measures defined by the authorities. These include protective glasses, hearing protection, helmet, gloves, safety shoes etc.

Waste which may be produced in any process in the company is correctly and sustainably collected, sorted and disposed of.

2.8 Product processing/Installation

GRIESSER aluminium blinds are installed manually; that means that electric drills and screwdrivers are generally deployed.

2.9 Packaging

The packaging normally consists of:

- Polyethylene wrap
- Polystyrene foam
- Cardboard

Further packaging materials may possibly be used, but the quantity involved is negligible.

Plastic packaging (polyethylene (PE) wrap, polystyrene foam parts) can be recycled if collected separately; alternatively, they can be recycled thermally. The cardboard is recycled.

2.10 Condition of use

The material composition of GRIESSER aluminium blinds does not change during the use period.

2.11 Environment and health during use

GRIESSER aluminium blinds contain no harmful substances which could be released during use.

Environmental protection: Based on current knowledge, no hazards for water, air and soil can arise with appropriate use of the products described.

Health protection: According to the current state of

knowledge, no damage of or impairment to health is to be expected.

2.12 Reference service life

It is not possible to calculate the reference length of use in accordance with *ISO 15686*. The reference length of use based on a manufacturer's declaration is 30 years. The corresponding use scenario is declared in 4.

2.13 Extraordinary effects

Fire

Fire protection in accordance with EN 13501-1

Name	Value
Building material class	A2

Water

In case of unexpected water ingress (flooding), GRIESSER venetian blinds must be replaced like electric components; no impairment to human health or the environment are to be expected.

Mechanical destruction

GRIESSER venetian blinds must be replaced in case of unexpected mechanical destruction; no impairments

to human health or the environment are to be expected.

2.14 Re-use phase

GRIESSER external venetian blinds can be easily dismantled manually. The metal parts – i.e. the aluminium slats - are normally recycled and the plastic parts are recycled thermally for energy recovery.

2.15 Disposal

GRIESSER aluminium blinds are inert and can be disposed of in corresponding building rubble landfill. However, recycling is desirable and usual due to the high value of the materials.

Waste code in accordance with the European Waste Catalogue (*ordinance concerning the European Waste Catalogue*):

17 04 14 Mixed metals

2.16 Further information

Further documents on the products, technical data sheets, BIM files etc. are available here:

www.griesser.ch

3. LCA: Calculation rules

3.1 Declared Unit

The product from the group covered by this EPD which is most frequently sold by a large margin is declared here: Lamisol III 90 with an average surface area of 4.5 m².

The declared unit is 1 m² in size.

Declared unit

Name	Value	Unit
Declared unit	1	m ²
Grammage	3.56	kg/m ²
conversion factor [Mass/Declared Unit]	3.56	-

3.2 System boundary

EPD type: cradle to grave.

The production of GRIESSER external aluminium venetian blinds (**Modules A1–A3**) includes raw material extraction, energy production, waste treatment and all transports to the factory gate. In compliance with EU COUNCIL REGULATION No 333/2011, secondary metals are modelled as part of the product systems from the point in time at which they are available as sorted scrap.

No waste or secondary fuels are used for production.

An average transport of 500 km to the building site is balanced for GRIESSER sun blinds in **Module A4**

Module A5 includes disposal of the PE and polystyrene packaging in a waste incineration plant. Heat and electricity produced in the waste incineration plant are offset as exported energy in Module D. Cardboard is sorted, although the recycling of

cardboard is not included in Module D due to the complex recycling

Electricity consumption for installation (drills, electric screwdrivers) is ignored.

Modules B1, B3 to B5 and B7 are not relevant for the product under examination or no significant environmental effects occur.

Module B2 includes annual cleaning with water and one replacement motor over the reference use period after 15 years. Since the composition of the motor and the amount of recyclate it contains are not known, it is not included in the calculation of Module D.

Module B6 includes electricity consumption for opening and closing the blinds across the reference use period.

Module C1 includes manual dismantling although no appreciable environmental effects occur.

Module C2 includes transport of the dismantled GRIESSER sun blinds to a sorting plant and after that to a waste incineration plant for the thermally recycled plastic content.

The taking apart or shredding of the dismantled sun blinds is balanced in **Module C3**. Sorted metal reaches the end of the waste properties according to *EU COUNCIL REGULATION No 333/2011* and leaves the product system as a secondary material. Since the composition of the motor and the amount of recyclate it contains are not known, it is not included in the calculation of Module D.

No processes or environmental effects accrue in **Module C4**.

Module D contains the benefits and loads beyond the system boundary associated with recycling materials which result from the treatment of recycled materials from the point at the end of waste to the point of substitution (as costs) and the substitution of primary resource (as a benefit).

It also contains the benefits and loads which are associated with energy recovery from plastic waste in a waste incineration plant as modelled in Module C. The net flows of metals which leave the product system are included in Module D.

3.3 Estimates and assumptions

No further assumptions and estimates which would be relevant for the result need to be made for the points listed here in Chapter 3 and in Chapter 4.

3.4 Cut-off criteria

No data which is available from the company survey was ignored. This also includes material usage, energy requirements (heat, electricity) VOC emissions from coating and cleaning, packaging materials of raw materials (insofar as they collect as waste) and product packaging, consumables in production, water requirements and waste water processing, waste processing and the transport of all inputs and outputs. Mass and energy flows are also balanced below 1% with this approach. No processes were ignored which those responsible for the project were aware of and which would have significantly contributed to the impact assessment.

3.5 Background data

ecoinvent 3.6 (2019) is used as the background database.

3.6 Data quality

The foreground data is based on extensive and detailed data collection at the production site in Aadorf. The foreground data was completely linked to

corresponding data from the *ecoinvent 3.6* background database.

The background data was updated in 2019. The quality of the foreground and the background data can therefore be regarded as extremely good.

3.7 Period under review

The LCA data represents the production conditions for 2019.

3.8 Allocation

No co-products accrue during the production of GRIESSER solar shades. Sorted production scrap of the various metals, especially aluminium, is regarded as secondary material with no economic value (no loads are allocated either) and included in the quantification of net flows which leave the production system. This approach was selected in order to guarantee coherent quantification of the net flows entering Module D.

No processes which would have made an allocation of multi-input processes necessary were modelled as part of the foreground model. The background data for the domestic waste incineration plant was absorbed from *ecoinvent* without modification.

The allocation of reuse, recycling and recovery was avoided by the cut-off approach in the foreground model in accordance with *EN 15804*.

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, respectively the product-specific characteristics of performance, are taken into account.

ecoinvent 3.6 (2019) is used as the background database.

4. LCA: Scenarios and additional technical information

A4 Transport to the building site

A truck transport of 1000 km is assumed. The vehicles involved are emissions class EURO 5 (15 %) and EURO 6 (85%) trucks with a payload > 32 tons. The standard values for utilisation of the records were not changed.

A5 Installation in the building

GRIESSER louvre blinds are supplied ready for installation and fitted manually; power consumption for drills and electric screwdrivers are ignored as being irrelevant.

Plastic packaging (polyethylene (PE wrap, polystyrene foam parts) is recycled thermally; the cardboard is recycled.

B2 Maintenance

The maintenance scenario (B2) covers annual cleaning with water and one replacement motor during the reference service life. Identically to the entire product, the replacement motor is transported by Aadorf/CH over 500 km to the place of use.

The replaced motor is transported 100 km to a shredding and sorting centre where the separated

metals reach the end-of-life stage. Consumption of 0.03 kWh/kg for pulverisation and sorting and 0.437 MJ/kg diesel fuel for manual operation are included for manual operation.

Since the specific composition of the motor and its recycle content are not known, the motor is not included in the quantification of Module D.

B6 Energy consumption during use

Assuming 10,000 opening/closing cycles of some 40 seconds across the reference use period, a consumption of 50 kWh/m² for the standby time and an average of 3 kWh/m² (depending on the type and size of motor) in operating mode for German conditions are inventorised.

Reference period of use

Name	Value	Unit
Reference service life	30	a
Declared product characteristics (at the factory gate) and information on filling in, etc.	The product passed internal quality controls and complies with DIN EN 13659 for CE labelling.	

Parameters for planned use (if specified by the manufacturer), including instructions for appropriate use and use regulations	Installation according to the fitting instructions and the current state of technology	
The assumed production quality if carried out in accordance with the manufacturer's instructions	Performance in accordance with the manufacturer's instructions.	
Outdoor conditions (if used outdoors) e.g. The influence of weather, pollutants, UV and exposure to wind, building alignment, shading and temperature	The declared products are intended for installation outside the building: They are therefore designed to withstand outdoor conditions for their entire service life.	
Indoor conditions (if used indoors), e.g. Temperature, humidity, exposure to chemicals	The declared products are not intended for installation inside buildings.	
Use conditions, e.g. frequency of use, mechanical stress	Standard use in every type of building, i.e. opening and closing as often as is necessary	
Servicing, maintenance, cleaning, e.g. the required frequency, type and quality and also the replacement of components	The declared products are designed for a reference use period of 30 years, although the motor is replaced every 15 years. They are maintained once a year by cleaning with water at the discretion of the building user.	

value of plastic parts is recovered as heat and 13.0% as electricity. The energy recovered is designated as "exported energy" and included in Module D.

C4 Disposal

Since a 100% recycling scenario is declared (within which some plastic waste is burnt in a waste incineration plant) no processes are declared in Module C4; the declared values are therefore 0.

D Potential benefits and loads beyond the product system

Module D contains the benefits and loads beyond the system boundary associated with recycling materials which result from the treatment of recycled materials from the point at the end of waste to the point of substitution (as costs) and the substitution of primary resource (as a benefit).

It also contains the benefits and loads which are associated with energy recovery from plastic waste in a waste incineration plant as modelled in Module C. The energy recovered in A5 from packaging waste is not included due to the low quantities.

The benefits of recycling the motor are also not included as no data is available about its composition and recycling quota.

The net flows of metals which leave the product system are included in Module D.

C1 Dismantling

Manual dismantling is assumed. Power consumption in connection with electric screwdrivers, etc. is regarded as being negligible. No environmental impacts are therefore declared in Module C1.

C2 Transport to the building site

As a recycling scenario it is assumed that the dismantled product is transported across 50 km with trucks > 32 tons of emissions classes /EURO 5/ (15%) and /EURO 6/ (85%) to a treatment centre. After crushing and sorting, the metal fractions reach the end of the waste property. The separated plastic parts are then transported to a waste incineration plant for thermal treatment.

C3 Waste treatment for recycling and energy recuperation

Consumption of 0.03 kWh/kg for pulverisation and sorting and 0.437 MJ/kg diesel fuel for internal logistics are included for manual operation. It is assumed that 100% of the metal scrap recovered is recycled. They leave the product system and "secondary material". The net quantities of metals which leave the product system are included in Module D.

It is still assumed that 100% of the plastic parts are treated in a waste incineration plant with an effectiveness of $R1 < 0.6$ (in accordance with theecoinvent data used); 25.57% of the lower heating

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE 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	X	MNR	MNR	X	X	MND	X	X	X	X	X	

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 m² GRIESSER external venetian blinds with aluminium slats (Lamisol, Grinotex, Aluflex and Solomatic)

Parameter	Unit	A1-A3	A4	A5	B2	B5	B6	C1	C2	C3	C4	D
GWP	[kg CO ₂ -Eq.]	4.07E+1	1.67E-1	1.37E-1	1.55E+0	0.00E+0	3.24E+1	0.00E+0	1.73E-2	1.03E+0	0.00E+0	-1.17E+1
ODP	[kg CFC11-Eq.]	2.63E-6	3.27E-8	5.00E-10	8.55E-8	0.00E+0	1.54E-6	0.00E+0	3.39E-9	1.20E-8	0.00E+0	-8.94E-7
AP	[kg SO ₂ -Eq.]	2.32E-1	4.56E-4	1.74E-5	2.51E-2	0.00E+0	6.59E-2	0.00E+0	4.72E-5	4.15E-4	0.00E+0	-7.28E-2
EP	[kg (PO ₄) ³ -Eq.]	2.01E-2	6.38E-5	3.78E-6	1.69E-3	0.00E+0	2.24E-2	0.00E+0	6.61E-6	1.11E-4	0.00E+0	-5.63E-3
POCP	[kg ethene-Eq.]	1.54E-2	2.11E-5	7.24E-7	1.28E-3	0.00E+0	2.80E-3	0.00E+0	2.18E-6	1.41E-5	0.00E+0	-6.12E-3
ADPE	[kg Sb-Eq.]	1.66E-2	5.12E-6	1.12E-7	3.21E-4	0.00E+0	1.98E-4	0.00E+0	5.30E-7	8.79E-7	0.00E+0	8.39E-3
ADPF	[MJ]	4.46E+2	2.62E+0	3.81E-2	1.59E+1	0.00E+0	6.49E+2	0.00E+0	2.72E-1	1.67E+0	0.00E+0	-1.42E+2

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 - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 m² GRIESSER external venetian blinds with aluminium slats (Lamisol, Grinotex, Aluflex and Solomatic)

Parameter	Unit	A1-A3	A4	A5	B2	B5	B6	C1	C2	C3	C4	D
PERE	[MJ]	6.35E+1	3.35E-2	7.87E-4	2.18E+0	0.00E+0	5.42E+1	0.00E+0	3.47E-3	1.27E-1	0.00E+0	-5.03E+1
PERM	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	6.35E+1	3.35E-2	7.87E-4	2.18E+0	0.00E+0	5.42E+1	0.00E+0	3.47E-3	1.27E-1	0.00E+0	-5.03E+1
PENRE	[MJ]	4.59E+2	2.71E+0	2.06E+0	1.75E+1	0.00E+0	0.00E+0	0.00E+0	2.81E-1	1.53E+1	0.00E+0	-1.49E+2
PENRM	[MJ]	1.60E+1	0.00E+0	-2.03E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.40E+1	0.00E+0	0.00E+0
PENRT	[MJ]	4.75E+2	2.71E+0	3.95E-2	1.75E+1	0.00E+0	4.55E+2	0.00E+0	2.81E-1	1.30E+0	0.00E+0	-1.49E+2
SM	[kg]	1.07E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.69E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m ³]	3.64E-1	2.82E-4	2.66E-5	1.81E-2	0.00E+0	1.33E-1	0.00E+0	2.93E-5	7.00E-4	0.00E+0	-2.87E-1

Caption 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+A1: 1 m² GRIESSER external venetian blinds with aluminium slats (Lamisol, Grinotex, Aluflex and Solomatic)

Parameter	Unit	A1-A3	A4	A5	B2	B5	B6	C1	C2	C3	C4	D
HWD	[kg]	1.26E-2	6.58E-6	1.25E-7	7.18E-4	0.00E+0	1.33E-4	0.00E+0	6.82E-7	1.49E-6	0.00E+0	9.79E-3
NHWD	[kg]	1.15E+1	2.37E-1	3.14E-3	6.35E-1	0.00E+0	1.85E+0	0.00E+0	2.45E-2	1.99E-2	0.00E+0	0.00E+0
RWD	[kg]	1.96E-3	3.97E-5	5.29E-7	8.62E-5	0.00E+0	3.30E-3	0.00E+0	4.11E-6	1.07E-5	0.00E+0	0.00E+0
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	9.43E-2	0.00E+0	2.10E-1	4.00E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.16E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	6.78E-1	0.00E+0	2.63E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.82E+0	0.00E+0	0.00E+0
EET	[MJ]	1.33E+0	0.00E+0	5.18E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.58E+0	0.00E+0	0.00E+0

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

Effects in line with the product life (Module A1-D)

Fig 1 shows the relative contributions of the various modules along the lifecycle of the declared products.

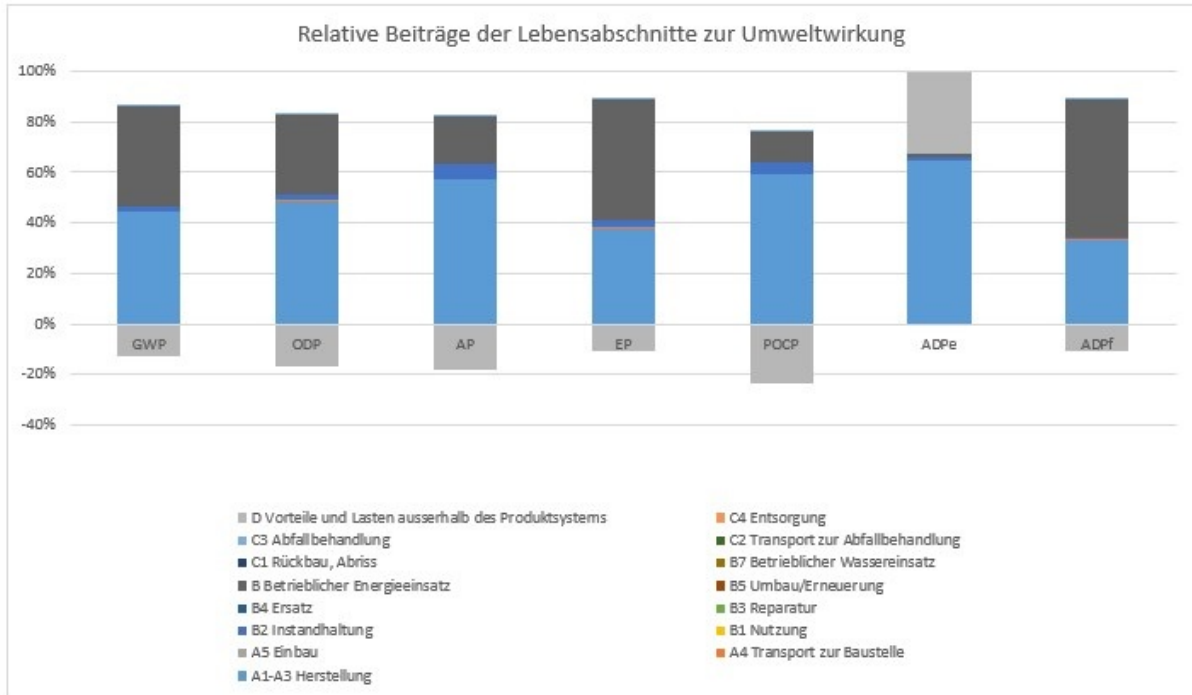


Fig. 1: Environmental effects of aluminium sliding shutters along the lifecycle (effects of the production modules A1-A3 = 100%)

By far the largest part of the environmental impacts is caused during manufacture (Modules A1-A3). The effects of the other modules are negligible.

Benefits and loads beyond the system boundary (Module D) make up 25% to 30% of the effects across the product lifecycle (Modules A1-A3). The positive net effects of the ADPe relate to the use of zinc in the aluminium casting alloy (an artefact in the supply chain of zinc which was corrected in ecoinvent 3.7.1).

The use of renewable and non-renewable primary energy is caused almost exclusively in the production

phase. The material use of primary energy is negligible and relates to plastic parts of the product and packaging material. The material use of primary energy is transferred to energy use if the primary energy-containing materials are burnt with energy recovery.

The same applies to all waste indicators, whereby the production stage contributes the most to these waste flows by far.

Impacts during manufacture (Modules A1-A3)

Fig. 2 shows all processes in connection with the manufacture of the declared product (Modules A1-A3) which contribute more than 2% to at least one of the impact categories declared in the EPD.

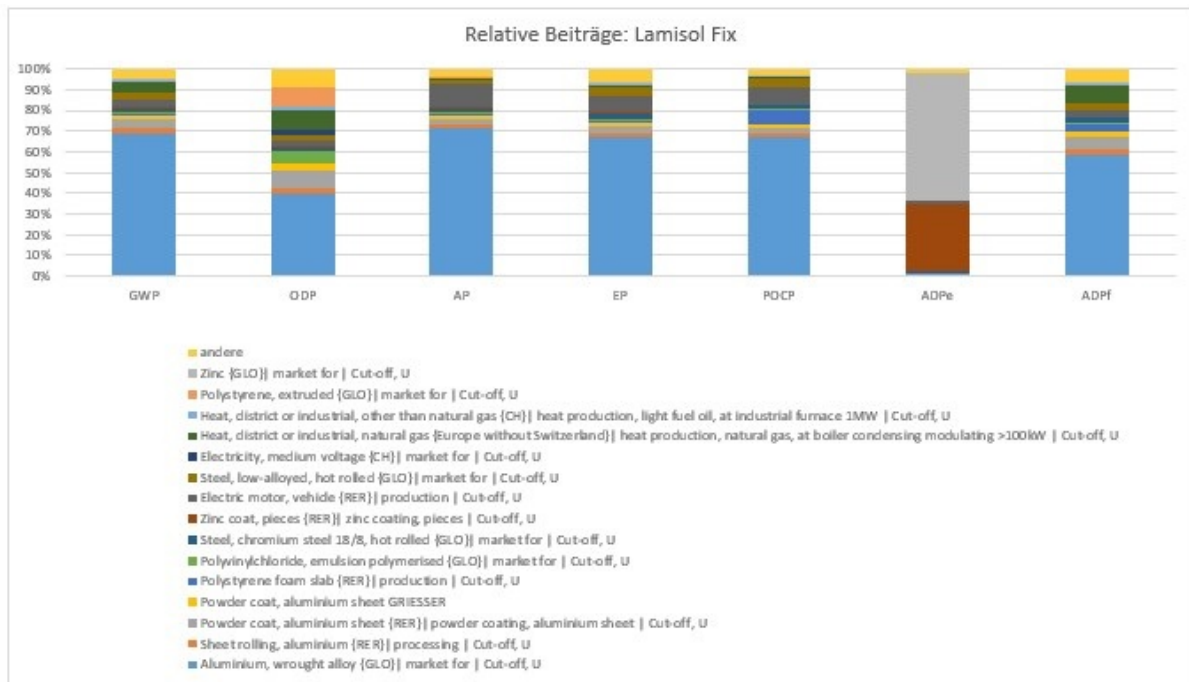


Fig. 2: Relative contributions of inputs to the production process (Modules A1-A3)

The environmental profile is dominated by the aluminium. Just the ADPe is also caused by the zinc for galvanisation. Other processes such as the production of the motor, the production of low-alloy steel parts or PE packaging wrap and also the production of heat from light heating oil appear in individual impact categories with contributions of around 10 %.

Variance of results

The product with the highest sales volume and corresponding dimensions of this product group is declared in the EPD.

Due to the different dimensions of the declared products, variance is much higher than the variance between different (average) product types of the same product group. This is attributable to the fact that some elements, e.g. the motor, are independent of the dimensions of the product; the impact of the motor is therefore not scaled depending on the size of the solar shade but divided by the m2 covered by a product. This leads to extremely small solar shade systems having relatively extremely high environmental impacts (and extremely large dimensions) compared to standard sizes.

The impacts of the 'system box' are some 10 % higher than the declared values for products without a 'system box'.

7. Requisite evidence

No evidence is required.

8. References

/EN 15804/
 /EN 15804:2012- 04+A1 2013/, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

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

/ISO 15686/
 DIN EN ISO 15686, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products; various parts.

/EN 13659/
 DIN EN 13659:2015- 07, Shutters and external venetian blinds - Performance requirements including safety.

/EN 14501/
 DIN EN 14501:2006- 02, Blinds and shutters - Thermal and visual comfort - Performance characteristics and classification.

/ISO 9001/
 DIN EN ISO 9001:2015- 09, Quality management systems - Requirements.

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 Institut Bauen und Umwelt e.V.: General EPD programme instructions from Institut Bauen und Umwelt e.V. (IBU). Version 1.1, Berlin, 2019. www.ibu-epd.com.

/PCR Part A/

Institut Bauen und Umwelt e.V. (Ed.): PCR Part A: Calculation rules for the LCA and requirements of the project report. Version 1.8, Berlin, 2019. www.ibu-epd.com.

PCR: Solar shade systems

Institut Bauen und Umwelt e.V. (Ed.): PCR Part B: Requirements of the EPD for solar shade systems. Version 2017/ 11, Berlin, 2017. www.ibu-epd.com.

ECHA List

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

/Ordinance on Biocidal Products/

/EU Ordinance No. 528/2012/ of the European Parliament and Council/ of 22nd May 2012 on the Provision on the Market and Use of Biocidal Products.

/EU Regulation no. 305/2011/(CPR)

/EU Regulation no 305/2011/ of the European Parliament and Council of 9th March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC.

/EU COUNCIL REGULATION No 333/2011/

/EU COUNCIL REGULATION No 333/2011/ of 31st 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 Catalogue regulation

<http://www.gesetze-im-internet.de/avv/anlage.html>

ecoinvent 3.6

ecoinvent 3.6, LCA database, 12/2019. ecoinvent, Zürich.

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