Environmental Product Declaration

Declaration Code: M-EPD-RRS-GB-108

Note: This EPD is based on the Model EPD Doors. The EPD becomes valid when transferred to the manufacturer by the **ift**.

Niemetz Torsysteme GmbH

Doors

Roller shutter doors and roller grilles sectional doors and side doors

Basis:

DIN EN ISO 14025
EN15804

Company EPD
Environmental
Product **D**eclaration

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Declaration holder	Niemetz Torsysteme GmbH Hollfelder Straße 11 96167 Königsfeld
Declaration code	M-EPD-RRS-GB-108
Designation of declared product	Roller shutter doors and roller grilles, sectional doors and side doors
Scope	Roller shutter doors and roller grilles, sectional doors and side doors for internal and external applications to close openings in industrial, commercial and residential buildings.
Basis	This EPD was prepared on the basis of EN ISO 14025:2011 and EN 15804:2012+A1:2013. In addition, the "Allgemeiner Leitfaden zur Erstellung von Typ III Umweltproduktdeklarationen" (Guidance on preparing Type III Environmental Product Declarations) applies. The Declaration is based on the PCR documents “PCR Part A” PCR-A-0.2:2018 and “Doors” PCR-TT-1.1:2018
Validity	Publication date: 01.07.2020 / Last revision: 09.07.2020 / Next revision: 01.07.2025 This verified Model Environmental Product Declaration applies solely to the specified products and is valid for a period of 5 years from the date of publication in accordance with DIN EN 15804. Validity applies to the member companies of the Association “BVT-Verband Tore”.
LCA basis	The LCA was prepared in accordance with DIN EN ISO 14040 and DIN EN ISO 14044. The base data includes both the data collected by the various member companies of “Niemetz Torsysteme GmbH” and the generic data derived from the “GaBi ts” database. LCA calculations were carried out for the specified “cradle to gate with options” life cycle including all upstream chains (e.g. raw material extraction, etc.).
Notes	The “Conditions and Guidance on the Use of ift Test Documents” apply. The declaration holder assumes full liability for the underlying data, certificates and verifications.

Florian Stich Deputy Head of Certification Body	Dr. Torsten Mielecke Chairman of Expert Committee	Patrick Wortner External verifier

1 General product information

Product definition

The EPD relates to the product group “Doors” and applies to:

1 m² of Roller shutter doors and roller grilles, sectional doors and side doors
from Niemetz Torsysteme GmbH

The functional unit is obtained by summing up:

Assessed product	Declared unit	Weight per unit area
Roller shutter doors and roller grilles	**1 m²**	19.9 kg/m²
Sectional doors	**1 m²**	24.7 kg/m²
Side doors	**1 m²**	16.6 kg/m²

Product description

Roller shutter doors and roller grilles
Roller shutter doors are vertically opening doors composed of a curtain comprising segments, a barrel/shaft with drive mechanism and lateral guide rails. The articulated curtain is composed of profiles available in a great variety of designs and materials, to suit various requirements.
The rolled-up door is mounted to the lintel and normally, in this position, does not restrict the clear passage height. Roller shutter doors are suitable for openings of both great width and height[1].

Roller grilles, a subtype of roller shutter doors, are stand-alone structures that separate the room, but when closed, still allow the passage of air and transparency. Roller grilles are composed of articulated special grille sections.
A door curtain, composed of roller shutter profiles with large cut-outs, resembles a roller grille and is also used for the same purpose.[2].

Curtain (roller shutter door):
The curtain of the roller shutter door consists of interconnected single or double-skin sections/slats in aluminium or steel with a range of infills and lateral slide blocks (heads) that run in the guide rails/channels. Depending on the design, an additional anti-extraction device is integrated to prevent extraction of the curtain. A great variety of punched openings is available in the form of glazed window and ventilation units. The robust bottom rail is fitted with an integrated (EPDM) rubber weather seal.

Curtain (roller grille):
Roller grille curtains either consist of interconnected single skin seg-

[1] see Pech, Pommer, Zeininger; Türen und Tore (Doors); published by Springer Verlag Vienna/New York; Vienna 2007; page 147

[2] see Lippe; Rolltore (Roller shutter doors); published by Kleffmann Verlag Bochum; Düsseldorf 2009; page 63 etseq

ments/slats in plain aluminium with cut-outs, including lateral plastic slide blocks that run in guide channels, or of articulated grille elements made of flat, oval or round metal bars bent to form honeycomb shapes. Depending on the design, an additional anti-extraction device is integrated to prevent extraction of the curtain. The robust bottom rail is fitted with an integrated (EPDM) rubber weather seal.

Guide rails/channels:
The curtain of the roller shutter door/roller grille runs in lateral guide rails to ensure a close fit. They are made of galvanised steel or plain aluminium in different sizes to suit the curtain and come with or without storm anchor guides. The edges are optionally protected by edge liners (e.g. PVC wear strips) to protect the curtain against wear.

Roller barrel/shaft:
The diameter and wall thickness of the shaft are designed to suit the door size. The shaft is supported by shaft pins welded to round plates in thrust brackets featuring maintenance-free ball bearings and fixed to the installation substrate using purpose-designed brackets

Drive mechanism:
Manual and power-operated drive mechanisms of different designs are used.

Safety:
The safety of roller shutter doors/roller grilles is ensured by approved anti-drop devices (integrated in drive mechanism or separate) in accordance with the relevant guidelines/directives. Suitable safety devices and control systems must be used, depending on the mode of operation.

Surface protection:
The surfaces are protected against corrosion.

Sectional doors
Sectional doors are vertically opening doors the door sections of which are usually lifted by a spring-assisted shaft, and which, in the final open position are stacked at a specific vertical or horizontal angle, or are folded vertically/horizontally in the final position The individual sections are rigid and are linked to rollers running in lateral guide rails. A key factor for easy operation in all operating modes is weight balance, which can be achieved with a number of different systems[3].

Curtain:
The curtain of sectional doors is made of interconnected horizontal sections consisting of polyurethane foam-filled panels or of extruded aluminium profiles with or without thermal break When the curtain is opened it either moves vertically upwards or upwards and inwards into the room. A sectional door may contain panel sections of different designs. It may also feature an integrated pass door.

[3] see Pech, Pommer, Zeininger - Türen und Tore (Doors); published by Springer Verlag Vienna/New York - Vienna 2007; page 146

Sealing:
The curtain contains seals between the panel sections, a top lintel seal, side frame seals as well as a bottom profile seal. All seals are in EPDM quality. A thermal barrier can be provided to separate the door frame from the installation substrate.

Hardware & frames:
As a rule the panel sections are connected by hinges. Side roller guides with adjustable, ball-bearing and low-wear running gear keep the curtain in the track. Track bends guide the curtain into the room. Other types of hardware are possible.
An appropriately dimensioned frame system must be selected.

Weight balance:
The weight is balanced by a torsion spring shaft with lateral cable reels and highly flexible steel cables or by a direct drive mechanism.

Drive mechanism:
Manual and power-operated drive mechanisms of different designs are used. When installing the sectional doors, the drive mechanism is usually installed on-site.

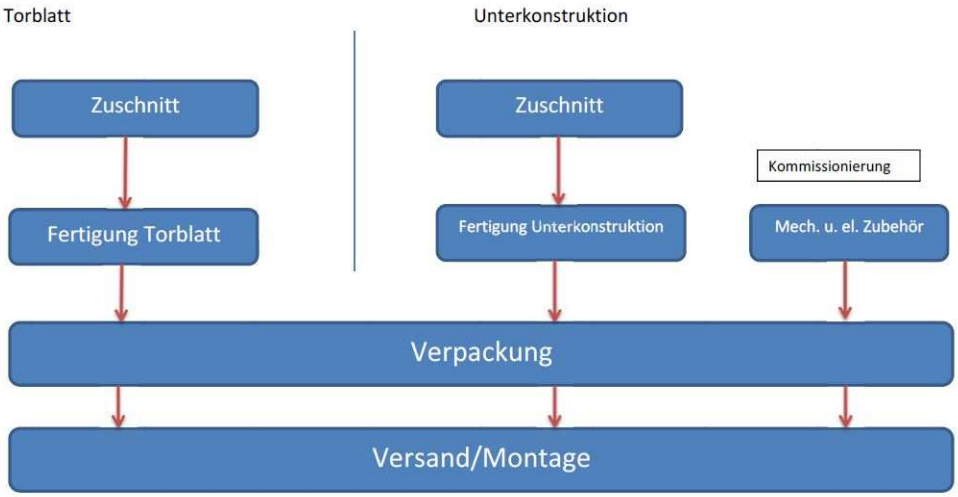
Safety:
The safety of sectional doors is secured by approved anti-drop devices in accordance with the relevant guidelines/directives.
Suitable safety devices and control systems must be used, depending on the mode of operation.

Side doors:

Side doors are designed to permit additional access to rooms without having to open large-sized doors.
The door frame is composed of aluminium and/or steel sections.
Like the door, the door leaf consists of polyurethane foam-filled steel and/or aluminium panels or extruded aluminium profiles.
The door leaf is hinged to the frame profile and locked via a mortise lock featuring a single or multipoint locking system.
Sealing is provided by rubber seals in EPDM quality and/or brush rails of various designs.

For a detailed product description refer to the manufacturer specifications or the product specifications of the respective offer/quotation.

Product manufacture



Application

Roller shutter doors and roller grilles:
Roller shutter doors and roller grillers for internal and external applications to close openings in industrial, commercial and residential buildings.

Sectional doors:
Sectional doors for internal and external applications to close openings in industrial, commercial and residential buildings.

Side doors:
Side doors to permit access to industrial and residential buildings from the side.

Verifications

The following verifications are held:

- Product quality to DIN 13241

Management systems (optional)

The following management systems are in place:

- Quality management system to DIN EN ISO 9001:2015

Additional information

For additional verification of applicability or conformity refer to the CE marking and the documents accompanying the product, if applicable.

2 Materials used

Primary materials

The primary materials used are listed in the LCA (see Section 7).

Declarable substances

The product contains no substances from the REACH candidate list (declaration dated June 2020).

3 Construction process stage

Processing recommendations, installation

Observe the instructions for assembly/installation, operation, servicing/maintenance and disassembly, provided by the manufacturers.

4 Use stage

Emissions to the environment

No emissions to indoor air, water or soil are known. There may be VOC emissions.

Reference service life (RSL)

The RSL information was provided by the manufacturer. The RSL shall refer to the declared technical and functional performance of the product within the building. It shall be established in accordance with specific rules set out in the European product standards and shall also take into account ISO 15686-1, -2, -7 and -8. Where European product standards provide guidance on determining RSL, such guidance shall have priority. If it is not possible to determine the service life as the RSL in accordance with ISO 15686, the BBSR table “Nutzungsdauer von Bauteilen zur Lebenszyklusanalyse nach BNB” (service life of building components for life cycle assessment in accordance with the sustainable construction evaluation system) can be used. For further information and explanations refer to www.nachhaltigesbauen.de.

For this EPD the following applies:

The reference service life (RSL) can be determined for a "cradle to gate with options" EPD only if all of the modules A1-A3 and B1-B7 are specified;
According to the BBSR table, an optional service life of 50 years has been specified for Roller shutter doors and roller grilles, sectional doors and side doors.

The reference service life is dependent on the characteristics of the product and the reference use conditions. The characteristics described in the EPD are applicable, in particular the characteristics listed below:

- Outdoor environment: climatic influences may have a negative impact on the reference service life
- Indoor environment: no impacts (e.g., humidity, temperature) known that may have a negative effect on the reference service life.

The service life solely applies to the characteristics specified in this EPD or the corresponding references.
The reference service life (RSL) does not reflect the actual life span, which is usually determined by the service life and the refurbishment of a building. It does not give any information on the useful life, warranty referring to performance characteristics or guarantees.

5 End-of-life stage

Possible end-of-life stages

The Roller shutter doors and roller grilles, sectional doors and side doors are shipped to central collection points. There the products are usually shredded and sorted into their original constituents. The end-of-life stage depends on the site where the products are used and is therefore subject to the local regulations. Observe the locally applicable regulatory requirements.

This EPD shows the end-of-life modules according to the market situation.
Specific parts of steel, aluminium, glass, and plastics are recycled. Residual fractions are sent to landfill or partially thermally recycled.

Disposal routes

The LCA includes the average disposal routes.

All life cycle scenarios are detailed in the Annex.

6 Life Cycle Assessment (LCA)

Environmental product declarations are based on life cycle assessments (LCAs) which use material and energy flows for the calculation and subsequent representation of environmental impacts.

Such a life cycle assessment was developed as the basis for Roller shutter doors and roller grilles, sectional doors and side doors. The LCA is in conformity with EN 15804 and the international standards DIN EN ISO 14040, DIN EN ISO 14044, ISO 21930 and EN ISO 14025.

The LCA is representative of the products presented in the Declaration and the specified reference period.

6.1 Definition of goal and scope

Goal

The goal of the LCA is to demonstrate the environmental impacts of Roller shutter doors and roller grilles, sectional doors and side doors. In accordance with EN 15804, the environmental impacts covered by this Environmental Product Declaration are presented for the entire product life cycle in the form of basic information. No other additional environmental impacts are specified.

Data quality, data availability and geographical and time-related system boundaries

The specific data originate exclusively from the 2018 fiscal year. They were collected on-site at the manufacturing plants of the data suppliers and originate in parts from company records and partly from values directly obtained by measurement. Validity of the data was checked by the ift Rosenheim.

The generic data originate from the “GaBi ts” professional and construction materials databases. The last update of both databases was in 2020. Data from before this date originate also from these databases and are not more than 4 years old. No other generic data were used for the calculation.

Data gaps were either filled with comparable data or conservative assumptions, or the data were cut off in compliance with the 1% rule.

The life cycle was modelled using the sustainability software tool “GaBi ts” for the development of Life Cycle Assessments.

Scope / system boundaries

The system boundaries refer to the supply of raw materials and purchased parts, manufacture/production, use and end-of-life stage of Roller shutter doors and roller grilles, sectional doors and side doors (cradle to gate with options).

Cut-off criteria

All company data collected, i.e. all commodities/input and raw materials used, the thermal energy and electricity consumption, were taken into consideration.

The boundaries cover only the product-relevant data. Building sections/parts of facilities that are not relevant to the manufacture of the products, were excluded.

The transport distances of the pre-products used were taken into consideration as a function of 100% of the mass of Roller shutter doors and roller grilles, sectional doors and side doors .
The transport mix is composed as follows and originates from the research project "EPDs für transparente Bauelemente" (EPDs for transparent building components).

- Truck, 26-28 t total weight / 18.4 t payload, Euro 6, freight, 85% capacity used, 100 km;
- Truck-trailer, 28-34 t total weight / 22 t payload, Euro 6, 50% capacity used, 50 km;
- Freight train, electrical and diesel driven; D 60%, E 51% capacity used, 50 km
- Seagoing vessel, consumption mix, 50 km

The criteria for the exclusion of inputs and outputs as set out in EN 15804 are fulfilled. It can be assumed that the total of negligible processes per life cycle stage does not exceed 1 percent of the mass/primary energy. This way the total of negligible processes does not exceed 5 percent of the energy and mass input. The life cycle calculation also includes material and energy flows that account for less than 1 percent.

6.2 Inventory analysis

Goal	All material and energy flows are described below. The processes covered are presented as input and output parameters and refer to the declared/functional units.
Life cycle stages	The Annex shows the entire life cycle of Roller shutter doors and roller grilles, sectional doors and side doors. The product stage "A1 – A3", construction process stage" A4 – A5", use stage "B1 – B7", end-of-life stage "C1 – C4" and the benefits and loads beyond the system boundaries "D" are considered.
Benefits	The below benefits have been defined as per EN 15804: • Benefits from recycling • Benefits (thermal and electrical) from incineration
Allocation procedures Allocation of co-products	No allocations result from the manufacture of Roller shutter doors and roller grilles, sectional doors and side doors.
Allocations for re-use, recycling and recovery	If Roller shutter doors and roller grilles, sectional doors and side doors are reused/recycled and recovered during the product stage (rejects), the components are shredded and then sorted into single constituents, if required. This is done using various process plants, e.g. magnetic separators. The system boundaries of the Roller shutter doors and roller grilles, sectional doors and side doors were set following their disposal, when the end of their waste status has been reached.
Allocations beyond life cycle boundaries	Use of recycled materials in the manufacturing process was based on the current market-specific situation. In parallel to this, a recycling potential was taken into consideration that reflects the economic value of the product after recycling (recyclate) . The system boundary set for the recycled material refers to collection.
Secondary material	The use of secondary material in Module A3 was considered. Secondary material is not used.

Inputs

The LCA includes the following production-relevant inputs:

Energy

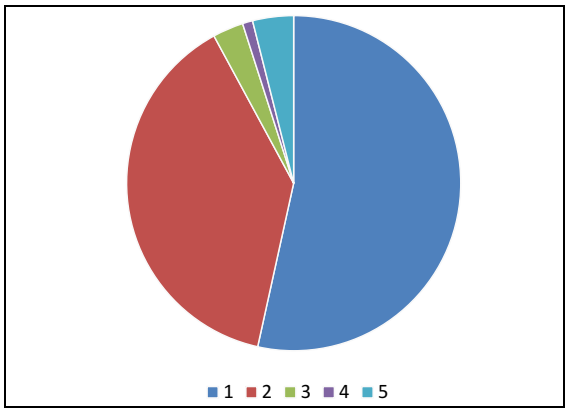
The electricity mix is based on “Strommix Deutschland” (German electricity mix). Gas is based on “Erdgas Deutschland” (German natural gas). Diesel is based on “Diesel Deutschland” (German Diesel).

Water

No water is consumed by the individual process steps for the manufacture of Roller shutter doors and roller grilles, sectional doors and side doors . The consumption of fresh water specified in Section 6.3 originates (among others) from the process chain of the pre-products.

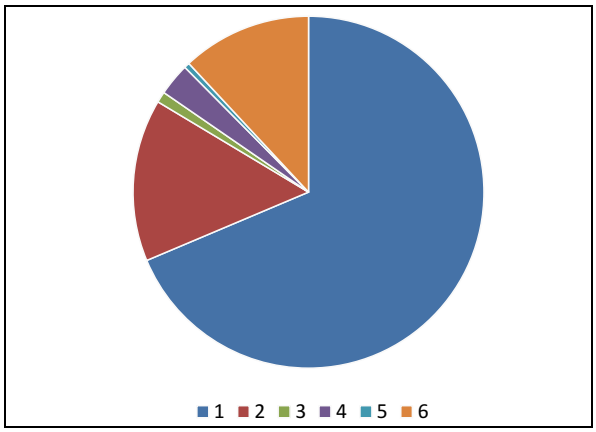
Raw material/pre-products

The chart below shows the share of raw materials/pre-products in %.

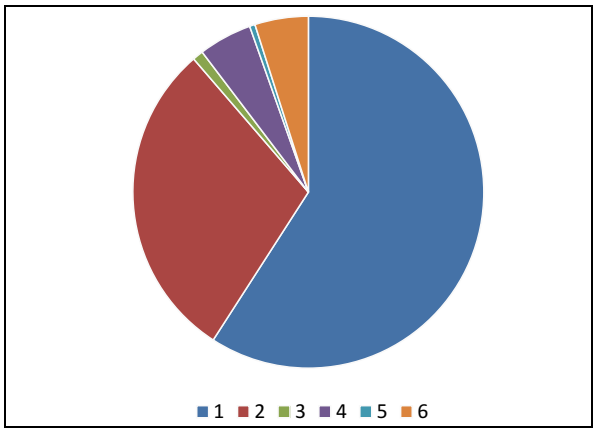


Roller shutter doors and roller grilles

Roller shutter doors and roller grilles		
No.	Material	Mass in %
1	Steel	54
2	Aluminium	39
3	EPDM	3
4	Plastics	1
5	Accessories	4



Sectional doors



Side doors

		Sectional doors	Side doors
No.	Material	Mass in %	Mass in %
1	Steel	69	60
2	Aluminium	15	30
3	EPDM	1	1
4	PUR	3	5
5	Plastics	<1	<1
6	SAN	12	5

Ancillary materials and consumables

0.4 kg ancillary materials and consumables are required for 1 m² of Roller shutter doors and roller grilles, sectional doors and side doors .

Product packaging

The amounts used for product packaging are as follows:

No.	Material	Mass in kg
1	Wood	0.9
2	Cardboard	0.2
3	PE film	0.06
4	Styrene	0.06

Outputs

The LCA includes the following production-relevant outputs per 1 m² of Roller shutter doors and roller grilles, sectional doors and side doors :

Waste
Secondary raw materials were included in the benefits.
See Section 6.3 Impact assessment.

Waste water
No waste water is produced for the manufacture of 1 m² of Roller shutter doors and roller grilles, sectional doors and side doors .

6.3 Impact assessment

Goal

The impact assessment covers both inputs and outputs. The impact categories applied are named below:

Impact categories

The models for impact assessment were applied as described in EN 15804-A1.
The impact categories presented in the EPD are as follows:

- Depletion of abiotic resources (fossil fuels);
- Depletion of abiotic resources (mineral substances);
- Acidification of soil and water;
- Ozone depletion;
- Global warming;
- Eutrophication,
- Photochemical ozone creation;

Waste

The waste generated during the production of 1 m² of Roller shutter doors and roller grilles, sectional doors and side doors is evaluated and shown separately for the fractions trade wastes, special wastes and radioactive wastes. Since waste handling is modelled within the system boundaries, the amounts shown refer to the deposited wastes. A portion of the waste indicated is generated during the manufacture of the pre-products.

Results per 1 m^2 of roller shutter doors and roller grilles																
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Central environmental impacts																
GWP	kg CO_2 eq.	95.5	0.27	1.69	ND	ND	1.484	ND	ND	0	0	0	4.42E-02	2.89E-03	1.47	- 55.30
ODP	kg R11 eq.	1.06E-07	4.46E-17	1.00E-09	ND	ND	3.35E-11	ND	ND	0	0	0	7.30E-18	8.64E-17	1.37E-16	-1.81E-13
AP	kg SO_2 eq.	0.281	1.31E-03	2.00E-04	ND	ND	2.64E-03	ND	ND	0	0	0	1.79E-04	6.06E-06	9.09E-05	-2.07E-01
EP	kg PO_4^{3-} eq.	0.0232	3.30E-04	6.30E-05	ND	ND	2.47E-04	ND	ND	0	0	0	4.48E-05	6.71E-07	1.99E-05	-1.33E-02
POCP	kg C_2H_4 eq.	0.0211	-5.63E-04	9.50E-06	ND	ND	3.28E-04	ND	ND	0	0	0	-6.74E-05	4.32E-07	9.51E-06	-1.40E-02
ADPE	kg Sb eq.	1.91E-04	2.25E-08	-3.68E-07	ND	ND	1.21E-03	ND	ND	0	0	0	3.69E-09	9.64E-10	8.08E-09	-1.51E-05
ADPF	MJ	1,100.00	3.70	0.35	ND	ND	37.97	ND	ND	0	0	0	0.61	0.03	0.15	- 584.00
Use of resources																
PERE	MJ	335.00	0.21	20.96	ND	ND	1.22	ND	ND	0	0	0	0.03	0.02	0.03	- 239.00
PERM	MJ	21.03	0	-21.03	ND	ND	0	ND	ND	0	0	0	0	0	0	0
PERT	MJ	356.03	0.21	-0.07	ND	ND	1.22	ND	ND	0	0	0	3.41E-02	2.29E-02	3.39E-02	- 239.00
PENRE	MJ	1,290.00	3.71	0.41	ND	ND	39.65	ND	ND	0	0	0	0.61	12.45	0.80	- 671.00
PENRM	MJ	13.11	0	0	ND	ND	0	ND	ND	0	0	0	0	-12.40	- 0.62	0
PENRT	MJ	1,303.11	3.71	0.41	ND	ND	39.65	ND	ND	0	0	0	6.07E-01	5.18E-02	0.18	- 671.00
SM	kg	0	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
RSF	MJ	3.22E-30	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
NRSF	MJ	4.89E-29	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
FW	m^3	0.638	2.41E-04	5.12E-03	ND	ND	5.13E-03	ND	ND	0	0	0	3.95E-05	2.65E-05	3.18E-03	-5.82E-01
Waste categories																
HWD	kg	1.76E-06	1.73E-07	4.42E-11	ND	ND	1.70E-03	ND	ND	0	0	0	2.83E-08	2.14E-11	1.21E-10	-3.90E-07
NHWD	kg	16.2	5.67E-04	1.48E-03	ND	ND	1.48E-02	ND	ND	0	0	0	9.29E-05	3.67E-05	5.83E-03	-11.50
RWD	kg	0.0758	4.59E-06	1.38E-05	ND	ND	6.65E-04	ND	ND	0	0	0	7.52E-07	7.86E-06	1.05E-05	-3.41E-02
HWD	kg	1.76E-06	1.73E-07	4.42E-11	ND	ND	1.70E-03	ND	ND	0	0	0	2.83E-08	2.14E-11	1.21E-10	-3.90E-07
Output material flows																
CRU	kg	0	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
MFR	kg	0.43	0	0	ND	ND	0	ND	ND	0	0	0	0	18.10	0	0
MER	kg	0	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
EEE	MJ	0	0	5.45	ND	ND	0	ND	ND	0	0	0	0	0	3.14	0
EET	MJ	0	0	1.92	ND	ND	0	ND	ND	0	0	0	0	0	5.59	0

Key:
GWP – global warming potential **- ODP** – ozone depletion potential **AP** - acidification potential **EP** - eutrophication potential **POCP** - photochemical ozone formation potential **ADPE** - abiotic depletion potential – non fossil resources **ADPF** - abiotic depletion potential – fossil resources **PERE** - use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **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** - net use of fresh water **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 per 1 m^2 of sectional doors																
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Central environmental impacts																
GWP	kg CO_2 eq.	99.4	0.335	2.09	ND	ND	5.389	ND	ND	0	0	0	0.0549	0.981	9.89	-44.2
ODP	kg R11 eq.	7.53E-08	5.53E-17	1.24E-09	ND	ND	1.22E-10	ND	ND	0	0	0	9.06E-18	2.93E-14	1.06E-15	-1.58E-13
AP	kg SO_2 eq.	0.243	1.63E-03	2.48E-04	ND	ND	9.60E-03	ND	ND	0	0	0	2.22E-04	2.06E-03	9.15E-04	-0.135
EP	kg PO_4^{3-} eq.	0.0233	4.09E-04	7.81E-05	ND	ND	8.98E-04	ND	ND	0	0	0	5.56E-05	2.28E-04	1.69E-03	-9.92E-03
POCP	kg C_2H_4 eq.	0.0257	-6.99E-04	1.18E-05	ND	ND	1.19E-03	ND	ND	0	0	0	-8.37E-05	1.47E-04	4.60E-04	-1.13E-02
ADPE	kg Sb eq.	4.74E-05	2.80E-08	-4.57E-07	ND	ND	1.21E-03	ND	ND	0	0	0	4.58E-09	3.28E-07	6.25E-08	-8.18E-06
ADPF	MJ	1,350	4.59	0.43	ND	ND	137.9	ND	ND	0	0	0	0.751	10.9	2.15	-461
Use of resources																
PERE	MJ	257	0.23	18.92	ND	ND	4.432	ND	ND	0	0	0	0.04	7.79	0.29	-136.00
PERM	MJ	19.00	0	-19.00	ND	ND	0	ND	ND	0	0	0	0	0	0	0
PERT	MJ	276.00	0.23	-0.08	ND	ND	4.432	ND	ND	0	0	0	0.0423	7.79	0.288	-136
PENRE	MJ	1,480.00	4.60	2.51	ND	ND	144	ND	ND	0	0	0	0.75	82.15	5.56	- 517.00
PENRM	MJ	69.90	0	-2.00	ND	ND	0	ND	ND	0	0	0	0	-64.55	- 3.22	0
PENRT	MJ	1,549.90	4.6	0.505	ND	ND	144	ND	ND	0	0	0	0.754	17.6	2.34	-517
SM	kg	0	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
RSF	MJ	4.28E-30	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
NRSF	MJ	6.50E-29	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
FW	m^3	0.485	2.99E-04	6.36E-03	ND	ND	1.86E-02	ND	ND	0	0	0	4.90E-05	9.01E-03	0.0181	-0.306
Waste categories																
HWD	kg	1.20E-06	2.14E-07	5.48E-11	ND	ND	6.18E-03	ND	ND	0	0	0	3.51E-08	7.28E-09	6.51E-09	-3.07E-07
NHWD	kg	9.51	7.04E-04	1.84E-03	ND	ND	5.39E-02	ND	ND	0	0	0	1.15E-04	0.0125	1.37	-5.77
RWD	kg	0.053	5.70E-06	1.71E-05	ND	ND	2.41E-03	ND	ND	0	0	0	9.33E-07	2.67E-03	7.53E-05	-0.022
HWD	kg	1.20E-06	2.14E-07	5.48E-11	ND	ND	6.18E-03	ND	ND	0	0	0	3.51E-08	7.28E-09	6.51E-09	-3.07E-07
Output material flows																
CRU	kg	0	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
MFR	kg	0	0	0	ND	ND	0	ND	ND	0	0	0	0	18.9	0	0
MER	kg	0	0	0	ND	ND	0	ND	ND	0	0	0	0	0	0	0
EEE	MJ	0	0	2.39	ND	ND	0	ND	ND	0	0	0	0	0	17.6	0
EET	MJ	0	0	6.76	ND	ND	0	ND	ND	0	0	0	0	0	31.3	0

Key:
GWP – global warming potential **- ODP** – ozone depletion potential **AP** - acidification potential **EP** - eutrophication potential **POCP** - photochemical ozone formation potential **ADPE** - abiotic depletion potential – non fossil resources **ADPF** - abiotic depletion potential – fossil resources **PERE** - use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **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** - net use of fresh water **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 per 1 m^2 of side doors																
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Central environmental impacts																
GWP	kg CO_2 eq.	99.6	0.383	1.63	ND	ND	ND	ND	ND	0	0	0	0.107	3.12E-03	6.18	-51.8
ODP	kg R11 eq.	8.10E-08	9.58E-17	9.71E-10	ND	ND	ND	ND	ND	0	0	0	1.77E-17	9.32E-17	7.92E-16	-1.89E-13
AP	kg SO_2 eq.	0.282	3.40E-04	1.94E-04	ND	ND	ND	ND	ND	0	0	0	4.42E-04	6.54E-06	8.61E-04	-0.201
EP	kg PO_4^{3-} eq.	0.0239	6.99E-05	6.11E-05	ND	ND	ND	ND	ND	0	0	0	1.11E-04	7.24E-07	2.54E-03	-0.0125
POCP	kg C_2H_4 eq.	0.0213	-5.54E-06	9.21E-06	ND	ND	ND	ND	ND	0	0	0	-1.67E-04	4.66E-07	6.63E-04	-0.0128
ADPE	kg Sb eq.	4.14E-05	3.54E-08	-3.57E-07	ND	ND	ND	ND	ND	0	0	0	8.96E-09	1.04E-09	4.69E-08	-1.56E-05
ADPF	MJ	1,240	5.22	0.336	ND	ND	ND	ND	ND	0	0	0	1.47	0.0345	2.41	-562
Use of resources																
PERE	MJ	339	0.302	15.9324	ND	ND	ND	ND	ND	0	0	0	0.0827	0.0248	0.237	-246
PERM	MJ	16	0	-16	ND	ND	ND	ND	ND	0	0	0	0	0	0	0
PERT	MJ	339	0.302	-0.0676	ND	ND	ND	ND	ND	0	0	0	0.0827	0.0248	0.237	-246
PENRE	MJ	1,430	5.24	6.54	ND	ND	ND	ND	ND	0	0	0	1.47	46.22	5.03	0
PENRM	MJ	54.74	0	-6.15	ND	ND	ND	ND	ND	0	0	0	0	-46.16	-2.49	0
PENRT	MJ	1,484.74	5.24	0.394	ND	ND	ND	ND	ND	0	0	0	1.47	0.0559	2.54	-652
SM	kg	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	0	0	0
RSF	MJ	3.09E-30	0	0	ND	ND	ND	ND	ND	0	0	0	0	0	0	0
NRSF	MJ	4.69E-29	0	0	ND	ND	ND	ND	ND	0	0	0	0	0	0	0
FW	m^3	0.678	3.52E-04	4.97E-03	ND	ND	ND	ND	ND	0	0	0	9.58E-05	2.86E-05	8.15E-03	-0.598
Waste categories																
HWD	kg	8.80E-07	2.42E-07	4.28E-11	ND	ND	ND	ND	ND	0	0	0	6.85E-08	2.31E-11	9.47E-09	-3.67E-07
NHWD	kg	15.5	8.31E-04	1.44E-03	ND	ND	ND	ND	ND	0	0	0	2.25E-04	3.96E-05	2.12	-11.8
RWD	kg	0.0746	9.66E-06	1.33E-05	ND	ND	ND	ND	ND	0	0	0	1.82E-06	8.48E-06	5.18E-05	-0.0358
HWD	kg	8.80E-07	2.42E-07	4.28E-11	ND	ND	ND	ND	ND	0	0	0	6.85E-08	2.31E-11	9.47E-09	-3.67E-07
Output material flows																
CRU	kg	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	0	0	0
MFR	kg	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	14.1	0	0
MER	kg	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	0	0	0
EEE	MJ	0	0	4.5	ND	ND	ND	ND	ND	0	0	0	0	0	7.71	0
EET	MJ	0	0	2.65	ND	ND	ND	ND	ND	0	0	0	0	0	13.7	0

Key:
GWP – global warming potential **- ODP** – ozone depletion potential **AP** - acidification potential **EP** - eutrophication potential **POCP** - photochemical ozone formation potential **ADPE** - abiotic depletion potential – non fossil resources **ADPF** - abiotic depletion potential – fossil resources **PERE** - use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **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** - net use of fresh water **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

6.4 Interpretation, LCA presentation and critical review

Evaluation

The high percentage of steel and aluminium contained in all the products is reflected in the environmental impacts. The recycling rate of the metals is shown in Module D. Plastics and packaging materials are of secondary importance.

As regards sectional doors, in addition to the metals, transparent infill panels also have a greater influence on environmental impacts. This also applies to side doors.

In scenario C4 only marginal consumptions arising from the physical pre-treatment and operation of the disposal site are expected. Allocation to individual products is almost impossible for disposal.

The LCA results differ considerably in places from those presented in the EPD prepared five years ago. The differences are due to using newer GaBi datasets, modification of the underlying GaBi data and new data collection during production by the manufacturing plants.

The chart below shows the allocation of the main environmental impacts.

The values obtained from the LCA calculation are suitable for building certification if required.

Chart

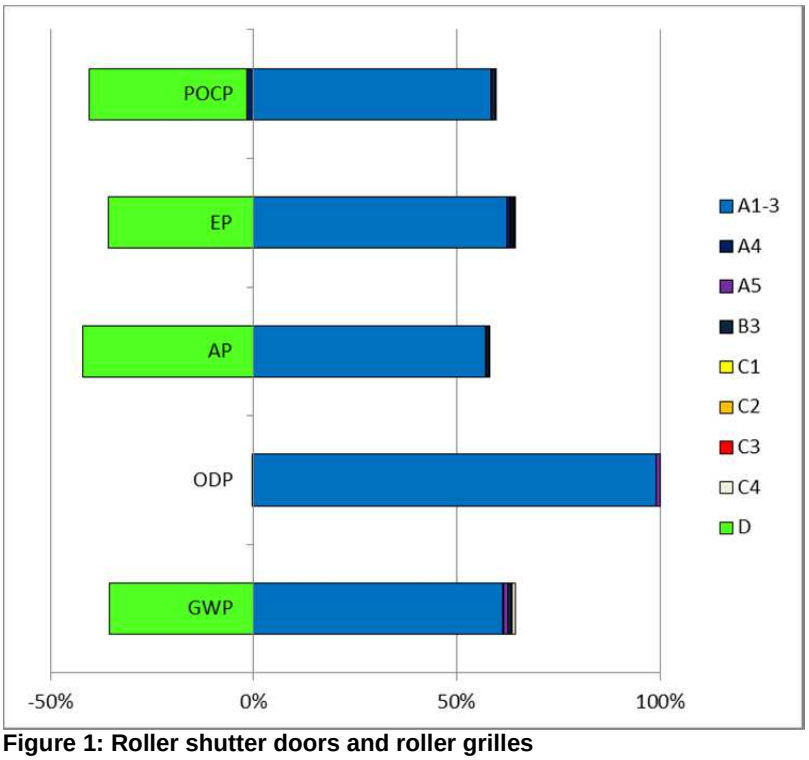


Figure 1: Roller shutter doors and roller grilles

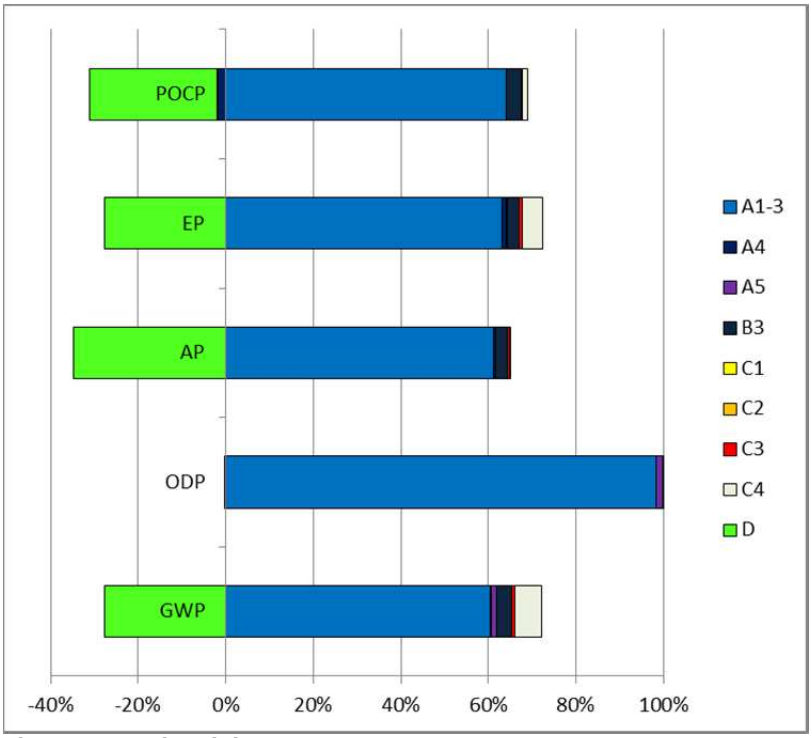


Figure 2: Sectional doors

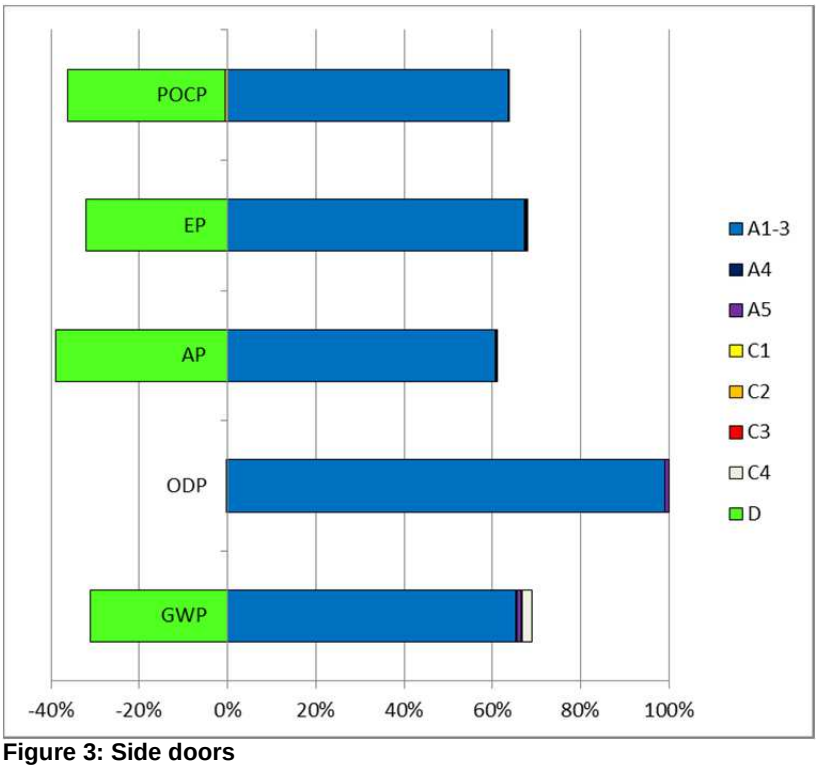


Figure 3: Side doors

Report

The LCA underlying this EPD was developed according to the requirements of DIN EN ISO 14040 and DIN EN ISO 14044 as well as EN 15804 and EN ISO 14025. It is not addressed to third parties for reasons of confidentiality. It is deposited with the ift Rosenheim. The results and conclusions reported to the target group are complete, correct, without bias and transparent. The results of the study are not designed to be used for comparative statements intended for publication.

Critical review

The critical review of the LCA and of the report took place in the course of verification of the EPD and was carried out by Patrick Wortner, an external verifier.

7 General information regarding the EPD

Comparability

This EPD was prepared in accordance with EN 15804 and is therefore only comparable to those EPDs that also comply with the requirements set out in EN 15804.
Any comparison must refer to the building context and the same boundary conditions of the various life cycle stages.
For comparing EPDs of construction products, the rules set out in EN 15804 (Clause 5.3) apply.

Communication

The communications format of this EPD meets the requirements of EN 15942:2012 and is therefore the basis for B2B communication. Only the nomenclature has been changed according to EN 15804.

Verification

Verification of the Environmental Product Declaration is documented in accordance with the ift "Richtlinie zur Erstellung von Typ III Umweltproduktdeklarationen" (Guidance on preparing Type III Environmental Product Declarations) in accordance with the requirements set out in EN ISO 14025.

The Declaration is based on the PCR - documents ,“PCR Part A” PCR-A-0.2:2018 and “Doors” PCR-TT-1.1:2018

The European standard EN 15804 serves as the core PCR [a)]
Independent verification of the declaration and statement according to EN ISO 14025:2010 ☐ internal ☒ external
Independent third party verifier: [b)] Patrick Wortner
[a)] Product category rules [b)] Optional for business-to-business communication Mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

Revisions of this document

No.	Date	Note:	Practitioner of the LCA	Verifier
1	09.06.2020	First external verification and approval	F.Stöhr	P.Wortner

8 Bibliography

1. **Research project.** *"EPDs für transparente Bauelemente" (EPDs for transparent building components) -Final report.* Rosenheim : ift Rosenheim GmbH, 2011 SF-10.08.18.7-09.21/II 3-F20-09-1-067.
2. **DIN EN 12457 - Part-1-4:2003-01.** *Characterization of waste - Leaching; Compliance test for leaching of granular waste materials and sludges - Part 1-4:* Berlin: Beuth Verlag GmbH, 2003.
3. **Klöpffer, W und Grahl, B.** *Ökobilanzen (LCA).* Weinheim: Wiley-VCH-Verlag, 2009.
4. **Hütter, A.** *Verkehr auf einen Blick. (Transport at a glance).* Wiesbaden : Federal Statistical Office, 2013
5. **Eyerer, P. and Reinhardt, H.-W.** *Ökologische Bilanzierung von Baustoffen und Gebäuden - Wege zu einer ganzheitlichen Bilanzierung. (LCA of building materials and buildings - Routes to integrated LCA).* Basel: Birkhäuser Verlag, 2000.
6. **Gefahrstoffverordnung – GefStoffV (Hazardous substances regulation)** *Verordnung zum Schutz vor Gefahrstoffen (Regulation on protection against hazardous substances),* Berlin: BGBI. (Federal Gazette) I S. 3758, 2017.
7. **Chemikalien-Verbotsverordnung – ChemVerbotsV (Chemicals Prohibition Regulation)** *Verordnung über Verbote und Beschränkungen des Inverkehrbringens gefährlicher Stoffe, Zubereitungen und Erzeugnisse Chemikaliengesetz (Regulation on bans and restrictions of the placing on the market of hazardous substances, formulations and products covered by the Chemicals Law),* Berlin: BGBI. (Federal Gazette) I S. 1328, 2017.
8. **DIN EN ISO 14040:2018-05.** *Environmental management - Life cycle assessment - Principles and framework.* Berlin: Beuth Verlag GmbH, 2018.
9. **DIN EN ISO 14044:2006-10.** *Environmental management - Life cycle assessment - Requirements and guidelines.* Berlin: Beuth Verlag GmbH, 2006.
10. **EN ISO 14025:2011-10.** *Umweltkennzeichnungen und -deklarationen Typ III Umweltdeklarationen - Grundsätze und Verfahren.(Environmental labels and declarations - Type III environmental declarations - Principles and procedures)* Berlin: Beuth Verlag GmbH, 2011.
11. **OENORM S 5200:2009-04-01** *Radioactivity in construction materials.* Berlin: Beuth Verlag GmbH, 2009.
12. **PCR Part B - Doors.** *Product category rules for environmental product declarations as per EN ISO 14025 and EN 15804* Rosenheim: ift Rosenheim, 2018
13. **EN 15942:2012-01.** *Sustainability of construction works - Environmental product declarations - Communication format business-to-business.* Berlin: Beuth Verlag GmbH, 2012.
14. **EN 15804:2012+A1:2013.** *Sustainability of construction works - Environmental product declarations - Rules for the product categories.* Berlin: Beuth Verlag GmbH, 2013.
15. **RAL-Gütegemeinschaft Fenster und Haustüren e.V.; ift Institut für Fenstertechnik (Quality Assurance Association Windows and Doors)-.** *Leitfaden zur Planung und Ausführung der Montage von Fenstern und Haustüren (Guide on planning and implementing the installation of windows and external pedestrian doorsets).* Frankfurt: RAL-Gütegemeinschaft Fenster und Haustüren e.V. (Quality Assurance Association Windows and Doors), 2014
16. **Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety) Berlin,** *Leitfaden Nachhaltiges Bauen (Guidance on Sustainable Building)* Berlin: s.n., 2016.
17. **DIN EN 13501-1:2010-01.** *Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests* Berlin: Beuth Verlag GmbH, 2010.
18. **ISO 21930:2017-07.** *Sustainability in building construction - Environmental declaration of building products* Berlin: Beuth Verlag, 2017.
19. **Bundesimmissionsschutzgesetz – BImSchG (Federal Immission Law)** *Gesetz zum Schutz vor schädlichen Umwelteinwirkungen durch Luftverunreinigungen, Geräusche, Erschütterungen und ähnlichen Vorgängen (Law on harmful environmental impacts by air contamination, noise, vibrations and similar processes.* Berlin: BGBI. (Federal Gazette) I S. 3830, 2017.
20. **Chemikaliengesetz – ChemG (Chemicals Act** *Chemikaliengesetz – ChemG (Chemicals Act) Gesetz zum Schutz vor gefährlichen Stoffen Unterteilt sich in Chemikaliengesetzt und eine Reihe von Verordnungen; hier relevant (Law on protection against hazardous substances - Subdivided into Chemicals Law and a series of regulations; of relevance here): Gesetz zum Schutz vor gefährlichen Stoffen (Law on protection against hazardous substances)* Berlin: BGBI. (Federal Gazette) I S. 1146, 2017.
21. **IKP Universität Stuttgart and PE Europe GmbH** *GaBi 8: Software and database for LCA.* Leinfelden-Echterdingen: s.n, 2017
22. **DIN EN 16034:2014-12** *Pedestrian doorsets, industrial, commercial, garage doors and openable windows - Product standard, performance characteristics - Fire resistance and/or smoke control characteristics.* Berlin: Beuth Verlag GmbH, 2014.
23. **prEN 17213:2018-01.** *Windows and doors - Environmental product declarations - Product category rules for windows and doors.* Berlin: Beuth Verlag GmbH, 2018.
24. **DIN EN 14351-2:2019-01.** *Windows and doors - Product standard, performance characteristics - Part 2: Internal pedestrian doorsets without resistance to fire/or smoke leakage characteristics.* Berlin: Beuth Verlag GmbH, 2019.
25. **DIN EN 14351-1:2016-12.** *Windows and doors – Product standard, performance characteristics – Part 1: Windows and external pedestrian doors without resistance to fire and/or smoke leakage characteristics.* Berlin: Beuth Verlag GmbH, 2016.
26. **DIN EN ISO 12457 Part 1-4** *Characterization of waste - Leaching; Compliance test for leaching of granular waste materials and sludges - Part 1-4:* Berlin: Beuth Verlag GmbH, 2003.
27. **ift-Guideline NA-01/3.** *Allgemeiner Leitfaden zur Erstellung von Typ III Umweltproduktdeklarationen (Guidance on preparing Type III Environmental Product Declarations)* Rosenheim : ift Rosenheim GmbH, 2015
28. **PCR Part A.** *Product category rules for environmental product declarations as per EN ISO 14025 and EN 15804.* Rosenheim: ift Rosenheim, 2018

9 Annex

Description of life cycle scenarios for Roller shutter doors and roller grilles, sectional doors and side doors

Product stage			Con-struction stage		Use stage							End-of-life stage				Benefits and loads from beyond the system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material supply	Transport	Manufacture	Transport	Construction/Installation	Use	Inspection, maintenance, clean-ing	Repair	Exchange / Replacement	Improvement / Modernisation	Operational energy use	Operational water use	Deconstruction	Transport	Waste management	Disposal	Re-use Recovery Recycling potential
✓	✓	✓	✓	✓	ND	ND	✓	ND	ND	✓	✓	✓	✓	✓	✓	✓

Calculation of the scenarios was based on a building service life of 50 years (in accordance with RSL under Section 4 Use stage).

The scenarios were based on information provided by the manufacturer. The scenarios were furthermore based on the research project “EPDs for transparent building components (1).

Note: The standard scenarios selected are presented in bold type. They were also used for calculating the indicators in the summary table.

✓ Included in the LCA
ND Not included in the LCA

A4 Transport to the construction site		
No.	**Scenario**	**Description**
A4	**Direct shipment to branch/distributor/site**	**40 t truck Euro 4, 80 percent capacity used, approx. 300 km to domestic construction site and return trip with 10 percent load Weight: Roller shutter door and roller grille 19.9 kg/m², sectional door 21.7 kg/m², side door 16.6 kg/m²**
Since only one scenario is used, the results are shown in the relevant summary table.		

A5 Construction/Installation		
No.	**Scenario**	**Description**
A5	**Manually**	**According to the manufacturer Roller shutter doors and roller grilles, sectional doors and side doors are installed without the use of additional lifting and auxiliary devices**
In case of deviating consumption during installation/assembly of the products which forms part of the site management, they are covered at the building level. Ancillary materials, consumables, use of energy and water, material losses and waste as well as transport distances during installation are negligible. It is assumed that the packaging material in the Module construction / installation is sent to waste handling. Waste is only thermally recycled or disposed of in line with the conservative approach. Films/foils / protective covers, wood and cardboard in waste incineration plants. Wood sent to landfill. Benefits from A5 are specified in Module D. Benefits from waste incineration: electricity replaces EU 28 electricity mix; thermal energy replaces thermal energy from natural gas (EU 28). Transport to the recycling plants is not taken into account. Since only one scenario is used, the results are shown in the relevant summary table.		

B1 Use (not included)
Refer to Section 5 Use stage - Emissions to the environment. Emissions cannot be quantified.

B2 Inspection, maintenance/servicing, cleaning (not relevant)
For a detailed servicing/maintenance description, refer to the manufacturer specifications or the assembly/installation and servicing/maintenance instructions of the respective manufacturer.

B3 Repair

No.	Scenario	Description
B3	Normal use and heavy use	One replacement*: Seals 0.5 kg and other wearing parts 0.02 kg

For updated information refer to the relevant instructions for assembly/installation, operation and servicing/maintenance of Roller shutter doors and roller grilles, sectional doors and side doors on the relevant manufacturer's website.

The specified reference service life of Roller shutter doors and roller grilles, sectional doors and side doors is 50 years. Scenario B3 presents the LCA of the different components of the building elements with a service life of less than the given period of 50 years.

Ancillary materials, consumables, use of energy and water, waste, material losses and transport distances during repair are negligible.

Since only one scenario is used, the results are shown in the summary table.

B4 Interchange / replacement (not included)
The statements made in this EPD are only informative to allow evaluation at the building level.

It is assumed that no replacement will be necessary during the 50 year reference service life/service life and the estimated 50 year building service life.

For updated information refer to the relevant instructions for assembly/installation, operation and servicing/maintenance of Roller shutter doors and roller grilles, sectional doors and side doors provided by the respective manufacturer.

B5 Improvement / modernisation (not included)
According to the manufacturer, there are no plans for improvement/modernisation of Roller shutter doors and roller grilles, sectional doors and side doors.

For updated information, refer to the relevant instructions for assembly/installation, operation and servicing/maintenance of Roller shutter doors and roller grilles, sectional doors and side doors on the respective manufacturer website.

B6 Operational energy use

No.	Scenario	Description
B6.1	**Hand-operated**	**No energy consumed when used**
B6.2	Power-operated normal use (residential)	Per drive mechanism: 44.8 kWh/20a electricity (incl. standby mode) (4 cycles per day) (door operator on ceiling/tubular motorization)
B6.3	Power-operated normal use (commercial/trade sectors)	Per drive mechanism: 112 kWh/20a electricity (incl. standby mode) (10 cycles per day)
B6.4	Power-operated increased use (industrial/public)	Per drive mechanism: 785 kWh/20a electricity (incl. standby mode) (70 cycles per day)

* Frequencies, times of use, number of users, cycles, etc.

B6 Operational energy use	Unit	B6.1	B6.2	B6.3	B6.4
Central environmental impacts					
GWP	kg CO_2 eq.	**0**	17.8	44.2	310
ODP	kg R11 eq.	**0**	5.31E-013	1.32E-012	9.27E-012
AP	kg SO_2 eq.	**0**	0.0373	0.0928	0.65
EP	kg PO_4^{3-} eq.	**0**	0.00413	0.0103	0.072
POCP	kg C_2H_4 eq.	**0**	0.00266	0.00661	0.0463
ADPE	kg Sb eq.	**0**	5.93E-006	1.48E-005	0.000104
ADPF	MJ	**0**	197	490	3.43E003
Use of resources					
PERE	MJ	**0**	-	-	-
PERM	MJ	**0**	-	-	-
PERT	MJ	**0**	141	351	2.46E003
PENRE	MJ	**0**	-	-	-
PENRM	MJ	**0**	-	-	-
PENRT	MJ	**0**	319	793	5.56E003
SM	kg	**0**	0	0	0
RSF	MJ	**0**	0	0	0
NRSF	MJ	**0**	0	0	0
FW	m^3	**0**	0.163	0.406	2.85
Waste categories					
HWD	kg	**0**	1.32E-007	3.28E-007	2.3E-006
NHWD	kg	**0**	0.226	0.562	3.94
RWD	kg	**0**	0.0483	0.12	0.843
Output material flows					
CRU	kg	**0**	0	0	0
MFR	kg	**0**	0	0	0
MER	kg	**0**	0	0	0
EEE	MJ	**0**	0	0	0
EET	MJ	**0**	0	0	0

B7 Operational water use (not relevant)

No water consumption when used as intended. Water consumption for cleaning is specified in Module B2.1.

C1 Deconstruction

No.	Scenario	Description
C1	Deconstruction	**Roller shutter doors and roller grilles, sectional doors and side doors** **99% deconstruction;** **Further deconstruction rates are possible, give adequate reasons.**

No relevant inputs or outputs apply to the scenario selected. The energy consumed for deconstruction is negligible. Any arising consumption is marginal.

In case of deviating consumption the removal of the products forms part of site management and is covered at the building level.

C2 Transport

No.	Scenario	Description
C2	Transport	**Transport to collection point using 40 t truck (Euro 0-6 Mix), 27 t payload, 80% capacity used** **50 km (1.65E-5 l/km)**

Since only one scenario is used, the results are shown in the summary table.

C3 Waste management

No.	Scenario	Description
C3	Disposal	**Share for recirculation of materials:** • **Metals 100% in melt** • **Plastics 100% thermal recycling in waste incineration plant (R1>0.6)** • **Wood 100% thermal recycling in waste incineration plant (R1>0.6)** **Remainder to landfill**

As Roller shutter doors and roller grilles, sectional doors and side doors are placed on the European market, the disposal scenario is based on average European data sets.

The below table presents the disposal processes and their percentage by mass/weight. The calculation is based on the above mentioned shares in percent related to the declared unit of the product system.

		Roller shutter doors and roller grilles	Sectional doors	Side doors
C3 Disposal	**Unit**	**C3**	**C3**	**C3**
Collection process, collected separately	kg	18.6	23.1	15.5
Collection process, collected as mixed construction waste	kg	0	0	0
Recovery system, for re-use	kg	0	0	0
Recovery system, for recycling	kg	18.1	18.9	12.16
Recovery system, for energy recovery	kg	0.5	2.6	0.99
Disposal	kg	0	1.7	2.35

Since only one scenario is used, the results are shown in the summary table.

C4 Disposal

No.	Scenario	Description
C4	**Disposal**	**The non-recordable amounts and losses within the re-use/recycling chain (C1 and C3) are modelled as "disposed".**

The consumption of scenario C4 results from physical pre-treatment, waste recycling and management of the disposal site. The benefits obtained here from the substitution of primary material production are allocated to Module D, e.g. electricity and heat from waste incineration.

Since only one scenario is used, the results are shown in the summary table.

D Benefits and loads from beyond the system boundaries

No.	Scenario	Description
D	**Recycling potential**	**Aluminium recyclate from C3 excluding the recyclate used in A3 replaces 60% of aluminium compound; Steel scrap from C3 excluding the scrap used in A3 replaces 60% of steel; Plastic recyclate from C3 excluding the plastics used in A3 replaces 60% of polyethylene granules; Benefits from waste incineration: Electricity replaces Deutschland/EU-28 electricity mix; thermal energy replaces thermal energy from natural gas (DE/EU-28).**

The values in Module D result from recycling of the packaging material in Module A5 and from deconstruction at the end of service life.

Since only one scenario is used, the results are shown in the summary table.

Imprint/Legal notice

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Notes
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