

EPD roller shutters and roller grilles, sectional doors

Environmental Product Declaration
according to DIN ISO 14025 and EN 15804

roller shutters and roller grilles, sectional doors (pattern-EPD)

NASSAU Door A/S



Deklarationsnummer
EPD-GB-RRS-003



Environmental Product Declaration in accordance with ISO 14025 and EN 15804

Roller shutters and roller grilles, sectional doors



Detailed version

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Declaration holder	NASSAU Door A/S Krogagervej 2 DK-5750 Ringe		
Declaration code	M-EPD-GB-RRS-003		
Designation of declared product	Roller shutters and roller grilles, sectional doors		
Scope	<p>Roller shutters and roller grilles: Roller shutters and roller grilles for internal and external applications to close openings in industrial, commercial and residential buildings.</p> <p>Sectional doors: Sectional doors for internal and external applications to close openings in industrial, commercial and residential buildings.</p>		
Basis	This EPD was prepared on the basis of EN ISO 14025:2011 and EN 15804:2012+A1:2013. In addition to that, the "Allgemeiner Leitfaden zur Erstellung von Typ III Umweltproduktdeklarationen" (Guidance on preparing Type III Environmental Product Declarations) applies. This Declaration is based on the PCR document "Doors" PCR-TT-1.1 : 2011		
Validity	This verified Environmental Product Declaration applies solely to the specified products and is valid for a period of 5 years from the date of approval.		
	Publication date: 15 May 2014	Next revision: 15 May 2019	
LCA basis	This LCA was prepared in accordance with DIN EN ISO 14040 and DIN EN ISO 14044. The base data include both the data from different manufacturers and the generic data derived from the "GaBi 6" database. LCA calculations were based on the "cradle to grave" life cycle including all upstream processes (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.		
Prof. Ulrich Sieberath Director of Institute		Verifier, Patrick Wortner	

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1 Product definition

Product definition This EPD applies to:

- **Roller shutters and roller grilles**
- **Sectional doors**

The LCA was prepared using the declared unit:

1 m² area

All roller shutters and roller grilles as well as all sectional doors produced in 2012/13 were scaled to the declared unit on the basis of representative data provided.

Product description

Roller shutters and roller grilles

Roller shutters are vertically opening doors comprised of a curtain composed of 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 opened (rolled-up) door is mounted to the lintel and normally, in this position, does not restrict the clear opening height. Roller shutters are suitable for openings of both great width and height¹.

Similar to roller shutters, roller grilles separate the room but when closed still allow the passage of air and transparency. Roller grilles are composed of articulated special grille sections.

A 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):

The curtain of the roller shutter consists of interconnected single skin or double-skin segments/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 segments/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)

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 shutters); published by Kleffmann Verlag Bochum; Düsseldorf 2009; page 63 etseq

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rubber weather seal.

Guide rails/channels:

The curtain of the roller shutter/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 shutters/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 systems³.

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.

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.

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

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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.

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.

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

Application

Roller shutters and roller grilles:

Roller shutters and roller grilles 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.

Verification (optional)

The following verifications/certificates are held:

- **Performance characteristics as per DIN EN 13241-1**

Quality assurance (optional)

Quality assurance can be stated.

Management systems (optional)

The following management systems are in place:

Additional information

For detailed structural characteristics refer to the CE marking, the Declaration of Performance and the documents accompanying the product.

2 Materials used

2.1 Primary materials

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

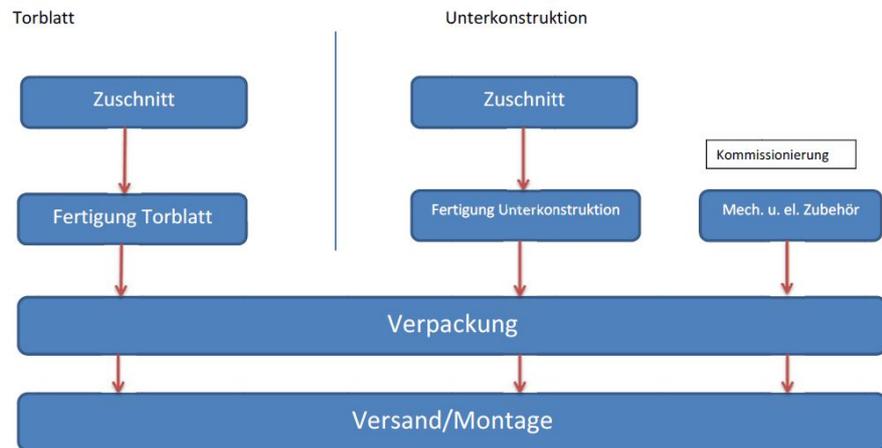
2.2 Declarable substances

Declarable substances The product contains no substances included in the REACH candidate list (as

of 16 December 2013).

3 Product stage

Product manufacture



4 Construction process stage

Processing recommendations, installation

Observe the instructions for assembly/installation, operation, maintenance and disassembly, provided by the respective manufacturer.

5 Use stage

Emissions to the environment

No emissions into the indoor air, water and soil are known. (except VOC emissions in certain cases).

Reference service life (RSL)

A reference service life of 20 years has been specified for roller shutters and roller grilles, sectional doors .

The service life depends on different impact factors such as the built conditions, installation details, climatic influences, wear, etc.

Of relevance is also the surface protection of the components during service life, determined by the galvanisation process and/or the coating/film thickness.

The reference service life is determined on the basis of the following:

- Declared product characteristics: refer to product definition
- Application parameters for the design: refer to processing recommendations, additional information
- Assumed quality of work: refer to processing recommendations, application
- Outdoor environment: climatic influences may have an impact on the service life. In this case take account of the built condition, installation details.
- Indoor environment: no impacts known that have a negative effect on the reference service life
- Maintenance: refer to scenario B2

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The service life solely applies to the characteristics specified in this EPD or the corresponding references.

The reference service life does not provide grounds for any claim going beyond the legal and/or agreed guaranty or warranty of performance.

6 End-of-life stage

Possible end-of-life stages The roller shutters and roller grilles, sectional doors are shipped to central collection points. There they are usually shredded and sorted into their original pure components. Aluminium, steel, glass, etc. are recycled. Residual fractions are thermally recycled.

Disposal routes The LCA includes the average disposal routes.

All life cycle scenarios are detailed in the Annex.

7 Life Cycle Assessment

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

On this basis, a Life Cycle Analysis (LCA) was prepared for roller shutters and roller grilles, sectional doors. The LCA was prepared in accordance with EN 15804 and the requirements set out in the international standards DIN EN ISO 14040, DIN EN ISO 14044, ISO 21930 and EN ISO 14025.

The LCA represents the products illustrated in the Declaration for the specified reference period.

7.1 Definition of goal and scope

Goal The goal of the LCA is to demonstrate the environmental impacts of roller shutters, roller grilles and sectional doors. In accordance with EN 15804, the environmental impacts covered by this Environmental Product Declaration are presented in the form of basic information for the entire product life cycle. Apart from these, no other environmental impacts have been specified / presented.

Data quality and data availability as well as geographical and time-related system boundaries The base data were collected at various manufacturing plants. They represent the typical data for this industry. The values were averaged using the volumes produced by the manufacturers as weighting. The data used are less than 5 years old.

The base data used for the essential parts of this LCA are for the geographical area of Europe only and originate mainly from the years 2012 and 2013.

The generic data originate from the "Professional Database" and the building materials database of the GaBi 6 software. Data before this date also originate from this database and are not more than 4 years old. No other generic data

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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 6" for the life cycle assessments.

Scope and system boundaries

The system boundaries relate to the supply of raw materials and purchased parts, the manufacture/production, use and end-of-life stages of roller shutters and roller grilles, sectional doors (cradle to grave). No additional data from sub-suppliers/subcontractors or other facilities were taken into consideration.

Cut-off criteria

All data from the operative data survey were taken into account, i.e. all commodities/input and raw materials used, the thermal energy and electricity consumption.

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

The average weighted transport distances of the primary products/pre-products to the various manufacturing plants were also taken into account.

It can be assumed that the total of negligible processes per life cycle stage does not account for more than 5 percent of the mass/primary energy. The life cycle calculation also includes material and energy flows that account for less than 1 percent.

7.2 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.

The models of the unit processes used for the LCA have been documented in a transparent manner.

Life cycle stages

The Annex shows the entire life cycle of roller shutters and roller grilles, sectional doors as follows: product stage A1 – A3, construction process stage A4 – A5, use stage B1 – B7, end-of-life stage C1 – C4 and benefits and loads beyond the system boundaries D.

Benefits

The following 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 shutters and roller grilles, sectional doors.

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Allocations for re-use, recovery and recycling If roller shutters and roller grilles, sectional doors are reused / recycled during the product stage (rejects) they are shredded and then sorted into their original pure components, as necessary. This is done using various process plants e.g. magnetic separators. The system boundaries of the roller shutters and roller grilles, sectional doors were set following their disposal and the end of any useful recycling.

Allocations based on 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 for the recycled material was set at collection.

Inputs

The LCA includes the following production-relevant inputs:

Energy

The electricity mix is based on "European electricity mix".
 Gas is based on "European natural gas".

Water

No water is consumed during the individual production steps for the manufacture of roller shutters and roller grilles, sectional doors
 The consumption of fresh water specified in Section 7.3 originates (among others) from the upstream processes of the primary products/pre-products.

Raw material/primary products/pre-products:

The chart below shows the percentage of raw materials/pre-products used.

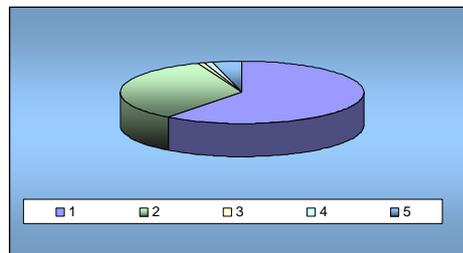


Figure 1: Roller shutters and roller grilles

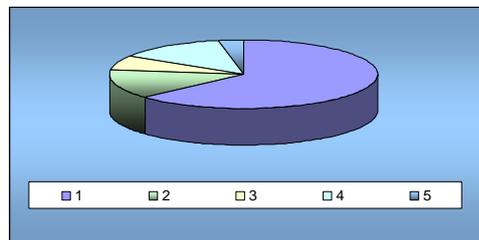


Figure 2: Sectional doors

No.	Material	Roller shutters and roller grilles	Sectional doors
1	Steel	61 %	63 %
2	Aluminium	34 %	14 %
3	EPDM	1 %	7 %
4	Other plastics	1 %	13 %
5	Accessories / Other	4%	3 %

Ancillary materials and consumables: roller shutters and roller grilles

0.1437 kg ancillary materials and consumables are required for 1 m² roller shutter and roller grille. Share in % is given below:

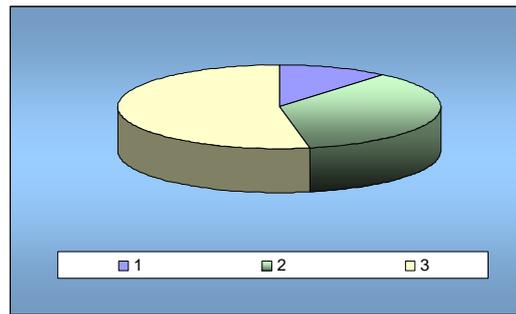


Figure 3: Ancillary materials for roller shutters and roller grilles

No.	Material	Mass in %
1	Processing gases	11 %
2	Ancillary materials Consumables	36 %
3	Fuel for industrial trucks	53 %

Ancillary materials and consumables: sectional doors

0.075 kg ancillary materials and consumables are required for 1 m² sectional door. Share in % is given below:

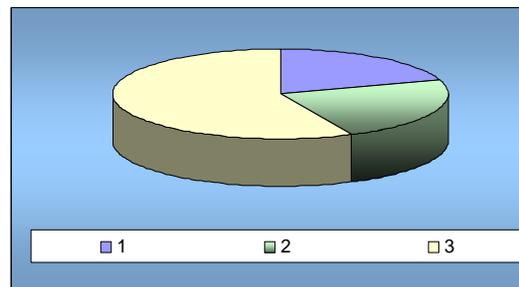


Figure 4: Ancillary materials of sectional doors

No.	Material	Mass in %
1	Processing gases	20 %
2	Ancillary materials Consumables	23 %
3	Fuel for industrial trucks	57 %

Outputs

The LCA includes the production-relevant outputs per 1 m² roller shutter and roller grille, sectional door given below:

Waste

Secondary raw materials were included in the benefits.
See Section 7.3 - Impact assessment

Waste water

No waste water is produced for the manufacture of roller shutters and roller grilles, sectional doors.

7.3 Impact assessment

Goal	The impact assessment covers inputs and outputs. The impact categories applied are set out below:
Impact categories	<p>The characterisation factors of the ELCD (European Reference Life Cycle Database) were used. The characterisation factors for the consumption of abiotic resources were taken from CML (Institute of Environmental Sciences, Faculty of Science, Leiden University, Netherlands).</p> <ul style="list-style-type: none">• Abiotic depletion - fossil resources (ADP - fossil fuels.)• Abiotic depletion - non-fossil resources (ADP - elements);• Acidification of soil and water;• Ozone depletion;• Global warming;• Eutrophication;• Photochemical ozone creation.
Waste	<p>The waste generated during the production of 1 m² roller shutter and roller grille, sectional door is evaluated and shown separately for each of the three main fractions, namely trade wastes, special wastes and radioactive wastes. Since waste handling is modelled within the system boundaries, the amounts shown refer to the deposited wastes.</p> <p>A portion of the waste indicated is generated during the manufacture of the primary products/pre-products. Radioactive waste results from the generation of electricity. The wastes presented are generated throughout the entire product life cycle.</p>

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Results per m² of roller shutter and roller grille																
Environmental impacts	Unit	A1–A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global warming potential (GWP 100)	kg CO ₂ equiv.	117.5	0.3567	-	-	0.2621	1.484	-	-	-	-	-	5.18E-02	0.8712	0.4351	-19.05
Ozone depletion potential (ODP)	kg R11-equiv.	5.15E-07	1.71E-12	-	-	2.41E-12	3.35E-11	-	-	-	-	-	2.48E-13	5.96E-10	3.77E-13	1.37E-10
Acidification potential of soil and water (AP)	kg SO ₂ equiv.	0.5846	1.63E-03	-	-	1.01E-03	2.64E-03	-	-	-	-	-	2.37E-04	4.11E-03	5.38E-05	-7.29E-02
Eutrophication potential (EP)	kg PO ₄ ³⁻ equiv.	0.0309	3.73E-04	-	-	5.36E-05	2.47E-04	-	-	-	-	-	5.42E-05	2.31E-04	2.30E-04	-6.06E-03
Photochemical ozone creation potential (POCP)	kg C ₂ H ₄ equiv.	0.0421	-5.27E-04	-	-	1.22E-04	3.28E-04	-	-	-	-	-	-7.65E-05	2.44E-04	5.91E-05	-1.09E-02
Abiotic depletion potential - non-fossil resources (ADP - elements)	kg Sb- equiv.	9.09E-04	1.34E-08	-	-	3.53E-08	1.01E-03	-	-	-	-	-	1.95E-09	1.21E-07	1.96E-09	-3.74E-07
Abiotic depletion potential - fossil resources (ADP – fossil fuels.)	MJ and Hz.	1271	4.921	-	-	12.77	37.97	-	-	-	-	-	0.7152	9.894	0.1379	-177.3
Use of resources	Unit	A1–A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Use of renewable primary energy - excluding renewable primary energy resources used as raw materials	MJ	355.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of renewable primary energy resources used as raw materials (material use)	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of renewable primary energy resources (primary energy and renewable primary energy resources used as raw materials) (energy + material use)	MJ	355.2	0.1939	-	-	0.0943	1.22	-	-	-	-	-	2.82E-02	2.833	7.48E-03	3.566
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials.	MJ	1,452	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable primary energy resources used as raw materials (material use)	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of non-renewable primary energy resources (primary energy and non-renewable primary energy resources used as raw materials) (energy + material use)	MJ	1,452	4.938	-	-	12.9	39.65	-	-	-	-	-	0.7176	15.5	0.1445	-165.9
Use of secondary materials	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of renewable secondary fuels	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of net fresh water	m ³	0.6698	1.37E-04	-	-	-2.75E-06	5.13E-03	-	-	-	-	-	1.99E-05	6.99E-03	-1.02E-04	-1.02E-02

Values that cannot be shown or are inexistent or marginal are expressed as [-]. Non-relevant modules are described in the Annex.

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Waste categories	Unit	A1–A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0.1057	1.13E-05	-	-	1.30E-04	1.70E-03	-	-	-	-	-	1.64E-06	2.15E-03	4.91E-06	0.0131
Non-hazardous waste disposed (municipal waste)	kg	11.82	6.21E-04	-	-	1.80E-04	1.48E-02	-	-	-	-	-	9.02E-05	5.01E-03	0.1227	0.311
Radioactive waste	kg	7.06E-02	6.47E-06	-	-	5.17E-05	6.65E-04	-	-	-	-	-	9.40E-07	2.23E-03	2.60E-06	4.51E-03
Output material flows	Unit	A1–A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Materials for recycling	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Materials for energy recovery	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exported energy	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Values that cannot be shown or are inexistent or marginal are expressed as [-]. Non-relevant modules are described in the Annex.

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Results per m ² of sectional door																
Environmental impacts	Unit	A1–A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global warming potential (GWP 100)	kg CO ₂ equiv.	75.33	0.3567	-	-	0.2621	5.389	-	-	-	-	-	6.05E-02	1.109	4.031	-45.58
Ozone depletion potential (ODP)	kg R11-equiv.	-3.35E-08	1.71E-12	-	-	2.41E-12	1.22E-10	-	-	-	-	-	2.90E-13	7.59E-10	3.50E-12	-5.83E-09
Acidification potential of soil and water (AP)	kg SO ₂ equiv.	0.2484	1.63E-03	-	-	1.01E-03	9.60E-03	-	-	-	-	-	2.77E-04	5.23E-03	4.98E-04	-2.03E-01
Eutrophication potential (EP)	kg PO ₄ ³⁻ equiv.	1.97E-02	3.73E-04	-	-	5.36E-05	8.98E-04	-	-	-	-	-	6.33E-05	2.95E-04	2.13E-03	-1.32E-02
Photochemical ozone creation potential (POCP)	kg C ₂ H ₄ equiv.	3.14E-02	-5.27E-04	-	-	1.22E-04	1.19E-03	-	-	-	-	-	-8.94E-05	3.11E-04	5.47E-04	-1.98E-02
Abiotic depletion potential - non-fossil resources (ADP - elements)	kg Sb- equiv.	7.78E-05	1.34E-08	-	-	3.53E-08	1.21E-03	-	-	-	-	-	2.28E-09	1.54E-07	1.81E-08	-9.38E-06
Abiotic depletion potential - fossil resources (ADP – fossil fuels.)	MJ and Hz.	1,078	4.921	-	-	12.77	137.9	-	-	-	-	-	0.8353	12.59	1.278	-488.7
Use of resources	Unit	A1–A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Use of renewable primary energy - excluding renewable primary energy resources used as raw materials	MJ	123.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of renewable primary energy resources used as raw materials (material use)	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of renewable primary energy resources (primary energy and renewable primary energy resources used as raw materials) (energy + material use)	MJ	123.8	0.1939	-	-	0.0943	4.432	-	-	-	-	-	0.03292	3.607	0.0693	-94.57
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials.	MJ	1203	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable primary energy resources used as raw materials (material use)	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total use of non-renewable primary energy resources (primary energy and non-renewable primary energy resources used as raw materials) (energy + material use)	MJ	1,203	4.938	-	-	12.9	144	-	-	-	-	-	0.8381	19.73	1.339	-550.6
Use of secondary materials	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of renewable secondary fuels	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of non-renewable secondary fuels	MJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Use of net fresh water	m ³	0.4863	1.37E-04	-	-	-2.75E-06	1.86E-02	-	-	-	-	-	2.32E-05	8.90E-03	-9.47E-	-3.34E-01

Values that cannot be shown or are inexistent or marginal are expressed as [-]. Non-relevant modules are described in the Annex.

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7.4 Interpretation, LCA presentation and critical verification

Evaluation The high percentage of metal contained in roller shutters and roller grilles results in a high recycling rate that is reflected in module D.
The same applies to sectional doors and their high recycling rate of aluminium that is also presented in module D.

The environmental impacts shown are suitable for the certification of buildings.

Report The LCA underlying this EPD was prepared in accordance with DIN EN ISO 14040 and DIN EN ISO 14044 as well as EN 15804 and EN ISO 14025. It is not intended for third parties as it contains confidential data. 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 intended to be used in the publication of *comparative* statements.

Critical verification The LCA was critically verified by Mr Patrick Wortner, an independent ift verifier.

8 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 the comparison of construction product EPDs, the rules set out in EN 15804 (Clause 5.3) apply.

Communication The communications format of this EPD meets the requirements of EN 15942:2011 and is therefore the basis for B2B communication. Only the nomenclature has been changed in accordance with 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.

This Declaration is based on the ift PCR document "Doors":
PCR-TT-1.1 : 2011.

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The European standard EN 15804 serves as the core PCR ^a
Independent verification of the declaration and statement according to EN ISO 14025:2010 <input checked="" type="checkbox"/> internal <input type="checkbox"/> external
Independent third party verifier: P.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	Status note	LCA practitioner	Verifier
1	13.05.2014	First internal verification and approval	F.Stöhr	P.Wortner
2				
3				
4				
5				

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Bibliography:

- [1] Ökologische Bilanzierung von Baustoffen und Gebäuden – Wege zu einer ganzheitlichen Bilanzierung (LCA of building materials and buildings - Routes to integrated LCA
Hrsg./Published by: Eyerer, P., Reinhardt, H.-W.
Birkhäuser Verlag, Basel, 2000
- [2] Leitfaden Nachhaltiges Bauen (Guidance on Sustainable Building).
Hrsg./Published by: Bundesministerium für Verkehr, Bau- und Wohnungswesen (Federal Ministry of Transport, Building and Housing).
Berlin, 2011
- [3] GaBi 5: Software und Datenbank zur Ganzheitlichen Bilanzierung. (Software and database for LCA)
Hrsg./Published by: IKP Universität Stuttgart and PE Europe GmbH.
Leinfelden-Echterdingen, 1992 – 2012
- [4] “Ökobilanzen (LCA)“.
Klöpffer, W.; Grahl, B.
Wiley-VCH-Verlag, Weinheim, 2009
- [5] EN 15804:2012+A1:2013
Sustainability of construction works - Environmental product declarations - Rules for the product categories.
Beuth Verlag GmbH, Berlin
- [6] EN 15942:2011
Sustainability of construction works – Environmental product declaration – Communication format business-to-business
Beuth Verlag GmbH, Berlin
- [7] ISO 21930:2007-10
Sustainability in building construction - Environmental declaration of building products
Beuth Verlag GmbH, Berlin
- [8] EN ISO 14025:2011-10
Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
Beuth Verlag GmbH, Berlin
- [9] EN ISO 16000-9:2006-08
Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method
Beuth Verlag GmbH, Berlin
- [10] EN ISO 16000-11:2006-08
Indoor air - Part 11: Determination of the emission of volatile organic compounds from building products and furnishing - Sampling, storage of samples and preparation of test specimens.
Beuth Verlag GmbH, Berlin
- [11] DIN ISO 16000-6:2004-08
Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS/FID.
Beuth Verlag GmbH, Berlin
- [12] DIN EN ISO 14040:2009-11
Environmental management - Life cycle assessment - Principles and framework.
Beuth Verlag GmbH, Berlin

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- [13] DIN EN ISO 14044:2006-10
Environmental management - Life cycle assessment - Requirements and guidelines.
Beuth Verlag GmbH, Berlin
- [14] DIN EN 12457-1:2003-01
Characterization of waste - Leaching; Compliance test for leaching of granular waste materials and sludges - Part 1: One stage batch test at a liquid to solid ratio of 2 l/kg and with particle size below 4 mm (without or with size reduction)
Beuth Verlag GmbH, Berlin
- [15] DIN EN 12457-2:2003-01
Characterization of waste - Leaching; Compliance test for leaching of leaching of granular waste materials and sludges - Part 2: One stage batch test at a liquid to solid ratio of 10 l/kg and with particle size below 4 mm (without or with size reduction)
Beuth Verlag GmbH, Berlin
- [16] DIN EN 12457-3:2003-01
Characterization of waste - Leaching; Compliance test for leaching of granular waste materials and sludges - Part 3: Two stage batch test at a liquid to solid ratio of 2 l/kg and 8 l/kg for materials with high solid content with particle size below 4 mm (without or with size reduction).
Beuth Verlag GmbH, Berlin
- [17] DIN EN 12457-4:2003-01
Characterization of waste - Leaching; Compliance test for leaching of granular waste materials and sludges - Part 4: One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 10 mm (without or with size reduction)
Beuth Verlag GmbH, Berlin
- [18] 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.
Beuth Verlag GmbH, Berlin
- [19] DIN 4102-1:1998-09
Fire behaviour of building materials and building components - Part 1: Building materials; concepts, requirements and tests.
Beuth Verlag GmbH, Berlin
- [20] DIN EN 13241-1:2004-04
Industrial, commercial and garage doors and gates - Product standard – Part 1: Products without fire resistance and smoke control characteristics.
Beuth Verlag GmbH, Berlin
- [21] OENORM S 5200:2009-04-01
Radioactivity in construction materials.
Beuth Verlag GmbH, Berlin
- [22] DIN/CEN TS 14405:2004-09
Characterization of waste - Leaching behaviour tests - Up-flow percolation test (under specified conditions).
Beuth Verlag GmbH, Berlin
- [23] VDI 2243:2002-07
Recycling-oriented product development.
Beuth Verlag GmbH, Berlin
- [24] Commission Directive 2009/2/EC
amending, for the purpose of its adaptation to technical progress, for the 31st time, Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances

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(15 January 2009).

- [25] **ift** Guideline NA-01/2
Allgemeiner Leitfaden zur Erstellung von Typ III Umweltproduktdeklarationen (Guideline on preparing Type III Environmental Product Declarations).
ift Rosenheim, December 2012
- [26] Arbeitsschutzgesetz – ArbSchG (Safety at Work Act)
Gesetz über die Durchführung von Maßnahmen des Arbeitsschutzes zur Verbesserung der Sicherheit und des Gesundheitsschutzes der Beschäftigten bei der Arbeit, 5. Februar 2009 (BGBl. I S. 160, 270) (Act on the implementation of occupational health and safety measures to improve the safety and health protection of employees at work)
- [27] Bundesimmissionsschutzgesetz – BImSchG (Federal Immission Control Act)
Gesetz zum Schutz vor schädlichen Umwelteinwirkungen durch Luftverunreinigungen, Geräusche, Erschütterungen und ähnlichen Vorgängen, 26. September 2002 (BGBl. I S. 3830) (Act on harmful environmental impacts caused by air contamination, noise, vibrations and similar processes)
- [28] Chemikaliengesetz – ChemG (Chemicals Act)
Gesetz zum Schutz vor gefährlichen Stoffen (Act on protection against hazardous substances)
Unterteilt sich in Chemikaliengesetz und eine Reihe von Verordnungen; hier relevant (subdivided into Chemicals Act and a series of regulations; of relevance here: Gesetz zum Schutz vor gefährlichen Stoffen (Act on Protection against hazardous substances), 2 July 2008 (BGBl. I S.1146)
- [29] Chemikalien-Verbotsverordnung – ChemVerbotsV (Chemicals Prohibition Regulation)
Verordnung über Verbote und Beschränkungen des Inverkehrbringens gefährlicher Stoffe, Zubereitungen und Erzeugnisse nach dem Chemikaliengesetz, 21 July 2008 (BGBl. I S. 1328) (Regulation on bans and restrictions of the placing on the market of hazardous substances, formulations and products covered by the Chemicals Act)
- [30] Gefahrstoffverordnung – GefStoffV (Hazardous substances regulation)
Verordnung zum Schutz vor Gefahrstoffen , 23 December 2004 (BGBl. I S. 3758) ((Regulation on protection against hazardous substances)
- [31] "PCR Doors". Product Category Rules as per ISO 14025 and EN 15804".
ift Rosenheim, July 2011
- [32] Research project "EPDs für transparente Bauelemente" (EPDs for transparent building components)
ift Rosenheim, 2011
- [33] Pech, Pommer, Zeininger; Türen und Tore (Doors); published by Springer Verlag Vienna/New York - Vienna 2007
- [34] Lippe; Rolltore (Roller shutters); published by Kleffmann Verlag Bochum; Düsseldorf 2009

Annex: Description of life cycle scenarios for roller shutters and roller grilles, sectional doors

Product stage			Construction process stage		Use stage							End-of-life stage				Benefits and loads 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	Maintenance	Repair	Replacement	Modification/refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste management	Disposal	Re-use Recovery Recycling potential

Calculation of the scenarios was based on a service life of 20 years.
 The information provided by the manufacturer should also be taken into consideration.
 The scenarios were based on information provided by the manufacturer. The scenarios were also based on the research project "EPDs for transparent building components" [32].

The standard scenarios selected are presented in bold type. They were also used for calculating the environmental impacts in the summary.

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A4 Transport

No.	Scenario	Description
A4.1	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: 25 kg
A4.2	Direct on-site assembly/installation	3.5 t van, 100 percent capacity used with trailer, approx. 100 km to domestic construction site and return trip with 10 percent load Weight: 25 kg

A4 Transport		Unit	A4.1	A4.2
Environmental impacts				
Global warming potential (GWP 100)	kg CO ₂ equiv.	0.3567	0.3645	
Ozone depletion potential (ODP)	kg R11-equiv.	1.71E-12	1.74E-12	
Acidification potential of soil and water (AP)	kg SO ₂ equiv.	1.63E-03	1.95E-03	
Eutrophication potential (EP)	kg PO ₄ ³⁻ equiv.	3.73E-04	4.57E-04	
Photochemical ozone creation potential (POCP)	kg C ₂ H ₄ equiv.	-5.27E-04	-7.27E-04	
Abiotic depletion potential - non-fossil resources (ADP - elements)	kg Sb- equiv.	1.34E-08	1.37E-08	
Abiotic depletion potential - fossil resources (ADP – fossil fuels)	MJ and Hz.	4.921	5.012	
Use of resources				
Use of renewable primary energy - excluding renewable primary energy resources used as raw materials	MJ	-	-	
Use of renewable primary energy resources used as raw materials (material use)	MJ	-	-	
Total use of renewable primary energy resources (primary energy and renewable primary energy resources used as raw materials) (energy + material use)	MJ	0.1939	0.1975	
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials.	MJ	-	-	
Use of non-renewable primary energy resources used as raw materials (material use)	MJ	-	-	
Total use of non-renewable primary energy resources (primary energy and non-renewable primary energy resources used as raw materials) (energy + material use)	MJ	4.938	5.028	
Use of secondary materials	kg	-	-	
Use of renewable secondary fuels	MJ	-	-	
Use of non-renewable secondary fuels	MJ	-	-	
Use of net fresh water	m ³	1.37E-04	1.39E-04	

Values that cannot be shown or are inexistent or marginal are expressed as [-].

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Waste categories	Unit	A4.1	A4.2
Hazardous waste disposed	kg	1.13E-05	1.13E-05
Non-hazardous waste disposed (municipal waste)	kg	6.21E-04	6.32E-04
Radioactive waste	kg	6.47E-06	6.58E-06
Output material flows	Unit	A4.1	A4.2
Components for re-use	kg	-	-
Materials for recycling	kg	-	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

Values that cannot be shown or are inexistent or marginal are expressed as [-].

A5 Construction/Installation

No.	Scenario	Description
A5.1	Manually	Roller shutters and roller grilles, sectional doors are installed without the use of additional lifting devices!
A5.2	Small lifting trolley / lifting platform	A small lifting platform/lifting trolley is required for the installation of roller shutters and roller grilles, sectional doors.

No relevant inputs or outputs apply to the scenario selected.

Should additional equipment be used, the assembly/installation of the products forms part of the site management and is covered at the building level.

B1 Use

Refer to Section 5 Emissions to the environment. Emissions cannot be quantified.

B2 Maintenance

B2.1 Cleaning

Observe the manufacturer's relevant servicing and maintenance instructions.

Ancillary materials, consumables, energy use and waste as well as transport distances during cleaning are negligible.

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B2.2 Maintenance

No.	Scenario	Description
B2.2.1	Normal use (e.g. industrial door)	Annual functional check, visual inspection, greasing/lubrication and, if necessary, maintenance, also includes cleaning.
B2.2.2	Heavy use (e.g. underground car park)	Every 6 months functional check, visual inspection, greasing/lubrication and, if necessary, maintenance, also includes cleaning.

Ancillary materials, consumables and waste materials as well as transport distances during maintenance are negligible. Fresh water and energy are not used for maintenance.

B2.2 Maintenance			
Environmental impacts	Unit	B2.2.1	B2.2.2
Global warming potential (GWP 100)	kg CO ₂ equiv.	0.2621	0.5242
Ozone depletion potential (ODP)	kg R11-equiv.	2.41E-12	4.82E-12
Acidification potential of soil and water (AP)	kg SO ₂ equiv.	1.01E-03	2.02E-03
Eutrophication potential (EP)	kg PO ₄ ³⁻ equiv.	5.36E-05	1.07E-04
Photochemical ozone creation potential (POCP)	kg C ₂ H ₄ equiv.	1.22E-04	2.44E-04
Abiotic depletion potential - non-fossil resources (ADP - elements)	kg Sb- equiv.	3.53E-08	7.05E-08
Abiotic depletion potential - fossil resources (ADP – fossil fuels.)	MJ and Hz.	12.77	25.54
Use of resources	Unit	B2.2.1	B2.2.2
Use of renewable primary energy - excluding renewable primary energy resources used as raw materials	MJ	-	-
Use of renewable primary energy resources used as raw materials (material use)	MJ	-	-
Total use of renewable primary energy resources (primary energy and renewable primary energy resources used as raw materials) (energy + material use)	MJ	0.0943	0.1886
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials.	MJ	-	-
Use of non-renewable primary energy resources used as raw materials (material use)	MJ	-	-
Total use of non-renewable primary energy resources (primary energy and non-renewable primary energy resources used as raw materials) (energy + material use)	MJ	12.9	25.8
Use of secondary materials	kg	-	-
Use of renewable secondary fuels	MJ	-	-
Use of non-renewable secondary fuels	MJ	-	-
Use of net fresh water	m ³	-2.75E-06	-5.50E-06

Values that cannot be shown or are inexistent or marginal are expressed as [-].

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Waste categories	Unit	B2.2.1	B2.2.2
Hazardous waste disposed	kg	1.30E-04	2.59E-04
Non-hazardous waste disposed (municipal waste)	kg	1.80E-04	3.61E-04
Radioactive waste	kg	5.17E-05	1.04E-04
Output material flows	Unit	B2.2.1	B2.2.2
Components for re-use	kg	-	-
Materials for recycling	kg	-	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

Values that cannot be shown or are inexistent or marginal are expressed as [-].

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B3 Repair

No.	Scenario	Description
B3.1	Normal use and heavy use	Sealing systems, safety/retention/securing systems, supports - two replacements (depending on intensity of use)

*Assumptions for evaluation of possible environmental impacts; statements made do not constitute any guarantee or warranty of performance.

For updated information refer to the respective instructions for assembly/installation, operation and maintenance of roller shutters and roller grilles, sectional doors provided by the respective manufacturer. A reference service life of 20 years is assumed for roller shutters and roller grilles, sectional doors, according to the intensity of use and state of the art (standards and regulations). Scenario B3 presents the LCA of building components with a service life of less than the relevant period of 20 years.

Ancillary materials, consumables, waste materials, fresh water resources, material losses, transport distances and energy use during maintenance are negligible.

B3 Repair		Roller shutters and roller grilles	Sectional doors
Environmental impacts	Unit	B3.1	B3.1
Global warming potential (GWP 100)	kg CO ₂ equiv.	1.484	5.389
Ozone depletion potential (ODP)	kg R11-equiv.	3.35E-11	1.22E-10
Acidification potential of soil and water (AP)	kg SO ₂ equiv.	2.64E-03	9.60E-03
Eutrophication potential (EP)	kg PO ₄ ³⁻ equiv.	2.47E-04	8.98E-04
Photochemical ozone creation potential (POCP)	kg C ₂ H ₄ equiv.	3.28E-04	1.19E-03
Abiotic depletion potential - non-fossil resources (ADP - elements)	kg Sb- equiv.	1.21E-03	1.21E-03
Abiotic depletion potential - fossil resources (ADP – fossil fuels.)	MJ and Hz.	37.97	137.9
Use of resources	Unit	B3.1	B3.1
Use of renewable primary energy - excluding renewable primary energy resources used as raw materials	MJ	-	-
Use of renewable primary energy resources used as raw materials (material use)	MJ	-	-
Total use of renewable primary energy resources (primary energy and renewable primary energy resources used as raw materials) (energy + material use)	MJ	1.22	4.432
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials.	MJ	-	-
Use of non-renewable primary energy resources used as raw materials (material use)	MJ	-	-
Total use of non-renewable primary energy resources (primary energy and non-renewable primary energy resources used as raw materials) (energy + material use)	MJ	39.65	144
Use of secondary materials	kg	-	-
Use of renewable secondary fuels	MJ	-	-
Use of non-renewable secondary fuels	MJ	-	-
Use of net fresh water	m ³	5.13E-03	1.86E-02

Values that cannot be shown or are inexistent or marginal are expressed as [-].

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Waste categories	Unit	B3.1	B3.1
Hazardous waste disposed	kg	1.70E-03	6.18E-03
Non-hazardous waste disposed (municipal waste)	kg	1.48E-02	5.39E-02
Radioactive waste	kg	6.65E-04	2.41E-03
Output material flows	Unit	B3.1	B3.1
Components for re-use	kg	-	-
Materials for recycling	kg	-	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

Values that cannot be shown or are inexistent or marginal are expressed as [-].

B4 Replacement (not relevant)

It is assumed that no replacement will be necessary during the 20-year service life specified here.

Replacement depends on intensity of use.

B5 Modification/refurbishment (not relevant)

It is assumed that no modification/refurbishment of roller shutters and roller grilles, sectional doors will be necessary.

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B6 Operational energy use

No.	Scenario	Description
B6.1	Manually 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 (trade/craftsmen)	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)

B6 Operational energy use					
Environmental impacts	Unit	B6.1	B6.2	B6.3	B6.4
Global warming potential (GWP 100)	kg CO ₂ equiv.	-	27.45	68.31	478.8
Ozone depletion potential (ODP)	kg R11-equiv.	-	3.96E-10	9.85E-10	6.91E-09
Acidification potential of soil and water (AP)	kg SO ₂ equiv.	-	0.0476	0.1185	0.8303
Eutrophication potential (EP)	kg PO ₄ ³⁻ equiv.	-	6.14E-03	1.53E-02	1.07E-01
Photochemical ozone creation potential (POCP)	kg C ₂ H ₄ equiv.	-	3.38E-03	8.42E-03	5.90E-02
Abiotic depletion potential - non-fossil resources (ADP - elements)	kg Sb- equiv.	-	5.20E-06	1.30E-05	9.07E-05
Abiotic depletion potential - fossil resources (ADP – fossil fuels)	MJ and Hz.	-	278.6	693.3	4,859
Use of resources	Unit	B6.1	B6.2		
Use of renewable primary energy - excluding renewable primary energy resources used as raw materials	MJ	-	-	-	-
Use of renewable primary energy resources used as raw materials (material use)	MJ	-	-	-	-
Total use of renewable primary energy resources (primary energy and renewable primary energy resources used as raw materials) (energy + material use)	MJ	-	82.75	205.9	1,443
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials.	MJ	-	-	-	-
Use of non-renewable primary energy resources used as raw materials (material use)	MJ	-	-	-	-
Total use of non-renewable primary energy resources (primary energy and non-renewable primary energy resources used as raw materials) (energy + material use)	MJ	-	387.9	965.5	6,767
Use of secondary materials	kg	-	-	-	-
Use of renewable secondary fuels	MJ	-	-	-	-
Use of non-renewable secondary fuels	MJ	-	-	-	-
Use of net fresh water	m ³	-	0.1076	0.2678	1.877

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Waste categories	Unit	B6.1	B6.2	B6.3	B6.4
Hazardous waste disposed	kg	-	0.1241	0.3089	2.165
Non-hazardous waste disposed (municipal waste)	kg	-	0.149	0.371	2.6
Radioactive waste	kg	-	0.04347	0.1082	0.7583
Output material flows	Unit	B6.1	B6.2	B6.3	B6.4
Components for re-use	kg	-	-	-	-
Materials for recycling	kg	-	-	-	-
Materials for energy recovery	kg	-	-	-	-
Exported energy	MJ	-	-	-	-

B7 Operational water use (not relevant)

No water consumption when used as intended. Water consumption for cleaning is specified in module B2.2.

C1 De-construction

No.	Scenario	Description
C1.1	Dismantling/removal	Roller shutters and roller grilles, sectional doors at least 99 % removable/de-construction. The energy consumed for the purpose of removal/ de-construction is negligible. Any arising consumption arising is marginal.

No relevant inputs or outputs apply to the scenario selected.

Should additional equipment be used, the removal / de-construction of the products forms part of the site management and is covered at the building level.

C2 Transport

No.	Scenario	Description
C2.1	Transport	Transport to collecting point using 40 t truck, 80 % capacity utilization, 50 km distance

The environmental impacts of the roller shutters and roller grilles, sectional doors are given in the respective overall tables (see pages 12 to 14).

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C3 Waste management

No.	Scenario	Description
C3.1	Waste management	98% recycling of aluminium, 90% recycling of remaining metals, 90% residual fractions in incineration plant

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

C3 Disposal	Unit	Roller shutters and roller grilles	Sectional doors
		C3.1	C3.1
Collection process, collected separately	kg	20.27	25.46
Collection process, collected as mixed construction waste	kg	-	-
Recovery system, for re-use	kg	-	-
Recovery system, for recycling	kg	18.21	17.9
Recovery system, for energy recovery	kg	1.67	5.8
Disposal	kg	0.18	1.675
Assumptions for scenario development e.g. for transport	Appropriate units	-	-

Values that cannot be shown or are inexistent or marginal are expressed as [-].

C4 Disposal

No.	Scenario	Description
C4.1	Disposal	The non-recordable amounts and losses within the re-use/recycling chain (C1 and C3) are modelled as "disposed". The consumption is marginal and cannot be quantified.

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D Benefits and loads beyond the system boundaries

No.	Scenario	Description
D	Recycling potential	Aluminium recyclate from C3.1 excluding the recyclate used in A3 replaces 100 % of aluminium compound. Steel scrap from C3.1 excluding the scrap used in A3 replaces 100% of steel. Glass recyclate from C3.1 excluding the glass shards used in A3 replace 100 % of glass. Benefits from waste incinerator: electricity replaces German electricity mix, thermal energy replaces thermal energy from natural gas.

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Notes

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