

Environmental Product Declaration



Declaration Code: EPD-MT-GB-5.2



TECKENTRUP
DOOR SOLUTIONS

**Teckentrup GmbH
& Co. KG**

Doors Multi-functional doors in steel



Basis:

DIN EN ISO 14025
EN15804

Company EPD
Environmental
Product Declaration

Publication date:
01.08.2022

Next revision:
01.08.2027



[www.ift-rosenheim.de/
published EPDs](http://www.ift-rosenheim.de/published-EPDs)

Environmental Product Declaration



Declaration Code: EPD-MT-GB-5.2

Programme operator	ift Rosenheim GmbH Theodor-Gietl-Straße 7-9 D-83026 Rosenheim		
Practitioner of the LCA	ift Rosenheim GmbH Theodor-Gietl-Straße 7-9 D-83026 Rosenheim		
Declaration holder	Teckentrup GmbH & Co. KG Industriestraße 50 D-33415 Verl-Sürenheide www.teckentrup.biz		
Declaration code	EPD-MT-GB-5.2		
Designation of declared product	Multi-functional doors in steel		
Scope	Multi-functional doors for use in office and administration buildings, public buildings and residential buildings.		
Basis	This EPD was prepared on the basis of EN ISO 14025:2011 and DIN EN 15804:2012+A2:2019. 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 EN 17213 "PCR for windows and doors", "PCR Part A" PCR-A-0.3:2018 and "Doors" PCR - TT-2.3:2018.		
Validity	Publication date: 01.08.2022	Last revision: 01.08.2022	Next revision: 01.08.2027
	This verified Company Environmental Product Declaration (company EPD) applies solely to the specified products and is valid for a period of five years from the date of publication in accordance with DIN EN 15804.		
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 at the production site of Teckentrup GmbH & Co. KG and the generic data derived from the "GaBi 10" database. LCA calculations were carried out for the "cradle to gate" life cycle with options (cradle to gate with options) 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.		

Christian Kehrer
Head of Certification and Surveillance Body

Dr. Torsten Mielecke
Chairman of Expert Committee
ift-EPD and PCR

Patrick Wortner
External verifier



1 General product information

Product definition

The EPD relates to the product group "Doors" and applies to:

**1 m² of multi-functional door in steel
made by Teckentrup GmbH & Co. KG.**

The functional unit is obtained by summing up:

Assessed product	Declared unit	Surface area of reference product	Weight per unit area
Multi-functional door	1 m ²	2.65 m ²	25.48 kg/m ²

Table 1: Product groups

The average unit is declared as follows:

Directly used material flows are assigned to the declared unit using the quantity produced (piece) and the standard sizes (1.236 m x 2.141 m).

The reference period is the year 2021.



Product description

Multi-functional door in steel, composed of door leaf and door frame.



										EDELSTAHL
fire retardant	highly fire retardant	fire resistant	smoke protection	soundproofing	burglar-resistant WK2 (RC2)	burglar-resistant WK3 (RC3)	burglar-resistant WK4 (RC4)	multipurpose	interior doors	

Bezeichnung	fire retardant	highly fire retardant	fire resistant	smoke protection	soundproofing	burglar-resistant WK2 (RC2)	burglar-resistant WK3 (RC3)	burglar-resistant WK4 (RC4)	multipurpose	interior doors	EDELSTAHL
T30-1 Klappe "Teckentrup HT 8-D"	X			X							
T30-1-Klappe "Teckentrup 62"	X			X		X					X
T30-1 "Teckentrup HT 8-D"	X			X	X	X					
T30-1 "Teckentrup 42"	X			X	X	X					
T30-1 "Teckentrup DF"	X			X	X	X					X
T30-1 "Teckentrup 62"	X			X	X	X	X	X			X
T30-1 "Teckentrup 62 ST"	X			X							X
T30-2 "Teckentrup 42"	X			X	X	X					
T30-2 "Teckentrup DF"	X			X	X	X					X
T30-2 "Teckentrup 62"	X			X	X	X	X	X			X
T30-2 "Teckentrup 62 ST"	X					X					X
T60-1 "Teckentrup 62"		X		X	X	X	X				
T60-2 "Teckentrup 62"		X		X	X	X	X				
T90-1-Klappe "Teckentrup 62"			X	X	X						X
T90-1 "Teckentrup DF"			X	X	X	X	X				X
T90-1 "Teckentrup 62"			X	X	X	X	X	X			
T90-2 "Teckentrup SV"			X	X	X	X	X				X
T90-2 "Teckentrup DF"			X	X	X						X
T90-1 "Teckentrup OS 72"			X		X						X
Rauchschutztür "RS-1"				X							
Rauchschutztür "RS-2"				X							
MZD-HT 8 "Teckentrup"					X						
dw 42-1 "Teckentrup"					X	X			X		
dw 42-2 "Teckentrup"					X	X			X		
dw 52-1 "Teckentrup DF"					X	X	X	X	X	X	X
dw 52-2 "Teckentrup DF"					X				X	X	X
dw 62-1 "Teckentrup DF" iso+					X						
dw 62-1 "Teckentrup"					X	X	X	X	X		X
dw 62-1 "Teckentrup XL"						X	X	X	X		
dw 62-2 "Teckentrup"					X	X	X	X	X		X
dw 62-2 "Teckentrup XL"								X	X		
dw 67-1 "Teckentrup"					X				X	X	
dw 67-2 "Teckentrup"					X				X	X	
Keller-Sicherheitstür - HT 8 / MZD-1						X	X				
MZD-HT 8 / MZD-1 "Teckentrup"						X			X		
Teckentrup Zellengewahrsams- / Haftraumtür (T15)								X			
dw 64-1 "Teckentrup BP" FB4 - Beschußhemmend									X	X	
Baustellentür BT42-1						X			X		
Teckentrup Water 1									X		X
Teckentrup Water 2									X		X
Teckentrup Pendeltür 1flg. & 2 flg.											
Innentür "Teckentrup" 1flg. & 2flg										X	X

Stand März. 2016. Diese Übersicht stellt die gängigsten Türtypen und Eigenschaftsoptionen dar.

For a detailed product description refer to the manufacturer specifications at www.teckentrup.biz or the product descriptions for the respective offer/quotation.

Product manufacture



Scope

Multi-functional doors are used, e.g. in

- office and administrative buildings
- industrial buildings
- public buildings
- residential buildings

Typical application areas of the Teckentrup multi-functional doors are:

- fire retardant doors (T30)
- very fire retardant doors (T60)
- fire resistant doors (T90)
- smoke control doors
- sound insulation doors
- burglar resistant doors
- internal doors
- multi-purpose door
- external pedestrian doorsets

Management systems

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 11 April 2016).

All relevant safety data sheets are available from Teckentrup GmbH & Co. KG .

3 Construction process stage

Processing recommendations, installation Observe the instructions for assembly/installation, operation, service/maintenance and disassembly, provided by the manufacturer. See www.teckentrup.biz

4 Use stage

Emissions to the environment No emissions to indoor air, water and soil are known. There may be VOC emissions.

Reference service life (RSL) The RSL information was provided by the manufacturer. The RSL shall be specified under defined reference in-use conditions and shall refer to the declared technical and functional performance of the product within the building. It shall be established in accordance with any specific rules given in European product standards, or, if not available, in a c-PCR. It shall also take into account ISO 15686-1, -2, -7 and -8. Where European product standards or a c-PCR provide guidance on deriving the 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:

For a "cradle to gate with options" EPD with the Modules C1-C4 and Module D (A1-A3 + C + D and one or more additional modules from A4 to B7), the reference service life (RSL) can only be stated if the reference in-use conditions have been specified.

According to the BBSR table, an optional service life of 50 years has been specified for the multi-functional doors made by Teckentrup GmbH & Co. KG.

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

- Outdoor environment: climatic influences may have a negative impact on the 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 Multi-functional doors in steel 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 presents the end-of-life modules according to the market situation or according to EN 17213.

Specific parts of steel and stainless steel are recycled, plastics are thermally recycled. Residual fractions are sent to landfill.

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 Multi-functional doors in steel. The LCA is in conformity with DIN 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 the products. In accordance with DIN 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-

The specific data originate exclusively from the 2021 fiscal year. They were collected on-site at the plant located in Verl 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 10" professional and building materials databases. The last update of both databases was in 2022. Data from before this date originate also from

related system boundaries	<p>these databases and are not more than ten years old. No other generic data were used for the calculation.</p> <p>Data gaps were either filled with comparable data or conservative assumptions, or the data were cut off in compliance with the 1% rule.</p> <p>The life cycle was modelled using the sustainability software tool "GaBi" for the development of Life Cycle Assessments.</p>
Scope / system boundaries	<p>The system boundaries refer to the supply of raw materials and purchased parts, manufacture/production, use and end-of-life stage of Multi-functional doors in steel. No additional data from pre-suppliers/subcontractors or other sites were taken into consideration.</p>
Cut-off criteria	<p>All company data collected, i.e. all commodities/input and raw materials used, the thermal energy and electricity consumption were taken into consideration.</p> <p>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.</p> <p>The transport mix is composed as follows and originates from the research project "EPDs für transparente Bauelemente" (EPDs for transparent building components).</p> <ul style="list-style-type: none"> • 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. <p>The criteria for the exclusion of inputs and outputs as set out in DIN EN 15804 are fulfilled. From the data analysis it can be assumed that the total of negligible processes per life cycle stage does not exceed 1% of the mass/primary energy. This way the total of negligible processes does not exceed 5% of the energy and mass input. The life cycle calculation also includes material and energy flows that account for less than 1%.</p>
6.2 Inventory analysis	
Goal	<p>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.</p>
Life cycle stages	<p>The Annex shows the entire life cycle of Multi-functional doors in steel. The product stage "A1 – A3", construction process stage "A4 – A5", use stage "B2 – B7", end-of-life stage "C1 – C4" and the benefits and loads beyond the system boundaries "D" are considered.</p>
Benefits	<p>The below benefits have been defined as per DIN EN 15804:</p> <ul style="list-style-type: none"> • Benefits from recycling • Benefits (thermal and electrical) from incineration
Allocation of co-products	<p>The manufacture of the product does not provide for any allocations.</p>
Allocations for re-use,	<p>If the products are reused/recycled and recovered during the product stage (rejects), the components are shredded, if necessary and then sorted into their single constituents. This is done by various process plants, e.g. magnetic separators.</p>



recycling and recovery Allocations beyond life cycle boundaries

The system boundaries were set following their disposal, reaching the end-of-waste status. 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) . Secondary material included as inputs in Multi-functional doors in steel is calculated as input without loads. No benefits, but consumptions were allocated to Module C4 (worse case consideration) The system boundary set for the recycled material refers to collection.

Secondary material

The use of secondary material in Module A3 by Teckentrup GmbH & Co. KG was not considered. Secondary material is not used.

Inputs

The LCA includes the following production-relevant inputs per 1 m² of multi-functional door:

Energy

Natural gas input material is based on "DE: Thermische Energie aus Erdgas (Thermal energy from natural gas), industrial truck gas is based on DE: Erdgas Mix" (natural gas mix). Electricity is based on "Strommix Deutschland" (Germany electricity mix).

Water

No water is consumed by the individual process steps for the manufacture of the products.

Raw material / pre-products

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

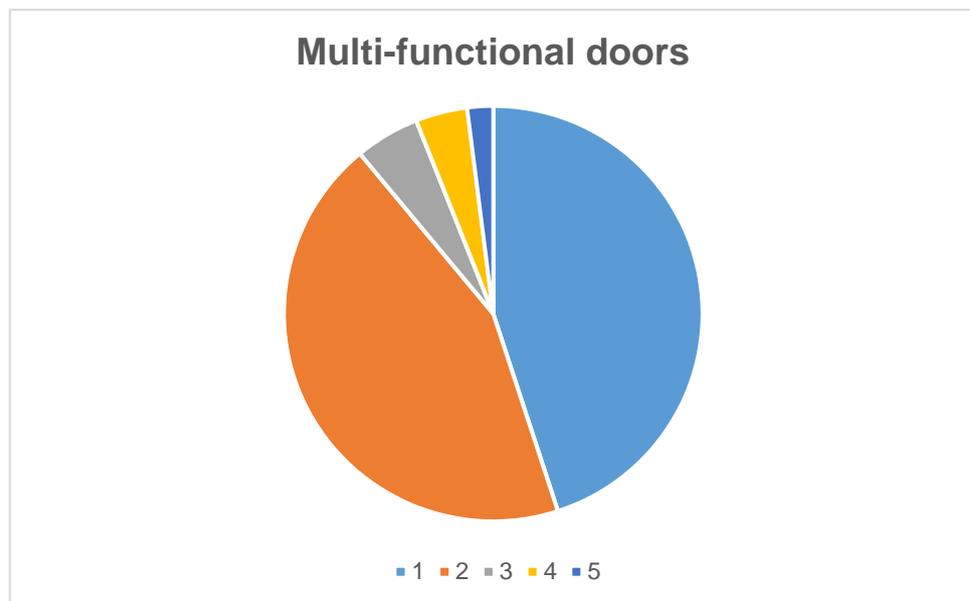


Figure 1: Percentage of individual materials per declared unit

No.	Material	Mass in %
1	Steel	45
2	Mineral wool	44
3	Paint	5
4	Plaster	4
5	Seals/gaskets	2

Table 2: Percentage of individual materials per declared unit

Ancillary materials and consumables

0.55 kg of ancillary materials and consumables are used.

Product packaging

The amounts used for product packaging are as follows:

No.	Material	Mass in kg
1	Films and protective covers	1.01
2	Wood	11.27
3	Cardboard	0.10
4	Plastics	0.05

Table 3: Weight in kg of packaging per declared unit

Biogenic carbon content

- Only the biogenic carbon content of the associated packaging is specified, as the total mass of substances containing biogenic carbon is less than 5% of the total mass of the product and associated packaging. According to EN 16449, packaging produces the following amounts of biogenic carbon :

No.	Component	Mass of packaging in kg	Content in kg C
1	Wood	11.27	5.03
2	Cardboard	0.10	0.03

Table 4: Biogenic carbon content of packaging at gate

Outputs

The LCA includes the following production-relevant outputs per 1 m² of multi-functional door:

Waste

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

Waste water

The manufacture does not produce any waste water.

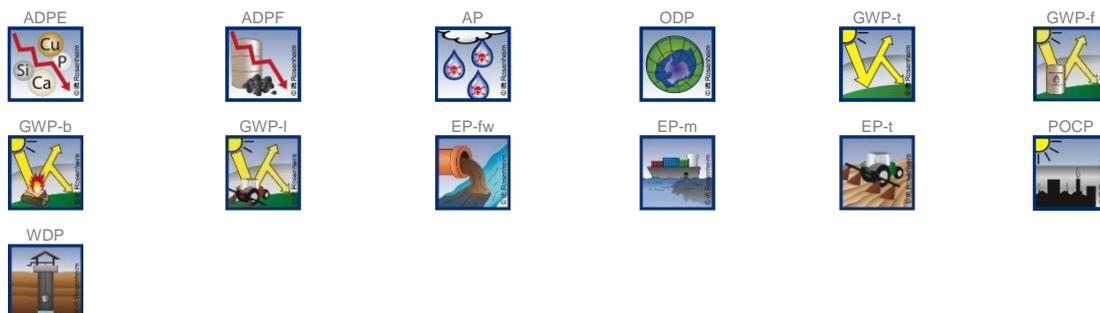
6.3 Impact assessment**Goal**

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 DIN EN 15804-A2. The impact categories presented in the EPD are as follows:

- depletion of abiotic resources – minerals and metals;
- depletion of abiotic resources - fossil fuels;
- acidification;
- ozone depletion;
- climate change - total
- climate change - fossil;
- climate change - biogenic;
- climate change – land use and land use change
- eutrophication aquatic fresh water;
- eutrophication aquatic marine;
- eutrophication terrestrial;
- photochemical ozone creation;
- water use.

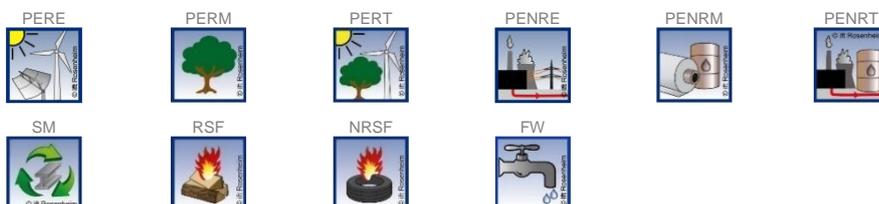


Use of resources

The models for impact assessment were applied as described in DIN EN 15804-A2.

The EPD presents the following indicators for the use of resources:

- renewable primary energy as energy resource;
- renewable primary energy for material use;
- total use of renewable primary energy;
- non-renewable primary energy as energy resource;
- renewable primary energy for material use;
- total use of non-renewable primary energy;
- use of secondary materials;
- use of renewable secondary fuels;
- use of non-renewable secondary fuels;
- net use of fresh water resources.



Waste

The waste generated during the production of 1 m² of multi-functional door 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.

The models for impact assessment were applied as described in DIN EN 15804-A2.

The waste categories and indicators for output material flows presented in the EPD are as follows:

- hazardous waste disposed;
- non-hazardous waste disposed;
- radioactive waste
- components for further use;
- materials for recycling;
- materials for energy recovery;
- exported electrical energy;
- exported thermal energy.



Additional environmental impact indicators

The models for impact assessment were applied as described in DIN EN 15804-A2.

The additional impact categories presented in the EPD are as follows:

- particulate matter emissions
- ionising radiation, human health
- ecotoxicity (fresh water)
- subcategory human toxicity, carcinogenic effect
- human toxicity, non-carcinogenic effect
- land use related impacts / soil quality





Results per 1 m² of multi-functional door

Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Core indicators																
GWP-t	kg CO ₂ eq.	52.85	0.57	23.90	ND	0.29	4.90	0.00	0.00	0.00	0.00	6.06E-02	2.31	0.21	-17.10	
GWP-f	kg CO ₂ eq.	70.72	0.57	3.59	ND	0.28	4.89	0.00	0.00	0.00	0.00	6.03E-02	2.30	0.21	-17.00	
GWP-b	kg CO ₂ eq.	-17.97	-7.92E-04	20.30	ND	2.64E-03	1.18E-02	0.00	0.00	0.00	0.00	-8.31E-05	1.13E-02	-6.24E-03	-7.71E-02	
GWP-l	kg CO ₂ eq.	2.18E-02	3.20E-03	5.34E-05	ND	1.74E-05	8.87E-04	0.00	0.00	0.00	0.00	3.35E-04	2.68E-04	3.88E-04	-3.12E-03	
ODP	kg CFC -11 eq.	4.67E-10	3.44E-14	1.82E-12	ND	3.00E-13	1.12E-11	0.00	0.00	0.00	0.00	3.60E-15	1.83E-11	4.95E-13	-1.12E-10	
AP	mol H ⁺ eq.	0.23	2.52E-04	3.27E-03	ND	8.77E-04	8.59E-03	0.00	0.00	0.00	0.00	6.99E-05	3.03E-03	1.49E-03	-3.40E-02	
EP-fw	kg P eq.	1.31E-04	1.71E-06	4.36E-07	ND	2.18E-06	4.43E-06	0.00	0.00	0.00	0.00	1.80E-07	3.66E-06	3.57E-07	-2.58E-05	
EP-m	kg N eq.	4.33E-02	1.82E-05	1.03E-03	ND	1.42E-04	2.10E-03	0.00	0.00	0.00	0.00	2.45E-05	7.07E-04	3.81E-04	-7.80E-03	
EP-t	mol N eq.	0.69	3.59E-04	1.55E-02	ND	1.53E-03	2.30E-02	0.00	0.00	0.00	0.00	2.87E-04	7.89E-03	4.19E-03	-8.38E-02	
POCP	kg NMVOC eq.	0.14	1.80E-04	2.83E-03	ND	6.70E-04	6.87E-03	0.00	0.00	0.00	0.00	6.13E-05	1.90E-03	1.16E-03	-2.44E-02	
ADPF*2	MJ	917.58	7.66	4.88	ND	13.00	61.40	0.00	0.00	0.00	0.00	0.80	22.80	2.76	-239.00	
ADPE*2	kg Sb eq.	7.77E-05	4.79E-08	4.43E-08	ND	4.30E-08	4.45E-07	0.00	0.00	0.00	0.00	5.03E-09	3.42E-07	2.16E-08	-3.31E-05	
WDP*2	m ³ world eq. deprived	1.41	5.13E-03	2.43	ND	5.38	0.16	0.00	0.00	0.00	0.00	5.38E-04	0.39	2.30E-02	-1.09	
Use of resources																
PERE	MJ	240.21	0.44	183.05	ND	0.21	5.80	0.00	0.00	0.00	0.00	4.57E-02	12.60	0.41	-67.70	
PERM	MJ	181.91	0.00	-181.91	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
PERT	MJ	422.12	0.44	1.14	ND	0.21	5.80	0.00	0.00	0.00	0.00	4.57E-02	12.60	0.41	-67.70	
PENRE	MJ	888.25	7.68	26.64	ND	13.00	61.60	0.00	0.00	0.00	0.00	0.81	32.28	2.76	-240.00	
PENRM	MJ	31.73	0.00	-21.75	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-9.48	0.00	0.00	
PENRT	MJ	919.98	7.68	4.89	ND	13.00	61.60	0.00	0.00	0.00	0.00	0.81	22.80	2.76	-240.00	
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
RSF	MJ	9.14E-30	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
NRSF	MJ	1.39E-28	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
FW	m ³	0.14	4.92E-04	5.72E-02	ND	0.13	9.35E-03	0.00	0.00	0.00	0.00	5.16E-05	1.44E-02	6.99E-04	-5.99E-02	
Waste categories																
HWD	kg	2.65E-07	3.68E-11	4.66E-10	ND	1.87E-10	3.34E-09	0.00	0.00	0.00	0.00	3.86E-12	1.98E-09	1.42E-10	-2.68E-08	
NHWD	kg	8.78	1.10E-03	0.25	ND	3.69E-02	6.56E-02	0.00	0.00	0.00	0.00	1.15E-04	3.94E-02	14.10	-0.24	
RWD	kg	0.02	9.46E-06	2.82E-04	ND	5.77E-05	7.34E-04	0.00	0.00	0.00	0.00	9.92E-07	3.60E-03	3.07E-05	-1.52E-02	
Output material flows																
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
MFR	kg	10.40	0.00	0.00	ND	0.00	1.10	0.00	0.00	0.00	0.00	0.00	10.90	0.00	0.00	
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
EEE	MJ	0.81	0.00	36.60	ND	0.00	4.33	0.00	0.00	0.00	0.00	0.00	4.06	0.00	0.00	
EET	MJ	1.90	0.00	65.60	ND	0.00	1.89	0.00	0.00	0.00	0.00	0.00	1.77	0.00	0.00	

Key:

GWP-t – global warming potential - total **GWP-f** – global warming potential fossil fuels **GWP-b** – global warming potential - biogenic **GWP-l** – global warming potential - land use and land use change **ODP** – ozone depletion potential **AP** - acidification potential **EP-fw** - eutrophication potential - aquatic freshwater **EP-m** - eutrophication potential - aquatic marine **EP-t** - eutrophication potential - terrestrial **POCP** - photochemical ozone formation potential **ADPF*2** - abiotic depletion potential – fossil resources **ADPE*2** - abiotic depletion potential – minerals&metals **WDP*2** – Water (user) deprivation potential **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

ift ROSENHEIM		Results per 1 m ² of multi-functional door														
		Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Additional environmental impact indicators																
PM	Disease incidence	4.52E-06	2.68E-09	1.71E-08	ND	5.45E-09	9.89E-08	0.00	0.00	0.00	0.00	0.00	4.2E-10	2.43E-08	1.84E-08	-4.05E-07
IRP*1	kBq U235 eq.	2.42	1.39E-03	4.58E-02	ND	9.35E-03	8.01E-02	0.00	0.00	0.00	0.00	0.00	1.45E-04	0.61	3.41E-03	-2.40
ETP-fw*2	CTUe	293.58	5.32	2.26	ND	8.85	23.90	0.00	0.00	0.00	0.00	0.00	0.56	9.95	1.54	-56.00
HTP-c*2	CTUh	6.88E-07	1.07E-10	1.57E-10	ND	1.75E-10	3.64E-09	0.00	0.00	0.00	0.00	0.00	1.12E-11	2.94E-10	2.36E-10	-3.37E-07
HTP-nc*2	CTUh	7.44E-06	5.5E-09	6.00E-09	ND	7.88E-09	4.83E-08	0.00	0.00	0.00	0.00	0.00	5.9E-10	1.10E-08	2.61E-08	-2.07E-07
SQP*2	dimensionless	2890.88	2.64	1.43	ND	0.14	4.56	0.00	0.00	0.00	0.00	0.00	0.28	8.19	0.57	-46.20

Key:
PM – particulate matter emissions potential **IRP*1** – ionising radiation potential – human health **ETP-fw*2** - Ecotoxicity potential – freshwater **HTP-c*2** - Human toxicity potential – cancer effects **HTP-nc*2** - Human toxicity potential – non-cancer effects **SQP*2** – soil quality potential

Disclaimers

*1 This impact category deals mainly with the eventual impact of low-dose ionising radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionising radiation from the soil, from radon and from some building materials is also not measured by this indicator

*2 The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator



6.4 Interpretation, LCA presentation and critical review

Evaluation The environmental impacts during the manufacture of the multi-functional doors by Teckentrup GmbH & Co. KG originate mainly from the use of steel parts and mineral wool or their upstream chains. The electricity mix and the etch primer applied must also be taken into account.

For scenario C4 only marginal consumptions arising from the physical pre-treatment and management of the disposal site are expected.

As regards the recycling of the products, approx. 5% of the environmental impacts of steel can be assigned as benefits to scenario D.

The charts below show the distribution of the main environmental impacts.

The values obtained from the LCA calculation are suitable for the certification of buildings.

Chart

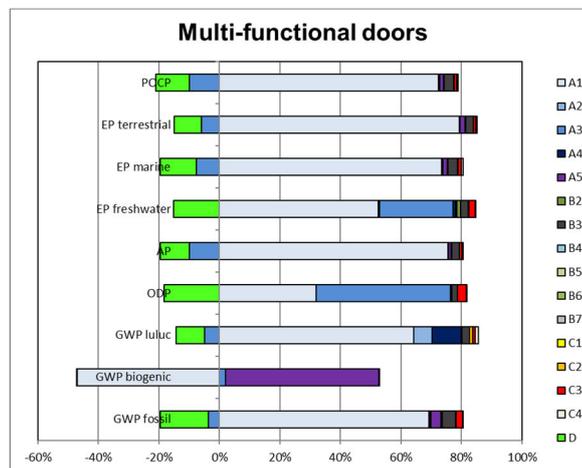


Figure 2: Percentage of the modules in selected environmental impact categories

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 DIN EN 15804 and DIN 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.



Product group: "Doors"

Critical review The critical review of the LCA and the report took place in the course of verification of the EPD and was carried out by Patrick Wortner, MBA and Eng., Dipl.-Ing. (FH), an external verifier.

7 General information regarding the EPD

Comparability This EPD was prepared in accordance with DIN EN 15804 and is therefore only comparable to those EPDs that also comply with the requirements set out in DIN 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 DIN 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 DIN 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 DIN EN ISO 14025.

The Declaration is based on the PCR documents EN 17213 "PCR for windows and doors", "PCR Part A" PCR-A-0.3:2018 and "Doors" PCR - TT-2.3:2018.

The European standard EN 15804 serves as the core PCR ^{a)}
Independent verification of the Declaration and statement according to EN ISO 14025:2010 <input type="checkbox"/> internal <input checked="" type="checkbox"/> 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	01.08.2022	External Verification	Hilz	Wortner
2				
3				

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. **EN 17213:2020-01. Windows and doors - Environmental product declarations - Product category rules for windows and doors.** Berlin : Beuth Verlag GmbH, 2020.
3. **PCR Part A. Product category rules for environmental product declarations as per EN ISO 14025 and EN 15804.** Rosenheim : ift Rosenheim, 2018.
4. **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.
5. **Klöppfer, W und Grahl, B. Ökobilanzen (LCA).** Weinheim: Wiley-VCH-Verlag, 2009.
6. **Eyerer, P. und 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.
7. **Gefahrstoffverordnung – GefStoffV (Hazardous substances regulation) Verordnung zum Schutz vor Gefahrstoffen (Regulation on protection against hazardous substances),** Berlin : BGBl. (Federal Gazette) I S. 3758, 2017.
8. **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 : BGBl. (Federal Gazette) I S. 1328, 2017.
9. **DIN EN ISO 14040:2018-05. Environmental management - Life cycle assessment - Principles and framework.** Berlin : Beuth Verlag GmbH, 2018.
10. **DIN EN ISO 14044:2006-10. Environmental management - Life cycle assessment - Requirements and guidelines..** Berlin : Beuth Verlag GmbH, 2006.
11. **EN ISO 14025:2011-10. Umweltkennzeichnungen und -deklarationen Typ III Umweltdelarationen - Grundsätze und Verfahren.(Environmental labels and declarations - Type III environmental declarations - Principles and procedures)** Berlin : Beuth Verlag GmbH, 2011.
12. **OENORM S 5200:2009-04-01 Radioactivity in construction materials.** Berlin : Beuth Verlag GmbH, 2009.
13. **PCR Part B - Doors. Product category rules for environmental product declarations as per EN ISO 14025 and EN 15804** Rosenheim : ift Rosenheim, 2018.
14. **EN 15942:2012-01. Sustainability of construction works - Environmental product declarations - Communication format business-to-business.** Berlin : Beuth Verlag GmbH, 2012.
15. **EN 15804:2012+A1:2013. Sustainability of construction works - Environmental product declarations - Rules for the product categories.** Berlin : Beuth Verlag GmbH, 2013.
16. **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
17. **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.
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** Berlin : Beuth Verlag GmbH, 2010.
19. **DIN ISO 16000-6:2012-11. Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on TENAX TA®, thermal desorption and gas chromatography using MS/FID.** Berlin : Beuth Verlag GmbH, 2012.
20. **ISO 21930:2017-07. Sustainability in building construction - Environmental declaration of building products** Berlin : Beuth Verlag, 2017.
21. **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 : BGBl. (Federal Gazette) I S. 3830, 2017.
22. **Chemikaliengesetz – ChemG (Chemicals Act Gesetz zum Schutz vor gefährlichen Stoffen - Unterteilt sich in Chemikaliengesetz 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 : BGBl. (Federal Gazette) I S. 1146, 2017.
23. **IKP Universität Stuttgart and PE Europe GmbH GaBi 8: Software and database for LCA.** Leinfelden-Echterdingen: s.n, 2017
24. **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.
25. **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.
26. **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.
27. **DIN EN ISO 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.
28. **DIN EN ISO 16000-9:2008-04. Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method** Berlin : Beuth Verlag GmbH, 2008.
29. **DIN EN ISO 16000-11:2006-06. Indoor air - Part 11: Determination of the emission of volatile organic compounds from building products and furnishing- Sampling, storage of**

Product group: "Doors"

samples and preparation of test specimens. Berlin : Beuth Verlag GmbH, 2006.

30. **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.

31. **EN ISO 16000-11:2006-06.** *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.* Berlin : Beuth Verlag GmbH, 2006.

32. **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* Berlin : Beuth Verlag GmbH, 2006.



9 Annex

Description of life cycle scenarios for Multi-functional doors in steel

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 process	Use	Maintenance	Repair	Replacement	Modification/refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Re-use Recovery Recycling potential
✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Calculation of the scenarios was based on a building service life of 50 years (in accordance with RSL of 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" and EN 17213 (1) (2).

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
- Not included in the LCA

A4 Transport to the construction site			
No.	Scenario	Description	
A4.1	Direct shipment to construction site / customer / domestic branch	40 t truck, 60 percent capacity used, approx. 420 km to domestic construction site, 10% capacity used for return trip	
A4.2	Direct shipment to construction site / customer / branch abroad	40 t truck, 65 percent capacity used, approx. 1,260 km to construction site abroad, 10% capacity used for return trip	
A4 Transport to the construction site		Transport weight [kg/m ²]	
Multi-functional door		37.91	
A4 Transport to the construction site	Unit	A4.1	A4.2
Core indicators			
GWP-t	kg CO ₂ eq.	0.57	1.70
GWP-f	kg CO ₂ eq.	0.57	1.70
GWP-b	kg CO ₂ eq.	-7.92E-04	-2.37E-03
GWP-l	kg CO ₂ eq.	3.20E-03	9.57E-03
ODP	kg CFC -11 eq.	3.44E-14	1.03E-13
AP	mol H ⁺ eq.	2.52E-04	7.49E-04
EP-fw	kg P eq.	1.71E-06	5.12E-06
EP-m	kg N eq.	1.82E-05	5.18E-05
EP-t	mol N eq.	3.59E-04	1.04E-03
POCP	kg NMVOC eq.	1.80E-04	5.32E-04
ADPF	MJ	7.66	22.90
ADPE	kg Sb eq.	4.79E-08	1.43E-07
WDP	m ³ world eq. deprived	5.13E-03	1.53E-02
Use of resources			
PERE	MJ	0.44	1.30
PERM	MJ	0.00	0.00
PERT	MJ	0.44	1.30
PENRE	MJ	7.68	23.00
PENRM	MJ	0.00	0.00
PENRT	MJ	7.68	23.00
SM	kg	0.00	0.00
RSF	MJ	0.00	0.00
NRSF	MJ	0.00	0.00
FW	m ³	4.92E-04	1.47E-03
Waste categories			
HWD	kg	3.68E-11	1.1E-10
NHWD	kg	1.10E-03	3.29E-03
RWD	kg	9.46E-06	2.83E-05
Output material flows			
CRU	kg	0.00	0.00
MFR	kg	0.00	0.00
MER	kg	0.00	0.00
EEE	MJ	0.00	0.00
EET	MJ	0.00	0.00
Additional environmental impact indicators			
PM	Disease incidence	2.68E-09	8.01E-09
IRP	kBq U235 eq.	1.39E-03	4.15E-03
ETPfw	CTUe	5.32	15.90
HTPc	CTUh	1.07E-10	3.21E-10
HTPnc	CTUh	5.5E-09	1.65E-08



Product group: "Doors"

SQP	dimensionless	2.64	7.89
A5 Construction/Installation			
No.	Scenario	Description	
A5	Manually	According to the manufacturer the products are installed without additional lifting and auxiliary devices	
<p>In case of deviating consumption the installation / assembly of the products forms part of the site management and is covered at the building level.</p> <p>Ancillary materials, consumables, use of energy and water, use of other resources, material losses, direct emissions as well as waste materials during installation are negligible.</p> <p>It is assumed that the packaging material in the Module construction / installation is sent to waste handling. Waste is only thermally recycled in line with the conservative approach. Films/foils / protective covers, wood and cardboard in waste incineration plants. Benefits from A5 are specified in Module D. Benefits from waste incineration plant: electricity replaces electricity mix (EU 28); thermal energy replaces thermal energy from natural gas (EU 28). Transport to the recycling plants is not taken into account.</p> <p>Since only one scenario is used, the results are shown in the summary table.</p>			
B1 Use			
Refer to Section 4 Use stage - Emissions to the environment. Emissions cannot be quantified.			
B2 Inspection, maintenance, cleaning:			
B2.1 Cleaning			
No.	Scenario	Description	
B2.1	Manual	Manually acc. to manufacturer; using water, annually (2.5 l/cleaning; 125 l / 50 yr) (4)	
<p>Ancillary materials, consumables, use of energy and water, material losses and waste as well as transport distances during cleaning are negligible.</p> <p>Since only one scenario is used, the results are shown in the relevant summary table.</p>			
B2.2 Maintenance			
No.	Scenario	Description	
B2.2	Normal use	Annual functional check, visual inspection, greasing/lubrication and, if necessary, repair according to manufacturer 0.25 kg lubricant per 50 yr (4)	
<p>Ancillary materials, consumables, use of energy and water, waste, material losses and transport distances during maintenance are negligible.</p> <p>Since only one scenario is used, the results are shown in the relevant summary table.</p>			



No.	Scenario	Description
B3	Normal use	One replacement*: Hardware, seals/gaskets

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

For updated information refer to the relevant "Anleitung für Montage, Betrieb und Wartung" (manufacturer instructions for assembly/installation, operation and servicing/maintenance.).

A reference service life of 50 years is stated for the multi-functional doors in steel made by Teckentrup GmbH & Co. KG. Scenario B3 presents the LCA of the components of building elements with a service life of less than the relevant period of 50 years.

It is assumed that the replaced components in the Module Repair are recycled as follows: Metals in melt (material recycling), plastics in waste incineration plants. Benefits from B3 are specified in Module D. Benefits from waste incineration: electricity replaces electricity mix (EU 28); thermal energy replaces thermal energy from natural gas (EU 28).

Transport to the recycling plants is not taken into account.

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 relevant summary table.

B4 Exchange / Replacement

No.	Scenario	Description
B4	Normal use	No replacement*

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

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

For updated information refer to the relevant manufacturer instructions for assembly/installation, operation and servicing/maintenance.

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

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

B5 Improvement / Modernisation

According to the manufacturer, the elements are not included in the improvement / modernisation activities for buildings.

For updated information refer to the respective instructions for assembly/installation, operation and maintenance from Teckentrup GmbH & Co. KG .

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

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

B6 Operational energy use

No.	Scenario	Description
B6.1	Hand-operated	No energy consumed when used
B6.2	Power operated, normal use	Per operator 1,280 kWh/50yr according to manufacturer

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

There is no transport consumption during the energy use in buildings. Ancillary materials, consumables and water, waste materials and other scenarios are negligible.

B6 Operational energy use	Unit	B6.1	B6.2
Core indicators			
GWP-t	kg CO ₂ eq.	0.00	476.00
GWP-f	kg CO ₂ eq.	0.00	472.00
GWP-b	kg CO ₂ eq.	0.00	4.25
GWP-l	kg CO ₂ eq.	0.00	0.10
ODP	kg CFC -11 eq.	0.00	0.00
AP	mol H ⁺ eq.	0.00	1.04
EP-fw	kg P eq.	0.00	0.00
EP-m	kg N eq.	0.00	0.23
EP-t	mol N eq.	0.00	2.44
POCP	kg NMVOC eq.	0.00	0.63
ADPF	MJ	0.00	8560.00
ADPE	kg Sb eq.	0.00	0.00
WDP	m ³ world eq. deprived	0.00	107.00
Use of resources			
PERE	MJ	0.00	4760.00
PERM	MJ	0.00	0.00
PERT	MJ	0.00	4760.00
PENRE	MJ	0.00	8570.00
PENRM	MJ	0.00	0.00
PENRT	MJ	0.00	8570.00
SM	kg	0.00	0.00
RSF	MJ	0.00	0.00
NRSF	MJ	0.00	0.00
FW	m ³	0.00	4.53
Waste categories			
HWD	kg	0.00	7.41E-07
NHWD	kg	0.00	6.45
RWD	kg	0.00	1.37
Output material flows			
CRU	kg	0.00	0.00
MFR	kg	0.00	0.00
MER	kg	0.00	0.00
EEE	MJ	0.00	0.00
EET	MJ	0.00	0.00
Additional environmental impact indicators			
PM	Disease incidence	0.00	8.59E-06
IRP	kBq U235 eq.	0.00	232.00
ETPfw	CTUe	0.00	3750.00



Product group: "Doors"

HTPc	CTUh	0.00	1.08E-07
HTPnc	CTUh	0.00	3.94E-06
SQP	dimensionless	0.00	3090.00

B7 Operational water use

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

There is no transport consumption during water use in buildings. Ancillary materials, consumables, waste materials and other scenarios are negligible.

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

C1 Deconstruction

No.	Scenario	Description
C1	Deconstruction	as per EN 17213: Deconstruction of glass-free materials: 95% 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.

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

In case of deviating consumption the removal of the products forms part of the 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), diesel, 27 t payload, 80% capacity used, 50 km

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

C3 Waste management

No.	Scenario	Description
C3	Current market situation	as per EN 17213: Metals 100% material recycling Plastics 100% energy recovery Remainder to landfill

Electricity consumption of incineration plant 0.5 MJ/kg.

As the products 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.



Product group: "Doors"

C3 Disposal	Unit	C3
Collection process, collected separately	kg	24.21
Collection process, collected as mixed construction waste	kg	1.27
Recovery system, for re-use	kg	0.00
Recovery system, for recycling	kg	10.92
Recovery system, for energy recovery	kg	0.46
Disposal	kg	14.10

The 100% scenarios differ from current average recycling (C3). The evaluation of the individual scenarios is presented in the underlying report.

Since only one scenario is used, the results are shown in the relevant 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" (EU-28).

The consumption in 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 relevant summary table.

D Benefits and loads from beyond the system boundaries

No.	Scenario	Description
D	Recycling potential (current market situation)	Steel scrap from C3 excluding the scrap used in A3 replaces 60% of steel; Benefits from waste incineration: electricity replaces electricity mix (DE/EU-28); 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.

The 100% scenarios differ from current average recycling (D). The evaluation of the individual scenarios is presented in the underlying report.

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

Imprint

Practitioner of the LCA

ift Rosenheim GmbH
Theodor-Gietl-Straße 7-9
D-83026 Rosenheim

Programme operator

ift Rosenheim GmbH
Theodor-Gietl-Str. 7-9
D-83026 Rosenheim
Phone: +49 80 31/261-0
Fax: +49 80 31/261 290
Email: info@ift-rosenheim.de
www.ift-rosenheim.de

Declaration holder

Teckentrup GmbH & Co. KG
Industriestraße 50
D-33415 Verl-Sürenheide

Notes

This EPD is mainly based on the work and findings of the Institut für Fenstertechnik e.V., Rosenheim (ift Rosenheim) and specifically on the ift-Richtlinie NA-01/3 Allgemeiner Leitfaden zur Erstellung von Typ III Umweltproduktdeklarationen. (Guideline NA.01/3 - Guidance on preparing Type III Environmental Product Declarations)

The publication and all its parts are protected by copyright. Any utilisation outside the confined limits of the copyright provisions is not permitted without the consent of the publishers and is punishable. In particular, this applies to any form of reproduction, translations, storage on microfilm and the storage and processing in electronic systems.

Layout

ift Rosenheim GmbH – 2021

Photographs (front page)

Teckentrup GmbH & Co. KG

© ift Rosenheim, 2022



ift Rosenheim GmbH
Theodor-Gietl-Str. 7-9
D-83026 Rosenheim
Phone: +49 (0) 80 31/261-0
Fax: +49 (0) 80 31/261-290
Email: info@ift-rosenheim.de
www.ift-rosenheim.de