ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	**ASSA ABLOY Entrance Systems**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20200094-IBC1-EN
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ASSA ABLOY OH1042FI overhead sectional door
ASSA ABLOY Entrance Systems

Institut Bauen und Umwelt e.V.

www.bau-umwelt.com / https://epd-online.com

1. General Information

ASSA ABLOY	ASSA ABLOY OH1042FI overhead sectional door
Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	**Owner of the Declaration** ASSA ABLOY Entrance Systems AB Lodjursgatan 10 SE-261 44 Landskrona Sweden
Declaration number EPD-ASA-20200094-IBC1-EN	**Declared product / Declared unit** This declaration represents 1 industrial overhead sectional door with insulated frame sections and with electrical operation. The door is DLW (daylight width) 3600 x DLH (daylight height) 3600 mm. All sections are insulated frame sections. The bottom section has FA* sandwich panel infills, while the other sections have DAD** infills. The frame thickness is 42 mm. * = Foamed panel Aluminium ** = Double Acrylic 'scratch resistant' (SAN with coating), Double sealed.
This Declaration is based on the Product Category Rules: IBU: PCR Automatic doors, automatic gates and revolving door systems (door systems) Version 1.6 (11. 2017). (PCR tested and approved by the independent expert committee)	**Scope:** This declaration and its LCA study are relevant to the ASSA ABLOY OH1042FI overhead sectional door. The production location is Heerhugowaard, Netherlands and components are sourced from international tier one suppliers. The ASSA ABLOY OH1042FI overhead sectional door size varies according to customer. The most average door size of DLW 3600 x DLH 3600 mm is used in this declaration. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences. The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as EN 15804.
Issue date 08.02.2022	
Valid to 07.02.2027	
 Dipl.-Ing. Hans Peters (Chairman of Institut Bauen und Umwelt e.V.)	**Verification** The CEN Standard *EN 15804* serves as the IBU PCR Independent verification of the declaration and data according to *ISO 14025* ☐ internally ☒ externally
 Dr. Alexander Röder (Managing Director IBU)	 Dr. Wolfram Trinius (Independent tester appointed by SVA)

2. Product

2.1 Product description

The ASSA ABLOY OH1042FI overhead sectional door is suitable for many types of buildings, with regards to both function and appearance. High flexibility makes it possible to install this door in almost every type of building. The high light admission allows working environments with maximum lighting. The door slides up under the roof when opened, allowing free space around the door opening and leaving the door opening completely free.

The door is made of insulated anodized aluminium tubular profiles, filled with sandwich panels or transparent infills, see table on next page.

The frames are designed with a broken cold bridge to provide minimal thermal transmittance. This reduces energy cost (in case the space is conditioned). The frame sections have integrated finger pinch protection.

There are top-, bottom- and side-seals and seals between door sections. The standard track system is made of galvanized steel. The balancing system balances the door by applying a force nearly equal to the weight of the door leaf. This allows the door leaf to be moved up and down, and to stay open in any position. The balancing system (torsion spring system or weight balancing system) supports heavy forces. In case of a spring or cable break, its counterforce is lost. The door is therefore equipped with two safety devices

that can block downward door movement; Spring Break Device (standard) and Cable Break Device (option, not declared in this EPD).

FILLING	DESCRIPTION
DAD	Double san Acrylic Double sealed (SAN coated)
DAS	Double san Acrylic Single sealed (SAN coated)
DE4D	Double hard Energy glass 4 mm Double sealed
DE6D	Double hard Energy glass 6 mm Double sealed
DH4D	Double Hard glass 4 mm Double sealed
DH6D	Double Hard glass 6 mm Double sealed
DSD	Double San acrylic Double sealed (SAN clear)
DSS	Double San acrylic Single sealed (SAN clear)
TAD	Triple san Acrylic Double sealed (SAN coated)
TSD	Triple San acrylic Double sealed (SAN clear)
FA	Foamed Panel Aluminium
FS	Foamed Panel Steel RAL 9006 Silver

The door has 4 primary parts:
1) Door leaf
2) Track set
3) Balancing system
4) Operating system/chain hoist (optional)

The ASSA ABLOY OH1042FI overhead sectional door has been designed to meet operational and safety requirements in the European Directives and the standards issued by the *European Standardization Committee (CEN).*

For the placing on the market in the EU/EFTA (excl. Switzerland), Switzerland and Turkey the Construction Products Regulation (*CPR) (EU) No 305/2011* applies. The product needs a Declaration of Performance and CE marking under consideration of the Construction Products Regulation and the harmonized standard *EN 13241:2003+A2:2016* Industrial, commercial and garage doors and gates — Product standard — Part 1: Products without fire resistance or smoke control characteristics.

Further standards that can be applied for sectional doors are:

 Wind load: *EN12424*
Class 3 (≤ 4250 mm DLW)
Class 2(> 4250 mm DLW) (Higher classes on request)
 Thermal transmittance: EN12428
3.1 W/(m²·K) Double acrylic glazing
2.6 W/(m²·K) Triple acrylic glazing
2.2 W/(m²·K) Double energy glazing
(valid for a DLW5000 x DLH5000 mm door)
 Water penetration: *EN12425*
Class 3 (Door surface 4000 x 3310 mm) (no passdoor)
 Air permeability: *EN12426*
Class 3 (4000 x 3310 mm without passdoor)
 Acoustic insulation: *EN ISO 10140-2*
R - 24 dB (door surface 4210 x 2590 mm)

The electrical unit as identified is in compliance with the following directives: *2006/42/EC* Machinery Directive (MD)
2014/30/EU Electromagnetic Compatibility Directive (EMCD)
2011/65/EU RoHS
2015/863/EU RoHS

Harmonized European standards, which have been applied:
EN 12453:2017 Industrial, commercial and garage doors and gates – Safety in use of power operated doors – Requirements and test methods
EN 60335-1 Household and similar electrical appliances -Safety -Part 1: General requirements
EN 60335-2-103 Household and similar electrical appliances -Safety -Part 2: Particular requirements for drives for gates, doors and windows.
EN 61000-6-2 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-3 Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments
EN ISO 13849-1 Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design
Disposal of the product is subject to the Waste from Electrical and Electronical Equipment (*WEEE*) Directive within Europe, Directive 2012/19/EU

2.2 Application
The ASSA ABLOY OH1042FI overhead sectional door is suitable for many types of buildings, with regard to both function and appearance. It has a modern, clean design and meets high stability and insulation demands. High flexibility makes it possible to install this door in almost every type of building allowing free space around the door. The high light admission allows working environments with maximum lighting.

2.3 Technical Data
The table presents the technical properties of the ASSA ABLOY OH1042FI overhead sectional door:

Technical data

Name	Value	Unit
Max width:	7250	mm
Max height:	6050	mm
Frame thickness:	42	mm
Frame material:	insulated aluminium profiles	[-]
Filling:	- Windows - insulated sandwich panels - infills	[-]
Colour outside:	Natural aluminium	[-]
Colour inside:	Natural aluminium	[-]
Track types:	Standard: SL optional: HL, LL, VL, HHL, SLL	[-]
Window types:	DAD, DAS, DSD, DSS, TAD, TSD DH4D, DH6D, DE4D, DE6D	[-]
Passdoor:	Not available	[-]
Electrical operation (optional):	Automated operation Access control Safety functions	[-]

Opening/ closing speed:	CDM9: 0.25 CDM9 HD: 0.18 CDM9 2H: 0.5 (open) 0.25 (close)	m/s

2.4 Delivery status

The ASSA ABLOY OH1042FI overhead sectional door unit with a daylight width of 3600 mm and a daylight height of 3600 mm is delivered in parts ready for installation. All necessary installation material is included. For every track type, ASSA ABLOY offers specific installation kits to position the door in the building façade. The ASSA ABLOY OH1042FI is delivered as a standard in natural aluminium. Other colours available on request.

2.5 Base materials/Ancillary materials

The average composition for ASSA ABLOY OH1042FI overhead sectional door is as following:

Component	Percentage in mass (%)
Aluminium	43.26
Brass	0.01
Copper	0.002
Plastics	25.13
Stainless steel	0.01
Steel	26.68
Zinc	0.41
Electronic	0.29
Electro_mechanics	2.56
Others	1.65
Total	**100**

2.6 Manufacture

The final manufacturing processes occur at the factory in Heerhugowaard, Netherlands. The electronics are produced in Ostrov, Czech Republic. The factory in Heerhugowaard, Netherlands has a certification of quality management system in accordance with *ISO 9001 & ISO 14001.*

Offcuts and scraps during the manufacturing process are directed to a recycling unit. Waste is sent for disposal and incineration. Waste codes according to *European Waste Catalogue and Hazardous Waste List* -Valid from 1 January 2002:
EWC 12 01 01 Ferrous metal filings and turnings
EWC 12 01 03 Non-ferrous metal filings and turnings
EWC 17 02 03 plastic
EWC 17 04 01 copper, bronze, brass
EWC 17 04 02 aluminium
EWC 17 04 05 iron and steel
EWC 17 04 11 Cables with the exception of those outlined in *17 04 10*

2.7 Environment and health during manufacturing

ASSA ABLOY Entrance Systems is committed to producing and distributing door opening solutions with minimal environmental impact, where health & safety is the primary focus for all employees and associates.
• Environmental operations, Greenhouse gases, energy, water,
waste, VOC, surface treatment and Health & Safety are being
routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and environment management program effectiveness is evaluated.
• Code of Conduct covers human rights, labour practices and decent work. Management of ASSA ABLOY Entrance Systems is aware of their roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
• The factory of Heerhugowaard, The Netherlands has certification of Environmental Management to *ISO 14001.*
• Any waste metals during machining are separated and recycled.

2.8 Product processing/Installation

The ASSA ABLOY OH1042FI overhead sectional door components are supplied ready for installation. The panels, tracks, springs and hardware are assembled and installed on-site. The components are assembled using simple tools including drills and hand tools. The installation is performed by certified (or competent) installation technicians.

2.9 Packaging

Packaging exists for the purpose of protection during transportation. ASSA ABLOY OH1042FI overhead sectional door components are initially packaged in polystyrene plastic and corrugated cardboard. All of these packaging components are standard industry types. All packaging materials incurred during installation are sent to a recycling unit and a waste incineration plant (wood, plastic and cardboard/paper) for its energy recovery.

The cardboard is recyclable. 80 % of carton is made from recycled material
100 % of packaging paper is made from recycled material.

Material	Value (%)
Cardboard/paper	65.53
Wood	16.58
Steel	0.60
Plastics	17.29
Total	**100.0**

Waste codes according to *European Waste Catalogue and Hazardous Waste List* -Valid from 1 January 2002:
EWC 15 01 01 paper and cardboard packaging
EWC 15 01 02 plastic packaging
EWC 15 01 03 wooden packaging
EWC 17 04 05 iron and steel

2.10 Condition of use

Regular inspections by a trained and qualified person is recommended a minimum of one visit per year or more.
Monthly examination of the ASSA ABLOY OH1042FI overhead sectional door:
1) Use a soft brush and a mild detergent to clean the track set and the door seals.
2) Make sure there are no loose screws, bolts or nuts on the door leaf or the track set.
3) If necessary, tighten all loose screws, bolts and nuts.
4) Examine all door leaf hinges, door seals, rollers and roller holders for damage.
5) If damage is found, contact the local service centre for advice.
6) Examine the door cables for damage and corrosion.
7) If damage or corrosion is found, contact the local service centre for advice.

8) Lubricate the metal door-leaf hinges with oil (SAE 20).

2.11 Environment and health during use

There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product.

2.12 Reference service life

The product has a reference service life of more than 200.000 cycles, standard daily use with the recommended maintenance and service program. For this EPD a lifetime of 10 years was considered.

2.13 Extraordinary effects

Fire

The panel fire test according to *DIN 4102* part 1 class B2. No further tests have been conducted by ASSA ABLOY.

Water

Contain no substances that have any impact on water in case of a flood. Electric operation of the device will be influenced negatively.

Mechanical destruction

No danger to the environment can be anticipated during mechanical destruction.

2.14 Re-use stage

The product is possible to be re-used during the reference service life and be moved from one door to another.

All recyclable materials are directed to a recycling unit where they are recycled (brass, electronics, electro-mechanics, stainless steel, steel, and aluminium).

On the other hand, the plastic components are sent to the waste incineration plant for its energy recovery.

Waste codes according *to European Waste Catalogue and Hazardous Waste List* -Valid from 1 January 2002:

EWC 16 02 14 Used devices with the exception of those outlined in *16 02 09 to 16 02 13*
EWC 17 02 03 plastic
EWC 17 04 01 copper, bronze, brass
EWC 17 04 02 aluminium
EWC 17 04 05 iron and steel
EWC 17 04 11 Cables with the exception of those outlined in *17 04 10*.

2.15 Disposal

The product can be mechanically dissembled to separate the different materials. The majority, of components are steel, aluminium and plastic which will be recycled. The plastic components are used for energy recovery in an incineration plant.

2.16 Further information

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3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of ASSA ABLOY OH1042FI overhead sectional door (daylight width of 3600 mm and daylight height 3600 mm) as specified in Part B requirements on the *EPD IBU: PCR Automatic doors, automatic gates and revolving door systems (door systems).*

Declared unit

Name	Value	Unit
Mass (without packaging)	284.10	kg
Mass packaging (paper, wood, steel and plastics)	8.33	kg
Declared unit for sectional door systems (dimensions acc. to this PCR)	1	piece

3.2 System boundary

Type of the EPD: cradle to gate - with options
The following life cycle stages were considered:

Production stage:

- A1 – Raw material extraction and processing
- A2 – Transport to the manufacturer and
- A3 – Manufacturing

Construction stage:

- A4 - Transport from the gate to the site
- A5 – Packaging waste processing

Use stage related to the operation of the building includes:

- B6 – Operational energy use

End-of-life stage:

- C1 - De-construction/demolition
- C2 – Transport to waste processing,
- C3 – Waste processing for recycling and
- C4 – Disposal (landfill, waste for incineration).

This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of-waste state or disposal of final residues.

Benefits and loads beyond the system boundaries:

- D – Declaration of all benefits and loads.

3.3 Estimates and assumptions

Transportation: Data on the mode of transport and distances, as reported by suppliers were used for those materials and parts contributing more than 2 % of the total product mass. In case of unknown transport distances for parts and materials, contributing less than 2 % to the total product mass, transport by road over an average distance of 500 km was assumed.

Use stage:
For the use phase, it is assumed that the sectional door is used in the European Union, thus a European electricity grid mix is considered within this stage. According to the most representative scenario, the operating hours of the product are accounted for 0.17 hours in on mode and finally 23.83 hours in standby mode per year (365 days per year in use); the power consumption throughout the whole life cycle is 2959 kWh.

EoL:
In the End-of-Life stage, for all the materials from the product which can be recycled (steel, aluminium, electronic parts, electro-mechanics, copper, stainless steel. zinc and brass) a recycling scenario with 100 % collection rate was assumed. The plastic components are sent for energy recovery within a waste incineration process. EoL is assumed to happen within EU-28. Furthermore, a transport distance by truck of 100 km has been assumed in the model.

3.4 Cut-off criteria

In the assessment, all available data from the production process are considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), and electric power consumption - including material and energy flows contributing less than 1 % of mass or energy (if available). In case a specific flow contributing less than 1 % in mass or energy is not available, worst case assumption proxies are selected to represent the respective environmental impacts.

Impacts relating to the production of machines and facilities required during production are out of the scope of this assessment.

3.5 Background data

For life cycle modelling of the considered product, the *GaBi 9* Software System for Life Cycle Engineering, developed by Sphera AG, is used *GaBi 9 2021a*. The *GaBi*-database contains consistent and documented datasets which are documented in the online *GaBi*-documentation *GaBi 9 2021b*. To ensure comparability of results in the LCA, the basic data of *GaBi* database were used for energy, transportation and auxiliary materials.

3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the *IBU PCR Part A*.
Sphera performed a variety of tests and checks during the entire project to ensure high-quality of the completed project. This obviously includes an extensive review of project-specific LCA models as well as the background data used.
The technological background of the collected data reflects the physical reality of the declared products. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.
All relevant background datasets are taken from the *GaBi 9* software database.

3.7 Period under review

The period under review is 2019 (12-month average).

3.8 Allocation

Regarding incineration, the software model for the waste incineration plant (WIP) is adapted according to the material composition and heating value of the

combusted material. In this EPD, the following specific life cycle inventories for the WIP are considered for:

- Waste incineration of paper
- Waste incineration of Plastic
- Waste incineration of Wood

Regarding the recycling material of metals, the metal parts in the EoL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within the background data is given in the *GaBi* dataset documentation.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. *GaBi 9 2021b* serves as background database for the calculation.

4. LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic Carbon Content in product	0	kg C
Biogenic Carbon Content in accompanying packaging	3.04	kg C

Transport to the building site (A4)

Name	Value	Unit
Truck transport		
Litres of fuel diesel with maximum load (27t payload)	39.4	l/100km
Transport distance truck (primary target market is EU 28)	750	km
Capacity utilization (incl. empty runs) of truck	61	%
Transport by ship	21	km

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (paper/cardboard packaging)	5.46	kg
Output substances following waste treatment on site (steel packaging)	0.05	kg
Output substances following waste treatment on site (wood packaging)	1.38	kg
Output substances following waste treatment on site (plastic packaging)	1.44	kg

Reference service life

Name	Value	Unit
Reference service life	35	a

Operational energy use (B6)

Name	Value	Unit
Electricity consumption per RSL (35 years, 220 days per year)	2958.7	kWh
Hours per day in on mode	0.05	h
Hours per day in stand-by mode	23.95	h
Hours per day in idle mode	0	h
Power consumption – on mode	500	W
Power consumption – stand-by mode	15	W
Power consumption – idle mode	0	W

For the remaining days (145 days) the power is being switched off.

*Total energy consumed during the whole product life was calculated using following formula:

*(W_active_mode*h_active_mode+W_idle_mode*h_idle_mode+W_stand_by_mode*h_stand_by_mode)*Life_span*days_year*0.001*

Where:

- W_active_mode - Energy consumption in active mode in W
- h_active_mode - Operation time in active mode in hours
- W_idle_mode - Energy consumption in idle mode in W
- h_idle_mode - Operation time in idle mode in hours
- W_stand_by_mode - Energy consumption in stand-by mode in W
- h_stand_by_mode - Operation time in stand-by mode in hours
- Life_span - Reference service life of product
- days_year - Operation days per year
- 0.001 - Conversion factor from MWh to kWh.

End of life (C1-C4)

Name	Value	Unit
Collected separately aluminium, steel, brass, plastics, stainless steel, copper, electronic, electro mechanics, wood etc.	279.40	kg
Incineration of plastic parts	71.38	kg
Recycling aluminium, steel, electronic, electro-mechanics, stainless steel, copper, brass	208.02	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Collected separately waste type (including packaging)	287.73	kg
Recycling aluminium	42.71	%
Recycling brass	0.01	%
Recycling copper	0.002	%
Recycling stainless steel	0.006	%
Recycling steel	26.36	%
Recycling electronic	0.29	%
Recyling electro mechanics	2.53	%
Incineration of plastic parts	25.31	%
Incineration of packaging (paper, wood and plastic) (from A5)	2.88	%
Recycling of steel packaging	0.017	%

5. LCA: Results

Results shown are calculated according to *EN 15804+A2*.

Note:
EP-freshwater: This indicator has been calculated as “kg P eq” as required in the characterization model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml).

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	X	X	MND	MND	MND	MND	MND	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of OH1042FI

Core Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	1,91E03	1,33E01	1,04E01	5,83E02	0.00E+0	1,71E00	1,92E02	0.00E+0	-1,12E03
GWP-fossil	[kg CO_2-Eq.]	1,85E03	1,32E01	3,49E-01	5,80E02	0.00E+0	1,70E00	1,92E02	0.00E+0	-1,12E03
GWP-biogenic	[kg CO_2-Eq.]	6,01E01	-2,23E-02	1,01E01	1,93E00	0.00E+0	-2,91E-03	-7,64E-03	0.00E+0	-2,12E00
GWP-luluc	[kg CO_2-Eq.]	1,16E00	1,06E-01	1,37E-04	8,41E-01	0.00E+0	1,38E-02	6,74E-03	0.00E+0	-3,82E-01
ODP	[kg CFC11-Eq.]	4,48E-08	1,59E-15	1,47E-15	1,28E-11	0.00E+0	2,05E-16	5,58E-14	0.00E+0	2,38E-10
AP	[mol H^+-Eq.]	7,60E00	1,67E-02	5,19E-03	1,28E00	0.00E+0	1,75E-03	2,55E-02	0.00E+0	-5,21E00
EP-freshwater	[kg PO_4-Eq.]	3,25E-03	4,00E-05	2,87E-07	1,55E-03	0.00E+0	5,18E-06	9,41E-06	0.00E+0	-5,02E-04
EP-marine	[kg N-Eq.]	1,21E00	4,75E-03	1,53E-03	2,84E-01	0.00E+0	5,09E-04	6,89E-03	0.00E+0	-6,45E-01
EP-terrestrial	[mol N-Eq.]	1,29E01	5,63E-02	1,80E-02	2,99E00	0.00E+0	6,14E-03	1,14E-01	0.00E+0	-7,02E00
POCP	[kg NMVOC-Eq.]	3,99E00	1,32E-02	4,50E-03	7,79E-01	0.00E+0	1,41E-03	1,98E-02	0.00E+0	-2,04E00
ADPE	[kg Sb-Eq.]	2,71E04	1,76E02	2,55E00	1,02E04	0.00E+0	2,27E01	7,46E01	0.00E+0	-1,41E04
ADPF	[MJ]	1,36E-02	9,45E-07	2,32E-08	1,68E-04	0.00E+0	1,22E-07	8,23E-07	0.00E+0	-6,35E-03
WDP	[m^3 world-Eq deprived]	2,19E02	1,18E-01	1,06E00	1,26E02	0.00E+0	1,52E-02	2,00E01	0.00E+0	-1,60E02
Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential									

RESULTS OF THE LCA - RESOURCE USE: One piece of OH1042FI

Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	[MJ]	7,93E+03	9,84E+00	1,45E+02	4,52E+03	0.00E+0	1,28E00	1,52E+01	0.00E+0	-5,94E03
PERM	[MJ]	1,45E+02	0.00E+0	-1,45E+02	0.00E+00	0.00E+0	0.00E+0	0,00E+00	0.00E+0	0.00E+0
PERT	[MJ]	8,07E+03	9,84E+00	4,63E-01	4,52E+03	0.00E+0	1,28E00	1,52E01	0.00E+0	-5,94E03
PENRE	[MJ]	2,42E+04	1,76E+02	3,41E+01	1,02E04	0.00E+0	2,27E01	3,09E+03	0.00E+0	-1,41E04
PENRM	[MJ]	3,04E+03	0.00E+0	-3,15E+01	0.00E+00	0.00E+0	0.00E+0	-3,01E+03	0.00E+0	0.00E+0
PENRT	[MJ]	2,72E+04	1,76E+02	2,55E+00	1,02E+04	0.00E+0	2,27E01	7,46E01	0.00E+0	-1,41E04
SM	[kg]	5,45E+01	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m^3]	1,86E01	1,14E-02	2,49E-02	5,23E00	0.00E+0	**1,48E-03**	**4,74E-01**	0.00E+0	-1,49E01
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of OH1042FI

Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	[kg]	3,71E-04	8,15E-06	3,92E-09	4,22E-06	0.00E+0	1,06E-06	2,53E-07	0.00E+0	-5,91E-06
NHWD	[kg]	3,88E02	2,69E-02	2,69E-01	7,24E00	0.00E+0	3,48E-03	1,85E01	0.00E+0	-2,73E02
RWD	[kg]	1,26E00	2,18E-04	1,32E-04	1,55E00	0.00E+0	2,81E-05	3,06E-03	0.00E+0	-8,50E-01
CRU	[kg]	0.00E+0	0.00E+0		0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	0,05E00	0.00E+0	0.00E+0	0.00E+0	2,08E02	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	8,28E00	0.00E+0	0.00E+0	0.00E+0	71,38E00	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	1,89E01	0.00E+0	0.00E+0	0.00E+0	4,25E02	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	3,15E01	0.00E+0	0.00E+0	0.00E+0	7,65E02	0.00E+0	0.00E+0
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy									

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: One piece of OH1042S

Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	[Disease Incidence]	7,70E-05	1,34E-07	2,52E-08	1,07E-05	0.00E+0	1,04E-08	3,56E-07	0.00E+0	-5,50E-05
IR	[kBq U235-Eq.]	2,31E02	3,15E-02	2,03E-02	2,54E02	0.00E+0	4,07E-03	3,94E-01	0.00E+0	-1,73E02
ETP-fw	[CTUe]	1,06E04	1,24E02	1,26E00	4,36E03	0.00E+0	1,60E01	5,39E01	0.00E+0	-4,81E03
HTP-c	[CTUh]	1,10E-06	2,60E-09	2,43E-10	1,20E-07	0.00E+0	3,36E-10	2,89E-09	0.00E+0	-6,50E-07
HTP-nc	[CTUh]	3,62E-05	1,34E-07	1,84E-08	4,44E-06	0.00E+0	1,73E-08	3,12E-07	0.00E+0	-9,63E-06
SQP	[-]	4,32E03	6,14E01	6,70E-01	3,25E03	0.00E+0	7,96E00	1,86E01	0.00E+0	-6,05E02
Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index									

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”.
This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”.
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. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. Stated percentages in the whole interpretation are related to the overall life cycle, excluding credits (module D).

The production stage (modules A1-A3) contributes between 64 % and 85 % to the overall results for all the environmental impact assessment categories hereby considered, except for the ozone depletion potential (ODP), for which the contribution from the production stage accounts for approx. 99,97 % - this impact category describes the reduction of the ozone layer in the stratosphere which is essential for life on earth, therefore, as expected, it is mainly related to the extraction of raw materials (A1).

Within the production stage, the main contribution for all the impact categories is the production of Aluminium and steel mainly due to the energy consumption of these processes. These two materials account for approx. 70,00 % to the overall mass of the product, therefore, the impacts are in line with the mass composition of the product. The environmental impacts for the transport (A2) have a negligible impact within this stage.

To reflect the use stage (module B6), the energy consumption was included, and it has a major contribution for all the impact assessment categories considered - between 14 % and 36 %, with the exception of ODP (0,03°%). This is a result of 0,17 hours of operation in on mode and 23,83 hours in stand-by mode per day and per 365 days in a year.

In the end-of-life stage, there are loads and benefits (module D, negative values) considered. The benefits are considered beyond the system boundaries and are declared for the recycling potential of the metals and for the credits from the incineration process (energy substitution).

7. Requisite evidence

Not applicable in this EPD.

8. References

Standards, norms, directives:

CPR
Regulation (EU) No. 305/2011, Construction Product Regulation (CPR)- laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

DIN EN ISO 10140-2
DIN EN ISO 10140-2:2010, Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation (ISO 10140-2:2010); German version EN ISO 10140-2:2010

DIN EN ISO 13849-1
DIN EN ISO 13849-1:2016, Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design

DIN 4102
DIN 4102-1 B2:1998, Reaction to fire tests - Ignitability of building products subjected to direct impingement of flame.

DIN EN 12424
DIN EN 12424:2000, Industrial, commercial and garage doors and gates - Resistance to wind load - Classification; German version EN 12424:2000

DIN EN 12426
DIN EN 12424:2000, Industrial, commercial and garage doors and gates. Air permeability. Classification; German version EN 12424:2000

DIN EN 12428
DIN EN 12428:2013, Industrial, commercial and garage doors - Thermal transmittance - Requirements for the calculation; German version EN 12428:2013

DIN EN ISO 14025
DIN EN ISO 14025:2010, Environmental labels and declarations - Type III environmental declarations - Principles and procedures

DIN EN 60335-1
DIN EN 60335-1:2020, Household and similar electrical appliances - Safety - Part 1: General requirements

DIN EN 60335-2
DIN EN 60335-2:2016, Household and similar electrical appliances - Safety - Part 2-103: Particular requirements for drives for gates, doors and windows

EN ISO 10140-2
EN ISO 10140-2:2010, Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation (ISO 10140-2:2010); German version EN ISO 10140-2:2010

EN 12425
EN 12425:2000, Industrial, commercial and garage doors and gates - Resistance to water penetration - Classification; German version EN 12425:2000

EN 12453
EN 12453:2017, Industrial, commercial and garage doors and gates – Safety in use of power operated doors – Requirements and test methods

EN 13241-1
EN 13241:2003+A2:2016, Industrial, commercial, garage doors and gates - Product standard, performance characteristics

EN 15804+A2
15804:2014+A2:2020, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

EN 61000-6-2
EN 61000-6-2:2005, Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments

EN 61000-6-3
EN 61000-6-3:2007: Electromagnetic compatibility (EMC) - Part 6-3: Generic Standards - Emission standard for residential, commercial and light-industrial environments

EWC
European Waste Catalogue established by Commission Decision 2000/532/EC

ISO 9001
ISO 9001:2015, Quality management systems - Requirements with guidance for us

ISO 14001
ISO 14001:2015, Environmental management systems — Requirements with guidance for use

2006/42/EC
European directive on machinery, and amending Directive 95/16/EC (recast)

2011/65/EC
European directive on the restriction of the use of certain hazardous substances in electrical and electronical equipment, and its amendment directives including 2015/863/EC (RoHS directive)

2012/19/EU
European directive on waste electrical and electronic equipment (WEEE)

2014/30/EU
European directive on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)

2015/863/EU
European directive amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances

Other sources:

GaBi 10 2021a
GaBi 10 2021: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Echterdingen, 1992-2018.

GaBi 10 2021b
GaBi 10 2021b: Documentation of GaBi 8: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Echterdingen, 1992-2021.
https:gabi.sphera.com/internationalsupportgabi

IBU PCR Part A:2019
Institut Bauen und Umwelt e.V., Königswinter (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. Version 1.8 April 2019
www.ibu-epd.de

IBU PCR Part B: 2017
IBU PCR Part B: PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B: Requirements on the EPD for Automatic doors, automatic gates and revolving door systems Version 1.6 (11. 2017) www.ibu-epd.com

IBU 2021
General Instructions for the EPD programme of Institut Bauen und Umwelt e.V. Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021.
www.ibu-epd.com

TRACI Methodology
Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI), EPA/600/R-12/554 2012

9. Annexe

Results shown below were calculated using *TRACI Methodology*.

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	X	X	MND	MND	MND	MND	MND	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of OH1042FI

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO2-Äq.]	1,85E+03	1,30E+01	1,04E+01	5,69E+02	1,67E+00	1,91E+02	0,00E+00	-1,11E+03
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Äq.]	5,97E-08	2,12E-15	1,96E-15	1,70E-11	2,73E-16	7,44E-14	0,00E+00	4,64E-10
AP	Acidification potential of land and water	[kg SO2-Äq.]	6,51	1,42E-02	6,63E-03	1,25E+00	1,48E-03	5,31E-02	0,00E+00	-4,36E+00
EP	Eutrophication potential	[kg PO43-- Äq.]	0,272	1,57E-03	2,58E-04	1,17E-01	1,91E-04	1,59E-03	0,00E+00	-1,16E-01
Smog	Ground-level smog formation potential	[kg Ethen Äq.]	75,1	2,43E-01	9,75E-02	1,66E+01	2,46E-02	4,10E-01	0,00E+00	-4,17E+01
Resources	Resources – resources fossil	[kg Sb Äq.]	2,69E+03	2,53E+01	2,57E-01	4,32E+02	3,26E+00	5,77E+00	0,00E+00	-1,21E+03

RESULTS OF THE LCA - RESOURCE USE: One piece of OH1042FI

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	7,93E+03	9,84	1,45E+02	4,52E+03	1,28E+00	1,52E+01	0,00E+00	-5,94E+03
PERM	Renewable primary energy resources as material utilization	[MJ]	1,45E+02	0,00E+00	-1,45E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	Total use of renewable primary energy resources	[MJ]	8,07E+03	9,84	0,463	4,52E+03	1,28E+00	1,52E+01	0,00E+00	-5,94E+03
PENRE	Non-renewable primary energy as energy carrier	[MJ]	2,42E+04	1,76E02	3,41E+01	1,02E+04	2,27E+01	3,09E+03	0E+00	-1,41E+04
PENRM	Non-renewable primary energy as material utilization	[MJ]	3,04E+03	0E+00	-3,15E+01	0E+00	0E+00	-3,01E+03	0E+00	0E+00
PENRT	Total use of non-renewable primary energy resources	[MJ]	2,72E+04	176	2,55	1,02E+04	2,27E+01	7,46E+01	0E+00	-1,41E+04
SM	Use of secondary material	[kg]	5,45E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

RSF	Use of renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	Use of non-renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	Use of net fresh water	[m³]	18,6	1,14E-02	2,49E-02	5,23	1,48E-03	4,74E-01	0,00E+00	-1,49E+01

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of OH1042FI

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	3,71E-04	8,15E-06	3,92E-09	4,22E-06	1,06E-06	2,53E-07	0,00E+00	-5,91E-06
NHWD	Non-hazardous waste disposed	[kg]	388	2,69E-02	0,269	7,24	3,48E-03	1,85E+01	0,00E+00	-2,73E+02
RWD	Radioactive waste disposed	[kg]	1,26	2,18E-04	1,32E-04	1,55	2,81E-05	3,06E-03	0,00E+00	-8,50E-01
CRU	Components for re-use	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	Materials for recycling	[kg]	0,00E+00	0,00E+00	0,05E00	0.00E+0	0.00E+0	2,08E02	0,00E+00	0,00E+00
MER	Materials for energy recovery	[kg]	0,00E+00	0,00E+00	8,28E00	0.00E+0	0.00E+0	71,38E00	0,00E+00	0,00E+00
EEE	Exported electrical energy	[MJ]	0,00E+00	0,00E+00	1,89E+01	0,00E+00	0,00E+00	4,25E+02	0,00E+00	0,00E+00
EET	Exported thermal energy	[MJ]	0,00E+00	0,00E+00	3,15E+01	0,00E+00	0,00E+00	7,65E+02	0,00E+00	0,00E+00

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