

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)
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ASSA ABLOY OH1042DD overhead sectional door ASSA ABLOY Entrance Systems



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1. General Information

ASSA ABLOY	ASSA ABLOY OH1042DD overhead sectional door
<p>Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p>	<p>Owner of the Declaration ASSA ABLOY Entrance Systems AB Lodjursgatan 10 SE-261 44 Landskrona Sweden</p>
<p>Declaration number EPD-ASA-20200097-IBC1-EN</p>	<p>Declared product / Declared unit This declaration represents 1 industrial overhead sectional door with electrical operation, 3600 mm width and 3600 mm height, consisting of panels filled with water-blown CFC-free polyurethane foam, panel thickness 42 mm and panel height 545 mm.</p>
<p>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)</p>	<p>Scope: This declaration and its LCA study are relevant to the ASSA ABLOY OH1042DD overhead sectional door. The production location is Heerhugowaard, Netherlands and components are sourced from international tier one suppliers. ASSA ABLOY OH1042DD overhead sectional door size vary according to project requirements; a standard door 3600 mm width and 3600 mm height with insulated panels filled with CFC-free polyurethane, panel thickness 42 mm, panel height 545 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 <i>EN 15804+A2</i>. In the following, the standard will be simplified as <i>EN 15804</i>.</p>
<p>Issue date 08.02.2022</p>	<p>Verification The CEN Standard <i>EN 15804</i> serves as the core PCR Independent verification of the declaration and data according to <i>ISO 14025</i> <input type="checkbox"/> internally <input checked="" type="checkbox"/> externally</p>
<p>Valid to 07.02.2027</p>	<p></p>
<p> Dipl.-Ing. Hans Peters (President of IBU e.V.)</p>	<p> Dr. Wolfram Trinius (Independent tester appointed by SVA)</p>
<p> Dr. Alexander Röder (Managing Director of IBU e.V.)</p>	

2. Product

2.1 Product description

Product name: ASSA ABLOY OH1042DD overhead sectional door

Modern, robust and flexible, the new OH1042DD overhead sectional direct drive door from ASSA ABLOY Entrance Systems is designed to keep your business moving – for all duties and in all weathers. Filled with innovation, and well insulated, this rugged, attractive overhead sectional door gives you the highest number of options at the lowest possible running cost.

This high-quality door is the perfect choice for warehouses, logistics centres and all kinds of business premises.

The surface is made of waffled steel or aluminium. The panel has integrated finger pinch protection. There is

top, bottom and side seals and seals between door sections. The standard track system is made of galvanized steel. The door does not have a conventional balancing system, instead, it operates with a stronger motor design to handle the complete load of the door. In case of a cable break, the door is equipped with two safety devices that block door movement; Slack Rope Switches (standard).

The door has 4 primary parts:

- 1) Door leaf
- 2) Track set
- 3) Lifting mechanism
- 4) Operating system/chain hoist (optional).

The ASSA ABLOY OH1042DD 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 products need 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: *EN 12424* Class 3
- Thermal transmittance: *EN 12428* 1.1 W/(m².K) Steel door (Door surface 4050 x 4250 mm)
- Water penetration: *EN 12425* Class 3
- Air permeability: *EN 12426* Class 3
- Acoustic insulation: *EN ISO 10140-2* R=25 dB (Door surface 2590 x 4210 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 Electronic Equipment (WEEE) Directive within Europe, *Directive 2012/19/EU*

2.2 Application

If the product reliability is of utmost importance for your business and an eventual breakdown like a spring breakage would create big concerns, the ASSA ABLOY OH1042DD would be the right choice for you since this door type is designed as a standard door but the normal spring package is replaced by a strong and reliable motor and control system which will manoeuvre the door both up and down in a very safe and reliable manner.

2.3 Technical Data

The table presents the technical properties of the ASSA ABLOY OH1042DD overhead sectional door:

Technical data

Name	Value	Unit
Max size: (W x H)	3600 x 3600	mm
Panel thickness:	42	mm
Panel material:	Waffled steel or aluminium	
Filling:	CFC-free polyurethane	
Weight	Steel: 13 kg/m ² Alu: 10 kg/m ²	
Colour outside:	14 Standard RAL colours	
Colour inside:	RAL 9002	
Track types:	Standard: SL Optional: HL, VL	
Windows (optional):	Optional: DARP, DAOP, Framed section	
Passdoor (optional):	Standard threshold	
Electrical operation:	Automated operation, Access control, Safety functions	
Opening/ closing speed:	0.17 m/s up and down	

2.4 Delivery status

ASSA ABLOY OH1042DD overhead sectional door unit with a door size of width 3600 mm and height 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.

2.5 Base materials/Ancillary materials

The average composition for ASSA ABLOY OH1042DD overhead sectional door is as following:

Component	Percentage in mass (%)
Aluminium	1.877
Copper	1.386
Plastics	19.106
Stainless steel	1.626
Steel	74.183
Iron	0.444
Electronic	0.247
Electro_mechanics	1.132
Total	100

2.6 Manufacture

The final manufacturing processes occur at the factory in Heerhugowaard, The Netherlands. The electronics are produced in Ostrov u Stribra, Czech Republic. The factory in Heerhugowaard, The 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. 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, volatile organic compounds (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, Netherlands has certification of Environmental Management to *ISO 14001*.

- Any waste metals during machining are separated and recycled.

2.8 Product processing/Installation

The overhead sectional door components are supplied ready for installation. The panels, tracks 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 OH1042DD overhead sectional door components are packaged in polystyrene plastic and corrugated cardboard. All of these packaging components are standard industry types. The cardboard is recyclable.

Material	Value (%)
Cardboard/paper	57.44
Wood	21.73
Plastics	20.83
Total	100.0

All materials incurred during installation are sent to a waste incineration plant (wood paper and plastic) for its energy recovery.

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.

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 OH1042DD 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 of 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

Contains 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

ASSA ABLOY

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 disassembled to separate the different materials. The majority of components are steel and plastic which will be recycled. The plastic components are used for energy recovery in an incineration plant. No disposal is foreseen for the product nor for the corresponding packaging.

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 OH1042DD overhead sectional door (width of 3600 mm and 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)	202.50	kg
Mass packaging (paper wood, steel and plastics)	6.63	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 round 157 hours in on mode and finally 8603 hours in idle mode per year (365 days per year in use); the power consumption throughout the whole life cycle is 2304 kWh (all numbers rounded).

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 and brass), a recycling scenario with a 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 10 Software System for Life Cycle Engineering, developed by thinkstep AG, is used *GaBi 10 2021a*. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation *GaBi 10 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 10 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 10 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	2.330	kg C

Transport to the building site (A4)

Name	Value	Unit
Truck transport		
Litres of fuel diesel with maximum load (27t payload)	27.505	kg/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)	3.810	kg
Output substances following waste treatment on site (wood packaging)	1.380	kg
Output substances following waste treatment on site (plastic packaging)	1.440	kg

Reference service life

Name	Value	Unit
Reference service life	10	a

Operational energy use (B6)

Name	Value	Unit
Electricity consumption per RSL (10 years, 365 days per year)	2304.245	kWh
Hours per day in on mode	0.430	h
Hours per day in stand-by mode	23.570	h
Hours per day in idle mode	0	h
Power consumption – on mode	920	W
Power consumption – stand-by mode	10	W
Power consumption – idle mode	0	W

*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 Wh to kWh.

End of life (C1-C4)

Name	Value	Unit
Collected separately aluminium, steel, brass, plastics, stainless steel, copper, electronic, electromechanics etc.	202.504	kg
Incineration of plastic parts	38.690	kg
Recycling aluminium, steel, electronic, electro-mechanics, stainless steel, copper, iron and brass	163.814	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	209.140	kg
Recycling aluminium	1.817	%
Recycling copper	1.342	%
Recycling stainless steel	1.574	%
Recycling steel	71.830	%
Recycling iron	0.430	%
Recycling electronic	0.239	%
Recycling electro mechanics	1.096	%
Incineration of plastic parts	18.50	%
Incineration of packaging (paper, wood and plastic) (from A5)	3.171	%

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 OH1042DD

Core Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ -Eq.]	7.74E02	9.52E00	8.11E00	9.32E02	0.00E0	1.22E00	1.00E02	0.00E0	-1.75E02
GWP-fossil	[kg CO ₂ -Eq.]	7.61E02	9.46E00	2.91E-01	9.28E02	0.00E0	1.21E00	1.00E02	0.00E0	-1.75E02
GWP-biogenic	[kg CO ₂ -Eq.]	1.23E01	-1.60E-02	7.82E00	3.09E00	0.00E0	-2.08E-03	-4.96E-03	0.00E0	-1.52E-01
GWP-luluc	[kg CO ₂ -Eq.]	6.40E-01	7.62E-02	9.81E-05	1.34E00	0.00E0	9.84E-03	3.52E-03	0.00E0	-5.40E-02
ODP	[kg CFC11-Eq.]	3.88E-08	1.14E-15	1.05E-15	2.04E-11	0.00E0	1.46E-16	2.92E-14	0.00E0	7.16E-12
AP	[mol H ⁺ -Eq.]	1.98E00	1.20E-02	4.54E-03	2.05E00	0.00E0	1.25E-03	1.33E-02	0.00E0	-5.03E-01
EP-freshwater	[kg PO ₄ -Eq.]	1.44E-03	2.86E-05	2.04E-07	2.48E-03	0.00E0	3.69E-06	4.92E-06	0.00E0	-1.09E-04
EP-marine	[kg N-Eq.]	4.29E-01	3.40E-03	1.29E-03	4.55E-01	0.00E0	3.63E-04	3.60E-03	0.00E0	-9.18E-02
EP-terrestrial	[mol N-Eq.]	4.59E00	4.03E-02	1.51E-02	4.78E00	0.00E0	4.37E-03	5.96E-02	0.00E0	-9.94E-01
POCP	[kg NMVOC-Eq.]	1.40E00	9.47E-03	3.87E-03	1.25E00	0.00E0	1.01E-03	1.03E-02	0.00E0	-2.93E-01
ADPE	[kg Sb-Eq.]	1.06E04	1.26E02	1.81E00	1.63E04	0.00E0	1.62E01	3.90E01	0.00E0	-2.01E03
ADPF	[MJ]	2.58E-02	6.77E-07	1.66E-08	2.68E-04	0.00E0	8.72E-08	4.30E-07	0.00E0	-1.91E-02
WDP	[m ³ world-Eq deprived]	5.88E01	8.43E-02	7.70E-01	2.02E02	0.00E0	1.09E-02	1.05E01	0.00E0	-6.17E00

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 OH1042DD

Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	[MJ]	1.69E03	0.00E0	1.16E02	0.00E0	0.00E0	0.00E0	7.93E00	0.00E0	0.00E0
PERM	[MJ]	1.16E02	0.00E0	-1.16E02	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
PERT	[MJ]	1.81E03	7.05E00	3.29E-01	7.23E03	0.00E0	9.10E-01	7.93E00	0.00E0	-3.26E02
PENRE	[MJ]	9.07E03	0.00E0	3.40E01	0.00E0	0.00E0	0.00E0	1.64E03	0.00E0	0.00E0
PENRM	[MJ]	1.63E03	0.00E0	-3.22E01	0.00E0	0.00E0	0.00E0	-1.60E03	0.00E0	0.00E0
PENRT	[MJ]	1.07E04	1.26E02	1.81E00	1.63E04	0.00E0	1.62E01	3.90E01	0.00E0	-2.03E03
SM	[kg]	1.66E02	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
RSF	[MJ]	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
NRSF	[MJ]	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
FW	[m ³]	3.32E00	8.16E-03	1.81E-02	8.36E00	0.00E0	1.05E-03	2.48E-01	0.00E0	-8.20E-01

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 OH1042DD

Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	[kg]	6.00E-05	5.84E-06	2.84E-09	6.75E-06	0.00E0	7.54E-07	1.32E-07	0.00E0	-1.17E-06
NHWD	[kg]	3.43E01	1.93E-02	1.96E-01	1.16E01	0.00E0	2.48E-03	9.68E00	0.00E0	-1.52E01
RWD	[kg]	2.57E-01	1.56E-04	9.31E-05	2.47E00	0.00E0	2.01E-05	1.60E-03	0.00E0	-8.50E-02
CRU	[kg]	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
MFR	[kg]	0.00E0	0.00E0	5.19E00	0.00E0	0.00E0	0.00E0	1.61E02	0.00E0	0.00E0
MER	[kg]	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
EEE	[MJ]	0.00E0	0.00E0	1.53E01	0.00E0	0.00E0	0.00E0	2.22E02	0.00E0	0.00E0
EET	[MJ]	0.00E0	0.00E0	2.50E01	0.00E0	0.00E0	0.00E0	4.00E02	0.00E0	0.00E0

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 RR5000										
Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	[Disease Incidence]	2.61E-05	9.62E-08	2.15E-08	1.72E-05	0.00E0	7.42E-09	1.86E-07	0.00E0	-5.90E-06
IR	[kBq U235-Eq.]	3.22E01	2.26E-02	1.43E-02	4.06E02	0.00E0	2.90E-03	2.06E-01	0.00E0	-1.54E01
ETP-fw	[CTUe]	3.86E03	8.91E01	9.11E-01	6.98E03	0.00E0	1.14E01	2.82E01	0.00E0	-5.82E02
HTP-c	[CTUh]	5.77E-06	1.87E-09	2.24E-10	1.93E-07	0.00E0	2.40E-10	1.51E-09	0.00E0	-1.68E-07
HTP-nc	[CTUh]	1.56E-05	9.62E-08	1.76E-08	7.10E-06	0.00E0	1.24E-08	1.63E-07	0.00E0	-1.79E-06
SQP	[-]	2.42E03	4.40E01	4.74E-01	5.19E03	0.00E0	5.68E00	9.70E00	0.00E0	-2.08E02
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 36.39 % and 52.34 % to the overall results for all the environmental impact assessment categories hereby considered, except for the abiotic depletion potential (ADPE), for which the contribution from the production stage accounts for approx. 39.14 % - this impact category describes the reduction of the global amount of non-renewable raw materials, therefore, as expected, it is mainly related to the extraction of raw materials (A1). Also, ODP shows a higher contribution of 99.95 %

Within the production stage, the main contribution for all the impact categories is the production of steel and plastic mainly due to the energy consumption of these processes. These two materials account for

approx. 76.06 % 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 51.07 % and 64.74 %, with the exception of ODP (0.5%). This is a result of 0.43 hours of operation in on mode and 23.57 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

EN 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 use

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 electronic 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 BOUNDARIES
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 OH1042DD

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C1	C2	C3	C4	D
GWP	Global warming potential, excl. biogenic	[kg CO2-eq.]	7.45E+02	9.34E+00	2.80E-01	9.14E+02	0.00E0	1.20E+00	1.00E+02	0.00E0	-1.72E+02
GWP	Global warming potential, incl. biogenic	[kg CO2-eq.]	7.51E+02	9.29E+00	8.09E+00	9.10E+02	0.00E0	1.19E+00	1.00E+02	0.00E0	-1.72E+02
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-eq.]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E0	0.00E+00	0.00E+00	0.00E0	0.00E+00
AP	Acidification potential of land and water	[kg SO2-eq.]	1.73E+00	1.00E-02	1.00E-02	1.99E+00	0.00E0	0.00E+00	3.00E-02	0.00E0	-4.30E-01
EP	Eutrophication potential	[kg N-eq.]	1.10E-01	0.00E+00	0.00E+00	1.90E-01	0.00E0	0.00E+00	0.00E+00	0.00E0	-2.00E-02
Smog	Ground-level smog formation potential	[kg O3-eq.]	2.65E+01	1.70E-01	8.00E-02	2.65E+01	0.00E0	2.00E-02	2.10E-01	0.00E0	-5.82E+00
Resources	Resources – resources fossil	[MJ surplus energy]	9.38E+02	1.81E+01	1.80E-01	6.91E+02	0.00E0	2.32E+00	3.02E+00	0.00E0	-1.33E+02

RESULTS OF THE LCA - RESOURCE USE: One piece of OH1042DD

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	1.69E03	0.00E0	1.16E02	0.00E0	0.00E0	0.00E0	7.93E00	0.00E0	0.00E0
PERM	Renewable primary energy resources as material utilization	[MJ]	1.16E02	0.00E0	-1.16E02	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
PERT	Total use of renewable primary energy resources	[MJ]	1.81E03	7.05E00	3.29E-01	7.23E03	0.00E0	9.10E-01	7.93E00	0.00E0	-3.26E02
PENRE	Non-renewable primary energy as energy carrier	[MJ]	9.07E03	0.00E0	3.40E01	0.00E0	0.00E0	0.00E0	1.64E03	0.00E0	0.00E0
PENRM	Non-renewable primary energy as material utilization	[MJ]	1.63E03	0.00E0	-3.22E01	0.00E0	0.00E0	0.00E0	-1.60E03	0.00E0	0.00E0
PENRT	Total use of non-renewable primary energy resources	[MJ]	1.07E04	1.26E02	1.81E00	1.63E04	0.00E0	1.62E01	3.90E01	0.00E0	-2.03E03
SM	Use of secondary material	[kg]	1.66E02	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
RSF	Use of renewable secondary fuels	[MJ]	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0

NRSF	Use of non-renewable secondary fuels	[MJ]	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
FW	Use of net fresh water	[m³]	3.32E00	8.16E-03	1.81E-02	8.36E00	0.00E0	1.05E-03	2.48E-01	0.00E0	-8.20E-01

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of OH1042DD

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	6.00E-05	5.84E-06	2.84E-09	6.75E-06	0.00E0	7.54E-07	1.32E-07	0.00E0	-1.17E-06
NHWD	Non-hazardous waste disposed	[kg]	3.43E01	1.93E-02	1.96E-01	1.16E01	0.00E0	2.48E-03	9.68E00	0.00E0	-1.52E01
RWD	Radioactive waste disposed	[kg]	2.57E-01	1.56E-04	9.31E-05	2.47E00	0.00E0	2.01E-05	1.60E-03	0.00E0	-8.50E-02
CRU	Components for re-use	[kg]	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
MFR	Materials for recycling	[kg]	0.00E0	0.00E0	5.19E00	0.00E0	0.00E0	0.00E0	1.61E02	0.00E0	0.00E0
MER	Materials for energy recovery	[kg]	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
EEE	Exported electrical energy	[MJ]	0.00E0	0.00E0	1.53E01	0.00E0	0.00E0	0.00E0	2.22E02	0.00E0	0.00E0
EET	Exported thermal energy	[MJ]	0.00E0	0.00E0	2.50E01	0.00E0	0.00E0	0.00E0	4.00E02	0.00E0	0.00E0

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