

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 OH1042FGI overhead sectional door ASSA ABLOY Entrance Systems



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1. General Information

<p>ASSA ABLOY</p> <hr/> <p>Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p> <hr/> <p>Declaration number EPD-ASA-20200095-IBC1-EN</p> <hr/> <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> <hr/> <p>Issue date 08.02.2022</p> <p>Valid to 07.02.2027</p> <hr/> <p> Dipl.-Ing. Hans Peters (Chairman of Institut Bauen und Umwelt e.V.)</p> <hr/> <p> Dr. Alexander Röder (Managing Director IBU)</p>	<p>ASSA ABLOY OH1042FGI overhead sectional door</p> <hr/> <p>Owner of the Declaration ASSA ABLOY Entrance Systems AB Lodjursgatan 10 SE-261 44 Landskrona Sweden</p> <hr/> <p>Declared product / Declared unit This declaration represents 1 industrial overhead sectional door with insulated frame sections and with electrical operation. The door is DLW3600 x DLH3600mm. All sections are insulated frame sections with DH4D* infills. The frame thickness is 42mm. * = Double Hard glass, 4mm, double sealed.</p> <hr/> <p>Scope: This declaration and its LCA study are relevant to the ASSA ABLOY OH1042FGI overhead sectional door. The production location is Heerhugowaard, Netherlands and components are sourced from international tier one suppliers. The ASSA ABLOY OH1042FGI overhead sectional door size varies according to the customer. The most average door size of DLW3600 x DLH3600mm 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.</p> <hr/> <p>Verification The CEN Standard EN 15804 serves as the core PCR Independent verification of the declaration and data according to ISO 14025</p> <p><input type="checkbox"/> internally <input checked="" type="checkbox"/> externally</p> <hr/> <p> Dr. Wolfram Trinius (Independent tester appointed by SVA)</p>
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2. Product

2.1 Product description

Product name: ASSA ABLOY OH1042FGI overhead sectional door

The ASSA ABLOY OH1042FGI 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
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

The door has 4 primary parts:

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

The ASSA ABLOY OH1042FGI 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: *EN12424*
Class 3 (≤ 4250 mm DLW)
Class 2(> 4250 mm DLW) (Higher classes on request)
- Thermal transmittance: *EN12428*
2.1 W/(m²·K) Double energy glazing
(valid for a DLW3600 x DLH3600 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 OH1042FGI 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 OH1042FGI overhead sectional door:

Technical data

Name	Value	Unit
Max width:	5500	mm
Max height:	4250	mm
Frame thickness:	42	mm
Frame material:	insulated aluminium profiles	[-]
Filling:	- double hard glass	[-]
Colour outside:	Natural aluminium	[-]
Colour inside:	Natural aluminium	[-]
Track types:	Standard: SL optional: HL, LL, VL, HHL, SLL	[-]
Window types:	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 OH1042FGI 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 OH1042FGI 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 OH1042FGI overhead sectional door, is as following:

Component	Percentage in mass (%)
Aluminium	29.051
Brass	0.006
Copper	0.001
Plastics	6.804

Stainless steel	0.046
Steel	16.376
Zinc	0.252
Glass	44.584
Electronic	0.176
Electro_mechanics	1.562
Others	1.141
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, Volatile Organic Compound (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 OH1042FGI 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 OH1042FGI 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 the carton is made from recycled material

100 % of packaging paper is made from recycled material.

Material	Value (%)
Cardboard/paper	65.53
Plastics	17.29
Wood	16.58
Steel	0.60
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 OH1042FGI 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 or 10 years 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
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 aluminium 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 OH1042FGI 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)	465.37	kg
Mass packaging (paper wood, steel and plastics)	8.333	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 62 hours in on mode and finally 8698 hours in standby mode per year (365 days per year in use); the power consumption throughout the whole life cycle is 1141. 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 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	3.040	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)	5.460	kg
Output substances following waste treatment on site (steel packaging)	0.050	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)	1440.984	kWh
Hours per day in on mode	0.170	h
Hours per day in stand-by mode	23.830	h
Hours per day in idle mode	0	h
Power consumption – on mode	500	W
Power consumption – stand-by mode	13	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	465.373	kg
Incineration of plastic parts	31.666	kg
Incineration of paper	0	kg
Recycling aluminium, steel, electronic, electro-mechanics, stainless steel, copper, brass	220.920	kg
Landfill	212.787	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	260.920	kg
Recycling aluminium	51.816	%
Recycling brass	0.011	%
Recycling copper	0.002	%
Recycling stainless steel	0.083	%
Recycling steel	29.208	%
Recycling Zinc	0.450	%
Recycling electronic	0.314	%
Recycling electro mechanics	2.786	%
Incineration of plastic parts	12.136	%
Incineration of packaging (paper, wood and plastic) (from A5)	3.174	%
Recycling of steel packaging	0.019	%

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 OH1042FGI

Core Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ -Eq.]	2.16E03	2.16E01	1.22E01	5.83E02	0.00E0	2.81E00	9.53E01	7.77E00	-1.20E03
GWP-fossil	[kg CO ₂ -Eq.]	2.10E03	2.14E01	2.11E00	5.80E02	0.00E0	2.79E00	9.53E01	7.95E00	-1.20E03
GWP-biogenic	[kg CO ₂ -Eq.]	5.95E01	-3.62E-02	1.01E01	1.93E00	0.00E0	-4.77E-03	6.34E-04	-1.86E-01	-2.21E00
GWP-luluc	[kg CO ₂ -Eq.]	1.14E00	1.73E-01	1.99E-04	8.41E-01	0.00E0	2.26E-02	4.81E-03	7.33E-03	-3.95E-01
ODP	[kg CFC11-Eq.]	2.13E-08	2.58E-15	1.98E-15	1.28E-11	0.00E0	3.36E-16	5.01E-14	1.50E-14	2.63E-10
AP	[mol H ⁺ -Eq.]	1.05E01	2.71E-02	5.43E-03	1.28E00	0.00E0	2.86E-03	1.48E-02	2.07E-02	-5.92E00
EP-freshwater	[kg PO ₄ -Eq.]	3.20E-03	6.49E-05	3.73E-07	1.55E-03	0.00E0	8.49E-06	7.38E-06	5.41E-06	-4.81E-04
EP-marine	[kg N-Eq.]	1.79E00	7.71E-03	1.59E-03	2.84E-01	0.00E0	8.35E-04	3.89E-03	6.18E-03	-7.17E-01
EP-terrestrial	[mol N-Eq.]	1.96E01	9.14E-02	1.91E-02	2.99E00	0.00E0	1.01E-02	6.13E-02	6.95E-02	-7.81E00
POCP	[kg NMVOC-Eq.]	5.26E00	2.14E-02	4.68E-03	7.79E-01	0.00E0	2.32E-03	1.11E-02	1.79E-02	-2.27E00
ADPE	[kg Sb-Eq.]	2.83E04	2.86E02	3.23E00	1.02E04	0.00E0	3.72E01	5.48E01	3.61E01	-1.48E04
ADPF	[MJ]	2.09E-02	1.53E-06	3.08E-08	1.68E-04	0.00E0	2.00E-07	7.04E-07	2.79E-07	-1.58E-02
WDP	[m ³ world-Eq deprived]	2.54E02	1.91E-01	1.24E00	1.26E02	0.00E0	2.50E-02	1.00E01	1.46E00	-1.74E02

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 OH1042FGI

Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	[MJ]	8.69E03	0.00E0	1.45E02	0.00E0	0.00E0	0.00E0	1.55E01	0.00E0	0.00E0
PERM	[MJ]	1.45E02	0.00E0	-1.45E02	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
PERT	[MJ]	8.83E03	1.60E01	6.03E-01	4.52E03	0.00E0	2.09E00	1.55E01	5.47E00	-6.38E03
PENRE	[MJ]	2.68E04	0.00E0	3.48E01	0.00E0	0.00E0	0.00E0	1.48E03	0.00E0	0.00E0
PENRM	[MJ]	1.45E03	0.00E0	-3.15E01	0.00E0	0.00E0	0.00E0	-1.42E03	0.00E0	0.00E0
PENRT	[MJ]	2.83E04	2.86E02	3.23E00	1.02E04	0.00E0	3.72E01	5.48E01	3.61E01	-1.48E04
SM	[kg]	1.07E02	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]	2.04E01	1.85E-02	2.93E-02	5.23E00	0.00E0	2.42E-03	2.42E-01	3.66E-02	-1.63E01

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 OH1042FGI

Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	[kg]	1.93E-04	1.32E-05	6.25E-09	4.22E-06	0.00E0	1.73E-06	1.32E-07	4.98E-07	-6.56E-06
NHWD	[kg]	4.42E02	4.37E-02	4.39E-01	7.24E00	0.00E0	5.70E-03	9.11E00	1.57E02	-3.05E02
RWD	[kg]	1.33E00	3.54E-04	1.60E-04	1.55E00	0.00E0	4.61E-05	4.26E-03	5.58E-04	-8.74E-01
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	6.84E00	0.00E0	0.00E0	0.00E0	4.20E02	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	2.28E01	0.00E0	0.00E0	0.00E0	2.09E02	0.00E0	0.00E0
EET	[MJ]	0.00E0	0.00E0	3.85E01	0.00E0	0.00E0	0.00E0	3.76E02	0.00E0	0.00E0

Capton 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]	9.79E-05	2.18E-07	2.84E-08	1.07E-05	0.00E0	1.71E-08	1.94E-07	2.52E-07	-6.22E-05
IR	[kBq U235-Eq.]	2.52E02	5.11E-02	2.39E-02	2.54E02	0.00E0	6.66E-03	6.46E-01	5.49E-02	-1.81E02
ETP-fw	[CTUe]	1.53E04	2.02E02	1.76E00	4.36E03	0.00E0	2.63E01	3.42E01	2.00E01	-5.20E03
HTP-c	[CTUh]	1.26E-06	4.23E-09	2.70E-10	1.20E-07	0.00E0	5.51E-10	1.64E-09	2.95E-09	-7.27E-07
HTP-nc	[CTUh]	4.11E-05	2.18E-07	2.13E-08	4.44E-06	0.00E0	2.84E-08	1.61E-07	3.10E-07	-1.15E-05
SQP	[]	4.67E03	9.96E01	8.41E-01	3.25E03	0.00E0	1.30E01	1.49E01	8.20E00	-5.60E02

Capton 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 66.16 % and 88.60 % 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. 72.72 % - 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 99.94 %

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

approx. 45.43 % 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 20.22 % and 38.42 %, with the exception of ODP (0.06 %). 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

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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

Regulation (EU) No 305/2011

Regulation of the European parliament and the council laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

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

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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

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

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 OH1042FGI

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C1	C2	C3	C4	D
GWP	Global warming potential, excl. biogenic	[kg CO ₂ -eq.]	2.10E+03	2.11E+01	2.09E+00	5.72E+02	0.00E0	2.75E+00	9.50E+01	7.84E+00	-1.18E+03
GWP	Global warming potential, incl. biogenic	[kg CO ₂ -eq.]	2.10E+03	2.11E+01	1.22E+01	5.69E+02	0.00E0	2.74E+00	9.50E+01	7.64E+00	-1.19E+03
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	0.00E+00	0.00E+00
AP	Acidification potential of land and water	[kg SO ₂ -eq.]	8.96E+00	2.00E-02	1.00E-02	1.25E+00	0.00E0	0.00E+00	3.00E-02	2.00E-02	-4.93E+00
EP	Eutrophication potential	[kg N- eq.]	3.40E-01	0.00E+00	0.00E+00	1.20E-01	0.00E0	0.00E+00	0.00E+00	0.00E+00	-1.30E-01
Smog	Ground-level smog formation potential	[kg O ₃ -eq.]	1.02E+02	3.90E-01	1.00E-01	1.66E+01	0.00E0	4.00E-02	2.30E-01	3.90E-01	-4.64E+01
Resources	Resources – resources fossil	[MJ surplus energy]	2.69E+03	4.10E+01	3.10E-01	4.32E+02	0.00E0	5.34E+00	3.61E+00	4.29E+00	-1.25E+03

RESULTS OF THE LCA - RESOURCE USE: One piece of OH1042FGI

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	8.69E03	0.00E0	1.45E02	0.00E0	0.00E0	0.00E0	1.55E01	0.00E0	0.00E0
PERM	Renewable primary energy resources as material utilization	[MJ]	1.45E02	0.00E0	-1.45E02	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0	0.00E0
PERT	Total use of renewable primary energy resources	[MJ]	8.83E03	1.60E01	6.03E-01	4.52E03	0.00E0	2.09E00	1.55E01	5.47E00	-6.38E03
PENRE	Non-renewable primary energy as energy carrier	[MJ]	2.68E04	0.00E0	3.48E01	0.00E0	0.00E0	0.00E0	1.48E03	0.00E0	0.00E0
PENRM	Non-renewable primary energy as material utilization	[MJ]	1.45E03	0.00E0	-3.15E01	0.00E0	0.00E0	0.00E0	-1.42E03	0.00E0	0.00E0
PENRT	Total use of non-renewable primary energy resources	[MJ]	2.83E04	2.86E02	3.23E00	1.02E04	0.00E0	3.72E01	5.48E01	3.61E01	-1.48E04
SM	Use of secondary material	[kg]	1.07E02	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]	2.04E01	1.85E-02	2.93E-02	5.23E00	0.00E0	2.42E-03	2.42E-01	3.66E-02	-1.63E01

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of OH1042FGI

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1.93E-04	1.32E-05	6.25E-09	4.22E-06	0.00E0	1.73E-06	1.32E-07	4.98E-07	-6.56E-06
NHWD	Non-hazardous waste disposed	[kg]	4.42E02	4.37E-02	4.39E-01	7.24E00	0.00E0	5.70E-03	9.11E00	1.57E02	-3.05E02
RWD	Radioactive waste disposed	[kg]	1.33E00	3.54E-04	1.60E-04	1.55E00	0.00E0	4.61E-05	4.26E-03	5.58E-04	-8.74E-01
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	6.84E00	0.00E0	0.00E0	0.00E0	4.20E02	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	2.28E01	0.00E0	0.00E0	0.00E0	2.09E02	0.00E0	0.00E0
EET	Exported thermal energy	[MJ]	0.00E0	0.00E0	3.85E01	0.00E0	0.00E0	0.00E0	3.76E02	0.00E0	0.00E0

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