

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

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-20150125-IBA1-EN
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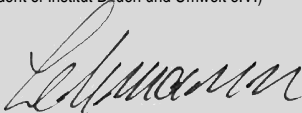
Crawford OH1042F overhead sectional door ASSA ABLOY Entrance Systems



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1. General Information

ASSA ABLOY Entrance Systems	Crawford OH1042F 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-20150125-IBA1-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 aluminum tubular profiles filled with either sandwich panels (filled with water blown CFC-free polyurethane foam) panel thickness 42 mm and panel height 545 mm or acrylic windows (DAD: Double glazed "scratch resistant" Acrylic, Double sealed). The frame thickness is 44 mm.</p>
<p>This Declaration is based on the Product Category Rules: IBU: PCR Automatic doors, automatic gates, and revolving door systems (door systems) (PCR tested and approved by the independent expert committee (SVA))</p>	<p>Scope: This declaration and its LCA study are relevant to the Crawford OH1042F overhead sectional door. The production location is Heerhugowaard, The Netherlands and components are sourced from international tier one suppliers. Crawford OH1042F overhead sectional door size vary according to project requirements; a standard door 3600 mm width and 3600 mm height with aluminum tubular profiles, filled with three sandwich panels and 15 acrylic windows, panel thickness 42 mm, panel height 545 mm and frame thickness 44 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.</p>
<p>Issue date 18.05.2015</p>	<p>Verification The CEN Standard EN 15804 serves as the core PCR Independent verification of the declaration and data according to ISO 14025 <input type="checkbox"/> internally <input checked="" type="checkbox"/> externally</p>
<p>Valid to 17.05.2020</p>	
<p> Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)</p>	<p> Dr. Wolfram Trinius (Independent verifier appointed by SVA)</p>
<p> Dr.-Ing. Burkhard Lehmann (Managing Director IBU)</p>	

2. Product

2.1 Product description

Product name: Crawford OH1042F overhead sectional door

Product characteristic: Overhead sectional door

The Crawford OH1042F overhead sectional door is suitable for all types of buildings, with regard to both function and appearance. High flexibility makes it possible to install this door in almost every type of building. The high light admission makes this door the ideal choice for working environments that require 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 aluminum tubular profiles, filled

with sandwich panels or acrylic windows (window types: DAS (Double glazed "scratch resistant" Acrylic (SAN with coating)), Single sealed/DSS (Double glazed Acrylic (SAN)), Single sealed/DAD (Double glazed "scratch resistant" Acrylic (SAN with coating)), Double sealed/DSD (Double glazed Acrylic (SAN)), Double sealed/TAD (Triple glazed, double sealed, 3 x 2.8mm, outer & inner sheet SAN scratch-resistance coating)/TSD (Triple glazed, double sealed, 3 x 2.8mm, SAN (without scratch-resistance coating))/SA3: Single pane of "scratch resistant" Acrylic (SAN with coating)) 2.8 mm/SS3: Single pane of Acrylic (SAN) 2.8 mm/SH4: Single hardened glass 4 mm.

The panels are designed without thermal bridge to provide minimal thermal transmittance, which reduces

energy cost (in case the space is conditioned). The surface is made of waffled steel. 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 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 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).

The door has 4 primary parts:

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

The Crawford OH1042F overhead sectional door has been designed to meet all operational and safety requirements in the European Directives and the standards issued by the European Standardization Committee (CEN).

2.2 Application

The Crawford OH1042F overhead sectional door is suitable for all types of buildings, with regard to both function and appearance. It has a modern, clean design and is one of the most stable and well insulated overhead doors on the market. 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 makes this door the ideal choice for working environments that require maximum lighting.

2.3 Technical Data

The table presents the technical properties of the Crawford OH1042F overhead sectional door:

Constructional data		
Name	Value*	Unit
Max size: (W x H)	7250 x 6050	mm
Frame thickness:	44	mm
Frame material:	Aluminium tubular frames	-
Filling:	Windows or insulated sandwich panels or infills	-
Colour outside:	Natural aluminium	-
Colour inside:	Natural aluminium	-
Track types:	Standard: SL Optional: HL, LL, VL	-
Windows (optional):	Optional: DAS, DSS, DAD , DSD, TAD, TSD, SA3, SS3, SH4	-
Passdoor (optional):	Optional: In door leaf or in side section	-
Electrical operation:	Optional: Automated operation , Access control, Safety functions	-
Opening/ closing speed:	CDM9: 0.25 m/s CDM9 HD: 0.18 m/s CDM9 2H: opening 0.5 m/s, closing 0.25 m/s	

*Bold text and values are relevant for the product in this EPD.

2.4 Placing on the market / Application rules

For the placing on the market in the EEA, Switzerland and Turkey the Construction Products Regulation (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 13241-1:2003+A1: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 (\leq 4250 mm DLW)
Class 2 ($>$ 4250 mm DLW) (Higher classes on request)
- Thermal transmittance: EN12428
2.3 W/(m².K) TAD/TSD (5000 x 5000 mm)
3.35 W/(m².K) DAD/DSD (5000 x 5000 mm)
5.2 W/(m².K) SA3/SS3 (5000 x 5000 mm)
- Water penetration: EN12425
Class 3 (Door surface 4000 x 3310 mm) (no passdoor)
- Air permeability: EN12426
Class 3 (4000 x 3310 mm without passdoor)
Class 2 (4000 x 3310 mm with passdoor)
- Acoustic insulation: EN ISO 10140-2
R - 24 dB (door surface 4210 x 2590mm)

The electrical unit as identified is in compliance with the following directives:

2006/42/EC Machinery Directive (MD)
2004/108/EC Electromagnetic Compatibility Directive (EMCD)

Harmonized European standards, which have been applied:

EN 60335-1 Household and similar electrical appliances -Safety -Part 1: General requirements
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 WEEE Directive within Europe, Directive 2012/19/EU

Other standards or technical specifications, which have been applied:

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

For the application and use the respective national provisions apply.

2.5 Delivery status

Crawford OH1042F overhead sectional door unit with door size of 3600 mm and height 3600 mm is delivered in parts ready for installation. All necessary installation material is included. For every track type, Crawford offers specific installation kits to position the door in the building façade. The Crawford OH1042F are delivered as a standard in natural aluminium. Other colors available on request.

2.6 Base materials / Ancillary materials

The average composition for Crawford OH1042F overhead sectional door, is as following:

Component	Percentage in mass (%)
Aluminium	28.06
Brass	0.33
Plastics	27.98
Steel	42.26
Electronics	0.22
Electro-mechanic	0.78
Others	0.37
Total	100

2.7 Manufacture

The final manufacturing processes occur at the factory in Heerhugowaard, Netherlands. The electronics are produced in Ostrov, 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

2.8 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, GHG, energy, water, waste, VOC, surface treatment and H&S 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, labor 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.

2.9 Product processing/Installation

The Crawford OH1042F 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.

2.10 Packaging

Packaging exists for the purpose of protection during transportation. Crawford OH1042F overhead sectional door components are initially packaged in polystyrene plastic and corrugated cardboard. All of these packaging components are standard industry types. 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	19.11
Plastic	27.25
Wood	53.63
Total	100.0

All materials incurred during installation are directed to a recycling unit. 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

2.11 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 Crawford OH1042F 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).

2.12 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.

2.13 Reference service life

The product has reference service life of more than 100.000 cycles which complies for 10 years of standard daily use (with the recommended yearly service check). For this EPD the lifetime of 10 years was considered.

2.14 Extraordinary effects

Fire

The panel fire test according to DIN 4102 part 1 class B2.

Water

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

Mechanical destruction

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

2.15 Re-use phase

The product is possible to re-use during the reference service life and be moved from one door to another. The components made of steel, plastic and aluminum alloy which can be recycled. The plastic components can be used for energy recovery within a waste incineration process.

All materials are directed to a recycling unit.

The components made of aluminum alloy, steel, and stainless steel can be recycled. The plastic components can be used for energy recovery within a waste incineration process.

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 aluminum

EWC 17 04 05 iron and steel

EWC 17 04 11 Cables with the exception of those outlined in 17 04 10

2.16 Disposal

No disposal is foreseen for the product nor for the corresponding packaging. Further information

2.17 Further information

ASSA ABLOY Entrance Systems AB

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3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of Crawford OH1042F overhead sectional door (size of 3600 mm and height 3600 mm) as specified in Part B requirements on the EPDIBU: PCR Automatic doors, automatic gates, and revolving door systems (door systems)

Declared unit

Name	Value	Unit
Mass (without packaging material)	304.67	kg
Packaging (Paper, plastics, wood)	4.30	kg
Conversion factor to 1 kg	0.0033	-
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 phases 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 (Energy consumption for sectional door operation)

C1-C4 End-of-life stage:

- 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.

Module D:

- Declaration of all benefits or recycling potential from EOL and A5.

3.3 Estimates and assumptions

Use phase:

For the use phase, it is assumed that the sectional door is used in the European Union, thus an European electricity grid mix is considered within this stage.

EoL:

In the End-of-Life phase, for all the materials which can be recycled, a recycling scenario with 100% collection rate was assumed.

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), thermal energy consumption 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 modeling of the considered products, the GaBi 6 Software System for Life Cycle Engineering, developed by PE INTERNATIONAL AG, is used /GaBi 6 2013/. The GaBi-database contains consistent and documented datasets which are documented in the online

GaBi-documentation /GaBi 6 2013D/.

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/.

PE INTERNATIONAL 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 6 software database. The last revision of the used background data has taken place not longer than 10 years ago.

3.7 Period under review

The period under review is 2013/14 (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 plastic
- Waste incineration of paper from packaging
- Waste incineration of wood
- Waste incineration of electronic scraps (PWBs).

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.

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).

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Paper packaging)	2.21	kg
Output substances following waste treatment on site (Plastic packaging)	0.71	kg
Output substances following waste treatment on site (Wood packaging)	1.38	kg

Reference service life

Name	Value	Unit
Reference service life (100000 cycles)	10	a

Operational energy use (B6)

Name	Value	Unit
Electricity consumption per RSL (10 years)	8474.4	kWh

End of life (C1-C4)

Name	Value	Unit
Collected separately Aluminium, brass, copper, plastics, StainlessSteel, Steel, Electronic, Electro mechanics	301.54	kg
Reuse plastic parts	85.79	kg
Recycling Aluminium, brass, steel, electronic	216.86	kg
Landfilling – other construction waste	1.11	kg

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

Name	Value	Unit
Collected separately waste type - Crawford OH1042F overhead sectional door (including packaging)	306.94	kg
Recycling Aluminium	27.67	%
Recycling Brass	0.33	%
Recycling Steel	41.67	%
Recycling Electronic & electromechanics (PWBs, copper)	0.98	%
Reuse Plastic parts	27.95	%
Recovery packaging material (paper, plastics, wood)	1.40	%

5. LCA: Results

Results shown below were calculated using CML 2001 – Apr. 2013 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	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of Crawford OH1042F overhead sectional door with a width of 3600 mm and height 3600 mm

Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
GWP	[kg CO ₂ -eq.]	1.83E+03	1.10E+01	5.38E+00	4.02E+03	1.46E+00	4.01E-02	2.12E+02	-9.82E+02
ODP	[kg CFC11-eq.]	3.93E-07	5.26E-11	2.32E-11	2.75E-06	7.01E-12	2.75E-11	6.31E-10	3.46E-07
AP	[kg SO ₂ -eq.]	7.98E+00	5.03E-02	1.03E-03	1.90E+01	6.70E-03	1.89E-04	5.41E-02	-5.09E+00
EP	[kg PO ₄ ³⁻ -eq.]	5.09E-01	1.15E-02	1.73E-04	1.07E+00	1.53E-03	1.07E-05	4.11E-03	-2.52E-01
POCP	[kg ethene-eq.]	6.77E-01	-1.62E-02	7.61E-05	1.13E+00	-2.16E-03	1.12E-05	2.64E-03	-3.10E-01
ADPE	[kg Sb-eq.]	3.30E-02	4.14E-07	8.63E-08	5.57E-04	5.52E-08	5.55E-09	1.44E-05	-9.10E-03
ADPF	[MJ]	2.33E+04	1.52E+02	1.37E+00	4.57E+04	2.02E+01	4.56E-01	9.01E+01	-9.92E+03
Caption	GWP = Global warming potential; ODP = Ozone depletion potential; AP = Acidification potential; EP = Eutrophication potential; POCP = Photochemical ozone creation potential; ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources								

RESULTS OF THE LCA - RESOURCE USE: One piece of Crawford OH1042F overhead sectional door with a width of 3600 mm and height 3600 mm

Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
PERE	[MJ]	5.14E+03	-	-	-	-	-	-	-
PERM	[MJ]	0.00E+00	-	-	-	-	-	-	-
PERT	[MJ]	5.14E+03	5.97E+00	1.31E-01	1.31E+04	7.96E-01	1.30E-01	6.67E+00	-3.57E+03
PENRE	[MJ]	2.79E+04	-	-	-	-	-	-	-
PENRM	[MJ]	0.00E+00	-	-	-	-	-	-	-
PENRT	[MJ]	2.79E+04	1.52E+02	1.61E+00	7.16E+04	2.03E+01	7.14E-01	1.00E+02	-1.23E+04
SM	[kg]	1.25E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[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	[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	[m ³]	1.40E+01	4.22E-03	1.49E-02	3.23E+01	5.62E-04	3.22E-04	5.19E-01	-9.50E+00
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 Crawford OH1042F overhead sectional door with a width of 3600 mm and height 3600 mm

Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
HWD	[kg]	1.62E+00	3.46E-04	1.12E-04	9.92E+00	4.62E-05	9.89E-05	7.14E-03	-1.91E-01
NHWD	[kg]	1.67E+02	1.91E-02	1.11E-01	2.31E+01	2.55E-03	2.30E-04	2.00E+01	-1.33E+02
RWD	[kg]	1.81E+00	1.99E-04	9.65E-05	1.03E+01	2.65E-05	1.03E-04	4.01E-03	-9.58E-01

CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
MFR	[kg]	0.00E+00	0.00E+00	4.95E-01	0.00E+00	0.00E+00	2.17E+02	0.00E+00	-
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
EEE	[MJ]	0.00E+00	0.00E+00	6.58E+00	0.00E+00	0.00E+00	0.00E+00	3.97E+02	-
EET	[MJ]	0.00E+00	0.00E+00	1.85E+01	0.00E+00	0.00E+00	0.00E+00	1.09E+03	-
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; EET = Exported thermal energy								

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 phase (modules A1-A3) contributes between 13% and 38% 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 phase accounts for app. 98% - this impact category describes the reduction of the global amount of non-renewable raw materials, therefore, as expected, it is mainly related with the extraction of raw materials (A1). Within the production phase, the main contribution for all the impact categories is the production of steel, with app. 95%, mainly due to the energy consumption on this process. Steel accounts with app. 42% 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 phase (module B6), the energy consumption was included and it has a major contribution for all the impact assessment categories considered - between 63% and 87%, with the exception of ADPE (2%).

In the end-of-life phase, 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

Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin(pub.):
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General principles

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www.bau-umwelt.de

PCR 2011, Part A

PCR 2011, Part A: Institut Bauen und Umwelt e.V., Berlin (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.
September 2012
www.bau-umwelt.de

IBU PCR Part B

IBU PCR Part B: Automatic doors, automatic gates, and revolving door systems (door systems)
(PCR tested and approved by the independent expert committee)

2004/108/EC Electromagnetic Compatibility Directive (EMCD)

Relating to electromagnetic compatibility and repealing Directive 89/336/EEC

2006/42/EC Machinery Directive (MD)

Directive 2006/42/EC on machinery

ISO 14025

EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804

EN 15804:2012+A1:2014: 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: 2001: Quality management systems - Requirements (EN ISO 9001:2008)

DIN 4102

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

EN 13241-1

EN 13241-1:2003+A1:2011 Industrial, commercial and garage doors and gates — Product standard — Part 1: Products without fire resistance or smoke control characteristics

GaBi 6

GaBi 6 2013: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, PE INTERNATIONAL AG, Leinfelden-Echterdingen, 1992-2013.

GaBi 6 2013D

GaBi 6 2013D: Documentation of GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, PE INTERNATIONAL AG, Leinfelden-Echterdingen, 1992-2013.

<http://documentation.gabi-software.com/>

WEEE

Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE).

EWC

European Waste Catalog



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9. Annex

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	MND	X	X	X	X	

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of Crawford OH1042F overhead sectional door with a width of 3600 mm and height 3600 mm

Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
GWP	[kg CO ₂ -eq.]	1.83E+03	1.10E+01	5.38E+00	4.02E+03	1.46E+00	4.01E-02	2.12E+02	-9.82E+02
ODP	[kg CFC11-eq.]	4.18E-07	5.59E-11	2.47E-11	2.93E-06	7.46E-12	2.92E-11	6.71E-10	3.68E-07
AP	[kg SO ₂ -eq.]	7.67E+00	6.57E-02	1.22E-03	1.80E+01	8.76E-03	1.79E-04	6.34E-02	-4.78E+00
EP	[kg N-eq.]	4.99E-01	4.64E-03	6.95E-05	7.65E-01	6.19E-04	7.62E-06	1.94E-03	-1.30E-01
Smog	[kg O ₃ -eq.]	8.17E+01	1.35E+00	2.70E-02	1.63E+02	1.80E-01	1.62E-03	5.01E-01	-4.43E+01
Resources	[MJ]	2.32E+03	2.18E+01	1.60E-01	3.26E+03	2.91E+00	3.24E-02	9.25E+00	-8.60E+02
Caption	GWP = Global warming potential; ODP = Ozone depletion potential; AP = Acidification potential; EP = Eutrophication potential; Smog = Smog, air; Resources = Resources, fossil fuels								

RESULTS OF THE LCA - RESOURCE USE: One piece of Crawford OH1042F overhead sectional door with a width of 3600 mm and height 3600 mm

Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
PERE	[MJ]	5.14E+03	-	-	-	-	-	-	-
PERM	[MJ]	0.00E+00	-	-	-	-	-	-	-
PERT	[MJ]	5.14E+03	5.97E+00	1.31E-01	1.31E+04	7.96E-01	1.30E-01	6.67E+00	-3.57E+03
PENRE	[MJ]	2.79E+04	-	-	-	-	-	-	-
PENRM	[MJ]	0.00E+00	-	-	-	-	-	-	-
PENRT	[MJ]	2.79E+04	1.52E+02	1.61E+00	7.16E+04	2.03E+01	7.14E-01	1.00E+02	-1.23E+04
SM	[kg]	1.25E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[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	[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	[m ³]	1.40E+01	4.22E-03	1.49E-02	3.23E+01	5.62E-04	3.22E-04	5.19E-01	-9.50E+00
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 Crawford OH1042F overhead sectional door with a width of 3600 mm and height 3600 mm

Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
HWD	[kg]	1.62E+00	3.46E-04	1.12E-04	9.92E+00	4.62E-05	9.89E-05	7.14E-03	-1.91E-01
NHWD	[kg]	1.67E+02	1.91E-02	1.11E-01	2.31E+01	2.55E-03	2.30E-04	2.00E+01	-1.33E+02
RWD	[kg]	1.81E+00	1.99E-04	9.65E-05	1.03E+01	2.65E-05	1.03E-04	4.01E-03	-9.58E-01
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
MFR	[kg]	0.00E+00	0.00E+00	4.95E-01	0.00E+00	0.00E+00	2.17E+02	0.00E+00	-

MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
EEE	[MJ]	0.00E+00	0.00E+00	6.58E+00	0.00E+00	0.00E+00	0.00E+00	3.97E+02	-
EET	[MJ]	0.00E+00	0.00E+00	1.85E+01	0.00E+00	0.00E+00	0.00E+00	1.09E+03	-
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; EET = Exported thermal energy								