ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	**ASSA ABLOY Entrance Systems AB**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20190122-IBA1-EN
Issue date	06.08.2019
Valid to	05.08.2024

ASSA ABLOY FD2250P folding door

ASSA ABLOY Entrance Systems AB

Institut Bauen und Umwelt e.V.

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

ASSA ABLOY

1. General Information

ASSA ABLOY Entrance Systems AB

Programme holder

IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number

EPD-ASA-20190122-IBA1-EN

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)

Issue date

06.08.2019

Valid to

05.08.2024

Hans Peters
(President of Institut Bauen und Umwelt e.V.)

Dr. Alexander Röder
(Managing Director of IBU)

ASSA ABLOY FD2250P folding door

Owner of the Declaration

ASSA ABLOY Entrance Systems AB
Lodjursgatan 10
SE-261 44 Landskrona
Sweden

Declared product / Declared unit

This declaration represents 1 power operated industrial folding door, 4050 mm width and 4000 mm height, consisting of 4 panels and 4 glass windows. Panels are filled with CFC-free polystyrene, panel thickness 57 mm and panel height 4000 mm. Windows are double-sided insulated hardened glass, rectangular, in plastic frame.

Scope:

This declaration and its LCA study are relevant to the Sectional Door - ASSA ABLOY FD2250P folding door.

The production location is Lidköping, Sweden and components are sourced from international tier one suppliers. FD2250P folding door sizes vary according to project requirements; a standard door 4050 mm width and 4000 mm height with insulated panels filled with CFC-free polystyrene, panel thickness 57 mm, panel height 4000 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.

Verification

The CEN Standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025
☐ internally ☒ externally

Dr. Wolfram Trinius
(Independent tester appointed by SVA)

2. Product

2.1 Product description

Product name: ASSA ABLOY FD2250P folding door
Product characteristic: Folding door panel

The ASSA ABLOY FD2250P is a well-insulated folding door especially developed for demanding industrial environments. High flexibility makes it possible to install this door in almost every type of building. The door slides (folds) to the left or right or in both directions if it is in two parts, leaving the door opening completely free, allowing free space around the door opening. The door can be installed on either the inside or the outside of the exterior wall. The door is made of insulated panels. The panels are designed without thermal bridge to provide minimal thermal transmittance, which reduces energy cost. The surface is made of rilled steel sheet. There are top, bottom and side seals and seals between door sections. The standard track system is made of galvanized steel.

The door has 5 primary parts:
1) Door leaf
2) Seals
3) Hardware
4) Passdoor (option)
5) Windows (option)

The ASSA ABLOY FD2250P folding 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).

For the placing of the product on the market in the EU/EFTA (with the exception of Switzerland) the Regulation (EU) No. 305/2011/ (CPR) and the following other harmonisation provisions apply:

Directive (EU) 2006/42/EC Machinery Directive (MD) and Directive (EU) 2014/30/EU Electromagnetic Compatibility Directive (EMCD) respectively) and

2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), Directive 2012/19/EU Waste Electrical and Electronic Equipment (WEEE Directive) respectively apply.

The product needs a Declaration of Performance in accordance with the CPR taking into consideration: /EN 13241+A2:2016/ Industrial, commercial, garage doors and gates - Product standard, performance characteristics, and the CE-marking. The CE-marking for the product takes into account the Declaration of Performance in accordance with the CPR and the proof of conformity with the following harmonised norms based on the other harmonisation provisions.

/EN 13241+A2:2016/,
/EN 61000-6-2:2005/,
/EN 61000-6-3:2007/,
/EN 60335-1:-2012+A11:2011+A12:2017+AC1:2014

For thermal insulation, the standard /EN 12428:2013-04/ applies.
The folding door has not performed tests regarding fire resistance or sound insulation.

For the application and use the respective national provisions apply.

2.2 Application

The ASSA ABLOY FD2250P folding door is suitable for all types of buildings, with regard to both function and appearance. It has a modern, clean design and its high flexibility makes it possible to install this door in almost every type of building allowing free space around the door.

2.3 Technical Data

The table presents the technical properties of the FD2250P folding door:

Technical data

Name	Value	Unit
Maximun height	6000	mm
Maximun width	4800	mm
Panel thickness	57	mm
Panel material	CFC -free polystyrene with sheet metal inner and outer skins	
Resistance to wind load acc.to /EN 12424/	Class 5 **	
Thermal transmittance acc.to /EN 12428/	1,23 ***	$W/m^2.k$
Resistance to water penetration acc. to /EN 12426/	Class 3 ****	
Air permeability acc. to /EN 12426/	Class 5 ****	
Power input "Idle"	15	W
Power input "Operation"	500	W

**DLW 5000 mm *DLH 5000 mm
*** Door configuration 4000 mm * 4000 mm
****DLW 3500 mm * DLH 3100 mm

2.4 Delivery status

ASSA ABLOY FD2250P folding door unit with door size: width 4050 mm and height 4000 mm, is delivered ready for installation.

2.5 Base materials / Ancillary materials

The average composition for FD2250P folding door, is as following:

Component	Percentage in mass (%)
Aluminium	2,405
Brass	0,251
Plastics	9,391
Steel	85,521
Glass	1,603
Paper	0,071
Electronic	0,170
Electro mechanics	0,588
Total	**100**

2.6 Manufacture

The primary manufacturing processes are made by Tier 1 suppliers. The components have origin in processes such as stamped steel, turning and steel casting. The final manufacturing processes for folding door units occur in Lidköping, Sweden.

2.7 Environment and health during manufacturing

ASSA ABLOY 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 routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and to evaluate the effectiveness of the environmental management program.
• Code of Conduct covers human rights, labor practices and decent work. Management of ASSA ABLOY is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
• Any waste metals during machining are separated and recycled. Waste water from water-based painting processes is delivered to waste treatment plant.

2.8 Product processing/Installation

The folding 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 skilled installation technicians.

2.9 Packaging

The ASSA ABLOY FD2250P folding door is placed horizontally on wooden pallets and banded to pallet for shipment. Minimum of 1 and max. 10 doors per pallet.

Material	Value (%)
Wood	99,99
Others (plastic wrapping and banding in polyester)	0,01

Total	100

All materials incurred during installation are dealt at the construction site.

2.10 Condition of use

Regular inspection is recommended: If serious damage is found, contact the ASSA ABLOY service department.

Monthly examination:
Check the screw attachments and nuts between door leaf, hinges, tracks, bearing brackets C-channels and installation frames. Make sure that all seals are clean, intact and undamaged. Clean them if necessary.

Examination every second month:
Clean the upper track if needed. Check the hinges and door leaves. Look for damage. Check the bearing brackets and their attachments. Look for damage.

Examination every six months:
Clean the inside and outside of the door with water and a mild detergent. This way the durability of the door is extended. Look for damage on the surface. Surface damage must be improved according to the manufacturer's instructions.

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 100.000 cycles which complies to 20 years of standard daily use (with the recommended yearly service check). For this EPD the lifetime of 20 years was considered. The location and intended use of the steel door assembly, the environment to which it is exposed, and the cycling of the door assembly will determine the steel door life expectancy.

2.13 Extraordinary effects

Fire
The folding door is not fireproof and is not approved for use in fire/smoke areas. The product has not been tested for reaction to or resistance to fire/smoke.

Water
The product does not contain any substances that could be released and have an additional environmental impact on water in case of flood.

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

2.14 Re-use stage

It is possible to re-use the product during the reference service life and it can be moved from one application to another. The majority, by weight, of the components is steel which can be recycled.

2.15 Disposal

The product can be mechanically dissembled to separate the different materials. The majority, by weight, of components is steel which can be recycled. The plastic components can be used for energy recovery in an incineration process. The lock can either be sent back to ASSA ABLOY Entrance Systems AB for recycling or to a professional recycling service provider. No disposal is foreseen for the product nor for the corresponding packaging.

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

/EWC/ 17 04 05 iron and steel
/EWC/ 17 04 01 copper, bronze, brass
/EWC/ 17 04 02 aluminium
/EWC/ 17 02 03 plastic
/EWC/ 17 02 02 glass
/EWC/ 16 02 wastes from electrical and electronic equipment
/EWC/ 15 01 03 wooden packaging

2.16 Further information

ASSA ABLOY Entrance Systems AB
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www.assaabloy.com

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to 1 power operated industrial folding door as specified in Part B requirements on the EPD for PCR Automatic doors, automatic gates, and revolving door systems (door systems).
A door of 4050 mm width and 4000 mm height, consisting of 4 panels and 4 glass windows has been considered in this declaration.

Declared unit

Name	Value	Unit
Mass (without packaging)	399,267	kg
Mass packaging (wood)	5,848	kg
Conversion factor to 1 kg	0,0025	-
Declared unit for folding 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 (EoL):

- 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 and loads

3.3 Estimates and assumptions

Transportation: Data on 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 stage, it is assumed that the folding 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 1584 hours in on mode and 3696 hours (220 days per year in use) in idle mode per year; the power consumption throughout the whole life-cycle is 16949 kWh.

EoL:
In the End-of-Life stage, for all the materials which can be recycled, a recycling scenario with 100% collection rate was assumed. 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 modeling of the considered product, the GaBi 8 Software System for Life Cycle Engineering, developed by thinkstep AG, is used /GaBi 8 2019/. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation /GaBi database SP25 :2016/. 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/.
Thinkstep 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 database SP25 :2016/ software database.

3.7 Period under review

The period under review is 2015/16 (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 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 8 2016b/ 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).

Transport to the building site (A4)

Name	Value	Unit
Truck transport		
Litres of fuel diesel with maximum load (27t payload)	39,400	l/100km
Transport distance truck (primary target market is Nordic countries)	1500	km
Capacity utilization (incl. empty runs) of truck	85	%

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (wood packaging)	5,848	kg

Reference service life

Name	Value	Unit
Reference service life	20	a

Operational energy use (B6)

Name	Value	Unit
Electricity consumption per RSL (20 years, 220 days per year)	16949	kWh
Hours per day in on mode	7,200	h
Hours per day in stand-by mode	0	h
Hours per day in idle mode	16,800	h
Power consumption – on mode	500	W
Power consumption – stand-by mode	0	W
Power consumption – idle mode	15	W

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

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

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

Where:

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

End of life (C1-C4)

Name	Value	Unit
Collected separately aluminum, steel, brass, plastics, electronic, paper and electro mechanics (excluding packaging).	392,866	kg
Incineration of plastic parts	37,496	kg
Recycling aluminum, brass, steel, electronic, electro-mechanics	355,087	kg
Transport Distance	100	km

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

Name	Value	Unit
Collected separately waste type (including packaging)	398,715	kg
Recycling aluminium	2,408	%
Recycling steel	85,639	%
Recycling brass	0,251	%
Recycling electronic	0,170	%
Recyling electro mechanics	0,589	%
Incineration of plastic parts	9,404	%
Incineration of wood	1,467	%

5. LCA: Results

Results shown below were calculated using CML 2000 – 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 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 ASSA ABLOY FD2250P folding door

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	8,48E+02	2,89E+01	1,18E+00	8,05E+03	1,90E+00	4,01E-02	9,82E+01	-4,14E+02
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	6,15E-08	1,38E-10	4,93E-12	5,51E-06	9,09E-12	2,75E-11	2,89E-10	2,11E-08
AP	Acidification potential of land and water	[kg SO_2-Eq.]	3,61E+00	1,32E-01	2,01E-04	3,79E+01	8,69E-03	1,89E-04	2,54E-02	-1,76E+00
EP	Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	2,93E-01	3,02E-02	3,28E-05	2,14E+00	1,98E-03	1,07E-05	1,97E-03	-1,24E-01
POCP	Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	3,72E-01	-4,27E-02	1,54E-05	2,26E+00	-2,80E-03	1,12E-05	1,26E-03	-1,99E-01
ADPE	Abiotic depletion potential for non-fossil resources	[kg Sb Eq.]	6,21E-02	1,09E-06	1,76E-08	1,11E-03	7,16E-08	5,55E-09	6,89E-06	-8,85E-03
ADPF	Abiotic depletion potential for fossil resources	[MJ]	1,16E+04	3,99E+02	2,84E-01	9,14E+04	2,62E+01	4,56E-01	4,27E+01	-4,27E+03

RESULTS OF THE LCA - RESOURCE USE: One piece of ASSA ABLOY FD2250P folding door

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	2,18E+03	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	2,18E+03	1,57E+01	2,75E-02	2,62E+04	1,03E+00	1,30E-01	3,21E+00	-3,82E+02
PENRE	Non-renewable primary energy as energy carrier	[MJ]	1,38E+04	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	1,38E+04	4,00E+02	3,36E-01	1,43E+05	2,63E+01	7,14E-01	4,74E+01	-4,49E+03
SM	Use of secondary material	[kg]	2,65E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	Use of renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	Use of non-renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	Use of net fresh water	[m³]	6,68E+00	1,11E-02	3,19E-03	6,46E+01	7,29E-04	3,22E-04	2,37E-01	-1,32E+00

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of ASSA ABLOY FD2250P folding door

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1,11E+00	9,11E-04	2,34E-05	1,98E+01	5,99E-05	9,89E-05	3,44E-03	1,07E-01
NHWD	Non-hazardous waste disposed	[kg]	3,57E+01	5,03E-02	2,12E-02	4,62E+01	3,31E-03	2,30E-04	1,41E+01	-1,77E+01
RWD	Radioactive waste disposed	[kg]	9,26E-01	5,24E-04	2,04E-05	2,06E+01	3,44E-05	1,03E-04	1,89E-03	-8,94E-02
CRU	Components for re-use	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	Materials for recycling	[kg]	0,00E+00	0,00E+00	4,80E-01	0,00E+00	0,00E+00	3,58E+02	0,00E+00	6,57E+00
MER	Materials for energy recovery	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	Exported electrical energy	[MJ]	0,00E+00	0,00E+00	1,42E+00	0,00E+00	0,00E+00	0,00E+00	1,79E+02	1,02E+01
EET	Exported thermal energy	[MJ]	0,00E+00	0,00E+00	3,99E+00	0,00E+00	0,00E+00	0,00E+00	4,91E+02	2,86E+01

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 1,10 % and 14,13 % 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. 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 stage, the main contribution for all the impact categories is the production of steel and aluminum mainly due to the energy consumption on these processes. These two materials account with approx. 84,8 % 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 86,6 % and 98,9 %, with the exception of ADPE (1,8%). This is a result of 6 hours of operation in stand-by mode and 10 hours in on 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

Institut Bauen und Umwelt
Institut Bauen und Umwelt e.V., Berlin (pub.): Generation of Environmental Product Declarations (EPDs);

/EN 15804:2012/
EN 15804:2012-04: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

/EN 305:2011/
Laying down harmonised conditions for the marketing of construction products.

/EN 13241+A2:2016/
Industrial, commercial and garage doors and gates - Product standard. Products without fire resistance or smoke control characteristics

/EN 60335-1:2012/
EN 60335-1:2012: Household and similar electrical appliances -Safety - Part 1: General requirements

/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: Quality management systems - Requirements (ISO 9001:2015)

/EN 12424:2000-11/
Industrial, commercial and garage doors and gates - Resistance to wind load - Classification; German version EN 12424:2000

/EN 12426:2000-11/
Industrial, commercial and garage doors and gates - Air permeability - Classification; German version EN 12426:2000

/EN12428: 2013-04/
Industrial, commercial and garage doors - Thermal transmittance - Requirements for the calculation

/EN ISO 13849-1/
EN ISO 13849-1:2008: Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design

/EWC/
European Waste Catalogue

General principles
for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013-04
www.bau-umwelt.de
/GaBi 8 2019/
GaBi 8 2019: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Echterdingen, 1992-2018.

/GaBi database SP25 :2016/
GaBi 8 2016b: Documentation of GaBi 8: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Echterdingen, 1992-2018. http://documentation.gabi-software.com/

IBU PCR Part A:2017
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. April 2017
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 forAutomatic doors, automatic gates and
revolving door systems. Version 1.6 (11. 2017)
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/ISO 14025:2015/
DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

/2014/30/EU/
Electromagnetic Compatibility Directive (EMCD)

/2006/42/EC/
Machinery Directive (MD)

/2012/19/EU/
Waste Electrical and Electronic Equipment Directive (WEEE Directive)

2011/65/EU
2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

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 ASSA ABLOY FD2250P folding door

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	8,48E+02	2,89E+01	1,18E+00	8,05E+03	1,90E+00	4,01E-02	9,82E+01	-4,14E+02
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	6,55E-08	1,47E-10	5,24E-12	5,86E-06	9,67E-12	2,92E-11	3,07E-10	2,23E-08
AP	Acidification potential of land and water	[kg SO_2-Eq.]	3,63E+00	1,73E-01	2,36E-04	3,59E+01	1,14E-02	1,79E-04	2,98E-02	-1,73E+00
EP	Eutrophication potential	[kg N-eq.]	3,12E-01	1,22E-02	1,33E-05	1,53E+00	8,02E-04	7,62E-06	9,45E-04	-8,31E-02
Smog	Ground-level smog formation potential	[kg O_3-eq.]	4,86E+01	3,56E+00	4,97E-03	3,25E+02	2,34E-01	1,62E-03	2,42E-01	-2,21E+01
Resources	Resources – resources fossil	[MJ]	8,72E+02	5,74E+01	3,31E-02	6,51E+03	3,77E+00	3,24E-02	4,39E+00	-1,42E+02

RESULTS OF THE LCA - RESOURCE USE: One piece of ASSA ABLOY FD2250P folding door

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	2,18E+03	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	2,18E+03	1,57E+01	2,75E-02	2,62E+04	1,03E+00	1,30E-01	3,21E+00	-3,82E+02
PENRE	Non-renewable primary energy as energy carrier	[MJ]	1,38E+04	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	1,38E+04	4,00E+02	3,36E-01	1,43E+05	2,63E+01	7,14E-01	5E+01	-4,49E+03
SM	Use of secondary material	[kg]	2,65E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	Use of renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	Use of non-renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	Use of net fresh water	[m^3]	6,68E+00	1,11E-02	3,19E-03	6,46E+01	7,29E-04	3,22E-04	2,37E-01	-1,32E+00

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of ASSA ABLOY FD2250P folding door

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1,11E+00	9,11E-04	2,34E-05	1,98E+01	5,99E-05	9,89E-05	3,44E-03	1,07E-01
NHWD	Non-hazardous waste disposed	[kg]	3,57E+01	5,03E-02	2,12E-02	4,62E+01	3,31E-03	2,30E-04	1,41E+01	-1,77E+01
RWD	Radioactive waste disposed	[kg]	9,26E-01	5,24E-04	2,04E-05	2,06E+01	3,44E-05	1,03E-04	1,89E-03	-8,94E-02
CRU	Components for re-use	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	Materials for recycling	[kg]	0,00E+00	0,00E+00	4,80E-01	0,00E+00	0,00E+00	3,58E+02	0,00E+00	6,57E+00
MER	Materials for energy recovery	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	Exported electrical energy	[MJ]	0,00E+00	0,00E+00	1,42E+00	0,00E+00	0,00E+00	0,00E+00	1,79E+02	1,02E+01
EET	Exported thermal energy	[MJ]	0,00E+00	0,00E+00	3,99E+00	0,00E+00	0,00E+00	0,00E+00	4,91E+02	2,86E+01

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