ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	ASSA ABLOY Entrance Systems AB
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20250463-IBA1-EN
Issue date	06.02.2026
Valid to	05.02.2031

Record DFA 127 Automatic Swing Door Operator

ASSA ABLOY Entrance Systems AB

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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ASSA ABLOY

1. General Information

ASSA ABLOY Entrance Systems AB

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-ASA-20250463-IBA1-EN

This declaration is based on the product category rules:

Drive systems for automatic doors and gates, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

06.02.2026

Valid to

05.02.2031

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Record DFA 127 Automatic Swing Door Operator

Owner of the declaration

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

Declared product / declared unit

The declaration represents 1 automatic record DFA 127 swing door operator.

Scope:

This declaration and its LCA study are relevant to the record DFA 127 swing door operator. The universally applicable drive system is for the automation of single and double leaf swing doors for internal use. The final assembly and production stage occurs at Agtatec Ag in Allmendstrasse 24, 8320 Fehraltorf, Switzerland. Components are sourced from international tier one suppliers.

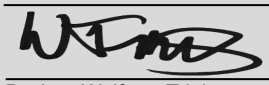
The record DFA 127 swing door operator cover length varies according to project requirements; an operator with a cover standard length of 580 mm and a PUSH arm system is used in this declaration.

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*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally



Dr.-Ing. Wolfram Trinius,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Product name: record DFA 127 swing door operator
Product characteristics: Automatic, slim and silent electro-mechanical swing door operator

The record DFA 127 is a universal drive system for the automation of swing doors. It is characterized by sophisticated technology, compact design and especially record's legendary smoothness of operation. The modular design allows a broad range of applications, with the adjustable spring force to operate doors in sizes EN 4 to EN 6. Flexible programming options offering a wide variety of solutions for many differing requirements.

The standard arm with pushing action is able to compensate different lintel depths, while the sliding arm with pulling or pushing action meets aesthetic requirements.

Operating modes as "automatic", "continuously open" or "manual" can be selected with a toggle switch in the side cap. It also integrates a signal LED and a reset button.
The interactive communication enabled by CAN bus technology between the "record" sensors and the door control guarantees high reliability and maximum user safety.

Automatic swing door operators are generally made of metal and plastic.

The drive system has 4 primary parts:
1) ATG Kit DFA 127 FP EU, with gear box and motor
2) Power supply NET
3) Control unit STG 127
4) Standard arm PUSH-20-230

EN 16005 compliant technology to meet all operational and safety requirements in the European Directives and the standards issued by the European Standardization Committee (CEN), approved as a hold-open system for fire protection barriers, can be used with various fire door profile systems from third party manufacturers, features gerontology technology for barrier-free access, power assist function to manually open a heavy door with minimum effort, power saving mode with optional opening of one leaf or both door leaves on double doors.

For the placing on the market in the the European Union/European Free Trade Association EU/EFTA (excl. Switzerland), Switzerland and Turkey the following European directives apply to the record DFA 127:

- *2014/30/EU* Electromagnetic Compatibility Directive (EMCD)
- *2006/42/EC* Machinery Directive (MD)
- *2011/65/EU* on the restriction of the use of certain hazardous substances in electrical and electronic equipment with the applicable amendments (RoHS).

These directives provide for CE marking of the product and issuing a Declaration of Conformity.

Harmonized European standards, which have been applied:

- *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 61000-3-2* Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤16 A per phase)
- *EN 61000-3-3* Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection
- *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
- *EN 16005* Power operated pedestrian door sets - Safety in use - Requirements and test methods.

Other standards or technical specifications, which have been applied:

- *DIN 18263-4* Locks and Building Hardware -Controlled door closing devices -Part 4: Automatic swing door operator with self-closing function
- *EN 1154* Building hardware – Controlled door closing devices – Requirements and test methods
- *EN 1155* Building hardware - Electrically powered hold-open devices for swing doors - Requirements and test methods
- *EN 1158* Building hardware – Door coordinator devices – Requirements and test methods.

Disposal of the product is subject to the Waste from Electrical and Electronic Equipment (WEEE) Directive within Europe, Directive 2012/19/EU together with the RoHS Directive 2011/65/EU and its amending Directive 2015/863.

For the application and use the respective national provisions apply.

2.2 Application

The record DFA 127 swing door operator is universally applicable for the automation of internal single and double leaf swing doors and can be retrofitted with existing doors.

- Full Power for heavy doors, Low Energy and Power Assist for smooth opening of accessible 'barrier-free' passages
- Approved as hold-open system for fire door assemblies with infinitely adjustable closing force from EN 4 to 6 in accordance with *EN 1154*
- Inverse operation for currentless opening in smoke and heat exhaust ventilation systems
- Interlock operation for two single doors or in combination with a sliding door.

2.3 Technical Data

The list presents the technical properties of the DFA 127. A door leaf is not included in the scope of delivery.

Operator length (with standard cover): 600 mm
Height: 85 mm
Depth: 124 mm
Inertia max.: 65 kgm^2
Cover finish: stainless steel, brushed

Constructional data

Name	Value	Unit
Power input "Standby"	13	W
Power "Idle"	12	W
Power input "On"	60	W
Auxiliary voltage:	24 /max 1000	VDC /mA
Opening time :	3-20	sec
Closing time :	5-20	sec
Hold open time:	0-60	sec
Opening width single leaf door max:	1400	mm
Opening width double-leaf door max:	2800	mm
Noise emission:	< 45	dB
Ambient temperature:	-15 up to +50	°C
Protection class:	IP20	
Locking unit (optional):	Electro-mechanical or manual lock	
Mains power supply:	230 VAC +10%/-15%, 50/60 Hz, fuse 10 AT (building installation)	

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

Performance data of the product according to the harmonised standards, based on provisions for harmonization.

- *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 61000-3-2* Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤16 A per phase)
- *EN 61000-3-3* Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection
- *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
- *EN 16005* Power operated pedestrian door sets - Safety in use - Requirements and test methods.

2.4 Delivery status

The record DFA 127 swing door operator is delivered ready for installation.

2.5 Base materials/Ancillary materials

The average composition of a standard record DFA 127 swing door operator is as follows:

Name	Value	Unit
Aluminium	18.17	%
Plastics	1.84	%
Stainless Steel	11.70	%
Steel	36.53	%
Electronic	12.81	%
Electro-mechanics	18.94	%
Others	0.24	%
TOTAL	100	%

**Percentage in mass*

2.6 Manufacture

The record DFA 127 is manufactured in two locations, Shanghai, China and Fehraltorf, Switzerland respectively. The Fehraltorf location is represented in this declaration.
The profiles are machined and optionally surface treated; either anodized or powder coated (both externally). Other parts as electronics etc. arrive from tier one suppliers, the factory in China or electronics production in Fehraltorf and a final assembly is done in Fehraltorf. The operators are packed in cardboard boxes and forwarded to on-site installation. The certified quality management system, *EN ISO 9001:2015*, ensures high standards.

Offcuts and scraps during the manufacturing process are directed to a recycling unit. Wastewater is cleared locally and waste is sent for disposal.

Waste codes according to the European Waste Catalogue and Hazardous Waste List - Valid from 1 July 2015:
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 02 Aluminum
EWC 17 04 05 Iron and steel

2.7 Environment and health during manufacturing

ASSA ABLOY Entrance Systems AB is committed to producing and distributing door opening solutions with minimal environmental impact, where health & safety are the primary focus for all employees and associates.

• Environmental operations, Greenhouse gases, energy, water, waste, Volatile Organic Compounds (VOC), surface treatment and Health & Safety are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and environment management program effectiveness is evaluated.
• Code of Conduct covers human rights, labor practices and decent work. ASSA ABLOY Entrance Systems AB´s management is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
• Preparation conditions in the factories of Shanghai and Fehraltorf do not require special health and safety measures. Standard health and safety measures (work gloves, hearing protection, safety shoes, dust mask when sanding and milling, dust extraction, etc.) are observed where appropriate.
• Water and soil contamination does not occur and all production related waste is processed internally in the

appropriate manner.

2.8 Product processing/Installation

The record DFA 127 swing door operator is supplied ready for installation. The installation is performed by trained and qualified installation technicians.

2.9 Packaging

Packaging exists for the purpose of protection during transportation. The record DFA 127 swing door operator is packed in cardboard packaging. The packaging consists of 100% cardboard/paper and is recyclable.
All materials incurred during installation are directed to a recycling unit.

Waste codes according to the European Waste Catalogue and Hazardous Waste List -Valid from 1 July 2015:
EWC 15 01 01 paper and cardboard packaging

2.10 Condition of use

Regular inspections shall be made according to national regulations and product documentation by an ASSA ABLOY Entrance Systems' trained and qualified technician. The number of service occasions should be in accordance with national requirements and product documentation. Service is recommended according to "Installation, Commissioning and Service Instructions".

Regular inspections and cleaning should be performed by the owner of the product, according to "User Manual".

The best way to remove dust and dirt from the record DFA 127 swing door operator is to use water and a soft cloth or a sponge. A gentle detergent may be used. The surfaces should be cleaned three times/year (once/four month's period). The cleaning should be documented.

- Do not expose profiles to alkalis. Aluminum is sensitive to alkalis.
- Do not clean with high pressure water. Operator, control panel and sensors may be damaged and water may enter the profiles.
- Do not use polishing detergent.
- Do not scrub with materials that will cause mechanical damage.

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 approximately 1,000,000 cycles or 10 years of average daily use with the recommended maintenance and service program.

For this EPD a lifetime of 10 years was considered.

2.13 Extraordinary effects

Fire

No standardized test has been conducted. The product consists mostly of metals which does not add to the spread of fire.

Water

Contains no substances that impact water. In case of a flood, the 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 phase

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

The majority, by weight, of components are steel and aluminum alloy which can be recycled.

All recyclable materials are directed to a recycling unit where they are recycled (electronics, electro-mechanics, stainless steel, steel, copper and aluminum). The plastic components can be used for energy recovery within a waste incineration process.

Waste codes according to the European Waste Catalogue and Hazardous Waste List -Valid from 1 July 2015.
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

2.15 Disposal

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

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

The disposal of the product is subject to the Waste Electrical and Electronic Equipment (WEEE) Directive within Europe, *Directive 2012/19/EU*

2.16 Further information

ASSA ABLOY Entrance Systems AB
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Sweden

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3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of automatic record DFA 127 swing door operator as specified in Part B requirements on the EPD IBU: PCR Automatic doors, automatic gates, and revolving door systems (door systems). Functional unit for module B6: Use of 1 piece of automatic record DFA 127 swing door operator for 10 years.

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	pce.
Mass (without packaging)	11.963	kg
Mass of packaging (paper, wood, and plastics)	0.588	kg
Mass reference	11.963	kg/pce

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:

- 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.
Use stage:
For the use phase, it is assumed that the universal drive system for the automation of swing doors are 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 2 hours in on mode and 10 hours in stand-by per day and 12 hours in idle mode per day (365 days per year in use, 10 years lifetime); the power consumption throughout the whole life cycle is 1.44 MWh.
EoL:
In the End-of-Life stage, for all the materials from the product that can be recycled (steel, aluminum, electronic parts, electro-mechanics, copper, stainless steel, 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, Sphera's Life Cycle for Expert (LCA FE) software is used. Sphera Managed Lifecycle Content (MLC) modelling database is used as the background database of the study.

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 a 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 Sphera MLC database.

3.7 Period under review

The period under review is 2023 (12-month average).

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Europe

3.9 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 MLC dataset documentation.

3.10 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. Sphera's Managed LCA Content CUP 2020.1 serves as background database for the calculation.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO2.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.25	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

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
Litres of fuel	27.51	l/100km
Transport distance	1145	km
Capacity utilisation (including empty runs)	61	%

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Paper/ cardboard packaging)	0.588	kg

End of life (C1-C4)

Name	Value	Unit
Collected seperately aluminium, steel, brass, plastics, stainless steel, copper, electronic, electromechanics, etc.	11.934	kg
Inceneration of Plastics	0.220	kg
Recycling of aluminium, steel, copper, electronic, electro-mechanics, stainless steel, and brass	11.714	kg
Landfill	0.029	kg

Operational Energy Use (B6)

Name	Value	Unit
Country of utilisation	EU-27	
Reference Service life (years)	10	years
Days per year in use (days/year)	365	days/year
Hours per day in different modes (eg. on, stand by) (hours/day)		
on mode (hours)	2	hours
stand-by mode (hours)	10	hours
idle mode (hours)	12	hours
Power consumption per mode (W)		
on mode (W)	60	W
stand-by mode (W)	13	W
idle mode (W)	12	W
Calculated total electricity consumption (MWh)	1.44	Mwh

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

(W_on_mode*h_on_mode+W_idle_mode*h_idle_mode +W_stand_by_mode*h_stand_by_mode)*Life_span*days_year*0.001

Where:
•W_on_mode - Energy consumption in on mode in W
•h_on_mode - Operation time in on 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

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	10	a

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

Name	Value	Unit
Recycling Aluminium	17.32	%
Inceneration of Plastics	1.76	%
Recycling Stainless steel	11.15	%
Recycling Steel	34.82	%
Recycling Electronics	12.21	%
Recycling Electro mechanics	18.05	%
Inceneration of Packaging (Paper)	4.70	%

5. LCA: Results

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

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	Refurbishment	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	MNR	MNR	MNR	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 Unit Record DFA 127 Automatic Swing Door Operator

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.38E+02	8.75E-01	8.34E-01	5.82E+02	0	7.64E-02	3.05E+00	2.66E+00	-4.27E+01
GWP-fossil	kg CO_2 eq	1.42E+02	8.68E-01	2.09E-02	5.79E+02	0	7.58E-02	1.4E+00	2.66E+00	-4.26E+01
GWP-biogenic	kg CO_2 eq	-4.15E+00	5.59E-05	8.13E-01	1.93E+00	0	4.88E-06	1.66E+00	-8.89E-04	-6.85E-02
GWP-luluc	kg CO_2 eq	9.54E-02	7.05E-03	1.37E-05	8.39E-01	0	6.16E-04	1.02E-03	3E-04	-1.56E-02
ODP	kg CFC11 eq	1.81E-09	1.05E-16	1.5E-16	1.27E-11	0	9.14E-18	1.53E-14	3.01E-15	3.99E-12
AP	mol H^+ eq	1.21E+00	8.93E-04	2.33E-04	1.28E+00	0	7.8E-05	3.4E-03	1.91E-03	-3.94E-01
EP-freshwater	kg P eq	3.02E-04	2.65E-06	2.94E-08	1.55E-03	0	2.31E-07	1.87E-06	6.71E-07	-1.75E-05
EP-marine	kg N eq	1.55E-01	2.6E-04	8.43E-05	2.84E-01	0	2.27E-05	8.09E-04	8.94E-04	-4.93E-02
EP-terrestrial	mol N eq	1.69E+00	3.13E-03	1.05E-03	2.98E+00	0	2.74E-04	8.92E-03	1.06E-02	-5.38E-01
POCP	kg NMVOC eq	4.79E-01	7.23E-04	2.23E-04	7.78E-01	0	6.31E-05	2.44E-03	2.31E-03	-1.51E-01
ADPE	kg Sb eq	1.86E+03	1.16E+01	2.63E-01	1.02E+04	0	1.01E+00	1.24E+01	2.65E+00	-4.89E+02
ADPF	MJ	2.11E-02	6.24E-08	2.37E-09	1.68E-04	0	5.45E-09	2.02E-07	3.32E-08	-2.2E-02
WDP	m^3 world eq deprived	2.24E+01	7.79E-03	1.03E-01	1.26E+02	0	6.8E-04	2.93E-01	5.76E-01	-4.92E+00

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 - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 Unit Record DFA 127 Automatic Swing Door Operator

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	MJ	3.61E+02	6.52E-01	1E+01	4.51E+03	0	5.69E-02	5.39E+00	6.98E-01	-1.2E+02
PERM	MJ	9.95E+00	0	-9.95E+00	0	0	0	0	0	0
PERT	MJ	3.71E+02	6.52E-01	4.78E-02	4.51E+03	0	5.69E-02	5.39E+00	6.98E-01	-1.2E+02
PENRE	MJ	1.81E+03	1.16E+01	2.63E-01	1.02E+04	0	1.01E+00	8.68E+01	2.65E+00	-4.94E+02
PENRM	MJ	7.44E+01	0	0	0	0	0	-7.44E+01	0	0
PENRT	MJ	1.88E+03	1.16E+01	2.63E-01	1.02E+04	0	1.01E+00	1.24E+01	2.65E+00	-4.94E+02
SM	kg	4.33E+00	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m^3	9.05E-01	7.55E-04	2.43E-03	5.22E+00	0	6.59E-05	9.55E-03	1.37E-02	-3.63E-01

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 – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 Unit Record DFA 127 Automatic Swing Door Operator

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	kg	1.63E-05	5.4E-07	3.88E-10	4.21E-06	0	4.72E-08	6.06E-09	1.53E-08	-4.09E-07
NHWD	kg	1.37E+01	1.78E-03	2.61E-02	7.22E+00	0	1.55E-04	8.92E-02	1.65E+00	-7.25E+00
RWD	kg	7.52E-02	1.44E-05	1.38E-05	1.54E+00	0	1.25E-06	1.84E-03	1E-04	-1.89E-02
CRU	kg	0	0	5.88E-01	0	0	0	0	0	0
MFR	kg	0	0	5.88E-01	0	0	0	1E+01	0	0
MER	kg	0	0	0	0	0	0	2.8E-01	0	0
EEE	MJ	0	0	1.26E+00	0	0	0	5.8E+00	0	0
EET	MJ	0	0	2.29E+00	0	0	0	8.9E+00	0	0

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

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 Unit Record DFA 127 Automatic Swing Door Operator

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	Disease incidence	1.24E-05	5.32E-09	1.29E-09	1.07E-05	0	4.65E-10	2.17E-08	2.16E-08	-3.59E-06
IR	kBq U235 eq	9.68E+00	2.08E-03	2.14E-03	2.53E+02	0	1.81E-04	3.01E-01	9.1E-03	-3.34E+00
ETP-fw	CTUe	1.11E+03	8.19E+00	1.25E-01	4.35E+03	0	7.16E-01	5.4E+00	1.23E+00	-1.76E+02
HTP-c	CTUh	5.53E-08	1.72E-10	6.61E-12	1.2E-07	0	1.5E-11	2.58E-10	1.73E-10	-2.07E-08
HTP-nc	CTUh	2.65E-06	8.86E-09	2.86E-10	4.43E-06	0	7.73E-10	1.55E-08	1.2E-08	-6.21E-07
SQP	SQP	9.58E+02	4.07E+00	6.98E-02	3.24E+03	0	3.55E-01	3.91E+00	8.67E-01	-6.89E+01

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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, 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 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 19% and 19.6% to the overall results for all core environmental impact assessment categories, except for the global warming potential – biogenic (GWP-biogenic). This result is mainly related to the extraction of renewable 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 of these processes. These two materials account for approx. 62.5% 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 contribution for all core impact assessment categories considered - between 60% and 85%, with the exception of ODP (0.7%) and ADPE (0.79%) respectively. This is a result of 2 hours of operation in on mode, 10 hours in stand-by mode per day, 12 hours in idle mode 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 14025
DIN EN ISO 14025:2010, Environmental labels and declarations - Type III environmental declarations - Principles and procedures

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

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

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

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

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

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

EN 60335-1
EN 60335-1: 2012 AC:2014 +A1:2019 + A2:2019 +A11:2014 +A13:2017 +A14:2019 Household and similar electrical appliances - Safety - Part 1: General requirements

EN 60335-2-103
EN 60335-2-103:2015 Household and similar electrical appliances - Safety - Part 2-103: Particular requirements for drives for gates, doors and windows

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

EN 61000-6-3
EN 61000-6-3: 2007 + A1:2011/AC:2012 + A1:2011 Electromagnetic compatibility (EMC) - Part 6-3: Generic Standards - Emission standard for residential, commercial and light-industrial environments

EN 61000-3-2
EN 61000-3-2 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤16 A per phase)

EN 61000-3-3
EN 61000-3-3 Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection

EN ISO 13849-1
EN ISO 13849-1:2015 Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design

EN 16005
EN 16005:2012 +/AC:2015 Power operated pedestrian doorsets – Safety in use – Requirements and test methods

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

ISO 9001
ISO 9001:2015, Quality management systems - Requirements with guidance for us
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Sphera Solutions, Managed LCA content dataset documentation, Sphera Solutions, Chicago, US, 2023. Retrieved from https://sphera.com/product-sustainability-gabi-data-search/

Sphera's Life Cycle for Expert (LCA FE) software: Sphera Solutions, 'Life Cycle Assessment for Expert software', Sphera Solutions, Chicago, US, 2023. Retrieved from https://sphera.com/life-cycle-assessment-lca-software/.

IBU PCR Part A
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 1.3, 8-2022
www.ibu-epd.de

IBU PCR Part B: 2021
PCR – Part B: Requirements of the EPD for Drive systems for automatic doors and gates, Institut for Bauen und Umwelt e.V., Version 1.6 (01.08.2021) www.ibu-epd.com

IBU 2021
General Instructions for the EPD programme of Institut Bauen und Umwelt e.V. Version 2.0, Berlin: Institut
Bauen und Umwelt e.V., 2021.
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Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI), EPA/600/R-12/554 2012

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