## **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-20190138-IBB1-EN

Issue date 04.09.2019

/alid to 03.09.202

# ASSA ABLOY Integra swing door system ASSA ABLOY Entrance Systems AB



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### 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-20190138-IBB1-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

20.12.2018

### Valid to

19.12.2023

Hans Peters

Dr. Alexander Röder (managing director of IBU))

## ASSA ABLOY Integra swing door system

#### 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 ASSA ABLOY Integra swing door system consisting of 2 door leaves with frame height 2.6 m, frame width 2.5 m and 22 mm insulated laminated glass.

### Scope:

This declaration and its LCA study are relevant to ASSA ABLOY Integra swing door system. The final assembly and production stage occur in Ostrov u Stribra, Czech Republic at D5 Logistic Park 34901 Ostrov u Stribra, Czech Republic. Components are sourced from international tier one suppliers. The ASSA ABLOY Integra swing door system cover length varies according to project requirements; a door system with 2 door leaves with frame height 2.6 m and frame width 2.5 m and with 22 mm clear insulated laminated glass 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

internall

externally



Dr. Wolfram Trinius (Independent tester appointed by SVA)

### 2. Product

### 2.1 Product description

**Product name:** ASSA ABLOY Integra swing door system.

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**Product characteristic:** Automatic, robust, electromechanical swing door operator. The ASSA ABLOY Integra swing door system is equipped with SW200 overhead concealed operator. The system will be providing an aesthetic look as the drive unit is connected direct to the top of the door showing no arm system.

The operator works electro-mechanically. It opens with motor and closes with motor and spring. The opening and closing speeds can be varied individually. The motor, control unit, gear box and spring are combined into a compact unit and mounted within the cover.

The ASSA ABLOY Integra swing door system can handle doors up to 170 kg. The smart control unit

offers added-value features like double-door controls and monitored battery backup for convenience. Push-and-Go opens the door automatically when manually pushed from the closed position and Power Assist provides motorized assistance when the door is pulled by hand.

Automatic swing door systems are generally made of aluminum and glass.

The ASSA ABLOY Integra swing door system has been designed to meet operational and safety requirements in the European Directives and the standards issued by the European Standardization Committee (CEN).

The door has three primary parts:

- 1. Frame
- Operator
- 3. Door leaf



For the placing of the product on the market in the EU/EFTA the Directive (EU) 2006/42/EC Machinery Directive (MD), Directive (EU) 2014/30/EU Electromagnetic Compatibility Directive (EMCD) 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 CE-marking for the product takes into account the proof of conformity with the following harmonized norms.

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

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

/EN 61000-6-3:2007+A1:2011 Quality management systems - Requirements (ISO 9001:2015)
/EN 60335-1: 2012+A11:2014: Household and similar electrical appliances -Safety - Part 1: General requirements

/EN 60335-2-103:2015 Household and similar electrical appliances -Safety - Part 2: Particular requirements for drives for gates, doors and windows /EN ISO 13849-1:2015 Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design

## Other standards or technical specifications, which have been applied:

IEC 60335-1:2010 ed. 5: Household and similar electrical appliances -Safety - Part 1: General requirements

IEC 60335-2-103 ed. 2.1:2011 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.

### 2.2 Application

The ASSA ABLOY Integra swing door system is suitable for both external and internal use. The ASSA ABLOY Integra swing door system facilitates entry and exit in buildings, ranging from healthcare facilities to the public sector. Packed with the most innovative and advanced technological features, the ASSA ABLOY Integra swing door system performs to the highest standards in the industry with unique features such as stack pressure management.

### 2.3 Technical Data

The table presents the technical properties of the ASSA ABLOY Integra swing door system:

### **Features**

Midrail (70 or 150 mm)	Optional
Threshold	Optional
Infill panel	Optional
Profile finish	anodized aluminum,
	RAL colors available on
	request

#### **Performance**

Mains power supply	100-240 V AC+10/-15%,	
	50/60Hz,mains fuse	
	max 10A (building	
	installation)	
Power consumption	Max. 300W	
Auxiliary voltage	24 V DC, max. 700 mA	
Opening time (0° - 80°)	variable between 2- 12	
	seconds	
Closing time (90° - 10°)	variable between 4 - 12	
	seconds	
HOLD open time	1.5-30 seconds	
Ambient temperature	-20°C to +45°C	

### **Technical data**

Name	Value	Unit
Frame height FH	2100-2600	mm
Frame width FW	1250- 2500	mm
Clear opening	FW-258	mm
Depth	160	mm
Glass	6, 8 or 10 laminated 22 or 40 Insulated	mm
Thermal transmittance *	2,9	W/m².k

<sup>\*</sup>The value varies between 1,1-5,7 depending on type of glass

### 2.4 Delivery status

ASSA ABLOY Integra swing door system is delivered ready for installation.

### 2.5 Base materials / Ancillary materials

The average composition for Integra swing door system, is as following:

Component	Percentage in mass (%)
Aluminium	30,72
Brass	0,02
Copper	0,16
Lead	0,00
Plastics	11,85
Stainless steel	0,40
Steel	6,59
Zink	1,18
Glass	47,61
Electronic	0,45
Electro mechanics	0,40
Paper	0,13
Others	0,00
Total	100

### 2.6 Manufacture

The primary manufacturing processes are made by tier one suppliers and the final manufacturing processes for operator units occur in factory in Ostrov, Czech Republic. The profiles are machined and surface treated; either anodized (externally) or powder coated (internally). Other parts as electronics etc. arrives from tier one suppliers or the factory in China and a final assembly is done in Ostrov. 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 on-site and 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 08 02 01 Waste coating powders EWC 12 01 05 Plastics

#### 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.
- Preparation and manufacturing conditions (including the process of powder coating) in the factory of Ostrov 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.

### Product processing/Installation

The ASSA ABLOY INTEGRA swing door system is supplied ready for installation. The installation is performed by certified installation technicians.

#### 2.9 **Packaging**

The ASSA ABLOY Integra swing door system is packed in a wooden crate and accessories in carboard package. The wooden crate and cardboard are recyclable.

Material	Value (%)
Cardboard/paper	1,21
Wood	98,79
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 03 wooden 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 "Service Log Book".

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

The best way to remove dust and dirt from the ASSA ABLOY Integra swing door system is to use water and a soft cloth or a sponge. A gentle detergent may be used. To maintain the quality of the enamel layer, 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, programme selector and sensor may be damaged and water may enter the profiles.
- Do not use polishing detergent.
- · Do not scrub with materials like Scotch-brite, as this will cause mechanical damage.

### Environment and health during use

There is no harmful emissive potential. Minimal risk for personal injury if correctly configured and maintenance recommendations apply.

### 2.12 Reference service life

The product has a reference service life of more than 1,000,000 cycles and 10 years of standard daily use (with the recommended maintenance and service program). For this EPD a lifetime of 10 years was considered.

#### 2.13 **Extraordinary effects**

Fire

Not applicable. The Integra door is not fire approved due to the fact that it is an exterior door.

### Water

The product does not contain any substances that could be released and have an adverse environmental impact on water in case of flood. Product operation can be influenced.

### **Mechanical destruction**

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

### 2.14 Re-use stage

The product is possible to re-use during the reference service life and be moved from one place to another. The majority, by weight, of components is aluminum and glass which can be recycled. The paper and wood components can be used for energy recovery within a waste incineration process. Glass and others (less significant amount) are landfilled.

The rest components can all be recycled and are directed to a recycling unit.

### 2.15 Disposal

The product can be mechanically dissembled to separate the different materials. The majority of the material can be recycled. The requirements on waste disposal and recycling listed in the European Waste Catalogue (EWC) should be followed

In this EPD, product parts made of glass were treated/disposed in landfill: EWC 17 02 02 glass



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 04 zinc

EWC/ 17 04 02 aluminium

EWC/ 17 02 03 plastic

EWC/ 16 02 wastes from electrical and electronic

equipment

EWC/ 15 01 01 paper and cardboard packaging

EWC/ 15 01 03 wooden packaging

### 2.16 Further information

ASSA ABLOY Entrance Systems AB Lodjursgatan 10 SE-261 44 Landskrona Sweden info.aaes@assaabloy.com www.assaabloy.com



### 3. LCA: Calculation rules

### 3.1 Declared Unit

The declaration refers to 1 power operated swing door system as specified in Part B requirements on the EPD for PCR Automatic doors, automatic gates, and revolving door systems (door systems).

A door system with 2 door leaves with frame height 2.6 m and frame width 2.5 m and with 22 mm clear insulated laminated glass is used in this declaration.

### **Declared unit**

Name	Value	Unit
Mass (without packaging)	298,26	kg
Mass packaging (paper and wood)	70,86	kg
Conversion factor to 1 kg	0,003352822	-
Declared unit for swing 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:

- 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

<u>Transportation:</u> 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 door is used in the EU-28 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 3650 hours in on mode and 2920 hours (365 days per year in use) in idle mode per year; the power consumption throughout the whole lifecycle is 1971 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 2019a/. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation /GaBi 8 2019b/. 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 8 software database.

### 3.7 Period under review

The period under review is 2018 (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 plastics
- · 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 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 Un		
Name	Value	Unit
Truck transport		
Litres of fuel diesel with maximum load (27t payload)	39.4	l/100km
Transport distance truck (primary target market is EU 28)	1425	km
Capacity utilization (incl. empty runs) of truck	85	%

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (paper packaging)	0,86	kg
Output substances following waste treatment on site (wood packaging)	70	kg

### Reference service life

Name	Value	Unit
Reference service life	10	а

Operational energy use (B6)

Operational energy use (B6)		
Name	Value	Unit
Electricity consumption per RSL (10 years, 365 days per year)	1971	kWh
Hours per day in on mode	10	h
Hours per day in stand-by mode	6	h
Hours per day in idle mode	8	h
Power consumption – on mode	40	W
Power consumption – stand-by mode	10	W
Power consumption – idle mode	10	W

<sup>\*</sup>Total energy consumed during the whole product life was calculated using following formula:

(W\_active\_mode\*h\_active\_mode+W\_idle\_mode\*h\_idl e\_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.

Collected separately aluminum, steel, brass, plastics, electronic and electro mechanics.	154,83	kg
Incineration of plastic parts	35,33	kg
Incineration of paper	0,40	kg
Recycling aluminum, brass, copper,	,	9
steel, zinc, electronic, electro-	119,10	kg
mechanics		
Landfill of glass	142,01	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	225,69	kg
Recycling aluminium	40,60	%
Recycling brass	0,03	%
Recycling copper	0,21	%
Recycling stainless steel	0,53	%
Recycling steel	8,71	%
Recycling brass	0,03	%
Recycling electronic	0,59	%
Recyling electro mechanics	0,53	%
Incineration of plastic parts	15,66	%
Incineration of packaging (paper and wood) (from A5)	31,40	%

End of life (C1-C4)

Name	Value	Unit



### 5. LCA: Results

Results shown below were calculated using CML 2000 – Apr. 2013 Methodology.

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Parame PER PERI PENR PENR PENR RSR	eter  E  M  T  T  RE  RRM  II  II  II  II  II  II  II  II  I	Renewa Renewa resource Total us e Non-rene m Total use o e Use of rer	Paramete able primary energy carr wable prima ss as materi e of renewa mergy resou wable prima energy carr wable prima energy carr wable prima energy resou sterial utiliz of non-rener nergy resou of secondary	y energ rier ary energial utilizable prinurces able prinurces ary energiary	rgy eation mary ergy as ergy as orimary rial y fuels ondary	(MJ) (MJ) (MJ) (MJ) (MJ) (MJ) (MJ) (MJ)	6,07 0,00 6,07 2,34 0,00 2,34 4,65 0,00	E+03 E+04 E+00 E+01 E+01 E+00 E+00 E+00	1,36E+ 3,48E+ 0,00E+ 0,00E+	-01 2,5 -02 3,0 -00 0,0 -00 0,0	A5	00 3,04l 00 1,67l 00 0,00 00 0,00	E+00 E+00 E+00	7,72E-0' - 1,96E+0 0,00E+0 0,00E+0	C3 - 1 7,36E-0 - 1 4,03E+ 0 0,00E+ 0 0,00E+	01 4,87 00 6,72 00 0,00 00 0,00 00 0,00	C4 - - 7E+00 - - - 1E+01 DE+00 DE+00	-3,90E+03 
Parame PER PERI PENE PENE PENE RSF NRS	E M T T T T T T T T T T T T T T T T T T	Renewa Renewa Total us e Non-rene Non-rene Total use o e Use of rer	Paramete able primary energy carr wable prima se as materi e of renewa wable prima energy carr wable prima energy carr wable prima energy carr wable prima energy resou for non-renev nergy resou of secondary newable sec on-renewabl fuels e of net fresh	y energy rier ary energial utilization with the principle principle principle ary energiary energiary energiary energiation washe purces y mater condary alle second h water	rgy as rgy action mary ergy as ergy as porimary rial y fuels ergy as rgy as roundary r	Unit  [MJ]  [MJ]  [MJ]  [MJ]  [MJ]  [MJ]  [MJ]  [MJ]	6,07 0,000 6,07 2,34 0,00 2,34 4,65 0,00 0,00	E+03 E+03 E+04 E+04 E+04 E+01 E+01 E+01 E+01	3,48E+ 0,00E+ 0,00E+ 9,61E-	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 03 2,9	A5	00 3,04 01 1,67 00 0,00 00 0,00 00 0,00 01 7,51	E+03  E+04  E+00  E+00  E+00  E+00	C2 7,72E-0 1,96E+0 0,00E+0 0,00E+0 0,00E+0 5,45E-04	C3 - 1 7,36E-0 - 1 4,03E+ 0 0,00E+ 0 0,00E+ 4 1,82E-0	00 6,72 00 0,00 00 0,00 00 0,00 00 0,00 03 1,42	CC4	-3,90E+03 -1,25E+04 0,00E+00 0,00E+00 0,00E+00 -1,04E+01
Parame PER PERI PENR PENR PENR RSF NRS FW	eter  E  M  T  RE  RM  I  I  I  I  I  I  I  I  I  I  I  I  I	Renewa Renewa Total us e Non-rene Non-rene Total use o e Use of rer	Paramete able primary energy care wable prima es as materie e of renewa nergy resou wable prima energy care wable prima energy care wable prima naterial utiliz of non-renee nergy resou of secondary newable sec on-renewabl fuels e of net fresi	y energy rier ary energial utilization with the principle principle principle ary energiary energiary energiary energiation washe purces y mater condary alle second h water	rgy as rgy action mary ergy as ergy as porimary rial y fuels ergy as rgy as roundary r	Unit  [MJ]  [MJ]  [MJ]  [MJ]  [MJ]  [MJ]  [MJ]  [MJ]	6,07 0,000 6,07 2,34 0,00 2,34 4,65 0,00 0,00	E+03 E+03 E+04 E+04 E+04 E+01 E+01 E+01 E+01	3,48E+ 0,00E+ 0,00E+ 9,61E-	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 03 2,9	A5	00 3,04 01 1,67 00 0,00 00 0,00 00 0,00 01 7,51	E+03  E+04  E+00  E+00  E+00  E+00	C2 7,72E-0 1,96E+0 0,00E+0 0,00E+0 0,00E+0 5,45E-04	C3 - 1 7,36E-0 - 1 4,03E+ 0 0,00E+ 0 0,00E+ 4 1,82E-0	00 6,72 00 0,00 00 0,00 00 0,00 00 0,00 03 1,42	CC4	-3,90E+03 -1,25E+04 0,00E+00 0,00E+00 0,00E+00 -1,04E+01
Parame PER PERI PENR PENR PENR RSF NRS FW	eter  E  M  T  RE  RRM  RT  I  F  F  JULT  G  JULT  JULT  G  JULT  JULT  G  JULT  JULT  JULT  G  JULT  JU	Renewa Renewa Renewa resource Total use Non-rene Mon-rene	Paramete able primary energy care wable prima es as materie e of renewa nergy resou wable prima energy care wable prima energy care wable prima naterial utiliz of non-renee nergy resou of secondary newable sec on-renewabl fuels e of net fresi	y energy rier ary energial utilization with the principle principle principle ary energiary energiary energiary energiation washe purces y mater condary alle second h water	rgy as rgy action mary ergy as ergy as porimary rial y fuels ergy as rgy as roundary r	Monital Market M	6,07 0,00 6,07 2,34 0,00 2,34 4,65 0,00 1,33	E+03 E+04 E+04 E+04 E+04 E+04 E+04 E+04 E+04	3,48E+ 0,00E+ 0,00E+ 9,61E- STE	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 CATE	A5	00 3,041 00 0,00 00 0,00 00 0,00 01 7,51 00 0,00 01 7,51	E+03  E=+04  E=+04  E=+00  One	7,72E-0° 1,96E+0 0,00E+0	C3	01 4,87 00 6,72 00 0,00 00 0 00 0 00 0 00 0 00 0 00 00 0 00 0	CC4	-3,90E+03 -1,25E+04 0,00E+00 0,00E+00 -1,04E+01 Integra
Parame PER PERI PENR PENR PENR PENR FSM RSF NRS FW RESU Swing	E M T T T T T T T T T T T T T T T T T T	Renewa Renewa Renewa resource Total us e Non-rene Mon-rene Total use of e Use of rer Use of no Use of rer F Hazardou	Parameter  able primary energy carrivable primary energy resouwable primary energy carrivable primary energy carrivable primary energy carrivable primary energy resource for non-renewnergy resource energy ene	y energy rier ary energial utilizable prinurces ary energation wable purces y mater condary ele seco	rgy as rgy action mary ergy as ergy as perimary ergy as perimary ergy fuels endary r	Unit	A1 6,07 0,000 0,000 2,34 4,65 0,000 1,33 CS ANI	-A3	3,48E+ - - 0,00E+ 0,00E+ 9,61E- STE	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 03 2,9  CATE  A5 2,12E-0		00 3,04 01 1,67 00 0,00 00 0,00 00 0,00 01 7,51 02 RIES:	E+04  E+00  E+00  One	C2 7,72E-0 1,96E+0 0,00E+0 0,00E+0 0,00E+0 0,00E+0 0,00E+0 0,00E+0 0,00E+0 0,00E+0	C3 - 1 7,36E-0 1 4,03E+ 0 0,00E+ 0 0,00E+ 0 0,00E+ 4 1,82E-0 C3 5,58E-04	00 6,72 00 0,00 00 0,00 00 0,00 03 1,42 6A AB	C4	-3,90E+03 -1,25E+04 0,00E+00 0,00E+00 -1,04E+01 Integra D -2,28E-01
Parame PER PERI PENE PENE PENE SM RSF NRS FW RESU Swing Param	E M T T T T T T T T T T T T T T T T T T	Renewa Renewa Renewa resource Total us e Non-rene m Total use o e Use of rer Use of no Use of rer Hoor syste P Hazardou Non-ha	Parameter	y energy rier ary energial utilizable prinurces ary energation wable purces y mater condary ele seco	rgy as rgy action mary ergy as ergy as perimary ergy as perimary ergy fuels endary r	Unit	A1 6,07 0,00 6,07 2,34 0,00 2,34 4,65 0,00 1,33 S ANI A1 - A3 ,24E-01 56E+02	E+03 E+04 E+04 E+00 E+04 E+04 E+00 E+04 E+01 E+00 E+01 E+01 E+01 E+01 E+01 E+01	3,48E+ 0,00E+ 0,00E+ 9,61E- STE  4 E-04 E-02	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 -00 0,0 CATE  A5 2,12E-( 1,66E+	A5	00 3,041 00 0,00 00 0,00 00 0,00 01 7,51 01 7,51 01 7,51 01 7,51 01 7,51	E+04  E+00  One  One	7,72E-0° - 1,96E+0 0,00E+0 0,00E+0 0,00E+0 5,45E-0 48E-05 47E-03	C3 - 1 7,36E-0 - 1 4,03E+ 0 0,00E+ 0 0,00E+ 0 0,00E+ 4 1,82E-0 C3 5,58E-04 1,30E-03	01 4,87 00 6,72 00 0,00 00 0,00 00 0,00 03 1,42 6A AB	C4	-3,90E+03 -1,25E+04 -1,25E+04 -0,00E+00 -0,00E+00 -1,04E+01 Integra  D -2,28E-01 -1,45E+02
Parame PER PERI PENR PENR PENR PENR SM RSF NRS FW RESU Swing Param HWI	E M T T T T T T T T T T T T T T T T T T	Renewa Renewa Renewa resource Total us e Non-rene Mon-rene Use of Use of rer Use of no Use S OF TH OUT Syste Hazardou Non-ha	Parameter  able primary energy carr wable prima es as materi e of renewab energy carr wable prima energy carr wable prima energy carr wable prima energy carr wable prima energy resou of non-renev nergy resou of secondary newable sec on-renewabl fuels e of net fresi	y energy rier ary energial utilizable principurces ary energiary e	rgy as rgy action mary ergy as primary rial y fuels product of the control of the	Unit	A1 6,07 0,000 0,000 1,33 A1 - A3 ,24E-01 55E+00	-A3	3,48E+ - - 3,48E+ 0,00E+ 0,00E+ 9,61E- STE ( 4 E-04 E-04	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 03 2,9  CATE  A5 2,12E-( 1,66E+ 1,88E-(	A5	00 3,04 01 1,67 00 0,00 00 0,00 00 0,00 01 7,51 01 7,51 01 7,51 01 7,51 01 7,51	E+00   E+00   One   One   2,6	C2 7,72E-0 1,96E+0 0,00E+0 0,00E+0 0,00E+0 0,00E+0 48E-05 47E-03	C3	00 6,72 00 0,00 00 0,00 00 0,00 00 0,00 00 1,42 6 4,24 6 1,33 7 2,19	C4	
Parame PER PERI PENE PENE PENE SM RSF NRS FW RESU Swing Param HWI NHW	E M T T T T T T T T T T T T T T T T T T	Renewa Renewa Renewa Renewa resource Total use e Non-rene m Total use o e Use of rer Use of no Use S OF TH OUT SYSTE	Parameter  Bable primary energy carrivable primary energy resource of renewal energy carrivable primary energy carrivable primary energy carrivable primary energy resource of non-renewable secondary enewable en	y energy rier ary energial utilizable prinurces ary energary energiary energ	rgy as rgy action mary ergy as ergy as porimary rial y fuels endary r	Unit	A1 6,07 0,000 6,07 2,34 0,000 2,34 4,65 0,000 1,333 CS ANI A1 - A3 ,24E-01 56E+02 52E+00 00E+00	E+03 E+04 E+04 E+04 E+04 E+04 E+04 E+04 E+04	1,36E+ 1,36E+ 3,48E+ 0,00E+ 0,00E+ 9,61E- STE  4 E-04 E-04 E-04 E-04 E-04	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 -00 0,0 -01 2,5 -02 3,0 -00 0,	A5	00 3,04 01 1,67 00 0,00 00 0,00 01 7,51 01 7,51 02,31E+( 0,00E+(	E+00 One  One  One  One  One	C2 7,72E-0 <sup>-</sup> 1,96E+0 0,00E+0 0,00E+0 0,00E+0 0,00E+0 47E-03 57E-05 00E+00	C3	00 6,72 00 0,00 00 0,00 00 0,00 00 1,42 6 1,33 1 2,19	C4	
Parame PER PERI PENR PENR PENR PENR RSF NRS FW RESU Swing Param HWI NHW RWI	E M T T T T T T T T T T T T T T T T T T	Renewa Renewa Renewa resource Total us e Non-rene m Total use o e Use of rer Use of no Use of rer Use of no Radioactiv Compo	Parameter  able primary energy carr wable prima es as materia e of renewa nergy resou wable prima energy carr wable prima energy carr wable prima laterial utiliz of non-renev nergy resou of secondary newable secondary  newable secondary  parameter  us waste dis eazardous wa disposed we waste dis	y energy rier ary energial utilizable priruirces ary energary energary energation wable purces y mater condary energial esecond water esecond	rgy as rgy as rgy as primary rial rgy fuels rindary r runit [kg] [kg]	Unit	A1 6,07 0,000 6,07 2,34 0,000 2,34 4,65 0,000 1,33 S ANI A1 - A3 ,24E-01 56E+02 52E+00 00E+00	E+03 E+04 E+00 E+04 E+00 E+01 E+00 D WA A A,36i 0,00i 0,00i	1,36E+ 1,36E+ - 3,48E+ 0,00E+ 0,00E+ 0,00E+ 9,61E- STE 4 E-04 E-04 E-02 E-04 E+00 E+00	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 03 2,9  CATE  A5 2,12E-( 1,66E+ 1,88E-( 0,00E+	A5	00 3,04 01 1,67 00 0,00 00 0,00 01 7,51 01 7,51 01 7,51 01 7,51 01 7,51 01 7,51 01 7,51	E+00   E+00   Cone   Co	C2	C3	00 6,74 00 0,00 00 0,00 00 0,00 00 0,00 00 1,42 6 4,24 1,331 2,19 0 0,000 2 0,000	C4	
Parame PER PERI PENE PENE PENE SM RSF NRS FW RESU Swing Param HWI NHW RWI CRU	E M T T T T T T T T T T T T T T T T T T	Renewa Renewa Renewa Renewa resource Total use of e Non-rene Use of rer Use of rer Use of no Use S OF TH or syste Radioactiv Compo	Parameter able primary energy carr wable prima es as materia e of renewab energy carr wable prima energy carr wable prima energy carr wable prima energy carr wable prima energy resou of secondary energy resou of secondary enewable sec en renewabl fuels e of net fresl  ELCA — em  Parameter  us waste dis azardous wa disposed we waste dis enents for re	y energy	rgy as rgy as argy as argy as primary rial y fuels andary r	Unit	A1 6,07 0,000 6,07 2,34 0,000 2,34 4,65 0,000 1,33 S ANI S ANI 56E+02 52E+00 00E+00 00E+00	E+03 E+04 E+04 E+00 E+04 E+04 E+00 E+04 E+01 E+01 C+00 E+04 C-00 C-000 C	1,36E+ - 1,36E+ - 3,48E+ 0,00E+ 0,00E+ 9,61E- STE  4 E-04 E-04 E-02 E-04 E+00 E+00 E+00	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 -00 0,0 -01 2,5 -02 3,0 -03 2,9 -04 1,66E+ -1,88E-(-1,66E+ -1,88E-(-1,	A5	00 3,041 01 1,670 00 0,00 00 0,00 01 7,511 00 2,31E+0 2,31E+0 0,00E+0 0,00E+0	E+00   E+00   One  One  One  One  One  One  One  One	C2 7,72E-0' 1,96E+0 0,00E+0 0,00E+0 0,00E+0 0,00E+0 47E-03 57E-05 00E+00 00E+00	C3	00 6,72 00 0,00 00 0,00 00 0,00 00 0,00 00 1,42 1,33 1,33 2,19 0 0,00 0 0,00 0 0,00 0 0,00	C4	-3,90E+03 -1,25E+04 0,00E+00 0,00E+00 -1,04E+01 Integra  D -2,28E-01 -1,45E+02 -1,03E+00 0,00E+00 0,00E+00
Parame PER PERI PENF PENF SM RSF NRS FW RESU Swing Param HWI NHW RWI CRU	E M T T T T T T T T T T T T T T T T T T	Renewa Renewa Renewa Renewa resource Total use Non-rene m Total use of Use of rer Use of no Use of rer Use of no Cor syste Radioactiv Compo Materials f	Parameter  able primary energy carr wable prima se as materi e of renewab material utiliz for non-renew nergy resou for secondary mewable	y energy rier ary energial utilizable prirurces ary energiary ener	rgy as rgy as argy as argy as primary rial y fuels andary recommendation for the recommenda	Unit	A1 6,07 0,000 6,07 2,34 0,000 2,34 4,65 0,000 1,33 S ANI A1 - A3 ,24E-01 56E+02 52E+00 00E+00	E+03 E+03 E+04 E+04 E+00 E+04 E+01 E+00 E+01 E+00 E+01 O,000 O,000 E+01 O,000 E+01 O,000	1,36E+ - 1,36E+ - 3,48E+ 0,00E+ 0,00E+ 9,61E- STE 4 E-04 E-04 E-02 E-04 E+00 E+00 E+00 E+00	-01 2,5 -02 3,0 -00 0,0 -00 0,0 -00 0,0 03 2,9  CATE  A5 2,12E-( 1,66E+ 1,88E-( 0,00E+	A5	00 3,04 01 1,67 00 0,00 00 0,00 01 7,51 01 7,51 01 7,51 01 7,51 01 7,51 01 7,51 01 7,51	E+04  E+00  One  One  One  One  One  One  One  O	C2	C3	01 4,87 00 6,74 00 0,00 00 0,00 00 0,00 00 0,00 01 1,76	C4	



### 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 49,49 % and 74,39 % 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. 99,68 % - 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 aluminium and glass mainly due to the energy consumption on these processes. These two materials accounts with approx. 78 % 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 significant contribution for all the impact assessment categories considered - between 29,58 % and 50,43 %, with the exception of ADPE (0,30 %). This is a result of 6 hours of operation in stand-by mode, 8 hours in idle-model 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

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### /EWC/

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### /IBU PCR Part A:2017/

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### /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) <a href="https://www.ibu-epd.com">www.ibu-epd.com</a>

### /ISO 14025/

DIN EN ISO 14025:2015: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

### /ISO 9001:2015/

Quality management systems - Requirements with guidance for us

### /OHSAS 18001:2007/

Occupational Health and Safety Assessment Series

### /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 Methodolog	ılts shown below were	calculated using	TRACI Methodology.
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DES			F THE								LCA; I	MND =	MOD	JLE N	OT DE	CLARED)
PRO	DUCT S	TAGE		RUCTI OCESS AGE			US	SE STAC	ЭE			EN	D OF LI	FE STA	GE	BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement <sup>1)</sup>	Refurbishment <sup>1)</sup>	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Recovery- Recycling- potential
<b>A</b> 1	A2	А3	A4	A5	B1	B2	В3	B4	B5	В6	В7	C1	C2	C3	C4	D
X	Х	Х	Χ	Χ	MND	MND	MND	MND	MND	Χ	MND	MND	Χ	Χ	Х	X

## RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of ASSA ABLOY Integra swing door system

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO <sub>2</sub> -Eq.]	1,57E+03	2,52E+01	1,16E+02	9,36E+02	1,42E+00	2,26E-01	9,48E+01	-9,89E+02
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	6,69E-07	1,28E-10	4,88E-10	6,81E-07	7,23E-12	1,65E-10	3,21E-10	4,10E-07
AP	Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	8,22E+00	1,55E-01	1,87E-02	4,18E+00	8,49E-03	1,01E-03	3,99E-02	-4,95E+00
EP	Eutrophication potential	[kg N-eq.]	4,82E-01	1,07E-02	1,03E-03	1,78E-01	6,00E-04	4,30E-05	1,91E-03	-1,27E-01
Smog	Ground-level smog formation potential	[kg O <sub>3</sub> -eq.]	9,52E+01	3,17E+00	3,58E-01	3,78E+01	1,75E-01	9,15E-03	4,69E-01	-4,44E+01
Resources	Resources – resources fossil	[MJ]	2,01E+03	4,99E+01	2,96E+00	7,57E+02	2,82E+00	1,83E-01	6,90E+00	-8,96E+02

### RESULTS OF THE LCA - RESOURCE USE: One piece of ASSA ABLOY Integra swing door system

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	6,07E+03	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0,00E+00	-	=	=	ı	-	=	-
PERT	Total use of renewable primary energy resources	[MJ]	6,07E+03	1,36E+01	2,52E+00	3,04E+03	7,72E-01	7,36E-01	4,87E+00	-3,90E+03
PENRE	Non-renewable primary energy as energy carrier	[MJ]	2,34E+04	-	-	-	i	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0,00E+00	=	=	=	III	-	=	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	2,34E+04	3,48E+02	3,03E+01	1,67E+04	1,96E+01	4,03E+00	7E+01	-1,25E+04
SM	Use of secondary material	[kg]	4,65E+01	0,00E+00						
RSF	Use of renewable secondary fuels	[MJ]	0,00E+00							
NRSF	Use of non-renewable secondary fuels	[MJ]	0,00E+00							
FW	Use of net fresh water	[m³]	1,33E+01	9,61E-03	2,99E-01	7,51E+00	5,45E-04	1,82E-03	1,42E-01	-1,04E+01

## RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of ASSA ABLOY INTEGRA swing door system

Parameter	Parameter	Unit	A1 - A3	A4	A5	В6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	8,24E-01	7,91E-04	2,12E-03	2,31E+00	4,48E-05	5,58E-04	4,24E-03	-2,28E-01
NHWD	Non-hazardous waste disposed	[kg]	1,56E+02	4,36E-02	1,66E+00	5,38E+00	2,47E-03	1,30E-03	1,33E+02	- 1,45E+02
RWD	Radioactive waste disposed	[kg]	1,52E+00	4,56E-04	1,88E-03	2,40E+00	2,57E-05	5,80E-04	2,19E-03	- 1,03E+00



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	-
MFR	Materials for recycling	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,19E+02	0,00E+00	0,00E+00
MER	Materials for energy recovery	[kg]	0,00E+00	0,00E+00	7,09E+01	0,00E+00	0,00E+00	35,73E+0 0	0,00E+00	0,00E+00
EEE	Exported electrical energy	[MJ]	0,00E+00	0,00E+00	1,35E+02	0,00E+00	0,00E+00	0,00E+00	1,76E+02	-
EET	Exported thermal energy	[MJ]	0,00E+00	0,00E+00	3,79E+02	0,00E+00	0,00E+00	0,00E+00	4,82E+02	-



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