

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	dormakaba International Holding GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-DOR-20220217-CBA1-EN
Issue date	29.11.2022
Valid to	28.11.2027

## ESA 400 Automatic Sliding Door Dormakaba

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ECO PLATFORM

EPD  
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## General Information

### Dormakaba

#### Programme holder

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

#### Declaration number

EPD-DOR-20220217-CBA1-EN

#### This declaration is based on the product category rules:

Automatic doors, automatic gates, and revolving door systems,  
01.08.2021  
(PCR checked and approved by the SVR)

#### Issue date

29.11.2022

#### Valid to

28.11.2027



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



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

### ESA 400 Automatic Sliding Door

#### Owner of the declaration

dormakaba International Holding GmbH  
DORMA Platz 1  
58256 Ennepetal  
Germany

#### Declared product / declared unit

1 piece of the product: Automatic sliding door ESA 400 consisting of the following items:  
- header  
- drive  
- panels and jambs  
- glass  
- packaging material

#### Scope:

This EPD refers to a specific automatic sliding door ESA 400 produced by dormakaba USA Inc. The production site is located in Reamstown, PA USA.

The year of data collection is 2022.

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	
<input type="checkbox"/>	internally
<input checked="" type="checkbox"/>	externally



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

## Product

### Product description/Product definition

The ESA 400 Fine Frame Automatic Sliding Door is elegant and upscale; perfect marriage of beauty and functionality.

Recommended for standard openings for office and apartment building applications. Full breakout provides enhanced egress capacity.

#### Features

- Breakout of sliding panels and sidelite
- All Glass Look
- Dual Vertical Weather Sweeps
- Factory Glazed 3/8' tempered glass
- Heavy-duty Delrin® and Brass Rollers
- Fully monitored overhead presence and activation sensors
- Security interface
- Low maintenance
- High traffic volume
- Adjustable astragal

#### Optional Features

- Battery backup for keeping the door operational during power loss
- Various thresholds to fit any site condition
- Transom
- Crash bars
- Glass stops up to 1"; sloped glass stops available

For placing on the market following standards are applicable:

- EN 16005
- ICC/IBC International Building Code
- ANSI/BHMA A 156.10 American National Standard for Power Operated Doors Pedestrian Doors
- UL 325 Listed
- NFPA 70 National Electrical Code
- NFPA 101 Life Safety Code
- CUL Approved for use in Canada

### Application

Recommended for standard openings for office and apartment building applications. Full breakout provides enhanced egress capacity.

### Technical Data

The technical specification of the ESA 400 is as follows:

#### Constructional data

Name	Value	Unit
Height	240	mm
Installation depth	152	mm
Opening speed maximum	50	cm/s
Closing speed maximum	40	cm/s
Hold open time maximum	60	s
Supply voltage, frequency maximum	60	Hz
Power supply maximum	60	Hz
Internal power available	27	VDC/2A
Fuse	6.6	A
Power consumption maximum	250	W

## LCA: Calculation rules

### Declared Unit

The declared unit is 1 piece of the product: ESA 400 Automatic Sliding Door

**Delivery status:** The delivery status of an average ESA 400 automatic sliding door includes header, drive, panels, jambs, glass and packaging materials:

Components	Absolute	Percentage
ESA 400	104,7 kg	48,09%
Glass	110 kg	50,53%
Packaging	3 kg	1,38%
Total	217,70 kg	100%

### Base materials/Ancillary materials

The ESA 400 automatic sliding door fine frame comprises the following components:

Components	Percentage
Aluminium elements	40,62%
Steel elements	4,91%
Brass elements	0,16%
Plastic elements	1,10%
Electronic elements	1,72%
Glass	50,53%
Paper	0,96%
Total	100,00%

The product contains partial articles which contain substances listed in the *Candidate List of REACH Regulation* 1907/2006/EC (date: 10.06.2022) exceeding 0.1 percentage by mass: no

### Reference service life

The life cycle of the ESA 400 door system is about 10 years, depending on the application and frequency of use. Regular maintenance is advised to ensure a life expectancy of 10 years. For repairs or renewals, suitable spare parts are available. The drive is tested to 1,000,000 closing cycles according to EN 16005.

### Declared unit

Name	Value	Unit
Declared unit	1	pce.
Mass (total system)	217,70	kg

### System boundary

The type of EPD is: cradle-to-gate with options, modules C1–C4, and module D (A1–A3 + C + D and additional modules: A4 + A5 + B6)

### Production - Module A1-A3

The product stage includes:  
 — A1, raw material extraction, processing and mechanical treatments, processing of secondary material input (e.g. recycling processes),  
 — A2, transport to the manufacturer,  
 — A3, manufacturing and assembly including provision of all materials, products and energy, as well as waste processing up to the end-of-waste state.

### Construction stage - Modules A4-A5

The construction process stage includes:  
 — A4, transport to the building site;  
 — A5, installation into the building;  
 including provision of all materials, products and energy, as well as waste processing up to the end-of waste state or disposal of final residues during the construction process stage.

### Use stage - Module B6

The use stage related to the operation of the building includes:  
 — B6, operational energy use

### End-of-life stage– Modules C1-C4 and D

The end-of-life stage includes:  
 — C1, de-construction, demolition;  
 — C2, transport to waste processing;  
 — C3, waste processing for reuse, recovery and/or recycling;  
 — C4, disposal;  
 including provision and all transport, provision of all materials, products and related energy and water use.

Module D (Benefits and loads beyond the system boundary) includes:

— D, recycling potentials, expressed as net impacts and benefits.

### Geographic Representativeness

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

### 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. Background database: *GaBi*, SP40.

## LCA: Scenarios and additional technical information

### Characteristic product properties of biogenic carbon

#### Information on describing the Biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic carbon content in product	0.25	kg C
Biogenic carbon content in accompanying packaging	0.74	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO<sub>2</sub>.

The following technical scenario information is required for the declared modules

#### Transport from the gate to the site (A4)

Name	Value	Unit
Litres of fuel (per 1 kg)	0.00276	l/100km
Capacity utilisation (including empty runs)	55	%
Transport distance via medium truck	100	km

Transport distance is declared for a distance of 100km by truck in order to allow scaling to a specific point of installation.

#### Installation into the building (A5)

Name	Value	Unit
Waste packaging (paper and plastic)	3	kg

#### Reference service life

Name	Value	Unit
Life Span according to the manufacturer	10	a

#### Operational energy use (B6)

The use stage is declared for 10 years

Name	Value	Unit
Electricity consumption for 1 year	189.29	kWh
Days per year in use	365	days
On mode per day	1.8	h
Idle mode per day	22.2	h
On mode power	14,31	W
Idle mode power	22.2	W

#### End of life (C1-C4)

Name	Value	Unit
Collected separately waste type	214.7	kg
Recycling	100	kg
Energy recovery	0.7	kg
Landfilling	114	kg
Transport to waste management	50	km

The product is disassembled in a recycling process. Material recycling is then assumed for the metals and electronics. The plastic components are assumed to be incinerated with energy recovery. Glass, electromechanics and minor proportions of residues arising from the recycling process are landfilled.

Region for the End of Life is: Global.

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

The collection rate is 100 %.

## 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	X	MNR	MNR	MNR	X	MND	X	X	X	X	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ESA 400 Automatic Sliding Door

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq	1.04E+03	1.9E+00	5.38E+00	0	1.06E+03	0	9.39E-01	4.04E+00	1.74E+00	-5.34E+02
GWP-fossil	kg CO <sub>2</sub> eq	1.04E+03	1.82E+00	2.61E+00	0	1.06E+03	0	8.97E-01	2.42E+00	1.72E+00	-5.32E+02
GWP-biogenic	kg CO <sub>2</sub> eq	-3.15E+00	8.4E-02	2.77E+00	0	2.3E-01	0	4.1E-02	1.62E+00	6E-03	-1.72E+00
GWP-luluc	kg CO <sub>2</sub> eq	6.79E-01	4.33E-05	1.9E-04	0	3.21E-01	0	2.14E-05	1.45E-04	5E-03	-7.9E-02
ODP	kg CFC11 eq	1.09E-09	1.92E-16	1.79E-15	0	3.74E-12	0	9.47E-17	1.33E-15	6.39E-15	-4.36E-09
AP	mol H <sup>+</sup> eq	5.48E+00	2E-03	1E-03	0	1.72E+00	0	8.98E-04	5.91E-04	1.2E-02	-2.04E+00
EP-freshwater	kg P eq	1.08E-03	3.9E-07	3.04E-07	0	5.81E-04	0	1.92E-07	2.11E-07	2.96E-06	-2.63E-04
EP-marine	kg N eq	8.71E-01	5.8E-04	3.89E-04	0	3.68E-01	0	2.86E-04	1.34E-04	3E-03	-2.65E-01
EP-terrestrial	mol N eq	9.68E+00	6E-03	6E-03	0	3.95E+00	0	3E-03	3E-03	3.5E-02	-2.88E+00
POCP	kg NMVOC eq	2.37E+00	2E-03	1E-03	0	1.05E+00	0	8.08E-04	3.76E-04	1E-02	-8.37E-01
ADPE	kg Sb eq	4.43E-03	5.46E-08	2.57E-08	0	2.11E-04	0	2.69E-08	1.85E-08	1.55E-07	-5.38E-04
ADPF	MJ	1.36E+04	2.58E+01	2.07E+00	0	1.72E+04	0	1.27E+01	1.32E+00	2.26E+01	-7.63E+03
WDP	m <sup>3</sup> world eq deprived	1.41E+02	4E-03	6.12E-01	0	2.06E+02	0	2E-03	3.91E-01	1.81E-01	-2.35E+01

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 piece ESA 400 Automatic Sliding Door

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
PERE	MJ	4.75E+03	8.1E-02	2.45E+01	0	2.72E+03	0	4E-02	2.17E+01	2.96E+00	-3.69E+03
PERM	MJ	4.54E+01	0	-2.4E+01	0	0	0	0	-2.14E+01	0	0
PERT	MJ	4.8E+03	8.1E-02	4.69E+01	0	2.72E+03	0	4E-02	3.29E-01	2.96E+00	-3.69E+03
PENRE	MJ	1.36E+04	2.58E+01	4.51E+01	0	1.72E+04	0	1.27E+01	2.48E+01	2.26E+01	-7.63E+03
PENRM	MJ	6.65E+01	0	-4.3E+01	0	0	0	0	-2.35E+01	0	0
PENRT	MJ	1.36E+04	2.58E+01	2.07E+00	0	1.72E+04	0	1.27E+01	1.32E+00	2.26E+01	-7.63E+03
SM	kg	6.75E+00	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0
FW	m <sup>3</sup>	1.19E+01	1.46E-04	1.4E-02	0	6.3E+00	0	7.2E-05	9E-03	6E-03	-6.42E+00

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 piece ESA 400 Automatic Sliding Door

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
HWD	kg	1.82E-05	2.51E-09	5.81E-09	0	6.63E-06	0	1.24E-09	4.39E-09	3.45E-07	-1.29E-05
NHWD	kg	2.45E+02	3E-03	3.53E-01	0	5.35E+00	0	1E-03	2.57E-01	1.14E+02	-1.45E+02
RWD	kg	7.19E-01	2.77E-05	9.08E-05	0	1.53E+00	0	1.37E-05	5.35E-05	2.58E-04	-8.72E-01
CRU	kg	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	1E+02	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	9E+00	0	0	0	0	0	0	0

EET	MJ	0	0	1.86E+01	0	0	0	0	0	0	0
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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 piece ESA 400 Automatic Sliding Door

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
PM	Disease incidence	5.08E-05	9.58E-09	1.02E-08	0	1.54E-05	0	4.72E-09	6.4E-09	1.53E-07	-3.31E-05
IR	kBq U235 eq	1.4E+02	4E-03	1.1E-02	0	1.27E+02	0	2E-03	6E-03	2.6E-02	-1.77E+02
ETP-fw	CTUe	7.51E+03	1.83E+01	8.67E-01	0	5.13E+03	0	9.02E+00	5.12E-01	1.29E+01	-2.9E+03
HTP-c	CTUh	6.42E-07	3.44E-10	6.08E-11	0	1.1E-07	0	1.7E-10	4.59E-11	1.92E-09	-1.4E-07
HTP-nc	CTUh	1.16E-05	1.47E-08	4.85E-09	0	4.17E-06	0	7.26E-09	3.98E-09	2.11E-07	-3.89E-06
SQP	SQP	1.61E+03	6.6E-02	5.9E-01	0	1.57E+03	0	3.3E-02	3.93E-01	4.72E+00	-2.11E+02

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 IRP

This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

#### Disclaimer 2 – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP

The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

## References

### Standards

#### A156.10

ANSI A156 - 2017 Power Operated Pedestrian Doors.

#### DIN 18650

DIN 18650:2010, Powered pedestrian doors - Product requirements and test methods.

#### DIN EN 60335

DIN EN 60335-1, -2-103:2020-08, Household and similar electrical appliances - Safety - Part 1: General requirements.

#### DIN EN 61000

DIN EN 61000-1-2:2017-07, Electromagnetic compatibility (EMC) - Part 1-2: General - Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena.

#### DIN EN 61508

DIN EN 61508-2:2011-02, Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems.

#### DIN EN ISO 13849

DIN EN ISO 13849-1:2021-08, Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design.

#### DIN EN ISO 14025

DIN EN ISO 14025:201110, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

#### EN 15804

EN 15804+A2: 2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

#### EN 16005

DIN EN 16005: 2013-01, Power operated pedestrian doorsets - Safety in use - Requirements and test methods.

#### ICC/IBC

The International Building Code (*IBC*) is a model building code developed by the International Code Council (*ICC*).

#### NFPA 70

National Electrical Code 70.

#### NFPA 101

Life Safety Code 101.

#### UL 325

UL 325:2017-05-19 Door, curtain, gate, blind and window operating devices and installations.

### Further References

#### 2011/65/EU ROHS3 Directive

Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

#### 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. [www.ibu-epd.com](http://www.ibu-epd.com)

#### GaBi ts software

Sphera Solutions GmbH Gabi Software System and Database for Life Cycle Engineering 1992-2020 Version 10.0.0.71 University of Stuttgart Leinfelden-Echterdingen

#### GaBi ts documentation

GaBi life cycle inventory data documentation (<https://www.gabisoftware.com/support/gabi/gabidatabase-2020-lci-documentation/>).

**LCA-tool dormakaba**

LCA tool, version ENS Door LCA tool No.: IBU-DOR-202107-LT1-EN

Developed by Sphera Solutions GmbH.

**PCR Part A**

PCR – Part A: Calculation Rules for the Life Cycle Assessment

and Requirements on the Project Re-port according to EN 15804+A2:2019, Version 1.0, Institut Bauen und Umwelt e.V., [www.ibu-epd.com](http://www.ibu-epd.com).

**PCR Part B**

PCR – Part B: Requirements on the EPD for Building Hardware product, version 1.2, Institut Bauen und Umwelt e.V., [www.ibu-epd.com](http://www.ibu-epd.com), 2020.



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