

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	dormakaba International Holding GmbH
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-DOR-20220224-CBA1-EN
Issue date	29.11.2022
Valid to	28.11.2027

ESA 500 Automatic Sliding Door dormakaba




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General Information

dormakaba Programme holder IBU – Institut Bauen und Umwelt e.V. Hegelplatz 1 10117 Berlin Germany	ESA 500 Automatic Sliding Door Owner of the declaration dormakaba International Holding GmbH DORMA Platz 1 58256 Ennepetal Germany
Declaration number EPD-DOR-20220224-CBA1-EN	Declared product / declared unit 1 piece of the product: Automatic sliding door ESA 500 consisting of the following items: - header - drive - panels and jambs - packaging material
This declaration is based on the product category rules: Automatic doors, automatic gates, and revolving door systems, 11.2017 (PCR checked and approved by the SVR)	Scope: This EPD refers to a specific automatic sliding door ESA 500 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 <i>EN 15804+A2</i> . In the following, the standard will be simplified as <i>EN 15804</i> .
Issue date 29.11.2022	
Valid to 28.11.2027	
 Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)	Verification The standard <i>EN 15804</i> serves as the core PCR Independent verification of the declaration and data according to <i>ISO 14025:2011</i> <input type="checkbox"/> internally <input checked="" type="checkbox"/> externally
 Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.)	 Dr.-Ing. Wolfram Trinius (Independent verifier)

Product

Product description/Product definition

The ESA 500 All Glass Automatic Sliding Door is perfect for creating a glass look for interior applications. The ESA 500 sliding door is a superior choice for interior openings. The door solution is also recommended for exterior applications in temperate climates. Suitable for larger openings with extended width sidelites.

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 especially on the market following standards are applicable:

- *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 interior and exterior applications in temperate climates. Suitable for larger openings with extended width sidelites. Applicable for single and double leaf doors.

Technical Data

The technical specification of the ESA 500 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

Delivery status:

The delivery status of an average ESA 500 Automatic Sliding Door includes header, drive, panels, jambs and packaging materials:

Components	Absolute	Percentage
ESA 500	130,59 kg	97,75%
Packaging	3,00 kg	2,25%
Total	133,59 kg	100%

Base materials/Ancillary materials

The ESA 500 All Glass Automatic Sliding door comprises the following components:

Components	Percentage
Aluminium elements	72,36%
Steel elements	4,42%
Plastic elements	4,16%
Electronic elements	3,60%
Paper	15,46%
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 500 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.

LCA: Calculation rules

Declared Unit

The declared unit is 1 piece of the product: ESA 500 Automatic Sliding Door

Declared unit

Name	Value	Unit
Declared unit	1	pce.
Mass (total system)	133,59	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.

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

Information on biogenic carbon

Information on describing the Biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic Carbon Content in product	7.07	kg C
Biogenic Carbon Content in accompanying packaging	0.74	kg C

components are assumed to be incinerated with energy recovery. 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 %.

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

The main distribution region is the american market. 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	130.59	kg
Recycling	123	kg
Energy recovery	4.14	kg
Landfilling	3.45	kg
Transport to waste management	50	km

The product is disassembled in a recycling process. Material recycling is then assumed for the metals, electronics and electromechanics. The plastic

LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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	ND	X	MNR	MNR	MNR	X	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece ESA 500 Automatic Sliding Door

Core Indicator	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ -Eq.]	9.40E+2	1.17E+0	5.38E+0	0.00E+0	1.06E+3	0.00E+0	5.66E-1	4.58E+1	5.50E-2	-5.96E+2
GWP-fossil	[kg CO ₂ -Eq.]	9.72E+2	1.12E+0	2.61E+0	0.00E+0	1.06E+3	0.00E+0	5.41E-1	1.10E+1	5.50E-2	-5.94E+2
GWP-biogenic	[kg CO ₂ -Eq.]	-3.26E+1	5.20E-2	2.77E+0	0.00E+0	2.30E-1	0.00E+0	2.50E-2	3.48E+1	1.88E-4	-1.91E+0
GWP-luluc	[kg CO ₂ -Eq.]	7.00E-1	2.66E-5	1.90E-4	0.00E+0	3.21E-1	0.00E+0	1.29E-5	9.28E-4	1.58E-4	-9.60E-2
ODP	[kg CFC11-Eq.]	8.99E-9	1.18E-16	1.79E-15	0.00E+0	3.74E-12	0.00E+0	5.72E-17	9.53E-15	2.04E-16	-4.76E-9
AP	[mol H ⁺ -Eq.]	4.50E+0	1.00E-3	1.00E-3	0.00E+0	1.72E+0	0.00E+0	5.42E-4	7.00E-3	3.95E-4	-2.24E+0
EP-freshwater	[kg P-Eq.]	1.07E-3	2.39E-7	3.04E-7	0.00E+0	5.81E-4	0.00E+0	1.16E-7	1.47E-6	9.44E-8	-3.04E-4
EP-marine	[kg N-Eq.]	6.23E-1	3.56E-4	3.89E-4	0.00E+0	3.68E-1	0.00E+0	1.72E-4	2.00E-3	1.02E-4	-2.93E-1
EP-terrestrial	[mol N-Eq.]	6.77E+0	4.00E-3	6.00E-3	0.00E+0	3.95E+0	0.00E+0	2.00E-3	3.20E-2	1.00E-3	-3.19E+0
POCP	[kg NMVOC-Eq.]	1.93E+0	1.00E-3	1.00E-3	0.00E+0	1.05E+0	0.00E+0	4.88E-4	6.00E-3	3.08E-4	-9.24E-1
ADPE	[kg Sb-Eq.]	4.22E-3	3.35E-8	2.57E-8	0.00E+0	2.11E-4	0.00E+0	1.62E-8	1.40E-7	4.94E-9	-5.62E-4
ADPF	[MJ]	1.28E+4	1.58E+1	2.07E+0	0.00E+0	1.72E+4	0.00E+0	7.68E+0	1.23E+1	7.21E-1	-8.56E+3
WDP	[m ³ world-Eq deprived]	1.42E+2	2.00E-3	6.12E-1	0.00E+0	2.06E+2	0.00E+0	1.00E-3	4.70E+0	6.00E-3	-2.68E+1

Caption: 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 500 Automatic Sliding Door

Indicator	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
PERE	[MJ]	5.40E+3	5.00E-2	2.45E+1	0.00E+0	2.72E+3	0.00E+0	2.40E-2	2.46E+2	9.50E-2	-4.09E+3
PERM	[MJ]	2.67E+2	0.00E+0	-2.40E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-2.43E+2	0.00E+0	0.00E+0
PERT	[MJ]	5.67E+3	5.00E-2	4.69E+1	0.00E+0	2.72E+3	0.00E+0	2.40E-2	2.66E+0	9.50E-2	-4.09E+3
PENRE	[MJ]	1.26E+4	1.59E+1	4.51E+1	0.00E+0	1.72E+4	0.00E+0	7.69E+0	1.26E+2	7.22E-1	-8.57E+3
PENRM	[MJ]	1.57E+2	0.00E+0	-4.30E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.14E+2	0.00E+0	0.00E+0
PENRT	[MJ]	1.28E+4	1.59E+1	2.07E+0	0.00E+0	1.72E+4	0.00E+0	7.69E+0	1.23E+1	7.22E-1	-8.57E+3
SM	[kg]	2.66E+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	0.00E+0
RSF	[MJ]	0.00E+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	0.00E+0
NRSF	[MJ]	0.00E+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	0.00E+0
FW	[m ³]	1.27E+1	8.96E-5	1.40E-2	0.00E+0	6.30E+0	0.00E+0	4.34E-5	1.11E-1	1.82E-4	-7.08E+0

Caption: PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 piece ESA 500 Automatic Sliding Door

Indicator	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
HWD	[kg]	2.26E-5	1.54E-9	5.81E-9	0.00E+0	6.63E-6	0.00E+0	7.46E-10	2.38E-8	1.10E-8	-1.07E-5
NHWD	[kg]	2.44E+2	2.00E-3	3.53E-1	0.00E+0	5.35E+0	0.00E+0	7.86E-4	1.34E+0	3.63E+0	-1.58E+2
RWD	[kg]	7.48E-1	1.70E-5	9.08E-5	0.00E+0	1.53E+0	0.00E+0	8.25E-6	6.07E-4	8.21E-6	-9.72E-1
CRU	[kg]	0.00E+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	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.03E+2	0.00E+0	0.00E+0
MER	[kg]	0.00E+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	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	9.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	1.86E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

Caption: HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece ESA 500 Automatic Sliding Door

Indicator	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
PM	[Disease Incidence]	4.68E-5	5.88E-9	1.02E-8	0.00E+0	1.54E-5	0.00E+0	2.85E-9	4.91E-8	4.88E-9	-3.62E-5
IRP	[kBq U235-Eq.]	1.47E+2	2.00E-3	1.10E-2	0.00E+0	1.27E+2	0.00E+0	1.00E-3	8.40E-2	8.45E-4	-1.96E+2
ETP-fw	[CTUe]	4.62E+3	1.12E+1	8.67E-1	0.00E+0	5.13E+3	0.00E+0	5.44E+0	5.08E+0	4.12E-1	-3.22E+3
HTP-c	[CTUh]	5.76E-7	2.11E-10	6.08E-11	0.00E+0	1.10E-7	0.00E+0	1.02E-10	3.77E-10	6.11E-11	-1.55E-7
HTP-nc	[CTUh]	1.22E-5	9.03E-9	4.85E-9	0.00E+0	4.17E-6	0.00E+0	4.38E-9	2.36E-8	6.73E-9	-4.30E-6
SQP	[-]	5.06E+3	4.10E-2	5.90E-1	0.00E+0	1.57E+3	0.00E+0	2.00E-2	3.53E+0	1.50E-1	-2.70E+2
Caption	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 14025:2011-10, 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.

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.

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.

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, 2020.

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