

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)
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Valid to	14.03.2028

Automatic Sliding Door ST FLEX dormakaba

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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-20220358-CBA4-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

15.03.2023

Valid to

14.03.2028



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



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

Automatic Sliding Door ST FLEX

Owner of the declaration

dormakaba International Holding GmbH
 DORMA Platz 1
 58256 Ennepetal
 Germany

Declared product / declared unit

The declared unit is one piece (1 pc.) of the ST FLEX automatic sliding door system without drive comprising:

- ST FLEX sliding panels,
- ST FLEX side screens and
- product packaging

Scope:

This EPD refers to the entire life cycle of a specific ST FLEX automatic sliding door system. The production location is dormakaba Zusmarshausen, Germany. Green electricity is used at the production facility. The material and energy flows were taken into consideration accordingly.

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

ST FLEX stands for an automatic sliding door system manufactured by dormakaba. The automatic sliding door system comprises a sliding door operator including sensors and control unit. It can be opened on one or two sides and configured with or without side screens.

Thanks to its low profile width, the ST FLEX automatic sliding door is extremely versatile and allows plenty of light penetration. With its various designs, it is the perfect solution for sophisticated projects.

To meet all requirements the ST FLEX system can be combined with different ES operator versions, among others ES PROLINE and ES 200. For placing the ST FLEX on the market the following legal provisions apply:

- EN 16005
- DIN 18650-1/ -2
- ISO 13849-1
- EN 60335-1
- EN 60335-2-103
- IEC 60335-2-103
- 2011/65/EU ROHS3 Directive

Application

The ST Flex is an elegant solution for all passage areas. The slender profile system provides visual openness and stability in various configurations. On request, the automatic sliding door systems from dormakaba are manufactured for individual dimensions of various building projects. Details regarding different operator systems that can be combined with the ST FLEX profile system are available in the respective product catalogues.

Technical Data

- Low profile width
- Attractive glass surfaces thanks to slender frames
- High stability and torsional rigidity
- Low k-value of frame due to double glazing
- Excellent insulation features thanks to interlocking side

- seals and top and bottom seals
- Flexible and adaptable to project requirements

Base materials/Ancillary materials

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision which can be applied are mentioned above.

The ST FLEX Automatic Sliding Door comprises the following components including packaging:

Components	Percentage
Glass	79%
Aluminium	12%
Plastics	7%
Steel	2%

The product contains partial articles which contain substances listed in the Candidate List of REACH Regulation 1907/2006/EC (date: 17.01.2023) exceeding 0.1 percentage by mass: no

The Candidate List can be found on the ECHA website address: <https://echa.europa.eu/de/home>.

Reference service life

The reference service life of the Automatic Sliding Door ST Flex amounts to 10 years, depending on the application and frequency of use. For repairs and renewals, suitable spare parts are available. The ST Flex is tested and certified to EN 16005, meaning they are designed to withstand a minimum of 1.000.000 cycles.

LCA: Calculation rules

Declared Unit

The declared unit is 1 piece of the product: Automatic Sliding Door ST FLEX

Name	Value	Unit
Declared unit	1	pce.
Mass (total system)	252.73	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 accompanying packaging	0.003	kg C

The following technical scenario information is required for the declared modules.

Transport to the building site (A4)

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

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)	9	kg

End of life (C1-C4)

C1: The product expansion depends on the building. The product share is so low that no environmental burden is assumed.

C2: Transport to waste treatment at end of life is 50km.

Name	Value	Unit
Collected separately waste type waste type	244	kg
Reuse	-	kg
Recycling	34.8	kg
Energy recovery	8.51	kg
Landfilling	200	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 components are assumed to be incinerated with energy recovery. Glass and minor proportions of residues arising from the recycling process are landfilled. Region for the End of Life is: Global.

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	MND	MND	X	X	X	X	X

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

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	4.54E+02	2.21E+00	2.29E+01	0	1.07E+00	2.17E+01	3.06E+00	-7.14E+01
GWP-fossil	kg CO ₂ eq	4.52E+02	2.11E+00	2.29E+01	0	1.02E+00	2.16E+01	3.04E+00	-7.12E+01
GWP-biogenic	kg CO ₂ eq	1.54E+00	9.8E-02	5.33E-04	0	4.7E-02	1.3E-02	1E-02	-1.2E-01
GWP-luluc	kg CO ₂ eq	1.91E-01	5.03E-05	1E-03	0	2.43E-05	1E-03	9E-03	-3.9E-02
ODP	kg CFC11 eq	2.45E-10	2.23E-16	1.15E-14	0	1.08E-16	1.09E-14	1.13E-14	-3.04E-10
AP	mol H ⁺ eq	2.95E+00	2E-03	4E-03	0	1E-03	4E-03	2.2E-02	-2.21E-01
EP-freshwater	kg P eq	4.16E-04	4.52E-07	1.84E-06	0	2.18E-07	1.74E-06	5.22E-06	-5.32E-05
EP-marine	kg N eq	6.48E-01	6.73E-04	9.18E-04	0	3.24E-04	8.69E-04	6E-03	-3.4E-02
EP-terrestrial	mol N eq	7.39E+00	7E-03	1.9E-02	0	4E-03	1.8E-02	6.2E-02	-3.68E-01
POCP	kg NMVOC eq	1.41E+00	2E-03	3E-03	0	9.17E-04	2E-03	1.7E-02	-1.05E-01
ADPE	kg Sb eq	7.62E-04	6.34E-08	1.58E-07	0	3.06E-08	1.5E-07	2.73E-07	-3.71E-04
ADPF	MJ	6.73E+03	3E+01	1.06E+01	0	1.44E+01	1E+01	3.99E+01	-1.04E+03
WDP	m ³ world eq deprived	3.14E+01	4E-03	2.34E+00	0	2E-03	2.21E+00	3.19E-01	-7.95E+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 piece Automatic Sliding Door ST FLEX

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	7.3E+02	9.4E-02	2.76E+00	0	4.6E-02	2.69E+00	5.22E+00	-3.53E+02
PERM	MJ	8.4E-02	0	0	0	0	-8.4E-02	0	0
PERT	MJ	7.3E+02	9.4E-02	2.76E+00	0	4.6E-02	2.61E+00	5.22E+00	-3.53E+02
PENRE	MJ	6.07E+03	3E+01	3.98E+02	0	1.45E+01	2.85E+02	3.99E+01	-1.04E+03
PENRM	MJ	6.62E+02	0	-3.87E+02	0	0	-2.75E+02	0	0
PENRT	MJ	6.73E+03	3E+01	1.06E+01	0	1.45E+01	1E+01	3.99E+01	-1.04E+03
SM	kg	2.59E+01	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	1.75E+00	1.7E-04	5.6E-02	0	8.17E-05	5.3E-02	1E-02	-6.98E-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 piece Automatic Sliding Door ST FLEX

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	1.04E-05	2.91E-09	4.04E-08	0	1.4E-09	3.82E-08	6.08E-07	-3.39E-06
NHWD	kg	5.74E+01	3E-03	2.38E+00	0	1E-03	2.25E+00	2.01E+02	-1.1E+01
RWD	kg	1.41E-01	3.22E-05	3.94E-04	0	1.55E-05	3.72E-04	4.54E-04	-8.6E-02
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	1.02E+01	0	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	0	0	4.24E+01	0	0	0	0	0
EET	MJ	0	0	9.73E+01	0	0	0	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 piece Automatic Sliding Door ST FLEX

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	1.93E-05	1.11E-08	5.2E-08	0	5.36E-09	4.92E-08	2.7E-07	-3.54E-06
IR	kBq U235 eq	2.32E+01	5E-03	3.5E-02	0	2E-03	3.4E-02	4.7E-02	-1.63E+01
ETP-fw	CTUe	7.48E+03	2.12E+01	3.98E+00	0	1.02E+01	3.77E+00	2.28E+01	-3.38E+02
HTP-c	CTUh	3.34E-06	4E-10	3.45E-10	0	1.93E-10	3.26E-10	3.38E-09	-3.37E-08
HTP-nc	CTUh	4.38E-06	1.71E-08	3.49E-08	0	8.24E-09	3.3E-08	3.72E-07	-4.67E-07
SQP	SQP	3.89E+02	7.7E-02	3.18E+00	0	3.7E-02	3.01E+00	8.31E+00	-8.33E+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.

References

Standards

DIN 18650-1

DIN 18650-1: 2010-06, Powered pedestrian doors –Part 1: Product requirements and test methods.

DIN 18650-2

DIN 18650-2:2010-06, Powered pedestrian doors –Part 2: Safety at powered pedestrian doors.

EN 15804

EN 15804:2012-04, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products; German version EN 15804:2012.

EN 16005

EN 16005:2013-01, Power operated pedestrian doorsets - Safety in use - Requirements and test methods; German version EN 16005:2012

EN 60335-1

EN 60335-1; VDE 0700-1:2012-10:2012-10, Household and similar electrical appliances – Safety - Part 1: General requirements (IEC 60335-1:2010, modified); German version EN 60335-1:2012.

EN 60335

EN 60335-2-103/A1; Household and similar electrical appliances - Safety - Part 2-103: Particular requirements for drives for gates, doors and windows (IEC 61/2863/CDV:2005); German version EN 60335-2-103:2003/prA1:2005.2011/65/EU

ISO 13849-1

ISO 13849-1:2008-12, Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design (ISO 13849-1:2006.)

ISO 14025

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

Further References

European Chemicals Agency (ECHA)

<https://echa.europa.eu/de/home>

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/>).

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

LCA-tool dormakaba

LCA tool, ENS doors LCA tool no.: BU-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 Report 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 Automatic doors, automatic gates, and revolving door systems, 08/2021, Institut Bauen und Umwelt e.V., www.ibu-epd.com

REACH Regulation

REACH Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals.

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



Publisher

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

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com



Programme holder

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

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com



Author of the Life Cycle Assessment

dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

+49 2333 793-0
info.de@dormakaba.com
www.dormakaba.com



Owner of the Declaration

dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

+49 2333 793-0
info.de@dormakaba.com
www.dormakaba.com