

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-20230098-CBA1-EN
Issue date	13.04.2023
Valid to	12.04.2028

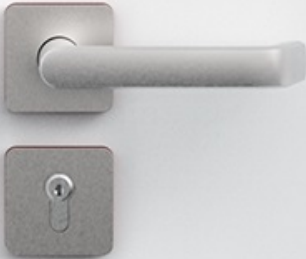
SafeRoute
dormakaba

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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-20230098-CBA1-EN

This declaration is based on the product category rules:

Building Hardware products, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

13.04.2023

Valid to

12.04.2028



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



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

SafeRoute

Owner of the declaration

dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

Declared product / declared unit

1 piece of the product: Escape Route Security System SafeRoute, consisting of the following items:

- SafeRoute STL-G door terminal
- SafeRoute STV electromagnetic door looking device
- Product packaging

Scope:

This Environment Product Declaration refers to a specific escape route security system manufactured by dormakaba. The production site is located in Ennepetal (Germany). Green electricity is being used at this production site.

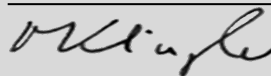
Data represents the year 2022.

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



Matthias Klingler,
(Independent verifier)

Product

Product description/Product definition

SafeRoute is a modularly constructed escape route security system that convincingly interconnects the contrasting requirements of doors in emergency exits and escape routes to save people's lives on the one hand, while securing property on the other hand.

With escape routes, building regulations require doors to be easily opened from inside without external tools. At the same time, insurers, police and facility operators require the most secure lock possible against misuse and break-ins. For the use and application of the product the respective national provisions at the place of use apply. For SafeRoute the standards which can be applied are the following:

- EN 13637: 2015-12
- 2011/65/EU ROHS3 Directive

Application

Doors in emergency exits are subject to many different requirements. SafeRoute offers comprehensive functions and options for securing emergency exits, which is why it features a flexible and modular design. The spectrum of uses ranges from simple retrofitting of a door to a secure escape route door. Installation of a complex escape route system with central monitoring and control via door management software or central management centers is also possible.

Technical Data

The escape route security system has the following technical properties:

Name	Value	Unit
Power supply		
Version without a power supply unit	via DCW bus 24 V DC +/- 10%	
Version with a power supply unit	above 230 V AC +/- 10% 24 V DC	
Output voltage	1A	
Power input		
Closed-circuit current	65 mA	
During alarm	100 mA	
Class of protection	IP 32	
Temperature range	-10°C to +55 °C	
Rel. Humidity	up to 93% (non-condensing)	
Dimensions (W x H x D)	approx. 95 x 253 x 75 cm	

LCA: Calculation rules

Declared Unit

The declared unit is 1 piece of the product: SafeRoute

Name	Value	Unit
Declared unit	1	piece/product
Mass of declared product including packaging	5.32	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)

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

Base materials/Ancillary materials

The major material composition including the packaging of the product is listed below.

Name	Value	Unit
Steel	42	%
Paper	21	%
Zinc	17	%
Aluminium	6	%
Plastic	5	%
Electronics	5	%
Primer and paint	4	%

SafeRoute includes 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: yes

- Lead (Pb): 7439-92-1 (CAS-No.) is used in some of the alloys. The concentration of lead in each individual alloy does not exceed 4.0% (by mass).

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 product amounts to 10 years and depends on the application and frequency of use. Regular maintenance is advised to ensure the life expectancy of 10 years. For repairs and renewals, suitable spare parts are available. The product is tested and certified to EN 13637, meaning they are designed to withstand a minimum of 200.000 cycles.

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: Germany

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.

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	0.35	kg C
Biogenic carbon content in accompanying packaging	0.055	kg C

Additional technical information for the declared modules.

Transport to the building site (A4)

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

The product is transported via truck. The product is stored in the dormakaba logistic center in Germany. The main distribution region is Europe. In order to allow scaling to a specific point of installation 100 km are declared.

Installation into the building (A5)

Name	Value	Unit
Waste packaging (paper and plastic)	0,15	kg

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	10	a

Operational energy use (B6)

Name	Value	Unit
Electricity consumption STL G and STV 200 for 1 year	21.37	kWh
Days per year in use	365	days
One mode per day	0,2	h
Idle mode per day	23,8	h
On mode power STL G	2,4	W
On mode power STV 200	4,8	W
Idle mode power STL G	1,2	W
Idle mode power STV 200	1,2	W

End of life (C1-C4)

C1: The product dismantling from the building is done manually without environmental burden.

Name	Value	Unit
Collected separately waste type	5.17	kg
Recycling	4.75	kg
Energy recovery	0.257	kg
Landfilling	0.16	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. Electromechanics and minor proportions of residues arising from the recycling process are landfilled.

Region for the End of Life is: Europe.

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

Name	Value	Unit
Recycling	100	%

Collection rate is 100%.

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	MND	MND	MNR	MNR	MNR	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece SafeRoute

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	2.27E+01	4.7E-02	2.13E-01	8.64E+01	0	2.3E-02	2.89E+00	2E-03	-7.35E+00
GWP-fossil	kg CO ₂ eq	2.43E+01	4.4E-02	5E-03	8.6E+01	0	2.2E-02	1.19E+00	2E-03	-7.33E+00
GWP-biogenic	kg CO ₂ eq	-1.68E+00	2E-03	2.07E-01	2.87E-01	0	1E-03	1.7E+00	8.29E-06	-1.5E-02
GWP-luluc	kg CO ₂ eq	3.2E-02	1.06E-06	3.5E-06	1.25E-01	0	5.24E-07	8.23E-05	6.99E-06	-4E-03
ODP	kg CFC11 eq	1.87E-09	4.7E-18	3.83E-17	1.89E-12	0	2.33E-18	7.96E-16	9E-18	-1.65E-11
AP	mol H ⁺ eq	1.2E-01	4.45E-05	5.96E-05	1.9E-01	0	2.21E-05	4.54E-04	1.74E-05	-3.4E-02
EP-freshwater	kg P eq	1.43E-04	9.52E-09	7.5E-09	2.3E-04	0	4.72E-09	1.25E-07	4.17E-09	-1.17E-05
EP-marine	kg N eq	2.06E-02	1.42E-05	2.15E-05	4.2E-02	0	7.02E-06	1.27E-04	4.48E-06	-4E-03
EP-terrestrial	mol N eq	2.14E-01	1.57E-04	2.68E-04	4.43E-01	0	7.8E-05	2E-03	4.92E-05	-4.6E-02
POCP	kg NMVOC eq	6.11E-02	4.01E-05	5.7E-05	1.16E-01	0	1.98E-05	3.48E-04	1.36E-05	-1.5E-02
ADPE	kg Sb eq	6.09E-03	1.33E-09	6.05E-10	2.49E-05	0	6.61E-10	1.14E-08	2.18E-10	-2E-03
ADPF	MJ	3.18E+02	6.31E-01	6.7E-02	1.51E+03	0	3.12E-01	9.09E-01	3.2E-02	-9.84E+01
WDP	m ³ world eq deprived	6.05E+00	8.72E-05	2.6E-02	1.88E+01	0	4.32E-05	2.97E-01	2.54E-04	-1.18E+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 SafeRoute

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	MJ	1.23E+02	2E-03	1.81E+00	6.7E+02	0	9.85E-04	1.16E+01	4E-03	-2.67E+01
PERM	MJ	1.32E+01	0	-1.8E+00	0	0	0	-1.14E+01	0	0
PERT	MJ	1.37E+02	2E-03	1.2E-02	6.7E+02	0	9.85E-04	2.09E-01	4E-03	-2.67E+01
PENRE	MJ	3.07E+02	6.31E-01	6.7E-02	1.51E+03	0	3.13E-01	1.2E+01	3.2E-02	-9.84E+01
PENRM	MJ	1.11E+01	0	0	0	0	0	-1.11E+01	0	0
PENRT	MJ	3.18E+02	6.31E-01	6.7E-02	1.51E+03	0	3.13E-01	9.1E-01	3.2E-02	-9.84E+01
SM	kg	2.07E+00	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m ³	1.92E-01	3.57E-06	6.21E-04	7.75E-01	0	1.77E-06	7E-03	8.03E-06	-5.8E-02

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 SafeRoute

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	kg	1.53E-05	6.12E-11	9.9E-11	6.26E-07	0	3.03E-11	2.31E-09	4.86E-10	-1.9E-06
NHWD	kg	1.94E+00	6.45E-05	7E-03	1.07E+00	0	3.2E-05	1.33E-01	1.6E-01	-5.34E-01
RWD	kg	1.4E-02	6.78E-07	3.53E-06	2.3E-01	0	3.36E-07	4.12E-05	3.63E-07	-7E-03
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	3.7E+00	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	3.22E-01	0	0	0	4.75E+00	0	0
EET	MJ	0	0	5.84E-01	0	0	0	9.67E+00	0	0

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

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 piece SafeRoute

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	Disease incidence	1.26E-06	2.34E-10	3.3E-10	1.59E-06	0	1.16E-10	3.89E-09	2.16E-10	-4.28E-07
IR	kBq U235 eq	1.74E+00	9.68E-05	5.46E-04	3.77E+01	0	4.8E-05	5E-03	3.73E-05	-1.1E+00
ETP-fw	CTUe	1.46E+02	4.47E-01	3.2E-02	6.47E+02	0	2.21E-01	3.64E-01	1.8E-02	-3.69E+01
HTP-c	CTUh	1.16E-07	8.41E-12	1.69E-12	1.79E-08	0	4.17E-12	2.82E-11	2.7E-12	1.02E-08
HTP-nc	CTUh	9.75E-07	3.6E-10	7.3E-11	6.58E-07	0	1.78E-10	2.15E-09	2.97E-10	1.29E-06
SQP	SQP	2.62E+02	2E-03	1.8E-02	4.82E+02	0	8.03E-04	2.64E-01	7E-03	-9.64E+00

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.

This EPD was created using a software tool.

References

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 13637

DIN EN 13637:2015-12 Building hardware - Electrically controlled exit systems for use on escape routes - Requirements and test methods

REACH

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Regulation (EC) No 1907/2006

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

Further References

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

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.gabi-software.com/support/gabi/gabidatabase-2020-ici-documentation/>)

LCA-tool dormakaba

LCA tool, version DHW. Tool No.: IBU-DOR-202104-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, 2020, 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, 2017



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



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dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

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