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-20220320-CBA1-EN
Issue date	04.01.2023
Valid to	03.01.2028

BEST EHD9000

dormakaba

Institut Bauen und Umwelt e.V.

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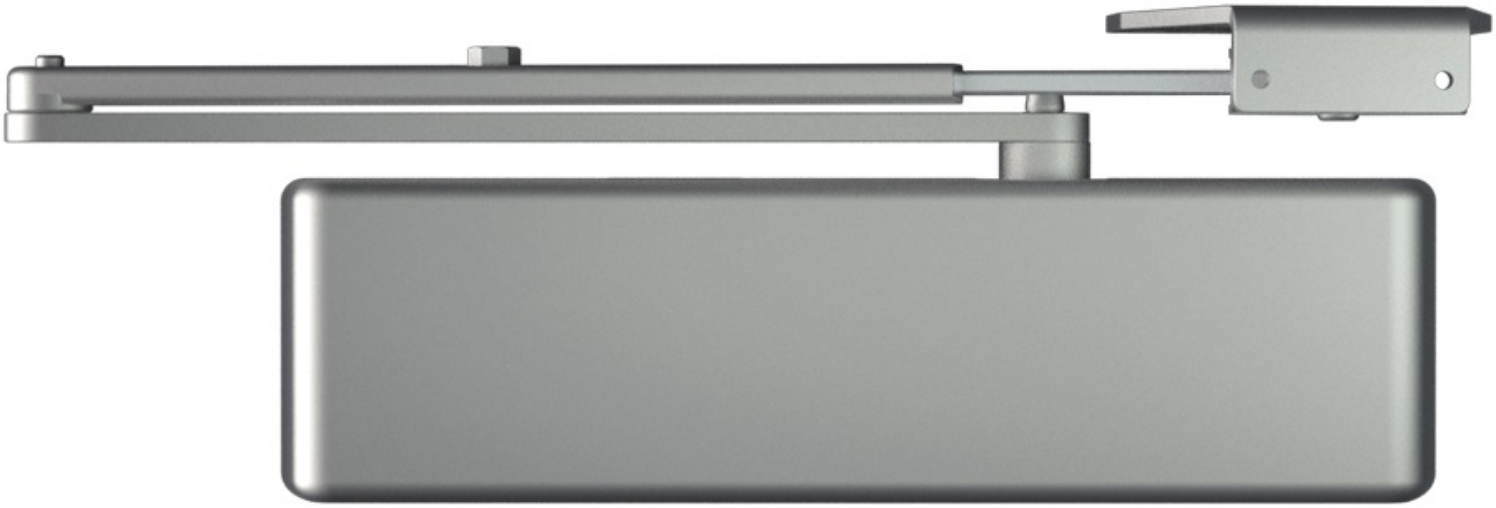
ECO PLATFORM EPD VERIFIED



General Information

dormakaba

Programme holder

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

Declaration number

EPD-DOR-20220320-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

04.01.2023

Valid to

03.01.2028

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

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

BEST EHD9000

Owner of the declaration

dormakaba International Holding GmbH
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Declared product / declared unit

1 door closer (1 piece) EHD9000

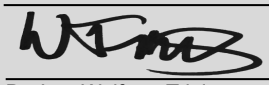
Scope:

This Environment Product Declaration refers to a specific door closer manufactured by dormakaba Production GmbH & Co. KG. The production site is located in Singapore. The 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
☐ internally ☒ externally



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

Product

Product description/Product definition

The EHD9000 is a cast iron closer for all institutional applications. It comes with self-regulating valves that significantly reduces the need to adjust the door closer in fluctuating temperatures and high-traffic areas. Front-facing spring force adjustment including spring-size indicator, and valves for adjustment of hydraulic functions. It utilizes a robust dual clamp fit cover design that strongly secures the cover on both ends. For the use and application of the product the respective national provisions at the place of use apply. The EHD9000 is a *Underwriters Laboratories (UL)* listed product. The standards which can be applied are the following:

- *ANSI/BHMA 156.4*
- *ANSI/ICC A117.1*
- *UL 10C*
- *ADA*

Application

The EHD9000 series closers are designed for commercial and institutional applications, including *ADA* barrier-free accessibility requirements. They are suitable for use on hollow metal, aluminum and wood doors and can be used for fire doors.

Technical Data

Data and features	EHD9016
Variable closing force (spring strength)	size 1-6 +50%
Standard doors	●
External doors, outward opening	●
For fire and smoke check doors	●
Non-handed	●
Arm assembly type	Scissor Arm
Closing force variable by means of adjustment screw	●
Closing speed adjustable by valve	●
Latching speed adjustable by valve	●
Backcheck (BC) adjustable at valve	●
Advanced variable backcheck (AVB) adjustable at valve	●
Delayed action (DA) adjustable at valve	○
Hold-open	○
Weight in kg (without packaging)	6.5
Weight in kg (with packaging)	7,25
Length (L) in mm	307
Overall depth (B) in mm	49
Height (H) in mm	70,25
Standard	ANSI A156.4 Grade 1

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

Name	Value	Unit
Steel	44	%
Aluminum	39	%
Paper	11	%
Plastic	3	%
Others (Lacquer)	2	%

The product/s include/s 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: yes

- Lead (Pb): 7439-92-1 (CAS-No.) is included in some of the alloys used. 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 EHD9000 depends on the traffic pattern and degree of usage of the door. These closers are rated to *ANSI Grade 1*, meaning they are designed to withstand a minimum of 1,500,000 cycles. The reference service life amounts for 20 years.

LCA: Calculation rules

Declared Unit

The declared unit is 1 piece of the product: EHD 9000.

Declared unit

Name	Value	Unit
Declared unit	1	piece/product
Mass of declared Product	7.25	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)

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.

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: Singapore

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	0.01	kg C
Biogenic carbon content in accompanying packaging	0.28	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

Additional technical information for the declared modules.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel per 1 kg (truck)	0.00276	l/100km
Transport distance via truck	100	km
Capacity utilisation (including empty runs) average	55	%
Transport distance via ship	22000	km

The product is transported via truck and ship. The main distribution regions are the USA and Dubai. In order to allow scaling to a specific point of installation via truck, 100 km are declared.

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (paper packaging)	0.76	kg
Output substances following waste treatment on site (plastic packaging)	0,007	kg

End of life (C1-C4)
C1: The product dismantling from the building is done manually without environmental burden.
C2: Transport to waste treatment at end of life is 50km.

Name	Value	Unit
Collected separately waste type	6.49	kg
Recycling	6.28	kg
Energy recovery	0.205	kg

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; 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 door closer

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	7.3E+01	5.85E-01	1.09E+00	0	2.84E-02	1.03E+00	0	-1.97E+01
GWP-fossil	kg CO_2 eq	7.42E+01	5.81E-01	4.6E-02	0	2.71E-02	9.75E-01	0	-1.96E+01
GWP-biogenic	kg CO_2 eq	-1.27E+00	3.48E-03	1.04E+00	0	1.25E-03	5.8E-02	0	-6.12E-02
GWP-luluc	kg CO_2 eq	2.11E-02	1.22E-05	1.87E-05	0	6.45E-07	5.57E-05	0	-3.09E-03
ODP	kg CFC11 eq	5.57E-10	5.56E-17	2.03E-16	0	2.86E-18	4.99E-16	0	-1.47E-10
AP	mol H^+ eq	3.91E-01	1.93E-02	3.04E-04	0	2.71E-05	1.82E-04	0	-7.16E-02
EP-freshwater	kg P eq	4.19E-05	1.3E-07	3.93E-08	0	5.8E-09	7.95E-08	0	-1.03E-05
EP-marine	kg N eq	6.01E-02	5.09E-03	1.09E-04	0	8.64E-06	4.19E-05	0	-9.55E-03
EP-terrestrial	mol N eq	6.52E-01	5.58E-02	1.37E-03	0	9.6E-05	8.3E-04	0	-1.03E-01
POCP	kg NMVOC eq	1.86E-01	1.42E-02	2.89E-04	0	2.44E-05	1.16E-04	0	-3.05E-02
ADPE	kg Sb eq	3.16E-04	1.52E-08	3.18E-09	0	8.13E-10	6.85E-09	0	-2.88E-05
ADPF	MJ	7.21E+02	7.17E+00	3.47E-01	0	3.85E-01	4.64E-01	0	-2.78E+02
WDP	m^3 world eq deprived	1.15E+01	1.06E-03	1.35E-01	0	5.31E-05	1.06E-01	0	-9.25E-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 door closer

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	7.08E+01	2.34E-02	9.14E+00	0	1.21E-03	5.08E-01	0	-1.26E+02
PERM	MJ	9.46E+00	0	-9.07E+00	0	0	-3.88E-01	0	0
PERT	MJ	8.03E+01	2.34E-02	6.38E-02	0	1.21E-03	1.2E-01	0	-1.26E+02
PENRE	MJ	7.13E+02	7.17E+00	6.71E-01	0	3.85E-01	8.36E+00	0	-2.78E+02
PENRM	MJ	8.22E+00	0	-3.23E-01	0	0	-7.89E+00	0	0
PENRT	MJ	7.21E+02	7.17E+00	3.47E-01	0	3.85E-01	4.65E-01	0	-2.78E+02
SM	kg	2.7E+00	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	2.9E-01	4.25E-05	3.18E-03	0	2.18E-06	2.53E-03	0	-2.21E-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 door closer

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	2.07E-05	7.04E-10	5.33E-10	0	3.73E-11	1.73E-09	0	-1.5E-06
NHWD	kg	1.16E+01	7.35E-04	3.56E-02	0	3.94E-05	1.02E-01	0	-4.77E+00
RWD	kg	5.2E-03	7.97E-06	1.81E-05	0	4.13E-07	1.75E-05	0	-3.03E-02
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	6.07E+00	0	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	0	0	1.66E+00	0	0	0	0	0
EET	MJ	0	0	3.02E+00	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 door closer

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	1.12E-05	3.28E-07	1.71E-09	0	1.43E-10	2.26E-09	0	-1.15E-06
IR	kBq U235 eq	6.26E-01	1.14E-03	2.78E-03	0	5.9E-05	1.62E-03	0	-6.08E+00
ETP-fw	CTUe	2.48E+02	5.07E+00	1.64E-01	0	2.73E-01	1.75E-01	0	-1E+02
HTP-c	CTUh	2.67E-08	9.55E-11	8.78E-12	0	5.13E-12	1.5E-11	0	-4.45E-09
HTP-nc	CTUh	8.46E-07	4.48E-09	3.97E-10	0	2.19E-10	1.5E-09	0	-1.4E-07
SQP	SQP	1.87E+02	1.9E-02	9.24E-02	0	9.88E-04	1.39E-01	0	-8.68E+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.

References

ADA (version 1-6)
Americans with Disabilities Act 1990

ANSI/ICC A117.1
ANSI/ICC A117.1:2017, Accessible and usable buildings and facilities

ANSI/BHMA A156.4
ANSI/BHMA A156.4:2019, Door controls — Closers

Candidate List of REACH Regulation /1907/2006/EC (date: 16.01.2020)

ECHA
European Chemicals Agency: https://echa.europa.eu/de/home

UL 10C
UL 10C:2016, Positive pressure fire tests of door assemblies

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

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

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

Further References

IBU
Institut Bauen und Umwelt e.V.: General Instructions for the EPDs 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

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

LCA-tool dormakaba
LCA tool IBU-DOR-202104-LT1-EN, version 1.0, 2021. 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

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