ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A1*

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-20200115-CBD3-EN
Issue date	24.08.2020
Valid to	23.08.2025

BTS 80, BTS 80 EMB, RTS 80 EMB Series door closers

dormakaba

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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General Information

dormakaba

Programme holder

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Germany

Declaration number

EPD-DOR-20200115-CBD3-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

24.08.2020

Valid to

23.08.2025

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

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BTS 80, BTS 80 EMB, RTS 80 EMB Series door closers

Owner of the declaration

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Declared product / declared unit

The declaration represents one concealed door closer unit.

Scope:

The declaration and the background LCA report represent dormakaba's BTS 80, BTS 80 EMB, RTS 80 EMB Series door closers. Raw materials and components are provided by suppliers and shipped to dormakaba, where the closers are manufactured and assembled at the dormakaba facility in Singapore. The BTS 80 and RTS 80 differ in how they are mounted to the door (floor versus frame), but are otherwise identical products; the EMB versions include electromagnetic hold-open features. 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+A1. 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

dormakaba's BTS 80, BTS 80 EMB and RTS 80 EMB Series of concealed door closers represent the latest in builders hardware technology. The closers can be used in a number of different configurations, including standard, narrow, or wide doors, as well as left-hand and right-hand single- or double-action mounting (both single and double leaf doors, including double leaf doors in combination with a BSR door coordinator). A compact body permits use where larger closers would be prohibitive, and a comprehensive selection of accessories ensures that they can be used successfully with a wide variety of door constructions and floor coverings. These products offer maximum reliability and quality. Benefits include:

- *For the trade:* Reduced stock requirements because of separate, interchangeable spindles, and slim product range offering all key functions.
- *For the installer:* Suitable for installation with left-hand or right-hand single and double action doors. Interchangeable spindles enable easy adaption to structural conditions—even when retrofitted.
- *For the architect:* Concealed installation for maximum visual elegance. All essential functions are provided, and the closers deliver proven, robust design capable of withstanding leaf weights up to 300 kg.
- *For the user:* A temperature-independent closing cycle and highly efficient mechanism gives maximum user convenience.

The BTS 80 EMB and RTS 80 EMB include a electrohydraulic hold-open function to meet fire protection and other user needs. For the use and application of the product the respective national provisions at the place of use apply. The standards which can be applied are the following:

- *ANSI A156.4 for Grade 1*
- *EN 1154*

Product variants with mechanical hold-open are not suitable for use on Fire doors.

Application

These door closers can control exceptionally heavy single- and double-acting doors (both single and double leaf). They are appropriate for almost any design and can meet most materials, size, and weight requirements. Trouble-free performance under adverse climatic and traffic conditions makes these products dependable and a perfect choice for even the most rigorous applications.

The BTS 80 EMB and RTS 80 EMB Series are specifically designed to be used in fire/life safety applications where the hold open is electrically controlled by a fire alarm contact. When installed in conjunction with a maintained control switch, these products can be used as a hold-open/privacy function.

Technical Data

The concealed door closers employ a cam and roller mechanism and are capable of controlling interior or exterior doors weighing up to 300 kg. They have a mechanical backcheck at approximately 70°. Dual valve adjustment provides controlled closing speed from approximately 175° opening range, even in cold temperature conditions.

The plant in Singapore is certified to the quality management system *ISO 9001*, which ensures consistent quality of dormakaba's products.

The Environmental Management System is certified to *ISO 14001* and the Energy Management to *ISO 50001*.

Name	Value	Unit
Length	341	mm
Depth	78	mm
Height	60	mm
Weight	6.1	kg
Test standards and methods	EN 1154	
Power rating (EMB only)	2.3	W

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
Iron	54	%
Steel	37	%
Oil	4	%
Zinc	3	%
Brass	1	%
Other	1	%

The products include partial articles which contain substances listed in the *Candidate List* of *REACH* Regulation 1907/2006/EC (date: 15.01.2019) exceeding 0.1 percentage by mass in the alloy:

- Lead (Pb): 7439-290-1 (CAS-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 dormakaba's BTS 80 and RTS 80 Series concealed door closers depends on the traffic pattern and degree of usage of the door. These closers are rated to American National Standards Institute (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 of this analysis is one concealed door closer.

Name	Value	Unit
Declared unit	1	piece/product
Mass of system (without packaging)	6.19	kg
Conversion factor to 1 kg	0.1616	-
Mass of declared Product	6.19	kg

The difference in product weight for the three door closer types is negligabe (<1%). The product with the highest weight is declared in this EPD representing the entire product series.

For IBU core EPDs (where clause 3.6 is part of the EPD): for average EPDs, an estimate of the robustness of the LCA values must be made, e.g. concerning the variability of the production process, geographical representativeness and the influence of background data and preliminary products

compared to the environmental impacts caused by the actual production.

System boundary
Type of EPD: cradle to gate - with options.
The Environmental Product Declaration refers to the production stage (A1-A3), transport from the gate to construction site (A4) and the end of life stage (C3) and indicates the recycling potential which is declared in the module "benefits and loads beyond the product system boundary" (D).

In line with the PCR, A5 is declared to ensure the export of biogenic CO2 from renewable packaging materials.

Modules A1 to A3 include the provision and processing of raw materials as well as the processing of input materials, the transport to manufacturer and production site. Module C3 includes the incineration of plastics for energy recovery. Module D comprises the recycling of metals and gives the recycling potentials as well as potential benefits from energy substitution.

A5 is declared to ensure the export of biogenic CO2 that is incorporated in the used packaging materials (paper). Potential benefits from the incineration of packaging materials are also declared in module D. The incineration processes in the End-of-Life are based on European datasets. The recycling processes in the End-of-Life are based on European and Global datasets.

Geographic Representativeness
Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Unbekannt

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

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND) Information for the use stage are only valid for RTS 80 EMB and BTS 80 EMB.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel truck (per piece)	0.012	l/100km
Transport distance (truck)	10 - 5000	km
Transport distance (ship)	0 - 22200	km
Average transport distance (truck)	1300	km
Capacity utilisation (including empty runs)	85	%
Average transport distance (ship)	10600	km

In order to represent dormakaba's global distribution network, sales-weighted averages are used to model transport to the building site.

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (packaging)	0.28	kg

In case a **reference service life** according to applicable ISO standards is declared then the assumptions and in-use conditions underlying the determined RSL shall be declared. In addition, it shall be stated that the RSL applies to the reference conditions only.

The same holds for a service life declared by the manufacturer. Corresponding information related to in-use conditions needs not be provided if a service life taken from the list of service life by *BNB* is declared.

Reference service life

Name	Value	Unit
Reference service life	20	a

Operational energy use (B6) and Operational water use (B7)
This additional technical information is only valid for BTS 80 EMB and RTS 80 EMB which have an electrohydraulic hold-open function.

Name	Value	Unit
Electricity consumption	403	kWh

End of life (C1-C4)

Name	Value	Unit
Recycling	6.19	kg

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

Name	Value	Unit
Recycling	100	%

Collection rate is 100%.

LCA: Results

The table below summarizes which modules are declared (as indicated by an "X"), and which are not declared (as indicated with "MND").

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE 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	MND	MND	X	MND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 closer (6.19kg)

Parameter	Unit	A1-A3	A4	A5	C3	D
Global warming potential (GWP)	kg CO_2 eq	17.2	1.37	0.395	0.203	9.09E-15
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	7.2E-12	1.09E-16	9.51E-17	2.19E-16	-1.11E-02
Acidification potential of land and water (AP)	kg SO_2 eq	6.15E-02	3.12E-02	8.27E-05	4.36E-05	-7.72E-04
Eutrophication potential (EP)	kg PO_4^3 eq	4.07E-03	3.53E-03	1.56E-05	9.44E-06	-1.21E-03
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg Ethen eq	5.1E-03	9.39E-04	5.47E-06	3.45E-06	-3.48E-04
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	8.58E-04	4.52E-08	7.76E-09	3.54E-08	-3.02E+01
Abiotic depletion potential for fossil resources (ADPF)	MJ	198	17.9	0.11	0.14	-0.38

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 closer (6.19kg)

Parameter	Unit	A1-A3	A4	A5	C3	D
Renewable primary energy as energy carrier (PERE)	MJ	33.245	0.0664	4.4769	0.0377	0
Renewable primary energy resources as material utilization (PERM)	MJ	4.455	0	-4.455	0	-0.38
Total use of renewable primary energy resources (PERT)	MJ	37.7	0.0664	0.0219	0.0377	-30.9
Non renewable primary energy as energy carrier (PENRE)	MJ	208.901	17.9	0.128	0.255	0
Non renewable primary energy as material utilization (PENRM)	MJ	0.099	0	0	-0.099	-30.9
Total use of non renewable primary energy resources (PENRT)	MJ	209	17.9	0.128	0.156	0
Use of secondary material (SM)	kg	5.56	0	0	0	0
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	-0.00927
Use of net fresh water (FW)	m^3	0.139	0.000307	0.00115	0.000905	-2.46E-07

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A1: 1 closer (6.19kg)

Parameter	Unit	A1-A3	A4	A5	C3	D
Hazardous waste disposed (HWD)	kg	8E-06	2.32E-09	2.48E-10	1.45E-09	-7.3E-02
Non hazardous waste disposed (NHWD)	kg	1.68	0.000137	0.0124	0.0379	-0.000272
Radioactive waste disposed (RWD)	kg	4.05E-03	6.28E-06	7.43E-06	6.37E-06	0
Components for re-use (CRU)	kg	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	1.49	0
Materials for energy recovery (MER)	kg	0	0	0	0	0
Exported electrical energy (EEE)	MJ	0	0	0.598	0.223	0
Exported thermal energy (EET)	MJ	0	0	1.09	0.571	0

References

ANSI/BHMA A156.4
ANSI/BHMA A156.4 - 2013, Door controls - Closers

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

ECHA
European Chemicals Agency

EN 1154
EN 1154:2003-04, Building hardware - Controlled door closing devices

EN 15804
EN 15804:2012-04 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

GaBi ts
thinkstep AG, GaBi Software System and Database for Life Cycle Engineering (SP39). 1992-2019 Copyright thinkstep AG

ISO 9001
Quality Management System - ISO 9001:2015

ISO 14001

Environmental Management System - ISO 14001:2015

ISO 14040
EN ISO 14040:2006, Environmental management - Life cycle assessment - Principles and framework

ISO 14044
EN ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines

ISO 50001
Energy Management System - ISO 50001:2011

PCR Part A
Institut Bauen und Umwelt e.V., Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report.

PCR Part B
PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B: Requirements on the EPD for building hardware products

REACH
Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Regulation (EC) No 1907/2006
The literature referred to in the Environmental Product Declaration must be listed in full.Standards already fully quoted in the EPD do not need to be listed here again.
The current version of PCR Part A and PCR Part B of the PCR document on which they are based must be referenced.

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