

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A1

|                          |                                      |
|--------------------------|--------------------------------------|
| Owner of the Declaration | dormakaba International Holding AG   |
| Programme holder         | Institut Bauen und Umwelt e.V. (IBU) |
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## BTS 75 V, BTS 75 R, RTS 87 Series door closers dormakaba

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## General Information

|   |  |   |  |   |  |                                     |  |
|---|--|---|--|---|--|-------------------------------------|--|
| <p><b>dormakaba</b></p> <hr/> <p><b>Programme holder</b><br/>IBU – Institut Bauen und Umwelt e.V.<br/>Panoramastr. 1<br/>10178 Berlin<br/>Germany</p> <hr/> <p><b>Declaration number</b><br/>EPD-DOR-20200116-CBD1-EN</p> <hr/> <p><b>This declaration is based on the product category rules:</b><br/>Building Hardware products, 02.2016<br/>(PCR checked and approved by the SVR)</p> <hr/> <p><b>Issue date</b><br/>24.08.2020</p> <hr/> <p><b>Valid to</b><br/>23.08.2025</p> <hr/> <p></p> <hr/> <p>Dipl. Ing. Hans Peters<br/>(chairman of Institut Bauen und Umwelt e.V.)</p> <hr/> <p></p> <hr/> <p>Dr. Alexander Röder<br/>(Managing Director Institut Bauen und Umwelt e.V.)</p> | <p><b>BTS 75 V, BTS 75 R, RTS 87 Series door closers</b></p> <hr/> <p><b>Owner of the declaration</b><br/>dormakaba International Holding AG<br/>Hofwisenstr. 24<br/>CH-8153 Rümlang<br/>Switzerland</p> <hr/> <p><b>Declared product / declared unit</b><br/>The declaration represents one concealed door closer unit.</p> <hr/> <p><b>Scope:</b><br/>The declaration and the background LCA represent dormakaba's BTS 75 V and RTS 87 Series Concealed 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 75 V, BTS 75 R (2-5) and RTS 87 differ in how they are mounted to the door (floor versus frame), but are otherwise identical products.</p> <p>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.<br/>The EPD was created according to the specifications of <i>EN 15804+A1</i>. In the following, the standard will be simplified as <i>EN 15804</i>.</p> <hr/> <p><b>Verification</b></p> <table border="1"> <tr> <td colspan="2">The standard <i>EN 15804</i> serves as the core PCR</td> </tr> <tr> <td colspan="2">Independent verification of the declaration and data according to <i>ISO 14025:2010</i></td> </tr> <tr> <td><input type="checkbox"/> internally</td> <td><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <p></p> <hr/> <p>Dr.-Ing. Wolfram Trinius<br/>(Independent verifier appointed by SVR)</p> | The standard <i>EN 15804</i> serves as the core PCR |  | Independent verification of the declaration and data according to <i>ISO 14025:2010</i> |  | <input type="checkbox"/> internally | <input checked="" type="checkbox"/> externally |
| The standard <i>EN 15804</i> serves as the core PCR   |  |   |  |   |  |                                     |  |
| Independent verification of the declaration and data according to <i>ISO 14025:2010</i>   |  |   |  |   |  |                                     |  |
| <input type="checkbox"/> internally   | <input checked="" type="checkbox"/> externally   |   |  |   |  |                                     |  |

## Product

### Product description/Product definition

dormakaba's BTS 75 V, BTS 75 R (2-5) and RTS 87 Series concealed door closers are dependable and versatile for almost any application. Their compact bodies enable them to be used in applications where larger closers would be prohibitive. They can be installed in a number of different configurations, including in standard, narrow or wide door frames, as well as with left-hand or right-hand single- or double-action mounting. The closers are designed for all types of doors and allow the necessary spring adjustments for both barrier-free and non-barrier free openings. A comprehensive selection of accessories ensures that they can be used successfully with a wide variety of door constructions and floor coverings. Product benefits include:

- *For the trade:* Reduced stock requirements because of adjustable closing force and

separate, interchangeable spindles (BTS 75 V only), 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, as well as adjustable closing force, enable easy adaption to structural conditions - even when retrofitted (BTS 75 V only).
- *For the architect:* Concealed installation for maximum visual elegance. A wide range of applications allow architects a reliable and durable solution without compromising the aesthetics of an opening.
- *For the user:* A temperature-independent closing cycle and highly efficient mechanism gives maximum user convenience.

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

The BTS 75 V, BTS 75 R (2-5) and RTS 87 Series offer aesthetically pleasing solutions for both interior and exterior applications. The closers can be used in a variety of applications, including as closers for fire and smoke doors for the non-hold-open versions.

### Technical Data

The concealed door closers employ a cam and roller mechanism, and are capable of controlling interior or exterior doors weighing up to 120 kg. They have an adjustable closing force from EN 1 to EN 4 and a mechanical backcheck at approximately 70°. Dual valve adjustment provides a controlled closing speed from approximately 175° opening range, even in cold temperature conditions.

The Environmental Management System in the Singapore production is certified to ISO 14001 and the Energy Management to ISO 50001.

| Name   | Value | Unit |
|--------|-------|------|
| Length | 285   | mm   |
| Width  | 82    | mm   |
| Height | 50    | mm   |

## LCA: Calculation rules

### Declared Unit

The declared unit of this analysis is one concealed door closer.

### Declared unit

| Name                               | Value | Unit          |
|------------------------------------|-------|---------------|
| Declared unit (1 closer)           | 1     | piece/product |
| Mass of system (without packaging) | 2.9   | kg            |
| Conversion factor to 1 kg          | 0.345 | -             |
| Mass of declared Product           | 2.9   | kg            |

### 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), 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 CO<sub>2</sub> from renewable packaging materials.

Modules A1 to A3 include the provision and processing of raw materials as well as the processing of input

|                            |         |    |
|----------------------------|---------|----|
| Weight                     | 2.9     | kg |
| Test standards and methods | EN 1154 |    |

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            | 44    | %    |
| Zinc                | 6     | %    |
| Oil                 | 5     | %    |
| Coatings and others | 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): 7439-290-1-1 (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 75 V, BTS 75 R, RTS 87 concealed door closers depends on the traffic pattern and degree of usage of the door. The reference service life amounts for 20 years.

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 CO<sub>2</sub> 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.

### 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.

The database used is *GaBi ts 9.2*, SP 39

## LCA: Scenarios and additional technical information

Additional technical information for the declared module.

### Transport to the building site (A4)

| Name  | Value     | Unit    |
|---|-----------|---------|
| Litres of fuel truck (per piece)            | 0.006     | l/100km |
| Transport distance (ship)                   | 0 - 23000 | km      |
| Transport distance (truck)                  | 10 - 5000 | km      |
| Average transport distance (truck)          | 1300      | km      |
| Capacity utilisation (including empty runs) | 85        | %       |
| Average transport distance (ship)           | 11300     | km      |

In order to represent dormakaba's global distribution network, a sales-weighted average is used to model transport to the building site. The table for Module A4 shows both weighted average transportation distance (given regional concealed closer sales), which is used in the analysis, along with the variation in that distance.

### Installation into the building (A5)

| Name  | Value | Unit |
|---|-------|------|
| Output substances following waste treatment on site (packaging) | 0.12  | kg   |

### End of life (C1-C4)

| Name      | Value | Unit |
|-----------|-------|------|
| Recycling | 2.9   | 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 (2.9kg)

| Parameter  | Unit                                      | A1-A3    | A4       | A5       | C3       | D        |
|--|---|----------|----------|----------|----------|----------|
| Global warming potential   | [kg CO <sub>2</sub> -Eq.]                 | 16.30    | 0.66     | 0.17     | 0.16     | -10.30   |
| Depletion potential of the stratospheric ozone layer             | [kg CFC11-Eq.]                            | 1.91E-12 | 5.25E-17 | 4.09E-17 | 1.49E-16 | 7.79E-14 |
| Acidification potential of land and water                        | [kg SO <sub>2</sub> -Eq.]                 | 6.48E-2  | 1.54E-2  | 3.56E-5  | 5.21E-5  | -4.35E-2 |
| Eutrophication potential   | [kg (PO <sub>4</sub> ) <sup>3</sup> -Eq.] | 4.61E-3  | 1.74E-3  | 6.71E-6  | 9.62E-6  | -2.75E-3 |
| Formation potential of tropospheric ozone photochemical oxidants | [kg ethene-Eq.]                           | 5.55E-3  | 4.91E-4  | 2.35E-6  | 3.07E-6  | -3.10E-3 |
| Abiotic depletion potential for non-fossil resources             | [kg Sb-Eq.]                               | 9.34E-4  | 2.18E-8  | 3.34E-9  | 2.38E-8  | -3.53E-4 |
| Abiotic depletion potential for fossil resources                 | [MJ]                                      | 194.00   | 8.62     | 0.05     | 0.10     | -103.00  |

## RESULTS OF THE LCA - RESOURCE USE according to EN 15804+A1: 1 closer (2.9kg)

| Parameter  | Unit              | A1-A3  | A4   | A5    | C3    | D       |
|--|-------------------|--------|------|-------|-------|---------|
| Renewable primary energy as energy carrier                 | [MJ]              | 55.20  | 0.03 | 1.81  | 0.03  | -34.90  |
| Renewable primary energy resources as material utilization | [MJ]              | 1.80   | 0.00 | -1.80 | 0.00  | 0.00    |
| Total use of renewable primary energy resources            | [MJ]              | 57.00  | 0.03 | 0.01  | 0.03  | -34.90  |
| Non-renewable primary energy as energy carrier             | [MJ]              | 212.37 | 0.00 | 0.00  | 1.74  | 0.00    |
| Non-renewable primary energy as material utilization       | [MJ]              | 1.63   | 0.00 | 0.00  | -1.63 | 0.00    |
| Total use of non-renewable primary energy resources        | [MJ]              | 214.00 | 8.63 | 0.06  | 0.11  | -116.00 |
| Use of secondary material                                  | [kg]              | 1.11   | 0.00 | 0.00  | 0.00  | 0.00    |
| Use of renewable secondary fuels                           | [MJ]              | 0.00   | 0.00 | 0.00  | 0.00  | 0.00    |
| Use of non-renewable secondary fuels                       | [MJ]              | 0.00   | 0.00 | 0.00  | 0.00  | 0.00    |
| Use of net fresh water                                     | [m <sup>3</sup> ] | 0.14   | 0.00 | 0.00  | 0.00  | -0.10   |

## RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES according to EN 15804+A1: 1 closer (2.9kg)

| Parameter                     | Unit | A1-A3   | A4      | A5       | C3       | D        |
|-------------------------------|------|---------|---------|----------|----------|----------|
| Hazardous waste disposed      | [kg] | 6.62E-6 | 1.12E-9 | 1.07E-10 | 9.35E-10 | -3.00E-7 |
| Non-hazardous waste disposed  | [kg] | 2.68E+0 | 6.57E-5 | 5.34E-3  | 1.72E-2  | -1.80E+0 |
| Radioactive waste disposed    | [kg] | 7.75E-3 | 3.02E-6 | 3.20E-6  | 4.60E-6  | -5.22E-3 |
| Components for re-use         | [kg] | 0.00    | 0.00    | 0.00     | 0.00     | 0.00     |
| Materials for recycling       | [kg] | 0.00    | 0.00    | 0.00     | 2.73     | 0.00     |
| Materials for energy recovery | [kg] | 0.00    | 0.00    | 0.00     | 0.00     | 0.00     |
| Exported electrical energy    | [MJ] | 0.00    | 0.00    | 0.26     | 0.22     | 0.00     |
| Exported thermal energy       | [MJ] | 0.00    | 0.00    | 0.47     | 0.51     | 0.00     |

## References

### ANSI 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, 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

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