

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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| Issue date | 19.10.2022 |
| Valid to | 18.10.2027 |

TS 71/TS 72
dormakaba

www.ibu-epd.com | <https://epd-online.com>



General Information

dormakaba

Programme holder

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Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-DOR-20220164-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

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Valid to

18.10.2027



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TS 71/TS 72

Owner of the declaration

dormakaba International Holding GmbH
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58256 Ennepetal
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Declared product / declared unit

1 door closer (1 piece) TS 71/TS 72

Scope:

This Environment Product Declaration refers to a specific door closer manufactured by dormakaba China Ltd. The production site is located in Suzhou (China).

The data represents the year 2020.

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

The TS 71/TS 72 are the ideal multi-purpose door closers for all standard door designs and constructions. Without a backplate, it is particularly easy and quick to fix. The spring strength can be individually adapted to the door size by means of an adjusting valve. 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:

- EN 1154
- EN 1634-1

Application

The door closers can be used for all standard doors (single- and double-leaf doors).

Technical Data

The door closer has following technical properties:

| Data and features | | TS 71 |
|---|-----------------------------------|------------------|
| Spring strength (adjustable by turning round the hinge plate) | Size | EN 3/4 |
| Standard doors ≤ 1100 mm ¹⁾ | | ● |
| External doors, outward opening | | - |
| Fire doors | | ● |
| Non-handed | | ● |
| Arm type | Standard Slide channel | ● - |
| Closing speed adjustable at 2 separate valves | 180° - 15° 115° - 10° | ● |
| Latching action adjustable (by arm) | | ● |
| Backcheck | | - |
| Delayed action | | - |
| Hold-open | | ○ |
| Weight in kg | | 1.2 |
| Dimensions in mm | Length Overall depth Height | 232 245 68 |
| Door closer tested and approved to EN 1154 | | ● |
| CE Marked | | ● |

● = Yes - = No ○ = Option

¹⁾ With parallel-arm fixing, the closing force is approx. 20 Nm (for doors up to 950 mm)

| Data and features | | TS 72 |
|--|---------------------------------------|-----------------|
| Continuously adjustable closing force | Size | EN 2-4 |
| General doors | $\leq 1,100$ mm ¹⁾ | ● |
| Exterior doors, opening outwards | | - |
| For fire and smoke doors | | ● |
| Same design for DIN-L (left-handed door) and DIN-R (right-handed door) | | ● |
| Bar | Standard Slide channel | ● - |
| Closing time continuously adjustable using two separate valves | 180°-15° 15°- 0° | ● |
| Continuously adjustable latching action (using rods) | | ● |
| Back check | | - |
| Delayed closing | | - |
| Hold open | | ○ |
| Weight in kg | | 1.2 |
| Dimensions in mm | Length (L) Depth (B) Height (H) | 232 45 68 |
| Door closers tested in accordance with EN 1154 | | ● |
| CE-Identification for construction products | | ● |

● yes - no ○ Option

¹⁾ For parallel arm installation, the closing torque is approx. 20 Nm (for doors of up to 950 mm)

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 compositions including the packaging of the product are listed below:

| Name | Value | Unit |
|------------|-------|------|
| Steel | 64 | % |
| Aluminium | 20 | % |
| Paper | 7 | % |
| Plastics | 4 | % |
| Lubricants | 4 | % |
| Zinc | 1 | % |

The product includes partial articles which contain substances listed in the Candidate List of REACH Regulation 1907/2006/EC (date: 17.01.2022) 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 TS 71/TS 72 door closers depend on the traffic pattern and degree of usage of the door. These closers are rated to EN 1154, meaning they are designed to withstand a minimum of 500,000 cycles. The reference service life amounts for 20 years. This corresponds with approx. 25,000 cycles per year.

LCA: Calculation rules

Declared Unit

The declared unit is 1 piece of the product: TS 71/TS 72.

Declared unit

| Name | Value | Unit |
|--------------------------|-------|---------------|
| Declared unit | 1 | piece/product |
| Mass of declared Product | 1.74 | 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: China

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 | 0.03 | kg C |

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

Additional technical information for the declared modules.

Transport to the building site (A4)

| Name | Value | Unit |
|---|---------|---------|
| Litres of fuel truck (per piece) | 0.00276 | l/100km |
| Transport distance (truck) | 500 | km |
| Capacity utilisation (including empty runs) average | 55 | % |
| Transport distance (ship) | 10000 | km |

Installation into the building (A5)

| Name | Value | Unit |
|---|-------|------|
| Output substances following waste treatment on site (paper packaging) | 0.09 | 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 | 2.47 | kg |
| Recycling | 2.46 | kg |
| Energy recovery | 0.01 | 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 | 1.3E+01 | 1.33E-01 | 1.57E-01 | 0 | 7E-03 | 4.15E-01 | 0 | -2.9E+00 |
| GWP-fossil | kg CO ₂ eq | 1.32E+01 | 1.3E-01 | 4E-03 | 0 | 7E-03 | 3.92E-01 | 0 | -2.89E+00 |
| GWP-biogenic | kg CO ₂ eq | -1.86E-01 | 3E-03 | 1.53E-01 | 0 | 3.15E-04 | 2.3E-02 | 0 | -7E-03 |
| GWP-luluc | kg CO ₂ eq | 7.01E-03 | 2.9E-06 | 2.59E-06 | 0 | 1.62E-07 | 2.24E-05 | 0 | -5.79E-04 |
| ODP | kg CFC11 eq | 2.11E-10 | 1.31E-17 | 2.84E-17 | 0 | 7.19E-19 | 2.01E-16 | 0 | -1.81E-11 |
| AP | mol H ⁺ eq | 6.26E-02 | 2E-03 | 4.41E-05 | 0 | 6.81E-06 | 7.31E-05 | 0 | -1.1E-02 |
| EP-freshwater | kg P eq | 9.91E-06 | 2.84E-08 | 5.55E-09 | 0 | 1.46E-09 | 3.19E-08 | 0 | -1.58E-06 |
| EP-marine | kg N eq | 1.02E-02 | 5.76E-04 | 1.59E-05 | 0 | 2.17E-06 | 1.68E-05 | 0 | -1E-03 |
| EP-terrestrial | mol N eq | 1.1E-01 | 6E-03 | 1.98E-04 | 0 | 2.41E-05 | 3.33E-04 | 0 | -1.6E-02 |
| POCP | kg NMVOC eq | 3.15E-02 | 2E-03 | 4.22E-05 | 0 | 6.13E-06 | 4.65E-05 | 0 | -5E-03 |
| ADPE | kg Sb eq | 1.76E-04 | 3.64E-09 | 4.48E-10 | 0 | 2.04E-10 | 2.76E-09 | 0 | -4.44E-05 |
| ADPF | MJ | 1.38E+02 | 1.72E+00 | 5E-02 | 0 | 9.7E-02 | 1.87E-01 | 0 | -3.93E+01 |
| WDP | m ³ world eq deprived | 2.48E+00 | 2.45E-04 | 2E-02 | 0 | 1.33E-05 | 4.2E-02 | 0 | -1.39E-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 | 1.84E+01 | 6E-03 | 1.34E+00 | 0 | 3.04E-04 | 2.01E-01 | 0 | -1.6E+01 |
| PERM | MJ | 1.48E+00 | 0 | -1.33E+00 | 0 | 0 | -1.52E-01 | 0 | 0 |
| PERT | MJ | 1.99E+01 | 6E-03 | 9E-03 | 0 | 3.04E-04 | 4.8E-02 | 0 | -1.6E+01 |
| PENRE | MJ | 1.35E+02 | 1.72E+00 | 5E-02 | 0 | 9.7E-02 | 3.09E+00 | 0 | -3.93E+01 |
| PENRM | MJ | 2.9E+00 | 0 | 0 | 0 | 0 | -2.9E+00 | 0 | 0 |
| PENRT | MJ | 1.38E+02 | 1.72E+00 | 5E-02 | 0 | 9.7E-02 | 1.87E-01 | 0 | -3.93E+01 |
| SM | kg | 9.52E-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 | 6.3E-02 | 9.94E-06 | 4.59E-04 | 0 | 5.46E-07 | 1E-03 | 0 | -2.8E-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 door closer

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|-----------|------|----------|----------|----------|----|----------|----------|----|-----------|
| HWD | kg | 7.74E-06 | 1.68E-10 | 7.32E-11 | 0 | 9.37E-12 | 6.96E-10 | 0 | -3.82E-08 |
| NHWD | kg | 1.5E+00 | 1.76E-04 | 5E-03 | 0 | 9.88E-06 | 4.1E-02 | 0 | -6.22E-01 |
| RWD | kg | 1.79E-03 | 1.88E-06 | 2.61E-06 | 0 | 1.04E-07 | 7.03E-06 | 0 | -4E-03 |
| CRU | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MFR | kg | 0 | 0 | 0 | 0 | 0 | 1.46E+00 | 0 | 0 |
| MER | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EEE | MJ | 0 | 0 | 2.38E-01 | 0 | 0 | 0 | 0 | 0 |
| EET | MJ | 0 | 0 | 4.32E-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 door closer

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|-----------|-------------------|----------|----------|----------|----|----------|----------|----|-----------|
| PM | Disease incidence | 1.56E-06 | 3.62E-08 | 2.44E-10 | 0 | 3.58E-11 | 9.07E-10 | 0 | -1.6E-07 |
| IR | kBq U235 eq | 1.99E-01 | 2.69E-04 | 4.04E-04 | 0 | 1.48E-05 | 6.52E-04 | 0 | -7.81E-01 |
| ETP-fw | CTUe | 4.82E+01 | 1.22E+00 | 2.4E-02 | 0 | 6.8E-02 | 7E-02 | 0 | -1.4E+01 |
| HTP-c | CTUh | 4.9E-09 | 2.29E-11 | 1.25E-12 | 0 | 1.29E-12 | 6.05E-12 | 0 | -1.09E-09 |
| HTP-nc | CTUh | 1.5E-07 | 1.02E-09 | 5.4E-11 | 0 | 5.5E-11 | 6.03E-10 | 0 | 3E-10 |
| SQP | SQP | 3.41E+01 | 4E-03 | 1.3E-02 | 0 | 2.48E-04 | 5.6E-02 | 0 | -1.57E+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

EN 1154

EN 1154-2003; Building hardware - Controlled door closing devices - Requirements and test methods

EN 1634-1

EN 1634-1:2018; Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 1: Fire resistance test for door and shutter assemblies and openable windows

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

REACH Regulation

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

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 University of Stuttgart Leinfelden-Echterdingen

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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