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-20220068-CBA8-EN
Issue date	04.05.2022
Valid to	03.05.2027

TS 90 Impulse
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.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-DOR-20220068-CBA8-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

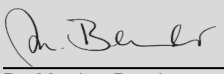
04.05.2022

Valid to

03.05.2027



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



Dr. Martina Bender
(Managing Director Institut Bauen und Umwelt e.V.)

TS 90 Impulse

Owner of the declaration

dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

Declared product / declared unit

1 door closer (1 piece) TS 90 Impulse

Scope:

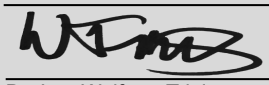
This Environmental Product Declaration refers to a specific door closer manufactured by dormakaba Production GmbH & Co. KG. The production site is located in Singapore.

The data represents the year 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
☐ internally ☒ externally



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

Product

Product description/Product definition

TS 90 Impulse combines technical superiority with outstanding value, and unites advanced design with convenient functionality - all on the basis of its heart-shaped cam. Two regulating valves for precise adjustment of closing speed and available accessories makes the TS 90 a versatile and cost-efficient choice for interior doors. The TS 90 is non-handed and offers easy and universal installation in all four mounting positions without mounting plate. Ease-of-use is also underlined by the ready-to-install complete packaging that simplifies stock keeping and processing on site. 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

With its installation versatility and inherent functional reliability, it is ideal for virtually any application.

Technical Data

The door closer has following technical properties:

Data and features		TS 90 Impulse
Closing force	Size	EN 3/4
Standard doors[1)]	≤ 1100 mm	●
Fire and smoke check doors[1)]		●
Non-handed		●
Slide channel		●
Two independent valves for closing speed adjustment		●
Cushioned limit stay (mechanical)		O
Delayed action		–
Hold-open		O
Weight in kg		1,7
Dimensions in mm	Length Overall depth Height	246 46 57
Door closer compliant with EN 1154		●
CE-mark or contruction products		●

● yes – no O Option

[1)] In the case of particularly heavy doors and doors that have to close against wind pressure, we recommend the dormakaba TS 93.

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	46	%
Paper	24	%
Aluminium	23	%
Lubricant	3	%
Plastics	1	%
Zinc	1	%
Others	2	%

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 90 Impulse door closer depends 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 90 Impulse.

Name	Value	Unit
Declared unit	1	piece/product
Mass of declared Product	2.5	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 accompanying packaging	0.21	kg C

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)	750	km
Capacity utilisation (including empty runs) average	55	%
Transport distance (ship)	17300	km

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (paper packaging)	0.58	kg

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	20	a

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	1.92	kg
Recycling	1.77	kg
Energy recovery	0.019	kg
Final deposition	0,13	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	7.5E+00	3.05E-01	8.25E-01	0	8E-03	4.8E-02	2E-03	-3.93E+00
GWP-fossil	kg CO_2 eq	8.42E+00	2.98E-01	2.1E-02	0	8E-03	4.8E-02	2E-03	-3.92E+00
GWP-biogenic	kg CO_2 eq	-9.3E-01	7E-03	8.04E-01	0	3.63E-04	1.13E-06	6.84E-06	-1.2E-02
GWP-luluc	kg CO_2 eq	6E-03	6.64E-06	1.36E-05	0	1.87E-07	2.73E-06	5.76E-06	-7.54E-04
ODP	kg CFC11 eq	3.82E-11	2.99E-17	1.49E-16	0	8.3E-19	2.44E-17	7.42E-18	-2.93E-11
AP	mol H^+ eq	3.6E-02	5E-03	2.31E-04	0	7.87E-06	8.6E-06	1.44E-05	-1.4E-02
EP-freshwater	kg P eq	2.27E-05	6.54E-08	2.91E-08	0	1.68E-09	3.89E-09	3.44E-09	-2.28E-06
EP-marine	kg N eq	6.29E-03	1E-03	8.34E-05	0	2.5E-06	1.94E-06	3.7E-06	-2E-03
EP-terrestrial	mol N eq	6.6E-02	1.6E-02	1E-03	0	2.78E-05	3.92E-05	4.06E-05	-2.1E-02
POCP	kg NMVOC eq	1.88E-02	4E-03	2.21E-04	0	7.08E-06	5.37E-06	1.12E-05	-6E-03
ADPE	kg Sb eq	1.38E-04	8.33E-09	2.35E-09	0	2.36E-10	3.34E-10	1.8E-10	-2.24E-05
ADPF	MJ	1.16E+02	3.93E+00	2.61E-01	0	1.11E-01	2.2E-02	2.6E-02	-5.68E+01
WDP	m^3 world eq deprived	1.2E+00	5.61E-04	1.02E-01	0	1.54E-05	5E-03	2.1E-04	-1.95E-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	4.65E+01	1.3E-02	7.03E+00	0	3.52E-04	1.5E-01	3E-03	-2.6E+01
PERM	MJ	7.13E+00	0	-6.98E+00	0	0	-1.44E-01	0	0
PERT	MJ	5.37E+01	1.3E-02	4.7E-02	0	3.52E-04	6E-03	3E-03	-2.6E+01
PENRE	MJ	1.15E+02	3.94E+00	2.61E-01	0	1.12E-01	7.09E-01	2.6E-02	-5.68E+01
PENRM	MJ	6.87E-01	0	0	0	0	-6.87E-01	0	0
PENRT	MJ	1.16E+02	3.94E+00	2.61E-01	0	1.12E-01	2.2E-02	2.6E-02	-5.68E+01
SM	kg	1.19E+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	9.1E-02	2.28E-05	2E-03	0	6.31E-07	1.18E-04	6.63E-06	-4.5E-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	1.44E-06	3.84E-10	3.84E-10	0	1.08E-11	8.53E-11	4.01E-10	-1.11E-07
NHWD	kg	1.54E+00	4.03E-04	2.6E-02	0	1.14E-05	5E-03	1.32E-01	-9.71E-01
RWD	kg	5E-03	4.3E-06	1.37E-05	0	1.2E-07	8.31E-07	2.99E-07	-6E-03
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	1.73E+00	0	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	0	0	1.25E+00	0	0	0	0	0
EET	MJ	0	0	2.26E+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	3.98E-07	8.98E-08	1.28E-09	0	4.14E-11	1.1E-10	1.78E-10	-2.28E-07
IR	kBq U235 eq	1.06E+00	6.16E-04	2E-03	0	1.71E-05	7.49E-05	3.08E-05	-1.25E+00
ETP-fw	CTUe	3.91E+01	2.79E+00	1.24E-01	0	7.9E-02	8E-03	1.5E-02	-2.08E+01
HTP-c	CTUh	4.26E-09	5.24E-11	6.54E-12	0	1.49E-12	7.27E-13	2.22E-12	-7.81E-10
HTP-nc	CTUh	1.12E-07	2.35E-09	2.83E-10	0	6.36E-11	7.37E-11	2.45E-10	-5.1E-09
SQP	SQP	1.21E+02	1E-02	6.9E-02	0	2.87E-04	7E-03	5E-03	-2.2E+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

Standards

EN 15804
EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

ISO 14025
EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

Further References

IBU 2021
Institut Bauen und Umwelt e.V.: 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

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.

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

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. 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 08/2021, Institut Bauen und Umwelt e.V., www.ibu-epd.com.

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