

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	dormakaba International Holding AG
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
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Mortise Lock - DL Series 9xxx / 7xxx dormakaba

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General Information

<p>dormakaba</p> <p>Programme holder IBU – Institut Bauen und Umwelt e.V. Hegelplatz 1 10117 Berlin Germany</p> <hr/> <p>Declaration number EPD-DOR-20220206-CBA1-EN</p> <hr/> <p>This declaration is based on the product category rules: Building Hardware products, 11.2017 (PCR checked and approved by the SVR)</p> <hr/> <p>Issue date 29.11.2022</p> <hr/> <p>Valid to 28.11.2027</p> <hr/> <p> Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)</p> <hr/> <p> Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.)</p>	<p>Mortise Lock - DL Series 9xxx / 7xxx</p> <p>Owner of the declaration dormakaba International Holding AG Hofwisenstr. 24 CH--8153 Rümlang Switzerland</p> <hr/> <p>Declared product / declared unit 1 Mortise Lock (1 piece) of the DL 9xxx Series, consisting of the following items: - one (1) mortise lock DL 91925 - one (1) closed case - one (1) forend - packaging</p> <hr/> <p>Scope: This declaration is a specific product declaration for the Mortise Lock - DL Series 9xxx manufactured at production facility DKF7. The production site is located in China. The underlying life cycle assessment is based on the entire life cycle of this specific mortise lock series. The EPD is also applicable for the Mortise Lock - DL Series 7xxx. Data represents the year 2022.</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.</p> <p>The EPD was created according to the specifications of <i>EN 15804+A2</i>. In the following, the standard will be simplified as <i>EN 15804</i>.</p> <hr/> <p>Verification</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 14025:2011</i></td> </tr> <tr> <td><input type="checkbox"/> internally</td> <td><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <p> Dr.-Ing. Wolfram Trinius (Independent verifier)</p>	The standard <i>EN 15804</i> serves as the core PCR		Independent verification of the declaration and data according to <i>ISO 14025:2011</i>		<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally
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Product

Product description/Product definition

dormakaba Mortise Lock - DL Series 9xxx / 7xxx for timber and steel doors. DL 9xxx / 7xxx locks are a complementary series of the SIS size locks.

A range of mechanically operated locks for doors in buildings.

A complete range of high-quality products and functional reliability.

With the use of high-grade materials, precise production techniques and a comprehensive quality management system, all dormakaba locks meet demanding technical specifications.

Locks are supplied complete with fixing screws.

For the use and application of the product the respective national provisions at the place of use apply.

dormakaba locks are subject to strict quality

requirements and are tested and certified according to:

- *EN 12209*

For applications with increased security requirements the locks are tested and certified in accordance with national and international standards.

Application

dormakaba DL locks can be used universally on standard doors by changing the latch handing.

Moreover they offer their precision by a simple, compatible assembling in standard door cuts.

As well as for applications with increased security requirements.

dormakaba locks are as well fire-tested and RISE-approved.

Technical Data

The Mortise Lock - DL Series 9xxx fullfils following technical properties:

Technical data	DL 909	DL 919	DL 912	DL 9192	DL 91925	DL 9195	DL 9197	DL 9097
Latch		•	•	•	•	•	•	
Locking latch								
Cylinder latch								
Dogging								
Dead bolt			•					
Hook bolt	•	•		•	•	•	•	•
EN 179 - Escape							•	•
Cylinder rotation	360°	360°	360°	360°	360°	360°	360°	360°

The following technical data are applicable for DL Series 7xxx:

Technical data	DL 700	DL 710	DL 7007	DL 712
Latch		•		•
Locking latch	•	•	•	
Cylinder latch	•	•	•	
Dogging	B/K/B	B/K/B	B/K/B	
Dead bolt				•
Hook bolt				
EN 179 - Escape			•	
Cylinder rotation	90°	90°	90°	90°

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision which can be applied are mentioned above.

Delivery status:

One (1) Mortise Lock - DL Series 9xxx includes one (1) DL 91925 lock, one (1) closed case and one forend.

Including packaging the Mortise Lock - DL Series will be supplied with a weight of 0,769 kg.

Base materials/Ancillary materials

The material composition of the Mortise lock - DL Series 9xxx is the following:

Name	Value	Unit
Stainless Steel	29,17	%
Steel	54,49	%
Zinc	14,01	%
Plastic	0,38	%
Paper	1,95	%
Total	100,00	%

Reference service life

dormakaba Mortise Lock - DL Series 9xxx / 7xxx is certified according to *EN 12209* up to 200.000 cycles of use. Under normal conditions and depending on cycle frequency, door weight and environmental conditions a duration of 15 years can be secured.

LCA: Calculation rules

Declared Unit

The declared unit is 1 piece of the product: Mortise Lock - DL 9xxx Series

Declared unit

Name	Value	Unit
Declared unit	1	piece/product
Mass of declared Product	0.769	kg

System boundary

The type of EPD is according to *EN 15804*: "cradle to gate with options, modules C1–C4, and module D". The following modules are declared: A1-A3, C1-C4, 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.

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.

Background database: *GaBi, SP40*.

LCA: Scenarios and additional technical information

Characteristic product properties Information on biogenic Carbon

Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic Carbon Content in accompanying packaging	0.006	kg C

Additional technical information for the declared modules.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel (per 1kg)	0.00276	l/100km
Transport distance via truck (from harbor to dormakaba logistic centre)	300	km
Capacity utilisation (including empty runs)	55	%
Transport distance via truck (for scaling)	100	km
Transport distance via ship	13.000	km

The product is transported via truck and ship. The product is stored in the dormakaba logistic centre in Germany. The main distribution region is Scandinavia and the Baltic States with the calculated transport distances. In order to allow scaling to a specific point of installation 100 km is declared as well.

Installation into the building (A5)

Name	Value	Unit
Waste packaging (paper)	0.01552	kg
Waste packaging (plastic)	0.0018	kg

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	15	a

End of life (C1-C4)

C1: The product dismantling from the building is done manually without environmental burden.

Name	Value	Unit
Collected separately	0.753	kg
Recycling	0.752	kg
Energy recovery	0.0006	kg
Landfilling	0	kg

The product is disassembled in a recycling process. Material recycling is then assumed for the metals. The plastic components are assumed to be incinerated with energy recovery. Region for the End of Life is: EU.

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

Name	Value	Unit
The collection rate is 100 %.		

LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X	

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece Mortise Lock - DL Series 9xxx / 7xxx

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ -Eq.]	2.69E+0	6.00E-2	2.70E-2	0.00E+0	3.00E-3	2.00E-3	0.00E+0	-1.74E+0
GWP-fossil	[kg CO ₂ -Eq.]	2.72E+0	5.80E-2	5.00E-3	0.00E+0	3.00E-3	2.00E-3	0.00E+0	-1.74E+0
GWP-biogenic	[kg CO ₂ -Eq.]	-2.69E-2	1.00E-3	2.10E-2	0.00E+0	1.44E-4	3.55E-8	0.00E+0	4.00E-3
GWP-luluc	[kg CO ₂ -Eq.]	4.30E-3	1.29E-6	6.21E-7	0.00E+0	7.43E-8	8.62E-8	0.00E+0	-2.00E-3
ODP	[kg CFC11-Eq.]	1.88E-13	5.81E-18	6.27E-18	0.00E+0	3.29E-19	7.69E-19	0.00E+0	-2.09E-15
AP	[mol H ⁺ -Eq.]	1.18E-2	1.00E-3	6.98E-6	0.00E+0	3.12E-6	2.72E-7	0.00E+0	-7.00E-3
EP-freshwater	[kg P-Eq.]	5.04E-6	1.29E-8	1.14E-9	0.00E+0	6.68E-10	1.23E-10	0.00E+0	-1.98E-6
EP-marine	[kg N-Eq.]	2.18E-3	3.27E-4	2.41E-6	0.00E+0	9.94E-7	6.12E-8	0.00E+0	-1.00E-3
EP-terrestrial	[mol N-Eq.]	1.90E-2	4.00E-3	3.15E-5	0.00E+0	1.11E-5	1.24E-6	0.00E+0	-1.20E-2
POCP	[kg NMVOC-Eq.]	5.52E-3	9.13E-4	6.41E-6	0.00E+0	2.81E-6	1.69E-7	0.00E+0	-4.00E-3
ADPE	[kg Sb-Eq.]	4.70E-4	1.61E-9	9.43E-11	0.00E+0	9.36E-11	1.06E-11	0.00E+0	-1.79E-4
ADPF	[MJ]	3.30E+1	7.61E-1	9.00E-3	0.00E+0	4.40E-2	7.07E-4	0.00E+0	-1.95E+1
WDP	[m ³ world-Eq deprived]	7.92E-1	1.09E-4	3.00E-3	0.00E+0	6.12E-6	1.56E-4	0.00E+0	-4.80E-1

Caption: 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 piece Mortise Lock - DL Series 9xxx / 7xxx

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	8.48E+0	2.00E-3	1.88E-1	0.00E+0	1.40E-4	1.84E-4	0.00E+0	-3.18E+0
PERM	[MJ]	1.86E-1	0.00E+0	-1.86E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	8.67E+0	2.00E-3	2.00E-3	0.00E+0	1.40E-4	1.84E-4	0.00E+0	-3.18E+0
PENRE	[MJ]	3.30E+1	7.62E-1	8.60E-2	0.00E+0	4.40E-2	2.20E-2	0.00E+0	-1.96E+1
PENRM	[MJ]	9.80E-2	0.00E+0	-7.70E-2	0.00E+0	0.00E+0	-2.10E-2	0.00E+0	0.00E+0
PENRT	[MJ]	3.31E+1	7.62E-1	9.00E-3	0.00E+0	4.40E-2	7.07E-4	0.00E+0	-1.96E+1
SM	[kg]	3.26E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m ³]	2.80E-2	4.43E-6	7.54E-5	0.00E+0	2.50E-7	3.73E-6	0.00E+0	-1.90E-2

Caption: 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 used as raw materials; 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 piece Mortise Lock - DL Series 9xxx / 7xxx

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	1.15E-7	7.44E-11	1.83E-11	0.00E+0	4.30E-12	2.70E-12	0.00E+0	-2.13E-7
NHWD	[kg]	1.86E-1	7.80E-5	1.00E-3	0.00E+0	4.53E-6	1.58E-4	0.00E+0	-8.50E-2
RWD	[kg]	1.19E-3	8.34E-7	4.44E-7	0.00E+0	4.76E-8	2.62E-8	0.00E+0	-2.44E-4
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.46E-1	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	6.86E-5	0.00E+0	4.20E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	1.25E-4	0.00E+0	8.00E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

Caption: 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 piece Mortise Lock - DL Series 9xxx / 7xxx

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	1.79E-7	2.07E-8	4.45E-11	0.00E+0	1.64E-11	3.46E-12	0.00E+0	-1.26E-7
IRP	[kBq U235-Eq.]	1.31E-1	1.20E-4	6.36E-5	0.00E+0	6.79E-6	2.36E-6	0.00E+0	-2.80E-2
ETP-fw	[CTUe]	1.43E+1	5.39E-1	4.00E-3	0.00E+0	3.10E-2	2.65E-4	0.00E+0	-8.94E+0
HTP-c	[CTUh]	3.21E-7	1.01E-11	2.43E-13	0.00E+0	5.90E-13	2.30E-14	0.00E+0	-1.23E-9
HTP-nc	[CTUh]	8.76E-8	4.59E-10	1.45E-11	0.00E+0	2.52E-11	2.33E-12	0.00E+0	1.55E-7
SQP	[-]	9.43E+0	2.00E-3	2.00E-3	0.00E+0	1.14E-4	2.12E-4	0.00E+0	-1.77E+0
Caption	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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from 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 or as there is limited experienced with the indicator.

References

EN 12209

EN 12209:2003 Building hardware – locks and latches – mechanically operated locks, latches and locking plates – requirements and methods

EN 15804

EN 15804+A2:2019+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.

REACH

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 2021

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

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 DHW.
LCA-Tool No.: 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 1.2, Institut Bauen und Umwelt e.V., www.ibu-epd.com, 2017.

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