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-20250123-CBA1-EN
Issue date	11/04/2025
Valid to	10/04/2030

Hotel Lock Quantum Pixel+

dormakaba

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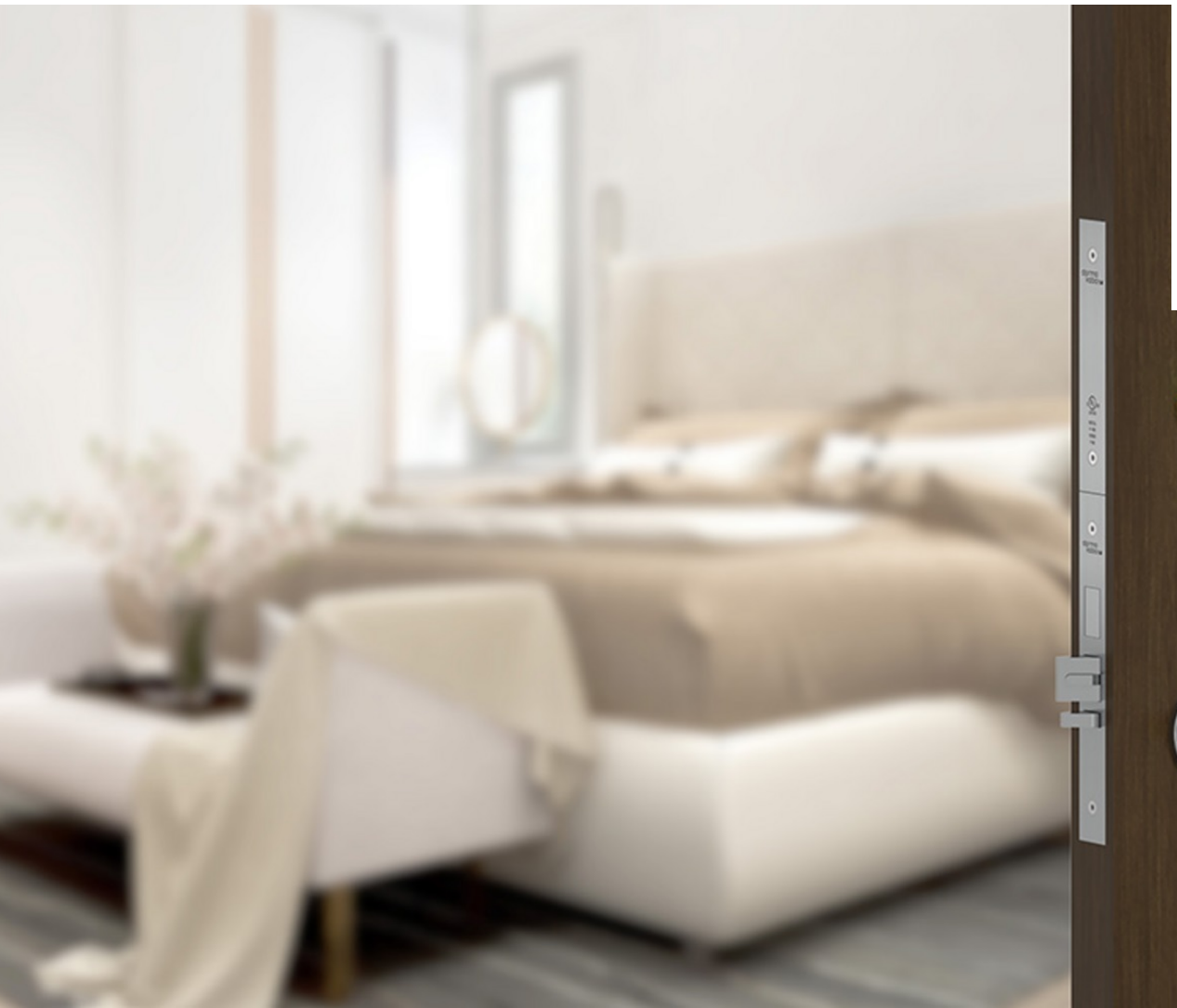

General Information

dormakaba

Programme holder

IBU – Institut Bauen und Umwelt e.V.
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10117 Berlin
Germany

Declaration number

EPD-DOR-20250123-CBA1-EN

This declaration is based on the product category rules:

Electronic and physical Access Control Systems, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

11/04/2025

Valid to

10/04/2030

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

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Hotel Lock Quantum Pixel+

Owner of the declaration

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Declared product / declared unit

1 piece of the product: Quantum Pixel+ consisting of the following items:

- Hotel Lock Quantum Pixel+
- Lever handle
- Fixing materials
- Product packaging

Scope:

This Environmental Product Declaration refers to a specific hotel lock manufactured by dormakaba. The EPD is representative for the Quantum Pixel+ Series. The production site is located in Montreal (Canada).

Data represents the year 2024.
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

The Quantum Pixel+ Series offers electronic hotel locks that are easy-to-use, secure and flexible. The solution is visually elegant and offers a high performance. The lock electronics are hidden inside the door while the hardware design fits to a range of rose and lever handle options. The result is a lock design that fits seamlessly into any hotel interior.

For the use and application of the product the representative national provisions apply. For the Quantum Pixel+ Series the standards which can be applied are the following:

- *ANSI A156.13*
- *ANSI A156.25*
- *UL 10C*
- *ULC CAN S-104*
- *EN 14846*
- *EN 1634-1*
- *EN 1363-1*

Application

Following applications apply for the hotel lock Quantum Pixel+ Series:

- Suitable for small to large-scale hotels
- Ideal for new projects or when doors are being replaced
- Retrofitting from previous generation Quantum Pixel

Technical Data

Quantum Pixel+ Series has following technical properties:

Name	Value	Unit
Throw deadbolt	25,4	mm
Dead-locking latch bolt	15,9	mm
Door thickness minimum	37	mm
Door thickness maximum	76	mm
Weight with hardware	8,0	lbs
Standard backset ANSI mortise	69,9	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 composition including the packaging of the product is listed below:

Name	Value	Unit
Steel	40	%
Zinc	23	%
Paper	17	%
Stainless steel	8	%
Electronics	5	%
Brass	5	%
Plastics	2	%

The product includes partial articles which contain substances listed in the *C*andidate List of *REACH Regulation 1907/2006/EC* (date: 21.01.2025) 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 % (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 for the Quantum Pixel+ Series amounts to 10 years, depending on the application and frequency of use. For repairs and renewals, suitable spare parts are available. The hotel lock series is tested and certified to *BHMA A156.13*, meaning they are designed to withstand a minimum of 1.000.000 cycles.

LCA: Calculation rules

Declared Unit

The declared unit is 1 piece of the product: Quantum Pixel+ including packaging

Name	Value	Unit
Declared unit	1	piece/product
Mass of declared product	2.78	kg
Mass of packaging	0.58	kg
Total mass of declared product	3.36	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.

Maintenance – Module B2

This module includes the production and the end of life of the batteries. The potential use of batteries is declared in module B2.

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: Global

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 of biogenic carbon

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.19	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

Transport to the building site (A4)

Name	Value	Unit
Liters of fuel	0,00276	l/100km
Transport distance via truck (from dormakaba logistic center to harbor)	300	km
Capacity utilisation (including empty runs)	55	%
Transport distance via ship (from habor to habor)	13.000	km
Transport distance via truck (for scaling)	100	km

The product is transported via truck and ship. The product is stored in the dormakaba logistic center in Montreal. The main distribution region is North America and Europe with the calculated transport distances. In order to allow scaling to a specific point of installation 100 km are declared as well.

Installation into the building (A5)

Name	Value	Unit
Waste packaging (paper / technical documentation and plastic)	0.54	kg

Maintenance (B2)

Name	Value	Unit
Maintenance cycle	5	Number/RSL

The Quantum Pixel+ Series are operated using a battery and are not connected to mains electricity. The batteries are provided by dormakaba. During the operation of the product, the only energy consumption comes from the battery use. The battery must be exchanged on average 5 times over the declared service life.

In order to allow scaling, the exchange of 1 battery is declared in the LCA.

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	10	a

End of life (C1-C4)

C1: The product dismantling from the building is done manually without environmental burden.
C2: Transport to waste management is 50 km.

Name	Value	Unit
Collected separately waste type waste type	2.96	kg
Recycling	2.78	kg
Energy recovery	0.04	kg
Landfilling	0.14	kg

The product is disassembled in a recycling process. Material recycling is then assumed for metals and electronics. The plastic components are assumed to be incinerated with energy recovery. The batteries and minor proportions of residues arising from the recycling process are landfilled. Region for the End of Life is: Global.

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

Name	Value	Unit
Recycling	100	%

The collection rate is 100 %.

LCA: Results

EF Version: 3.0

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	X	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece Quantum Pixel+

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	9.7E+00	2.41E-01	7.84E-01	2.09E-01	0	1.3E-02	1.81E-01	2E-03	-3.98E+00
GWP-fossil	kg CO_2 eq	1.05E+01	2.36E-01	5.3E-02	2.09E-01	0	1.2E-02	1.81E-01	2E-03	-3.98E+00
GWP-biogenic	kg CO_2 eq	-8.15E-01	4E-03	7.31E-01	2.88E-04	0	5.72E-04	4.22E-06	7.34E-06	4.21E-04
GWP-luluc	kg CO_2 eq	1.3E-02	5.15E-06	1.43E-05	8.67E-05	0	2.94E-07	1.02E-05	6.18E-06	-4E-03
ODP	kg CFC11 eq	1.25E-10	2.33E-17	1.53E-16	7.19E-16	0	1.31E-18	9.14E-17	7.96E-18	-1.7E-14
AP	mol H^+ eq	6.1E-02	6E-03	2.16E-04	2.11E-03	0	1.24E-05	3.23E-05	1.54E-05	-1.8E-02
EP-freshwater	kg P eq	4.31E-05	5.23E-08	2.92E-08	1.48E-07	0	2.65E-09	1.46E-08	3.69E-09	-8.1E-06
EP-marine	kg N eq	1.19E-02	1E-03	7.72E-05	2.54E-04	0	3.94E-06	7.27E-06	3.96E-06	-3E-03
EP-terrestrial	mol N eq	1.24E-01	1.6E-02	9.73E-04	2.32E-03	0	4.38E-05	1.47E-04	4.36E-05	-2.8E-02
POCP	kg NMVOC eq	3.3E-02	4E-03	2.05E-04	7.85E-04	0	1.11E-05	2.01E-05	1.2E-05	-9E-03
ADPE	kg Sb eq	4.07E-03	6.45E-09	2.37E-09	9.05E-06	0	3.71E-10	1.25E-09	1.93E-10	-9.8E-04
ADPF	MJ	1.42E+02	3.04E+00	2.53E-01	2.37E+00	0	1.75E-01	8.4E-02	2.8E-02	-5.14E+01
WDP	m^3 world eq deprived	2.92E+00	4.39E-04	9.7E-02	2.3E-02	0	2.42E-05	1.9E-02	2.25E-04	-1.08E+00

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 Quantum Pixel+

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
PERE	MJ	4.48E+01	1E-02	6.39E+00	1.97E-01	0	5.53E-04	2.2E-02	4E-03	-1.08E+01
PERM	MJ	6.35E+00	0	-6.35E+00	0	0	0	0	0	0
PERT	MJ	5.11E+01	1E-02	4.7E-02	1.97E-01	0	5.53E-04	2.2E-02	4E-03	-1.08E+01
PENRE	MJ	1.4E+02	3.05E+00	8.38E-01	2.37E+00	0	1.76E-01	1.54E+00	2.8E-02	-5.15E+01
PENRM	MJ	2.04E+00	0	-5.85E-01	0	0	0	-1.45E+00	0	0
PENRT	MJ	1.42E+02	3.05E+00	2.53E-01	2.37E+00	0	1.76E-01	8.4E-02	2.8E-02	-5.15E+01
SM	kg	1.95E+00	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m^3	9.01E-02	1.78E-05	2E-03	7.23E-04	0	9.92E-07	4.43E-04	7.1E-06	-4E-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 piece Quantum Pixel+

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
HWD	kg	1.81E-06	2.98E-10	4.1E-10	1.15E-08	0	1.7E-11	3.2E-10	4.29E-10	-9.28E-07
NHWD	kg	6.39E-01	3.12E-04	2.7E-02	1E+00	0	1.8E-05	1.9E-02	1.42E-01	-6.4E-02
RWD	kg	6.01E-03	3.35E-06	1.3E-05	4.87E-05	0	1.88E-07	3.12E-06	3.21E-07	-2E-03
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	2.75E+00	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	1.2E+00	0	0	0	3.86E-01	0	0
EET	MJ	0	0	2.2E+00	0	0	0	8.88E-01	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 piece Quantum Pixel+

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
PM	Disease incidence	7.31E-07	9.41E-08	1.24E-09	1.52E-08	0	6.51E-11	4.12E-10	1.91E-10	-2.72E-07
IR	kBq U235 eq	7.61E-01	4.8E-04	2E-03	5.24E-03	0	2.69E-05	2.81E-04	3.3E-05	-2.39E-01
ETP-fw	CTUe	6.75E+01	2.16E+00	1.18E-01	6.06E-01	0	1.24E-01	3.2E-02	1.6E-02	-2.31E+01
HTP-c	CTUh	4.81E-07	4.06E-11	6.46E-12	5.97E-11	0	2.34E-12	2.73E-12	2.38E-12	5.79E-09
HTP-nc	CTUh	4.38E-07	1.85E-09	3.1E-10	3.41E-09	0	1E-10	2.76E-10	2.63E-10	1.02E-06
SQP	SQP	1.28E+02	8E-03	6.8E-02	4.61E-01	0	4.51E-04	2.5E-02	6E-03	-4.89E+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.

This EPD was created using a software tool.

References

ANSI A156.25
ANSI A156.25:2023, Electrified Locking Devices

ANSI A156.13
ANSI A156.13:2022, Mortise Locks

UL 10C
UL 10C:2016-06, Standard for Safety Positive Pressure Fire Tests of Door Assemblies

ULC CAN-S104
ULC CAN-S104:2020-08, Standard Method for Fire Tests of Door Assemblies

EN 14846
EN 14846:2008-11 Building hardware - Locks and latches - Electromechanically operated locks and striking plates - Requirements and test methods

EN 1634-1
EN 1634-1:2018-04, Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware

EN 1363-1
EN 1363-1:2020-05, Fire resistance tests - Part 1: General Requirements

ISO 14025
ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

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

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

RoHS
Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) Directive (EU) No 2011/65

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
19922020
Version 10.0.0.71
University of Stuttgart
Leinfelden-Echterdingen

GaBi ts documentation
GaBi life cycle inventory data documentation (https://www.gabisoftware.com/support/gabi/gabidatabase-2020-lcidocumentation/).

LCA-tool dormakaba
LCA too, ESC
Tool No.: IBU-DOR-202109-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.

Bauen und Umwelt e.V., www.ibu-epd.com.

PCR Part B
PCR – Part B: Requirements on the EPD for Electronic and physical Access Control Systems, version 08/2021, Institut

Publisher

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