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-20210247-CBA4-EN
Issue date	15.02.2022
Valid to	14.02.2028

LA GARD 700
dormakaba

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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General Information

dormakaba

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-DOR-20210247-CBA4-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

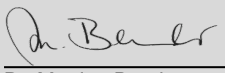
15.02.2022

Valid to

14.02.2028



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



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

LA GARD 700

Owner of the declaration

dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

Declared product / declared unit

1 LA GARD 700 Series electronic safe lock (1piece), consisting of the following items:
- swing bolt, dual handed
- keypad with OLED display (excluding batteries and any energy supply modules)

Scope:

This declaration is a specific product declaration for the LA GARD 700 series electronic safe lock.
The underlying life cycle assessment is based on the entire life cycle of this specific LA GARD 700 Series electronic safe lock manufactured by dormakaba. The various technical features are outlined in chapter 2. The products are manufactured at the dormakaba production facility in Nogales (Mexico). The year of data collection is 2021. The declared product is not including the batteries and energy supply modules
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

LA GARD has been an industry leader in the safe lock sector for nearly half of a century.

The LA GARD 700 Series embodies the original tried-and-true features
and long legacy of LA GARD high-security function along with advanced
technological features.
The series offers a range of features and options to fit almost any
safe lock need.

- Security – the electronic safe locks are designed to support the ever-changing needs of today's world
- Efficiency – lower total cost of ownership, fewer battery changes, ease of use, simplified inventory management
- Confidence – from a name you know and trust
- User Experience – unified software platform, feature-rich OLED display, simplified user-prompts
- Excellence – quality commitment backed by 2 year warranty; extended warranty
  available, world-class support, modern dormakaba design aesthetic
- Display – OLED keypad featuring on-screen prompts

For placing the LA GARD 700 Series electronic safe lock on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the following legal provisions apply:

- *VdS 2344:2014-07*
- *VdS 2396:2014-07*
- *UL 2058:2005-06*
- *DIN EN1300:2019-05*
- *Restriction of Hazardous Substances (RoHS)*

Application

The LA GARD 700 Series is the ideal for commercial industries, vault storage, government and residential/personal applications like:

- Residential
- Commerial retail
- Quick serve restaurants
- ATM and currency exchange
- Pharmacies
- Law enforcement facilities
- Valut storage
- Cash recyclers
- Military institutions

With five models (Models 701-705) to choose from, the series offers a range of features and options to fit almost any safe lock need. Following models are available:

- Model 701 – basic offering
- Model 702 – multi-user lock standard keypad
- Model 703 – multi-user, 2-lock system, display
- Model 704 – multi-user, 5-lock system, display
- Model 705 – multi-user, 5-lock system, displa

Technical Data

Following technical specification applies for LA GARD 700 Series:

Name	Value	Unit
Combination length	11 (2id + 6-9)	-
Battery power	2x9	V
1.28” Monochrome OLED Display	128 x 64	-
Low-energy Bluetooth key fob for credential and Time Delay Override	x	-
Single unified software platform for increased usability and updatable firmware	x	-

Power supply

- 2 batteries 1.5 V AA L91, FR6 or via the S module (not included in this EPD)
- via the S-module: 12–24 V AC or 12–24 V DC, ≥ 0.4 A (not included in this EPD)

The products are not harmonised in accordance with the Construction Product Regulations (CPR) but in accordance with other provisions for harmonisation of the EU. Compliance with the European Union Directive and technical specifications:

- *DIN EN 1300: 2019-05,* Secure storage units - Classification for high security locks according to their resistance to unauthorized opening.

The products are subject to CE marking according to the relevant harmonization legislation.

Base materials/Ancillary materials

For the main product components: Lock, keypad model 703 and standard profile, the product composition of the LA GARD 700 Series is the following:

Material	Value	Unit
Zinc	65	%
Plastics	16	%
Electronics	10	%
Steel	9	%
Total	100	%

The product includes partial articles which contain substances listed in the Candidate List of REACH Regulation 1907/2006/EC (date: 14.06.2023) exceeding 0.1 percentage by mass: no
The Candidate List can be found on the ECHA website address: https: echa.europa.eu/de/home.

Reference service life

The product is certified according to *UL 2058* with testing up to 25.000 cycles. Under normal conditions and depending on cycle frequency, it means an approximate duration of 7 years.

LCA: Calculation rules

Declared Unit

The declared unit is 1 piece of the product: 0.606 kg

Name	Value	Unit
Declared unit	1	pce.
Mass (total system)	0.606	kg
Conversion factor to 1 kg	0.606	-

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 + B6)

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.

Use stage - Module B6
The use stage related to the operation of the building includes:
— B6, operational energy use
The potential use of electricity from the grid is declared in module B6.

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: Mexico

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	-	kg C
Biogenic carbon content in accompanying packaging	<0.01	kg C

The following technical scenario information is required for the declared modules

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	0.00276	l/100km
Capacity utilisation (including empty runs) via medium truck	55	%
Transport distance via medium truck	100	km
Transport distance via plane	2800	km

The product is transported via truck and plane. The main distribution regions are Mexico and US with the calculated average transport distances.

Installation into the building (A5)

Name	Value	Unit
Waste packaging	0.0126	kg

Maintenance (B2)

Name	Value	Unit
Use of batteries (9V batteries)	4	pieces

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	7	a

Operational energy use (B6)
The use stage is declared for 7 years.

Name	Value	Unit
Electricity consumption for 1 year	0.0054	kW
Days per year in use	365	days
Stand by mode per day	23,97	h
On mode per day	0,03	h
Stand by power	0,00015	W
On mode power	0,375	W

Two scenarios are declared:
- B6/1 is calculated with EU-28 electricity grid mix
- B6/2 is calculated with mainly US electricity grid mix (76 %) according to dormakaba's market
- Attention:
Scenarios B6/1 and B6/2 require the power supply module, which is not included
in this EPD.

End of life (C1-C4)
C1: The product dismantling from the building is done manually without environmental burden.

Name	Value	Unit
Recycling	0.5016	kg
Energy recovery	0.0971	kg
Landfilling	0.007671	kg
Transport to waste management	50	km

The product is disassembled in a recycling process. Material recycling is then assumed for the metals, electronic and electromechanics. The plastic components are assumed to be incinerated with energy recovery. Minor proportions of residues arising from the recycling process are landfilled (1 %). Region for the End of Life is: Global.

Reuse, recovery and/or recycling potentials (D), relevant scenario information
Collection rate is 100 %.

LCA: Results

B2 declares the environmental impact for the use stage under the assumption that batteries are used.
B6 declares the environmental impact for the use stage under the assumption that electricity from the grid (B6/1: region EU, B6/2: region mainly US) is used.

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	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece LA GARD 700

Parameter	Unit	A1-A3	A4	A5	B2	B6/1	B6/2	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.51E+01	1.06E+00	1.79E-02	3E-01	1.53E-02	2.26E-02	0	2.65E-03	2.51E-01	3E-04	-3.61E+00
GWP-fossil	kg CO_2 eq	1.51E+01	1.06E+00	4.47E-04	3E-01	1.52E-02	2.26E-02	0	2.53E-03	2.47E-01	2.98E-04	-3.6E+00
GWP-biogenic	kg CO_2 eq	1.72E-02	1.78E-03	1.74E-02	5.26E-04	5.07E-05	9.48E-06	0	1.17E-04	3.95E-03	1.02E-06	-7.66E-03
GWP-luluc	kg CO_2 eq	8.64E-03	2.22E-05	2.94E-07	2.88E-04	2.21E-05	1.13E-05	0	6.03E-08	1.4E-05	8.59E-07	-1.5E-03
ODP	kg CFC11 eq	2.4E-10	7.72E-17	3.22E-18	5.65E-12	3.35E-16	1.09E-16	0	2.68E-19	1.25E-16	1.11E-18	-1.18E-14
AP	mol H^+ eq	1.09E-01	4.32E-03	5E-06	9.36E-04	3.36E-05	6.32E-05	0	2.54E-06	4.45E-05	2.14E-06	-4.1E-02
EP-freshwater	kg P eq	3.26E-05	1.74E-07	6.3E-10	4.81E-07	4.06E-08	1.55E-08	0	5.42E-10	1.99E-08	5.12E-10	-4.25E-06
EP-marine	kg N eq	1.58E-02	1.92E-03	1.81E-06	2.05E-04	7.46E-06	1.17E-05	0	8.07E-07	1.01E-05	5.51E-07	-5.08E-03
EP-terrestrial	mol N eq	1.71E-01	2.11E-02	2.25E-05	2.59E-03	7.84E-05	1.27E-04	0	8.97E-06	2.03E-04	6.05E-06	-5.53E-02
POCP	kg NMVOC eq	4.73E-02	5.48E-03	4.79E-06	5.63E-04	2.04E-05	3.37E-05	0	2.28E-06	2.79E-05	1.67E-06	-1.6E-02
ADPE	kg Sb eq	4.08E-03	3.01E-08	5.09E-11	1.32E-06	4.4E-09	3.97E-09	0	7.6E-11	1.71E-09	2.68E-11	-2.23E-03
ADPF	MJ	2.13E+02	1.44E+01	5.64E-03	3.86E+00	2.67E-01	3.41E-01	0	3.59E-02	1.15E-01	3.91E-03	-4.11E+01
WDP	m^3 world eq deprived	2.58E+00	1.61E-03	2.21E-03	4.03E-02	3.32E-03	4.83E-03	0	4.97E-06	2.57E-02	3.13E-05	-5.84E-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 piece LA GARD 700

Parameter	Unit	A1-A3	A4	A5	B2	B6/1	B6/2	C1	C2	C3	C4	D
PERE	MJ	3.03E+01	3.48E-02	1.52E-01	7.77E-01	1.19E-01	6.21E-02	0	1.13E-04	5.63E-02	5.13E-04	-5.3E+00
PERM	MJ	1.77E-01	0	-1.51E-01	0	0	0	0	0	-2.64E-02	0	0
PERT	MJ	3.06E+01	3.48E-02	1.02E-03	7.77E-01	1.19E-01	6.21E-02	0	1.13E-04	2.99E-02	5.13E-04	-5.3E+00
PENRE	MJ	2.11E+02	1.44E+01	5.64E-03	3.86E+00	2.68E-01	3.42E-01	0	3.6E-02	3.54E+00	3.92E-03	-4.11E+01
PENRM	MJ	3.43E+00	0	0	0	0	0	0	0	-3.43E+00	0	0
PENRT	MJ	2.14E+02	1.44E+01	5.64E-03	3.86E+00	2.68E-01	3.42E-01	0	3.6E-02	1.15E-01	3.92E-03	-4.11E+01
SM	kg	3.17E-02	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	7.56E-02	6.74E-05	5.21E-05	1.74E-03	1.37E-04	1.36E-04	0	2.03E-07	6.13E-04	9.87E-07	-1.72E-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 LA GARD 700

Parameter	Unit	A1-A3	A4	A5	B2	B6/1	B6/2	C1	C2	C3	C4	D
HWD	kg	2.1E-06	1.38E-09	8.31E-12	4.84E-08	1.11E-10	1.34E-10	0	3.49E-12	4.37E-10	5.97E-11	-5.94E-07
NHWD	kg	3.72E-01	1.46E-03	5.6E-04	7.27E-02	1.9E-04	1.18E-04	0	3.68E-06	2.57E-02	1.97E-02	4.19E-03
RWD	kg	9.46E-03	1.18E-05	2.96E-07	8.97E-05	4.06E-05	2.77E-05	0	3.86E-08	4.3E-06	4.46E-08	-1.32E-03
CRU	kg	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	4.87E-01	0	0

MER	kg	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	2.47E-03	0	2.7E-02	0	0	0	0	0	0	0	0
EET	MJ	4.47E-03	0	4.9E-02	0	0	0	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 piece LA GARD 700

Parameter	Unit	A1-A3	A4	A5	B2	B6/1	B6/2	C1	C2	C3	C4	D
PM	Disease incidence	1.04E-06	1.4E-08	2.77E-11	9.82E-09	2.82E-10	7.54E-10	0	1.33E-11	5.64E-10	2.65E-11	-3.7E-07
IR	kBq U235 eq	9.27E-01	1.61E-03	4.59E-05	8.82E-03	6.66E-03	2.62E-03	0	5.52E-06	3.9E-04	4.59E-06	-1.38E-01
ETP-fw	CTUe	1.22E+02	1.02E+01	2.68E-03	1.32E+01	1.14E-01	9.86E-02	0	2.55E-02	4.33E-02	2.24E-03	-1.18E+01
HTP-c	CTUh	5.31E-09	1.92E-10	1.42E-13	6.69E-11	3.16E-12	2.73E-12	0	4.79E-13	3.74E-12	3.31E-13	4.81E-09
HTP-nc	CTUh	3.77E-07	8.85E-09	6.13E-12	7.74E-09	1.16E-10	1.07E-10	0	2.05E-11	3.77E-10	3.65E-11	5.76E-07
SQP	SQP	5.05E+01	2.94E-02	1.5E-03	3.76E-01	8.52E-02	3.93E-02	0	9.24E-05	3.45E-02	8.16E-04	-2.57E+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 IRP
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 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 ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP. 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

DIN EN 1300
DIN EN 1300:2019, Secure storage units - Classification for high security locks according to their resistance to unauthorized opening

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

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

UL 2058
UL 2058: 2005-06,Underwriters Laboratories, High-Security Electronic locks

VdS 2344
VdS 2344:2014-07, Procedure for the testing, approval and certification of products and systems for fire protection and security technologies

VdS 2396
VdS 2396:2014-07, VdS Guidelines for Physical Security Devices - High Security Locks for Secure Storage Units - Requirements and Test Methods

(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)
Substances in electrical and electronic equipment (RoHS), Directive (EU) No 2011/65.

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Further References

IBU 2021
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GaBi ts software
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, version 1.0. SAL
Developed by Sphera Solutions GmbH.

PCR Part A
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PCR Part B
PCR – Part B: Requirements on the EPD for Electronic and physical Access Control Systems, version 08/2021, Institut Bauen und Umwelt e.V., www.ibu-epd.com.

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