

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-20240496-CBA1-EN
Issue date	20.12.2024
Valid to	19.12.2029

Personal Interlock Orthos PIL-M02
dormakaba

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General Information

dormakaba	Personal Interlock Orthos PIL-M02								
Programme holder IBU – Institut Bauen und Umwelt e.V. Hegelplatz 1 10117 Berlin Germany	Owner of the declaration dormakaba International Holding GmbH DORMA Platz 1 58256 Ennepetal Germany								
Declaration number EPD-DOR-20240496-CBA1-EN	Declared product / declared unit 1 piece of the product: dormakaba Orthos PIL-M02 consisting of the following items: • Two portals • VSG door leafs • Drive unit • Product packaging								
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)	Scope: This Environmental Product Declaration refers to a specific Personal Interlock manufactured by dormakaba. The production site is located in Bühl (Germany). Green electricity with Guarantee of Origin (GoO) is being used at this production site. 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 <i>EN 15804</i> .								
Issue date 20.12.2024	Verification <table><tr><td colspan="2">The standard EN 15804 serves as the core PCR</td></tr><tr><td colspan="2">Independent verification of the declaration and data according to ISO 14025:2011</td></tr><tr><td>☐</td><td>internally</td></tr><tr><td>☒</td><td>externally</td></tr></table>	The standard EN 15804 serves as the core PCR		Independent verification of the declaration and data according to ISO 14025:2011		☐	internally	☒	externally
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Valid to 19.12.2029									
 Dipl.-Ing. Hans Peters (Chairman of Institut Bauen und Umwelt e.V.)									
 Florian Pronold (Managing Director Institut Bauen und Umwelt e.V.)	 Matthias Klingler, (Independent verifier)								

Product

Product description/Product definition

The Personal Interlock PIL-M02 provides a controlled access secure path of travel configured to allow high-volume single-direction pedestrian movement, and to sense, deter, and provide local and remote notification for attempts to enter corridor from the restricted direction. It is often employed at airports for the sake of controlled crossing of all passengers from airside (sterile area) to landside (non-sterile area). The modular system consists of a combination of several fast-moving half- and full-height door sets. The required security level may be achieved by different unit lengths and sensor combinations. The sophisticated sensor systems ensure a high object security with simultaneous regard to pedestrian safety.

For the Orthos PIL-M02 the standards which can be applied are the following:

- Machinery Directive 2006/42/EC
- EMC Directive 2014/30/EU
- ROHS Directive 2011/65/EU
- ISO 12100
- EN 16005
- EN 13849-1
- EN 13849-2
- EN 60335-1
- EN 60335-2-103
- EN 61000-6-2
- EN 61000-6-3

The CE-marking takes into account the proof of conformity with the respective harmonized standards based on the legal provisions above. For the application and use the respective national provisions apply.

Application

The Orthos PIL-M02 is ideal for the use in airports and crossover points. The modular Orthos PIL-M02 Personal Interlock only allows passage in one direction. The interlock is user friendly with luggage. Different security levels are possible depending on the selected configuration.

Technical Data

The Orthos PIL-M02 has following technical properties:

Name	Value	Unit
Multiple units	single, double, triple, quadruple, ...	lanes
Length	various unit length	mm
Passage height	2100	mm
Passage width	650-1400	mm
Door combinations	1-3	full-height doors
Door combinations	0-2	half-height doors
Sensor system	radar	standard
Sensor system	stereo	optional

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	42	%
Glass	37	%
Aluminum	18	%
Plastics	2	%
Electronics	1	%

The Orthos PIL-M02 includes partial articles which contain substances listed in the *Candidate List of REACH Regulation* 1907/2006/EC (date: 07.11.2024) 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 of the Personal Interlock Orthos PIL amounts to 20 years, depending on the application and frequency of use. For repairs and renewals, suitable spare parts are available. The personal interlock is tested and certified to *EN 16005*, meaning they are designed to withstand a minimum of 500.000 cycles.

LCA: Calculation rules

Declared Unit

The declared unit is 1 piece of product: Orthos PIL-M02 including packaging.

Name	Value	Unit
Declared unit	1	pce.
Mass of declared product without packaging	1029	kg
Mass of packaging	5,08	kg
Total mass of declared product	1034,08	kg

System boundary

Type of EPD: 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 (green electricity with Guarantee of Origin (GoO)), as well as waste processing up to the end-of-waste state.

A3 is located in Bühl, Germany.

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.

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, deconstruction, 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: Germany

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. 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	1.65	kg C

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

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel (per 1 kg)	0.00276	l/100km
Transport distance via medium truck	100	km
Capacity utilisation (including empty runs) via medium truck	55	%

The product is transported via truck. The main distribution region is Europe. In order to allow scaling to a specific point of installation 100 km are declared.

Installation into the building (A5)

Name	Value	Unit
Waste packaging	5,08	kg

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	20	a

Operational energy use (B6)

Name	Value	Unit
Days per year in use	365	days
On mode per day	4	hours
Idle mode per day	20	hours
Off mode	0	hours
On mode power	102	W
Idle mode power	64	W
Off mode power	0	W
Electricity consumption per 1 year	616,12	kWh

End of life (C1-C4)

C1: The product expansion depends on the building. The product share is so low that no environmental burden is assumed.

Name	Value	Unit
Collected separately waste type	1029	kg
Recycling	617	kg
Energy recovery	13.7	kg
Landfilling	398	kg
Transport to waste management	50	km

The product is disassembled in a recycling process. Material recycling is then assumed for the metals, and electronics. The plastic components are assumed to be incinerated with energy recovery. Glass and electromechanics are assumed to be landfilled.

Region for the End of Life is: Global.

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

Name	Value	Unit
Recycling	100	%

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	MND	MNR	MNR	MNR	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece Orthos PIL-M02

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	6.71E+03	9.04E+00	8.37E+00	4.98E+03	0	4.48E+00	3.75E+01	6.08E+00	-2.71E+03
GWP-fossil	kg CO ₂ eq	6.62E+03	8.64E+00	2.18E+00	4.96E+03	0	4.28E+00	3.75E+01	6.04E+00	-2.71E+03
GWP-biogenic	kg CO ₂ eq	8.59E+01	4E-01	6.19E+00	1.65E+01	0	1.98E-01	8.75E-04	2.1E-02	5.25E+00
GWP-luluc	kg CO ₂ eq	5.49E+00	2.06E-04	2.12E-04	7.19E+00	0	1.02E-04	2E-03	1.7E-02	-3.47E+00
ODP	kg CFC11 eq	7.03E-09	9.13E-16	2.1E-15	1.09E-10	0	4.52E-16	1.89E-14	2.24E-14	-8.31E-09
AP	mol H ⁺ eq	2.77E+01	9E-03	2E-03	1.1E+01	0	4E-03	7E-03	4.3E-02	-1.16E+01
EP-freshwater	kg P eq	4.69E-03	1.85E-06	3.67E-07	1.3E-02	0	9.16E-07	3.02E-06	1.04E-05	-2E-03
EP-marine	kg N eq	4.38E+00	3E-03	6.11E-04	2.43E+00	0	1E-03	2E-03	1.1E-02	-1.69E+00
EP-terrestrial	mol N eq	4.84E+01	3.1E-02	8E-03	2.56E+01	0	1.5E-02	3E-02	1.23E-01	-1.84E+01
POCP	kg NMVOC eq	1.23E+01	8E-03	2E-03	6.67E+00	0	4E-03	4E-03	3.4E-02	-5.11E+00
ADPE	kg Sb eq	1.29E-01	2.59E-07	3.1E-08	1E-03	0	1.28E-07	2.6E-07	5.43E-07	-5.9E-02
ADPF	MJ	8.71E+04	1.23E+02	2.81E+00	8.72E+04	0	6.07E+01	1.74E+01	7.92E+01	-3.51E+04
WDP	m ³ world eq deprived	1.15E+03	1.7E-02	9.64E-01	1.08E+03	0	8E-03	3.84E+00	6.33E-01	-7.38E+02

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 Orthos PIL-M02

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	MJ	1.62E+04	3.87E-01	5.32E+01	3.87E+04	0	1.91E-01	4.53E+00	1.04E+01	-1.13E+04
PERM	MJ	5.26E+01	0	-5.26E+01	0	0	0	0	0	0
PERT	MJ	1.62E+04	3.87E-01	5.88E-01	3.87E+04	0	1.91E-01	4.53E+00	1.04E+01	-1.13E+04
PENRE	MJ	8.68E+04	1.23E+02	3.72E+01	8.72E+04	0	6.07E+01	2.84E+02	7.93E+01	-3.51E+04
PENRM	MJ	3.01E+02	0	-3.44E+01	0	0	0	-2.67E+02	0	0
PENRT	MJ	8.71E+04	1.23E+02	2.81E+00	8.72E+04	0	6.07E+01	1.74E+01	7.93E+01	-3.51E+04
SM	kg	2.16E+02	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	5.51E+01	6.93E-04	2.3E-02	4.47E+01	0	3.43E-04	9.2E-02	2E-02	-3.93E+01

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 Orthos PIL-M02

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	kg	2.25E-04	1.19E-08	6.21E-09	3.61E-05	0	5.89E-09	6.63E-08	1.21E-06	-5.28E-05
NHWD	kg	7.02E+02	1.3E-02	3.85E-01	6.19E+01	0	6E-03	3.9E+00	3.99E+02	-4.4E+02
RWD	kg	1.84E+00	1.32E-04	1.35E-04	1.32E+01	0	6.52E-05	6.46E-04	9.02E-04	-1.77E+00
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	6.02E+02	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	1.31E+01	0	0	0	0	0	0
EET	MJ	0	0	2.55E+01	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 Orthos PIL-M02

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	Disease incidence	3.45E-04	4.55E-08	1.36E-08	9.19E-05	0	2.25E-08	8.53E-08	5.36E-07	-2.16E-04
IR	kBq U235 eq	3.16E+02	1.9E-02	1.9E-02	2.17E+03	0	9E-03	5.8E-02	9.3E-02	-3.5E+02
ETP-fw	CTUe	5.44E+04	8.69E+01	1.24E+00	3.73E+04	0	4.3E+01	6.53E+00	4.53E+01	-1.64E+04
HTP-c	CTUh	5.54E-04	1.63E-09	8.34E-11	1.03E-06	0	8.09E-10	5.65E-10	6.71E-09	-3.76E-06
HTP-nc	CTUh	8.98E-05	6.99E-08	5.76E-09	3.8E-05	0	3.46E-08	5.73E-08	7.4E-07	-1.65E-05
SQP	SQP	8.31E+03	3.15E-01	7.84E-01	2.78E+04	0	1.56E-01	5.21E+00	1.65E+01	-3.46E+03

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

EN 16005

EN 16005: 2013-01 and Amendment 2015-10
Power operated pedestrian doorsets

EN 60335-1

EN 60335-1: 2020-08
Household and similar electrical appliances – safety

EN 60335-2

EN 60335-2-103: 2016-05
Household and similar electrical appliances

EN 61000-6-2

EN 61000-6-2: 2005 and Amendment:2011
Electromagnetic Compatibility (EMC): Immunity

EN 61000-6-3

EN 61000-6-3: 2007 and A1:2011
Electromagnetic Compatibility (EMC): Emission

ISO 12100

ISO 12100:2011-03
Safety of machinery

EN 15804

EN 15804+A2, Sustainability of construction works -
Environmental Product Declarations -
Core rules for the product category of construction products.

ISO 9001

ISO 9001:2015-09
Quality management systems Requirements

ISO 14025

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

2014/30/EU Electromagnetic Compatibility Directive

DIRECTIVE 2014/30/EU OF THE EUROPEAN
PARLIAMENT AND OF THE COUNCIL of 26 February
2014 on the harmonisation of the laws of the Member
States relating to electromagnetic compatibility

European Waste Catalogue (EWC)

COMMISSION DECISION of 18 December 2014
amending Decision 2000/532/EC on the list of waste
pursuant to Directive 2008/98/EC of the European
Parliament and of the Council

Machinery Directive 2006/42/EC

DIRECTIVE 2006/42/EC OF THE EUROPEAN
PARLIAMENT AND OF THE COUNCIL of 17 May
2006 on machinery, and amending Directive 95/16/EC

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

Directive 2011/65/EU of the European Parliament and
of the Council of 8 June 2011 on the restriction of the
use of certain hazardous substances in electrical and
electronic equipment

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

GA 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.gabisoftware.com/support/gabi/gabidatabase\[1\]2020lcidocumentation/](https://www.gabisoftware.com/support/gabi/gabidatabase[1]2020lcidocumentation/)).

LCA-tool dormakaba

LCA tool, ESC (Entrance System Control)

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 Report
according to EN 15804+A2:2019, Version 1.0, Institut
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 Bauen und Umwelt e.V., www.ibu-epd.com.



Publisher

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

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com



Programme holder

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

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com



Author of the Life Cycle Assessment

dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

+49 2333 793-0
info.de@dormakaba.com
www.dormakaba.com



Owner of the Declaration

dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

+49 2333 793-0
info.de@dormakaba.com
www.dormakaba.com