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-20230452-CBA2-EN
Issue date	27/11/2023
Valid to	26/11/2028

Crane Automatic Revolving Door - AL 1000/2000/3000

dormakaba

Institut Bauen und Umwelt e.V.

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ECO PLATFORM EPD VERIFIED

General Information

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Programme holder

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

Declaration number

EPD-DOR-20230452-CBA2-EN

This declaration is based on the product category rules:

Automatic doors, automatic gates, and revolving door systems, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

27/11/2023

Valid to

26/11/2028

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

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

Crane Automatic Revolving Door - AL 1000/2000/3000

Owner of the declaration

dormakaba International Holding GmbH
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Declared product / declared unit

1 piece of the product: Automatic Revolving Door AL 1000/2000/3000, with a diameter of 10 ft. (3050 mm) and a height of 7,5 ft. (2290 mm), consisting of the following items:

- 4 door leaves
- Enclosure
- Canopy
- Product packaging

Scope:

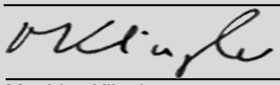
This Environmental Product Declaration refers to a specific automatic revolving door manufactured by dormakaba. The production site is located in Reamstown (USA).

The data represents the year 2022.
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



Matthias Klingler,
(Independent verifier)

Product

Product description/Product definition

The Crane Automatic Revolving Door 1000/2000/3000 is designed as a building's primary entrance. A range of available finishes allows the integration into its surrounding décor and architecture. The technical and safety features ensure smooth and safe traffic flow. The Crane 1000/2000/3000 doors feature the same automatic drive system. The Crane 2000 and 3000 series fullfill higher quality standards and are more customized. In these ways, the Crane revolving doors fulfill both aesthetic and functional requirements.

For the Crane Automatic Revolving Door 1000/2000/3000 the standards which can be applied are the following:

- ANSI 156.27
- 2011/65/EU ROHS3 Directive

Application

Revolving doors may be used to provide a comfortable entry and exit in many applications in the facade of or within a building. Typical applications include:

- Hotels
- Healthcare settings
- Airports and transportation facilities
- Commercial office buildings
- Institutional and educational buildings
- Retail stores

Technical Data

The Crane Automatic Revolving Doors AL 1000/2000/3000 have following technical properties:

Name	Value	Unit
Height range 1000/2000	7-9	ft
Height range 3000	7+	ft
Diameter range maximum 1000/2000/3000	12	ft
Enclosure glass 1000/2000	7/16"	clear or tinted laminated
Enclosure glass 3000	9/16"	clear or tinted laminated
Door leaf glass	1/4"	tempered

The product with respect to its characteristics are in accordance with the relevant technical provisions (no CE-marking):

- *ANSI 156.27*
- 2011/65/EU ROHS3 Directive

Base materials/Ancillary materials

The major material composition including the packaging of the product is listed below:

Name	Value	Unit
Glass	59	%
Aluminium	31	%
Electronics	5	%
Zinc	4	%
Plastics	1	%

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 reference service life of the Crane Automatic Revolving door AL 1000/2000/3000 amounts to 20 years, depending on the application and frequency of use. For repairs and renewals, suitable spare parts are available. The revolving door is tested and certified to *ANSI 156.27*, 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: Automatic Revolving Door AL 1000/2000/3000

Name	Value	Unit
Declared unit	1	piece/product
Mass of declared Product	896	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+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.

Use stage - Module B6

The use stage related to the operation of the building includes: — B6, operational energy use.

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

Information on describing the biogenic carbon content at factury gate

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

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	0.00276	l/100km
Transport distance	50	km
Capacity utilisation (including empty runs)	55	%

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

Installation into the building (A5)

Name	Value	Unit
Waste packaging (paper and plastic)	8	kg

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	20	a

Operational energy use (B6)

Name	Value	Unit
Electricity consumption for 1 year	1964,5	kWh
Days per year in use	365	days
On mode per day	5	h
Idle mode per day	19	h
On mode power	300	W
Idle mode power	200	W

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.
C2: Transport to waste management is 50 km.

Name	Value	Unit
Collected separately waste type waste type	887	kg
Recycling	318	kg
Energy recovery	3.08	kg
Landfilling	565	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. 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

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 AL 1000/2000/3000

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	4.53E+03	7.83E+00	2.29E+01	2.21E+04	0	3.88E+00	7.83E+00	8.63E+00	-1.78E+03
GWP-fossil	kg CO_2 eq	4.52E+03	7.49E+00	2.29E+01	2.21E+04	0	3.71E+00	7.83E+00	8.57E+00	-1.77E+03
GWP-biogenic	kg CO_2 eq	7.04E+00	3.46E-01	5.33E-04	4.78E+00	0	1.71E-01	1.82E-04	2.9E-02	-5.77E+00
GWP-luluc	kg CO_2 eq	1.78E+00	1.78E-04	1E-03	6.65E+00	0	8.82E-05	4.43E-04	2.5E-02	-3.22E-01
ODP	kg CFC11 eq	2.95E-11	7.9E-16	1.15E-14	7.77E-11	0	3.91E-16	3.95E-15	3.18E-14	-1.38E-08
AP	mol H^+ eq	2.14E+01	7E-03	4E-03	3.57E+01	0	4E-03	1E-03	6.2E-02	-6.94E+00
EP-freshwater	kg P eq	3.49E-03	1.6E-06	1.84E-06	1.2E-02	0	7.93E-07	6.3E-07	1.47E-05	-1E-03
EP-marine	kg N eq	3.6E+00	2E-03	9.18E-04	7.64E+00	0	1E-03	3.14E-04	1.6E-02	-9.02E-01
EP-terrestrial	mol N eq	4E+01	2.7E-02	1.9E-02	8.2E+01	0	1.3E-02	6E-03	1.74E-01	-9.79E+00
POCP	kg NMVOC eq	9.53E+00	7E-03	3E-03	2.18E+01	0	3E-03	8.7E-04	4.8E-02	-2.88E+00
ADPE	kg Sb eq	1.64E-01	2.25E-07	1.58E-07	4E-03	0	1.11E-07	5.42E-08	7.7E-07	-5.3E-02
ADPF	MJ	6.18E+04	1.06E+02	1.06E+01	3.57E+05	0	5.26E+01	3.63E+00	1.12E+02	-2.54E+04
WDP	m^3 world eq deprived	6.56E+02	1.5E-02	2.34E+00	4.27E+03	0	7E-03	8.01E-01	8.99E-01	-9.62E+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 AL 1000/2000/3000

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	MJ	1.79E+04	3.35E-01	2.76E+00	5.65E+04	0	1.66E-01	9.44E-01	1.47E+01	-1.2E+04
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.79E+04	3.35E-01	2.76E+00	5.65E+04	0	1.66E-01	9.44E-01	1.47E+01	-1.2E+04
PENRE	MJ	6.14E+04	1.06E+02	3.98E+02	3.57E+05	0	5.26E+01	1.15E+02	1.13E+02	-2.54E+04
PENRM	MJ	4.98E+02	0	-3.87E+02	0	0	0	-1.11E+02	0	0
PENRT	MJ	6.19E+04	1.06E+02	1.06E+01	3.57E+05	0	5.26E+01	3.63E+00	1.13E+02	-2.54E+04
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	4.29E+01	6.01E-04	5.6E-02	1.31E+02	0	2.97E-04	1.9E-02	2.8E-02	-2.1E+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 AL 1000/2000/3000

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	kg	3.99E-05	1.03E-08	4.04E-08	1.38E-04	0	5.1E-09	1.38E-08	1.72E-06	-5.89E-05
NHWD	kg	8.29E+02	1.1E-02	2.38E+00	1.11E+02	0	5E-03	8.13E-01	5.66E+02	-4.55E+02
RWD	kg	3.58E+00	1.14E-04	3.94E-04	3.18E+01	0	5.65E-05	1.35E-04	1E-03	-2.84E+00
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	3.18E+02	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	4.24E+01	0	0	0	1.45E+01	0	0
EET	MJ	0	0	9.73E+01	0	0	0	3.33E+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 AL 1000/2000/3000

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	Disease incidence	1.89E-04	3.94E-08	5.2E-08	3.19E-04	0	1.95E-08	1.78E-08	7.61E-07	-1.11E-04
IR	kBq U235 eq	5.54E+02	1.6E-02	3.5E-02	2.63E+03	0	8E-03	1.2E-02	1.32E-01	-5.69E+02
ETP-fw	CTUe	3.45E+04	7.53E+01	3.98E+00	1.06E+05	0	3.73E+01	1.36E+00	6.43E+01	-9.85E+03
HTP-c	CTUh	1.88E-06	1.42E-09	3.45E-10	2.29E-06	0	7.01E-10	1.18E-10	9.52E-09	6.25E-08
HTP-nc	CTUh	6.02E-05	6.06E-08	3.49E-08	8.66E-05	0	3E-08	1.19E-08	1.05E-06	4.7E-05
SQP	SQP	5.11E+03	2.73E-01	3.18E+00	3.27E+04	0	1.35E-01	1.09E+00	2.35E+01	-7.43E+02

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 156.27
ANSI/BHMA A156.27-2019, Power and Manual Operated Revolving Pedestrian Doors

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)

2011/65/EU ROHS3 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

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
Tool No.: IBU-DOR-202107-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 Automatic doors, automatic gates, and revolving door systems, version 6, Institut Bauen und Umwelt e.V.,
www.ibu-epd.com.

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