

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

|                          |                                      |
|--------------------------|--------------------------------------|
| Owner of the Declaration | dormakaba International Holding GmbH |
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| Valid to                 | 17.06.2029                           |

## Stainless steel lever handle four+ dormakaba

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General Information

dormakaba

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**Declaration number**  
EPD-DOR-20250125-CBA2-EN

**This declaration is based on the product category rules:**  
Building Hardware products, 01.08.2021  
(PCR checked and approved by the SVR)

**Issue date**  
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**Valid to**  
17.06.2029

  
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Stainless steel lever handle four+

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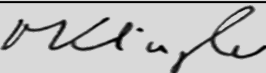
**Declared product / declared unit**  
The declared unit is one (1 piece) stainless steel lever handle from the four + series, including packaging materials. The average fitting including packaging weighs 717 g.

**Scope:**  
This Environmental Product Declaration refers to a specific stainless steel lever handle manufactured in Velbert (Germany).  
  
The data represents the year 2023.

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*.

|                                                                                  |            |
|----------------------------------------------------------------------------------|------------|
| The standard EN 15804 serves as the core PCR                                     |            |
| Independent verification of the declaration and data according to ISO 14025:2011 |            |
| <input type="checkbox"/>                                                         | internally |
| <input checked="" type="checkbox"/>                                              | externally |

  
Matthias Klingler,  
(Independent verifier)

## Product

### Product description/Product definition

four+ lever handles are suitable for highly frequented and stressed doors in commercial and residential buildings. The complete four+ range is fire rated. The offering includes lever/lever designs, as well as knob/lever and WC sets. All four + fittings are made of stainless steel and fulfil the highest corrosion resistance class 5 acc. to *EN 1906*. The range includes designs suitable for *EN 179* applications.

For the placing the lever handles on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the following legal provisions apply:

- *EN 179 (CE)*
- *EN 1906*

### Application

The lever handles are suitable for practically all applications:

- For use on doors which are subject to frequent force, e.g. football stadiums, military barracks, schools, public toilets
- For extremely high-traffic areas and intensive use in buildings
- Use in public buildings, e.g. hospitals or administrative buildings
- Manifold barrier-free applications
- Use on glass doors
- Use on panic, escape, rescue and fire safety doors
- Use on doors with electronic access control

### Technical Data

The stainless steel lever handles comply with following standards:

- *EN 179: Locks and fittings*
- *EN 1634: Fire resistance and smoke control tests for door and shutter assemblies*

- *EN 1906: Requirements and test methods for lever handles and knob furniture*
- *DIN 18273: Lever handle units for fire doors and smoke control doors*

Performance data of the products 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:

- Stainless steel: 56%
- Steel: 26%
- Paper: 14%
- Plastics: 4%

The lever and window handles include 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: yes

- Lead (Pb): 7439-92-1 (CAS-No) is used in the steel alloy. The concentration of lead in the alloy does not exceed 0,35% (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 stainless steel lever handles amount to 40 years and depends on the application and frequency of use. For repairs or renewals, suitable spare parts are available. The lever handles are tested according to the highest grade of *EN 1906*, meaning they are designed to withstand a minimum of 200.000 cycles (test results show that four+ lever handles withstand more than 1.000.000 cycles).

## LCA: Calculation rules

### Declared Unit

The declared unit is 1 piece of the product: Stainless steel lever handle:

| Name                                       | Value | Unit          |
|--------------------------------------------|-------|---------------|
| Declared unit                              | 1     | piece/product |
| Mass of declared Product without packaging | 0.619 | kg            |
| Packaging                                  | 0.098 | 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.

### 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 ts, 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 | 0.04  | kg C |

Velbert (Germany) is considered for A3.

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO<sub>2</sub>.

### Transport to the building site (A4)

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

Transport distance is declared for 100km by truck in order to allow scaling to a specific point of installation.

### Installation into the building (A5)

| Name                                                            | Value | Unit |
|-----------------------------------------------------------------|-------|------|
| Output substances following waste treatment on site (packaging) | 0.098 | kg   |

### Reference service life

| Name                   | Value | Unit |
|------------------------|-------|------|
| Reference service life | 40    | a    |

### End of life (C1-C4)

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

C2: Transport to waste treatment at end of life is 50 km.

| Name                            | Value | Unit |
|---------------------------------|-------|------|
| Collected separately waste type | 0.619 | kg   |
| Recycling                       | 0.59  | kg   |
| Energy recovery                 | 0.029 | kg   |

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

The collection rate is 100%.

| Name      | Value | Unit |
|-----------|-------|------|
| Recycling | 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           | MND                    | MND                   | X                          | X         | X                | X        | X                                               |

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

| Parameter      | Unit                             | A1-A3     | A4       | A5       | C1 | C2       | C3       | C4 | D         |
|----------------|----------------------------------|-----------|----------|----------|----|----------|----------|----|-----------|
| GWP-total      | kg CO <sub>2</sub> eq            | 2.9E+00   | 6E-03    | 1.39E-01 | 0  | 3E-03    | 7.9E-02  | 0  | -1.97E+00 |
| GWP-fossil     | kg CO <sub>2</sub> eq            | 3.06E+00  | 6E-03    | 3E-03    | 0  | 3E-03    | 7.9E-02  | 0  | -1.98E+00 |
| GWP-biogenic   | kg CO <sub>2</sub> eq            | -1.61E-01 | 2.77E-04 | 1.35E-01 | 0  | 1.2E-04  | 1.84E-06 | 0  | 9E-03     |
| GWP-luluc      | kg CO <sub>2</sub> eq            | 5.31E-03  | 1.43E-07 | 2.29E-06 | 0  | 6.16E-08 | 4.45E-06 | 0  | -4E-03    |
| ODP            | kg CFC11 eq                      | 1.1E-12   | 6.33E-19 | 2.5E-17  | 0  | 2.73E-19 | 3.97E-17 | 0  | -4.27E-15 |
| AP             | mol H <sup>+</sup> eq            | 1.48E-02  | 6E-06    | 3.89E-05 | 0  | 2.59E-06 | 1.4E-05  | 0  | -8E-03    |
| EP-freshwater  | kg P eq                          | 7.03E-06  | 1.28E-09 | 4.9E-09  | 0  | 5.54E-10 | 6.34E-09 | 0  | -1.72E-06 |
| EP-marine      | kg N eq                          | 2.26E-03  | 1.91E-06 | 1.41E-05 | 0  | 8.24E-07 | 3.16E-06 | 0  | -1E-03    |
| EP-terrestrial | mol N eq                         | 2.3E-02   | 2.12E-05 | 1.75E-04 | 0  | 9.16E-06 | 6.39E-05 | 0  | -1.4E-02  |
| POCP           | kg NMVOC eq                      | 6.72E-03  | 5.4E-06  | 3.72E-05 | 0  | 2.33E-06 | 8.75E-06 | 0  | -4E-03    |
| ADPE           | kg Sb eq                         | 1.17E-04  | 1.8E-10  | 3.96E-10 | 0  | 7.76E-11 | 5.45E-10 | 0  | -5.69E-05 |
| ADPF           | MJ                               | 3.89E+01  | 8.5E-02  | 4.4E-02  | 0  | 3.7E-02  | 3.7E-02  | 0  | -2.4E+01  |
| WDP            | m <sup>3</sup> world eq deprived | 1.02E+00  | 1.17E-05 | 1.7E-02  | 0  | 5.07E-06 | 8E-03    | 0  | -7.52E-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

| Parameter | Unit           | A1-A3    | A4       | A5        | C1 | C2       | C3        | C4 | D         |
|-----------|----------------|----------|----------|-----------|----|----------|-----------|----|-----------|
| PERE      | MJ             | 1.01E+01 | 2.68E-04 | 1.18E+00  | 0  | 1.16E-04 | 9E-03     | 0  | -4.8E+00  |
| PERM      | MJ             | 1.18E+00 | 0        | -1.18E+00 | 0  | 0        | 0         | 0  | 0         |
| PERT      | MJ             | 1.13E+01 | 2.68E-04 | 8E-03     | 0  | 1.16E-04 | 9E-03     | 0  | -4.8E+00  |
| PENRE     | MJ             | 3.84E+01 | 8.5E-02  | 4.4E-02   | 0  | 3.7E-02  | 4.99E-01  | 0  | -2.41E+01 |
| PENRM     | MJ             | 4.62E-01 | 0        | 0         | 0  | 0        | -4.62E-01 | 0  | 0         |
| PENRT     | MJ             | 3.89E+01 | 8.5E-02  | 4.4E-02   | 0  | 3.7E-02  | 3.7E-02   | 0  | -2.41E+01 |
| SM        | kg             | 3.06E-01 | 0        | 0         | 0  | 0        | 0         | 0  | 0         |
| RSF       | MJ             | 0        | 0        | 0         | 0  | 0        | 0         | 0  | 0         |
| NRSF      | MJ             | 0        | 0        | 0         | 0  | 0        | 0         | 0  | 0         |
| FW        | m <sup>3</sup> | 3.9E-02  | 4.81E-07 | 4.06E-04  | 0  | 2.08E-07 | 1.93E-04  | 0  | -2.9E-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

| Parameter | Unit | A1-A3    | A4       | A5       | C1 | C2       | C3       | C4 | D         |
|-----------|------|----------|----------|----------|----|----------|----------|----|-----------|
| HWD       | kg   | 2.13E-07 | 8.25E-12 | 6.47E-11 | 0  | 3.56E-12 | 1.39E-10 | 0  | -1.4E-07  |
| NHWD      | kg   | 2.45E-01 | 8.7E-06  | 4E-03    | 0  | 3.76E-06 | 8E-03    | 0  | -1.63E-01 |
| RWD       | kg   | 6.65E-04 | 9.13E-08 | 2.31E-06 | 0  | 3.94E-08 | 1.36E-06 | 0  | -1.99E-04 |
| CRU       | kg   | 0        | 0        | 0        | 0  | 0        | 0        | 0  | 0         |
| MFR       | kg   | 0        | 0        | 0        | 0  | 0        | 5.88E-01 | 0  | 0         |
| MER       | kg   | 0        | 0        | 0        | 0  | 0        | 0        | 0  | 0         |
| EEE       | MJ   | 0        | 0        | 2.1E-01  | 0  | 0        | 1.46E-01 | 0  | 0         |
| EET       | MJ   | 0        | 0        | 3.81E-01 | 0  | 0        | 3.35E-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

| Parameter | Unit              | A1-A3    | A4       | A5       | C1 | C2       | C3       | C4 | D         |
|-----------|-------------------|----------|----------|----------|----|----------|----------|----|-----------|
| PM        | Disease incidence | 2.56E-07 | 3.15E-11 | 2.16E-10 | 0  | 1.36E-11 | 1.79E-10 | 0  | -1.67E-07 |
| IR        | kBq U235 eq       | 6.8E-02  | 1.31E-05 | 3.57E-04 | 0  | 5.63E-06 | 1.22E-04 | 0  | -2.6E-02  |
| ETP-fw    | CTUe              | 1.73E+01 | 6E-02    | 2.1E-02  | 0  | 2.6E-02  | 1.4E-02  | 0  | -1.18E+01 |
| HTP-c     | CTUh              | 5.72E-07 | 1.13E-12 | 1.1E-12  | 0  | 4.89E-13 | 1.19E-12 | 0  | -3.72E-09 |
| HTP-nc    | CTUh              | 5.37E-08 | 4.85E-11 | 4.77E-11 | 0  | 2.09E-11 | 1.2E-10  | 0  | -1.06E-08 |
| SQP       | SQP               | 2.5E+01  | 2.19E-04 | 1.2E-02  | 0  | 9.43E-05 | 1.1E-02  | 0  | -3.35E+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

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

### ECHA

European Chemicals Agency: <https://echa.europa.eu/de/home>

### REACH

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Regulation (EC) No 1907/2006

### 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/gabidatabase2020-lci-documentation/>

### LCA-tool dormakaba

LCA tool IBU-DOR-202104-LT1-EN, version 1.0, 2021 Developed by Sphera Solutions GmbH

### 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](http://www.ibu-epd.com)

### PCR Part A

PCR – Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN15804+A2:2019, Version 1.0, 2020, Institut Bauen und Umwelt e.V., [www.ibu-epd.com](http://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](http://www.ibu-epd.com), 2017

### EN 179

EN 179:2008-04: Building hardware - Emergency exit devices operated by a lever handle or push pad, for use on escape routes - Requirements and test methods

### EN 1634

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

### EN 1906

EN 1906:2012-12: Building hardware - Lever handles and knob furniture - Requirements and test methods

### DIN 18273

DIN 18273:2015-07: Building hardware - Lever handle units for fire doors and smoke control doors - Terms and definitions, dimensions, requirements, testing and marking



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