# ENVIRONMENTAL-PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A1*

| | |
|---|---|
| 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-20210082-IBI2-EN |
| Issue date | 28.06.2021 |
| Valid to | 27.06.2028 |

## ST PRO Green
## dormakaba

Institut Bauen und Umwelt e.V.

**www.ibu-epd.com | https://epd-online.com**

ECO PLATFORM EPD VERIFIED



# 1. General Information

## dormakaba

**Programme holder**

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

**Declaration number**

EPD-DOR-20210082-IBI2-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**

28.06.2021

**Valid to**

27.06.2028

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

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

## ST PRO Green

**Owner of the declaration**

dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

**Declared product / declared unit**

The declared unit is one piece of the ST PRO Green automatic sliding door system comprising:

- representative value of the ES PROLINE drive system
- two sliding panels
- respective packaging materials.

The LCA results for two side screens and a fanlight are presented in the appendix.

**Scope:**

This EPD refers to the entire life cycle of a DORMA ST PRO GREEN automatic sliding door system.

The various technical characteristics are outlined in section 2.3. The production location is dormakaba Zusmarshausen, Germany. Product components are also procured from the DORMA facilities in Ennepetal. The material and energy flows were taken into consideration accordingly. 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+A1. In the following, the standard will be simplified as *EN 15804 bezeichnet*.

**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)

# 2. Product

## 2.1 Product description/Product definition

The ST PRO GREEN convinces with its comprehensive energy efficiency:

The slim profile system can be used with double and triple glazing, whereby UD values of down to 1.0 W/(m²·K) (glass heat transfer coefficient) can be realized.
Together with the thermally separated profile the energy losses are minimized.

Thanks to the new ES PROLINE drive system single door leaves up to 250kg and double door leaves up to 200kg each can be moved quickly and quietly.
The low energy consumption of the sliding door drive also contributes to the overall energy efficiency of the sliding door system.
The drive is suitable for almost all sliding door applications, including use on escape route sliding doors. For the placing on the market in the European

Union/European Free Trade Associaton (EU/EFTA)

(with the exception of Switzerland) the following legal

provisions apply:

- *Machinery Directive 2006/42/EC*
- *2014/30/EU Electromagnetic Compatibility Directive*
- *2011/65/EU ROHS3 Directive*
- *DIN EN ISO 12100:2011-03 Safety of machinery*
- *DIN EN 16005: 2013-01 and Amendment 2015-10 Power operated pedestrian doorsets*
- *DIN EN ISO 13849- 1:2016-06 Safety of machinery*
- *DIN EN 60335-2-103: 2016-05 Household and similar electrical appliance*
- *DIN EN 61000-3-2:2015-03 Electromagnetic compatibility (EMC)*
- DIN EN 61000-3-3: 2014-03 Electromagnetic compatibility (EMC)
- *DIN EN 61000-6-2: 2005 and Amendment:2011 Electromagnetic Compatibility (EMC)*
- DIN *EN 61000-6-3:2007 and A1:2011 Electromagnetic Compatibility (EMC)*
- *DIN EN IEC 63000: 2019-05*

The CE-marking takes into account the proof of conformity with the respective harmonized standards based on the legal provisions above.

## 2.2 Application

With the sliding door profile system both standard sliding doors and escape route sliding doors can be equipped. Following automatic ES PROLINE drive system can be used:

| Door parameter | *ES 250 PRO ES 250 PRO FST ES 250 PRO EASY* | *ES 400 PRO ES 400 PRO FST* | *ES 250 PRO ES 250 PRO FST ES 250 PRO EASY* | *ES 400 PRO ES 400 PRO FST* |
|---|---|---|---|---|
| Use in escape and rescue routes | ✓ | ✓ | ✓ | ✓ |
| | *Single-panel sliding door* | | *Double-panel sliding door* | |
| Opening width (mm) | *700-3000 mm* | *700-3000 mm* | *800-3000 mm* | *800-3000 mm* |
| Door panel weight max. (kg) | *1x125kg* | *1x250 kg* | *2x125 kg* | *2x200 kg* |

## 2.3 Technical Data

Technical data of the ES PROLINE drive systems used for ST PRO GREEN standard and emergency exit sliding doors

**Constructional data ES PROLINE**

| Name | Value | Unit |
|---|---|---|
| Height | mm | 100 |
| Installation depth 180 | mm | 180 |
| Opening and closing force 150 | N | 150 |
| Opening speed ES 250 PRO 10-70 | cm/s | 10-70 |
| Opening speed ES 400 PRO 10-90 | cm/s | 10-90 |
| Opening speed ES 250 PRO Easy 10-70 | cm/s | 10-70 |
| Opening speed ES 250 PRO FST 20-70 | cm/s | 20-70 |
| Opening speed ES 400 PRO FST 20-90 | cm/s | 20-90 |
| Closing speed ES 250 PRO 10-70 | cm/s | 10-70 |
| Closing speed ES 400 PRO 10-90 | cm/s | 10-90 |
| Closing speed ES 250 PRO Easy 10-70 | cm/s | 10-70 |
| Hold open time ES PROLINE 0-180 | s | 0-180 |
| Supply voltage, frequency ES PROLINE 50-60 | Hz | 50-60 |
| Power input ES PROLINE 130-180 | W | 130-180 |
| Protection type IP 120 | - | 120 |
| Low-voltage and EMC Directives - | - | - |

Product not harmonised in accordance with the CPR but in accordance with other provisions for harmonisation of the EU:

- M*achinery Directive 2006/42/EC*
- *2014/30/EU Electromagnetic Compatibility Directive*
- 2011*/65/EU ROHS3 Directive*

## 2.4 Delivery status

As an automatic sliding door involves a customised door system, shapes and sizes can vary considerably. The ST PRO Green under review has the following delivery status:

| Characteristics | Dimensions |
|---|---|
| Clear height | 2.2 m |
| Total height | 2.3 m |
| Clear width | 1.6 m |
| Total width | 3.3 m |
| Surface area | 4.07 $m^2$ |

The components associated with these dimensions have the following weights:

| Components | Absolute |
|---|---|
| 1 x drive system | 24.46 kg |
| 1 x drive system packaging | 3.00 kg |
| 2 x sliding panel | 180.35 kg |
| **Total** | **207.83 kg** |

The ES PROLINE automatic drive system is supplied in a separate box; the sliding panels and side screens are supplied on frames.

## 2.5 Base materials/Ancillary materials

Mass percentages of the automatic sliding door system:

| Components | Percentage |
|---|---|
| Glass panes | 71% |
| Aluminum components | 16% |
| Steel components | 6% |
| Plastic components | 5% |
| Electronic components | 1% |
| Other | <1% |
| **Total** | **100%** |

The products include partial articles which contain substances listed in the *candidate list* of REACH Regulation 1907/2006/EC (date: 19.01.2021) 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 4.0% (by mass).

This product/article/at least one partial article contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: no.

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): no.

### 2.6 Manufacture

The ST PRO Green sliding panels and side screens are manufactured in the DORMA plant Zusmarshausen. The ES PROLINE drive units and requisite circuit boards are manufactured at dormakaba. The certified Quality Management system in accordance with *ISO 9001* safeguards the high quality standard of dormakaba products. It guarantees continuous improvement of the overall processes and product quality at the dormakaba locations.

### 2.7 Environment and health during manufacturing

No health protection measures beyond the legally specified measures are required. The maximum allowable concentrations are clearly complied with at each point of production.

**Air:**
Waste air generated during production is cleaned in accordance with statutory specifications. Emissions are significantly below the Technical Instructions on Air Quality.

**Water/Ground:**
No contamination of water or ground. Production-related waste/water is treated internally and redirected to the production process.

**Sound protection:**
Analyses have established that all values communicated inside and outside the production facilities are far below the standards applicable in Germany.
The Environmental Management system in the dormakaba production facility Ennepetal and Zusmarshausen is certified to *ISO 14001*; industrial safety is certified to *OHSAS 18001*.

### 2.8 Product processing/Installation

The product system is installed by specially-trained assembly teams.

### 2.9 Packaging

The declared unit comprises the following packaging materials and their mass percentages:

| Components | Percentage |
|---|---|
| Paper and Cardboard | 89% |
| Wood | 10% |
| Foil | 1% |
| **Total** | **100%** |

More information on the possible disposal of packaging is provided in section 2.14 and 2.15.

### 2.10 Condition of use

No auxiliaries or consumables are incurred during maintenance, and use of the sliding door system ST PRO GREEN. Regular maintenance

is advised to ensure a service life of 15 years.

For repairs or renewals, suitable spare parts are available. The energy supply for the analysed sliding door has been calculated for the reference service life of 15 years.

### 2.11 Environment and health during use

There are no known impact relations between product, environment and health during use.

### 2.12 Reference service life

The reference service life amounts to 15 years. This complies with 1,500,000 cycles according to *EN 16005*.

### 2.13 Extraordinary effects

**Fire**
Due to the predominant use of aluminium and steel which are considered non-flammable or flame-retardant, no additional influence on the environment in case of fire is to be expected.

**Fire protection**

| Name | Value |
|---|---|
| Building material class | not applicable |
| Burning droplets | not applicable |
| Smoke gas development | not applicable |

**Water**
No substances are used which have a negative impact on the ecological water quality upon contact by the device with water.

**Mechanical destruction**
No impacts on the environment are expected in the case of an unforeseeable mechanical destruction.

### 2.14 Re-use phase

With reference to the material composition of the product system in accordance with section 2.5, the following possibilities arise:

**Re-use**
During refurbishment or deconstruction, sliding doors can be easily segregated and reused for the same application.

**Material recycling**
The metallurgical materials and glass contained in the product are suitable for material recycling.

**Energy recovery**
The plastics contained in the product are suitable for energetic recovery.

**Landfilling**
Is not applicable.

### 2.15 Disposal

**Cuttings:**
Cuttings incurred during the manufacturing phase are directed towards metallurgical recycling and energy recovery. Cuttings are collected separately and collected by a disposal company.

Following European Waste Catalogue (*EWC*) Codes are relevant:

- *EWC* 07 02 03 Plastic waste
- *EWC* 12 01 01 Ferrous metal filings and turnings
- *EWC* 12 01 03 Non-ferrous metal filings and turnings

**Packaging:**
Packaging incurred for installation in the building is directed towards energy recovery.

- *EWC* 15 01 01 Paper and cardboard packaging
- *EWC* 15 01 02 Plastic packaging

**End of Life:**
All materials contained in the product are directed to energy recovery or recycling process.

- *EWC* 16 02 14 Used devices with the exception of those included in 16 02 09 to 16 02 1
- *EWC* 16 02 16 Components removed from used devices with the exception of those included in 16 02 15
- *EWC* 17 02 03 Plastic
- *EWC* 17 04 02 Aluminum
- *EWC* 17 04 05 Iron and steel
- *EWC* 17 04 11 Cables with the exception of those included in 17 04 10
- *EWC* 17 02 02 Glass

### 2.16 Further information

Contact data for more detailed information:
Please refer to the last page of this Declaration

## 3. LCA: Calculation rules

### 3.1 Declared Unit

The declared unit is one (1) piece ST PRO Green. The declared unit consists of the drive system and two sliding panels. The LCA results of two side screens and a fanlight are presented in the appendix.

**Declared unit**

| Name | Value | Unit |
|---|---|---|
| Declared unit for automatic doors and gates | 4.07 | $m^2$ |
| Grammage | 50.32 | $kg/m^2$ |
| Mass (total system) | 204.83 | kg |
| Conversion factor to 1 kg | 0.005 | - |

### 3.2 System boundary

Type of the EPD: cradle to gate - with options *Modules A1-A3, A4, and A5*
The product stage (A1-A3) begins with considering the production of the necessary raw materials and energies, including all corresponding upstream chains and the actual procurement transports. Furthermore, the entire manufacturing phase was mapped, including the treatment of production waste until the end-of-waste status (EoW) was reached. In addition, both the distribution transports (A4) and the installation including power-consuming tools, installation materials and the packaging waste generated during installation (A5) were taken into account.

*Module B6*
Module B6 includes the operational energy use over the Reference Service Life of 15 years.

*Modules C1-C4*
The modules include the environmental impacts for dismantling of the ST PRO Green and the treatment of the waste categories until end-of-waste status (EoW) is reached, including the associated transports at the end of the product life cycle.

*Module D*
Identification of the benefits and costs of the product outside the system boundary. For plastics, these consist of energy credits from thermal utilization (C3) in the form of the average European electricity mix or thermal energy from natural gas. Recycling of glass and metal scrap results in credits of the respective raw materials.

### 3.3 Estimates and assumptions

It was assumed that End-of-Life thermal waste incineration plants are plants with an R1 factor (energy conversion efficiency or energy efficiency of waste incineration plants according to the *European Waste Framework Directive*) >0.6.

### 3.4 Cut-off criteria

The effect associated with the neglected mass shares is less than 5% of the effect categories per module. The minimum limit of 1% total mass and the use of renewable and non-renewable primary energy is not exceeded.

### 3.5 Background data

The LCA software *GaBi 10.0* was used to model the life cycle. The entire manufacturing process, as well as energy consumption, were modelled on the basis of manufacturer-specific data.
However, generic background datasets were used for the upstream and downstream processes. The majority of the background datasets used were taken from the current version of the *GaBi 10.0* database. *Ecoinvent Version 3.6* and *Ecoinvent Version 2.2* datasets were only used when suitable *GaBi 10.0* datasets were not available.

Where possible, German datasets were used for modules A1-A3, and the corresponding European datasets for distribution transports (A4), installation (A5) and disposal scenarios (C modules).

### 3.6 Data quality

The background datasets used for accounting purposes mainly originate from the respective updated *GaBi 10.0* databases at the time of calculation.
The data for the examined products was captured on the basis of evaluations of internal production and environmental data, the collection of LCA--relevant data within the supply chain, as well as the evaluation of relevant data for the energy supply. The collected data were checked for plausibility and consistency. Good representativity can be assumed.

### 3.7 Period under review

Life cycle assessment data were collected in 2019 and 2020.

### 3.8 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

### 3.9 Allocation

All required energies, raw materials, and supplies could be (clearly) assigned to the declared product. No by--products are produced and no allocation is required. In module A1--A3, credits are issued for recycling of metallurgical waste. Packaging materials and the combustible product parts are incinerated at the end of life in a waste incineration plant. Metallurgical parts and glass are recycled. Any emissions that occur are taken into account in the model. Depending on their elementary composition and the resulting heating values, recycling credits are taken into account in module D.

### 3.10 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.

## 4. LCA: Scenarios and additional technical information

**Transport to the building site (A4)**

| Name | Value | Unit |
|---|---|---|
| Litres of fuel | unknown | l/100km |
| Transport distance (Truck) | 596 | km |
| Capacity utilisation (including empty runs) (Truck) | 55 | % |
| Gross density of products transported | unknown | $kg/m^3$ |
| Capacity utilisation volume factor | unknown | - |

**Installation into the building (A5)**

| Name | Value | Unit |
|---|---|---|
| Auxiliary (screws and screw anchors) | 0.155 | kg |
| Electricity consumption | 0.04 | kWh |

**Reference service life**

| Name | Value | Unit |
|---|---|---|
| Life Span according to the manufacturer | 15 | a |

**Operational energy use (B6) and Operational water use (B7)**

| Name | Value | Unit |
|---|---|---|
| Electricity consumption (15 years) | 988.49 | kWh |

**End of life (C1-C4)**

| Name | Value | Unit |
|---|---|---|
| Collected separately waste type waste type | 204.97 | kg |
| Collected as mixed construction waste | - | kg |
| Reuse | - | kg |
| Recycling | 192.78 | kg |
| Energy recovery | 12.2 | kg |
| Landfilling | - | kg |

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

| Name | Value | Unit |
|---|---|---|
| Net steel scrap | 8.39 | kg |
| Net aluminium scrap | 6.65 | kg |
| Net zinc scrap | 0.85 | kg |
| Collection rate | 100 | % |
| Recycling loss | 0 | % |

## 5. LCA: Results

The following table shows the results of the LCA for 1 piece declared ST PRO Green. The results in module B6 are based on a lifetime of 15 years. The LCA results for two side screens and a fanlight are presented in the appendix.

**DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE 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+A1: 1 piece ST PRO Green**

| Parameter | Unit | A1-A3 | A4 | A5 | B6 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|
| GWP | kg $CO_2$ eq | 5.9E+02 | 1.02E+01 | 4.99E+00 | 3.9E+02 | 8.22E-03 | 4.91E-01 | 3.23E+01 | 0 | -1.04E+02 |
| ODP | kg CFC11 eq | 1.13E-05 | 1.68E-15 | 5.95E-15 | 1.17E-11 | 2.46E-16 | 1.43E-16 | 1.63E-07 | 0 | -4.83E-08 |
| AP | kg $SO_2$ eq | 4.22E+00 | 4.32E-02 | 2.23E-03 | 8.19E-01 | 1.73E-05 | 2.09E-03 | 3.17E-02 | 0 | -4.48E-01 |
| EP | kg $PO_4^3$ eq | 8.97E-01 | 1.08E-02 | 3.36E-04 | 9.06E-02 | 1.91E-06 | 5.23E-04 | 1.74E-02 | 0 | -5.19E-02 |
| POCP | kg Ethen eq | 2.53E-01 | -1.82E-02 | 2.01E-04 | 5.83E-02 | 1.23E-06 | -7.85E-04 | 1.69E-03 | 0 | -3.18E-02 |
| ADPE | kg Sb eq | 6.13E-02 | 8.51E-07 | 2.35E-05 | 1.3E-04 | 2.75E-09 | 4.6E-08 | 7.47E-05 | 0 | -3.73E-03 |
| ADPF | MJ | 8.42E+03 | 1.4E+02 | 9.73E+00 | 4.32E+03 | 9.11E-02 | 6.71E+00 | 5.24E+01 | 0 | -1.19E+03 |

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

**RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 piece ST PRO Green**

| Parameter | Unit | A1-A3 | A4 | A5 | B6 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 1.18E+03 | 7.86E+00 | 3.91E+01 | 3.1E+03 | 6.53E-02 | 3.91E-01 | 1.4E+01 | 0 | -3.47E+02 |
| PERM | MJ | 3.98E+01 | 0 | -3.77E+01 | 0 | 0 | 0 | -2.06E+00 | 0 | 0 |
| PERT | MJ | 1.22E+03 | 7.86E+00 | 1.36E+00 | 3.1E+03 | 6.53E-02 | 3.91E-01 | 1.19E+01 | 0 | -3.47E+02 |
| PENRE | MJ | 8.96E+03 | 1.4E+02 | 1.08E+01 | 7E+03 | 1.47E-01 | 6.74E+00 | 5.15E+02 | 0 | -1.34E+03 |
| PENRM | MJ | 4.56E+02 | 0 | -3.44E-01 | 0 | 0 | 0 | -4.56E+02 | 0 | 0 |
| PENRT | MJ | 9.42E+03 | 1.4E+02 | 1.05E+01 | 7E+03 | 1.47E-01 | 6.74E+00 | 5.89E+01 | 0 | -1.34E+03 |
| SM | kg | 4.07E+01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.55E+02 |
| RSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FW | $m^3$ | 8.39E+00 | 9.1E-03 | 1.41E-02 | 3.59E+00 | 7.56E-05 | 4.34E-04 | 8.88E-02 | 0 | -4.02E+00 |

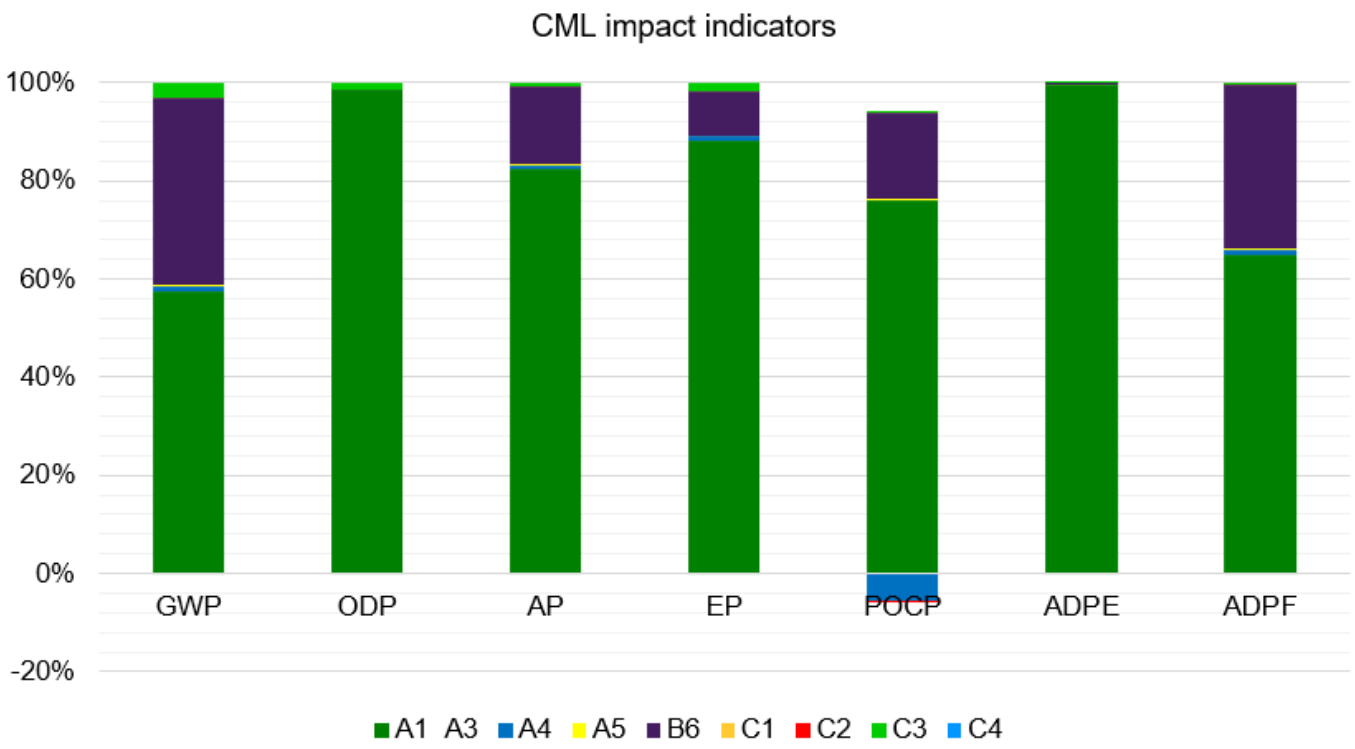
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable 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+A1: 1 piece ST PRO Green**

| Parameter | Unit | A1-A3 | A4 | A5 | B6 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 1.57E-02 | 6.52E-06 | 2.41E-08 | 2.9E-06 | 6.1E-11 | 3E-07 | 1.91E-07 | 0 | -2.68E-06 |
| NHWD | kg | 1.81E+02 | 2.14E-02 | 1.39E-01 | 4.96E+00 | 1.05E-04 | 1.09E-03 | 1.17E+01 | 0 | -1.66E+01 |
| RWD | kg | 3.08E-01 | 1.73E-04 | 3.15E-04 | 1.06E+00 | 2.24E-05 | 1.18E-05 | 1.57E-03 | 0 | -5.88E-02 |
| CRU | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MFR | kg | 8.87E+00 | 0 | 0 | 0 | 0 | 0 | 1.93E+02 | 0 | 0 |
| MER | kg | 2.66E+00 | 0 | 2.98E+00 | 0 | 0 | 0 | 1.2E+01 | 0 | 0 |
| EEE | MJ | 0 | 0 | 6.57E+00 | 0 | 0 | 0 | 3.82E+01 | 0 | 0 |
| EET | MJ | 0 | 0 | 1.19E+01 | 0 | 0 | 0 | 2.81E+02 | 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

## 6. LCA: Interpretation




The *CML* characterization factors were used for the evaluation. The results of the *CML* categories refer to the potential environmental impacts over a period of 100 years.
The main impacts lie in the modules A1-A3 and B6. The impacts in module B6 are due to the electricity mix used for modelling the electricity consumption over a period of 15 years. In the following, the main influences on the modules A1-A3 for the indicators will be explained.

Global warming potential (GWP) in modules A1-A3 is mainly influenced by the operator (35%), the glass (35%) and aluminium (20%). Ozone depletion potential in module A1-A3 is mainly influenced by the electronic components of the operator (>90%). Acidification potential (AP) in modules A1-A3 is dominated by the glass (48%) and the operator (27%). Eutrophication potential (EP) in modules A1-A3 is dominated by the operator (71%) and there the electronic components. The glass also has a significant impact on the EP (23%). Formation potential of tropospheric ozone photochemical oxidants (POCP) in modules A1-A3 is mainly influenced by the glass.
Abiotic depletion potential for non--fossil resources in modules A1-A3 is dominated by the operator (91%) and there the electronic components.
Abiotic depletion potential for fossil resources (ADPF) in modules A1-A3 is dominated by the glass (47%).

## 7. Requisite evidence

## 8. References

**Standards**

**EN 15804**

EN 15804:2012-04+A1 2013, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.
**EN 16005**

DIN EN 16005:2013-01 and Amendment 2015-10, Power operated pedestrian doorsets - Safety in use - Requirements and test methods.
**EN 60335-2-103**

DIN EN 60335-2-103:2016-05, Household and similar electrical appliances - Safety - Part 2-103: Particular requirements for drives for gates, doors and windows.
**EN 61000-3-2**

DIN EN 61000-3-2:2015-03, Electromagnetic compatibility (EMC) - Part 3-2:
Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase).
**EN 61000-3-3**

DIN EN 61000-3-3:2014-03, Electromagnetic compatibility (EMC) - Part 3-3:
Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.
**EN 61000-6-2**

DIN EN 61000-6-2:2005 + Amendment:2011. Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments.
**EN 61000-6-3**

DIN EN 61000-6-3:2007 + A1:2011, Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments.

**IEC 63000**

DIN EN IEC 63000:2019-05, Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
**ISO 9001**

DIN EN ISO 9001:2015-11, Quality management systems - Requirements (ISO 9001:2015); German and English version EN ISO 9001:2015 **ISO 12100**

DIN EN ISO 12100:2011-03, Safety of machinery - General principles for design - Risk assessment and risk reduction.
**ISO 13849-1**

DIN EN ISO 13849-1:2016-06, Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design.
**ISO 14001**

ISO 14001:2015-09, Environmental management systems - Requirements with guidance for use **ISO 14025**

DIN EN ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.
**OHSAS 18001**

Occupational health and safety – Management systems – Requirements
**Further references**

**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

**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 (recast)

**CML**
Institute of Environmental Sciences Leiden University

**Ecoinvent Version 2.2**
Database for life cycle assessment (life cycle inventory data), Version 2.2, 2010.

**Ecoinvent Version 3.6**
Database for life cycle assessment (life cycle inventory data), Version 3.6, 2019.

**EWC**
European Waste Catalogue (EWC). Commission Decision on the European List of Waste (COM 2000/532/EC)

**GaBi 10.0**
Life cycle engineering (GaBi) software and database. LBP, University of Stuttgart and thinkstep AG, Documentation of GaBi 10.0 data sets http://documentation.gabisoftware.com/, 2020.

**IBU 2016**
Institut Bauen und Umwelt e.V.: General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V. Version 1., Berlin: Institut Bauen und Umwelt e.V., 2016. www.ibu-epd.com

**IP**
Ingress Protection Rating. DIN EN 60529; VDE 04701: 201409: Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989 + A1:1999 + A2:2013); German version EN 60529:1991 + A1:2000 + A2:2013

**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 (recast)

**Ordinance on Biocide Products No. 528/2012**
Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products

**Product Category Rules Part A**
Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report. Version 1.8 (04.07.2019)

**Product Category Rules Part B**
Requirements on the EPD for Automatic doors, automatic gates, and revolving door systems. Version 1.1 (09.07.2013)

**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**

brands & values GmbH
Altenwall 14
28195 Bremen
Germany

+49 421 70 90 84 33
info@brandsandvalues.com
www.brandsandvalues.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