ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804*

Owner of the Declaration	dormakaba International Holding GmbH
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-DOR-20200269-IBA1-EN
Issue date	28.06.2021
Valid to	27.06.2026

ES PROLINE

Modular Automatic Drive System for Sliding Doors dormakaba

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1. General Information

dormakaba

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Germany

Declaration number
EPD-DOR-20200269-IBA1-EN

This declaration is based on the product category rules:
Drive systems for automatic doors and gates, 11.2017
(PCR checked and approved by the SVR)

Issue date
28.06.2021

Valid to
27.06.2026

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

Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.))

ES PROLINE - Modular Automatic Drive System for Sliding Doors

Owner of the declaration
dormakaba International Holding GmbH
DORMA Platz 1
58256 Ennepetal
Germany

Declared product / declared unit
ES PROLINE - Modular Automatic Drive System for Sliding Doors

Scope:

This EPD refers to the entire life cycle of a representative ES PROLINE drive system.
The various technical characteristics are depicted in section 2.3.
The production location is the DORMA production site in Ennepetal, Germany.
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.

Verification

The standard *EN 15804* serves as the core PCR
Independent verification of the declaration and data according to *ISO 14025:2010*
☐ internally ☒ externally

Dr.-Ing. Wolfram Trinius
(Independent verifier appointed by SVR)

2. Product

2.1 Product description/Product definition

With ES PROLINE, a drive system has been developed that offers the latest dormakaba technology. At the same time, the drive meets high design and functional requirements of modern buildings.
The ES PROLINE drive system offers versatile application possibilities. It does not matter whether it is a standard door, a door in escape and rescue routes or a telescopic sliding door. Even particularly heavy door leaves are no problem for the drive. Up to 400 kg can be moved with the new system.

With the following ES PROLINE drive system variants you can meet almost all requirements:

- ES 250: Standard doors
- ES 250 PRO FST: Escape and rescue routes
- ES 250 PRO EASY: Standard doors, less features
- ES 400 PRO / ES 400 PRO FST: For heavy standard doors and escape and rescue routes optional with Resistance Class (RC)

The product family of the modular automatic ES PROLINE drive system covers all above mentioned drive systems. The configuration of the drive is modular. Additional modules can be added like battery packs and interlocks. Values (material and energy flows) for a representative product are based on the volumes of ES PROLINE variants sold during the reference period.

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 appliances*
- *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

The automatic ES PROLINE drive system is used as a drive for automating sliding door systems as well as escape and rescue routes:

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

The following technical data is of relevance for the LCA:

Constructional data

ES PROLINE

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

- *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 ISO 13849- 2:2013-02 Safety of machinery*
- *DIN EN 60335-2-103: 2016-05 Household and similar electrical appliances*
- *DIN EN 61000-3-2:2015-03 Electromagnetic compatibility (EMC)*
- *DIN EN 61000-6-2: 2005 and Amendment:2011 Electromagnetic Compatibility (EMC)*

2.4 Delivery status

One automatic ES PROLINE drive system (representative by sales volume) has the following delivery status:

Components	Absolute	Percentage
Average ES PROLINE	24.47 kg	89%
Average Packaging	3.00 kg	11%
Total	**27.47 kg**	**100%**

2.5 Base materials/Ancillary materials

The ES PROLINE family comprises the following components:

Components	Percentage
Aluminum elements	52%
Steel elements	30%
Plastic elements	7%
Electronic elements	4%
Other	6%
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 drive units and requisite circuit boards of ES PROLINE product family 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 is certified to *ISO 14001*; industrial safety is certified to *OHSAS 18001*.

2.8 Product processing/Installation

dormakaba sliding door drives are installed by specially-trained assembly teams to install the drives or the product system

2.9 Packaging

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

Components	Percentage
Paper and Cardboard	99%
Foil	1%
Total	**100%**

More information on the possible re-use 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 automatic drive system ES PROLINE. Regular maintenance is advised to ensure the service life of 15 years. For repairs or renewals, suitable spare parts are available. The energy supply for the analysed drive units 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 negative impact on the ecological water quality is expected by contact of the product 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 2.6, the following possibilities arise:

Re-use
During refurbishment or de-construction, the drive system can be easily segregated and re-used for the same application.

Material recycling
The metallurgical materials 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 are directed to an energy recovery or recycling process.

- *EWC* 16 02 14 Used devices with the exception of those included in 16 02 09 to 16 02 13
- *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

Disposal of the drive unit in Europe is subject of the *WEEE Guideline* 2002/96/EC/.

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 declaration represents one (1) ES PROLINE.

Declared unit

Name	Value	Unit
Declared unit	1	pce.
Conversion factor to 1 kg	0.036	-

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 service life of 15 years.

Modules C1-C4
The modules include the environmental impacts for dismantling of the ES PROLINE 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 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 9.5* 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 9.5* database. *Ecoinvent Version 3.6* and *Ecoinvent Version 2.2* datasets were only used when suitable *GaBi 9.5* 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 9.5* 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 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 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.

3.9 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.

The background database used is *GaBi 9.5* Service Pack 40.

4. LCA: Scenarios and additional technical information

Transport from the gate to the site (A4)

Name	Value	Unit
Transport distance (Truck)	674	km
Capacity utilisation (including empty runs) (Truck)	55	%
Transport distance (Container Ship)	5469	km

Assembly (A5)

Name	Value	Unit
Auxiliary (screws and screw anchors)	0.112	kg
Electricity consumption	0.021	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
Assumed load of the drive system during use stage	2 x 120	kg
Energy consumption under the declared load	0.123	Wh/cycle
Cycle duration	23	seconds
Standby	6.6	W
Assumed number of annual cycles	100,000	cycles
Opening width	1600	mm

End of life (C1-C4)

Name	Value	Unit
Collected separately waste type	24.58	kg
Collected as mixed construction waste	-	kg
Reuse	-	kg
Recycling	21.12	kg
Energy recovery	3.44	kg
Landfilling	0	kg

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

Name	Value	Unit
Net steel scrap	6.19	kg
Net aluminium scrap	2.56	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 ES PROLINE. The results in module B6 are based on a lifetime of 15 years.

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: 1 piece ES PROLINE

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP	[kg CO_2-Eq.]	2.07E+2	2.77E+0	4.80E+0	3.90E+2	4.11E-3	2.14E-1	6.73E+0	0.00E+0	-3.04E+1
ODP	[kg CFC11-Eq.]	1.12E-5	4.10E-16	4.44E-15	1.17E-11	1.23E-16	6.81E-17	4.19E-14	0.00E+0	-1.27E-13
AP	[kg SO_2-Eq.]	1.16E+0	4.34E-2	1.87E-3	8.19E-1	8.63E-6	9.10E-4	2.20E-3	0.00E+0	-1.08E-1
EP	[kg $(PO_4)^{3-}$-Eq.]	6.39E-1	5.74E-3	2.95E-4	9.06E-2	9.55E-7	2.27E-4	2.28E-4	0.00E+0	-6.00E-3
POCP	[kg ethene-Eq.]	8.01E-2	-7.25E-4	1.46E-4	5.83E-2	6.15E-7	-3.43E-4	8.85E-5	0.00E+0	-9.56E-3
ADPE	[kg Sb-Eq.]	5.58E-2	1.61E-7	1.71E-5	1.30E-4	1.37E-9	2.01E-8	9.89E-7	0.00E+0	-3.09E-3
ADPF	[MJ]	2.65E+3	3.61E+1	7.29E+0	4.32E+3	4.56E-2	2.92E+0	3.77E+0	0.00E+0	-3.41E+2

Caption	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 - RESOURCE USE: 1 piece ES PROLINE

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	[MJ]	3.80E+2	1.23E+0	3.87E+1	3.10E+3	3.27E-2	1.71E-1	8.78E-1	0.00E+0	-1.32E+2
PERM	[MJ]	3.77E+1	0.00E+0	-3.77E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	4.18E+2	1.23E+0	1.02E+0	3.10E+3	3.27E-2	1.71E-1	8.78E-1	0.00E+0	-1.32E+2
PENRE	[MJ]	2.90E+3	3.62E+1	8.22E+0	7.00E+3	7.37E-2	2.93E+0	9.30E+1	0.00E+0	-3.97E+2
PENRM	[MJ]	8.93E+1	0.00E+0	-3.44E-1	0.00E+0	0.00E+0	0.00E+0	-8.89E+1	0.00E+0	0.00E+0
PENRT	[MJ]	2.99E+3	3.62E+1	7.88E+0	7.00E+3	7.37E-2	2.93E+0	4.13E+0	0.00E+0	-3.97E+2
SM	[kg]	1.43E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.60E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m^3]	6.51E+0	1.45E-3	1.36E-2	3.59E+0	3.78E-5	1.84E-4	1.85E-2	0.00E+0	-3.61E-1

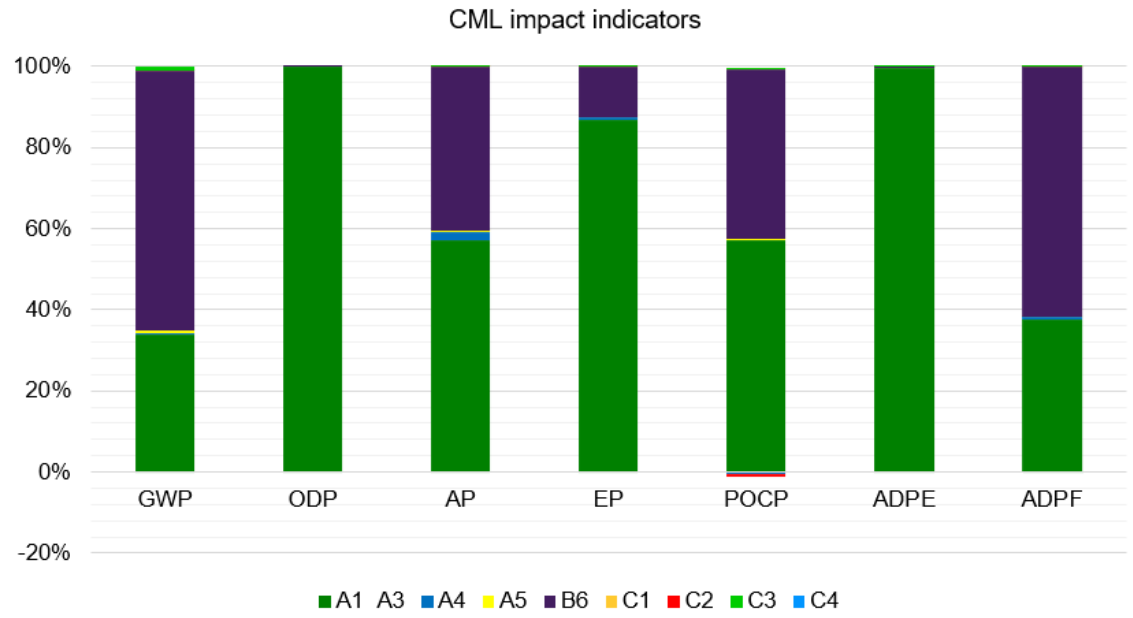
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable 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 – OUTPUT FLOWS AND WASTE CATEGORIES: 1 piece ES PROLINE

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	[kg]	9.58E-6	9.76E-7	2.27E-8	2.90E-6	3.05E-11	1.27E-7	1.55E-8	0.00E+0	-1.17E-7
NHWD	[kg]	7.85E+0	4.77E-3	1.37E-1	4.96E+0	5.23E-5	4.83E-4	1.04E+0	0.00E+0	-4.87E+0
RWD	[kg]	4.74E-2	4.29E-5	2.35E-4	1.06E+0	1.12E-5	4.93E-6	1.45E-4	0.00E+0	-2.41E-2
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	2.89E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.12E+1	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	2.98E+0	0.00E+0	0.00E+0	0.00E+0	3.43E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	6.57E+0	0.00E+0	0.00E+0	0.00E+0	1.29E+1	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	1.19E+1	0.00E+0	0.00E+0	0.00E+0	2.76E+1	0.00E+0	0.00E+0

Caption	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; EEE = 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.

The indicators ozone depletion potential (ODP), eutrophication potential (EP) and abiotic depletion potential for non--fossil resources (ADPE) in module A1-A3 are more than 90% dominated by the electronic components. The other *CML* indicators are also dominated by the electronic components. However, the aluminium also has a significant impact.The aluminium contributes 28% to global warming potential (GWP), 23% to abiotic depletion potential for fossil resources (ADPF), 14% to formation potential of tropospheric ozone photochemical oxidants (POCP) and 12% to acidification potential (AP).

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
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