

ENVIRONMENTAL PRODUCT DECLARATION

ED 100 / ED 900 AND ED 250

AUTOMATIC SWING DOOR OPERATORS



Automatic swing door operators manufactured by DORMA designed for single- or double-leaf swing doors.



Registered under the scope of mutual recognition between UL Environment and Institut Bauen und Umwelt e.V. (IBU)



DORMA IS THE TRUSTED GLOBAL PARTNER FOR PREMIUM ACCESS SOLUTIONS & SERVICES ENABLING BETTER BUILDINGS

With over 100 years of tradition behind it, the company offers holistic solutions covering all facets of door operability – from hinges, closers, and floor springs to automatic door systems and time and access control solutions. DORMA also supplies horizontal sliding wall systems.

DORMA maintains major production plants in Europe, Singapore, Malaysia, China, and North and South America.

Our commitment to a sustainable future

We are committed to sustainable development as one of our business maxims. DORMA's aim is to ensure energy-saving and resource-conserving production, a high recycling ratio and the longevity of our quality products. With comprehensive advice, innovative products and an international service capability, we are able to make a significant contribution to energy efficiency and to drive cost savings derived from sustainable building concepts. Through our involvement in national organizations around the world, we at DORMA support the idea of the World Green Building Council.

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ENVIRONMENTAL PRODUCT DECLARATION




DORMA GmbH + Co. KG
ED 100/ ED 900 and ED 250 automatic swing
door operators

According to EN 15804 and ISO 14025
Dual Recognition by UL Environment and Institut Bauen und Umwelt e.V.

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. **Exclusions:** EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. **Accuracy of Results:** EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. **Comparability:** EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



| | |
|---|---|
| PROGRAM OPERATOR | UL Environment |
| DECLARATION HOLDER | DORMA GmbH + Co. KG |
| ULE DECLARATION NUMBER | 4786548204.101.1 |
| IBU DECLARATION NUMBER | EPD-DOR-2012211-EN |
| DECLARED PRODUCT | ED 100/ ED 900 and ED 250 automatic swing door operators |
| REFERENCE PCR | Product Category Rules Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report, 2011-07 Product Category Rules Part B: Requirements on the EPD for automatic doors, automatic gates, and revolving door systems, 2011-06 |
| DATE OF ISSUE | December 18, 2012 |
| PERIOD OF VALIDITY | 5 years |
| SCOPE | This EPD is Manufacturer Declaration (1a) – Declaration of a specific product from a manufacturer's plant. The owner of the declaration shall be liable for the underlying information and evidence. |
| CONTENTS OF THE DECLARATION | Product definition Information about basic material and the material's origin Description of the product's manufacture Indication of product processing Life cycle assessment results Testing results and verifications |
| The PCR review was conducted by: | The independent expert committee |
| The CEN Norm EN 15804 serves as the core PCR. This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL |  Anna Nicholson |
| This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by: | IBU - Institut Bauen und Umwelt e.V. |



Disclaimer

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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.

General information

DORMA GmbH + Co. KG

Programme holder

IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
GERMANY

Declaration number

EPD-DOR-2012211-EN

This Declaration is based on the Product Category Rules (PCR):


Automatic doors and gates, revolving door systems (dated from: 29.06.2011).
(PCR tested and approved by the independent Expert Committee (SVA))

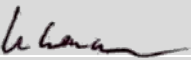
Issue date

18/12/2012

Valid until

17/12/2017


Prof. Dr.-Ing. Horst J. Bossemeyer
(President of Institut Bauen und Umwelt e.V.)


Prof. Dr.-Ing. Hans-Wolf Reinhardt
(Chairman of the Expert Committee)

ED 100 / ED 900 and ED 250 automatic swing door operators

(Note: The ED 100 and ED 900 are equivalent products and only differ in the product description)

Owner of the Declaration

DORMA GmbH + Co. KG
Dorma Platz 1
58256 Ennepetal
GERMANY

Declared product / Declared unit

The declared unit is the average for one (1) ED 100 / ED 900 and ED 250 automatic swing door operator, incl.
- an ED slide channel set,
- an ED BASIC cover and
- the respective packaging materials.


Scope:

This EPD refers to the calculated average of DORMA ED 100 / ED 900 and ED 250 swing door operators. Deviations by the individual products from the calculated average are significantly below 10 %.
The production location for both products is DORMA headquarters in Ennepetal, Germany. The material and energy flows were taken into consideration accordingly.

Verification

The CEN /EN 15804/ standard serves as the core PCR.
Verification of the EPD by an independent third party in accordance with ISO 14025

internal external


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



Product

Product description

The automatic swing door operators manufactured by DORMA are electromechanical swing door operators designed for single- or double-leaf swing doors. Depending on the width and weight of the door leaf, the ED 100 / ED 900 or the ED 250 is required. Both operators can be mounted with standard arm as push-version and with sliding channel as pull-version. Apart from the extended cover, an integrated door coordinator is also available for double-leaf operators, which is also easily fitted. By using the DORMA Upgrade Card, the functional scope can be adapted to a variety of door situations.

- Flexible configuration of the functions actually required
- Inexpensive transport and easy assembly thanks to lower weights
- Low-noise application thanks to multi-stage gear
- Elegant design: DORMA Contur Design with an operator height of only 70 mm

The ED 100 / ED 900 and ED 250 variants are particularly distinguished by their drive units. For this reason, the ED 250 was taken into consideration in the analysis (maximum characteristics of a swing door operator). Only formation of the average for energy consumption during the usage phase follows the arithmetic average. Using this conservative implementation method, the LCA results are indicated as averages for both swing door operators (ED 100/ ED 900 and 250).

Application

DORMA swing door operators are suitable for various applications:

- For single- or double-leaf swing doors
- Assembly on smoke and fire doors: as pull-version with slide channels and as push-version with standard arm
- Automation of doors with low traffic capacity (Low-Energy Mode) and heavily frequented doors (Full-Energy Mode)
- High torque for full-automatic swing doors with radar detector control
- Suitable for internal and external doors

Technical data

| ED 100 / ED 900 | |
|---|------------------------------|
| Max. power input | 120 Watt |
| Closing force to /EN 1154/ | EN 2 – 4 infinitely variable |
| Max. door-leaf weight for lintel depths of up to 300 mm | 100 kg |
| Door-leaf width | 700 – 1,100 mm |
| Max. opening speed | **50° (27°*)/second |
| Max. closing speed | **50° (27°*)/second |
| Axle extension | 30/60 mm |
| Lintel depth for slide channel | ± 30 mm |
| Lintel depth for standard arm | 0 – 300 mm |

| ED 250 | |
|--|--|
| Max. power input | 240 Watt |
| Closing force to /EN 1154/ | EN 4 – 6 infinitely variable |
| Max. door-leaf weight for lintel depths of up to 300 mm | 250 kg to 1,400 mm door-leaf width 190 kg at 1,600 mm door-leaf width |
| Max. door-leaf weight for lintel depths from 301 to 500 mm | 160 kg |
| Door-leaf width | 700 – 1,600 mm |
| Door-leaf width for fire door | 700 – 1,400 mm |
| Max. opening speed | **60° (27°*)/second |
| Max. closing speed | **60° (27°*)/second |
| Axle extension | 30/60/90 mm |
| Lintel depth for slide channel | ± 30 mm |
| Lintel depth for standard arm | 0 – 500 mm |

* Values in brackets indicate the maximum speed in Low-Energy Mode without Full-Energy or Fire Protection Upgrade Cards

** Depending on the door-leaf weight, automatically limited in accordance with /DIN 18650/, /BS 7036-4/ and /ANSI 156.19/.

Delivery status

| ED 100 / ED 900 & ED 250 | Weight | Dimensions in mm |
|-------------------------------|-----------------|------------------|
| Operator incl. packaging | 8.90 kg | 807 x 150 x 180 |
| Slide channel incl. packaging | 1.60 kg | 410 x 85 x 45 |
| Basic cover incl. packaging | 2.20 kg | 690 x 100 x 140 |
| TOTAL | 12.70 kg | |

Base materials/Auxiliaries

The average for ED 100 / ED 900 and ED 250 swing door operators gives rise to the following mass percentages for the primary product components:

| Component | Weight | Percentage |
|----------------------|-----------------|--------------|
| Steel components | 5.05 kg | 46 % |
| Aluminium components | 3.00 kg | 28 % |
| Cast zinc components | 1.78 kg | 16 % |
| Plastic components | 0.76 kg | 7 % |
| Circuit boards | 0.20 kg | 2 % |
| Cable | 0.11 kg | 1 % |
| TOTAL | 10.90 kg | 100 % |

Reference service life (RSL)

In accordance with /DIN 18263/, Part 4 and /UL 325/ the reference service life amounts to minimum 5 years. This complies with a total of 500,000 closing cycles with approx. 100,000 closing cycles per year at maximum load.



LCA: Calculation rules

Declared unit

The declared unit is the average for one (1) ED 100 / ED 900 and ED 250 automatic swing door operator, incl. ED slide channel set, ED BASIC cover and packaging materials.

System boundary

Type of EPD: cradle to gate with options.

Modules A1-A4

The product stage commences with considering production of the requisite raw materials including all of the corresponding upstream chains and the requisite procurement transport. Transport associated with distribution was also taken into consideration.

Module B6

Average energy consumption for the two ED 100 / ED 900 and ED 250 automatic swing door operators in Full-Energy Mode is depicted using the arithmetic average.

Modules C2-C3

The modules include the environmental impacts of waste treatment at the end of the product life cycle as well as the transport associated with this.

Module D

The value flows resulting from waste treatment which in turn serve as energy (waste incineration route) or material input (recycling) for a downstream product system are indicated here.

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.

LCA: Scenarios and additional technical information

Two different impact assessment methods are considered: CML (for European market) and TRACI (for the U.S. market). All product systems are produced in Ennepetal, Germany.

Transport to the site (A4) – ED 100 / ED 900 and ED 250

Means of transport:

GLO: truck combination/articulated truck PE

EU-27: Diesel Mix, at site

GLO: container ship PE

EU-27: heavy fuel oil S, at refinery (1.0wt.% S)

Transport distance 1,378 km

Capacity utilisation (including empty runs) 85 %

The transport distance includes all distribution countries proportionately. Transport to the site is depicted using the country-specific data records. The scenario is according to the worldwide distribution of products leaving the production site at Ennepetal. This includes the transportation to DORMA distribution sites at the U.S., too. Further ways from the U.S. distribution sites to the customers are not considered for ED 900.

Reference service life – ED 100 / ED 900 and ED 250

Reference service life minimum 5 years

Ambient temperature -15 to +50 °C

Only for dry rooms

Max. rel. humidity 93 %

non-condensing

Voltage supply 230 V AC 50 Hz +/-10%

115 V AC 60 Hz +/-10%

Class of protection IP 20

Operational energy use (B6) – ED 100 / ED 900 and ED 250

Electricity consumption 72.5 kWh

Equipment output 316.5 kW

Electricity consumption was calculated for the entire reference service life of 5 years with European datasets. The energy mix for the use of ED 900 within the U.S. market is not considered.

End of Life (C1-C4) – ED 100 / ED 900 and ED 250

For recycling 77.4 %

For energy recovery 22.6 %

The processes at the End of Life (EoL) were modelled using European data records. U.S. specific datasets for EoL are not used.

Re-use, recovery and recycling potential (D)

Metals are directed to material recycling, plastics and packaging materials are directed to energy recovery circuits, whereby transport and recovery rates within Europe were taken into consideration.

LCA: Results

| SYSTEM LIMITS (X = INCLUDED IN THE LCA; MND = MODULE NOT DECLARED) | | | | | | | | | | | | | | | | |
|--|-----------|---------------|----------------------------|------------------------------|-------------------|-------------|---------|-------------|---------------|--|---|-----------------------------|-----------|------------------|----------|---|
| PRODUCT stage | | | CONSTRUCTION PORCESS stage | | USE stage | | | | | | | END OF LIFE stage | | | | Benefits and loads beyond the system boundary |
| Raw material supply | Transport | Manufacturing | Transport to the site | Installation in the building | Use / Application | Maintenance | Repairs | Replacement | Refurbishment | Energy required for operating the building | Water required for operating the building | 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 | MND | MND | MND | X | MND | MND | X | X | MND | X |

| Parameter | Unit | A1-A3 | A4 | A5 | B6 | C2 | C3 | D |
|---|--|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|------------------|
| LCA RESULTS: ENVIRONMENTAL EFFECTS – CML 2001, updated Apr. 2013 | | | | | | | | |
| Global Warming Potential (GWP) | [kg CO ₂ equiv.] | 7.00E+01 | 6.26E-01 | 1.48E+00 | 1.52E+00 | 1.80E-02 | 4.17E+00 | -5.39E+01 |
| Ozone Depletion Potential (ODP) | [kg CFC11 equiv.] | 2.33E-06 | 2.30E-10 | 9.43E-10 | 9.94E-08 | 6.66E-12 | 1.09E-07 | -4.50E-06 |
| Acidification Potential (AP) | [kg SO ₂ equiv.] | 5.04E-01 | 6.18E-03 | -2.69E-04 | 6.48E-03 | 1.16E-04 | 7.25E-03 | -2.75E-01 |
| Eutrophication Potential (EP) | [kg PO ₄ ³ equiv.] | 1.47E-01 | 1.12E-03 | -1.79E-05 | 3.48E-04 | 2.79E-05 | 9.07E-04 | -1.29E-02 |
| Photochemical Ozone Creation Potential (POCP) | [kg ethene equiv.] | 8.35E-02 | -1.28E-03 | -9.99E-05 | 3.94E-04 | -4.71E-05 | 5.14E-04 | -1.70E-02 |
| Abiotic Depletion Potential for Elements (ADPE) | [kg Sb equiv.] | 9.54E-03 | 2.37E-08 | -8.14E-09 | 1.25E-07 | 7.09E-10 | 9.95E-07 | -5.11E-04 |
| Abiotic Depletion Potential of Fossil Fuels (ADPF) | [MJ] | 9.90E+02 | 8.52E+00 | -1.65E+01 | 1.73E+01 | 2.48E-01 | 2.78E+01 | -5.35E+02 |
| LCA RESULTS: ENVIRONMENTAL EFFECTS – TRACI 2.1 | | | | | | | | |
| Global Warming Potential (GWP) | [kg CO ₂ equiv.] | 8.27E+01 | 6.28E-01 | -8.64E-01 | 1.52E+00 | 1.99E-02 | 4.29E+00 | -5.14E+01 |
| Ozone Depletion Potential (ODP) | [kg CFC11 equiv.] | 2.10E-06 | 3.08E-12 | 8.28E-12 | 1.10E-09 | 1.01E-13 | 3.43E-08 | -1.23E-06 |
| Acidification Potential (AP) | [kg SO ₂ equiv.] | 4.95E-01 | 7.55E-03 | -4.34E-04 | 6.74E-03 | 1.73E-04 | 7.28E-03 | -2.75E-01 |
| Eutrophication Potential (EP) | [kg N equiv.] | 3.01E-01 | 4.18E-04 | -2.58E-05 | 2.87E-04 | 1.19E-05 | 3.39E-04 | -6.61E-03 |
| Photochemical Ozone Creation Potential (POCP) | [kg O ₃ equiv.] | 4.91E+00 | 1.53E-01 | -5.63E-03 | 6.11E-02 | 3.70E-03 | 1.60E-01 | -2.81E+00 |
| Abiotic Depletion Potential for Elements (ADPE) | [kg Sb equiv.] | 9.54E-03 | 2.37E-08 | -8.14E-09 | 1.25E-07 | 7.09E-10 | 9.95E-07 | -5.11E-04 |
| Abiotic Depletion Potential of Fossil Fuels (ADPF) | [MJ] | 9.90E+02 | 8.52E+00 | -1.65E+01 | 1.73E+01 | 2.48E-01 | 2.78E+01 | -5.35E+02 |
| LCA RESULTS: USE OF RESOURCES | | | | | | | | |
| Primary energy, renewable (PERE) | [MJ] | 3.59E+02 | 2.94E-01 | -1.21E-02 | 3.88E+00 | 9.73E-03 | 1.36E+00 | -1.84E+02 |
| Primary energy, renewable, used as raw materials (PERM) | [MJ] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| <i>Total use of renewable primary energy (PERT)</i> | <i>[MJ]</i> | <i>3.59E+02</i> | <i>2.94E-01</i> | <i>-1.21E-02</i> | <i>3.88E+00</i> | <i>9.73E-03</i> | <i>1.36E+00</i> | <i>-1.84E+02</i> |
| Primary energy, non-renewable (PENRE) | [MJ] | 1.15E+03 | 8.55E+00 | -1.65E+01 | 2.66E+01 | 2.49E-01 | 3.40E+01 | -7.01E+02 |
| Primary energy, non-renewable, used as raw materials (PENRM) | [MJ] | 6.29E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.09E-09 | -2.99E-08 |
| <i>Total use of non-renewable primary energy resources (PENRT)</i> | <i>[MJ]</i> | <i>1.15E+03</i> | <i>8.55E+00</i> | <i>-1.65E+01</i> | <i>2.66E+01</i> | <i>2.49E-01</i> | <i>3.40E+01</i> | <i>-7.01E+02</i> |
| Use of Secondary Material (SM) | [kg] | 6.31E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of Renewable Secondary Fuels (RSF) | [MJ] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Non-Renewable Secondary Fuels (NRSF) | [MJ] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of Fresh Water resources (FW) | [m ³] | npd | npd | npd | npd | npd | npd | npd |



| Parameter | Unit | A1-A3 | A4 | A5 | B6 | C2 | C3 | D |
|---|------|----------|----------|----------|----------|----------|----------|----------|
| LCA RESULTS: OUTPUT FLOWS AND WASTE CATEGORIES | | | | | | | | |
| Hazardous Waste Disposed (HWD) | [kg] | npd | npd | npd | npd | npd | npd | npd |
| Non-Hazardous Waste Disposed (NHWD) | [kg] | npd | npd | npd | npd | npd | npd | npd |
| Radioactive Waste Disposed (RWD) | [kg] | mpd | npd | npd | npd | npd | npd | npd |
| Components for Re-Use (CRU) | [kg] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Materials For Recycling (MFR) | [kg] | 3.47E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 9.37E+00 |
| Materials for Energy Recovery (MER) | [kg] | 0.00E+00 | 0.00E+00 | 1.72E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.02E+00 |
| Exported energy [electricity] | [MJ] | 0.00E+00 | 0.00E+00 | 9.38E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.37E+01 |
| Exported energy [thermal energy] | [MJ] | 0.00E+00 | 0.00E+00 | 2.59E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.20E+01 |

npd = no performance determined: This Environmental Product Declaration follows an interim solution approved by the IBU's independent Expert Committee (SVA) and is drawn up without a water and waste declaration due to lack of specific background data.

References

Institute Construction and Environment e.V.
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DIN EN 1154:2003-04, Building hardware - Controlled door closing devices - Requirements and test methods (includes amendment A1:2002); German version EN 1154:1996 + A1:2002

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DIN 18650-2:2010-06, Powered pedestrian doors – Part 2: Safety at powered pedestrian doors

DIN 18263-4:1997-05, Building hardware – Controlled door closing devices – Part 4: Automatic swing-door operator

UL 325: Door, Drapery, Gate, Louver, and Window Operators and Systems



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