

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.



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

With over 100 years of experience, the company offers comprehensive solutions covering all facets of your opening – from locks, closers, and floor springs to automatic door systems and access control components. DORMA also supplies horizontal sliding wall systems, revolving doors and glass 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 key business objectives. DORMA's aim is to ensure energy-saving and resource-conserving production, to maintain a high recycled content ratio and to provide products with a long service life. With expert advice, innovative products and international service coverage we are able to make significant contributions 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.

For more information visit:
www.dorma.com



ENVIRONMENTAL PRODUCT DECLARATION



DORMA Deutschland GmbH
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.



By using this EPD, the user agrees to the UL ENVIRONMENT SUSTAINABLE PRODUCT GUIDE TERMS OF USE (<http://productguide.ulenvironment.com/TermsandConditions.aspx>), where this EPD is listed.

PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	DORMA Deutschland GmbH
ULE DECLARATION NUMBER	4786548204.109.1
IBU DECLARATION NUMBER	EPD-DOR-20160041-CBD1-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, 2014-07

DATE OF ISSUE	April 29, 2016
PERIOD OF VALIDITY	5 years

CONTENTS OF THE DECLARATION	General information Product / Product description LCA calculation rules LCA scenarios and further technical information LCA results (CML) References LCA results (TRACI)	
The PCR review was conducted by:	IBU – Institut Bauen und Umwelt e.V. PCR was approved by the Independent Expert Committee (SVR) of IBU	
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	 Wade Stout, UL Environment	
This life cycle assessment was independently verified in accordance with EN 15804 and the reference PCR by:	IBU – Institut Bauen und Umwelt e.V.	

Environment



General Information

DORMA

Programme holder

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

Declaration number

EPD-DOR-20160041-CBD1-EN

This Declaration is based on the Product Category Rules:

Drive systems for automatic doors and gates, 07/2014
(PCR tested and approved by the SVR)

Issue date

29.04.2016

Valid to

28.04.2021



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



Dr. Burkhard Lehmann
(Managing Director IBU)

Automatic Swing Door Operators ED 100 and ED 250

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

Owner of the Declaration

DORMA Deutschland GmbH
Dorma Platz 1
58256 Ennepetal
GERMANY

Declared product / Declared unit

The declared unit is the mean value (arithmetic average) for one (1) automatic swing door operator ED consisting of ED 100 / ED 900 and ED 250 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 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 CEN Norm /EN 15804/ serves as the core PCR

Independent verification of the declaration according to /ISO 14025/

internally externally



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

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 two ED 100 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.

Base materials / Ancillary materials

The average for ED 100 / ED 900 and ED 250 swing door operators give 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

The reference service life amounts to 10 years. This complies with a total of 1,000,000 closing cycles in accordance with /EN 16005/.

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. For the calculation of the average the arithmetic mean was used.

Name	Value	Unit
Weight of the component (incl. packaging)	12.7	kg

System boundary

Type of EPD: cradle to gate with options.

Modules A1-3, A4 and A5

The product stage commences with consideration of the material and energy flows required for manufacturing the product, including all of the associated upstream chains and requisite transport associated with procurement. Furthermore the whole production phase was mapped, including the treatment of production waste towards achieving the End-of-Waste status (EoW). Distribution transports and the installation into the building were considered as well.

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 over the entire operating life time of 10 years.

Modules C2-3

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

Evidence of credits incurred by waste treatment as a result of energetic (waste incineration route) or material recycling (recycling route) of packaging (A5) and the product at the End-of-Life (C3).

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

Transport to the building site (A4)

Name	Value	Unit
Transport distance Lorry + Container Ship	1378	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.

Reference service life

Name	Value	Unit
Reference service life	10	a

Operational energy use (B6)

Name	Value	Unit
Electricity consumption	832	kWh
Equipment output ED 100	0.12	kW
Equipment output ED 250	0.24	kW
Class of protection	IP 20	

Electricity consumption was calculated for the entire reference service life of 10 years.

End of life (C1-C4)

Name	Value	Unit
Recycling	8.44	kg
Energy recovery	2.46	kg

The processes at the End-of-Life were modelled using European data records.

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

Module D comprises credits for the material recycling of metals of the module C3 as well as credits for the energetic recycling of plastics of module C3 and the packaging materials of module A5.

LCA: Results

Results shown below were calculated using CML 2000 – Apr. 2015 methodology.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

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	MND	MND	MND	X	MND	MND	X	X	MND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: ED 100 / ED 900 and ED 250

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	D
GWP	[kg CO ₂ -Eq.]	6.33E+1	6.28E-1	2.55E+0	3.94E+2	2.74E-2	4.29E+0	-5.25E+1
ODP	[kg CFC11-Eq.]	1.87E-6	2.54E-12	1.21E-11	2.93E-7	1.12E-13	3.22E-8	-1.16E-6
AP	[kg SO ₂ -Eq.]	4.26E-1	6.12E-3	5.40E-4	1.98E+0	1.74E-4	6.35E-3	-2.90E-1
EP	[kg (PO ₄) ³⁻ -Eq.]	1.46E-1	1.16E-3	9.49E-5	1.08E-1	4.46E-5	8.75E-4	-1.58E-2
POCP	[kg ethene-Eq.]	8.04E-2	-1.28E-3	3.92E-5	1.15E-1	-7.15E-5	5.57E-4	-1.83E-2
ADPE	[kg Sb-Eq.]	9.49E-3	2.34E-8	4.27E-8	6.24E-5	1.07E-9	3.27E-6	-5.15E-4
ADPF	[MJ]	9.46E+2	8.49E+0	6.64E-1	4.39E+3	3.76E-1	3.65E+1	-5.86E+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: ED 100 / ED 900 and ED 250

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	D
PERE	[MJ]	3.34E+2	4.17E-1	7.50E-2	1.48E+3	2.11E-2	1.35E+0	-2.12E+2
PERM	[MJ]	1.22E+1	4.40E-13	2.46E-12	4.14E-8	1.99E-14	1.32E-6	-7.73E+0
PERT	[MJ]	3.46E+2	4.17E-1	7.50E-2	1.48E+3	2.11E-2	1.35E+0	-2.20E+2
PENRE	[MJ]	1.12E+3	8.51E+0	7.83E-1	7.02E+3	3.77E-1	3.95E+1	-6.64E+2
PENRM	[MJ]	7.10E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.52E-11	-4.20E+0
PENRT	[MJ]	1.13E+3	8.51E+0	7.83E-1	7.02E+3	3.77E-1	3.95E+1	-6.69E+2
SM	[kg]	6.31E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	5.60E-5	2.84E-5	9.26E-2	2.50E-6	5.94E-4	0.00E+0
NRSF	[MJ]	0.00E+0	5.87E-4	1.31E-4	9.67E-1	2.62E-5	4.56E-3	0.00E+0
FW	[m ³]	4.64E+2	3.59E-2	6.97E-2	1.33E+3	1.69E-3	1.86E+0	-5.39E+2

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: ED 100 / ED 900 and ED 250

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	D
HWD	[kg]	9.02E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-5.79E-3
NHWD	[kg]	2.21E+2	3.05E-2	1.58E-1	1.63E+3	1.42E-3	2.63E+0	-7.72E+1
RWD	[kg]	5.82E-2	1.15E-5	4.75E-5	1.05E+0	5.15E-7	1.26E-3	-3.24E-2
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	3.47E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.37E+0
MER	[kg]	0.00E+0	0.00E+0	1.72E+0	0.00E+0	0.00E+0	0.00E+0	1.02E+0
EEE	[MJ]	0.00E+0	0.00E+0	9.38E+0	0.00E+0	0.00E+0	0.00E+0	2.37E+1
EET	[MJ]	0.00E+0	0.00E+0	2.59E+1	0.00E+0	0.00E+0	0.00E+0	6.20E+1

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

References

Institut Bauen und Umwelt

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Generation of Environmental Product Declarations
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General principles

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(IBU), 2013/04
www.bau-umwelt.com

Product Category Rules for Construction Products

Part A: Calculation Rules for the Life Cycle
Assessment and Requirements on the Background
Report, 2011-07

Product Category Rules for Construction Products

Part B: Requirements on the EPD for automatic doors,
automatic gates, and revolving door systems, 2014-07
www.bau-umwelt.com

ISO 14025

DIN EN ISO 14025:2011-10: Environmental labels and
declarations – Type III environmental declarations —
Principles and procedures

ISO 14044:2006-10, Environmental management –
Life cycle assessment – Requirements and guidelines
(ISO 14044:2006).

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 1154:2003-04: Building hardware - Controlled door
closing devices - Requirements and test methods
(includes amendment A1:2002); German version EN
1154:1996 + A1:2002

EN 16005:2013-01: Power operated pedestrian
doorsets - Safety in use - Requirements and test
methods; German version EN 16005:2012

Annex

Results shown below were calculated using TRACI 2.1 methodology.

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	MND	MND	MND	X	MND	MND	X	X	MND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: ED 100 / ED 900 and ED 250

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	D
GWP	[kg CO ₂ eq.]	6,33E+01	6,25E-01	2,55E+00	3,36E+02	2,73E-02	4,29E+00	-5,25E+01
ODP	[kg CFC11 eq.]	2,11E-06	2,70E-12	1,29E-11	2,66E-07	1,19E-13	3,43E-08	-1,23E-06
AP	[kg SO ₂ eq.]	4,10E-01	7,48E-03	6,54E-04	1,59E+00	2,35E-04	7,27E-03	-2,76E-01
EP	[kg N eq.]	2,98E-01	5,08E-04	3,73E-05	5,97E-02	2,09E-05	3,24E-04	-6,06E-03
POCP	[kg O ₃ eq.]	4,52E+00	1,54E-01	1,52E-02	1,42E+01	5,13E-03	1,60E-01	-2,83E+00
ADPF	[MJ]	8,23E+01	1,22E+00	7,41E-02	2,52E+02	5,39E-02	4,98E+00	-5,66E+01

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; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - RESOURCE USE: ED 100 / ED 900 and ED 250

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	D
PERE	[MJ]	3,34E+2	4,17E-1	7,50E-2	1,48E+3	2,11E-2	1,35E+0	-2,12E+2
PERM	[MJ]	1,22E+1	4,40E-13	2,46E-12	4,14E-8	1,99E-14	1,32E-6	-7,73E+0
PERT	[MJ]	3,46E+2	4,17E-1	7,50E-2	1,48E+3	2,11E-2	1,35E+0	-2,20E+2
PENRE	[MJ]	1,12E+3	8,51E+0	7,83E-1	7,02E+3	3,77E-1	3,95E+1	-6,64E+2
PENRM	[MJ]	7,10E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	5,52E-11	-4,20E+0
PENRT	[MJ]	1,13E+3	8,51E+0	7,83E-1	7,02E+3	3,77E-1	3,95E+1	-6,69E+2
SM	[MJ]	6,31E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0
RSF	[MJ]	0,00E+0	5,60E-5	2,84E-5	9,26E-2	2,50E-6	5,94E-4	0,00E+0
NRSF	[MJ]	0,00E+0	5,87E-4	1,31E-4	9,67E-1	2,62E-5	4,56E-3	0,00E+0
FW	[m ³]	4,64E+2	3,59E-2	6,97E-2	1,33E+3	1,69E-3	1,86E+0	-5,39E+2

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: ED 100 / ED 900 and ED 250

Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	D
HWD	[kg]	9,02E-1	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	-5,79E-3
NHWD	[kg]	2,21E+2	3,05E-2	1,58E-1	1,63E+3	1,42E-3	2,63E+0	-7,72E+1
RWD	[kg]	5,82E-2	1,15E-5	4,75E-5	1,05E+0	5,15E-7	1,26E-3	-3,24E-2
CRU	[kg]	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0
MFR	[kg]	3,47E-1	0,00E+0	0,00E+0	0,00E+0	0,00E+0	0,00E+0	9,37E+0
MER	[kg]	0,00E+0	0,00E+0	1,72E+0	0,00E+0	0,00E+0	0,00E+0	1,02E+0
EEE	[MJ]	0,00E+0	0,00E+0	9,38E+0	0,00E+0	0,00E+0	0,00E+0	2,37E+1
EET	[MJ]	0,00E+0	0,00E+0	2,59E+1	0,00E+0	0,00E+0	0,00E+0	6,20E+1

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

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