ENVIRONMENTAL PRODUCT DECLARATION

NORTON

7100SZ SERIES DOOR CLOSER



The Norton 7100SZ style door closer combines with a manifold and solenoid to provide a hold-open feature. When the door is opening manually, SafeZone® senses movement in the door opening and stops the door from closing.

Norton° ASSA ABLOY

ASSA ABLOY is committed to providing products and services that are environmentally sound throughout the entire production process and the product lifecycle. Our unconditional aim is to make sustainability a central part of our business philosophy and culture, but even more important is the job of integrating sustainability into our business strategy. The employment of EPDs will help architects, designers, and LEED-APs select environmentally preferable door openings. The Norton 7100SZ Series Door Closer EPD provides detailed requirements with which to evaluate the environmental and human health impacts related to producing our door openings. ASSA ABLOY will continue our efforts to protect the environment and health of our customers/end users and will utilize the EPD as one means to document those efforts.





ENVIRONMENTAL PRODUCT DECLARATION

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.



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PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	ASSA ABLOY / Norton Door Controls
ULE DECLARATION NUMBER	4786545067.150.1.1
IBU DECLRATION NUMBER	EPD-ASA-20150267-IBA1-EN
DECLARED PRODUCT	Door Closer – Norton 7100SZ series
REFERENCE PCR	Locks and fittings, 07.2014
DATE OF ISSUE	September 20, 2015
PERIOD OF VALIDITY	5 years
	General information

CONTENTS OF THE DECLARATION	General information Product / Product description LCA calculation rules LCA scenarios and further technic LCA results References	al information
The PCR review was conducte	d by:	IBU – Institut Bauen und Umwelt e.V.
		PCR was approved by the Independent Expert Committee (SRV)
The CEN Norm EN 15804 serv was independently verified in a Underwriters Laboratories	es as the core PCR. This declaration ccordance with ISO 14025 by	ubl
□ INTERNAL	⋈ EXTERNAL	Wade Stout
This life cycle assessment was with EN 15804 and the reference	independently verified in accordance ce PCR by:	IBU – Institut Bauen und Umwelt e.V.

Environment





1. General Information

Norton Door Controls

Programme holder

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

Declaration number

Germany

EPD-ASA-20150267-IBA1-EN

This Declaration is based on the Product Category Rules:

Locks and fittings, 07,2014

(PCR tested and approved by the independent expert committee (SVR))

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Issue date

20.09.2015

Valid to

19.09.2020

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

Dr.-Ing. Burkhart Lehmann (Managing Director IBU)

Door Closer - Norton 7100SZ Series

Owner of the Declaration

Norton Door Controls 3000 Hwy 74 East Monroe, NC 28112 USA

Declared product / Declared unit

The declaration represents 1 Norton 7100SZ Series electromechanical closer / holder, consisting of the following items:

- A closer body including programmable motion sensor
- A closer arm
- Accessories

Scope:

This declaration and its LCA study are relevant to Norton Door Controls 7100SZ series door closer / holders.

The primary manufacturing processes are made by external suppliers and the final manufacturing processes and assembly for all door closer components occur at our manufacturing factory in Monroe, NC USA. 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 Standard EN 15804 serves as the core PCR Independent verification of the declaration and data according to ISO 14025

internally

externally



2. Product

2.1 Product description

Product name: Norton 7100SZ series electromechanical door closer / holder.

Product characteristic: closers are UL Listed and characterized by: using a Norton 7100SZ style door closer combined with a manifold and solenoid to provide a hold-open feature. When the door is opened manually, SafeZone® senses movement in the door opening and stops the door from closing. A physically disabled person in a wheelchair; an elderly person moving slowly; a child who stops to pick up a toy are all protected. When movement is no longer detected, the adjustable setting times out, the solenoid deenergizes and the door closes.

- Cast aluminum body with a rack-and-pinion design

- Available with spring sizes 3, 4 or 5 for 7110SZ or 7150SZ; spring sizes 2, 3, 4 or 5 for 7120SZ or 7130SZ
- Multi-point, electromechanical hold open
- Handed unit, push or pull side mounted
- Self-drilling screws included
- Sensor detects movement in both directions
- Fail safe operation
- Adjustable closing force and two closing ranges
- Adjustable back check, which offers optimum protection for doors and walls by damped opening
- Wide range of accessories, including various arms and brackets for various mounting configurations.

This EPD is applicable to following products: 7100SZ Series.



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2.2 Application

The Norton Door Controls 7100SZ series electromechanical door closer / holder can be used – from private to commercial and public sectors both light and heavy:

- Fire & smoke protection and standard doors
- For interior doors
- Detects motion in both directions, allowing one person or a stream of people to travel through an opening
- Is ideal for theaters, hospitals, doctor's offices and elementary schools

2.3 Technical Data

The table presents the technical properties of Norton Door Controls 7100SZ series.

Technical data

recinical data	
Name	Value
Sized closing force	available in sizes 2, 3, 4, and 5
Door width up to	48 in (1220 mm)
Door weight up to	250 lbs (114 kg)
Fire and smoke	Yes
protections	163
Door swing	Left or right hand mounted, push or
directions	pull side specific
Power Supply	120VAC 60Hz .05 A current draw
i ower Suppry	or 24VDC .086 A current draw
Closing speed	Variable between 180° - 10°
Latching speed	Variable between 10° - 0°
Back check	Variable above 70°
	Up to 180° for push side
Opening angle	applications
	Up to 110° for pull side applications
Closer weight	16.42 lbs (7.45 kg)
Closer height	3.50 in (89mm)
Closer depth	2.69 in (68mm)
Closer length	26.69 in (677mm)
	ANSI/BHMA A156.15
	UL Listed
Certified to / in	UL10C for positive pressure fire
compliance with	doors
	ADA compliant
	ANSI/BHMA A117.1

2.4 Placing on the market / Application rules

The standards that can be applied for door closer devices and relevant accessories are:

- ANSI/BHMA A156.15 Releasing Devices
- ANSI/BHMA A117.1
- UL Listed product
- meets requirements of UL10C for positive pressure
- ADA Compliant
- Controlled door closing devices.
- 7100SZ series electromechanical closer / holder and relevant accessories are certified according to these standards.

2.5 Delivery status

Door closer units and arms are delivered ready for installation in a single package. The packaging has the following dimensions: 114 mm x 197 mm x 737 mm.

2.6 Base materials / Ancillary materials

The primary product components and/or materials must be indicated as a percentage mass to enable the user of the EPD to understand the composition of the product in delivery status.

The average composition for Norton Door Controls 7100SZ Series, including the arm is as following:

Component	Percentage in mass (%)
Aluminum	18.63
Stainless Steel	67.20
Electro mechanics	7.13
Brass	0.12
Steel	0.50
Plastics	1.10
Other	5.32
Total	100.0

2.7 Manufacture

The primary manufacturing processes are made by Tier 1 suppliers in China, Taiwan, Mexico, and throughout the USA and some primary and final manufacturing processes occur at factory in Monroe, NC USA. The electronics are produced in China and the USA. The components come from processes like stamped steel, turning, zinc and aluminum casting. Final assembly takes place in Monroe, NC USA.

The factory of Monroe, NC USA has a certification of Quality Management system in accordance with ISO 9001:2008.

Waste management at the Monroe, NC USA factory is in accordance with the plant's ISO9001 and ISO14001:2004 standards:

- Office paper / cardboard recycling covered under Solid Waste Recycling Program
- Plant paper / cardboard recycling covered under Solid Waste Recycling Program
- General trash covered under Solid Waste Recycling Program
- Comingled recyclables covered under Solid Waste Recycling Program
- Metals recycling metal chips and dust covered under Solid Waste Recycling Program
- Wood pallets covered under Solid Waste Recycling Program

2.8 Environment and health during manufacturing

ASSA ABLOY and Norton Door Controls are committed to producing and distributing door opening solutions with minimal environmental impact, where health & safety is the primary focus for all employees and associates.

 Environmental operations, GHG, energy, water, waste, VOC, surface treatment and H&S are being routinely monitored. Inspections, audits, and



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reviews are conducted periodically to ensure that applicable standards are met and Environment Management program effectiveness is evaluated.

- Code of Conduct covers human rights, labor practices and decent work. Management of ASSA ABLOY and Norton Door Controls are aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
- The factory of Monroe, NC USA has certification of Environmental Management to ISO 14001:2004.
- Any waste metals during machining are separated and recycled. The waste from the water-based painting process is delivered to waste treatment plant.

2.9 Product processing / Installation

Norton Door Controls 7100SZ series door closer / holders are sold through a variety of distribution and wholesale sources and installed by trained installation technicians, such as locksmiths, carpenters etc. adhering to local/national standards and requirements as well as unskilled laborers. In any case the installation must be done in line with instructions provided by the manufacturer.

Door and frame preparations are made in door manufacturer's production sites.

2.10 Packaging

Norton Door Controls 7100SZ series door closer / holders are packed in cardboard packaging. Packaging includes paper installation instruction – all of which are fully recyclable.

Material	Value (%)
Cardboard/paper	100.0
Total	100.0

2.11 Condition of use

Annual inspection is recommended in order to guarantee correct functionality of the product and the door leaf. The inspection includes: checking, fixing screws to ensure they are properly tight, correct adjustments (closing speeds, force), compliance with local legal inspection standards and greasing all the moving parts of the arm.

2.12 Environment and health during use

There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product.

2.13 Reference service life

Norton Door Controls 7100SZ series electromechanical door closer / holders were developed to comply with ANSI/BHMA A156.15 standard and quality requirements. The typical life time of a 7100SZ series is 10 years, dependent on frequency of cycles. In this EPD lifetime of 5 years was analyzed.

2.14 Extraordinary effects

Fire

Norton Door Controls 7100SZ series electromechanical door closer / holders are tested for usage in fire and smoke protection doors according to UL10C.

Water

Door closers include hydraulic oil and are designed for conventional use and are not intended for flood protection. Unforeseeable flooding conditions will increase the potential for developing surface rust.

Mechanical destruction

No danger to the environment can be anticipated during mechanical destruction.

2.15 Re-use stage

The product is possible to re-use during the reference service life and be moved from one door to another. The majority, by weight, of components are stainless steel and aluminum, which can be recycled. The plastic components can be used for energy recovery within a waste incineration process.

2.16 Disposal

Materials or product parts that can be recycled (such as aluminum, steel and other metals) are assumed to be recycled. Plastics are assumed to be send to incineration (with energy recovery). Components or parts that cannot be clearly separated or recycled are assumed to be disposed in landfill.

2.17 Further information

Norton Door Controls 3000 Hwy 74 East Monroe, NC 28112 USA Tel: +800-438-1951 www.nortondoorcontrols.com



3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of door closer 7100SZ Series as specified in Part B requirements on the EPD PCR Locks and fittings.

Declared unit

Name	Value	Unit
Declared unit	1	piece of door closer
Mass (without packaging)	6.77	kg
Conversion factor to 1 kg	0.148	-

3.2 System boundary

Type of the EPD: cradle to gate - with options The following life cycle stages were considered:

Production stage:

- A1 Raw material extraction and processing
- A2 Transport to the manufacturer and
- A3 Manufacturing

Construction stage:

- A4 Transport from the gate to the site
- A5 Packaging waste processing

Use stage related to the operation of the building includes:

B6 – Operational energy use

End-of-life stage:

- C2 Transport to waste processing
- C3 Waste processing
- C4 Disposal (landfill)

This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or disposal of final residues.

 D - Declaration of all benefits or recycling potential from EOL and A5.

3.3 Estimates and assumptions

In the End-of-Life stage, a scenario with collection rate of 100% for all the recyclable materials was assumed.

3.4 Cut-off criteria

In the assessment, all available data from the production process are considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), thermal energy consumption and electric power consumption - including material and energy flows contributing less than 1% of mass or energy (if available). In case a specific flow contributing less than 1% in mass or energy is not available, worst case assumption proxies are selected to represent the respective environmental impacts.

Impacts relating to the production of machines and facilities required during production are out of the scope of this assessment.

3.5 Background data

For life cycle modeling of the considered products, the GaBi 6 Software System for Life Cycle Engineering, developed by thinkstep AG, is used /GaBi 6 2013/. The GaBi-database contains consistent and documented datasets which are documented in the online

GaBi-documentation /GaBi 6 2013D/. To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.

3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the /IBU PCR PART A/.

thinkstep AG performed a variety of tests and checks during the entire project to ensure high quality of the completed project. This obviously includes an extensive review of project-specific LCA models as well as the background data used.

The technological background of the collected data reflects the physical reality of the declared products. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.

All relevant background datasets are taken from the GaBi 6 software database. The last revision of the used background data has taken place not longer than 10 years ago.

3.7 Period under review

The period under review is 2013/14 (12 month average).

3.8 Allocation

Regarding incineration, the software model for the waste incineration plant (WIP) is adapted according to the material composition and heating value of the combusted material. In this EPD the following specific life cycle inventories for the WIP are considered:

- Waste incineration of plastic
- Waste incineration of paper
- Waste incineration of wood

Regarding the recycling material of metals, the metal parts in the EoL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within the background data is given in the GaBi dataset documentation.

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.



4. LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

Installation into the building (A5)

Name	Value	Unit
Output substances following waste	0.69	ka
treatment on site (Paper packaging)	0.09	kg

Reference service life

Name	Value	Unit
Reference service life	5	а

Operational energy use (B6)

Name	Value	Unit
Electricity consumption	90.5	kWh
Days per year in use	365	d
Hours per day in on mode	0.1	h
Power consumption in on mode in W	2.52	W
Hours per day in stand-by mode	23.9	h
Power consumption in stand-by mode in W	2.064	W

End of life (C2-C4)

Name	Value	Unit
Collected separately aluminum, brass, steel, electro mechanics, plastics	6.41	kg
Collected as mixed construction waste – construction waste for landfilling	0.36	kg
Reuse plastics parts	0.07	kg
Recycling aluminum, brass, steel, electro mechanics	6.34	kg
Landfilling of construction waste	0.36	kg

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

Name	Value	Unit
Collected separately waste type Door closer (including packaging)	7.46	kg
Recycling Aluminum	16.92	%
Recycling Brass	0.11	%
Recycling Steel	61.48	%
Recycling Electro mechanics	6.48	%
Thermal Treatment (plastics)	1.00	%
Loss Construction waste for landfilling (no recycling potential)	4.83	%
Reuse Packaging (paper) (from A5)	9.18	%



5. LCA: Results

Results shown below were calculated using CML 2000 – Apr. 2013 Methodology.

<u> </u>	RIF	PTION O	F THE	SYST	ΓEΜ	BOUN	IDAR	₹Y (X = IN	CLUDE	D IN	LCA	; MND :	= MOD	ULE N	OT D	ECL/	ARED)
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Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	921	Maintenance	Ċ	Repair	Replacement ¹⁾	Refurbishment ¹⁾	Operational energy use	Operational water	De-construction demolition	Transport	Waste processing	Disposal	Reuse-	Recovery- Recycling- potential
A 1	A2	2 A3	A4	A5	В	1 B2	? E	33	B4	B5	В6	В7	C1	C1 C2 C3		C4		D
X	Χ	X	Χ	Х	MN	ID MN	D M	ND	MND	MND	Χ	MNE	MND	Х	Х	Х		Χ
RESU	JLT	S OF TH	E LC	4 - EN'	VIR	ONME			IPACT				closer			SZ		
Parame	eter		Paramet	er		Un	it	<i>A</i>	A1-3	A4	A5		B6	C2	C3		C4	D
GWF	Р		warming			[kg CO	₂ -Eq.]	6.4	I0E+01	2.13E-01	9.70E	-01 6	.07E+01	2.13E-01	4.38E-	02 1.5	54E+00	-2.00E+01
ODF	>		on potent oheric oza			[kg CFC	11-Eq.]	1.3	39E-08	1.02E-12	4.44E	-12 2	2.10E-08	1.02E-12	3.00E-	11 4.	14E-12	5.34E-09
AP		Acidification	n potentia water	al of land a	and	[kg SO	-Eq.]	3.5	50E-01	9.74E-04	2.21E	-04 2	2.05E-01	9.74E-04	2.06E-	04 4.	38E-04	-9.67E-02
EP		Eutrop	hication p	potential		[kg (PO ₄)	³ - Eq.]	2.7	72E-02	2.23E-04	3.86E	-05 1	.10E-02	2.23E-04	1.16E-	05 4.9	94E-05	-5.54E-03
POC	Р	Formation p				[kg Ethe	n Eq.]	2.5	54E-02	-3.14E-04	1.57E	-05 1	.25E-02	-3.14E-04	1.23E-	05 2.4	45E-05	-7.88E-03
ADPI	E	Abiotic dep		ential for i		[kg Sb	Eq.]	3.7	78E-03	8.02E-09	1.75E	-08 8	3.01E-06	8.02E-09	6.06E-	09 1.	70E-07	-9.02E-05
ADP	F	Abiotic depl	etion pote	ential for fo	ossil	[M.]	72	24E+02	2.94E+00	2.72E	-01 7	.00E+02	2.94E+00	4.97E-	01 7	45E-01	-1.95E+02
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PERI PENR PENR PENR SM RSF	M T T REE RM RT F F	Renewab Total use Non renew Non renew Total use of Use of no	le primary materia e of renev resc vable prim utili of non ren resc e of secco	y energy i al utilization vable prin ources mary energarrier nary energization sewable p ources ondary ma	resourin narry e gy as gy as gy as rimary taterial dary fu	energy energy material y energy	[MJ] [MJ]		1.10E+02 0.00E+00 1.10E+02 8.27E+02 0.00E+00 8.27E+02 1.10E+00 0.00E+00	1.16E-0	0 3.18 0 0.00 0 0.00 0 0.00	E-02 E-01 E+00 E+00	6.85E+01 8.86E+02 0.00E+00 0.00E+00	1.16E-01 2.95E+00 0.00E+00	- 1.42E	-01 6. -01 8. +00 0. +00 0.	- 80E-02 - - 44E-01 00E+00	-5.12E+012.26E+02 0.00E+00
PERI PENR PENR PENR SM RSF NRS FW	M T T RE RRM RT F	Renewab Total use Non renew Total use of Use of Use of no	le priman materia e of renev rest vable prin vable prin utili of non ren rest e of secco	y energy i y energy	resourn nary e gy as gy as gy as gy as irimany futerial dary futerial	energy energy material y energy uels y fuels	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	1]	1.10E+02 0.00E+00 1.10E+02 8.27E+02 0.00E+00 8.27E+02 1.10E+00 0.00E+00 0.00E+00	1.16E-0 1.16E-0 2.95E+0 0.00E+0 0.00E+0 8.17E-0	1 2.53 0 3.18 0 0.00 0 0.00 0 0.00 0 2.82	E-02 E-01 E+00 E+00 E+00 E-03	6.85E+01 - 8.86E+02 0.00E+00 0.00E+00 3.11E-01	1.16E-01 2.95E+0(0.00E+0(0.00E+0(- 1.42E	-01 6. -01 8. +00 0. +00 0.	- - 80E-02 - - 44E-01 00E+00 00E+00	-5.12E+015.226E+02 0.00E+00 0.00E+00
PERI PENR PENR PENR SM RSF NRS FW	M T T RE RRM RT F F F CCC CCC	Non renew Non renew Total use of Use of Use of not S OF TH	le priman materia e of renev rest vable prin vable prin utili of non ren rest e of secco	y energy i y energy	resourn nary e gy as gy as gy as gy as irimany futerial dary futerial	energy energy material y energy uels y fuels UT FLC]	1.10E+02 0.00E+00 1.10E+02 8.27E+02 0.00E+00 8.27E+02 1.10E+00 0.00E+00 0.00E+00	1.16E-0 1.16E-0 2.95E+0 0.00E+0 0.00E+0 8.17E-0	0 3.18 0 0.00 0 0.00 0 0.00 5 2.82	E-02 E-01 E+00 E+00 E+00 E-03	6.85E+01 - 8.86E+02 0.00E+00 0.00E+00 3.11E-01	- 1.16E-01 - 2.95E+00 0.00E+00 0.00E+00 8.17E-05	- 1.42E	-01 6. -01 8. +00 0. +00 0.		-5.12E+015.26E+02 0.00E+00 0.00E+00
PERI PENR PENR PENR SM RSF NRS FW RESU	M T T RE RE F JLT Ce c	Non renew Non renew Total use of Use of Use of not S OF TH	le primany material e of renew rescribe primany utili of non renew ce of second renewable primany are renewable primany are rescribed to second renewable primany are renewable primany are rescribed to second renewable primany are renewable primany	y energy in a utilization wable prin ources many energization lewable pources ondary mable second able second able second Norto	resourn nary e gy as gy as rimany atterial dary fu natterial	rces as energy energy material y energy uels y fuels UT FLC 100SZ t A1-	[M] [M] [M] [M] [M] [M] [M] [M] [M]]	1.10E+02 0.00E+00 1.10E+02 8.27E+02 0.00E+00 8.27E+02 1.10E+00 0.00E+00 0.00E+00 3.97E-01 D WA:	1.16E-0 2.95E+0 0.00E+0 0.00E+0 0.00E+0 8.17E-0	1 2.53 0 3.18 0 0.00 0 0.00 0 0.00 5 2.82	E-02	- 6.85E+01 8.86E+02 0.00E+00 0.00E+00 3.11E-01	- 1.16E-01 - 2.95E+00 0.00E+00 0.00E+00 0.00E+00	1.42E - 1.779E 0.00E 0.00E 0.00E 0.3.51E	-01 6. -01 8. +00 0. +00 0. +00 4.		
PERI PENR PENR PENR SM RSF NRS FW RESU 1 piec	M T T RE RRM RT T T T T T T T T T T T T T T T T	Renewab Total use Non renew Total use of Use of not S OF TH of door of	le priman materia e of reneverses vable primutili of non reneverse of secondary renewable primutili of non renewable primutili of non renewable primutili of non renewable primutili on renewable on renewable of neewable of neewable of neewable was a fine of neewable of n	y energy in utilization wable prin ources many energy arrier mary energy ization lewable prources ondary manual execution and the second arrier many energy ization lewable prources ondary manual execution and execution was also second at fresh was a second in the second execution was a second exec	esouinn nary e gy as gy as gy as ririmany taterial dary fu nndary TPU 171 Unit	energy energy material y energy uels y fuels UT FLC 100SZ 1 2.35E	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]]	1.10E+02 0.00E+00 1.10E+02 8.27E+02 0.00E+00 8.27E+02 1.10E+00 0.00E+00 0.00E+00 D WAS	1.16E-0 2.95E+0 0.00E+0 0.00E+0 0.00E+0 8.17E-0 STE CA	0 3.18 0 0.00 0 0.00 0 0.00 5 2.82 1EG	E-02 E-01 E+00 E+00 E+00 E-03 ORIE	6.85E+01 8.86E+02 0.00E+00 0.00E+00 3.11E-01 S:	- 1.16E-01 - 2.95E+00 0.00E+00 0.00E+00 8.17E-05	- 1.42E	-01 6. -01 8. +00 0. +00 0. +00 4.		
PERI PENR PENR PENR SM RSF NRS FW RESU 1 piec	M T RE RM RT F F D D D D D	Renewab Total use Non renew Total use of Use of Use of OF TH of door of Hazardous	le priman materia e of renew rescribe of second renewable priman rescribe of second renewable priman renewable priman renewable on rene	y energy in a utilization wable prin ources many energization ewable pources ondary many energization ewable pources ondary many energization ewable pources ondary many energization ewable second rable second and experimental	resourn n nary e gy as gy as gy as rimany aterial dary fu nndary ter Unit	rces as energy energy material y energy uels y fuels UT FLC 100SZ t A1- 1 2.35E	[M]	1] (1) (1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	1.10E+02 0.00E+00 1.10E+02 8.27E+02 0.00E+00 8.27E+02 1.10E+00 0.00E+00 0.00E+00 D WAS	1.16E-0 2.95E+0 0.00E+0 0.00E+0 8.17E-0 STE CA A5	0 3.18 0 0.00 0 0.00 0 0.00 5 2.82 1TEG	E-02 E-01 E+00 E+00 E-03 ORIE	- 6.85E+01 8.86E+02 0.00E+00 0.00E+00 3.11E-01 S: C2	1.16E-01 1.16E-01 2.95E+0(0.00E+0(0	1.42E - 1.4	-01 6. -01 8. +00 0. +00 0. -04 4. C4		
PERI PENR PENR PENR RSF NRS FW RESU 1 piece HWE NHW	M T T RRE RM F F F D D D D	Renewab Total use Non renew Total use of Use of not Use of not Hazardous Non hazardo Radioactive	le priman materia e of renew rescribe of second renewable priman rescribe of second renewable priman renewable priman renewable on rene	y energy in utilization wable prinources many energy in any energy in an	esouinn nary e gy as gy as gy as rimany taterial dary fu nndary tater Uni [kg]	energy energy material y energy uels y fuels UT FLC 100SZ 1 2.35E 1 3.53E 1 4.06E	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	6.7° 3.86	1.10E+02 0.00E+00 1.10E+02 1.10E+02 8.27E+02 0.00E+00 0.00E+00 0.00E+00 0.00E+00 D WAS	1.16E-0 1.16E-0 2.95E+0 0.00E+0 0.00E+0 8.17E-0 STE CA A5 2.44E-02	0 3.18 0 0.00 0 0.00 0 0.00 5 2.82 1 EG	E-02 E-01 E+00 E+00 E+00 ORIE B6	6.85E+01 - 8.86E+02 0.00E+00 0.00E+00 3.11E-01 S: C2 6.71E- 3.71E-	1.16E-01 - 2.95E+00 0.00E+00 0	- 1.42E	-01 601 8. +00 0. +00 0. +00 4.		-5.12E+015.12E+012.26E+02 0.00E+00 0.00E+00 -1.42E-01 D 1.91E-03 -2.09E+00
PERI PENR PENR PENR SM RSF NRS FW RESU 1 piece HWE NHW	M T RE RM RT F F T D D D J	Renewab Total use Non renew Total use of Use of not Use of not Hazardous Non hazardo Radioactive Compon	le priman materia e of renew resc vable prim utili of non ren resc se of seccor renewable on renew Use of ne LCA se waste di us waste di us waste de waste de waste de waste de se waste de se waste de le se vaste de l	y energy in a utilization wable prin ources many energy in a utilization wable prin ources many energy ization ewable pources ondary many energy ization ewable pources ondary many energy ization ewable second rable second rable second rable second isposed disposed euse	esound normal properties of the control of the cont	roes as energy energy energy material y energy uels y fuels UT FLC 100SZ t A1-1 2.35E 1 3.53E 1 4.06E 1 0.00E	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]		1.10E+02 0.00E+00 1.10E+02 1.10E+02 8.27E+02 0.00E+00 8.27E+02 1.10E+00 0.00E+00 0.00E+00 0.00E+00 1.10E+00 1.10E+00 0.00E+00 1.10E+00 0.00E+00 0.00E+00	1.16E-0 2.95E+0 0.00E+0 0.00E+0 0.00E+0 8.17E-0 STE CA 2.19E-05 2.44E-02 1.86E-05	0 3.18 0 0.00 0 0.00 0 0.00 0 2.82 TEG 6.9 2.8 7.2	E-02 E-01 E+00 E+00 E+00 E-03 B6 000E-04 33E-01	- 6.85E+01 8.86E+02 0.00E+00 0.00E+00 3.11E-01 S: C2 6.71E-3.71E-3.86E-	1.16E-01 1.16E-01 1.16E-01 1.16E-01 1.16E-01 1.00E+00 0.00E+00 0.0	1.42E 1.	-01 6. -01 8. +00 0. +00 0. +00 4. C4 8.60E 2.28E 3.94E		
PERI PENR PENR PENR RSF NRS FW RESU 1 piece Parame HWE NHW RWE CRL	T RE RRM RT F F CO	Renewab Total use Non renew Total use of Use of not Use of not Hazardous Non hazardo Radioactive Compon	le priman materia e of renew resc vable prim utili of non renew use of secon renewable on renew use of ne use of secon renewable on renew use of ne use of secon renewable use of secon renewable use waste dients for recy	y energy in a utilization wable prinources many energy in a utilization wable prinources many energy ization lewable pources condary many energy ener	esouin nary e gy as gy as rimany aterial dary fu nater Uni [kg]	roes as energy energy energy energy waterial y energy uels y fuels UT FLC 100SZ t A1-1 2.35E 1 3.53E 1 4.06E 1 0.00E	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	1]	1.10E+02 0.00E+00 1.10E+02 8.27E+02 0.00E+00 8.27E+02 1.10E+00 0.00E+00 0.00E+00 0.00E+00 1.10E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	1.16E-0 1.16E-0 2.95E+0 0.00E+0 0.00E+0 8.17E-0 STE CA A5 2.44E-02 1.86E-05 0.00E+00	0 3.18 0 0.00 0 0.00 0 0.00 5 2.82 11 EC	E-02	6.85E+01 - 8.86E+02 0.00E+00 0.00E+00 3.11E-01 S: C2 6.71E- 3.71E- 3.86E- 0.00E+	1.16E-01 2.95E+00 0.00E+00	1.42E	-01 601 8. +00 0. +00 004 4. C4 8.60E 2.28E 3.94E 0.00E		-5.12E+015.12E+02 -2.26E+02 0.00E+00 0.00E+00 -1.42E-01 D 1.91E-03 -2.09E+00 -1.22E-02 0.00E+00
PERI PENR PENR PENR PENR SM RSF NRS FW RESU 1 piec NHW RWE CRU	M T RE RRM RRM RRT F F COCCE CC	Renewab Total use Non renew Total use of the second	le priman materia e of renew resc vable prim utili of non renew resc e of secon renewable primale e of renewable primale e of secon renewable primale e of secon renewable primale e waste discontra e waste discontra e waste discontra e e e e e e waste discontra e e e e e e e e e e e e e e e e e e e	y energy in utilization vable primources many energy in utilization vable primources many energy ization lewable pources ondary manuel esecond rable second and in utilization vable second disposed is disposed e-use recovery	resouring in a specific property of the control of	roes as energy energy material y energy uels y fuels UT FLC 100SZ 1 2.35E 1 2.35E 1 4.06E 1 0.00E 1 0.00E	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]		1.10E+02 0.00E+00 1.10E+02 1.10E+02 8.27E+02 0.00E+00 8.27E+02 1.10E+00 0.00E+00 0.00E+00 1.10E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	1.16E-0 2.95E+0 0.00E+0 0.00E+0 0.00E+0 8.17E-0 8.17E-0 2.19E-05 2.44E-02 1.86E-05 0.00E+00 6.85E-01	0 3.18 0 0.00 0 0.00 0 0.00 5 2.82 1EG 6.9 2.8 7.2 0.0 0 0.0	E-02 E-01 E+00 E+00 E+00 E-03 ORIE B6 00E-04 00E-02 00E+00 00E+00	- 6.85E+01 - 8.86E+02 0.00E+00 0.00E+00 3.11E-01 S:	1.16E-01	1.42E 1.	-01 601 8. +00 0. +00 004 4. C4 8.60E 2.28E 3.94E 0.00E		-5.12E+01 -7.12E+02 -7.2.26E+02 -7.00E+00 -7.42E-01 -7.1.22E-02 -7.00E+00 -7.00E+00 -7.00E+00 -7.00E+00



6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. Stated percentages in the whole interpretation are related to the overall life cycle, excluding credits (module D).

The production stage (modules A1-A3) contributes between 40% and 70% to the overall results for all the environmental impact assessment categories hereby considered, except for the abiotic depletion potential (ADPE), for which the contribution from the production stage accounts for almost 99% - this impact category describes the reduction of the global amount of non-renewable raw materials, therefore, as expected, it is mainly related with the extraction of raw materials (A1).

Within the production stage, the main contribution for all the impact categories is the production of steel mainly due to the energy consumption on this process. Aluminum and steel account with almost 85% to the overall mass of the product, therefore, the impacts are in line with the mass composition of the product. The environmental impacts for the transport (A2) have a negligible impact within this stage.

The negative contribution of transports to installation side (module A4) to POCP impact categories is explained in following. The most important substance contributing to the ozone forming process is nitrogen dioxide (NO2), which is cleaved under the influence of sunlight. This produces nitric oxide (NO) and ozone

(O3). Conversely, nitrogen monoxide and ozone form NO2 and O2. Ozone formation and ozone depletion are in equilibrium, the ozone concentration depend on the ratio of NO2 and NO emissions to air and the solar radiation.

Therefore NO has a negative and NO2 a positive characterization factor according to CML. NO is mainly emitted from internal combustion engines (ICE) while the fuel combustion. This leads to a negative overall value for the POCP for transports (using ICE) according to CML methodology.

To reflect the use stage (module B6), the energy consumption was included and it has a major contribution for all the impact assessment categories considered - between 28% and 60%, with the exception of ADPE (1%). This is a result of 0.1 hours of operation in on mode and 23.9 hours of operation in stand-by mode per day per 365 days in a year.

In the end-of-life stage, there are loads and benefits (module D, negative values) considered. The benefits are considered beyond the system boundaries and are declared for the recycling potential of the metals and for the credits from the incineration process (energy substitution).

7. Requisite evidence

Not applicable in this EPD.

8. References

Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin (pub.): Generation of Environmental Product Declarations (EPDs);

General principles

for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013-04 www.bau-umwelt.de

IBU PCR Part A

IBU PCR Part A: Institut Bauen und Umwelt e.V., Königswinter (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. April 2013 www.bau-umwelt.de

IBU PCR Part B

IBU PCR Part B: PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B:

Requirements on the EPD for Locks and fittings. www.bau-umwelt.com

ADA Compliant

ADA Compliant: Americans with Disabilities Act 2010 Standard for Accessible Design

ANSI/BHMA A156.15

ANSI/BHMA A156.15-2001: Standard for Releasing Devices

ANSI A117.1

ANSI A117.1-2009 Accessible and Usable Buildings and Facilities

ISO 9001

ISO 9001:2008: Quality management systems - Requirements

ISO 14001

ISO 14001: Environmental management systems - Requirements with guidance for use (ISO 14001:2004 + Cor. 1:2009)

ISO 14025

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



EN 15804

EN 15804:2012+A1:2014: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

GaBi 6 2013

GaBi 6 2013: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Echterdingen, 1992-2013.

GaBi 6 2013D

GaBi 6 2013D: Documentation of GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Echterdingen, 1992-2013. http://documentation.gabi-software.com/

UL Listed

Tested to / Compliant with UL228 Standard for Door Closers - Holders

UI 10C

UL10C Positive Pressure Fire Test of Door Assemblies



9. Annex

Results shown below were calculated using TRACI Methodology.

DESC	CRIP	TION O	F THE	SYST	EM BO	DUND	ARY	(X = I)	NCLUD	ED IN L	CA;	MND	= MODI	JLE N	OT DE	ECLA	(RED)	
PRODUCT		STAGE	CONSTRUCTI ON PROCESS STAGE			USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS	
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement ¹⁾	Refurbishment ¹⁾	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse-	Recovery- Recycling- potential	
A1	A2	А3	A4	A5	B1	B2	В3	В4	B5	В6	B7	C1	C2	C3	C4		D	
Х	Χ	Х	Х	Χ	MND	MND	MND	MNE	D MND	Х	MND	MNE	X	Х	Χ		Χ	
	RESULTS C		THE LCA - ENVIRONI				IPAC					Nortor						
Parameter		Parameter			Unit [kg CC)2	A1-3	A4	A5		B6	C2	C3		C4	D		
GWF			Global warming potential			Eq.]	0.2	0E+01	2.13E-01	9.70E-0	9.70E-01 6.07E		2.13E-01	4.38E-0	02 1.54	.54E+00 -2.00E+0		
ODP Depletion			n potential of the stratospheric ozone layer			[kg CFC Eq.]	1.4	19E-08	1.08E-12	4.72E-	12 2.2	3E-08	1.08E-12	3.19E-	11 4.4	0E-12	5.68E-09	
AP	AP Acidificatio			n potential of land and water			3.4	19E-01	1.27E-03	2.68E-0	1.9	2E-01	1.27E-03	1.95E-0	5.2	5E-04	-9.26E-02	
EP E			trophication potential			Eq.] [kg N-e	kg N-eq.] 2.15		8.99E-05	1.54E-0	05 9.4	1E-03	8.99E-05	8.32E-06 2.2		9E-05	-3.25E-03	
Smo	Ground-lev	evel smog formation potential			[kg O3-	eq.] 4.4	8E+00	2.62E-02	6.25E-0	03 1.63	3E+00	2.62E-02	1.77E-0	03 7.1	5E-03	-9.86E-01		
Resour	ces	Resources – fossil resources				[MJ]	5.4	6E+01	4.22E-01	3.19E-0	02 4.12	2E+01	4.22E-01	3.54E-0	02 7.4	8E-02	-1.10E+01	
RESU	JLTS	S OF THE LCA - RESOURC				E US	E: 1 p	oiece	of door	closer	Nort	on 71	100SZ		·			
Parameter		Parameter Renewable primary energy as				Unit	: 1	1-3	A4	A5	ı	36	C2	С3	(C4	D	
PER	RE	Renew	able prin energy		ergy as	[MJ]	1.1	0E+02	-	-		-	-	-		-	-	
PERM		Renewable primary energy resources as material utilization				[MJ]	0.0	0E+00	-	-		-	-	-		-	-	
PER	RT	Total us	use of renewable primary energy resources			[MJ]	1.1	0E+02	1.16E-01	2.53E-0	02 6.85	E+01	1.16E-01	1.42E-0	01 6.80	0E-02	-5.12E+01	
PENI	RE	Non renewable primary energy as energy carrier				[MJ]	[MJ] 8.27E+02		-	-				-		-	-	
PEN	RM	Non renewable primary energy as material utilization				[MJ]	[MJ] 0.00E+		-	-		-	-	-		-	-	
PEN	RT	Total use of non renewable primary energy resources				[MJ]	8.2	75.02	0.055.00						1 0 4		-2.26E+02	
SM			of secondary material					/ LTUZ	2.95E+00	3.18E-0	1 8.86	E+02	2.95E+00	7.79E-0	71 0.44	4E-01	-2.200+02	
RS			of second	dary mat		[kg]			0.00E+00		-		2.95E+00 0.00E+00	7.79E-0		4E-01 0E+00	0.00E+00	
_	F	Use of re			terial	[kg]	1.1	0E+00		0.00E+0	00.00	E+00		0.00E+	0.00			
NRS			newable on renew	second	terial ary fuels		1.1	0E+00 0E+00	0.00E+00	0.00E+0	0.00	E+00 E+00	0.00E+00 0.00E+00	0.00E+	0.00)E+00)E+00	0.00E+00	
NRS FW	SF	Use of re	newable	second vable se	terial ary fuels condary	[MJ]	1.1	0E+00 0E+00 0E+00	0.00E+00	0.00E+0 0.00E+0 0.00E+0	0.00	E+00 E+00 E+00	0.00E+00 0.00E+00	0.00E+0	0.00)E+00)E+00)E+00	0.00E+00 0.00E+00	
FW	SF V	Use of re Use of ne	newable on renew fue e of net f	second vable se els resh wa	ary fuels condary ter	[MJ] [m³]	1.1 0.0 0.0 3.9	0E+00 0E+00 0E+00 7E-01	0.00E+00 0.00E+00	0.00E+0 0.00E+0 0.00E+0 2.82E-0	00 0.00 00 0.00 00 0.00 03 3.1	E+00 E+00 E+00 E+00	0.00E+00 0.00E+00 0.00E+00	0.00E+0	0.00)E+00)E+00)E+00	0.00E+00 0.00E+00 0.00E+00	
FW	JLTS	Use of re	newable on renew fue e of net f	second vable se els resh wa	ary fuels condary ter	[MJ] [m³]	1.1 0.0 0.0 3.9 /S AN	0E+00 0E+00 0E+00 7E-01	0.00E+00 0.00E+00 0.00E+00 8.17E-05	0.00E+0 0.00E+0 0.00E+0 2.82E-0	00 0.00 00 0.00 00 0.00 03 3.1	E+00 E+00 E+00 E-01	0.00E+00 0.00E+00 0.00E+00	0.00E+0	00 0.00 00 0.00 00 0.00 04 4.2)E+00)E+00)E+00	0.00E+00 0.00E+00 0.00E+00	
RESU 1 pied	JLTS ce or	Use of re Use of no Use OF TH	newable on renew fue e of net f	second wable se els resh wa A – OU Nortol meter	terial ary fuels condary ter TPUT n 71003	[MJ] [m³] FLOW	1.1 0.0 0.0 3.9 /S AN	0E+00 0E+00 0E+00 7E-01 ID W/	0.00E+00 0.00E+00 0.00E+00 8.17E-05	0.00E+0 0.00E+0 0.00E+0 2.82E-0	00 0.00 00 0.00 00 0.00 03 3.11	E+00 E+00 E+00 E-01 :	0.00E+00 0.00E+00 0.00E+00 8.17E-05	0.00E+0 0.00E+0 0.00E+0 3.51E-0	00 0.00 00 0.00 00 0.00 00 0.00 04 4.2	DE+00 DE+00 DE+00 DE+00	0.00E+00 0.00E+00 0.00E+00 -1.42E-01	
RESU 1 piec	JLTS ce or	Use of re Use of no Use S OF TH	newable on renew fue e of net f IE LCA closer Para	second vable seeds resh wa OUNorto meter vaste dis	terial ary fuels condary ter TPUT n 71003	[MJ] [MJ] [m³] FLOW SZ	1.1 0.0 0.0 3.9 3.9 AN A1 2.35	0E+00 0E+00 0E+00 7E-01 ID W/	0.00E+00 0.00E+00 0.00E+00 8.17E-05 ASTE C.	0.00E+0 0.00E+0 0.00E+0 2.82E-0 ATEGO	00 0.00 00 0.00 00 0.00 03 3.1 ² 0RIES B	E+00 E+00 E+00 E-01 :	0.00E+00 0.00E+00 0.00E+00 8.17E-05	0.00E+0 0.00E+0 0.00E+0 3.51E-0	00 0.000 000 0.000 0.000 0.000 0.000 0.000 4.200 4.8600	DE+00 DE+00 DE+00 TE-03	0.00E+00 0.00E+00 0.00E+00 -1.42E-01	
RESU 1 piec Param	JLTS ce of neter	Use of re Use of no Use OF TH f door of Haza	newable on renew fue e of net f IE LCA closer Para	second vable se els resh wa A - OU Norto meter vaste dis	terial ary fuels condary ter TPUT n 71003 posed	[MJ] [MJ] [m³] FLOW SZ Unit	1.1 0.0 0.0 3.9 /S AN t A1 2.35 3.53	0E+00 0E+00 0E+00 7E-01 ID W/	0.00E+00 0.00E+00 0.00E+00 8.17E-05 ASTE C.	0.00E+0 0.00E+0 0.00E+0 2.82E-0 ATEGO A5 2.19E-05	00 0.00 00 0.00	E+00 E+00 E+00 E-01 :	0.00E+00 0.00E+00 0.00E+00 8.17E-05	0.00E+0 0.00E+0 0.00E+1 3.51E-0	00 0.00 00 0.00 00 0.00 04 4.2 4 8.60 4 2.28	DE+00 DE+00 DE+00 DE+00 7E-03	0.00E+00 0.00E+00 0.00E+00 -1.42E-01 D 1.91E-03	
RESU 1 piec Param HW	JLTS ce of heter D VD	Use of re Use of no Use S OF TH f door c Hazz	newable on renew fue on renew fue of net f le LCA closer Para ardous w azardous	second vable se els resh wa Norto meter vaste dis s waste dis	terial ary fuels condary ter ITPUT n 71000 posed disposed	[MJ] [MJ] [m³] FLOW SZ Unit	1.1 0.0 0.0 3.9 //S AN	0E+00 0E+00 0E+00 7E-01 ID W/ -3 E-02 E-02	0.00E+00 0.00E+00 0.00E+00 8.17E-05 ASTE C. A4 6.71E-06 3.71E-04 3.86E-06	0.00E+0 0.00E+0 0.00E+0 2.82E-0 ATEGO A5 2.19E-05 2.44E-02	00 0.00 00 0.00 00 0.00 03 3.1 ² DRIES B 6.90 2 2.83 5 7.29	E+00 E+00 E+01 : 6 E-04 E-01 :	0.00E+00 0.00E+00 0.00E+00 8.17E-05 C2 6.71E-06 3.71E-04	0.00E+1 0.00E+1 0.00E+1 3.51E-0 C3 1.08E-0 2.51E-0	00 0.00 00 0.00 00 0.00 04 4.2 4 8.60 4 2.28 4 3.94	DE+00 DE+00 DE+00 DE+03 TE-03 DE-05 BE-01 HE-05	0.00E+00 0.00E+00 0.00E+00 -1.42E-01 D 1.91E-03 -2.09E+00	
RESU 1 piec Param HW NHW	JLTS ce of the term of the ter	Use of re Use of no Use S OF TH f door of Haza Non ha Radia	newable on renew fue e of net f lE LCA closer Para ardous w azardous pactive w	second vable se els resh wa A — OU Nortol meter vaste dis s waste c vaste dis ts for re-	terial ary fuels condary ter TPUT n 71003 posed disposed sposed -use	[MJ] [MJ] [MJ] [MJ] [M] [M] [kg]	1.1 0.0 0.0 3.9 //S AN tt A1 2.35 3.53 4.06 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0E+00 0E+00 0E+00 7E-01 1D W/ -3 E-02 (E+00 (E+00 (0.00E+00 0.00E+00 0.00E+00 8.17E-05 ASTE C A4 6.71E-06 3.71E-04 3.86E-06 0.00E+00 0.00E+00	0.00E+0 0.00E+0 0.00E+0 2.82E-0 ATEGO A5 2.19E-05 2.44E-02 1.86E-05 0.00E+0 6.85E-01	00 0.00 00 0.00 00 0.00 03 3.1 ¹ 00 6.90 0 6.90 0 7.29 0 0.00 0 0.00	E+00 E+00 E+00 E-01 : : 6 E-04 E-01 E-02 E+00 E+00	0.00E+00 0.00E+00 0.00E+00 8.17E-05 C2 6.71E-06 3.71E-04 3.86E-06 0.00E+00 0.00E+00	0.00E++ 0.00E++ 0.00E++ 3.51E-0 1.08E-0 2.51E-0 1.12E-0 0.00E+0 5.86E+0	00 0.00 00 0.00 00 0.00 04 4.2 4 8.60 4 2.28 4 3.94 00 0.00	DE+00 DE+00 DE+00 DE+00 TE-03 DE-05 BE-01 DE-05 DE+00 DE+00	0.00E+00 0.00E+00 0.00E+00 -1.42E-01 D 1.91E-03 -2.09E+00	
RESULT Piece Parame HW NHW RW CR MFI	JLTS ce of other line line line line line line line line	Use of re Use of no Use OF TH f door o Haze Non ha Radic Co M Mater	newable on renev fue e of net f IE LCA closer Para ardous w azardous pactive v omponen aterials for e	waste disaste for recyclenergy re	terial ary fuels condary ter TPUT n 71000 posed disposed sposed -use ling ecovery	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	1.1 0.0 0.0 3.9 1.1	0E+00 0E+00 0E+00 7E-01 ID W/ -3 E-02 (E+00 (E+00 (E+00 (0.00E+00 0.00E+00 0.00E+00 8.17E-05 ASTE C. A4 6.71E-06 3.71E-04 3.86E-06 0.00E+00 0.00E+00	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 0.00E+0 0.00E+0	B C C C C C C C C C	6 E-04 E-02 E-00 E+00 E+00 E-01 E-01 E-02 E-00 E-00 E-00 E-00 E-00 E-00 E-00	0.00E+00 0.00E+00 0.00E+00 8.17E-05 C2 6.71E-06 3.71E-04 3.86E-06 0.00E+00 0.00E+00 0.00E+00	0.00E+0 0.00E+0 0.00E+0 3.51E-0 C3 1.08E-0 2.51E-0 0.00E+0 5.86E+0 0.00E+0	00 0.00 00 0.00 00 0.00 04 4.2 4 8.60 4 2.28 4 3.94 10 0.00 10 0.00	DE+00 DE+00 DE+00 DE+00 TE-03 DE-05 DE-05 DE-05 DE-05 DE-05 DE-00 DE+00 DE+00	0.00E+00 0.00E+00 0.00E+00 -1.42E-01 D 1.91E-03 -2.09E+00	
RESULT PIECE Parameter HW NHW RW CRI	SF V V U V D V D V R R E	Use of re Use of no Use OF TH f door of Haza Non ha Radii Co M. Mater	newable on renew fue e of net f IE LCA Para ardous w azardous pactive w emponen aterials f	second vable seeds and a condition of the condition of th	terial ary fuels condary ter ary fuels condary ter ary fuels condary ter ary fuels condary ter ary fuels condary ary fuels condary ary fuels condary ary fuels condary ary fuels	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	1.1 0.0 0.0 3.9	DE+00	0.00E+00 0.00E+00 0.00E+00 8.17E-05 ASTE C A4 6.71E-06 3.71E-04 3.86E-06 0.00E+00 0.00E+00 0.00E+00	0.00E+0 0.00E+0 0.00E+0 2.82E-0 ATEGO A5 2.19E-05 2.44E-02 1.86E-05 0.00E+0 6.85E-01	B G G G G G G G G G	E+00 E+	0.00E+00 0.00E+00 0.00E+00 8.17E-05 C2 6.71E-06 3.71E-04 3.86E-06 0.00E+00 0.00E+00	0.00E+1 0.00E+1 0.00E+1 3.51E-0 1.08E-0 2.51E-0 1.12E-0 0.00E+0 0.00E+0 0.00E+0	00 0.000 00 0.000 00 0.000 00 4 4.2° 4 8.60 4 2.28 4 3.94 0 0.000 00 0.000 00 2.09	DE+00 DE+00 DE+00 DE+00 DE+00 DE-03 DE-05 BE-01 BE-05 EE+00 DE+00 DE+00 DE+00	0.00E+00 0.00E+00 -1.42E-01 D 1.91E-03 -2.09E+00 -1.22E-02 -	



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