ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration ASSA ABLOY Sicherheitstechnik GmbH

Programme holder Institut Bauen und Umwelt e.V. (IBU)

Publisher Institut Bauen und Umwelt e.V. (IBU)

Declaration number EPD-ASA-20150094-IBA1-EN

Issue date 30.04.2015

/alid to 29.04.2020

Electric Strike - 143 Series

ASSA ABLOY Sicherheitstechnik GmbH



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1. General Information

ASSA ABLOY Sicherheitstechnik GmbH

Programme holder

IBU - Institut Bauen und Umwelt e.V.

Panoramastr. 1 10178 Berlin Germany

Declaration number

EPD-ASA-20150094-IBA1-EN

Electric strike - 143 Series

Owner of the Declaration

ASSA ABLOY Sicherheitstechnik GmbH Bildstockstrasse 20 72458 Albstadt, Germany

Declared product / Declared unit

The declaration represents 1 electric strike – 143 Series consisting of the following items:

- 143.20-----Q34

This Declaration is based on the Product Category Rules:

Locks and fittings , 07.2014 (PCR tested and approved by the independent expert committee (SVA))

Issue date

30.04.2015

Valid to

29.04.2020

WWenneryes
Prof. Dr.-Ing. Horst J. Bossenmayer

(President of Institut Bauen und Umwelt e.V.)

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

Scope:

This declaration and its LCA study are relevant to the 143 Series electric strike.

The primary manufacturing processes, secondary manufacturing processes and assembly occur at the manufacturing factory in Albstadt, Germany. 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
according to ISO 14025
internally x externally

Dr. Wolfram Trinius
(Independent verifier appointed by SVA)

2. Product

2.1 Product description

Product name: 143 series

Product characteristic: Electric Strike

The 143 series is an electric strike, designed for fire door application and to accommodate mainly European style locks according EN 12209. All major components are completely encased within its 66mm x 20mm x 28mm steel housing. The monitoring contact is installed in the housing. The connector block can be flipped over to the other side. Multi-Voltage, high preload capability and small overall dimensions make this electric strike versatile. The operation mode is fail secure. The multi voltage range is 12-24 V AC/DC.

2.2 Application

143 Series electric strikes are ideal for a wide range of applications – mainly for commercial and public sectors:

- For fire rated or smoke resistant doors.

2.3 Technical Data

For the declared product, the following technical data in the delivery status must be provided with reference to the test standard.

Technical data

Parameter	Value	Unit
Static strength*	8,000	Newton
Endurance	500,000	Cycles
Dual voltage	12 - 24	V AC/DC

Note: * tested according factory standard.

2.4 Placing on the market / Application rules The standards that can be applied for 143 Series

The standards that can be applied for 143 Series electric strikes are:

- DIN EN 14846:2008



2.5 Delivery status

Electric strikes are delivered as in a box size - 93 mm x 35 mm x 28 mm containing installation instructions.

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 143 Series is as following:

Component	Percentage in mass (%)
Zinc	2.7
Brass	0.1
Copper	0.5
Steel	78.4
Stainless Steel	2.8
Plastic	14.7
Electronics	0.8
Total	100.0

2.7 Manufacture

The primary manufacturing processes and the final manufacturing processes occur at our factory in Albstadt, Germany. The electric coil is produced in Albstadt. The components come from processes like stamped steel, plastic molding, milling, turning and zinc casting. Final assembly takes place in Albstadt.

The factory of Albstadt has a certification of Quality Management system in accordance with DIN EN ISO 9001:2008.

2.8 Environment and health during manufacturing

ASSA ABLOY is 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, Greenhouse Gas Emissions, energy, water, waste, VOC, surface treatment and H&S are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met to ensure Environmental Management program effectiveness.
- Code of Conduct covers human rights, labor practices and decent work. Management of ASSA ABLOY is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
- The factory of Albstadt has certification of Environmental Management to DIN EN ISO 14001:2009 and Occupational Health and Safety to OHSAS 18001:2007.
- Manufacturing waste is minimised and treated appropriately to ensure minimal environmental impact.

2.9 Product processing / Installation

143 Series electric strikes are distributed through and installed by door manufacturers, trained installation technicians, such as locksmiths, carpenters etc. adhering to local/national standards and requirements.

2.10 Packaging

The packaging is not considered.

2.11 Condition of use

To maintain low friction and secure latching, annual maintenance <1g of grease on contact surfaces of electric strike is recommended.

No cleaning. Electric strikes can be replaced or upgraded without changing control unit or installation cable.

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

Approved for 500,000 cycles under normal working conditions, 12 years depending on cycle frequency. Through System 1 according DIN EN 14846:2008.

2.14 Extraordinary effects

Fire

Suitable for use in fire and smoke doors (EN 14846).

Water

Contain no substances that have any impact on water in case of flood. Electric operation of the device will be influenced negative.

Mechanical destruction

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

2.15 Re-use phase

The product is possible to re-use during the reference service life and be moved from one door to another. The majority, of components are brass and steel, which can be recycled. The locks can be mechanically disassembled to separate the different materials. 100% of the materials used are recyclable.

2.16 Disposal

All parts of product can be recycled.

2.17 Further information

Assa Abloy Sicherheitstechnik GmbH Bildstockstrasse 20 72458 Albstadt, Germany Tel: +49 7431 123-0 www.assaabloy.de



3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of 143 Series as specified in Part B requirements on the EPD for PCR Locks and fittings: (mechanical & electromechanical locks & fittings).

Declared unit

Name	Value	Unit
Declared unit	0.794 Kg	1 piece of electric strike
Conversion factor to 1 kg	1.26	-

3.2 System boundary

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

Production stage:

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

Use stage related to the operation of the building includes:

 B6 – Operational energy use (Energy consumption for sectional door operation)

End-of-life stage:

- C2 Transport to waste processing
- C3 Waste processing for recycling
- 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

Use Phase:

For the use phase, it is assumed that the electric strike is used in the European Union, thus an European electricity grid mix is considered within this stage.

EoL:

In the End-of-Life phase, for all the materials which can be recycled, a recycling scenario with 100% collection rate was assumed.

3.4 Cut-off criteria

In the assessment, all available data from 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 PE INTERNATIONAL 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/.

PE INTERNATIONAL 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 for:

- Waste incineration of paper from packaging
- · Waste incineration of plastics
- · Waste incineration of electronic wastes

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).

Reference service life

Name	Value	Unit
Reference service life (500,000 cycles)	12	а

Operational energy use (B6)

Name	Value	Unit
Electricity consumption	2.16	kWh
Days per year in use	300	d
Hours per day in on mode	0.3	h
Power consumption in on mode in W	2	W
Hours per day in off mode	23.7	h
Power consumption in off mode in W	0	W

End of life (C1-C4)

Name	Value	Unit
Collected separately Zinc, Brass,		
Copper, Steel, Stainless Steel, Plastic,	0.794	kg
Eletronics, Electro mechanics		_
Reuse plastic parts	0.12	kg
Recycling Zinc, Brass, Copper, Steel,		
Stainless Steel, Electronics, Electro	0.676	kg
mechanics		

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

Tolovani Socilario illiorillationi		
Name	Value	Unit
Collected separately waste type	0.794	kg
(without packaging)		J
Recycling Zinc	2.7	%
Recycling Brass	0.1	%
Recycling Copper	0.5	%
Recycling Steel	78.5	%
Recycling Stainless steel	2.8	%
Recycling Electronics	0.8	%
Reuse plastic parts	14.8	%



5. LCA: Results

Results shown below were calculated using CML2001 – Apr. 2013 Methodology. The values for operational energy use (module B6) are presented per reference service life (12 years).

energy use (module B6) are presented per reference service life (12 years).																	
DESC	CRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLA														ARED)		
PROD	PRODUCT STAGE CONSTRUCTI ON PROCESS STAGE						USE STAGE								ЭE	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 demolition	Transport	Waste processing	Disposal	Reuse-	Recovery- Recycling- potential	
A1	A2	А3	A4	A5	B1	B2	В3	B4	B5	B6	B7	C1	C2	C3	C4		D
Х	Х	Х	MND	MND	MND	MND	MND	MND	MNI	D X	MND	MND	Х	Х	Χ		Х
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AP				ntial of la		<i>r</i> ater		SO2-E		1.8E-02	4.8E-		7E-06	8.3E-07		E-05	-7.9E-03
EP				ation pot al of tropo		zone		PO4)3 E		1.4E-03	2.7E-		.0E-06	4.7E-08		E-06	-5.9E-04
POCP			photoche	mical oxid	dants			[kg Ethen Eq.] 1.7E-03 2.9E-0					.8E-06	4.9E-08			-9.4E-04
ADPE ADPF				ntial for no ential for			s [k	[kg Sb Eq.] 2.5E-04 [MJ] 5.2E+01			1.4E-		.2E-11 .6E-02	2.4E-11 2.0E-03		E-08 E-01	-2.3E-04 -1.8E+01
	ADPF Abiotic depletion potential for fossil resources RESULTS OF THE LCA - RESOURCE USE														1.2E-01		
IKESU	LTS	OF TH	IE LCA	A - RES	SOUR	CE US	E: 1 p		f ele		•	43 S	eries				
Parar		OF TH	IE LC		SOUR(CE US	E: 1 p				•	43 S	eries C2	C3	С	4	D
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Parar PE PEN PEN PEN PEN PEN RS NR FN RESU Series Parar HVW RV	RE RM RT IRE RM IRT M SF SF V ILTS O N N N N N N N N N N N N N N N N N N	Rene Renewa Total us Non rer Non Tota	wable primable primable primable primable primable renewall I use of normal I use	Para rimary ene utiliz ewable p primary ble primary ble primary utiliz non rene reso of secor enewable n renewable n renewas se of net Para urdous w zardous pactive w	meter nergy as rgy resorcation energy a energy a energy a ary energ attion ewable p urces ndary ma e second ble second the second the second waste disp waste disp	energy reason as energy as maximary external dary fuel and ary fuel and ary fuel ondary fuel on a	carrier materia esources y carrier aterial nergy s uels	ECC O Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	t	5.8E+00 0.0E+00 5.8E+00 0.0E+00 6.2E+01 0.0E+00 6.2E+01 1.4E-01 0.0E+00 2.0E-02 CATEG A1-A3 4.3E-03 1.1E-01 4.0E-03	1.8E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.5E+0 0.0E+0 2.5E-0 2.6E-0	0 1.0 0 0.0 0 0.0 0 0.0 3 7.: 1 pic	C2	5.7E-04 - 3.1E-03 0.0E+00 0.0E+00 1.4E-06 electri C3 4.3E-07 1.0E-06 4.5E-07	1.3E 0.0E 0.0E 0.0E 6.8E c strik 2.6E 2.6E	E-03 E-01 ++00 ++00 E-04 E-04 E-06 -02 -06	-4.6E-01 -1.8E+01 -0.0E+00 0.0E+00 -3.7E-03 143 D 5.6E-04
Parar PE PEN PEN PEN PEN RS NR RS NR FN RESU Series Parar HV NH RV CF	RE RM RT IRE IRM IRT M BF SF W LLTS IS IND	Rene Renewa Total us Non rer Non Tota	wable produced was produced by the produced by	Para rimary ene utiliz ewable p primary ble primary ble prima utiliz non rene reso of secor enewable n renewable n renewable a renewable renewable se of net A — OU Para urdous w zardous pactive w	energy as reg resort action primary energy as reaction primary energy arry energy arry energy action ewable purces addry male second fresh was the displayment of the second action was the displayment of the second fresh was the sec	energy reason energy reason energy reason energy reason energy gy as marrimary e enterial dary fuel ondary fuel ondary fuel ondary fuel energy fuel en	carrier materia esources y carrier aterial nergy s uels	ECC O Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	t	5.8E+00 0.0E+00 5.8E+00 0.0E+00 6.2E+01 0.0E+00 6.2E+01 1.4E-01 0.0E+00 2.0E-02 CATEG A1-A3 4.3E-03 1.1E-01 4.0E-03 0.0E+00	1.8E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0	0 1.4 0 0.0 0 0.0 0 0.0 3 7.3 1 pic	C2	5.7E-04 - 3.1E-03 0.0E+00 0.0E+00 1.4E-06 electri C3 4.3E-07 1.0E-06 4.5E-07 0.0E+00	8.6E 1.3E 0.0E 0.0E 0.0E 0.0E 0.0E	E-03	-4.6E-01 -1.8E+01 -0.0E+00 0.0E+00 0.0E+00 -3.7E-03 143 D 5.6E-04 -4.1E-02 -4.8E-05
Parar PE PEN PEN PEN PEN SI RSS NR FI RESU Series Parar HW NHM RW CF	RE RM RT IRE IRM IRT W IRT W ILTS IN	Rene Renewa Total us Non rer Non Tota	wable produced was produced with the produced was produced by the produ	Para rimary ene utiliz ewable p primary ble primary ble primary ble primary control primary ble primary ble primary reso of secore enewable n renewable n renewable renewable renewable ardous w zardous w zardous pactive w mponeni aterials for	meter mergy as rgy resort action permany energy a reaction reactio	energy reason energy gy as material dary fuel and energy fuel endary fuel endary fuel energy fuel energy fuel energy fuel energy fuel en	carrier materia esources y carrier aterial nergy s uels	ECC O Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	t	5.8E+00 0.0E+00 5.8E+00 0.0E+00 6.2E+01 0.0E+00 6.2E+01 1.4E-01 0.0E+00 2.0E-02 CATEG A1-A3 4.3E-03 1.1E-01 4.0E-03 0.0E+00 0.0E+00	1.8E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0	1 2.4 0 0.6 0 0.6 0 0.6 0 0.6 3 7.3 1 pice 1	C2	5.7E-04 - 3.1E-03 0.0E+00 0.0E+00 1.4E-06 electri C3 4.3E-07 1.0E-06 4.5E-07 0.0E+00 6.8E-01	8.6E 1.3E 0.0E 0.0E 0.0E 0.0E 0.0E 0.0E 0.0E	E-03 E-03 E-01 E-01 E-00 E-04 E-06 E-02 E-06 E-00 E-00 E-000	-4.6E-01 -1.8E+01 0.0E+00 0.0E+00 0.0E+00 143 D 5.6E-04 -4.1E-02
Parar PE PEN PEN PEN SI RS NR FN RESU Series Parar HW NHV RV GF	RE RM RT IRE IRM IRT W BF SF W ILTS O RD IRD IRD IRD IRD IRD IRD IRD IRD IRD	Rene Renewa Total us Non rer Non Tota	wable produced was produced by the second se	Para rimary ene utiliz ewable p primary ble primary ble primary ble primary ble primary ble primary reso of secore enewable renewable reso of secore enewable renewable renewabl	meter mergy as rgy resorvation primary e energy a ary energy eation ewable p urces adary ma e second ble second fresh wa TPUT meter aste disp waste di vaste dis ts for re- or recycl nergy re	energy reason as energy reason as energy gy as matrimary energy fuel and any fuel and ary fuel and are are also and are are arrespondent as a fuel and are are arrespondent as a fuel and are arrespondent as a fuel are arrespondent arres	carrier materia esources y carrier aterial nergy s uels	ECCE O Unit [MJ] [MJ]	t	5.8E+00 0.0E+00 5.8E+01 0.0E+01 0.0E+01 0.0E+01 0.0E+01 0.0E+01 1.4E-01 0.0E+00 0.0E+02 CATEG A1-A3 4.3E-03 1.1E-01 4.0E-03 0.0E+00 0.0E+00 0.0E+00	1.8E+0 0.0E+0	1 2.1 0 0.0 0 0.0 0 0.0 0 0.0 3 7.1 1 pio	C2	5.7E-04 - 3.1E-03 0.0E+00 0.0E+00 1.4E-06 electri C3 4.3E-07 1.0E-06 4.5E-07 0.0E+00 0.0E+00	8.6E 1.3E 0.0E 0.0E 6.8E 2.6E 5.2E 0.0E 0.0E 0.0E	E-03 E-03 E-01 E-01 E-04 E-04 E-06 E-02 E-06 E-00 E-00 E-00 E-00 E-00 E-00 E-00	-4.6E-01 -1.8E+01 -0.0E+00 0.0E+00 0.0E+00 -3.7E-03 143 D 5.6E-04 -4.1E-02 -4.8E-05
Parar PE PEN PEN PEN PEN SI RSS NR FI RESU Series Parar HW NHM RW CF	RE RM RT IRE IRM IRT W SF SF V ILTS O VD VD VD RU ER ER	Rene Renewa Total us Non rer Non Tota	wable production was producted by the second	Para rimary ene utiliz ewable p primary ble primary ble primary ble primary control primary ble primary ble primary reso of secore enewable n renewable n renewable renewable renewable ardous w zardous w zardous pactive w mponeni aterials for	meter mergy as rgy resorvation primary e energy a ary energy ary ary energy ary ary ary ary ary ary ary ary ary ar	energy reason as energy as energy as energy as energy energy reason as energy reason as energy energy energy reason as energy energy energy reason as energy energy reason as energy energy energy energy reason as energy ener	carrier materia esources y carrier aterial nergy s uels	ECC O Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	t	5.8E+00 0.0E+00 5.8E+00 0.0E+00 6.2E+01 0.0E+00 6.2E+01 1.4E-01 0.0E+00 2.0E-02 CATEG A1-A3 4.3E-03 1.1E-01 4.0E-03 0.0E+00 0.0E+00	1.8E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0 0.0E+0	1 2.1 0 0.6 0 0.6 0 0.6 0 0.6 3 7.: 1 pic	C2	5.7E-04 - 3.1E-03 0.0E+00 0.0E+00 1.4E-06 electri C3 4.3E-07 1.0E-06 4.5E-07 0.0E+00 6.8E-01	8.6E 1.3E 0.0E 0.0E 0.0E 0.0E 0.0E 0.0E 0.0E	E-03 E-03 E-01 E-01 E-04 4 -06 -02 -06 ++00 ++00 ++00 -01	-4.6E-01 -1.8E+01 -0.0E+00 0.0E+00 0.0E+00 -3.7E-03 143 D 5.6E-04 -4.1E-02 -4.8E-05 -



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 phase (modules A1-A3) contributes between 58% and 100% 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 phase accounts for app. 100% - 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 phase, the main contribution for all the impact categories is the production of steel, with app. 40%, mainly due to the energy consumption on this process. Steel accounts with app. 78% 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.

To reflect the use phase (module B6), the energy consumption was calculated for reference service life (12 years) and included and. With exception of ozone depletion potential (ODP) (42%), it contributes up to 21% for all the other impact categories considered. This is a result of 0.3 hours of operation per day in on mode per 365 days in a year.

In the end-of-life phase, 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.

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DIN EN 14846:2008-11: Building hardware - Locks and latches - Electromechanically operated locks and striking plates - Requirements and test methods; German version EN 14846:2008

EN 12209

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EN 15804

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GaBi 6 2013

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

GaBi 6 2013D

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

OHSAS 18001

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UL 1034

UL 1034 Burglary-Resistant Electric Locking Mechanisms



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9. Annex

Results shown below were calculated using TRACI Methodology. The values for operational energy use (module B6) are presented per reference service life (12 years).

DESC	RIP	TION C	F THE	SYST	FM B	OUND	ARY (X = IN	CLU	IDF	D IN	I CA·I	MNI	D =	MOD	ULE N	OT D	FCL	ARFD)										
DEGC	ZIXII	i ion c		. 0101	LIVID	COND	AIX I (2	<u> </u>	OLC		ווע	LOA, I	VIIVE		IVICE	OLL IN	ים וט		EFITS AND										
PROD	UCT	CONSTRUCTI ON PROCESS STAGE						SE STAGE						END OF LIFE STAGE				BEY S	LOADS YOND THE SYSTEM JNDARYS										
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 demolition Transport		Transport	Waste processing	Disposal	Reuse-	Recovery- Recycling- potential											
A1	A2	А3	A4	A5	B1	B2	В3	B4	В5	5	B6	B7	C	1	C2	C3	C4		D										
Х	Χ	Х	MND	MND	MND	MND	MND	MND	MN	D	Х	MND	MN	1D	Χ	Х	Х		Х										
RESU	LTS	OF TH	IE LC/	4 - EN'	VIRON	MENT	AL IM	PACT	։ 1 բ	oiec	e of	electri	c st	rike	- 14	13 Serie	es												
Param	eter		P	aramete	r			Unit		A	1-A3	В6		c	2	C3	0	:4	D										
GW	Р		Global w	varming p	otential		[kg	CO ₂ -Eo	1.]	4.5	E+00	1.0E+	00	1.91	≣-03	1.8E-04	2.81	E-01	-1.8E+00										
ODI	0	Depletion		layer			[kg C	CFC11-E		1.0	E-09	7.5E-′	10	9.71	≣-15	1.3E-13	8.91	E-13	-7.4E-11										
AP EP		Acidific	cation pot	tential of nication p		water		SO ₂ -Ec	[.]		3E-02	4.6E-0			E-05	7.8E-07		E-05 E-06	-7.9E-03										
Smo		Grou	nd-level s			ential		g N-eq.] g O₃-eq.	1	_	0E-03 2E-01	1.9E-0	_		E-07 E-04	3.3E-08 7.1E-06	_	=-06 =-04	-4.0E-04 -1.1E-01										
Onic	9			Resources	•		Livi	[MJ]	1		E+00	8.3E-0			E-03	1.4E-04		E-02	-3.3E-01										
RESU	ILTS	OF Th	IE LC	4 - RE	SOUR	CE US	E: 1 p	iece of electric strike – 1																					
Parar	neter			Para	meter			Uni	t	A 1	-A3	В6		C	2	C3	С3 С		D										
PE	RE					energy		[MJ]	5.8	E+00	-		-		-		-	-										
PE	RM			utiliz	ation	urces as		[IVIJ]	0.0	≣+00	-		-		-	-		-										
PE	RT	Total us	se of ren	ewable p	orimary e	energy re	esources	[MJ]	5.8	≣+00	3.3E+0	00	1.0E	≣-03	5.7E-04	8.6	E-03	-4.6E-01										
PEN	IRE	Non re	newable	primary	energy a	as energ	y carrier	[MJ]	6.2	E+01	-					-		-										
PEN	IRM	Non	renewal		ary energ	gy as ma	terial	[MJ]	0.0	E+00	-			-	-		-	-										
PEN	IRT	Tota	I use of	non rene		rimary ei	nergy	[MJ]	6.2	E+01	1.8E+0)1	2.6	-02	3.1E-03	1.3	E-01	-1.8E+01										
S				of secor	ndary ma			[kg			E-01	0.0E+0		0.0E		0.0E+00	0.0E+0		0.0E+00										
RS NR						dary fuels		[MJ			E+00 E+00	0.0E+0		0.0E		0.0E+00		E+00 E+00	0.0E+00 0.0E+00										
F		0,		se of net			CIS	[m ³	_		E-02	8.2E-0		7.3		1.4E-06		E-04	-3.7E-03										
RESU Series		OF TH	IE LC	4 – OU	TPUT	FLOW	/S ANI	O WAS	STE	CA	TEG	ORIES	: 1	pie	ce of	electri	c stril	ke –	143										
Parar	neter			Para	meter			Uni	t	A1	-A3	В6		С	2	СЗ	C	:4	D										
HV	۷D		Hazardous waste disposed			Hazardous waste disposed		Hazardous waste disposed		Hazardous waste disposed			Hazardous waste disposed		Hazardous waste disposed			[kg]		4.3	E-03	2.5E-0	3	6.0E	-08	4.3E-07	9.21	≣-06	5.6E-04
NH	WD					isposed		[kg]		1.1	E-01	5.9E-0	3	3.3E	-06	1.0E-06	1.0E-06 2.6E-02		-4.1E-02										
RV	VD			oactive w		•		[kg]		4.0	E-03	2.6E-0	3	3.5E	-08	4.5E-07	5.21	≣-06	-4.8E-05										
CF	RU			mponen				[kg]		0.0	E+00	0.0E+0	0	0.0E	+00	0.0E+00	0.0	E+00	-										
MF	R			aterials f				[kg]		0.0	E+00	0.0E+0	0	0.0E	+00	6.8E-01	_	E+00	-										
ME				ials for e				[kg]			E+00	0.0E+0		0.0E		0.0E+00	_	+00	-										
EE			•	orted ele				[MJ	_		E+00	0.0E+0	_	0.0E		0.0E+00 0.0E+00		E-01 E+00	-										
E	: F		⊨xp	orted the	ermai en	ergy	[MJ	J	0.0E	E+00	0.0E+0	O	-																