ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

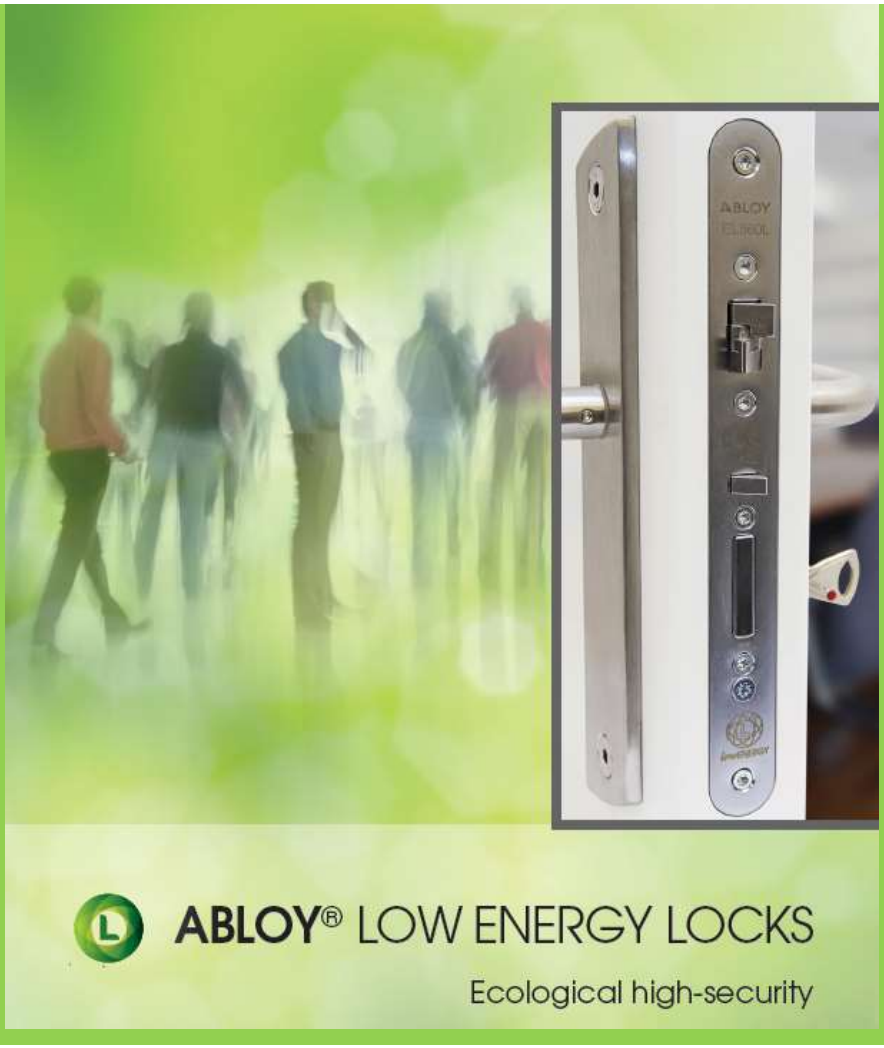
Owner of the Declaration	Abloy Oy
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-201600239-IBA1-EN
Issue date	16.11.2016
Valid to	15.11.2021

EL 560 handle function solenoid lock

Abloy Oy

Institut Bauen und Umwelt e.V.

www.bau-umwelt.com / https://epd-online.com



1. General Information

Abloy Oy

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

Declaration number
EPD-ASA-201600239-IBA1-EN

This Declaration is based on the Product Category Rules - PCR:
Locks and fittings, 07.2014
(PCR tested and approved by the independent expert committee)

Issue date
16.11.2016

Valid to
15.11.2021

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

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

EL 560 handle function solenoid lock

Owner of the Declaration
Abloy Oy
Wahlforssinkatu 20,
80100 Joensuu, Finland

Declared product / Declared unit
The declaration represents 1 EL560 handle function solenoid lock case series for solid doors consisting of:
- lock case (EL560 / EL560L / EL564 / EL564L / BL560)
- Striker plates
- Cable
- Accessories

Scope:
The EPD is based on the full lifecycle of the EL560 handle function solenoid lock case for solid doors, being representative for the products of this lock case series. Data collected from lock case manufacturing & assembly & packaging at Joensuu, Finland. 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 ☒ externally

Dr. Wolfram Trinius
(Independent verifier appointed by SVA)

2. Product

2.1 Product description

Product name: The solenoid lock EL560 (handle function) solenoid lock case series / battery operated lock BL560 for solid doors.

Product characteristic: a handle outside, inside handle or panic bar

Doors can be opened outside by handle when the electrical control is on (e.g. timer, reader, and push button). Inside handle opens the lock always.

2.2 Application

EL560 solenoid lock case series is designed for:

- standard wooden or metal doors
- interior doors, corridor doors
- medium or low traffic exit doors and access controlled doors
- fire rated doors - single or double leaf doors (separate or with rebated edge)

2.3 Technical Data

The technical data listed in the DoPs apply.

Other technical data

Name	Value	Unit
Dimensions	23,5*9,8*2,4	cm
Weight	1,72	kg
Supply voltage	3,6-24	VDC
Temperature (operating)	-10 - +55	°C
Temperature (peak)	-10 - +55	°C

2.4 Placing on the market / Application rules

For the placing on the market in the EU/EFTA (with the exception of Switzerland) the following legal provisions apply:

- Regulation (EU) No 305/2011
- EMC directive (2004/108/EC) - electromagnetic compatibility
- RoHS directive (2011/65/EU) - restriction of the use of certain hazardous substances in electrical and electronic equipment

The products need Declarations of Performance (DoP) taking into consideration

- /EN 14846:2008/

Building hardware – Locks and latches – Electromechanically operated locks and striking plates – Requirements and test methods

- /EN 179:2008/

Building hardware – Emergency exit devices operated by a lever handle or push pad, for use on escape routes – Requirements and test methods/

- /EN 1125:2008/

Building hardware – Panic exit devices operated by a horizontal bar, for use on escape routes – Requirements and test methods/

and the CE-marking.

The CE-marking for the product takes into account the Declaration of Performance in accordance with the CPR and the proof of conformity with the harmonised norms based on the other legal provisions described above.

For the application and use the respective national provisions apply.

2.5 Delivery status

Delivered in a box size 272x120x26 mm. Striking plates, spindle and cable have to be ordered separately.

2.6 Base materials / Ancillary materials

The average composition for EL 560 (handle function) solenoid lock is as following:

Component	Percentage in mass (%)
Steel	90.46
Stainless Steel	5.20
Electronic	1.94
Electro mechanics	0.65
Copper	0.19
Plastics	1.12
Zinc	0.14
Others	0.30
Total	**100.0**

2.7 Manufacture

The product is assembled and the main steel parts are manufactured at Abloy factories in Finland. Electronics, and electro-mechanics are provided by Tier-1 supplier in Finland, main stainless steel parts by Tier-1 supplier in Sweden and cable from Tier-1 supplier in India. The components come from processes like stamped steel, zinc and steel casting. Some of the components are surface treated with different coatings like zinc, while some are stainless steel.

2.8 Environment and health during manufacturing

Abloy Oy routinely monitors the environmental operations, GHG, energy, water, waste, VOC, surface treatment and H&S. Conducts periodic inspections, audits, and reviews to ensure that applicable standards are met and to evaluate the effectiveness of the Environmental Management program. Abloy Oy follows the waste hierarchy:

- Prevention
- Minimization
- Reuse
- Recycling
- Energy recovery
- Disposal.

The production site meets /OHSAS 18001/ and /ISO 14001/.

2.9 Product processing/Installation

EL560 solenoid lock series are distributed and installed by trained technicians; such as locksmiths or security technicians. Preparation of doors and frames are mainly conducted at the door manufacturer's production site.

2.10 Packaging

All packaging is fully recyclable. The packaging material is composed of cardboard and polyethylene film. 61% of the cardboard is made from recycled material.

Material	Percentage in mass (%)
Cardboard/paper	11.56
Plastics	11.56
Others (Polyethylene)	76.88
Total	**100.0**

2.11 Condition of use

Annual maintenance of double action bolt and trigger bolt to maintain low friction and secure latching is grease, applied to contact surfaces. Lock 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

The reference service life of 10 years is based on a typical installation of an EL560. The lock is tested to 200,000 cycles in accordance with /EN 14846/.

2.14 Extraordinary effects

Fire

The lock itself is not fire proof, but it is tested and approved to be used in fire doors (/EN14846/).

Water

Contains no substances that have an impact on water in case of flooding. Electric components and functionality may be jeopardized in the event of flooding.

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.

2.16 Disposal

The majority, by weight, of components are steel, stainless steel and electro-mechanics/electronics, which can be recycled. The lock case can be sent to a professional recycling service provider.

2.17 Further information

Abloy Oy
Wahlforssinkatu 20,
80100 Joensuu, Finland

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of EL 560 (handle function) solenoid lock as specified in Part B requirements on the EPD for Locks and fittings: (mechanical & electromechanical locks & fittings).

Declared unit

Name	Value	Unit
Declared unit	1.72 kg	1 piece of solenoid lock
Conversion factor to 1 kg	0.64787	-

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

The use stage:

- 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 loads and benefits or recycling potential from EOL and A5.

3.3 Estimates and assumptions

Transportation: Data on mode of transport and distances, as reported by suppliers were used for those materials and parts contributing more than 2% of total product mass. For parts and materials, contributing less than 2% to the total product mass, transport by road over an average distance of 500 km was assumed.

Use phase: For the use phase, it is assumed that the lock is used in the European Union, thus a European electricity grid mix is considered within this phase. According to the most representative scenario, the operating hours of the product are accounted for 8760 hours per year; the power consumption throughout the whole life-cycle is 3.067 kWh.

EoL: In the End-of-Life stage, 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 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 modelling 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 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 plastic
- Waste incineration of paper

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

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 treatment on site (Paper packaging)	0.02	kg
Output substances following waste treatment on site (Plastics packaging)	0.02	kg

Operational energy use (B6)

Name	Value	Unit
Electricity consumption*	3.0670	kWh
Days per year in use	365	d
Hours per day in on mode	0.101	h
Hours per day in stand-by mode	0.0025	h
Hours per day in idle mode	23.996	h
Power consumption on mode	7.992	W
Power consumption stand-by mode	0.48	W
Power consumption idle mode	0.0012	W

*Total energy consumed during the whole product life was calculated using following formula:

*(W_active_mode*h_active_mode+W_idle_mode*h_idle_mode+W_stand_by_mode*h_stand_by_mode)*Life_span*days_year*0.001*

Where:

- W_active_mode - Energy consumption in active mode in W
- h_active_mode - Operation time in active mode in hours
- W_idle_mode - Energy consumption in idle mode in W
- h_idle_mode - Operation time in idle mode in hours
- W_stand_by_mode - Energy consumption in stand-by mode in W
- h_stand_by_mode - Operation time in stand-by mode in hours
- Life_span - Reference service life of product
- days_year - Operation days per year
- 0.001 - Conversion factor from Wh to kWh.

Reference service life

Name	Value	Unit
Reference service life	10	a

End of life (C2-C4)

Name	Value	Unit
Collected separately Copper, Plastics, Stainless steel, Steel, Zinc, Electronic, Electro mechanics	1.53833	kg
Collected as mixed construction waste – construction waste for landfilling	0.00418	kg
Recycling Copper	0.0024	kg
Recycling Stainless Steel	0.0807	kg
Recycling Steel	1.39629	kg
Recycling Zinc	0.0021	kg
Recycling Electronic	0.03	kg
Recycling Electro mechanics	0.01	kg
Reuse Plastic Parts	0.01727	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	1.71551	kg
Recycling Copper	0.14	%
Recycling Stainless Steel	4.68	%
Recycling Steel	81.39	%
Recycling Zinc	0.12	%
Recycling Electronic	1.75	%
Recycling Electro mechanics	0.58	%
Reuse Paper	1.17	%
Reuse Plastics	2.17	%
Collected as mixed construction waste – construction waste for landfilling	8	%

5. LCA: Results

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

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece EL 560 handle function solenoid lock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	6.19E+00	1.00E-01	2.17E-01	1.46E+00	1.14E-01	3.32E-03	8.97E-02	-2.43E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.70E-10	4.81E-13	9.91E-13	9.97E-10	5.46E-13	2.28E-12	2.72E-13	-2.82E-11
AP	Acidification potential of land and water	[kg SO_2-Eq.]	2.84E-02	4.60E-04	4.94E-05	6.87E-03	5.22E-04	1.57E-05	2.29E-05	-1.04E-02
EP	Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	2.90E-03	1.05E-04	8.62E-06	3.87E-04	1.19E-04	8.83E-07	1.51E-06	-7.61E-04
POCP	Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	2.90E-03	-1.48E-04	3.51E-06	4.08E-04	-1.68E-04	9.32E-07	1.10E-06	-1.37E-03
ADPE	Abiotic depletion potential for non-fossil resources	[kg Sb Eq.]	2.15E-04	3.79E-09	3.91E-09	2.02E-07	4.30E-09	4.60E-10	5.10E-09	-9.80E-05
ADPF	Abiotic depletion potential for fossil resources	[MJ]	7.71E+01	1.39E+00	6.07E-02	1.65E+01	1.57E+00	3.78E-02	3.83E-02	-2.35E+01

RESULTS OF THE LCA - RESOURCE USE: One piece EL 560 handle function solenoid lock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	8.08E+00	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	8.08E+00	5.46E-02	5.66E-03	4.74E+00	6.21E-02	1.08E-02	2.66E-03	1.30E-01
PENRE	Non-renewable primary energy as energy carrier	[MJ]	8.11E+01	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	8.11E+01	1.39E+00	7.12E-02	2.59E+01	1.58E+00	5.92E-02	4.22E-02	-2.26E+01
SM	Use of secondary material	[kg]	2.62E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Use of renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	Use of non-renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	Use of net fresh water	[m^3]	2.95E-02	3.85E-05	6.31E-04	1.17E-02	4.38E-05	2.67E-05	2.03E-04	-2.68E-03

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece EL 560 handle function solenoid lock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	2.78E-03	3.17E-06	4.89E-06	3.59E-03	3.60E-06	8.20E-06	2.55E-06	1.41E-03
NHWD	Non-hazardous waste disposed	[kg]	1.95E-01	1.75E-04	5.44E-03	8.37E-03	1.99E-04	1.91E-05	1.79E-02	-5.84E-02
RWD	Radioactive waste disposed	[kg]	1.61E-03	1.82E-06	4.16E-06	3.73E-03	2.07E-06	8.52E-06	1.55E-06	3.72E-04
CRU	Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	Materials for recycling	[kg]	0.00E+00	0.00E+00	1.53E-01	0.00E+00	0.00E+00	1.48E+00	0.00E+00	0.00E+00
MER	Materials for energy recovery	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	Exported electrical energy	[MJ]	0.00E+00	0.00E+00	2.74E-01	0.00E+00	0.00E+00	0.00E+00	1.78E-01	0.00E+00
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	7.74E-01	0.00E+00	0.00E+00	0.00E+00	4.88E-01	0.00E+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 76% and 100% to the overall results for all the environmental impact assessment categories hereby considered, except for the depletion potential of the stratospheric ozone layer (ODP), for which the contribution from the production stage accounts for app. 15%. Stainless steel and steel accounts in total with approx. 95 % 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 stage (module B6), the energy consumption was included and it has a contribution for all the impact assessment categories considered - between 0% and 19%, with the exception of for the depletion potential of the stratospheric ozone layer (ODP) (85%). This impact category describes the reduction of the global amount of non-renewable raw materials. This is a result of almost 24 h of operation in idle mode per day and 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

PCR Part A
Institut Bauen und Umwelt e.V., Berlin (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

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

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

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

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/

EMC directive (2004/108/EC)
Electromagnetic compatibility

RoHS directive (2011/65/EU)
Restriction of the use of certain hazardous substances in electrical and electronic equipment

EN 14846
EN 14846:2008
Building hardware — Locks and latches — Electromechanically operated locks and striking plates — Requirements and test methods

EN 179
EN 179:2008
Building hardware — Emergency exit devices operated by a lever handle or push pad, for use on escape routes — Requirements and test methods

EN 1125
EN 1125:2008
Building hardware — Panic exit devices operated by a horizontal bar, for use on escape routes — Requirements and test methods

OHSAS 18001
OHSAS 18001 Specifies requirements for an OH&S management system to help an organization develop and implement a policy and objectives, which take into account legal requirements and information about OH&S risks. It applies to all types and sizes of organizations and accommodates diverse geographical, cultural and social conditions.

9. Annex

Results shown below were calculated using TRACI 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 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**	**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	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece EL 560 handle function solenoid lock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	6.19E+00	1.00E-01	2.17E-01	1.46E+00	1.14E-01	3.32E-03	8.97E-02	-2.43E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.82E-10	5.11E-13	1.05E-12	1.06E-09	5.81E-13	2.42E-12	2.90E-13	-3.07E-11
AP	Acidification potential of land and water	[kg SO_2-Eq.]	2.94E-02	6.01E-04	5.99E-05	6.50E-03	6.83E-04	1.48E-05	2.66E-05	-1.03E-02
EP	Eutrophication potential	[kg N-eq.]	2.07E-03	4.24E-05	3.45E-06	2.77E-04	4.82E-05	6.32E-07	7.52E-07	-5.56E-04
Smog	Ground-level smog formation potential	[kg O_3-eq.]	4.73E-01	1.24E-02	1.40E-03	5.89E-02	1.41E-02	1.34E-04	1.68E-04	-1.37E-01
Resources	Resources – resources fossil	[MJ]	4.83E+00	1.99E-01	7.12E-03	1.18E+00	2.27E-01	2.69E-03	4.01E-03	-5.38E-02

RESULTS OF THE LCA - RESOURCE USE: One piece EL 560 handle function solenoid lock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	8.08E+00	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	8.08E+00	5.46E-02	5.66E-03	4.74E+00	6.21E-02	1.08E-02	2.66E-03	1.30E-01
PENRE	Non-renewable primary energy as energy carrier	[MJ]	8.11E+01	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	8.11E+01	1.39E+00	7.12E-02	2.59E+01	1.58E+00	5.92E-02	4E-02	-2.26E+01
SM	Use of secondary material	[kg]	2.62E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Use of renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	Use of non-renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	Use of net fresh water	[m^3]	2.95E-02	3.85E-05	6.31E-04	1.17E-02	4.38E-05	2.67E-05	2.03E-04	-2.68E-03

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One pc. EL 560 handle lock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	2.78E-03	3.17E-06	4.89E-06	3.59E-03	3.60E-06	8.20E-06	2.55E-06	1.41E-03
NHWD	Non-hazardous waste disposed	[kg]	1.95E-01	1.75E-04	5.44E-03	8.37E-03	1.99E-04	1.91E-05	1.79E-02	-5.84E-02
RWD	Radioactive waste disposed	[kg]	1.61E-03	1.82E-06	4.16E-06	3.73E-03	2.07E-06	8.52E-06	1.55E-06	3.72E-04
CRU	Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
MFR	Materials for recycling	[kg]	0.00E+00	0.00E+00	1.53E-01	0.00E+00	0.00E+00	1.48E+00	0.00E+00	-
MER	Materials for energy recovery	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
EEE	Exported electrical energy	[MJ]	0.00E+00	0.00E+00	2.74E-01	0.00E+00	0.00E+00	0.00E+00	1.78E-01	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	7.74E-01	0.00E+00	0.00E+00	0.00E+00	4.88E-01	-

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

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@bau-umwelt.com
Web **www.bau-umwelt.com**

Programme holder
Institut Bauen und Umwelt e.V.
Panoramastr 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 – 3087748 - 29
Mail info@bau-umwelt.com
Web **www.bau-umwelt.com**

Author of the Life Cycle Assessment
thinkstep AG
Hauptstraße 111-113
70771 Leinfelden-Echterdingen
Germany

Tel +49 (0)711 341817-0
Fax +49 (0)711 341817-25
Mail info@thinkstep.com
Web **www.thinkstep.com**

Owner of the Declaration
Wahlforssinkatu 20,
80100 Joensuu, Finland

Tel +358 20 599 2501
Web www.abloy.com
Mail **export.sales@abloy.com**