ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	**ASSA ABLOY Schweiz AG**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20180188-IBC1-EN
Issue date	20.12.2018
Valid to	19.12.2023

ASSA ABLOY mFliplock drive 25544PE-SV

ASSA ABLOY Schweiz AG

Institut Bauen und Umwelt e.V.

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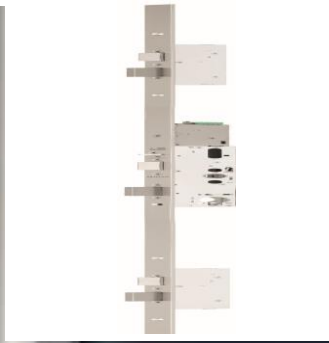

1. General Information

ASSA ABLOY Schweiz AG	mFliplock drive 25544PE-SV
Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	**Owner of the declaration** ASSA ABLOY Schweiz AG Laufenstrasse 172 4245 Kleinlützel, CH
Declaration number EPD-ASA-20180188-IBC1-EN	**Declared product / declared unit** The declaration represents 1 motorized lock mFliplock of the following type: mFliplock drive 25544PE-SV. It includes the following components of the lock: lock body, latches, bolt, motor, electronic and all mounting hardware
This declaration is based on the product category rules: Building Hardware products, 02.2016 (PCR checked and approved by the SVR)	**Scope:** This declaration and the corresponding LCA study are relevant to mFliplock drive. The primary manufacturing processes are performed by external suppliers and the final manufacturing processes and assembly for the lock components occur at the manufacturing factory in Kleinlützel. The owner of the declaration shall be liable for the underlying information and evidence; IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.
Issue date 20.12.2018	
Valid to 19.12.2023	**Verification** The standard /EN 15804/ serves as the core PCR Independent verification of the declaration and data according to /ISO 14025:2010/ ☐ internally ☒ externally
Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)	
Hans Peters (Head of Board IBU)	Dr. Wolfram Trinius (Independent verifier appointed by SVR)

2. Product

2.1 Product description / Product definition

The mFliplock drive, is a motorised multipointlock of the Fliplock - series. It has a reversible stainless-steel latch, independent non-handed stainless steel deadlatch. It´s main function is to secure doors in commercial buildings.

The mFliplock drive is available with 2 different electromechanical locking functions, optional deadbolt and multiple lever options.

The standards that can be applied to ASSA ABLOY mFliplock are:

- EN1627-1630,
- DIN18251-3,
- EN179,
- EN1125,
- DIN EN1634

Meets or exceeds impact requirements of resistance class 3 (RC3) (EN1627-1630).

2.2 Application

The locks are designed for single or double leaf doors. The locks are typically installed in commercial buildings, such as

- Commercial campuses
- Colleges
- Detention centers
- Dormitories
- Hospitals
- Warehouses
- Psychiatric wards

2.3 Technical Data

The following table lists the technical properties of the product which are according to the classification in EN 12209 and EN15685:

Classes	Required technical characteristics	Defined grades
1	Category of use	3
2	Durability	S
3	door mass and closing force	3

4	Suitability for use in fire resisting and/or smoke control door set	1
5	Safety	0
6	Corrosion resistance	G
7	Security - burglar resistance	7
8	Key identification of lever locks	H

2.4 Delivery status

The mFliplock is delivered as a complete unit, inclusive of lockbody. Delivered in a box size (1993mmx162mmx30mm).

2.5 Base materials / Ancillary materials

The composition of the mFliplock drive in percentage (%) of total mass per unit is, as follows:

Component	Percentage in mass (%)
Electromechanics	5,371
Plastics	0,103
Stainless steel	43,070
Steel	51,454
Total	100,000

2.6 Manufacture

The primary manufacturing processes are made by Tier 1 suppliers (mainly located in China and for electro mechanic components in Germany). The components have origin in processes such as stamped steel, turning, zinc and steel casting. The final manufacturing processes for door closer units occur at Assa Abloy in Kleinlützel.

The factory of Kleinlützel has a Quality Management system certified according to ISO 9001:2008.

2.7 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, GHG, 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, and the effectiveness of Environment Management program is evaluated.
• Code of Conduct covers human rights, labor practices and decent work. The Management of ASSA ABLOY is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
• Preparation and manufacturing conditions in the factory of Kleinlützel do not require special health and safety measures. Standard health and safety measures (work gloves, hearing protection, safety shoes, dust mask when sanding and milling, dust extraction, etc.) are observed where appropriate.
• Water and soil contamination does not occur, and all production related waste is processed internally in the appropriate manner.
• Any waste metals during machining are separated and recycled.

2.8 Product processing/Installation

mFliplocks are distributed through, and installed by trained technicians, such as locksmiths or security technicians. Preparation of doors and frames are conducted at the door manufacturer's production site.

2.9 Packaging

mFliplocks are packed in cardboard packaging. Packaging includes two paper sheets (installation instruction and drilling template) – all of which are fully recyclable. The packaging does not return to the manufacturer meaning it stays at the site.

Material	Value (%)
Paper	100,00
Total	**100,00**

2.10 Condition of use

Annual inspection is recommended in order to guarantee the correct functionality of the product. 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.

2.11 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.

2.12 Reference service life

The reference service life of 10 years is based on a typical installation of a mFliplock drive as a security lock operated when the facilities are to be closed or opened. If operations per day exceeds that typical wear the locks are exposed to the life time is limited to 1,000,000 cycles in accordance with EN1627-1630, DIN18251-3, EN179, EN1125, DIN EN1634
Influences on ageing when applied in accordance with the rules of technology...

2.13 Extraordinary effects

Fire

mFliplock drive is suitable for use in fire and smoke protection doors and tested according to EN1634-1.

Fire protection

Name	Value
Building material class	A1
Burning droplets	d0
Smoke gas development	s1

Water

The product does not contain any substances that could be released and have an additional environmental impact on water in case of flood.

Mechanical destruction

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

2.14 Re-use stage
The product can be re-used during the reference service life and it can be moved from one application to another.

2.15 Disposal
The product can be mechanically dissembled to separate the different materials. The majority, by weight, of components are steel and stainless steel which can be recycled. The plastic components can be used for energy recovery in an incineration process. The lock can either be sent back to Assa Abloy in Kleinlützel for recycling or to a professional recycling service provider. No disposal is foreseen for the product nor for the corresponding packaging.

EWC/ 17 04 05 iron and steel
EWC/ 17 02 03 plastic .
EWC/ 17 04 metals (including their alloys)

EWC/ 15 01 01 paper and cardboard packaging

2.16 Further information
ASSA ABLOY Schweiz AG
Laufenstrasse 172
4245 Kleinlützel - CH
www.msl-lock.com
www.assabloy.com

3. LCA: Calculation rules

3.1 Declared Unit
The declaration represents 1 motorized lock mFliplock of the following type: mFliplock drive 25544PE-SV.
It includes the following components of the lock: lock body, latches, bolt, motor, electronic and all mounting hardware.

Declared unit

Name	Value	Unit
Mass (without packaging)	2,73	kg
Mass packaging (paper)	1,08	kg
Conversion factor to 1 kg	0,36541427	-
Declared unit for hardware systems	1	Piece

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

C1-C4 End-of-life stage:
- C2 – Transport to waste processing,
- C3 – Waste processing for recycling and
- C4 – Disposal (landfill, waste for incineration).

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.

Module D:
- Declaration of all benefits and loads.

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. In case of unknown transport distances 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 stage:
For the use stage, it is assumed that the motorized lock mFliplock is used within EU-27, thus a EU-27 electricity grid mix is considered within this stage.

EoL:
In the End-of-Life stage, for all the materials which can be recycled, a recycling scenario with 100% collection rate was assumed. The country where EoL takes place is EU-27. Furthermore, a transport distance by truck of 100 km has been assumed in the model.

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), and electric power consumption - including material and energy flows contributing less than 1% of mass or energy (if available). In case any 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 8.7.0.18 Software System for Life Cycle Engineering,
developed by thinkstep AG, is used /GaBi 8.7.0.18 2018/. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation /GaBi 8.7.0.18:2018b/.
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 8.7.0.18 software database.

3.7 Period under review

The period under review is 2017/18 (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 (packaging)

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. GaBi 8.7.0.18 serves as background database for the calculation.

4. LCA: Scenarios and additional technical information

The following technical scenario information is required 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).

Transport to the building site (A4)

Name	Value	Unit
Liters of fuel	39,4	l/100km
Transport distance	180	km
Capacity utilisation (including empty runs)	85	%

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (paper packaging)	1,08	kg

Reference service life

Name	Value	Unit
Reference service life (according to ISO 15686-1, -2, -7 and -8)	10	a

Operational energy use (B6) and Operational water use (B7)

Name	Value	Unit
Electricity consumption per RSL (10 years, 365 days per year)	441,626	kWh
Hours per day in on mode	0,01	h
Hours per day in stand-by mode	23,99	h
Power consumption – on mode	8,4	W
Power consumption – stand – by mode	5,04	W

End of life (C1-C4)

Name	Value	Unit
Collected separately (Electromechanics, Plastics, Stainless, Steel, Zinc)	2,7366	kg
Incineration of plastic parts	0,0028	kg
Recycling Stainless, Steel, Zinc, Electromechanics	2,7338	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	3,81	kg
Recycling Plastic	0,07	%
Recycling Stainless steel	30,88	%
Recycling Steel	36,89	%
Recycling Electromechanics	3,85	%
Incineration of Plastic parts (not packaging)	0,074	%
Incineration of packaging (paper) (from A5)	28	%

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 BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	X	X	MND	MND	MND	MND	MND	X	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 motorized lock mFliplock

Parameter	Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	1,51E+01	3,27E-02	1,53E+00	2,10E+02	1,30E-02	2,33E-02	9,59E-02	-3,11E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	3,48E-09	1,56E-13	7,00E-12	1,44E-07	6,23E-14	1,59E-11	2,69E-13	-2,54E-10
AP	Acidification potential of land and water	[kg SO_2-Eq.]	1,06E-01	1,50E-04	3,49E-04	9,89E-01	5,96E-05	1,10E-04	4,56E-05	-2,35E-02
EP	Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	8,15E-03	3,42E-05	6,09E-05	5,57E-02	1,36E-05	6,18E-06	1,05E-05	-1,43E-03
POCP	Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	6,64E-03	-4,82E-05	2,47E-05	5,88E-02	-1,92E-05	6,52E-06	3,44E-06	-1,46E-03
ADPE	Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	3,84E-03	1,23E-09	2,76E-08	2,90E-05	4,91E-10	3,22E-09	2,82E-08	-1,35E-03
ADPF	Abiotic depletion potential for fossil resources	[MJ]	1,93E+02	4,51E-01	4,29E-01	2,38E+03	1,80E-01	2,64E-01	7,67E-02	-3,51E+01

RESULTS OF THE LCA - RESOURCE USE: 1 motorized lock mFliplock

Parameter	Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	5,74E+01	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	5,74E+01	1,78E-02	4,00E-02	6,82E+02	7,08E-03	7,57E-02	1,00E-02	-2,09E+00
PENRE	Non-renewable primary energy as energy carrier	[MJ]	2,38E+02	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	2,38E+02	4,52E-01	5,02E-01	3,73E+03	1,80E-01	4,14E-01	9,12E-02	-3,76E+01
SM	Use of secondary material	[kg]	3,85E+00	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]	1,09E-01	1,25E-05	4,45E-03	1,68E+00	4,99E-06	1,87E-04	4,69E-04	-1,56E-02

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 motorized lock mFliplock

Parameter	Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	2,48E-02	1,03E-06	3,45E-05	5,17E-01	4,10E-07	5,74E-05	1,52E-05	-7,27E-04
NHWD	Non-hazardous waste disposed	[kg]	2,66E+00	5,69E-05	3,84E-02	1,20E+00	2,27E-05	1,34E-04	3,69E-02	-3,20E-01
RWD	Radioactive waste disposed	[kg]	1,77E-02	5,92E-07	2,94E-05	5,38E-01	2,36E-07	5,97E-05	5,77E-06	-9,99E-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	1,08E+00	0,00E+00	0,00E+00	2,73E+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	1,93E+00	0,00E+00	0,00E+00	0,00E+00	1,35E-02	0,00E+00

EET	Exported thermal energy	[MJ]	0,00E+00	0,00E+00	5,46E+00	0,00E+00	0,00E+00	0,00E+00	3,70E-02	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 2,36% and 12,74% to the overall results for all the environmental impact assessment categories hereby considered (except abiotic depletion potential (ADPE); Abiotic depletion potential (ADPE), for which the contribution of the production stage (modules A1-A3) accounts for approx. 99,25% - describes the reduction of the global amount of non-fossil resources, 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 and stainless steel mainly due to the energy consumption. Steel accounts with approx. 51,45% and stainless steel with approx. 43,07% 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 major contribution for all the impact assessment categories considered – between 87,06% - 97,62%, with the exception of ADPE (0,75%). This is a result of 23,99 hours of operation in standby mode (5,04 W), 0,01 hours in on mode (8,4 W), 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

DIN 18251-3:2002-11
Locks - Mortise locks - Part 3: Mortise locks as multipoint locks

DIN EN 15685:2011-04 – Entwurf
Building hardware - Multipoint locks and their locking plates - Requirements and test methods; German version prEN 15685:2011

DIN EN 12209:2016-10
Building hardware - Mechanically operated locks and locking plates - Requirements and test methods; German version EN 12209:2016

/EN 15804/
/EN 15804:2012-04+A1 2013/, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

/EN1634-1/
/Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware. Fire resistance test for door and shutter assemblies and openable windows.

/EN179
/Escape

/EN1125 /
/Escape Pushbars

EN1627-1630
Resistence class 3

GaBi 8.7.0.18:2018
Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Echterdingen, 1992-2018

GaBi 8.7.0.18:2018b
Documentation of GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Echterdingen, 1992-2013. http://documentation.gabi-software.com/

IBU 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. March 2018
www.ibu-epd.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
Building Hardware products (02.2016) www.ibu-epd.com

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

/ISO 9001:2015/
Quality management systems - -- Requirements with guidance for us

/OHSAS 18001:2007/
Occupational Health and Safety Assessment Series

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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: 1 motorized lock mFliplock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	1,51E+01	3,27E-02	1,53E+00	2,10E+02	1,30E-02	2,33E-02	9,59E-02	-3,11E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	3,72E-09	1,66E-13	7,44E-12	1,53E-07	6,63E-14	1,69E-11	2,86E-13	-2,96E-10
AP	Acidification potential of land and water	[kg SO_2-Eq.]	1,04E-01	1,95E-04	4,22E-04	9,36E-01	7,78E-05	1,04E-04	5,80E-05	-2,26E-02
EP	Eutrophication potential	[kg N-eq.]	6,38E-03	1,38E-05	2,43E-05	3,99E-02	5,50E-06	4,42E-06	4,68E-06	-6,92E-04
Smog	Ground-level smog formation potential	[kg O_3-eq.]	1,26E+00	4,02E-03	9,86E-03	8,48E+00	1,60E-03	9,41E-04	1,79E-03	-2,59E-01
Resources	Resources – resources fossil	[MJ]	1,40E+01	6,48E-02	5,03E-02	1,70E+02	2,58E-02	1,88E-02	7,51E-03	-2,19E+00

RESULTS OF THE LCA - RESOURCE USE: 1 motorized lock mFliplock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	5,74E+01	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	5,74E+01	1,78E-02	4,00E-02	6,82E+02	7,08E-03	7,57E-02	1,00E-02	-2,09E+00
PENRE	Non-renewable primary energy as energy carrier	[MJ]	2,38E+02	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	2,38E+02	4,52E-01	5,02E-01	3,73E+03	1,80E-01	4,14E-01	9E-02	-3,76E+01
SM	Use of secondary material	[kg]	3,85E+00	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]	1,09E-01	1,25E-05	4,45E-03	1,68E+00	4,99E-06	1,87E-04	4,69E-04	-1,56E-02

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 motorized lock mFliplock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	2,48E-02	1,03E-06	3,45E-05	5,17E-01	4,10E-07	5,74E-05	1,52E-05	-7,27E-04
NHWD	Non-hazardous waste disposed	[kg]	2,66E+00	5,69E-05	3,84E-02	1,20E+00	2,27E-05	1,34E-04	3,69E-02	-3,20E-01
RWD	Radioactive waste disposed	[kg]	1,77E-02	5,92E-07	2,94E-05	5,38E-01	2,36E-07	5,97E-05	5,77E-06	-9,99E-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	1,08E+00	0,00E+00	0,00E+00	2,73E+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	1,93E+00	0,00E+00	0,00E+00	0,00E+00	1,35E-02	-
EET	Exported thermal energy	[MJ]	0,00E+00	0,00E+00	5,46E+00	0,00E+00	0,00E+00	0,00E+00	3,70E-02	-

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