ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	ASSA ABLOY
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20150227-IBA1-EN
Issue date	21.08.2015
Valid to	20.08.2020

Door Closer – DC860 series

ASSA ABLOY

Institut Bauen und Umwelt e.V.

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

ASSA ABLOY

1. General Information

ASSA ABLOY	Door Closer – DC860Series
Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	**Owner of the Declaration** Abloy Oy Wahlforssinkatu 20, 80100 Joensuu, Finland
Declaration number EPD-ASA-20150227-IBA1-EN	**Declared product / Declared unit** The declaration represents one concealed Cam-Motion® door closer DC860, consisting of the following items: - A closer body - A concealed guide rail - Accessories
This Declaration is based on the Product Category Rules: Locks and fittings, 07.2014 (PCR tested and approved by the independent expert committee (SVR))	**Scope:** This declaration and its LCA study are relevant to ASSA ABLOY DC860 door closers. 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 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.
Issue date 21.08.2015	**Verification** The CEN Standard EN 15804 serves as the core PCR Independent verification of the declaration and data according to ISO 14025 ☐ internally ☒ externally
Valid to 20.08.2020	
Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)	
Dr.-Ing. Burkhart Lehmann (Managing Director IBU)	Dr. Wolfram Trinius (Independent verifier appointed by SVR)

2. Product

2.1 Product description

Product name: DC860 concealed Cam-Motion® door closers.

Product characteristic: ASSA ABLOY's door closers are ideal for a wide range of situations – from private homes to the commercial or public sector and for heavy or lightweight doors. Cam-Motion® door closers help to save energy in all seasons, optimizing the thermal efficiency of the door opening. The modular design simplifies planning, while the intelligent setting adjustment and installation features ensure easy installation. The door closer range is a joint development between companies in the ASSA ABLOY Group.
The product is characterized by:

- CE mark
- Cam-Motion® technology, which reduces counter-pressure when opening the door, making it easier to handle
- Fulfillment of barrier-free building requirements (Equality Act/CEN TR 15894)
- Concealed Cam-Motion® door closers prefers esthetic advantages for every solutions
- Adjustable closing force and two closing ranges
- Thermodynamic valves for consistent performance
- Different spindle extensions
- Wide range of accessories

2.2 Application

The ASSA ABLOY Cam-Motion concealed door closer DC860 can be used – from private to commercial and public sectors both light and heavy, such as:

- Fire & smoke protection and standard doors
- For interior doors
- For exterior doors

2.3 Technical Data

The declared door closer has following technical specifications and is applicable to the following door technical data with reference to the test standard.

Technical data

Name	Value
Adjustable closing force	EN 1-5
Door width up to	1250 mm
Fire and smoke protections	Yes
DIN door swing directions	Left / right handed
Closing speed	Variable between 120° - 7°
Latching speed	Variable between 7° - 0°
Backcheck	Variable above 70°
Opening angle	Ca. 120°
Weight	2.0 kg
Height	54 mm
Depth	40 mm
Length	230 mm
Fire and smoke protection	Yes
Certified in compliance with	EN1154
CE marking for building products	Yes

2.4 Placing on the market / Application rules

For the placing on the market in the EU/EFTA (with the exception of Switzerland) the Regulation (EU) No 305/2011 applies. The products need a Declaration of Performance taking into consideration the /*EN 1154:1996/A1:2002/AC:2006 Building hardware — Controlled door closing devices — Requirements and test methods*/ and the CE-marking.
DC860 and relevant accessories are certified according to these standards.
For the application and use of the products the respective national provisions apply.

2.5 Delivery status

Door closer units and arms are delivered ready for installation in separate packages.
The door closer unit including the packaging has the following dimensions: 368mm (l) x 70mm (h) x 45mm (w)
The guide rail arm packaging dimensions: 518mm x 35mm x 33mm.

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 ASSA ABLOY DC860, including the guide rail arm is as follows:

Component	Percentage in mass (%)
Aluminium	34.44
Brass	0.27
Plastics	1.63
Steel	57.13
Zinc	1.64
Other	4.89
Total	100.0

2.7 Manufacture

The primary manufacturing processes are made by Tier - 1 suppliers and the final manufacturing processes for door closer units occur at the factory in Joensuu, Finland.
Manufacturing of the concealed door closer unit consists of machining, aluminum profile extruding, die casting, component manufacturing (springs, bearings, O-rings). Final manufacturing process includes assembly, testing, painting, and packing of the door closer.
Arms are processed in extruding and/or cutting, welding, painting and assembly steps. The factory of Joensuu has a certification of Quality Management system in accordance with ISO 9001:2008.

Offcuts and scraps during the manufacturing process are directed to a recycling unit.

Waste codes according to European Waste Catalogue and Hazardous Waste List - Valid from 1 January 2002:
WC 12 01 01 Ferrous metal filings and turnings
EWC 12 01 03 Non-ferrous metal filings and turnings
EWC 08 02 01 Waste coating powders.

2.8 Environmental 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 the environmental management program is evaluated.

• 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 Joensuu (Abloy Oy) has certification of Environmental Management to /ISO 14001:2004/ and Occupational Health and Safety to /OHSAS 18001:2007/.

• The factory of Joensuu strictly follows the waste hierarchy:

- Prevention
- Minimization
- Reuse
- Recycle
- Energy recovery
- Disposal

• 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

ASSA ABLOY DC860 concealed door closers are distributed through and installed by trained installation technicians, such as locksmiths, carpenters etc. adhering to local/national standards and requirements.

2.10 Packaging

ASSA ABLOY DC860 concealed door closers are packed in cardboard packaging. Packaging includes two paper sheets (installation instruction and drilling template) – all of which are fully recyclable.

80% of carton is made from recycled material
100% of paper documents are made from recycled material.

Component	Percentage in mass (%)
Cardboard/paper	100.0
Total	100.0

All materials incurred during installation are directed to a recycling unit.
Waste codes according to European Waste Catalogue and Hazardous Waste List - Valid from 1 January 2002:
EWC 15 01 01 paper and cardboard packaging.

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 emissions potential. No damage to health or damage is expected under normal use corresponding to the intended use of the product.

2.13 Reference service life

Door closer units are normally installed by trained technicians. In any case the installation must be done in line with instructions provided by the manufacturer. ASSA ABLOY DC860 were developed to comply with EN1154 standard and quality requirements. The typical life time of a product is 15-20 years, dependent on frequency of cycles.

2.14 Extraordinary effects

Fire

ASSA ABLOYDC860 are tested for usage in fire and smoke protection doors according to EN1634-1.

Water

Door closer includes hydraulic oil and is designed for conventional use, is 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 following possibilities arise with reference to the material composition of the door closer.
Re-use
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 is aluminium alloy, steel which can be recycled. The plastic components can be used for energy recovery within a waste incineration process.
Waste codes according to European Waste Catalogue and Hazardous Waste List - Valid from 1 January 2002:
EWC 16 02 13* discarded equipment containing hazardous components (2) other than those mentioned in 16 02 09 to 16 02 12
EWC 17 02 01 wood
EWC 17 02 03 plastic
EWC 17 04 01 copper, bronze, brass
EWC 17 04 02 aluminium
EWC 17 04 05 iron and steel
EWC 17 04 11 Cables with the exception of those outlined in 17 04 10.

2.16 Disposal

No disposal is foreseen for the product nor for the corresponding packaging.

2.17 Further information

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www.abloy.com

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of door closer DC860 Series as specified in Part B requirements on the EPD PCR Locks and fittings.

Declared unit

Name	Value	Unit
Declared unit	1	One piece of door closer
Conversion factor to 1 kg	0.457	-

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

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 treatment on site (Paper packaging)	0.055	kg

Reference service life

Name	Value	Unit
Reference service life	15	a

End of life (C2-C4)

Name	Value	Unit
Collected separately Aluminum, brass, steel, plastics, zinc	2.083	kg
Collected as mixed construction waste – construction waste for landfilling	0.107	kg
Reuse plastics parts	0.036	kg
Recycling Aluminum, brass, steel, zinc	2.047	kg
Construction waste for landfilling	0.107	kg

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

Name	Value	Unit
Collected separately waste type Door closer (including packaging)	2.245	kg
Recycling Aluminium	33.59	%
Recycling Brass	0.27	%
Recycling Steel	55.73	%
Recycling Zinc	1.60	%
Thermal Treatment (plastics)	1.59	%
Loss Construction waste for landfilling (no recycling potential)	4.77	%
Reuse Packaging (paper) (from A5)	2.45	%

5. LCA: Results

Results shown below were calculated using CML2001 – 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	MND	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 piece of DC860 door closer

Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
Global warming potential	[kg CO_2-Eq.]	1.46E+01	8.53E-02	7.79E-02	5.33E-02	0.00E+00	3.56E-01	-7.57E+00
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	4.07E-09	3.68E-13	3.56E-13	2.55E-13	0.00E+00	1.07E-12	3.30E-09
Acidification potential of land and water	[kg SO_2-Eq.]	7.05E-02	1.22E-03	1.78E-05	2.44E-04	0.00E+00	9.08E-05	-4.14E-02
Eutrophication potential	[kg $(PO_4)^{3-}$- Eq.]	4.42E-03	1.54E-04	3.10E-06	5.57E-05	0.00E+00	6.87E-06	-1.97E-03
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	4.69E-03	-2.10E-05	1.26E-06	-7.86E-05	0.00E+00	4.41E-06	-2.39E-03
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	3.46E-04	2.83E-09	1.41E-09	2.01E-09	0.00E+00	2.35E-08	-2.11E-04
Abiotic depletion potential for fossil resources	[MJ]	1.62E+02	1.13E+00	2.18E-02	7.35E-01	0.00E+00	1.51E-01	-7.33E+01

RESULTS OF THE LCA - RESOURCE USE: 1 piece of DC860 door closer

Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	4.61E+01	-	-	-	-	-	-
Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of renewable primary energy resources	[MJ]	4.61E+01	2.97E-02	2.04E-03	2.90E-02	0.00E+00	1.10E-02	-3.11E+01
Non renewable primary energy as energy carrier	[MJ]	2.04E+02	-	-	-	-	-	-
Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of non renewable primary energy resources	[MJ]	2.04E+02	1.13E+00	2.56E-02	7.37E-01	0.00E+00	1.68E-01	-9.30E+01
Use of secondary material	[kg]	1.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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
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
Use of net fresh water	[m^3]	1.24E-01	2.28E-05	2.27E-04	2.04E-05	0.00E+00	8.71E-04	-8.24E-02

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 piece of DC860 door closer

Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
Hazardous waste disposed	[kg]	1.16E-02	2.12E-06	1.76E-06	1.68E-06	0.00E+00	1.17E-05	-1.14E-03
Non hazardous waste disposed	[kg]	1.41E+00	9.42E-05	1.96E-03	9.27E-05	0.00E+00	3.32E-02	-1.16E+00
Radioactive waste disposed	[kg]	1.68E-02	1.45E-06	1.50E-06	9.65E-07	0.00E+00	6.67E-06	-7.80E-03
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
Materials for recycling	[kg]	0.00E+00	0.00E+00	5.50E-02	0.00E+00	2.04E+00	0.00E+00	0.00E+00
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
Exported electrical energy	[MJ]	0.00E+00	0.00E+00	9.85E-02	0.00E+00	0.00E+00	6.82E-01	0.00E+00
Exported thermal energy	[MJ]	0.00E+00	0.00E+00	2.78E-01	0.00E+00	0.00E+00	1.87E+00	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 95% and 100% to the overall results for all the environmental impact assessment categories hereby considered. Within the production stage the main contribution for all the impact categories is the production of steel and aluminium, with almost 99%, mainly due to the energy consumption on this process. Steel and aluminum together account with almost 92% 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.

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., 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

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

Building hardware
Door fittings for use by children, elderly and disabled people in domestic and public buildings - A guide for specifiers; German version CEN/TR 15894:2009

DIN EN 1154
EN 1154:1996/A1:2002/AC:2006: Building hardware — Controlled door closing devices — Requirements and test methods

DIN EN 1634-1
Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 1: Fire resistance test for door and shutter assemblies and openable windows; German version FprEN 1634-1:2012

DIN EN ISO 9001
DIN EN ISO 9001:2008: Quality management systems - Requirements; Trilingual version EN ISO 9001:2008

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

DIN EN ISO 14025
DIN EN 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, 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
OHSAS 18001:2007: Occupational health and safety management

REGULATION (EU) No 305/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC.

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	MND	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 piece of DC860 door closer

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	1.46E+01	8.53E-02	7.79E-02	5.33E-02	0.00E+00	3.56E-01	-7.57E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	4.33E-09	3.91E-13	3.79E-13	2.71E-13	0.00E+00	1.14E-12	3.52E-09
AP	Acidification potential of land and water	[kg SO_2-Eq.]	6.80E-02	1.34E-03	2.15E-05	3.19E-04	0.00E+00	1.06E-04	-3.87E-02
EP	Eutrophication potential	[kg N-eq.]	2.64E-03	5.61E-05	1.24E-06	2.25E-05	0.00E+00	3.24E-06	-9.86E-04
Smog	Ground-level smog formation potential	[kg O_3-eq.]	7.50E-01	2.53E-02	5.02E-04	6.56E-03	0.00E+00	8.36E-04	-3.48E-01
Resources	Resources – fossil resources	[MJ]	1.39E+01	1.62E-01	2.56E-03	1.06E-01	0.00E+00	1.55E-02	-6.19E+00

RESULTS OF THE LCA - RESOURCE USE: 1 piece of DC860 door closer

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	4.61E+01	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	4.61E+01	2.97E-02	2.04E-03	2.90E-02	0.00E+00	1.10E-02	-3.11E+01
PENRE	Non renewable primary energy as energy carrier	[MJ]	2.04E+02	-	-	-	-	-	-
PENRM	Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PENRT	Total use of non renewable primary energy resources	[MJ]	2.04E+02	1.13E+00	2.56E-02	7.37E-01	0.00E+00	1.68E-01	-9.30E+01
SM	Use of secondary material	[kg]	1.34E+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
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
FW	Use of net fresh water	[m^3]	1.24E-01	2.28E-05	2.27E-04	2.04E-05	0.00E+00	8.71E-04	-8.24E-02

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 piece of DC860 door closer

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1.16E-02	2.12E-06	1.76E-06	1.68E-06	0.00E+00	1.17E-05	-1.14E-03
NHWD	Non hazardous waste disposed	[kg]	1.41E+00	9.42E-05	1.96E-03	9.27E-05	0.00E+00	3.32E-02	-1.16E+00
RWD	Radioactive waste disposed	[kg]	1.68E-02	1.45E-06	1.50E-06	9.65E-07	0.00E+00	6.67E-06	-7.80E-03
CRU	Components for re-use	[kg]	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	5.50E-02	0.00E+00	2.04E+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	-
EEE	Exported electrical energy	[MJ]	0.00E+00	0.00E+00	9.85E-02	0.00E+00	0.00E+00	6.82E-01	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	2.78E-01	0.00E+00	0.00E+00	1.87E+00	-

ASSA ABLOY

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