

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-20150310-IBA1-EN
Issue date	03.11.2015
Valid to	02.11.2020

Door closer – DC477 Cam-Motion floor spring
ASSA ABLOY Italia S.p.A

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



1. General Information

<p>ASSA ABLOY Italia S.p.A</p> <hr/> <p>Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p> <hr/> <p>Declaration number EPD-ASA-20150310-IBA1-EN</p> <hr/> <p>This Declaration is based on the Product Category Rules: Locks and fittings, 07.2014</p> <p>(PCR tested and approved by the independent expert committee (SVR))</p> <hr/> <p>Issue date 03.11.2015</p> <hr/> <p>Valid to 02.11.2020</p> <hr/> <p> Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)</p> <hr/> <p> Dr.-Ing. Burkhard Lehmann (Managing Director IBU)</p>	<p>Door closer – DC 477 floor spring</p> <hr/> <p>Owner of the Declaration ASSA ABLOY Italia S.p.A Via Bovaresa 13, 40017 San Giovanni in Persiceto Bologna - Italy</p> <hr/> <p>Declared product / Declared unit The declaration represents the Cam-Motion® floor spring DC477, consisting of the following items: - A closer body - A cover plate - Accessories</p> <hr/> <p>Scope: This declaration and its LCA study are relevant to ASSA ABLOY DC477 floor spring. 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 San Giovanni in Persiceto, Italy. 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 evidence.</p> <hr/> <p>Verification</p> <p>The CEN Standard EN 15804 serves as the core PCR</p> <p>Independent verification of the declaration and data according to ISO 14025</p> <p><input type="checkbox"/> internally <input checked="" type="checkbox"/> externally</p> <hr/> <p> Dr. Wolfram Trinius (Independent verifier appointed by SVR)</p>
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2. Product

2.1 Product description

Product name: DC477 Cam-Motion® floor spring.

Product characteristic: DC477 Cam-Motion® floor spring is characterized by:

- A Universal Cam-Motion® floor spring suitable for a left and right hand doors, including double action applications
- Cam-Motion® Door Closers help to save energy in all seasons
- Adjustable closing force
- Mechanical back check, which offers optimum protection for doors and walls by damped opening
- Adjustable door speed and latching speed from top regulating valves
- Thermodynamic valves for consistent performance
- Cover plates and eyelets made in polish or satin stainless steel and polished brass
- Available with hold open angle 90° and 105° or without hold open
- Closing from 175° in both door swing directions

This EPD is applicable to following products: DC477 Cam-Motion® floor spring.

2.2 Application

The ASSA ABLOY Cam-Motion DC477 floor spring can be used in private, commercial and public sectors in both light and heavy duty applications:

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

2.3 Technical Data

Technical data

Name	Value
Adjustable closing force	3-6
Door width up to	1400 mm
Fire and smoke protections	Yes
DIN door swing directions	Left/right handed
Closing speed	175°-15°
Latching speed	Variable between 15°-0°

Backcheck	Yes, mechanical
Weight	7.3 kg
Height	82 mm
Length	345 mm
Width	78 mm
Body adjustment within cement box	Vertical : 9; side : 6; front : 5; angular 2°
DIN direction	Left/ Right handed doors or double action
Hold-open mode	90°/105°/ Non Hold-open
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 marketing in the EU/EFTA (with the exception of Switzerland) the Regulation (EU) No 305/2011 dated from 9 March 2011 applies.

The products need a Declaration of Performance taking into consideration

/EN 1154:1996/A1:2002/AC:2006 / – Building hardware -Controlled door closing devices/ and the CE-marking.

The ASSA ABLOY DC477 and relevant accessories are certified according to these standards.

For the application and use the respective national provisions apply.

2.5 Delivery status

Door closer body and accessories are delivered ready for installation in separate packages. The door closer unit including the packaging has the following dimensions: 355mm X 90mm X 90mm. The accessories are packed in plastic bags with max. dimension of: 400mm X 240mm for the cover plate and 125mm X 80mm for the spindle.

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 DC477, including the accessories is as following:

Component	Percentage in mass (%)
Aluminium	1.21
Plastics	0.17
Stainless steel	5.43
Steel	89.3
Other	3.89
Total	100.0

2.7 Manufacture

The primary manufacturing and the final manufacturing processes occur at our factory San Giovanni in Persiceto (BO), Italy. The components come from processes like stamped cast iron, steel, turning, aluminium and steel casting. All the components are stamped and machined in Italy, apart from the body in cast iron, which is made by La Fonte Ardenaisse in France. Final assembly takes place in Italy.

The factory of San Giovanni in Persiceto (BO) 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-water is cleared on-site and waste is sent for responsible disposal.

Waste codes according to European Waste Catalogue and Hazardous Waste List - Valid from 1 January 2002:

EWC 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 Environment Management program effectiveness is evaluated.

- Code of Conduct covers human rights, labour 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 San Giovanni in Persiceto (BO), Italy has certification of Environmental Management to ISO 14001:2004.

- Any waste metals during machining are separated and recycled. The waste from the water-based painting process is delivered to waste treatment plant.

2.9 Product processing/installation

ASSA ABLOY DC477 is distributed through and installed by trained installation technicians, such as locksmiths, glass door and panel manufacturers, carpenters etc. adhering to local/national standards and requirements.

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

2.10 Packaging

The ASSA ABLOY DC477 is packed in cardboard packaging. Packaging includes a paper sheet (installation instruction and drilling template) – all of which are fully recyclable. The accessories are packed in plastic bags.

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

Component	Percentage in mass (%)
Cardboard/paper	97.4
Plastics	2.6
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
EWC 15 01 02 plastic 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 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 ASSA ABLOY DC477 was developed to comply with EN1154 standard and quality requirements. The typical life time of a DC477 is 10-15 years, dependent on frequency of cycles.

2.14 Extraordinary effects

Fire

The ASSA ABLOY DC477 is tested for usage in fire and smoke protection doors according to EN1634-1.

Water

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

Mechanical destruction

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

2.15 Re-use stage

The product is possible to re-use during the reference service life and be moved from one door to another. The majority, by weight, of components 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 03 plastic

EWC 17 04 01 copper, bronze, brass

EWC 17 04 02 aluminium

EWC 17 04 05 iron and steel

2.16 Disposal

Product parts and components that cannot be clearly separated or recyclable are landfilled.

2.17 Further information

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3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of door closer DC477 Cam-Motion floor spring 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	0.181	-

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 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 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.

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)	0.1502	kg
Output substances following waste treatment on site (Plastics packaging)	0.004	kg

Reference service life

Name	Value	Unit
Reference service life	15	a

End of life (C2-C4)

Name	Value	Unit
Collected separately Aluminium, plastics, stainless steel and steel	5.009	kg
Collected as mixed construction waste – construction waste for landfilling	0.214	kg
Reuse plastics parts	0.013	kg
Recycling aluminium, plastics, steel, stainless steel	4.996	kg
Construction waste for landfilling	0.214	kg

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

Name	Value	Unit
Collected separately waste type Door closer (including packaging)	5.159	kg
Recycling Aluminium	1.18	%
Recycling Stainless steel	5.29	%
Recycling Steel	86.87	%
Thermal Treatment (plastics)	0.23	%
Loss Construction waste for landfilling (no recycling potential)	3.78	%
Reuse Packaging (paper) (from A5)	2.65	%

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 BOUNDARIES
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 DC 477 floor spring

Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
Global warming potential	[kg CO ₂ -Eq.]	1.33E+01	5.65E-01	2.13E-01	5.65E-01	0.00E+00	1.81E-01	-4.63E-01
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	2.19E-08	2.71E-12	9.73E-13	2.71E-12	0.00E+00	5.46E-13	2.60E-10
Acidification potential of land and water	[kg SO ₂ -Eq.]	7.55E-02	2.59E-03	4.85E-05	2.59E-03	0.00E+00	4.62E-05	-1.02E-03
Eutrophication potential	[kg (PO ₄) ³⁻ - Eq.]	7.11E-03	5.91E-04	8.46E-06	5.91E-04	0.00E+00	3.50E-06	-5.50E-05
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	4.91E-03	-8.34E-04	3.44E-06	-8.34E-04	0.00E+00	2.24E-06	-9.49E-05
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	3.88E-04	2.13E-08	3.84E-09	2.13E-08	0.00E+00	1.20E-08	1.05E-04
Abiotic depletion potential for fossil resources	[MJ]	1.63E+02	7.80E+00	5.96E-02	7.80E+00	0.00E+00	7.67E-02	-4.58E+00

RESULTS OF THE LCA - RESOURCE USE: 1 piece of DC 477 floor spring

Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	2.88E+01	-	-	-	-	-	-
Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of renewable primary energy resources	[MJ]	2.88E+01	3.07E-01	5.56E-03	3.07E-01	0.00E+00	5.62E-03	-2.51E+00
Non renewable primary energy as energy carrier	[MJ]	2.85E+02	-	-	-	-	-	-
Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of non renewable primary energy resources	[MJ]	2.85E+02	7.82E+00	6.99E-02	7.82E+00	0.00E+00	8.53E-02	-6.34E+00
Use of secondary material	[kg]	2.38E+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]	1.02E-01	2.17E-04	6.19E-04	2.17E-04	0.00E+00	4.43E-04	-5.03E-03

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 piece of DC 477 floor spring

Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
Hazardous waste disposed	[kg]	1.72E-02	1.78E-05	4.80E-06	1.78E-05	0.00E+00	5.96E-06	6.42E-05
Non hazardous waste disposed	[kg]	6.31E-01	9.84E-04	5.34E-03	9.84E-04	0.00E+00	1.69E-02	2.35E-02
Radioactive waste disposed	[kg]	4.81E-02	1.02E-05	4.08E-06	1.02E-05	0.00E+00	3.40E-06	-7.02E-04
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	1.50E-01	0.00E+00	5.44E+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	2.69E-01	0.00E+00	0.00E+00	3.47E-01	0.00E+00
Exported thermal energy	[MJ]	0.00E+00	0.00E+00	7.59E-01	0.00E+00	0.00E+00	9.52E-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 from 87% to 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. Steel and stainless steel 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

DIN EN 1154

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

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/>

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 BOUNDARIES
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 DC 477 floor spring

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
GWP	Global warming potential	[kg CO ₂ -Eq.]	1.33E+01	5.65E-01	2.13E-01	5.65E-01	0.00E+00	1.81E-01	-4.63E-01
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	2.32E-08	2.88E-12	1.03E-12	2.88E-12	0.00E+00	5.81E-13	2.76E-10
AP	Acidification potential of land and water	[kg SO ₂ -Eq.]	7.79E-02	3.38E-03	5.88E-05	3.38E-03	0.00E+00	5.42E-05	-9.75E-04
EP	Eutrophication potential	[kg N-eq.]	3.87E-03	2.39E-04	3.39E-06	2.39E-04	0.00E+00	1.65E-06	-3.14E-05
Smog	Ground-level smog formation potential	[kg O ₃ -eq.]	1.22E+00	6.95E-02	1.37E-03	6.95E-02	0.00E+00	4.26E-04	-9.73E-03
Resources	Resources – fossil resources	[MJ]	1.57E+01	1.12E+00	6.99E-03	1.12E+00	0.00E+00	7.90E-03	-5.23E-01

RESULTS OF THE LCA - RESOURCE USE: 1 piece of DC 477 floor spring

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	2.88E+01	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	2.88E+01	3.07E-01	5.56E-03	3.07E-01	0.00E+00	5.62E-03	-2.51E+00
PENRE	Non renewable primary energy as energy carrier	[MJ]	2.85E+02	-	-	-	-	-	-
PENRM	Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PENRT	Total use of non renewable primary energy resources	[MJ]	2.85E+02	7.82E+00	6.99E-02	7.82E+00	0.00E+00	8.53E-02	-6.34E+00
SM	Use of secondary material	[kg]	2.38E+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]	1.02E-01	2.17E-04	6.19E-04	2.17E-04	0.00E+00	4.43E-04	-5.03E-03

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 piece of DC 477 floor spring

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1.72E-02	1.78E-05	4.80E-06	1.78E-05	0.00E+00	5.96E-06	6.42E-05
NHWD	Non hazardous waste disposed	[kg]	6.31E-01	9.84E-04	5.34E-03	9.84E-04	0.00E+00	1.69E-02	2.35E-02
RWD	Radioactive waste disposed	[kg]	4.81E-02	1.02E-05	4.08E-06	1.02E-05	0.00E+00	3.40E-06	-7.02E-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	-
MFR	Materials for recycling	[kg]	0.00E+00	0.00E+00	1.50E-01	0.00E+00	5.44E+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	2.69E-01	0.00E+00	0.00E+00	3.47E-01	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	7.59E-01	0.00E+00	0.00E+00	9.52E-01	-

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