

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804




Owner of the Declaration	<b>Abloy Oy</b>
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20140209-IBC1-EN
Issue date	13.02.2015
Valid to	12.02.2020

Door Closer - DC 2615  
**LOCKWOOD**

[www.bau-umwelt.com](http://www.bau-umwelt.com) / <https://epd-online.com>



## 1. General Information

LOCKWOOD	Door closer – 2615
<p><b>Programme holder</b> IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p>	<p><b>Owner of the Declaration</b> Abloy Oy Wahlforssinkatu 20, 80100 Joensuu, Finland</p>
<p><b>Declaration number</b> EPD-ASA-20140209-IBC1-EN</p>	<p><b>Declared product / Declared unit</b> The declaration represents 1 Cam-Motion door closer (2615 series), consisting of the following items:</p> <ul style="list-style-type: none"> <li>- A closer body</li> <li>- A guide rail</li> <li>- Accessories</li> </ul>
<p><b>This Declaration is based on the Product Category Rules:</b> Locks and fittings , 07.2014 (PCR tested and approved by the independent expert committee)</p>	<p><b>Scope:</b> This declaration and its LCA study are relevant to LOCKWOOD 2615 series 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.</p>
<p><b>Issue date</b> 13.02.2015</p>	<p><b>Verification</b> The CEN Norm EN 15804 serves as the core PCR Independent verification of the declaration according to ISO 14025</p> <p><input type="checkbox"/> internally    <input checked="" type="checkbox"/> externally</p>
<p><b>Valid to</b> 12.02.2020</p>	
<p> Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)</p>	<p> Dr.-Ing. Wolfram Trinius (Independent tester appointed by SVA)</p>
<p> Dr. Burkhard Lehmann (Managing Director IBU)</p>	

## 2. Product

### 2.1 Product description

The 2615 Cam-Motion® door closers are CE-marked and characterized by

- Cam-Motion® technology, which reduces counter-pressure when opening the door, making it easier to operate
- Fulfillment of Design for Access and Mobility Standard (AS1428.1-2009)
- A single Cam-Motion® Door Closers are suitable for installation in all four mounting positions
- Cam-Motion® Door Closers help to save energy in all seasons, optimizing the thermal efficiency of the door opening
- Height-adjustable pinion connection between door closer and arm
- A uniform attractive design across the entire product range gives buildings style and aesthetic Appeal throughout the building
- Variable adjustable closing force

- Adjustable back-check which offers optimum protection for doors, walls and users to pass through the door
- Adjustable delayed closing which is important for situations where extended closing time is needed for passing through a door
- Integrated, concealed mounting plate available
- Height-adjustable guide rail Option, for ease of installation
- Thermodynamic valves for consistent performance across a wide temperature range
- Wide range of accessories.

### 2.2 Application

The LOCKWOOD Cam-Motion overhead door closers 2615 are ideal for a wide range of applications – from private to commercial and public sectors both light and heavy:

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



ASSA ABLOY

- For exterior doors it is recommended to use a door closer of 2616 series
- All four alternative mounting positions enabled on single leaf doors as standard, to frame or door leaf on hinge or non-hinge side

### 2.3 Technical Data

The 2615 Cam-Motion® door closer has following technical properties:

Adjustable closing force	EN1-4
Door width up to	1100mm
Fire and smoke protection	yes
DIN door swing directions	Left/right handed
Closing speed	Variable between 170°-10°
Latching speed	Variable between 10°-0°
Backcheck	Variable above 70°
Opening angle, hinge side	ca. 170°
Opening angle non-hinge side	ca. 120°
Weight	2,7kg
Height	64mm
Depth	57mm
Length	270mm
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 dated from the 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 — Requirements and test methods/ and the CE-marking.

2615 and relevant accessories are certified according to these standards.

### 2.5 Delivery status

Door closer units and guide rail arms are packed together and delivered ready for installation. The door closer unit and guide rail arms including the packaging have the following dimensions: 515mm x 107mm x 65mm.

### 2.6 Base materials / Ancillary materials

The average composition for LOCKWOOD 2615, including the guide rail arm and packaging is as following:

Component	Percentage in mass (%)
Aluminum	40.3
Steel	48.3
Plastic	3.6
Oil	3.2
Other	4.4
<b>Total</b>	<b>100.0</b>

### 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 door closer unit consists of machining, die casting, component manufacturing (springs, bearings, O-rings). Final manufacturing process includes assembly, testing, painting, and packing of the door closer. Guide rail arms are processed in profile extruding, cutting, welding, painting and assembly phases.

The factory of Joensuu has a certification of Quality Management system in accordance with /ISO 9001:2008/

### 2.8 Environment and health during manufacturing

Abloy Oy 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.

- Routinely monitoring of our environmental operations, Green House Gas (GHG), energy, water, waste, Volatile Organic Compound (VOC), surface treatment and Health&Safety (H&S). Conduct periodic inspections, audits, and reviews to ensure that we meet applicable standards and to evaluate our Environment Management program effectiveness.
- Code of Conduct covers human rights, labor practices and decent work. Personnel are aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
- The factory of Joensuu has certification of Environmental Management according to /ISO 14001:2004/ and Occupational Health and Safety to /OHSAS 18001:2007/.
- Any waste metals during machining are separated and recycled. The waste from the water-based painting process is delivered to a waste treatment plant.

### 2.9 Product processing/Installation

LOCKWOOD 2615 door closers are distributed through and installed by trained installation technicians, such as locksmiths, carpenters etc. adhering to local/national standards and requirements.

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

### 2.10 Packaging

LOCKWOOD 2615 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.

### 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

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. LOCKWOOD 2615 were developed to comply with /EN1154/ standard and quality requirements. The typical life time of a LOCKWOOD is 15-25 years, dependent on frequency of cycles. The 2615 carries the Lockwood 25 year warranty.

### 2.14 Extraordinary effects

#### Fire

LOCKWOOD 2615 series door closer has been successfully tested up to four hours (depending on type of doorset) on fire door assemblies in accordance with Australian Standard AS1905.1:2005 Fire Resistant Door Sets.

#### Water

Door closers include hydraulic oil and are designed for traditional locations 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 phase

It is possible to re-use the product during the reference service life and it can be moved from one door to another. The major materials, by weight, are aluminium alloy and steel, which can be recycled. The plastic components can be used for energy recovery in a waste incineration plant.

### 2.16 Disposal

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

#### Manufacturing:

/EWC 12 01 01/ Ferrous metal filings and turnings  
/EWC 12 01 03/ Non-ferrous metal filings and turnings

#### Packaging:

All materials incurred during Installation on their end-of-life are directed to a recycling unit.  
/EWC 15 01 01/ paper and cardboard packaging  
/EWC 15 01 02/ plastic packaging

#### End of life:

All materials on their end-of-life can be directed to a recycling unit.  
/EWC 16 02 14/ discarded Equipment other than those mentioned in 16 02 09 to 16 02 13.  
/EWC 16 02 16/ components removed from discarded equipment other than those mentioned in 16 02 15.  
/EWC 17 04 01/ copper, bronze, brass  
/EWC 17 04 02/ aluminium  
/EWC 17 04 05/ iron and steel.

### 2.17 Further information

Abloy Oy  
Wahlforssinkatu 20  
PL 108  
80101 JOENSUU, Finland  
Tel: +358-20 599 2501  
www.assabloy.com  
[www.abloy.com](http://www.abloy.com)

## 3. LCA: Calculation rules

### 3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of door closer 2615 as specified in Part B requirements on the EPD for doors, windows, shutters, and related products/IBU PCR Part B/.

#### Declared unit

Name	Value	Unit
Declared unit	1	piece of door closer
Mass (total system)	2.99	kg/piece
Conversion factor to 1 kg	0.33	

### 3.2 System boundary

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

#### Production phase:

- A1 – Raw material extraction and processing

- A2 – Transport to the manufacturer and
- A3 – Manufacturing

#### Construction phase:

- A4 -- Transport from the gate to the site
- A5 – Packaging waste processing

#### End-of-life phase:

- C2 – Transport to 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 status or disposal of final residues.

- D - Declaration of all benefits or recycling potential from EOL and A5

### 3.3 Estimates and assumptions

#### Transport:

Real-world data, reported by suppliers, on the mode of transport and distance were used for components contributing more than 2% to the total product mass. For parts and materials, contributing less than 2% to the total product mass, transport by road over an average distance of 500km was assumed.

#### EOL:

In the End-of-Life phase a recycling scenario with 100% collection rate was assumed. The transport back to Finland for recycling of the product was considered.

### 3.4 Cut-off criteria

In the assessment, all available data from production process were 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).

For raw materials, contributing more than 2% to the total product mass, means of transportation and distances were modeled in more detail to better reflect reality; for materials or product parts, contributing less than 2% of total product mass, average distances and traditional means of transport were assumed. Average distance assumptions were based on following thoughts:

- within one country – max. transport distance of 500 km;
- between two countries/regions – average distance between these countries/regions.
- Several supplier countries – weighted average distances.

The overall contribution from these assumptions does not exceed 5% to the impact categories under consideration. Impacts relating to the production of machines and facilities required during production are not within the scope of this assessment.

### 3.5 Background data

For life cycle modeling of the considered products, the /GaBi 6/ Software System for Life Cycle Engineering, developed by PE INTERNATIONAL AG, is used /GaBi

6 2013/. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation /GaBi 6 2013D/.

To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.

### 3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the /IBU PCR PART A/.

PE INTERNATIONAL performed a variety of tests and checks during the entire project to ensure high quality of the completed project. This obviously includes an extensive review of project-specific LCA models as well as the background data used.

The technological background of the collected data reflects the physical reality of the declared products. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.

All relevant background datasets are taken from the /GaBi 6/ software database. The last revision of the used background data has taken place not longer than 10 years ago.

### 3.7 Period under review

The period under review is 2012/13 (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 from packaging
  - Waste incineration of paper from 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 each background dataset is available in the corresponding 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

In the EPD scenarios and/or technical information for modules A5, C1-C4 and D are given.

#### Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site Packaging (paper)	0.3	kg

#### Reference service life

Name	Value	Unit
Reference service life	15	a

#### End-of-life (C1-C4)

Name	Value	Unit
Collected separately aluminium, brass, stainless steel, steel	2.9	kg
Collected as mixed construction waste construction waste for landfilling	0.09	kg
Recycling steel, stainless steel, aluminium	2.6	kg
Landfilling construction waste	0.09	kg

#### Re-use, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Collected separately waste type Door closer (including packaging)	2.99	kg



ASSA ABLOY

Recycling secondary aluminium	43	%
Recycling brass	1	%
Recycling steel	43	%
Reuse paper packaging (from A5)	6	%
Reuse plastic packaging (from A5)	4	%
Construction waste going to landfill	3	%

## 5. LCA: Results

The Table below shows the LCA results for the declared unit - 1 piece of door closer 2615.

### 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 <sup>(1)</sup>	Refurbishment <sup>(1)</sup>	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	MND	X	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: declared unit and product

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
Global warming potential	[kg CO <sub>2</sub> -Eq.]	1.49E+1	9.50E-1	2.58E-1	7.08E-2	3.05E-1	-3.44E+0
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	3.49E-9	7.43E-12	7.06E-12	1.24E-12	4.99E-12	-2.13E-10
Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	8.43E-2	1.81E-2	6.65E-5	3.21E-4	7.81E-5	-1.66E-2
Eutrophication potential	[kg (PO <sub>4</sub> ) <sup>3-</sup> -Eq.]	6.58E-3	2.91E-3	1.09E-5	7.41E-5	6.46E-6	-1.21E-3
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	5.69E-3	1.28E-3	6.72E-6	-1.05E-4	5.45E-6	-1.45E-3
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	1.01E-3	2.40E-8	5.71E-9	2.64E-9	4.35E-8	-1.93E-4
Abiotic depletion potential for fossil resources	[MJ]	1.67E+2	1.17E+1	1.69E-1	9.79E-1	1.53E-1	-3.77E+1

### RESULTS OF THE LCA - RESOURCE USE: declared unit and product

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
Renewable primary energy as energy carrier	[MJ]	5.77E+1	-	-	-	-	-
Renewable primary energy resources as material utilization	[MJ]	0.00E+0	-	-	-	-	-
Total use of renewable primary energy resources	[MJ]	5.77E+1	2.05E-1	1.05E-2	3.85E-2	1.44E-2	-7.22E+0
Non renewable primary energy as energy carrier	[MJ]	1.88E+2	-	-	-	-	-
Non renewable primary energy as material utilization	[MJ]	0.00E+0	-	-	-	-	-
Total use of non renewable primary energy resources	[MJ]	1.88E+2	1.17E+1	1.87E-1	9.82E-1	1.72E-1	-3.77E+1
Use of secondary material	[kg]	0.00E+0	-	0.00E+0	0.00E+0	0.00E+0	-
Use of renewable secondary fuels	[MJ]	0.00E+0	-	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of non renewable secondary fuels	[MJ]	0.00E+0	-	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of net fresh water	[m <sup>3</sup> ]	1.31E+2	2.49E-4	7.58E-1	4.27E-2	7.20E-1	-1.87E+1

### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: declared unit and product

Parameter	Unit	A1-A3	A4	A5	C2	C4	D
Hazardous waste disposed	[kg]	5.88E-3	-	3.31E-3	0.00E+0	3.04E-2	-6.16E-4
Non hazardous waste disposed	[kg]	3.05E+0	5.34E-5	2.62E-3	1.27E-4	5.92E-2	-3.74E-1
Radioactive waste disposed	[kg]	8.67E-3	1.53E-5	7.68E-6	1.37E-6	7.97E-6	-6.09E-4
Components for re-use	[kg]	0.00E+0	-	0.00E+0	0.00E+0	0.00E+0	-
Materials for recycling	[kg]	0.00E+0	-	0.00E+0	0.00E+0	0.00E+0	-
Materials for energy recovery	[kg]	0.00E+0	-	0.00E+0	0.00E+0	0.00E+0	-
Exported electrical energy	[MJ]	0.00E+0	-	8.92E-1	0.00E+0	0.00E+0	-
Exported thermal energy	[MJ]	0.00E+0	-	2.48E+0	0.00E+0	0.00E+0	-

## 6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. When expressed as a percentage, the impact refers to its magnitude as a percentage of total impact across all modules, with the exception of module D.

Production phase (module A1-A3) contributes between 69% and 100% to total impact assessment. This stage is dominated by upstream emissions associated with steel- and secondary aluminium making processes. The environmental impacts for the transport (A2) have a negligible impact within this stage. Transport to installation site (module A4)

contributes between < 1% and 30% to total impact assessment.

In module D the benefits (negative values) and loads beyond the system boundary are declared for the recycling potential of the metals and for the credits from the incineration process (energy substitution) within A5.

## 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);

### ISO 14025

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

### EN 15804

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

### DIN EN 1154

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

### OHSAS 18001

Arbeits- und Gesundheitsschutz-Managementsysteme  
- Leitfaden für die Implementierung von OHSAS 18001

### DIN EN ISO 14001

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

### CEN/TR 15894:2009

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

### ISO 9001:2008

Quality management systems - Requirements (ISO  
9001:2008).

### DIN EN 1634-1:2012-07

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

### GABI 6 2013

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

### GaBi 6 2013D

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

### 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](http://www.bau-umwelt.com)

### AS 1428.1-2009

Design for access and mobility - General requirements  
for access - New building work

### AS 1905.1-2005

Components for the protection of openings in fire-  
resistant walls - Fire-resistant doorsets



**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](mailto:info@bau-umwelt.com)  
Web [www.bau-umwelt.com](http://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](mailto:info@bau-umwelt.com)  
Web [www.bau-umwelt.com](http://www.bau-umwelt.com)



**PE INTERNATIONAL**  
SUSTAINABILITY PERFORMANCE

**Author of the Life Cycle Assessment**

PE INTERNATIONAL AG  
Hauptstraße 111  
70771 Leinfelden-Echterdingen  
Germany

Tel +49 711 34 18 17 22  
Fax +49 711 34 18 17 25  
Mail [consulting@pe-international.com](mailto:consulting@pe-international.com)  
Web [www.pe-international.com](http://www.pe-international.com)

**Owner of the Declaration**

Abloy Oy  
Wahlforssinkatu 20  
80101 Joensuu  
Finland

Tel +358-20 599 2501  
Fax +358-20 599 2209  
Mail [export.sales@abloy.com](mailto:export.sales@abloy.com)  
Web [www.abloy.com](http://www.abloy.com)