

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	ASSA ABLOY / TrioVing a.s
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20150275-IAB1-EN
Issue date	29.09.2015
Valid to	28.09.2020


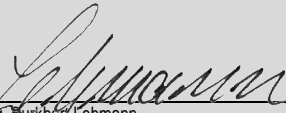

Standard complete lockset – TrioVing
ASSA ABLOY / TrioVing a.s



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



1. General Information

<p>ASSA ABLOY / TrioVing a.s</p> <hr/> <p>Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p> <hr/> <p>Declaration number EPD-ASA-20150275-IAB1-EN</p> <hr/> <p>This Declaration is based on the Product Category Rules: IBU: PCR Locks and fittings: (mechanical & electromechanical locks & Fittings) (PCR tested and approved by the independent expert committee (SVR))</p> <hr/> <p>Issue date 29.09.2015</p> <hr/> <p>Valid to 28.09.2020</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>Standard complete lockset – TrioVing</p> <hr/> <p>Owner of the Declaration TrioVing a.s Anolitveien 1-3 Postboks 424, 1402 Ski, Norway</p> <hr/> <p>Declared product / Declared unit The declaration represents one unit of Standard complete lockset – TrioVing</p> <hr/> <p>Scope: This declaration and its LCA study are relevant to Standard complete lockset – TrioVing The primary manufacturing processes are made by external suppliers and the final manufacturing processes and assembly occur at our manufacturing factory in Ski, Norway. 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> <hr/> <p>Verification The CEN Standard EN 15804 serves as the core PCR 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>
--	---

2. Product

2.1 Product description

Product name: Standard complete lockset – TrioVing
Product characteristic:

- Cylinder and thumb turn cylinder in brass, with surface treatment.
- Lock case in mainly steel and stainless steel.
- Striking plate in steel
- Escutcheon in stainless steel
- Handle in stainless steel
- Key in nickel silver.

2.2 Application

Standard complete lockset - TrioVing to be used in commercial buildings or private homes including Connect- Module-, 50- and 51-series.
- For internal and external use

2.3 Technical Data

The table presents the technical properties of Standard complete lockset – TrioVing.

Technical data

Name	Value	Unit
Dimensions (W x H x D)	277x135x143	cm

Weight	1.92	kg
Temperature (operation)	-40 to +70	°C
Temperature (storage)	5 to 40	°C

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 12209:2003/AC:2005/ – Building hardware — Locks and latches — Mechanically operated locks, latches and locking plates — Requirements and test methods

and the CE-marking.

Cylinders are rated according European standard EN 1303. The rating for Triton Scandinavian cylinder are:

a - b - c - d - e - f - g - h

1 - 6 - 0 - 1 - 0 - C - 6 - 2

where:

a - Category of use: small chance to misuse

b - Durability: number of test cycles 100,000 (highest requirements)

c - Door mass: no requirement

d - Fire resistance: 1, Triton Scandinavian Oval offers fire resistance

e - Safety: no requirement

f - Corrosion resistance and temp.: EN 1670 grade 3 / - 20...+80 °C

g - Key related security: grade 6 (highest requirements)

h - Attack resistance: grade 2 (highest requirement)

For the application and use the respective national provisions apply.

2.5 Delivery status

The product can be supplied in industrial packages, including up to 30 units, in order to minimize the wastes at the building sites.

When supplied in smaller scale, the product can be delivered in individual pack with the following dimensions: 277 mm x 135 mm x 143 mm.

2.6 Base materials / Ancillary materials

The average composition for Standard complete lockset - TrioVing is as following:

Component	Percentage in mass (%)
Brass	17.19
Zinc	2.95
Stainless Steel	31.05
Steel	45.39
Plastics	0.41
Others	3.01
Total	100.0

2.7 Manufacture

The primary manufacturing processes are made by suppliers and the final manufacturing processes occur in factory Ski, Norway.

The parts are produced in:

Cylinders are made in the Czech Republic

Lock case are made in China

Striking plates are made in Romania

Escutcheons are made in China

Handles are made in China

Keys are made in Spain.

The components come from processes like machined brass, machined nickel silver and hardened steel. Final assembly takes place in Norway.

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

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.

2.8 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 environment management program effectiveness 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 in Ski has certification of Environmental Management to ISO 14001:2004.

- Any waste metals during machining are separated and recycled.

2.9 Product processing/Installation

Standard complete lockset - TrioVing are distributed through and installed by trained installation technicians, such as locksmiths, carpenters etc. adhering to local/national standards and requirements. It can also be installed by the end user.

2.10 Packaging

Standard complete lockset - TrioVing are packed in a cardboard box with corrugated carton inlays. The packaging is fully recyclable. Separate package with dimensions: 277 mm x 135 mm x 143 mm.

Material	Value (%)
Cardboard/paper	88.36
Plastics	11.64
Total	100.0

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 17 02 03 plastic.

2.11 Condition of use

To ensure the correct conditions of use, it is important to keep the product maintained, as indicated in the instructions. This typically includes for example ensuring that the visible screws are kept tight.

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 installation and use of the product.

2.13 Reference service life

Approved for 100.000 cycles under normal working conditions, 10 years depending on cycle frequency.

2.14 Extraordinary effects**Fire**

Suitable for use in fire and smoke doors (EN 12209).

Water

Contains no substances that have any impact on water in case of flood.

Mechanical destruction

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

2.15 Re-use stage

The product can be re-used during the reference service life and be moved from one door to another.

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

EWC 17 02 03 plastic

EWC 17 04 05 iron and steel.

2.16 Disposal

The majority of the components are stainless steel, steel, brass and zinc, which can be recycled. The locks can be mechanically disassembled to separate the different materials. 90% of the materials used are recyclable. The plastic components can be used for energy recovery in an incineration plant.

2.17 Further information

TrioVing a.s
Anolitveien 1-3
Postboks 424,
1402 Ski, Norway
Tel: +47 69 24 52 00
www.trioving.no

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of Standard complete lockset – TrioVing as specified in Part B requirements on the EPD for PCR Locks and fittings: (mechanical & electromechanical locks & fittings).

Declared unit

Name	Value	Unit
Declared unit	1	Piece of single point lock
Mass (without packaging)	1.92	kg
Conversion factor to 1 kg	0.52	-

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
- 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

EoL:

In the End-of-Life stage, for all the materials, which can be recycled, a recycling scenario with 100% collection rate was assumed.

3.4 Cut-off criteria

In the assessment, all available data from the production process are considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), thermal energy consumption and electric power consumption - including material and energy flows contributing less than 1% of mass or energy (if available). In case a specific flow contributing less than 1% in mass or energy is not available, worst case assumption proxies are selected to represent the respective environmental impacts.

Impacts relating to the production of machines and facilities required during production are out of the scope of this assessment.

3.5 Background data

For life cycle 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 for:

- Waste incineration of plastic
- Waste incineration of paper

Regarding the recycling material of metals, the metal parts in the EoL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within the background data is given in the GaBi dataset documentation.

3.9 Comparability

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)	0.0078	kg
Output substances following waste treatment on site (Plastic packaging)	0.0592	kg

Reference service life

Name	Value	Unit
Reference service life	10	a

End of life (C2 and C4)

Name	Value	Unit
Collected separately Zinc, steel, stainless steel, plastics, brass	1.858	kg
Collected as mixed construction waste – construction waste for landfilling	0.058	kg
Reuse Plastics	0.008	kg
Recycling Zinc, steel, stainless steel, brass	1.85	kg
Construction waste for landfilling	0.058	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	1.925	kg
Recycling Brass	16.61	%
Recycling Zinc	2.85	%
Recycling Steel	43.86	%
Recycling Stainless steel	30.01	%
Reuse Plastics	0.39	%
Reuse Paper packaging (from A5)	2.98	%
Reuse Plastics packaging (from A5)	0.40	
Loss Construction waste for landfilling (no recycling potential)	2.90	kg

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 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	MND	X	X	

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of Standard complete lockset – TrioVing

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C4	D
GWP	Global warming potential	[kg CO ₂ -Eq.]	5.54E+00	2.35E-02	8.38E-02	4.71E-02	3.92E-02	-1.58E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	4.45E-10	1.13E-13	3.84E-13	2.25E-13	1.18E-13	-4.90E-11
AP	Acidification potential of land and water	[kg SO ₂ -Eq.]	3.02E-02	1.08E-04	1.91E-05	2.15E-04	1.00E-05	-3.71E-03
EP	Eutrophication potential	[kg (PO ₄) ³⁻ -Eq.]	2.05E-03	2.46E-05	3.34E-06	4.92E-05	7.57E-07	-4.52E-04
POCP	Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	2.39E-03	-3.47E-05	1.36E-06	-6.95E-05	4.86E-07	-9.22E-04
ADPE	Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	1.28E-03	8.87E-10	1.51E-09	1.77E-09	2.59E-09	-3.39E-04
ADPF	Abiotic depletion potential for fossil resources	[MJ]	6.66E+01	3.25E-01	2.35E-02	6.50E-01	1.66E-02	-1.45E+01

RESULTS OF THE LCA - RESOURCE USE: One piece of Standard complete lockset – TrioVing

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	8.38E+00	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	8.38E+00	1.28E-02	2.19E-03	2.56E-02	1.22E-03	-1.64E-01
PENRE	Non renewable primary energy as energy carrier	[MJ]	7.43E+01	-	-	-	-	-
PENRM	Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-
PENRT	Total use of non renewable primary energy resources	[MJ]	7.43E+01	3.26E-01	2.75E-02	6.52E-01	1.85E-02	-1.40E+01
SM	Use of secondary material	[kg]	1.28E+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
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
FW	Use of net fresh water	[m ³]	3.22E-02	9.03E-06	2.44E-04	1.81E-05	9.59E-05	-1.48E-03

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of Standard complete lockset – TrioVing

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C4	D
HWD	Hazardous waste disposed	[kg]	4.98E-03	7.42E-07	1.89E-06	1.48E-06	1.29E-06	1.27E-03
NHWD	Non hazardous waste disposed	[kg]	7.26E-01	4.10E-05	2.11E-03	8.20E-05	3.66E-03	2.21E-01
RWD	Radioactive waste disposed	[kg]	3.06E-03	4.27E-07	1.61E-06	8.53E-07	7.35E-07	2.00E-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	5.92E-02	0.00E+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
EEE	Exported electrical energy	[MJ]	0.00E+00	0.00E+00	1.06E-01	0.00E+00	7.51E-02	0.00E+00
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	2.99E-01	0.00E+00	2.06E-01	0.00E+00

6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. Stated percentages in the whole interpretation are related to the overall life cycle, excluding credits (module D).

The production stage (modules A1-A3) contributes between 96% 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, stainless steel and brass, with almost 99%, mainly due to the energy consumption

on this process. Stainless steel, steel and Brass account with 93,6% 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

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

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, thinkstep AG, 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, thinkstep AG, Leinfelden-Echterdingen, 1992-2013. <http://documentation.gabi-software.com/>

DIN EN 1670

Building hardware - Corrosion resistance - Requirements and test methods; German version EN 1670:2007

ISO 14025

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

EN 12209:2004

Building hardware - Locks and latches - Mechanically operated locks, latches and locking plates - Requirements and test methods

ISO 9001:2008

Quality management systems – Requirements

ISO 14001:2004

Environmental management systems - Requirements with guidance for use

DIN EN1634-1

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 EN 1634-1:2014

EWC

European Waste Catalog

DIN EN 1303

DIN EN 1303: Building hardware - Cylinders for locks - Requirements and test methods; German version EN 1303:2015

EN 12209:2003/AC:2005

EN 12209: Building hardware - Mechanically operated locks and plates - Requirements and test methods; German and English version FprEN 12209:2015

DIN EN 1906

DIN EN 1906: Building hardware - Lever handles and knob furniture - Requirements and test methods; German version EN 1906:2012

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	MND	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of Standard complete lockset – TrioVing

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C4	D
GWP	Global warming potential	[kg CO ₂ -Eq.]	5.54E+00	2.35E-02	8.38E-02	4.71E-02	3.92E-02	-1.58E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	4.73E-10	1.20E-13	4.08E-13	2.40E-13	1.26E-13	-5.22E-11
AP	Acidification potential of land and water	[kg SO ₂ -Eq.]	2.93E-02	1.41E-04	2.32E-05	2.82E-04	1.17E-05	-4.05E-03
EP	Eutrophication potential	[kg N-eq.]	1.30E-03	9.95E-06	1.33E-06	1.99E-05	3.57E-07	-3.67E-04
Smog	Ground-level smog formation potential	[kg O ₃ -eq.]	3.41E-01	2.90E-03	5.41E-04	5.80E-03	9.21E-05	-7.92E-02
Resources	Resources – fossil resources	[MJ]	4.12E+00	4.67E-02	2.76E-03	9.34E-02	1.71E-03	3.33E-01

RESULTS OF THE LCA - RESOURCE USE: One piece of Standard complete lockset – TrioVing

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	8.38E+00	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	8.38E+00	1.28E-02	2.19E-03	2.56E-02	1.22E-03	-1.64E-01
PENRE	Non renewable primary energy as energy carrier	[MJ]	7.43E+01	-	-	-	-	-
PENRM	Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-
PENRT	Total use of non renewable primary energy resources	[MJ]	7.43E+01	3.26E-01	2.75E-02	6.52E-01	1.85E-02	-1.40E+01
SM	Use of secondary material	[kg]	1.28E+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
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
FW	Use of net fresh water	[m ³]	3.22E-02	9.03E-06	2.44E-04	1.81E-05	9.59E-05	-1.48E-03

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of Standard complete lockset – TrioVing

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C4	D
HWD	Hazardous waste disposed	[kg]	4.98E-03	7.42E-07	1.89E-06	1.48E-06	1.29E-06	1.27E-03
NHWD	Non hazardous waste disposed	[kg]	7.26E-01	4.10E-05	2.11E-03	8.20E-05	3.66E-03	2.21E-01
RWD	Radioactive waste disposed	[kg]	3.06E-03	4.27E-07	1.61E-06	8.53E-07	7.35E-07	2.00E-04
CRU	Components for re-use	[kg]	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	5.92E-02	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	-
EEE	Exported electrical energy	[MJ]	0.00E+00	0.00E+00	1.06E-01	0.00E+00	7.51E-02	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	2.99E-01	0.00E+00	2.06E-01	-



Publisher

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

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



Programme holder

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

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



thinkstep

Author of the Life Cycle Assessment

thinkstep AG
Hauptstraße 111-113
70771 Leinfelden-Echterdingen
Germany

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

Owner of the Declaration

TrioVing a.s
Anollitveien 1-3
Postboks 424,
1402 Ski, Norway

Tel +47 69 24 52 00
Web www.assaabloy.com
www.trioving.no