

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-20150276-IAB1-EN |
| Issue date | 29.09.2015 |
| Valid to | 28.09.2020 |

Securistyle – Parallel PX Plus hinge set **ASSA ABLOY**

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



1. General Information

ASSA ABLOY – Securistyle

Programme holder

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

Declaration number

EPD-ASA-20150276-IAB1-EN

This Declaration is based on the Product Category Rules:

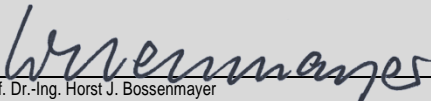
Locks and fittings , 07.2014
Product Category Rules (PCR) tested and approved by the independent expert committee (SVR)


Issue date

29.09.2015

Valid to

28.09.2020


Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)


Dr.-Ing. Burkhard Lorenz
(Managing Director IBU)

Parallel PX Plus hinge set

Owner of the Declaration

Securistyle Ltd,
Princess Elizabeth Way,
Cheltenham, GL51 7RE, UK

Declared product / Declared unit

The declaration represents 1 window hinge set – Parallel PX Plus - consisting of the following items:
• 2 hinge sides

Scope:

This declaration and its LCA study are relevant to the Parallel PX Plus hinge sets manufactured in Securistyle Ltd, United Kingdom (Cheltenham).

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.

Verification

The CEN Standard EN 15804 serves as the core PCR
Independent verification of the declaration
according to ISO 14025
 internally externally


Dr. Wolfram Trinius
(Independent verifier appointed by SVR)

2. Product

2.1 Product description

Product name: Parallel PX Plus hinge set

Product characteristics:

- Parallel PX Plus hinge set consists of two or more hinges. This declaration reflects a PX Plus hinge set consisting of two hinges.
- Hinges are assembled with a number of patented features including an integral tie-bar, eccentric pivot for parallel adjustment and reinforced pivot points
- Hinges provide parallel opening of vents up to 250mm, but can be restricted to smaller openings if required
- Product is normally used in commercial applications and is produced in Austenitic Stainless Steel for corrosion resistance & strength
- Product is capable of carrying vents up to 2m wide & 3m high
- Can provide manual or automated operation

2.2 Application

Parallel PX Plus consist of a whole range of window hinges offered in various sizes to provide a solution for varying commercial vents.

2.3 Technical Data

The table presents the technical properties of Parallel PX Plus hinge set.

| Parameter | Value |
|---------------------|---|
| Available Finishes: | Natural stainless steel finish |
| Available Sizes: | PX0350 (350mm long) PX0450 (450mm) PX0670 (670mm) PX0950 (950mm) |
| Width: | 46mm |
| Height: | 20mm |

2.4 Placing on the market / Application rules

The standards that applicable to Parallel PX Plus hinge set are:

- EN 13126-1;
- EN 13126-6;
- BS 6375 Pt1 & 2

2.5 Delivery status

Parallel PX Plus hinge sets are delivered packed by 10 hinges in a box sizes - 935mm x 95mm x 110mm.

2.6 Base materials / Auxiliary materials

The average composition for Parallel PX Plus hinge set follows:

| Component | Percentage in mass (%) |
|-----------------|------------------------|
| Zinc | 5.26 |
| Stainless Steel | 94.26 |
| Plastic | 0.39 |
| Others | 0.09 |
| Total | 100.00 |

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.

2.7 Manufacture

The manufacturing processes occur at Securistyle Ltd factory:

- 1) Stainless steel processing - punching, rolling, forming & cropping of strip for links and track
- 2) Spin riveting of sub-assemblies
- 3) Final build assembly - manual assembly, riveting and complete packing of product.

The factory of Securistyle Ltd, Princess Elizabeth Way, Cheltenham Glos UK GL51 7RE has a certification of Quality Management system in accordance with ISO 9001:2008 (Certificate Number FM611016)

Location of suppliers :

Stainless Steel Strip (coil) : UK

Plastic Moulding : UK & China

Plated Zinc Castings : UK

Steel Rivets : UK

Steel Pressing (Tie-bar & slider inner) : UK

Brass bush : UK.

2.8 Environment and health during manufacturing

Securistyle Ltd is committed to producing and distributing window opening solutions, where health & safety is the primary focus for all employees and associates.

- Environmental operations, GHG, energy, waste, VOC, surface treatment and H&S are routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and Environment Management program effectiveness is evaluated.
- The manufacturing site in Cheltenham has certification of Environmental Management to ISO 14001:2004.
- 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.

- Any waste metals during machining are separated and recycled.

2.9 Product processing/Installation

Parallel PX Plus hinge sets are distributed through and installed by trained installation technicians, such as facade engineers, curtain wall builders, etc. adhering to local/national standards and requirements.

2.10 Packaging

Parallel PX Plus hinges are by 10 individual hinges in a cardboard box. The packaging is fully recyclable with dimensions: 935mm x 95mm x 110mm.

| Material | Value (%) |
|-----------------|--------------|
| 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

In façade openings fitted with the opening cavity of a vent.

Must be maintained in line with Securistyle Ltd recommendations - cleaning of dust & debris and light lubrication with engineering oil.

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

Approved for 20,000 cycles under normal working conditions, 12 years depending on cycle frequency.

2.14 Extraordinary effects

Fire

N/A

Water

Contain 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 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.

Material Recycling

The majority, by weight, of components is stainless 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 17 02 03 plastic
 EWC 17 04 04 zinc
 EWC 17 04 05 iron and steel.

Princess Elizabeth Way
 Cheltenham GL51 7RE (UK)
<http://www.securistyle.co.uk/>

2.16 Disposal

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

2.17 Further information

Securistyle Ltd

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 unit of Parallel PX Plus window hinge set (consisting of two hinge sides) 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 | punit of window hinge set |
| Mass (without packaging) | 3.27 | kg |
| Conversion factor to 1 kg | 0.306 | - |

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) | 0.09 | kg |

Reference service life

| Name | Value | Unit |
|------------------------|-------|------|
| Reference service life | 12 | a |

End of life (C2-C4)

| Name | Value | Unit |
|--|-------|------|
| Collected separately Zinc, steel, plastics | 3.266 | kg |
| Collected as mixed construction waste – construction waste for landfilling | 0.003 | kg |
| Reuse Plastics | 0.013 | kg |
| Recycling Zinc, steel | 3.253 | kg |
| Construction waste for landfilling | 0.003 | kg |

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

| Name | Value | Unit |
|--|-------|------|
| Collected separately waste type (including packaging) | 3.36 | kg |
| Recycling Zinc | 5.12 | % |
| Recycling Steel | 91.70 | % |
| Reuse Plastics | 0.38 | % |
| Reuse Paper packaging (from A5) | 2.71 | % |
| Loss Construction waste for landfilling (no recycling potential) | 0.09 | % |

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 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 | MND | X | X |

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of Parallel PX Plus hinge set

| Parameter | Parameter | Unit | A1-A3 | A4 | A5 | C2 | C4 | D |
|-----------|--|--|----------|-----------|----------|-----------|----------|-----------|
| GWP | Global warming potential | [kg CO ₂ -Eq.] | 1.41E+01 | 7.99E-02 | 1.29E-01 | 7.99E-03 | 3.22E-02 | 5.49E+00 |
| ODP | Depletion potential of the stratospheric ozone layer | [kg CFC11-Eq.] | 1.15E-09 | 3.83E-13 | 5.91E-13 | 3.83E-14 | 9.69E-14 | -1.26E-11 |
| AP | Acidification potential of land and water | [kg SO ₂ -Eq.] | 1.04E-01 | 3.66E-04 | 2.94E-05 | 3.66E-05 | 8.20E-06 | 3.82E-02 |
| EP | Eutrophication potential | [kg (PO ₄) ³⁻ -Eq.] | 6.07E-03 | 8.35E-05 | 5.14E-06 | 8.35E-06 | 6.21E-07 | 2.35E-03 |
| POCP | Formation potential of tropospheric ozone photochemical oxidants | [kg Ethen Eq.] | 6.15E-03 | -1.18E-04 | 2.09E-06 | -1.18E-05 | 3.98E-07 | 2.75E-03 |
| ADPE | Abiotic depletion potential for non fossil resources | [kg Sb Eq.] | 6.23E-03 | 3.01E-09 | 2.33E-09 | 3.01E-10 | 2.13E-09 | 9.53E-04 |
| ADPF | Abiotic depletion potential for fossil resources | [MJ] | 1.56E+02 | 1.10E+00 | 3.62E-02 | 1.10E-01 | 1.36E-02 | 5.73E+01 |

RESULTS OF THE LCA - RESOURCE USE: One piece of Parallel PX Plus hinge set

| Parameter | Parameter | Unit | A1-A3 | A4 | A5 | C2 | C4 | D |
|-----------|--|-------------------|----------|----------|----------|----------|----------|----------|
| PERE | Renewable primary energy as energy carrier | [MJ] | 2.15E+01 | - | - | - | - | - |
| PERM | Renewable primary energy resources as material utilization | [MJ] | 0.00E+00 | - | - | - | - | - |
| PERT | Total use of renewable primary energy resources | [MJ] | 2.15E+01 | 4.34E-02 | 3.38E-03 | 4.34E-03 | 9.98E-04 | 2.94E+00 |
| PENRE | Non renewable primary energy as energy carrier | [MJ] | 1.75E+02 | - | - | - | - | - |
| PENRM | Non renewable primary energy as material utilization | [MJ] | 0.00E+00 | - | - | - | - | - |
| PENRT | Total use of non renewable primary energy resources | [MJ] | 1.75E+02 | 1.11E+00 | 4.24E-02 | 1.11E-01 | 1.51E-02 | 5.92E+01 |
| SM | Use of secondary material | [kg] | 2.16E+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] | 9.61E-02 | 3.07E-05 | 3.76E-04 | 3.07E-06 | 7.86E-05 | 2.03E-02 |

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of Parallel PX Plus hinge set

| Parameter | Parameter | Unit | A1-A3 | A4 | A5 | C2 | C4 | D |
|-----------|-------------------------------|------|----------|----------|----------|----------|----------|----------|
| HWD | Hazardous waste disposed | [kg] | 1.11E-02 | 2.52E-06 | 2.92E-06 | 2.52E-07 | 1.06E-06 | 2.56E-03 |
| NHWD | Non hazardous waste disposed | [kg] | 3.59E+00 | 1.39E-04 | 3.24E-03 | 1.39E-05 | 3.00E-03 | 1.34E+00 |
| RWD | Radioactive waste disposed | [kg] | 7.56E-03 | 1.45E-06 | 2.48E-06 | 1.45E-07 | 6.03E-07 | 7.20E-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 | 9.12E-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 | 1.63E-01 | 0.00E+00 | 6.16E-02 | 0.00E+00 |
| EET | Exported thermal energy | [MJ] | 0.00E+00 | 0.00E+00 | 3.73E-01 | 0.00E+00 | 1.69E-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 98% 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 zinc mainly due to the energy consumption on this process. Steel and zinc

account in total with almost 99% 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, Leinfelden-Echterdingen, 1992-2013. <http://documentation.gabi-software.com/>

ISO 14025

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

EN 1906:2012

Building Hardware.Lever handles and knobs furnitures. Requirements and tests methods. ISBN 978 0 580 67832 5

EN13126-1

Building hardware for windows and door height windows; requirements and test methods

EN13126-6

Building hardware for windows and door height windows; requirements and test methods variable geometry stay hinges

BS6375 Pt1 & 2

Performance of windows and doors. Classification for weather tightness and guidance on selection and specification

ISO 9001:2008

Quality management systems – Requirements

ISO 14001:2009

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

EWC

European Waste Catalog

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 Parallel PX Plus hinge set

| Parameter | Parameter | Unit | A1-3 | A4 | A5 | C2 | C4 | D |
|-----------|--|---------------------------|----------|----------|----------|----------|----------|-----------|
| GWP | Global warming potential | [kg CO ₂ -Eq.] | 1.41E+01 | 7.99E-02 | 1.29E-01 | 7.99E-03 | 3.22E-02 | 5.49E+00 |
| ODP | Depletion potential of the stratospheric ozone layer | [kg CFC11-Eq.] | 1.23E-09 | 4.07E-13 | 6.28E-13 | 4.07E-14 | 1.03E-13 | -1.34E-11 |
| AP | Acidification potential of land and water | [kg SO ₂ -Eq.] | 9.92E-02 | 4.78E-04 | 3.57E-05 | 4.78E-05 | 9.62E-06 | 3.68E-02 |
| EP | Eutrophication potential | [kg N-eq.] | 3.34E-03 | 3.38E-05 | 2.06E-06 | 3.38E-06 | 2.93E-07 | 1.30E-03 |
| Smog | Ground-level smog formation potential | [kg O ₃ -eq.] | 1.05E+00 | 9.84E-03 | 8.33E-04 | 9.84E-04 | 7.56E-05 | 4.18E-01 |
| Resources | Resources – fossil resources | [MJ] | 9.56E+00 | 1.59E-01 | 4.25E-03 | 1.59E-02 | 1.40E-03 | 2.03E+00 |

RESULTS OF THE LCA - RESOURCE USE: One piece of Parallel PX Plus hinge set

| Parameter | Parameter | Unit | A1-A3 | A4 | A5 | C2 | C4 | D |
|-----------|--|-------------------|----------|----------|----------|----------|----------|----------|
| PERE | Renewable primary energy as energy carrier | [MJ] | 2.15E+01 | - | - | - | - | - |
| PERM | Renewable primary energy resources as material utilization | [MJ] | 0.00E+00 | - | - | - | - | - |
| PERT | Total use of renewable primary energy resources | [MJ] | 2.15E+01 | 4.34E-02 | 3.38E-03 | 4.34E-03 | 9.98E-04 | 2.94E+00 |
| PENRE | Non renewable primary energy as energy carrier | [MJ] | 1.75E+02 | - | - | - | - | - |
| PENRM | Non renewable primary energy as material utilization | [MJ] | 0.00E+00 | - | - | - | - | - |
| PENRT | Total use of non renewable primary energy resources | [MJ] | 1.75E+02 | 1.11E+00 | 4.24E-02 | 1.11E-01 | 1.51E-02 | 5.92E+01 |
| SM | Use of secondary material | [kg] | 2.16E+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] | 9.61E-02 | 3.07E-05 | 3.76E-04 | 3.07E-06 | 7.86E-05 | 2.03E-02 |

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of Parallel PX Plus hinge set

| Parameter | Parameter | Unit | A1-A3 | A4 | A5 | C2 | C4 | D |
|-----------|-------------------------------|------|----------|----------|----------|----------|----------|----------|
| HWD | Hazardous waste disposed | [kg] | 1.11E-02 | 2.52E-06 | 2.92E-06 | 2.52E-07 | 1.06E-06 | 2.56E-03 |
| NHWD | Non hazardous waste disposed | [kg] | 3.59E+00 | 1.39E-04 | 3.24E-03 | 1.39E-05 | 3.00E-03 | 1.34E+00 |
| RWD | Radioactive waste disposed | [kg] | 7.56E-03 | 1.45E-06 | 2.48E-06 | 1.45E-07 | 6.03E-07 | 7.20E-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 | 9.12E-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 | 1.63E-01 | 0.00E+00 | 6.16E-02 | - |
| EET | Exported thermal energy | [MJ] | 0.00E+00 | 0.00E+00 | 4.61E-01 | 0.00E+00 | 1.69E-01 | - |



Institut Bauen
und Umwelt e.V.

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



Institut Bauen
und Umwelt e.V.

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

ASSA ABLOY

Owner of the Declaration

Securistyle Ltd
Princess Elizabeth Way
Cheltenham GL51 7RE (UK)

Tel +44 (0) 1242 221 200
Mail info@securistyle.co.uk
Web <http://www.securistyle.co.uk>