

# 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-201600255-IBA1-EN
Issue date	06.02.2017
Valid to	05.02.2022

## Securistyle – Sterling & Storm hinges ASSA ABLOY

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



## 1. General Information

<p><b>ASSA ABLOY – Securistyle</b></p> <hr/> <p><b>Programme holder</b>          IBU - Institut Bauen und Umwelt e.V.          Panoramastr. 1          10178 Berlin          Germany</p> <hr/> <p><b>Declaration number</b>          EPD-ASA-201600255-IBA1-EN</p> <hr/> <p><b>This Declaration is based on the Product Category Rules - PCR:</b>          Locks and fittings, 07.2014          (PCR tested and approved by the independent expert committee (SVR))</p> <hr/> <p><b>Issue date</b>          06.02.2017</p> <hr/> <p><b>Valid to</b>          05.02.2022</p> <hr/> <p></p> <hr/> <p>Prof. Dr.-Ing. Horst J. Bossenmayer          (President of Institut Bauen und Umwelt e.V.)</p> <hr/> <p></p> <hr/> <p>Dr.-Ing. Burkhard Lehmann          (Managing Director IBU)</p>	<p><b>Securistyle Sterling &amp; Storm hinges</b></p> <hr/> <p><b>Owner of the Declaration</b>          SECURISTYLE Kingsmead Ind Est          Princess Elizabeth Way,          Cheltenham Glos          GL51 7RE (UK)</p> <hr/> <p><b>Declared product / Declared unit</b>          The declaration represents 1 pair of commercial project out friction hinges – Securistyle Sterling &amp; Storm hinges consisting of the following items: 1 Left Hand &amp; 1 Right Hand hinge</p> <hr/> <p><b>Scope:</b>          This declaration and its LCA study are relevant to the Securistyle Sterling &amp; Storm hinges manufactured from components sourced from international Tier-1 suppliers. The manufacturing occurs in Securistyle Cheltenham UK.          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><b>Verification</b></p> <table border="1"> <tr> <td colspan="2">The CEN Standard EN 15804 serves as the core PCR</td> </tr> <tr> <td colspan="2">Independent verification of the declaration according to ISO 14025</td> </tr> <tr> <td><input type="checkbox"/> internally</td> <td><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <p></p> <hr/> <p>Dr. Wolfram Trinius          (Independent verifier appointed by SVR)</p>	The CEN Standard EN 15804 serves as the core PCR		Independent verification of the declaration according to ISO 14025		<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally
The CEN Standard EN 15804 serves as the core PCR							
Independent verification of the declaration according to ISO 14025							
<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally						

## 2. Product

### 2.1 Product description

**Product name:** Securistyle Sterling & Storm hinges

**Product characteristic:**

- Securistyle Sterling & Storm hinges consist of a left hand and a right hand hinge to form a pair.
- The hinges are assembled with a number of unique features that include a composite slider, asymmetric end points and caps, integral limit stops, balancing geometry and strengthened links resistant to abuse loads.
- Hinges provide opening of vents up to 50° top hung and 90° side hung but can be restricted to smaller openings if required. The hinges can also be used in bottom-hung mode for purge ventilation.
- Product is normally used in commercial applications and is produced from Austenitic grade 304 stainless steel for corrosion resistance and strength.

- Product is capable of carrying vents up to 2.5m high & 180kg top hung or 838mm wide x 47kg side hung.
- Can provide manual or automated operation.
- Available in 5 sizes top hung - 10", 12", 16", 22" & 26" and 10" & 16" side hung.

### 2.2 Application

Sterling & Storm consist of a range of hinges offered in various sizes to provide ventilation for varying commercial vents.

### 2.3 Technical Data

The table presents the technical properties of Securistyle Sterling & Storm hinges:

## Technical data

Parameter	Value
Available finishes	Natural stainless steel finish
Available Sizes	SPT10, SPT12, SPT16, SPT16W, SPTH16, SPT22, SPT22W, SPT26, SBS10, SBSH16, STORMB10, STORMB12, STORMB16, STORMB22, STORMB22W, STORMB26, STORMBS10, STORMBS16
Height	16 mm
Width	23 mm

### 2.4 Placing on the market / Application rules

For the product no DoP and no CE-marking are applicable, because no harmonized technical specifications exist.

For the application and use of the product the respective national provisions apply.

The standards that can be applied for Sterling & Storm hinges are:

- EN13126-1
- EN13126-6
- BS6375 pt 1 & 2
- AAMA904-1

### 2.5 Delivery status

Sterling & Storm hinges are packed by 25 or 10 pairs in box sizes up to 755mm x 100mm x 125mm

### 2.6 Base materials / Ancillary materials

The average composition for Sterling & Storm Hinges are as following:

Component	Percentage in mass (%)
Plastics	0.32
Stainless Steel	99.03
Zinc	0.65
<b>Total</b>	<b>100.0</b>

### 2.7 Manufacture

The manufacturing processes occur at Securistyle factory: 1) Stainless Steel processing - punching rolling, forming & cropping of strip for links and track 2) impact riveting of sub-assemblies 3) Final build assembly - manual assembly, riveting, checking and complete packing of product

The factory of Securistyle, Princess Elizabeth Way, Cheltenham, Glos GL51 7RE has a quality management system certified according to ISO 9001:2008 (Certificate Number FM11016)

### 2.8 Environment and health during manufacturing

- Environmental operations, GHG, energy, water, 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 to evaluate the

effectiveness of the environmental management program.

- The manufacturing site in Cheltenham has an environmental management system certified according to ISO 14001:2004
- Any waste metals during machining are separated and recycled.

### 2.9 Product processing / Installation

Sterling & Storm Hinges are distributed and installed by trained installation technicians; such as, façade engineers, curtain wall builders, etc., adhering to local/national standards and requirements.

### 2.10 Packaging

Sterling & Storm Hinges are packed in pairs of 25 or 10 (depending on size and weight) in a cardboard box. The packaging is fully recyclable with maximum dimensions: 755 mm x 125mm x 100 mm

Material	Percentage in mass (%)
Cardboard/paper	100.0
<b>Total</b>	<b>100.0</b>

### 2.11 Condition of use

In façade openings fitted with the opening cavity of a vent. Must be installed and maintained in line with Securistyle 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

The product is not fireproof. The product is tested in accordance with EN12101 natural smoke and heat exhaust ventilation and is suitable to use in approved buildings

#### 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

It is possible to re-use the product during the reference service life and it can be moved from one window to another. 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.

### 2.16 Disposal

No disposal is foreseen for the Mechanical Exit Device nor for the corresponding packaging.

## 2.17 Further information

Securistyle  
Princess Elizabeth Way  
Cheltenham

GL51 7RE (UK)  
Tel +44 1242 221200  
Web [www.securistyle.co.uk](http://www.securistyle.co.uk)

## 3. LCA: Calculation rules

### 3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of Sterling & Storm Hinge 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	2.28 kg	1 piece of hinge
Conversion factor to 1 kg	0.438	-

### 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 and loads

### 3.3 Estimates and assumptions

Transportation: Data on mode of transport and distances, as reported by suppliers were used for those materials and parts contributing more than 2% of total product mass. In case of unknown transport distances for parts and materials, contributing less than 2% to the total product mass, transport by road over an average distance of 500 km was assumed.

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 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 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 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

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)	0.0382	kg

### Reference service life

Name	Value	Unit
Reference service life	12	a

### End of life (C2-C4)

Name	Value	Unit
Collected separately Stainless Steel, Zinc	2.27	kg
Recycling Stainless Steel	2.25	kg
Recycling Zinc	0.0148	kg
Reuse Plastic Parts	0.0073	kg
Reuse Paper	0.0382	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	2.31	kg
Recycling Stainless Steel	97.40	%
Recycling Zinc	0.63	%
Reuse Paper	1.65	%
Reuse Plastics	0.32	%

## 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 <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	X	X	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece Securistyle Sterling & Storm hinges

Parameter	Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
GWP	Global warming potential	[kg CO <sub>2</sub> -Eq.]	1.52E+01	5.52E-02	5.41E-02	5.42E-03	0.00E+00	1.83E-02	-3.04E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	7.00E-10	2.64E-13	2.47E-13	2.60E-14	0.00E+00	5.52E-14	-1.07E-10
AP	Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	1.08E-01	2.52E-04	1.23E-05	2.48E-05	0.00E+00	4.67E-06	-2.42E-02
EP	Eutrophication potential	[kg (PO <sub>4</sub> ) <sup>3-</sup> - Eq.]	6.44E-03	5.77E-05	2.15E-06	5.67E-06	0.00E+00	3.54E-07	-1.39E-03
POCP	Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	6.31E-03	-8.14E-05	8.75E-07	-8.01E-06	0.00E+00	2.27E-07	-1.51E-03
ADPE	Abiotic depletion potential for non-fossil resources	[kg Sb Eq.]	5.49E-03	2.08E-09	9.77E-10	2.04E-10	0.00E+00	1.21E-09	-1.39E-03
ADPF	Abiotic depletion potential for fossil resources	[MJ]	1.72E+02	7.61E-01	1.52E-02	7.48E-02	0.00E+00	7.76E-03	-3.26E+01

### RESULTS OF THE LCA - RESOURCE USE: One piece Securistyle Sterling & Storm hinges

Parameter	Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	1.75E+01	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	1.75E+01	3.00E-02	1.41E-03	2.95E-03	0.00E+00	5.69E-04	-2.67E+00
PENRE	Non-renewable primary energy as energy carrier	[MJ]	1.93E+02	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	1.93E+02	7.64E-01	1.78E-02	7.51E-02	0.00E+00	8.62E-03	-3.42E+01
SM	Use of secondary material	[kg]	2.32E+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 <sup>3</sup> ]	9.17E-02	2.12E-05	1.57E-04	2.08E-06	0.00E+00	4.48E-05	-1.88E-02

### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

#### One piece Securistyle Sterling & Storm hinges

Parameter	Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1.17E-02	1.74E-06	1.22E-06	1.71E-07	0.00E+00	6.03E-07	-5.26E-04
NHWD	Non-hazardous waste disposed	[kg]	3.68E+00	9.60E-05	1.36E-03	9.44E-06	0.00E+00	1.71E-03	-8.88E-01
RWD	Radioactive waste disposed	[kg]	8.48E-03	1.00E-06	1.04E-06	9.83E-08	0.00E+00	3.43E-07	-6.08E-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	0.00E+00
MFR	Materials for recycling	[kg]	0.00E+00	0.00E+00	3.82E-02	0.00E+00	2.27E+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	0.00E+00
EEE	Exported electrical energy	[MJ]	0.00E+00	0.00E+00	6.84E-02	0.00E+00	0.00E+00	3.51E-02	0.00E+00
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	1.93E-01	0.00E+00	0.00E+00	9.63E-02	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 99% 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 stainless steel, with approx. 98%, mainly due to the energy consumption on this

process. Stainless steel accounts with the majority of 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](http://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](http://www.bau-umwelt.de)

### **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)

### **ISO 14025**

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

### **ISO 14001**

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

### **ISO 9001**

Quality management systems

### **EN 13126**

Fittings for windows and window doors

### **EN 12101**

Smoke and heat control systems

### **BS 6375-1:2009**

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

### **BS 6375-2:2009**

Performance of windows and doors. Classification for operation and strength characteristics and guidance on selection and specification

### **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 <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	X	X	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece Securistyle Sterling & Storm hinges

Parameter	Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
GWP	Global warming potential	[kg CO <sub>2</sub> -Eq.]	1.52E+01	5.52E-02	5.41E-02	5.42E-03	0.00E+00	1.83E-02	-3.04E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	7.45E-10	2.81E-13	2.63E-13	2.76E-14	0.00E+00	5.87E-14	-1.14E-10
AP	Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	1.04E-01	3.30E-04	1.49E-05	3.24E-05	0.00E+00	5.48E-06	-2.31E-02
EP	Eutrophication potential	[kg N-eq.]	3.32E-03	2.33E-05	8.61E-07	2.29E-06	0.00E+00	1.67E-07	-7.04E-04
Smog	Ground-level smog formation potential	[kg O <sub>3</sub> -eq.]	1.14E+00	6.79E-03	3.49E-04	6.68E-04	0.00E+00	4.31E-05	-2.48E-01
Resources	Resources – resources fossil	[MJ]	1.07E+01	1.09E-01	1.78E-03	1.08E-02	0.00E+00	7.99E-04	-1.51E+00

### RESULTS OF THE LCA - RESOURCE USE: One piece Securistyle Sterling & Storm hinges

Parameter	Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	1.75E+01	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	1.75E+01	3.00E-02	1.41E-03	2.95E-03	0.00E+00	5.69E-04	-2.67E+00
PENRE	Non-renewable primary energy as energy carrier	[MJ]	1.93E+02	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	1.93E+02	7.64E-01	1.78E-02	7.51E-02	0.00E+00	9E-03	-3.42E+01
SM	Use of secondary material	[kg]	2.32E+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 <sup>3</sup> ]	9.17E-02	2.12E-05	1.57E-04	2.08E-06	0.00E+00	4.48E-05	-1.88E-02

### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: Securistyle Sterling & Storm hinges

Parameter	Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1.17E-02	1.74E-06	1.22E-06	1.71E-07	0.00E+00	6.03E-07	-5.26E-04
NHWD	Non-hazardous waste disposed	[kg]	3.68E+00	9.60E-05	1.36E-03	9.44E-06	0.00E+00	1.71E-03	-8.88E-01
RWD	Radioactive waste disposed	[kg]	8.48E-03	1.00E-06	1.04E-06	9.83E-08	0.00E+00	3.43E-07	-6.08E-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	3.82E-02	0.00E+00	2.27E+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	6.84E-02	0.00E+00	0.00E+00	3.51E-02	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	1.93E-01	0.00E+00	0.00E+00	9.63E-02	-





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