ENVIRONMENTAL PRODUCT DECLARATION

ADAMS RITE MS1850S MS® SINGLE POINT LOCK



The MS1850S Series MS® Deadlock utilizes a laminated stainless steel bolt, activated by a pivot mechanism to provide maximum security for a single leaf, narrow stile door.



ASSA ABLOY is committed to providing products and services that are environmentally sound throughout the entire production process and the product lifecycle. Our unconditional aim is to make sustainability a central part of our business philosophy and culture, but even more important is the job of integrating sustainability into our business strategy. The employment of EPDs will help architects, designers and LEED-APs select environmentally preferable door openings. The Adams Rite MS1850S® Single Point Lock EPD provides detailed requirements with which to evaluate the environmental and human health impacts related to producing our door openings. ASSA ABLOY will continue our efforts to protect the environment and health of our customers/end users and will utilize the EPD as one means to document those efforts.



ENVIRONMENTAL PRODUCT DECLARATION



ASSA ABLOY ASSA ABLOY/ Adams Rite Manufacturing MS1850S MS®

According to EN 15804 and ISO 14025 Dual Recognition by UL Environment and Institut Bauen und Umwelt e.V.

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. <u>Exclusions</u>: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. <u>Accuracy of Results</u>: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. <u>Comparability</u>: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



| PROGRAM OPERATOR | UL Environment |
|------------------------|--|
| DECLARATION HOLDER | ASSA ABLOY / Adams Rite Manufacturing |
| ULE DECLARATION NUMBER | 4786545067.123.1 |
| IBU DECLRATION NUMBER | EPD-ASA-20150137-IBA1-EN |
| DECLARED PRODUCT | Single-point locks – MS1850S Series MS® |
| REFERENCE PCR | IBU: PCR Locks and fittings (mechanical & electromechanical locks & fittings), 07-2014 |

| DATE OF ISSUE | April 18, 2015 |
|--------------------|----------------|
| PERIOD OF VALIDITY | 5 years |

| CONTENTS OF THE DECLARATION | General information Product / Product description LCA calculation rules LCA scenarios and further technical information LCA results References | |
|---|---|---|
| The PCR review was conduc | ted by: | IBU – Institut Bauen und Umwelt e.V. PCR was approved by the Independent Expert Committee (SVA) |
| The CEN Norm EN 15804 serves as the core PCR. This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories | | WB |
| | 🖂 EXTERNAL | Wade Stout |
| This life cycle assessment was independently verified in accordance with EN 15804 and the reference PCR by: | | IBU – Institut Bauen und Umwelt e.V. |



Environment



General Information

Adams Rite Manufacturing

Programme holder

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

Declaration number

EPD-ASA-20150137-IBA1-EN

This Declaration is based on the Product Category Rules:

IBU: PCR Locks and fittings (mechanical & electromechanical locks & fittings), 07-2014 (PCR tested and approved by the independent expert committee (SVA))

Issue date

18.05.2015

Valid to

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

Mann

Dr.-Ing. Burkhart Lehmann (Managing Director IBU)

2. Product

2.1 Product description

Product name: Adams Rite MS1850S Series MS® Deadlock

Product characteristic: Single point deadlocks

The MS1850S Series MS® Deadlock utilizes a laminated stainless steel bolt, activated by a pivot mechanism to provide maximum security for a single leaf, narrow stile door. The nearly 3" long bolt activated by an uncomplicated pivot mechanism, has made this basic MS® Deadlock the standard of the narrow stile door industry.

2.2 Application

The Adams Rite MS1850S Deadlocks provide maximum security for a single leaf, narrow stile door, even a very tall and flexible one or an installation where the gap between the door and jamb is greater than it should be.

2.3 Technical Data

The table presents the technical properties of Adams Rite MS1850S Series MS® Deadlock:

MS1850S Series MS®

Owner of the Declaration

Hanchett Entry Systems, Inc. 10027 S. 51st Street, Suite 102 Phoenix, AZ 85044 USA

Declared product / Declared unit

The declaration represents 1 single point deadlock, with stainless steel, pivoting, high-security bolt.

Scope:

This declaration and its LCA study are relevant to Adams Rite MS1850S Series MS® Deadlock.

The primary manufacturing processes are made by external suppliers and the final manufacturing processes and assembly for all door locking components occur at the manufacturing factory in Shenzhen, China. 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 and data according to ISO 14025



(Independent verifier appointed by SVA)

Technical data

| Name | Value | Unit | |
|--|----------------------------|--------|--|
| Dimensions | | | |
| 1. Case, 31/32" backset (W x H x D) | 1" x 6" x 1-5/8" | Inches | |
| Case, 1-1/8" backset (W x H x D) | 1" x 6" x 1- 25/32" | Inches | |
| Case, 1-1/2" backset (W x H x D) | 1" x 6" x 2-1/4" | Inches | |
| 2. Bolt (W x H x D) | 5/8" x 1-3/8" x 2- 7/8" | Inches | |
| 3. Faceplate (W x H) | 1" x 6-7/8" | Inches | |
| Weight | 1-1/2 | lbs | |
| Operating Temperature | -40 to +120 | deg F | |

2.4 Placing on the market / Application rules The products are subject to ANSI/BHMA marking. Relevant norms are: ANSI/BHMA A156.36-2010

2.5 Delivery status

Single point deadlocks are delivered as separate lock bodies in a box size 4-7/8" x 8-1/4" x 2-1/2".



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2.6 Base materials / Ancillary materials

The average composition for Adams Rite MS1850S Deadlock as following:

| Component | Percentage in mass (%) | |
|-----------|------------------------|--|
| Steel | 99.82 | |
| Other | 0.18 | |
| Total | 100.0 | |

2.7 Manufacture

The primary manufacturing processes occur by Tier 1 suppliers in Shenzhen, China and the final manufacturing processes for single point deadlock units occur in US.

The components come from processes like stamped steel, turning, zinc and steel casting.

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 roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.

2.9 Product processing/Installation

Adams Rite MS1850S Deadlocks are distributed through and installed by trained installation technicians, such as locksmiths, carpenters etc. adhering to local/national standards and requirements.

2.10 Packaging

Adams Rite MS1850S Deadlocks are packaged in cardboard packaging. Packaging includes two paper sheets (installation instruction and drilling template) – all of which are fully recyclable.

| Material | Value (%) |
|------------------|-----------|
| Cardboard/ Paper | 100.0 |
| Total | 100.0 |

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of single point lock Adams Rite MS1850S Series 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 lock | | |
| Mass | 2.40 | kg | | |
| Conversion factor to 1 kg | 0.42 | - | | |

2.11 Condition of use

Annual inspection is recommended in order to guarantee correct functionality of the product and the door leaf. The inspection includes: checking, fixing screws to ensure they are properly tight, correct adjustments (closing speeds, force), compliance with local legal inspection standards and greasing all the moving parts of the arm.

2.12 Environment and health during use

There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product.

2.13 Reference service life

The typical life time of Adams Rite MS1850S Deadlock is 20 years, dependent on frequency of use and environmental conditions.

2.14 Extraordinary effects

Water

Contain no substances that have any impact on water in case of flood. Electric operation of the device will be influenced negative.

Mechanical destruction

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

2.15 Re-use phase

The product is possible to re-use during the reference service life and be moved from one door to another. The majority, by weight, of components is steel, aluminum alloy which can be recycled. The locks can be mechanically dissembled to separate the different materials. The plastic components can be used for energy recovery within a waste incineration process.

2.16 Disposal

The product can be mechanically dissembled to separate the different materials. 99.83% of the materials used are recyclable. The rest is disposed as a construction waste for landfill.

2.17 Further information

Adams Rite Manufacturing 10027 S. 51st Street, Suite 102 Phoenix, AZ 85044 USA www.AdamsRite.com

3.2 System boundary

Type of the EPD: cradle to gate - with Options The following life cycle phases 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

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 phase, 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 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 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

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).

| Name | Value | Unit |
|---|-------|------|
| Output substances following waste treatment on site (Paper packaging) | 0.091 | kg |

Reference service life

| Name | Value | Unit |
|------------------------|-------|------|
| Reference service life | 20 | а |

End of life (C1-C4)

| Name | Value | Unit |
|---|-------|------|
| Collected separately Steel | 2.396 | kg |
| Collected as mixed construction waste – construction waste for landfilling | 0.004 | kg |
| Recycling Steel | 2.396 | kg |
| Landfilling - Construction waste for | 0.004 | kg |

| Name | Value | Unit |
|-------------|-------|------|
| landfilling | | |

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

| Name | Value | Unit |
|--|-------|------|
| Collected separately waste type Door closer (including packaging) | 2.492 | kg |
| Recycling Steel | 96.17 | % |
| Reuse Paper packaging (from A5) | 3.66 | % |
| Loss Construction waste for landfilling (no recycling potential) | 0.17 | % |



Results shown below were calculated using CML 2001 – Apr. 2013 Methodology.

| DESC | CRIPT | | F THE | SYST | EM B | OUN | DARY | (X = IN | CLUD | ED IN | LCA; | MND = | | JLE N | IOT DE | CLARED) | | |
|---|--|---|---|---|--|--|--|--|--|---|---|---|--|--|---|--|--|--|
| PROI | RODUCT STAGE | | | | | USE STAGE | | | | | | | | END OF LIFE STAGE Molition Asste processing Recycling- Recyclin | | | | |
| Raw material supply | Transport | Manufacturing | Transport from the gate to the site | Assembly | esN | Maintenance | Repair | Replacement ¹⁾ | Refurbishment ¹⁾ | Operational energy use | Operational water use | De-construction demolition | De-construction demolition Transport | | Disposal | Reuse- Recovery- Recycling- potential | | |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 C | | C2 | C2 C3 | | D | | |
| Х | Х | Х | Х | Х | MND | MND | | MND | MND | MND | MND | ID MND X N | | | MND | Х | | |
| RESL Serie | | OF TH | | \ - EN\ | VIRON | IMEN | TAL IN | IPACT | : One | piece | of sin | gle po | int loc | k Ada | ms Rit | e MS1850S | | |
| Paran | neter | | Par | rameter | | | Un | it | A1 - | A3 | A4 | | A5 | | C2 | D | | |
| GV | VP | C | Global wa | rming pc | otential | | [kg CO | 2-Eq.] | 6.29E | +00 | 1.44E- | 01 | 1.29E-01 | 5. | .04E-03 | -3.38E+00 | | |
| OD | PΡ | Depletio | on potenti ozc | ial of the one layer | | neric | [kg CFC | 11-Eq.] | 2.24 | E-10 | 2.07E- | 12 | 5.91E-13 | 1. | .40E-12 | 8.29E-12 | | |
| A | Р | Acidifica | Acidification potential of land and water [kg SO ₂ -Eq.] | | | | | | 4.24 | -02 | 6.61E- | 04 | 2.95E-05 | 2. | .37E-05 | -1.29E-02 | | |
| E | P | | Eutrophic | | | | [kg (PO ₄ |) ³⁻ - Eq.] | 4.06 | -03 | 1.49E- | 04 | 5.14E-06 | 3. | .70E-06 | -1.07E-03 | | |
| PO | СР | Formation potential of troposphe photochemical oxidants | | | | | [kg Ethe | en Eq.] | 3.80 | 0E-03 -2.09E | | 04 2.09E-06 | | -3 | 8.74E-06 | -1.92E-03 | | |
| AD | PE | Abiotic depletion potential for non fossi resources | | | | iossil | [kg Sb | Eq.] | 2.46 | E-06 | 5.66E- | 09 | 2.33E-09 | | .12E-10 | -2.16E-06 | | |
| | ADPF Abiotic depletion potential for fossil resources | | | | | MJ] 7.37E+01 1.99E+ | | | | | | | | | | | | |
| AD | PF | 710101 | | | al for fos | sil | [M | J] | 7.37E | +01 | 1.99E+ | 00 | 3.62E-02 | 7. | .14E-02 | -3.18E+01 | | |
| | | | res | sources | | | | · | | | point lo | ock Ad | dams R | | S1850 | S Series | | |
| RESU | | | res | sources | SOUR | | | · | e of s | | point lo | | | | | | | |
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| RESU Paran PE PE PE PE PE S RS RS RS RESU Adam | JLTS meter RE RM RT NRE VRT VRT SF SF W JLTS ns Rit meter | OF TH Renew Ren Total Non Total Usa | resevent of non Use of non | A RES Paran mary en primary en primary en primary en terial ut f renewa carr le prima utiliza on renev resou of second newable renewat e of net f A OU Series Parameter | SOUR neter ergy as a energy re- titilization any energy ary energy ation wable prim- irces dary mate esecond ble second ble second ble second tresh war TPUT er | energy esource ary energy gy as e y as m imary e terial ary fue ndary f ter FLO | SE: Or carrier es as ergy nergy aterial energy ls uels WS AN | e piec Unii [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] | ee of s 5 0 5 7 0 7 0 7 0 0 1 7 0 0 5 5 7 0 1 0 0 5 7 7 1 0 0 5 7 7 1 0 0 7 7 1 0 0 7 7 7 1 0 0 7 7 7 7 | A1 - A3 .34E+00 .00E+00 .34E+00 .34E+00 .70E+0 .70E+0 .00E+00 .00E+00 .51E-02 ATEG 3 | point lo 0 0 0 0 0 0 1 0 1 0 0 1 0 0 0 1 0< | Deck Ac - - - - 2E-02 - - E+00 E+00 DE+00 DE+00 DE-05 : One | dams F A5 - - 3.38E- - - 4.25E- 0.00E+ 0.00E+ 0.00E+ 3.76E- piece A5 | Rite Mile 03 | S1850S C2 - - 8.48E-03 - - 8.46E-02 0.00E+0000000000 | Series D - 5.46E-01 - 0.00E+00 0.00E+00 -1.91E-03 int lock D | | |
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| RESU Paran PE PE PEN PEN PEN S RS RS RS RS RS NR RESU Adam | JLTS meter RE RM RT NRE VRT NRT SF SF SF W JLTS SF SF W JLTS SF NS Rit WD WD | OF TH Renew Ren Total Non Total Usa | resevent of non Use of non Use Hazardou n hazardou | A RES Paran mary en primary en primary en primary en resou of renewa resou of second newable renewate of net f A OU Series Paramete us waste dous waste | SOUR neter ergy as a ergy as a | ce U energy esource ary energy gy as e y as m imary energy gy as e y as m imary energy gy as e terial ary fue ndary f ter FLO | SE: Or carrier es as ergy nergy aterial energy ls uels WS AN Ur | e piec Unii [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] | ee of s 5 0 5 0 5 7 0 7 0 0 7 0 0 1 7 0 0 1 0 5 5 7 7 1 0 0 1 7 7 1 0 0 1 7 7 1 0 0 1 7 7 1 0 0 1 5 5 1 7 7 7 1 1 7 7 7 1 1 9 1 9 1 9 1 9 1 9 | A1 - A3 .34E+00 .34E+00 .34E+00 .34E+00 .70E+07 .70E+07 .28E-01 .00E+00 .51E-02 ATEG .3 03 02 | point lo 0 0 0 0 0 0 1 0 1 0 1 0 0 1 0 0 1 0< | Dck Ac - - - 2E-02 - - E+00 E+00 E+00 DE+00 E+00 E+00 < | As As As As As As As As As As | Rite Mile 03 | S1850S C2 - - 8.48E-03 - 8.46E-02 0.00E+0000 0.00E+0000000000 | Series D - 5.46E-01 - 5.46E-01 - - - -3.00E+01 0 0.00E+00 0.00E+00 0.00E+00 -1.91E-03 Int lock D 2.23E-03 -4.82E-02 | | |
| RESU Paran PE PE PEN PEN PEN S S R: S R: S R: S R: S R: S R: S R: S | JLTS meter RE RM RT NRE VRT NRT SF SF W JLTS ns Rit meter WD | OF TH Renew Ren Total Non Total Usa | resevable pri- newable pri- renewable pri- renewable renewable renewable use of n Use of renewable use of non Use of renewable use of renewable use of renewable | A RES Paran mary en primary en primary en primary en resou of renewa resou of second newable ren | SOUR neter ergy as a ergy as a | ce U energy essource ary energy gy as e y as m imary energy gy as e y as m imary energy gy as e terial ary fue ndary f ter FLOO | SE: Or carrier es as ergy nergy aterial energy ls uels WS AN | e piec Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] | ee of s 5 0 5 0 5 7 0 7 0 0 7 0 0 1 7 0 0 1 7 5 5 7 0 0 1 7 7 1 0 0 2 7 7 1 0 0 1 7 7 1 0 0 1 7 7 1 0 0 1 5 5 1 7 7 7 1 1 9 1 9 1 1 9 1 9 1 9 1 9 1 9 | A1 - A3 .34E+00 .34E+00 .34E+00 .34E+00 .70E+07 .70E+07 .228E-01 .00E+00 .00E+00 .51E-02 ATEG .3 03 03 02 03 | point lo 0 0 0 0 0 0 1 0 1 0 0 1 0 0 0 1 0< | Deck Ac - - - 2E-02 - - E+00 E+00 < | dams F A5 - - 3.38E- - - 4.25E- 0.00E+ 0.00E+ 0.00E+ 3.76E- piece A5 2.92E-06 | Rite Mile 03 4 03 4 03 4 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 1 5.0 1.1 5.1 5.1 | S1850S C2 - - 8.48E-03 - - 8.46E-02 0.00E+0000 0.00E+0000 0.00E+0000000000 | Series D - 5.46E-01 - 5.46E-01 - - -3.00E+01 0 0.00E+00 0 0.00E+00 0 0.00E+00 1.91E-03 D 2.23E-03 | | |
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| RESU Paran PE PE PE PE PE PE RS RS RS RS RS RS RS RS RS RS RS RS RS | JLTS meter RE RM RT NRE NRT NRT SF SF W JLTS SF W JLTS SF W U JLTS SF RU FR ER | OF TH Renew Ren Total Non Total Usa OF TH e MS1 | resevable pri rewable pri renewable pri renewable renewab use of n Use of Jse of re e of non Use of renewab renewab renewab renewab use of n Use of F Hazardou n hazaro Radioacti Compo Materi laterials | A - RES Paran mary en primary en primary en primary en primary en resou of renewa de prima utiliza on renew resou of second newable rene | SOUR neter ergy as a energy re- titilization ble primurces ary energent ary energent ation wable primurces dary mate a second ble second ble second ble second ble second ble second ble second ble second cresh war TPUT er e dispose ste dispose | ce U energy essourcc ary energy gy as e y as m imary energy gy as e y as m imary energy gy as e terial ary fue ndary f ter FLOO | SE: Or carrier es as ergy nergy aterial energy ls uels WS AN WS AN | Pepiec Unit [MJ] | ee of s 5 5 0 5 7 0 5 7 7 0 0 7 7 0 0 1 7 7 0 0 1 7 7 1 0 0 1 1 9 5 7 7 1 0 0 1 1 9 7 7 1 0 0 1 1 7 7 7 1 0 0 1 5 5 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | A1 - A3 .34E+00 .34E+00 .34E+00 .70E+ | point lo 0 0 0 0 0 1 0 1 0 1 0 0 1 0 1 0 0 0 1 0 | Deck Ac - - - 2E-02 - - E+00 E 0 0 0 0 0 0 0 0 0 | As As As As As As As A25E- 0.00E+ 0.0 | Rite Mile 03 4 03 4 03 4 03 4 03 4 03 4 04 5 05 5.0 1.1 5.5 0.0 0.0 0.0 0.0 0.0 0.0 | S18503 C2 - - 8.48E-03 - 8.48E-03 - - 8.46E-02 0.00E+00 0.00E+00 0.00E+00 0.00E+00 00E+00 00E+00 00E+00 00E+00 00E+00 | Series D - 5.46E-01 - 5.46E-01 - - - -3.00E+01 0 0.00E+00 0.00E+00 0.00E+00 -1.91E-03 Int lock D 2.23E-03 -4.82E-02 | | |
| RESU Paran PE PE PE PE PE PE RS RS RS RS RS RS RS RS RS RS RS RS RS | JLTS meter RE RM RT NRE NRT NRT SF SF SF W JLTS SF SF W JLTS SF W U JLTS SF RT WD NRT SF SF SF SF SF W SF SF SF SF SF ST SF SF ST ST ST ST ST ST ST ST ST ST ST ST ST | OF TH Renew Ren Total Non Total Usa OF TH e MS1 | resevable pri- rewable pri- renewable pri- renewable renewable use of n Use of non Use of re e of non Use of E LCA Radioacti Compo Materi- laterials i Exported | A - RES Paran mary en primary en aterial u f renewa carri le prima carri le prima carri newable renew | SOUR neter ergy as a energy re- titilization ble primurces ary energent ary energent ation wable primurces dary mate a second ble second ble second ble second ble second ble second ble second ble second cresh war TPUT er e dispose ste dispose | energy esourcc ary energy gy as e y as m imary energy gy as e y as m imary energy gy as e terial ary fue ndary f ter FLOO | SE: Or carrier es as ergy nergy aterial energy ls uels WS AN WS AN | Pepieo Unit [MJ] [M] [M] <t< td=""><td>ee of s 5 5 0 5 7 0 5 7 0 0 7 0 0 7 0 0 1 7 7 0 0 1 7 7 1 0 0 1 7 7 1 0 0 1 7 7 1 0 0 1 7 7 7 1 0 0 1 7 7 7 1 0 0 1 5 5 1 7 7 7 7 7 1 0 0 1 5 5 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7</td><td>A1 - A3 .34E+00 .34E+00 .34E+00 .70E+</td><td>point lo 0 0 0 0 0 1 0 1 0 1 0 1 0 0 1 0 0 0 1 0</td><td>Dck Ac -</td><td>dams F A5 - - 3.38E- - - 4.25E- 0.00E+ 0.00E+ 0.00E+ 0.00E+ 3.76E- piece 2.92E-06 3.25E-03 2.48E-06 0.00E+00 3.13E-02</td><td>Rite Mile 03 I 03 I 03 I 03 I 03 I 04 I 05 Sin 06 I 07 Sin 08 Sin 09 I 00 <tdi< td=""> I</tdi<></td><td>S18503 C2 - - 8.48E-03 - 8.48E-03 - - 8.46E-02 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00</td><td>Series D - 5.46E-01 - 5.46E-01 - - - -3.00E+01 0 0.00E+00 0.00E+00 0.00E+00 -1.91E-03 Int lock D 2.23E-03 -4.82E-02</td></t<> | ee of s 5 5 0 5 7 0 5 7 0 0 7 0 0 7 0 0 1 7 7 0 0 1 7 7 1 0 0 1 7 7 1 0 0 1 7 7 1 0 0 1 7 7 7 1 0 0 1 7 7 7 1 0 0 1 5 5 1 7 7 7 7 7 1 0 0 1 5 5 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | A1 - A3 .34E+00 .34E+00 .34E+00 .70E+ | point lo 0 0 0 0 0 1 0 1 0 1 0 1 0 0 1 0 0 0 1 0 | Dck Ac - | dams F A5 - - 3.38E- - - 4.25E- 0.00E+ 0.00E+ 0.00E+ 0.00E+ 3.76E- piece 2.92E-06 3.25E-03 2.48E-06 0.00E+00 3.13E-02 | Rite Mile 03 I 03 I 03 I 03 I 03 I 04 I 05 Sin 06 I 07 Sin 08 Sin 09 I 00 I 00 <tdi< td=""> I</tdi<> | S18503 C2 - - 8.48E-03 - 8.48E-03 - - 8.46E-02 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 | Series D - 5.46E-01 - 5.46E-01 - - - -3.00E+01 0 0.00E+00 0.00E+00 0.00E+00 -1.91E-03 Int lock D 2.23E-03 -4.82E-02 | | |



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 phase (modules A1-A3) contributes between 91% and 100% to the overall results for all the environmental impact assessment categories hereby considered. Within the production phase, the main contribution for all the impact categories is the production of steel, with app. 99%, mainly due to the energy consumption on this process. Steel accounts

7. Requisite evidence

Not applicable in this EPD.

8. References

Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin (pub.): Generation of Environmental Product Declarations (EPDs);

General principles

for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013-04 www.bau-umwelt.de

IBU PCR Part A

IBU PCR Part A: Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. April 2013

www.bau-umwelt.de

IBU PCR Part B

IBU PCR Part B: PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B: Requirements on the EPD for Locks and fittings. www.bau-umwelt.com

ANSI/BHMA A156.36

ANSI/BHMA A156.36-2010: Auxiliary Locks

with app. 99% to the overall mass of the product,

composition of the product. The environmental impacts

for the transport (A2) have a negligible impact within

In the end-of-life phase, there are loads and benefits

declared for the recycling potential of the metals and

for the credits from the incineration process (energy

(module D. negative values) considered. The benefits

are considered beyond the system boundaries and are

therefore, the impacts are in line with the mass

ISO 14025

this stage.

substitution).

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

EN 15804

EN 15804: 2012+A1:2014: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

GaBi 6 2013

GaBi 6 2013: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Echterdingen, 1992-2013.

GaBi 6 2013D

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



Results shown below were calculated using TRACI Methodology.

| DESC | RIPT | ION O | F THE | EM B | OUND | ARY | (X = IN | ICLU | JDEI |) IN | LCA; | MND : | = MO | DU | LE N | OT DE | CL | ARED) | | | |
|------------------------|---|---|-------------------------------------|------------------------|-----------|-------------|----------|-----------------------------------|-----------------------------|--------------------|---------|--------------------------|----------------------------------|----------------|-------------|----------------|----------------------|--|--------------------------------------|--|--|
| PROE | OUCT S | STAGE | ON PR | TRUCTI OCESS AGE | 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⁾ | Onerational energy | use use | Operational water use | De-construction demolition | Transport | Transport | | Disposal | Reuse- | Recovery- Recycling- potential | | |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B | 5 B6 B7 | | B7 | C1 (| | C2 (| | C4 | | D | | |
| Х | Х | Х | Х | Х | MND | MND | MND | MND | MN | ID N | /ND | MND | D MND X MND M | | | | MND | | Х | | |
| RESU Serie: | | OF TH | IE LCA | 4 - EN' | VIRON | MENT | AL IN | IPAC1 | ר: Or | ne pi | ece | of sin | gle po | oint l | ock | Adaı | ns Rit | e N | IS1850S | | |
| Param | neter | | | Param | eter | | | | Unit | | 4 | A1 - A3 | A4 | | A | 5 | C2 | | D | | |
| GW | 'P | | Globa | al warmir | ng potent | ial | | [kg C | CO2-E | q.] | 6. | .29E+00 | 1.44E | -01 | 1.29 | E-01 | 5.04E- | 03 | -3.38E+00 | | |
| OD | P [| Depletion | potentia | I of the s | ratosphe | eric ozone | e layer | [kg Cl | -C11- | Eq.] | 2 | .39E-10 | 2.20E | -12 | 6.29 | E-13 | 1.49E- | 12 | 8.77E-12 | | |
| AF | > | Acio | dification | potential | of land a | and wate | r | [kg \$ | SO ₂ -Е | q.] | 4 | .39E-02 | 8.60E | -04 | 3.57 | E-05 | 2.73E- | 05 | -1.30E-02 | | |
| EF | > | Eutrophication potential | | | | | [kg | JN-eq. |] | 2 | .17E-03 | 6.05E | -05 | 2.06 | 06E-06 1.69 | | 06 | -7.83E-04 | | | |
| Smo | og | | | | | potential | | [kg O ₃ -eq.] 7.22E-01 | | | | | 1.76E | 1.76E-02 8.34E | | | 04 4.51E-04 | | -1.93E-01 | | |
| Resou | irces | | | | | | | | [MJ] | | 3. | 25E+00 | 2.85E | -01 | 4.25 | 25E-03 8.61E-0 | | 03 | 3.55E-01 | | |
| RESU | II TS | OF TH | IF I CA | - RF | SOUR | CF US | F: Or | | | sin | ale | noint le | ock A | dam | s Ri | te MS | S18503 | s s | eries | | |
| | | | 2 20/ | | | | | Uni | 1 | | - A3 | | t lock Adams Rite MS1850S Series | | | | | | | | |
| | Parameter Parameter PERE Renewable primary energy as energy | | | | enerav a | arrier | [MJ | 5.34E+00 | | - | | - | - | | | - | | | | | |
| PE | RM | | ewable | primary e | energy re | esources | | [MJ | - | 0.00E+00 | | | - | | - | | - | | - | | |
| PE | RT | Tot | al use o | f renewa resou | | ary ener | gу | [MJ | 1J] 5.34E+00 8.42 | | | 2E-02 | E-02 3.38E-03 | | | 8.48E-03 | | 5.46E-01 | | | |
| PEN | IRE | Non | renewał | ole prima cari | | gy as en | ergy | [MJ |] | 7.70E+01 | | | | | - | - | | | - | | |
| PEN | IRM | Non i | renewab | le prima utiliza | | y as mai | terial | [MJ |] | 0.00 | E+0 | 0 | - | | - | | - | | - | | |
| PEN | NRT | Total use of non renewable primary energy resources | | | | | nergy | [MJ] 7.70E+01 2.01E+00 | | | | 4.25E-02 8.46E-02 | | | | -3.00E+01 | | | | | |
| S | М | Use of secondary material | | | | | | [kg] 7.28E-01 0.00 | | | | | 0.00E+00 | | | 0.00E+00 | |) | 0.00E+00 | | |
| R | SF | Use of renewable secondary fuels | | | | | ; | [MJ] 0.00E+00 0.0 | | | | | 0.00E+00 | | | 0 0.00E+00 | |) | 0.00E+00 | | |
| NR | SF | Use | e of non | renewał | ole seco | ndary fue | els | [MJ | [MJ] 0.00E+00 0.00 | | | |)E+00 | E+00 0.00E+00 | | | 0.00E+00 | | 0.00E+00 | | |
| F١ | Ν | Use of net fresh water | | | | | | [m³ |] | 1.51 | E-02 | 2 7.1 | 10E-05 3.76E-04 1.76E-05 -1.91E | | | | | | | | |
| | | | | | | FLOW | IS AN | ID WA | STE | CA | ΓEG | ORIES | : One | piec | e o | fsing | gle po | int | lock | | |
| | | e MS1 | | | | | | | | 42 | | | | 45 | | | <u></u> | Т | D | | |
| | meter | | | Paramet | | | Ur | - | | - A3 | A4 | | A: | | | | C2 | | D | | |
| - | ND IWD | | | us waste dous was | | | [k | | | 2E-03 | - | 9.48E-0 2.60E-0 | | | | | 5.09E-06 | | 2.23E-03 -4.82E-02 | | |
| | ND | | | ive waste | · · | | [k [k | | | 54E-02 31E-03 | | 2.60E-0 7.77E-0 | | | | | 1.77E-05 5.24E-06 | | -4.82E-02 7.29E-04 | | |
| - | RU | | | onents fo | | | [k | - | |)E+00 | | 0.00E+0 | | | | | 0.00E+00 | | - | | |
| | FR | | | als for re | | | [k | - | |)E+00 | | 0.00E+0 | | | | | 0E+00 | | - | | |
| | ER | М | | for energ | | ery | [k | - | |)E+00 | | 0.00E+0 | | | | | 0.00E+00 | | - | | |
| E | EE | | Exported | d electric | al energ | у | [M | IJ] | 0.00 |)E+00 | | 0.00E+0 | 00 | | | 0.0 | 0E+00 | | - | | |
| E | ET | Exported thermal energy [I | | | | | [M | IJ] | 0.00 |)E+00 | | 0.00E+0 | 00 | 4.62E- | 01 | 0.0 | 0E+00 | | - | | |



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