ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

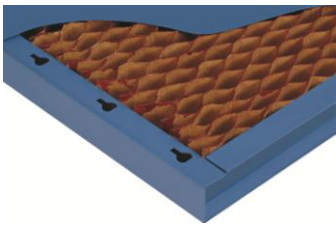
Owner of the Declaration	**ASSA ABLOY Door Group, LLC / Ceco Door**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20150072-IBA1-EN
Issue date	10.04.2015
Valid to	09.04.2020

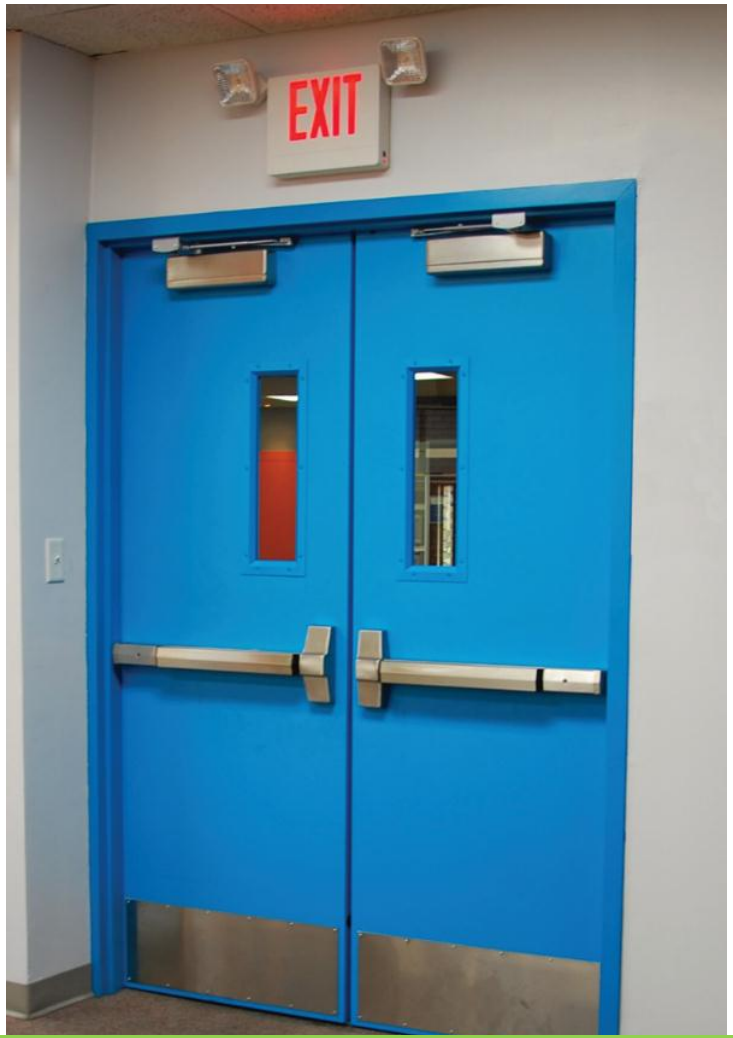
Doors – Regent / Omega door

ASSA ABLOY Door Group, LLC / Ceco Door

Institut Bauen und Umwelt e.V.

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





ASSA ABLOY

The global leader in door opening solutions

1. General Information

ASSA ABLOY Door Group, LLC
Ceco Door

Regent / Omega Door

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

Owner of the Declaration
ASSA ABLOY Door Group
Ceco Door
9159 Telecom Drive
Milan, TN 38358
USA

Declaration number
EPD-ASA-20150072-IBA1-EN

Declared product / Declared unit
This declaration represents 1 Regent/Omega Honeycomb Core Steel Door prime painted.

This Declaration is based on the Product Category Rules:
Windows and doors, 11-2014
(PCR tested and approved by the independent expert committee (SVR))

Scope:
This declaration and its LCA study are relevant to Regent/Omega Honeycomb core 1 3/4" (4.445 cm) steel doors manufactured from 14, 16, 18, 20 gauge cold rolled steel or optional 14, 16, 18, 20 gauge galvanized steel face sheets. All Regent/Omega door component assembly and manufacturing processes are performed at our manufacturing factory - ASSA ABLOY Door and Perimeter Security Group - Ceco Door - Milan, TN, USA. The Regent/Omega doors are marketed under ASSA ABLOY Door Group Ceco Door, Milan, TN, USA.

Issue date
10.04.2015

Valid to
09.04.2020

Verification

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

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

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

Dr. Wolfram Trinius
(Independent verifier appointed by SVR)

2. Product

2.1 Product description
Product name: Regent/Omega Honeycomb Core Steel Door

Product characteristic: Regent doors are made full-flush or (optional) seamless style. Face sheets are commercial quality cold rolled steel (optional) hot-dipped galvanized steel supplied by Nucor (Alabama). Regent full-flush doors have mechanically interlocked, hemmed, hairline seams on vertical edges and have no visible seams on faces. Doors specified "seamless" have no visible seams on faces or vertical edges. 14 gauge doors are seamless vertical edge construction. A one piece, kraft honeycomb core is securely bonded to both face sheets under pressure with contact adhesive. The top and bottom door edges are closed with 16 gauge steel channels welded to both face sheets.

2.2 Application
The Regent/Omega can be used indoors or outdoors. Common applications are: Interior or Exterior door openings, Motels/Hotels, Office Buildings, Urban Renewal, Health Care, Institutional, Mercantile, School/Training Centers, Public Utility Stations, Warehouses/Factories, Manufacturing Plants, Transportation Terminals, Vehicle Service Facilities, and Government Buildings.

2.3 Technical Data
Regent/Omega Doors conform to the Steel Door Institute guide specification, ANSI A250.8 Recommended Specifications for Standard Steel Doors and Frames and ANSI / NAAMM / HMMA 867-06 Guide Specifications for Commercial Laminated Core Hollow Metal Doors and Frames; Available Sizes: 4′0″ x 9′0″ maximum single, 8′0″ x 9′0″ maximum pair.

The table below presents the technical properties of the product:

Technical data

Name	Value	Unit
Thermal Transmittance: (ASTM C1363) with Thermal Break frame	0.53	U-Factor
Thermal Transmittance: (ASTM C1363) with Thermal Break Frame	1.9	R-Value

Physical endurance testing: Exceeds ANSI A250.4 performance test, level A (1,000,000 cycles) class 1 stiffness	1,000,000	cycles
Hurricane rating: Up to +/- 70 psf 4′0″ x 8′0″ single or +/- 70 psf 8′0″ x 8′0″ pair with weather kerf frame & cylindrical lock, mortise lock or rim exit device. ANSI A250.13, ASTM E330, ASTM E1886, ASTM E1996, TAS-201, TAS-202, TAS-203	4′0″ x 8′0″ Single +/- 70 8′0″ x 8′0″ pair +/-70	psf
Fire rating: Up to and including 3 hours 4′0″ x 9′0″ singles and 8′0″ x 9′0″ pairs (UL10C) UL Agency Up to and including 4′0″ x 9′0″ singles and 8′0″ x 9′0″ pairs Warnock Hersey agency 180 minute max	UL & WH180 min 4′0″ x 9′0″ singles & 8′0″ x 9′0″ pairs	minute
Air Infiltration: CFM=cubic feet per minute, ASTM E283 operable tested with ASSA ABLOY Hardware, Sargent, Corbin Russwin, Yale, Pemko, McKinney	0.04	cfm/sqft
Air Infiltration: CFM=cubic feet per minute, ASTM E283 operable tested with ASSA ABLOY Hardware, Sargent, Corbin Russwin, Yale, Pemko, McKinney	0.06	cfm/lnft
Airborn Sound Transmission ASTM E90 and ASTM E413 – Sound Transmission Class (STC) F Design, 18 Ga Face Sheets, (Fully Operable) 4′0″ x 9′0″ maximum size	32	STC

2.4 Placing on the market / Application rules

Regent/Omega doors conform to the Steel Door Institute guide specifications and ASTM / ANSI American Standards, Underwriters Lab and Warnock Hersey Agency:

- ASTM C1363-11 Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus
- ANSI /SDI A250.4-2011 Physical Endurance for Steel Doors, Frames & Frame Anchors Physical endurance testing
- ASTM A250.13 Testing and Rating of Severe Windstorm Resistant Components for Swinging Door Assemblies
- ASTM E330 02 (2010) - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- ANSI/UL 10C Positive Pressure Fire Tests of Door Assemblies
- ASTM E90- Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E283 Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

2.5 Delivery status

Finished Regent/Omega doors are individually packaged then placed horizontally on cardboard pallet and banded to pallet for shipment. Minimum of 1 and max 20 doors per pallet. Package Sizes: Package dimensions are proportionate to the door size: e.g. 3′0″ x 7′0″ door pallet will be 3′0″ x 7′0″ x 44″ (20 doors + 4″ high pallet) 4′0″ x 8′0″ maximum width, 20 doors/pallet = 44″ height.

2.6 Base materials / Ancillary materials

The composition of the steel door is as following:

Component	Percentage in mass (%)
Steel	99.04
Plastics	0.96
Total	**100.0**

2.7 Manufacture

Regent/Omega Door production process utilizes cutting, forming, stamping, CNC, welding, grinding and electrostatic water based painting equipment. Door skins & components are fabricated from 20 ga, 18 ga, 16 ga and 14 ga cold rolled steel conforming to ASTM A1008 or hot-dipped galvanized steel conforming to ASTM A924 and A653. Top & Bottom door skins are mechanically interlocked and welded, hemmed vertical edge seams. Hardware Reinforcements for most lock preps, including concealed hardware, 7 gauge steel hinge reinforcements. Hinge preparations are handed. Hinge edges are mortised for 4-1/2″ or 5″ high, standard and heavy weight hinges. Paint: Electrostatically applied water based prime base coat per ANSI A250.10., Optional Colorstyle factory pre-finish per ANSI A250.3.

All Regent/Omega door component assembly and manufacturing processes are performed at our manufacturing factory - ASSA ABLOY Door and Perimeter Security Group - Ceco Door - Milan, TN, USA.

2.8 Environment and health during manufacturing

ASSA ABLOY Door Group and Ceco Door are committed to protecting human health and the environment; meeting or exceeding Federal, State, and local laws, regulations, codes, and guidelines; and employing sustainable pollution prevention practices. Painting and welding areas of the manufacturing plant has extraction ventilation system to remove dust, VOC and air borne materials. Sound abatement is implemented where possible and Personal Protective Equipment is provided. Waste water is pre-treated prior to dispensing into city water system.

• Ceco's Regent/Omega Honeycomb Hollow Metal Doors are third party certified GREENGUARD Gold by UL Environmental

• 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.

2.9 Product processing / Installation

Doors are typically installed into commercial applications per local, state and federal building codes, standards and requirements. Personal Protective Equipment should be provided at construction site.

2.10 Packaging

Regent/Omega Doors are individually wrapped in protective cardboard and banded with polyethylene to retain door protective packaging. Doors are stacked horizontally on cardboard pallet and banded to pallet for shipment. (max. 20 doors per pallet) Corrugated packaging is 100% recycled. Packaging material and polyethylene banding should be removed from packaging and collected separately for recycling.
Cardboard pallet weighs 10 lbs (4.53 Kg) – we use 1 cardboard pallet for shipping 20 doors = 0.5 pounds (0.2267 Kg) per door
Polypropylene (plastic) banding – each door has 3 bands of polypropylene weight is 0.8 ounces (22.67 grams). One pallet of 20 doors would have 16 ounces (453.592 grams) of polypropylene banding
Cardboard door wrap (protective wrap) each door has 2 pounds (0.9071 Kg) per door, a pallet of 20 doors would have 40 pounds (18.14 Kg) of protective cardboard wrap.

Material	Value (%)
Cardboard/paper	98.81
Plastics	1.19
Total	**100.0**

2.11 Condition of use

Doors are only prime painted, unless the Customer orders the doors factory finish painted. Doors receive an environmentally friendly primer finish designed to provide a rust inhibiting substrate and is intended as a preparatory base for field painting. The primer finish is not designed to be the final layer of protection from outside elements. Primed doors should receive a finish paint topcoat per S.D.I. / NAAMM / HMMA standards for performance. Gasketing and thresholds are used to control the flow of air, smoke, heat or cold, water, and sound through the door opening. The location or intended use of the door assembly, the environment to which it is exposed, and the performance expected will dictate the selection of gasketing and threshold products and the amount of maintenance required. Typical maintenance is to service the painted surface by re-coating the doors as necessary (location and environment will vary the time). This is usually after about 5 years in the field (but can be longer depending on exposure and environment). Repairs or replacement are not usually necessary. No cleaning efforts need to be taken into consideration.

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. Ceco's Regent/Omega Honeycomb Hollow Metal Doors are third party certified GREENGUARD Gold by UL Environmental.

2.13 Reference service life

Properly installed and maintained steel hollow metal doors often last 30 years or longer. Steel Door Institute test standard (ANSI/SDI A250.4- 2001) Level A requires 1,000,000 cycles; Level B requires 500,000 cycles. 18 ga, 16 ga and 14 ga Regent/Omega doors have cycle tested (open/closed) 1,000,000 cycles with no issues; 20 ga Regent/Omega doors have cycle tested (open/closed) 500,000 cycles with no issue. The location and intended use of the steel door assembly, the environment to which it is exposed, and the cycling of the door assembly will determine the steel door assembly life expectancy.

2.14 Extraordinary effects

Fire
Fire Protection
Fire Door Labeling Agency: UL, Intertek / Warnock Hersey and Factory Mutual
Test: UL10C, UL10B NFPA 252
Rating: UL 20 min. to 3 Hours Max size: 4'0" x 9'0" single, Max size 8'0" x 9'0" Pair
UL & WH up to 180 min 4'0" x 8'0" singles and 8'0" x 9'0" pairs 20 ga,
4'0" x 9'0" singles and 8'0" x 9'0" pairs 18,16,14 ga.

Water
No substances are used which have a negative impact on ecological water quality on contact by the door with water. Steel doors subjected to unforeseeable flooding conditions will increase the potential for developing surface rust. The door is designed for traditional locations and is not intended for flood protection.

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

2.15 Re-use phase

The product is possible to reuse during the reference service life and be moved from one similar door opening to another. The majority, by weight, of door components is steel which can be recycled.

In collaboration with the Steel Recycling Institute, customers can utilize a locator tool, allowing them to find a recycling center near them. The locator tool is hosted on the Steel Recycling Institute's website (www.recycle-steel.org); it simply asks the user for location information, and provides the nearest recycling location. The tool is free to use and allows the consumer to travel just a short distance and properly dispose their materials. This free program provides recycling and/or disposal of door and frame products that have reached the end of their life cycle and are beyond the product's warranty period.

2.16 Disposal

No disposal is foreseen for the Regent Door nor for the corresponding packaging.

2.17 Further information

For additional information on our products please visit our web sites:
ASSA ABLOY Door Security Solutions
www.assaabloydss.com, or Ceco Door www.cecodoor.com

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of Regent door as specified in Part B requirements on the EPD for Windows and doors/IBU PCR Part B/.

Declared unit

Name	Value	Unit
Declared unit	1	piece of Regent door
Conversion factor to 1 kg	0.02	
Area	1.95	sqm/pc
Ratio to reference door	0.728	Measuring 1.23 m x 2.18 m = 2.68 sqm/pc (reference door based on EN14351-1)

3.2 System boundary

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

A1-A3 Production stage:

- A1 – Raw material extraction and processing
- A2 – Transport to the manufacturer and
- A3 – Manufacturing.

A4-A5 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 for recycling and
- C4 – Disposal (landfill)

These information modules include provision and transport of all materials, products, as well as energy and water provisions, waste processing up to the end-of-waste state or disposal of final residues.

Module D:

- Declaration of all benefits or recycling potential from EoL and A5

3.3 Estimates and assumptions

Transport:
For materials and pre-products the actual means of transport and distances, provided by the suppliers, were considered

EoL:
In the End-of-Life phase 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:
• Waste incineration of plastic
• Waste incineration of paper
• Waste incineration of wood

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

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

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Plastics packaging)	0.027	kg
Output substances following waste treatment on site (Paper packaging)	2.222	kg

Reference service life

Name	Value	Unit
Reference service life	30	a

End of life (C1-C4)

Name	Value	Unit
Collected separately Steel	44.32	kg
Collected separately Plastics	0.43	kg
Recycling Steel	44.32	kg
Thermal treatment (Plastics)	0.43	kg

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

Name	Value	Unit
Collected separately waste type Regent door (including packaging)	46.99	kg
Recycling Steel Recycling	94.30	%
Reuse Packaging (paper + plastic) (from A5)	4.79	%
Thermal treatment (Plastics)	0.91	%

5. LCA: Results

Results shown below were calculated using CML 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	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 piece of Regent Door

Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
Global warming potential	[kg CO_2-Eq.]	1.13E+02	1.69E+00	1.67E+00	8.38E-01	0.00E+00	1.64E+00	-7.15E+01
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	7.56E-09	8.08E-12	7.55E-12	4.01E-12	0.00E+00	7.34E-12	2.07E-10
Acidification potential of land and water	[kg SO_2-Eq.]	4.20E-01	7.72E-03	3.83E-04	3.84E-03	0.00E+00	3.76E-04	-2.68E-01
Eutrophication potential	[kg $(PO_4)^{3-}$- Eq.]	3.62E-02	1.76E-03	6.52E-05	8.76E-04	0.00E+00	6.32E-05	-2.23E-02
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	5.34E-02	-2.49E-03	2.68E-05	-1.24E-03	0.00E+00	2.61E-05	-4.01E-02
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	1.11E-05	6.36E-08	3.34E-08	3.16E-08	0.00E+00	3.41E-08	-1.47E-06
Abiotic depletion potential for fossil resources	[MJ]	1.32E+03	2.33E+01	4.78E-01	1.16E+01	0.00E+00	4.72E-01	-6.62E+02

RESULTS OF THE LCA - RESOURCE USE: 1 piece of Regent Door

Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	1.11E+02	-	-	-	-	-	-
Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of renewable primary energy resources	[MJ]	1.11E+02	9.18E-01	4.40E-02	4.56E-01	0.00E+00	4.32E-02	1.16E+01
Non renewable primary energy as energy carrier	[MJ]	1.40E+03	-	-	-	-	-	-
Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of non renewable primary energy resources	[MJ]	1.40E+03	2.34E+01	5.59E-01	1.16E+01	0.00E+00	5.51E-01	-6.24E+02
Use of secondary material	[kg]	6.81E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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
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
Use of net fresh water	[m^3]	0.52155	0.00064751	0.0048359	0.00032161	0	0.0047193	-0.042251

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 piece of Regent Door

Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
Hazardous waste disposed	[kg]	1.55E-02	5.32E-05	3.84E-05	2.64E-05	0.00E+00	3.79E-05	4.67E-02
Non hazardous waste disposed	[kg]	1.39E+00	2.94E-03	4.66E-02	1.46E-03	0.00E+00	4.76E-02	-1.02E+00
Radioactive waste disposed	[kg]	3.18E-02	3.06E-05	3.21E-05	1.52E-05	0.00E+00	3.14E-05	1.54E-02
Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
Materials for recycling	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.65E+01	0.00E+00	-
Materials for energy recovery	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
Exported electrical energy	[MJ]	0.00E+00	0.00E+00	2.16E+00	0.00E+00	0.00E+00	2.13E+00	-
Exported thermal energy	[MJ]	0.00E+00	0.00E+00	6.08E+00	0.00E+00	0.00E+00	6.00E+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).

Production phase (module A1-A3) contributes between 93 and 100% to total impact assessment. This stage is dominated by upstream emissions associated with steel manufacturing processes. The environmental impacts for the transport (A2) have a negligible impact within this stage.

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

7. Requisite evidence

Not applicable in this EPD.

8. References

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

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., Königswinter (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
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ANSI / SDI A250.4-2011
ANSI /SDI A250.4-2011: Physical Endurance for Steel Doors, Frames & Frame Anchors Physical endurance testing

ASTM A250.13
ASTM A250.13: Testing and Rating of Severe Windstorm Resistant Components for Swinging Door Assemblies

ASTM C1363-11
ASTM C1363-11: Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

ASTM E90-09
ASTM E90-09: Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

ASTM E283
ASTM E283: Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

ASTM E330 02
ASTM E330 02 (2010): Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

ASTM E413 – 10
ASTM E413 – 10: Classification for Rating Sound Insulation

ASTM E1886-13a
ASTM E1886-13a: Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missiles; and Exposed to Cyclic Pressure Differentials

ASTM E1996-12
ASTM E1996-12: Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes

CEN/TR 15941
CEN/TR 15941: 2010-11 Sustainability of construction works - Environmental product declarations - Methodology for selection and use of generic data

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

EN ISO 14040
EN ISO 14040: 2006, Environmental management - Life cycle assessment - Principles and framework

EN ISO 14044
EN ISO 14044: 2006 Environmental management - Life cycle assessment - Requirements and guidelines

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/

NFPA 252
NFPA 252: Standard methods of fire tests of door assemblies

TAS-201
TAS-201: Large and Small Missile Test Standards, Florida Building Code

TAS-202
TAS-202: Uniform Structural Load Standards, Florida Building Code

TAS-203
TAS-203: Uniform Cyclic Pressure Test Standards, Florida Building Code

UL 10C
UL 10c: Positive Pressure Fire Tests of Door

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 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	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 piece of Regent Door

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	1.13E+02	1.69E+00	1.67E+00	8.38E-01	0.00E+00	1.64E+00	-7.15E+01
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	8.04E-09	8.59E-12	8.03E-12	4.27E-12	0.00E+00	7.81E-12	2.19E-10
AP	Acidification potential of land and water	[kg SO_2-Eq.]	4.24E-01	1.01E-02	4.63E-04	5.01E-03	0.00E+00	4.54E-04	-2.72E-01
EP	Eutrophication potential	[kg N-eq.]	2.40E-02	7.09E-04	2.56E-05	3.52E-04	0.00E+00	2.48E-05	-1.33E-02
Smog	Ground-level smog formation potential	[kg O_3-eq.]	5.98E+00	2.08E-01	1.05E-02	1.03E-01	0.00E+00	1.02E-02	-4.03E+00
Resources		[MJ]	4.46E+01	3.35E+00	5.57E-02	1.66E+00	0.00E+00	5.48E-02	7.68E+00

RESULTS OF THE LCA - RESOURCE USE: 1 piece of Regent Door

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	1.11E+02	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	1.11E+02	9.18E-01	4.40E-02	4.56E-01	0.00E+00	4.32E-02	1.16E+01
PENRE	Non renewable primary energy as energy carrier	[MJ]	1.40E+03	-	-	-	-	-	-
PENRM	Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PENRT	Total use of non renewable primary energy resources	[MJ]	1.40E+03	2.34E+01	5.59E-01	1.16E+01	0.00E+00	5.51E-01	-6.24E+02
SM	Use of secondary material	[kg]	6.81E+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^3]	5.22E-01	6.48E-04	4.84E-03	3.22E-04	0.00E+00	4.72E-03	-4.23E-02

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 piece of Regent Door

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1.55E-02	5.32E-05	3.84E-05	2.64E-05	0.00E+00	3.79E-05	4.67E-02
NHWD	Non hazardous waste disposed	[kg]	1.39E+00	2.94E-03	4.66E-02	1.46E-03	0.00E+00	4.76E-02	-1.02E+00
RWD	Radioactive waste disposed	[kg]	3.18E-02	3.06E-05	3.21E-05	1.52E-05	0.00E+00	3.14E-05	1.54E-02
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	0.00E+00	0.00E+00	4.65E+01	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	2.16E+00	0.00E+00	0.00E+00	2.13E+00	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	6.08E+00	0.00E+00	0.00E+00	6.00E+00	-

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**

Author of the Life Cycle Assessment
PE INTERNATIONAL AG
Hauptstraße 111
70771 Leinfelden-Echterdingen
Germany

Tel +49 711 34 18 17 22
Fax +49 711 34 18 17 25
Mail consulting@pe-international.com
Web **www.pe-international.com**

Owner of the Declaration
ASSA ABLOY Door Group
Ceco Door
9159 Telecom Drive
Milan, TN 38358
USA

Tel +1-731-686-4308
Fax +1-731-686-4285
Mail dan.glover@assaabloy.com
Web **www.cecodoor.com**