ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	**Ceco Door**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20130282-IBC1-EN
Issue date	21.02.2014
Valid to	20.02.2019

Trio-E steel stiffened door

ASSA ABLOY Door Group, LLC / Ceco Door
ASSA ABLOY, INC.

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

Programme holder

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

Declaration number

EPD-ASA-20130282-IBC1-EN

This Declaration is based on the Product Category Rules:

Windows and doors, 10-2012
(PCR tested and approved by the independent expert committee)

Issue date

21.02.2014

Valid to

20.02.2019

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

Dr. Burkhart Lehmann
(Managing Director IBU)

Trio-E Steel Stiffened Door

Owner of the Declaration

Ceco Door
9159 Telecom Drive
38358 / Milan, TN USA

Declared product / Declared unit

This declaration represents 1 TrioE Steel Stiffened Door prime painted.

Scope:

This declaration and its LCA study are relevant to TrioE steel stiffened polyurethane foam in place core 1 3/4" (4.445 cm) hollow metal doors manufactured from 18 gauge cold rolled steel or optional 16 gauge galvanized steel face sheets at a single manufacturing ASSA ABLOY Door Group site - Ceco Door, Milan, TN, USA. All TrioE door component assembly and manufacturing processes are performed at our manufacturing factory - Ceco Door - Milan, TN, USA. The TrioE doors are marketed under the following ASSA ABLOY Door Group brands: Ceco Door, CURRIES and Fleming Door Products. 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 Norm EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025
☐ internally ☒ externally

Dr.-Ing. Wolfram Trinius
(Independent tester appointed by SVA)

2. Product

2.1 Product description

Trio-E steel stiffened door is for exterior commercial applications where green factors, strength, sustainability and aesthetics all play a role. The Trio-E door is part of a complete door opening, utilizing thermal break or kerf frames and PEMKO thermal barrier saddles, to offer operable U-Factor (0.29), while maintaining the strength to withstand winds up to 100 psf. The door is manufactured without any visible weld marks, to achieve a beautiful energy efficient opening.

2.2 Application

The Trio- E can be used indoors or outdoors. Common applications are: interior or exterior door openings, motels/hotels, office buildings, urban renewal, health care, institutional, data processing, mercantile, food processing, school/training centers, public utility stations, warehouses/factories, manufacturing plants, transportation terminals, vehicle service facilities and government buildings.

2.3 Technical Data

TRIO-E 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 8’0” maximum single, 8’0” x 8’0” maximum pair.

The table below presents the technical properties of the product:

Constructional data

Name	Value	Unit
Thermal Transmittance: (/ASTM C1363/) with Thermal Break Frame	0.29	U-Factor
Thermal Transmittance: (/ASTM C1363/) with Thermal Break Frame,	3.4	R-Value
Thermal Transmittance: (/ASTM C1363/) with kerf frame	0.36	U-Factor
Thermal Transmittance: (/ASTM C1363/) with kerf frame	2.7	R-Value
Physical endurance testing: Exceeds	4,800,000	cycles

/ANSI A250.4/ performance test, level A (1,000,000 cycles) class 1 stiffness		
Hurricane rating: Up to +/- 100 psf 3'0" x 7'0" single or +/- 70 psf 4'0" x 8'0" single 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/	3'0"x7'0" Single +/-100 4'0"x8'0" Single +/-70	psf
Fire rating: Up to and including 3 hours 4'0"x 8'0" singles and 8'0"x 8'0" pairs (/UL10C/) UL Agency 4'0" x 8'0" singles Warnock Hersey agency 90 minute max	UL -Up to 180 min 4'0"x 8'0" singles & 8'0" x 8'0" pairs WH 90 min 4'0" x 8'0" singles	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 8'0'' maximum size	30	STC
Blast Resistance: /UFC 4-010-01/, /GSA TS-01/, /ASTM F2248/, /ASTM F2247/, /ASTM F1642/, /F2927/ Singles seated 2'6"x 6'8" up to 4'0"x 8'0" Flush or Up to Half Glass	4,6,12	psi
Blast Resistance: /UFC 4-010-01/, /GSA TS-01/, /ASTM F2248/, /ASTM F2247/, /ASTM F1642/, /F2927/ Singles seated 2'6"x 6'8" up to 4'0"x 8'0" Flush or Up to Half Glass	28,42,89	psi/msec

2.4 Placing on the market / Application rules

TrioE 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 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
- /UFC 4-010-01/ DoD Miminum Antiterrorism Standard for Buildings
- /ASTM F2248/ Standard Practice for Specifying an Equivalent 3-Second Duration Design Loading for Blast Resistant Glazing Fabricated with Laminated Glass
- /ASTM F2247/ Standard Test Method for Metal Doors Used in Blast Resistant Applications
- /ASTM F1642/ Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings

2.5 Delivery status

Finished TrioE 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 (excluding packaging) is as following:

Component	Percentage in mass (%)
Steel face sheet / components - CRS	95
PU core	2
Others (primer, foam)	3
Total	**100**

2.7 Manufacture

Door production process utilizes cutting, forming, stamping, CNC, welding, grinding and electrostatic water based painting equipment. Door skins & components are fabricated from 18 ga or 16 ga cold rolled steel conforming to /ASTM A1008/ or hot-dipped galvanized steel conforming to /ASTM A924/ and /ASTM 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. Core: 22 gauge steel stiffeners welded spaced every 6" apart with injected polyurethane foam in place core. Paint: Electrostatically applied water based prime base coat per /ANSI A250.10/. Optional color style factory pre-finish per /ANSI A250.3/

2.8 Environment and health during manufacturing

ASSA ABLOY Door Group and Ceco 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 manufacturing plant has extraction ventilation system to remove dust, volatile organic compounds (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. A large portion of power supply available on the grid to the plant is generated from nearby TVA hydroelectric generation. (TVA dam systems)
• Ceco's production process is third party certified by /UL Environment 102/
• Routinely monitoring our environmental operations, green house gases (GHG), energy, water, waste, VOC, surface treatment. Conduct periodic inspections, audits, and reviews to ascertain that we meet applicable standards and to evaluate our Environment Management program effectiveness.
• Code of Conduct covers human rights, labor practices and decent work. Personnel are 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

TrioE 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.

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.

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 - TrioE doors have cycle tested (open/closed) 4,800,000 cycles with no issues. 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 and Warnock Hersey
Test: /UL10C, UL10B NFPA 252/
Rating: UL 20 min. to 3 Hours Max size: 4'0" x 8'0" single, Max size 8'0" x 8'0" Pair
WH 20 min. to 1 1/2 hour Max size: 4'0" x 8'0" single.

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 impact on human health and environment is known or expected. Especially no hazardous substance can be anticipated in case of a mechanical destruction.

2.15 Re-use phase

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

2.16 Disposal

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 to properly dispose of 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. /European Waste Catalogue Code: 15 01 01 Paper and Cardboard Packaging/, /15 -1 -3 Wooden Packaging/, /17 02 02 Glass/, /17 04 05 Steel/, /20 01 02 Glass/, /20 01 40 Metal/. See: LCA, PCR.

2.17 Further information

For additional information on our products please visit our web sites**:** ASSA ABLOY **www.assaabloy.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 Trio-E steel door (including packaging) 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 Trio-E steel door
Mass (total system)	53.5	kg
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 Trio-E steel door:

A1-A3 Production phase:

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

A4-A5 Construction phase:

- A5 – Packaging waste processing

The use phase:

- B2 - Maintenance (surface treatment by re-coating / re-painting).

End-of-life phase:

- C2 – Transport to waste processing,
- 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 status or disposal of final residues.

Module D:

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

3.3 Estimates and assumptions

Transport:
Real-world data on mode of transport and distances, as reported by suppliers, was considered for materials contributing more than 2% to the total product mass. For parts and materials, contributing less than 2% to the total product mass, transport by road over an average distance of 500km was assumed.

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 production process were 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).

For raw materials, contributing more than 2% to the total product mass, means of transportation and distances were modeled in more detail to better reflect the reality; for materials or product parts, contributing less than 2% of total product mass, average distances and standard means of transport were assumed.

The overall contribution derived from these assumptions does not exceed 5% to the impact categories under consideration. 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 2012/13 (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 from packaging
• Waste incineration of paper from packaging
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 each background dataset is available in the corresponding GaBi 6 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 B2, B6, C1-C4 and D are given.

Maintenance (B2)

The typical maintenance is to service the painted surface by re-coating / re-painting the doors as necessary (location and environment will vary the time). This is usually after about 5 years in the field.

Name	Value	Unit
Maintenance cycle	1	each 5 year
Solvent paint	1.28	kg/door*re-coating

Reference service life

Name	Value	Unit
Reference service life	30	a

End of life (C1-C4)

Name	Value	Unit
Collected separately steel	49.2	kg
Collected as mixed construction waste	3.2	kg
Recycling steel	49.2	kg
Landfilling	3.2	kg

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

Name	Value	Unit
Collected separately waste type steel door Trio-E (including packaging)	53.5	kg
Recycling steel recycling	92	%
Reuse packaging (paper + plastic) (from A5)	2	%
Construction waste for landfill	6	%

5. LCA: Results

The Table below shows the LCA results for the declared unit - 1 piece of Trio-E steel stiffened door.

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	MND	X	MND	X	MND	MND	MND	MND	MND	MND	X	MND	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: declared unit and product

Parameter	Unit	A1 - A3	A5	B2	C2	C4	D
Global warming potential	[kg CO_2-Eq.]	1.31E+2	1.6E+0	3.12E+0	1.27E+0	1.83E-1	-8.82E+1
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	6.13E-6	4.3E-11	4.5E-10	2.22E-11	3.42E-11	6.38E-9
Acidification potential of land and water	[kg SO_2-Eq.]	4.9E-1	4.11E-4	3.61E-2	5.76E-3	2.72E-4	-3.36E-1
Eutrophication potential	[kg $(PO_4)^{3-}$- Eq.]	4.89E-2	6.62E-5	7.51E-4	1.33E-3	4.16E-5	-2.8E-2
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	1.86E-1	4.09E-5	3.39E-3	-1.89E-3	7.06E-5	-5.01E-2
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	4.22E-4	3.76E-8	2.57E-6	4.73E-8	1.6E-8	-2.55E-6
Abiotic depletion potential for fossil resources	[MJ]	1.53E+3	1.03E+0	7.48E+1	1.75E+1	5.95E-1	-8.27E+2

RESULTS OF THE LCA - RESOURCE USE: declared unit and product

Parameter	Unit	A1 - A3	A5	B2	C2	C4	D
Renewable primary energy as energy carrier	[MJ]	8.6E+1	-	-	-	-	-
Renewable primary energy resources as material utilization	[MJ]	0.0E+0	-	-	-	-	-
Total use of renewable primary energy resources	[MJ]	8.6E+1	6.41E-2	1.8E+0	6.9E-1	4.62E-2	1.3E+1
Non renewable primary energy as energy carrier	[MJ]	1.57E+3	-	-	-	-	-
Non renewable primary energy as material utilization	[MJ]	0.0E+0	-	-	-	-	-
Total use of non renewable primary energy resources	[MJ]	1.57E+3	1.15E+0	7.78E+1	1.76E+1	6.23E-1	-7.8E+2
Use of secondary material	[kg]	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	-
Use of renewable secondary fuels	[MJ]	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0
Use of non renewable secondary fuels	[MJ]	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0
Use of net fresh water	[m^3]	5.71E+2	4.66E+0	1.43E+1	7.65E-1	-1.17E+0	-3.59E+1

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: declared unit and product

Parameter	Unit	A1 - A3	A5	B2	C2	C4	D
Hazardous waste disposed	[kg]	7.99E-2	2.46E-2	1.44E-2	0.0E+0	4.45E-4	-4.8E-2
Non hazardous waste disposed	[kg]	2.41E+0	1.58E-2	1.8E-2	2.28E-3	3.15E+0	-1.14E+0
Radioactive waste disposed	[kg]	1.44E-2	4.7E-5	1.22E-3	2.45E-5	1.11E-5	2.02E-2
Components for re-use	[kg]	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	-
Materials for recycling	[kg]	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	-
Materials for energy recovery	[kg]	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	-
Exported electrical energy	[MJ]	0.0E+0	2.02E+0	0.0E+0	0.0E+0	0.0E+0	-
Exported thermal energy	[MJ]	0.0E+0	5.69E+0	0.0E+0	0.0E+0	0.0E+0	-

6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories.When expressed as a percentage, the impact refers to its magnitude as a percentage of the total impact across all modules, with the exception of module D.

Production phase (module A1-A3) contributes between 96 and 100% to total impact assessment. This stage is dominated by upstream emissions associated with steel making 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
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www.bau-umwelt.de

PCR Part A
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www.bau-umwelt.de

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

EN 15804
EN 15804:2012-04: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

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

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

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

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

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

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

UFC 4-010-01, DoD Miminum Antiterrorism Standard for Buildings

ASTM F2248 Standard Practice for Specifying an Equivalent 3-Second Duration Design Loading for Blast Resistant Glazing Fabricated with Laminated Glass

ASTM F2247 Standard Test Method for Metal Doors Used in Blast Resistant Applications

ASTM F1642 Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings

GaBi 6 Software, GaBi 6. Software and Databases for Life Cycle Engineering. LBP, University of Stuttgart und PE International, 2013.

GaBi 6 Documentation
GaBi 6: Documentation of the GaBi datasets for Life Cycle Engineering. LBP, Universitity of Stuttgart and PE International, 2011.
http://documentation.gabisoftware.
com

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 Windows and doors. www.bau-umwelt.com

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

EN ISO 14025: 2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures

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

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