

ENVIRONMENTAL PRODUCT DECLARATION

CURRIES

POLYISO BLOCK DOOR



The Polyiso door can be used indoors or outdoors. Common applications are: Interior or Exterior door openings.



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 Curries Polyiso Block Door 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 Door Group, LLC
Curries

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. **Exclusions:** 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. **Accuracy of Results:** 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. **Comparability:** 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 Door Group, LLC / Curries
ULE DECLARATION NUMBER	4786545067.117.1
IBU DECLARATION NUMBER	EPD-ASA-20150074-IBA1-EN
DECLARED PRODUCT	Polyiso Block Door
REFERENCE PCR	IBU PCR Part B: Windows and Doors, 11-2014




DATE OF ISSUE	April 10, 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 conducted by:	IBU – Institut Bauen und Umwelt e.V. PCR was approved by the Independent Expert Committee (SRV)	
The CEN Norm EN 15804 serves as the core PCR. This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> 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



1. General Information

<p>ASSA ABLOY Door Group, LLC</p> <hr/> <p>Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p> <hr/> <p>Declaration number EPD-ASA-20150074-IBA1-EN</p> <hr/> <p>This Declaration is based on the Product Category Rules: Windows and doors, 11-2014 (PCR tested and approved by the independent expert committee (SVR))</p> <hr/> <p>Issue date 10.04.2015</p> <hr/> <p>Valid to 09.04.2020</p> <hr/>  <hr/> <p>Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)</p> <hr/>  <hr/> <p>Dr.-Ing. Burkhard Lehmann (Managing Director IBU)</p>	<p>Polyiso Door</p> <hr/> <p>Owner of the Declaration Curries An ASSA ABLOY Door Group Brand 1502 12th St. NW Mason City, IA 50401</p> <hr/> <p>Declared product / Declared unit This declaration represents 1 Polyiso Door (707 Series - Urethane) prime painted.</p> <hr/> <p>Scope: This declaration and its LCA study are relevant to Polyisocyanurate (707 Series with urethane core) 1-3/4" (4.445 cm) hollow metal doors manufactured from an option of 20 to 14 gauge cold rolled steel face sheets at a single manufacturing ASSA ABLOY Door Group site - Curries, Mason City, IA, USA. All Polyiso door component assembly and manufacturing processes are performed at our manufacturing factory - Curries, Mason City, IA, USA. The Polyiso doors are marketed under the following ASSA ABLOY Door Group brands: Curries, Mason City, IA, USA.</p> <hr/> <p>Verification</p> <table border="1"> <tr> <td colspan="2">The CEN Standard EN 15804 serves as the core PCR</td> </tr> <tr> <td colspan="2">Independent verification of the declaration and data according to ISO 14025</td> </tr> <tr> <td><input type="checkbox"/> internally</td> <td><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/>  <hr/> <p>Dr. Wolfram Trinius (Independent verifier appointed by SVR)</p>	The CEN Standard EN 15804 serves as the core PCR		Independent verification of the declaration and data according to ISO 14025		<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally
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Independent verification of the declaration and data according to ISO 14025							
<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally						

2. Product

2.1 Product description

Product name: Polyiso door

Product characteristic: Polyiso door is for exterior commercial applications where green factors, strength, sustainability and aesthetics all play a role. The Polyiso door is available with embossed panels and contains a polyurethane core. This door carries an R-factor of 10.04 and can be fire rated up to 3 hours. The door is manufactured without any visible weld marks, to achieve a beautiful and dependable opening.

2.2 Application

The Polyiso door 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

Polyiso 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: 1-3/8" or 1-3/4" thick; minimum 2'0" x 6'8" to maximum 5'0" x 10'0" per leaf

2.4 Placing on the market / Application rules

Polyiso 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
- ANSI/UL 10C Positive Pressure Fire Tests of Door Assemblies

2.5 Delivery status

Finished Polyiso 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	93.80
Plastics	6.20
Total	100.0

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 20, 18, 16, or 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. Core: Polyurethane meeting the requirements of ASTM C591, Table 2, Grade 2, Type IV. Paint: Electrostatically applied water based prime base coat per ANSI A250.10., Optional Colorstyle factory pre-finish per ANSI A250.3.

All Polyiso door component assembly and manufacturing processes are performed at our manufacturing factory - Curries, Mason City, IA, USA.

2.8 Environment and health during manufacturing

ASSA ABLOY Door Group and Curries 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 have 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. A large portion of power supply available on the grid to the plant is generated from nearby TVA hydroelectric generation. (TVA dam systems)

- Curries' Production Process is third party certified by UL Environment 102
- 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

Polyiso Doors are individually wrapped in protective cardboard and banded with polyethylene to retain door protective packaging. Doors are stacked horizontally on wood 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.

Material	Value (%)
Steel	0.85
Cardboard/paper	0.01
Plastic	0.01
Wood	99.13
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 / HMMMA 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 - Polyiso doors have cycle tested (open/closed) in excess of 1,000,000 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: 20 min. to 3 Hours Max size: 4'0" x 8'0" single,
 Max size 8'0" x 8'0" Pair

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 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.

2.16 Disposal

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

2.17 Further information

For additional information on our products please visit our web sites:

ASSA ABLOY www.assaabloy.com, or Curries www.curries.com

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of Polyiso 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 Polyiso 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 Polyiso 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
- 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)	0.007	kg
Output substances following waste treatment on site (Paper packaging)	0.007	kg
Output substances following waste treatment on site (Wood packaging)	53.014	kg
Output substances following waste treatment on site (Steel packaging)	0.453	kg

Reference service life

Name	Value	Unit
Reference service life	30	a

End of life (C1-C4)

Name	Value	Unit
Collected separately Steel	43.74	kg
Collected separately Plastics	2.89	kg
Recycling Steel	43.74	kg
Thermal treatment Plastics	2.89	kg

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

Name	Value	Unit
Collected separately waste type Polyiso door (including packaging)	100.11	kg
Recycling Steel recycling	43.69	%
Reuse Packaging (paper, plastic, wood, steel) (from A5)	53.42	%
Thermal Treatment Plastics	2.89	%

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 BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement ⁽¹⁾	Refurbishment ⁽¹⁾	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X

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

Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
Global warming potential	[kg CO ₂ -Eq.]	2.12E+01	1.24E+00	8.54E+01	1.24E+00	0.00E+00	1.09E+00	-1.04E+02
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	4.69E-09	5.93E-12	3.47E-10	5.93E-12	0.00E+00	3.29E-12	-9.18E-09
Acidification potential of land and water	[kg SO ₂ -Eq.]	4.07E-01	5.67E-03	9.05E-03	5.67E-03	0.00E+00	2.78E-04	-3.43E-01
Eutrophication potential	[kg (PO ₄) ³⁻ -Eq.]	3.63E-02	1.29E-03	1.60E-03	1.29E-03	0.00E+00	2.10E-05	-2.75E-02
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	6.65E-02	-1.83E-03	5.32E-04	-1.83E-03	0.00E+00	1.35E-05	-4.62E-02
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	2.32E-05	4.67E-08	1.13E-06	4.67E-08	0.00E+00	7.21E-08	-4.05E-06
Abiotic depletion potential for fossil resources	[MJ]	1.25E+03	1.71E+01	1.17E+01	1.71E+01	0.00E+00	4.62E-01	-1.15E+03

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

Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	1.01E+03	-	-	-	-	-	-
Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of renewable primary energy resources	[MJ]	1.01E+03	6.73E-01	2.02E+00	6.73E-01	0.00E+00	3.38E-02	-3.33E+01
Non renewable primary energy as energy carrier	[MJ]	1.30E+03	-	-	-	-	-	-
Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of non renewable primary energy resources	[MJ]	1.30E+03	1.71E+01	1.57E+01	1.71E+01	0.00E+00	5.13E-01	-1.20E+03
Use of secondary material	[kg]	6.52E+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]	5.15E-01	4.75E-04	2.22E-01	4.75E-04	0.00E+00	2.67E-03	-1.49E-01

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

1 piece of Polyiso Door

Parameter	Unit	A1 - A3	A4	A5	C2	C3	C4	D
Hazardous waste disposed	[kg]	1.24E-02	3.91E-05	2.11E-03	3.91E-05	0.00E+00	3.59E-05	1.17E-02
Non hazardous waste disposed	[kg]	2.32E+00	2.16E-03	1.21E+00	2.16E-03	0.00E+00	1.02E-01	-1.09E+00
Radioactive waste disposed	[kg]	2.19E-02	2.24E-05	1.58E-03	2.24E-05	0.00E+00	2.04E-05	-2.02E-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	9.72E+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	1.00E+02	0.00E+00	0.00E+00	2.09E+00	-
Exported thermal energy	[MJ]	0.00E+00	0.00E+00	2.82E+02	0.00E+00	0.00E+00	5.73E+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 95 and 100% to total impact assessment for all impact categories with exception for Global Warming Potential - GWP (19%). This stage is dominated by upstream emissions associated with steel manufacturing

processes. GWP is dominated by module A5 due to the high share of packaging material (mainly wood). 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

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

ANSI A250.3

ANSI A250.3: Test Procedure and Acceptance Criteria
for Factory Applied Finish Painted Steel Surfaces for
Steel Doors and Frames (American National Standard)

ANSI / SDI A250.4-2011

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

ANSI/SDI A250.8

ANSI/SDI A250.8: Specifications for Standard Steel
Doors and Frames (American National Standard/Steel
Door Institute)

ANSI A250.10

ANSI A250.10: Test Procedure and Acceptance
Criteria for Prime Painted Steel Surfaces for Steel
Doors and Frames (American National Standard)

ASTM A250.13

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

ASTM A653

ASTM A653: Standard Specification for Steel Sheet,
Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated
(Galvannealed) by the Hot-Dip Process (American
Society for Testing and Materials)

ASTM A924

ASTM A924: Standard Specification for General
Requirements for Steel Sheet, Metallic-Coated by the

Hot-Dip Process (American Society for Testing and
Materials)

ASTM A1008

ASTM A1008: Standard Specification for Steel, Sheet,
Cold-Rolled, Carbon, Structural, High-Strength Low-
Alloy, High-Strength Low Alloy with Improved
Formability, Solution Hardened, and Bake Hardenable
(American Society for Testing and Materials)

ASTM C591

ASTM C591: Standard Specificatin for Unfaced
Preformed Rigid Cellular Polyisocyanurate Thermal
Insulation (American Society for Testing and Materials)

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

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

DoD UFC 4-010-01

DoD UFC 4-010-01: Minimum Antiterrorism Standards
for Buildings (Department of Defense Unified Facilities
Criteria)

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

UL 10C

UL 10c: Positive Pressure Fire Tests of Door Assemblies

UL 10b

UL 10b: Fire Tests of Door Assemblies

9. Annex

Results shown below were calculated using TRACI Methodology.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement ⁽¹⁾	Refurbishment ⁽¹⁾	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X

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

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
GWP	Global warming potential	[kg CO ₂ -Eq.]	2.12E+01	1.24E+00	8.54E+01	1.24E+00	0.00E+00	1.09E+00	-1.04E+02
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	4.99E-09	6.31E-12	3.69E-10	6.31E-12	0.00E+00	3.50E-12	-9.76E-09
AP	Acidification potential of land and water	[kg SO ₂ -Eq.]	4.15E-01	7.41E-03	1.08E-02	7.41E-03	0.00E+00	3.26E-04	-3.45E-01
EP	Eutrophication potential	[kg N-eq.]	2.14E-02	5.21E-04	5.87E-04	5.21E-04	0.00E+00	9.30E-06	-1.61E-02
Smog	Ground-level smog formation potential	[kg O ₃ -eq.]	6.18E+00	1.52E-01	2.18E-01	1.52E-01	0.00E+00	2.56E-03	-4.88E+00
Resources	Resources	[MJ]	4.13E+01	2.46E+00	2.30E+00	2.46E+00	0.00E+00	4.75E-02	-5.65E+01

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

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	1.01E+03	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	1.01E+03	6.73E-01	2.02E+00	6.73E-01	0.00E+00	3.38E-02	-3.33E+01
PENRE	Non renewable primary energy as energy carrier	[MJ]	1.30E+03	-	-	-	-	-	-
PENRM	Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PENRT	Total use of non renewable primary energy resources	[MJ]	1.30E+03	1.71E+01	1.57E+01	1.71E+01	0.00E+00	5.13E-01	-1.20E+03
SM	Use of secondary material	[kg]	6.52E+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]	5.15E-01	4.75E-04	2.22E-01	4.75E-04	0.00E+00	2.67E-03	-1.49E-01

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

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1.24E-02	3.91E-05	2.11E-03	3.91E-05	0.00E+00	3.59E-05	1.17E-02
NHWD	Non hazardous waste disposed	[kg]	2.32E+00	2.16E-03	1.21E+00	2.16E-03	0.00E+00	1.02E-01	-1.09E+00
RWD	Radioactive waste disposed	[kg]	2.19E-02	2.24E-05	1.58E-03	2.24E-05	0.00E+00	2.04E-05	-2.02E-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	9.72E+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	1.00E+02	0.00E+00	0.00E+00	2.09E+00	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	2.82E+02	0.00E+00	0.00E+00	5.73E+00	-

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