Environmental Product Declaration

ASSA ABLOY E119 Fire Resistive Frame Solution

Fire Rated Frame

The E119 Fire Resistive Frame Solution is a narrow style framing system that meets fire ratings of 60 minutes. This fully insulated option provides architects with modern design opportunities where a fire rating is required.

ASSA ABLOY

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.

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.

UL CERTIFIED
ENVIRONMENTAL PRODUCT DECLARATION
UL.COM/EPD

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
DECLARATION NUMBER	4788469462.101.1
DECLARED PRODUCT	ASSA ABLOY E119 Fire Resistive Frame Solution
REFERENCE PCR	Environdec PCR for Consturction Product and Construction Services v2.2 (2015)
DATE OF ISSUE	August 22, 2018
EXPIRATION DATE	February 15, 2023
CONTENTS OF THE DECLARATION	Product definition and information about building physics Information about basic material and the material's origin Description of the product's manufacturing Indication of product processing Information about the in-use conditions Life cycle assessment results Testing results and verifications

The PCR review was conducted by	The International EPD System
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories ☐ INTERNAL ☒ EXTERNAL	Grant R. Martin Grant R. Martin, UL Environment
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by	Thomas P. Gloria, Industrial Ecology Consultants

1 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.

This EPD conforms with EN 15804

Product Definition and Information

Product Description

Product Name: E119 Fire Resistive Frame Solution
Engineered steel window or door frames to provide a fire-resistive or fire-protective framing solution with complete design flexibility. Frames are custom sized according to building specifications, including a steel profile, coating, and gasket for the glazing.

The E119 Fire Resistive Frame Solution is used with the Vetrotech Contraflam Fire Rated Saftey Glass, which also have seperate EPDs.
Additional features and benefits include:
- Fire ratings of 60 minutes up to 180 minutes
- Easy to assemble
- UL Certified in US and Canada
- Fabricated in the US

Application

The E119 Fire Resistive Frame Solution is for commercial use. The products are used to hold or support glass panels as sidelites, transoms, or windows. Doors may also be installed in the E119 frames.

Technical Data

The results presented in this EPD refer specifically to the 60 Minute E119 Frame; however, additional ratings are available as described below:

Technical Data	
Fire Rating	**Weight (lbs / linear foot)**
60 Minute	3.75 - 4.5
90 Minute	6.33 - 6.63
120 Minute	6.33 - 6.63
180 Minute	14

Placing on the Market / Application Rules

The standards that can be applied for the E119 Fire Resistive Frame Solution are:
- ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials
- UL 263, Standard for Fire Tests of Building Construction and Materials
- NFPA 80, Standard for Fire Doors and Other Opening Protectives
- NFPA 252, Standard on Fire Test of Door Assemblies
- NFPA 257, Standard on Fire Test for Window and Glass Block Assemblies
- CAN/ULC S106, Standard Methods of Tests of Fire Resistance of Building Construction and Materials

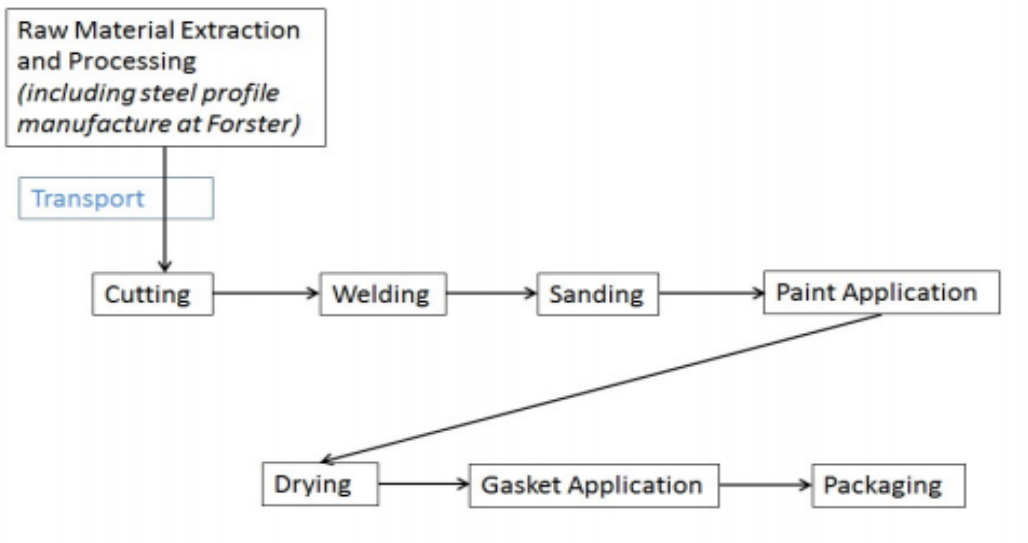
Base Materials / Ancilary Materials

VDS Framing by Forster Framing System		
Component	**Percent of Component**	**Percent of Final Product**
Steel Profile		74.4%
Hot Dipped Galvanized Steel	*48%*	
Stainless Steel	*9%*	
Gypsum Board	*42%*	
Foam Insulation	*1%*	
Rubber Gasket		12.1%
Steel Bead		8.4%
Paint		5.0%
Putty		0.1%

Manufacture

The steel profile portion of the product is manufactured in Arbon, Switzerland where large rolls of steel sheets are processed through various forming operations to create the steel profiles. The profiles are then cut into 6 meter lengths and shipped to Auburn, WA for fabrication.

The steel profiles are cut and welded according to the order or building specifications for the frame size. The welded frame is then prepped for paint and sanded with sandpaper to allow better adhering of the paint to the steel surface. Paint is then applied and dried in a natural gas heated oven. Gaskets necessary for the installation of the glass panels is applied before the product is packaged for shipping to the construction site.



Product Processing / Installation

Frames 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.

Conditions of Use

No cleaning or annual maintenance is required.

Environmental 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.

Reference Service Life

The reference service life is 30 years

Extraordinary Effects

Fire
No negative environmental impact will result from exposure to fire.

Water
Contains no substances that have any impact on water in case of flood.

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

Re-use Phase

The product can be moved from one door to another during the reference service life, thus enabling re-use.

Disposal

The product can be mechanically dissembled to separate the different materials.

Further Information

ASSA ABLOY Door Group
1502 12th St. NW
Mason City, IA 50401

Life Cycle Assessment

Declared Unit

The declaration refers to declared unit of 1 meter of ASSA ABLOY E119 Fire Resistive Frame Solution

Name	Value	Unit
Declared unit	1	One Meter of Frame
Mass	8.210	kg
Conversion factor to 1 kg	0.122	-

System Boundary

This is a cradle to gate with options Environmental Product Declaration. The following life cycle phases were considered:

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 gate to the site	Construction/ installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction /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	MND

Description of the System Boundary Stages Corresponding to the PCR
(X = Included; MND = Module Not Declared)

*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.

Estimates and Assumptions

Life cycle analysis requires that assumptions are made to constrain the project boundary or model processes when little to no data is available. Key assumption make for this study include the paint mixture of primer, top coat, and catalyst; the disposition of the manufacture waste for recycle and landfill' the final product transportation; the amount and weight of additional installation materials; and the disposition of the end of life waste for recycling and landfill.

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.

Background data

SimaPro v8.1 software was used for modeling the life cycle of the product. Each background dataset was taken from the SimaPro databases, Ecoinvent v3, US-Ecoinvent 2.2, and US LCI.

Data Quality

The data sources used are complete and representative of North America in terms of the geographic and technological coverage and are a recent vintage (i.e. less than ten years old). The data used for primary data are based on direct information sources of the manufacturer. Secondary data sets were used for raw materials extraction and processing, end of life, transportation, and energy production flows. Wherever secondary data is used, the study adopts critically reviewed data for consistency, precision, and reproducibility to limit uncertainty.

Period Under Review

The period under review is the full calendar year of 2016.

Allocation

Allocation was determined on a per unit basis.

Comparability

A comparison or an evaluation of EPD data is only possible if all 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. Environmental delarations from different programs may not be comparable. Full conformance with the PCR for North American Builders Hardware products allows EPD comparability only when all stages of a Builders Hardware product's life cycle have been considered. However, variations and deviations are possible.

LCA: Modeling 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.

Installation into the building (A5)		
Name	**Value**	**Unit**
Ancillary materials for installation	0.3	kg
Water use	0.0	m^3
Other resources	0.0	kg
Quantitative description of energy type and consumption during the preparation and installation process	190.5	kWh
Direct emissions to ambient air, soil, and water	0.0	kg
Waste materials on the building site, generated by the product's installation,	4.7	kg
Output materials (specified by type) as result of waste processing at the construction site	0.0	kg
Vehicle type used for transport specified for all waste and output material types	Refuse Truck	-
Vehicle load capacity	9000.0	kg
Fuel type and consumption	1.8	L of diesel per km
Distance to construction site	161.0	kg
Capacity utilization (including empty runs)	-	%
Bulk density of transported products	-	kg/m^3

Reference Service Life		
Name	**Value**	**Unit**
Reference Service Life	30	years

End of life (C1-C4)		
Name	**Value**	**Unit**
Reuse	0.00	kg
Recycling	6.16	kg
Energy recovery	0.00	kg
Landfilling	2.05	kg

LCA Results

Results shown below were calculated using TRACI 2.1 Methodology.

TRACI 2.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	C2-C4
GWP	Global warming potential	kg CO_2-Eq.	3.9E+01	2.5E+00	1.5E+00	1.8E-01
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	3.1E-06	9.6E-11	2.8E-08	5.8E-09
AP Air	Acidification potential for air emissions	kg SO_2-Eq.	3.1E-01	1.5E-02	1.6E-02	1.3E-03
EP	Eutrophication potential	kg N-Eq.	1.2E-01	8.4E-04	2.6E-03	8.4E-05
SP	Smog formation potential	kg O_3-Eq.	3.0E+00	4.1E-01	4.7E-01	3.5E-02
FFD	Fossil Fuel Depletion	MJ-surplus	5.4E+01	4.8E+00	2.5E+00	4.0E-01

Results shown below were calculated using CML 2001 - April 2013 Methodology.

CML 4.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	C2-C4
GWP	Global warming potential	kg CO_2-Eq.	3.9E+01	2.5E+00	1.5E+00	1.8E-01
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	2.4E-06	9.6E-11	2.1E-08	4.4E-09
AP Air	Acidification potential for air emissions	kg SO_2-Eq.	3.0E-01	1.3E-02	1.5E-02	1.1E-03
EP	Eutrophication potential	kg$(PO_4)^3$-Eq.	6.6E-02	2.2E-03	3.2E-03	1.9E-04
POCP	Formation potential of tropospheric ozone photochemical oxidants	kg ethane-Eq.	1.6E-02	5.7E-04	6.0E-04	4.7E-05
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	9.0E-04	0.0E+00	3.4E-07	1.6E-08
ADPF	Abiotic depletion potential for fossil resources	MJ	6.3E+02	3.5E+01	2.2E+01	2.8E+00

Results below contain the resource use throughout the life cycle of the product.

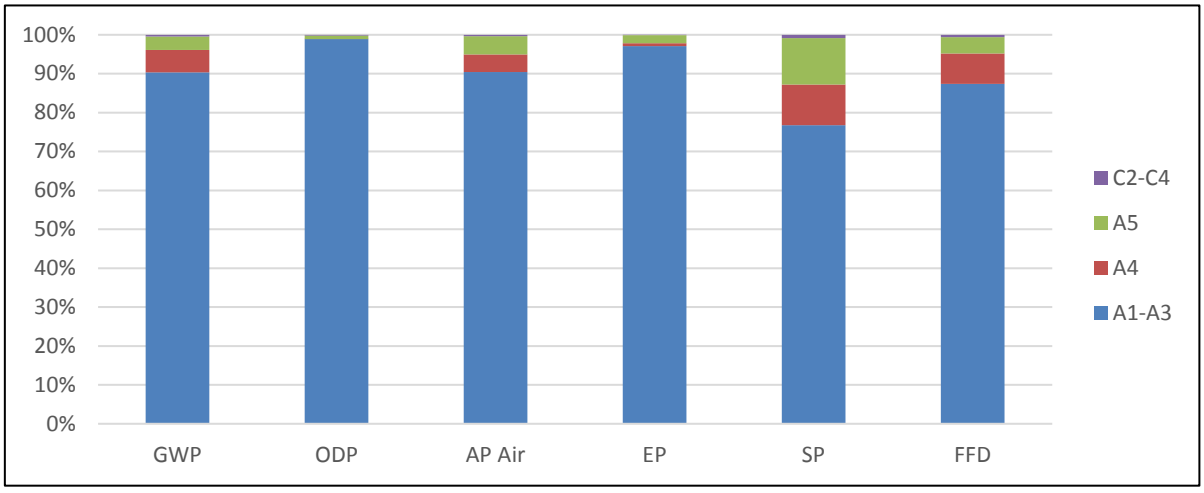
Resource Use

Parameter	Parameter	Unit	Value
PERE	Renewable primary energy as energy carrier	MJ	1.6E+02
PERM	Renewable primary energy resources as material utilization	MJ	0.0E+00
PERT	Total use of renewable primary energy resources	MJ	1.6E+02
PENRE	Nonrenewable primary energy as energy carrier	MJ	6.6E+02
PENRM	Nonrenewable primary energy as material utilization	MJ	0.0E+00
PENRT	Total use of nonrenewable primary energy resources	MJ	6.6E+02
SM	Use of secondary material	MJ	1.0E+01
RSF	Use of renewable secondary fuels	MJ	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00
FW	Use of net fresh water	m^3	8.9E-03

Results below contain the output flows and wastes throughout the life cycle of the product.

Resource Use			
Parameter	**Parameter**	**Unit**	**Value**
HWD	Hazardous waste disposed	kg	2.0E-02
NHWD	Non-hazardous waste disposed	kg	1.9E+01
RWD	Radioactive waste disposed	kg	1.3E-03
CRU	Components for re-use	kg	0.0E+00
MFR	Materials for recycling	kg	3.5E+00
MER	Materials for energy recovery	kg	0.0E+00
L	Landfill	kg	1.2E+00

The production (A1-A3) life cycle stage drives the results in all of the environmental impact categories. Manufacturing impacts (A3) are primarily driven by electricity use. Raw materials, particularly steel drives the production stage (A1), as this material is the primary material within the product. Transportation impacts (A2) are a distant secondary driver of impacts.



References

- PCR Part A — UL Environment and 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. July 2014, version 1.3
- PCR Part B — Environdec: Product Category Rule (PCR) for Construction Products and Construction Services: Version 2.2
- GaBi 8 — thinkstep.one: GaBi Software-System and Databases for Life Cycle Engineering. version 6.110. Copyright, TM. Stuttgart, Echterdingen. 1992-2015
- ISO 14025 — ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.
- ISO 14040 — ISO 14040:2009-11, Environmental management — Life cycle assessment — Principles and framework.
- ISO 14044 — ISO 14044:2006-10, Environmental management — Life cycle assessment — Requirements and guidelines.
- EN 15804 — EN 15804:2012-04: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction product
- ULE 2013 — UL Environment, General Program Instructions, 2013.
- TRACI 2.1 — US EPA, Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI)
- CML 2001 — Center of Environmental Science of Leiden University impact categories and characterisation methods for impact assessment (CML)