

Environmental Product Declaration AADG Acoustical Door and Frame System



AADG Acoustical Door and Frame System offers a wide range of operable STC ratings from 32 to 66 in flush, glazed, embossed steel, laminates and wood doors. The AADG Acoustical Door and Frame System includes STC door, frame and all sealing hardware

STC 50-66 door assemblies are 30% lighter than most sound doors in the market allowing standard weight hinges to be used

All door cores are lead and asbestos free

Most doors are 1-3/4" thick instead of 2-1/4" or larger like other sound doors in the market

Door assemblies can be pre-wired with Electrolynx snap-together connectors to make adding or upgrading electrified openings easy

Most door assemblies are UL or WH fire rated

Doors can help achieve LEED requirements for sound abatement and recycled content

Thresholds are ADA compliant

Sound-Tech Xpress Factory Glazed Systems are available with 5/16" acoustical glass 100 sq. in. - 720 sq. in. STX Factory Glazed Systems range from STC 33 - 48 singles and STC 33 - 44 pairs

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.



Environmental Product Declaration

AADG Acoustical Door and Frame System

Hollow Metal Doors and Frames

ASSA ABLOY



According to
ISO 14025, EN 15804,
and ISO 21930:2017

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025 and ISO 21930-2017. 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.

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Environment 333 Pfingsten Road Northbrook, IL 60611	https://www.ul.com/ https://spot.ul.com/
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	General Program Instruction, v2.7 March 2022	
MANUFACTURER NAME AND ADDRESS	ASSA ABLOY 110 Sargent Drive, New Haven, CT 06511	
DECLARATION NUMBER	4790336162.114.1	
DECLARED PRODUCT & FUNCTIONAL UNIT OF DECLARED UNIT	AADG Acoustical Door and Frame System Functional Unit = 1 piece (1 Door) over 75 year building lifetime	
REFERENCE PCR AND VERSION NUMBER	Part B: Commercial Steel Doors and Steel Frames, Version 2.0, UL Environment, Published September 2020.	
DESCRIPTION OF PRODUCT APPLICATION/USE	ASSA ABLOY products are primarily used in commercial, residential, and educational settings.	
PRODUCT RSL DESCRIPTION	30 Years	
MARKETS OF APPLICABILITY	Global	
DATE OF ISSUE	October 1, 2022	
PERIOD OF VALIDITY	5 Years	
EPD TYPE	Product Specific	
DATASET VARIABILITY	N/A	
EPD SCOPE	Cradle to Gate with Options	
YEAR(S) OF REPORTED PRIMARY DATA	2019	
LCA SOFTWARE & VERSION NUMBER	GaBi 8.7	
LCI DATABASE(S) & VERSION NUMBER	GaBi Sphera database, Service Pack 35	
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1; CML 4.2	
The sub-category PCR review was conducted by:	UL Environment - PCR Review Panel - epd@ul.com	
This declaration was independently verified in accordance with ISO 14025: 2006. The UL Environment "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," v3.2 (Dec 2018), based on ISO 21930:2017, serves as the core PCR, with additional considerations from CEN Norm EN 15804 (2013) and the USGBC/UL Environment Part A Enhancement (2017)	<i>Cooper McC</i>	
<input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	Cooper McCollum, UL Environment	
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Sustainable Solutions Corporation	
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Thomas P. Gloria, Industrial Ecology Consultants <i>Thomas P. Gloria</i>	

Environmental declarations from different programs (ISO 14025) may not be comparable.

Comparison of the environmental performance using EPD information shall consider all relevant information modules over the full life cycle of the products within the building.

This PCR allows EPD comparability only when the same functional requirements between products are ensured and the requirements of ISO 21930:2017 §5.5 are met. It should be noted that different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

Comparison of the environmental performance of construction works and construction products using EPD information shall be based on the product's use and impacts at the construction works level. In general, EPDs may not be used for comparability purposes when not considered in a construction works context. Given this PCR ensures products meet the same functional requirements, comparability is permissible provided the information given for such comparison is transparent and the limitations of comparability explained.



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General Information

Description of Company/Organization

Products are manufactured by ASSA ABLOY Door Group. The manufacturing facilities are located in Milan, TN / Valle Hermoso, Mexico but can also be manufactured in Mason City, IA / Valle Hermoso, Mexico / Tijuana, Mexico / Woodbridge, Ontario, CN / Newton, North Carolina / Carlstadt, NJ, and has an ISO 14001 certified environmental management system in place.

ASSA ABLOY remains committed to the principles of the UN Global Compact in the areas of human rights, labor, the environment and anti-corruption.

Product Description

Product characteristics:

This declaration represents a specific 3'0" x 7'0" 1-3/4" thick AADG Acoustical Door and Frame System manufactured by Ceco Door Products. AADG Acoustical Door and Frame System are marketed under the following ASSA ABLOY Door Group brands: Curries, Ceco, Fleming, SMP, Concept Frames and Pioneer.

Door Configurations

- Single flush doors available from STC 32 to STC 66
- Single factory glazed doors available from STC 33 to STC 48
- Flush pairs available up to STC 49
- Pairs with glazing available from STC 33 to STC 44
- All doors tested in fully operable conditions
- Seals, thresholds and door bottoms (as required) will be drop shipped to designated address
- Up to 4'0" x 8'0" singles and 8'0" x 8'0" pairs
- 3-hour fire rating by Underwriters Laboratories (UL) and ITS (fire ratings vary with STC rating)
- Wood doors available in various species, stains and finishes
- Seals, thresholds, and door bottoms (when required) are shipped with the doors along with the attached STC rating label

Frame Configurations

- 16 or 14 gauge cold rolled or galvanized steel
- 4-1/8" through 14" depths
- Continuously welded corners

Hardware Preps

Locks:

- 161 cylindrical locks (backset min. varies per STC rating)
- 86 edge mortise locks with escutcheon or sectional trims
- Spin Dial/Government locks
- Rim panic and surface mounted vertical rod exit devices
- Surface and flush bolts on inactive leaves

Hinges:

- Standard 4.5 x .134
- Heavyweight and 5" optional
- Continuous hinges for STC 55 assemblies
- Can lift hinges for STC 66 assemblies
- Sound-Tech Xpress Factory Glazed Systems are available with 5/16" acoustical glass 100 sq. in. - 720 sq. in. STX Factory Glazed Systems range from STC 33 - 48 singles and STC 33 - 44 pairs



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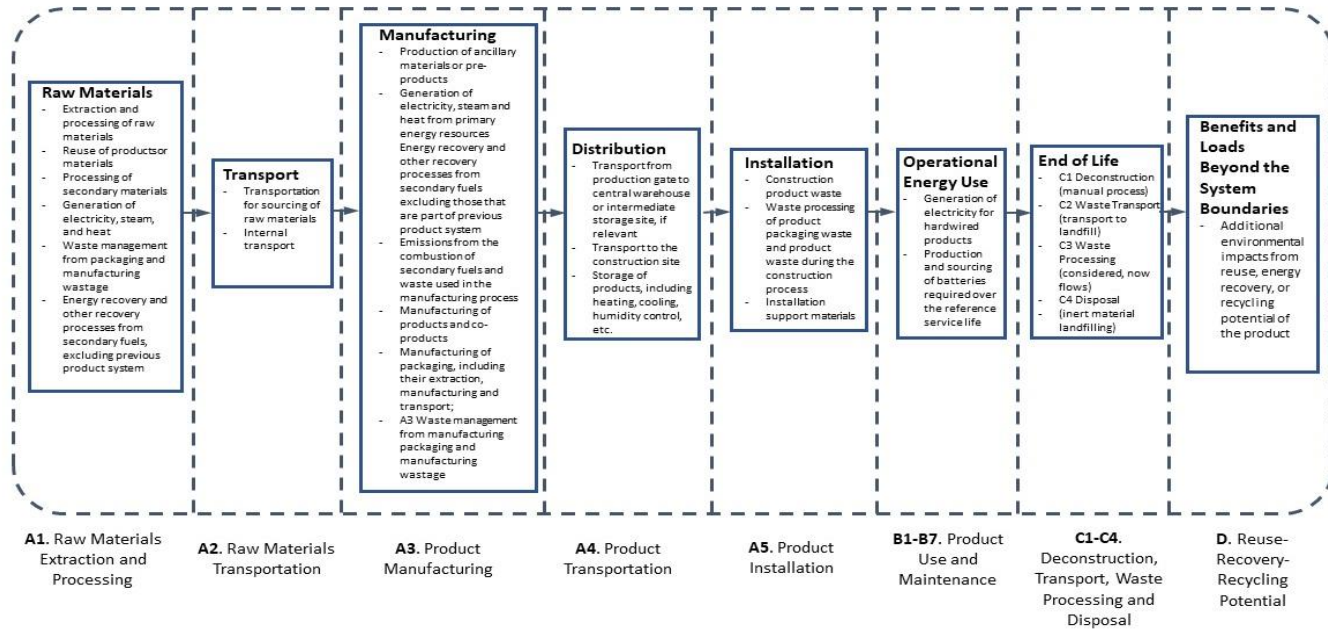
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Flow Diagram



Manufacturer Specific EPD

This product-specific EPD was developed based on the cradle-to-gate with options (modules A1-D, excluding B6) Life Cycle Assessment. The EPD accounts for raw material extraction and processing, transport, product manufacturing, distribution, installation, maintenance, disposal, and potential benefits and loads following the end of life disposal. Manufacturing data were gathered directly from company personnel. When updated company-specific data were not available the ratio of production units, between the 2019 calendar year and 2015 baseline year, was used as a proxy. For any product group EPDs, an impact assessment was completed for each product and the highest impacts were reported as conservative representations of the product group. Product grouping was considered appropriate if the individual product impacts differed by no more than $\pm 10\%$ in any impact category. For products offered in flush and glazed options, the higher impact product (glazed) were reported.



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Application

The Acoustical Door and Frame System Door is typically used Healthcare, Hospitality, Education, and Commercial office space applications. Market areas include:

- K-12
- University
- Healthcare
- Worship
- Government
- Municipality
- Parks and Recreation

Material Composition

The primary product components and/or materials must be indicated as a percentage mass to enable the user of the EPD to understand the composition of the product in delivery status.

The average composition of a AADG Acoustical Door and Frame System Door is as follows:

Material	Percentage in mass (%)
Water Based Adhesive	0.00%
Solvent Based Adhesive	0.00%
Epoxy	0.00%
Steel	83.60%
Stainless Steel	0.00%
Core	0.00%
Paint	0.00%
Fiberglass	1.74%
Water Based Primer	0.07%
Solvent Based Primer	0.00%
Glass	14.32%
Sealant	0.10%
Mineral Wool	0.00%
Polyurethane	0.00%
Other	0.17%
Total	100.00%



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Technical Data

For the declared product, the following technical data in the delivery status must be provided with reference to the test standard:

Technical Data	
Thermal Transmittance:	AADG Acoustical Door and Frame System have not been Third Party tested for Thermal Transmittance but similar AADG door designs and third party testing results could be used to estimate thermal protection levels.
Air Infiltration:	Air Infiltration rating ≤ 0.10 CFM / ft ² in accordance with ASTM E283 / NFRC 400 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
Indoor-Outdoor Sound Attenuation:	<p>Sound Transmission Class (STC): ASTM E90 and ASTM E413 - Fully Operable</p> <ul style="list-style-type: none"> - Single - Flush: HM (Up to 66), Wood (Up to 53), Laminate (Up to 66) - Single - Glazed: HM (Up to 52), Wood (Up to 51), Laminate (Up to 52) - Borrowed Lite - Glazed: HM (Up to 57) - Sliders - Flush: HM (Up to 54) - Single - Decorative*: HM (Up to 48) - Pairs - Flush: HM (Up to 49) - Pairs - Glazed: HM (Up to 47) <p>* Embossed Panel(s)</p>
Deflection/Loading:	Meets ANSI A250.4 Performance Test, 18, 16, and 14 Gage: Level A (1,000,000 Cycles)
Fire Rating:	N/A



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Placing on the Market / Application Rules

The AADG Acoustical Door and Frame System conform to the certifications and sustainability regulations below:

- ANSI/SDI A250.4 Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors
- ANSI/SDI A250.3 Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames
- ANSI/SDI A250.10 Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
- ASTM A480/A480M Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
- ASTM A568/A568M Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled Sheet
- ASTM A653/A653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
- ASTM A924/A924M Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- ASTM A1008/A1008M Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- ASTM A1011/A1011M Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low Alloy with Improved Formability
- ASTM C1363 (NFRC 102)- Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus
- ASTM C518- Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- ASTM E283 (NFRC 400) Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
- NFPA 252: Standard Methods of Fire Tests of Door Assemblies
- UL 10C Standard for Positive Pressure Fire Tests of Door Assemblies
- ASTM E90-04 and E90-09, Standard test method for laboratory measurement of airborne sound transmission loss of building partitions
- ASTM E413-04, Classification for rating sound insulation
- ASTM E1332-90, (Re-approved 2003) Standard classification for determination of outdoor-indoor transmission class
- ASTM E2235-04, Standard test method for determination of decay rates for use in sound insulation test methods

Properties of Declared Product as Shipped

AADG Acoustical Door and Frame System Doors are placed horizontally on a wooden pallet. Cardboard slips are placed between doors and the pallet is banded by polypropylene. A minimum of one and maximum of 20 doors are placed on each pallet. The dimensions of the door as delivered to the site of application are: Door Height (ft): 7; Door Width (ft): 3; Door Thickness (in): 1.75.



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Methodological Framework

Functional Unit

The declaration refers to the functional unit of 1 unit (or piece) of AADG Acoustical Door and Frame System as specified in the Commercial Steel Doors and Steel Frames PCR.

Name	Value	Unit
Functional unit	One commercial steel, nominal dimensions of 3-feet x 7-feet considered in isolation.	
Mass	65.18	kg
Thickness to achieve Functional or Declared Unit	0.04	m
Density	21.08	kg/m ³

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	X	MND	MND	MND	MND	X	X	X	X

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.

Reference Service Life

The reference service life of a properly installed AADG Acoustical Door and Frame System is 30 years. The building estimated service life is 75 years.

Allocation

Allocation was determined on a per unit basis for primary data. For secondary data, cut-off methodology was used except for the "Steel cold rolled coil, 1.5mm" and "stainless steel cold rolled coil". All upstream recycling benefits that would have been accounted for in module A1 were nullified and accounted for in module D to avoid allocation by system expansion within the system boundaries.



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Cut-off Criteria

Processes whose total contribution to the final result, with respect to their mass and in relation to all considered impact categories, is less than 1% can be neglected. The sum of the neglected processes may not exceed 5% by mass of the considered impact categories. For that a documented assumption is admissible.

For Hazardous Substances the following requirements apply:

- The Life Cycle Inventory (LCI) of hazardous substances will be included, if the inventory is available.
- If the LCI for a hazardous substance is not available, the substance will appear as an input in the LCI of the product, if its mass represents more than 0.1% of the product composition.
- If the LCI of a hazardous substance is approximated by modeling another substance, documentation will be provided.

This EPD is in compliance with the cut-off criteria. No known flows are deliberately excluded from this EPD. Capital items for the production processes (machine, buildings, etc.) were not taken into consideration.

It was assumed that any cleaning of the product over the product's lifetime would be negligible and has not been included within these results.

Data Sources

Primary data were collected for every process in the product system under the control of ASSA ABLOY Corporate. Secondary data from the GaBi Sphera database were utilized. These data were evaluated and have temporal, geographic, and technical coverage appropriate to the scope of the Commercial Steel Doors and Steel Frames product category.

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 2019.

Treatment of Biogenic Carbon

The uptake and release of biogenic carbon throughout the product life cycle follows ISO 21930:2017 Section 7.2.7.

Comparability and Benchmarking

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 declarations from different programs may not be comparable. Full conformance with the PCR for North American Commercial Steel Doors and Steel Frames products allows EPD comparability only when all stages of a Commercial Steel Door and Steel Frame product's life cycle have been considered. However, variations and deviations are possible.

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Estimates and Assumptions

End of Life

In the End of Life phase, metal materials were assumed to have an 85% recycling rate while all other materials were assumed to have a 0% recycling rate, in accordance with the Building-Related Products PCR Part A.

Units

The LCA results within this EPD are reported in SI units.

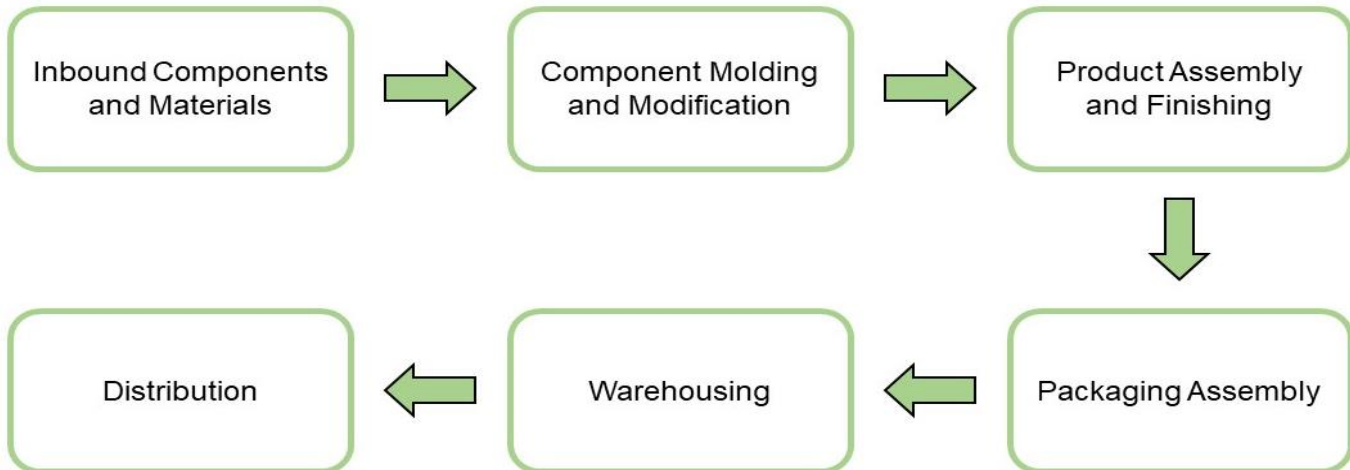
Additional Environmental Information

Background data

For life cycle modeling of the considered products, the GaBi 8 Software System for Life Cycle Engineering, developed by Sphera, is used. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation. To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.

Manufacturing

The primary manufacturing processes are made by Tier 1 suppliers in the USA. The final manufacturing processes occur in Milan, TN / Valle Hermoso, Mexico.



Packaging

All packaging is fully recyclable. The packaging material is composed by cardboard, polypropylene, and wood.

Material	Quantity (% By Weight)
Cardboard	25%
Polypropylene	2%
Wood	73%
Total	100%



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Transportation

Transport to Building Site (A4)		
Name	Value	Unit
Fuel type	Diesel	
Liters of fuel	38	l/100km
Transport distance	1287	km
Capacity utilization (including empty runs)	90	%
Gross density of products transported	-	kg/m ³
Weight of products transported	66	kg
Volume of products transported	0.09	m ³
Capacity utilization volume factor	1.00	-

Product Installation

AADG Acoustical Door and Frame System are distributed through and installed by trained installation technicians, such as locksmiths, carpenters etc. adhering to local/national standards and requirements.

Installation into the building (A5)		
Name	Value	Unit
Auxiliary materials	-	kg
Water consumption	-	m ³
Other resources	-	kg
Electricity consumption	0.01	kWh
Other energy carriers	-	MJ
Product loss per functional unit	-	kg
Waste materials at construction site	0.00	kg
Output substance (recycle)	0.00	kg
Output substance (landfill)	0.00	kg
Output substance (incineration)	0.00	kg
Packaging waste (recycle)	0.69	kg
Packaging waste (landfill)	0.20	kg
Packaging waste (incineration)	0.05	kg
Direct emissions to ambient air, soil, and water	1.26	kg CO ₂
VOC emissions	-	kg

*CO₂ emissions to air from disposal of packaging

Reference Service Life		
Name	Value	Unit
Reference Service Life	30	years
Estimated Building Service Life	75	years
Number of Replacements	1.5	number



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Disposal

The product can be mechanically disassembled to separate the different materials. 85% of the metal materials used are recyclable. The remainder of components are disposed of according to standard municipal solid waste deposition.

End of life (C1-C4)		
Name	Value	Unit
Collected separately	46.31	kg
Collected as mixed construction waste	18.87	kg
Reuse	0.00	kg
Recycling	46.31	kg
Landfilling	18.87	kg
Incineration with energy recovery	0.00	kg
Energy conversion	-	kg
Material for final deposition	-	kg
Removals of biogenic carbon	-	kg

Re-use Phase

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

Re-Use, recovery, And/Or Recycling Potential (D)		
Name	Value	Unit
Net energy benefit from energy recovery from waste treatment declared as exported energy in C3 (R>0.6)	0.00	MJ
Net energy benefit from thermal energy due to treatment of waste declared as exported energy in C4 (R<0.6)	0.00	MJ
Net energy benefit from material flow declared in C3 for energy recovery	0.00	MJ
Process and conversion efficiencies		
Further assumptions for scenario development (e.g. further processing technologies, assumptions on correction factors);	85% of metals are assumed to be recycled at end-of-life.	



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LCA Results per Functional Unit Over the Building Lifetime of 75 Years - Including 1.5 Replacements

Results shown below were calculated using TRACI 2.1 Methodology.

TRACI 2.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	B4	C2	C3	C4	D
GWP	Global warming potential	kg CO ₂ -Eq.	1.5E+02	7.9E+00	5.5E-01	2.5E+02	3.0E-01	4.7E+00	6.7E+00	-7.4E-02
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	1.3E-08	3.0E-10	6.7E-14	2.0E-08	1.1E-11	1.6E-10	2.6E-14	5.3E-10
AP Air	Acidification potential for air emissions	kg SO ₂ -Eq.	4.1E-01	4.7E-02	2.2E-03	8.1E-01	1.8E-03	2.9E-02	5.3E-02	-1.5E-04
EP	Eutrophication potential	kg N-Eq.	1.8E-02	2.6E-03	2.2E-04	6.5E-02	1.0E-04	1.4E-03	2.1E-02	-5.9E-06
SP	Smog formation potential	kg O ₃ -Eq.	6.5E+00	1.3E+00	1.0E-02	1.3E+01	5.0E-02	6.9E-01	1.3E-01	-2.1E-03
FFD	Fossil Fuel Depletion	MJ-surplus	6.7E+01	1.4E+01	6.5E-02	1.4E+02	5.4E-01	7.7E+00	1.5E+00	1.2E-02

*All use phase and disposal stages have been considered and only those with non-zero values have been reported

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

CML 4.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	B4	C2	C3	C4	D
GWP	Global warming potential	kg CO ₂ -Eq.	1.5E+02	7.9E+00	6.2E-01	2.5E+02	3.0E-01	4.7E+00	7.3E+00	-7.5E-02
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	1.2E-08	3.0E-10	1.2E-13	1.9E-08	1.1E-11	1.6E-10	1.5E-12	4.2E-10
AP Air	Acidification potential for air emissions	kg SO ₂ -Eq.	3.9E-01	3.9E-02	1.7E-03	7.2E-01	1.5E-03	2.5E-02	1.8E-02	-1.5E-04
EP	Eutrophication potential	kg(PO ₄) ³ -Eq.	4.0E-02	6.9E-03	3.8E-04	1.1E-01	2.7E-04	3.7E-03	2.4E-02	-1.1E-05
POCP	Formation potential of tropospheric ozone photochemical oxidants	kg ethane-Eq.	3.0E-02	4.6E-03	4.6E-04	6.4E-02	1.7E-04	2.9E-03	4.4E-03	-3.4E-05
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	1.6E-04	3.3E-09	1.5E-08	2.3E-04	1.3E-10	8.1E-09	3.6E-07	-2.2E-07
ADPF	Abiotic depletion potential for fossil resources	MJ	1.4E+03	1.0E+02	5.7E-01	2.4E+03	3.9E+00	6.1E+01	1.2E+01	-7.2E-01

*All use phase and disposal stages have been considered and only those with non-zero values have been reported

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

Resource Use

Parameter	Parameter	Unit	A1-A3	A4	A5	B4	C2	C3	C4	D
RPR _E	Renewable primary energy as energy carrier	MJ	1.0E+02	0.0E+00	4.7E-02	1.6E+02	0.0E+00	0.0E+00	1.1E+00	4.8E-02
RPR _M	Renewable primary energy resources as material utilization	MJ	1.6E+01	0.0E+00	0.0E+00	2.4E+01	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRPR _E	Nonrenewable primary energy as energy carrier	MJ	1.5E+03	0.0E+00	4.7E-02	2.2E+03	0.0E+00	0.0E+00	1.1E+00	4.8E-02
NRPR _M	Nonrenewable primary energy as material utilization	MJ	1.4E+01	0.0E+00	0.0E+00	2.1E+01	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SM	Use of secondary material	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	Use of renewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	Use of nonrenewable secondary fuels	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RE	Energy recovered from disposed waste	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	Use of net fresh water	m ³	1.5E-01	0.0E+00	2.3E-04	2.2E-01	0.0E+00	0.0E+00	2.7E-03	1.0E-04

*All use phase and disposal stages have been considered and only those with non-zero values have been reported



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

Output Flows and Waste Categories										
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	6.7E-08	0.0E+00	1.9E-11	2.9E-08	0.0E+00	0.0E+00	4.5E-10	-4.9E-08
NHWD	Non-hazardous waste disposed	kg	2.8E+00	0.0E+00	5.0E-01	3.0E+01	0.0E+00	0.0E+00	1.6E+01	8.0E-03
HLRW	High-level radioactive waste	kg or m ³	2.4E-02	0.0E+00	4.5E-06	3.6E-02	0.0E+00	0.0E+00	1.1E-04	2.4E-08
ILLRW	Intermediate- and low-level radioactive waste	kg or m ³	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
CRU	Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	Materials for recycling	kg	0.0E+00	0.0E+00	6.9E-01	7.1E+01	0.0E+00	0.0E+00	4.6E+01	0.0E+00
MER	Materials for energy recovery	kg	0.0E+00	0.0E+00	4.9E-02	7.4E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EE	Recovered energy exported from system	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

*All use phase and disposal stages have been considered and only those with non-zero values have been reported

Results below contain direct greenhouse gas emissions and removals throughout the life cycle of the product.

Resource Use										
Parameter	Parameter	Unit	A1-A3	A4	A5	B4	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO ₂	1.26E+00	0.00E+00	0.00E+00	1.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO ₂	0.00E+00	0.00E+00	1.26E+00	1.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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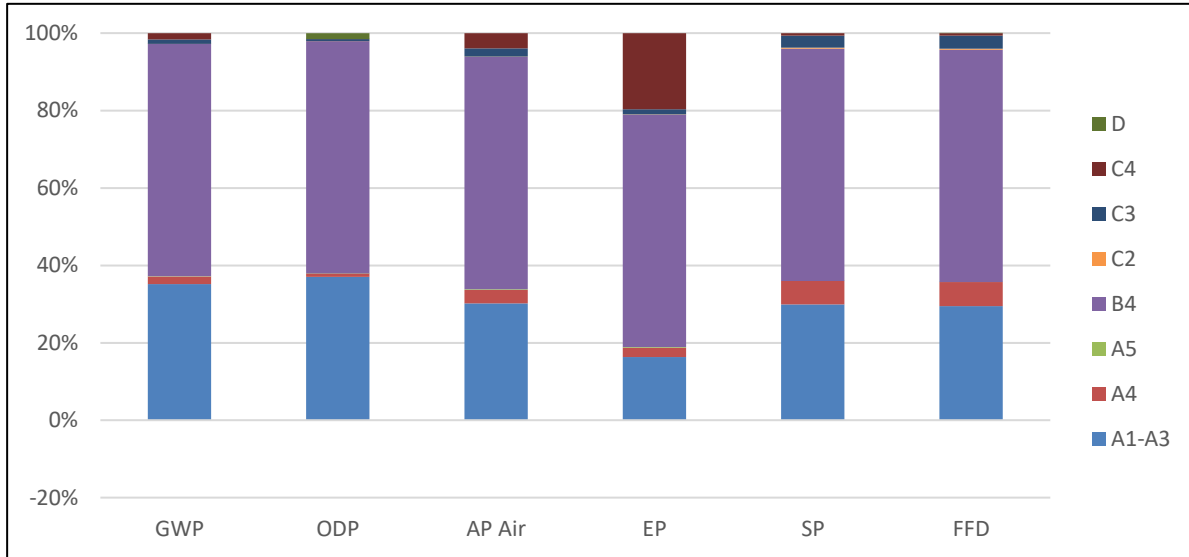
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LCA Interpretation

The production life cycle stage (A1-A3) dominates the impacts across all impact categories. This is due to the upstream production of materials used in the product, along with electricity use in the manufacturing of the product. With 1.5 replacements required over a life-span of a building, the replacement stage (B4) dominates from duplicating these stages.



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Additional Environmental Information

Environmental and Health During Manufacturing

ASSA ABLOY is committed to producing and distributing door opening solutions with minimal environmental impact, where health & safety is the primary focus for all employees and associates.

- Environmental operations, GHG, energy, water, waste, VOC, surface treatment and H&S are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and environment management program effectiveness is evaluated.
- Code of Conduct covers human rights, labor practices and decent work. Management of ASSA ABLOY is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
- Any waste metals during machining are separated and recycled. The waste from the water-based painting process is delivered to waste treatment plant.
- The factories in Milan, TN / Valle Hermoso, Mexico have certification of Environmental Management to ISO 14001:2004 and Occupational Health and Safety to OHSAS 18001:2007.

Environmental and Health During Installation

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.

Extraordinary Effects

Fire

Suitable for use in fire and smoke doors: (listed by Underwriters Laboratories)

Water

Contain 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.

Delayed Emissions

Global warming potential is calculated using the TRACI 2.1 and CML 4.2 impact assessment methodologies. Delayed emissions are not considered.

Environmental Activities and Certifications

ASSA ABLOY works hard to minimize the environmental impacts of its business activities through various corporate-wide sustainability initiatives. To learn more, please visit: <https://www.assaabloy.com/sv/com/sustainability/sustainability-report/>

Many ASSA ABLOY Group Brands now offer a free Product End-of-Life Recycling program that accepts each brand's products that have reached the end of their life cycle and are beyond the product's warranty period, disposing them in an environmentally-responsible manner.

Further Information

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- ADAAG-1998 Americans with Disabilities Act Accessibility Guidelines
- ANSI A117.1 Accessible and Usable Buildings and Facilities
- CBC, Title 24 Barrier Free guidelines
- ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building
- ASTM E283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls,
- BHMA A156.21 Thresholds
- UL 10(b) Gasketing Material for Fire Doors
- UL 10(c) Positive Pressure Gasketing Material for Fire Doors
- UL 2818 GREENGUARD Certification Program for Chemical Emissions for Building Materials, Finishes and Furnishings
- ISO 21930: 2017 ISO 21930:2017, Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services.
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