



Traditional Curtain Walls



Environmental Product Declaration

Conducted in accordance with ISO 14025 and ISO 21930

EPDs are not intended to make comparisons with other products due to varying background data in LCA softwares and/or varying Program Operator rules or Product Category Rules.
The EPD and PCR process are informational only and do not warrant performance.

EPD SUMMARY

DECLARED PRODUCT	Arcadia Traditional Curtain Walls See Product Description section.
MANUFACTURER & DECLARATION HOLDER	Arcadia Inc. 2301 East Vernon Ave. Vernon, CA 90058 https://arcadiainc.com/ (323) 771-9819 Manufacturing in Nevada and Hawaii
PROGRAM OPERATOR	ASTM International. https://www.astm.org/
PROGRAM RULES	ASTM and SEI General Program Instructions (GPIs) for EPDs. Version: 9.0, Revised 21 August 2026.
DECLARATION NUMBER	1268
DECLARED UNIT	1 m ² of the Arcadia Traditional Curtain Wall system
REFERENCE PCR	ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.
SUBCATEGORY PCR & REVIEWERS	PCR for EPDs for Fenestration Assemblies– NSF 1102-23, v.2, valid through December 31, 2028. Review conducted by: Tom Gloria, PhD, Industrial Ecology Consultants; Jack Geibig, EcoForm; and Bill Stough, Bill Stough, LLC.
INTENDED APPLICATION & USE, MARKET OF APPLICABILITY	An external non-bearing wall that separates the exterior and interior environments of a commercial building. The stick-built traditional curtain wall system is assembled at the building site. Product RSL not applicable.
DATES OF VALIDITY	5 October 2026 through 4 October 2031
EPD TYPE & SCOPE	Product-specific EPD, Cradle-to-gate (A1 through A3)
REPORTED PRIMARY DATA	January – December 2025
LCA SOFTWARE	SimaPro 10.5 (2026)
CUT-OFF CRITERIA & ASSUMPTIONS, PROXY DATA	The cut-off goal was met. Where data for specific ancillary materials were not available, general chemical compounds were used as proxy data. Only 3 inputs totaling <3% by mass of the product required proxy data. See LCA Overview section.
LCI DATABASE(S)	DATASMART (2026),ecoinvent 3.12 (2026), Industry Data 2.0 (2026)
ALLOCATION RULES	N/A
LCIA METHODOLOGIES	TRACI 2.2, IPCC AR6
DATA QUALITY ASSESSMENT	Very good

EPD SUMMARY

This declaration was independently verified in accordance with ISO 14025:2006. ISO 21930:2017 serves as the core PCR. Subcategory PCR: Fenestration Assemblies. Verification performed: ☐ Internally ☒ Externally	
The LCA was conducted in accordance with ISO 14044 and the reference PCR by:	Four Elements Consulting, LLC https://www.fourelementslc.com
The LCA was independently verified in accordance with ISO 14044 and the reference PCR by:	 Thomas P. Gloria, Ph. D. Industrial Ecology Consultants
Explanatory material may be obtained from:	Anne Landfield Greig, LCACP anne@fourelementslc.com

This EPD meets all comparability requirements stated in ISO 14025:2006. However, differences in certain assumptions, data quality, and variability between LCA data sets may still exist. As such, caution should be exercised when evaluating EPDs from different manufacturers or programs, as the EPD results may not be entirely comparable.

Any EPD comparison must be carried out at the construction works level per ISO 21930:2017 guidelines. The results of this EPD reflect an average performance by the product and its actual impacts may vary on a case-to-case basis.

Arcadia Inc.

Since 1930, Arcadia Inc. has helped the architectural community complete successful projects by providing high performance windows and doors that stand the test of time. Arcadia offers custom window and door solutions that successfully tackle the most challenging design concepts. Arcadia's projects help to reduce liabilities, achieve costs savings, and deliver a better end product for clients. Arcadia has enjoyed decades-long relationships with customers and partners who cite high quality and personal service as key reasons why they prefer Arcadia.

Product Description and Declaration Summary

A curtain wall is "an external non-bearing wall, intended to separate the exterior and interior environments." (AAMA/ WDMA / CSA 101/I.S.2/A440-05). The stick-built traditional curtain wall system is assembled at the building site where the frame or mullions and glass are connected piece by piece. Arcadia's curtain wall systems are offered in a variety of depths, profiles, and finishes, with framing thermally- or non-thermally improved.

The Arcadia curtain wall windows covered in this EPD include:



- ❖ T500-OPG1500
- ❖ T500-OPG6000
- ❖ T500-OPG1900
- ❖ T500-OPG2900
- ❖ T500-OPG3000
- ❖ T500-TI Beam 3 Series
- ❖ T500-TI Beam 1 (5-½, 6-½, 8-7/16, 9-7/8)
- ❖ PDX500-OPG2900XT
- ❖ PDX500-OPG23011XT
- ❖ Cassette SSG Clad Wall 7 ¼"
- ❖ Cassette SSG Clad Cassette 10 5/16"

Life Cycle Assessment Overview

A cradle-to-gate Life Cycle Assessment (LCA) was completed on Arcadia's window and door systems in accordance with ISO 14040 / ISO 14044, and the study was reviewed for conformance with ISO 14044, ISO 21930:2017, ASTM program operator rules, and the PCR subcategory. Arcadia's products were assessed based on 2025 data from Arcadia's manufacturing and assembly operations in the United States.

System Boundaries

The LCA evaluated the cradle to gate of the curtain wall system. This includes: raw material extraction and processing (A1), transportation of the materials to fabrication plants (A2), and

manufacturing or fabrication (A3). This is depicted below in the context of the construction works life cycle (adapted from 21930:2017 Fig 1).

Table 1 EPD System Boundary Modules

PRODUCTION Stage			CONSTRUC-TION Stage		USE Stage					END-OF-LIFE Stage				Benefits & Loads
Extraction and upstream production	Transport to factory	Manufacturing	Transport to site	Installation	Product Use	Maintenance	Repair	Full replacement	Refurbishment	Deconstruction / Demolition	Transport to waste processing or disposal	Waste processing	Disposal of waste	Reuse, recovery, recycling potential
					B6	Operational energy use								
					B7	Operational water use								
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	D
X	X	X	O	O	NA	NA	NA	NA	NA	NA	NA	NA	NA	O

X = required, O = optional, NA = not applicable

Figure 1 presents A1-A3 as they pertain to Arcadia's products, plus excluded elements.

A1 – A3 Product Stage

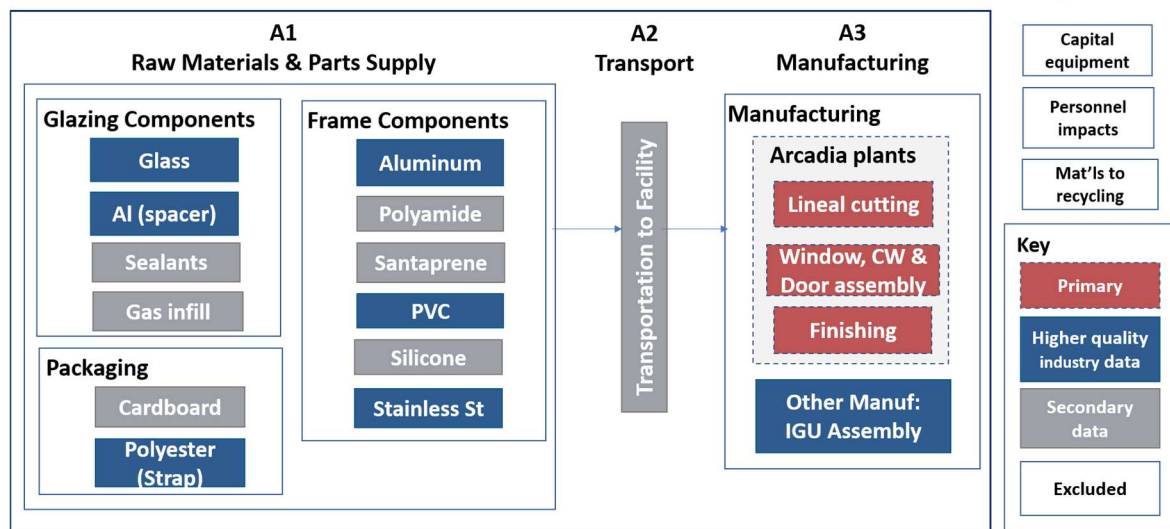


Figure 1 Arcadia Window and Doors System Boundary and Data

Declared Unit

The declared unit is one square meter (1 m²) of the product, based on the production weighted average of Arcadia manufacturing facilities and high selling products. A functional unit is not reported

since the product system boundaries are cradle-to-gate, and no use phase over a reference service life has been modeled. As a result, this EPD may not be compared with other EPDs.

A1 Raw Material Extraction and Processing

	Materials	% of Total
FRAME	Aluminum (68% RC)	40%
	Polyamide	2.3%
	Silicone & elastomer parts	2.9%
	Steel parts	0.1%
	Other materials	1.0%
IGU	Glass	53%
	Sealants & spacer	0.5%
	Other materials	0.04%
	Total -->	100%

Module A1 accounts for the extraction of materials and production of framing, insulated glass units (IGUs), other parts and components, and packaging. The table presents the contributions of the materials in the product, excluding packaging.

Table 2 Product Bill of Materials

A2 Transportation to Manufacturing

Module A2 accounts for transportation of raw materials to the Arcadia manufacturing plants in North Las Vegas, NV, and Waipahu, Hawaii. The distances of each material to the plants by heavy duty diesel truck and ocean freighter were weighted on a facility production basis for this product.

A3 Manufacturing

Module A3 includes fabrication activities at Arcadia's facilities, which include cutting of extruded aluminum lineals, assembly of framing parts, and preparation and assembly of windows up until insertion and sealing of insulated glass units (IGUs). 2025 energy use, ancillary materials, and waste management were included in the model. Regional electricity grids were used to account for different geographical locations; the Nevada facility was modeled using the Western Electricity Coordinating Council (WECC) grid, and the Hawaii facility uses Hawaiian Islands Coordinating Council (HICC).

Cut-off Criteria

The cut-off criteria outlined in NSF (2023) is "1% of renewable primary resource (energy), 1% nonrenewable primary resource (energy) usage, 1% of the total mass input of that unit process and 1% of environmental impacts. The total of neglected input flows per module shall be a maximum of 5% of energy usage, mass and environmental impacts." This cut-off goal was met since all materials and energy in the defined system were included. Data was not available for only two inputs that totaled less than 0.1% by mass of the product. Proxy data sets were used for these.

Allocation

Arcadia's facilities produce windows, doors, and sunshade products. Data were provided on a total facility basis since there was no clear-cut way to accurately measure process inputs and outputs for one type of product. Thus, an allocation was made on a total mass basis, basing the allocation on the total square footage of windows and doors. Sunshades represent less than 1 percent of the total.

Software and Data Used

The SimaPro LCA software was used to model the product. Data came from sources appropriate for the curtain wall model, with intentional choices for the highest data quality. Secondary data came from several databases, including Industry 2.0 for industry-average high quality LCA data, DATASmart for North American energy, transportation, parts and materials, and ecoinvent for parts and materials not available in the other databases.

Data Quality

The data applied to this study represent current Arcadia products and operations. Arcadia's manufacturing facilities supplied 2025 process data, of which over 99% was based on production of windows and doors prepared and packaged for distribution. Data was aggregated on a weighted basis, based on facility square footage production. Energy and transportation data are based on the low 2020s and later, and production data for materials are based on low 2020s. Some of the minor material constituents are based on initially older data, but their "background data" are updated whenever new database versions are released. Data for energy, transportation, and the vast majority of materials and processes (on a weight percentage) are North American-based. Most were specific to the supplier locations. Technological coverage for the upstream materials and processes is generally industry average, and in some instances, it is typical technology.

Results and Contribution Analysis

The Life Cycle Impact Assessment (LCIA) results were calculated using Tool for the Reduction and Assessment of Chemical and other Environmental Impacts (TRACI) v.2.2, a North American impact assessment methodology. Global Warming Potential is based on IPCC 6th Assessment. Abiotic Depletion Potential for fossil fuels is based on CML's baseline methodology. LCIA results are presented for the cradle to gate totals for the declared unit of 1 m², showing A1, A2, and A3 as absolute values and as percentages, respectively. LCIA results are relative expressions and do not predict impacts on category endpoints, exceeding of thresholds, safety margins or risks. Life Cycle Inventory (LCI) results follow.

Table 3 Impact Assessment Results (per 1 m²) – absolute values

Impact Categories – LCIA	Unit	Total	A1	A2	A3
Global warming potential	kg CO ₂ -e	172.09	167.45	1.31	3.34
Acidification potential	kg SO ₂ -e	0.90	0.88	0.01	0.01
Freshwater eutrophication potential	kg P eq	0.03	0.032	7.01 E-06	3.47 E-04
Marine eutrophication potential	kg N eq	0.09	0.09	0.00	1.11 E-03
Smog creation potential	kg O ₃ -e	10.63	10.30	0.21	0.12
Ozone depletion potential	kg CFC11-e	2.63 E-06	2.51 E-06	1.62 E-08	1.08 E-07
Abiotic depletion potential fossil (ADP)	MJ (LHV)	1853.12	1812.29	1.32	39.51
Total energy (used as fuel)	MJ (LHV)	2246.55	2182.18	1.39	62.98

Table 4 Impact Assessment Results (per 1 m²) – percentages

Impact Categories – LCIA	Unit	Total	A1	A2	A3
Global warming potential	kg CO ₂ -e	172.09	97.30%	0.76%	1.94%
Acidification potential	kg SO ₂ -e	0.90	97.84%	0.72%	1.44%
Freshwater eutrophication potential	kg P eq	0.03	98.89%	0.02%	1.09%
Marine eutrophication potential	kg N eq	0.09	97.04%	1.78%	1.18%
Smog creation potential	kg O ₃ -e	10.63	96.90%	1.94%	1.16%
Ozone depletion potential	kg CFC11-e	2.63 E-06	95.30%	0.62%	4.09%
Abiotic depletion potential fossil (ADP)	MJ (LHV)	1853.12	97.80%	0.07%	2.13%
Total energy (used as fuel)	MJ (LHV)	2246.55	97.13%	0.06%	2.80%

Note: numbers may not add to 100% due to rounding.

Table 5 Inventory Results (per 1 m²)

Additional Categories – LCI	Unit	TOTAL	A1	A2	A3
Resource Use: Energy					
Non-renewable primary energy – fuel	MJ (LHV)	1991.68	1940.69	1.36	49.64
Non-renewable primary energy res. - raw mat'ls	MJ (LHV)	83.82	83.82	0.00	0.00
Renewable primary energy – fuel	MJ (LHV)	254.86	241.49	0.03	13.35
Renewable primary energy res - raw materials	MJ (LHV)	17.26	17.26	0.00	0.00
Resource use: Materials					
Use of secondary materials	Kg	9.80	9.80	N/A	0.00
Use of renewable secondary fuels	MJ (LHV)	0.00	N/A	N/A	0.00
Use of non-renewable secondary fuels	MJ (LHV)	0.00	N/A	N/A	0.00
Use of recovered energy	MJ (LHV)	0.00	N/A	N/A	0.00
Use of net fresh water (inputs minus outputs)	m ³	1.73	1.64	0.00	0.09
Waste categories					
Non-hazardous waste disposed	Kg	1.22	1.06	N/A	0.16
Hazardous waste disposed	Kg	0.06	0.06	N/A	0.00
High-level radioactive waste	kg	4.13 E-04	3.83 E-04	1.17 E-07	2.97 E-05
Intermediate- & low level radioactive waste	kg	3.35 E-03	3.28 E-03	2.58 E-07	6.61 E-05
Other output flows					
Components for reuse	kg	0.00	0.00	0.00	0.00
Materials for recycling	kg	8.12	0.08	0.00	8.04
Materials for energy recovery	kg	0.00	0.00	0.00	0.00
Exported energy	MJ (LHV)	0.00	0.00	0.00	0.00
Biogenic CO ₂ emissions from wood packaging	kg	1.40	1.40	0.00	0.00
CO ₂ emissions from waste comb. (NR sources)	kg	0.00	0.00	0.00	0.00

Per requirements of NSF (2023), results for production only of the framing materials and of the IGU materials are provided separately in the tables below.

Table 6 Framing Impact Assessment Results (1 m²)

Impact Categories – LCIA	Unit	Total
Global warming potential	kg CO ₂ -e	135.89
Acidification potential	kg SO ₂ -e	0.65
Freshwater eutrophication potential	kg P eq	0.03
Marine eutrophication potential	kg N eq	0.07
Smog creation potential	kg O ₃ -e	7.53
Ozone depletion potential	kg CFC11-e	1.94E-06
Abiotic depletion potential fossil (ADP)	MJ (LHV)	1480.70
Total energy (used as fuel)	MJ (LHV)	1756.26

Table 7 Framing Inventory Results (1 m²)

Additional Categories – LCI	Unit	Total
Resource Use: Energy		
Non-renewable primary energy – fuel	MJ (LHV)	1566.35
Non-renewable primary energy res. - raw mat'ls	MJ (LHV)	81.12
Renewable primary energy – fuel	MJ (LHV)	189.91
Renewable primary energy res - raw materials	MJ (LHV)	7.64 E-09
Resource use: Materials		
Use of secondary materials	kg	9.80
Use of renewable secondary fuels	MJ (LHV)	0.00
Use of non-renewable secondary fuels	MJ (LHV)	0.00
Use of recovered energy	MJ (LHV)	0.00
Use of net fresh water (inputs minus outputs)	m ³	1.29
Waste categories		
Non-hazardous waste disposed	kg	1.06
Hazardous waste disposed	kg	5.54 E-02
High-level radioactive waste	kg	2.44 E-04
Intermediate- & low level radioactive waste	kg	2.65 E-03
Other output flows		
Components for reuse	kg	0.00
Materials for recycling	kg	0.08
Materials for energy recovery	kg	0.00
Exported energy	MJ (LHV)	0.00

Table 8 IGU Impact Assessment Results (1 m²)

Impact Categories – LCIA	Unit	Total
Global warming potential	kg CO ₂ -e	30.04
Acidification potential	kg SO ₂ -e	0.23
Freshwater eutrophication potential	kg P eq	2.82 E-03
Marine eutrophication potential	kg N eq	0.03
Smog creation potential	kg O ₃ -e	2.66
Ozone depletion potential	kg CFC11-e	4.76 E-07
Abiotic depletion potential fossil (ADP)	MJ (LHV)	311.76
Total energy (used as fuel)	MJ (LHV)	387.63

Table 9 IGU Inventory Results (1 m²)

Additional Categories – LCI	Unit	Total
Resource Use: Energy		
Non-renewable primary energy – fuel	MJ (LHV)	352.17
Non-renewable primary energy res. - raw mat'ls	MJ (LHV)	2.13
Renewable primary energy – fuel	MJ (LHV)	35.46
Renewable primary energy res - raw materials	MJ (LHV)	0.00
Resource use: Materials		
Use of secondary materials	kg	0.00
Use of renewable secondary fuels	MJ (LHV)	0.00
Use of non-renewable secondary fuels	MJ (LHV)	0.00
Use of recovered energy	MJ (LHV)	0.00
Use of net fresh water (inputs minus outputs)	m ³	0.33
Waste categories		
Non-hazardous waste disposed	kg	0.00
Hazardous waste disposed	kg	0.00
High-level radioactive waste	kg	1.32 E-04
Intermediate- & low level radioactive waste	kg	2.92 E-04
Other output flows		
Components for reuse	kg	0.00
Materials for recycling	kg	0.00
Materials for energy recovery	kg	0.00
Exported energy	MJ (LHV)	0.00

Performance Standards & Certifications

Arcadia's products are tested, certified and labeled for the following performance standards:

- ❖ AAMA/WDMA/CSA 101/IS2/A440 (NAFS-North American Fenestration Standard/ Specification for windows, doors, and skylights)
- ❖ ASTM E283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specific Pressure Differences Across the Specimen, also AAMA 501 and NFRC 400 for Air Leakage
- ❖ ASTM E331, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Door, and Curtain Walls by Uniform Static Air Pressure Difference
- ❖ AAMA 501.1, Standard Test Method for Water Penetration of Windows, Curtain Walls And Doors Using Dynamic Pressure
- ❖ ASTM E330, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference
- ❖ AAMA 1503, NFRC 100 Thermal Transmittance, U-Factors
- ❖ AAMA 1503, CSA A440.2 NFRC 500 Condensation Rating (CRF,CI)
- ❖ AAMA 507 and NFRC 200, Overall Solar Heat Gain Coefficient and Visible Transmittance
- ❖ AAMA 1801, ASTM E90 and ASTM E1425 Sound Transmission (STC, OITC)

Note: Testing varies by product type, glazing specified, and specific products tested.

Other Environmental Information

Through their sustainability and waste reduction initiatives, Arcadia strives to help their environment and enhance the value of their products for architects and building professionals. Arcadia's environmental management activities include:

- ❖ Recycling up to 50% of the water consumed in the aluminum anodizing process
- ❖ Keeping 1,350 tons of solid anodizing waste out of landfills each year
- ❖ Replacing potentially hazardous chemicals with environmentally-friendly products



In the building realm:

- ❖ Arcadia's core products comply with the Leadership in Energy and Environmental Design (LEED) Green Building Rating System.
- ❖ By providing high performance products and applying sustainable design principles to every project, Arcadia is committed to helping the American Institute of Architects (AIA) hit its goal of carbon-neutrality by 2030.
- ❖ Arcadia's products achieve and exceed standards set by the U.S. Green Building Council; the American Society of Heating, Refrigerating and Air-Conditioning Engineers; the International Green Construction Code; CALGreen

At end of life of the product, the aluminum and glass may be recycled. No substances in the product in this EPD are found on the Candidate List of Substances of Very High Concern. There are no materials present in over 0.1% by mass of the product that are hazardous to human health and the environment.

Limitations and Comparability of EPDs for Construction Products

This EPD meets all comparability requirements stated in ISO 14025:2006. However, EPDs are not intended for making comparisons. Differences in certain assumptions, data quality, and variability between LCA data sets may exist. As such, caution should be exercised when evaluating EPDs from different manufacturers or programs, as the EPD results may not be entirely comparable. Any EPD comparison must be carried out at the construction works level per ISO 21930:2017 guidelines. The results of this EPD reflect an average performance by the product and its actual impacts may vary on a case-to-case basis.

Full conformance with the PCR for products allows EPD comparability only when all stages of a life cycle have been considered, including the product's Use phase in a building. Variations and deviations, as noted above, are likely. If comparisons to other EPDs are done, these variations and deviations must be acknowledged. Furthermore, EPDs are comparable only if they comply with ISO 21930:2017, use the same sub-category PCR, include all relevant information modules, and are based on equivalent scenarios with respect to the context of construction works.

References

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