



Arch Aluminum & Glass Co., Inc.

True Single Source™

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www.archaluminum.net
www.archgreen.com
www.archdecoglass.com

Visit our website at www.archaluminum.net for current information on Arch High Performance Glass, Architectural Aluminum and Laminated Units or visit www.archdecoglass.com for more information on Arch Deco Glass, our complete line of decorative glasses.



LEED
IMPACT



Arch Aluminum & Glass has 33 facilities located strategically across the United States and Canada to conveniently reach most major markets with regional materials. Visit our website at www.archaluminum.net for individual locations.

Phoenix, AZ
City of Industry, CA
Aurora, CO
Ft. Myers, FL
Orlando, FL
Sarasota, FL
Tamarac, FL

Norcross, GA
Villa Rica, GA
Indianapolis, IN
Kansas City, KS
Rogers, MN
Jackson, MS
Youngsville, NC

Bridgeport, NJ
Las Vegas, NV
Cuyahoga Falls, OH
Nashville, TN
Austin, TX
Fort Worth, TX
Garland, TX

Haltom City, TX
Magnolia, TX
Salt Lake City, UT
New Berlin, WI
Brampton, Ontario
Mississauga, Ontario

Arch Deco Glass:
Columbus, OH

Arch Extrusions:
Miami, FL

Arch Mirror:
Bettendorf, IA
Ft. Pierce, FL

AWP LLC:
Jacksonville, FL
Medley, FL



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For more than three decades, Arch Aluminum & Glass has maintained a corporate philosophy of balancing the demands of a Profit & Loss Statement with the task of preserving our environment. We have a documented history of sustainable manufacturing practices, including the use of energy saving technologies, materials conservation and recycling, even before it was fashionable. We have always designed our products with energy efficiency in mind.

Arch was the first to provide the glazing and extruded aluminum industry with a LEED® Green Building Rating System matrix, published in 2003, prior to any other manufacturer. We chose powder coat finishing over Kynar spray coating to effectively eliminate VOC emissions and 90 percent of our scrap insulated air spacers and trimmed PVB are recycled. And we're not finished.

As the sustainability trend moves toward reduced carbon emissions and energy zero buildings, Arch will be there for you well ahead of the competition. Not because we like being first, even though we do, but because it's the right thing to do. With locations nationwide, Arch provides the industry with a one-stop destination for all green resources related to the glazing and aluminum products industry.

Arch Aluminum & Glass products and services can assist building teams in achieving the applicable LEED® prerequisites and with potential points toward LEED® certification in five credit categories. Track your team's earned points using the table below:

Category	Page	Credit	Potential Points	Earned Points
Sustainable Sites	4	SS 7	1	
		SS 8	1	
Energy & Atmosphere	5	EA 1	1-10	
Materials & Resources	6	MR 3.1	1	
		MR 3.2	1	
	7	MR 4.1	1	
		MR 4.2	1	
		MR 5.1	1	
	8	MR 5.2	1	
MR 6		1		
Indoor Environmental Quality	9	EQ 8.1	1	
		EQ 8.2	1	
Innovation & Design Process	10	ID 1.1	1	
	11	ID 1.2	1	
		ID 1.3	1	



Category LEED® Prerequisites

Sustainable Sites	1. Reduce potential construction-related soil erosion, waterway sedimentation and dust.
Energy & Atmosphere*	1. Fundamental commissioning of building energy systems
	2. Meet the minimum energy performance standards in ASHRAE 90.1-2004
	3. HVAC units cannot contain CFC-based refrigerants
Materials & Resources	1. Establish an area on the job site for recycling of building materials.
Indoor Environmental Quality	1. A minimum level of Indoor Air Quality performance must be met to enhance IAQ in buildings, in order to contribute to the comfort and well-being of the occupants, with a ventilation system that meets the ASHRAE 61.1-2004 standard for Ventilation for Acceptable Indoor Air Quality.
	2. Environmental Tobacco Smoke (ETS) Control by prohibiting smoking in the building, locate any exterior smoking areas at least 25 feet from entrances, air intakes and operable windows. Another option is to contain, capture and remove tobacco smoke from a room for smoking. In residential buildings, the transfer of tobacco smoke between units must also be addressed by sealing wall, ceiling and floor penetrations.

*Note: There are also two prescriptive compliance paths that LEED® offers to project teams, including following the ASHRAE Advanced Energy Design Guide for Small Office Buildings 2004 for 4 LEED® points. The second prescriptive path option offers 1 point toward LEED® certification through compliance with the Basic Criteria and Prescriptive Measures of the Advanced Buildings Benchmark™ Version 1.1 with some exceptions and restrictions.

Disclaimer:

Points toward the LEED® Green Building Rating System are not awarded on the basis of products but on the building performance achieved through sustainable design, construction and operations of buildings, which can include the use of sustainable materials, products and assemblies offered by Arch Aluminum & Glass.

The LEED® credit section references in this brochure are for suggested applications of Arch products. The LEED® applicant is ultimately responsible for determining the product attributes that will help enhance energy efficiency and reduce the environmental impact and therefore provide LEED® certification of a structure. The Arch products covered in this guideline can assist building teams in obtaining LEED® points as long as the overall design meets or exceeds the LEED® performance standards.

The final decision on LEED® compliance ultimately relies on the judging panel at USGBC. The role of the architect, designer, contractor or other member of the team is to document a building's sustainable design, construction, operation and performance data, and to make that data available to the USGBC. Arch recommends project teams employ a LEED® Accredited Professional to compile the necessary documentation for review and submittal to the USGBC for a positive outcome.

Arch glazing and extruded aluminum products can perform at higher levels beyond the scope of the standards in the LEED® rating system. In such cases, project teams have several options when specifying Arch high performance architectural systems, including a request for a Credit Interpretation Ruling (CIR) from the USGBC Technical and Scientific Advisory Committee. Another strategy is to document the exemplary performance of Arch assemblies from a whole building design perspective in the LEED® Innovation & Design credit category.

Sustainable Sites

SS Credit 7 Heat Island Effect: Non-Roof

Intent: Reduce heat islands (thermal gradient differences between developed and undeveloped areas) minimize the impact on a regional climate, and human and wildlife dwellings.

LEED® Requirements: Any exterior surface used to shade the project boundaries must have an SRI (Solar Reflectance Index) of at least 29.

Arch High Performance Glass Options: The high reflectant properties of Arch glazing systems can reduce the potential for heat absorption within the site to minimize any disturbance to the local climate.

Arch Architectural Aluminum: Arch aluminum framing can provide an opaque or glass parking cover or other shade structure with an high-albedo glazing system to potentially improve SRI values.

Arch Laminated Units: Solar emissivity and reflectivity can be controlled through custom fabricated LU from Arch.

Added Benefits: This credit can qualify for an innovation point for exemplary performance by demonstrating 100% of non-roof impervious surfaces have been constructed with high-albedo materials.

SS Credit 8 Light Pollution Reduction

Intent: Minimize the impact of a building's interior and exterior lighting, glare and sky-glow on nocturnal habitats within four levels of development densities (rural, residential, high-density, city).

LEED® Requirements: For interior lighting: angle interior lighting sources away from exteriors to avoid candela leaving through the windows or place lights on automatic timer for non-business hours.

Arch High Performance Glass Options: Arch glass systems come with coatings and interlayers to block exit of light from interiors.

Arch Architectural Aluminum: Arch glass and aluminum systems can potentially reduce horizontal luminance values and vertical footcandles from exiting the design area and retain lighting within project boundaries.

Arch Laminated Units: Arch LU can be fabricated for low-reflectance to mute lighted interior surfaces.

Added Benefits: Additional interior decorative laminated glass products such as VISUAL can provide an additional opaque light barrier to potentially reduce light emitting from the structure.

Energy & Atmosphere

EA Credit 1 Optimize Energy Performance

Intent: Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

LEED® Requirements: Whole Building Energy Simulation - Demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2004 (without amendments) by a whole building project simulation using the Building Performance Rating Method in Appendix G of the Standard. The minimum energy cost savings percentage for each point threshold is as follows:

New Buildings	Existing Building Renovations	Award Points
10.5%	3.5%	1
14%	7%	2
17.5%	10.5%	3
21%	14%	4
24.5%	17.5%	5
28%	21%	6
31.5%	24.5%	7
35%	28%	8
35.5%	31.5%	9
42%	35%	10



Arch High Performance Glass Options: Arch fabricates glasses that can increase the performance of the glazing, reducing the energy demand on the HVAC. Calculations are available.

Arch Architectural Aluminum: Arch manufacturers thermally broken store front and curtain wall system for improved energy performance. Arch has the widest range of thermal doors.

Arch Laminated Units: Arch offers laminated units with Low-E interlayers for improved energy performance and safety.

Added Benefits: Building orientation and specifying window systems with gas filled double-glazing, glass coatings and thermally improved edge spaces, especially for south-facing windows, can further enhance energy performance.

Materials & Resources

MR Credit 3.1 Materials Reuse: Specify 5% MR Credit 3.2 Materials Reuse: Specify 10%

Intent: Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

LEED® Requirements - 3.1: Specify salvaged, refurbished or reused materials such that the sum of these materials constitutes at least 5%, based on cost, of the total value of materials on the project.

LEED® Requirements - 3.2: Specify salvaged, refurbished or reused materials for an additional 5% beyond MR Credit 3.1 (10% total based on cost).

Potential Technologies & Strategies: Identify opportunities to incorporate salvaged materials into building design and research potential material suppliers. Consider salvaged materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick and decorative items.

Arch High Performance Glass Options: Resource Reuse - Arch offers a wide range of high-performance Insulated Glass units that can be re-glazed into salvaged aluminum frames for improved energy performance.

Arch Architectural Aluminum: The long-lasting qualities of Arch aluminum frames provides creative options for their reuse in both interior design schemes and exterior enclosure systems.

Arch Laminated Units: In calculating the cost of materials, LEED® permits a reclaimed product to be calculated at the higher new product cost.

Added Benefits: The life span of Arch aluminum products, including its shower doors, can reduce first costs of construction through resale from credible salvage vendors.



Materials & Resources

MR Credit 4.1 Recycled Content* 10% MR Credit 4.2 Recycled Content* 20% *post-consumer + ½ pre-consumer

Intent: Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials.

LEED® Requirements - 4.1: Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project.

LEED® Requirements - 4.2: Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes an additional 10% beyond MR Credit 4.1 (total of 20%, based on cost) of the total value of the materials in the project.

MR Credit 5.1 Local/Regional Materials+ 10% MR Credit 5.2 Local/Regional Materials+ 20% *Extracted, Processed & Manufactured Regionally (for LEED® v. 2.2)

Intent: Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

LEED® Requirements - 5.1: Specify building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% (based on cost of the total materials value). If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

LEED® Requirements - 5.2: Specify a total of 20% based on cost of the total material value.

(Please see our location map on the back cover.)

Arch High Performance Glass Options: Arch uses glass manufactured with a minimum of 20% post industrial recycled content.

Arch Architectural Aluminum: Arch extrusions are produced with 45% prime, 49% post industrial, 6% post consumer recycled content.

Arch Laminated Units: PVB suppliers recycle 30% post industrial recycled.

Miscellaneous: This credit category can qualify for an Innovation in Design point for exemplary performance.

Arch High Performance Glass Options: Wood crating used in delivery of glazing is reused or ground for landscape mulch.

Arch Laminated Units: Aluminum building materials are lighter for reduced fossil fuel consumption and carbon emissions during transportation.

Added Benefits: Arch is constantly reevaluating its packaging materials to reduce a freight carrier's dependence on fossil fuels. *Local/Regional* - Arch also has 33 plants located strategically to be within 500 miles of most major markets.

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Materials & Resources

MR Credit 6 Rapidly Renewable Materials

Intent: Reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials.

LEED® Requirements: Use rapidly renewable building materials and products (made from plants that are typically harvested within a ten-year cycle or shorter) for 2.5% of the total value of all building materials and products used in the project, based on cost.



Arch High Performance Glass Options: Arch is researching bio-based plastics from sources such as corn starch for its new generation of spacer technology.

Arch Architectural Aluminum: Sustainably forested wood strengthens Arch aluminum composite framing systems.

Arch Laminated Units: Non-petroleum-based interlayers are currently under development from agricultural products taking less than 10 years to mature.

Added Benefits: Renewable Materials - Arch can contribute as all wood used is supplied in accordance with the Sustainable Forestry Initiative (SFI).

MR Credit 7 Certified Wood

Intent: Encourage environmentally responsible forest management.

LEED® Requirements: Use a minimum of 50% of wood-based materials and products, which are certified in accordance with the Forest Stewardship Council's (FSC) Principles and Criteria, for wood building components. These components include, but are not limited to, structural framing and general dimensional framing, flooring, sub-flooring, wood doors and finishes.

Arch High Performance Glass Options: Arch provides field service to verify project requirements and installation assistance for all phases of construction.

Arch Architectural Aluminum: Sustainable wood for framing is treated free from reliance on petroleum intensive processes.

Arch Laminated Units: Arch LU are appropriately sealed and storage instructions provided to avoid ambient moisture from altering the benefits of their wood components.

Added Benefits: Certified Wood - Arch can contribute as lumber used is harvested in accordance with the Forest Practical Code (FPC).

Indoor Environmental Quality

Daylight & Views

EQ 8.1 Daylight 75% of Spaces

EQ 8.2 Views 90% of Spaces

Intent: Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

LEED® Requirements - 8.1: Achieve a minimum daylight factor of 2% (excluding all direct sunlight penetration) in 75% of all spaces occupied for critical visual tasks. Spaces excluded from this requirement include copy rooms, storage areas, mechanical plant rooms, and laundry rooms and other low occupancy support areas. Other expectations for space where tasks would be hindered by the use of daylight will be considered on their merits. There are three options for compliance with the Credit Category (1) calculation of the glazing factor, (2) computer simulation showing 25 footcandles has been achieved in at least 75% of all occupied areas, (3) or measurement of the indoor light levels meeting the minimum requirements of 25 footcandles within the occupied space.

LEED® Requirements - 8.2: Achieve direct line of sight to vision glazing for building occupants in 90% of all regularly occupied spaces. Examples of exceptions include copy rooms, storage areas, mechanical, laundry and other low occupancy support areas. Other exceptions will be considered on their merits.

Arch High Performance Glass Options: Low-VOC sealants are applied during manufacturing for less offgassing during construction and over the life span of the enclosed structure.

Arch Architectural Aluminum: Arch frames can assist in moisture control for better IAQ by eliminating a major component for mold growth.

Arch Laminated Units: Arch Laminated units allow daylight to secure areas that typically in the past could not afford to have glass and glazing.

Added Benefits: Evaluation of adhesives and sealants for their sustainable design attributes is an ongoing task at Arch.





Innovation & Design Process

Innovation & Design Process

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ID Credit 1.2 Innovation in Design: Water Efficiency

Arch High Performance Glass Options: Arch fabricates its products in 33 facilities utilizing water reclamation for many of its processes. Environmental stewardship could provide LEED points in upcoming versions of the program that account for the life cycle analysis, resource usage and energy considerations of the manufacturing process.

Arch Architectural Aluminum: Recycled wastewater utilized in the fabrication processes greatly reduces the impact on potable water from natural sources and eases wear and tear on discharge infrastructure.

Arch Laminated Units: The manufacturing process is continually monitored to limit the lowest responsible amount of water resources needed for cooling and finishing of Arch products.

Added Benefits: Arch has historically taken a leadership role in continually auditing the environmental impacts of its business practices.

ID Credit 1.3 Innovation in Design: IAQ

Arch High Performance Glass Options: Intelligent design of Arch's new generation of spacers can limit the exposure of the interior space to moisture for a reduced potential for mold and improved indoor air quality.

Arch Architectural Aluminum: Curtain wall innovations with warm spacer technology can avoid condensation problems at window edges and can incorporate a thermal break for added energy efficiency.

Arch Laminated Units: New technology for edge spacers are more durable and designed to improve insulation and reduce condensation.

Added Benefits: New Arch products protect the occupants of an indoor environment from windborne, seismic or ballistic threats.

Intent: To reward project teams for exceptional performance above the requirements set by the LEED®-NC Green Building Rating System and innovative performance in categories not addressed by LEED®.

LEED® Requirements: A written proposal identifying the intent and requirements for compliance, submittals, and the design strategies to be applied for energy performance, water efficiency, and environmental and health benefits.

ID Credit 1.1 Innovation in Design: Daylighting

Arch High Performance Glass Options: Arch fabricates electrochromonic glass products for regulation of solar light into the enclosed space based on seasonal or geographical climate conditions.

Arch Architectural Aluminum: Framing options for electrochromonic glass include powder coatings applied during an energy efficient manufacturing process.

Arch Laminated Units: Electronically tintable multi-pane units regulate visible light transmittance and solar heat gain to compliment daylighting, interior thermal mass temperature modulation, and other sustainable design strategies.

Added Benefits: As the Embedded Energy of products is incorporated into emerging LEED® standards for Life Cycle Analysis, powder coated glazing frames and the lower energy requirements of recycling aluminum compared to producing it from raw materials will contribute to compliance.

