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The U.S. Green Building Council (USGBC)

The U.S. Green building council includes leaders from across the industry working to produce high performance buildings through promoting environmentally responsible, profitable and healthy places to live and work.

Leadership in Energy and Environmental Design (LEED)

LEED is a rating system for high performance sustainable buildings. It was created to define green building and raise consumer awareness of green building benefits. LEED v.4 has four levels of certification: Certified: 40-49 points, Silver: 50-59 points, Gold: 60-79 points and Platinum: 80 points and above. Before being able to receive any credits, one must first complete one of the prerequisites offered for each category. Once a prerequisite has been obtained, the project can begin earning points. A certain amount of points can be added to become a credit, which allows for a project to be labeled as LEED certified.

Out of the eight categories in LEED v4, glass selection may be able to help in four:

- **Energy and Atmosphere (EA)** intended to use energy most efficiently to increase the economic and environmental benefits of sustainable living.
- **Materials and Resources (MR)** intended to encourage and reward teams who use materials with life cycles that are environmentally and socially responsible.
- **Indoor Environmental Quality (EQ)** intended to take full advantage of nature's natural light source, improve the mood of a building, and reduce electricity use.
- **Innovation (IN)**, intended to encourage higher thinking and innovative solutions to environmental roadblocks a team might encounter.

Energy and Atmosphere (EA)

There are four options to earn a prerequisite in the Energy and Atmosphere category. Glass selection may be able to help with one of the four prerequisites and one of the seven credits in this area.

- **EA Prerequisite: Minimum Energy Performance**

Option 1: Whole Building Energy Simulation

Demonstrate a 5% improvement in the proposed building performance rating for new buildings, compared to the baseline building performance rating according to the building performance rating method in Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2010 using a computer simulation model for the whole building project.

Option 2: Prescriptive Compliance: ASHRAE 50% Advanced Energy Design Guide

This option only applies to office buildings under 100,000 square feet or retail buildings 20,000 to 100,000 square feet, large hospitals over 100,000 square feet, or K-12 School Buildings.

Option 3: Prescriptive Compliance: Advanced Buildings Core Performance Guide

This option only applies to projects less than 100,000 square feet. Healthcare, warehouse and laboratory projects are ineligible for this path.

- **EA Credit 1: Optimize Energy Performance (18 points)**

Option 1: Whole Building Energy Simulation (1-18 points)

Demonstrate a percentage improvement in the proposed building performance rating compared with the baseline building performance rating according to ANSI/ASHRAE/IESNA Standard 90.1-2010 using a computer simulation model for the whole building project. The further the Standard is exceeded the more points are achieved.

Option 2: Prescriptive Compliance: ASHRAE Advanced Energy Design Guide (1-6 points)

****To be eligible for Option 2, projects must use Option 2 in EA Prerequisite Minimum Energy Performance.*

Implement and document compliance with the applicable recommendations and standards in Chapter 4, Design Strategies and Recommendations by Climate Zone, for the appropriate ASHRAE 50% Advanced Energy Design Guide and climate zone.

→ **Viracon's Solution:**

A high performance solar control coating will improve the energy consumption of a building.

Please contact Viracon's architectural design team for specific solar performance values.

Materials and Resources (MR)

There are two prerequisites along with five credits available in Materials and Resources. Glass selection may be able to help with three of the five credits in this area.

• **MR Credit: Building Product Disclosure and Optimization—Environmental Declaration (2 points)**

Option 1: Environmental Product Declaration (1 Point)

Use at least 20 different permanently installed products sourced from at least five different manufacturers that meet one of the disclosure criteria.

Option 2: Multi-Attribute Optimization (1 Point)

Use products that comply with one of the criteria below for 50%, by cost, of the total value of permanently installed products in the project.

→ **Viracon's Solution:**

Viracon offers several product specific cradle-to-gate Environmental Product Declarations in accordance with ISO 14025 and ISO 21930. **Please contact Viracon's architectural design team to provide an Environmental Product Declaration.**

• **MR Credit: Building Product Disclosure and Optimization – Sourcing of Raw Materials (2 points)**

Option 1: Raw Material Source and Extraction Reporting (1 Point)

Use at least 20 different permanently installed products from at least five different manufacturers that have publicly released a report from their raw material suppliers, a commitment to long-term ecologically responsible land use, as well as commitment to reducing environmental harms from extraction and/or manufacturing processes.

Option 2: Leadership Extraction Practices (1 Point)

Use products that meet at least one of the responsible extraction criteria for at least 25%, by cost, of the total value of permanently installed building products in the project.

→ **Viracon's Solution:**

Option 1: For credit achievement, products sourced (extracted, manufactured, and purchased) must be within 100 miles of the project site. The material Viracon uses in the glass fabrication process comes from a variety of suppliers. Each supplier uses raw materials extracted from multiple locations. It is not possible, with the current fabrication systems, to track each fabricated glass unit back through these processes to a specific point of extraction. **Viracon's products will not contribute towards this credit.**

The glass for this project will be manufactured at Viracon's Owatonna, MN facility.

Option 2: Float glass used in commercial applications contains recycled material, however, is excluded from being labeled as recycled. The only content meeting the definition of recycled content is glass returned to a float manufacturer from another source, such as a fabrication facility. Exact percentages vary by manufacturer and are deemed proprietary. **As a result, Viracon's glass products contain recycled content, but do not contribute to this credit per LEED® guidelines.**

- **MR Credit: Building Product Disclosure and Optimization – Material Ingredients, (2 points)**

Option 1: Material Ingredient Reporting (1 Point)

Use at least 20 different permanently installed products from at least five different manufacturers that use any of the programs to demonstrate the chemical inventory of the product to at least 0.1% (1000ppm).

Option 2: Material Ingredient Optimization (1 Point)

Use products that document their material ingredient optimization using the prescribed paths for at least 25%, by cost, of the total value of permanently installed building products in the project.

Option 3: Product Manufacturer Supply Chain Optimization (1 Point)

Use products for at least 25%, by cost, of the total value of permanently installed products in the project.

→ **Viracon's Solution:**

Viracon does not have a published Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard. **Viracon's products cannot contribute to this credit.**

Indoor Environmental Quality (EQ)

There is two prerequisites along with nine credits available in the Indoor Environmental Quality category. Glass selection can help with one of the credits in this area.

- **EQ Credit: Daylight, (3 points)**

Daylight 75% of regularly occupied spaces. The Visible Light Transmittance (aka VLT or Tvis) needed to determine compliance can be found above under Glass Product Performance EA Prerequisite - Minimum Energy Performance. This can be determined through one of three methods:

Option 1: Simulation: Spatial Daylight Autonomy and Annual Sunlight Exposure (2-3 Points)

Demonstrate through annual computer simulations that spatial daylight autonomy of at least 55% or 75% is achieved. Use regularly occupied floor area.

Option 2: Simulation: Luminance Calculations (1-2 Points)

Demonstrate through computer simulations that illuminance will be between 300 lux and 3,000 lux for 9 a.m. and 3 p.m., both on a clear-sky day at the equinox, for the floor area indicated. Use regularly occupied floor area.

Option 3: Measurement (2-3 Points)

Achieve luminance levels between 300 lux and 3,000 lux for a minimum of 75% or 90% of regularly occupied floor area.

→ **Viracon's Solution:**

Incorporating Viracon's glass products into a design that meets the above requirements **can contribute to the point for this credit. Please contact Viracon's architectural design team to provide the specific Visible Light Transmittance (VLT) values for your projects glass.**

- **EQ Credit: Quality Views (1 point)**

Achieve a direct line of sight to the outdoors via vision glazing for 75% of all regularly occupied floor area. View glazing in the contributing area must provide a clear image of the exterior, not obstructed by frits, fibers, patterned glazing, or added tints that distort color balance.

→ **Viracon's Solution:**

Incorporating Viracon's glass products into a design that meets the above requirements **can contribute to the point for this credit. Please contact Viracon's architectural design team to provide the specific Visible Light Transmittance (VLT) values for your projects glass.**

Innovation (IN)

There are a total of three options to achieve a maximum of five points. Project teams can use any combination of innovation, pilot, and exemplary performance strategies.

Option 1: This specific option designed by LEED is irrelevant for glass use, therefore Viracon will not be able to assist in this credit.

Option 2: Pilot (1 Point)

Achieve one pilot credit from USGBC's LEED Pilot Credit Library.

→ **Viracon's Solution:**

This point may be achieved by specifically addressing the USGBC's LEED pilot credit Bird Collision Deterrence.

Building Façade Requirements

Develop a building façade to make the building visible, eliminating conditions that create confusing reflections to birds. If all materials on the building façade have a Threat Factor of 15 or below, the project is exempt from the building façade requirements.

Viracon has submitted specific glass make-ups with ceramic frit silkscreened patterns to the American Bird Conservancy (ABC) for testing their effectiveness in reducing bird collisions with favorable results. **Viracon products that incorporate a ceramic frit may contribute towards this credit.**

For additional information, please contact us at www.viracon.com or 800-533-2080.