EARN LEED POINTS WITH SUNGUARD®

THE SUNGUARD® GUIDE TO LEED

UNIVERSITY OF MICHIGAN
C.S. MOTT CHILDREN’S HOSPITAL
ANN ARBOR, MI, USA

Architect: HKS Architects
Glazier: Contract Glaziers
Fabricator: Trulite Glass & Aluminum Solutions
Glass: SunGuard Neutral 40 (42) with SuperNeutral 68 (43)
LEED: Silver

We make buildings greener. With Advanced Architectural Glass.

See what’s possible™

Please file in 088100 Glass.

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When you’re looking at LEED, look to SunGuard from Guardian Glass.

LEED means leadership in greener buildings.

Building design that enhances the indoor environment while protecting the natural environment – that’s the goal of the Leadership in Energy and Environmental Design (LEED) rating system, developed by the U.S. Green Building Council.

The LEED system promotes sustainable buildings, awarding points for reducing energy use, improving indoor environmental quality and promoting a whole-building approach to sustainability. LEED-certified buildings typically cost less to operate, have faster lease-up rates, may qualify for incentives like tax rebates and zoning allowances and retain higher property values. While LEED does not certify specific products, using SunGuard Advanced Architectural Glass along with other factors may help your project earn LEED points.

In most cases, LEED compliance is voluntary, although more and more public- and private-sector clients are making it mandatory. In either case, we believe that ecologically responsible building is simply the right thing to do.

Committed to the environment.

Guardian Glass is proud to be a member of the U.S. Green Building Council, a coalition of building-industry leaders that promotes and creates environmentally responsible structures.

SunGuard glass improves the environment – inside and out.

Few materials can make a building greener faster than high-performance glass. And as one of the world’s leading producers of architectural glass, Guardian is well qualified to help your project earn LEED points. Our SunGuard products offer the largest selection of post-temperable sputter-coated glass in the world, giving you the striking appearance you want, while delivering the comfort, functionality and energy savings you need.

This brochure shows you how SunGuard Advanced Architectural Glass can help your project earn credit points in six LEED categories. If you’d like more details, call Guardian Glass at 1-866-GuardSG (482-7374).
Guardian Glass SunGuard Manufacturing.

Float glass begins with mountains of silica sand and select raw materials, heated to a liquid state and floated on a bath of molten tin to produce a perfect ribbon of glass. Guardian brings the process and results of glassmaking to new levels, applying deep knowledge of chemistry, physics and advanced technologies to create glass with optimal light transmission, clarity and integrity for custom treatments and fabrication. After the float glass is made, Guardian applies a wide variety of SunGuard low-E vacuum-deposition sputter coatings to improve solar and thermal performance.

Guardian makes float glass and SunGuard coated products at multiple locations in North America and around the world. Manufacturing location and the source of materials and resources may have an impact on LEED credits earned.

Earning LEED points in six categories.

LEED for New Construction is a voluntary standard for developing high-performance sustainable buildings. Using SunGuard glass can boost your LEED score in up to six categories. Some are very apparent; others you may not think of at first. Ultimately, SunGuard Advanced Architectural Glass can help you maximize your building’s appearance without compromising its energy performance.

The LEED scoring system.

To qualify as LEED-certified, a building must score at least 40 of 110 possible points. Higher levels of compliance are possible, indicating higher levels of energy efficiency and environmental sustainability.

Guardian Glass Sustainability Calculator.

Although LEED does not certify specific products, using SunGuard Advanced Architectural Glass may help your project earn LEED points. Guardian Glass offers design professionals our Sustainability Calculator online to help evaluate and document environmental performance during the project design phase. Go to GuardianGlass.com to find a SunGuard Advanced Architectural Glass product, and other Guardian glass products, to help your project achieve LEED certification.

The charts on the following pages further illustrate LEED categories and credits, in addition to SunGuard solutions for complying with LEED standards.
v4 - LEED v4: Scoring and Solutions

<table>
<thead>
<tr>
<th>LEED CATEGORY</th>
<th>LEED CREDIT</th>
<th>LEED POINTS</th>
<th>THE INTENT</th>
<th>THE REQUIREMENTS</th>
<th>GUARDIAN SUNGUARD SOLUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUSTAINABLE SITES</td>
<td>SSpc55:</td>
<td>1 point.</td>
<td>Reduce bird injury and mortality from in-flight collisions with buildings.</td>
<td>Develop a building façade design strategy to make the building visible as a physical barrier and eliminate conditions that create confusing reflections to birds.</td>
<td>Guardian Bird1st™ and SunGuard® products have been tested by the American Bird Conservancy to help deter bird collisions and meet the requirements for this pilot credit.</td>
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<td></td>
<td>SSc5:</td>
<td>Up to 2 points.</td>
<td>To minimize effects on microclimates and human and wildlife habitats by reducing heat islands.</td>
<td>Roof and nonroof measures can be added together to calculate compliance. Nonroof measures can be considered architectural structures or devices that provide shade and have a three-year aged solar reflectance (SR) of at least 0.28. If a three-year SR is not available, 0.33 at installation is acceptable.</td>
<td>Guardian offers the Building Energy Calculator as part of our comprehensive Glass Analytics suite of online tools. The Building Energy Calculator uses customized make-ups created in the Performance Calculator to compare energy cost, consumption and financial payback information based on hourly simulations of glazing options, building parameters and project location. This design tool can compare annual energy costs for a variety of exterior envelope scenarios.</td>
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<td>INTEGRATIVE PROCESS</td>
<td>iPc1:</td>
<td>1 point.</td>
<td>To support high-performance, cost-effective project outcome through an early analysis of the interrelationships among systems.</td>
<td>Discovery: perform a preliminary &quot;simple box&quot; energy modeling analysis that explores how to reduce energy loads. Assess potential strategies such as massing and orientation in addition to basic envelope attributes.</td>
<td>SunGuard Advanced Architectural Glass offers 13 coatings providing a wide spectrum of beautiful, energy-saving choices, with varying degrees of light transmission and reflectivity. Most SunGuard products will meet the U.S. Dept. of Energy’s &quot;spectrally selective&quot; definition: a light to solar gain (LSG) ratio of 1.25 or higher. SunGuard LSG ratios can approach and exceed 2.0. A range of color and SHGC can be achieved using an array of tinted substrates such as green, CrystalGray®, gray, CrystalBlue® and Guardian UltraClear® low-iron. All of these options focus on energy load reduction while not compromising on aesthetics.</td>
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<td>ENERGY AND ATMOSPHERE</td>
<td>EaC2:</td>
<td>Up to 20 points.</td>
<td>To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.</td>
<td>Whole-building energy simulation - Use energy simulation of efficiency opportunities versus past energy simulation analyses for similar buildings. Focus on load reduction and potential energy savings and holistic project cost implications related to all affected systems. Demonstrate percentage of improvement compared with the baseline.</td>
<td>SunGuard Advanced Architectural Glass offers 13 coatings providing a wide spectrum of beautiful, energy-saving choices, with varying degrees of light transmission and reflectivity. Most SunGuard products will meet the U.S. Dept. of Energy’s “spectrally selective” definition: a light to solar gain (LSG) ratio of 1.25 or higher. SunGuard LSG ratios can approach and exceed 2.0. A range of color and SHGC can be achieved using an array of tinted substrates such as green, CrystalGray®, gray, CrystalBlue® and Guardian UltraClear® low-iron. All of these options focus on energy load reduction while not compromising on aesthetics.</td>
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<td>MATERIALS AND RESOURCES</td>
<td>MrC2:</td>
<td>Up to 2 points.</td>
<td>To encourage the use of products and materials from manufacturers who have verified improved environmental, economic and socially preferable life-cycle impacts.</td>
<td>Environmental Product Declaration (EPD) (Option 1): Use at least 20 permanently installed products that meet the product-specific Type III declaration.</td>
<td>Guardian led the development of an industry-wide Product Category Rule (PCR) through the Glass Association of North America. The PCR will ensure future EPDs perform to the criteria established in LEED v4. The next step is development of the Life Cycle Assessment which is the basis for an EPD.</td>
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<td>MrC3:</td>
<td>Up to 2 points.</td>
<td>To encourage the use of products and materials for which life-cycle information is available and are verified to have been extracted or sourced in a responsible manner.</td>
<td>Sourcing of raw materials (Option 2): Use at least 25% by cost products that meet responsible extraction criteria.</td>
<td>Guardian float glass, including SunGuard Advanced Architectural Glass, may contain recycled glass, of which a small amount may be pre-consumer content. Under LEED guidelines, only scrap glass brought in from other manufacturing facilities can qualify as pre-consumer, so the percentage varies depending on the location of the factory and available supply. To find the pre-consumer percentage for the Guardian factory nearest you, use GuardianGlass.com’s Sustainability Calculator to evaluate your project for this credit.</td>
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<td>MrC4:</td>
<td>Up to 2 points.</td>
<td>To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically and socially preferable life-cycle impacts; and are verified to minimize the use and generation of harmful substances.</td>
<td>Option 1: Material ingredient reporting - Use at least 20 permanently installed products that demonstrate the chemical inventory of the product to at least 0.1%.</td>
<td>Guardian has published a Health Product Declaration (HPD) for SunGuard Advanced Architectural Glass with full disclosure of known hazards in compliance with the HPD open standard. The glass is valued as a whole product for purposes of calculation and would count toward Option 2: Material Ingredient Optimization.</td>
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<td>- OR - Option 2: Material ingredient optimization - Use products that document their material ingredient optimization using at least 25%, by cost, of the total value of permanently installed products in the project.</td>
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**v4 - LEED v4: Scoring and Solutions**

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<td>INDOOR ENVIRONMENTAL QUALITY</td>
<td>EQc5: Thermal Comfort.</td>
<td>1 point.</td>
<td>To promote occupants’ productivity, comfort and well-being by providing quality thermal comfort.</td>
<td>ASHRAE Standard 55-2010 - Design heating, ventilating, HVAC systems and the building envelope to meet applicable ASHRAE requirements.</td>
<td>There are several Guardian SunGuard Advanced Architectural Glass, products that are designed to optimize the SHGC and reduce glare that have a direct impact on the thermal comfort of the occupants.</td>
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<td>EQc7: Daylight.</td>
<td>Up to 3 points.</td>
<td>To connect building occupants with the outdoors, reinforce circadian rhythms and reduce the use of electrical lighting by introducing daylight into the space.</td>
<td>Option 1: Provide manual or automatic (with manual override) glare-control devices for all regularly occupied spaces. Demonstrate through computer simulations the percentage of regularly occupied floor area that achieves spatial daylight autonomy (sDA 300/50%) while direct overhead lighting does not exceed 25% of the connected lighting load within a space. Demonstrate that annual sunlight exposure (ASE 1000,250) of no more than 10% is achieved.</td>
<td>Guardian offers a variety of SunGuard coated glass products with light transmission from 8% to more than 78% that allows designers the ability to provide ample visible light to connect the occupants to the outdoors and enhance the experience of the space.</td>
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<td>EQc8: Quality Views.</td>
<td>1 point.</td>
<td>To give building occupants a connection to the natural outdoor environment by providing quality views.</td>
<td>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 clear image of the exterior, not obstructed by frits, fibers, patterned glazing or added tints that distort color balance.</td>
<td>SunGuard Advanced Architectural Glass offers a variety of products with high visible light transmission and high color rendering index providing more accurate color transmission through the glazing.</td>
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<td>EQc9: Acoustic Performance.</td>
<td>1 point.</td>
<td>To provide workspaces and classrooms that promote occupants’ well-being, productivity and communications through effective acoustic design.</td>
<td>For all occupied spaces, meet requirements, as applicable, for HVAC background noise, sound isolation, reverberation time and sound reinforcement and masking.</td>
<td>SunGuard Advanced Architectural Glass can be used with relatively high STC ratings for indoor applications while also reaching high OITC ratings for exterior applications.</td>
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<td>INNOVATION</td>
<td>Inc1: Innovation.</td>
<td>Up to 5 points.</td>
<td>To encourage projects to achieve exceptional or innovative performance.</td>
<td>Achieve significant, measurable environmental performance using a strategy not addressed in the LEED green building rating system and/or achieve exemplary performance in an existing LEED v4 credit. Performance point is typically earned for achieving double the credit requirements or the next incremental percentage threshold.</td>
<td>Guardian Advanced Architectural Glass has the ability to meet or exceed local and/or national energy code requirements. Guardian has also tested product makeups for bird collision deterrence, which is pilot credit 55.</td>
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While LEED does not certify specific products, using SunGuard Advanced Architectural Glass along with other factors may help your project earn LEED points.
We’ll help you build with light.
And build LEED points, too.

Nobody offers more post-temperable sputter-coated glass options than Guardian. And our specialists are always available to help you find the best products and techniques to raise your LEED score. To find the Guardian Architectural Design Manager nearest you, give Guardian a call at 1-866-GuardSG (482-7374) or visit GuardianGlass.com.

Just some of the LEED-certified buildings using Guardian glass.

SunGuard Advanced Architectural Glass is improving the indoor and outdoor environments at these buildings and more, which have received or applied for LEED certification.

- Azure Tower, Dallas, TX
- Anundel Preserve, Hanover, MD
- BioSquare D, Boston, MA
- Collaboration 3, Greenville, SC
- Cyan/PDX, Portland, OR
- Ebeid Hospice Residence, Sylvania, OH
- Fluor World Headquarters, Irving, TX
- GVSU JC Kennedy Hall of Engineering, Grand Rapids, MI
- Hearst Corporation, New York, NY
- Heifer International, Little Rock, AR
- Linden Grove Middle School, Kalamazoo, MI
- National Business Park Building, Columbia, MD
- Peregrine Financial, Waterloo, IA
- Terrazzo, Nashville, TN
- The Burnham Institute, Orlando, FL
- The Proximity Hotel, Greensboro, NC
- USA Campus, Phoenix, AZ
- Westminster Center South, New Westminster, BC
- Winrock, Little Rock, AR

See what’s possible™