

PPG Glass, Coatings and Paint Contributions USGBC LEED-NC v.2.2



The United States Green Building Council (USGBC) has established the Leadership in Energy and Environmental Design (LEED[®]) rating system, a third-party certification tool designed "to promote a nationwide standard for what constitutes a green building. "

While the USGBC does not certify individual building products, it does recognize that the selection of products plays an essential role in making a building LEED-compliant.

PPG manufactures a variety of glass, coatings and paint products that help architects and building owners earn LEED credits for their projects. These products can be specified individually, or together as part of an integrated "green" building design.

In addition to paints, coatings and glass, PPG contributes to green buildings in other ways. For instance, PPG supplies materials for the renewable energy market, such as fiberglass for wind turbine blades and ultra-clear glass for photo-voltaic cells. PPG also manufactures low-VOC powder coatings for architectural metals.

This document provides architects, specifiers, designers, developers, building owners and other professionals with a brief overview of PPG glass, coatings and paint products that can contribute to a LEED project when used as directed, and for the intended application.

LEED CATEGORY:

Sustainable Sites

Credit 7.1: Heat Island Effect:
Non-Roof (Option 2)

LEED Credit: 1 Point

Credit 7.2: Heat Island Effect:
Roof (Option 1 & 3)

LEED Credit: 1 Point

Intent: Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

7.1 Requirements: Place a minimum of 50% of parking spaces under cover (defined as under ground, under deck, under roof, or under a building). Any roof used to shade or cover parking must have a Solar Reflectance Index (SRI) of at least 29.

7.2 Requirements: Use roofing materials having a Solar Reflectance Index (SRI) equal to or greater than the following values for a minimum 75% of the roof surface:

Low sloped (< 2:12) = 78.

Steep-sloped (> 2:12) = 29.

Related PPG Solution:

Durana[®] SPF Coatings

PPG manufactures *Durana* SPF coatings that provide the heat-reflective benefits of a proprietary infrared coating technology with a wide spectrum of colors. *Durana* SPF meets solar reflective index (SRI) requirements, complies with ENERGY STAR[®] reflectance roof limits, and has 21 colors registered with the Cool Roof Rating Council. *Durana* SPF coatings cut cooling costs, extend roof life expectancy and aid in the reduction of heat island and heat-related smog.

**LEED
CATEGORY:**

**Energy &
Atmosphere**

Credit 1: Optimize Energy Performance

LEED Credit: 1-10 Points

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

Requirements: For a *Whole Building Energy Simulation*, demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building rating per ASHRAE/IESNA Standard 90.1-2004 (without amendments) using the Building Performance Rating Method in Appendix G of the Standard. Greater efficiencies above this baseline are awarded according to a 10-point scale based on specified energy cost savings thresholds.

Related PPG Solutions:

1. **Solarban[®] 70XL Solar Control Low-E Glass**
2. **Solarban[®] z50 Solar Control Low-E Glass**
3. **Solarban[®] 60 Solar Control Low-E Glass**
4. **Solarban[®] 80 Solar Control Low-E Glass**
5. **Oceans of Color[™] Spectrally Selective Tinted Glasses, including Atlantica[™], Azuria[™], Solexia[™] and Caribia[™] glasses**
6. **Sungate[®] 500 Low-E Glass**

When considering an integrated building design and orientation, the selection of architectural glass can maximize energy efficiency and daylighting by reducing demand on regulated energy systems (heating, cooling, fans, pumps), as well as the need for interior lighting.

For sustainable building projects, the ideal architectural glass is one that balances the greatest amount of natural light entering a building while reducing or eliminating the thermal effects of infrared energy and solar heat gain.

A glass's ability to balance light and heat is quantified by its Light to Solar Gain ratio (LSG). Any glass that achieves an LSG of more than 1.25 is considered by the U.S. Department of Energy (DOE) to be *spectrally selective*. This designation is especially significant because the DOE, following a study by the Lawrence Berkeley National Laboratories (LBNL), now recommends that all commercial buildings in the U.S. be glazed with spectrally selective glass.

PPG makes *Solarban 70XL* Solar Control Low-E Glass, which delivers the industry's highest LSG rating (2.37) along with a clear, color-neutral aesthetic.

PPG also manufactures *Oceans of Color*, a collection of four spectrally selective tinted architectural glasses. They can be used alone or in combination with clear *Sungate 500* Low-E glass, or with *Solarban z50* or *Solarban 60* Solar Control Low-E glasses in a standard one-inch insulating glass unit. The LSG ratings of the product combinations in a standard one-inch insulating glass unit can range from 1.28 to 1.84, all which would be considered *spectrally selective*.

Visit www.ppgideascape.com to see how to achieve the highest possible degree of *spectral selectivity* or download a PPG-commissioned report on the economic advantages of specifying *Solarban 70XL* glass.

**LEED
CATEGORY:**

**Materials &
Resources**

Credit 1.1: Building Reuse: 75% of Existing Walls, Floors and Roof

Credit 1.2: Building Reuse: 90% of Existing Walls, Floor and Roof

LEED Credit: 1 Point (per credit)

Intent: Extend the lifecycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements: Maintain at least 75%/90% (based on surface area) of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing material).

Related PPG Solutions:

Coraflon[®] ADS Coatings

Extending an existing structure's life is far more sustainable than relocating or building new on unused land. To extend the life-cycle of existing metal roofing or exterior building panels, architects and building owners can specify *Coraflon ADS (Air-Dried System)*, a revolutionary line of colorful fluoropolymer coatings designed for renewing, restoring and refurbishing weathered building panels. They can be field-applied to exterior building elements such as aluminum panels, walls, roofs, doors, window frames, stairs and handrails.

A proprietary cross-link formulation allows *Coraflon*-coated panels to last as long and look as good as any factory-made panel. *Coraflon ADS* coatings meet strict building codes and can be installed in virtually any environmental setting, due to its low-VOC formulation.

**LEED
CATEGORY:**

**Materials &
Resources**

Credit 2.1: Construction Waste Management: Divert 50% from disposal

Credit 2.2: Construction Waste Management: Divert 75% from disposal

LEED Credit: 1 Point (per credit)

Intent: Divert construction and demolition debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

Requirements: Recycle and/or salvage at least 50%/75% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or co-mingled.

Related PPG Solutions:

PPG Paint Containers

By developing a waste management plan to include recycling and alternative reuse of construction-generated waste (i.e., wood, metal,

concrete/inert material, drywall/gypsum, co-mingled recycled waste, etc.), PPG's quart, 1-gallon and 5-gallon plastic paint containers can be diverted from landfill disposal by recycling.

The quart and 1-gallon buckets are Type 5 polypropylene (PP) recyclable containers. The 5-gallon bucket is a Type 2 high-density polyethylene (HDPE) pail. Both types (PP and HDPE) are preferred plastics for recycling. The recycle code is molded into the container bottom, and the symbol is easily visible for sorting purposes. In addition to the plastic containers, the accompanying metal container lids and handles can be recycled.

Please be advised that, depending on the product, once the paint has dried, the material could be deemed non-hazardous. Check the MSDS and local and/or recycling regulations at the project site prior to recycling.

**LEED
CATEGORY:**

**Materials &
Resources**

Credit 4.1: Recycled Content 10%
(post-consumer + 1/2 pre-consumer)

Credit 4.2: Recycled Content 20%
(post-consumer + 1/2 pre-consumer)

LEED Credit: 1 Point (per credit)

Intent: Increase demand for building products, thereby reducing the impacts resulting from extraction and processing of new virgin materials.

Requirements: 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%/20% (based on cost) of the total value of the materials in the project.

Related PPG Solutions:

PPG Paint Containers

PPG paint products, defined as the paint and its container, have approximately 5% post-consumer recycled content by weight in the container bucket, lid and handle. Product container sizes include quart and 1-gallon buckets. Although the containers do not achieve the 10% minimum recycled content requirement on their own, they may still be applied toward this credit when the overall recycled content for construction products is calculated.

**LEED
CATEGORY:**

**Materials &
Resources**

Credit 5.1: Regional Materials: 10% extracted, processed and manufactured regionally

Credit 5.2: Regional Materials: 20% extracted, processed and manufactured regionally

LEED Credit: 1 Point (per credit)

Intent: Increase the 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.

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

Related PPG Solutions:

PPG Supply Chain: Extraction, Manufacturing and Fabrication

For LEED[®]-NC 2.2, final product assembly is no longer sufficient to acquire credits. Extraction and manufacturing must be included as part of the calculation for this credit.

PPG operates paint, coatings and glass manufacturing facilities throughout the U.S., which can contribute to the regional materials credit. PPG aligns raw material suppliers and extraction locations in proximity to our manufacturing facilities. For example, sand extraction mines that supply PPG glass manufacturing operations are nearby, which minimizes transportation costs and emissions.

Due to the complexity and/or proprietary nature of raw materials, PPG suppliers, specified PPG products, and your site location, PPG suggests that you call **1-888-PPG-IDEA** to further compare your project's location with our supply chain for the regional material credit.

In the interim, the manufacturing facility map on page 5 may serve as an initial guide for locating PPG facilities to your project site.

Additionally, PPG maintains a network of certified glass fabricators, certified coatings applicators, paint dealers and stores that can regionally supply finished products to meet your design specifications and construction schedules.

To locate a PPG Certified Fabricator in your area, visit **www.ppgcfp.com** or call **1-888-PPG-IDEA**.

Manufacturing Locations



LEED CATEGORY:

Indoor Environmental Quality

Credit 4.1: Low Emitting Materials: Adhesives and Sealants

LEED Credit: 1 Point

Intent: Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants

Requirements (Credit 4.1): All adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the requirements of SCAQMD Rule #1168.

Related PPG Solutions:

PPG Sealants and Caulking
PPG manufactures interior and exterior sealants made from acrylics. *Top Gun*[®] products # 1411, 1413, 1414 and 1416 all have lower VOC content than the required 250 g/l.

**LEED
CATEGORY:**

Indoor
Environmental
Quality

Credit 4.2: Low Emitting Materials:
Paints and Coatings

LEED Credit: 1 Point

Intent: Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants

Requirements (Credit 4.2): Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the VOC content limits of the following:

- ¥ Green Seal[®] Standard GS-11, Paints Edition, May 20, 1993
- ¥ Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997, and
- ¥ South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

Related PPG Solutions:

PPG Architectural Finishes

PPG Paints and Porter[®] Paints offer more than 15 brands that meet or substantially exceed the required VOC limits of Green Seal or SCAQMD criteria.

Most applicable to LEED is Pittsburgh Paints *Pure Performance*[™] primer and latex paints, whose low-odor, zero-VOC formulations surpass LEED requirements. Other LEED-compliant products include primers and paints such as *Speedhide*[®], *WallHide*, *Manor Hall*, *Wall Supreme*, *Speedcraft*, *Supertech*, *Builders Spec*, *Pitt-Tech*, *Pitt-Guard* and *Aquapon*.

Several Porter Paint products also meet LEED criteria, including *Pro-Master*, *PorterGuard*, *Acri-Pro*, *Quik-Fil*, *Acri-Fil* and *Sta-Kil*.

For a comprehensive guide of LEED-compliant PPG paints, see the *USGBC LEED[®] Guide Specification*, Section 9900, Interior Paint Schedule at www.ppgideascales.com, or call **1-888-PPG-IDEA** to receive a copy of the booklet.

**LEED
CATEGORY:**

Indoor
Environmental
Quality

Credit 8.1: Daylight & Views:
Daylight 75% of Spaces

Credit 8.2: Daylight & Views:
Daylight 90% of Spaces

LEED Credit: 1 Point (per credit)

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

Requirements: Achieve direct line of sight to the outdoor environment via vision glazing between 2' 6" and 7' 6" above finish floor for building occupants in 75%/90% of all regularly occupied areas.

Related PPG Solutions:

PPG Architectural Glass

This credit is awarded when 75% or 90% of occupied building space receives direct line of sight to vision glazing and the outdoors.

For sustainable building projects, the ideal architectural glass is one that permits the greatest amount of natural light to enter a building while limiting, to the furthest extent reasonable, the thermal effects of infrared energy and solar heat gain.

PPG architectural glasses, such as *Solarban*[®] Solar Control Low-E glasses, exhibit high degrees of light transmission as well as excellent solar control. This can produce exceptional energy savings benefits (see products detailed in *Energy and Atmosphere* Credit 1), while permitting designers to incorporate larger expanses of vision glass without requiring a commensurate increase in a building's overall cooling capacity. Introducing more natural daylighting also reduces the cost and need for artificial lighting.

Visit www.ppgideascales.com to see how PPG's *Oceans of Color* tinted glass and Low-E coatings achieve the highest possible degree of spectral selectivity and solar control.

**LEED
CATEGORY:**

Innovation in
Design

Credit 1.1 to 1.4: Innovation in Design

LEED Credit: 1 to 4 Points

Intent: To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the *LEED-NC Green Building Rating System* and/or innovative performance in Green Building categories not specifically addressed by the *LEED-NC Green Building Rating System*.

Requirements: In writing, identify the intent of the proposed innovation credit, the proposed requirement for compliance, the proposed submittals to demonstrate compliance and the design approach (strategies) that might be used to meet the requirements.

Related PPG Solutions:

PPG Architectural Glass, Coatings and Paints can factor into numerous areas under this requirement, from education programs on how glass, coatings and paints are manufactured to advanced performance strategies related to daylighting (and other concepts) that yield enhanced work or educational performance.



1.888.PPG.IDEA (774-4332)
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