

# PPG Glass, Coatings and Paint USGBC LEED Specification Summary



The United States Green Building Council (USGBC) has established the LEED Green Building 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 designed to help architects earn LEED credits for their projects. These products can be specified individually or together as part of an overall “green” building system.

The following document provides architects, specifiers, designers, building owners and other professionals with a brief overview of PPG glass, coatings and paint products that are or have the potential to be LEED compliant when they are used

as directed and for the application for which they are intended.

The format follows that established by the USGBC in the project checklist published in the *Green Building Rating System for New Construction and Major Renovations (LEED-NC) Version 2.1*. This checklist encompasses six distinct categories with individual credits listed under each. Two categories — *Water Efficiency* and *Innovation and Process Design* — address issues that fall outside the realm of PPG product offerings. Others, such as *Materials & Resources* and *Energy & Atmosphere*, can be profoundly influenced by the specification of PPG products.

This document is designed to serve as a valuable guide to architects seeking to earn LEED certification for their buildings through the proper selection of glass, coatings and paint products.

## LEED CATEGORY: Sustainable Sites

**Credit 7.2:** Heat Island Effect: Roof

**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.

**Requirements:** Use ENERGY STAR® compliant (highly reflective) and high-emissivity roofing (emissivity of at least 0.9 when tested in accordance with ASTM 408) for a minimum of 75% of the roof surface; OR install a “green” vegetated roof for at least 50% of the roof area. Combination of high-albedo and vegetated roof can be used provided they collectively cover 75% of the roof area.

## Related PPG Solution:

### *Duranar*® SPF Coatings

*Duranar SPF* coatings for pre-finished metal roofs comply with ENERGY STAR® reflectance limits established for low slope and steep slope coated metal roofing products, while cutting cooling costs, extending roof life expectancy, and aiding in the reduction of heat-related smog. *Duranar SPF* coatings provide the heat-reflective benefits of a proprietary infrared coating technology, which allows the product to remain LEED compliant even for roofs coated with medium and dark colors.

## 7.2 LEED Credit Update — April 2004

The USGBC has confirmed its earlier ruling that disallows rounding to achieve the minimum 0.9 emissivity standard for LEED credit in c7.2. This requires a minimum emissivity level more commonly characterized in the building products industry as 0.90. Though *Duranar SPF* Infrared Reflective Coatings have an emissivity rating in the 0.85 to 0.88 range (depending on color) and cannot satisfy the 0.90 LEED requirement as it is currently interpreted, they continue to meet the ENERGY STAR reflectance requirements for roof products and are top performers with regard to emissivity. The performance of *Duranar SPF* represents a significant advance in reflective coatings and exceeds the requirements of most state codes for emissivity, which are generally 0.80. Despite any claims to the contrary, no known coating on aluminum can achieve an emissivity rating of 0.90. The USGBC recognizes the difficulty faced by architects in obtaining products that meet this standard and advises us that a revision to the related section (SSc7.2 for LEED-NC v2.2) is being developed.

**LEED  
CATEGORY:**  
**Energy &  
Atmosphere**

**Credit 1:** Optimize Energy Performance

**LEED Credit:** 1-10 Points

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

**Requirements:** Reduce energy costs compared to the energy cost budgets for energy systems regulated by ASHRAE/IESNA Standard 90.1-1999 (without amendments) as demonstrated by the whole building simulation using the Energy Cost Budget Method described in Section 11 of the standards.

**Related PPG Solutions:**

1. *Oceans of Color™ Spectrally Selective Tinted Glass*
2. *Sungate® 100 Low-E Glass*
3. *Sungate® 500 Low-E Glass*
4. *Solarban® 60 Solar Control Low-E Glass*
5. *Solarban® 80 Solar Control Low E- Glass*

The judicious selection of architectural glass can significantly influence the awarding of points within this LEED credit category by reducing demand on regulated energy systems (heating, cooling, fans, pumps), as well as the need for interior lighting. However, the degree to which architectural glass can influence this credit depends on several other factors, including the whole building design and placement.

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 possible, the thermal effects of infrared energy and solar heat gain.

A glass's ability to balance this "spectral ideal" 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 became especially significant when the DOE, following a study by the Lawrence Berkeley National Laboratories (LBNL), recommended that all commercial buildings in the U.S. be glazed with spectrally selective glass.

PPG makes *Oceans of Color™*, a collection of four spectrally selective tinted architectural glasses with LSG ratings of 1.28 to 1.34. The performance of these architectural glazings can be enhanced by combining these tints in one-inch insulating glass units with *Sungate® 100* or *Sungate 500* low-emissivity (Low-E) coated glasses, or with higher-performing *Solarban® 60* Solar Control Low-E Glass.

*Solarban® 80* Solar Control Low-E Glass, PPG's best performing solar control Low-E glass, provides an LSG of 2.04, the highest in the industry, together with a steel jade appearance when shaded, and a satin reflective finish in direct sunlight.

Visit [www.ppgglazing.com](http://www.ppgglazing.com) to see how *Oceans of Color* spectrally selective tinted glasses, such as *Atlantica™*, *Azurria™*, *Caribia™*, and *Solexia™*, can be teamed with other Low-E and Solar Control Low-E Glasses to achieve the highest possible degree of spectral selectivity.

**LEED  
CATEGORY:**  
**Materials &  
Resources**

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

**Credit 1.2:** Building Reuse: Maintain 100% of Existing Walls, Floor and Roof

**Credit 1.3:** Maintain 100% of Shell/Structure and 50% of Non-Shell/Non-Structure

**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% of existing building structure and shell (exterior skin and framing, excluding window assemblies and non-structural roofing material).

**Related PPG Solutions:**

1. *Duranar*<sup>®</sup> Coatings
2. *Megaflon*<sup>®</sup> Coatings
3. *Coraflo*<sup>™</sup> ADS Coatings

**For Metal Roofing and Exterior Building Panels**  
*Duranar* and *Megaflon* factory-applied fluoropolymer coatings provide resistance against color and gloss fade, as well as environmental stress such as acid rain and UV exposure. They resist dirt collection and chemical staining, and can significantly reduce maintenance costs over time. Metal roofs or exterior building panels coated with high-performance *Duranar* or *Megaflon* coatings outlast many of the buildings they cover. If a building with an existing *Duranar*- or *Megaflon*-coated metal roof, or exterior building panels, is being renovated, the roof and/or building panels can be reused and applied toward the LEED credit earned for extending the lifecycle of existing building stock.

**For Exterior Building Panels (Field Applied)**  
*Coraflo* ADS (Air-Dried System) is a revolutionary line of colorful fluoropolymer coatings designed for the restoration and refurbishment of 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 *Coraflo*-coated panels to last as long and look as good as any factory-made panel. *Coraflo* ADS coatings meet strict building codes and can be installed in virtually any environmental setting due to their low-VOC formulation.

**LEED  
CATEGORY:**  
**Materials &  
Resources**

**Credit 4.1:** Recycled Content 5% (post-consumer + 1/2 post-industrial)

**Credit 4.2:** Recycled Content 10% (post-consumer + 1/2 post-industrial)

**LEED Credit:** 1 Point (per credit)

**Intent:** Increase demand for building products that incorporate recycled content materials, therefore reducing 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 post-industrial content constitutes at least 5%/10% of the total value of the materials in the project.

**Related PPG Solution:**

**PPG Architectural Glass**

All PPG glass products, including architectural glass, contain a minimum of 20% post-industrial recycled content. This credit is determined through a formula calculating the percent of recycled content (both post-consumer and post-industrial) and comparing it to the total value of materials used for the building. If architectural glass is a large portion of the building materials value, it has potential to contribute towards this credit.

**LEED CATEGORY:**

**Materials & Resources**

**Credit 5.1:** Regional Materials: 20% manufactured regionally

**Credit 5.2:** Regional Materials: 50% 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 regional economy and reducing environmental impacts resulting from transportation.

**Requirements:** Use a minimum of 20%/50% of building materials and products that are manufactured regionally within a radius of 500 miles.

**Related PPG Solutions**

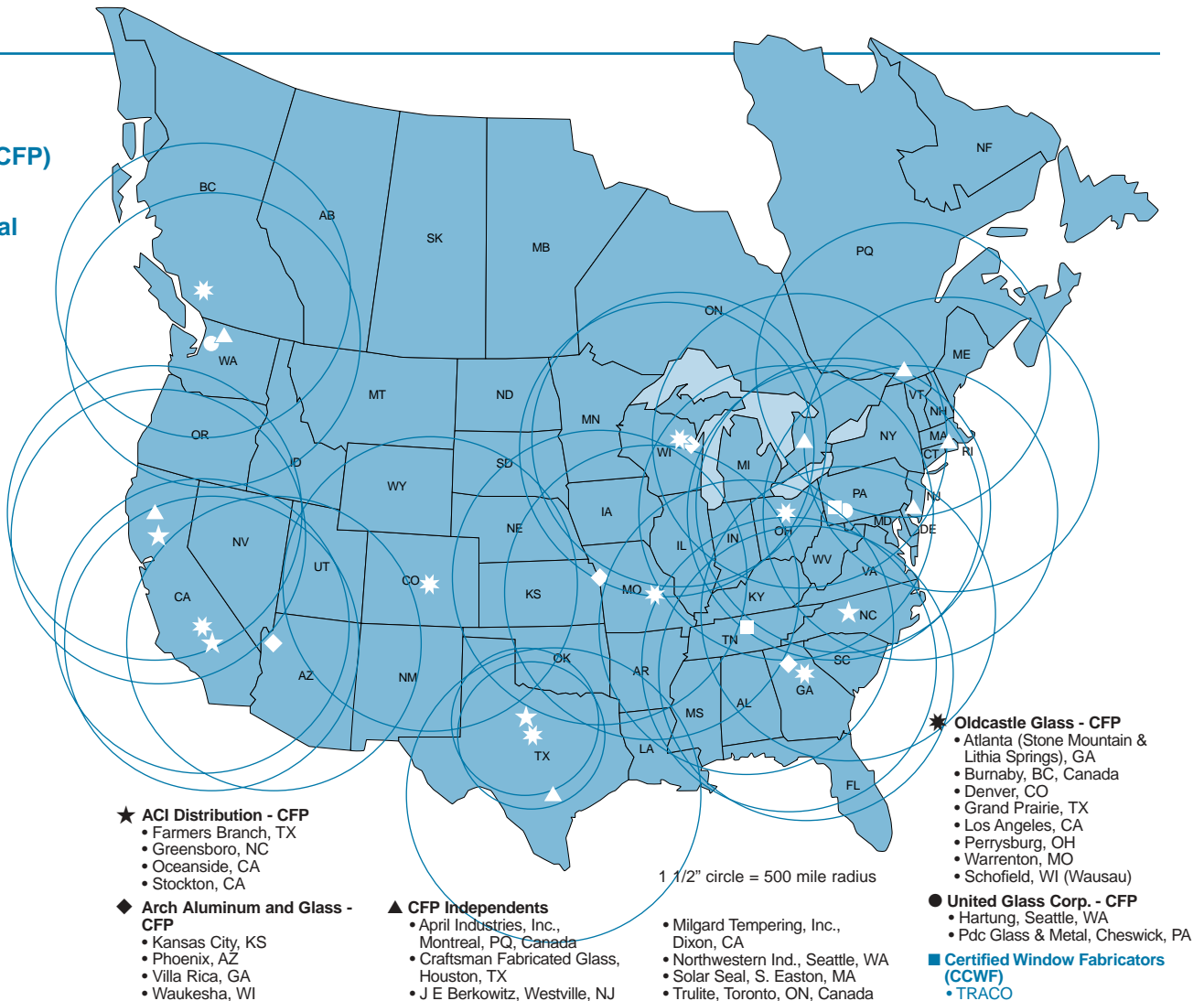
1. PPG Architectural Glass
2. PPG Paints
3. PPG Industrial Coatings

**PPG Architectural Glass**

PPG's Certified Fabricator Program (CFP) is a network of highly trained and qualified suppliers with fabricating plants throughout the United States. By purchasing glass from a local CFP, architects receive the highest possible level of quality and performance, and can claim additional credit toward LEED certification, depending on the percentage of glass material used in their project.

**Certified Fabricator Program (CFP)  
Certified Commercial Window Fabricator Program (CCWF)**

*Locations – 2003-2004*



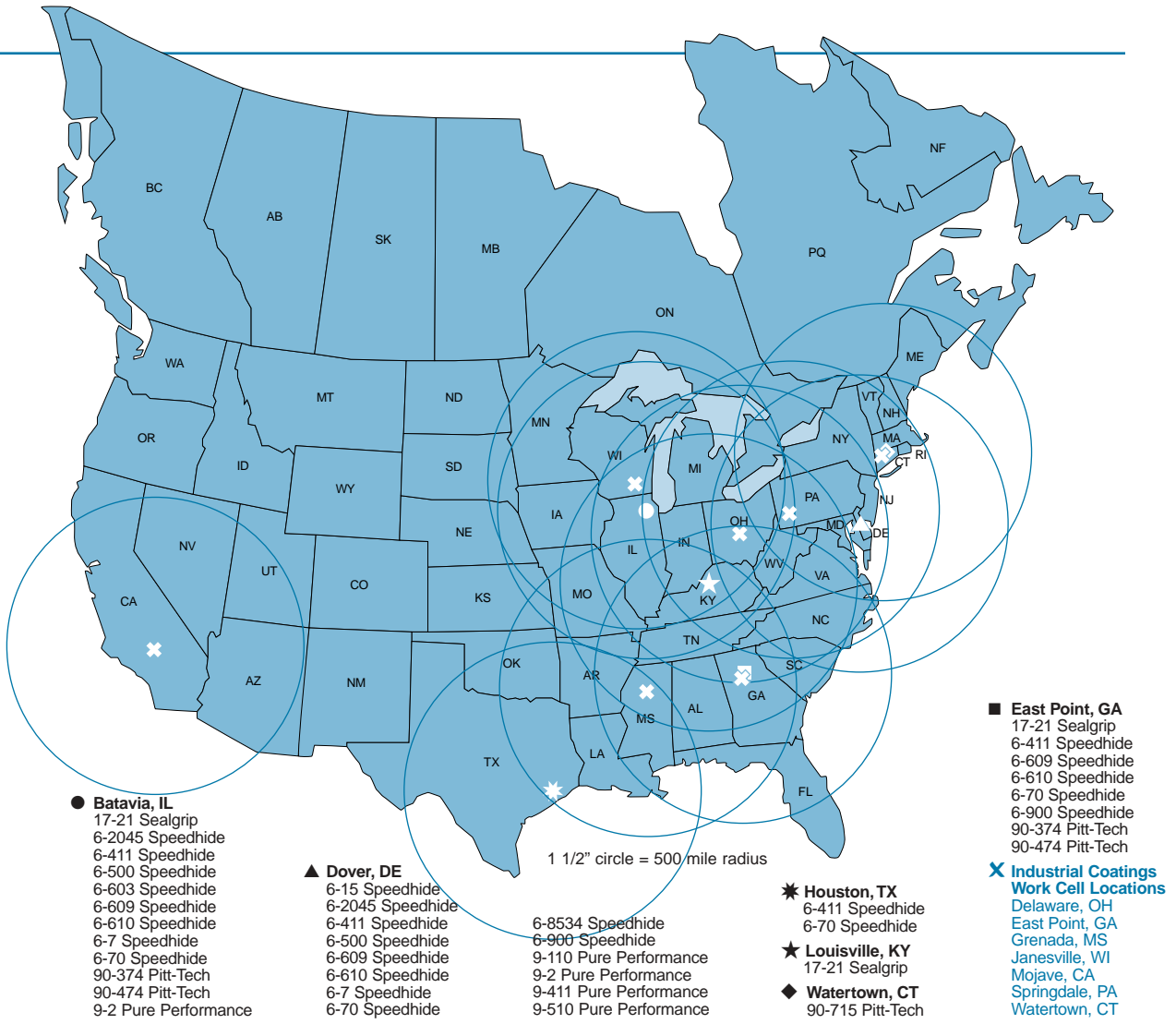
**PPG Paints**

PPG manufacturers paint in six locales: Batavia, Ill.; Houston, Tex.; Dover, Del.; East Point, Ga.; Watertown, Conn.; and Louisville, Ky. Not all PPG paint brands are made at each facility, but buildings located within a 500-mile radius of these locations may be eligible for Regional Materials credit, depending on the paint used. The following map shows where each brand of PPG paint is manufactured.

**PPG Industrial Coatings**

PPG Kaleidoscope™ Work Cells make coatings in five- to 1,000-gallon batches, the most commonly ordered batch quantities, with a highly precise, computer-controlled dispensing and formulating system. These work cells also are strategically located near coating facilities to enhance our ability to meet customer demands, as well as the LEED mandate for proximity to building construction sites.

**Manufacturing Locations**



**LEED  
CATEGORY:****Indoor  
Environmental  
Quality**

**Credit 4.1:** Low Emitting Materials: Adhesives and Sealants

**Credit 4.2:** Low Emitting Materials: Paints and Coatings

**LEED Credit:** 1 Point (per credit)

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

**Requirements (Credit 4.1):** The VOC content of adhesives and sealants must be less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168, AND all sealants used as fillers must meet or exceed the requirements of the Bay Area Quality Management District Regulation 8, Rule 51.

**Requirements (Credit 4.2):** VOC emissions from paints and coatings must not exceed the VOC and chemical component limits of Green Seal's Standard GS-11 Requirements.

**Related PPG Solutions**

1. Pittsburgh Paints® *Pure Performance*™ Paint\*
2. Pittsburgh Paints® *Speedhide*® Commercial Interior Latex Paints
3. Pittsburgh Paints® *Pitt-Tech*® DTM Series (Direct to Metal) Paints

\* *Pure Performance*™ paint surpasses LEED requirements because of its zero-VOC formulation.

For a comprehensive guide of LEED-compliant PPG paints, see the *USGBC LEED Guide Specification*, Section 9900, Interior Paint Schedule at [www.ppgaf.com](http://www.ppgaf.com), or call 1-888-PPG-SPEC 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 a minimum daylight factor of 2% (excluding all direct sunlight penetration) in 75%/90% of all spaces occupied for critical visual tasks. Spaces excluded from this requirement include copy rooms, storage areas, mechanical plant rooms, laundry rooms, and other low occupancy support areas. Other exceptions for spaces where tasks would be hindered by the use of daylight will be considered on their merits.

**Related PPG Solutions****PPG Architectural Glass**

This credit is awarded when 75%/90% of occupied building space receives direct line of sight to vision glazing. To achieve this, several factors must be taken into account such as building siting, design of building, type of architectural glass used and the glazing on that glass.

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vides an LSG of 2.04, the highest in the industry, together with a steel jade appearance when shaded, and a satin reflective finish in direct sunlight.

Because these architectural glasses exhibit high degrees of solar control, even larger areas of glass can be incorporated, producing even greater amounts of natural daylighting.

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1.888.PPG.SPEC

Glass: [www.ppglazing.com](http://www.ppglazing.com)

Industrial Coatings: [www.industrial-coatings.com](http://www.industrial-coatings.com)

Paint: [www.ppgaf.com](http://www.ppgaf.com)

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