

# Sustainable Design



Avonite Surfaces® and the LEED Program



*Does sustainable design have to come at the expense of style? Should clients pay a premium for sustainability? At Avonite Surfaces,<sup>®</sup> we're working diligently to break through these paradigms confronting the architectural community. Our goal is to become catalysts for design transformation, ingraining sustainable design into standard design practices by providing superior Avonite Surfaces products and surfaces.*

*The LEED (Leadership in Energy and Environmental Design) rating system has emerged as an important force in today's building industry, serving as a touchstone for those seeking to build high performance, more sustainable buildings. Our mission is to assist you in understanding all of the program's ramifications and implementation challenges.*

*This white paper is designed to help you understand the impact our products can have on sustainable design and your pursuit of LEED credits. We have outlined and illustrated how our products contribute to the achievement of certain LEED credits.*



## **U.S. Green Building Council**

The U.S. Green Building Council (USGBC) is the nation's foremost nonprofit coalition of over 6,000 companies and organizations from across the building industry promoting high-performance green buildings that are environmentally responsible, profitable, and healthy places to live and work. The USGBC developed LEED as a voluntary, consensus-based national standard to support and validate successful green building design, construction, and operations. Avonite Surfaces/Aristech Acrylics is a current member.

## **LEED Rating System**

The USGBC LEED program offers third-party certification of qualifying buildings and interiors, high-performance design guidelines, and professional training and accreditation services. LEED was created to:

- define "green building" by establishing a common standard of measurement
- promote integrated, whole-building design practices
- recognize environmental leadership in the building industry
- stimulate green competition
- raise consumer awareness of green building benefits
- transform the building market

## **The LEED Rating System evaluates projects over 5 core and 1 bonus credit categories:**

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Bonus Credits for Process and Design Innovation

**Projects can result in one of four levels of certification through achieving Core Credit Points:**

**LEED Certified** achieve 40% or more of the Core Credits

**LEED Silver** achieve 50% or more of the Core Credits

**LEED Gold** achieve 60% or more of the Core Credits

**LEED Platinum** achieve 80% or more of the Core Credits

## Overview of LEED Programs

The LEED Rating System originated as a program designed to evaluate new construction and major renovations for office buildings. With the success of this initial system the USGBC created several other LEED products to address other project types not covered by the original rating system.

### LEED-NC (New Construction & Major Renovations) Version 2.2 Released 2005

LEED-NC is designed to be applied to Commercial and Institutional buildings that are either new or undergoing major renovations with a focus on office buildings. Practitioners have also applied the system to K-12 schools, multi-unit residential buildings, manufacturing plants, laboratories and many other building types. LEED-NC Version 2.2 was released in late 2005.

### LEED-CI (Commercial Interiors) Released 2004

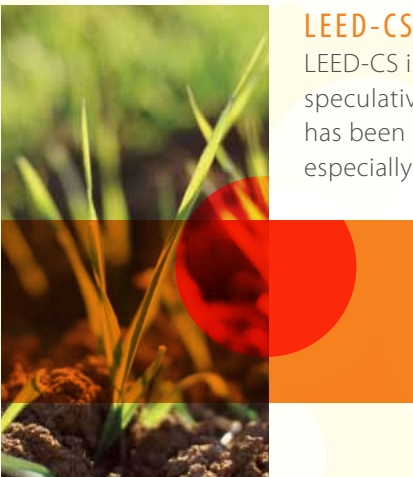
LEED-CI is designed to address the specifics of tenant spaces primarily in office and institutional buildings. LEED-CI provides the opportunity for building tenants to design and certify high performance, healthy, durable, affordable and environmentally sound workplaces.

### LEED-EB (Existing Buildings) Released 2004

LEED-EB is designed to be a set of performance standards for the sustainable operation of existing buildings. It includes building operations and upgrades of systems and/or processes in existing buildings where these upgrades do not significantly change the interior or exterior surfaces of the building.

### LEED-CS (Core & Shell Development) Pilot Project Release 2005

LEED-CS is a set of performance standards for the sustainable design and construction of speculative and core-and-shell buildings. Based on the LEED-NC Rating system, LEED-CS has been developed in recognition of the unique nature of core and shell development, especially the lack of developer control over key aspects such as interior finishes, lighting, and HVAC distribution. LEED-CS is designed to complement the LEED-CI Green Building Rating System so that a LEED-CS certified building that also incorporates a LEED-CI certified interior fit-out will be the equivalent to a LEED-NC certified building.





## How Avonite Surfaces Can Contribute Points

Although LEED is comprised of five core and one bonus category, surfacing products typically only play a role in four core credit categories: Materials & Resources, Indoor Environmental Quality, and Innovative Design. This document will further explain the requirements of the impacted credits and provide a description of how Avonite Surfaces products may contribute to these credits. The Materials and Resource Credits are mainly based on the cost of the material and the relative percentages that those materials contribute to the overall budget of the project.

Projects certifying under the LEED-NC program will typically have budgets that range from \$120/sf to \$400/sf. Solid surfacing materials typically average between \$25.00/sf to \$45.00/sf. On an entire building project, surfacing is only a fraction of the costs associated with materials. Differences in small percentages when calculating recycled content do not necessarily have a significant impact in LEED-NC calculations.

Projects certifying under the LEED-CI program typically have budgets that range from \$30/sf to \$150/sf. Flooring materials typically average between \$25.00/sf - \$45.00/sf. On a commercial interior/tenant improvement project, surfacing may be a major component of the costs associated with materials. It is important to review the impact of varying recycled content percentages and their overall impact on the LEED-CI calculation. LEED-CI considerations are outlined in our LEED-CI White Paper, available online at [www.avonitesurfaces.com/LEED](http://www.avonitesurfaces.com/LEED).

Note: No single product can, by itself, obtain a LEED Credit. Products can, in aggregate, contribute to attaining credits. The only exception is the Indoor Environmental Quality – Low Emitting Materials (Carpet) Credit.

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## LEED-NC Materials & Resources Credits

### Recycled Content

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

Credit 4.2 Recycled Content: 20% (post-consumer + 1/2 pre-consumer) **(1 Point in addition to 4.1)**

*Note: pre-consumer recycled content has the same meaning as post-industrial.*

#### Intent

Increase demand for building products that incorporate recycled content materials, thereby reducing impact 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% or 20% of the total value of the materials in the project.

The value of the recycled content portion of a material or furnishing shall be determined by dividing the weight of recycled content in the item by the total weight of all material in the item, then multiplying the resulting percentage by the total value of the item. Recycled content shall be defined in accordance with the International Organization of Standards document, ISO 14021 — Environmental labels and declarations—Self-declared environmental claims (Type II environmental labeling).

## Avonite Surfaces Credit Contribution

Avonite Surfaces has a variety of recycled content products that can contribute to this credit calculation. All of the Studio Collection Recycled Products Group contains a minimum 40% pre-consumer content. There are currently six products in this group with more under development. All of these products have third party certification by SCS. Two simple generic calculation examples are noted below.

### Equation 1:

$$\text{Recycled [\$] Content Value} = \text{Material or [\$] Product Cost} \times \text{Recycled [%] Content}$$

### Equation 2:

$$\text{Recycled [%] Content Rate} = \frac{\text{Post-consumer RCV [\$]} + 1/2 \text{ Pre-consumer RCV [\$]}}{\text{Total Materials Cost [\$]}}$$

*Note: RCV = Recycled Content Value*

### Surfacing Product Calculation

Total Materials Cost:	\$4,000,000
Product Material Cost:	\$90,000
Recycled Content:	40% Pre-consumer
Post Industrial RCV:	\$90,000 x 40% = \$36,000

$$\text{Recycled Content Rate: } \frac{\text{Post-consumer RCV} + 1/2 \text{ Pre-consumer RCV}}{\text{Total Materials Cost [\$]}}$$

$$\text{Calculation: } \frac{\$0 \text{ PC RCV} + 1/2 [\$36,000]}{\$4,000,000} = \frac{\$18,000}{\$4,000,000} = .45\%$$

*Note: .45% toward 10% (1 pt.) or 20% (2 pt.) minimum requirement of total materials cost of the LEED project.*

## Regional Materials

Credit 5.1 Regional Materials:

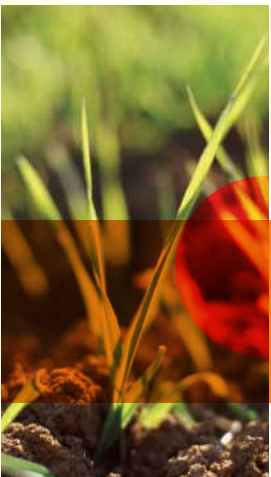
10% Extracted, Processed & Manufactured Regionally (1 Point)

Credit 5.2 Regional Materials:

20% Extracted, Processed & Manufactured Regionally (1 Point in addition to 5.1)

### Intent

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the regional economy and reducing the environmental impacts resulting from transportation.



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## 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 a minimum of 10% or 20% (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.

## Avonite Surfaces Credit Contribution

This contribution must be calculated for every project location. Foundations® products are manufactured in Florence, KY 41042. Studio Collection® products are manufactured in Belen, NM 87002.

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### Equation 1:

$$\text{Regional [\%] Materials Rate} = \frac{\text{Regionally Extracted, Processed \& Manufactured Materials Cost [\$]}}{\text{Total Materials Cost [\$]}}$$

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# LEED-NC Indoor Environmental Quality Credits

## Low-Emitting Materials

EQ Credit 4.1 Low-Emitting Materials - Adhesives and Sealants **(1 Point)**

### 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

The VOC content of adhesives and sealants used must be less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168, AND all aerosol adhesives must meet Green Seal Standard for Commercial Adhesives GS-36 requirements.

- SCAQMD Installation Product Limits VOC Limit (g/L)
- Indoor Carpet Adhesives 50
- Carpet Pad Adhesives 50
- Wood Flooring Adhesives 100
- Rubber Floor Adhesives 60
- Ceramic Tile Adhesives 65
- VCT & Asphalt Adhesives 50
- Cove Base Adhesives 50

### Avonite Surfaces Credit Contribution

All adhesives produced and recommended by Avonite Surfaces for fabrication and installation of Avonite Surfaces products meets the SCAQMD Limit on VOC Emissions.

# ID Credits 1-4: Innovative Design

## Avonite Surfaces Potential Contributions

Designing assemblies from Avonite Solid Surface materials can help reduce waste by custom sheet sizes allowing for less seams, labor and waste. The durable Avonite material also provides great opportunity for modular designs that can easily be deconstructed and relocated and reused.

## Other Potential Contributions

### Resource Credits

Avonite Surfaces products are warranted for 10 years and most installations last well beyond the warranty. Because of the exceptional life cycle of these products, many installations can be removed and reshaped for new locations. This creates the possibility for Materials Reuse credits noted below.

MR Credit 3.1 - NC- Versions 2.1 & 2.2: Materials Reuse - 5% **(1 Point)**

*Note: Also see LEED CI: MR Resource Reuse Credit 3.1 5%; Credit 3.2 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.

### Requirements

Use 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.

MR Credit 3.2 NC Versions 2.1 & 2.2: Materials Reuse - 10%

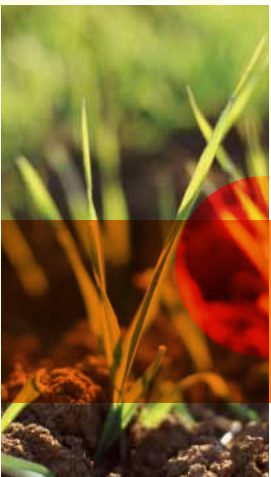
**(1 Point - in addition to MR 3.1)**

### 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.

### Requirements

Use salvaged, refurbished or reused materials for an additional 5% beyond MR Credit 3.1 (10% total, based on cost).



*At Avonite Surfaces, we are committed to being a part of the sustainable design community. We recognize that the LEED rating system is evolving, maturing in the context of new markets and project types. As new LEED Rating Systems are released and new LEED Application guides developed, Avonite Surfaces will continue to be a trusted resource to our customers, your clients, and their projects.*

## Additional Information

For more information regarding our products and commitment to the environment please visit [www.avonitesurfaces.com/LEED](http://www.avonitesurfaces.com/LEED).

Member of the USGBC.



### **About Avonite Surfaces®**

Since 1983, Avonite has brought unparalleled beauty to the world's most luxurious hotels, resorts, restaurants, and elite kitchens. Once the secret of professional designers, Avonite Surfaces products are now available to homeowners around the world searching for a unique touch of elegance.

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**[www.avonitesurfaces.com](http://www.avonitesurfaces.com) | (800) 4 AVONITE**

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