

USGBC LEED 2009
Reference Guide for
Green Building Design
and Construction

LEED CERTIFICATION

Kawneer
Sustainable
Solutions



Architectural Aluminum Systems
Entrances + Framing
Curtain Walls
Windows

 **KAWNEER**
AN ALCOA COMPANY



**LAWRENCE BERKELEY
NATIONAL LABORATORY –
MOLECULAR FOUNDRY**

Berkeley, California, USA
LEED Certification - Gold

ARCHITECT

SmithGroup
San Francisco, California, USA

GLAZING CONTRACTOR

Royal Glass Co., Inc.
Santa Clara, California, USA

KAWNEER PRODUCTS

2250 IG (Inside Glazed) with
custom head anchors
1600 Wall System*1
500 Wide Stile Entrances
7225 Non-Thermal Windows

DESIGNING A SUSTAINABLE FUTURE WITH KAWNEER.

Sustainable design is a reality. What was once an ambitious goal is now a priority in the building and construction industry.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is a voluntary, evolving, consensus-based national standard for developing high-performance, sustainable buildings using a comprehensive, point-based system. As the adoption of sustainable building practices increases, it becomes increasingly critical that architects have the most up-to-date information on tools and performance criteria during the development stage. Kawneer is dedicated to developing products and systems that help comply with LEED standards and promote integrated, whole-building design practices.

Building with sustainable products can make a positive difference in the future of the planet and ultimately the solution starts with you. Every day you make a choice. Kawneer's sustainable solutions and products can help you make a choice that counts.



**PCL CENTENNIAL
LEARNING CENTRE**
Edmonton, Alberta, Canada
LEED Certification - Gold

ARCHITECT
Cohos Evamy integratedesign™
Edmonton, Alberta, Canada

GLAZING CONTRACTOR
Beacon Glass Products Ltd.
St. Albert, Alberta, Canada

KAWNEER PRODUCTS
7500 Wall®
2000 Skylight
360 Insulclad® Thermal Entrances
350 Medium Stile Entrances

KAWNEER PRODUCTS AND SYSTEMS: MORE LEED CREDITS THAN MEET THE EYE.

Many LEED-focused architects are aware that the recycled content found in Kawneer's aluminum products can help earn certification points in the LEED rating system. What many may not be aware of, however, is that Kawneer has a range of products and systems that can help you gain many more valuable certification points across several categories.

Materials & Resources

Kawneer utilizes various aluminum billets for our extrusions. Prime billet smelted from alumina is provided directly from Alcoa. This is the foundation for our extrusions to ensure a top-quality consistent finish and the quality shapes required for architectural grade products and systems. Upon request, we can offer billet with high pre- and post-consumer recycled aluminum content⁽¹⁾.

For LEED projects, be sure your specifications indicate the recycled content requirement for extruded aluminum materials. This way, special measures can be taken to review the desired recycled content and a determination can be made on supplying the recycled content for your specific project.

Energy & Atmosphere

Points under the Energy & Atmosphere category can be leveraged by using Kawneer's thermal windows, swing and sliding entrances, storefronts, sun shades, curtain walls and window wall systems to optimize energy performance. The Photovoltaic (PV) panels in Kawneer's 1600 PowerShade®, 1600 PowerWall® and 1600 PowerSlope® can help earn points for on-site renewable energy.

Indoor Environmental Quality

While all of Kawneer's vertical glass and glazing products can be utilized to provide views, other products such as InLighten® Light Shelf, 1600 Sloped Glazing and 2000 Skylight increase natural daylight to occupied areas of the building. Kawneer's wide range of operable windows and concealed ventilators can provide increased natural ventilation and controllability of systems, all supporting points toward the Indoor Environmental Quality category.

Innovation & Design Process

Kawneer's solvent-free powder coat paints, Cradle to Cradle Certified™ products and paperless architectural support and service systems are just three of the ways points may be earned under the Innovation & Design Process category.

This tool was developed using the U.S. Green Building Council's (USGBC) LEED 2009 Reference Guide for Green Building Design and Construction⁽²⁾. The Canada Green Building Council's (CaGBC)⁽³⁾ LEED standards may vary. Designed to be used as a working instrument, this planning tool will guide you to the specific Kawneer products and solutions that can help you reach your LEED certification goals.

(1) Note: Recycled content variation exists in billet purchases from suppliers.

(2) Note: This tool is offered as a guide. For complete details on LEED-2009 version requirements, please refer to the USGBC LEED 2009 Reference Guide for Green Building Design and Construction.

(3) Note: To learn more about the CaGBC LEED standards, please visit Cagbc.org.

KAWNEER PRODUCTS AND SERVICES



1600 SUNSHADE®
Cradle to Cradle Certified™ Product*

HIGH-PERFORMANCE THERMAL PRODUCTS

Designed to shade interiors and optimize energy performance by reducing solar heat gain, 1600 SunShade® works with Kawneer products to allow greater use of glazing while reducing demand on the HVAC. These properties can help qualify for LEED points in the Energy & Atmosphere category.

High-performance thermal systems are designed to provide optimum thermal performance leading to greater energy conservation. Kawneer systems offer infills from 1" IG (Insulating Glass) to 2" maximum performance triple-glazed units. Thermal products such as 7500 Wall®, 5500 ISOWEB® Windows, AA®900 ISOWEB® Windows, AA®3200 Sliding Door, AA®3900 ISOWEB® Sliding Door, and 1600 Wall System®3 and 4 maximize thermal performance by reducing thermal transmittance. These systems can help qualify for LEED points in the Energy & Atmosphere category.

ENERGY & ATMOSPHERE

Potential Points

Earned Points

LEED Requirements

Kawneer Products + Services

1 Optimize Energy Performance

Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impact associated with excessive energy use.

1-19

(1-19)

(1)

(1-3)

Select one of the three compliance path options below.

OPTION 1: Whole Building Energy Simulation

Demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda) by a whole building project simulation using the Building Performance Rating Method in Appendix G of the Standard.

OPTION 2: Prescriptive Compliance Path

Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide appropriate to the project scope. Project teams must fully comply with all applicable criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located.

OPTION 3: Prescriptive Compliance Path: Advanced Buildings™ Core Performance™ Guide

Comply with the prescriptive measures identified in the Advanced Buildings™ Core Performance™ Guide developed by the New Buildings Institute.

- 1600 SunShade®
- 1600 PowerShade®
- High-performance Thermal Products
- InLighten® Light Shelf
- Thermal, architectural grade operable windows

2 On-site Renewable Energy

Encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impact associated with fossil fuel energy use.

1-7

Use on-site renewable energy systems to offset building energy cost. Calculate project performance by expressing the energy produced by renewable systems as a percentage of the building annual energy cost and using the table below to determine the number of points possible:

RENEWABLE ENERGY	POINT(S)
1%	1
3%	2
5%	3
7%	4
9%	5
11%	6
13%	7

- 1600 PowerShade®
- 1600 PowerWall®
- 1600 PowerSlope®



1600 POWERSHADE®



1600 POWERWALL®
1600 POWERSLOPE®



THERMAL, ARCHITECTURAL GRADE
OPERABLE WINDOWS AND
512 VENTROW ISOLOCK® VENTILATOR

Credits may be obtained for renewable energy in the Energy & Atmosphere category for LEED certification. Photovoltaic (PV) cells in the 1600 PowerShade® convert light energy from the sun into electricity, which can be fed into the building's system. On-site renewable energy reduces the environmental impact associated with the use of fossil fuels.

1600 PowerWall® is the first proven curtain wall system to produce electricity by capturing the energy of the sun. 1600 PowerSlope® combines sloped glazing with PV cells to convert light energy from the sun into electricity. Credits may be obtained for renewable energy in the Energy & Atmosphere category for LEED certification by utilizing these systems.

To maintain aesthetic appeal without sacrificing performance, Kawneer offers a wide range of thermal, architectural grade windows that can help leverage points in the Energy & Atmosphere category. Kawneer's operable windows can earn potential points in the Indoor Environmental Quality Category by providing controllable natural ventilation. The 512 Ventrow, a modular insert ventilator, adds natural, concealed air circulation in fixed frames.

MATERIALS & RESOURCES

Potential Points

Earned Points

LEED Requirements

Kawneer Products + Services

4.1 Recycled Content: 10%

Increase demand for building products that incorporate recycled content materials, therefore reducing the impact resulting from extraction and processing of virgin materials.

1

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% (based on cost) of the total value of the materials in the project.

Use of Recycled Aluminum

4.2 Recycled Content: 20%

Increase demand for building products that incorporate recycled content materials, therefore reducing the impact resulting from extraction and processing of virgin materials.

(4.1) + 1

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

Use of Recycled Aluminum

5.1 Regional Materials: 10% Extracted, Processed and Manufactured Regionally

Increase 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 impact resulting from transportation.

1

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% (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.

Nationwide Customer Network

Use of Recycled Aluminum

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Nationwide Customer Network

Use of Recycled Aluminum



INLIGHTEN® LIGHT SHELF
Cradle to Cradle Certified™ Product*

1600 SLOPED GLAZING & 2000 SKYLIGHT

ARCHITECTURAL SERVICES TEAM (AST)

InLighten® Light Shelf is designed to integrate with 1600 curtain wall systems to reflect natural light deeper into occupied spaces. InLighten® directs available natural light to interior spaces and can help qualify for points in the Indoor Environmental Quality category. In addition, light shelves have been proven to reduce requirements for artificial perimeter lighting, thereby conserving electrical energy costs.

Opening the center of a building with overhead pyramid skylights is one of the fastest and easiest ways to provide natural lighting to an interior space. The insulating thermal break is placed to the exterior of the plane of glass to minimize heat loss and condensation. These systems can qualify for points in the Indoor Environmental Quality category of the LEED certification process.

When planning projects for LEED certification, Kawneer's Architectural Services Team (AST) is available to assist with the selection of products that can qualify for LEED points. Points for the Innovation & Design Process could be achieved by documenting the development of a project in a paperless environment, with the assistance of the AST via the internet – saving the energy often invested in traveling to face-to-face meetings. Division 8 can be developed in a paperless, low-energy-consuming environment.

INDOOR ENVIRONMENTAL QUALITY

Potential Points

Earned Points

LEED Requirements

Kawneer Products + Services

2 Increased Ventilation

Provide additional outdoor air ventilation to improve indoor air quality for improved occupant comfort, well-being and productivity.

1

For mechanically ventilated spaces, increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE Standard 62.1-2007 as determined by EQ Prerequisite 1. For naturally ventilated spaces, design natural ventilation systems for occupied spaces to meet the recommendations set forth in the Carbon Trust "Good Practice Guide 237" [1998]

Thermal, architectural grade operable windows and 512 Ventrow ISOLOCK® Ventilator

6.2 Controllability of Systems: Thermal Comfort

Provide a high level of thermal comfort system control by individual occupants or specific groups in multi-occupant spaces to promote the productivity, comfort and well-being of building occupants.

1

Provide individual comfort controls for 50% (minimum) of the building occupants to enable adjustments to suit individual task needs and preferences. In certain areas, operable windows can be used in lieu of comfort controls. The areas of operable window must meet the requirements of ASHRAE 62.1-2007 paragraph 5.1 Natural Ventilation.

Thermal, architectural grade operable windows and 512 Ventrow ISOLOCK® Ventilator

8.1 Daylight and Views (Daylight 75% of Spaces)

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

1

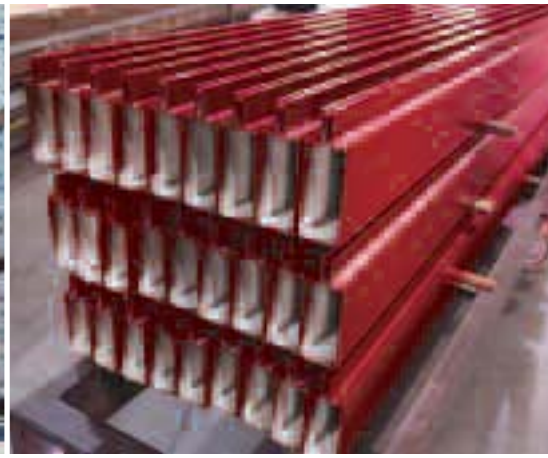
OPTION 1: Simulation
Demonstrate through computer simulations that 75% or more of all regularly occupied spaces achieve defined daylight illuminance levels of a minimum of 25fc and a maximum of 500fc.

OPTION 2: Prescriptive
Use a combination of side-lighting and/or top-lighting to achieve a total Daylighting Zone that is at least 75% (1 point) of all the regularly occupied spaces.

OPTION 3
Any of the above calculation methods may be combined to document the minimum daylight illumination in at least 75% of all regularly occupied spaces. The different methods used in each space must be clearly recorded on all building plans.

OPTION 4: Measurement
Demonstrate, through records of indoor light measurements, that a minimum daylight illumination level of 25 foot-candles has been achieved in at least 75% of all regularly occupied areas.

1600 SunShade®
InLighten® Light Shelf
1600 Sloped Glazing & 2000 Skylight
High-performance Thermal Products



NATIONWIDE CUSTOMER NETWORK

USE OF RECYCLED ALUMINUM

SOLVENT-FREE POWDER COAT FINISHES

Kawneer works selectively in all markets to maintain a network of the best-trained, highly qualified, Division 8 (glass and glazing) subcontractors. Final assembly of Kawneer components often occurs in a subcontractor's local shop. It is possible to earn points toward regional materials in the category of Materials & Resources when both the point of final assembly and the source of high recycled content billet are within 500 miles of the project site.

Kawneer products are typically produced from primary billet to ensure a top-quality consistent finish and architectural grade extrusions. Upon request, billet containing high pre- and post-consumer recycled aluminum content is available and can help contribute points toward recycled content in the Materials & Resources category.

Kawneer offers a wide palette of powder coat paints in attractive colors that are free from the harmful environmental effects of VOCs associated with liquid paints. These powder coat paints are available to finish all Kawneer products. Points for Innovation & Design could be achieved by applying for credit and providing substantiation that the powder coat finish is a low-emitting material that results in improved air quality and has no negative environmental impact.

INDOOR ENVIRONMENTAL QUALITY

Potential Points

Earned Points

LEED Requirements

Kawneer Products + Services

8.2 Daylight and Views (Views 90% of Spaces)

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

1

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 90% of all regularly occupied areas.

High-performance Thermal Products
Thermal, architectural grade operable windows

INNOVATION & DESIGN PROCESS

Potential Points

Earned Points

LEED Requirements

Kawneer Products + Services

1-1.4 Innovation in Design: Provide Specific Title

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

1-5

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.

Solvent-Free Powder Coat Finishes
Architectural Services Team (AST)
1600 SunShade®
InLighten® Light Shelf
1600 Wall System®1
1600 Wall System®2

*Note: Cradle to Cradle Certified™ is a certification mark of MBDC. 1600 SunShade®, InLighten® Light Shelf, 1600 Wall System®1 and 1600 Wall System®2 have been certified for its material content, recyclability and manufacturing characteristics. Not all finishes and components qualify, contact Kawneer for details.

If you are looking for product applications or need technical assistance with your LEED project, contact Kawneer's Architectural Services Team (AST) at our toll-free numbers: (tel) 1.877.767.9107 or (fax) 1.877.767.9102.



Printed using soy based inks on paper that is 100% recycled, post-consumer fiber and made with windpower.

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