

The LEED® (Leadership in Energy & Environmental Design) Rating System is continually evolving. First released in 2004, the current version is LEED® v4. This version has many changes from the previous version (LEED® 2009), particularly in the category of Materials and Resources (MR). In fact, the majority of the MR credits are completely new, replacing the LEED® 2009 credits on material attributes (e.g. recycled content) with new credits focused on building product transparency and reporting.



It is important to recognize that the credits in the LEED® rating system are focused on assessing the building as a whole. For example, in many of the MR credits, a certain percentage, by cost, of the total value of permanently installed building products in the project must meet the criteria. In other cases, a certain number of building products must meet the criteria. As a result, no one product or material alone can earn LEED® credit points. Rather building products can contribute toward earning LEED® points on a project.

**SAFTI FIRST's** fire rated glass and framing systems can be used as part of a strategy to earn points in several credit categories in the current LEED® v4 system, including:

## Energy & Atmosphere



*Within this category there are one prerequisite and one credit, both related to energy use, that **SAFTI FIRST** products can contribute toward. An energy efficient building envelope is a key component in sustainable building design. Achieving an energy efficient building envelope includes consideration of both the insulating value of materials as well as potential solar impacts.*

- *Prerequisite – Minimum Energy Performance – **SAFTI FIRST** products can be part of a strategy to help achieve the required energy performance because of their daylighting properties and films available. Specifically SuperLite products have the option of being insulated and having low-e or energy performance glazing.*
- *Credit - Optimize Energy Performance – **SAFTI FIRST** products can be used as part of strategies, including energy performance glazing and passive solar designs, to further reduce the amount of energy consumed by the building. SuperLite II-XL and GPX Framing assemblies have NFRC (National Fenestration Ratings Council) certifications for U-Factor, Solar Heat Gain Coefficient and Condensation Resistance. In addition, because this credit also includes interior lighting energy demands, the use of **SAFTI FIRST** products as part of a daylighting strategy can help improve energy performance even more. Using fire rated glass can help maximize light penetration, even from artificial lighting, by providing light transmittance in areas where opaque walls are the norm.*

## Materials & Resources



**SAFTI FIRST** has several products that meet the new product information disclosures criteria found in LEED v4. These and other credits within Materials & Resources that relate to **SAFTI FIRST** products are described in the following paragraphs.

- *Credit – Building Product Disclosure and Optimization – Sourcing of Raw Materials – Option 2: Leadership Extraction Practices* of this credit awards a point for using materials that contain recycled content or those that follow other responsible extraction criteria for at least at least 25%, by cost, of the total value of permanently installed products. The credit evaluates all building materials on the project. Metal portions of **SAFTI FIRST** glass framing systems contain recycled content that can contribute. Steel used in the GPX framing system contains approximately 30% by weight pre-consumer recycled content. Aluminum used in the GPX framing system contains approximately 25% by weight pre-consumer recycled content. However, their total contribution relative to other materials on a project may not be significant.
- *Credit – Building Product Disclosure and Optimization – Material Ingredients*, has three options worth 1 point each. All three options require documentation of the raw material ingredients for building products.

Option 1 awards 1/20 of one point for each product used having a Health Product Declaration (HPD) or other compliant ingredient report. HPD v2.0 reports are available for **SAFTI FIRST's** SuperLite I, SuperLite I-XL, SuperLite X-90, SuperLite II-XL, and SuperLite II-XLB fire resistive glazing products and for GPX framing.



Option 2 awards 1 point if 25%, by cost, of the total value of permanently installed products in the project document material ingredient optimization using one of the specified certifications, including Cradle to Cradle (C2C) certification. PYRAN® Platinum product C2C Silver Certification counts toward achievement of this credit.



- *Credit – Construction and Demolition Waste Management* – this credit awards points based on construction waste diverted from the landfill, and new in LEED® v4, also for reduction in total waste material if total waste generated is no more than 2.5 lbs per square foot of building floor area. Since **SAFTI FIRST** products are supplied to the construction site in the exact quantities needed they typically have no waste and so can contribute to the construction waste avoidance option. Should a product be damaged in transit, both the glass and the metal framing systems can be recycled.



# Indoor Environmental Quality



*This category addresses both indoor air quality and other aspects of indoor comfort.*

- *Credit – Low-Emitting Materials* – this credit strives to minimize the amount of volatile organic compounds (VOC) in the indoor air of the building. New in LEED® v4 is the recognition of products that are considered inherently non-emitting materials such as glass and metals without further testing. **SAFTI FIRST** glass and metal framing used as interior walls or flooring eliminate a possible source of VOC's from the indoor environment. Other green building programs, such as the IGCC, have also recognized glass and metal products as inherently non-emitting materials.
- *Credit – Daylight; Credit – Views* – In LEED® v4 these are two separate credits, one awarding points for providing daylighting, the other for providing views to the outdoors. Glass can be an integral part of a strategy to provide both daylight and views while still providing sound control, security, and privacy. **SAFTI FIRST** fire-rated glass products provide benefits of daylighting as well as light access in areas not normally glazed such as stair wells.



- *Credit – Acoustic Performance* – Acoustic comfort is another important element in sustainable designs. This new credit in LEED® v4 includes requirements for sound transmission, background noise and other criteria as a function of the occupancy of the building. High Sound Transmission Class (STC) values provide superior acoustic insulation. In the case of LEED®-Schools, there is an additional minimum prerequisite for Acoustic Performance. Schools must meet the Sound Transmission Class (STC) requirements of ANSI Standard S12.60-2010, Acoustical Performance Criteria, Design Requirements and Guidelines for Schools, and windows must have an STC rating of at least 35.

The STC values for **SAFTI FIRST** glass products range from 28 to 33 for SuperLite I, I-XL, I-W and PYRAN Platinum F products. The STC values ranges from 40 to 44 for SuperLite X-90, SuperLite II-XL and PYRAN Platinum L products. Furthermore, the SuperLite glass products can be customized to achieve higher STC ratings as needed.

SuperLite II-XL products also have OITC (Outdoor-Indoor Transmission Class) values that range from 37 to 40. SuperLite II-XL can also be customized to achieve higher OITC ratings as needed.

## Innovation in Design and Pilot Credits



The Innovation in Design category in LEED® allows project teams to submit potential innovative sustainable design criteria not included in the current rating system. The LEED® Pilot Credits are credits found on the LEED website but not formally part of the current rating system that can be included as Innovation credits.

- *Pilot Credit – Bird Collision Deterrence* – This Pilot Credit is available in several of the rating systems including BD+C: New Construction, Schools, and Healthcare. There are several criteria to earn this credit including the requirement that all glazed corners or fly-through conditions have a Threat Factor less than or equal to 25. According to USGBC reference materials, many fritted glass patterns have Threat Factors of 25 or less. **SAFTI FIRST** can incorporate fritted glass in any SuperLite product as desired.

There are also several Pilot Credits related to resilience and passive survivability during emergencies that contain criteria related to design that does not rely on mechanical services for performance in times of disaster. One area to consider is damage to a building's sprinkler system during an earthquake. FM Global reported that "sprinkler system breakage puts your fire protection out of service at the time that you need it the most. After an earthquake, the threat of fire is greater due to the increased presence of ignition sources and, at some facilities, flammable material releases."<sup>1</sup> Unlike sprinklers, **SAFTI FIRST** products can be used as part of a design strategy to provide reliable, 24/7 fire protection without the need for electrical power or mechanical triggers.

## Fire Rated Glass Systems and Sustainable Design

As mentioned earlier, any meaningful discussion of "green design" must go beyond what is covered in the LEED® v4 Rating System. This section describes some of the high performance sustainable design principles related to fire rated glass systems.

### **Safety and Security**

Safety and security are two aspects of sustainable design that are not covered by the LEED® rating systems. Fire-resistant construction and resistance to impacts and wind-borne debris promote occupant health and safety. Glass is non-combustible. All **SAFTI FIRST** glass, framing and PYRAN® Platinum products protect against fire and can provide passive survivability in the event of a fire. SuperLite II-XL can be manufactured to provide resistance to impacts, including:

ballistic  forced entry  hurricane  and blast 

**in addition to protecting against fire.**

<sup>1</sup> "Understanding the Hazard: Lack of Earthquake Bracing on Sprinkler Systems," FM Global, 2009.

Another aspect of safety and security involves vision and lines of sight. Design guidelines issued by the Safer School Design Initiative, Crime Prevention Through Environmental Design and the National Clearinghouse for Educational facilities all recommend sight lines that maximize visibility and foster positive social interaction. **SAFTI FIRST** has several fire rated glass and framing options that help ensure visual access in like corridors, between occupancies, stairwells and other closed-off areas where attack is prone to occur while still meeting fire rated requirements.



*St. Cloud University ISELF Building in St. Cloud, MN*

### ***Daylighting and Visual Comfort***

The introduction of daylight into the building spaces provides several benefits. Good daylighting allows for light penetration deep into the building space while avoiding glare and direct solar lighting on work planes. Glass has good potential as a daylighting strategy. In general glass provides light transmittance, and providing fire rated glazing in areas that would often be opaque allows for deeper penetration of sunlight and visual access.

Visual comfort can include both views to outdoor spaces as well as avoidance of glare. SuperLite products that incorporate patterns or films are good candidates for controlling or avoiding glare. Sunshades can also be incorporated into the GPX Framing system to minimize glare.



*Doolittle BART Station in Oakland, CA*

### ***Environmentally Preferable Products and Manufacturing***

Some aspects of environmentally preferable materials are captured in the MR section of LEED®. However, there are a number of attributes that LEED® does not consider that relate directly to **SAFTI FIRST** products including: abundance of raw materials, sustainable measures in acquisition or manufacture, and avoidance of toxic materials. Glass is made from some of the most abundant materials on earth, and most of the products do not include toxic materials and all finished building products are inert.

**SAFTI FIRST** also manufactures all components in-house providing control over manufacturing practices. By incorporating Vertically Integrated Manufacturing, complete system manufacturing occurs at one location, rather than importing and assembling products made by others. This approach reduces the transportation and associated costs for **SAFTI FIRST** products as compared with others in the marketplace. In addition, **SAFTI FIRST** upgraded its manufacturing facilities to incorporate skylights to reduce energy consumption and other sustainable manufacturing practices.

### ***Durability***

**SAFTI FIRST** products are made from glass and aluminum, neither of which will degrade over time, and requires no maintenance at all. Ballistic, forced entry, blast and hurricane rated systems are also available and provide added durability.

**SAFTI FIRST** glass products and framing systems that meet the principle of both LEED® v4 and sustainable building design. It is important to recognize the value of the holistic approach taken by the principles of high performance design to achieve a truly sustainable building that considers social and economic impacts as well as environmental ones.

For more information on sustainable design principles and LEED® v4 updates, [click here](#) to download our full white paper on “LEED® v4 and Beyond: Achieving Sustainable Design with Today’s Fire Rated Glass Systems”. You can also visit us online at [www.safti.com](http://www.safti.com) to view our complete line of fire rated glass and framing products.



**If you have any or current or upcoming projects that need fire rated glass or framing, contact us at [info@safti.com](mailto:info@safti.com) or give us a call at **888.653.3333**. We’re happy to help!**

# LEED® v4 for BD+C: New Construction and Major Renovation

**SAFTIFIRST** Fire Rated Glass & Framing can contribute to the credits **highlighted** below.

Y	?	N	<b>Location and Transportation</b>	<b>16</b>
Y	?	N	Credit LEED for Neighborhood Development Location	16
			Credit Sensitive Land Protection	1
			Credit High Priority Site	2
			Credit Surrounding Density and Diverse Uses	5
			Credit Access to Quality Transit	5
			Credit Bicycle Facilities	1
			Credit Reduced Parking Footprint	1
			Credit Green Vehicles	1

Y	?	N	<b>Sustainable Sites</b>	<b>10</b>
Y			Prereq Construction Activity Pollution Prevention	Required
Y	?	N	Credit Site Assessment	1
			Credit Site Development - Protect or Restore Habitat	2
			Credit Open Space	1
			Credit Rainwater Management	3
			Credit Heat Island Reduction	2
			Credit Light Pollution Reduction	1

Y	?	N	<b>Water Efficiency</b>	<b>11</b>
Y			Prereq Outdoor Water Use Reduction	Required
Y			Prereq Indoor Water Use Reduction	Required
Y			Prereq Building-Level Water Metering	Required
Y	?	N	Credit Outdoor Water Use Reduction	2
			Credit Indoor Water Use Reduction	6
			Credit Cooling Tower Water Use	2
			Credit Water Metering	1

Y	?	N	<b>Energy and Atmosphere</b>	<b>33</b>
Y			Prereq Fundamental Commissioning and Verification	Required
Y			Prereq <b>Minimum Energy Performance</b>	Required
Y			Prereq Building-Level Energy Metering	Required
Y			Prereq Fundamental Refrigerant Management	Required
Y	?	N	Credit Enhanced Commissioning	6
			Credit <b>Optimize Energy Performance</b>	18
			Credit Advanced Energy Metering	1
			Credit Demand Response	2
			Credit Renewable Energy Production	3
			Credit Enhanced Refrigerant Management	1
Credit Green Power and Carbon Offsets	2			

Y	?	N	<b>Materials and Resources</b>	<b>13</b>
Y			Prereq Storage and Collection of Recyclables	Required
Y			Prereq Construction and Demolition Waste Management Planning	Required
			Credit Building Life-Cycle Impact Reduction	5
			Credit Building Product Disclosure and Optimization - Environmental Product Declarations	2
			Credit Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
			Credit Building Product Disclosure and Optimization - Material Ingredients	2
			Credit Construction and Demolition Waste Management	2

Y	?	N	<b>Indoor Environmental Quality</b>	<b>16</b>
Y			Prereq Minimum Indoor Air Quality Performance	Required
Y			Prereq Environmental Tobacco Smoke Control	Required
			Credit Enhanced Indoor Air Quality Strategies	2
			Credit Low-Emitting Materials	3
			Credit Construction Indoor Air Quality Management Plan	1
			Credit Indoor Air Quality Assessment	2
			Credit Thermal Comfort	1
			Credit Interior Lighting	2
			Credit Daylight	3
			Credit Quality Views	1
			Credit Acoustic Performance	1

Y	?	N	<b>Innovation</b>	<b>2</b>
			Credit Innovation	up to 5
			Credit Innovation - Pilot Credit on Bird Collision Deterrence	1
			Credit LEED Accredited Professional	1

Y	?	N	<b>Regional Priority</b>	<b>4</b>
			Credit Regional Priority: Specific Credit	1
			Credit Regional Priority: Specific Credit	1
			Credit Regional Priority: Specific Credit	1
			Credit Regional Priority: Specific Credit	1

**0 0 0 TOTALS Possible Points: 106**

**Certified:** 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110