

LEED FOR NEW CONSTRUCTION IMPACT

The following is intended to serve as an outline for contribution to the overall LEED certification of a project when using Heatlok® Soy 200 Plus spray polyurethane foam insulation manufactured by Demilec. Demilec's Building Science Department can be consulted regarding questions with the inclusion of this product in a project seeking LEED certification.

LEED for New Construction is designed primarily for new commercial office buildings, but may be applicable to other building types. Any structure defined as commercial by the applicable building code is eligible for certification as LEED for New Construction buildings.

The following credits will be addressed: EA1, MR4, MR6, IEQ4.1, IEQ7.1

EA Credit 1: Optimized Energy Performance (1-19 points)

INTENT: To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

REQUIREMENTS: Select 1 of the 3 compliance path options. Project teams documenting achievement using any of the 3 options are assumed to be in compliance with EA Prerequisite 2: Minimum Energy Performance.

RECOMMENDED OPTION: Whole Building Energy simulation (1-19 points)

Demonstrate a percentage improvement in the proposed building performance rating compared with the baseline building performance rating. Calculate the baseline building performance according to Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda) using a computer simulation model for the whole building project. The minimum energy cost savings percentage for each point threshold is as follows:

NEW BUILDINGS	EXISTING BUILDING RENOVATIONS	POINTS
12%	8%	1
14%	10%	2
16%	12%	3
18%	14%	4
20%	16%	5
22%	18%	6
24%	20%	7
26%	22%	8
28%	24%	9
30%	26%	10
32%	28%	11
34%	30%	12
36%	32%	13
38%	34%	14
40%	36%	15
42%	38%	16
44%	40%	17
46%	42%	18
48%	44%	19

Heatlok Soy 200 Plus spray polyurethane foam insulation will contribute to a more effective building envelope. The air seal created when using this product will tighten up the envelope allowing the HVAC system to more efficiently heat and cool the occupied space of the building.

Refer to the chart above for an outline of available points. Example: An increased efficiency of 12% above the baseline building performance will earn 1 point toward this credit for new construction, while a 48% increase over the baseline performance will earn 19 points (project specific).

MR Credit 4: Recycled Content (1-2 points)

INTENT: To increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials.

REQUIREMENTS: Use materials with recycled content such that the sum of post-consumer recycled content plus 1/2 of the pre-consumer content constitutes at least 10% or 20%, based on cost, of the total value of the materials in the project. The minimum percentage materials recycled for each point threshold is as follows: **10% - 1 point, or 20% - 2 points**

The recycled content value of a material assembly is determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

For Heatlok Soy 200 Plus: $0.0963 \times \$$ _____ Total cost of the installed spray polyurethane foam job.

Heatlok Soy 200 Plus has 4.68% post-consumer recycled content, and 9.89% pre-consumer recycled content.
 $0.0468 + \frac{1}{2} (0.0989) = 0.0468 + 0.0495 = 0.0963$

To earn 1 point from this credit, 10% of the total project value must be attributed to recycled content.
 To earn 2 points from this credit, 20% of the total project value must be attributed to recycled content.

MR Credit 6: Rapidly Renewable Materials (1 point)

INTENT: To reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials.

REQUIREMENTS: Use rapidly renewable building materials and products for 2.5% of the total value of all building materials and products used in the project, based on cost. Rapidly renewable building materials and products are made from plants that are typically harvested within a 10 year or shorter cycle.

For Heatlok Soy 200 Plus: $0.03 \times \$$ _____ Total cost of the installed spray polyurethane foam job.

To earn 1 point from this credit, 2.5% of the total project value must be attributed to rapidly renewable content.

IEQ Credit 4.1 Low Emitting Materials – Adhesives and Sealants (1 point)

INTENT: To 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: All adhesives and sealants used on the interior of the building (i.e. inside the weatherproofing system and applied on-site) must comply with the following requirements as applicable to the project scope:

- Adhesives, sealants, and sealant primer must comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. Volatile organic compounds (VOC) limits listed below correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.

ARCHITECTURAL APPLICATION	VOC LIMIT (g/L LESS WATER)
Plastic Foams	50

Emission testing of Heatlok Soy 200 Plus has identified Total VOC's (TVOC) at less than 0.01 mg/m³; this is more than a million times less than LEED's VOC limit for plastic foam.

ANALYTE	24 HR EMISSION FACTOR (µg/m ² ·hr)	Predicted Concentration		
		Classroom	Office	Residence
TVOC	23.5	> 0.5 - 4.9 mg/m ³	> 0.5 - 4.9 mg/m ³	> 0.5 - 4.9 mg/m ³

Heatlok Soy 200 Plus has achieved the Greenguard Gold Certification for low emitting products and materials for offices and classrooms. By Method A, Heatlok Soy 200 Plus is eligible to earn credit in LEED for Schools EQ4: Low Emitting Materials credit, and is therefore also eligible to earn the credit for this section in LEED for New Construction and Substantial Renovation.

To earn 1 point from this section, all adhesives and sealants used on the project must comply with SCAQMD 1168 as required by this credit.

IEQ Credit 7.1 Thermal Comfort Design (1 point)

INTENT: To provide a comfortable thermal environment that promotes occupant productivity and well-being.

REQUIREMENTS: Design heating, ventilating and air conditioning (HVAC) systems and the building envelope to meet the requirements of ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy (with errata but without addenda). Demonstrate design compliance in accordance with the Section 6.1.1 documentation.

Heatlok Soy 200 Plus serves as both insulation and air barrier. This results in a much tighter building envelope, less natural air changes per hour and subsequently less air infiltration. The HVAC equipment can then condition the interior air more efficiently providing a more comfortable space for occupants.