

LEED FOR NEW CONSTRUCTION IMPACT

CREDIT: Integrative Process (1 point)

INTENT: To support high-performance, cost-effective project outcomes through an early analysis of the interrelationships among systems.

REQUIREMENT: NC, CS, Schools, Retail, Data Centers, Warehouses & Distribution Centers, Hospitality, Healthcare

Beginning in pre-design and continuing throughout the design phases, identify and use opportunities to achieve synergies across disciplines and building systems. Use the analyses described below to inform the owner's project requirements (OPR), basis of design (BOD), design documents, and construction documents.

RECOMMENDED OPTION: Energy-Related Systems

Discovery: Perform a preliminary "simple box" energy modeling analysis before the completion of schematic design that explores how to reduce energy loads in the building and accomplish related sustainability goals by questioning default assumptions. Assess at least two potential strategies associated related to the credit. (Here are the potential strategies that can be exploited with the HEATLOK XT - HIGH LIFT product.)

- Basic envelope attributes. Assess insulation values, window-to-wall ratios, glazing characteristics, shading, and window operability.
- Thermal comfort ranges. Assess thermal comfort range options.

Implementation: Document how the above analysis informed design and building form decisions in the project's OPR and BOD and the eventual design of the project, including the following, as applicable. (Here is the potential strategy that can be exploited with the HEATLOK XT - HIGH LIFT product.)

- Building envelope and façade treatments on different orientations

PRODUCT CONTRIBUTION: From the preliminary design phase of your project, Demilec Inc. helps you determine and implement strategies to ensure optimal energy performance for all your project's assemblies.

Among the free services offered:

- Simulation of the various envelope assemblies using the CONDENSE W 3.0 software, HAM Analysis or DOE 2 in order to identify thermal weaknesses in the first design stages of the project;
- Revision of the various details to ensure that each one is appropriate to sprayed urethane and/or to propose, more efficient and less expensive options.
- Quality control visit(s) including applied thickness verification, adhesion/cohesion testing, and daily worksheets are being completed. Field audits are made, as requested within the specification, before, during and after the application of the product, as verification the work exceeds the requirements.

ENERGY AND ATMOSPHERE

CREDIT: Optimize Energy Performance (1-18 point)

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

REQUIREMENTS: NC, CS, Schools, Retail, Warehouses & Distribution Centers, Hospitality, Healthcare

Establish an energy performance target no later than the schematic design phase. The target must be established as kBtu per square foot-year (kW per square meter-year) of source energy use. 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: Option 1. Whole-Building Energy Simulation
(1-18 points except Schools and Healthcare, 1-16 points Schools, 1-20 points Healthcare)

| New Construction | Major Renovation | Core and Shell | Points (except schools and healthcare) | Points (healthcare) | Points (schools) |
|------------------|------------------|----------------|--|------------------------|---------------------|
| 6 % | 4 % | 3 % | 1 | 3 | 1 |
| 8 % | 6 % | 5 % | 2 | 4 | 2 |
| 10 % | 8 % | 7 % | 3 | 5 | 3 |
| 12 % | 10 % | 9 % | 4 | 6 | 4 |
| 14 % | 12 % | 11 % | 5 | 7 | 5 |
| 16 % | 14 % | 13 % | 6 | 8 | 6 |
| 18 % | 16 % | 15 % | 7 | 9 | 7 |
| 20 % | 18 % | 17 % | 8 | 10 | 8 |
| 22 % | 20 % | 19 % | 9 | 11 | 9 |
| 24 % | 22 % | 21 % | 10 | 12 | 10 |
| 26 % | 24 % | 23 % | 11 | 13 | 11 |
| 29 % | 27 % | 26 % | 12 | 14 | 12 |
| 32 % | 30 % | 29 % | 13 | 15 | 13 |
| 35 % | 33 % | 32 % | 14 | 16 | 14 |
| 38 % | 36 % | 35 % | 15 | 17 | 15 |

PRODUCT CONTRIBUTION: Heatlok XT - High Lift polyurethane foam insulation will contribute to a more effective building envelope. The air seal created when using this product will tighten the envelope allowing the HVAC system to more efficiently heat and cool the occupied space of the building. Right-sizing of HVAC equipment is highly recommended as the installed insulation will provide an integrated air barrier assembly in compliance with ASHRAE 90.1 Refer to the chart above for an outline of available points. Example: An increased efficiency of 12% above the baseline building performance will earn 19 points (project specific).

MATERIALS AND RESOURCES

CREDIT: Building Life-Cycle Impact Reduction (2-5 points)

INTENT: To encourage adaptive reuse and optimize the environmental performance of products and materials.

REQUIREMENTS: NC, CS, Schools, Retail NC, Data Centers, Warehouses & Distribution Centers, Hospitality NC, Healthcare
Demonstrate reduced environmental effects during initial project decision-making by reusing existing building resources or demonstrating a reduction in materials use through life-cycle assessment. Achieve one of the following options.

- **Option 1: Historic Building Reuse**
(5 points BD&C, 6 points Core and Shell)
Maintain the existing building structure, envelope, and interior no-structural elements of a historic building or contributing building in a historic district.
- **Option 2: Renovation of abandoned or dilapidated buildings.**
(5 points BD&C, 6 points Core and Shell)
Maintain at least 50%, by surface area, of the existing building structure, enclosure, and interior structural elements for buildings that meet local criteria of abandoned or are considered blight.
- **Option 3: Building and Material Reuse**
(2-4 points BD&C, 2-5 points Core and Shell)
Reuse or salvage building materials from off site or on site as a percentage of the surface area, as listed in table below:

| % of Completed Project Area Reused | Points BD+C | Points BD+C (CS) |
|------------------------------------|-------------|------------------|
| 25 | 2 | 2 |
| 50 | 3 | 3 |
| 75 | 4 | 5 |

RECOMMENDED OPTION: To be determined by the current building state and existing use.

PRODUCT CONTRIBUTION: If the building already contains sprayed polyurethane, it is possible to spray directly onto an existing polyurethane. The HEATLOK XT High Lift product is durable for the life of the building and remains fully adhered to the substrate. It resists demolition work. The airtightness properties are always maintained. The product limits masonry efflorescence by eliminating un-controlled air infiltration and exfiltration.

MATERIALS AND RESOURCES

CREDIT: Construction And Demolition Waste Management (1-2 points)

INTENT: To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.

REQUIREMENTS: NC, CS, Schools, Retail NC, Data Centers, Warehouses & Distribution Centers, Hospitality NC, Healthcare
Recycle and/or salvage nonhazardous construction and demolition materials.

- Option 1: Diversion (1-2 points)

Path 1. Divert 50% and Three Material Streams (1 point)

Divert at least 50% of the total construction and demolition material; diverted materials must include at least three material streams.

OR

Path 2. Divert 75% and Four Material Streams (2 points)

Divert at least 75% of the total construction and demolition material; diverted materials must include at least four material streams.

OR

- Option 2. Reduction of Total Waste Material (2 points)

Do not generate more than 2.5 pounds of construction waste per square foot (12.2 kilograms of waste per square meter) of the building's floor area.

PRODUCT CONTRIBUTION: HEATLOK XT- HIGH LIFT is delivered in 3 different size containers:

- Recycled steel drums suitable for further recycling
- Returnable/Reusable totes
- Fixed onboard bulk containers (no raw material packaging or container)

With Spray Polyurethane Foam, there is no trimming or installed thickness adjustment, no adhesive or mechanical fastening, no tapes at board joints. Heatlok XT follows the shape of the building and always provides high performance results without complex details. This results in minimum insulation waste.

INDOOR ENVIRONMENTAL QUALITY

CREDIT: Low-Emitting Materials (1-3 points)

INTENT: To reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

REQUIREMENTS:

- Option 1. Product category calculations
Complied with two or more of the seven categories
- Option 2
Method of calculating the budget

If some products in one of the categories do not meet the requirements, calculate the percentage compliance using a weighted average.

PRODUCT CONTRIBUTION: Manufacturers' claims of compliance with the above requirements must also state the range of total VOCs after 14 days (336 hours), measured as specified in the CDPH Standard Method v1.1:

- 0.5 mg/m³ or less;
- between 0.5 and 5.0 mg/m³; or
- 5.0 mg/m³ or more.

INDOOR ENVIRONMENTAL QUALITY

CREDIT: THERMAL COMFORT (1 points)

INTENT: To promote occupants' productivity, comfort, and well-being by providing quality thermal comfort.

REQUIREMENTS: Meet the requirements for both thermal comfort design and thermal comfort control.

- Option 1. Norm ASHRAE 55-2010
Design HVAC systems and building envelope in accordance with the requirements of ASHRAE 55-2010

OR

- Option 2. Norm ISO and CEN
HVAC systems and the building envelope must conform to the following standards:
 - ISO 7730-2005, Ergonomics of the Thermal Environment
 - CEN Standard EN 15251: 2007, Indoor Environmental Input Parameters for Design and Assessment of Energy Performance of Building.

PRODUCT CONTRIBUTION: Heatlok XT is a closed cell insulating foam product which provides high levels of insulation as well as eliminating air infiltration/exfiltration. Drafts and cold spots are eliminated, condensation is eliminated and the potential for mold growth greatly reduced.

MATERIALS AND RESOURCES

CREDIT: Building Product Disclosure and Optimization – Sourcing of Raw Materials (1-2 points)

INTENT: To encourage the use of products and materials for which life cycle information is available and that have environmentally, economically, and socially preferable life cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.

REQUIREMENTS: NC, CS, Schools, Retail NC, Data Centers, Warehouses & Distribution Centers, Hospitality NC, Healthcare

- Option 2. Leadership Extraction Practices (1 point)
Use products that meet at least one of the responsible extraction criteria below for at least 25%, by cost, of the total value of permanently installed building products in the project.

Recycled content. Recycled content is the sum of post-consumer recycled content plus one-half the pre-consumer recycled content, based on cost. Products meeting recycled content criteria are valued at 100% of their cost for the purposes of credit achievement calculation

PRODUCT CONTRIBUTION: Base on weight percentage, HEATLOK contains 7.5% post-consumer recycled product and 10.5% post-industrial recycled product.