

Polyiso Insulation: An Integral Part of Sustainable Building and LEED 2009 Credits

About Polyiso Insulation

Polyiso is a rigid foam insulation used in over 70% of commercial roof construction, in commercial sidewall construction and in residential construction.

The Benefits of using Polyiso include:

- Low environmental impact
- Virtually no global warming potential
- Zero ozone depletion potential
- Cost effective, optimized energy performance
- Long service life
- Recyclable through reuse
- Recycled content (amount varies by product)
- Regional materials (nationwide production network)
- Meets new continuous insulation (ci) standards
- Quality Mark™ certified LTRR-values
- High R-value per inch of thickness
- Thinner walls and roofs with shorter fasteners
- Excellent fire test performance
- Extensive building code approvals
- Preferred insurance ratings
- Compatible with most roof and wall systems
- Moisture resistance
- Dimensional stability
- Compressive strength

PIMA and polyiso products have received many environmental awards. These include an honorable mention in the Sustainable Buildings Industry Council's (SBIC) - "Best Practice" Sustainability Awards Program and the U.S. EPA's Climate Protection Award for the association's leadership in promoting energy efficiency and climate protection. The EPA also awarded PIMA and its members the Stratospheric Ozone Protection Award for "leadership in CFC phase-out in polyiso insulation and in recognition of exceptional contributions to global environmental protection."



LEED Rating System

In the early 1990s, the United States Green Building Council (USGBC) developed the Leadership in Energy and Environmental Design (LEED) Rating System, as the standard for green buildings. The LEED Rating System establishes basic requirements for the various aspects of sustainable design: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation in design and regional priority. Credits or points are earned for implementation of the technical requirements of the specific LEED rating category. In the most recent version of LEED (LEED 2009 for New Buildings and Major Renovations) a minimum threshold of 40 of the approximately 110 available points is required to achieve the minimum LEED Certified rating. Higher performance levels are designated as Silver, Gold or Platinum and are achieved by meeting minimum points for each level.

Sustainable Building Design and Green Architecture

Today, architects, contractors, specifiers and building owners are using the LEED program to promote the design and the use of materials that minimize the overall environmental impact of construction. While many have perceived that this type of building design requires a higher initial investment in the planning and construction of the building, the movement for sustainable or "green" buildings has quickly shifted from a niche construction market to mainstream building design. Building "green" can be a good long-term investment that does not have to cost significantly more than building with traditional materials.

Polyiso Insulation: An Ideal Product for LEED 2009 Building Designs

Polyiso insulation is an ideal choice for LEED 2009 building designs because it offers these advantages:

- **Highest Thermal Efficiency**
Polyiso is the most thermally efficient insulation available in today's marketplace, as determined using the LTRR testing method to determine a 15 year time-weighted R-value. In addition, members of PIMA initiated a third party certification program — QualityMark^{CM} — to validate these thermal values. QualityMark is a voluntary program administered by FM. Well-insulated buildings reduce fossil fuel use, thereby reducing air pollution.

- **Zero Ozone Depletion Potential**
All PIMA polyiso manufacturer members produce rigid foam board with third-generation, zero ozone-depleting blowing agents. All polyiso products are HFC- HCFC-, and CFC-free.
- **Negligible Global Warming Potential**
Because polyiso roof and wall insulation is manufactured without the use of HFCs, HCFCs or CFCs, its global warming potential is negligible. This feature is especially important since some other thermal insulating foam products are produced using blowing agents with HFCs and HCFCs, resulting in a significantly higher global warming potential.
- **Recycled Content**
Virtually all polyiso insulation is manufactured using recycled material. The percentage of the recycled material by weight depends on the individual manufacturer, the thickness of the product and the type of facer.

LEED 2009: Potential Opportunities for Polyiso Use

Using polyiso insulation may contribute to prerequisites and credits in two LEED 2009 rating categories: Energy and Atmosphere (EA) and Materials and Resources (MR). Here are some suggested opportunities to incorporate polyiso in a LEED building, using the LEED 2009 checklist:

- **Minimum Energy Performance (EA Prerequisite 2)**
Compared to other available insulating materials, Polyiso provides the highest thermal resistance per inch of thickness. Because LEED 2009 has established the energy performance standards of ASHRAE 90.1-2007 as a minimum performance level, the high thermal performance of polyiso offers an effective and economical way to help meet these minimum energy standards– both in the roof and the walls of the building.
- **Optimize Energy Performance (EA Credit 1)**
Because LEED 2009 establishes energy goals significantly higher than ASHRAE 90.1-2007 standards (from a minimum of 8% up to 48% in additional energy savings), the high thermal performance of polyiso may be a critical factor in achieving these high energy savings goals.
- **Construction Waste Management (MR Credit 2)**
National programs are now available to reclaim and recycle polyiso insulation from an existing building. Contact PIMA for additional information.
- **Materials Reuse (MR Credit 3)**
Existing roofs and walls containing polyiso can be maintained and upgraded without removing the polyiso insulation. Existing roof systems containing polyiso may be recovered with additional polyiso and a new roofing membrane, and existing wall systems containing polyiso may be retrofitted with additional polyiso and new interior and/or exterior finishing treatments. With the advent of national recycling programs for existing polyiso insulation (See MR Credit 2), reused polyiso insulation may now be available for many building projects.
- **Recycled Content (MR Credit 4)**
Depending on the product manufacturer and thickness, polyiso can be used toward one of the levels of recycled content credit.

- **Regional Materials (MR Credit 5)**
Because PIMA manufacturing members operate insulation plants and source materials at many locations across North America, polyiso may contribute to the regional materials credit, depending on individual plant material sources and distance of the plant to the building project.
- **Rapidly Renewable Materials (MR Credit 6)**
Depending on the product composition, and thickness, polyiso can be used toward one of the levels of rapidly renewable materials credit.
- **Certified Wood (MR Credit 7)**
FSC-certified wood when used in products where Polyiso is bonded to the wood can contribute to gaining this credit

Other Potential LEED 2009 Credits for Polyiso Use.

LEED 2009 for Schools. In addition to LEED 2009 credits discussed previously, using polyiso insulation may contribute to two Indoor Environmental Quality (IEQ) credits available in the specialized LEED 2009 program for schools:

- **Low-Emitting Materials: Ceiling and Wall Systems (IEQ Credit 4.6)**
Depending on the product manufacturer, there are polyiso products available that meet the testing and product requirements of this credit.
- **Mold Prevention (IEQ Credit 10)**
Depending on the product manufacturer, there are polyiso products available that meet the testing and product requirements of this credit.

Indirect Credits. In addition to credits discussed previously, polyiso insulation offers several features that may help indirectly in achieving the following Water Efficiency (WE) and Indoor Environmental Quality (IEQ) credits in LEED 2009:

- **Water Efficient Landscaping (WE Credit 1) / Innovative Wastewater Technology (WE Credit 2)**
Tapered polyiso roof insulation may be used to develop a comprehensive roof drainage system that can divert and direct rain water to storage and distribution systems to for use in non-potable applications such as landscaping and toilets.
- **Daylight and Views: Daylight (IEQ Credit 8.1)**
Because of its high R-value per inch, additional thicknesses of polyiso may be used to help compensate for thermal losses associated with the use of skylights in order to achieve optimal daylighting levels.

Why Polyiso Insulation

Polyiso continues to be one of the most cost-effective, energy efficient and environmentally responsible insulation products available, delivering dependable year after year benefits.

Inch for inch, polyiso has superior energy efficiency performance compared to other building insulation products. In fact, independent testing of polyiso's thermal performance has proven its R-value exceeds that of other common insulating materials.

Because of its high R-value per inch—which is the measure of thermal resistance used to describe an insulating material's effectiveness—less polyiso is needed to maintain the same R-value. This results in:

- Thinner walls and roofs with shorter fasteners.
- Less change in building dimensions to meet a determined R-value.
- Immediate cost savings through a reduction in materials and labor.

PIMA is the national trade association that advances the use of polyiso insulation. PIMA is a member of the Energy Efficient Codes Coalition and supports "The Thirty Percent Solution" - a comprehensive, integrated campaign to boost new home model code energy efficiency by 30%. Read more at <http://www.thirtypercentsolution.org/>

PIMA

For over 20 years, PIMA (Polyisocyanurate Insulation Manufacturers Association) has served as the unified voice of the rigid polyiso industry proactively advocating for safe, cost-effective, sustainable and energy efficient construction.

PIMA produces technical bulletins in an effort to address frequently asked questions about polyiso insulation. PIMA's technical bulletins are published to help expand the knowledge of specifiers and contractors and to build consensus on the performance characteristics of polyiso. Individual companies should be consulted for specifics about their respective products.

PIMA's membership consists of manufacturers and marketers of polyiso insulation and suppliers to the industry. Our members account for a majority of all of the polyiso produced in North America.

SAFETY

Polyiso insulation, like wood and other organic building materials, is combustible. Therefore, it should not be exposed to an ignition source of sufficient heat and intensity (e.g., flames, fire, sparks, etc.) during transit, storage or product application. Consult the product label and/or the PIMA members' Material Safety Data Sheets (MSDS) for specific safety instructions. In the United States, follow all regulations from OSHA, NFPA and local fire authorities; in Canada, follow all regulations from Health Canada Occupational Health and Safety Act (WHMIS) and local fire authorities.

For more information on polyisocyanurate insulation, visit www.polyiso.org



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