

Multi-layering of Polyiso Roof Insulation

About Polyiso Insulation

Polyiso is a rigid foam insulation used in more than 70% of commercial roof construction and offers a continuous insulation solution for commercial and residential wall assemblies. As one of North America's most widely used and readily available building products, Polyiso is a cost-effective insulation option for reducing building energy use and improving the overall service-life of roofs and walls.

The benefits of using Polyiso include:

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

Multi-layering of polyiso roof insulation installed with staggered joints offers a number of advantages, including:

- Reduced thermal loss at insulation joints;
- Less thermal bridging;
- Helps prevent moisture from the inside of the building from condensing on the underside of the roofing membrane; and
- Minimizes potential for membrane splitting in Built Up Roofing (BUR) systems

The benefits of multiple layers of rigid board insulation of all types have been well known for years. Industry authorities, including National Roofing Contractors Association (NRCA), Oak Ridge National Laboratory (ORNL), Canadian Roofing Contractor Association (CRCA) and Roof Consultants Institute (RCI), have recognized these benefits; and contractors, designers and specifiers have followed this long-standing recommendation for the use of multiple insulation layers.

In a double or multiple layer configuration, the layer next to the deck must meet the polyiso roof insulation manufacturer's minimum thickness requirement for fire performance as designated by FM 4450 / UL 1256 / ULC-S126. The upper layer must meet the FM or UL/ULC applicable wind uplift classification.

Single-Ply Systems

- Insulation Mechanically Fastened Through All Layers: When a coverboard is not used, PIMA **strongly recommends** the use of multiple layers. It is the responsibility of the designer to ensure that the cumulative R-value of multi-layer insulation corresponds to the R-value of the single layer insulation.
- The minimum thickness of either layer shall meet the requirements of the manufacturer's FM approvals and UL/ULC classifications.
- Joints of each layer must be offset (minimum 6" or as otherwise approved by the insulation manufacturer) to prevent continuous vertical joints through the full insulation thickness.

Hot-Applied BUR and Modified Bituminous Roof Systems

- Cover boards are generally required in hot-applied BUR and modified bituminous roof systems and therefore create a multi-layered system.



Surround yourself with the best.

Multiple layering of the polyiso can add to the benefits of a multi-layered system in both fully mopped systems and systems that have the first layer of insulation mechanically fastened with successive layers mopped or adhered.

- Joints of each layer must be offset (minimum 6" or as otherwise approved by the insulation manufacturer) to prevent continuous vertical joints through the full insulation thickness.

In Summary

Although polyiso roof insulation manufacturers recognize that single-layer insulation systems continue to be specified and installed, they all agree that a multiple-layer system provides greater thermal efficiency.

PIMA

For more than 30 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's membership includes manufacturers of polyiso insulation and suppliers to the industry. The products of PIMA's members comprise the majority of the polyiso produced in North America.

PIMA produces technical bulletins to address frequently asked questions about polyiso insulation. These publications update and inform architects, specifiers, and contractors about and build consensus on the performance characteristics of polyiso insulation. Individual companies can provide specific information about their respective polyiso products.

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



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