Removing the Wool From Your Eyes

Advantages of Polyiso Over Mineral Wool in a Building Envelope

Maximize Control. Efficient Design. **Rmax.**

"Mineral wool installation is more time consuming due to numerous clips that are required to cut around and causes itch and irritation to installers"

Why Polyiso Is the Better Decision

Rmax insulation has been designed and tested to provide building envelopes with superior insulating protection, while meeting the fire requirements of building codes, including numerous NFPA 285 assemblies.

Rmax's engineered products and solutions allow for ultimate efficiency through multiple design options, creating ease of construction and reduced energy usage. This leads to a better building envelope all while adding to the bottom-line through both material and labor savings - making Rmax an excellent choice for commercial buildings.

	Polyiso Benefit
Thermal Performance	At 6.5 R/inch, Rmax Polyiso provides 60% more efficiency than mineral wool at 4 R/inch.
Continuous Insulation (ci)	Mineral wool requires costly Z-Furring or proprietary clip systems which are not true ci, leading to expensive energy modeling and calculations to meet code. Rmax Polyiso can be easily installed as true ci.
Fire Performance	With 100's of listed and approved wall assemblies, Rmax Polyiso meets the fire requirements for all building types.
Air Barrier Performance	Closed-cell Rmax Polyiso is an air barrier, while open fiber mineral wool is not. It requires additional materials to prevent air leakage.
Moisture Resistance (water and vapor)	Foil-faced Rmax Polyiso is a water and vapor barrier, while un-faced mineral wool may become saturated with moisture. The presence of vapor or water within the mineral wool reduces its thermal efficiency. It can also break down the binder causing deteriorating performance over time.
Compressive Strength	With 2 ½ times the compressive strength, Rmax Polyiso can support heavy cladding weight, while mineral wool requires highly conductive and costly Z-Furring, hat channels or proprietary clip systems.
Light Weight - Thin Profile	When covering the same area with an equivalent R-value, mineral wool board is 7 times heavier and 2 ½ times thicker than Polyiso, making it more difficult to handle and costly to install.

Foil-faced Polyiso meets life safety standards established by the National Fire Protection Agency (NFPA 285), while providing superior thermal insulation performance.

Did You Know This About Mineral Wool

Maximizing Value: Thermal Performance

Foil-faced Polyiso has more than a 60% increase in R-value/inch over mineral wool. This allows for a thinner profile wall and associated material cost savings or more usable space. Rmax R-values are based on aged samples to account for thermal drift and are backed by a thermal warranty. Additionally, the gas-tight facer and closed-cell foam core maximize thermal performance in situ by eliminating the effects that air movement, bulk water and vapor drive have on product performance. Conversely, these drastically lower the performance of products like mineral wool by as much as 25% due to air infiltration in the winter and up to about 80% in the summer[1].

Toughing It Out: Compressive Strength

Mineral wool manufacturers often list compressive strength values in pounds per square foot (psf) and allow greater deformation during the test - misleading one to think they have high values. When converting psf to psi and using the same test method as Polyiso, mineral wool provides less than half of the compressive strength of standard Polyiso. Lack of compressive strength requires complex, cumbersome and costly cladding attachment systems which reduce effective R-values through thermal bridging.

The above image shows the lack of compressive strength of mineral wool compared to Polyiso. Standard 16lb bowling balls were used with 6"x 6" samples.

Under Pressure: Wind-Washing

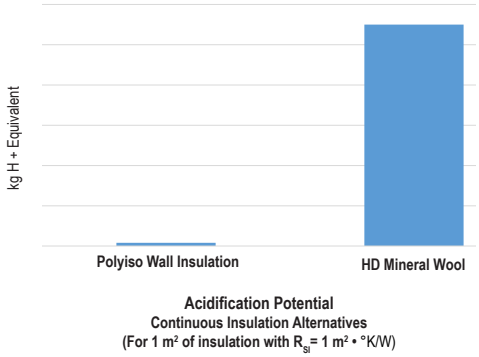
Wind blowing against a wall causes air movement through mineral wool located behind the cladding. To reduce this movement, an air barrier must be placed on the outside of the mineral wool. However, even if the mineral wool is faced or behind a wrap, the pressure creates a billowing effect which still moves air through the fibers. Advertised R-values for mineral wool are based on testing in static, ideal conditions which ignore the effects of air movement. In reality, wind pressure on mineral wool dramatically reduces its R-value. Being a rigid air barrier, neither of these conditions affect Polyiso or its R-value.

Thermal Bridging: Cladding Attachment

Cladding attachment over mineral wool requires the use of metal Z-Furring or sizeable clips, both of which create voids in the insulation and violate ASHRAE's definition of continuous insulation. The overall effectiveness of the building envelope is significantly reduced by the thermal bridging. Code officials have often red-tagged Z-Furring leading to delays, costly removal, redesign and reinstallation of alternate methods/materials.

The Environment: Acidification

When comparing Environmental Product Declarations (EPD), Polyiso rates significantly better than mineral wool in primary energy demand (151%)[2] and acidification potential (28,646%)[2]. Polyiso and mineral wool are similar in all other categories with very low impact, including GWP and ODP.



Acidification Potential
Continuous Insulation Alternatives
(For 1 m² of insulation with R_{SI} = 1 m² • °K/W)

Soaking It All In: Water Absorption

The mineral wool specification does not require it to be tested in contact with water, resulting in a deceptively good value leaving a false impression of water and vapor resistance. In a rainscreen application, rain will get behind the cladding exposing the unprotected mineral wool to direct contact with water. The presence of water in insulation effects its thermal performance. Over time, exposure to water and weather can break down mineral wool and its binder further diminishing its performance. Products that are not designed to be tested for water contact should not be used in exterior wall assemblies, especially rainscreens.

When exposed to the same testing as Polyiso, ASTM C209, mineral wool had 11 times more water absorption (% volume) than Polyiso. Even after the sample was drained, mineral wool had lost 70% of its R-value while Polyiso only lost 0.6%."

This 8ft x 12ft wall has been exposed to the elements, day and night, for over two years – hot, cold and freezing temperatures, direct sunlight (UV), wind, rain, snow, ice, hail, etc. That's 100% exposure on both sides with virtually no movement of the insulation or deterioration of the bond between the insulation and tape or flashing.

"An additional advantage of exterior air barrier systems is the control of wind-washing that an exterior air seal provides."
- Building Science Corporation, BSC RR0403

[1]David W. Yarbrough and Ronald S. Graves. *Yarbrough and Graves on Air Flow Through Insulation.* Journal of ASTM International, Vol. 4, No. 5. Paper ID JAI100607
[2]Percentages were calculated as a ratio of mineral wool's impact over Polyiso's impact. Acidification is shown in the chart as an example.

Improving Your Design.

For warranties, limitations and conditions refer to Rmax Sales Policy and applicable warranties. All documents are located at www.rmax.com. For technical and sales support, email rmax@rmax.com or call (800) 527-0890.

Proudly Made and Engineered in the U.S.A.

Rmax Sales Offices and Plant Locations

Central:
13524 Welch Road
Dallas, Texas 75244

Phone: 972-387-4500
Fax: 972-387-4673
Toll Free: 1-800-527-0890

East:
1649 South Batesville Road
Greer, South Carolina 29650

Phone: 864-297-1382
Fax: 864-234-7548
Toll Free: 1-800-845-4455

West:
210 Lyon Drive
Fernley, Nevada 89408

Phone: 775-575-4849
Fax: 775-575-5035
Toll Free: 1-800-762-9462

E-mail us at rmax@rmax.com or visit our website www.rmax.com

PIMA POLYISOCYANURATE INSULATION MANUFACTURERS ASSOCIATION

ENERGY STAR PARTNER

2016-09