

WHAT'S THE DIFFERENCE BETWEEN R-SHIELD[®] MAX AND XPS INSULATION



R-Shield is a UL recognized insulation.

There are marketplace misconceptions on the performance of R-Shield MAX compared to XPS (extruded polystyrene) insulation.



**INSULATION POWERED
BY GRAPHITE**

THERE ARE MANY MYTHS ABOUT THE PERFORMANCE OF R-SHIELD MAX COMPARED TO XPS INSULATION. - CONSIDER THESE FACTS AND MAKE AN EDUCATED DECISION -



ASTM C578 Standard Compliance.

R-Shield MAX is manufactured in compliance with ASTM C578, "Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation".

UL and ICC Recognition.

R-Shield MAX is recognized in UL ER40361-01 evaluation report.



Closed Cell Polystyrene Foam Filled with Air.

R-Shield MAX is a closed cell foam. It is manufactured from graphite enhanced expanded polystyrene resin which is expanded into blocks. R-Shield MAX contains air within the closed cells.

R-value: Stable Long-Term.

R-Shield MAX is stable and the R-value will not change with time.

Excellent Water Resistance.

R-Shield MAX is a closed cell polystyrene foam which is naturally water resistant. Expanded polystyrene products have demonstrated lower water absorption than XPS in several long-term exterior exposure studies. Don't be fooled by comparisons using short term laboratory tests which are conducted for only 24 hours.

R-value: Water Exposure.

R-Shield MAX is manufactured to resist moisture absorption in wetting conditions and release absorbed moisture quickly during drying periods, which means R-Shield MAX maintains R-value.

Vapor Permeance.

The vapor permeability of R-Shield MAX ranges from 2.5 to 5.0 perms for a 1 in. thick material. This is approximately 2-3 times better than XPS.

XPS

ASTM C578 Standard Compliance.

XPS is manufactured in compliance with ASTM C578, "Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation".

Limited Recognition.

Code reports for XPS are not available from UL. Some, but not all manufacturers have ICC-ES reports.

Closed Cell Polystyrene Foam Filled with an Unknown Gas.

XPS is a closed cell foam. It is manufactured from polystyrene, blowing agents, and dyes which are extruded into boards. XPS generally contains HFC's such as HFC 134a within the closed cells. HFC's are harmful to the environment.

R-value: Loses R-value over Time.

XPS is not stable and the R-value will drop over time as the cell gases escape.

Excellent Water Resistance.

XPS is a closed cell polystyrene foam which is naturally water resistant. The water resistance of XPS is published for exposure to water in a laboratory after only 24 hours. Short term laboratory results do not correlate to long-term performance of XPS in exterior exposure conditions.

R-value: Water Exposure.

XPS is manufactured to resist moisture absorption in wetting conditions, but long-term in-situ testing has shown XPS traps water due to its low drying potential. This means XPS loses R-value.

Vapor Permeance.

The vapor permeability of XPS is typically 1.5 perms for a 1 in. thick material. XPS over 1.5 in. thick will act as a vapor retarder which may trap moisture in some climate zones.



XPS

A Great Value.


When purchasing insulation materials, the cost per R-value and strength are critical benchmarks. R-Shield MAX is available in different types which comply with ASTM C578. Products with compressive strengths of 10, 15, and 25 psi are available. The wide range of R-Shield MAX types makes selecting the best product for your application easy. The cost per R-value for R-Shield MAX is much less than XPS.

Expensive.

XPS is available in a limited number of types which comply with ASTM C578. Products with compressive strengths of 15 and 25 psi are most common. Although XPS has a slightly higher R-value, the cost per R-value is much higher making XPS a more expensive insulation. In addition, the R-value is not stable for the life of the product.

DON'T COMPROMISE, R-SHIELD MAX INSULATION PROVIDES MORE THERMAL RESISTANCE (R-VALUE) PER DOLLAR.

Selecting R-Shield MAX vs. XPS Insulations.

Insulation	Compressive Strength (psi)	Density (lbs/ft ³)	50 Year R-value ¹ °F·ft ² ·h/Btu
 R-SHIELD MAX 150	15	1.5 ²	5.0
XPS Type X	15	1.3	4.3 ³
 R-SHIELD MAX 250	25	2.0 ²	5.0
XPS Type IV	25	1.45	4.3 ³

¹ R-value at 75°F and are based on 1-1/8" thickness.

² Nominal

³ Based on available testing and published research

When comparing the performance of R-Shield MAX to XPS insulation, R-Shield MAX is the clear winner.

Foam face-off:

Choosing R-Shield MAX over XPS.

R-Shield MAX powered by graphite provides a stable long-term R-value at a lower cost

R-Shield MAX uses a blowing agent with 10 x lower global warming potential and 10,000 x lower ozone depletion

R-Shield MAX and XPS meet strength requirements

R-Shield MAX and XPS have resistance to moisture. R-Shield MAX has a higher vapor permeance leading to superior drying potential

R-Shield MAX with a treatment is available to provide termite resistance

Proven to meet, or exceed, building codes.

R-Shield MAX is manufactured under an industry leading quality control program monitored by UL and further recognized in UL Evaluation Report UL ER40361-01. R-Shield MAX meets ASTM C578, "Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation".



Performance Value.

When you consider all performance characteristics and cost, R-Shield MAX is your best choice for foam insulation.

R-Shield MAX has air in its closed cells and therefore has a stable R-value. Many other insulations use blowing agents that cause R-value loss and are harmful to the environment.

R-Shield MAX has compressive strength to meet specific project requirements.

R-Shield MAX is manufactured to resist moisture absorption in wetting conditions and release absorbed moisture quickly during drying periods, which means R-Shield MAX maintains R-value.

Ready to take control? Start here.

If you're ready to have R-Shield contribute to your next project, just contact your Premier Building Systems Technical Sales Representative. They will be happy to give you design consultation, information about R-Shield products, pricing, and answers to all of your questions.

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