

SCIENCE DOESN'T LIE

**FOAMULAR® XPS INSULATION PERFORMS
BETTER THAN EPS INSULATION**



OWENS CORNING® FOAMULAR® XPS

PROVEN PERFORMANCE

The most important characteristic of insulation is its ability to retain R-value and continue to insulate even when exposed to water for long periods of time.

Over the lifetime of a building or paved surface, water gets into, and lingers in, the soil around the foundation and the roof as water makes its way off of the building. Water is an excellent conductor of heat, so if insulation is water soaked, R-value is lost. Also, if absorbed water freezes and thaws, the insulation structure will break down over time and structural integrity can be compromised. There is extensive messaging from the EPS industry claiming that EPS performs the same, if not better, than XPS when it comes to R-value and moisture. But you only have to look at the science to see the real truth – science doesn't lie.

Science proves XPS is more moisture-resistant than EPS*

The EPS industry claims to have “proof” that EPS is more moisture-resistant than XPS. This came from one study that was commissioned by the EPS industry. To this day, no one has been able to verify or recreate these same results. In fact, when asked for the study to be made public, the full report was not disclosed to multiple requesters. If the data is truly valid, then why not show it to the world?

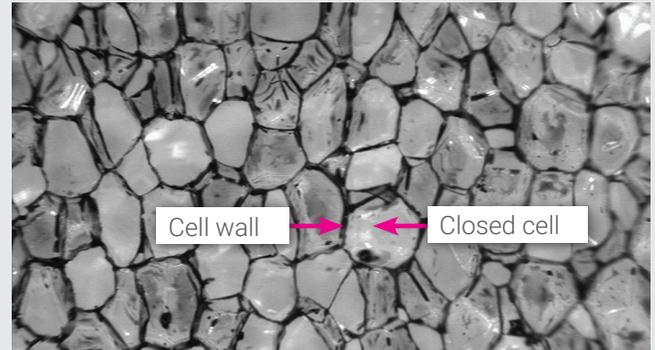
Experts have reviewed numerous independent technical studies and their key findings prove that XPS performs better than EPS in applications where the insulation is exposed intermittently and repeatedly to high moisture environments such as below grade and on rooftops. For this reason, the use of EPS is limited in certain applications such as for insulating frost-protected, shallow foundations as cited in numerous design standards published by the American Society of Civil Engineers (ASCE), the International Building Code (IBC), and the International Residential Code (IRC) and in vegetative roof assemblies as recommended by the National Roofing Contractors Association. **Because XPS has proven its moisture resistance in decades of unbiased demonstrations to the people who matter, it is required over EPS for critical applications.**

Science proves XPS holds R-value better than EPS at lower mean temperatures when water is present*

The EPS industry claims that EPS “holds” R-value better than XPS. The truth is XPS has a higher R-value than EPS. The EPS claim compares the FOAMULAR® XPS warranty of 90% to 100% for EPS. **However, 90% of R-5 is always more than 100% of R-3.6 to 4.2, and the FOAMULAR warranty is for the lifetime of the product.**

EPS claims also mention that their R-value is higher when tested at lower temperatures. That is true for both EPS and XPS. What is not mentioned is that when EPS absorbs water, its R-value gets lower, even when tested at lower mean temperature. Meanwhile XPS continues to have a higher R-value at lower mean temperatures even when exposed to water. In real applications- particularly below grade- insulation gets wet. Recognition of “real world” conditions is important when assessing performance. **XPS holds R-value better.**

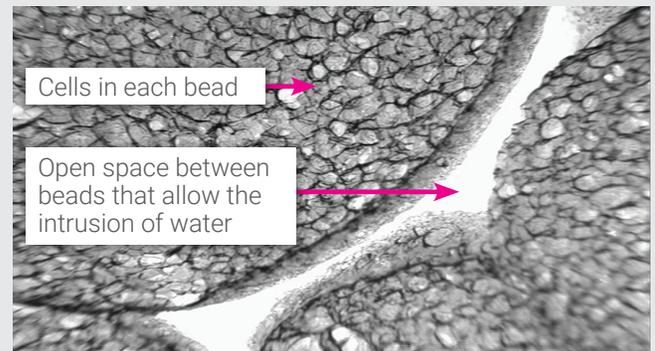
THE MANUFACTURING PROCESS MATTERS



XPS

XPS – Extruded Polystyrene

Manufactured in a continuous extrusion process, that produces a homogeneous, closed-cell, cross-section.



EPS

EPS – Expanded Polystyrene

Manufactured by expanding spherical beads in a mold, using heat and pressure to fuse the beads together. While each individual bead is a closed-cell environment, there are significant open spaces between each bead.

*ASTM C272 and ASTM C518. Also see Owens Corning technical document: “Extrusion Matters” for more details.

FOAMULAR® XPS VS. EPS: A HEAD-TO-HEAD COMPARISON

FOAMULAR® XPS	BENEFITS	EPS
 Base products R-5 per inch with High-R product line at R-5.7 per inch. (Reducing the required thickness for rooftops in height-restricted areas!)	R-Value	 Most products range from R-3.1 to R-4.3 per inch thickness.
 0.3% maximum water absorption by volume (ASTM C272) – potential absorption is very low.	Water Absorption	 2-4% water absorption by volume (ASTM C272) – potential absorption is 10 times greater than FOAMULAR® XPS.
 XPS maintains product integrity because it does not readily absorb moisture that will break down the material during freeze/thaw cycles. ¹	Maintaining Structural Integrity	 EPS is capable of absorbing water- even with facers on- which will break down material and cause damage during freeze/thaw cycles.
 Passed Exterior Wall Fire Testing. ²	NFPA 285 Fire Tested	 Very few EPS manufacturers have completed testing (UL listed assemblies) with less assembly options.
 The only XPS to have achieved GREENGUARD Gold Certification – with strict certification criteria, including testing, that considers factors for sensitive individuals and ensures acceptability for use in schools and health-care facilities.	Underwriters Laboratories (UL) GREENGUARD Certification	 Limited EPS Manufacturers have this certification.
 XPS is reusable and remnants from manufacturing are recycled back into new XPS foam insulation.	Recycle/Reuse	 EPS is recyclable and reusable. Recycled content is not certified from a third party. Most are listed with 15% recycled content.
 Industry's only LIFETIME LIMITED WARRANTY. ³ We stand behind our product for the life of the home or building.	Warranty	 Limited EPS Manufacturers have lifetime warranties.
 World-class, industry-leading building science capabilities for 80 years. Customers can talk directly to a building science leader with GET-TECH email and support resources.	Technical Support	 Technical support offered by manufacturers.
 XPS can contribute to meeting LEED® credit criteria. Additionally, FOAMULAR® XPS is available with an Environmental Product Declaration (EPD) and Material Health Information – additional areas where contributions to LEED® points can be made.	LEED® Credits	 Contributes to LEED® credits.



¹ASTM C666.

²Approved under variety of masonry veneer finishes, over steel stud frame or masonry back-up walls.

³See actual warranty for complete details, limitations and requirements.



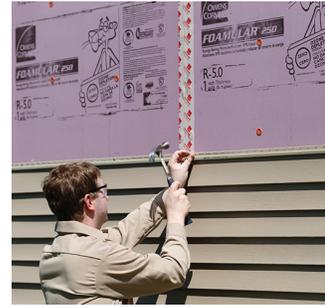
COMMERCIAL WALLS



COMMERCIAL ROOFS



RESIDENTIAL ROOFS



RE-SIDING



UNDER ROADS



UNDERGROUND UTILITIES



FOUNDATIONS



PIPE FABRICATION BILLETS

OWENS CORNING® FOAMULAR® XPS RIGID FOAM INSULATION IS WELL-SUITED FOR MULTIPLE COMMERCIAL AND RESIDENTIAL APPLICATIONS.

FOAMULAR® XPS Insulation's Key Features:

- Industry's ONLY lifetime limited warranty.
- The ONLY XPS to have achieved GREENGUARD Gold Certification, with strict certification for occupants with sensitivities.
- Available in multiple thicknesses and highly customized for unique applications from square, tongue-and-groove, and scored-squared edging to channeled and ribbed faces.
- XPS is reusable and remnants from manufacturing are recycled back into new XPS foam insulation.
- XPS is the only insulation recommended for vegetative roof systems by the NRCA (Green Roof Systems Manual, 2017 Edition)

Owens Corning Benefits:

- Access to leading building science experts with fire, acoustic, thermal, hygrothermal, sustainability, and learning center resources available through our Building Science Solutions Center (www.owenscorning.com/insulation/commercial/building-science)
- Enclosure solutions resources organized for your specific building application (www.owenscorning.com/enclosure)



OWENS CORNING INSULATING SYSTEMS
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