



XPS vs EPS

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 construction.

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 finds prove that XPS performs better than EPS in below grade applications. The use of EPS below grade, is limited in certain critical 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). **XPS is more moisture-resistant than EPS.**

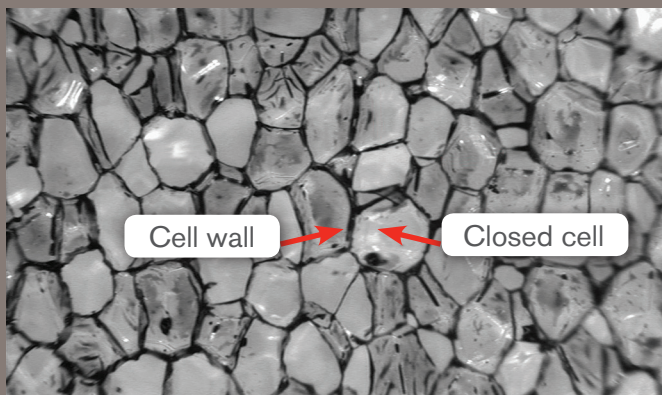
Science proves XPS holds R-value better than EPS at lower mean temperatures when water is present*

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.**

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

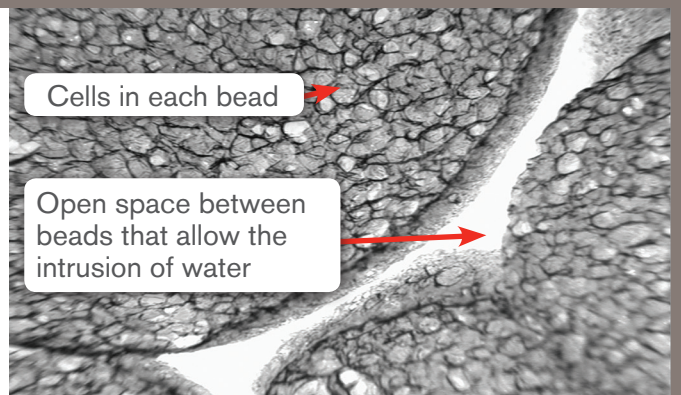
MANUFACTURING PROCESS MATTERS



XPS: Closed Cell

XPS – Extruded Polystyrene

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





















EPS: Open Cell

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.

SCIENCE DOESN'T LIE

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. | R-Value |  Products range from R-3.1 to R-4.3 per inch. |
|  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 of its moisture-resistance. Water does not penetrate and break down material during freeze/thaw cycles. ¹ | Maintaining Structural Integrity |  EPS is capable of absorbing water, even with facer 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). |
|  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 healthcare facilities. | Underwriters Laboratories (UL) GREENGUARD Certification |  No EPS manufacturer has this certification. |
|  XPS is reusable and remnants from manufacturing are recycled back into new XPS foam insulation. Only FOAMULAR® XPS is third party certified for recycled content (SCS Certification) with 20% minimum. | 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 |  Warranties range from 0-20 years. |
|  World-class, industry-leading building science capabilities for 75 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 as an Environmental Product Declaration (EPD) – an additional area where contributions to LEED® points can be made. | LEED® Credits |  Qualifies for 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 Walls



Re-siding

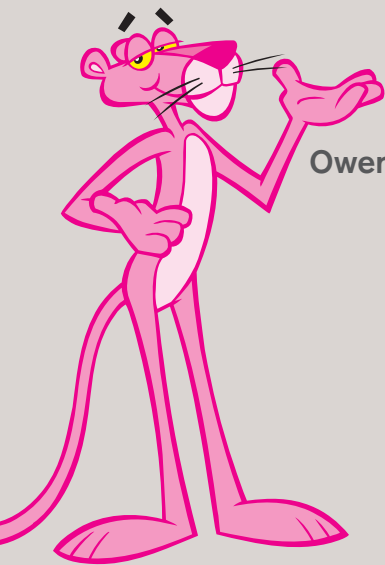
Owens Corning™ FOAMULAR® XPS Rigid Foam Insulation is well-suited for multiple commercial and residential applications.

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.
- The **ONLY** XPS that is third-party certified by **SCS** with a minimum 20% recycled content.
- Available in multiple thicknesses with straight tongue-and-groove and scored-squared edging.
- XPS is reusable and remnants from manufacturing are recycled back into new XPS foam insulation.

Owens Corning Benefits:

- Leading building science experts.
- Architectural and Engineering Information Center (www.OCBuildingSpec.com).



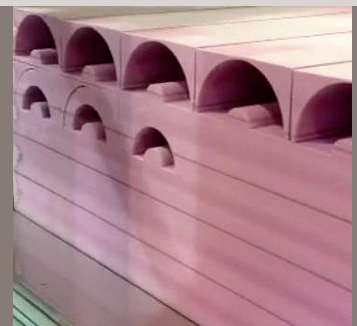
Under Roads



Underground Utilities



Foundations



Pipe Fabrication Billets

For more information for your next job or your 3-part guide spec, visit us at
www.OCBuildingSpec.com or
www.owenscorning.com



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