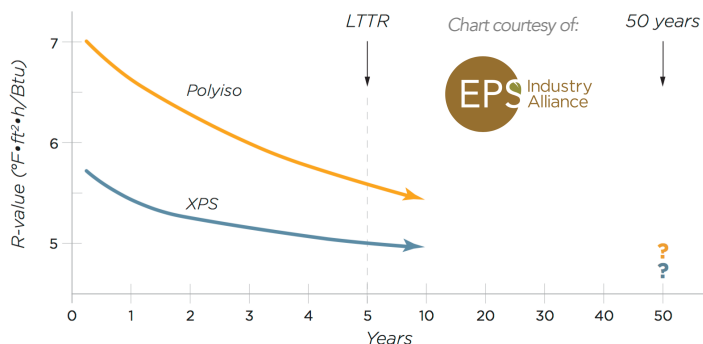


TECHNICAL BULLETIN

Long-Term R-value Performance

Polyiso & XPS R-value over time



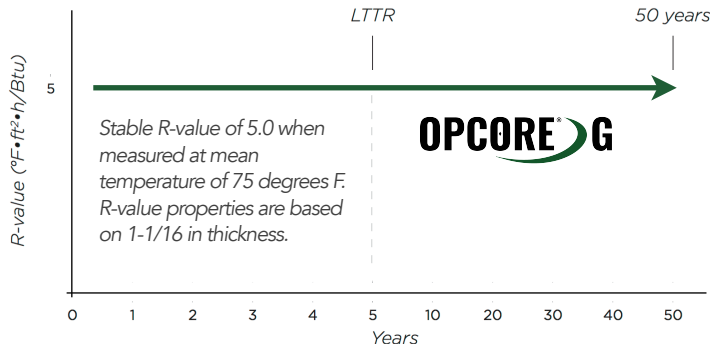
According to the EPS Industry Alliance Technical Bulletin 'XPS & Polyiso Long-Term Thermal Resistance & R-value Performance', polyisocyanurate (polyiso) and XPS (extruded polystyrene) lose R-value over their lifetime. This means the materials ability to resist the flow of heat will lessen well past the five year point reported using common LTTR test methods ASTM C1303 or CAN/ULC-S770.

Both materials make use of gases with a lower thermal conductivity than air. This allows the material to be described with a higher 'on-the-board' R-value than what would be achieved if the cells in the foamed materials contained just air. However, over time, air replaces these gases as the atmosphere in a given cell naturally seeks equilibrium with the atmosphere outside of the cell.

Starting in year five and for the remaining life of the materials, the R-values of polyiso and XPS are below LTTR published R-values.⁽¹⁾

Most insulation users are interested in a true long-term R-value for their energy demand calculations. They need to determine the true cost savings potential of thermal insulation and structure design options to optimize both cost and performance. While five-year LTTR values are of interest, a 50-year LTTR is more suitable for building insulation specifications.

OPCORE®-G R-value over time



OPCORE recyclable thermal insulation and OPCORE-G graphite-enhanced recyclable thermal insulation demonstrate a stable R-value over time.

Both materials are made of small pockets of air surrounded by a recyclable polymer matrix. This means the R-value of the material is stable over time. The insulating gas in the cells starts as, and stays as, air.

OPCORE-G contains high purity graphite wholly contained in, and evenly dispersed throughout, a recyclable polymer matrix. Graphite naturally absorbs radiant energy, and therefore slows the flow of heat through the material. And, as an added benefit, graphite's effect on the material's radiant heat transfer rate is even more pronounced when measured at lower mean temperatures. This means the R-value of OPCORE-G is stable over time - and powers up as the mean temperature of the material drops.

Summer or winter, now, at five years or throughout the life of the installation, OPCORE and OPCORE-G Recyclable Thermal Insulation helps keep heat where it belongs.



Learn more about OPCORE and OPCORE-G rigid thermal insulation products at www.opcodirect.com.

(1) As stated in EPSIA Technical Bulletin 'XPS & Polyiso Long-Term Thermal Resistance & R-value Performance'.

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