

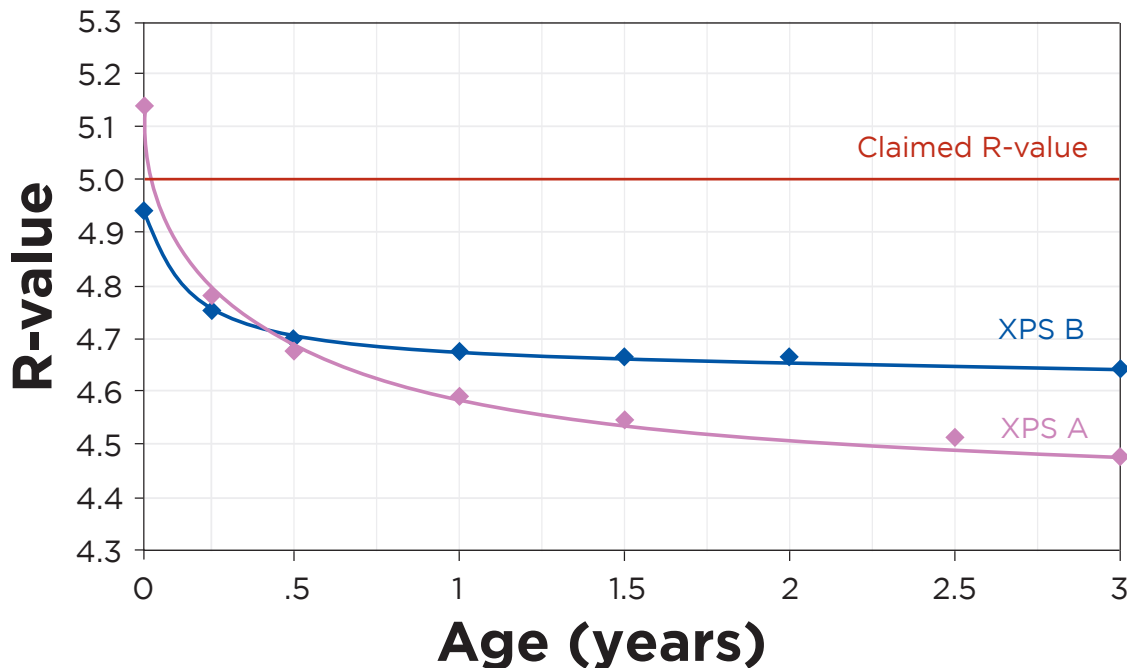
WHAT'S THE R-VALUE OF XPS AFTER 3 YEARS



The extruded polystyrene (XPS) insulation industry publishes R-values based on samples conditioned for a set period of time or based on an estimate of the long term thermal resistance (LTTR). Published R-values are useful, but XPS is affected by aging and temperature. Therefore, actual R-value testing data that considers aging time and in use temperature conditions is needed.

R-value data was obtained by tests conducted at an ISO 17025 accredited laboratory using ASTM C518, "Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus". Two 2" thick XPS commercially available insulations were obtained from major industry suppliers. The insulations were tested immediately upon receipt and at regular intervals thereafter for 3 years. R-value data was obtained at mean temperatures of 75°F and 40°F.

XPS @ 75°F

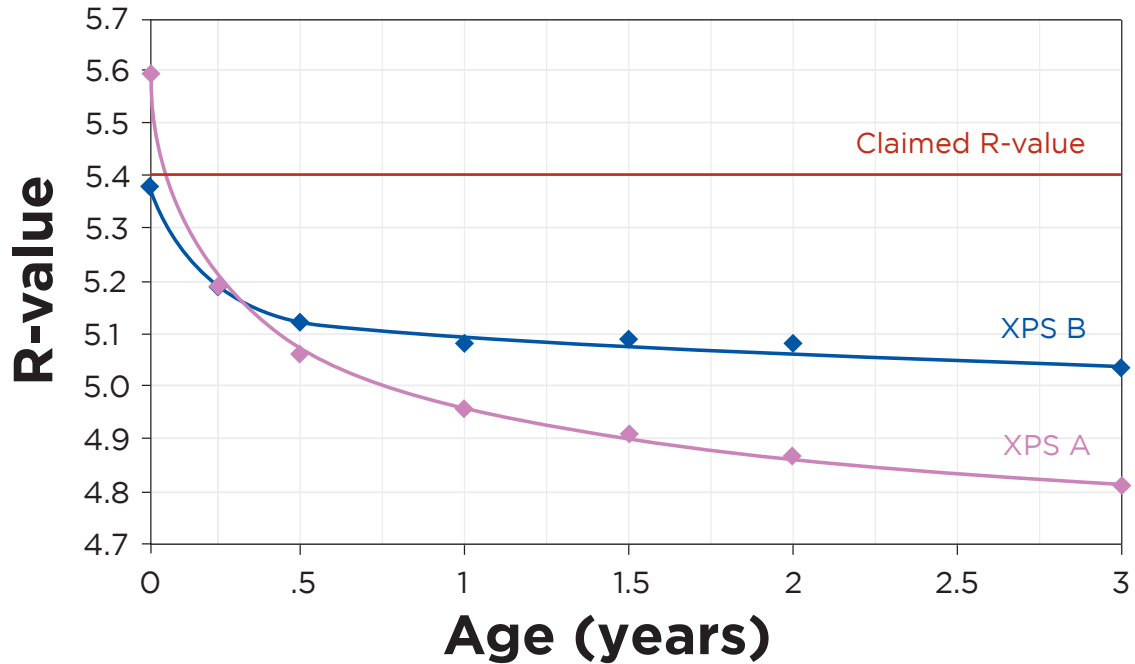


XPS manufacturers publish an R-value of 5.0. The data shows performance below the published R-value of 5.0 for both of the manufacturers within 1 month after the samples were obtained.

What will the R-value be in 5, 15, or 50 years?

In cold climate regions of the US, the insulation used in a building envelope must perform at temperatures well below 75°F. Test data was obtained on XPS insulation at a mean temperature of 40°F to investigate the impact of temperature.

XPS @ 40°F



XPS manufacturers publish an R-value of 5.4 at a mean temperature of 40°F. The data shows performance below the published R-value of 5.4 for both of the manufacturers within 1 month after the samples were obtained.

What will the R-value be in 5, 15, or 50 years?

Summary.

The R-value data obtained raises questions on the performance of XPS as it ages and when used in cold climates.

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