FOAM CONTROL® EPS

EXTERIOR FOUNDATION WALL INSULATION

The impact of moisture absorption on the performance of polystyrene foam insulations used for below grade applications is an important design consideration. It has been scientifically proven that water absorption into polystyrene foam insulations will diminish R-values.

This Study Summary provides the results of a research project conducted from 1980 to 1983 by Hoechst Corporation. The objective of the study was to survey the performance of below grade insulation 3 years after initial installation.

Expanded polystyrene (EPS) and extruded polystyrene (XPS) insulation samples were removed from the foundation of commercial building located in Leominster, MA. The foundation was a poured twelve-inch concrete wall extending six feet below grade. The inside was dirt filled thus eliminating the influence of heat-flux through the wall.

Summary of Study Test Results

Material	ASTM C578 Type	R-value (°F·ft²·h/Btu)		R-value Loss (%)
		Prior to Installation	After Removal	
EPS	I	3.74	3.60	3.7
EPS	VIII	4.15	4.16	0.0
EPS	II	4.46	4.40	1.3
EPS	IX	4.31	4.30	0.2
EPS	XIV	4.49	4.37	2.6
XPS	IV	5.01	4.75	5.2

The EPS samples have a slightly higher R-value retention than the XPS, but overall the results demonstrate that R-value retention for EPS and XPS samples are comparable.

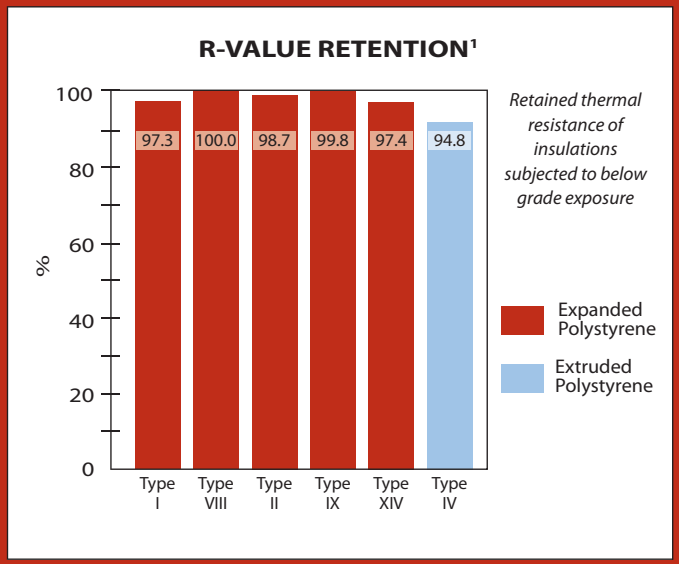
The slight reductions in R-value are anticipated to be primarily from moisture absorption, however it is possible that the greater loss in R-value for the XPS may have been partially due to the loss of blowing agents which diffuse out of the XPS over time.

These results suggest very clearly that short term laboratory tests of water absorption for EPS and XPS do not necessarily reflect the long term below grade performance of these materials.

STUDY SUMMARY
Moisture No. 103

CONTROL, NOT COMPROMISE.®

Foam face-off:
The facts about below grade insulation and R-value.



[1] Testing was conducted by Hoechst Corporation.

This Study Summary is part of a series of moisture impact studies available. Please refer to other Study Summaries for additional information.

Foam-Control EPS products are manufactured by AFM Corporation licensees.

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