



TECHNICAL BULLETIN

TECHNICAL BULLETIN # 1021

SUBJECT: R-TECH® FREEZE-THAW ENVIRONMENTAL CYCLING

DATE: AUGUST, 2008

During 2008, Insulfoam had its R-Tech IV product tested at an accredited independent laboratory per ASTM C1512, *Standard Test Method for Characterizing the Effect of Exposure to Environmental Cycling on Thermal Performance of Insulation Products*. As a means of comparison, a Type IV extruded polystyrene (XPS) was also tested.

The ASTM C1512 test method was developed specifically to determine a thermal insulation's resistance to moisture absorption and its ability to retain its R-value when exposed to both moisture and a freeze-thaw environment. This test simulates the typical exposure of a building insulation in cold climates by exposing the insulation to moisture for 28 days with the intent of raising the insulation's moisture content. After this conditioning phase the samples are placed in an apparatus that creates two drastically different environments. On one side of the sample the temperature is 75° F with a 90 % relative humidity. The other side of the sample is cycled every 12 hours between 5° and 60° F. This continuous freeze-thaw cycling is repeated for 20 days. At the conclusion of the cyclical freeze-thaw exposure the compressive strength, moisture content and R-value are measured.

The results from these cyclical testing showed that neither product lost R-value, compressive strengths were unaffected with both products exceeding 25 psi and water absorption for both products was less than 1% by volume with the Type IV XPS testing at 0.7% and the R-Tech IV testing at 0.9% by volume.

The results of this environmental testing indicate the following:

- Freeze-thaw environments where moisture is present do not adversely affect R-Tech's compressive strength, moisture resistance or R-value.
- R-Tech's tested performance confirms it's an ideal insulation for below-slab, below-grade and cavity wall applications.

R-Tech consists of a closed-cell InsulFoam® EPS that has polymeric facers laminated to each side. R-Tech has been used successfully in numerous commercial and residential construction applications where moisture and freeze thaw conditions are encountered.

If you have more questions pertaining to R-Tech, contact the Insulfoam-Technical Center at 800-469-8870.

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