ASTM polyiso standard updated

by **Mark S. Graham**

In June, an updated edition of the U.S. material standard for polyisocyanurate insulation, ASTM C1289, "Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation," was published. This new edition begins to address some of NRCA's ongoing concerns related to polyisocyanurate insulation used as a component of low-slope membrane roof assemblies.

Changes

The standard's 2001 edition, designated as ASTM C1289-01, includes several improvements from the previous edition, which was published in 1998.

The most significant change is the inclusion of additional classes and grades for felt- or mat-faced polyisocyanurate insulation products. Previous editions of ASTM C1289 include type classifications, which designate specific polyisocyanurate insulation products. For example, Type I designates foil-faced polyisocyanurate insulation; Type II designates felt- or mat-faced polyisocyanurate insulation; and Types III through VI designate laminated products. In ASTM C1289-01, Type II products typically used in roofing now are further designated as Class 1, and products typically used for wall sheathing applications are designated as Class 2. Also, Grades 1, 2 and 3 have been added for ASTM C1289, Type II, Class 1 products to designate minimum compressive-strength values of 16 psi (110 kPa), 20 psi (138 kPa) and 25 psi (172 kPa), respectively.

As a result of these added classifications, a specific polyisocyanurate insulation product, as well as its facer type, intended usage and physical properties, can be specified for an intended application. For example, a felt- or mat-faced polyisocyanurate insulation product intended for roofing applications with a 20-psi (138-kPa) minimum compressive strength is designated as ASTM C1289, Type II, Class 1, Grade 2.

Other changes incorporated into the standard include lowering the linear dimensional stability limit for certain polyisocyanurate insulation products. In previous editions of ASTM C1289, a 4 percent maximum value was provided as the dimensional stability limit. In ASTM C1289-01, the dimensional stability limit for Type II products is lowered to a 2 percent maximum value for length and width directions. The 4 percent maximum allowable value still applies to the thickness direction.

ASTM C1289-01 also provides for reporting of thermal-resistance data (such as R-value) for polyisocyanurate insulation products according to ASTM C1303, "Test Method for Estimating the Long-Term Change in the Thermal Resistance of Unfaced Rigid Closed Cell Plastic Foams by Slicing and Scaling under Controlled Laboratory Conditions," when requested by a purchaser and agreed to by a product's manufacturer.

NRCA considers ASTM C1303 to be more reliable than other methods for determining long-term R-value of polyisocyanurate insulation.

NRCA's recommendations

Because of the issuance of ASTM C1289-01, NRCA recommends design professionals intending to use felt- or mat-faced polyisocyanurate insulation products specify products that comply with ASTM C1289, Type II, Class 1, Grade 2 as a minimum. This designates products with minimum compressive-strength values of 20 psi (138 kPa). NRCA still recommends using a suitable cover board over polyisocyanurate insulation as described in NRCA Technical Bulletin 2000-3, "Use of Cover Boards over Polyisocyanurate Insulation."

Also, NRCA suggests designers obtain R-value data for polyisocyanurate insulation products used in roofing based on ASTM C1303 when an estimate of long-term change in R-value is desired for specific engineering or design requirements.

Closing thoughts

Although the changes to ASTM C1289-01 are an improvement, further improvements still are necessary. For example, a performance-based method for determining resistances to facer-sheet delamination of polyisocyanurate insulation products still is needed.

NRCA looks forward to continuing to work cooperatively with polyisocyanurate insulation manufacturers in making further improvements to ASTM C1289-01.

ASTM C1289-01 is available individually or as part of *2001 Annual Book of ASTM Standards, Volume 04.06: Thermal Insulation; Environmental Acoustics*. The document can be purchased from ASTM by calling (610) 832-9500 or accessing its Web site, www.astm.org.

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