Polyisocyanurate update

by **Mark S. Graham**

In March 2000, NRCA issued Technical Bulletin 2000-3, "Use of cover boards over polyisocyanurate insulation," which followed a letter to NRCA's members from NRCA's Technical Operations Committee in May 1999. Both documents raised concerns regarding the performance of polyisocyanurate insulation used in low-slope membrane roof systems.

Since the technical bulletin and letter were issued, there have been significant developments related to polyisocyanurate insulation, which follow.

ASTM standard

Important changes will affect the U.S. material standard for polyisocyanurate insulation, ASTM C1289-98, "Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board."

The changes include establishing three new grade classifications for felt- or mat-faced polyisocyanurate insulation (defined as ASTM C1289, Type II). Grades 1, 2 and 3 will designate polyisocyanurate insulation with minimum compressive strength values of 16 pounds per square inch (psi) (110 kPa), 20 psi (138 kPa) and 25 psi (172 kPa), respectively. Currently, ASTM C1289-98 requires a minimum compressive strength value for Type II products to be 16 psi (110 kPa).

The dimensional stability limit for Type II products will be reduced to a maximum of 2 percent in length and width dimensions from the 4 percent maximum in ASTM C1289-98.

Also, provisions are being added to the standard to provide for reporting by manufacturers of long-term thermal resistance (R-value). If requested by a product purchaser and agreed to by the product's manufacturer, this revision would provide for reporting long-term R-values according to ASTM C1303, "Standard Test Method for Estimating the Long-Term Change in the Thermal Resistance of Unfaced Rigid Closed-Cell Plastic Foams by Slicing and Scaling Under Laboratory Conditions." This should begin to address the long-standing controversy in the roofing industry regarding polyisocyanurate insulation's long-term R-value (For more information about this issue, see "Issues regarding polyiso insulation," August 1999 issue, page 53).

The changes to ASTM C1289 likely will be finalized at the next meeting of American Society for Testing and Materials (ASTM) task group C1289, which will take place April 1-4 in Phoenix. If approved, the revisions likely will be published as the next edition of ASTM C1289 later this year.

Canadian standards

The Canadian standard for polyisocyanurate insulation, CGSB-51.26-M86, "Thermal Insulation Urethane and Isocyanurate, Boards, Faced," is being replaced by CAN/ULC-S704, "Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced."

CAN/ULC-S704 divides polyisocyanurate insulation products into three classifications (Type 1, 2 or 3) based on physical properties and three classes (Class 1, 2 or 3) based on water vapor permeability. The minimum compressive strength values for products defined by Types 1, 2 and 3 are 16 psi (110 kPa), 18 psi (125 kPa) and 20 psi (140 kPa), respectively.

The standard also provides that products manufactured with the intent of retaining blowing agents other than air for longer than 180 days be tested for long-term R-values according to CAN/ULC-S770, "Standard Method of Test for Determination of Long Term Thermal Resistance of Closed-Cell Thermal Insulation Foams." CAN/ULC-S770 is somewhat similar to ASTM C1303.

Closing thoughts

During the past several months, there have been significant developments and progress in addressing industry concerns regarding polyisocyanurate insulation used in low-slope membrane roof systems. This largely has been because of roofing professionals' constructive efforts. In particular, Atlas Roofing Corp., Meridian, Miss.; Firestone Building Products Co., Carmel, Ind.; and Johns Manville, Denver, are to be complimented for their support and efforts in standard development processes in the United States and Canada.

But there still are unresolved issues related to polyisocyanurate insulation, including finding and successfully implementing blowing-agent replacements for hydrochlorofluorocarbon (HCFC-141b) by the Dec. 31, 2002, deadline mandated by the U.S. Environmental Protection Agency.

NRCA hopes the recent cooperation in the industry regarding polyisocyanurate insulation issues will continue.



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