Specifying polyiso

by Mark S. Graham

Polyisocyanurate insulation widely is used in low-slope roof systems and sometimes as a component of steep-slope roof assemblies. Specifying the correct type of polyisocyanurate insulation for a specific application is an important design consideration for ensuring long-term roof system performance.

Following are descriptions of various types of polyisocyanurate insulation products.

ASTM C1289

The current recognized U.S. product standard for faced polyisocyanurate insulation is ASTM C1289-06, "Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board." Within this standard, there are six type classifications, several of which are further divided into classes. And three classes are further subdivided into grades. Overall, the standard describes 15 product types.

ASTM C1289, Type I describes foil-faced polyisocyanurate insulation. Within this type, Class 1 describes a foil-faced product appropriate for wall sheathing applications and Class 2 describes a product appropriate for use as a component in some roof systems. For example, foil-faced polyisocyanurate insulation complying with ASTM C1289, Type I, Class 2 sometimes is used with metal paper roof systems.

ASTM C1289, Type II describes felt- or mat-faced polyisocyanurate insulation. Within this type, Class 1 describes a fiberglass-reinforced cellulosic felt- or polymer-bonded fiberglass mat-faced product; Class 2 describes a coated polymer-bonded fiberglass mat-faced product; and Class 3 describes an uncoated polymer-bonded fiberglass mat-faced product. Within each of these classes, Grade 1, Grade 2 and Grade 3 designate minimum compressive strength values for the polyisocyanurate foam core of 16 pounds per square inch (psi), 20 psi and 25 psi, respectively.

ASTM C1289, Type II, Class 1 and Class 2 products commonly are used as components in membrane roof systems. Typically, Type II, Class 1 products are used in loosely laid, mechanically attached, and hot asphalt- or adhesive-adhered membrane roof systems. Type II, Class 2 products are used in some cold-applied adhesive and self-adhering membrane roof systems but also can be used in loosely laid, mechanically attached and other types of adhered membrane roof systems.

NRCA recommends polyisocyanurate insulation products used in membrane roof systems have a minimum compressive strength of 20 psi.

ASTM C1289, Type III describes a composite board product that has a layer of perlite board insulation on one side of the polyisocyanurate foam core and fiberglass-reinforced cellulosic felt- or polymer-bonded fiberglass mat facer on the other side.

ASTM C1289, Type IV describes a composite board product that has a layer of wood fiberboard insulation on one side of the polyisocyanurate foam core and fiberglass-reinforced cellulosic felt- or polymer-bonded fiberglass mat facer on the other side.

ASTM C1289, Type V describes a composite board product that has a layer of plywood or oriented strand board on one side of the polyisocyanurate foam core and fiberglass-reinforced cellulosic felt- or polymer-bonded fiberglass mat facer on the other side.

ASTM C1289, Type VII describes a composite board product that has a layer of fiberglass mat-faced gypsum board on one side of the polyisocyanurate foam core and fiberglass-reinforced cellulosic felt- or polymer-bonded fiberglass mat facer on the other side.

NRCA's recommendations

NRCA recommends polyisocyanurate insulation manufacturers label their products using the type, class and grade designations provided in ASTM C1289. Currently, most manufacturers only are using the ASTM number designation and not specific type, class and grade designations.

Furthermore, NRCA recommends specifiers describe polyisocyanurate insulation products in their project specifications based on ASTM C1289, including the specific type, class and grade designations appropriate for the roof system being specified to accurately describe the specific product desired.

Finally, I encourage roofing contractors to reference ASTM C1289, including the type, class and grade designations specified, in purchase orders and contracts for polyisocyanurate insulation.

A copy of ASTM C1289 can be purchased from ASTM International by calling (800) 262-1373 or accessing www.astm.org.

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