Fiberglass Reaches the Next Level
Updates to Standard Reflect Material's Growing Stature

BY RICHARD RINKA

Window performance is a complicated concept. The big picture is not defined just by U-value or glass type. It is not discerned by debating the purported merits of the different framing material. Each framing material offers its own unique performance characteristics and special advantages for dealing with the performance challenges posed by climate, building design, buyer preference and/or budget for various applications. Any controversy based on the purported generic superiority of material type is rendered virtually immaterial when one stops comparing the basic characteristics of isolated samples of unsupported material and concentrates on the performance of the complete fenestration unit.

Standards Matter

There are many framing profile materials in use today. Their common denominator is performance in their role in a finished fenestration product. Today's performance-based, material-neutral window, door and skylight standard, the North American Fenestration Standard (NAFS), aka AAMA/WDMA/CSA 101/IS2/A440-17 or its predecessors, takes into account the unique properties, strengths and weaknesses of all material types.

The profile specifications referenced in NAFS assist the architect, contractor, manufacturer, designer and owner in specifying profiles to provide a target level of structural and weathering performance over a period of many years.

It has been some four decades since the standard for PVC profiles emerged on the scene. Today there are seven specifications referenced in NAFS for polymeric profiles. Of these, profiles made of fiberglass reinforced thermoset (FRT) polymer—more commonly known as fiberglass—stand out as a rising star in popularity, taking an increasingly larger share of the window market even during the late-2000s meltdown.

AAMA 305, the first standard governing the performance of fiberglass profiles, was released in 2000. It establishes performance requirements and references test procedures for dimensional stability, impact resistance, tensile strength, flexural strength, compressive strength, water absorption, thermal expansion, heat deflection, and temperature and color weatherability. These parameters must be verified through the AAMA profile certification program as a prerequisite for certification of completed fiberglass fenestration units.

Staying Ahead of the Curve

One of AAMA’s key missions is to help bring new materials and products to the marketplace. AAMA does this by developing the specifications and test methods necessary to allow them to be evaluated on a level playing field. Accordingly, building on the previous 2015 version, AAMA 305 has been updated for 2018.

The primary change is the introduction of two different product performance levels. Level I performance is adequate for most fenestration applications; however, for fenestration applications that require higher flexural strength and stiffness, an optional Level II has been established. For flexural strength and flexural modulus, the Level I parameters remain the same as defined in the 2015 edition. For Level II, they are more stringent, with loading parameters up to seven times those of Level I. All other performance requirements for Level I and Level II are the same.

AAMA 305 references the most current standards for weatherability of organic coatings—the “good-better-best” trilogy of AAMA 623-17a, 624-17a and 625-17a.

305-18 also references the most current versions of applicable ASTM test methods for water absorption, deflection temperature under flexural load, thermal expansion, flexural properties and dimensional tolerances. Laminates must meet stated adhesive bond requirements (which have not changed compared to the 2015 version) as well as the requirements of AAMA 307, Voluntary Specification for Laminates Intended for Use on AAMA-Certified Plastic Profiles.

It also continues the distinction between critical areas, defined as those areas of the profile that are exposed to view when the finished product is completely installed and in the closed position. “Exposed areas,” which may be critical or non-critical areas, are defined as those that are exposed to direct sunlight when the finished product is completely installed.

The ongoing upgrades to underlying standards and certifications exemplified by the development of AAMA 305-18 not only enable end users to cut through the fog of material-based claims and counterclaims; they also provide a reference point for building codes.

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