



High Hurdles for Hardware

BY KEN BRENDEN

Modern doors and windows are highly engineered products involving many constituent elements that must work together to strike a balance among a variety of sometimes opposing performance demands. This understanding is the basis of today's performance standards for complete door, window and skylight products – the latest version being AAMA/WDMA/CSA 101/1.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for windows, doors, and skylights* (NAFS-08). This standard currently is being updated for the 2011 edition.

Approved Components

These NAFS standards reference additional specifications setting minimum requirements for the array of critical door and window components. Components approved for potential use in certified products are listed in the AAMA Verified Components List (VCL). Updated monthly, the VCL lists more than 100 manufacturers, several hundred individual products and the corresponding AAMA standards for sealants, weatherstripping, anodized coatings, organic coatings, installation products and, of course, hardware.

A Hard Look at Hardware

Casement and similar windows (awning, jalousie, etc.) are excellent examples of the importance of hardware that must perform smoothly and precisely over years of constant use. The applicable standards are:

- AAMA 901-07, *Voluntary Specification for Rotary Operators in Window Applications*, which

sets forth performance criteria for determining the durability of gear type rotary operating devices. A good example of the rigor of these standards is the requirement for 8,000 open/close cycles without any compromise in performance.

- AAMA 904-01 *Voluntary Specification for Multi-Bar Hinges In Window Applications*, which describe performance requirements, test methods and necessary laboratory test report data for the multi-part hinges used in casement, as well as project-out and project-in configurations. Hinges may be tested for either an R or C grade and are given a maximum weight, height and width rating as applicable for the exact window type.

Hung windows depend on sash balances for proper function. Standards for these critical hardware components are:

- AAMA 902-07, *Voluntary Specification for Sash Balances*; and
- AAMA 908-02, *Voluntary Specification for Friction Based Sash Balances*.

Roller assemblies on sliding glass doors bear the brunt of day-to-day operating stress. AAMA 906-07, *Voluntary Specification for Sliding Glass Door Roller Assemblies*, covers these assemblies, requiring 10,000 full-open/full-close cycles without the roller “jumping” its track or causing the sash to become more difficult to operate.

All steel hardware items also must meet AAMA 907-05, *Voluntary Specification for Corrosion Resistant Coatings on Carbon Steel Components*.

Door Hinges and Locks

Standards also exist that govern hardware performance for exterior or side-hinged doors (SHD):

- AAMA 920-03, *Specification for Operating Cycle Performance of Side-Hinged Exterior Door Systems*, establishes an accelerated operating test method and performance specifications for a door system and associated hardware connections;
- AAMA 925-07, *Specification for Determining the Vertical Loading Resistance of Side-Hinged Door Leaves*, determines the ability of a side-hinged door system (including the hinges) to withstand the application of a vertical load along the lock stile of the door leaf.

The real impact of hardware and other component testing comes when model codes reference NAFS standards that encompass the component requirements, and building officials begin looking for evidence of compliance – be it a certification label or test reports. At that point, meeting every component performance specification – right down to the sash balances and sliding door rollers – is as much a requirement as passing air, water and structural performance tests for the entire product. **I**

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