



**Comments on Version 6.0 Product Specification Framework Document  
Respectfully Submitted by the Association of Millwork Distributors (AMD)  
November 22, 2011**

The AMD appreciates the opportunity to comment on the Energy Star for Windows, Doors, and Skylights Version 6.0 Product Specification Framework Document released October 14, 2011 by the U.S. Environmental Protection Agency (EPA). AMD has provided responses below to specific “items for comment and discussion” regarding structural and air leakage requirements as it relates to side-hinged exterior doors. AMD represents the largest segment of side-hinged exterior door pre-hangers, distributors, and component manufacturers in the United States.

***II. Program Elements Considered for Adoption***

***a. Structural Requirements***

*Some manufacturers that currently test and certify to the North American Fenestrations Standard (NAFS) have requested that structural requirements be added as a to the ENERGY STAR specification. At this time, however, less than a quarter of ENERGY STAR’s partnership base currently participates in NAFS certification through the American Architectural Manufacturers Association (AAMA) or the Window and Door Manufacturers Association (WDMA). This raises concerns that requiring NAFS certification at this time may result in a backlog at labs and inundation of AAMA and WDMA resources. Thus, EPA proposes that the Agency reconsider this suggestion during the next criteria revision.*

**Items for Comment & Discussion:**

- 1. Is there compelling data demonstrating that any of these proposals should be reconsidered during this criteria revision?**

With respect to structural testing requirements, AMD is not aware of any compelling data or research which would demonstrate that the structural performance of a fenestration product is related to its energy performance or savings. Most door systems today are built to withstand a minimum wind speed of 85 mph which is the minimum specified in the International Codes. Structural testing tests a product’s pressure resistance in pounds per square foot by simulating “high” interior and exterior wind pressure which is then reflected in a DP (design pressure) rating. The design pressure rating represents the maximum positive and negative wind load that a window or door can experience without breaking, deglazing, or permanently distorting.

In summary, structural testing looks at a product’s structural resistance to specified wind speeds and in this regard is not an indicator of a product’s overall energy efficiency. AMD sees no correlation between a product’s ability to withstand high wind loads and its energy savings; the focus is solely on structural design. One could seek the argument that if a product is not structurally sound, then it is vulnerable to losing its energy performance

capability, but what also holds true is the product loses its overall functioning and would ultimately need to be replaced if damaged by high wind speeds.

**2. Is there compelling data or research demonstrating that any of these proposals should not be considered during the next criteria revision?**

For the reasons stated above, structural testing should not be considered during the next criteria revision.

However, in the event that structural testing is determined for the next revision, EPA should consider allowing an alternative structural standard to the North American Fenestration Standard (NAFS) for side-hinged exterior door systems (SHEDS). AMD has developed a structural standard for SHEDS called the AMD 100 that uses the ASTM E330 test method and incorporates procedures for door component substitution. AMD will seek to have this standard referenced in the next revision cycle of the International Residential Code (IRC).

NAFS is a full system based standard that requires complete door systems to undergo not only structural testing and air leakage testing, but also undergo water penetration testing, durability testing, materials testing, forced entry resistance testing, cycling performance testing, and vertical loading resistance testing in order to comply with the standard.

At this time side-hinged exterior doors are allowed to use the ASTM E330 structural test method in the International Codes in lieu of certifying to NAFS, so they are exempted from the many tests required of doors in the NAFS. The ASTM E330 is a full system based test that is referenced in the NAFS. If the exemption were not in place in the codes, door pre-hangers who use door components from multiple suppliers and test their own products would have to test to NAFS, which involves multiple tests using multiple systems of each door configuration they assemble for the marketplace. This would be such a significant cost for these pre-hangers that many would not be able to stay in business unless they started buying complete door systems from door manufacturers who have the resources to conduct testing of their own systems. Additional jobs would be lost due to the closing of door shops that currently employ thousands across the country. These pre-hangers, to stay in business, would be purchasing prehung doors from shops that already hang doors. This would not improve either the housing market or help relieve the unemployment.

The AMD 100 will minimize the testing required of door pre-hangers because it establishes protocols for component evaluation for the purposes of interchanging a component in a E330 tested door system without having to re-test that system each and every time a component substitution is made.

#### ***IV. New Additions to Program Requirements***

##### ***a. Air Leakage***

*During the physical test to determine a fenestration product's thermal performance, proper procedure requires test labs to caulk windows completely shut to prevent any air infiltration in order to get a stable performance reading. This practice indicates how air leakage could affect the thermal performance of the product. In the real world, however, most fenestration products are not sealed shut. Currently, a consumer could buy an ENERGY STAR qualified fenestration product and be*

*unsatisfied with the tightness of the seal. EPA believes an air leakage requirement would help ensure that consumers are purchasing quality fenestration. Additionally, the NFRC has revised its air leakage testing specification to allow for the use of other commonly used tests, an issue that had previously prevented the ENERGY STAR criteria from including an air leakage requirement. For the Version 6.0 criteria, EPA intends to propose the addition of the following air leakage requirements to align with the 2010 International Energy Conservation Code (IECC) and minimize the energy lost due to air leakage:*

- *Windows, sliding doors, and skylights must have an air leakage rating of \_ 0.3 cfm/ft2*
- *Swinging doors must have an air leakage rating of \_ 0.5 cfm/ft2*

*EPA will work closely with NFRC and stakeholders to determine the best way to label for and document compliance with the air leakage requirement. The following approaches are currently under consideration:*

- *Encouraging manufacturers to certify their products' air leakage using the NFRC 400.*
- *Working with NFRC to identify the best way to include air leakage rating on the NFRC temporary label (e.g. using “\_ 0.3”)*
- *Allowing the AAMA Gold Label or the WDMA Hallmark label to be used instead of listing air leakage on the NFRC temporary label*
- *Requiring documentation of air leakage results in the CPD*
- *Having manufacturers relying on AAMA or WDMA labeling work with their Inspection Agencies to ensure test results are uploaded correctly to the CPD*

### **Items for Comment & Discussion:**

- 1. How many manufacturers are currently testing for air leakage? For those not already testing, what are the projected costs associated with adding air leakage testing? Do manufacturers anticipate a product price increase to the consumer? If so, how much?**

AMD recommends that EPA request query results from the Certified Product Directories/Databases (CPD) of NFRC, AAMA, and WDMA in order to get an idea of the numbers testing for air leakage. Those manufacturers that test for air leakage have more than likely certified to air leakage as well.

Air leakage testing is based on the ASTM E283 test procedure which is also a full system-based test method. AMD is concerned about the potential cost impact for pre-hangers if they are required to test each configuration they produce, with tests and reporting running approximately \$1500-\$2000 each, that could add up to significant costs.

AMD recently contacted the NFRC for clarification on whether a participant in the NFRC product certification program has to test every configuration of a door system that they assemble/manufacture. It is not clear from the NFRC 400 standard which door system configuration covers multiple instances for air leakage or if it does at all. NFRC staff indicated to AMD staff that typically, though not explicitly set forth in the 400, the system used for U-factor validation testing is also used for air leakage when the program participant is seeking this optional rating. If this is so, then no additional sampling is required, which is a good thing; testing can be completed on the same specimen used for U-factor validation with an added cost of \$1500-\$2000 for that air leakage test. This, however, would still be a considerable cost to smaller shop pre-hangers who don't use NFRC thermal reports from door manufacturers.

**2. Are there any concerns about the ability of windows, doors, or skylights to meet the above-specified air leakage criteria?**

Doors can meet the specified air leakage rating of  $\leq 0.5$  cfm/ft<sup>2</sup>; there is no concern in this regard. The main concern rather is the added costs imposed on pre-hangers for this testing. AMD plans to begin developing an air leakage standard starting in the fall of next year to provide a valid procedure for air leakage testing of side-hinged exterior doors that will also focus on component interchange and thereby minimize the amount of testing required. But this will take time to develop through the consensus process and propose to the IRC. AMD hopes that the EPA will consider this AMD standard for Energy Star qualification in the future.

Perhaps in the interim, doors could be exempted from the air leakage testing requirement and provided with an alternate air leakage path for Energy Star qualification that focuses on a component-based air leakage performance verification process and door assembly inspection. The main door components to consider would be the doorglass assembly, the sill, the weather stripping around the door, and the seal used around the door frame at the time of installation. Each of these components is designed to minimize air leakage and could obtain third party verification of air leakage performance. Proper assembly of components and individual component performance could then be verified, for example, by an IA at the time of inspection. And this review could also be incorporated into the Independent Verification Program (IVP). In this way, costs are distributed and not solely imposed on the door manufacturer or pre-hanger.

**3. Should air leakage results be available to the public via the CPD (or the forthcoming CPD-based ENERGY STAR search feature)?**

AMD believes that certified information should be made available to the public via a CPD so that confirmation of third-party certification can be obtained. AMD recommends developing a pass/fail criteria which can be reported in a CPD and on an NFRC temporary label. This will streamline and simplify the process. The Energy Star label has always been associated with the NFRC temporary label and so air leakage results should be reported there and not on the AAMA or WDMA labels.

In reading the NFRC 400, it states that NFRC will recognize the NAFS for air leakage reporting purposes. But it's not clear what is specifically meant by this: NAFS "can alternately be used to report product air leakage...." Does this mean that NFRC certifies the reported test results? Or does this mean that NFRC recognizes the certification of AAMA and WDMA? If EPA is considering allowing for the AAMA Gold Label and WDMA Hallmark label to be used instead of the NFRC temporary label, that seems to suggest that AAMA and WDMA certification can be used for air leakage requirements in the Energy Star program. As referenced previously in relation to structural testing, NAFS requires several other tests, such as materials testing, which goes well beyond air leakage. As an example, the WDMA Hallmark program and the AAMA Gold program will not certify any door products that do not conform to the WDMA I.S.4 - *Industry Specification for Preservative Treatment for*

*Millwork* as this is required in the NAFS. NAFS should not be the determining standard for air leakage requirements. That should remain within the purview of the NFRC.

**4. What is a reasonable timeline for implementation of this requirement?**

Much of the timeline considerations may hinge on NFRC CPD software updates and document revisions to the NFRC 400 standard and certification program procedures:

1. The NFRC CPD will need to be revised to upload and reflect air leakage ratings
2. NFRC procedures will need to be revised to
  - a. Establish revised labeling requirements for air leakage
  - b. Clarify existing air leakage testing and certification procedures for side-hinged exterior doors; or alternatively
  - c. Establish new inspection and/or verification protocols for verifying door component performance and proper door system assembly