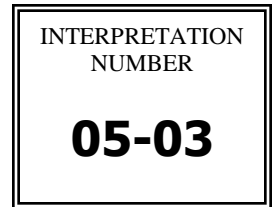




**AAMA/CSA/WDMA TECHNICAL INTERPRETATION**

**REQUEST**



**Approved 10/06**

**DATE OF INQUIRY:** January 6, 2005

**PERTINENT AAMA/CSA/WDMA SPECIFICATION(S):** AAMA/NWWDA 101/I.S.2-97, “Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors”

ANSI/AAMA/WDMA 101/I.S.2/NAFS-02, “Voluntary Performance Specification for Windows, Skylights, and Glass Doors”

AAMA/WDMA/CSA 101/I.S.2/A440-05, “Standard/Specification for Windows, Doors, and Unit Skylights”

**SECTION(S) IN QUESTION:** 101/I.S.2-97 – Section 4, “Optional Performance Grades”

101/I.S.2/NAFS-02 – Section 4.2.2.5, “Optional Performance Grades (Design Pressures)”

101/I.S.2/A440-05 – Clause 4.4.2.6, “Optional Performance Grades (Design Pressures)”

**INTERPRETATION REQUESTED:** If a manufacturer wishes to test to an Optional Performance Grade, can they go straight to the Optional Performance Levels without prior testing at the Gateway Performance pressures for the product classification desired?

**SUGGESTED INTERPRETATION:** There are two possible ways to test products for compliance with the Performance Grades referenced in the standards. The manufacturer may choose to test a specimen at the entry level Gateway conditions for a desired Performance Class. This includes all required tests in the standard performed on a specimen that is the minimum test size or larger for the Performance Class and Operator type referenced in the applicable standard. Having completed all these “Gateway tests”, the manufacturer may then test another specimen at a higher Performance Grade with a reduced specimen size according to the requirements of the Sections (Clauses) referenced above. If this option is chosen, the second specimen must be tested for Water Penetration Resistance at a higher test pressure, and both the Uniform Load Deflection Test at the higher Design Pressure and the Uniform Load Structural Test at 150% of the higher Design Pressure must be completed on the second specimen. Having completed and passed all the Gateway tests on a specimen of the minimum test size or larger, and the Optional Performance Grade tests on a reduced sized specimen, the manufacturer is entitled to claim the higher Performance Grade achieved for the product.

The second method of achieving compliance at a higher Performance Grade (Design Pressure) with a single specimen is to complete all of the Gateway tests required for the Performance Class

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and Operator Type on a specimen that is the required minimum test size or larger, but at a Design Pressure that is higher than the Gateway Design Pressure for the Performance Class selected. The Water Penetration Resistance test pressure must be as stipulated for the higher Performance Grade and the Design Pressure for the Uniform Load Deflection test and the Uniform Load Structural Test must be used when choosing this method of achieving an Optional Performance Grade.

For Example:

A manufacturer wishes to achieve compliance with AAMA/WDMA/CSA 101/I.S.2/A440-05 for a casement window. The desired Performance Class is R and the desired Performance Grade is 30 (DP = 1440 Pa (30 psf)). The largest size product the manufacturer plans to sell is 18" x 48" (460 mm x 1200 mm). The minimum test size for Performance Class R in the standard is 600 mm x 1500 mm (24" x 60"). The lowest or Gateway Performance Grade for Performance Class R is 15, which requires a Design Pressure of 720 Pa (15 psf). There are two paths possible for achieving the desired rating of R30:

Method 1:

The manufacturer would test a specimen which is 600 mm x 1500 mm (24" x 60") or larger at a Uniform Load Deflection test pressure of 720 Pa (15 psf) and a Uniform Load Structural test pressure of 1080 Pa (22.5 psf). The Water Penetration Resistance test pressure required would be 140 Pa (2.9 psf). The Air Leakage test pressure would be 75 Pa (1.57 psf). In addition, the specimen would be tested for Forced Entry Resistance (Clause 5.3.5), Operating Force (Clause 5.3.1.1), Sash Vertical Deflection (Clause 5.3.6.4.3) and Distributed Load (Clause 5.3.6.3.2). If the framing material were PVC, the specimen would also be tested for Thermoplastic Corner Weld Strength (Clause 5.3.6.2). Completion of these tests would allow the product to achieve an R15 Performance Class and Grade. Since the manufacturer wanted an R30 rating and does not plan to claim compliance for a product larger than 460 mm x 1200 mm (18" x 48"), a second series of tests would be done on a smaller (460 mm x 1200 mm) specimen. The second set of tests would be Water Penetration Resistance at a test pressure of 220 Pa (4.5 psf), a Uniform Load Deflection Test at a test pressure of 1440 Pa (30 psf) and a Uniform Load Structural Test at a test pressure of 2160 Pa (45 psf). Passing these tests would allow the manufacturer to claim an R30 Performance Class and Grade with a maximum size tested (MST) of 460 mm x 1200 mm (18" x 48"). The final rating would be C-R30 460 x 1200\* (18 x 48\*), or any allowable variation thereof as described in Clause 4.4.2. An additional rating of C-R15 600 x 1500 (24 x 60), or any allowable variation thereof as described in Clause 4.4.2, could also be claimed.

Method 2:

The manufacturer would test a specimen which is 600 mm x 1500 mm (24" x 60") or larger at a Uniform Load Deflection test pressure of 1440 Pa (30 psf) and a Uniform Load Structural test pressure of 2160 Pa (45 psf). The Water Penetration Resistance test pressure required would be 220 Pa (4.5 psf). The Air Leakage test pressure would be 75 Pa (1.57 psf). In addition, the specimen would be tested for Forced Entry Resistance (Clause 5.3.5), Operating Force (Clause 5.3.1.1), Sash Vertical Deflection (Clause 5.3.6.4.3) and Distributed Load (Clause 5.3.6.3.2). If the framing material were PVC, the specimen would also be tested for Thermoplastic Corner Weld Strength (Clause 5.3.6.2). Completion of these tests would allow the product to achieve an R30 Performance Class and Grade with a maximum size tested (MST) of 600 mm x 1500 mm (24" x 60"). The final rating would be C-R30 600 x 1500 (24 x 60), or any allowable variation thereof as described in Clause 4.4.2.

**REVIEWED/ APPROVED BY:**

<b>COMMITTEE</b>	<b>COMMENTS / ACTION</b>	<b>DATE</b>
<b>JDMG</b>		Nov. 20 <sup>th</sup> , 2006
<b>AAMA</b>		Oct. 12 <sup>th</sup> , 2006
<b>CSA</b>		March 21 <sup>st</sup> , 2005
<b>WDMA</b>		July 12 <sup>th</sup> , 2005