

American  
Architectural  
Manufacturers  
Association



# The AAMA Certification Program

*Your definitive proof of quality.*

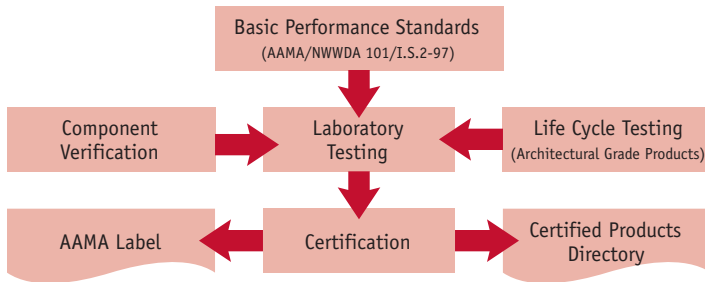
Since 1962, the ANSI-accredited AAMA Certification Program – the original third-party window performance verification program – has provided manufacturers with the means to independently demonstrate product performance quality to their customers.

The AAMA Certification Label on a product tells customers that a sample of the product has been verified as conforming to the standards' requirements through independent laboratory testing and follow-up on-site inspection of the manufacturer's production line. Labeled products and their manufacturers are also listed in the AAMA Certified Products Directory, the industry's ultimate sourcebook for certified quality products.



CMB-1  
Issue Date: 01/98  
Revision Date: 11/05

# The Foundation: Basic Performance Standards



For more than 50 years, AAMA window performance standards have been recognized and required by federal, state and local regulatory and purchasing agencies. Today, AAMA/NWWDA 101/I.S.2-97, "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors," serves as the cornerstone for an interlocking system of third-party product performance certification and quality control to establish a uniquely credible total quality management system.

AAMA/NWWDA 101/I.S.2-97 defines basic performance requirements for products made of aluminum, vinyl (PVC), ABS plastics, fiberglass and wood, as well as those with aluminum-clad or vinyl-clad wood framing members.

Given its performance (versus prescriptive) orientation and its material neutrality, AAMA/NWWDA 101/I.S.2-97 offers a true basis for comparing the key characteristics and quality attributes of window and door products.

Since the publication of 101/I.S.2-97, AAMA has helped develop other performance standards for windows, doors and skylights. More information on these later standards can be found on the AAMA website. It is expected that these later versions will replace 101/I.S.2-97 at some future date.

## How the Standard Works

AAMA/NWWDA 101/I.S.2-97 rates all window types and classes from a material-neutral, performance-oriented point of view. The standard is based on the basic performance characteristics of a completely fabricated window or glass door: structural performance under wind loading, resistance to air leakage and water penetration, and forced entry resistance. Additional performance requirements are established for specific window types (casement, horizontal sliding, etc.), as well as for optional efficiency attributes (thermal performance and condensation resistance), against which the manufacturer may elect to have products evaluated for specific markets or job requirements. AAMA 1002.10-93 provides similar requirements for the certification of aluminum and vinyl storm windows and sliding glass storm doors.

## The Designation System

AAMA/NWWDA 101/I.S.2-97 includes a product designation system keyed to five levels of minimum performance requirements depending on application and provides for specification of optional higher performance grades for more demanding

applications. These designations can be quickly and easily used to specify windows.

Nomenclature under AAMA/NWWDA 101/I.S.2-97 directly provides a number of meaningful facts about the product. The designation system begins with a code for the window type (such as "H" for single, double or triple hung windows, "HS" for horizontal sliding windows, "C" for casement, etc.).

Following the product type code is a Performance Class designation based on intended use of the product in Residential, Light Commercial, Commercial, Heavy Commercial or Architectural applications. The key to the Class designation is the product's Performance Grade number, which is the actual design pressure. In turn, the design pressure indicates the pressure levels at which tests for structural integrity and water leakage resistance are conducted. The structural test pressure is always 50% higher than the design pressure, while the water penetration test pressure is 15% of the design pressure (2.86 psf minimum) for all but the Architectural Class. Air leakage test pressure is 1.57 psf for all but the Heavy Commercial compression seal products and the Architectural Class.

The Architectural Class has the same design pressure and structural test pressure requirements as the Heavy Commercial Class of products, but is subject to higher performance requirements for water penetration resistance and air leakage resistance. In addition, a deflection limit of 1/175 of the length of an individual framing member under the uniform load test has been established for architectural windows and doors, as well as the requirement that they pass life cycle testing.

The Class designation is also keyed to a minimum test size for each window type. This provides a uniform basis for comparing the performance of different manufacturers' windows of the same class, grade and type – a valuable equalizer when evaluating various suppliers.

To specify a particular product type and Class, the window type code is followed by the Performance Class designation and the Performance Grade. For example, a Double Hung, residential-class window is designated as H-R15. A projected, architectural-class window is designated as AP-AW40.

## Optional Higher Performance

AAMA/NWWDA 101/I.S.2-97 makes it possible to specify higher uniform load structural testing and water penetration resistance test pressures, such as in cases where the installed product will be subject to severe weather conditions or excessive wind loadings.

For example, should the minimum design pressure of 30 psf be judged insufficient for a double hung commercial window, the specifier may choose a heavier window built to withstand a design pressure of 35 psf. The designation for such a window would be H-C35. This higher performance also specifies correspondingly higher test criteria for uniform structural load (52.5 psf instead of 45) and for water penetration resistance (5.25 psf instead of 4.5).

The table below shows the minimum Performance Grade required for each Performance Class.

Window/Door Performance Class	Performance Grade (Minimum Design Pressure) (psi)	Structural Test Pressure (psi)	Water Resistance Test Pressure (psi)	Air Leakage Test Pressure (psi)
Residential (R)	15	22.5	2.86	1.57
Light Commercial (LC)	25	37.5	3.75	1.57
Commercial (C)	30	45.0	4.50	1.57
Heavy Commercial (HC)	40	60.0	6.00	1.57/6.24
Architectural (AW)	40	60.0	8.00	6.24

# The Certification Process

The basic window standard and component verification system provide a strong foundation for the nationally recognized AAMA-sponsored, ANSI-accredited Certification Program. This program brings the force and credibility of independent third-party inspection and testing to window and door quality assurance.

Under the AAMA Certification Program, the "third party" is an independent organization acting under contract with AAMA to serve as the program's Administrator/Validator. The Administrator/Validator – Associated Laboratories Inc. (ALI) – provides two functions: verifying that samples of products authorized for certification do, in fact, meet the requirements of the applicable standard, and general administration and record-keeping.

Actual testing of the product sample may be carried out at an AAMA-accredited independent laboratory of the manufacturer's choosing. The laboratory conducts the requisite tests on prototype samples of the particular window type, class and grade according to methods specified in AAMA/NWWDA 101/I.S.2-97 and other applicable standards and submits a test report to the Administrator/Validator, who reviews it to verify that the laboratory followed the proper procedures.

## The AAMA Label

Once all tests and conformance to requirements are verified, the Administrator/Validator initiates an Authorization for Product Certification (with final authorizing signature by the AAMA Product Certification Manager) to the manufacturer, who may then purchase AAMA Certification Labels for application to production line units that conform to the tested design. The product will then be listed in the AAMA Certified Products Directory, widely recognized by specifiers as the definitive guide to performance-certified windows and doors. By applying the authorized AAMA Label to the product, the manufacturer certifies that the product meets or exceeds the product rating.

## Verification

The Administrator/Validator subsequently conducts a minimum of two unannounced inspections per year at the manufacturer's factory to verify that production line units are equivalent to the tested prototype.

At least once every four years, the manufacturer must retest the product to verify that the design continues to comply with the standard's requirements.

This painstaking, consistent and carefully documented testing and inspection procedure, carried out by accredited independent laboratories, is the reason the AAMA Certification Label has earned a reputation throughout the construction industry as a credible indicator of product quality and documented performance.

## Independent Energy Performance Certification

Manufacturers may certify product thermal performance to either the AAMA 1503 standard or to National Fenestration Rating Council (NFRC) requirements (NFRC-100) without the prerequisite of certification for basic structural, air and water performance requirements specified in AAMA/NWWDA 101/I.S.2-97. This allows manufacturers to more easily respond to code and market pressures for substantiated energy performance.



AAMA Prime & Replacement Label

## Automated Labeling

AAMA automated labeling offers the benefit of greatly reducing labeling cost and the likelihood of mislabeling.

This option utilizes a computer-controlled automated label printer, which a participating manufacturer purchases and locates at the labeling workstation. AAMA's certification program Administrator/Validator provides the operating program, the labeling database on a PC/MIA data card (the same sort used in laptop computers), and special blank label forms for official AAMA product labels. The database is custom-configured for each manufacturer and product, based on test results and evaluations to determine which labels the manufacturer is authorized to apply and the data to be printed on each. At the push of a button, or when triggered by an automated scan of a product identification bar code, the system automatically generates the certification labels needed for a given product. The database can be updated on-line by the Administrator/Validator as products and test data change.

## The WINS Temporary Labeling System

AAMA's Window Inspection and Notification System ("WINS") offers manufacturers an optional AAMA-sanctioned method of including additional product data on a temporary label for application to the glass.

With WINS, a second printer, connected to the automated label printer, can print other labels of different sizes and formats other than the official AAMA Certification label. For example, the temporary label can be printed on the back of a company's temporary logo label by the second printer, and can encompass label information required by various code jurisdictions, as well as the installation instructions and anchoring data now typically placed on the back of such labels. The WINS temporary label provides building code inspectors with a quick and easy method for determining code compliance and offers manufacturers the benefit of consolidating diverse labeling requirements into a single label, further reducing costs and label clutter.

## Testing vs. Certification

Use of the AAMA label is authorized only to licensee manufacturers who comply with AAMA Certification Program rules and regulations and whose products fulfill the requirements of the underlying standards. For those not licensed pursuant to the Certification Program, conformance with AAMA/NWWDA 101/I.S.2-97 must not be claimed or implied unless such products do, in fact, meet all of the descriptive safety, performance and rating requirements.

Any manufacturer may have product prototypes or samples independently tested for conformance to AAMA standards, and may claim such conformance based on these test results. AAMA membership is not required.

However, unless the manufacturer participates as a licensee in the official Certification Program, there is no independent verification of test results and no follow-up inspection to verify that actual production-line units continue to meet the requirements.

- A = Manufacturer's Code Number  
(Company name may also be shown)
- B = Specification Identification  
(AAMA/NWWDA 101/I.S.2-97)
- C = Manufacturer's Series Number
- D = Product Grade and Class Designation
- E = Maximum Size Tested

# Component Performance Addresses the Total Window System

AAMA/NWWDA 101/I.S.2-97 and AAMA certification go beyond basic quality assurance for completed window units by recognizing that a window is a complex system of components – extrusions, finishes, glass, screening, weatherstrip, sealants and hardware – that must perform properly and continuously over a long service life. Therefore, any effective definition of window quality must encompass the performance of these components as well as the way they interact to make a completed window unit.

Accordingly, the AAMA Certification Program includes a system of verification and documentation of components' compliance with the applicable standards referenced within AAMA/NWWDA 101/I.S.2-97.

## Extrusion Profile Certification

To be deemed as conforming to AAMA/NWWDA 101/I.S.2-97 and therefore certifiable under the AAMA Certification Program, windows other than aluminum or wood must be made from extrusions that comply with applicable AAMA specifications for PVC, fiberglass, ABS or fiber-reinforced PVC extrusions.

Extrusions may be certified for compliance through the AAMA Extrusion Certification Program in which randomly selected production line samples of extrusions are tested by an accredited third-party laboratory for conformance with the appropriate AAMA extrusion specification. The requirements include impact resistance, dimensional stability, heat resistance, weight tolerance and color fastness. The extruder must also prepare a Quality Control Manual setting forth the procedures used to assure ongoing conformance of the product with the AAMA specifications. At least two unannounced in-plant

inspections are conducted annually by third-party inspectors to determine continued compliance with the program.

## Aluminum Extrusion Requirements

While not subject to separate certification (as are PVC, ABS or fiberglass extrusions), aluminum extrusions must meet the requirements for alloy composition, tensile strength and yield strength specified in AAMA/NWWDA 101/I.S.2-97.

## Wood Requirements

Wood parts (including wood framing members that are aluminum or vinyl clad) must comply with AAMA/NWWDA 101/I.S.2-97 specifications for maximum moisture content and treatment with water-repellent preservatives, and with referenced ASTM requirements for adhesives.

## Verified Components

To establish a total quality management system tying together the network of component suppliers and window system fabricators, key component suppliers must assure window manufacturers that their products meet appropriate AAMA standards for painted finishes, weatherstrip, sealants and hardware as referenced in AAMA/NWWDA 101/I.S.2-97. To do this, they must have product samples tested for compliance with the appropriate standard at an AAMA-accredited laboratory and supply a documented test report indicating compliance.

If a component supplier cannot demonstrate that its product complies with applicable AAMA standards via testing at an accredited laboratory, the component may not be used in products approved to bear the AAMA Certification Label.

# Life Cycle Testing Verifies Architectural Product Durability

One criterion of product quality is its durability; that is, its ability to maintain required or expected performance levels throughout a reasonably long service life.

Life cycle tests, described in AAMA 910-93, employ accelerated testing methods to model the normal wear that can be expected due to the typical number of basic vent operating cycles and locking hardware opening/closing cycles experienced during the life of a typical architectural class product. Loading conditions expected during washing, maintenance and the occasional, predictable misuse situations, such as improper operation or maintenance and excessive operating force, are also simulated.

Air leakage and water penetration tests are conducted both

before and after cycling and simulated misuse to evaluate any performance changes. In addition, there must be no damage to hardware and other components that would render the window inoperable.

These life cycle tests are required of all Architectural Class ("AW" designation) products for them to be certified as in compliance with AAMA/NWWDA 101/I.S.2-97. They may optionally be applied to other Performance Classes as well.

### **Dues credit for certification participation.**

Members can earn a credit of up to half their AAMA dues with participation in AAMA and NFRC certification programs.

# The AAMA Label: A Reliable Indicator of Product Quality

More than ever before, the AAMA certification label is a meaningful way for specifiers, builders and remodelers, consumers and homeowners, as well as building code and government agencies to evaluate product performance quality on a level playing field.

Product certification and labeling based on AAMA/NWWDA 101/I.S.2-97 and the underlying network of component verification, combined with automated labeling and the WINS program, provide window manufacturers an added selling edge to position themselves as offering quality products to their customers.



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For more information on AAMA standards, certification and other programs, visit the AAMA web site.