Architectural Testing

AAMA/WDMA/CSA 101/I.S.2/A440-08
TEST REPORT

Rendered to:

MI WINDOWS AND DOORS, INC.

SERIES/MODEL: EC147
(also marketed as Series HMIII-147 and BB-147)
PRODUCT TYPE: Polyvinyl Chloride (PVC) Casement

Title	Summary of Results
Primary Product Designator	Class LC-PG60 915 x 1525 (36 x 60)-C
Design Pressure	± 2880 Pa (± 60.19 psf)
Operating Force (in motion)	22 N (5 lbf)
Air Infiltration	<0.25 L/s/m^2 (<0.01 cfm/ft^2)
Water Penetration Resistance Test Pressure	440 Pa (9.20 psf)
Uniform Load Structural Test Pressure	± 4320 Pa (± 90.28 psf)
Forced Entry Resistance	Passed

Test Completion Date: 03/02/10

Reference must be made to Report No. 97838.05-901-44, dated 04/12/11, for complete test specimen description and data.

22155 68th Ave S
Kent, WA 98032
phone: 253-395-5656
fax: 253-395-5657

A·L·I

(Validator / Operations Administrator)

AAMA
CERTIFICATION PROGRAM

AUTHORIZATION FOR PRODUCT CERTIFICATION

MI Windows & Doors, LLC
P.O. Box 370
Gratz, PA 17030-0370

Attn: Rick Sawdey

The product described below is hereby approved for listing in the next issue of the AAMA Certified Products Directory. The approval is based on successful completion of tests, and the reporting to the Administrator of the results of tests, accompanied by related drawings, by an AAMA Accredited Laboratory.

1. The listing below will be added to the next published AAMA Certified Products Directory.

SPECIFICATION	RECORD OF PRODUCT TESTED			
AAMA/WDMA/CSA 101/I.S.2/A440-08 LC-PG60-914x1524 (36x60)-C				
COMPANY AND CODE	CPD NO.	SERIES MODEL & PRODUCT DESCRIPTION	MAXIMUM SIZE TESTED	
MI Windows & Doors, LLC Code: MTL	6423	EC147 CASEMENT (FINLESS) (PVC)(X)(OG)(INS GL) (ASTM)	FRAME 914 mm x 1524 mm (3'0" x 5'0")	VENT 870 mm x 1480 mm (2'10" x 4'10")

2. This Certification will expire **March 2, 2016 (extended from March 2, 2014 per AAMA 106-13)** and requires validation until then by continued listing in the current AAMA Certified Products Directory.

3. Product Tested and Reported by: **Architectural Testing, Inc.**

   Report No.: **97838.05-901-44**

   Date of Report: **April 12, 2011**

Validated for Certification

Associated Laboratories, Inc.

Date: **January 9, 2014**

Authorized for Certification

American Architectural Manufacturers Association

Cc: AAMA
JGS
ACP-04 (Rev. 1/11)

Architectural Testing

AAMA/WDMA/CSA 101/I.S.2/A440-08 TEST REPORT

Rendered to:

MI WINDOWS AND DOORS, INC.
7555 E. State Rt. 69
Prescott Valley, AZ 86314

Report No.:	97838.05-901-44
Test Dates:	02/08/10
Through:	03/02/10
Report Date:	04/12/11
Test Record Retention Date:	03/02/14
Revision 1:	03/08/13

Project Summary: Architectural Testing, Inc. was contracted by Mikron Industries, Inc. to perform and validate testing on a Series/Model 10200 PVC Casement at the test facility of Architectural Testing, Inc. in Kent, Washington. The sample tested successfully met the performance requirements for a Class LC-PG60 915 x 1525 (36 x 60)-C. This report is a reissue of the original Report No. 97838.01-901-44. This report is reissued in the name of MI Windows and Doors, Inc. through written authorization of Mikron Industries, Inc. Test specimen description and results are reported herein. The sample was provided by the client.

Test Specification: The test specimen was evaluated in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights.*

Test Specimen Description:

Series/Model: EC147 (also marketed as Series HMIII-147 and BB-147)

Product Type: Casement

Overall Size: 915 mm (36") wide by 1525 mm (60") high

Sash Size: 870 mm (34-1/4") wide by 1480 mm (58-1/4") high

Overall Area: 1.4 m^2 (15 ft^2)

Finish: All PVC members were white.

Frame Construction: The frame members were miter cut with thermally-welded corner construction.

Sash Construction: The sash members were miter cut with thermally-welded corner construction.

22155 68th Ave S
Kent, WA 98032
phone: 253-395-5656
fax: 253-395-5657

Test Specimen Description: (Continued)

Weatherstripping:

Description	Quantity	Location
6.3 mm foam bulb (1/4")	2 rows	Frame, sash pocket, full perimeter
7.3 mm high pile (0.29")	1 row	Sash, exterior edge, full perimeter

Glazing Details: The glass unit was exterior glazed against double-sided foam tape with PVC glazing beads. The nominal 28.5 mm (1-1/8") thick insulating glass unit was fabricated with two sheets of nominal 3 mm (1/8") thick annealed glass and an aluminum spacer system.

Drainage:

Description	Quantity	Location
25.4 mm by 6.3 mm (1" by 1/4") (with weep flap)	2	Sash, bottom rail, exterior face, 50.8 mm (2") from outside corner, through one wall, draining hollow

Hardware:

Description	Quantity	Location
Metal rotary operator	1	Frame, sill, secured with six 4.1 mm by 18.4 mm (#8 by 3/4") screws
Metal lock lever	1	Frame, jamb, secured with two 4.1 mm by 15.2 mm (#8 by 9/16") screws
Metal tie bar (multi-point lock)	1	Frame, jamb, locking points located at 115 mm (4-1/2"), 760 mm (30"), and 1390 mm (54-3/4") up from outside corner of sill
Plastic tie bar guides	3	Frame, jamb, located at 150 mm (6"), 800 mm (31-1/2"), and 1440 mm (56-9/16") up from outside corner of sill, secured with two 4.1 mm by 33.8 mm (#8 by 1-3/8") screws

Test Specimen Description:

Hardware: (Continued)

Description	Quantity	Location
Metal snubbers	3	Frame, jamb, located at 380 mm (15"), 760 mm (30"), and 1140 mm (45"), up from outside corner, secured with two 4.1 mm by 12.7 mm (#8 by 0.50") screws
Metal hinge track	2	Frame, head and sill, secured with four 4.1 mm by 9.6 mm (#8 by 0.37") screws
Metal hinge	2	Sash, top and bottom rail, secured with four 4.1 mm by 18.4 mm (#8 by 0.75") screws
Metal snubbers	3	Sash, stile, aligned with snubbers on frame jamb, secured with two 4.1 mm by 12.7 mm (#8 by 0.50") screws
Metal keepers	3	Sash, stile, aligned with locks, secured with three 4.1 mm by 18.4 mm (#8 by 0.75") screws
Metal operator track	1	Sash, bottom rail, secured with three 4.1 mm by 18.4 mm (#8 by 0.75") screws
Metal stud bracket	1	Sash, bottom rail, secured with two 4.1 mm by 18.4 mm (#8 by 0.75") screws

Reinforcement: No reinforcement was utilized.

Installation: The specimen was installed into a 2' by 8' wood test buck. The frame was fastened to the buck with 4.8 mm by 63.5 mm (#10 by 2-1/2") screws spaced 152 mm (6") off each end, jambs and head, and no more than 406 mm (16") apart. The test buck, at the sill, contained an interior and exterior blind stop.

Test Results: The temperature during testing was 21°C (71°F). The results are tabulated as follows:

Paragraph	Title of Test - Test Method	Results	Allowed
5.3.1	Operating Force per ASTM E 2068		
	Initiate motion	31 N (7 lbf)	Report Only
	Maintain motion	22 N (5 lbf)	30 N (7 lbf)
	Latches	13 N (3 lbf)	100 N (22.5 lbf)
5.3.2.1	Air Leakage Resistance per ASTM E 283		
	75 Pa (1.6 psf)	<0.25 L/s/m^2 (<0.01 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.
5.3.3.2	Water Penetration Resistance per ASTM E 547		See Note #2
5.3.4.2	Uniform Load Deflection per ASTM E 330		See Note #2
5.3.4.3	Uniform Load Structural per ASTM E 330		See Note #2
5.3.5	Forced Entry Resistance per ASTM F 588		
	Type: B	Grade: 20	
	Disassembly Test	No entry	No entry
	Sash/Panel Manipulation Test	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry
	Test B1	No entry	No entry
	Test B2	No entry	No entry
	Test B3	No entry	No entry
	Sash/Panel Manipulation Test	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry

***Note #1**: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.*

***Note #2**: The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance."*

Test Results: (Continued)

Paragraph	Title of Test - Test Method	Results	Allowed
5.3.6.2	Thermoplastic Corner Weld Test	Meets as stated	Meets as stated
5.3.6.4.3	Sash Vertical Deflection Test 200 N (45 lbf)	0.8 mm (0.03")	1.8 mm (0.07") max.
5.3.6.6.2	Distributed Load Test 240 Pa (5.0 psf)	No damage	No damage
Optional Performance			
4.3.2.1	Water Penetration Resistance per ASTM E 547 580 Pa (12.12 psf)	No leakage	No leakage
4.3.2.1	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the hinge stile between snubbers) (Loads were held for 10 seconds) 2880 Pa (60.19 psf) (positive) 2880 Pa (60.19 psf) (negative)	 0.8 mm (0.03") 1.5 mm (0.06")	 See Note #3
4.3.2.1	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the top rail between hinge and locking point) (Loads were held for 10 seconds) 2880 Pa (60.19 psf) (positive) 2880 Pa (60.19 psf) (negative)	 2.0 mm (0.08") 10.3 mm (0.41")	 See Note #3

***Note #3**: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.*

4.3.2.1	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the hinge stile between snubbers) (Loads were held for 10 seconds) 4320 Pa (90.28 psf) (positive) 4320 Pa (90.28 psf) (negative)	 <0.2 mm (<0.01") <0.2 mm (<0.01")	 1.5 mm (0.05") max. 1.5 mm (0.05") max.
4.3.2.1	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the top rail between hinge and locking point) (Loads were held for 10 seconds) 4320 Pa (90.28 psf) (positive) 4320 Pa (90.28 psf) (negative)	 <0.2 mm (<0.01") <0.2 mm (<0.01")	 3.5 mm (0.13") max. 3.5 mm (0.13") max.

Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing, Inc. and are representative of the test specimen reported herein.

This report is reissued in the name of MI Windows and Doors, Inc. through written authorization of Mikron Industries, Inc., to whom the original report was rendered. The original Mikron Industries, Inc. Report No. is 97838.01-901-44.

List of Official Observers

Name	Company
Rob Schrader	Mikron Industries, Inc.
Steve Powers	Architectural Testing, Inc.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice; and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. If the test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

Digitally Signed for: Brian L. Rasmussen by Patricia A Caln

Brian L. Rasmussen
Technician

Digitally Signed by: Jeffrey L. Dideon

Jeffrey L. Dideon
Director – Regional Operations

SEP:pac

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Alteration Addendum (1)
Appendix-B: Complete drawings packet on file with Architectural Testing, Inc.

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	04/12/11	N/A	Original report issue – Reissue of Report No. 97838.01-901-44 in the name of MI Windows and Doors, Inc.
1	03/08/13	Cover page, Page 1	Series/Model number was changed to reflect: (also marketed as Series HMIII-147 and BB-147).

Appendix A

Alteration Addendum

***Note**: No alterations were required.*

Appendix B

Drawings

***Note**: Complete drawings packet on file with Architectural Testing, Inc.*