Architectural Testing

TEST REPORT

Report No.: B9420.02-301-47

Rendered to:

MI WINDOWS AND DOORS, INC.
Prescott Valley, Arizona

PRODUCT TYPE: Polyvinyl Chloride (PVC) XO Horizontal Sliding Window
SERIES/MODEL: EC 160

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

CAWM 301, *Forced Entry Resistance Test for Windows.*

Title	Summary of Results
Primary Product Designator	HS-LC25 1827 x 1827 (72 x 72)
Design Pressure	±1200 Pa (±25.06 psf)
Air Infiltration	0.41 L/s/m^2 (0.08 cfm/ft^2)
Water Penetration Resistance Test Pressure	290 Pa (6.06 psf)

Test Completion Date: 05/21/2012

Reference must be made to Report No. B9420.02-301-44, dated 07/31/12 for complete test specimen description and detailed test results.

1.0 Report Issued To: MI Windows and Doors, Inc.
7555 East State Route 69
Prescott Valley, Arizona 86314

2.0 Test Laboratory: Architectural Testing, Inc.
2524 East Jensen Avenue
Fresno, California 93706

3.0 Project Summary:

3.1 Product Type: Polyvinyl Chloride (PVC) XO Horizontal Sliding Window

3.2 Series/Model: EC 160

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method. The specimen tested successfully met the performance requirements for a **HS-LC25 1827 x 1827 (72 x 72)** rating.

This product was originally tested as a Mikron Industries, Inc. Series/Model 10200 Series XO Sliding Window, Polyvinyl Chloride (PVC) XO Horizontal Sliding Window and is a reissue of the original Report No. B9420.01-301-47. This report is reissued in the name of MI Windows and Doors, Inc. through written authorization by Mikron Industries, Inc.

3.4 Test Dates: 05/09/2012 – 05/21/2012

3.5 Test Record Retention End Date: All test records for this report will be retained until May 21, 2016.

3.6 Test Location: MI Windows and Doors, Inc. test facility in Prescott Valley, Arizona. Calibration of test equipment was performed by Architectural Testing in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

3.7 Test Sample Source: The test specimen was provided by the client. Representative samples of the test specimen will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix B. Any deviations are documented herein or on the drawings.

3.0 Project Summary: (Continued)

3.9 List of Official Observers:

Name	Company
Mike Maystadt	MI Windows and Doors, Inc.
Russ Wilkerson	MI Windows and Doors, Inc.
Jeffrey Osugi	Architectural Testing, Inc.

4.0 Test Specifications:

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

CAWM 301, *Forced Entry Resistance Test for Windows.*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 35.93 m^2 (3.34 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	1827	71-15/16	1827	71-15/16
Interior panel	916	36-1/16	1752	69
Screen	869	34-3/16	1720	67-11/16

5.2 Frame Construction:

Frame Member	**Material**	**Description**
Head, sill and jambs	PVC	Two internal hollows were filled with Aircell foam.
Roller track	PVC	Snap fit to sill and held back 1/2 – 5/8" from each end.
Exterior meeting stile	PVC	
Anti-lift	PVC	Two employed above panel.

	Joinery Type	**Detail**
Head, sill and jambs	Mitered	Fully welded.
Exterior meeting stile	Coped	Secured at each end with two #8 x 3" Phillips pan head screws with washers and rubber gaskets.

5.0 Test Specimen Description: (Continued)

5.3 Panel Construction:

Panel Member	Material	Description
Top rail, bottom rail, each stile	PVC	The interlock was notched 1-1/4" from each end and 2" for the locks. A 0.070" lip was utilized at each lock.

	Joinery Type	Detail
All corners	Mitered	Fully welded.

5.4 Weatherstripping:

Description	Quantity	Location
Wrapped hollow foam bulb gasket	1 Row	Interior and exterior meeting stiles.
0.260" high polypile with triple center fin	1 Row	All members of frame. Jamb stile and bottom rail of panel.
0.450" high polypile with center fin	1 Row	Interior meeting stile.

5.5 Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
3/4" IG	Polycarbonate – butyl composite	1/8" Annealed	1/8" Annealed	Exterior glazed onto a 3/8" wide x 1/16" high glazing tape and secured with a PVC snap in glazing bead. The corners of the glazing tape were sealed.

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed lite	1	825 x 1720	32-1/2 x 67-11/16	1/2"
Panel	1	828 x 1669	32-5/8 x 65-11/16	1/2"

5.0 Test Specimen Description: (Continued)

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weephole with cover	1-1/2" x 5/16" (1-1/16" x 3/16")	4	3" and 31" from each end through exterior sill face.
Weephole	1/8" x 1/8"	2	3-1/2" from each end through screen / glazing track.
Weephole	1" x 1/8"	4	1-5/8" and 27 - 27-1/2" from each end through exterior sill leg.
Weepnotch	1" x 5/16"	2	Through exterior leg of roller track at each center sill leg weephole.
Weepnotch	1-1/4" x 5/16"	2	15/16" from each end through exterior leg of roller track.
Weephole	3/8" x 3/16"	2	3/16" from each end through first layer of horizontal internal webbing.
Weephole	1-1/2" x 1/4"	2	Each end through first layer of vertical internal webbing.
Weephole	1/2" x 1/8" oval	4	1/4" from each end on bottom rail and 2-5/8" from each end through snap in glazing bead track.

5.7 Hardware:

Description	Quantity	Location
Cam lock	2	9" from each end on interior meeting stile secured with two#6 x 1" Phillips flat head self-drilling into reinforcement.
Keeper	2	Opposite each lock on exterior meeting stile secured with two #6 x 1" Phillips flat head self-drilling screws into reinforcement.
Plastic rollers with housing	2	2-1/4" from each end on bottom rail secured with two #8 x 1/2" Phillips pan head screws.

5.8 Reinforcement:

Drawing Number	Location	Material
M-9265	Exterior meeting stile	Aluminum
M-9264	Interior meeting stile	Aluminum

5.0 Test Specimen Description: (Continued)

5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Type	Mesh Attachment Method
Extruded aluminum	Mitered with corner key	Fiberglass	Hollow spline

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/4 – 5/16" shim space. The exterior perimeter of the window was sealed with silicone.

Location	Anchor Description	Anchor Location
Head and jambs	#8 x 1-1/2" Phillips pan head screws.	5" from each corner and 10" on center.

7.0 Test Results: The temperature during testing was 21 - 24°C (70 - 76°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 111 N (25.0 lbf) Maintain motion: 48 N (10.8 lbf) Locks: 22 N (5.0 lbf)	Report Only 115 N (25.9 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.41 L/s/m² (0.08 cfm/ft²)	1.5 L/s/m² (0.3 cfm/ft²) max.	1
Water Penetration, per ASTM E 547	N/A	N/A	3
Uniform Load Deflection, per ASTM E 330 taken at exterior meeting stile +1200 Pa (+25.06 psf) -1200 Pa (-25.06 psf)	 34.3 mm (1.35") 32.8 mm (1.29")	 Report Only	4,5,6
Uniform Load Structural, per ASTM E 330 taken at exterior meeting stile +1800 Pa (+37.59 psf) -1800 Pa (-37.59 psf)	 1.8 mm (0.07") 2.5 mm (0.10")	 6.9 mm (0.27") max.	5,6
Forced Entry Resistance, per ASTM F 588, Type: A - Grade: 10	Pass	No entry	
Forced Entry Resistance, per CAWM 301, Type: I	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Deglazing, per ASTM E 987 Operating direction, 320 N (71.9 lbf) Remaining direction, 230 N (51.7 lbf)	Pass Pass	Meets as stated Meets as stated	
Optional Performance			
Water Penetration, per ASTM E 547 at 290 Pa (6.06 psf)	Pass	No leakage	2

7.0 Test Results: (Continued)

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: With and without insect screen.

Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 4: 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.

Note 5: Loads were held for 10 seconds.

Note 6: 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.

This report is reissued in the name of MI Windows and Doors, Inc. through written authorization by Mikron Industries, Inc. to whom the original report was rendered. The original Mikron Industries, Inc. Report No. is B9420.01-301-47.

Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period.

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 by: Jeffery Osugi

Jeffrey Osugi
Technician

Digitally Signed by:Leaton Kirk

Leaton Kirk
Director – Regional Operations

JO: ms

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Alteration Addendum (1)
Appendix-B: Drawings (15) Complete drawings packet on file with Architectural Testing, Inc.

Revision Log

Rev. #	Date	Page(s)	Revision(s)
1	07/31/12	Cover	Correction of Test Completion Date.

Appendix A

Alteration Addendum

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

Appendix B

Drawings

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