Architectural Testing

TEST REPORT

Report No.: C6127.01-301-44

Rendered to:

MI WINDOWS AND DOORS, INC.
Prescott Valley, Arizona

PRODUCT TYPE: Polyvinyl Chloride (PVC) Double Horizontal Sliding Window
SERIES/MODEL: EC 130

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

CAWM 301-90, *Forced Entry Resistance Test for Windows.*

Title	Summary of Results
Primary Product Designator	HS-C30 1831 x 1828 (72 x 72)
Design Pressure	±1440 Pa (±30.08 psf)
Air Infiltration	0.61 L/s/m^2 (0.12 cfm/ft^2)
Water Penetration Resistance Test Pressure	290 Pa (6.06 psf)

Test Completion Date: 04/16/2013

Reference must be made to Report No. C6127.01-301-44 dated 04/30/13 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
(559) 233 - 8705

3.0 Project Summary:

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

3.2 Series/Model: EC 130

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test methods. The specimens tested successfully met the performance requirements for a **HS-C30 1831 x 1828 (72 x 72)** rating.

3.4 Test Dates: 02/13/2013 – 04/16/2013

3.5 Test Record Retention End Date: All test records for this report will be retained until April 30, 2017.

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 specimens 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 specimens 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.

3.9 List of Official Observers:

Name	Company
Russ Wilkerson	MI Windows and Doors, Inc.
Jim Liapple	MI Windows and Doors, Inc.
Mike Maystadt	MI Windows and Doors, Inc.
David Douglass	Architectural Testing, 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 301-90, *Forced Entry Resistance Test for Windows.*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 3.35 m^2 (36.03 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	1831	72-1/8	1828	71-15/16
Exterior panel	900	35-7/16	1715	67-1/2
Interior panel	897	35-5/16	1714	67-1/2
1/2 Screen	889	35	1714	67-1/2
Full screen	1711	67-3/8	1712	67-3/8

5.2 Frame Construction:

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

	Joinery Type	**Detail**
Head, sill and jambs	Mitered	Fully welded.

5.3 Panel Construction:

Panel Member	**Material**	**Description**
Top rail, bottom rail and each stile	PVC	One hollow in the top rails, bottom rails and jamb stiles of each panel were filled with Aircell foam. The interlocks were held back 1-1/4" from each end and 2" for the lock. A 0.070" lip was employed at the locks.

5.0 Test Specimen Description: (Continued)

5.3 Panel Construction: (Continued)

	Joinery Type	Detail
All corners	Mitered	Fully welded.

5.4 Weatherstripping:

Description	Quantity	Location
0.290" high polypile with triple center fin	2 Rows	All members of frame.
Hollow wrapped foam gasket	1 Row	Each meeting stile.
0.400" high polypile	1 Row	Interior meeting stile.
0.290" high polypile with triple center fin	1 Row	Exterior panel jamb stile. Bottom rail of each panel.
0.290" high polypile with triple center fin	3 Rows	Top rails of each panel. Jamb stile of exterior panel.

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	U shaped coated steel	1/8" Annealed	1/8" Annealed	Exterior glazed onto a 3/8" wide x 1/16" high glazing tape and secured with a snap in PVC glazing bead.

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Exterior panel	1	809 x 1626	31-7/8 x 64	1/2"
Interior panel	1	809 x 1625	31-7/8 x 64	1/2"

5.0 Test Specimen Description: (Continued)

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weephole with cover	1" x 1/4" (13/16" x 1/8" effective)	2	2-1/2" from each end through exterior sill face.
Weephole	1/4" x 1/8" oval	2	1/2" from each end through screen track exterior sill face.
Weephole	3/8" x 1/8" oval	2	1/2" from each end through exterior panel sill track through frame.
Weephole	5/8" x 1/8"	2	1" from each end through interior panel sill track.
Weephole	1-3/4" x 1/4"	2	Each end through second layer of internal webbing.
Weephole	1/4" x 3/4"	2	1" from each end through third layer of internal webbing.
Weephole	1/2" x 1/8" oval	4	1/4" from each end through bottom rail of each panel. 2-1/4" from each end through snap in glazing bead track on bottom rail of each panel.

5.7 Hardware:

Description	Quantity	Location
Plastic rollers with housing	4	1-3/4" from each end on bottom rail of each panel.
Cam lock	1	Mid-span on interior meeting stile secured with two #6 x 1" Phillips flat head self–drilling screws into reinforcement.
Keeper	1	Opposite each lock on interior meeting stile secured with two #6 x 1" Phillips flat head self–drilling screws into reinforcement.

5.0 Test Specimen Description: (Continued)

5.8 Reinforcement:

Drawing Number	Location	Material
M-9264	Exterior meeting stile	Extruded aluminum
M-9258	Interior meeting stile	Extruded aluminum

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 3/16 - 3/8" shim space. The exterior perimeter of the window was sealed with silicone.

Location	Anchor Description	Anchor Location
Head and jambs	#8 x 2" Phillips pan head screws	3-1/2 – 5" from each corner and 10" on center through the frame.

7.0 Test Results: The temperature during testing was 17 - 18°C (62 - 65°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 105 N (23.5 lbf) Maintain motion: 49 N (11.0 lbf) Locks: 18 N (4.0 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)	0.61 L/s/m^2 (0.12 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.	1
Water Penetration, per ASTM E 547	N/A	N/A	4

7.0 Test Results: (Continued)

Title of Test	Results	Allowed	Note
Uniform Load Deflection, per ASTM E 330 taken at exterior meeting stile +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	 29.0 mm (1.14") 30.8 mm (1.21")	 Report Only.	 5, 6, 7
Uniform Load Structural, per ASTM E 330 taken at exterior meeting stile +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	 1.5 mm (0.06") 2.8 mm (0.11")	 5.1 mm (0.20") max.	 6, 7
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	
Optional Performance			
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	
Water Penetration, per ASTM E 547 at 290 Pa (6.06 psf)	Pass	No leakage	2, 3

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 full insect screen.

Note 3: With and without 1/2 insect screen.

Note 4: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 5: 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 6: Loads were held for 10 seconds.

Note 7: 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.

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 (17) Complete drawings packet on file with Architectural Testing, Inc.

Appendix A

Alteration Addendum

Alteration #1: Date – 04/16/13
Cause for alteration – Specimen #1 failed structural load test.
Remedial action taken – Replaced panels.

Appendix B

Drawings

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