

TEST REPORT

Report No.: C5825.01-109-47

Rendered to:

MI WINDOWS AND DOORS, INC.
Gratz, Pennsylvania

PRODUCT TYPE: PVC Single Hung Window
SERIES/MODEL: 4340

SPECIFICATION: AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

Title	Summary of Results
Primary Product Designator	Class LC-PG30 1118 x 1981 (44 x 78)-H
Design Pressure	+1440 Pa (+30.08 psf)
Negative Design Pressure	-1920 Pa (-40.10 psf)
Air Infiltration	0.4 L/s/m ² (0.08 cfm/ft ²)
Water Penetration Resistance Test Pressure	290 Pa (6.06 psf)

Test Completion Date: 02/08/2013

Reference must be made to Report No. C5825.01-109-47, dated 04/17/13 for complete test specimen description and detailed test results.



1.0 Report Issued To: MI Windows and Doors, Inc.
P.O. Box 370
650 West Market Street
Gratz, Pennsylvania 17030-0370

2.0 Test Laboratory: Architectural Testing, Inc.
130 Derry Court
York, Pennsylvania 17406-8405
717-764-7700

3.0 Project Summary:

3.1 Product Type: PVC Single Hung Window

3.2 Series/Model: 4340

3.2.1 This product also labeled under the following names: 4340SH, 4340SPSH, S-4340SH, and S-4340SPSH.

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). The specimen tested successfully met the performance requirements for a **Class LC-PG30 1118 x 1981 (44 x 78)-H** rating.

3.4 Test Dates: 02/04/2013 - 02/08/2013

3.5 Test Record Retention End Date: All test records for this report will be retained until April 17, 2017.

3.6 Test Location: MI Windows and Doors, Inc. test facility in Gratz, Pennsylvania. 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(s) will be retained by Architectural Testing for a minimum of four years from the report completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Architectural Testing per the drawings on file with Architectural Testing. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Rick Sawdey	MI Windows and Doors, Inc.
Jeremy R. Bender	Architectural Testing, Inc.

**4.0 Test Specification(s):**

AAMA/WDMA/CSA 101/1.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

5.0 Test Specimen Description:**5.1 Product Sizes:**

Overall Area: 2.2 m ² (23.8 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1118	44	1981	78
Interior sash	1051	41-3/8	978	38-1/2
Screen	1030	40-9/16	953	37-1/2

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, and jambs	PVC	Extruded
Fixed meeting rail	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermoplastic weld
Fixed meeting rail	Coped and butted	The fixed meeting rail utilized a PVC end cap at both ends, which was secured to the fixed meeting rail with three #6 x 1-1/4" flat head screws. The PVC end cap was secured to the jamb with two #6 x 1/2" long flat screws.

5.3 Sash Construction:

Sash Member	Material	Description
Rails and stiles	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermoplastic weld



5.0 Test Specimen Description: (Continued)

5.4 Weatherstripping:

Description	Quantity	Location
0.187" backed by 0.150" high polypile with fin	1 Row	Interior sill leg
0.187" backed offset, co-extruded 5/32" diameter foam bulb	1 Row	Fixed meeting rail
0.187" backed offset, co-extruded 3/8" diameter foam-filled vinyl bulb seal with fin	1 Row	Bottom rail
0.187" backed by 0.240" high polypile with fin	1 Row	Interior meeting rail and sash stiles
0.187" backed by 0.310" high polypile with fin	1 Row	Sash stiles

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	Metal reinforced butyl	3/32" clear annealed	3/32" clear annealed	The glass was interior glazed against a bead of silicone sealant and secured with PVC snap-in glazing beads

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Sash daylight opening	1	975 x 899	38-3/8 x 35-3/8	1/2"
Fixed daylight opening	1	997 x 905	39-1/4 x 35-5/8	1/2"

5.6 Drainage: A sloped sill was utilized.

Drainage Method	Size	Quantity	Location
Weep notch	1" wide by 1/8" high	2	Sill, at the each
Weep notch	1" wide by 1/4" high	2	Sill, at the each

**5.0 Test Specimen Description:** (Continued)**5.7 Hardware:**

Description	Quantity	Location
Block and tackle balances	2	One at each jamb
Composite cam locks with adjacent composite keeper	2	Interior meeting rail
Surface mount PVC tilt latches	2	Interior meeting rail ends
Metal tilt pins	2	Bottom rail ends

5.8 Reinforcement:

Drawing Number	Location	Material
GVL-450	Fixed meeting rail	Roll-formed steel
GVL-451-020	Interior meeting rail, sash stiles, and bottom rail	Roll-formed steel

5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Type	Mesh Attachment Method
Roll-formed aluminum	Square-cut and keyed with plastic corner key	Fiberglass mesh	Flexible vinyl spline

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/8" shim space. The exterior perimeter of the window was sealed with sealant.

Location	Anchor Description	Anchor Location
Head, sill, and jambs	#6 x 1-5/8" long screws	2" from corners and spaced 9" on center through the mounting fin into the wood buck



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

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 85 N (19 lbf) Maintain motion: 90 N (20 lbf) Latches: 18 N (4 lbf) Locks: 13 N (3 lbf)	Report Only 135 N (30 lbf) max. 100 N (22.5 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.4 L/s/m ² (0.08 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	3
Uniform Load Deflection, per ASTM E 330	N/A	N/A	3
Uniform Load Structural, per ASTM E 330	N/A	N/A	3
Forced Entry Resistance, per ASTM F 588, Type: A - Grade: 10	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Deglazing, per ASTM E 987 Operating direction, 320 N (70 lbf) Remaining direction, 230 N (50 lbf)	Pass Pass	Meets as stated Meets as stated	



7.0 Test Results: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 at 290 Pa (6.06 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 taken at meeting rail +1440 Pa (+30.08 psf) -1920 Pa (-40.10 psf)	12.2 mm (0.48") 14.0 mm (0.55")	Report Only	4, 5, 6
Uniform Load Structural, per ASTM E 330 taken at meeting rail +2160 Pa (+45.11 psf) -2880 Pa (-60.15 psf)	1.8 mm (0.07") 1.8 mm (0.07")	4.1 mm (0.16") max. 4.1 mm (0.16") max.	5, 6

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.



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.

Jeremy R. Bender
Technician

Michael D. Stremmel, P.E.
Senior Project Engineer

JRB:dem

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.



Architectural Testing

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Appendix A

Alteration Addendum

Note: No alterations were required.



Architectural Testing

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Appendix B

Drawings

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