

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

**Rendered to:**

**MI WINDOWS AND DOORS, INC.**

**SERIES/MODEL: 4300**

**PRODUCT TYPE: Single Hung Window (Finless)**

<b>Title</b>	<b>Summary of Results</b>
Primary Product Designator	Class R-PG30 1016 x 1981 (40 x 78)-H
Design Pressure	1440 Pa (30.08 psf)
Negative Design Pressure	1680 Pa (35.09 psf)
Operating Force (in motion)	89 N (20 lbf)
Air Infiltration	1.0 L/s/m <sup>2</sup> (0.19 cfm/ft <sup>2</sup> )
Water Penetration Resistance Test Pressure	260 Pa (5.43 psf)
Uniform Load Structural Test Pressure	+2160 Pa (+45.11 psf) -2520 Pa (-52.63 psf)
Forced Entry Resistance	Grade 10

**Test Completion Date:** 02/25/10

Reference must be made to Report No. 98665.01-109-47, dated 03/30/10 for complete test specimen description and data.

**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			
<b>AAMA/WDMA/CSA 101/I.S.2/A440-08 R-PG30-1016x1981 (40x78)-H</b> Negative Design Pressure = -35 psf				
COMPANY AND CODE	CPD NO.	SERIES MODEL & PRODUCT DESCRIPTION	MAXIMUM SIZE TESTED	
<b>MI Windows &amp; Doors, LLC</b> Code: MTL	<b>4115</b>	<b>4300 SH (FINLESS) (PVC)(O/X)(IG)(INS GL) (MODIF)(REINF)(TILT) (ASTM)</b>	<b>FRAME</b> <b>1016 mm x 1981 mm</b> <b>(3'4" x 6'6")</b>	<b>SASH</b> <b>953 mm x 978 mm</b> <b>(3'2" x 3'3")</b>

2. This Certification will expire **February 25, 2016 (extended from February 25, 2014 per AAMA 108-13)** 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.: **98665.01-109-47**Date of Report: **March 30, 2010****Validated for Certification**  
Associated Laboratories, Inc.Date: **December 18, 2013****Authorized for Certification**Cc: AAMA  
JGS  
ACP-04 (Rev. 1/11)  
American Architectural Manufacturers Association



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

Rendered to:

MI WINDOWS AND DOORS, INC.  
P.O. Box 370  
650 West Market Street  
Gratz, Pennsylvania 17030-0370

Report No.: 98665.01-109-47  
Test Dates: 02/23/10  
Through: 02/25/10  
Report Date: 03/30/10  
Test Record Retention Date: 02/25/14

**Project Summary:** Architectural Testing, Inc. was contracted by MI Windows and Doors, Inc. to witness and validate testing on a Series/Model 4300, single hung window (finless) at the MI Windows and Doors, Inc. test facility in Gratz, Pennsylvania. The sample tested successfully met the performance requirements for a Class R-PG30 1016 x 1981 (40 x 78)-H rating. 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:** 4300

**Product Type:** Single Hung Window (Finless)

**Overall Size:** 1016 mm (40") wide by 1981 mm (78") high

**Sash Size:** 953 mm (37-1/2") wide by 978 mm (38-1/2") high

**Fixed Daylight Opening Size:** 895 mm (35-1/4") wide by 905 mm (35-5/8") high

**Screen Size:** 927 mm (36-1/2") wide by 953 mm (37-1/2") high

**Overall Area:** 1.2 m<sup>2</sup> (13.33 ft<sup>2</sup>)

**Test Specimen Description:** (Continued)

**Finish:** All vinyl was white.

**Frame Construction:** The frame was constructed of extruded vinyl. The corners were mitered and welded. The fixed meeting rail was coped at each end and secured to the frame jambs using a custom shaped extruded vinyl clip. Each clip was secured to the fixed meeting rail with three #6 x 1-1/4" long flat head screws, and secured to the jamb with three #6 x 5/8" long flat head screws.

**Sash Construction:** The sash was constructed from extruded vinyl. The corners of the sash were mitered and welded.

**Weatherstripping:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
0.187" backed by 0.150" high polypile with fin	1 Row	Interior sill leg
0.187" backed, 5/32" diameter offset foam-filled vinyl bulb seal	1 Row	Fixed meeting rail
0.187" backed, 3/8" diameter offset co-extruded 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

**Glazing Details:** The window was glazed with 7/8" thick sealed insulating glass constructed from two sheets of 3/32" thick clear annealed glass and a metal reinforced butyl spacer system. The fixed lite was interior glazed onto double-sided adhesive tape and secured with snap-in vinyl glazing beads. The sash was interior glazed onto a bead of silicone and secured with snap-in vinyl glazing beads.

**Test Specimen Description: (Continued)**

**Drainage:** A sloped sill was utilized.

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
1/4" long by 1/2" wide weepslot	2	Glazing pocket, 1-1/4" from each end draining the glazing pocket to the hollow below
3/32" long by 1/2" wide weepslot	2 per end	Bottom rail, 2-5/8" from each end draining the bottom rail
1-5/8" wide by 1/8" tall weep notch	2	Sill, each end draining the interior sill track to the screen track
1" wide by 1/4" tall weep notch	2	Sill, each end draining the screen track

**Hardware:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
Block and tackle balances	2	One at each jamb
Sweeping cam locks with adjacent keepers	2	Interior meeting rail, 7" from each end
Recessed vinyl tilt latches	2	Interior meeting rail ends
Aluminum pivot bars	2	Bottom rail ends

**Reinforcement:** The fixed meeting rail utilized a roll-formed steel reinforcement, (reference Drawing #GVL-450). The interior meeting rail and bottom rail utilized a roll-formed steel reinforcement, (reference Drawing #GVL-451-020).

**Screen Construction:** The screen was constructed of roll-formed aluminum. The corners of screen frame were square-cut and keyed with plastic keys. The fiberglass mesh was secured with a flexible vinyl spline.

**Installation:** The unit was installed into a Spruce-Pine-Fir wood buck. The unit was secured through the jambs with #8 x 2" long plan head screws, located 4" from corners and midspan. The exterior perimeter was sealed with silicone.

**Test Results:** The temperature during testing was 22°C (71°F). The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.1	Operating Force per ASTM E 2068		
	Initiate motion	76 N (17 lbf)	Report Only
	Maintain motion	89 N (20 lbf)	135 N (35 lbf)
	Latches	9 N (2 lbf)	100 N (25 lbf)
	Locks	53 N (12 lbf)	100 N (25 lbf)
5.3.2.1	Air Leakage Resistance per ASTM E 283		
	75 Pa (1.6 psf)	1.0 L/s/m <sup>2</sup> (0.19 cfm/ft <sup>2</sup> )	1.5 L/s/m <sup>2</sup> (0.3 cfm/ft <sup>2</sup> ) max.

*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.*

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

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

5.3.5	Forced Entry Resistance per ASTM F 588		
	Type: A	Grade: 10	
	Disassembly Test	No entry	No entry
	Test A1-through A5	No entry	No entry
	Test A7	No entry	No entry
	Sash/Panel Manipulation Test	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry
5.3.6.2	Thermoplastic Corner Weld Test	Meets as stated	Meets as stated

**Test Results: (Continued)**

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.6.3	Deglazing Test In operating direction - 320 N (70 lbf)		
	Top rail	2.5 mm (0.10")	11.4 mm (0.45")
	Bottom rail	2.8 mm (0.11")	11.4 mm (0.45")
	In remaining direction - 230 N (50 lbf)		
	Left stile	2.3 mm (0.09")	11.4 mm (0.45")
	Right stile	2.0 mm (0.08")	11.4 mm (0.45")

Optional Performance

4.3.2.1	Water Penetration Resistance per ASTM E 547 (with and without insect screen) 260 Pa (5.43 psf)	No leakage	No leakage
4.3.2.1	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the fixed meeting rail) (Loads were held for 10 seconds)		
	1440 Pa (30.08 psf) (positive)	5.1 mm (0.20")	See Note #3
	1680 Pa (35.09 psf) (negative)	5.1 mm (0.20")	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 fixed meeting rail) (Loads were held for 10 seconds)		
	2160 Pa (45.11 psf) (positive)	0.3 mm (0.01")	3.6 mm (0.14") max.
	2520 Pa (52.63 psf) (negative)	0.5 mm (0.02")	3.6 mm (0.14") 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 and are representative of the test specimen reported herein.

**List of Official Observers:**

<u>Name</u>	<u>Company</u>
Rick Sawdey	MI Windows and Doors, Inc.
Russell W. Clark	Architectural Testing, Inc.

Per the client, this product is also labeled under the following names:

1355  
4340  
New Bridge SH

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 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 by: Russell Clark

Russell W. Clark  
Technician



Digitally Signed by: Michael D. Stremmel

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

RWC:dem

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Alteration Addendum (1)

Appendix-B: Test Equipment (1)

Appendix-C: Complete drawings packet on file with Architectural Testing, Inc.



### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	03/30/10	N/A	Original report issue

**Appendix A**  
**Alteration Addendum**

*Note: No alterations were required.*

**Appendix B**  
**Test Equipment**

<b>Instrument</b>	<b>Manufacturer</b>	<b>Asset #</b>
Control Panel	Architectural Testing, Inc.	MI-1
Linear Transducer	Celesco	E1603001A
Linear Transducer	Celesco	J1705016A
Linear Transducer	Celesco	J1705015A
Force Gauge	Chatillon	E33653
Force Gauge	Viking	FG-1
Force Gauge	Viking	FG-2
Deglazing Tool	Architectural Testing, Inc.	#126

## **Appendix C**

### **Drawings**