

**TEST REPORT**

**Report No.:** B2427.02-301-44

**Rendered to:**

MI WINDOWS AND DOORS, INC.  
Prescott Valley, Arizona

**PRODUCT TYPE:** Polyvinyl Chloride (PVC) Fixed Window  
**SERIES/MODEL:** EC 155

**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.*

**Test Dates:** 08/09/11  
**Through:** 09/20/11  
**Report Date:** 10/25/11  
**Test Record Retention Date:** 09/20/15

**Summary of Results**

Title	Summary of Results	
	Test Specimen #1	Test Specimen #2
Primary Product Designator	FW -C45 2438 x 1827 (96 x 72)	FW - C30 1827 x 1523 (72 x 60)
Design Pressure	±2160 Pa (±45.11 psf)	±1440 Pa (±30.08 psf)
Air Infiltration	<0.05 L/s/m <sup>2</sup> (<0.01 cfm/ft <sup>2</sup> )	N/A
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)	N/A

Title	Summary of Results
	Test Specimen #3
Primary Product Designator	FW - C55 1523 x 1521 (60 x 60)
Design Pressure	±2640 Pa (±55.14 psf)
Air Infiltration	N/A
Water Penetration Resistance Test Pressure	N/A

**Test Completion Date:** 09/20/2011

Reference must be made to Report No. B2427.02-301-44 dated 10/25/11 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) Fixed Window

**3.2 Series/Model:** EC 155

**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 the following ratings: Test Specimen #1: **FW - C45 2438 x 1827 (96 x 72)**; Test Specimen #2: **FW - C30 1827 x 1523 (72 x 60)**; Test Specimen #3: **FW - C55 1523 x 1521 (60 x 60)**.

This product was originally tested as the Mikron Industries, Inc. Series/Model 10200 PW – Finless 96” x 72”, Polyvinyl Chloride (PVC) Fixed Window and is a reissue of the original Report No. B2427.01-301-47. This report is reissued in the name of MI Windows and Doors, Inc. through written authorization by Mikron Industries, Inc.

**3.4 Test Dates:** 08/09/2011 - 09/20/2011

**3.5 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".

**3.6 Test Sample Source:** The test specimens were 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.

**3.7 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.

### 3.0 Project Summary: (Continued)

#### 3.8 List of Official Observers:

<u>Name</u>	<u>Company</u>
Mike Maystadt	MI Windows and Doors, Inc.
Wayne Battram	MI Windows and Doors, Inc.
David Douglass	Architectural Testing, Inc.
Jeffrey T. 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:

##### Test Specimen #1:

Overall Area: 4.45 m <sup>2</sup> (47.94 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	2438	96	1827	71-15/16

##### Test Specimen #2:

Overall Area: 2.78 m <sup>2</sup> (29.95 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1827	71-15/16	1523	59-15/16

##### Test Specimen #3:

Overall Area: 2.32 m <sup>2</sup> (24.93 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1523	59-15/16	1521	59-7/8

*The following descriptions apply to all specimens except where noted.*

## 5.0 Test Specimen Description: (Continued)

### 5.2 Frame Construction:

Frame Member	Material	Description
Head, sill and jambs	PVC	Two hollows were filled with Aircell foam filling.
Sill track filler	PVC	

	Joinery Type	Detail
All corners	Mitered	Fully welded.

**5.3 Sash/Vent/Panel Construction:** No Sash/Vent/Panel was utilized.

**5.4 Weatherstripping:** No weatherstripping was utilized.

### 5.5 Glazing:

#### Test Specimen #1:

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
3/4" IG	Polycarbonate - butyl composite	3/16" Tempered	3/16" Tempered	Exterior glazed onto a bed of Insta glaze and secured with a PVC snap in glazing bead.

#### Test Specimen #2:

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 bed of Insta glaze and secured with a PVC snap in glazing bead.

#### Test Specimen #3:

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

## 5.0 Test Specimen Description: (Continued)

### 5.5 Glazing: (Continued)

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Specimen #1 fixed light	1	2330 x 1719	91-3/4 x 67-11/16	1/2 - 3/8"
Specimen #2 fixed light	1	1721 x 1415	67-3/4 x 55-11/16	1/2"
Specimen #3 fixed light	1	1415 x 1415	55-11/16 x 55-11/16	1/2"

### 5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weephole with cover	1-1/4" x 1/4" oval (13/16 x 1/8" effective)	2	3" from each end through exterior sill face.
Weephole	5/8" x 1/8" oval	2	3" from each end through glazing track.
Weephole	3/8" x 3/16" oval	2	1/8" from each end through first horizontal layer of internal webbing.
Weephole	1" x 3/16"	2	1-5/8" from each end through center sill leg.

**5.7 Hardware:** No hardware was utilized.

**5.8 Reinforcement:** No reinforcement was utilized.

**5.9 Screen Construction:** No screen was utilized.

## 6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/8 - 5/16" shim space. The exterior perimeter of the window was sealed with silicone.

Location	Anchor Description	Anchor Location
Head, sill and jambs	#8 x 1-1/2" Phillips flat head screws.	3" from each end and 12 - 14" on center through the frame.

**7.0 Test Results:** The temperature during testing was 28-29°C (82-85°F). The results are tabulated as follows:

**Test Specimen #1:**

Title of Test	Results	Allowed	Note
<b>Air Leakage,</b> Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	<0.05 L/s/m <sup>2</sup> (<0.0 cfm/ft <sup>2</sup> )	1.5 L/s/m <sup>2</sup> (0.3 cfm/ft <sup>2</sup> ) max.	1
<b>Water Penetration,</b> per ASTM E 547	N/A	N/A	3
<b>Uniform Load Deflection,</b> per ASTM E 330	N/A	N/A	3
<b>Uniform Load Structural,</b> per ASTM E 330	N/A	N/A	3
<b>Forced Entry Resistance,</b> per ASTM F 588, Type: D	Pass	No entry	
<b>Forced Entry Resistance,</b> per CAWM 301, Type: V	Pass	No entry	
<b>Thermoplastic Corner Weld</b>	Pass	Meets as stated	
<b>Optional Performance</b>			
<b>Water Penetration,</b> per ASTM E 547 at 580 Pa (12.11 psf)	Pass	No leakage	2
<b>Uniform Load Deflection,</b> per ASTM E 330 taken at left jamb of frame between mounting screws +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	0.0 mm (0.00") 0.3 mm (0.01")	Report Only	4,5,6
<b>Uniform Load Structural,</b> per ASTM E 330 taken at left jamb of frame between mounting screws +3240 Pa (+67.67 psf) -3240 Pa (-67.67 psf)	0.3 mm (0.01") 0.0 mm (0.00")	1.1 mm (0.04") max.	5,6

**7.0 Test Results:** (Continued)

**Test Specimen #2:**

<b>Title of Test</b>	<b>Results</b>	<b>Allowed</b>	<b>Note</b>
<b>Uniform Load Deflection,</b> per ASTM E 330 taken at left jamb of frame between mounting screws +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	0.0 mm (0.00") 0.0 mm (0.00")	Report Only	4,5,6
<b>Uniform Load Structural,</b> per ASTM E 330 taken at left jamb of frame between mounting screws +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	0.0 mm (0.00") 0.0 mm (0.00")	1.0 mm (0.04") max.	5,6

**Test Specimen #3**

<b>Title of Test</b>	<b>Results</b>	<b>Allowed</b>	<b>Note</b>
<b>Uniform Load Deflection,</b> per ASTM E 330 taken at left jamb of frame between mounting screws +1920 Pa (+40.10 psf) -1920 Pa (-40.10 psf)	0.3 mm (0.01") 0.0 mm (0.00")	Report Only	
<b>Uniform Load Structural,</b> per ASTM E 330 taken at left jamb of frame between mounting screws +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	0.3 mm (0.01") 0.0 mm (0.00")	1.0 mm (0.04") max.	



**7.0 Test Results:** (Continued)

**Test Specimen #3** (Continued)

Title of Test	Results	Allowed	Note
<b>Optional Performance</b>			
<b>Uniform Load Deflection,</b> per ASTM E 330 taken at left jamb of frame between mounting screws +2640 Pa (+55.14 psf) -2640 Pa (-55.14 psf)	0.3 mm (0.01") 0.0 mm (0.00")	Report Only	4,5,6
<b>Uniform Load Structural,</b> per ASTM E 330 taken at left jamb of frame between mounting screws +3960 Pa (+82.71 psf) -3960 Pa (-82.71 psf)	0.0 mm (0.00") 0.0 mm (0.00")	1.1 mm (0.04") 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: 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 not used to seal against air leakage during structural testing.*

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 B2427.01-301-47.

The service life of this report will expire on the stated Test Record Retention End Date, at which time such materials as drawings, data sheets, samples of test specimens, copies of this report, and any other pertinent project documentation, shall be discarded without notice.

If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) 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.

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Jeffrey T. Osugi  
Technician

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Leaton Kirk  
Director – Regional Operations

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

Appendix-A: Alteration Addendum (1)

Appendix-B: Drawings (6) Complete drawings packet on file with Architectural Testing, Inc.

## Appendix A

### Alteration Addendum

- Alteration #1:** Date – 08/09/11  
Cause for alteration – Test Specimen #1 failed water penetration test.  
Remedial action taken – Re sealed corners of glazing.
- Alteration #2:** Date – 08/09/11  
Cause for alteration – Test Specimen #1 failed structural load test.  
Remedial action taken – Reglazed.
- Alteration #3:** Date – 08/23/11  
Cause for alteration – Test Specimen #3 failed structural load test.  
Remedial action taken – Glazing sealant changed from Insta glaze to 3/8” wide x 1/16” high glazing tape.



Test Report No.: B2427.02-301-47  
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## **Appendix B**

### **Drawings**

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