



NATIONAL CERTIFIED TESTING LABORATORIES

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

TEST REPORT SUMMARY

Rendered to:

MI WINDOWS AND DOORS, INC.
650 West Market Street
Gratz, PA 17030

PRODUCT TYPE: PVC Casement

SERIES/ MODEL: "9770"

Title	Summary of Results
Primary Product Designator AAMA/WDMA/CSA 101/I.S.2/A440-08	Class LC-PG50: 914 x 1829 mm (36 x 72 in) C
Positive Design Pressure	+2400Pa (+50.13 psf)
Negative Design Pressure	-2400 Pa (-50.13 psf)
Operating Force (in motion)	9 N (2 lbf)
Air Infiltration	0.4 L/s/m ² (0.07 cfm/ft ²)
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)
Uniform Load Structural Test Pressure	±3600 Pa (75.19 psf)
Forced Entry Resistance	ASTM F588-07 - Grade 10 Pass

Reference must be made to Report No. NCTL-110-15580-3 dated 11/13/12 for complete test specimen description and data.

For National Certified Testing Laboratories

Robert WM. DeFayette
Field Testing/ Curtain Wall Coordinator



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STRUCTURAL TEST REPORT

NCTL-110-15580-3

REPORT TO:
MI WINDOWS AND DOORS, INC.
650 WEST MARKET STREET
GRATZ, PA 17030

REPORT NUMBER: NCTL-110-15580-3
REPORT DATE: 11/13/12
REVISION DATE: 02/21/13

PRODUCT:
"9770" PVC Casement



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Report Number NCTL-110-15580-3

Report Date 11/13/12
Revision Date 02/21/13

Report To MI Windows And Doors, Inc.
650 West Market Street
Gratz, PA 17030

Test Date 11/08/12
Expiration Date 11/08/16

Specification AAMA/WDMA/CSA 101/I.S.2/A440-08
NAFS North American Fenestration Standard/Specification for windows, doors, and skylights

Performance Results AAMA/WDMA/CSA 101/I.S.2/A440-08
Class LC-PG50: Size tested 914 x 1829 mm (36 x 72 in)

Description of Specimen Tested

Note: All dimensions are in the order (Width x Height x Thickness) unless otherwise noted.

Model/ Series "9770"

Configuration PVC Casement
This product is also labeled under the following names: 1675 and CT Case

Overall Frame Size 914.4 mm x 1828.8 mm (36" x 72")

Vent Size 874.71 mm x 1789.11 mm (34.4375" x 70.4375")

Viewing Area 742.95 mm x 1657.35 mm (29.25" x 65.25")

Frame & Sash Type Extruded vinyl

Joint Construction Frame & Vent
Mitered, welded

Glazing Components

Overall	19.05 mm (0.750") Nominal
Glass Thickness	(2) Lites of 3 mm (0.117") nominal annealed glass
Spacer Type/Size	13.11 mm (0.516") Polycarbonate-butyl composite spacer (Type P1-D)
Glazing System	Exterior glazed with an adhesive back-bedding and a snap-in single-leaf dual durometer glazing bead

Weatherstrip

Type	(1) Strip center fin
Size	8.89 mm (0.350") high
Location	Vent perimeter
Type	(2) Strips foam-filled bulb-vinyl
Location	Vent perimeter
Size	7.62 mm (0.300") High

Operating Hardware

Locks	
Type	Single handle (4)-point lock assembly with lock points
Location	Lock points located at 82.55 mm (3.75"), 730.25 mm (28.75"), 1130.3 mm (44.5") and 1612.9 mm (63.5") from the sill
Keeper	
Type	Metal
Location	Lock stile at the lock point locations
Roto-Operator	
Type	Standard
Location	379.4 mm (11") From the hinge jamb on the sill
Hinge Hardware	
Type	(3)-Bar
Location	Head/ top rail and sill/ bottom jamb

Auxiliary

Type	Plastic vent guide
Location	76.2 mm (3") From the lock jamb on the sill
Type	(2) Metal snubber
Location	596.6 mm (23.5") and 1206.5 mm (47.5") From the sill and the hinge jamb with corresponding snubbers located on the hinge stile

Reinforcement No reinforcement employed

Weep Description

Size	12.7 mm (0.5") x 3.18 mm (0.125") High
Location	76.2 mm (3") From each end of the bottom rail glazing bead

Interior/ Exterior Surface Finish

White vinyl (PVC)

Sealant

No apparent sealant applied

Insect Screen

No screen employed

Installation Method

The window was installed in a spruce-pine-fir wood buck and fastened through the frame with (1) #8 x 44.45 mm (1.75") pan head screw located at 76.2 mm (3") from each end and 40.6.4 mm (16") on center thereafter at the jambs. The exterior perimeter was sealed with a silicone sealant.

Test Results - AAMA/WDMA/CSA 101/I.S.2/A440-2008

<u>Paragraph</u>	<u>Test</u>
5.2	Operating Force and Force to Latch - Method B (Force Gauge) ASTM E2068-00(08)
	Initiate Motion = 27 N (6 lbf)
	Maintain Motion - Opening = 9 N (2 lbf)
	Maintain Motion - Closing = 9 N (2 lbf)
	Allowed (LC Rating ₀₈) = 30 N (7 lbf)
	Latches = 18 N (4 lbf)
	Allowed = 100 N (22.5 lbf)

NOTE: The results above represent the maximum force among all sash tested.

Paragraph Test
 5.3.2.1 Air Leakage Resistance
 ASTM E283-04(12)

The tested specimen meets or exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-2008 for air infiltration at 75 Pa (1.6 psf).

Maximum Allowable	=	1.5 L/s/m ² (0.3 cfm/ft ²)
Air Leakage Rate	=	0.4 L/s/m ² (0.07 cfm/ft ²)

Paragraph Test
 5.3.3 Water Penetration Resistance
 ASTM E547-00(09)

No Leakage after 4 cycles of 5 minutes at 580 Pa (12.11 psf)

Paragraph Test
 5.3.4.2 Uniform Load Deflection at Design Pressure
 ASTM E330-02(10)

No damage after positive	2400 Pa (50.13 psf) held for 10 seconds
No damage after negative	2400 Pa (50.13 psf) held for 10 seconds
Measured Deflection _{Positive}	= 1.02 mm (0.040 inches)
Measured Deflection _{Negative}	= 1.65 mm (0.065 inches)

Paragraph Test
 5.3.4.3 Uniform Load Structural Test
 ASTM E330-02(10)

No damage after positive	3600 Pa (75.19 psf) held for 10 seconds
No damage after negative	3600 Pa (75.19 psf) held for 10 seconds
Measured Permanent Set _{Positive}	= <0.03 mm (<0.001 inches)
Measured Permanent Set _{Negative}	= 0.51 mm (0.020 inches)
Maximum Allowed (0.4%)	= 2.44 mm (0.096 inches)

NOTE: Deflection and Permanent Set measurements taken on the hinge stile over a 609.6 mm (24") span.

Paragraph Test
 5.3.5 Forced Entry Resistance
 ASTM F588-07

Type B Window Assembly/Grade 10/ 20: Pass

<u>Test</u>	<u>Results</u>	<u>Allowed</u>
Disassembly	No Entry	No Entry
Lock Manipulation	No Entry	No Entry
Sash Manipulation	No Entry	No Entry
Test B1	No Entry	No Entry
Test B2	No Entry	No Entry
Test B3	No Entry	No Entry
Hardware Manipulation Test	No Entry	No Entry
Sash Manipulation Test	No Entry	No Entry

NOTE: 1. : T1 = 5 minutes, L1 = 667 N (150 lbf), L2 = 333 N (75 lbf), L3 = 111 N (25 lbf)
 2. Loads were held for 60 seconds.

<u>Paragraph</u>	<u>Test</u>
5.3.6.2	Thermoplastic Corner Weld Test (PVC products only) - Pass

<u>Paragraph</u>	<u>Test</u>
5.3.6.4.3	Sash Vertical Deflection Test
	Vertical load applied 200 N (45 lbf) held for 60 seconds
	Vertical Deflection Limit = 0.8 mm (0.03 inches)
	Measured Deflection = 1.5 mm (0.06 inches)

<u>Paragraph</u>	<u>Test</u>
5.3.6.6.2	Distributed Load Test
	Uniform load applied 300 Pa (6.2 psf) held for 10 seconds
	No failure or deformation = Pass

Testing performed at MI Windows and Doors, Inc.

This test report was prepared by National Certified Testing Laboratory (NCTL), for the exclusive use of the above named client and it does not constitute certification of this product. The results are for the particular specimen tested and do not imply the quality of similar or identical products manufactured or installed from specifications identical to the tested product. The test specimen was supplied to NCTL by the above named client. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen are to be drawn from the ASTM E330 test. Forced entry resistance test equipment used is in compliance with Section 7 of the ASTM F588-07 test method. Foam tape is mounted to the perimeter of the test buck prior to clamping to the test wall. NCTL is a testing lab and assumes that all information provided by the client is accurate and does not guarantee or warranty any product tested or installed. The results in this report are actual tested values and are applicable to the specimen tested only, using the components and construction methods described herein.

Detailed drawings were available for laboratory records and compared to the test specimen at the time of this report. Component drawings were reviewed for product verification. The bill of materials contains details with any deviations noted. Ambient conditions during the referenced testing are available upon request. A copy of this report along with representative sections of the test specimen will be retained by NCTL. This report does not constitute certification or approval of the product, which may only be granted by a certification program validator or recognized approval entity. All tests were conducted in full compliance with the referenced specifications and/or test methods. This report is the joint property of National Certified Testing Laboratories Inc. and the Client to whom it is issued. Permission to reproduce this report by anyone other than National Certified Testing Laboratories Inc and the Client must be granted in writing by both of the above parties. This report may not be reproduced, except its entirety, without the written consent of NCTL.

National Certified Testing Laboratories



Robert WM. DeFayette
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Robert H. Zeiders, P.E.
Vice-President Engineering & Quality

RWD/ hl
Attachments
Appendix A – Revision Summary
Appendix B – Drawings

Appendix A

Section 1:

Component Drawings, with Applicable Part Numbers, Manufacturing and Modeling Details, were Reviewed (as submitted) for Product Verification
(Reference: NCTL-110-15580-3)

See Attached Documentation;
any deviations noted.

Note: The above referenced component drawings along with representative sections of the test specimen will be retained per procedure by NCTL. This testing facility assumes that all information provided by the client is accurate.

Section 2:

<u>Identification</u>	<u>Date</u>	<u>Page & Revision</u>
Original Issue	11/13/12	Not Applicable
Revision 01	02/21/13	Appendix B page moved from report PDF to Prints PDF PDF page numbering and naming