

**AAMA/NWDA 101/I.S.2-97
TEST REPORT**

Rendered to:

ALUMIL USA, INC.

**SERIES/MODEL: M11000 Alutherm
TYPE: Aluminum In-swing Casement**

Title	Summary of Results
AAMA Rating	C-AW70 48 x 72
Air Infiltration	0.1 cfm/ft ²
Water Resistance Test Pressure	15.0 psf
Uniform Load Deflection Test Pressure	±70.0 psf
Uniform Load Structural Test Pressure	±105.0 psf
Forced Entry Resistance	Grade 10

Reference should be made to ATI Report No. 01-45119.02 for complete test specimen description and data.



Architectural Testing

AAMA/NWWDA 101/I.S.2-97 TEST REPORT

ALUMIL USA, INC.
262 East 3rd Street
Mt. Vernon, New York 10553

Report No: 01-45119.02
Test Dates: 06/03/03
Through: 06/06/03
Report Date: 06/20/03
Expiration Date: 06/06/07

Project Summary: Architectural Testing, Inc. (ATI) was contracted by Alumil S.A. and Alumil USA, Inc. to perform tests on a Model M11000, aluminum casement window. The sample tested successfully met the performance requirements for a C-AW70 48 x 72 rating.

Test Specification: The test specimen was evaluated in accordance with the following:

AAMA/NWWDA 101/I.S.2-97, *Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.*

AAMA/NWWDA 910-93, *Voluntary "Life Cycle" Specifications and Test Methods for Architectural Grade Windows and Sliding Glass Doors.*

Test Specimen Description:

Model: M11000 Alutherm

Type: Aluminum In-Swing Casement Window

Overall Size: 4' 0" wide by 6' 0" high

Vent Size: 3' 9-3/4" wide by 5' 9-3/4" high

Finish: All aluminum was mill finish.

Glazing Details: The glazing consisted of a 1" thick sealed insulating glass unit fabricated from two sheets of 1/4" thick, clear annealed glass and a desiccant-filled metal spacer system. The glass was channel glazed from the exterior onto an EPDM gasket and secured using snap-fit aluminum glazing beads with an EPDM seal. One #10 x 1-1/2" screw located at the midspan of each glazing bead was utilized to further secure the glazing beads.

Test Specimen Description: (Continued)**Weatherstripping:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
0.187" backed, custom EPDM dual leaf gasket	1 Row	Perimeter of vent
0.187" backed, custom EPDM single leaf gasket	1 Row	Perimeter of frame, exterior sill leg
EPDM central gasket	1 Row	Perimeter of frame, over top of thermal break

Frame Construction: The frame was constructed of thermally broken extruded aluminum. All corners were mitered, keyed, sealed, and staked.

Vent Construction: The vent was constructed of thermally broken extruded aluminum. All corners were mitered, keyed, sealed, and staked.

Hardware:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
Metal hinge	3	Hinge jamb, 3" from each end and one at midspan
Lock handle	1	Midspan of locking stile
Metal keepers	5	Midspan of top and bottom rail, 6", 40", and 66" from sill at locking stile
Vent lift block	1	Sill, 4" from the lock stile

Drainage:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
1" wide by 13/32" high weepslot with cover	3	Sill, 5" from each end and one at midspan
5/16" weephole	3	Bottom rail's glazing channel, 6" from each end and one at midspan

Test Specimen Description: (Continued)

Reinforcement: No reinforcement was utilized.

Installation: The window frame was installed into a wooden test buck from the exterior and sandwiched between 3/4" wide by 3/4" high blind stops and cap sealed using silicone. The blind stops were secured to the buck with #8 x 1-5/8" screws, 3" from each end and 8" on center.

Test Results:

The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
2.1.2	Air Infiltration (ASTM E 283-91) @ 6.24 psf (50 mph)	0.1 cfm/ft ²	0.1 cfm/ft ² max.

Note #1: The tested specimen meets the performance levels specified in AAMA/NWWDA 101/I.S.2-97 for air infiltration.

2.1.3	Water Resistance (ASTM E 331-00) WTP = 15.0 psf	No leakage	No leakage
-------	--	------------	------------

Life Cycle Testing (AAMA 910-93)

2.1.4	Vent Cycle Testing (first half) (1250)	Meets as stated	
-------	--	-----------------	--

Observation: Small amount of metal shavings at hinge stile and sill. Vent operates properly.

2.1.5	Locking Hardware Cycle Testing (first half) (1250 cycles)	Meets as stated	
-------	---	-----------------	--

Observation: Slight abrasions on lock keepers.

2.1.7	Misuse Testing		
2.5.2.1	Ventilator Torsion Testing	Meets as stated	
2.5.2.2	Ventilator Vertical Load Testing	Meets as stated	
2.1.8	Vent Cycle Testing (second half)	Meets as stated	

Test Results: (Continued)

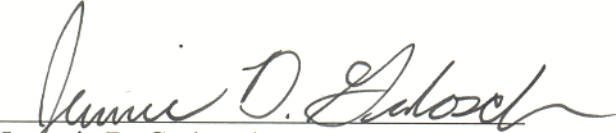
<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<u>Life Cycle Testing (AAMA 910-93)</u>			
2.1.9	Locking Hardware Cycle Testing (second half) (1250 cycles)	Meets as stated	
<i>Observation: Slight abrasion on lock keepers.</i>			
2.1.11	Air Infiltration (ASTM E 283-91) @ 6.24 psf (50 mph)	0.1 cfm/ft ²	0.1 cfm/ft ² max.
2.1.12	Water Resistance (ASTM E 331-00) WTP = 15.0 psf	No leakage	No leakage
2.1.4.1	Uniform Load Deflection (ASTM E 330-97) (Deflections reported were taken on the lock stile between keepers) (Loads were held for 52 seconds) @ 40.0 psf (positive) @ 40.0 psf (negative)	0.02" 0.02"	0.20" max. 0.20" max.
2.1.4.2	Uniform Load Structural (ASTM E 330-97) (Permanent sets reported were taken on the lock stile between keepers) (Loads were held for 10 seconds) @ 60.0 psf (positive) @ 60.0 psf (negative)	<0.01" <0.01"	0.07" max. 0.07" max.
2.1.8	Forced Entry Resistance (ASTM F 588-97) Type: B Grade: 10		
	Lock Manipulation Test	No entry	No entry
	Test B1	No entry	No entry
	Test B2	No entry	No entry
	Test B3	No entry	No entry
	Lock Manipulation Test	No entry	No entry
2.2.5.6.1	Vertical Deflection Test 60 lbf	0.11"	0.95"

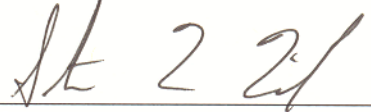
Test Results: (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<u>Life Cycle Testing (AAMA 910-93)</u>			
2.2.5.6.3	Torsion Test		
	20 lbf (interior)	1.94"	4.16"
	20 lbf (exterior)	2.06"	4.16"
<u>Optional Performance</u>			
4.4.1	Uniform Load Deflection (ASTM E 330-97) (Deflections reported were taken on the lock stile between keepers) (Loads were held for 52 seconds)		
	@ 70.0 psf (positive)	0.08"	0.20" max.
	@ 70.0 psf (negative)	0.04"	0.20" max.
4.4.2	Uniform Load Structural (ASTM E 330-97) (Permanent sets reported were taken on the lock stile) (Loads were held for 10 seconds)		
	@ 105.0 psf (positive)	<0.01"	0.07" max.
	@ 105.0 psf (negative)	<0.01"	0.07" max.

Detailed drawings, representative samples of the test specimen, and a copy of this report will be retained by ATI for a period of four years. The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specification. This report does not constitute certification of this product, which may only be granted by the certification program administrator. This report may not be reproduced, except in full, without the approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC:


Jeramie D. Grabosch
Technician


Steven M. Urich, P.E.
Senior Project Engineer

DOCUMENT CONTROL ADDENDUM #01-45119.00

Current Issue Date: 06/20/03

Report No.: 01-45119.01

Requested by: Jordan Siskos, Alumil USA, Inc.

Purpose: AAMA/NWWDA 101/I.S.2-97 testing of a Series/Model M11000, aluminum in-swing casement window.

Issued Date: 06/13/03

Comments:

Report No.: 01-45119.02

Requested by: Jordan Siskos, Alumil USA, Inc.

Purpose: Revise Report No. 01-45119.02.

Issued Date: 06/13/03

Comments: Changed Series/Model from M11000 to M11000 Alutherm. Made Changes to Glazing Details and Weatherstripping.