

**Summary of Test Results**

Product Manufacturer:	Merrill Millwork, Inc.
Product Type:	Clad Center Hinged Door
Product Series/Model:	Aluminum Clad Center Hinged Door (multi-Point)
ASTM E 283 ASTM E 330 ASTM E 548	Design Pressure +35 PSF -40 PSF
Test Completion Date:	08/15/08
Air Infiltration:	.02 cfm/ft <sup>2</sup>
Water Resistance Test Pressure:	4.5 psf
Uniform Load Deflection Test Pressure:	+35 -40 psf
Uniform Load Structural Test Pressure:	+52.5 -60 psf
Reference must be made to Report No.180-7711, dated 08/15/08 for complete test specimen description and detailed test results.	

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**STORK® TWIN CITY TESTING**  
**115 S. 84<sup>th</sup> Ave.**  
**Wausau, WI 54401**

**IN-PLANT TESTING OF A ALUMINUM CLAD CENTER  
HINGED SWING DOOR 77x82 (multi-point)**

**MANUFACTURED BY  
MERRILL MILLWORK, INC.**

**Prepared for:  
MERRILL MILLWORK, INC.**  
**1300 West Taylor Street**  
**Merrill, WI 54452**

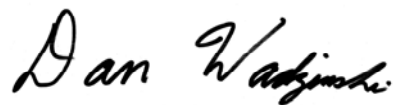
Test Dates: 08/15/08  
Record Retention Date: 08/15/12

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The test results contained in this report pertain only to the specimens tested and not necessarily to all similar products.

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**IN-PLANT TESTING OF AN ALUMINUM CLAD CENTER HINGED SWING  
DOOR**

**INTRODUCTION:**

This report presents the results of in-plant testing conducted on an Aluminum Clad Center Hinged Door manufactured by Merrill Millwork, Inc. of Merrill, Wisconsin. This work was requested and authorized by Merrill Millwork, Inc with testing conducted on August 15, 2008 at Merrill Millwork testing facility. The purpose of the testing was to determine the performance of the door for air infiltration, water resistance, and structural integrity.

**TEST RESULTS SUMMARY:**

The door described herein meets or exceeds the following specifications when tested to a design pressure of +35 psf and -40 psf:

<b>ASTM E 283</b>	1.57 psf
<b>ASTM E 330</b>	
Uniform load deflection pressure	+35 psf, -40 psf
Uniform load structural pressure	+52.5 psf, -60 psf
<b>ASTM E 547</b>	4.5 psf

**SAMPLE DESCRIPTION:**

Overall Unit Size:	1956mm (76.88") wide x 2083mm (82.13") high
Overall Unit Area:	4.08m <sup>2</sup> (43.84 ft <sup>2</sup> )
Unit Door Panel Size:	991mm (39") wide x 2032mm (80") high
Unit Crack length:	10.06m (33 ft)
Finish:	Natural wood interior and aluminum clad exterior

**Glazing:** The door utilized nominal 22mm (7/8") insulated glass comprised of nominal 3.1mm (1/8") thick clear tempered sheets measuring 741mm (29-3/16") wide x 1724mm (67-7/8") high, separated by an aluminum spacer system. The glass was set from the interior against a continuous back bed of silicone sealant. The interior glazing beads were secured with 32mm (1-1/4") T-nails spaced 229mm to 356mm (9" to 14") on center. Glass setting blocks were used around the glass to panel.

**Spacer Type:** Aluminum

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**SAMPLE DESCRIPTION (CON'T):**

**Frame Construction:** The molded, finger jointed pine frame members were square cut, dadoed, butted, sealed, and secured with two #6 x 51mm (2") PFH screws per corner at the head and four #6 x 51mm (2") PFH screws at the sill corners. Extruded aluminum corners at the head were mitered, keyed, and joined with one #6 x 35mm (1-3/8") PFH SS screw per corner. The frame sill is comprised of fiberglass and plastic end plugs. Extruded aluminum cladding was press fit over the wood frame members.

**Panel Construction:** The panel members consisted of finger jointed pine stiles and molded pine rails with an LVL lock side stile. The corners were square cut and doweled at the corners. There were 3 dowels per corner. Extruded aluminum was snap fit onto the wood members then stapled. The stationary panel is then attached to the frame and mullion with six (6) 1/4 20 x 1-5/8" stationary sash bolts (three per side).

**Mull Construction:** A pine mull with press fit extruded aluminum is siliconed and attached to the head with one #8 x 64mm (2-1/2") drywall screw. The sill utilizes a mull connector that is attached with one #6 x 51mm (2") drywall screw. The bottom of the mull is then siliconed to the mull connector.

**Weatherstripping:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
.175" thick foam filled flexible leaf with fin	1 each	Sill
.170" thick foam filled flexible leaf	1 each	Head and side jambs

**Hardware:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
3-point lock w/ dead bolt	1 set	Active panel
Standard 3.5" Butt hinge	4 ea.	10", 31-1/2", 51" and 73" from sill.

**Drainage:** Sloped sill and weep slots at both ends of sill assembly.

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**SAMPLE DESCRIPTION (CON'T):**

**Installation:** The door was installed into a nominal 51mm x 254mm (2x10") SPF wood test buck with a 6mm (1/4") gap between the frame and rough opening and then installed into a metal frame. The entire perimeter gap between the window frame and test buck was closed off by an applied vinyl nailing flange at the head and side jambs secured to the buck with 51mm (2") roofing nails spaced 89mm (3-1/2") on center with silicone sealant applied over the nail heads. The sill was set into a bed of silicone sealant

**TEST RESULTS:**

<b><u>Paragraph</u></b>	<b><u>ACTUAL</u></b>	<b><u>REQUIREMENT</u></b>
<b><u>ASTM E 283</u></b> <b><u>Air Infiltration</u></b>		
Chamber Pressure, Pa (psf)	+75 (+1.57)	
L/s/m <sup>2</sup> (cfm/ft <sup>2</sup> )	0.1 (0.02)	1.5 (.30) maximum
<b><u>ASTM E 547</u></b> <b><u>Static Water Penetration</u></b>		
Chamber Pressure, Pa (psf)	+220 (4.5)	---
Pressurized Duration, min.	5.0	5.0
Unpressurized Duration, min.	1.0	1.0
Cycles	4	4
Water Penetration	NONE	No water shall flow over the interior face.
<b><u>ASTM E 330</u></b> <b><u>Uniform Load Deflection</u></b>		
Chamber Pressure, Pa (psf)	+1680 (+35)	+1680 (+35)
Duration, sec.	60.00	10.00
Meeting Rail Span, mm (in.)	1981 (78)	----
Deflection, mm (in.)	4.03 (.159)	
Chamber Pressure, Pa (psf)	-1920 (-40)	-1920 (-40)
Duration, sec.	60.00	10.00
Deflection, mm (in.)	5.03 (.198)	----
<b><u>Structural Load Test</u></b>		
Chamber Pressure, Pa (psf)	+2520 (+52.5)	+2520 (+52.5)
Duration, sec.	10.00	10.00
Perm Set, mm (in.)	0.03 (.001)	<0.4%L = 7.92 (.312) max
Chamber Pressure, Pa (psf)	-2880 (-60)	-2880 (-60)
Duration, sec.	10.00	10.00
Perm Set, mm (in.)	0.28 (.011)	<0.4%L = 7.92 (.312) max

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The tests were conducted in accordance with ASTM test procedures and the results were compared to the performance requirements.

**REMARKS:**

The horizontal and vertical cross-section drawings of the test specimen were reviewed by Stork-Twin City Testing, and those drawings matched the tested specimen. The tested window remained in the custody of Stork-Twin City Testing after testing was completed. Stork-Twin City Testing will retain detailed drawings, corner samples, and a copy of this report. The above results were obtained by using the designated test methods and they indicate compliance with the performance requirements of the above referenced guidelines. Certification of this product may only be granted by a certification administrator.