

PROJECT NUMBER: 180-6352

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**STORK® TWIN CITY TESTING
723 S. 72nd AVE STE B
Wausau, WI 54401**

**LABORATORY TESTING OF
4-0 X 6-5 VINYL PREMIUM SINGLE HUNG
MANUFACTURED BY
HURD MILLWORK COMPANY**

**Prepared for:
HURD MILLWORK COMPANY
Attn: Mr. Art Kuss
520 South Whelen Street
Medford, WI 54451**

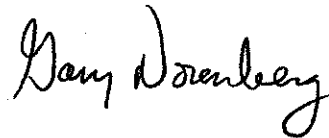
Test Date: 04/15/02
04/19/02
Expiration Date: 04/15/2006
DP15 Rating: Air .25 cfm/ft2
Water 4.5 psf
Structural 22.5 psf

Prepared By:

Reviewed By:



John R. Bordagaray
Office Manager (Wausau)
Product Testing Department
Telephone: (715) 848-3935



Gary Norenberg
Engineering Technician
Product Testing Services
Telephone: (715) 848-3935

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

LABORATORY TESTING OF A 4-0 X 6-5 VINYL PREMIUM SINGLE HUNG

INTRODUCTION:

This report represents the results of laboratory testing conducted on a Vinyl premium Single Hung manufactured by Hurd Millwork Company. This work was requested and authorized by Mr. Art Kuss of Hurd Millwork with testing conducted on April 15 and 19, 2002.

The purpose of the testing was to determine the performance of the window for air infiltration, water resistance, and structural integrity when tested in accordance with ASTM procedures included in ANSI/AAMA/WDMA 101/I.S.2-97 "*Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors*".

TEST RESULTS SUMMARY:

The window described herein meets performance specifications for ANSI/AAMA/WDMA 101/I.S.2-97 H-R15 48X 77 .

Design Pressure Rating: For use in locations adhering to the S.B.C.C.I., S.F.B.C., S.F.B.C. Broward Edition, and where the pressure requirements as determined by ASCE 7 minimum design loads for buildings and other structures does not exceed design pressure ratings listed above.

SAMPLE DESCRIPTION:

Overall Size: 47-1/2" wide by 76-1/2" high

Unit Area: 25.23 ft²

Finish: White vinyl

Glazing: The panels utilized 3/4" thick sealed insulating glass composed from two sheets of 1/8" clear annealed glass separated by a nominal 1/2" intercept metal spacer. The glass was set from the exterior against a 9/16" wide double sided adhesive closed cell foam tape. Glass setting block were used. Silicone was applied at the corners.

SAMPLE DESCRIPTION (CON'T):

Frame Construction: Frame corners were miter cut and welded. The stationary sash was snap-fit to the frame and contained aluminum for reinforcement at the check rail. The stationary sash top rail and stiles were set on rope foam on the frame head and jambs and silicone sealant was applied at the top corners. The fixed meeting checkrails had 2 #6 x 2-3/4" screws per end.

Sash Construction: The sash corners were miter cut and welded.

SAMPLE DESCRIPTION (CON'T):

Screen Construction: The screen frame was roll-formed aluminum with plastic corner keys. Fiberglass screen cloth was attached to the frame with a rubber spline.

Installation: The test specimen was installed within a 1 1/2" by 6" wood buck. The window frame was secured to the wood buck by utilizing the vinyl nailing fin with 2" galvanized roofing nails spaced 4" on center and sealed with a quality silicone sealant.

Weatherstripping:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
0.250" high pile with center fin by 0.187" backing	1 row	Operating sash exterior face head and stiles
0.250" high pile with center fin by 0.187" backing	1 row	Operating sash interior perimeter head and stiles
.500" Bulb weatherstrip	1 row	Operating sash at sill
0.250" high pile with center fin by 0.187" backing	1 row	Fixed sash interior at meeting rail
.300" rope foam	1 row	Stiles and head rail

Hardware:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
Block and tackle balance	2	1 per jamb
Metal lock with keeper	2	6" on center from each edge
Plastic tilt latches	2	1 each side on top of operating sash
Metal pivot pins	2	1 each side jamb of operating sash at sill

Drainage:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
3/8" by 1/4" weep hole	4	Sill exterior and inner cavity leg, 1-1/2" from each end
5/8" by 1/4" weep hole	2	Sill to hollow below, 3" from each jamb

TEST RESULTS:

	<u>ACTUAL</u>	<u>PERFORMANCE REQUIREMENTS</u>
<u>Air Infiltration</u>		
Chamber Pressure, psf	+1.57	+1.57
Unit Area, ft ²	25.23	
Air Infiltration, cfm	5.81	
cfm/ft ²	0.23	0.30 maximum
<u>Water Penetration Test with and without screens</u>		
Chamber Pressure, psf	4.5	2.86
Water Flow Rate, gal/hr/ft ²	5.00	5.00 minimum
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.
<u>Structural Load Test</u>		
Chamber Pressure, psf	+15	---
Duration, sec.	60	---
Max deflection, in.	0.225	---
Chamber Pressure, psf	-15	---
Duration, sec.	60	---
Max deflection, in.	0.242	---
Chamber Pressure, psf	+22.5	+22.5
Duration, sec.	10.00	10.00
Permanent Set, in.	0.005	<0.4%L = 0.176 maximum
Chamber Pressure, psf	-22.5	-22.5
Duration, sec.	10.00	10.00
Permanent Set, in.	0.027	<0.4%L = 0.176 maximum
<u>Operating Force</u>		
Opening	15lbs	30lbs
Closing	25lbs	30lbs
<u>Corner weld test</u>	Pass	No break Along the entire weld line

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TEST RESULTS (CON'T):

Forced Entry Resistance (ASTM F588-97, performance grade 10)

<u>Test</u>	<u>Load (lbs)</u>	<u>Duration (min)</u>	<u>Performance</u>
Lock Manipulation	---	5	Satisfactory (PASS)
A1	75	1	Satisfactory (PASS)
A2	150, 75	1	Satisfactory (PASS)
A3	150, 75	1	Satisfactory (PASS)
A4	150, 75	1	Satisfactory (PASS)
A5	150, 75	1	Satisfactory (PASS)
A7	150, 75, 25	1	Satisfactory (PASS)
Lock Manipulation	---	5	Satisfactory (PASS)

Deglazing

ACTUAL

PERFORMANCE
REQUIREMENTS

Deglazing bite @ 70 lbs
Deglazing bite @ 50 lbs

0.03"
0.03"

0.50"
0.50"

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TEST PROCEDURE:

The tests were conducted in accordance with ASTM and ANSI/AMMA/WDMA 101/I.S.2-97 test procedures and the results were compared to the performance requirements.

Air Infiltration

ASTM:E283-91, Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.

Water Penetration

ASTM:E547-96, Standard Test Methods for Water Penetration of Exterior Windows, Curtain Wall and Doors by Cyclic Static Air Pressure Difference.

Physical Load Testing

ASTM:E330-96, Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Differences.

Deglazing Test

AAMA/WDMA:I.S.2-97(2.2.19.5.2), Deglazing Test for Sliding Glass Doors.

Operating Force Test

AAMA/WDMA:I.S.2-97(2.2.19.5.1), Operating Force Test for Sliding Glass Doors.

Forced Entry Resistance

ASTM:F842-97, Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing.

REMARKS:

The tested window remained in the custody of the manufacturer after testing was completed. Twin City Testing will retain detailed drawings 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.