



Intertek Testing Services ETL SEMKO

REPORT NO: 281-1269-1
CLIENT NO: L09215
DATE: August 14, 2000

DESCRIPTION: **Performance Evaluation of a Vinyl Window**

CLIENT: **Remodelers Supply Center**
2500 North Pulaski Road, Chicago, IL, 60639

ATTENTION: Ella Karpowicz

Introduction

This report covers testing carried out on a window submitted July 7, 2000 for performance evaluation. Testing was performed in accordance with AAMA/NWWDA 101/I.S. 2-97.

Description

Designation: Royal 565 Series Single Slider.

Type: Vinyl, horizontally sliding lift out window, having one operating sash and one fixed lite.

Condition: New and undamaged.

Frame: Extruded vinyl frame members having welded corners. Vinyl sill raiser was fitted into the frame sill track. The sill raiser was notched at both ends measuring 7/8" long by 1/4" high (22.2 mm by 6.4 mm). The mullion was reinforced with an extruded aluminum channel measuring 43-1/2" long by 11/16" wide by 13/16" deep by .086" thick (1105 mm by 17.5 mm by 20.6 mm by 2.2 mm). Ends of the mullion were fastened with two #8 x 3" (76.2 mm) long pan head screws through each jamb and sandwich sealed with silicone on the interior during assembly and needle beaded on the exterior joints after assembly.

Overall Size: 70" wide by 49" high
(1778 mm by 1245 mm)

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Description (contd)

Sash: Extruded vinyl sash members having welded corners. A vinyl interlock leg was notched out at a length of 3-7/8" (98.4 mm) at the locking hardware. The lock stile was reinforced with extruded aluminum channel measuring 43-1/2" long by 1/2" wide by 3/4" deep by 0.063" thick (1105 mm by 12.7 mm by 19.1 mm by 1.6 mm). The pull stile was reinforced with a extruded aluminum hollow section measuring 43-1/2" long by 31/64" square (1105 mm by 12.3 mm square). Two cam type locks (Allan Stevens Part # 9324) installed 10-1/2" (268 mm) from the ends of the interior interlock stile engaged keepers (Allan Stevens Part # 9857) installed on the mullion. Each lock or keeper was fastened to their respective member using two #6 x 1" (25.4 mm) long flathead screws. Two roller assemblies on the sill rail (Ashland Part# 79523) were fitted into slots located 4" (102 mm) on center from each corresponding stile.

Overall Size: 34" wide by 45-1/2" high
(864 mm by 1156 mm)

Glazing Method:

Sash: Laid in glazed on 1/16" by 1/2" (1.6 mm by 12.7 mm) double sided adhesive glazing tape (Tom Broun Part# F932) on the interior. As well, a heel bead of silicone was placed on the exterior with the exception of 1" (25.4 mm) up each stile and 3" (76.2 mm) cross the sill rail to allow drainage in the glazing cavity and vinyl stops. Three neoprene setting blocks, measuring 3/4" wide 1" long by 1/8" thick, (19.1 mm by 25.4 mm by 3.2 mm) were placed at third points along each sash member.

Fixed Lite: Laid in glazed on 1/16" by 1/2" (1.6 mm by 12.7 mm) double sided adhesive glazing tape (Tom Broun Part# F932) on the interior. As well, a heel bead of silicone was placed on the exterior with the exception of 1" (25.4 mm) up each stile and 3" (76.2 mm) cross the sill rail to allow drainage in the glazing cavity and vinyl stops. Three neoprene setting blocks, measuring 3/4" wide 1" long by 1/8" thick, (19.1 mm by 25.4 mm by 3.2 mm) were placed at third points along each sash member.

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Description (contd)

Glazing: Factory sealed glazing units having two sheets of 7/64" (3 mm) glass, and a 5/8" (15.9 mm) air space and metal spacer.

Igmac Identification: HCP 64 IGCC CBA 98.

Screen: Roll formed aluminum screen members having fiberglass mesh and corners supported by aluminum corner keys.

Retention Method: Screen rails engaged tracks on the frame sill and mullion and two leaf springs at the head rail.

Overall Size: 32-3/16" wide by 43-3/4 " high
(818 mm by 1111 mm)

Weatherstripping:

Sash: The head and sill rail and the jamb stile were single weatherstripped on the exterior edges with finned woven pile (Schlegel Part # 7924-187). The head and sill rails of both sash were single weatherstripped on the interior face with finned woven pile (Schlegel Part # 7924-187). The jamb stiles were single weatherstripped on the interior face with finned woven pile (Schlegel Part # 7924-187). The interlock stile was single weatherstripped with finned woven pile (Schlegel Part # 7924-187) under the interlock leg.

Frame: The frames head sill and jambs were single weatherstripped with fin woven pile (Schlegel Part # 7924-187).

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Description (contd)

Dust Plugs: One open celled dust plug measuring 1-1/2" long by 1-1/4" wide by 1" thick (38.1 mm by 31.8 by 25.4 mm) was fitted into the sill track, on top of the sill raiser, at the intersection of the sill and the fixed lite jamb.

Weep Holes: Two 1/2" (12.7 mm) long by 13/64" (5.16 mm) wide slots drained the sash glazing cavity to the sill. One elliptical shape slot measuring 1/2" (12.7 mm) long by 13/64" (5.16 mm) wide drained the glazing cavity of the fix lite to the frame cavity. Two slots 3/4" wide by 3/16" high drained the sill track to the frame cavity. Two 1" wide by 3/16" high slots complete with weep covers (Ashland Part# 66900) drain the frame cavity to the exterior. Two 7/16" wide by 5/16" high slots drain the sill screen track to the exterior.

Drawings:

Cross Sections: Dominion Plastics Inc. drawings titled: "565-650 Single Slider Lift-Out Window, Vertical Section" and "Single Slider Lift-Out Window Horizontal Section", both dated 10-Aug-99.

Member Details: Dominion Plastics Inc. Die Drawing Numbered: VS565, VS652, VS650, VS649, VS648, D211, D348.

A copy of the above drawings stamped "Intertek Testing Services NA Ltd." is enclosed with this report.

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Testing

Operating Force Test

Tested: July 8, 2000

The force required to operate the sash was measured and found to be as follows;

Description of Force	Maximum Measured		Maximum Allowable	
	N	(lbs)	N	(lbs)
Maintain motion opening/closing	35	(7.9)	90	(20)

The test specimen meets the performance level specified in HS-Class for operating force.

Air Leakage Test

Tested: July 8, 2000

Air infiltration testing was performed at a pressure differential of 1.56 psf (75 Pa) in accordance with the procedure outlined in A.S.T.M. E283. A Meriam Instrument Co. laminar flow element, Model No. 50MW20-2, Serial No. 729710-D1, an Ashcroft 0-5" W.C. to 0-5V DC pressure transducer Model No. XLDP, Serial No. 20227-101, and a calibrated Sciometric Instruments System 200 analog to digital converter, were used to measure the volume of air leakage through the window.

Based on a corrected leakage rate of 3.4 cfm (5.78 m³/h), and a product area of 23.86 ft² (2.217 m²), the air leakage rate was calculated to be 0.142 cfm/ft² (2.607 m³/h/ m²) of product area.

The test specimen exceeds the performance level specified in HS-Class for air infiltration, with a specified maximum allowable leakage of 5.41 m³/h/ m² (0.3 cfm/ ft²).

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Testing (contd)

Water Resistance Test

Tested: July 11, 2000

Water resistance testing was performed on the sample in accordance with the procedure outlined in A.S.T.M. E547, using pressure differential of 6.75 psf (330 Pa). A completed test period consisted of four cycles each having 5 minutes with the pressure applied and 1 minute with the pressure released during which the water spray was maintained.

No leakage was observed at the 6.75 psf (330 Pa) pressure level. The test specimen meets the performance level specified in HS-R45 for water resistance

Uniform Load Structural Test

Tested: August 7, 2000

The window unit was subjected to a uniform load structural test in accordance with the procedure outlined in A.S.T.M. E330 using a positive and negative pressure of 67.5 psf (3240 Pa) as specified in the standard for the HS-R45 rating level.

Deflections were measured on the interlock.

No breakage or damage that would impair the performance of the window was observed at the 67.5 psf (3240 Pa) pressure level.

The maximum allowable residual deflection was 0.4% of the span (0.152 in, 3.86 mm).

Rating	Test Pressure		Net Mid Span Residual Deflection	
	Pa	(psf)	mm	(in)
HS-R45	+3240	(+67.5)	0.55	(0.022)
	-3240	(-67.5)	0.55	(0.022)

Residual deflections were within the maximum allowable at the 3240 Pa (67.5 psf) pressure level.

The test specimen meets the performance level specified in HS-R45 for the uniform load structural test.

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Testing (contd)

Deglazing Test

Tested: August 8, 2000

Deglazing tests were carried out on the sash members in accordance with the procedure outlined in A.S.T.M. E987. The maximum allowable degree of deglazing is the original measured glazing bite.

Results were as follows;

Member	Load N (lbs)	Measured Deglazing mm (in)	Maximum Allowable mm (in)
Pull Stile	320 (70.0)	1.0 (0.039)	12.7 (0.50)
Interlock Stile	320 (70.0)	0.9 (0.036)	12.7 (0.50)
Head Rail	230 (50.0)	1.0 (0.040)	12.7 (0.50)
Sill Rail	230 (50.0)	1.0 (0.041)	12.7 (0.50)

The test specimen meets the performance level specified for the deglazing test.

Corner Weld Test

Tested: August 8, 2000

Corner weld tests were carried out on the frame corners and the sash corners in accordance with the procedure outlined in Appendix A of the Standard. When loaded to failure, the break shall not extend along the entire weld line.

Frame Corners

When loaded to failure, the break produced in each corner specimen did not extend along the entire weld line.

Sash Corners

When loaded to failure, the break produced in each corner specimen did not extend along the entire weld line.

The test specimen meets the performance level specified for the corner weld test.

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Testing (contd)

Forced-Entry Resistance

Tested: August 7, 2000

The window was installed into a wood test buck as supplied by the manufacturer and mounted in a steel test frame. The test unit was subjected to the resistance to forced entry test in accordance with the procedure outlined in A.S.T.M. F588.

1.0 Sample Preparation: During time T1 the fasteners on the exterior sash interlock were removed, followed by the interlock cover/leg. One fastener from each tilt pin was then removed.

2.0 Lock Manipulation Test: During time T1 entry was not gained.

3.0 Static Load on Sash and Locking Device Strength Resistance Test

Test	Load Description	Comments
3.1	L1 on lock device(s) in opening direction.	No entry
3.2	L1 on lock device(s) in opening direction. L2 on interlock towards the interior.	No entry
3.3	L1 on lock device(s) in opening direction. L2 on interlock towards the exterior.	No entry
3.4	L1 on lock device(s) in opening direction. L2 on stile towards the interior.	No entry
3.5	L1 on lock device(s) in opening direction. L2 on stile towards the exterior.	No entry

The sash was lifted vertically to within the confines of the frame for test 3.6 and 3.7.

Test	Load Description	Comments
3.6	L1 on lock device(s) in opening direction. L2 on interlock towards the exterior. L3 outward on interlock at sill rail.	No entry
3.7	L1 on lock device(s) in opening direction. L2 on interlock towards the interior. L3 inward on interlock at sill rail.	No entry

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Forced-Entry Resistance (contd)

4.0 Lock Manipulation Test: During time T1 entry was not gained.

Loads: T1 = 5 minutes
L1 = 666 N (150 lbs)
L2 = 333 N (75 lbs)
L3 = 111 N (25 lbs) towards interior.

Conclusions

The window unit described herein met the air infiltration test HS-class rating, water resistance test HS-R45 rating, uniform load structural test HS-R45 rating, operating force test (Performance Level 10) HS-class rating, deglazing test, corner weld test, and forced entry resistance test performance requirements of AAMA/NWDA 101/I.S. 2-97. The window unit achieves an overall rating of HS-R45.

Tested and reported by: Michael MacDonald

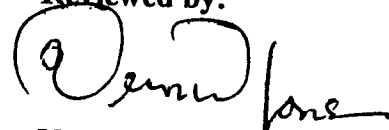
Respectfully submitted,

Intertek Testing Services NA Ltd.



Michael MacDonald
Physical Testing Services

Reviewed by:



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MGM:mgm
Encl.
2cc Client