

REPORT

Report No.: B9574.01-501-47

Rendered to:

VEKA INC.
Fombell, Pennsylvania

PRODUCT TYPE: PVC Double Hung Window
SERIES/MODEL: DH93WW / Slope / Unequal Glass

SPECIFICATION: AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

Title	Summary of Results	
	Test Specimen #1	Test Specimen #2
Primary Product Designator	Class CW-PG40 1422 x 2311 (56 x 91) - H	Class CW-PG60 1270 x 1930* (50 x 76*) - H
Design Pressure	±1920 Pa (±40.10 psf)	±3120 Pa (±65.16 psf)
Air Infiltration	0.7 L/s/m ² (0.13 cfm/ft ²)	0.4 L/s/m ² (0.07 cfm/ft ²)
Water Penetration Resistance Test Pressure	330 Pa (6.90 psf)	440 Pa (9.20 psf)

Test Completion Date: 05/11/2012

Reference must be made to Report No. B9574.01-501-47, dated 05/22/12 for complete test specimen description and detailed test results.

1.0 Report Issued To: Veka Inc.
100 Veka Drive
Fombell, Pennsylvania 16123-0250

2.0 Test Laboratory: Architectural Testing, Inc.
1140 Lincoln Avenue
Springdale, Pennsylvania 15144
724-275-7100

3.0 Project Summary:

3.1 Product Type: PVC Double Hung Window

3.2 Series/Model: DH93WW / Slope / Unequal Glass

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). The specimens tested successfully met the performance requirements for the following ratings: Test Specimen #1: **Class CW-PG40 1422 x 2311 (56 x 91) - H**; Test Specimen #2: **Class CW-PG60 1270 x 1930* (50 x 76*) - H**.

General Note: An asterisk () next to the size designation indicates that the size tested for optional performance was smaller than the Gateway test size for the product type and class.*

3.4 Test Dates: 05/10/2012 - 05/11/2012

3.5 Test Record Retention End Date: All test records for this report will be retained until May 22, 2016.

3.6 Test Location: Veka Inc. test facility in Fombell, Pennsylvania. Calibration of test equipment was performed by Architectural Testing in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

3.7 Test Sample Source: The test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix B. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Doug Merry	Veka Inc.
Cornell Charles	Veka Inc.
Joseph Allison	Architectural Testing, Inc.

4.0 Test Specification(s):

AAMA/WDMA/CSA 101/1.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

5.0 Test Specimen Description:

5.1 Product Sizes:

Test Specimen #1:

Overall Area: 3.3 m ² (35.4 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1422	56	2311	91
Exterior sash size	1308	51-1/2	1143	45
Interior sash size	1334	52-1/2	1143	45
Screen size	1422	51-1/2	1130	44-1/2

Test Specimen #2:

Overall Area: 2.5 m ² (26.4 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1270	50	1930	76
Exterior sash size	1156	45-1/2	953	37-1/2
Interior sash size	1181	46-1/2	953	37-1/2
Screen size	1156	45-1/2	940	37

The following descriptions apply to all specimens.

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, jambs	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded

5.0 Test Specimen Description: (Continued)

5.3 Sash Construction:

Sash Member	Material	Description
All rails, and stiles	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded

5.4 Weatherstripping:

Description	Quantity	Location
0.187" wide by 0.270" high center fin pile	3 Rows	All sash stiles,
0.187" wide by 0.270" high center fin pile	1 Row	Head, sill, lock rail, exterior meeting rail (exterior), bottom rail
0.187" wide by 0.380" high center fin pile	2 Rows	Exterior meeting rail (interior)
3/4" wide by 1-1/4" tall by 0.500" high adhesive backed pile pad	2	Lock rail, one at each end
1/2" wide by 1/2" tall by 0.250" high adhesive backed pile pad	2	Exterior meeting rail (interior), one at each end
0.187" wide by 0.450" high foam-filled vinyl jacket bulb	1 Row	Bottom rail

5.5 Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1" IG	Rectangular shaped steel, single sealed	1/8" annealed	1/8" annealed	The glass was set from the exterior against a silicone sealant and secured with rigid vinyl glazing beads.

5.0 Test Specimen Description: (Continued)

5.5 Glazing: (Continued)

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Specimen #1 top sash	1	1210 x 1045	47-5/8 x 41-1/8	5/8"
Specimen #1 bottom sash	1	1235 x 1045	48-5/8 x 41-1/8	5/8"
Specimen #2 top sash	1	1057 x 854	41-5/8 x 33-5/8	5/8"
Specimen #2 bottom sash	1	1083 x 854	42-5/8 x 33-5/8	5/8"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot with flap	1-5/16" wide by 5/16" high	2	Exterior sill face, one 4" in from each end.
Weepslot	1" wide by 1/4" high	2	Intermediate sill wall, one at each end.
Weepslot	1-1/4" deep by 7/8" wide	2	Sill/jamb intersection, one at each end
Weepslot	3/82" wide by leg height	2	Sill sash retainer leg, one at each end

5.7 Hardware:

Description	Quantity	Location
Metal cam lock and keeper	2	Lock rail, one 9" from each end with corresponding metal keeper on the exterior meeting rail.
Locking metal surface mount tilt latch	2	Top corners of bottom sash
Recessed tilt latch	2	Top corners of top sash
Molded plastic jamb clip for tilt latch (Specimen #2)	2	One at each jamb, at the sash tilt latch location.
Metal jamb clip for tilt latch (Specimen #1)	2	One at each jamb at the sash tilt latch location.
Spring balance system with locking pivot shoes (Specimen #1)	2	One per jamb
Constant force balance system with locking pivot shoes (Specimen #2)	2	One per jamb
Metal interlocking tilt pin	4	Bottom corners of sash

5.0 Test Specimen Description: (Continued)

5.8 Reinforcement:

Drawing Number	Location	Material
RFSE9346bSOM	Lock rail	Roll-formed steel
RFSE9344SOM	Exterior meeting rail	Roll-formed steel
RFSE9345AOM	Top rail, bottom rail, all stiles	Extruded Aluminum

5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Type	Mesh Attachment Method
Roll-formed aluminum	Square-cut and secured with snap-in plastic corner keys	Fiber	Flexible vinyl spline

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/8" shim space. The exterior perimeter of the window was sealed with a silicone sealant. The sill was set onto a silicone sealant

Location	Anchor Description	Anchor Location
Head	#10 x 3" truss head screws	Four total, evenl space and beginning 4" in from each end.
Jambs	#10 x 3" truss head screws	Seven per jamb, evenly spaced, with and beginning 4" from the top and bottom, and one at midspan through the tilt latch clip.

7.0 Test Results: The temperature during testing was 22°C (68°F). The results are tabulated as follows:

Test Specimen #1:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 111 N (25 lbf) Maintain motion: 111 N (25 lbf) Latches: 9 N (2 lbf) Locks: 53 N (12 lbf)	Report Only 200 N (45 lbf) max. 100 N (22.5 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.7 L/s/m ² (0.13 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Water Penetration, per ASTM E 547	N/A	N/A	3
Uniform Load Deflection, per ASTM E 330	N/A	N/A	3
Uniform Load Structural, per ASTM E 330	N/A	N/A	3
Forced Entry Resistance, per ASTM F 588, Type: A - Grade: 10	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Deglazing, per ASTM E 987 Operating direction, 320 N (72 lbf) Remaining direction, 230 N (52 lbf)	Pass Pass	Meets as stated Meets as stated	

7.0 Test Results: (Continued)

Test Specimen #1: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 at 330 Pa (6.90 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 taken at the exterior meeting rail +1920 Pa (+40.10 psf) -1920 Pa (-40.10 psf)	6.8 mm (0.27") 4.8 mm (0.19")	7.4 mm (0.29") max. 7.4 mm (0.29") max.	5, 6
Uniform Load Structural, per ASTM E 330 taken at the exterior meeting rail +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	1.3 mm (0.05") 0.5 mm (0.02")	3.8 mm (0.15") max. 3.8 mm (0.15") max.	5, 6

Test Specimen #2:

Title of Test	Results	Allowed	Note
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.4 L/s/m ² (0.07 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Optional Performance			
Water Penetration, per ASTM E 547 at 440 Pa (9.20 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 taken at the exterior meeting rail +3120 Pa (+65.16 psf) -3120 Pa (-65.16 psf)	5.8 mm (0.23") 3.5 mm (0.14")	6.6 mm (0.26") max. 6.6mm (0.26") max.	5, 6
Uniform Load Structural, per ASTM E 330 taken at the exterior meeting rail +4680 Pa (+97.74 psf) -4680 Pa (-97.74 psf)	1.0 mm (0.04") 0.5 mm (0.02")	3.6 mm (0.14") max. 3.6 mm (0.14") max.	5, 6

7.0 Test Results: (Continued)

Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

Note 2: With and without insect screen.

Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 4: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.

Note 5: Loads were held for 10 seconds.

Note 6: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.

Joseph E. Allison
Senior Technician

Lynn George
Director – Regional Operations

JEA:sld

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Alteration Addendum (1)

Appendix-B: Drawings (2) Complete drawings packet on file with Architectural Testing, Inc.



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Appendix A
Alteration Addendum

Note: No alterations were required.



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Appendix B

Drawings

Note: Complete drawings packet on file with Architectural Testing, Inc.

