

**AAMA/WDMA/CSA 101/I.S.2/A440-08  
TEST REPORT**

**Rendered to:**

**REMODELERS SUPPLY CENTER**

**SERIES/MODEL: ClimateGuard Classic  
PRODUCT TYPE: New Construction PVC Double Hung Window**

**Report No.: 86545.03-501-47  
Test Date: 03/26/09  
Report Date: 06/05/09  
Test Record Retention Date: 03/26/13**

**AAMA/WDMA/CSA 101/I.S.2/A440-08  
TEST REPORT**

**Summary of Results**

<b>Summary of Results</b>			
<b>Title</b>	<b>Test Specimen #1</b>	<b>Test Specimen #2</b>	<b>Test Specimen #3</b>
Primary Product Designator	Class R-PG20 1118 x 1829 (44 x 72)-H	Class R-PG40 914 x 1829* (36 x 72*)-H	Class R-PG50 914 x 1524* (36 x 60*)-H
Design Pressure	** 960 Pa (20.06 psf)	** 1920 Pa (40.13 psf)	2400 Pa (50.16 psf)
Operating Force (in motion)	** 71 N (16 lbf)	N/A	N/A
Air Infiltration	** 1.22 L/s/m <sup>2</sup> (0.24 cfm/ft <sup>2</sup> )	N/A	N/A
Water Penetration Resistance Test Pressure	** 290 Pa (6.06 psf)	** 360 Pa (7.52 psf)	N/A
Uniform Load Structural Test Pressure	** ±1440 Pa (±30.09 psf)	** ±2880 Pa (±60.19 psf)	±3600 Pa (±75.24 psf)
Forced Entry Resistance	** Grade 10	N/A	N/A

**Test Completion Date:** 03/26/09

Reference must be made to Report No. 86545.03-501-47, dated 06/05/09 for complete test specimen description and detailed test results. Reference Architectural Testing, Inc. Report No. 86545.01-501-47, dated 12/08/08 for complete *Gateway* test specimen description and for these (\*\*) test results.

**AAMA/WDMA/CSA 101/I.S.2/A440-08 TEST REPORT**

Rendered to:

REMODELERS SUPPLY CENTER  
2622 North Pulaski Road  
Chicago, Illinois 60639

Report No.: 86545.03-501-47  
Test Dates: 03/26/09  
Report Date: 06/05/09  
Test Record Retention Date: 03/26/13

**Project Summary:** Architectural Testing, Inc. was contracted by Veka Inc. to witness and validate testing on three Series/Model DH54WW, PVC double hung windows at the Veka test facility in Fombell, Pennsylvania. The samples tested successfully met the performance requirements for the following ratings: Test Specimen #1: Class R-PG20 1118 x 1829 (44 x 72)-H; Test Specimen #2: Class R-PG40 914 x 1829\* (36 x 72\*)-H; Test Specimen #3: Class R-PG50 914 x 1524\* (36 x 60\*)-H. This report is a reissue of the original Report No. 86545.02-501-47. This report is reissued in the name of Remodelers Supply Center through written authorization of Veka Inc. Test specimen description and results are reported herein. The samples were provided by the client.

**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.*

**Test Specification:** The test specimen was evaluated in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights.*

**Test Specimen Description:**

**Series/Model:** ClimateGuard Classic

**Product Type:** Poly Vinyl Chloride (PVC) Double Hung Window

**Test Specimen #1:** Class R-PG20 1118 x 1829 (44 x 72)-H

**Overall Size:** 1118 mm (44") wide by 1829 mm (72") high

**Bottom Sash Size:** 1063 mm (41-7/8") wide by 889 mm (35") high

**Top Sash Size:** 1032 mm (40-5/8") wide by 889 mm (35") high

**Test Specimen Description:** (Continued)

**Test Specimen #1:** Class R-PG20 1118 x 1829 (44 x 72)-H (Continued)

**Screen Size:** 1029 mm (40-1/2") wide by 860 mm (33-7/8") high

**Overall Area:** 2.04 m<sup>2</sup> (22.0 ft<sup>2</sup>)

**Test Specimen #2:** Class R-PG40 914 x 1829\* (36 x 72\*)-H

**Overall Size:** 914 mm (36") wide by 1829 mm (72") high

**Bottom Sash Size:** 860 mm (33-7/8") wide by 889 mm (35") high

**Top Sash Size:** 829 mm (32-5/8") wide by 889 mm (35") high

**Screen Size:** 826 mm (32-1/2") wide by 860 mm (33-7/8") high

**Overall Area:** 1.67 m<sup>2</sup> (18.0 ft<sup>2</sup>)

**Test Specimen #3:** Class R-PG50 914 x 1524\* (36 x 60\*)-H

**Overall Size:** 914 mm (36") wide by 1524 mm (60") high

**Bottom Sash Size:** 860 mm (33-7/8") wide by 737 mm (29") high

**Top Sash Size:** 829 mm (32-5/8") wide by 737 mm (29") high

**Overall Area:** 1.39 m<sup>2</sup> (15.0 ft<sup>2</sup>)

*The following descriptions apply to all specimens.*

**Finish:** All PVC was white.

**Frame Construction:** The PVC frame was of mitered and welded corner construction. Snap-in rigid PVC adapters were located at the head and at the sill.

**Sash Construction:** The PVC sashes were of mitered and welded corner construction.

**Test Specimen Description:** (Continued)

**Weatherstripping:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
0.187" backed by 0.280" high center fin pile	1 Row	Head adapter, sill, top rail, lock rail, and keeper rail
0.187" backed by 0.280" high center fin pile	2 Rows	All sash stiles
0.110 backed by 0.350" high foam filled/vinyl jacket bulb	1 Row	Keeper rail
0.187" offset base with 0.500" diameter foam-filled hollow bulb	1 Row	Bottom rail
0.187" backed by 0.300" high center fin pile	1 Row	Bottom rail

**Glazing Details:** The sash were exterior glazed with nominal 3/4" thick sealed insulating glass fabricated from two sheets of 1/8" clear annealed glass and a "U" shaped steel spacer system embedded in sealant, single sealed. The insulating glass was set against a double-sided adhesive tape and secured with rigid vinyl glazing beads.

**Drainage:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
1-1/4" wide by 5/16" weepslot with flap	2	Exterior sill face, one 5" from each end
1" wide by 1-1/4" deep weepslot	2	Interior track at jamb/sill intersection
1" wide by 3/16" high weepslot	2	Sill intermediate wall, one at each end
1" wide by 3/16" high weepslot	2	Sill exterior track, one at each end

**Test Specimen Description:** (Continued)

**Drainage:** (Continued)

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
3/8" wide by 1/8" weepslot	4	Bottom rail and keeper rail, 2-1/2" in from each end
3/4" wide by 3/16" high weepslot	2	Sill screen track, one 3-1/2" in from each end through two walls

**Hardware:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
Metal cam lock and keeper	2	Lock rail, one 8" from each end with corresponding keepers on the exterior meeting rail
Tilt latch	4	Top rail and lock rail, one at each end
Metal pivot bars	4	Meeting rail and lift rail, one at each end
Block and tackle balances with locking tilt shoes	4	Two per jamb

**Reinforcement:** The lock rail contained a custom-shaped extruded aluminum reinforcement, reference Drawing No. S-047. The top rail, exterior meeting rail, bottom rail, and all sash stiles contained a custom-shaped extruded aluminum reinforcement, reference Drawing No. S-050.

**Screen Construction:** The screen was constructed from roll-formed aluminum. The corners were square-cut and secured with snap-in plastic corner keys. Fiber mesh screen cloth was secured with a flexible vinyl spline.

**Installation:** The unit was installed in a wood buck constructed of Spruce-Pine-Fir construction lumber and secured through the nailing fin with #8 x 2" long truss head screws spaced approximately 9" on center and starting at the corners. The nail fin perimeter was sealed with a silicone sealant. A nominal 3/16" shim space was maintained at the perimeter between the test unit and wood buck.

**Test Results:** The temperature during testing was 22°C (72°F). The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<b><u>Test Specimen #1:</u></b> Class R-PG20 1118 x 1829 (44 x 72)-H			
5.3.1	Operating Force per ASTM E 2068 **		
	Initiate motion	71 N (16 lbf)	Report Only
	Maintain motion	71 N (16 lbf)	135 N (30 lbf)
	Latches	18 N (4 lbf)	100 N (22.5 lbf)
	Locks	22 N (5 lbf)	100 N (22.5 lbf)
5.3.2.1	Air Leakage Resistance per ASTM E 283 **		
	75 Pa (1.6 psf)	1.22 L/s/m <sup>2</sup> (0.24 cfm/ft <sup>2</sup> )	1.5 L/s/m <sup>2</sup> (0.3 cfm/ft <sup>2</sup> ) max.

**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.

5.3.3.2	Water Penetration Resistance per ASTM E 547 **		See Note #2
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**Note #2:** The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".

5.3.4.2	Uniform Load Deflection per ASTM E 330 **		
	(Deflections were taken on the exterior meeting rail)		
	(Loads were held for 10 seconds)		
	720 Pa (15.05 psf) (positive)	8.8 mm (0.35")	See Note #3
	720 Pa (15.05 psf) (negative)	8.0 mm (0.32")	See Note #3

**Note #3:** 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.

5.3.4.3	Uniform Load Structural per ASTM E 330 **		
	(Permanent sets were taken on the exterior meeting rail)		
	(Loads were held for 10 seconds)		
	1080 Pa (22.57 psf) (positive)	0.5 mm (0.02")	4.1 mm (0.16") max.
	1080 Pa (22.57 psf) (negative)	1.0 mm (0.04")	4.1 mm (0.16") max.

**Note:** Reference Architectural Testing, Inc. Report No. 86545.01-501-47, dated 12/08/08 for these test results (\*\*).

**Test Results:** (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<b><u>Test Specimen #1:</u></b> Class R-PG20 1118 x 1829 (44 x 72)-H (Continued)			
5.3.5	Forced Entry Resistance per ASTM F 588 **		
	Type: A	Grade: 10	
	Disassembly Test	No entry	No entry
	Tests A1 through A7	No entry	No entry
	Sash Manipulation Test	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry
5.3.6.2	Thermoplastic Corner Weld Test **	Meets as stated	Meets as stated
5.3.6.3	Deglazing Test **		
	In operating direction - 320 N (72 lbf)		
	Top rail	3.0 mm (0.12")	11.4 mm (0.45")
	Meeting rail	3.0 mm (0.12")	11.4 mm (0.45")
	Lock rail	3.0 mm (0.12")	11.4 mm (0.45")
	Bottom rail	3.0 mm (0.12")	11.4 mm (0.45")
	In remaining direction - 230 N (52 lbf)		
	Top sash right stile	1.8 mm (0.07")	11.4 mm (0.45")
	Top sash left stile	2.0 mm (0.08")	11.4 mm (0.45")
	Bottom sash right stile	2.0 mm (0.08")	11.4 mm (0.45")
	Bottom sash left stile	2.0 mm (0.08")	11.4 mm (0.45")
<u>Optional Performance</u>			
4.3.2.1	Water Penetration Resistance per ASTM E 547 ** (with and without insect screen)		
	290 Pa (6.06 psf)	No leakage	No leakage
4.3.2.1	Uniform Load Deflection per ASTM E 330 ** (Deflections were taken on the exterior meeting rail) (Loads were held for 10 seconds)		
	960 Pa (20.06 psf) (positive)	12.0 mm (0.47")	See Note #3
	960 Pa (20.06 psf) (negative)	11.0 mm (0.43")	See Note #3

*Note: Reference Architectural Testing, Inc. Report No. 86545.01-501-47, dated 12/08/08 for these test results (\*\*).*

**Test Results:** (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<b><u>Test Specimen #1:</u></b> Class R-PG20 1118 x 1829 (44 x 72)-H (Continued)			
<u>Optional Performance</u> (Continued)			
4.3.2.1	Uniform Load Structural per ASTM E 330 ** (Permanent sets were taken on the exterior meeting rail) (Loads were held for 10 seconds)		
	1440 Pa (30.09 psf) (positive)	1.0 mm (0.04")	4.1 mm (0.16") max.
	1440 Pa (30.09 psf) (negative)	1.3 mm (0.05")	4.1 mm (0.16") max.

**Test Specimen #2:** Class R-PG40 914 x 1829\* (36 x 72\*)-H

Optional Performance

4.3.2.1	Water Penetration Resistance per ASTM E 547 ** (with and without insect screen)		
	360 Pa (7.52 psf)	No leakage	No leakage
4.3.2.1	Uniform Load Deflection per ASTM E 330 ** (Deflections were taken on the exterior meeting rail) (Loads were held for 10 seconds)		
	1920 Pa (40.13 psf) (positive)	9.1 mm (0.36")	See Note #3
	1920 Pa (40.13 psf) (negative)	12.2 mm (0.48")	See Note #3
4.3.2.1	Uniform Load Structural per ASTM E 330 ** (Permanent sets were taken on the exterior meeting rail) (Loads were held for 10 seconds)		
	2880 Pa (60.19 psf) (positive)	0.5 mm (0.02")	3.3 mm (0.13") max.
	2880 Pa (60.19 psf) (negative)	1.3 mm (0.05")	3.3 mm (0.13") max.

*Note: Reference Architectural Testing, Inc. Report No. 86545.01-501-47, dated 12/08/08 for these test results (\*\*).*

**Test Results:** (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
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**Test Specimen #3:** Class R-PG50 914 x 1524\* (36 x 60\*)-H

Optional Performance

4.3.2.1	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the exterior meeting rail) (Loads were held for 10 seconds)		
	2400 Pa (50.16 psf) (positive)	11.5 mm (0.45")	See Note #3
	2400 Pa (50.16 psf) (negative)	7.5 mm (0.30")	See Note #3
4.3.2.1	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the exterior meeting rail) (Loads were held for 10 seconds)		
	3600 Pa (75.24 psf) (positive)	1.3 mm (0.05")	3.3 mm (0.13") max.
	3600 Pa (75.24 psf) (negative)	1.0 mm (0.04")	3.3 mm (0.13") max.

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.

**Drawing Reference:** The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein.

**List of Official Observers:**

<u>Name</u>	<u>Company</u>
Nils Hinrichsen	Veka Inc.
Joe Allison	Architectural Testing, Inc.

This report is reissued in the name of Remodelers Supply Center through written authorization of Veka Inc. to whom the original report was rendered. The original Veka Inc. Report No. is 86545.02-501-47.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. 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.



Digitally Signed by: Joseph E. Allison

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Joseph E. Allison  
Senior Technician



Digitally Signed by: Lynn George

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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)

### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	06/05/09	N/A	Original report issue – Reissue of Report No. 86545.02-501-47 in the name of Remodelers Supply Center.

**Appendix A**  
**Alteration Addendum**

*Note: No alterations were required.*