NATIONAL CERTIFIED TESTING LABORATORIES

FIVE LEIGH DRIVE • YORK, PENNSYLVANIA 17406 • TELEPHONE (717) 846-1200
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AAMA/WDMA/CSA 101/I.S.2/A440-11
AAMA/WDMA/CSA 101/I.S.2/A440-08
AAMA/WDMA/CSA 101/I.S.2/A440-05

TEST REPORT SUMMARY

Rendered to:

CLIMATEGUARD MANUFACTURING
2500 North Pulaski
Chicago, IL 60639

PRODUCT TYPE: Tilt Double Hung

SERIES/ MODEL: "ClimateGuard 500"

Title	Summary of Results
Primary Product Designator AAMA/WDMA/CSA 101/I.S.2/A440-11 AAMA/WDMA/CSA 101/I.S.2/A440-08 AAMA/WDMA/CSA 101/I.S.2/A440-05	Class R-PG30: Size tested 1016 x 1600 mm (~40 x 63 in) - Type H Class R-PG30: Size tested 1016 x 1600 mm (40 x 63 in) - Type H H-R30 1016 x 1600 (40 x 63)
Positive Design Pressure	+1440 Pa (+30.08 psf)
Negative Design Pressure	-1440 Pa (-30.08 psf)
Operating Force (in $motion_{max}$)	93.4 N (21 lbf)
Air Infiltration	0.3 L/s/m^2 (0.06 cfm/ft^2)
Water Penetration Resistance Test Pressure	220 Pa (4.59 psf)
Uniform Load Structural Test Pressure	±2160 Pa (45.11 psf)
Forced Entry Resistance	ASTM F588-07 - Grade 10 Pass

Test Completed: 09/29/14

Reference must be made to Report No. NCTL-110-17412-1 dated 10/23/14 for complete test specimen description and data.

For National Certified Testing Laboratories

Justin L. Bupp
Technician

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AAMA/WDMA/CSA 101/I.S.2/A440-05

STRUCTURAL TEST REPORT

NCTL-110-17412-1

REPORT TO:
CLIMATEGUARD MANUFACTURING
2500 NORTH PULASKI
CHICAGO, IL 60639

REPORT NUMBER: NCTL-110-17412-1
REPORT DATE: 10/23/14

PRODUCT:
“CLIMATEGUARD 500”
TILT DOUBLE HUNG

FIVE LEIGH DRIVE • YORK, PENNSYLVANIA 17406 • TELEPHONE (717) 846-1200
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Report Number	NCTL-110-17412-1
Report Date	10/23/14
Report To	ClimateGuard Manufacturing 2500 North Pulaski Chicago, IL 60639
Test Date	09/29/14
Specification	AAMA/WDMA/CSA 101/I.S.2/A440-11 NAFS 2011 - North American Fenestration Standard/Specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-08 NAFS North American Fenestration Standard/Specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-05 Standard/Specification for Windows, Doors, and Unit Skylights
Performance Results	AAMA/WDMA/CSA 101/I.S.2/A440-11 Class R-PG30: Size tested 1016 x 1600 mm (~40 x 63 in)-Type H AAMA/WDMA/CSA 101/I.S.2/A440-08 Class R-PG30: Size tested 1016 x 1600 mm (40 x 63 in)-Type H AAMA/WDMA/CSA 101/I.S.2/A440-05 H-R30 1016 x 1600 (40 x 63)

Description of Specimen Tested

Note: All dimensions are in the order (Width x Height x Thickness) unless otherwise noted.

Model/ Series	ClimateGuard 500
Configuration	Tilt Double Hung
Frame Size	Overall 1016 mm x 1600.2 mm (40” x 63”)
Top Sash Size	923.93 mm x 771.53 mm (36.375” x 30.375”)
Bottom Sash Size	950.91 mm x 796.93 mm (37.4375” x 31.375”)
Top Sash Viewing Area	850.9 mm x 698.5 mm (33.5” x 27.5”)
Bottom Sash Viewing Area	876.3 mm x 723.9 mm (34.5” x 28.5”)
Frame and Sash Type	Extruded vinyl
Joint Construction	Frame & Sash Mitered, welded

Glazing Components

Overall	21.84 mm (0.860”) nominal
Glass Thickness	(2) Lites of 3 mm (0.118”) nominal annealed glass
Spacer Type/Size	15.85 mm (0.624”) Coated U-shaped steel spacer (Type CU-D)
Glazing System	Exterior glazed with silicone back-bedding and a snap-in rigid vinyl glazing bead.

Weatherstrip

Type	(1) Strip center fin
Size	6.86 mm (0.270”) high
Location	Head, top rail, interior face of the exterior meeting rail and the interior meeting rail
Type	(2) Strips center fin
Size	5.84 mm (0.230”) high
Location	Stiles
Type	(1) Strip center fin
Size	5.84 mm (0.230”) high
Location	Sill
Type	Adhesive-backed polypile pad
Size	12.7 mm x 31.75 mm x 3.05 mm high (0.5” x 1.25” x 1.20”)
Location	Midspan of the jambs
Type	Closed cell foam pad
Location	Sill/ interior jamb track
Type	Closed cell balance plug
Location	Top sash balances

Operating Hardware

Locks

Type	Metal cam-type sweep
Location	254 mm (10”) From each end of the interior meeting rail

Keeper

Type	Metal
Location	Exterior meeting rail at the lock locations

Balance

Type	Spiral
Location	Each jamb track

Pivot Bar

Type	U-shaped stamped metal and die cast
Location	Stamped metal at each end of the bottom rail and die cast at each end of the exterior meeting rail fastened with (2) screws

Auxiliary

Type	Rigid vinyl sash stop
Location	Snap fitted at the top of each interior jamb track and bottom of the exterior jamb track
Type	Rigid vinyl balance cover
Location	Interior jamb track
Type	Plastic tilt latch
Location	Each end of the top rail and interior meeting rail
Type	Rigid vinyl cover/ interior vertical head leg/ weatherstrip holder
Location	Snap-fitted at the interior head track

Reinforcement

Type	Extruded aluminum U-shaped
Thickness	1.45 mm (0.057")
Location	Meeting rails

Weep Description

Size	6.35 mm wide x 6.35 mm (0.25" x 0.25")
Location	50.8 mm (2.0") From each end of the bottom rail and exterior meeting rail
Size	9.53 mm wide x 9.53 mm (0.375" x 0.375") notch
Location	Each end of the center sill leg

Interior/ Exterior Surface Finish White vinyl (PVC)

Sealant No apparent sealant applied

Insect Screen

Size	908.05 mm wide x 781.05 mm (35.75" x 30.75")
Corner Construction	Butt-type plastic corner keys
Material	Fiberglass mesh with solid spline and (2) jamb retainer springs.

Installation Method The window was installed in a 50.3 mm x 254 mm (2" x 10") spruce-pine-fir lumber test buck and sandwiched between interior and exterior wood blind stops. The stops were fastened to the buck with evenly spaced staples. The interior and exterior perimeters were sealed with a silicone sealant.

Test Results - AAMA/WDMA/CSA 101/I.S.2/A440-2011, 2008 & 2005

Paragraph 5.3.1/ 9.3.1 — Test: Operating Force and Force to Latch - Method B (Force Gauge) ASTM E2068-00(08)

Initiate Motion	=	124.6 N	(28 lbf)
Maintain Motion - Opening	=	93.4 N	(21 lbf)
Maintain Motion - Closing	=	93.4 N	(21 lbf)
Allowed (Normal Use$_{11/08}$)	=	155 N	(34.85 lbf)
Allowed (R Rating$_{05}$)	=	155 N	(35 lbf)
Latches	=	35.6 N	(8 lbf)
Allowed	=	100 N	(22.5 lbf)

NOTE: The results above represent the maximum force among all sash tested.

Paragraph 5.3.2.1/ 9.3.2 — Test: Air Leakage Resistance ASTM E283-04(12)

The tested specimen meets or exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-2011, 2008, and 2005 for air infiltration at 75 Pa (1.6 psf).

Maximum Allowable	=	1.5 L/s/m^2 (0.3 cfm/ft^2)
Extraneous Air Leakage	=	0.47 L/s (1.0 cfm)
Total Air Leakage	=	0.52 L/s (1.1 cfm)
Air Infiltration Rate	=	0.3 L/s/m^2 (0.06 cfm/ft^2)

Paragraph	Test
5.3.3/ 9.3.3	Water Penetration Resistance ASTM E547-00(09)

3.4 L/ (min• m²) (5.0 gph/ft²)

No Leakage after 4 cycles of 5 minutes at 220 Pa (4.59 psf)

NOTE: Tested with and without insect screen

Paragraph	Test
5.3.4.2/ 9.3.4.2	Uniform Load Deflection at Design Pressure ASTM E330-14

No damage after positive	1440 Pa (30.08 psf) held for 10 seconds
No damage after negative	1440 Pa (30.08 psf) held for 10 seconds
Measured Deflection $_{Positive}$	= 5.74 mm (0.226 inches)
Measured Deflection $_{Negative}$	= 5.92 mm (0.233 inches)

Paragraph	Test
5.3.4.3/ 9.3.4.3	Uniform Load Structural Test ASTM E330-14

No damage after positive	2160 Pa (45.11 psf) held for 10 seconds
No damage after negative	2160 Pa (45.11 psf) held for 10 seconds
Measured Permanent Set $_{Positive}$	= 0.43 mm (0.017 inches)
Measured Permanent Set $_{Negative}$	= 0.13 mm (0.005 inches)
Maximum Allowed (0.4%)	= 3.56 mm (0.140 inches)

NOTE: Deflection and Permanent Set measurements taken on the meeting rail over an 889 mm (35”) span.

Paragraph	Test
5.3.5/ 9.3.5	Forced Entry Resistance ASTM F588-07

Type A Window Assembly/ Grade 10: = Pass

Test	
Disassembly	= No Entry
Lock Manipulation	= No Entry
Sash Manipulation	= No Entry
Test A1	= No Entry
Test A2	= No Entry
Test A3	= No Entry
Test A4	= No Entry
Test A5	= No Entry
Test A7	= No Entry
Hardware Manipulation Test	= No Entry
Sash Manipulation	= No Entry

NOTE: 1. T1 = 5 minutes, L1 = 667 N (150 lbf), L2 = 333 N (75 lbf), L3 = 111 N (25 lbf)
2. Loads were held for 60 seconds.

Paragraph	Test
5.3.6.2/ 9.3.6.2	Thermoplastic Corner Weld Test (PVC products only) = Pass

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Paragraph	Test	
5.3.6.3/ 9.3.6.3	Deglazing Test ASTM E987-88(09)	
	Top Sash	
	Stiles – 230 N (51.71 lbf)	
	Maximum Allowed	= 90% (100%)
	Left Stile	= 7.8%
	Right Stile	= 8.6%
	Rails – 320 N (71.94 lbf)	
	Maximum Allowed	= 90% (100%)
	Top Rail	= 13.6%
	Meeting Rail	= 13.0%
	Bottom Sash	
	Stiles – 230 N (51.71 lbf)	
	Maximum Allowed	= 90% (100%)
	Left Stile	= 9.8%
	Right Stile	= 9.0%
	Rails – 320 N (71.94 lbf)	
	Maximum Allowed	= 90% (100%)
	Meeting Rail	= 13.4%
	Bottom Rail	= 14.4%

NOTE: The glass bite was approximately 12.7 mm (0.5”)

This test report was prepared by National Certified Testing Laboratory (NCTL), for the exclusive use of the above named client and it does not constitute certification of this product. The results are for the particular specimen tested and do not imply the quality of similar or identical products manufactured or installed from specifications identical to the tested product. The test specimen was supplied to NCTL by the above named client. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen are to be drawn from the ASTM E330 test. Forced entry resistance test equipment used is in compliance with Section 7 of the ASTM F588-07 test method. Foam tape is mounted to the perimeter of the test buck prior to clamping to the test wall. NCTL is a testing lab and assumes that all information provided by the client is accurate and does not guarantee or warranty any product tested or installed. The results in this report are actual tested values and are applicable to the specimen tested only, using the components and construction methods described herein.

Detailed drawings were available for laboratory records and compared to the test specimen at the time of this report. Component drawings were reviewed for product verification. The bill of materials contains details with any deviations noted. Ambient conditions during the referenced testing are available upon request. A copy of this report along with representative sections of the test specimen will be retained by NCTL. This report does not constitute certification or approval of the product, which may only be granted by a certification program validator or recognized approval entity. All tests were conducted in full compliance with the referenced specifications and/or test methods. This report is the joint property of National Certified Testing Laboratories Inc. and the Client to whom it is issued. Permission to reproduce this report by anyone other than National Certified Testing Laboratories Inc and the Client must be granted in writing by both of the above parties. This report may not be reproduced, except its entirety, without the written consent of NCTL.

National Certified Testing Laboratories

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NJL/ drm
Attachments
Appendix A – Revision Summary
Appendix B – Drawings

Appendix A

Section 1:

Component Drawings, with Applicable Part Numbers, Manufacturing and Modeling Details, were Reviewed (as submitted) for Product Verification
(Reference: NCTL-110-17412-1)

See Attached Documentation;
any deviations noted.

Note: The above referenced component drawings (if applicable) along with representative sections of the test specimen will be retained per procedure by NCTL. This testing facility assumes that all information provided by the client is accurate.

Section 2:

Identification	Date	Page & Revision
Original Issue	10/23/14	Not Applicable