



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 Single 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})	107 N (24 lbf)
Air Infiltration	0.4 L/s/m ² (0.07 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: 09/24/14

Reference must be made to Report No. NCTL-110-17413-1 dated 10/21/14 for complete test specimen description and data.

For National Certified Testing Laboratories

Jay Leader
Technician



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STRUCTURAL TEST REPORT

NCTL-110-17413-1

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

REPORT NUMBER: NCTL-110-17413-1
REPORT DATE: 10/21/14

PRODUCT:
"CLIMATEGUARD 500"
TILT SINGLE HUNG



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Report Number	NCTL-110-17413-1
Report Date	10/21/14
Report To	ClimateGuard Manufacturing 2500 North Pulaski Chicago, IL 60639
Test Date	09/24/14
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	<u>AAMA/WDMA/CSA 101/I.S.2/A440-11</u> Class R-PG30: Size tested 1016 x 1600 mm (~40 x 63 in)-Type H <u>AAMA/WDMA/CSA 101/I.S.2/A440-08</u> Class R-PG30: Size tested 1016 x 1600 mm (40 x 63 in)-Type H <u>AAMA/WDMA/CSA 101/I.S.2/A440-05</u> 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 Single Hung
Frame Size	<u>Overall</u> 1016 mm x 1600 mm (40" x 63")
Active Sash Size	946 mm x 795 mm (37.25" x 31.313")
Active Sash Viewing Area	876 mm x 721 mm (34.5" x 28.375")
Fixed Lite Viewing Area	886 mm x 724 mm (34.875" x 28.5")
Frame and Sash Type	Extruded vinyl
Joint Construction	<u>Frame & Sash</u> Mitered, welded <u>Fixed Meeting Rail</u> (2) Screw butt-type

Glazing Components

Overall	21.94 mm (0.865") nominal
Glass Thickness	(2) Lites of 3 mm (0.118") nominal annealed glass
Spacer Type/Size	15.98 mm (0.629") Coated U-shaped steel spacer (Type CU-D)
Glazing System	The active sash was exterior glazed and the fixed lite was interior glazed with silicone back-bedding, silicone heel bead with a snap-in rigid vinyl glazing bead.

Weatherstrip

Type	(1) Strip bulb-vinyl
Location	Bottom rail
Type	(2) Strips center fin
Size	6.86 mm (0.270") high
Location	Stiles
Type	(1) Strip center fin
Size	5.84 mm (0.230") high
Location	Sill
Type	(1) Strip polypile
Size	8.89 mm (0.350") high
Location	Fixed meeting rail
Type	(1) Strip center fin
Size	6.35 mm (0.250") high
Location	Active meeting rail
Type	Adhesive-backed polypile dust pad
Size	31.75 mm x 12.7 mm x 6.35 mm high (1.25" x 0.5" x 0.250")
Location	Each end of the active meeting rail

Operating Hardware

Locks	
Type	Metal cam-type lock
Location	267 mm (10.5") From each end of the active meeting rail
Keeper	
Type	Metal
Location	Fixed meeting rail at the lock locations
Balance	
Type	Spiral balance system
Location	Each interior jamb track
Pivot Bar	
Type	Metal U-shaped
Location	Each end of the bottom rail fastened with (2) screws

Auxiliary

Type	Rigid vinyl sash stop
Location	Top of each interior jamb track
Type	Rigid vinyl balance cover
Location	Each interior jamb track
Type	Plastic tilt latch with thumb actuator
Location	Each end of the active meeting rail
Type	Plastic safety latch/ lock
Location	152.4 mm (6") From each end of the fixed meeting rail located on the jambs

Auxiliary (continued)

Type	Closed cell foam block
Location	Bottom of each interior jamb track

Reinforcement

Type	Aluminum contour-shaped
Thickness	1.78 mm (0.070")
Location	Active meeting rail

Weep Description

Size	4.78 mm wide x 4.78 mm high (0.188" x 0.188") V-shaped notch
Location	63.5 mm (2.5") From each end of the screen bottom rail
Size	6.35 mm wide x 6.35 mm high (0.25" x 0.25")
Location	50.8 mm (2") From each end of the bottom rail
Size	11.13 mm wide x 11.13 mm high (0.438" x 0.438")
Location	Each end of the vertical sill leg

**Interior/ Exterior
Surface Finish**

White vinyl (PVC)

Sealant

No apparent sealant applied

Insect Screen

Size	906 mm wide x 792 mm (35.688" x 31.188")
Corner Construction	Pressure-fitted plastic corner keys
Material	Fiberglass mesh with solid vinyl 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. 25.4 mm x 12.7 mm (1" x 0.5") wood blind stops were located at the interior and exterior frame perimeter. Each blind stop was secured with (1) 31.75 mm (1.25") brad staple located at 76.2 mm (3") from each end and 203.2 mm (8") on center thereafter. The interior and exterior perimeter were sealed with silicone.

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

Paragraph	Test
5.3.1/ 9.3.1	Operating Force and Force to Latch - Method B (Force Gauge) ASTM E2068-00(08)
	Initiate Motion = 89 N (20 lbf)
	Maintain Motion - Opening = 107 N (24 lbf)
	Maintain Motion - Closing = 98 N (22 lbf)
	Allowed (R Rating) = 155 N (35 lbf)
	Latches = 27 N (6 lbf)
	Allowed = 100 N (22.5 lbf)

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

Paragraph	Test
5.3.2.1/ 9.3.2	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	=	1.09 L/s (2.3 cfm)
Air Infiltration Rate	=	0.4 L/s/m ² (0.07 cfm/ft ²)

<u>Paragraph</u>	<u>Test</u>
5.3.3/ 9.3.3	Water Penetration Resistance ASTM E547-00(09)
	<u>3.4 L/ (min• m²) (5.0 gph/ft²)</u>
	No Leakage after 4 cycles of 5 minutes at 220 Pa (4.59 psf)
	NOTE: Tested with and without insect screen

<u>Paragraph</u>	<u>Test</u>
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} = 4.78 mm (0.188 inches)
	Measured Deflection _{Negative} = 4.88 mm (0.192 inches)

<u>Paragraph</u>	<u>Test</u>
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} = 0.58 mm (0.023 inches)
	Measured Permanent Set _{Negative} = 0.56 mm (0.022 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.

<u>Paragraph</u>	<u>Test</u>
5.3.5/ 9.3.5	Forced Entry Resistance ASTM F588-07
	<u>Type A Window Assembly/ Grade 10:</u> = Pass
	<u>Test</u>
	Operable Panel
	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 Test = No Entry

Type D Window Assembly/ Grade 10: = Pass

Test

Fixed Lite/ Panel

Disassembly = 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

Paragraph Test

5.3.6.3/ 9.3.6.3 Deglazing Test

ASTM E987-88(09)

Active Sash

Stiles – 230 N (51.71 lbf)

Maximum Allowed = 90% (100%)

Left Stile = 8.0%

Right Stile = 7.4%

Rails – 320 N (71.94 lbf)

Maximum Allowed = 90% (100%)

Meeting Rail = 12.8%

Bottom Rail = 11.8%

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 LaboratoriesA digital signature of Jay Leader in cursive script, with a small NCTL logo overlaid on the signature. Below the signature, the text "DIGITAL SIGNATURE" is printed in a small, sans-serif font.

Jay Leader
Technician

A digital signature of Robert H. Zeiders in cursive script, with a small NCTL logo overlaid on the signature. Below the signature, the text "DIGITAL SIGNATURE" is printed in a small, sans-serif font.

Robert H. Zeiders, P.E.
Vice-President Engineering & Quality

NJL/ drm

Attachments

Appendix A – Revision Summary

Appendix B – Drawings