



NATIONAL CERTIFIED TESTING LABORATORIES

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SUPERSEAL MFG. COMPANY
AAMA/WDMA/CSA 101/LS.2/A440-05
TEST SUMMARY REPORT

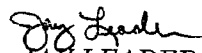
Report No: NCTL-110-10971-1S
Expiration Date: 11/30/11

Test Specimen

Manufacturer: Superseal Mfg. Company
Product Type: Type OX Horizontal Sliding Aluminum Prime Window
Series/Model: Series "6202"
Primary Product Designation: HS-HC40 2500x 2000 (99x79)
Optional Product Designation: Not Applicable
Test Completion Date: 11/05/07

Reference should be made to Structural Performance Test Report Number NCTL-110-10971-1 for complete specimen description and test data.

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JAY LEADER
Technician



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STRUCTURAL PERFORMANCE TEST REPORT

Report No: NCTL-110-10971-1
Test Date: 11/05/07
Report Date: 11/08/07
Expiration Date: 11/30/11

Client: Superseal Mfg. Company
125 Helen Street, P.O. Box 795
South Plainsfield, NJ 07080

Test Specimen: Superseal Mfg. Company's Series "6202" Type XO Horizontal Sliding Aluminum Prime Window HS-HC 2500 x 2000 (99 x 79).

Test Specification: AAMA/WDMA/CSA 101/I.S.2/A440-05, "Standard/Specification for Windows, Doors and Unit Sky Lights."

TEST SPECIMEN DESCRIPTION

General: The test specimen was a type OX horizontal sliding aluminum prime window measuring 2514.6 mm (99") wide by 2006.6 mm (79") high overall. The active panel measured 1254.1 mm (49-3/8") wide by 1898.6 mm (74-3/4") high. The fixed lite was glazed to the frame members, providing a viewing area of 1155.7 mm (45-1/2") wide by 1847.8 mm (72-3/4") high. The frame and active panel were thermally broken using poured urethane thermal barriers. One (1) continuous spring-loaded snap lock was located on the interior jamb stile. The metal keeper was extruded onto the active jamb. A rigid parting vinyl was snap-fitted at the sill, active jamb, and head. A metal roller was located at each end of the active sash bottom rail. The frame was of four (4) screw butt-type corner construction. The active sash was of double screw butt-type corner construction with closed cell foam gaskets. The fixed meeting stile was fastened to the head and sill at midspan with two (2) screws. A 50.8 mm (2") x 57.15 mm (2-1/4") aluminum reinforcement was employed at the active meeting stile and secured with ten (10) evenly spaced screws.

Glazing: The fixed lite was interior glazed using sealed insulating glass with a foam type back bedding, a rigid vinyl glazing bead at the fixed jamb and extruded aluminum glazing bead at the head, sill and fixed meeting stile. The active sash was channel glazed using sealed insulating glass with a flexible vinyl glazing bead. The overall insulating glass thickness was 22.2 mm (7/8") consisting of two (2) lites of 4.7 mm (3/16") thick annealed glass and one (1) space created by a coated steel U-shaped spacer system (CU-D).

Weatherseals: Two (2) strips of center fin weatherstrip 5.5 mm (0.220" high) were located at the top rail, bottom rail and active meeting stile. One (1) strip of center fin weatherstrip 5.5 mm (0.220" high) was located at the active jamb.

Weeps: One (1) weep hole measuring 38.1 mm (1-1/2") x 6.35 mm (1/4") and employing a plastic weep cover was located at 66.6 mm (2-5/8") from each end of the exterior sill face. One (1) weep hole measuring 19 mm (3/4") x 3.1 mm (1/8") was located at 69.8 mm (2-3/4") from the active jamb on the exterior sill face. One (1) weep hole measuring 34.9 mm (1-3/8") x 6.35 mm (1/4") was located at 60.3 mm (2-3/8") from each end of the interior sill track. One (1) weep hole measuring 12.7 mm (1/2") x 6.35 mm (1/4") was located at 92 mm (3-5/8") from each end of the bottom rail.

Interior & Exterior Surface Finish: Brown painted aluminum.

Sealant: The sill/jamb corners and sash glazing corners were sealed with a silicone sealant.

Installation: The specimen was mounted into a standard 51 mm (2") x 250 mm (10") lumber wood buck. The specimen was held in place with 19 mm (3/4") x 19 mm (3/4") wood blind stops fastened at the interior and exterior frame perimeters with #8 x 4mm (1-5/8") drywall screws. All stops were secured 152.4 mm (6") from ends and 355.6 mm (14") on center to the buck. The exterior perimeter was sealed with a silicone sealant.

TEST RESULTS

<u>Par. No.</u>	<u>Title of Test & Method</u>	<u>Measured</u>	<u>Allowed</u>
5.3.1.1	Operating Force - ASTM E2068 Active Panel		
	Initiate Open	115.6 N (26 lbf)	-----
	Maintain Open	106.7 N (24 lbf)	115 N (25 lbf)
	Initiate Close	106.7 N (24 lbf)	-----
	Maintain Close	106.7 N (24 lbf)	115 N (25 lbf)
5.3.6.3	Deglazing - ASTM E987 Active Sash		
	Top Rail (230 N (50lbf)	4.2 % (0.53 mm 0.021")	<90%
	Bottom Rail (230 N (50lbf)	7.2 % (0.91 mm 0.036")	<90%
	Jamb Stile (320 N (70lbf)	10.2 % (1.29 mm 0.051")	<90%
	Meeting Stile (320 N (70lbf)	12.4 % (1.57 mm 0.062")	<90%
5.3.2	Air Infiltration - ASTM E283 300 Pa - (6.2 psf) (50 mph)	1.0 L/ (sec • m ²) (0.2 cfm /ft ²) (0.20 cfm /ft ²) measured	1.5 L/ (sec • m ²) (0.3 cfm /ft ²)
5.3.3	Water Penetration - ASTM E547 & E331 3.4 L/ (min • m ²) 5.0 gph/ft ² WTP= 290 Pa (6.0 psf)	No Leakage	No Leakage
5.3.4.2	** Uniform Load Deflection - ASTM E330 1920 Pa (40.0 psf) Exterior 1920 Pa (40.0 psf) Interior	7.03 mm (0.277") 6.47 mm (0.255")	10.54 mm (0.415") 10.54 mm (0.415")

TEST RESULTS (continued)

<u>Par. No.</u>	<u>Title of Test & Method</u>	<u>Measured</u>	<u>Allowed</u>
5.3.4.3	** Uniform Load Structural - ASTM E330 2880 Pa (60.0 psf) Exterior 2880 Pa (60.0 psf) Interior	0.10 mm (0.004") 0.53 mm (0.021")	5.53 mm (0.218") 5.53 mm (0.218")
5.3.5	Forced Entry Resistance Test – ASTM F588	Meets As Stated	

OPTIONAL PERFORMANCE

5.3.3	Water Penetration - ASTM E331& E547 3.4 L/(min•m ²) 5.0 gph/ft ² WTP= 110 Pa (9.0 psf)	No Leakage	No Leakage
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** No glass breakage or permanent damage causing the unit to be inoperable

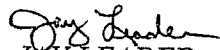
TEST COMPLETED 11/05/07

The tested specimen meets (or exceeds) the performance level specified in AAMA/WDMA/CSA 101/I.S.2/A440-05 for air leakage resistance. The listed results were secured by using the designated test methods and indicate compliance with the performance requirements of the referenced specification paragraphs for the HS-HC40 2500 x 2000 (99x79) product designation.

Detailed drawings were available for laboratory records and were compared to the test specimen at the time of this report. A list of the component drawings reviewed for product verification is included as an appendix to this report.

A copy of this report along with representative sections of the test specimen will be retained by NCTL for a period of four (4) years. The results obtained apply only to the specimen tested. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen may be drawn from this test. This report does not constitute certification of the product which may only be granted by a certification program validator.

NATIONAL CERTIFIED TESTING LABORATORIES


JAY LEADER
Technician


ROBERT H. ZEIDERS, P.E.
Vice-President Engineering & Quality

APPENDIX A
Forced Entry Resistance Test Results

Test Method: ASTM F588-04, "Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact".

TEST RESULTS
Operable Panel

<u>Paragraph No.</u>	<u>Loads</u>	<u>Duration</u>	<u>Measured</u>	<u>Allowed</u>
<i>A2.1 Disassembly Test</i>	<i>N/A</i>	<i>5 Minutes</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.2 Lock Manipulation</i>	<i>N/A</i>	<i>5 Minutes</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.3 Sash Manipulation</i>	<i>N/A</i>	<i>5 Minutes</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.4.2 -Test A1</i>	<i>L1=150 lbf</i>	<i>1 Minute</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.4.3 -Test A2</i>	<i>L1=150 lbf L2= 75 lbf interior</i>	<i>1 Minute</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.4.4 -Test A3</i>	<i>L1=150 lbf L2= 75 lbf exterior</i>	<i>1 Minute</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.4.5 -Test A4</i>	<i>L1=150 lbf L2= 75 lbf interior</i>	<i>1 Minute</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.4.6 -Test A5</i>	<i>L1=150 lbf L2= 75 lbf exterior</i>	<i>1 Minute</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.4.8 -Test A7</i>	<i>L1=150 lbf L2= 75 lbf interior L3= 25 lbf interior</i>	<i>1 Minute</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.2 -Lock Manipulation</i>	<i>N/A</i>	<i>5 Minutes</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.3 - Sash Manipulation</i>	<i>N/A</i>	<i>5 Minutes</i>	<i>No Entry</i>	<i>No Entry</i>

Fixed Lite/ Panel

<i>A2.1 -Disassembly Test</i>	<i>N/A</i>	<i>5 Minutes</i>	<i>No Entry</i>	<i>No Entry</i>
<i>A2.3 -Sash Manipulation</i>	<i>N/A</i>	<i>5 Minutes</i>	<i>No Entry</i>	<i>No Entry</i>

APPENDIX B

Estimated Uncertainty of Measurements

As required by Section 5.10.3 of ISO 17025, "General Requirements for the Competence of Testing and Calibration Laboratories", listed below is the estimated expanded uncertainties for the applicable measurements in this report:

<i>Operating Force:</i>	$\pm 2.7 \text{ N } (\pm 0.6 \text{ lb}_f)$
<i>Test Pressures:</i>	$\pm 10 \text{ Pa } (\pm 0.2 \text{ psf})$
<i>Air Leakage:</i>	$\pm 0.06/A \text{ L}/(\text{sec} \bullet \text{ m}^3) (\pm 0.12/A \text{ cfm}/\text{ft}^2)$ <i>where A is the area of the test specimen</i>
<i>Deflection Measurements:</i>	$\pm 0.05 \text{ mm } (\pm 0.002 \text{ inches})$
<i>Deglazing Force:</i>	$\pm 3.1 \text{ N } (\pm 0.7 \text{ lb}_f)$
<i>Forced Entry Loads:</i>	$\pm 3.1 \text{ N } (\pm 0.7 \text{ lb}_f)$

All of the above expanded uncertainties are determined from combined standard uncertainties and a coverage factor $k = 2.00$ based on a normal distribution, and define an interval estimated to have a level of confidence of 95%.

APPENDIX C

List of Component Drawings Reviewed for Product Verification

See Attached Bill of Materials

Note: The above referenced component drawings along with representative sections of the test specimen will be retained by NCTL for a period of four (4) years.