



NATIONAL CERTIFIED TESTING LABORATORIES

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

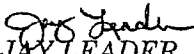
Report No: NCTL-110-10971-4S
Expiration Date: 10/31/11

Test Specimen

Manufacturer: Superseal Mfg. Company
Product Type: Single Hung Aluminum Prime Window
Series / Model: Series "6102"
Primary Product Designation: H-C60 1400 x 2300 (56x93)
Optional Product Designation: Not Applicable
Test Completion Date: 10/09/07

Reference should be made to Structural Performance Test Report Number NCTL-110-10971-4 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-110-10971-4
Test Date: 10/09/07
Report Date: 11/20/07
Expiration Date: 10/31/11

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

Test Specimen: Superseal Mfg. Company's Series "6102" Single Hung Aluminum Prime Window H-C60 1400 x 2300 (56x93).

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 one-over-one tilt single hung aluminum prime window measuring 1422 mm (56") wide by 2362 mm (93") high overall. The fixed lite was glazed to the frame members, providing a viewing area of 1276.3 mm (50-1/4") wide by 1101.7 mm (43-7/8") high. The active sash measured 1328.7 mm (52-5/16") wide by 1155.7 mm (45-1/2") high. The frame and sash were thermally broken using poured urethane thermal barriers. The active sash was removable via a double block and tackle balance with locking tilt shoe located in each jamb track. One (1) metal spring-loaded snap-lock was located at 203 mm (8") from each end of the bottom rail. The metal keeper was extruded onto the sill. One (1) plastic tilt latch with thumb actuator was housed at each end of the active meeting rail. One (1) solid metal pivot bar was fastened with one (1) screw at each end of the bottom rail. Two (2) rigid vinyl sash stops were employed in each exterior jamb track. A rigid parting vinyl was located at the fixed meeting rail, jamb and head. The frame was of triple screw butt-type corner construction with closed cell foam gasket employed at the head/jamb corners. The fixed meeting rail was fastened to the jambs at midspan with two (2) screws and employed closed cell foam gaskets.

Glazing: The active sash was channel glazed using sealed insulating glass with a flexible vinyl gasket. The fixed lite was interior glazed using sealed insulating glass with a foam tape back-bedding and a snap-in extruded aluminum glazing bead at the jambs and the fixed meeting rail and a vinyl snap-in glazing bead at the head. The overall insulating glass thickness was 22.2 mm (7/8") consisting of two (2) lites of 3 mm double strength annealed glass and one (1) steel coated U-shaped spacer system (CU-D).

Weatherseals: One (1) strip of center fin weatherstrip 5.8 mm (0.230" high) was located at the sill. Two (2) strips of center fin weatherstrip 5.8 mm (0.230" high) were located at the active meeting rail. Three (3) strips of center fin weatherstrip 5.8 mm (0.230" high) were located at the stiles. One (1) strip of bulb-vinyl weatherstrip was located at the bottom rail.

Weeps: One (1) weep hole measuring 38.1mm (1-1/2") x 6.35 mm (1/4") and employing a plastic weep cover was located at 14.2 mm (9/16") from each end of the sill face. One (1) weep hole measuring 9.5 mm (3/8") x 6.3 mm (1/4") was located at 101.6 mm (4") from each end of the fixed meeting rail.

Interior & Exterior Surface Finish: Brown painted aluminum.

Sealant: The frame corners and the ends of the fixed meeting rail were sealed with a silicone sealant.

Installation: The window was installed into a 51 mm (2") x 250 mm (10") wood test 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 41 mm (1-5/8") drywall screws. All stops were secured 203 mm (8") from the ends and 355.6 mm (14") on center. 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 Sash Initiate Open	115.6 N (26 lbf)	-----
	Maintain Open	106.7 N (24 lbf)	200 N (45 lbf)
	Initiate Close	147 N (33 lbf)	-----
	Maintain Close	156 N (35lbf)	200 N (45 lbf)
5.3.1.1.3	Force to Latch	Meets As Stated	
5.3.2	Air Infiltration - ASTM E283 75 Pa – (1.6 psf) (25 mph)	0.5 L/ (sec• m ²) (0.1 cfm /ft ²) (0.09 cfm /ft ²) measured	1.5 L/ (sec• m ²) (0.3 cfm /ft ²)
5.3.3	* Water Penetration - ASTM E331 3.4 L/ (min• m ²) 5.0 gph /ft ² WTP= 220 Pa (4.5 psf)	No Leakage	No Leakage
5.3.4.2	** Uniform Load Deflection - ASTM E330 1440 Pa (30.0 psf) Exterior 1440 Pa (30.0 psf) Interior	3.48 mm (0.137") 3.40 mm (0.134")	---- ----
5.3.4.3	** Uniform Load Structural - ASTM E330 2160 Pa (45.0 psf) Exterior 2160 Pa (45.0 psf) Interior	0.05 mm (0.002") 0.025 mm (0.001")	3.84 mm (0.151") 3.84 mm (0.151")
5.3.5	Forced Entry Resistance Test – ASTM F588	Meets As Stated	
5.3.6.2	Thermoplastic Corner Weld Test – ASTM D618	Meets As Stated	

TEST RESULTS (cont'd)

<u>Par. No.</u>	<u>Title of Test & Method</u>	<u>Measured</u>	<u>Allowed</u>
5.3.6.3	<i>Deglazing Test – ASTM E987 Active Sash</i>		
	<i>Meeting Rail (320 N/70 lbf)</i>	<i>7.4 % (0.94 mm/0.037")</i>	<i><90%</i>
	<i>Bottom Rail (320 N/70 lbf)</i>	<i>11.8 % (1.50 mm/0.059")</i>	<i><90%</i>
	<i>Left Stile (230 N/50 lbf)</i>	<i>5.8 % (0.74 mm/0.029")</i>	<i><90%</i>
	<i>Right Stile (230 N/50 lbf)</i>	<i>5.4 % (0.69 mm/0.027")</i>	<i><90%</i>

OPTIONAL PERFORMANCE

5.3.3	* <i>Water Penetration - ASTM E331 3.4 L/(min • m²) 5.0 gph/ft² WTP= 440 Pa (9.0 psf)</i>	<i>No Leakage</i>	<i>No Leakage</i>
5.3.4.2	** <i>Uniform Load Deflection - ASTM E330 2880 Pa (60.0 psf) Exterior 2880 Pa (60.0 psf) Interior</i>	<i>7.39 mm (0.291") 6.65 mm (0.262")</i>	<i>---- ----</i>
5.3.4.3	** <i>Uniform Load Structural - ASTM E330 4320 Pa (90.0 psf) Exterior 4320 Pa (90.0 psf) Interior</i>	<i>0.025 mm (0.001") 0.15 mm (0.006")</i>	<i>3.84 mm (0.151") 3.84 mm (0.151")</i>
	* <i>Tested without insect screen</i>		
	** <i>No glass breakage or permanent damage causing the unit to be inoperable</i>		

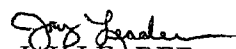
TEST COMPLETED 10/09/07

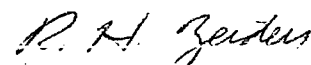
The tested specimen meets (or exceeds) the performance level specified in AAMA/WDMA/CSA 101/I.S.2/A440-05 for air leakage resistance. The listed results were secured by using the designated test methods and indicate compliance with the performance requirements of the referenced specification paragraphs for the H-C60 1400 x 2300 (56x93) 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


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

Fixed Lite/ Panel

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

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>	$\pm 2.7 \text{ N } (\pm 0.6 \text{ lbf})$
<i>Test Pressures:</i>	$\pm 10 \text{ Pa } (\pm 0.2 \text{ psf})$
<i>Air Leakage:</i>	$\pm 0.06/A \text{ L}/(\text{sec} \cdot \text{m}^2) (\pm 0.12/A \text{ cfm}/\text{ft}^2)$ <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>	$\pm 3.1 \text{ N } (\pm 0.7 \text{ lbf})$
<i>Forced Entry Loads:</i>	$\pm 3.1 \text{ N } (\pm 0.7 \text{ lbf})$

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.