



Architectural Testing

**AAMA/NWWDA 101/I.S. 2-97  
TEST REPORT SUMMARY**

**Rendered to:**

**GREAT LAKES WINDOW, INC.**

**SERIES/MODEL: GLW-DH-120  
TYPE: Vinyl Double Hung Window**

<b>Results</b>			
<b>Title of Test</b>	<b>Specimen #1</b>	<b>Specimen #2</b>	<b>Specimen #3</b>
Rating	H-LC30 52 x 78	H-LC40 52 x 78	H-LC60 44 x 60
Overall Design Pressure	30 psf	40 psf	60 psf
Operating Force	19 lbs max.	N/A	N/A
Air Infiltration	0.02 cfm ft <sup>2</sup>	N/A	N/A
Water Penetration	10.50 psf	N/A	N/A
Structural Test Pressure	+45.0 psf	+60.0 psf	+90.0 psf
Forced Entry Resistance	Passed	N/A	N/A
Deglazing	Passed	N/A	N/A
Corner Weld	Passed	N/A	N/A

Reference should be made to Report No. 07-30217.01 for complete test specimen description and data.

For ARCHITECTURAL TESTING, INC.

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**AAMA/NWWDA 101/L.S. 2-97 STRUCTURAL TEST REPORT**

Rendered to:

GREAT LAKES WINDOW, INC.  
30499 Tracy Road  
P.O. Box 1896  
Toledo, Ohio 43603-1896

Report No: 07-30217.01  
Test Date: 11/27/01  
Report Date: 12/19/01  
Expiration Date: 11/27/05

**Project Summary:** Architectural Testing, Inc. (ATI) was contracted by Great Lakes Window to witness performance tests at their facility in Toledo, Ohio. Structural performance tests were completed on three Series/Model GLW-DH-120 vinyl double hung windows. The specimens tested met the performance requirements for the following ratings: Test Specimen #1: H-LC30 52 x 78; Test Specimen #2: H-LC40 52 x 78; and Test Specimen #3: H-LC60 44 x 60. Test specimen descriptions and results are reported herein.

**Test Specification:** The test specimens were evaluated in accordance with AAMA/NWWDA 101/L.S. 2-97, *"Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors."*

**Test Specimen Description:**

**Test Specimen #1:** H-LC30 52 x 78

**Series/Model:** GLW-DH-120

**Type:** Vinyl Double Hung

**Overall Size:** 4' 4" wide by 6' 6" high

**Top Sash Size:** 3' 10-1/4" wide by 3' 1-1/2" high

**Bottom Sash Size:** 3' 11-1/4" wide by 3' 2-1/2" high

**Screen Size:** 3' 11" wide by 3' 2" high

**Reinforcement:** Fiberglass pulltrusion reinforcement was utilized in both meeting rails. See Great Lakes drawing #HS00214.



**Test Specimen Description:**

**Test Specimen #1: H-LC30 52 x 78 (Continued)**

**Glass Type:** Nominal 7/8" thick glass fabricated from two 1/8" clear annealed sheets with a spacer system.

**Glazing Details:** All glass was interior wet glazed and secured against silicone back bedding with dual durometer snap-in PVC glazing beads.

**Test Specimen #2: H-LC40 52 x 78**

**Series/Model:** GLW-DH-120

**Type:** Vinyl Double Hung

**Overall Size:** 4' 4" wide by 6' 6" high

**Top Sash Size:** 3' 10-1/4" wide by 3' 1-1/2" high

**Bottom Sash Size:** 3' 11-1/4" wide by 3' 2-1/2" high

**Screen Size:** 3' 11" wide by 3' 2" high

**Reinforcement:** Fiberglass pulltrusion reinforcement was utilized in all stiles and rails. See Great Lakes drawing #HS00214.

**Glass Type:** Nominal 7/8" thick glass fabricated from two 1/8" clear annealed sheets with a spacer system.

**Glazing Details:** All glass was interior wet glazed and secured against silicone backbedding with dual durometer snap-in PVC glazing beads.

**Test Specimen #3: H-LC60 44 x 60**

**Series/Model:** GLW-DH-120

**Overall Size:** 3' 8" wide by 5' 0" high

**Top Sash Size:** 2' 2-1/4" wide by 2' 4-1/2" high

**Bottom Sash Size:** 3' 3-1/4" wide by 2' 5-1/2" high

**Screen Size:** None

**Test Specimen Description:****Test Specimen #3:** H-LC60 44 x 60 (Continued)

**Reinforcement:** Fiberglass pulltrusion reinforcement was utilized in both meeting rails. See Great Lakes drawing #HS00214.

**Glass Type:** Nominal 7/8" thick glass fabricated from two 3/32" clear annealed sheets with a spacer system.

**Glazing Details:** All glass was interior glazed and secured against silicone back bedding with dual durometer snap-in PVC glazing beads.

*The following descriptions apply to all specimens.*

**Finish:** White PVC.

**Weatherstripping:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
0.290" high by 0.187" backed polypile with center fin	1 Row	Top rail
0.290" high by 0.187" backed polypile with center fin	1 Row	Head and sill
0.290" high by 0.187" backed polypile with center fin	3 Rows	All stiles
0.290" high by 0.187" wool pile	2 Rows	Bottom sash meeting rail
0.290" high by 0.187" backed polypile with center fin	1 Row	Top sash meeting rail
0.290" high by 0.187" wool pile	1 Row	Top sash meeting rail
1/4" foam-filled bulb Drawing #IW00176	1 Row	Bottom lift rail





**Test Results:** The results are tabulated as follows.

**Test Specimen #1: H-LC30 52 x 78**

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
2.2.1.6.1	Operating Force	19 lbs max.	30 lbs max.
2.1.2	Air Infiltration per ASTM E 283-91 (See Note #1) @ 1.57 psf (25 mph)	0.02 cfm/ft <sup>2</sup>	0.30 cfm/ft <sup>2</sup> max.
<i>Note #1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/NWWDA 101/I.S. 2-97 for air infiltration.</i>			
2.1.3	Water Resistance per ASTM E 547-96 (with and without screen) WTP = 3.75 psf	No leakage	No leakage
2.1.4.2	Uniform Load Structural per ASTM E 330-97 (Measurements reported were taken on bottom lift rail) (DP loads held for 52 seconds, PSF loads held for 10 seconds) @ 37.5 psf (exterior) @ 37.5 psf (interior)	0.02" 0.05"	0.186" max. 0.186" max.
2.2.1.6.2	Deglazing Test per ASTM E 987-97 In operating direction at 70 lbs. Interior Meeting Rail Bottom Rail Exterior Meeting Rail Exterior Top Rail In remaining direction at 50 lbs. Interior Left Stile Right Stile Exterior Left Stile Right Stile	0.010"/02% 0.010"/02% 0.010"/02% 0.010"/02% 0.010"/02% 0.005"/01% 0.005"/01% 0.005"/01% 0.005"/01%	0.500"/100% 0.500"/100% 0.500"/100% 0.500"/100% 0.500"/100% 0.500"/100% 0.500"/100%
2.1.7	Welded Corner Test	Meets as stated	Meets as stated
2.1.8	Forced Entry Resistance per ASTM F 588-97 (Testing was conducted on single lock and double locks) Type A Grade 10 Lock Manipulation Test Test A1 thru A7 Lock Manipulation Test	No entry No entry No entry	No entry No entry No entry



**Test Results**

**Test Specimen #1: H-LC30 54 x 78 (Continued)**

<u>Paragraph</u>	<u>Title of Test – Test Method</u>	<u>Results</u>	<u>Allowed</u>
<u>Optional Performance</u>			
4.3	Water Resistance per ASTM E 547-96 (with and without screen) WTP = 10.50 psf	No leakage	No leakage
2.1.4.3	Uniform Load Structural per ASTM E 330-97 (Measurements were taken on the bottom lift rail) (DP loads held for 52 seconds, PSF loads held for 10 seconds)		
	@ 45.0 psf (exterior)	0.04"	0.186" max.
	@ 45.0 psf (interior)	0.02"	0.186" max.

**Test Specimen #2: H-LC40 52 x 78**

2.1.4.3	Uniform Load Structural per ASTM E 330-97 (Measurements were taken on the bottom lift rail) (DP load held for 52 seconds, PSF load held for 10 seconds)		
	@ 60.0 psf (exterior)	0.04"	0.186" max.
	@ 60.0 psf (interior)	0.04"	0.186" max.

**Test Specimen #3: H-LC60 44 x 60**

2.1.4.3	Uniform Load Structural per ASTM E 330-97 (Measurements were taken on the bottom lift rail) (DP load held for 52 seconds, PSF load held for 10 seconds)		
	@ 90.0 psf (exterior)	0.03"	0.155" max.
	@ 90.0 psf (interior)	0.02"	0.155" max.

Detailed drawings, representative samples of the test specimen, and a copy of this report will be retained by ATI for a period of four years. The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specification. This report does not constitute certification of this product, which may only be granted by the certification program administrator.

For ARCHITECTURAL TESTING, INC:

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