

Robert J. Brady, P.E.
Consulting Engineer
4185 S. W. 178th Terrace
Dunnellon, Florida 34432

June 10, 2002

Mr. Bob Braatz, C.E.O.
Energy Saving Products, Inc.
P. O. Box 1119
Jasper, Fl 32052

Subject: Vinyl Window Products
Test Reports

Dear Mr. Braatz:

Pursuant to your request, I have reviewed reports from Architectural Testing, Inc. and Twin City Testing Corporation for performance of vinyl windows, as furnished by you.

The reports reviewed are as follows:

Testing Lab	Test No.	Test Date	Exp. Date	Manufacturer/Model
Arch. Testing	01-34367.01	03/04/99	03/04/03	Fiberlux, Inc./1800 6'0"x6'0" Fixed
Arch. Testing	01-39470.01	07/09/01	07/09/05	Fiberlux, Inc./1800 54x64 & 37x64 D.H.
Arch. Testing	01-39545.01	6/19/01	09/20/05	Fiberlux, Inc./1800 54x64 & 37x64 S.H.
Twin City Testing	1801 99-1359C.2	Oct. 30, 01	Oct. 30, 05	Engineered Profiles/ 5200 SGD-LC40 96x96 Sliding Door

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Based on my review, these reports are in accord with the proper and applicable building codes for testing of vinyl windows. It is my opinion that the results of these listed reports can be used for design of windows manufactured by Energy Saving Products provided that structural member profiles, glass types and window sizes and types match those described in the respective reports.

I trust this information is a proper response to your request.

Sincerely,

A handwritten signature in cursive script, appearing to read "Robert J. Brady".

Robert J. Brady, P.E.
FL P.E. #26153

cc: File

rbesp611

**AAMA/NWDA 101/LS.2-97
TEST REPORT SUMMARY**

Rendered to:

**NORTH AMERICAN PROFILES GROUP,
FIBERLUX DIVISION**

**SERIES/MODEL: 1800
TYPE: PVC Single Hung Window**

Title of Test	Results	
	Test Specimen #1	Test Specimen #2
Rating	H-R35 54 x 64	H-R50 37 x 63*
Overall Design Pressure	+35.0 psf	+50 psf
Operating Force	15 lb max.	N/A
Air Infiltration	0.06 cfm/ft ²	N/A
Water Resistance	7.5 psf	N/A
Structural Test Pressure	+52.5 psf	+75.0 psf
Deglazing	Passed	N/A
Forced Entry Resistance	Grade 10	N/A

Reference should be made to Report No. 01-39545.01 for complete test specimen description and data.

For ARCHITECTURAL TESTING, INC.


Mark A. Hess, Technician

MAH:baw

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

Rendered to:

NORTH AMERICAN PROFILES GROUP, FIBERLUX DIVISION
2287 Route 292
Holmes, New York 12531

Report No: 01-39545.01
Test Date: 06/19/01
Thru: 09/20/01
Report Date: 10/24/01
Expiration Date: 09/20/05

Project Summary: Architectural Testing, Inc. (ATI) was contracted to witness testing on two Series/Model 1800, PVC single hung windows at the Fiberlux, Inc.'s test facility in Holmes, New York. The samples tested successfully met the performance requirements for the following ratings: Test Specimen #1 H-R35 54 x 64; Test Specimen #2 H-R50* 37 x 63.

General Note: *An asterisk (*) next to the performance grade indicates that the size tested for optional performance was smaller than the Gateway test size for the product type and class.*

Test Specification: The test specimen was 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:

Series/Model: 1800

Type: PVC Single Hung Window

Test Specimen #1: H-R35 54 x 64

Overall Size: 4' 6" wide by 5' 4" high

Sash Size: 4' 3-7/8" wide by 2' 6-3/4" high

Fixed Daylight Opening Size: 4' 1" wide by 2' 4-3/8" high

Screen Size: 4' 3-5/8" wide by 2' 4-1/2" high

Test Specimen Description: (Continued)

Test Specimen #2: H-R50 37 x 63*

Overall Size: 3' 1" wide by 5' 3" high

Sash Size: 2' 11" wide by 2' 6-5/8" high

Fixed Daylight Opening Size: 2' 8" wide by 2' 3-1/2" high

Screen Size: 2' 7-3/4" wide by 2' 3-1/4" high

The following descriptions apply to all specimens.

Finish: All PVC was white.

Glazing Details: The window utilized 3/4" thick sealed insulating glass units fabricated from two sheets of 1/8" thick clear annealed glass and a desiccant filled metal spacer system. The sash was exterior glazed and the fixed glass was interior glazed, each against dual-sided adhesive foam tape and secured with PVC glazing beads.

Weatherstripping:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
0.230" high by 0.187" backed polypile with center fin	2 Rows	Stiles
0.230" high by 0.187" backed polypile with center fin	1 Row	Interior sill leg, interior meeting rail

Frame Construction: The frame was constructed using mitered and welded corner construction. The fixed meeting rail ends were milled and fastened to each jamb using plastic T-blocks. Two #6 x 1/2" flat head screws into each jamb and one #6 x 1/2" pan head screw fastened each meeting rail end/T-block. A snap-fit sill adapter with a 1-1/4" interior leg was sealed at each end using silicone.

Sash Construction: The sash was constructed using mitered and welded corner construction.

Screen Construction: The screen was constructed of roll-formed aluminum and plastic corner keys. The fiberglass mesh screening was secured with a flexible vinyl spline.

Test Specimen Description: (Continued)**Hardware:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
Metal cam lock with adjacent keepers	2	7-1/2" from each end of interior meeting rail
Spiral balance assembly	2	One per jamb
Metal flush mount tilt latch	2	Each end of interior meeting rail
Metal pivot bar	2	One in each end of bottom rail
Anti bow pin	2	Midspan of each sash stile

Drainage:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
3/8" wide by 3/16" deep weephole	4	3-1/2" from each end of fixed meeting and bottom rails draining each glazing cavity
1" wide by 1/4" high	2	One in each end of sill center web draining the interior sill track into the exterior sill track
3/8" wide by 3/16" deep weephole	2	3-1/2" from each end of sill screen track draining hollow
1-3/8" wide by 3/16" high weephole with cover	2	One each end of sill, draining exterior sill hollow

Reinforcement: The interior and exterior meeting rails each utilized steel reinforcement with a typical wall thickness of 0.125".

Installation: The test unit was installed into a #2 Spruce-Pine-Fir wood test buck. The integral nail fin was set against silicone back bedding and secured through the nailing fin using #6 x 1-1/4" drywall screws spaced 6" on center.

Test Results:

The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
Test Specimen #1: H-R35 54 x 64			
2.2.1.6.1	Operating Force	15 lbs	30 lbs max.
2.1.2	Air Infiltration per ASTM E 283 (See Note #1) @ 1.57 psf (25 mph)	0.06 cfm/ft ²	0.3 cfm/ft ² max.
<i>Note #1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/NWDA 101/I.S. 2-97 for air infiltration.</i>			
2.1.3	Water Resistance per ASTM E 547 (See Note#2)		
<i>Note#2: The client opted to start at a pressure higher than the minimum required. These results are listed under "Optional Performance".</i>			
2.1.4.2	Uniform Load Structural per ASTM E 330 (See Note #2)		
<i>Note#2: The client opted to start at a pressure higher than the minimum required. These results are listed under "Optional Performance".</i>			
2.2.1.6.2	Deglazing Test per ASTM E 987 In operating direction at 70 lbs		
	Interior Meeting Rail	0.06"/12.5%	0.50"/100%
	Bottom Rail	0.06"/12.5%	0.50"/100%
	In remaining direction at 50 lbs		
	Right Stile	0.03"/6.25%	0.50"/100%
	Left Stile	0.03"/6.25%	0.50"/100%
2.1.7	Welded Corner Test	Meets as stated	Meets as stated
2.1.8	Forced Entry Resistance per ASTM F 588-97		
	Type: A Grade: 10		
	Lock Manipulation Test	No entry	No entry
	Test A1 thru A7	No entry	No entry
	Lock Manipulation Test	No entry	No entry

Test Results: (Continued)

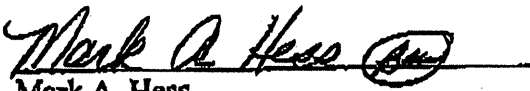
<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<u>Test Specimen #1: (Continued)</u>			
<u>Optional Performance</u>			
4.3	Water Resistance per ASTM E 547 (with and without screen) WIP = 7.50 psf	No leakage	No leakage
4.4.2	Uniform Load Structural per ASTM E 330 (Measurements reported were taken on the exterior meeting rail) (Loads held for 10 seconds)		
	@ 52.5 psf (positive)	0.13"	0.21" max.
	@ 52.5 psf (negative)	0.21"	0.21" max.

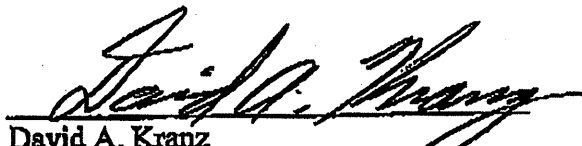
Test Specimen #2: H-R50 37 x 63*

4.4.2	Uniform Load Structural per ASTM E 330 (Measurements reported were taken on the exterior meeting rail)		
	@ 75.0 psf (positive)	0.11"	0.15" max.
	@ 75.0 psf (negative)	0.11"	0.15" max.

Representative samples of the test specimen, and a copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein and is applicable to the sample tested. Results obtained are tested values and do not constitute an opinion or endorsement by this laboratory.

For ARCHITECTURAL TESTING, INC:


Mark A. Hess
Technician


David A. Kranz
Director - Product/Physical Testing

MAH:baw
01-39545.01