



HURRICANE TEST LABORATORY, LLC
TESTING AND EVALUATION SOLUTIONS
1701 WESTFORK DRIVE, SUITE 106
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Report #: G268-0401-07
Specimen # 16, 18, 19, and 23
Test Date: 4/3-4/23/07
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MANUFACTURER'S IDENTIFICATION

- 1.0 NAME OF APPLICANT:** CPFilms, Inc.
 P.O. Box 5068
 Martinsville, Virginia 24112
 (276) 627-3366
- 2.0 CONTACT PERSON:** Andres A. Vasquez
- 3.0 HTL TEST NOTIFICATION #:** N/A
- 4.0 HTL LAB CERTIFICATION:** Miami-Dade County (04-0806.02)
 Florida Building Code #TST3892
 IAS #TL-388

PRODUCT IDENTIFICATION

- 5.0 Product Type:** Window Film
- 6.0 Model Number:** Vista 8 Mil Solar
- 7.0 Performance Class:** +/- 50 psf
- 8.0 Overall Sample Size:** 50" (w) x 81" (h)
- 9.0 Configuration:** Fixed
- 10.0 Sample Source:** Samples provided by CPFilms, Inc.

PRODUCT DESCRIPTION

- 11.0 Frame Assembly:** The frame used in this sample was fabricated using the following aluminum extrusions:

Description	Part #	Material
Head/Jamb	E9-1303	6063-T6
Sill	E9-1304	6063-T6
Sill Plate	E9-1030	6063-T6
Glass Stop	E9-1305	6063-T6

The following procedures (typical) were utilized when assembling this individual frame:
Frame Corner Construction: At each frame corner, the frame members were square cut and butted together.
Frame Corner Sealant: None used.

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Kevin Rouse



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12.0 Glazing:

12.1 Glazing Material: The glazing material used in these units was 1/4" annealed glass with Vista 8 Mil Solar film.

12.2 Glazing Method: Each glass lite used in these units were glazed using the following (typical) procedures:

Interior Side: 1/2" x 1/2" bead of LLUMAR EDGE GRIP™ (Tremco Proglaze SSG) silicone on top of a 5/8" x 1/2" glazing stop that snapped into place along the sill.

Exterior Side: Glazing gasket (Part #E2-0052).

12.3 Daylight Opening:

Qty.	Daylight Opening	Glass Bite
1	45-1/4" (w) x 76-1/2" (h)	5/8"

13.0 Sealant's Used:

Location	Sealant
Glazing Sealant	Tremco Proglaze SSG
Perimeter Sealant	Dow Corning 795 Silicone Sealant

INSTALLATION

14.0 Following is a description of how this sample was installed in the wood test buck (using 2 x 6 wood studs) when viewed from the exterior side:

Location	Anchor Description & Schedule
Frame to Wood	#10 x 2-1/4" wood screws located 3" from the ends and 12" o.c. thereafter.

TEST RESULTS

15.0 SUMMARY OF RESULTS:

Test Method	Test Conditions	Test Conclusion
Specimen # 18		
Air Infiltration Test (ASTM E283)	1.57 psf & 6.24 psf	PASS
Water Infiltration Test (ASTM E331)	7.5 psf	PASS
Uniform Static Load Test (ASTM E330)	+/- 50 psf Design Pressure	PASS

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Test Method	Test Conditions	Test Conclusion
Specimen # 16, 19, and 23		
Large Missile Impact Test (ASTM E1886 and E1996)	Missile Level C	PASS
Cyclic Load Test (ASTM E1886 and E1996)	+/- 50 psf Design Pressure	PASS

16.0 AIR INFILTRATION TEST RESULTS (ASTM E283):

Test Pressure	Measured	Allowed
1.57 psf	0.00 cfm/ft ²	0.30 cfm/ft ²
6.24 psf	0.01 cfm/ft ²	N/A

17.0 WATER LEAKAGE TEST RESULTS:

Test Pressure	Spray Rate	Test Duration	Measured	Allowed
7.50 psf	5.0 GPH/ft ²	15.00 min.	No Entry	No Entry

18.0 UNIFORM STATIC LOAD TEST RESULTS:

18.1 LOAD DATA

Positive Load		Negative Load	
Load (psf)	Result	Load (psf)	Result
37.5	PASS	37.5	PASS
50	PASS	50	PASS
75	PASS	75	PASS

18.2 REMARKS:

No signs of failure were observed in any area of this test specimen during the uniform static load test. As such, this specimen was found to satisfy the uniform static load test requirements of ASTM E330.

19.0 MISSILE IMPACT TESTS

19.1 IMPACT DATA:

Impact #	Missile Weight (lb.)	Missile Length (in.)	Velocity (ft/s)	Glass Temp. (°F)	X Coordinate (in.)	Y Coordinate (in.)
SPECIMEN # 16 (shot @ bottom left corner)						
1	4.4	48	39.53	77	9.50	11.00
SPECIMEN # 19 (shot @ top right corner)						
1	4.4	48	40.60	68.5	43.00	72.00

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Impact #	Missile Weight (lb.)	Missile Length (in.)	Velocity (ft/s)	Glass Temp. (°F)	X Coordinate (in.)	Y Coordinate (in.)
SPECIMEN # 23 (shot @ geometric center)						
1	4.4	48	40.88	62.5	26.00	41.00

19.2 IMPACT LOCATIONS AND REMARKS:

Each impact test conducted on these specimens was performed in accordance with the requirements of ASTM E1996. All of the impacts hit their intended targets resulting in the recorded measurements. Upon completion of the missile impact tests, these samples subsequently underwent the cyclic load test as specified by ASTM E1886/E1996.

20.0 CYCLIC LOAD TEST

20.1 CYCLIC TEST PRESSURE:

CYCLIC TEST PRESSURE	
$(P_d)_{in} = P_{max}$	$(P_d)_{out} = P_{max}$
50 psf	50 psf

20.2 CYCLIC LOAD SPECTRUM:

20.2.1 POSITIVE CYCLIC LOAD SPECTRUM:

# OF INWARD ACTING CYCLES/STAGE			
3500	300	600	100
10 - 25 (psf)	0 - 30 (psf)	25 - 40 (psf)	15 - 50 (psf)

20.2.2 NEGATIVE CYCLIC LOAD SPECTRUM:

# OF INWARD ACTING CYCLES/STAGE			
50	1050	50	3350
15 - 50 (psf)	25 - 40 (psf)	0 - 30 (psf)	10 - 25 (psf)

20.3 REMARKS:

These samples were inspected carefully upon completion of the cyclic test for failures. None were found. As such, these specimens were found to satisfy the cyclic test requirements of ASTM E1886/E1996.

MISCELLANEOUS INFORMATION

21.0 CERTIFICATION & DISCLAIMER STATEMENT:

All tests performed on this test specimen were conducted in accordance with the specifications of the applicable codes, standards & test methods listed below by the Hurricane Test Laboratory, LLC located at 1701 Westfork Drive, Suite 106, Lithia Springs, Georgia 30122. HTL does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products tested at HTL. HTL is not owned, operated or controlled by any company manufacturing or distributing products it tests. This report is only intended for the use of the entity named in section 1.0 of this report. Detailed assembly drawings showing wall thickness of all members, corner construction and hardware applications are on file and have been compared to the test specimen submitted. A copy of this test report along with representative sections of the test specimen will be retained at HTL for a period of four (4) years. All results obtained apply only to the specimen tested and they do

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indicate compliance with the performance requirements of the test methods and specifications listed in the following section.

22.0 APPLICABLE CODES, STANDARDS & TEST METHODS:

ASTM E283 - Standard Test Method For Determining The Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences.

ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

ASTM E1886-05 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials.

ASTM E1996-05b - Standard Specification for Performance of Exterior Walls, Glazed Curtain Walls, Doors, and Storm Shutters Impacted by Windborne Debris in Hurricanes.

23.0 LIST OF OFFICIAL OBSERVERS:

Vinu J. Abraham, P.E. - HTL, CEO

José E. Colón, E.I. - HTL, Operations Manager

Andrew Bush - HTL

Kevin Rouse - HTL

Ian McKenzie - HTL

Al Fite - HTL

Andres Vasquez - CPFilms

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