

August 20, 2009

Mr. Frank Fountas  
FilmFastener, LLC  
8206 Copeland Road  
Odessa, FL. 33556

RE: Letter of Results for the Research and Development for 93465.01-401-36

Dear Mr. Fountas:

Architectural Testing, Inc. (ATI), Tampa, Florida recently completed testing on your series BondKap™ system; 7/8" wide PVC cover strips at the stiles and 1" wide PVC cover strips at the rails back bedded with Dow Corning 995 silicone. This specimen utilized an Aluminum Sliding Door Panel 38" wide by 79" high with 3/16" thick tempered glass and an applied window film, back bedded with Dow Corning 995 silicone at the interior perimeter edge of window film and aesthetically capped with FilmFastener BondKap™.

The test specimen was evaluated in accordance with the following:

**ASTME 330-02**, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Differences.*

**ASTM E 1996-05**, *Standard Specification for Performance of Exterior Windows, Doors, Skylights and Impact Protective Systems Impacted by Windborne Debris in Hurricanes. (4.5 lbs. Large Missile Impact- Level C)*

**ASTM E 1886-02**, *Standard Test Method for Performance of Exterior Windows, Curtain Walls Doors and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.*

Test results are listed below:

Structural loads; ASTM E 330-02, were performed to find a design pressure for the ASTM E 1886-05 cyclic pressure test. The specimen was loaded with static air pressure in intervals of 5 lbs. increments; starting at +/- 40 psf and achieved a maximum pressure of +/- 180 psf with no visible damage, for a design pressure of +/- 120 psf. It was determined after the impact that the specimen would be cycled at a design pressure of +/- 50psf.

**Test Results:** (Continued)

**ASTM E 1996-05, *Large Missile Impact- Level C***

**Conditioning Temperature:** 84°F

**Missile Weight:** 4.5 lbs

**Missile Length:** 49"

**Muzzle Distance from Test Specimen:** 6 ft.

**Test Unit #1**

**Impact #1:** Missile Velocity: 41.3 fps; orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Lower right corner of glass.

**Observations:** Missile hit target area, no damage or penetration.

*Note #1: Increased air pressure in cannon so glass breakage would occur.*

**Results:** Pass

**Re-Impact #2:** Missile Velocity: 42.9 fps; orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Lower right corner of glass.

**Observations:** Missile hit target area, fractured glass, tare in window film 5-1/8" long by 1/2" wide at the top of target area and tare in window film at missile impact area 2-1/4" by 1-1/2".

*Note #2: Placed 5-1/2" by 5-1/2" by 1/2" thick OSB board on interior and exterior sides of hole to gain pressure for cyclic pressures.*

**Results:** Fail

**Test Results:** (Continued)

**ASTM E 1886-05, Air Pressure Cycling**

**Test Unit #1**

**Design Pressure:** ±50 psf

**POSITIVE PRESSURE**

<b>Pressure Range Pa (psf)</b>	<b>Number of Cycles</b>	<b>Average Cycle Time (seconds)</b>	<b>Observations</b>
10 to 25	3500	1.50	Tempered glass falling off window film at the perimeter, no deglazing visible.
0 to 30	300	2.61	Tempered glass continues to fall off window film at the perimeter, no deglazing visible.
25 to 40	600	1.71	Tempered glass continues to fall off window film at the perimeter, no deglazing visible.
15 to 50	100	2.03	Upon the conclusion of the positive cycles the PVC cover strips separated from the silicone on the stiles only. 8" up from bottom corner on the right side, 13" up from bottom left side and 4" down from top right side. No deglazing or chaffing occurred.

**NEGATIVE PRESSURE**

<b>Pressure Range Pa (psf)</b>	<b>Number of Cycles</b>	<b>Average Cycle Time (seconds)</b>	<b>Observations</b>
15 to 50	50	1.91	Tempered glass falling off window film at the perimeter, no deglazing visible.
25 to 40	1050	1.65	Tempered glass continues to fall off window film at the perimeter, no deglazing visible.
0 to 30	50	2.54	Tempered glass continues to fall off window film at the perimeter, no deglazing visible.
10 to 25	3350	1.54	Upon the conclusion of the negative cycles the PVC cover strips separated from the silicone on the stiles only. 13" up from bottom corner on the right side, 16" up from bottom left side and 13" down from top right side. No deglazing or chaffing occurred.

**Result:** Pass

Results obtained are tested values and were secured by using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

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Scott Parker, Technician  
ARCHITECTURAL TESTING, INC.

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Don Beltz  
Director- Regional Operations

SP:ck