

DATE: September 9, 2009

FROM: Howard Paritsky, President  
Express Window Films

RE: Express Window Films  
8 Mil Security Film  
Miami Dade County Small Missile  
Impact Test Certification

We are proud to announce that on June 30<sup>th</sup>, 2009 we successfully completed our Dade County Small Missile Impact and Cyclic Wind Pressure Test (FBC TAS 201 & 203) on our Clear 8 Mil Security Film. Here are some highlights in regard to the testing:

#1: The testing was performed by Hurricane Engineering & Testing, Inc., (HETI) of Doral Florida. This is the same lab that performed the certification tests on our key competitor's products, notably 3M, CP/LLumar and Bekaert Window Films.

#2: Our test specimen size was unusually large (51" x 87"). We believe that these windows were larger than those used by our competitors.

#3: Our testing was performed on stock window units (EFCO 3900s). The units were neither modified nor fortified for the test. We believe that this is worth mentioning as well.

We wish to sincerely thank Dr. Axel Rhode, PhD who served as our lead project engineer for the tests. A copy of the test results is available on the "downloads page" of our website [www.buytint.com](http://www.buytint.com). The testing was conducted in conjunction with our Concord Films division, a wholly owned and legally registered subsidiary of our parent company.

Any questions regarding the test or the test results should be directed to me personally at [howard@buytint.com](mailto:howard@buytint.com) or via telephone at (800)345-6669.



Howard Paritsky, President  
Express Window Film

# Concord Window Films

Technical & Performance Data  
Clear 8 Mil Security Film



## Concord Window Films

82 Mill Plain Road  
Danbury, CT 06811

Tel: (203) 798-2211  
Fax: (203) 798-2253

<u>Parameter &amp; Test Number</u>	<u>Value</u>
<u>Tensile Strength</u> ASTM D 882	30,000 psi
<u>Elongation At Break</u> ASTM D 882	165%
<u>Yield Stress (5%)</u> ASTM D 882	15,700 psi
<u>Break Strength</u>	223 lbs/in
<u>Yield Strength (5%)</u>	115 lbs/in
<u>Tear Strength</u> ASTM D 1004 Graves Tear Test Graves Tear Test (Initial)	21
<u>Tensile Modulus</u> ASTM D 882	558,000 psi
<u>Puncture Strength</u> ASTM D 4830	125 lbs
<u>Peel Strength</u>	3,325 gm/in width
<u>Poisson's Ratio</u> ASTM D 882	0.40
<u>Abrasion Resistance</u> ASTM D 1003-92 ASTM D 1044 100 Cycles	< 5%
<u>ANZI Z 97.1</u>	Pass
<u>CPSC CFR 1201</u> Category II	Pass
<u>GSA Security Criteria</u> Performance Cond Daylight Application (4psi / 28psi / msec)	3b
<u>BS 6206</u> Class C	Pass
<u>Flame Spread Index</u> ASTM D 882	2
<u>Smoke Index</u> ASTM D 882	31
<u>Flash Temp</u> ASTM D 1929	735 F
<u>Combustion Rate</u>	Negligible
<u>Melting Point</u>	263 C
<u>Self Ignition</u> ASTM D 1929	755 F

# HURRICANE ENGINEERING & TESTING INC.

[www.hurricanetesting.com](http://www.hurricanetesting.com)

Computer controlled product testing & design, wind load analysis

## Small Missile Impact & Cyclic Wind Pressure Test.

(FBC TAS 201 & 203)

June 30, 2009

REPORT NUMBER: HETI-09-2531

CLIENT: Dr. Axel Rohde.  
4000 N. A1A, Visions, Suite 902, Hutchinson Island, FL. 34949.

MANUFACTURER: Concord ® Window Films.  
82 Mill Plain Road, Danbury, CT 06811.

TEST LOCATION: Hurricane Engineering & Testing Inc.  
6120 NW 97<sup>th</sup> Avenue, Doral, Florida, 33178

LAB. CERTIFICATION No.: 09-0512.07 (MIAMI-DADE COUNTY, FLORIDA)  
IAS. CERTIFICATION No.: TL-296 per ISO 17025-2005  
FBC ORGANIZATION No: TST1691  
FBPE Certificate of Authorization Number: 6905

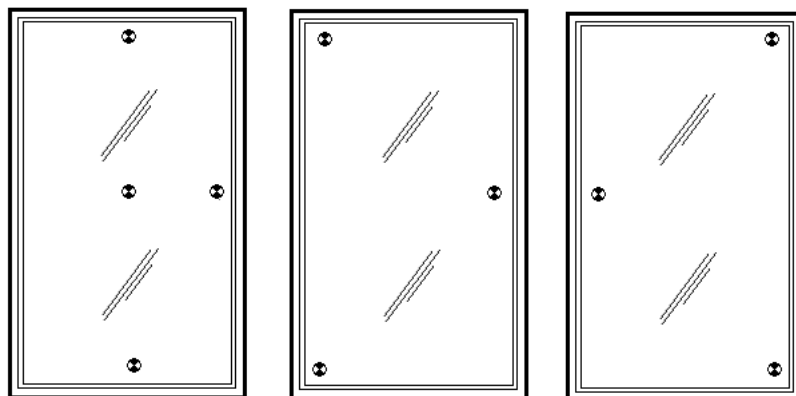
PRODUCT: Fixed Window (EFCO 3900) retrofitted with 8 mil CONCORD  
Security Film.  
(Reference Tensile Test Report No. HETI-09-T110)

PRODUCT SIZE: 51" w x 87" h (overall frame size)

DRAWING NUMBER: 1346 by W. W. Schaefer Engineering & Consulting, Dated Nov. 11, 2004.

DESIGN LOADS (psf): **+80, -80**

TEST WITNESSED BY: Syed Waqar Ali, Ph. D. (HETI)  
Dr. Nasreen K. Ali, E.I. (HETI)  
Mr. Candido F. Font, P.E. (HETI)  
Dr. Axel Rohde.



Sample # 1

Sample # 2

Sample # 3

⊕ Impact Locations

# Construction Details

PRODUCT: Fixed Window (EFCO 3900) retrofitted with 8 mil CONCORD Security Film.

## DESCRIPTION OF UNIT

FILM TYPE: 8 mil Clear Security film by Concord ®.  
PRODUCT SIZE: 51" w x 87" h (overall frame size)  
CONFIGURATION: O (Fixed lite)  
NO. & SIZE OF VENTS (1) Fixed

### Frame Components (Aluminum Extrusions)

Drawing No	Description	Overall Dimension (Inches)	Maximum Thickness (Inches)	Material
---	Head, Sill, and Jamb	3.25 x 1.50	0.056	6063-T5
---	Glazing Bead	0.99 x 0.21	0.060	6063-T6
---	Clips	2.00 x 0.59	0.096	6063-T6

### Corner Construction

The Corners were butt joined and secured using a (2) #8 x 1" Philips Pan Head Sheet Metal Screw Type B (PPH SMS). All the corners were sealed. The 3" wide clips were attached to the Frame with (1) #8 x 3/4" PPH Self Drilling Screw (SDS). On the Head and Sill (4) clips were located at 3", 18", 33" and 48" from the end. On the Jamb (6) clips were located at 3 1/2", 19 1/2", 35 1/2", 51 1/2", 67 1/2" and 83 1/2" from top.

### Glazing Material

Thermopane Insulated Glass.:

- 8 mil Clear Security film by Concord ®.
- 1/4" nominal (0.22") inboard Tempered Glass
- 0.48" Air space
- 1/4" nominal (0.22") outboard Tempered Glass
- 1" nominal (0.928") total thickness.

### Glazing Method

The glass was wet glazed using Dow Corning 795 silicone. A Glazing bead with a bulb vinyl, Part # WA04 by EFCO, was used at the inside face of the glass.

### Film Attachment

The film was applied to the surface of the innermost tempered glass, and attached to the glazing bead using Dow Corning 995 silicone.

Glass bite 0.55"

Reinforcements None.

Day Light Opening: 48" w x 84" h

Setting Blocks (2) per side, Neoprene 0.180" x .973" x 3.97" long setting block

Muntins None.

Reinforcements None.

**INSTALLATION.**

**SCREWS/METAL CLIPS AND METHOD OF ATTACHMENT**

**Substrata** 2 x 12 SYP PT wood  
**Shimming** 0"  
**Frame Sealant** Dow Corning 795

Location	Type	Size	Spacing	Quantity
Head & Sill	PPH SMS	#12 x 1 1/2"	2", 4", 17", 19", 32", 34", 47" and 49" from end.	8
Jamb	PPH SMS	#12 x 1 1/2"	2 1/2", 4 1/2", 18 5/8", 20 3/4", 34 1/2", 36 1/2", 50 5/8", 52 5/8", 66 5/8", 68 5/8", 82 5/8" and 84 5/8" from top.	12

PPH SMS= Philips Pan Head Sheet Metal Screws. All of the screws were attached to substrate using clips.

**Test Results**  
**Small Missile Impact Test**

Impact Location	Speed (fps)	Observations (in)	Description of Result
<b>Sample # 1 (Reference Report HETI-09-2531)</b>			
(1) Center	130	-----	No Penetration or Failure
(2) Right Edge of Glass	130	-----	No Penetration or Failure
(3) Bottom Edge @ Center	130	-----	No Penetration or Failure
(4) Top Edge @ Center	130	-----	No Penetration or Failure
<b>Sample # 2 (Reference Report HETI-09-2576)</b>			
(1) Right Edge of Glass	130	-----	No Penetration or Failure
(2) Top Left Corner	130	-----	No Penetration or Failure
(3) Bottom Left Corner	130	-----	No Penetration or Failure
<b>Sample # 3 (Reference Report HETI-09-2577)</b>			
(1) Left Edge of Glass	130	-----	No Penetration or Failure
(2) Top Right Corner	130	-----	No Penetration or Failure
(3) Bottom Right Corner	130	-----	No Penetration or Failure

*The impact consisted of (10) 2 gram steel balls.*

**Cyclic Wind Pressure Test Results**

**Sample # 1 (Reference Report HETI-09-2531)**

Cycles	Pressure (psf)	Deflection (in)	Set (in)	Recovery (%)	Duration (sec)
<b>Positive Pressure Cycles</b>					
3500	<b>+40</b>	----	----	----	1.0
300	<b>+48</b>	----	----	----	1.0
600	<b>+64</b>	----	----	----	1.0
100	<b>+80</b>	----	----	----	1.0
<b>Negative Pressure Cycles</b>					
50	<b>-80</b>	----	----	----	1.0
1050	<b>-64</b>	----	----	----	1.0
50	<b>-48</b>	----	----	----	1.0
3350	<b>-40</b>	----	----	----	1.0

**Sample # 2 (Reference Report HETI-09-2575)**

Cycles	Pressure (psf)	Deflection (in)	Set (in)	Recovery (%)	Duration (sec)
<b>Positive Pressure Cycles</b>					
3500	<b>+40</b>	----	----	----	1.0
300	<b>+48</b>	----	----	----	1.2
600	<b>+64</b>	----	----	----	1.0
100	<b>+80</b>	----	----	----	1.1
<b>Negative Pressure Cycles</b>					
50	<b>-80</b>	----	----	----	1.3
1050	<b>-64</b>	----	----	----	1.0
50	<b>-48</b>	----	----	----	1.3
3350	<b>-40</b>	----	----	----	1.0

**Sample # 3 (Reference Report HETI-09-2576)**

Cycles	Pressure (psf)	Deflection (in)	Set (in)	Recovery (%)	Duration (sec)
<b>Positive Pressure Cycles</b>					
3500	<b>+40</b>	----	----	----	1.0
300	<b>+48</b>	----	----	----	1.2
600	<b>+64</b>	----	----	----	1.0
100	<b>+80</b>	----	----	----	1.1
<b>Negative Pressure Cycles</b>					
50	<b>-80</b>	----	----	----	1.3
1050	<b>-64</b>	----	----	----	1.0
50	<b>-48</b>	----	----	----	1.3
3350	<b>-40</b>	----	----	----	1.0

**Conclusion**

*The samples were tested in accordance with TAS 201-94 (small Missile) and TAS 203-94 of the Florida Building Code and ASTM E 1886-02/ASTM E 1996-03. The exterior glass of the samples were hammered out after the first impact, since it cracked but did not shatter, before the interior glass (with film) were impacted with the steel balls.*

*NOTE: The above results were obtained using the designated test methods, which indicates compliance with the performance requirements of the referenced specifications. This report does not constitute certification of the specimens tested.*

**STATEMENT OF INDEPENDENCE**

The Hurricane Engineering & Testing, Inc., does not have, nor does it intend to acquire or will acquire, a financial interest in any company manufacturing or distributing products tested or labeled by the Hurricane Engineering & Testing, Inc. Hurricane Engineering & Testing, Inc., is not owned, operated or controlled by any company manufacturing or distributing products it test or labels.

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Dr. Nasreen K. Ali  
Vice President

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Mr. Candido F. Font, P.E.  
Resident Engineer