

Date: January 31, 1999 Page 1 of 3  
March 12, 1999  
Report No.: 284-4891-01 Revised  
Client No.: L24328  
Description: **Testing of Burglary Resisting Glazing Material**  
Client: **ACE/Security Laminates Incorporated**  
200 Isabella, Suite 500, Ottawa, Ontario K1S 1V7  
Attention: Mr. Peter Fabian

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## **Introduction.**

This test report covers the testing of glazing material in accordance with ULC-S332-93 - Standard for Burglary Resisting Glazing Material. Test samples were submitted October 8, 1998 in an as new condition. We performed testing in our laboratory on January 27, 1999, January 29 to January 31, 1999. Representative samples were subjected to Indoor use, Outdoor use, and Indoor/Outdoor use multiple impact tests after relevant thermal conditioning. The testing program was concluded in a high-energy impact test.

## **Description.**

Thirty-three (33) samples of glazing assemblies measuring 610 mm by 610 mm, by 3.4 mm total thickness. Each assembly consisted of a nominal 3 mm glass with a burglary resistant plastic film identified as SL 14 by the manufacturer, adhered to one side. The plastic film was 0.335 mm (335 microns) in thickness.

Samples were tested after being mounted horizontally and clamped in the specified testing frame. The samples were thermally conditioned at each specified temperature for at least 24 hr prior to testing.

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**Standard's Requirement.**

For the **multiple impact tests**, the samples should be capable of withstanding five 68 J impacts as produced by dropping an 83 mm diameter hardened smooth steel ball with a mass of 2.3 kg through a vertical distance of 3 m. All impacts have to fall within a 125 mm diameter circle. The steel ball shall not penetrate completely through the glazing material on any one of the five (5) impacts on nine (9) of the ten (10) samples tested.

The **high-energy impact test**, samples should be capable of withstanding one 270 J impact as produced by dropping the same ball through a vertical distance of 12 m at an approximate center of the sample. The steel ball shall not penetrate completely through the glazing material in all three (3) samples tested.

**Testing Program.**

**A - Thermal Conditioning Test for Outdoor Use** / The multiple impacts tests were conducted on ten samples conditioned at  $49 \pm 1^\circ\text{C}$  and on ten additional samples conditioned at  $-18 \pm 1^\circ\text{C}$

**B - Thermal Conditioning Test for Indoor Use** / The multiple impacts tests were conducted on ten samples conditioned at  $13 \pm 1^\circ\text{C}$ . We did not conduct additional conditioning and testing at  $35 \pm 1^\circ\text{C}$  required based on the results of testing for outdoor use at  $49 \pm 1^\circ\text{C}$ .

**C - High-Energy Impact Test** / The test was conducted on three samples conditioned at  $21 \pm 1^\circ\text{C}$ .

**Results.**

Test	Conditioning @	Results
A - Outdoor Use	$49 \pm 1^\circ\text{C}$	Ten out of ten samples tested passed
	$-18 \pm 1^\circ\text{C}$	Three out of ten samples tested failed
B - Indoor Use	$35 \pm 1^\circ\text{C}$	Not required as samples passed $49 \pm 1^\circ\text{C}$ conditioning
	$13 \pm 1^\circ\text{C}$	Nine out of ten samples tested passed
C - High Energy Impact Test	$21 \pm 1^\circ\text{C}$	Three out of three samples tested passed

**Conclusion.**

The glazing material submitted by the client satisfies the **ULC-S332-93 - Standard for Burglary Resisting Glazing Material** for the Indoor use category.

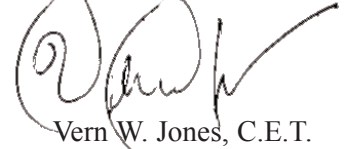
Tested and reported by: Robert Davison, Vern Jones.

Respectfully Submitted,  
**Intertek Testing Services, NA. Ltd.**



Robert Davison,  
Physical Testing Services

**Reviewed by**



Vern W. Jones, C.E.T.  
Manager  
Physical Testing Services

RD/VWJ/dsn  
2cc Client

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Report No.: 281-1012-01

Client No.: L24328

Description: **Testing of Burglary Resisting Glazing Material**

Client: **ACE/Security Laminates Incorporated**  
200 Isabella, Suite 500, Ottawa, Ontario K1S 1V7

Attention: Mr. Peter Fabian

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## **Introduction.**

This test report covers the testing of glazing material in accordance with **ULC-S332-93 - Standard for Burglary Resisting Material**. We performed the testing in our laboratory between the dates of November 14, 1997 and January 9, 1998. Representative samples were subjected to Indoor use, Outdoor use, and Indoor/Outdoor use multiple impacts test after relevant thermal conditioning. The testing program was concluded in a high-energy impact test.

## **Description.**

Thirty-three (33) samples of glazing assemblies measuring 610 mm by 610 mm, by 6 mm total thickness. Each assembly consisted of laminated glass with a burglary resistant plastic film identified as SL 14 adhered to one side. The laminated glass was 5.6 mm in thickness and the plastic film (two layers) was approximately 0.4 mm in thickness.

Samples were tested after being mounted horizontally and clamped in the specified testing frame. The samples were thermally conditioned at each specified temperature for at least 24 hours prior to testing.

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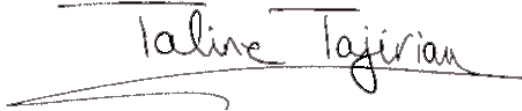
**Conclusion.**

The glazing material submitted by the client satisfies the **ULC-S332-93 - Standard for Burglary Resisting Glazing Material** for the Indoor use category.

Tested and reported by: Robert Davison, Vern Jones, and Taline Tajerian.

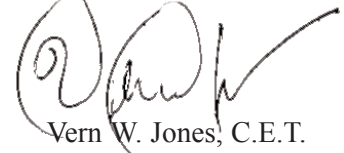
Respectfully Submitted,

**Intertek Testing Services, NA. Ltd.**



Taline Tajerian, B. Sc. (Hons.)  
Engineering Assistant

**Reviewed by**



Vern W. Jones, C.E.T.  
Manager

Physical Testing Services

TNT/VWJ/tnt

2cc Client