



REPORT NO: 3026404-1  
CLIENT NO: 30489  
DATE: August 27, 2002

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

CLIENT: **3M Canada Company– Window Film Solutions**  
Consumer Safety and Light Management  
5520 Explorer Drive, Suite 201  
Mississauga, Ontario  
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ATTENTION: Mr. Ron Phelps

## Introduction

This report covers the testing of glazing material in accordance with **ULC-S332-93** (Standard for Burglary Resisting Glazing Material). **Convenience Group Inc.** supplied the laminated glass and applied the film. The testing was performed between August 20 to 22, 2002 in our Mississauga Laboratory. Representative samples were subjected to Indoor/Outdoor use and high-energy impacts.

## Description

Thirty-three (33) samples of glazing material measuring 610 mm by 610 mm. Each assembly consisted of laminated glass with a burglary resistant plastic film manufactured by 3M adhered to one side. The laminated glass consisted of two pieces of 3 mm glass with a plastic layer sandwiched between them, giving an overall nominal thickness of 6.4 mm. The 3M Scotchshield™ (Part# SH14CLARL) plastic film was approximately 0.36mm in thickness.

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## Standard Requirements

### **Multiple Impact:**

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

### **High-Energy Impact:**

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

### **Results:**

Indoor/Outdoor Use	Conditioning	Results
Multiple Impacts	21 ± 1°C	Ten out of ten samples passed
	49 ± 1°C	Ten out of ten samples passed
	-18 ± 1°C	Ten out of ten samples passed
High-Energy Impacts	21 ± 1°C	Three out of three samples passed

### **Additional Testing:**

One of each conditioned sample was tested to see how many impacts it would take for failure to occur. The results are as follows:

	Conditioning	Results
Multiple Impacts	21 ± 1°C	22 impacts before failure
	49 ± 1°C	15 impacts before failure
	-18 ± 1°C	19 impacts before failure
High-Energy	21 ± 1°C	3 impacts before failure

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**Conclusions**

The glazing material submitted by 3M and Convenience Group Inc satisfies the **ULC-S332-93** Standard for Burglary Resisting Glazing material for both indoor/outdoor use.

**Tested by:** Michael MacDonald and Mustufa Swalah

**Reported by:** Michael MacDonald

Respectfully submitted,

**Intertek Testing Services NA Ltd.**



Michael MacDonald  
Physical Testing Services

**Reviewed by:**



Vern Jones C.E.T  
Manager  
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MGM/MS:mgm

Encl.

2cc Client