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**Impact Testing of Aged Organic coated Glass in
accordance with ANSI Z97.1-2009, CAN/CSGB-12.1-
M90 and CPSC 1201**

3M Renewable Energy
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Date: January 23, 2015
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Report Number: ESP016970P.3

**3M SCOTCHSHIELD ULTRA 600
AGED SAMPLES**

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INTRODUCTION:

The following report presents the results of impact testing of aged organic coated glass in accordance with the ANSI Z97.1-2009, National Standard of Canada CAN/CGSP-12.1-M90 and CPSC 1201 standards. Testing was requested by Paul Neumann of 3M Renewable Energy. The samples were received on June 4, 2014 and testing was completed by Josh Garrison on October 24, 2014.

SUMMARY OF RESULTS:

3M Scotchshield Ultra 600 film when applied to nominal 1/8" annealed glass **Complies** with the safety glazing impact requirements of ANSI Z97.1-2009 (Class A), CAN/CSGB-12.1-M90 and CPSC 1201 (Category II).

TEST METHODS AND RESULTS:

Aging Test

Place four of the organic-coated glass specimens positioned vertically and spaced at least one inch apart in the chamber. Raise the temperature to 140°F +/- 5°F within 3 hours and maintain for 21 hours. Change the chamber conditions to 100°F +/- 5°F and 95% +/- 5% relative humidity in three hours and maintain for 21 hours. This represents one complete cycle. Expose the specimens to 10 complete cycles. At the completion of the tenth cycle, change the chamber conditions to 0°F +/- 5°F in three hours and maintain for 21 hours.

Impact Test

Specimens were kept at a temperature of 70-80° F for a minimum of four hours preceding the test. Specimens were impacted alternating on the film side and the glass side, as noted in the tables in the following results section. Each specimen was struck once within ½ inch of center, with a shot bag constructed in accordance with the specifications referenced, swinging in a pendulum arc, from a drop height shown below.

3M Scotchshield Ultra 600 6 Mil – 1/8" Annealed Glass						
Sample Identification	Impact Side	Total Thickness Inches	Drop Height Inches	Weight of All Lost Particles (grams)	Weight of Largest Piece (grams)	Results/Size of Opening
#1	Glass	0.130	48	212	8	Pass – No tears / No openings
#2	Film	0.129	48	139	3	Pass – No tears / No openings
#3	Glass	0.132	48	132	5	Pass – No tears / No openings
#4	Film	0.132	48	129	3	Pass – No tears / No openings



EAR-CONTROLLED DATA

CALIBRATED TEST EQUIPMENT:

- PT-171-020 Digital Caliper
- PT-173-018 Sartorius Scale
- PT-177-012 Tape Measure

Calibration Due: 11/07/2014

Calibration Due: 08/27/2015

Calibration Due: 02/07/2018

DISPOSITION OF SAMPLE:

Samples were destroyed during testing and were disposed of immediately.

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