



January 10, 2011

3M INTERNAL TEST REPORT
RENEWABLE ENERGY DIVISION – ENERGY CONSERVATION
SAINT PAUL, MN 55116

TEST: **Window Film Abrasion Resistance**

TEST METHOD: ASTM D1044-05, *Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion*

TEST SPECIMEN: 3M™ Safety S70 (SH7CLARL) Safety and Security Window Film
Lot: GT 500 16354, roll# 290D6049
Date of Manufacture: 9/29/2009

TEST APPARATUS: Teledyne 5150 Taber Abraser, CS-10F Calibrase Wheel
BYK Gardner Haze-Gard Plus Hazemeter

SETTINGS: 500 grams, 100 cycles. 60 rpm. Wheel cleaned for 25 cycles with previously abraded sample following resurfacing

OVERVIEW:

Four 4x4 inch specimens were subjected to abrasion by means of a Taber Abraser with a load of 500 grams on each CS-10F Calibrase wheel for 100 cycles and operated in accordance with ASTM D1044-05. Haze measurements from four locations within each sample were made before and after abrasion, by means of a Pivotal-Sphere Hazemeter. The light scatter scattered as a result of abrasion was calculated and defined by the difference in haze before and after abrasion.

RESULTS:

Specimen #	Initial Haze (%)	Haze after Abrasion (%)	Difference (Increase) in Haze (%)
Safety S70 - 1	3.1	7.5	4.4
Safety S70 - 2	3.2	7.9	4.7
Safety S70 - 3	3.8	6.8	3.0
Safety S70 - 4	4.3	7.7	3.4
Average Difference (Increase in Haze)			3.9

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