BREAK and ENTRY PERFORMANCE TEST REPORT

Report No.: D5857.03-201-42

Rendered to:

3M COMPANY
St. Paul, Minnesota

PRODUCT TYPE: Safety and Security Window Film

Test Date: 02/26/14
And: 03/06/14
Report Date: 09/04/14

1.0 Report Issued To: 3M Company
Renewable Energy Division
St. Paul, Minnesota 55114

2.0 Test Laboratory: Architectural Testing, Inc.
849 Western Avenue North
St. Paul, Minnesota 55114
651-636-3835

3.0 Project Summary:

3.1 Product Type: Safety and Security Window Film
3.1.1 3M™ Scotchshield™ Safety and Security Film Ultra 800 (8 mil Microlayered)
3.1.2 3M™ Safety and Security Film, Safety S70 Exterior (7 mil)

3.2 Scope: Testing involved methodical attacks by an adult male to an entry door system including sidelites. Objective of the testing was to simulate an attack by an intruder with a firearm as the primary device to gain access through a door entryway. Testing was performed per the direction of 3M personnel.

3.3 Test Dates: 02/26/2014 and 03/06/2014

3.4 Test Record Retention End Date: All test records for this report will be retained until March 6, 2018.

3.5 Test Location: Architectural Testing, Inc. test facility in St. Paul, Minnesota.

3.6 Test Sample Source: The test specimens were provided by the client.

3.7 List of Official Observers:

Name	Company
Paul Neumann	3M Company
Eric J. Schoenthaler	Architectural Testing, Inc.

4.0 Test Specimen Description:

4.1 Test Specimen Description: The glazing that was tested was installed within a storefront entry system including two sidelites. The mockup consisted of a fully glazed outswing aluminum entry door with deadbolt and two fully glazed sidelites. The door size was 36" x 84" and the sidelites were 18" x 84". The glass remains consistent with 1/4" tempered glass with applied film as noted in the testing section.

5.0 Test #1: Semi-automatic rifle attack

5.1 Product Type: Safety and Security Window Film

5.2 Series/Model: 3M Ultra 800

5.3 Film Attachment: Flexible-mechanical attachment

5.4 Area of Attack: Door

5.5 Conditioning Temperature: 21°C (70°F)

5.6 Result: A total of 35 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	**Number of Impacts/Shots**	**Time Elapsed (Seconds)**	**Note**
Gunshots	4	0:00:05	1, 2
Upper Body Attack	9	0:00:06	3
Kicking	16	0:00:24	
Upper Body Attack	4	0:00:06	4
Totals from above:			
Gunshots	4	0:00:05	
Upper Body Attack	13	0:00:12	
Kicking	16	0:00:24	
Total:	**24**	**0:00:35**	
Method of Attack	**Number of Impacts/Shots**	**Time Elapsed (Seconds)**	**Note**
Gunshots	1	**0:00:03**	1

Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.

Note 2: Attempted pushing glazing after first shot.

Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.

Note 4: Attachment system failed before film penetration. Not enough time allowed for attachment system adhesive bond to cure.

6.0 Test #2: Semi-automatic rifle attack

6.1 Product Type: Safety and Security Film

6.2 Series/Model: 3M Ultra 800

6.3 Film Attachment: 3M Impact Protection Profile flexible-mechanical attachment

6.4 Area of Attack: Sidelite

6.5 Conditioning Temperature: 21°C (70°F)

6.6 Result: A total of 60 seconds elapsed before the attacker was able to gain access through door entryway system.

Method of Attack	Number of Impacts/Shots	Time Elapsed (Seconds)	Note
AR-15	2	0:00:22	1, 2
Upper Body Attack	15	0:00:10	3
Kicking	11	0:00:14	
Upper Body Attack	1	0:00:02	
Kicking	2	0:00:03	
Upper Body Attack	7	0:00:09	4
Totals from above:			
Gunshots	4	0:00:09	
Upper Body Attack	12	0:00:11	
Kicking	14	0:00:24	
Total:	**38**	**0:01:00**	

Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.

Note 2: Includes 3 upper body attacks between shots, and addressing a jammed ammunition cartridge (16 sec).

Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.

Note 4: Attachment system failed (adhesion to frame) before film was able to be penetrated.

7.0 Test #3: Semi-automatic rifle attack

7.1 Product Type: Safety and Security Film

7.2 Series/Model: 3M Ultra 800

7.3 Film Attachment: 3M Impact Protection Profile

7.4 Area of Attack: Sidelite

7.5 Conditioning Temperature: 21°C (70°F)

7.6 Result: A total of 50 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts/Shots	Time Elapsed (Seconds)	Note
AR-15	4	0:00:07	1, 2
Upper body impacts	14	0:00:11	3
Kicking	11	0:00:14	
Upper body impacts	11	0:00:09	
Kicking	5	0:00:09	4
Totals from above:			
Gunshots	4	0:00:07	
Upper Body Attack	25	0:00:20	
Kicking	16	0:00:23	
Total:	**45**	**0:00:50**	

Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.

Note 2: Includes 3 upper body attacks between shots.

Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.

Note 4: Film was torn and ripped open to allow complete body passage.

8.0 Test #4: Semi-automatic rifle attack

8.1 Product Type: Safety and Security Film

8.2 Series/Model: 3M Ultra 800

8.3 Film Attachment: 3M Impact Protection Profile

8.4 Area of Attack: Sidelite

8.5 Conditioning Temperature: 21°C (70°F)

8.6 Result: A total of 48 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts/Shots	Time Elapsed (Seconds)	Note
AR-15	4	0:00:07	1, 2
Upper body impacts	13	0:00:08	3
Kicking	12	0:00:14	
Upper body impacts	7	0:00:07	
Kicking	1	0:00:03	
Upper body impacts	6	0:00:09	
Totals from above:			
Gunshots	4	0:00:07	
Upper Body Attack	26	0:00:24	
Kicking	13	0:00:17	
Total:	**43**	**0:00:48**	

Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.

Note 2: Includes 3 upper body attacks between shots.

Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.

9.0 Test #5: Semi-automatic rifle attack

9.1 Product Type: Safety and Security Film

9.2 Series/Model: 3M Ultra 800 (interior); 3M Safety S70 Exterior (exterior)

9.3 Film Attachment: Flexible-mechanical attachment

9.4 Area of Attack: Door

9.5 Conditioning Temperature: 21°C (70°F)

9.6 Result: A total of 91 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts/Shots	Time Elapsed (Seconds)	Note
AR-15	4	0:00:05	1, 2
Upper body impacts	12	0:00:08	3
Kicking	14	0:00:17	
Upper body impacts	1	0:00:02	
Kicking	7	0:00:09	
Upper body impacts	5	0:00:05	
Kicking	13	0:00:24	
Simulated rifle attack	14	0:00:21	4
Totals from above:			
Gunshots	4	0:00:05	
Upper Body Attack	18	0:00:15	
Kicking	34	0:00:50	
Simulated rifle attack	14	0:00:21	
Total:	**43**	**0:01:31**	

Note 1: The rifle utilized was a Rock River Arms AR-15 in .223 caliber. The ammunition utilized was ballistic tipped.

Note 2: Includes 4 upper body attacks between shots.

Note 3: Upper body attack defined as a discrete attempt to push, pull, punch, rip or tear the glazing with hands, fists, or elbow.

Note 4: Simulated rifle attack consisted of direct impact with a nine pound galvanized steel pipe in the shape of a rifle.

10.0 Test #6: Baseball bat attack, NO FILM

10.1 Product Type: None

10.2 Series/Model: None (no film)

10.3 Film Attachment: None

10.4 Area of Attack: Sidelite

10.5 Conditioning Temperature: 21°C (70°F)

10.6 Result: A total of 5 seconds elapsed before the attacker was able to gain access through door entryway system

Method of Attack	Number of Impacts	Time Elapsed (Seconds)	Note
Baseball bat	4	0:00:05	1
Total:	**4**	**0:00:05**	

Note 1: First 2 strikes with bat did not break glass

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For ARCHITECTURAL TESTING, Inc.

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Eric J. Schoenthaler
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Daniel A. Johnson
Director – Regional Operations

EJS/jb

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Photographs (7 pages)

Appendix A

Photographs

Photo No. 1

Test #1: 3M Ultra 800, Semi-automatic rifle attack, after 4 shots.

Photo No. 2

Test #1: Semi-automatic rifle attack, accessed gained after 33 impacts and 35 seconds.

Photo No. 3

Test #2: 3M Ultra 800, Semi-automatic rifle attack, after 2 shots and jammed gun.

Photo No. 4

Test #2: Semi-automatic rifle attack, access gained after 38 impacts and 60 seconds.

Photo No. 5

Test #3: 3M Ultra 800, Semi-automatic rifle attack, after 4 shots.

Photo No. 6

Test #3: Semi-automatic rifle attack, access gained after 45 impacts and 50 seconds.

Photo No. 7

Test #4: 3M Ultra 800, Semi-automatic rifle attack, after 4 shots.

Photo No. 8

Test #4: Semi-automatic rifle attack, after 38 seconds.

Photo No. 9

Test #4: Semi-automatic rifle attack, access gained after 43 impact and 48 seconds.

Photo No. 10

Test #5: Semi-automatic rifle attack, 3M Ultra 800 (interior) with Safety S70 Exterior (exterior).

Photo No. 11

Test #5: Semi-automatic rifle attack, after 70 seconds.

Photo No. 12

Test #5: Semi-automatic rifle attack, access gained after 70 impacts and 91 seconds.

Photo No. 13

Test #6: Bat attack, NO FILM.

Photo No. 14

Test #6: Bat attack, NO FILM, access gained in 6 seconds.