

Ballistic Testing Services

Report Number: BTR-12-06-2019-Sample 6

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Report Date: December 6, 2019
 Contact: Paul Mouton
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Ballistic Results

Project Summary

Type of Products to be tested: **Bullet Resistant Glazings**
 Test Specimen Sample size(s): **12 x 12 inch**
 Number of test specimens: **23 Samples**
 Weight of all samples: **321.7 lbs**
 Are Materials a Health Hazard: **No**
 Need the Tests performed by: **within 7 to 10 days**
 Need products shipped back: **No**
 Purchase Order Number: **Not Applicable**

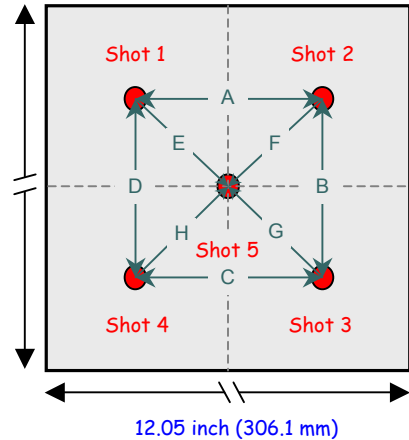
International Ballistic Standards / Specifications Testing

ASTM Canadian FRA NIJ CFR Pass All
 Australian EN1063 Germ DIN State Dept CFR SYA
 British EN1522/23 MIL-SAMIT UL 752 Other
 Test Standard: **National Institute of Justice 0108.01**
 Particular Test: **NIJ II-A Part 2 (.357 Magnum JSP)**
 Velocity Range: **1,200 to 1,300 ft/s**
 Shots: **5 shots**
 Shot Pattern: **> 2 inch**

Test Results

Test Sample: **Sample 6**
 Part Number / D.O.M.: **MWGF-NIJIIA / November 19, 2019**
 Reference ID: **CFR NIJ IIA**
 Description: **Security Glazing**
 Sample Size: **12.09 x 12.05 inch (307.1 x 306.1 mm)**
 Thickness: **0.902 inch (22.91 mm)**
 Weight: **9.41 lbs (4.27 kg)**
 Weapon Type: **.357 Magnum**
 Cartridge / Projectile Type: **.357 Magnum JSP**
 Projectile Weight: **158 grains**
 Target Distance: **16.4 feet**
 Number of Shots: **5 shots**

12.09 inch
(307.1 mm)



Shot Sequence:	Shot 1	Shot 2	Shot 3	Shot 4	Shot 5
Impact Velocity (ft/sec) *:	1,252	1,285	1,268	1,245	1,226
Impact Energy (ft-lbs):	550	579	564	544	527
Impact Momentum (lb-sec.):	0.88	0.90	0.89	0.87	0.86
Impact Angle (degrees):	0°	0°	0°	0°	0°
Sample Penetration:	NP	NP	NP	NP	NP
Witness Plate Penetration:	NP	NP	NP	NP	NP

Impact Spacing (inches)	
A	6.00
B	5.38
C	6.40
D	5.25
E	3.75
F	4.00
G	4.00
H	4.60
Average	
5.76	
Average	
4.09	

Witness Plate & Spall Result:

Witness plate material: **0.020 in. type 2024-T4 Aluminum foil alloy**
 Spall catch box: **Not required**
 Witness / Box Distance: **6.0 inches**
 Spall Occurrence: **No spall occurred**
 Test Temperature: **70 ° F**
 Test Date: **December 06, 2019**
 Pass / Fail Results: **Passed the Test**
 Comments: **CFR Reference for NIJ Level IIA Parts 1 & 2 (9 mm and .357 Magnum)**

NP = No Penetration
 PP = Partial Penetration
 CP = Complete Penetration
 N/A = Not Applicable

Footnotes

* Velocity measurements were taken at a distance of 6.6 feet from muzzle.

Test and Report Engineers

Tested and Reported by: **Sam Raheb**

Signature: *Sam Raheb*

Date: **December 6, 2019**

Name: **Midwest Glass Fabricators**

Report Date: **December 6, 2019**

Ballistic Test Results and Photographs

Ballistic Test Results:

Test Sample 6 passed the National Institute of Justice 0108.01 NIJ II-A Part 2 (.357 Magnum JSP) Ballistic test. There was no complete penetration of the test sample from any of the .357 Magnum JSP caliber projectiles.

Witness Plate and Spall Effects:

No spall occurred or damage to the 0.020 in. type 2024-T4 Aluminum foil alloy witness plate was observed.

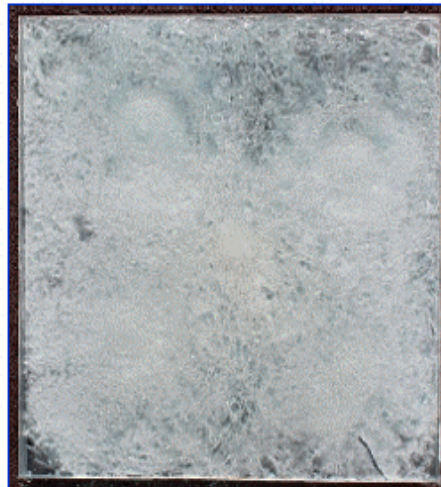
Photographs

The following photographs show the post-test sample. Additional larger sized photographs are included with this report.

Sample 6: MWGF-NIJIIA - D.O.M. November 19, 2019 - CFR NIJ IIA - NIJ II-A Part 2 - 12.09 x 12.05 x 0.902 in.



Sample 6 Post Test Impact Side



Sample 6 Post Test Rear Side

Test and Report Engineers

Tested and Reported by: **Sam Raheb**

Signature: *Sam Raheb*

Date: **December 6, 2019**