

Ballistic Testing Services

Report Number: BTR-12-06-2019-Sample 19

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Report Date: December 6, 2019
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Ballistic Results

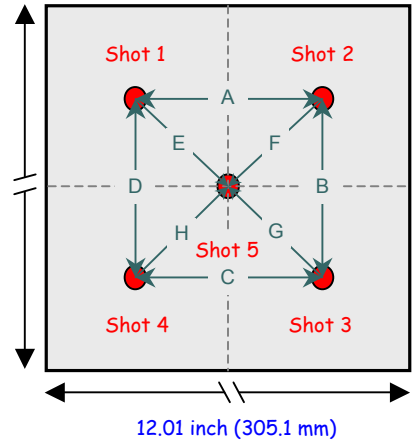
Project Summary
 Type of Products to be tested: **Bullet Resistant Glazings**
 Test Specimen Sample size(s): **12 x 12 inch**
 Number of test specimens: **23 Samples**
 Weight of all samples: **321.7 lbs**
 Are Materials a Health Hazard: **No**
 Need the Tests performed by: **within 7 to 10 days**
 Need 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 III (.30 cal. 7.62 NATO M80)**
 Velocity Range: **2,700 to 2,800 ft/s**
 Shots: **5 shots**
 Shot Pattern: **> 2 inch**

Test Results

Test Sample: **Sample 19**
 Part Number / D.O.M.: **MWGF-NIJIII-UL8 / November 14, 2019**
 Reference ID: **CFR NIJ III UL Level 8**
 Description: **Security Glazing**
 Sample Size: **12.01 x 12.01 inch (305.1 x 305.1 mm)**
 Thickness: **2.304 inch (58.52 mm)**
 Weight: **24.80 lbs (11.25 kg)**
 Weapon Type: **7.62 NATO**
 Cartridge / Projectile Type: **7.62 NATO / M80 FMJ**
 Projectile Weight: **147 grains**
 Target Distance: **49.2 feet**
 Number of Shots: **5 shots**

12.01 inch
(305.1 mm)



Shot Sequence:	Shot 1	Shot 2	Shot 3	Shot 4	Shot 5
Impact Velocity (ft/sec) *:	2,792	2,780	2,798	2,789	2,798
Impact Energy (ft-lbs):	2,544	2,522	2,555	2,539	2,555
Impact Momentum (lb-sec.):	1.82	1.81	1.83	1.82	1.83
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	6.25	Average 5.74
B	5.50	
C	5.60	
D	5.60	Average 4.04
E	4.40	
F	4.00	
G	3.50	
H	4.25	

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: **72 ° F**
 Test Date: **December 06, 2019**
 Pass / Fail Results: **Passed the Test**
 Comments: **CFR Reference for NIJ Level III and UL Level 8 (7.62 NATO)**

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 19 passed the National Institute of Justice 0108.01 NIJ III (.30 cal. 7.62 NATO M80) Ballistic test. There was no complete penetration of the test sample from any of the 7.62 NATO / M80 FMJ 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 19: MWGF-NIJIII-UL8 - D.O.M. November 14, 2019 - CFR NIJ III UL Level 8 - NIJ III - 12.01 x 12.01 x 2.304 in.



Sample 19 Post Test Impact Side



Sample 19 Post Test Rear Side

Test and Report Engineers

Tested and Reported by: **Sam Raheb**

Signature: *Sam Raheb*

Date: **December 6, 2019**