

Ballistic Testing Services

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

Phone: 800-513-4291 Email: techsupport@CloseFocusResearch.com

CloseFocusResearch.com

Name: Midwest Glass Fabricators
 Address: PO Box 1509, 100 Transfer Dr. Highland, MI 48357
 Phone: Phone: 248-889-6246 / Mobile 248-249-0478

Report Date: December 6, 2019
 Contact: Paul Mouton
 Email: pmouton@mwgf.com

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**

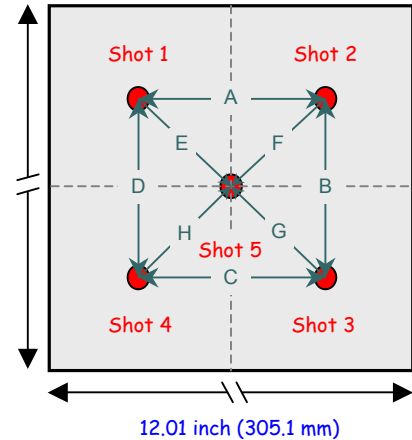
International Ballistic Standards / Specifications Testing

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-A Part 2 (9 mm Parabellum FMJ)**
 Velocity Range: **1,350 to 1,450 ft/s**
 Shots: **5 shots**
 Shot Pattern: **> 2 inch**

Test Results

Test Sample: **Sample 12**
 Part Number / D.O.M.: **MWGF-NIJIIIA-UL3-ENBR4 / November 14, 201 12.01 inch**
 Reference ID: **CFR NIJ IIIA EN BR4 UL Level 3 (305.1 mm)**
 Description: **Security Glazing**
 Sample Size: **12.01 x 12.01 inch (305.1 x 305.1 mm)**
 Thickness: **1.302 inch (33.07 mm)**
 Weight: **13.48 lbs (6.12 kg)**
 Weapon Type: **9 mm Parabellum**
 Cartridge / Projectile Type: **9 mm Parabellum FMJ**
 Projectile Weight: **124 grains**
 Target Distance: **16.4 feet**
 Number of Shots: **5 shots**

Shot Sequence:	Shot 1	Shot 2	Shot 3	Shot 4	Shot 5
Impact Velocity (ft/sec) *:	1,449	1,438	1,441	1,440	1,448
Impact Energy (ft-lbs):	578	569	572	571	577
Impact Momentum (lb-sec.):	0.80	0.79	0.79	0.79	0.80
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	5.50
C	5.60
D	5.50
E	4.20
F	3.20
G	4.30
H	4.00
Average	
5.65	
Average	
3.93	

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 IIIA Parts 1 & 2, UL Level 3, EN1063 BR4 (9 mm HV and .44 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 12 passed the National Institute of Justice 0108.01 NIJ III-A Part 2 (9 mm Parabellum FMJ) Ballistic test. There was no complete penetration of the test sample from any of the 9 mm Parabellum 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 12: MWGF-NIJI3IA-UL3-ENBR4 - D.O.M. November 14, 2019 - CFR NIJ IIIA EN BR4 UL Level 3 - NIJ III-A Part 2 - 12.01 x 12.01 x 1.302 in.



Sample 12 Post Test Impact Side



Sample 12 Post Test Rear Side

Test and Report Engineers

Tested and Reported by: **Sam Raheb**

Signature: *Sam Raheb*

Date: **December 6, 2019**