

Ballistic Testing Services

Report Number: BTR-12-06-2019-Sample 1

Phone: 800-513-4291 Email: [techsupport@CloseFocusResearch.com](mailto: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](mailto:pmouton@mwgf.com)

**Ballistic Results**

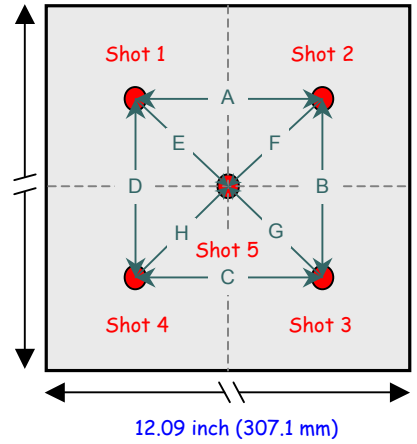
**Project Summary**  
 Type of Products to be tested: **Bullet Resistant Glazings**  
 Test Specimen Sample size(s): **12 x 12 inch**  
 Number of test specimens: **23 Samples**  
 Weight of all samples: **321.7 lbs**  
 Are Materials a Health Hazard: **No**  
 Need the Tests performed by: **within 7 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 I Part 1 (.22 LR HV Lead)**  
 Velocity Range: **1,010 to 1,090 ft/s**  
 Shots: **5 shots**  
 Shot Pattern: **> 2 inch**

**Test Results**

Test Sample: **Sample 1**  
 Part Number / D.O.M.: **MWGF-NIJ1 / November 10, 2019**  
 Reference ID: **CFR NIJ I**  
 Description: **Security Glazing**  
 Sample Size: **12.09 x 12.09 inch (307.1 x 307.1 mm)**  
 Thickness: **0.444 inch (11.28 mm)**  
 Weight: **4.46 lbs (2.02 kg)**  
 Weapon Type: **.22 Caliber Rifle**  
 Cartridge / Projectile Type: **.22 Caliber RNL**  
 Projectile Weight: **40 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) *:	1,201	1,152	1,093	1,189	1,217
Impact Energy (ft-lbs):	128	118	106	126	132
Impact Momentum (lb-sec.):	0.21	0.20	0.19	0.21	0.22
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	5.00	Average 5.50
B	6.00	
C	5.25	
D	5.75	Average 3.88
E	3.60	
F	3.90	
G	3.75	
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: **70 ° F**  
 Test Date: **December 06, 2019**  
 Pass / Fail Results: **Passed the Test**  
 Comments: **CFR Reference for NIJ Level 1 Parts 1 & 2 (.22LR and .38 Special)**

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 1 passed the National Institute of Justice 0108.01 NIJ I Part 1 (.22 LR HV Lead) Ballistic test. There was no complete penetration of the test sample from any of the .22 Caliber RNL 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 1: MWGF-NIJ1 - D.O.M. November 10, 2019 - CFR NIJ I - NIJ I Part 1 - 12.09 x 12.09 x 0.444 in.**



Sample 1 Post Test Impact Side



Sample 1 Post Test Rear Side

**Test and Report Engineers**

Tested and Reported by: **Sam Raheb**

Signature: *Sam Raheb*

Date: **December 6, 2019**