

Ballistic Testing Services

Report Number: BTR-12-06-2019-Sample 21

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Name: Midwest Glass Fabricators
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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 IV (.30 cal. 30-06 M2 AP)

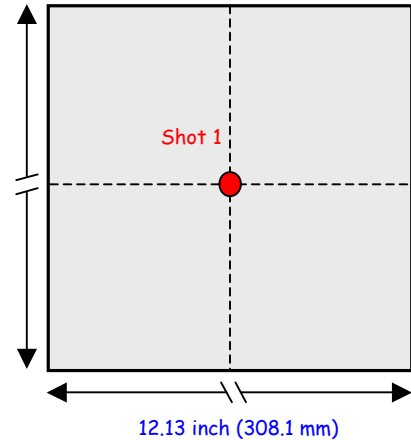
Velocity Range: 2,800 to 2,900 ft/s

Shots: 1 shot

Shot Pattern: Center shot

Test Results

Test Sample: Sample 21
Part Number / D.O.M.: MWGF-NIJIV-UL9 / November 22, 2019 12.13 inch (308.1 mm)
Reference ID: CFR NIJ IV UL Level 9
Description: Security Glazing
Sample Size: 12.13 x 12.13 inch (308.1 x 308.1 mm)
Thickness: 2.874 inch (73.00 mm)
Weight: 34.20 lbs (15.51 kg)
Weapon Type: .30 caliber 30-06
Cartridge / Projectile Type: .30 caliber 30-06 M2 AP FMJ
Projectile Weight: 166 grains
Target Distance: 49.2 feet
Number of Shots: 1 shot
Shot Sequence: Shot 1
Impact Velocity (ft/sec)\*: 2,862
Impact Energy (ft-lbs): 3,019
Impact Momentum (lb-sec.): 2.11
Impact Angle (degrees): 0°
Sample Penetration: NP
Witness Plate Penetration: NP
Impact Spacing (inches)\*\*: N/A
Impact Spacing / Pattern: N/A
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 IV and UL Level 9 (.30-06 M2AP)



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: [Handwritten Signature]

Date: December 6, 2019

Name: **Midwest Glass Fabricators**

Report Date: **December 6, 2019**

**Ballistic Test Results and Photographs**

**Ballistic Test Results:**

Test Sample 21 passed the National Institute of Justice 0108.01 NIJ IV (.30 cal. 30-06 M2 AP) Ballistic test. There was no complete penetration of the test sample from the .30 caliber 30-06 M2 AP FMJ caliber projectile.

**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.

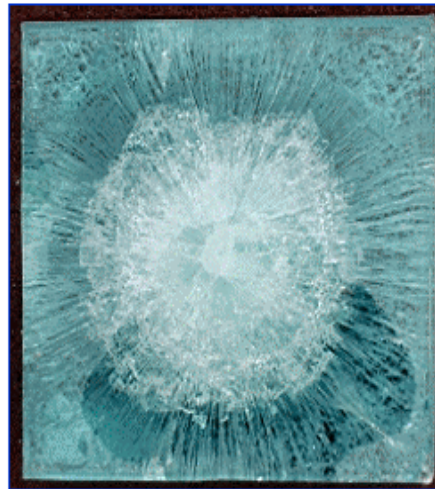
**Photographs**

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

**Sample 21: MWGF-NIJIV-UL9 - D.O.M. November 22, 2019 - CFR NIJ IV UL Level 9 - NIJ IV - 12.13 x 12.13 x 2.874 in.**



Sample 21 Post Test Impact Side



Sample 21 Post Test Rear Side

**Test and Report Engineers**

Tested and Reported by: **Sam Raheb**

Signature: *Sam Raheb*

Date: **December 6, 2019**