

Ballistic Testing Services

Report Number: BTR-12-06-2019-Sample 13

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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**

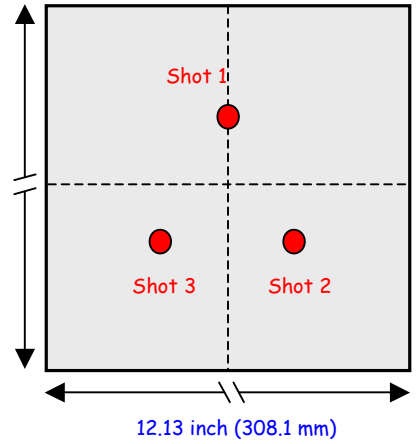
International Ballistic Standards / Specifications Testing
 ASTM Canadian FRA NIJ CFR Pass All
 Australian EN1063 Germ DIN State Dept CFR SYA
 British EN1522/23 MIL-SAMIT UL 752 Other
 Test Standard: **Underwriters Laboratory UL752 (Ambient Temp. Only)**
 Particular Test: **UL Level 3 Part 1 (.44 Magnum SWC)**
 Velocity Range: **1,350 to 1,485 ft/s**
 Shots: **3 shots**
 Shot Pattern: **4.0 ± 0.5 inch triangle**

Test Results

Test Sample: **Sample 13**
 Part Number / D.O.M.: **MWGF-NIJIIIA-UL3-ENBR4 / November 25, 2011.13 inch**
 Reference ID: **CFR NIJ IIIA EN BR4 UL Level 3 (308.1 mm)**
 Description: **Security Glazing**
 Sample Size: **12.13 x 12.13 inch (308.1 x 308.1 mm)**
 Thickness: **1.298 inch (32.97 mm)**
 Weight: **13.54 lbs (6.14 kg)**
 Weapon Type: **.44 Magnum**
 Cartridge / Projectile Type: **.44 Magnum SWC**
 Projectile Weight: **240 grains**
 Target Distance: **15 feet**
 Number of Shots: **3 shots**
 Shot Sequence:

	Shot 1	Shot 2	Shot 3
Impact Velocity (ft/sec) *:	1,427	1,399	1,466
Impact Energy (ft-lbs):	1,085	1,043	1,145
Impact Momentum (lb-sec.):	1.52	1.49	1.56
Impact Angle (degrees):	0°	0°	0°
Sample Penetration:	NP	NP	NP
Witness Plate Penetration:	NP	NP	NP
Impact Spacing (inches) **::	4.00	3.90	3.00

Impact Spacing / Pattern: **3.63 inch (average)**
 Witness plate material: **0.125 in. thick corrugated cardboard**
 Spall catch box: **Not required**
 Witness / Box Distance: **18.0 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 feet from muzzle.
 ** Impact Spacing is the distance between shots (shot 1= 3 to 1, shot 2 = 1 to 2, shot 3 = 2 to 3)

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 13 passed the Underwriters Laboratory UL752 UL Level 3 Part 1 (.44 Magnum SWC) Ballistic test. There was no complete penetration of the test sample from any of the .44 Magnum SWC caliber projectiles.

Witness Plate and Spall Effects:

No spall occurred or damage to the 0.125 in. thick corrugated cardboard witness plate was observed.

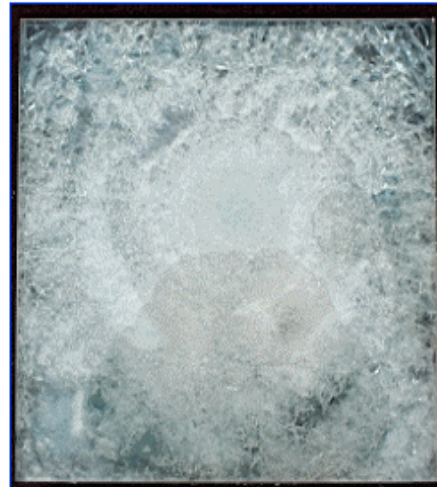
Photographs

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

Sample 13: MWGF-NIJIIIA-UL3-ENBR4 - D.O.M. November 25, 2019 - CFR NIJ IIIA EN BR4 UL Level 3 - UL Level 3 Part 1 - 12.13 x 12.13 x 1.298 in.



Sample 13 Post Test Impact Side



Sample 13 Post Test Rear Side

Test and Report Engineers

Tested and Reported by: **Sam Raheb**

Signature: *Sam Raheb*

Date: **December 6, 2019**