

Ballistic Testing and Design Services

Report Number: BTR-02-01-2006-TBD-Sample 3

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Report Date: [February 1, 2006](#)  
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**Ballistic Results**

**Project Summary**

Type of Products to be tested: **Ballistic Material**  
 Test Specimen Sample size(s): **12 x 12 and 24 x 24 inch**  
 Number of test specimens: **4 Samples**  
 Weight of all samples: **115 lbs**  
 Are Materials a Health Hazard: **No**  
 Need the Tests performed by: **February 10, 2006**  
 Need products shipped back: **Yes**  
 Purchase Order Number: **TBD**

**International Ballistic Standards / Specifications Testing**

ASTM  Brunswick  FRA  NIJ  CFR Pass All  
 Australian  Canadian  Germ DIN  State Dept  CFR SYA  
 British  EN 1063  MIL-SAMIT  UL 752  Other  
 Test Standard: **National Institute of Justice**  
 Particular Test: **NIJ III (.30 cal. 7.62 NATO M80) modified**  
 Velocity Range: **2,700 to 2,800 ft / sec**  
 Number of Shots: **5 shots - shot at 30° angle**  
 Spacing / Pattern: **> 2 inches (See illustration below)**

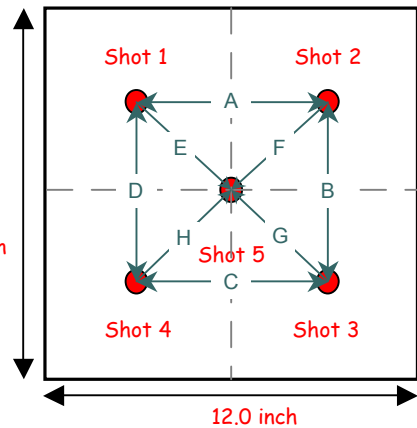
**Test Results**

Product Number: **Sample 3 12 x 12 x 2.05 inch Composite**  
 Sample Type: **Ballistic Material**  
 Sample Size: **12.0 x 12.0 inch**  
 Thickness: **2.05 inch**  
 Weight: **20.6 lbs**  
 Weapon Type: **7.62 Rifle**  
 Cartridge / Projectile Type: **7.62 x 51 NATO M80**  
 Projectile Weight: **147 gr**  
 Target Distance: **49.2 ft**  
 Number of Shots: **5 shots - shot at 30° angle**

NP = No Penetration  
 CP = Complete Penetration

Shot Sequence:	Shot 1	Shot 2	Shot 3	Shot 4	Shot 5
Impact Velocity (ft/sec) *:	2,740	2,745	2,739	2,746	2,748
Impact Energy ( ft-lbs):	2,450	2,459	2,448	2,461	2,464
Impact Momentum ( lb-sec.):	1.79	1.79	1.79	1.79	1.79
Impact Angle (degrees):	30 °	30 °	30 °	30 °	30 °
Penetration Effect:	NP	NP	NP	NP	NP
Bulge Height (inches) **:	0.00	0.00	0.00	0.00	0.00

Witness plate material: **0.020 in. type 2024-T3 Aluminum foil alloy**  
 Witness Plate Distance: **6 inches**  
 Spall Occurrence: **None**  
 Test Temperature: **74 °F**  
 Test Date: **February 1, 2006**  
 Comments: **Passed the Test**



Impact Spacing (inches)		
A	6.10	Average 6.21
B	6.60	
C	6.45	
D	5.70	
E	3.95	Average 4.39
F	4.35	
G	4.75	
H	4.50	

**Comments and Test Descriptions**

- \* Velocity measurements were taken at a distance of 6.6 ft from muzzle
- \*\* The post impact Bulge Height is the distance between the apex of the extruded deformation bulge to the tangent plane of the flat surface. This measurement is taken from the side opposite to the impacts.

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**Test and Report Engineers**

Tested and Reported by: **Sam Wilson**

Signature: *Sam Wilson*

Date: **February 1, 2006**

Name: **Shooting Ranges International**

Report Date: **February 1, 2006**

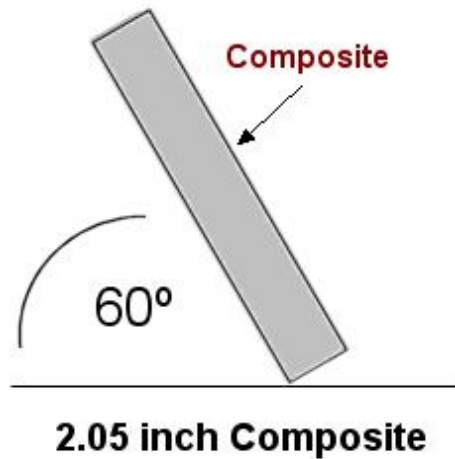
**Ballistic Test Results and Photographs**

**Ballistic Test Results:**

All five shots penetrated the impact surface but did not completely penetrate through the sample. This Ballistic Material test sample passed the modified NIJ III (.30 cal. 7.62 NATO M80) Ballistic test.

**Witness Plate Spall Effects:**

No Spall was observed.



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Date: **February 1, 2006**