

Ballistic Testing and Design Services

Report Number: BTR-02-01-2006-TBD-Sample 1

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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: **CFR Pass All**
 Particular Test: **CFR-PA-08 (7.62 NATO M80)**
 Velocity Range: **2,750 to 3,025 ft/s**
 Number of Shots: **5 shots**
 Spacing / Pattern: **4.3 inch square**

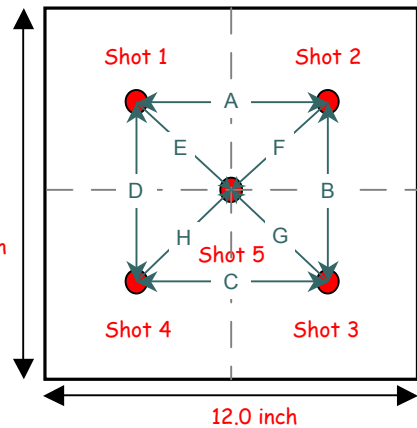
Test Results

Product Number: **Sample 1 12 x 12 x 4.65 inch Composite**
 Sample Type: **Ballistic Material**
 Sample Size: **12.0 x 12.0 inch**
 Thickness: **4.65 inch**
 Weight: **28.5 lbs**
 Weapon Type: **7.62 Rifle**
 Cartridge / Projectile Type: **7.62 x 51 NATO M80**
 Projectile Weight: **147 gr**
 Target Distance: **15 ft**
 Number of Shots: **5 shots**

NP = No Penetration
 CP = Complete Penetration

Shot Sequence:	Shot 1	Shot 2	Shot 3	Shot 4	Shot 5
Impact Velocity (ft/sec) *:	2,925	2,933	2,931	2,922	2,928
Impact Energy (ft-lbs):	2,792	2,807	2,804	2,786	2,798
Impact Momentum (lb-sec.):	1.91	1.91	1.91	1.91	1.91
Impact Angle (degrees):	0 °	0 °	0 °	0 °	0 °
Penetration Effect:	NP	NP	NP	NP	NP
Bulge Height (inches) **::	0.00	0.00	0.00	0.00	0.00

Witness plate material: **0.001 in. thick Aluminum foil**
 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	3.84	Average 4.24
B	4.48	
C	4.48	
D	4.16	
E	2.85	Average 3.02
F	3.24	
G	3.11	
H	2.88	

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**

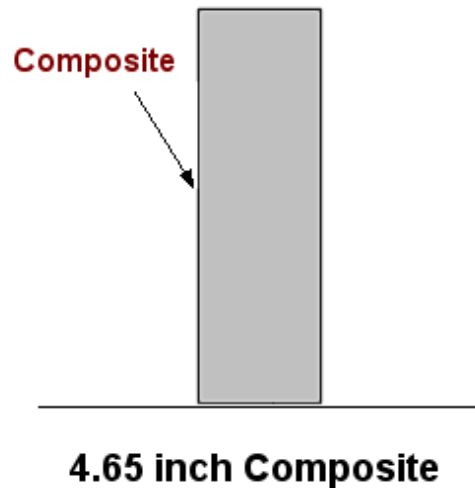
Ballistic Test Results and Photographs

Ballistic Test Results:

The Sample was placed in a Ricochet catch box to observe if any fragments ricocheted back through the sample's impact surface. All five shots penetrated the impact surface, but did not completely penetrate through the sample. This Ballistic Material test sample passed the CFR Pass All - CFR-PA-08 (7.62 NATO M80) Ballistic test. No fragments ricocheted back through the impact surface.

Witness Plate Spall Effects:

No Spall was observed.



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