

# H.P. WHITE LABORATORY, INC.

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13 August 2009  
(HPWLI 11272-01F)

Hercules High Performance Materials Co., Limited  
RM3305, 33/F, Jin Zhong Huan Commercial Building  
Jin Tian Road, Futian  
Shenzhen, G.D. 518048 China

Attention: David Lee

Gentlemen:

In accordance with your instructions, H.P. White Laboratory, Inc. conducted ballistic resistance testing of two armor samples (see enclosed data records for construction description) received 5 August 2009 via DHL.

Testing was conducted in accordance with your instructions, and the modified provisions of NIJ-STD-0101.06, Level III, using caliber 7.62x51mm, 149 grain, M80, Ball ammunition. The test samples were mounted on an indoor range 50.3 feet from the muzzle of a test barrel to produce zero degree obliquity impacts. Velocity screens were positioned at 39.5 and 44.5 feet, which, in conjunction with elapsed time counters (chronographs), were used to compute projectile velocities 42.0 feet from the muzzle. Table I is a summary of the enclosed data records.

TABLE I. SUMMARY OF RESULTS

Test Sample				Ballistic Threat					Results	
Number	Weight Plate (lb)	Weight Vest (lb)	Plies	Obliquity	Caliber	Shots	Velocity (fps) Max. Min.		Penetrations	Deformation (mm) (a)
10	3.25	1.64	(b)	0	7.62, M80	6	2794	2766	0	43/42
11	4.14	Na	(b)	0	7.62, M80	6	2796	2753	0	45/44

(a) Deformation of 5.5 inch clay backing.  
(b) See enclosed data record for information.

This report is based on data obtained from having tested only the samples submitted, and should NOT be interpreted as an endorsement by H.P. White Laboratory, Inc. of the continuing quality, or performance, of any other items of the same, or similar, design.

The test samples are being returned via DHL. Should you have any questions regarding this matter, or if we may be of any further service, please do not hesitate to contact us.

Very truly yours,

H. P. WHITE LABORATORY, INC

  
Craig B. Dunn

CBD/tc  
Enclosures



# H.P. White Laboratory, Inc.

Client : HERCULES HIGH PERFORMANCE MATERIALS CO, LT

## BALLISTIC RESISTANCE TEST

Job No. : 11272-01

Test Date : 8/7/09

### TEST PANEL

Manufacturer : HERCULES ARMOR  
 Size : PLATE: 10 x 12, VEST: 15.5x15.5 in.  
 Thicknesses : NA  
 Avg. Thick : NA  
 Description : SEE REMARKS FOR MAKE-UP.  
 PLATE: MODEL: HAP-PE111-ICW (7.62x51mm NATO), VEST: MODEL: SAP-SB160UD-28

Sample No. : 10  
 Weight : PLATE: 3.25, VEST:1.64 lbs, Date Rec'd : 08/05/09  
 Hardness : NA  
 Plies/Laminates : PLATE: 1, VEST: 28  
 Ve : DHL  
 Returned : DHL

### SET-UP

Shot Spacing : PER NIJ-STD-0101.06 LEVEL III  
 Witness Panel : CLAY  
 Obliquity : 0 deg.  
 Backing Material : 5.5" CLAY/PLYWOOD  
 Conditioning : IMPACTED AND SUBMERGED

Primary Vel. Screens : 39.5 ft., 44.5 ft.  
 Primary Vel. Location : 42.0 ft. From Muzzle  
 Residual Vel. Screens : NA  
 Residual Vel. Location : NA  
 Range to Target : 50.3 ft.  
 Target to Wit. : 0.0 in.

Range No. : 9  
 Temp. : 72 F  
 BP : 29.88 in. Hg  
 RII : 50%  
 Barrel No./Gun : .308/R-9  
 Gunner : C. SUTTON  
 Recorder : L. CHES

### AMMUNITION

(1) : 7.62mm Ball, M80, 149 gr. Lot No. : WRA-67  
 (2) : Lot No. :  
 (3) : Lot No. :  
 (4) : Lot No. :

### APPLICABLE STANDARDS OR PROCEDURES

- (1) : PER NIJ-STD-0101.06 LEVEL III (MODIFIED)
- (2) : PRE-TEST CLAY DROPS: 20mm, 21mm, 19mm, 18mm, 19mm
- (3) : PRE-TEST CLAY TEMP: 99.0F

Shot No.	Ammo.	Time 1 (usec)	Velocity 1 (ft/s)	Time 2 (usec)	Velocity 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Footnotes
1	1	1802	2775	1802	2775	2775	None	DEF. 42mm
2	1	1791	2792	1791	2792	2792	None	DEF. 43mm
3	1	1798	2781	1799	2779	2780	None	
4	1	1808	2765	1807	2767	2766	None	
5	1	1803	2773	1803	2773	2773	None	
6	1	1790	2793	1789	2795	2794	None	

#### REMARKS :

MAKE-UP: PLATE: LAYER 1, 100% UHMW POLYETHYLENE (21MM).  
 VEST: LAYERS 1-28, 100% UHMW POLYETHYLENE.  
 STITCHING: NONE

#### FOOTNOTES :





# H.P. White Laboratory, Inc.

Client: HERCULES HIGH PERFORMANCE MATERIALS CO, LT

## BALLISTIC RESISTANCE TEST

Job No. : 11272-01

Test Date : 8/7/09

### TEST PANEL

Manufacturer : HERCULES ARMOR  
 Size : 10 x 12 in.  
 Thicknesses : NA  
 Avg. Thick. : NA  
 Description : SEE REMARKS FOR MAKE-UP.  
 MODEL: HAP-PE111-STA (STAND ALONE).

Sample No. : 11  
 Weight : 4.14 lbs.  
 Hardness : NA  
 Plies/Laminates : 1

Date Rec'd. : 08/05/09  
 Via : DHL  
 Returned : DHL

### SET-UP

Shot Spacing : PER NIJ-STD-0101.06 LEVEL III  
 Witness Panel : CLAY  
 Obliquity : 0 deg.  
 Backing Material : 5.5" CLAY/PLYWOOD  
 Conditioning : IMPACTED AND SUBMERGED

Primary Vel. Screens : 39.5 ft., 44.5 ft.  
 Primary Vel. Location : 42.0 ft. From Muzzle  
 Residual Vel. Screens : NA  
 Residual Vel. Location : NA  
 Range to Target : 50.3 ft.  
 Target to Wit. : 0.0 in.

Range No. : 9  
 Temp. : 72 F  
 BP : 29.85 in. Hg  
 RH : 51%  
 Barrel No./Gun : .308/R-9  
 Gunner : C. SUTTON  
 Recorder : L. CHES

### AMMUNITION

(1) : 7.62mm Ball, M80, 149 gr. Lot No. : WRA 67  
 (2) : Lot No. :  
 (3) : Lot No. :  
 (4) : Lot No. :

### APPLICABLE STANDARDS OR PROCEDURES

- (1) : PER NIJ-STD-0101.06 LEVEL III (MODIFIED)
- (2) : PRE-TEST CLAY DROPS: 21mm, 19mm, 19mm, 19mm
- (3) : PRE-TEST CLAY TEMP: 100.5F

Shot No.	Ammo.	Time 1 (usec)	Velocity 1 (ft/s)	Time 2 (usec)	Velocity 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Footnotes
1	1	1789	2795	1789	2795	2795	None	DEF. 45mm
2	1	1811	2761	1810	2762	2762	None	DEF. 44mm
3	1	1788	2796	1788	2796	2796	None	
4	1	1811	2761	1810	2762	2762	None	
5	1	1816	2753	1816	2753	2753	None	
6	1	1797	2782	1797	2782	2782	None	

### REMARKS :

MAKE-UP: LAYER 1, 100% UHMW POLYETHYLENE (26mm).

### FOOTNOTES :