

# H.P. WHITE LABORATORY, INC.

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13 August 2009  
(HPWLI 11272-01C)

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 one armor sample (see enclosed data record for construction description) received 5 August 2009 via DHL.

Testing was conducted in accordance with your instructions, and the abbreviated provisions of NIJ-STD-0101.04, Level IIIA, using caliber 9mm Luger, 124 grain, FMJ ammunition only. The test sample was mounted on an indoor range 16.3 feet from the muzzle of a test barrel to produce zero and thirty degree obliquity impacts. Velocity screens were positioned at 6.5 and 11.5 feet, which, in conjunction with elapsed time counters (chronographs), were used to compute projectile velocities 9.0 feet from the muzzle. Table I is a summary of the enclosed data record.

TABLE I. SUMMARY OF RESULTS

Test Sample			Ballistic Threat				Results	
Number	Weight (lbs)	Plies	Obliquity	Caliber	Shots	Velocity (fps) Max. Min.	Penetrations	Deformation (mm) (a)
09	1.62	28	0	9mm Luger	4	1460 1401	0	30/30
			30		2	1444 1428	0	Na

(a) Deformation of 5.5 inch clay backing; maximum permissible: 44mm.

This report is based on data obtained from having tested only the sample 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 sample is 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  
Enclosure



# H.P. White Laboratory, Inc.

Client: HERCULES HIGH PERFORMANCE MATERIALS CO, L

## BALLISTIC RESISTANCE TEST

Job No.: 11272-01

Test Date: 8/11/09

### TEST PANEL

Manufacturer: HERCULES ARMOR

Size: 15.5 x 15.5 in.

Thicknesses: NA

Avg. Thick.: NA

Description: SEE REMARKS FOR MAKE-UP.

MODEL: SAP-SB160UD-28

Sample No.: 09

Weight: 1.62 lbs.

Hardness: NA

Plies/Laminates: 28

Date Rec'd.: 08/05/09

Via: DHL

Returned: DHL

### SET-UP

Shot Spacing: PER NIJ-STD-0101.04 LEVEL IIIA

Witness Panel: CLAY

Obliquity: 0 & 30 deg.

Backing Material: 5.5" CLAY/PLYWOOD

Conditioning: WET

Primary Vel. Screens: 6.5 ft., 11.5 ft.

Primary Vel. Location: 9.0 ft. From Muzzle

Residual Vel. Screens: NA

Residual Vel. Location: NA

Range to Target: 16.3 ft.

Target to Wit.: 0.0 in.

Range No.: 9

Temp.: 66 F

B<sub>P</sub>: 29.59 in. Hg

RH: 73%

Barrel No./Gun: 9mm/R-9

Gunner: C. SUTTON

Recorder: L. CHES

### AMMUNITION

(1): 9mm, FMJ, 124 gr.

(2):

(3):

(4):

Lot No.: REMINGTON 23558

Lot No.:

Lot No.:

Lot No.:

### APPLICABLE STANDARDS OR PROCEDURES

(1): PER NIJ-STD-0101.04 LEVEL IIIA (ABBREVIATED)

(2): PRE-TEST CLAY DROPS: 21mm, 20mm, 20mm, 20mm

(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	3424	1460	3425	1460	1460	None	DEF. 30mm
2	1	3481	1436	3480	1437	1437	None	DEF. 30mm
3	1	3500	1429	3500	1429	1429	None	
4	1	3462	1444	3461	1445	1444	None	(a)
5	1	3501	1428	3502	1428	1428	None	(a)
6	1	3570	1401	3569	1401	1401	None	

### REMARKS:

MAKE-UP: LAYERS 1-28, 100% UHMW POLYETHYLENE.

### FOOTNOTES:

(a) SHOT IMPACTED ON A 30 DEGREE ANGLE.