

H.P. WHITE LABORATORY, INC.

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8 November 1997
(HPWLI 7489-01C)
Revised 10 April 1998

Waco Composites, Inc.
P.O. Box 20667
Waco, Texas 76702

Attention: Mr. George Smith

Gentlemen:

In accordance with your verbal authorization, H.P. White Laboratory, Inc. conducted Ballistic Resistance Testing of two fiberglass laminates identified as **ARMORCORE** which were received on 13 November 1997 via United Parcel Service.

Testing was conducted in accordance with the Level II requirements of NIJ-STD-0108.01, BALLISTIC RESISTANT PROTECTIVE MATERIALS, dated September 1985. The test samples were rigidly mounted on an indoor range 16.5 feet from the muzzle of a test barrel to produce zero degree obliquity impacts using calibers 9mm, 124.0 grain, FMJ and .357 Magnum, 158.0 grain, JSP ammunition. Lumiline screens were positioned at 6.5 and 9.5 feet which, in conjunction with an elapsed time counter (chronograph), were used to determine velocities at 8.0 feet from the muzzle. Penetrations were determined by visual examination of a 0.020 inch thick sheet of 2024T3 aluminum positioned 6.0 inches behind, and parallel to, the test samples. The requirements of NIJ-STD-0108.01 specify only that the shot pattern will be "evenly spaced". Integrating that requirement with a minimum allowable sample size of 12" x 12", we have derived a shot pattern of 5 shots on the corners and in the center of an 8.0 inch square. In order to eliminate variance in the test results related to shot density, it is our policy to use this pattern for all testing REGARDLESS of the size of the test samples. Table I is a summary of the attached data records.

TABLE I. SUMMARY OF RESULTS

Test Sample			Ballistic Threat			Results		
Serial Number	Thickness (in) (a)	Weight (lbs.)	Caliber	Shots	Velocity(fps) Max. Min.	Pene- tration	Spall Only	
97-284-19								
HPW-3	0.439	6.01	9mm	5	1221	1158	0	0
HPW-4	0.433	5.90	.357 Mag.	5	1440	1406	0	0

(a) Average of four corner thicknesses.

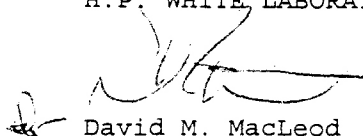
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Based on the data presented in Table I, the samples submitted for testing **SATISFIED** the ballistic requirements of NIJ-STD-0108.01 for **LEVEL II** protection.

The test panels are being returned via United Parcel Service. 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.



David M. MacLeod

DMM:lc

enclosures