

# H.P. WHITE LABORATORY, INC.

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2 November 2005  
(HPWLI 9751-03C)

Mofet Etzion  
Kibbutz Kfar Etzion  
Bott Postal Tzfón  
Yhuda 90912, Israel

Attention: Mr. Nizan Sela

Gentlemen:

In accordance with your instructions, H.P. White Laboratory, Inc. conducted Ballistic Limit, Protection (V50BL[P]) testing of four armor samples received 27 October 2005 via Federal Express.

Testing was conducted in accordance with the provisions of MIL-STD-662F, dated 18 December 1997, using caliber 14.5mm, 950 grain, B-32 and 20mm, 830 grain fragment simulating projectiles conforming to MIL-P-46593A. The test samples were mounted on an indoor range 13.72 meters from the muzzle of a test barrel to produce zero degree obliquity impacts. Photoelectric lumiline screens were positioned at 4.57 and 10.67 meters which, in conjunction with elapsed time counters (chronographs), were used to compute projectile velocities 7.6 meters from the muzzle. Penetrations were determined by visual examination of a 0.020-inch thick sheet of 2024T3 aluminum positioned 15.2 centimeters behind, and parallel to the test samples. Table I is a summary of the attached data records.

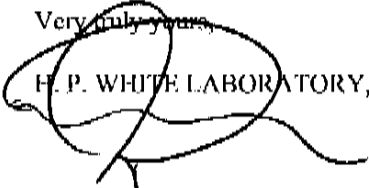
TABLE I. SUMMARY OF RESULTS

Test Sample			Ballistic Threat		Ballistic Limit (fps)		
Number	Weight (kg)	Thickness (in) (a)	Caliber	Shots Total/V50	V50	High Partial	Low Complete
ZAD28T19B3R2.5-210	NA	NA	14.5, B-32	5/2	982.7	961.3	1004.1
ZAD28T19B3R2.5-210	NA	NA	20mm FSP	4/0(a)	NA	1099.5	NA
ZAD28T19B3R4-210	17.96	NA	14.5, B-32	5/4	884.3	879.4	869.3
ZAH31-185	NA	NA	14.5, B-32	7/2	921.7	968.5	874.9

(a) Average of four corner thicknesses.  
(b) Test stopped at client request.

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 discarded. 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

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To: 0351320022022993289#02 P. 9

97229932433

11-NOV-2005 06:54 From: MOFET ETZION



# H.P. White Laboratory, Inc.

## PROTECTION BALLISTIC LIMIT TEST, V50 BL(P)

Client MOFET ETZION

Job No : 9751-03

Test Date : 11/1/05

### TEST PANEL

Manufacturer : MOFET ETZION	Sample No : ZAD28T19B3R2.5-210	Date Rec'd : 10/27/05
Size : 550 x 505 mm	Heat No. : NA	Via : Federal Express
Thicknesses : NA	Weight : NA lbs.	Returned : N/A
Avg Thick : NA	Hardness : NA	
Required BL(P)	Plies/Laminates : NA	
Description : ZAD28T19B3R2.5-210 (LIBA-AMIT) + 8mm STEEL PLATE		

### SET-UP

Shot Spacing : PER CUSTOMER REQUEST	Primary Vel. Screens : 4.57 m, 10.67 m	Range No. : 3
Witness Panel : 0.020", 2024-T3 ALUMINUM	Primary Vel. Location : 7.6 m From Muzzle	Temp. : 21 C
Obliquity : 0 deg	Residual Vel. Screens : NA	BP : 1 019 bar
Backing Material : NA	Residual Vel. Location : NA	RH : 49%
Conditioning : AMBIENT	Range to Target : 13.72 m	Barrel No./Gun : TEST BARREL
	Target to Wit : 15.2 cm	Gunner : POOLE
		Recorder : POOLE

### AMMUNITION

Projectile : 14.5mm B-32, 950 gr.	Lot No. : NA
Powder : H4831 SC	

### APPLICABLE STANDARDS OR PROCEDURES

- (1) MIL-STD-662F
- (2)
- (3)

Shot No	Powder/Seating	Time 1 (usec)	Velocity 1 (m/s)	Time 2 (usec)	Velocity 2 (m/s)	Avg Vel. (m/s)	Vel Loss (m/s)	V-Strike (m/s)	Result	Include in V50	Footnotes
1	318.0	6997	871.2	6999	871.0	871.1	2.8	868.3	P		
2	318.0	6969	874.7	6970	874.6	874.7	2.8	871.9	P		
3	340.0	6617	921.3	6618	921.1	921.2	2.8	918.4	P		
4	363.0	6323	964.1	6323	964.1	964.1	2.8	961.3	P	Y	
5	388.0	6054	1006.9	6055	1006.8	1006.9	2.8	1004.1	C	Y	

REMARKS :

FOOTNOTES :

V50 SUMMARY :

No Points	1 & 1
V50	982.7
High Partial	961.3
Low Complete	1004.1
Range of Results	42.8
Range of Mixed	0.0



# H.P. White Laboratory, Inc.

## PROTECTION BALLISTIC LIMIT TEST, V50 BL(P)

Client : MOFET ETZION

Job No. : 9751-03

Test Date 11/1/05

### TEST PANEL

Manufacturer	MOFET ETZION	Sample No	ZAD28T19B3R2.5-210 (20FSP)	Date Rec'd	10/27/05
Size	550 x 505 mm	Heat No	NA	Via	Federal Express
Thicknesses	NA	Weight	NA lbs.	Returned	N/A
Avg Thick	NA	Hardness	NA		
Required BL(P)		Plies/Laminates	NA		
Description	ZAD28T19B3R2.5-210 (LIBA-AMIT) + 8mm STEEL PLATE				

### SET-UP

Shot Spacing	PER CUSTOMER REQUEST	Primary Vel Screens	4.57 m, 10.67 m	Range No	3
Witness Panel	0.020", 2024-T3 ALUMINUM	Primary Vel. Location	7.6 m From Muzzle	Temp	21 C
Obliquity	0 deg.	Residual Vel Screens	NA	BP	1 019 bar
Backing Material	NA	Residual Vel Location	NA	RH	49%
Conditioning	AMBIENT	Range to Target	13.72 m	Barrel No /Gun	TEST BARREL
		Target to Wtr	15.2 cm	Gunner	POOLE
				Recorder	POOLE

### AMMUNITION

Projectile 20mm Fragment Simulator, 830 gr. Lot No NA  
 Powder H4831 SC

### APPLICABLE STANDARDS OR PROCEDURES

- (1) MIL-STD-662F
- (2)
- (3)

Shot No	Powder/Seating	Time 1 (usec)	Velocity 1 (m/s)	Time 2 (usec)	Velocity 2 (m/s)	Avg Vel (m/s)	Vel Loss (m/s)	V-Strike (m/s)	Result	Include in V50	Footnotes
1	445.0	6286	969.8	6287	969.6	969.7	29.6	940.1	P		
2	470.0	5994	1017.0	5995	1016.8	1016.9	31.0	986.0	P		
3	505.0	5592	1090.1	5593	1089.9	1090.0	33.0	1057.0	P		
4	530.0	5376	1133.9	5377	1133.7	1133.8	34.3	1099.5	P		(a)

### REMARKS

### FOOTNOTES

(a) TEST STOPPED PER CUSTOMER REQUEST

### V50 SUMMARY

No Points  
 V50  
 High Partial 1099.5  
 Low Complete  
 Range of Results  
 Range of Mixed