

H.P. WHITE LABORATORY, INC.

3114 Scarboro Road
Street, Maryland 21154-1822
Telephone: (410) 838-6550
Facsimile: (410) 838-2802
email: info@hpwhite.com
www.hpwhite.com

September 14, 2010
[HPWLI 11521-02A]



Optima Ballistic Glass Corporation
Zona Procesadora de Exportacion Albrook
Call Marginal Este, Ave. Curundu, Local G
Panama
Republica de Panama

Attention: Juan Jose Estrada

Dear Juan Jose Estrada:

Your message of August 11, 2010 and related communications requested ballistic resistance testing of two transparent armor samples received on September 8, 2010 via truck. Your representatives were present for and witnessed all testing.

All testing was conducted on an indoor range at ambient conditions and in accordance with provisions of NIJ-STD-0108.01, **BALLISTIC RESISTANT PROTECTIVE MATERIALS**, dated September 1985. Testing was conducted at a Level IIIA threat using calibers 9mm, 124 grain FMJ and .44 MAG, 240 grain, SWGC ammunition. The test samples were rigidly mounted 16.5 feet from the muzzle of a test barrel to produce zero degree obliquity impacts. Redundant pairs of lumiline screens were located at 6.5 feet and 9.5 feet. Together with electronic chronographs, they provided bullet velocities at 8 feet. Penetrations were determined by visual examination of a 0.020 inch thick witness panel of alloy 2024T3 aluminum positioned 6 inches behind, and parallel to, the rear of the test sample. Table I provides a summary of information on the attached Data Record.

TABLE I – SUMMARY OF RESULTS
[NIJ Level IIIA – Optima Glazing]

Test Sample			Ballistic Threat				Results [Penetrations]
Number	Thickness [in.] [a]	Weight [lbs.]	Caliber	Shots [b]	Velocity		
					Minimum	Maximum	
3631-2	0.773	22.6	9mm	5	1396	1416	0
3631-1	0.773	22.6	.44 MAG	5	1375	1433	0

[a] – Average of four corner thicknesses
[b] – At the corners and in the center of an 8-inch square

Based on the data presented, the test samples submitted for testing **SATISFIED** the ballistic resistance requirements of NIJ-STD-0108.01, Level IIIA. This conclusion is based solely on data obtained from the sample provided, and should not be interpreted as an endorsement by H.P. white Laboratory, Inc.

Thank you for the opportunity to conduct these tests. The samples were discarded after testing as you requested. If you should have any questions, please feel free to contact us.

Very truly yours,

H.P. WHITE LABORATORY, INC.

Lester W. Roane

LWR/mw
[Enclosure]



H.P. White Laboratory, Inc.

BALLISTIC RESISTANCE TEST

Client : OPTIMA BALLISTIC GLASS

Job No. : 11521-02

Test Date : 9/13/10

TEST PANEL

Manufacturer : OPTIMA BALLISTIC GLASS
 Size : 19.5 X 19.5 in.
 Thicknesses : 0.770, 0.775, 0.775, 0.773 in.
 Avg. Thick. : 0.773 in.
 Description : LAMINATED TRANSPARENCY.
 PRODUCT# 3631-1

Sample No. : SAMPLE-3631-1
 Weight : 22.6 lbs.
 Hardness : NA
 Plies/Laminates : NA

Date Rec'd. : 9/8/10
 Via : BUDGET RENTAL
 Returned : NA

SET-UP

Shot Spacing : 4 ON 8" SQUARE - 1 IN CENTER
 Witness Panel : 0.020", 2024-T3 ALUMINUM
 Obliquity : 0 deg.
 Backing Material : NA
 Conditioning : AMBIENT

Primary Vel. Screens : 6.5 ft., 9.5 ft.
 Primary Vel. Location : 8.0 ft. From Muzzle
 Residual Vel. Screens : NA
 Residual Vel. Location : NA
 Range to Target : 16.5 ft.
 Target to Wit. : 6.0 in.

Range No. : 3
 Temp. : 67 F
 BP : 29.81 in. Hg
 RH : 67%
 Barrel No./Gun : R3/ .44 MAG
 Gunner : GORSCH
 Recorder : BONSTALL

AMMUNITION

- (1) : 44 MAGNUM, SWCGC, 240 gr.
- (2) : 9mm, FMJ, 124 gr.
- (3) :
- (4) :

Lot No. : PMC-B44243
 Lot No. : REMINGTON 23558
 Lot No. :
 Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

- (1) : NIJ-STD-0108.01 (LEVEL IIIA).
- (2) : REQUIRED VELOCITY: 1350-1450 fps.
- (3) :

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	2123	1413	2127	1410	1412	None	
2	1	2118	1416	2127	1410	1413	None	
3	1	2114	1419	2118	1416	1418	None	
4	1	2177	1378	2186	1372	1375	None	
5	1	2091	1435	2096	1431	1433	None	
6	2	2145	1399	2154	1393	1396	None	(a)
7	2	2136	1404	2141	1401	1403	None	(a)
8	2	2123	1413	2127	1410	1412	None	(a)
9	2	2114	1419	2123	1413	1416	None	(a)
10	2	2114	1419	2123	1413	1416	None	(a)

REMARKS :

FOOTNOTES :

(a) SAMPLE-3631-2, WEIGHT: 22.6lbs,
 THICKNESSES: 0.773",0.771",0.775",0.772".
 AVERAGE THICKNESS: 0.773".