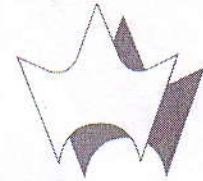


H.P. WHITE LABORATORY, INC.

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17 January 2008
(HPWLI 10618-02)

Optima Ballistic Glass
Panama Zona Procesadora de Exportacion Albrook
Caole Marginal Este, Ave.
Curundu, Local G
Panama, Rep. Panama

Attention: Juan Jose Estrada

Gentlemen:

In accordance with your instructions, H.P. White Laboratory, Inc. conducted ballistic resistance testing of three laminated transparencies, received 11 January 2008 via Roadway.

Testing was conducted in accordance with your instructions, and the modified provisions of EN-1063, Level BR6, using caliber 7.62x51mm, 149 grain, M80, Ball ammunition. The test samples were positioned on an indoor range 32.8 feet from the muzzle of a test barrel to produce zero degree obliquity impacts. Photoelectric lumiline screens were positioned at 23.5 feet and 26.5 feet which, in conjunction with elapsed time counters (chronographs), were used to compute projectile velocities 25.0 feet forward of the muzzle. Penetrations were determined by visual examination of 0.001 inch aluminum foil witness panel positioned 20.0 inches behind, and parallel to, the test samples. Table I presents a summary of the enclosed data records.

TABLE I. SUMMARY OF RESULTS

Test Sample			Ballistic Threat				Results	
Heat Number	Weight (lb)	Thickness (in) (a)	Obliquity (degrees)	Caliber	Shots (b)	Velocity (fps) Max. Min.		Penetrations
Sample 1	47.6	1.560	0	7.62, M80	3	2735	2714	0
Sample 2	47.8	1.564	0	7.62, M80	3	2722	2701	0
Sample 3	47.8	1.556	0	7.62, M80	3	2715	2701	0

(a) Average of four corner thicknesses.
(b) Three impacts on vertices of a 120mm equilateral triangle.

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.

H.P. White will retain the remaining untested samples and await your specific disposition instructions. Should you have any questions regarding this matter, or if we may be of any further service, please do not hesitate to contact us.

Sincerely,

H.P. White Laboratory, Inc.


Ray McBride

RM/mw
Enclosures



H.P. White Laboratory, Inc.

BALLISTIC RESISTANCE TEST

Client : OPTIMA BALLISTIC GLASS

Job No. : 10618-02

Test Date : 1/17/08

TEST PANEL

Manufacturer : OPTIMA BALLISTIC GLASS

Size : 19.5 X 19.5 in.

Thicknesses : 1.558, 1.549, 1.555, 1.564 in.

Avg. Thick. : 1.556 in.

Description : 40mm LAMINATED TRANSPARENCY
PRODUCT#: 921-10

Sample No. : SAMPLE 3

Weight : 47.8 lbs.

Hardness : NA

Plies/Laminates : NA

Date Rec'd. : 01/11/08

Via : ROADWAY

Returned : NA

SET-UP

Shot Spacing : 3 SHOTS ON 120mm TRIANGLE

Witness Panel : 0.001" ALUMINUM FOIL

Obliquity : 0 deg.

Backing Material : NA

Conditioning : AMBIENT

Primary Vel. Screens : 23.5 ft., 26.5 ft.

Primary Vel. Location : 25.0 ft. From Muzzle

Residual Vel. Screens : NA

Residual Vel. Location : NA

Range to Target : 32.8 ft.

Target to Wit. : 20.0 in.

Range No. : 3

Temp. : 45 F

BP : 30.03 in. Hg

RH : 45%

Barrel No./Gun : TEST BARREL

Gunner : BONSALL/WOOTEN

Recorder : BLACK

AMMUNITION

(1) : 7.62mm Ball, M80, 149 gr.

(2) :

(3) :

(4) :

Lot No. : WRA 67

Lot No. :

Lot No. :

Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

(1) : EN-1063, LEVEL BR 6

(2) : REQUIRED VELOCITY : 2690-2756 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	1105	2715	1105	2715	2715	None	
2	1	1110	2703	1111	2700	2701	None	
3	1	1106	2712	1108	2708	2710	None	

REMARKS :

FOOTNOTES :



H.P. White Laboratory, Inc.

BALLISTIC RESISTANCE TEST

Client : OPTIMA BALLISTIC GLASS

Job No. : 10618-02

Test Date : 1/17/08

TEST PANEL

Manufacturer : OPTIMA BALLISTIC GLASS
 Size : 19.5 X 19.5 in.
 Thicknesses : 1.560, 1.551, 1.560, 1.567 in.
 Avg. Thick. : 1.560 in.
 Description : 40mm LAMINATED TRANSPARENCY
 PRODUCT#: 921-8

Sample No. : SAMPLE 1
 Weight : 47.6 lbs.
 Hardness : NA
 Plies/Laminates : NA

Date Rec'd. : 01/11/08
 Via : ROADWAY
 Returned : NA

SET-UP

Shot Spacing : 3 SHOTS ON 120mm TRIANGLE
 Witness Panel : 0.001" ALUMINUM FOIL
 Obliquity : 0 deg.
 Backing Material : NA
 Conditioning : AMBIENT

Primary Vel. Screens : 23.5 ft., 26.5 ft.
 Primary Vel. Location : 25.0 ft. From Muzzle
 Residual Vel. Screens : NA
 Residual Vel. Location : NA
 Range to Target : 32.8 ft.
 Target to Wit. : 20.0 in.

Range No. : 3
 Temp. : 45 F
 BP : 30.03 in. Hg
 RH : 45%
 Barrel No./Gun : TEST BARREL
 Gunner : BONSALL/WOOTEN
 Recorder : BLACK

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) : EN-1063, LEVEL BR 6
 (2) : REQUIRED VELOCITY : 2690-2756 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	1101	2725	1102	2722	2724	None	
2	1	1095	2740	1099	2730	2735	None	
3	1	1103	2720	1108	2708	2714	None	

REMARKS :

FOOTNOTES :



H.P. White Laboratory, Inc.

BALLISTIC RESISTANCE TEST

Client : OPTIMA BALLISTIC GLASS

Job No. : 10618-02

Test Date : 1/17/08

TEST PANEL

Manufacturer : OPTIMA BALLISTIC GLASS
 Size : 19.5 X 19.5 in.
 Thicknesses : 1.570, 1.570, 1.554, 1.561 in.
 Avg. Thick. : 1.564 in.
 Description : 40mm LAMINATED TRANSPARENCY
 PRODUCT#: 921-9

Sample No. : SAMPLE 2
 Weight : 47.8 lbs.
 Hardness : NA
 Plies/Laminates : NA

Date Rec'd. : 01/11/08
 Via : ROADWAY
 Returned : NA

SET-UP

Shot Spacing : 3 SHOTS ON 120mm TRIANGLE
 Witness Panel : 0.001" ALUMINUM FOIL
 Obliquity : 0 deg.
 Backing Material : NA
 Conditioning : AMBIENT

Primary Vel. Screens : 23.5 ft., 26.5 ft.
 Primary Vel. Location : 25.0 ft. From Muzzle
 Residual Vel. Screens : NA
 Residual Vel. Location : NA
 Range to Target : 32.8 ft.
 Target to Wit. : 20.0 in.

Range No. : 3
 Temp. : 45 F
 BP : 30.03 in. Hg
 RH : 45%
 Barrel No./Gun : TEST BARREL
 Gunner : BONSALL/WOOTEN
 Recorder : BLACK

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) : EN-1063, LEVEL BR 6
 (2) : REQUIRED VELOCITY : 2690-2756 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	1109	2705	1112	2698	2701	None	
2	1	1102	2722	1106	2712	2717	None	
3	1	1100	2727	1104	2717	2722	None	

REMARKS :

FOOTNOTES :