



B4

23-7

Magnuson

Ballistic Resistance – Test Report

Client: Kratos Glass LLC.
Attention: Fadi Michael
Dubai Investment Park 2
Dubai
United Arab Emirates

Date of report: 29 October 2015

Report prepared by: Ashley Gowland, Customer Operations Coordinator

Report reviewed by: Wesley Mason, Manager of Technical Operations - Hard Armor

Test method and supporting documentation: CEN 1063
PO# 030

Job number: 000004906A

Date of sample receipt, shipping method, identification information, and inspection results: The sample(s) were received on **27 October 2015** via Philadelphia Truck Lines. Sample item(s) were identified as laminated transparencies. The test sample(s) were inspected prior to testing and no anomalies were discovered.

Date of testing and location: Testing commenced on **28 October 2015**, at the H.P. White Laboratory, Inc. facilities located at 3114 Scarboro Road, Street, Maryland.

Date of test completion and sample disposition: Testing concluded on **29 October 2015**; sample(s) will be discarded, unless otherwise instructed.

Test data transmittal method and storage location: This test report and test data were transmitted via email in a manner compliant with ISO 17025 requirements. Permanent electronic and hardcopy files are maintained in accordance with HPWLI data storage policy on data storage systems, filed by job number.

Revision number and date: NA

Disclaimer: Testing was performed on sample(s) provided by the client. H.P. White Laboratory, Inc. holds no responsibility for sample selection methods. This report is based on data obtained from testing only the sample(s) 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. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. This testing was performed by H.P. White Laboratory, Inc. to client specification, and the test results are the property of the client, who holds all rights of reproduction or publication of this report and related test data.

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Test Procedures

Ballistic Resistance Testing: All testing was conducted on an indoor range at ambient conditions in accordance with your instructions and the general provisions of EN1063. Testing was conducted at threat level BR4, using caliber 44 Magnum, 240 grain, FMJ FN LC ammunition. The test sample was positioned 16.4 feet from the muzzle of the barrel to produce zero (0) degree obliquity impacts. Photoelectric infrared screens were located at 7.0 feet and 10.0 feet which, in conjunction with electronic chronographs, were used to compute bullet velocities at 8.5 feet forward of the muzzle. Penetrations were determined by visual examination of the 0.001 inch thick aluminum foil witness plate, placed 20.0 inches behind and parallel to the test sample. Table I provides a summary of information on the attached data record(s).

Table I: Ballistic Resistance, Summary of Results

Test Sample			Ballistic Threat			Results		
Sample Number	Thickness (in.) (a)	Weight (lbs.)	Caliber	Obliquity	Shots (b)	Velocity (fps)		Penetrations
						Max	Min	
401150122	0.932	27.70	44 Magnum	0°	3	1458	1426	0
701140822	0.933	28.21	44 Magnum	0°	3	1441	1417	0
701150109	0.933	27.71	44 Magnum	0°	3	1435	1413	0

(a) Based on an average of four corner thicknesses
 (b) 3 shot(s) on 120 mm triangle
 (c) See individual data record for specific footnotes/remarks

Report prepared by:

Ashley Gowland

Ashley Gowland
 Customer Operations Coordinator

Report reviewed by:

Wesley Mason

Wesley Mason
 Manager of Technical Operations - Hard Armor



H.P. White Laboratory, Inc.

BALLISTIC RESISTANCE TEST

Client : 6075: Kratos Glass,LLC

Job No. : 000004906 Test Date : 10/28/15

TEST PANEL

Manufacturer : Kratos Glass,LLC
Size : 19.750 x 19.750 in.
Thicknesses : 0.934, 0.934, 0.932, 0.926 in.
Avg. Thick. : 0.932 in.
Description : 24mm Laminated Transparency

Sample No. : 401150122
Weight : 27.70 lbs.
Hardness :
Plies/Laminates :

Date Rec'd. : 10/27/15
Via : Philadelphia Truck Lines
Returned : N/A

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 : 7.0 ft., 10.0 ft.
Primary Vel. Location : 8.5 ft. From Muzzle
Residual Vel. Screens : NA
Residual Vel. Location : NA
Range to Target : 16.4 ft.
Target to Wit. : 20.0 in.

Range No. : 4
Temp. : 68 F
BP : 30.14 in. Hg
RH : 34%
Barrel No./Gun : R4/.44mag
Gunner : CHES
Recorder : BONSALL

AMMUNITION

(1) : 44 MAG FMJ FN LC, 240 gr. Lot No. : UNKNOWN
(2) : Lot No. :
(3) : Lot No. :
(4) : Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

- (1) : EN 1063
- (2) : LEVEL: BR4
- (3) : REQUIRED VELOCITY; 1411-1476 fps

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	2102	1427	2102	1427	1427	None	
2	1	2103	1427	2104	1426	1426	None	
3	1	2055	1460	2060	1456	1458	None	

<u>REMARKS :</u>	<u>FOOTNOTES :</u>



H.P. White Laboratory, Inc.

BALLISTIC RESISTANCE TEST

Client : 6075: Kratos Glass,LLC

Job No. : 000004906 Test Date : 10/28/15

TEST PANEL

Manufacturer : Kratos Glass,LLC
Size : 19.750 x 19.750 in.
Thicknesses : 0.936, 0.936, 0.935, 0.924 in.
Avg. Thick. : 0.933 in.
Description : 24mm Laminated Transparency

Sample No. : 701140822
Weight : 28.21 lbs.
Hardness :
Plies/Laminates :

Date Rec'd. : 10/27/15
Via : Philadelphia Truck Lines
Returned : N/A

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 : 7.0 ft., 10.0 ft.
Primary Vel. Location : 8.5 ft. From Muzzle
Residual Vel. Screens : NA
Residual Vel. Location : NA
Range to Target : 16.4 ft.
Target to Wit. : 20.0 in.

Range No. : 4
Temp. : 68 F
BP : 30.14 in. Hg
RH : 34%
Barrel No./Gun : R4/.44mag
Gunner : CHES
Recorder : BONBALL

AMMUNITION

- (1) : 44 MAG FMJ FN LC, 240 gr.
- (2) :
- (3) :
- (4) :

Lot No. : UNKNOWN
Lot No. :
Lot No. :
Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

- (1) : EN 1063
- (2) : LEVEL: BR4
- (3) : REQUIRED VELOCITY; 1411-1476 fps

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	2078	1444	2087	1437	1441	None	
2	1	2105	1425	2105	1425	1425	None	
3	1	2117	1417	2117	1417	1417	None	

REMARKS :	FOOTNOTES :



H.P. White Laboratory, Inc.

BALLISTIC RESISTANCE TEST

Client : 6075: Kratos Glass,LLC

Job No. : 000004906 Test Date : 10/28/15

TEST PANEL

Manufacturer : Kratos Glass,LLC
 Size : 19.750 x 19.750 in.
 Thicknesses : 0.933, 0.936, 0.933, 0.930 in.
 Avg. Thick. : 0.933 in.
 Description : 24mm Laminated Transparency

Sample No. : 701150109
 Weight : 27.71 lbs.
 Hardness :
 Plies/Laminates :

Date Rec'd. : 10/27/15
 Via : Philadelphia Truck Lines
 Returned : N/A

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 : 7.0 ft., 10.0 ft.
 Primary Vel. Location : 8.5 ft. From Muzzle
 Residual Vel. Screens : NA
 Residual Vel. Location : NA
 Range to Target : 16.4 ft.
 Target to Wit. : 20.0 in.

Range No. : 4
 Temp. : 68 F
 BP : 30.14 in. Hg
 RH : 34%
 Barrel No./Gun : R4/.44mag
 Gunner : CHES
 Recorder : BONSALL

AMMUNITION

(1) : 44 MAG FMJ FN LC, 240 gr.
 (2) :
 (3) :
 (4) :

Lot No. : UNKNOWN
 Lot No. :
 Lot No. :
 Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

(1) : EN 1063
 (2) : LEVEL: BR4
 (3) : REQUIRED VELOCITY; 1411-1476 fps

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	2091	1435	2091	1435	1435	None	
2	1	2105	1425	2100	1429	1427	None	
3	1	2123	1413	2123	1413	1413	None	

REMARKS :

FOOTNOTES :