



Ballistic Resistance – Test Report

Client:	FG Glass Industries Pvt. Ltd. 1204 Tower A, Naman Midtown Elphinstone Road, Lower Parel, Mumbai 400 013 IN
Report date:	21 June 2018
Job number:	000008327B
Test procedure and supporting documentation:	Per Customer Instructions ANSI/UL-752, Level 5 (Modified)
Sample receipt, identification information, and disposition:	The sample(s) were received on 4 June 2018 . Sample item identification and description details are provided on the attached data record(s). The test sample(s) were inspected prior to testing and no anomalies were discovered. Sample(s) will be returned, discarded, or held, per customer instructions.
Test date(s) and location:	Testing commenced on 6 June 2018 , at the H.P. White Laboratory, Inc. facilities located at 3114 Scarboro Road, Street, Maryland. Testing concluded on 6 June 2018 .
Report prepared by:	Ashley Gowland, Customer Operations Coordinator
Report reviewed by:	Ray McBride, General Manager
Revision number and date:	NA
Supplement to report:	NA
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.
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.
Destination control statement:	This document may contain items controlled by the U.S. government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. government or as otherwise authorized by U.S. law and regulations.

Ballistic Testing: All testing was conducted on an indoor range at ambient conditions, in accordance with your instructions and the modified provisions of ANSI/UL-752, Level 5. Testing was conducted using 7.62x51mm, 150 gr., M80 Ball ammunition. The test sample(s) were positioned 15.0 feet from the muzzle of the barrel to produce zero (0°) degree obliquity impacts. Photoelectric infrared screens were located at 5.0 feet and 10.0 feet which, in conjunction with electronic chronographs, were used to compute bullet velocities at 7.5 feet forward of the muzzle. Penetrations were determined by visual examination of the 1/8-inch-thick corrugated cardboard witness plate, placed 18.0 inches behind and parallel to the test sample(s). Table I provides a summary of information on the attached data record(s).

Table I: Ballistic Resistance, Summary of Results

Test Sample			Set-Up			Results	
Sample No.	Thickness (in.) (a)	Weight (lbs.)	Caliber	Obliquity	Shots (b)	Velocity (fps)	Penetrations
FGBR/1001	1.465	16.22	7.62, M80	0°	1	2762	0
FGBR/1002	1.482	16.42	7.62, M80	0°	1	2811	1
FGBR/1003	1.464	16.21	7.62, M80	0°	1	2833	0
FGBR/1004	1.466	16.24	7.62, M80	0°	1	2804	0
FGBR/1005	1.466	16.22	7.62, M80	0°	1	2811	0

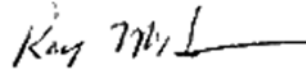
(a) Average of thickness measurements
 (b) See individual data record(s) for specific footnotes/remarks

Report prepared by:



Ashley Gowland
 Customer Operations Coordinator

Report reviewed by:



Ray McBride
 General Manager



TEST PANEL

Manufacturer : FG Glass Industries Pvt. Ltd.

Size : 12 x 12 in.

Thicknesses : 1.462, 1.467, 1.467, 1.464 in.

Avg. Thick : 1.465 in.

Description : TRANSPARENT ARMOR,BR GLASS

Sample No. : FGBR/1001

Weight : 16.22 lbs.

Hardness : NA

Plies/Laminates : NA

Date Rec'd. : 6/4/18

Via :

Returned :

SET-UP

Shot Spacing : 1 SHOT 1.25" FROM EDGE

Witness Panel : 1/8" CORRUGATED CARDBOARD

Obliquity : 0 deg.

Backing Material : NA

Conditioning : Ambient (+72 F)

Primary Vel. Screens : 5.0 ft., 10.0 ft.

Primary Vel. Location : 7.5 ft. From Muzzle

Residual Vel. Screens : NA

Residual Vel. Location : NA

Range to Target : 15.0 ft.

Target to Wit. : 18.0 in.

Range No. : 3

Temp. : 68 F

BP : 29.80 in. Hg

RH : 60%

Barrel No./Gun : R3/.308

Gunner : LINKOUS

Recorder : BONSALL

AMMUNITION

(1) : 7.62x51mm, M80, Ball, 150 gr.

(2) :

(3) :

(4) :

Lot No. : HPW-081

Lot No. :

Lot No. :

Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

(1) : Bullet Resistant Equipment, ANSI/UL 752-2005 (Modified)

(2) : Non-Metallic, Protection Level 5 (7.62mm M80, 2750-3025 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	1808	2765	1812	2759	2762	None	

REMARKS : SPALL PERMITTED	FOOTNOTES :
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TEST PANEL

Manufacturer : FG Glass Industries Pvt. Ltd.

Size : 12 x 12 in.

Thicknesses : 1.485, 1.480, 1.478, 1.483 in.

Avg. Thick : 1.482 in.

Description : TRANSPARENT ARMOR,BR GLASS

Sample No. : FGBR/1002

Weight : 16.42 lbs.

Hardness : NA

Plies/Laminates : NA

Date Rec'd. : 6/4/18

Via :

Returned :

SET-UP

Shot Spacing : 1 SHOT IN CENTER

Witness Panel : 1/8" CORRUGATED CARDBOARD

Obliquity : 0 deg.

Backing Material : NA

Conditioning : Ambient (+72 F)

Primary Vel. Screens : 5.0 ft., 10.0 ft.

Primary Vel. Location : 7.5 ft. From Muzzle

Residual Vel. Screens : NA

Residual Vel. Location : NA

Range to Target : 15.0 ft.

Target to Wit. : 18.0 in.

Range No. : 3

Temp. : 68 F

BP : 29.80 in. Hg

RH : 60%

Barrel No./Gun : R3/.308

Gunner : LINKOUS

Recorder : BONSALL

AMMUNITION

(1) : 7.62x51mm, M80, Ball, 150 gr.

(2) :

(3) :

(4) :

Lot No. : HPW-081

Lot No. :

Lot No. :

Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

(1) : Bullet Resistant Equipment, ANSI/UL 752-2005 (Modified)

(2) : Non-Metallic, Protection Level 5 (7.62mm M80, 2750-3025 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	1776	2815	1781	2807	2811	Spall	(a)

REMARKS : SPALL PERMITTED	FOOTNOTES : (a) STRIKE FACE STICKER ON WRONG SIDE OF SAMPLE RESULTING IN A COMPLETE PENETRATION, SPALL.
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TEST PANEL

Manufacturer : FG Glass Industries Pvt. Ltd.
Size : 12 x 12 in.
Thicknesses : 1.464, 1.461, 1.462, 1.468 in.
Avg. Thick : 1.464 in.
Description : TRANSPARENT ARMOR,BR GLASS

Sample No. : FGBR/1003
Weight : 16.21 lbs.
Hardness : NA
Plies/Laminates : NA

Date Rec'd. : 6/4/18
Via :
Returned :

SET-UP

Shot Spacing : 1 SHOT IN CENTER
Witness Panel : 1/8" CORRUGATED CARDBOARD
Obliquity : 0 deg.
Backing Material : NA
Conditioning : Cold (+55 F)

Primary Vel. Screens : 5.0 ft., 10.0 ft.
Primary Vel. Location : 7.5 ft. From Muzzle
Residual Vel. Screens : NA
Residual Vel. Location : NA
Range to Target : 15.0 ft.
Target to Wit. : 18.0 in.

Range No. : 3
Temp. : 68 F
BP : 29.80 in. Hg
RH : 60%
Barrel No./Gun : R3/.308
Gunner : LINKOUS
Recorder : BONSALL

AMMUNITION

(1) : 7.62x51mm, M80, Ball, 150 gr.
(2) :
(3) :
(4) :

Lot No. : HPW-081
Lot No. :
Lot No. :
Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

- (1) : Bullet Resistant Equipment, ANSI/UL 752-2005
- (2) : Indoor, Non-Metallic, Protection Level 5 (7.62mm M80, 2750-3025 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	1763	2836	1767	2830	2833	None	

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



TEST PANEL

Manufacturer : FG Glass Industries Pvt. Ltd.

Size : 12 x 12 in.

Thicknesses : 1.467, 1.465, 1.471, 1.461 in.

Avg. Thick : 1.466 in.

Description : TRANSPARENT ARMOR,BR GLASS

Sample No. : FGBR/1004

Weight : 16.24 lbs.

Hardness :

Plies/Laminates : NA

Date Rec'd. : 6/4/18

Via :

Returned :

SET-UP

Shot Spacing : 1 SHOT IN CENTER

Witness Panel : 1/8" CORRUGATED CARDBOARD

Obliquity : 0 deg.

Backing Material : NA

Conditioning : Hot (+95 F)

Primary Vel. Screens : 5.0 ft., 10.0 ft.

Primary Vel. Location : 7.5 ft. From Muzzle

Residual Vel. Screens : NA

Residual Vel. Location : NA

Range to Target : 15.0 ft.

Target to Wit. : 18.0 in.

Range No. : 3

Temp. : 68 F

BP : 29.80 in. Hg

RH : 60%

Barrel No./Gun : R3/.308

Gunner : LINKOUS

Recorder : BONSALL

AMMUNITION

(1) : 7.62x51mm, M80, Ball, 150 gr.

(2) :

(3) :

(4) :

Lot No. : HPW-081

Lot No. :

Lot No. :

Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

(1) : Bullet Resistant Equipment, ANSI/UL 752-2005

(2) : Indoor, Non-Metallic, Protection Level 5 (7.62mm M80, 2750-3025 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	1781	2807	1785	2801	2804	None	(a)

<u>REMARKS :</u>	<u>FOOTNOTES :</u> (a) STRIKE FACE STICKER ON WRONG SIDE OF SAMPLE. IMPACTED OPPOSITE SIDE WITH SPALL SHIELD IN BACK.
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TEST PANEL

Manufacturer : FG Glass Industries Pvt. Ltd.

Size : 12 x 12 in.

Thicknesses : 1.468, 1.459, 1.465, 1.470 in.

Avg. Thick : 1.466 in.

Description : TRANSPARENT ARMOR,BR GLASS

Sample No. : FGBR/1005

Weight : 16.22 lbs.

Hardness : NA

Plies/Laminates : NA

Date Rec'd. : 6/4/18

Via :

Returned :

SET-UP

Shot Spacing : 1 SHOT IN CENTER

Witness Panel : 1/8" CORRUGATED CARDBOARD

Obliquity : 0 deg.

Backing Material : NA

Conditioning : Ambient (+72 F)

Primary Vel. Screens : 5.0 ft., 10.0 ft.

Primary Vel. Location : 7.5 ft. From Muzzle

Residual Vel. Screens : NA

Residual Vel. Location : NA

Range to Target : 15.0 ft.

Target to Wit. : 18.0 in.

Range No. : 3

Temp. : 68 F

BP : 29.80 in. Hg

RH : 60%

Barrel No./Gun : R3/.308

Gunner : LINKOUS

Recorder : BONSALL

AMMUNITION

(1) : 7.62x51mm, M80, Ball, 150 gr.

(2) :

(3) :

(4) :

Lot No. : HPW-081

Lot No. :

Lot No. :

Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

(1) : Bullet Resistant Equipment, ANSI/UL 752-2005 (Modified)

(2) : Non-Metallic, Protection Level 5 (7.62mm M80, 2750-3025 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	1776	2815	1781	2807	2811	None	(a)

REMARKS : SPALL PERMITTED	FOOTNOTES : (a) STRIKE FACE STICKER ON WRONG SIDE OF SAMPLE. IMPACTED OPPOSITE SIDE WITH SPALL SHIELD IN BACK.
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