



10 February 2022

Optima Ballistic Glass Colombia S.A.
Zona Franca La Cayena Mz K Lote In 45 A.
Barranquilla, Colombia

Attention: Mr. Julio Rodriguez

Subject: Optima Ballistic Glass Colombia S.A., Armor Protection Ballistic Resistance Test:
Project No. PR153387C, Tested 9 February 2022, Purchase Order No. Signed Quote

Dear Mr. Rodriguez:

Please find enclosed a report documenting the subject test series conducted by NTS-Chesapeake Testing on 9 February 2022.

If you have any questions related to this test, please call Mr. Craig Thomas at 410-297-8154 or contact him via e-mail at craig.thomas@nts.com.

Sincerely,

A handwritten signature in black ink, appearing to read "CS", is written over a horizontal line.

Chris Schueler
General Manager, NTS-Chesapeake Testing

cdh

Enc. a/s

NTS-Chesapeake Testing is an independent testing facility
and has no affiliation with Optima Ballistic Glass Class Colombia S.A.

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OPTIMA BALLISTIC GLASS COLOMBIA S.A. PROPRIETARY INFORMATION

National Technical Systems Test Report for Ballistic Resistance Testing

Prepared For

Optima Ballistic Glass Colombia S.A. | Zona Franca La Cayena Mz K Lote In 45 A. | Barranquilla, Colombia

Prepared By

National Technical Systems | 4603B Compass Point Road | Belcamp, MD 21017 | (410) 297-8154 | www.nts.com



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Further dissemination only as directed by Optima Ballistic Glass Colombia S.A., February 2022.

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BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Optima Ballistic Glass Colombia
S.A.S.

Project No.: PR153387-1

Test Date: 02/09/2022

Page 1 of 1

Test Panel Description: Transparent armor.

Manufacturer: Optima Ballistic Glass Colombia S.A.

Sample No.: OFC-12020-198

Size: 19.75 x 19.75 in
Avg. Thickness: 1.750 in
Thicknesses: 1.750 in, 1.730 in,
1.760 in, 1.760 in

Weight: 56.200 lbs
Plies/Laminates: N/A

Date Received: 01/25/2022
Received Via: DHL
Returned Via: DHL

Setup

Shot Spacing: NIJ-STD-0108.01
Level III
Witness Panel: 0.02 in 2024-T3 Al
Backing Material: N/A
Condition: Ambient

Primary Vel. Screens (ft): 6.500, 9.500
Primary Vel. Location (ft): 8.000
Range to Target (ft): 50.000
Target to Witness (in): 6.000

Range No.: Range 3
Temp: 68.1 °F
BP: 30.1 inHg
RH: 33.7 %
Barrel/Gun: WC020651
Gunner: William Ellis
Recorder: Ramon Chavez

Ammunition

Projectile	Lot No.	Manufacturer	Powder
(1) 7.62 x 51-mm, 149-grain M80 FMJ	NA	Military	N133

Applicable Standards or Procedures

(1) NIJ-STD-0108.01 Level III

Shot No.	Ammo	Powder/ Seating	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Obliq. (°)	Footnotes
1	1	39.0	149	1075	2791	1075	2791	2791	None	0	
2	1	39.0	149	1073	2796	1071	2801	2799	None	0	
3	1	39.0	149	1073	2796	1073	2796	2796	None	0	
4	1	39.0	149	1080	2778	1080	2778	2778	None	0	
5	1	39.0	149	1074	2793	1074	2793	2793	None	0	

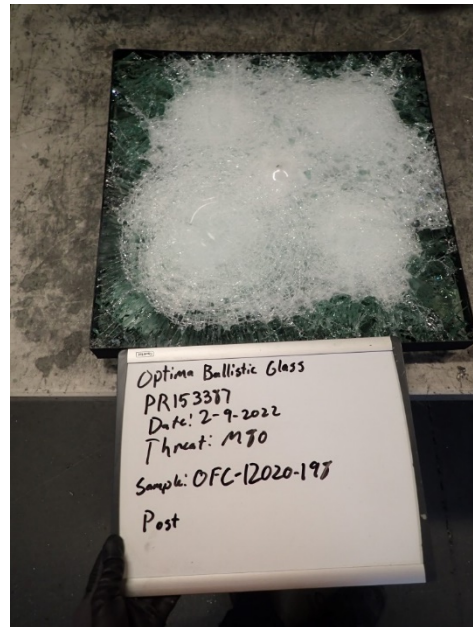
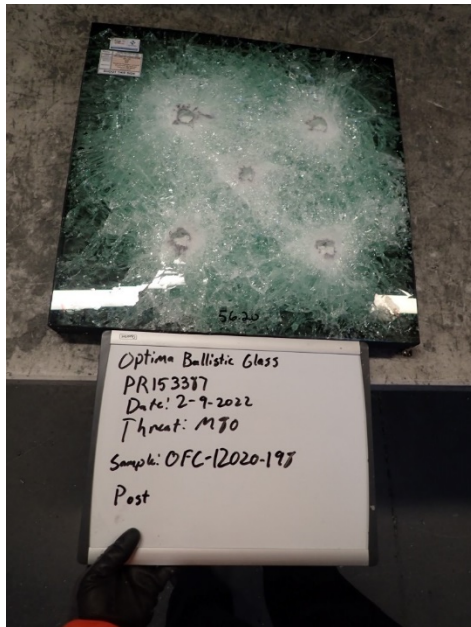
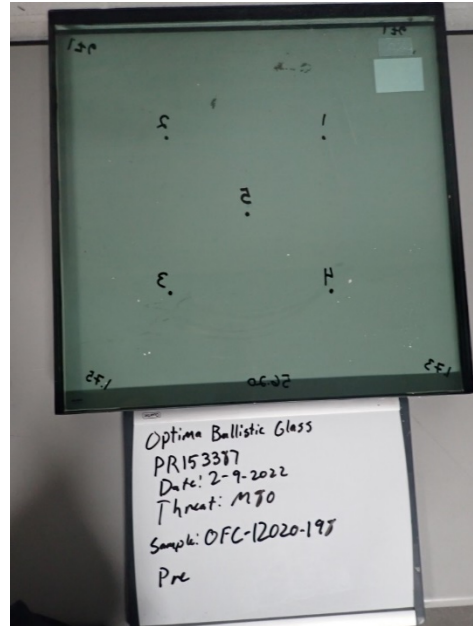
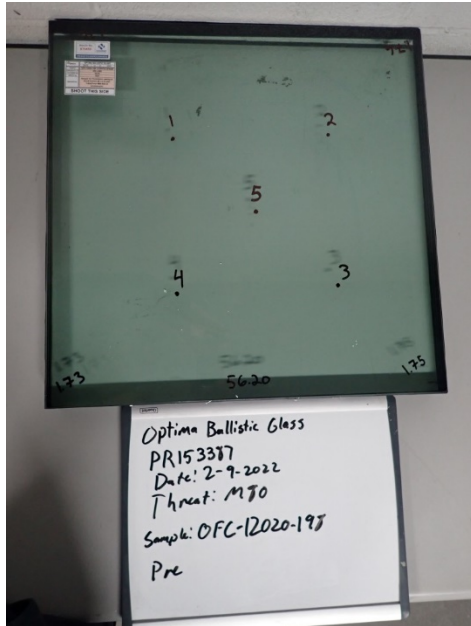
Remarks:

Required Velocity: 2700 - 2800 ft/s.
Projectile yaw check: Less than 3° yaw on all impacts.

Footnotes:

N/A

ATTACHMENT A PHOTOGRAPHS



ATTACHMENT B CALIBRATION DATA

Calibration Abbreviations

CAL calibrated

NCR no calibration required

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC020651	Barrel (gun)	Bill Wiseman & Company	N/A	NCR	NCR
WC027078	Measurement Tools (Tape Measure)	Starrett	530-100	03/10/2021	03/10/2022
WC027148	Meter (Chronograph)	YIS/Cowden Group, Inc	Chrono USB	08/26/2021	08/26/2022
WC060600	Scale (Floor)	Sartorius	Combics	12/06/2021	12/06/2022
WC060650	Measurement Tools (Angle Gauge)	SPI	91-316-0	10/15/2021	10/15/2023
WC060802	Range (shooting)			NCR	NCR
WC067022	Meter (Chronograph)	YIS/Cowden Group, Inc	Chrono-USB	08/26/2021	08/26/2022
WC067351	Meter (Thermometer)	Control Company	4371	06/18/2021	06/18/2022
WC067358	Gauge (Depth)	Starrett	3753A-6/150	07/21/2021	07/21/2022
WC074968	Scale (Digital)	RCBS	ChargeMaster 1500	04/08/2021	04/08/2022
WC074987	Measurement Tools (Tape Measure)	Dewalt Industrial Tool	DWHT36107	04/19/2021	04/19/2022
WC075060	Gauge (Depth)	Starrett	3753A -6/150	11/08/2021	11/08/2022
WC075093	Meter (Thermometer)	Control Company	4378, 98768-49	11/20/2020	11/20/2022
WC075118	Sensor (Temperature/Humidity)	Omega Engineering	ZW-CM-BTH	03/23/2021	03/23/2022
WC078628	Measurement Tools (Tape Measure)	Craftsman	CMHT37525	09/01/2021	09/01/2023

END OF REPORT