



Ballistic Resistance – Test Report

Client:	TruArmor, LLC. Attention: Dave Trudeau
Report date:	24 May 2018
Job number:	000008335A
Test procedure and supporting documentation:	Per Customer Instructions
Sample receipt, identification information, and disposition:	The sample(s) were received on 18 May 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 24 May 2018 , at the H.P. White Laboratory, Inc. facilities located at 3114 Scarboro Road, Street, Maryland. Testing concluded on 24 May 2018 .
Report prepared by:	Tiffany Haines, Customer Operations Specialist
Report reviewed by:	Chris D'Amario, Engineer
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 Resistance Testing: All testing was conducted on an indoor range at ambient conditions, in accordance with your instructions and the general provisions of ANSI/UL 752-2005, Level 1. Testing was conducted using caliber 9mm, 124 gr., FMJ Luger 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.	Weight (lbs.)	Caliber	Obliquity	Shots (a)	Velocity (fps)		Penetration(s)
					Max	Min	
HPW-1-9mm	49.13	9mm	0°	3	1259	1245	0
(a) See individual data record(s) for specific shot details							

Ballistic Resistance Testing: All testing was conducted on an indoor range at ambient conditions, in accordance with your instructions and the general provisions of ANSI/UL 752-2005, Level 2. Testing was conducted using caliber .357 MAG, 158 gr., JSP 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 II provides a summary of information on the attached data record(s).

Table II: Ballistic Resistance, Summary of Results

Test Sample		Set-Up			Results		
Sample No.	Weight (lbs.)	Caliber	Obliquity	Shots (a)	Velocity (fps)		Penetration(s)
					Max	Min	
HPW-2-.357 MAG	49.48	.357 MAG	0°	3	1369	1348	0
(a) See individual data record(s) for specific shot details							

Ballistic Resistance Testing: All testing was conducted on an indoor range at ambient conditions, in accordance with your instructions and the general provisions of NIJ-STD-0108.01. Testing was conducted using caliber .357 MAG, 158 gr., JSP ammunition. The test sample(s) were positioned 16.4 feet from the muzzle of the barrel to produce zero (0°) degree obliquity impacts. Photoelectric infrared screens were located at 6.6 feet and 9.8 feet which, in conjunction with electronic chronographs, were used to compute bullet velocities at 8.2 feet forward of the muzzle. Penetrations were determined by visual examination of the 0.020-inch-thick 2024-T3 aluminum alloy witness plate, placed 6.0 inches behind and parallel to the test sample(s). Table III provides a summary of information on the attached data record(s).

Table III: Ballistic Resistance, Summary of Results

Test Sample		Set-Up			Results		
Sample No.	Weight (lbs.)	Caliber	Obliquity	Shots (a)	Velocity (fps)		Penetration(s)
					Max	Min	
HPW-3-.357 MAG	49.29	.357 MAG	0°	5	1424	1361	0
(a) See individual data record(s) for specific shot details							

Report prepared by:

Tiffany Haines

Tiffany Haines
 Customer Operations Specialist

Report reviewed by:

Chris D'Amario

Chris D'Amario
 Engineer



TEST PANEL

Manufacturer : Clear -Armor, LLC	Sample No. : HPW-1-9mm	Date Rec'd. : 5/18/18
Size : 25 X 36 in.	Weight : 49.13 lbs.	Via :
Thicknesses : 1.014, 1.016, 1.001, 1.004 in.	Hardness : NA	Returned :
Avg. Thick. : 1.009 in.	Plies/Laminates : NA	
Description : TRANSPARENCY ARMOR, AUTOMOTIVE DOOR WINDOW		

SET-UP

Shot Spacing : 3 SHOTS ON 4" TRIANGLE	Primary Vel. Screens : 5.0 ft., 10.0 ft.	Range No. : 9
Witness Panel : 1/8" CORRUGATED CARDBOARD	Primary Vel. Location : 7.5 ft. From Muzzle	Temp. : 66 F
Obliquity : 0 deg.	Residual Vel. Screens : NA	BP : 30.16 in. Hg
Backing Material : NA	Residual Vel. Location : NA	RH : 67%
Conditioning : Ambient (+72 F)	Range to Target : 15.0 ft.	Barrel No./Gun : R9/ 9mm
	Target to Wit. : 18.0 in.	Gunner : STREETT
		Recorder : GORRERA

AMMUNITION

(1) : 9mm Luger, FMJ, 124 gr.	Lot No. : REMINGTON 23558
(2) :	Lot No. :
(3) :	Lot No. :
(4) :	Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

- (1) : Bullet Resistant Equipment, ANSI/UL 752-2005
- (2) : Metallic, Protection Level 1 (9mm, 1175-1293 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	4017	1245	4017	1245	1245	None	
2	1	3972	1259	3973	1258	1259	None	
3	1	3972	1259	3975	1258	1258	None	

<u>REMARKS :</u>	<u>FOOTNOTES :</u>
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TEST PANEL

Manufacturer : Clear -Armor, LLC	Sample No. : HPW-2-.357 MAG	Date Rec'd. : 5/18/18
Size : 25 X 36 in.	Weight : 49.48 lbs.	Via :
Thicknesses : 0.990, 1.002, 1.004, 0.984 in.	Hardness : NA	Returned :
Avg. Thick. : 0.995 in.	Plies/Laminates : NA	
Description : TRANSPARENCY ARMOR, AUTOMOTIVE DOOR WINDOW		

SET-UP

Shot Spacing : 3 SHOTS ON 4" TRIANGLE	Primary Vel. Screens : 5.0 ft., 10.0 ft.	Range No. : 9
Witness Panel : 1/8" CORRUGATED CARDBOARD	Primary Vel. Location : 7.5 ft. From Muzzle	Temp. : 66 F
Obliquity : 0 deg.	Residual Vel. Screens : NA	BP : 30.16 in. Hg
Backing Material : NA	Residual Vel. Location : NA	RH : 67%
Conditioning : Ambient (+72 F)	Range to Target : 15.0 ft.	Barrel No./Gun : R9/ .357 MAG
	Target to Wit. : 18.0 in.	Gunner : STREETT
		Recorder : GORRERA

AMMUNITION

(1) : .357 Magnum, JSP, 158 gr.	Lot No. : REMINGTON 23558
(2) :	Lot No. :
(3) :	Lot No. :
(4) :	Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

- (1) : Bullet Resistant Equipment, ANSI/UL 752-2005
- (2) : Metallic, Protection Level 2 (.357, 1250-1375 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	3707	1349	3709	1348	1348	None	
2	1	3652	1369	3653	1369	1369	None	
3	1	3675	1361	3678	1359	1360	None	

REMARKS :	FOOTNOTES :
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TEST PANEL

Manufacturer : Clear -Armor, LLC	Sample No. : HPW-3-.357 MAG	Date Rec'd. : 5/18/18
Size : 25 X 36 in.	Weight : 49.29 lbs.	Via :
Thicknesses : 0.986, 0.986, 1.001, 0.994 in.	Hardness : NA	Returned :
Avg. Thick. : 0.992 in.	Plies/Laminates : NA	
Description : TRANSPARENCY ARMOR, AUTOMOTIVE DOOR WINDOW		

SET-UP

Shot Spacing : 4 ON 8" SQUARE - 1 IN CENTER	Primary Vel. Screens : 6.6 ft., 9.8 ft.	Range No. : 9
Witness Panel : 0.020", 2024-T3 ALUMINUM	Primary Vel. Location : 8.2 ft. From Muzzle	Temp. : 66 F
Obliquity : 0 deg.	Residual Vel. Screens : NA	BP : 30.16 in. Hg
Backing Material : NA	Residual Vel. Location : NA	RH : 67%
Conditioning : AMBIENT	Range to Target : 16.4 ft.	Barrel No./Gun : R9/ .357 MAG
	Target to Wit. : 6.0 in.	Gunner : STREETT
		Recorder : GORRERA

AMMUNITION

(1) : .357 Magnum, JSP, 158 gr.	Lot No. : REMINGTON 23558
(2) :	Lot No. :
(3) :	Lot No. :
(4) :	Lot No. :

APPLICABLE STANDARDS OR PROCEDURES

- (1) : NIJ-STD-0108.01, LEVEL II
- (2) : REQUIRED VELOCITY: 1345-1445 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	2366	1387	2367	1386	1386	None	
2	1	2410	1361	2411	1361	1361	None	
3	1	2303	1425	2304	1424	1424	None	
4	1	2293	1431	2294	1430	1430	None	
5	1	2303	1425	2307	1422	1423	None	

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