

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-212-1
Test Date: 2/24/2020

Test Panel

Description: Soft armor. Model: HW-2019-01-SB

Manufacturer: Hardwire, LLC

Sample No.: 0015

Size: 2015-C3
Avg. Thick: NA
Thickness: NA

Weight: 1.13 lbs
Plies/Laminates: NA

Date Received: 2/18/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: NIJ-STD-0101.06 Level IIIA
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Wet per NIJ-STD-0101.06

Primary Vel. Screens (ft): 6.500, 6.833,
11.166, 11.500
Primary Vel. Location (ft): 9.000
Range to Target (ft): 17.200
Target to Witness (in): 0.000

Range No.: 3
Temp: 67.1 °F
BP: 29.9 inHg
RH: 39.6%
Barrel/Gun: Test Barrel
Gunner: Blake Ellis
Recorder: Ramon Chavez

Ammunition

Projectile	Lot No.	Powder
(1) 9-mm, 127-grain +P+ T-Series	Winchester	Accurate No. 2

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 11:10 AM; Block No. 11; Temp: 89.0 °F; Drop Depths: 17.1mm,17.5mm,17.3mm,17.4mm.17.3mm
(1) NIJ-STD-0101.06 Level IIIA (Modified)
(2) Customer Request

Shot No.	Ammo	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Deformation (mm)	Obliq. (°)	Footnotes
1	1	127.0	3475	1439	3009	1440	1439	None	31.1	0.0	
2	1	127.0	3456	1447	2989	1450	1448	None	35.5	0.0	
3	1	127.0	3375	1481	2921	1483	1482	None	37.7	0.0	
4	1	127.0	3458	1446	2994	1447	1447	None	NA	30.0	
5	1	127.0	3441	1453	2977	1455	1454	None	NA	45.0	
6	1	127.0	3458	1446	2992	1448	1447	None	NA	0.0	

Remarks:

Requested Velocity: 1430 to 1490 ft/s

Footnotes:

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-212-2
Test Date: 2/24/2020

Test Panel

Description: Soft armor. Model: HW-2019-01-SB

Manufacturer: Hardwire, LLC

Sample No.: 0016

Size: 2015-C3
Avg. Thick: NA
Thickness: NA

Weight: 1.13 lbs
Plies/Laminates: NA

Date Received: 2/18/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: NIJ-STD-0101.06 Level IIIA
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Wet per NIJ-STD-0101.06

Primary Vel. Screens (ft): 6.500, 6.833,
11.166, 11.500
Primary Vel. Location (ft): 9.000
Range to Target (ft): 17.200
Target to Witness (in): 0.000

Range No.: 3
Temp: 66.9 °F
BP: 29.9 inHg
RH: 39.7%
Barrel/Gun: Test Barrel
Gunner: Blake Ellis
Recorder: Ramon Chavez

Ammunition

Projectile	Lot No.	Powder
(1) 9-mm, 100-grain Frangible	Federal P23M355	Accurate No. 2

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 10:50 AM; Block No. 28; Temp: 91.9 °F; Drop Depths: 17.3mm,17.4mm,17.0mm,16.9mm,17.5mm
(1) NIJ-STD-0101.06 Level IIIA (Modified)
(2) Customer Request

Shot No.	Ammo	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Deformation (mm)	Obliq. (°)	Footnotes
1	1	100.0	4674	1070	4046	1071	1070	None	17.3	0.0	
2	1	100.0	4395	1138	3816	1135	1137	None	14.5	0.0	
3	1	100.0	4650	1075	4022	1077	1076	None	17.6	0.0	
4	1	100.0	4625	1081	4000	1083	1082	None	NA	30.0	
5	1	100.0	4630	1080	4007	1081	1081	None	NA	45.0	
6	1	100.0	4474	1118	3876	1118	1118	None	NA	0.0	

Remarks:

Requested Velocity: 1070 to 1130 ft/s

Footnotes:

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-212-3
Test Date: 2/24/2020

Test Panel

Description: Soft armor. Model: HW-2019-01-SB

Manufacturer: Hardwire, LLC

Sample No.: 0017

Size: 2015-C3
Avg. Thick: NA
Thickness: NA

Weight: 1.12 lbs
Plies/Laminates: NA

Date Received: 2/18/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: NIJ-STD-0101.06 Level IIIA
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Wet per NIJ-STD-0101.06

Primary Vel. Screens (ft): 6.500, 6.833,
11.166, 11.500
Primary Vel. Location (ft): 9.000
Range to Target (ft): 17.200
Target to Witness (in): 0.000

Range No.: 3
Temp: 66.9 °F
BP: 29.9 inHg
RH: 39.9%
Barrel/Gun: Test Barrel
Gunner: Blake Ellis
Recorder: Ramon Chavez

Ammunition

Projectile	Lot No.	Powder
(1) 5.7 x 28-mm, 40-grain SS197SR	FNH USA 1202469023	Accurate No. 2

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 10:35 AM; Block No. 28; Temp: 92.6 °F; Drop Depths: 17.5mm, 17.2mm, 18.9mm, 17.2mm, 17.4mm
(1) NIJ-STD-0101.06 Level IIIA (Modified)
(2) Customer Request

Shot No.	Ammo	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Deformation (mm)	Obliq. (°)	Footnotes
1	1	40.0	2600	1923	2250	1926	1924	None	22.5	0.0	
2	1	40.0	2591	1930	2242	1933	1931	None	18.1	0.0	
3	1	40.0	2589	1931	2242	1933	1932	None	16.6	0.0	
4	1	40.0	2535	1972	2194	1975	1974	None	NA	30.0	
5	1	40.0	2600	1923	2250	1926	1924	None	NA	45.0	
6	1	40.0	2572	1944	2225	1947	1946	None	NA	0.0	

Remarks:

Requested Velocity: 1920 to 1980 ft/s

Footnotes:

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-212-4
Test Date: 2/24/2020

Test Panel

Description: Soft armor. Model: HW-2019-01-SB

Manufacturer: Hardwire, LLC

Sample No.: 0018

Size: 2015-C3
Avg. Thick: NA
Thickness: NA

Weight: 1.12 lbs
Plies/Laminates: NA

Date Received: 2/18/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: NIJ-STD-0101.06 Level IIIA
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Wet per NIJ-STD-0101.06

Primary Vel. Screens (ft): 6.500, 6.833,
11.166, 11.500
Primary Vel. Location (ft): 9.000
Range to Target (ft): 17.200
Target to Witness (in): 0.000

Range No.: 3
Temp: 67.1 °F
BP: 29.9 inHg
RH: 39.6%
Barrel/Gun: Test Barrel
Gunner: Blake Ellis
Recorder: Ramon Chavez

Ammunition

Projectile	Lot No.	Powder
(1) .357-cal., 125-grain SIG GDHP	Speer	Accurate No. 2

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 11:30 AM; Block No. 11; Temp: 89.0 °F; Drop Depths: 19.6mm, 17.7mm, 17.9mm, 17.4mm, 19.4mm
(1) NIJ-STD-0101.06 Level IIIA (Modified)
(2) Customer Request

Shot No.	Ammo	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Deformation (mm)	Obliq. (°)	Footnotes
1	1	125.0	3414	1465	2955	1466	1465	None	37.5	0.0	
2	1	125.0	3385	1477	2928	1480	1478	None	29.5	0.0	
3	1	125.0	3395	1473	2938	1475	1474	None	28.6	0.0	
4	1	125.0	3429	1458	2965	1461	1460	None	NA	30.0	
5	1	125.0	3387	1476	2933	1477	1477	None	NA	45.0	
6	1	125.0	3414	1465	2955	1466	1465	None	NA	0.0	

Remarks:

Requested Velocity: 1435 to 1495 ft/s

Footnotes:

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-212-6
Test Date: 2/24/2020

Test Panel

Description: Soft armor. Model: HW-2019-01-SB

Manufacturer: Hardwire, LLC

Sample No.: 0023

Size: 2015-C3
Avg. Thick: NA
Thickness: NA

Weight: 1.12 lbs
Plies/Laminates: NA

Date Received: 2/18/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: NIJ-STD-0101.06 Level IIIA
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Wet per NIJ-STD-0101.06

Primary Vel. Screens (ft): 6.500, 6.833,
11.166, 11.500
Primary Vel. Location (ft): 9.000
Range to Target (ft): 17.200
Target to Witness (in): 0.000

Range No.: 3
Temp: 66.9 °F
BP: 29.9 inHg
RH: 38.5%
Barrel/Gun: Test Barrel
Gunner: Blake Ellis
Recorder: Ramon Chavez

Ammunition

Projectile	Lot No.	Powder
(1) 5.7 x 28-mm, 27-grain SS195 LFHP	FNH USA 01FNB13	Accurate No. 2

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 9:25 PM; Block No. 14; Temp: 92.8 °F; Drop Depths: 17.6mm, 18.3mm, 19.5mm, 19.7mm, 17.8mm
(1) NIJ-STD-0101.06 Level IIIA (Modified)
(2) Customer Request

Shot No.	Ammo	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Deformation (mm)	Obliq. (°)	Footnotes
1	1	27.0	2440	2049	2113	2051	2050	None	18.5	0.0	
2	1	27.0	2433	2055	2103	2060	2058	None	15.6	0.0	
3	1	27.0	2430	2058	2100	2063	2060	None	15.3	0.0	
4	1	27.0	2462	2031	2130	2034	2033	None	NA	30.0	
5	1	27.0	2467	2027	2135	2030	2028	None	NA	45.0	
6	1	27.0	2428	2059	2101	2062	2061	None	NA	0.0	

Remarks:

Requested Velocity: 2020 to 2080 ft/s

Footnotes:

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-212-7
Test Date: 2/24/2020

Test Panel

Description: Soft armor. Model: HW-2019-01-SB

Manufacturer: Hardwire, LLC

Sample No.: 0025

Size: 2015-C3
Avg. Thick: NA
Thickness: NA

Weight: 1.12 lbs
Plies/Laminates: NA

Date Received: 2/18/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: NIJ-STD-0101.06 Level IIIA
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Wet per NIJ-STD-0101.06

Primary Vel. Screens (ft): 6.500, 6.833,
11.166, 11.500
Primary Vel. Location (ft): 9.000
Range to Target (ft): 17.200
Target to Witness (in): 0.000

Range No.: 3
Temp: 66.9 °F
BP: 29.9 inHg
RH: 36.7%
Barrel/Gun: Test Barrel
Gunner: Blake Ellis
Recorder: Ramon Chavez

Ammunition

Projectile	Lot No.	Powder
(1) .40-cal., S&W 165-grain T-Series	Winchester	Accurate No. 2

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 9:00 AM; Block No. 12; Temp: 90.2 °F; Drop Depths: 17.1mm, 17.2mm, 18.4mm, 17.1mm, 17.4mm
(1) NIJ-STD-0101.06 Level IIIA (Modified)
(2) Customer Request

Shot No.	Ammo	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Deformation (mm)	Obliq. (°)	Footnotes
1	1	165.0	4088	1223	3539	1224	1224	None	29.8	0.0	
2	1	165.0	4012	1246	3475	1247	1247	None	24.2	0.0	
3	1	165.0	4076	1227	3529	1228	1227	None	28.4	0.0	
4	1	165.0	4022	1243	3480	1245	1244	None	NA	30.0	
5	1	165.0	4042	1237	3497	1239	1238	None	NA	45.0	
6	1	165.0	3995	1252	3461	1252	1252	None	NA	0.0	

Remarks:

Requested Velocity: 1200 to 1260 ft/s

Footnotes:

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-212-8
Test Date: 2/24/2020

Test Panel

Description: Soft armor. Model: HW-2019-01-SB

Manufacturer: Hardwire, LLC

Sample No.: 0031

Size: 2015-C3
Avg. Thick: NA
Thickness: NA

Weight: 1.13 lbs
Plies/Laminates: NA

Date Received: 2/18/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: NIJ-STD-0101.06 Level IIIA
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Wet per NIJ-STD-0101.06

Primary Vel. Screens (ft): 6.500, 6.833,
11.166, 11.500
Primary Vel. Location (ft): 9.000
Range to Target (ft): 17.200
Target to Witness (in): 0.000

Range No.: 3
Temp: 66.9 °F
BP: 29.9 inHg
RH: 37.2%
Barrel/Gun: Test Barrel
Gunner: Blake Ellis
Recorder: Ramon Chavez

Ammunition

Projectile	Lot No.	Powder
(1) 7.62 x 25-mm, 85-grain TOKAREV SJLC	Romanian	Accurate No. 2

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 8:40 AM; Block No. 12; Temp: 90.8 °F; Drop Depths: 17.8mm, 17.9mm, 19.2mm, 18.3mm, 17.7mm
(1) NIJ-STD-0101.06 Level IIIA (Modified)
(2) Customer Request

Shot No.	Ammo	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Penetration	Deformation (mm)	Obliq. (°)	Footnotes
1	1	85.0	3236	1545	2801	1547	1546	None	25.2	0.0	
2	1	85.0	3253	1537	2816	1539	1538	None	21.0	0.0	
3	1	85.0	3255	1536	2819	1537	1537	None	22.2	0.0	
4	1	85.0	3258	1535	2819	1537	1536	None	NA	30.0	
5	1	85.0	3290	1520	2845	1523	1521	None	NA	45.0	
6	1	85.0	3243	1542	2809	1543	1542	None	NA	0.0	

Remarks:

Requested Velocity: 1520 to 1580 ft/s

Footnotes:

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-210-1
Test Date: 2/21/2020
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Test Panel Description: Proprietary. Soft armor. HW-2019-01-SB

Manufacturer: Hardwire LLC

Sample No.: 0042

Size: C-3
Avg. Thick: NA
Thickness: NA

Weight: 1.12 lbs
Plies/Laminates: NA
Required BL(P): 2735 ft/s

Date Received: 2/13/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: DEA Armor Testing Protocol
Witness Panel: Clay
Backing Material: 5.5-in clay
Condition: Ambient

Primary Vel. Screens (ft): 5.000, 8.000
Primary Vel. Location (ft): 6.500
Range to Target (ft): 10.000
Target to Witness (in): 0.000

Range No.: 5
Temp: 67.1 °F
BP: 30.2 inHg
RH: 37.2%
Barrel/Gun: Test Barrel
Gunner: C. Peddicord
Recorder: Jesse Fulk

Ammunition

Projectile	Lot No.	Powder
(1) 2-grain RCC	02070214	Bullseye

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 2:55 PM; Block No. 56; Temp: 96.7°F; Drop Depths: 19.6 mm, 21.4 mm, 20.6 mm, 21.2 mm, 19.2 mm
(1) DEA Armor Testing Protocol, dated 2 February 2018
(2) MIL-STD-662F, dated 18 December 1997

Shot No.	Powder/ Seating	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Striking Vel. (ft/s)	Result	Include in V ₅₀	Obliq. (°)	Footnotes
1	4.7	4.0	1159.8	2587	2474	P	No	0.0	
2	5.1	4.0	1110.9	2701	2584	P	Yes	0.0	
3	5.6	4.0	1075.1	2790	2670	C	Yes	0.0	
4	5.4	4.0	1088.6	2756	2637	C	Yes	0.0	
5	5.1	4.0	1091.4	2749	2630	P	Yes	0.0	
6	5.4	4.0	1086.7	2761	2642	C	Yes	0.0	
7	5.1	4.0	1091.2	2749	2631	P	Yes	0.0	

Remarks:
Requested starting velocity: 2835 ft/s
Projectile yaw check: 0° yaw on all impacts

Footnotes:

V₅₀ Summary:

No. Points: 3 and 3
V₅₀: 2632 ft/s
High Partial: 2631 ft/s
Low Complete: 2637 ft/s
Range of Results (ROR): 86 ft/s
Range of Mix Results (RMR): NA
Gap: 6 ft/s

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

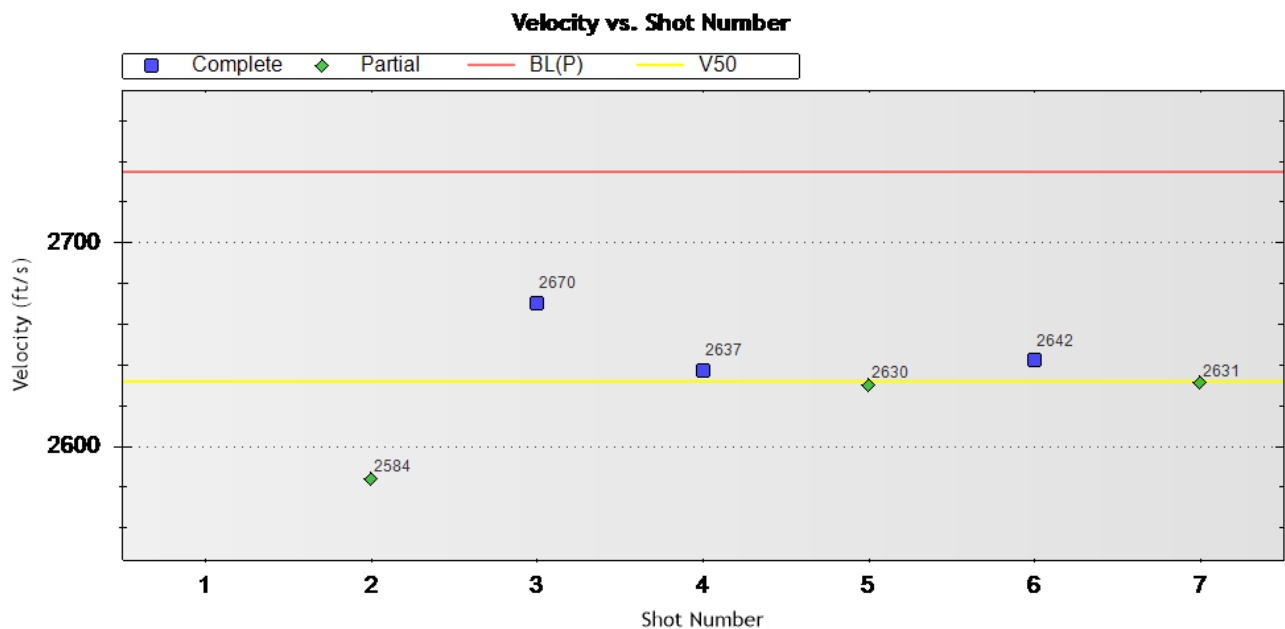
Client: Hardwire LLC
Job No.: 2084-210-1
Test Date: 2/21/2020
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Manufacturer: Hardwire LLC

Sample No.: 0042

V₅₀ Summary:

No. Points: 3 and 3
V₅₀: 2632 ft/s
High Partial: 2631 ft/s
Low Complete: 2637 ft/s
Range of Results (ROR): 86 ft/s
Range of Mix Results (RMR): NA
Gap: 6 ft/s



PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-210-2
Test Date: 2/21/2020
Page 1 of 2

Test Panel Description: Proprietary. Soft armor. HW-2019-01-SB

Manufacturer: Hardwire LLC

Sample No.: 0039

Size: C-3
Avg. Thick: NA
Thickness: NA

Weight: 1.08 lbs
Plies/Laminates: NA
Required BL(P): 2420 ft/s

Date Received: 2/13/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: DEA Armor Testing Protocol
Witness Panel: Clay
Backing Material: 5.5-in clay
Condition: Ambient

Primary Vel. Screens (ft): 5.000, 8.000
Primary Vel. Location (ft): 6.500
Range to Target (ft): 10.000
Target to Witness (in): 0.000

Range No.: 5
Temp: 67.1 °F
BP: 30.2 inHg
RH: 37.2%
Barrel/Gun: Test Barrel
Gunner: C. Peddicord
Recorder: Jesse Fulk

Ammunition

Projectile	Lot No.	Powder
(1) 4-grain RCC	46216	Bullseye

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 2:55 PM; Block No. 56; Temp: 96.7°F; Drop Depths: 19.6 mm, 21.4 mm, 20.6 mm, 21.2 mm, 19.2 mm
(1) DEA Armor Testing Protocol, dated 2 February 2018
(2) MIL-STD-662F, dated 18 December 1997

Shot No.	Powder/Seating	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Striking Vel. (ft/s)	Result	Include in V ₅₀	Obliq. (°)	Footnotes
1	5.0	2.0	1130.5	2654	2567	C	No	0.0	
2	4.8	2.0	1176.0	2551	2467	C	No	0.0	
3	4.4	2.0	1224.8	2449	2369	C	Yes	0.0	
4	3.8	2.0	1394.1	2152	2080	P	No	0.0	
5	4.1	2.0	1312.5	2286	2210	P	No	0.0	
6	4.4	2.0	1234.6	2430	2350	P	Yes	0.0	
7	4.6	2.0	1195.6	2509	2427	C	No	0.0	
8	4.4	2.0	1218.3	2462	2381	C	Yes	0.0	
9	4.3	2.0	1267.2	2367	2289	C	Yes	0.0	
10	4.2	2.0	1289.9	2326	2249	P	No	0.0	
11	4.3	2.0	1263.4	2375	2296	P	Yes	0.0	
12	4.4	2.0	1245.9	2408	2328	P	Yes	0.0	

Remarks:
Requested starting velocity: 2520 ft/s
Projectile yaw check: 0° yaw on all impacts

Footnotes:

V₅₀ Summary:
No. Points: 3 and 3
V₅₀: 2336 ft/s
High Partial: 2350 ft/s
Low Complete: 2289 ft/s
Range of Results (ROR): 92 ft/s
Range of Mix Results (RMR): 61 ft/s
Gap: NA

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

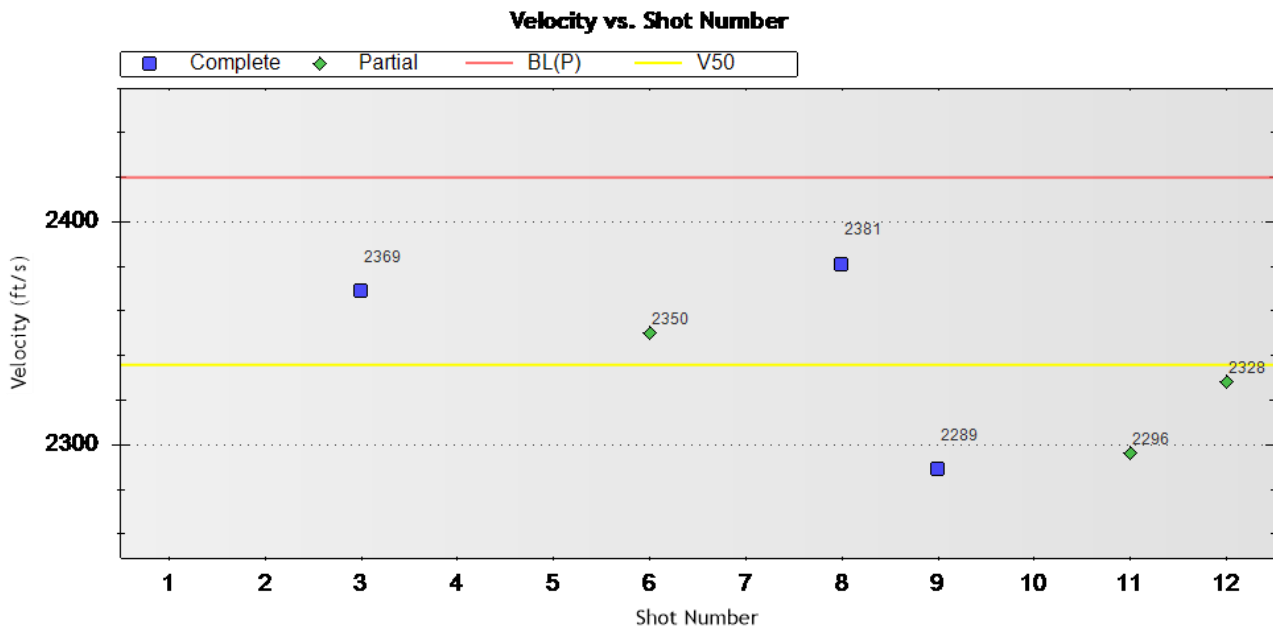
Client: Hardwire LLC
Job No.: 2084-210-2
Test Date: 2/21/2020
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Manufacturer: Hardwire LLC

Sample No.: 0039

V₅₀ Summary:

No. Points: 3 and 3
V₅₀: 2336 ft/s
High Partial: 2350 ft/s
Low Complete: 2289 ft/s
Range of Results (ROR): 92 ft/s
Range of Mix Results (RMR): 61 ft/s
Gap: NA



PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-210-3
Test Date: 2/21/2020
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Test Panel Description: Proprietary. Soft armor. HW-2019-01-SB

Manufacturer: Hardwire LLC

Sample No.: 0041

Size: C-3
Avg. Thick: NA
Thickness: NA

Weight: 1.08 lbs
Plies/Laminates: NA
Required BL(P): 2080 ft/s

Date Received: 2/13/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: DEA Armor Testing Protocol
Witness Panel: Clay
Backing Material: 5.5-in clay
Condition: Ambient

Primary Vel. Screens (ft): 5.000, 5.333, 9.667, 10.000
Primary Vel. Location (ft): 7.500
Range to Target (ft): 15.000
Target to Witness (in): 0.000

Range No.: 5
Temp: 67.1 °F
BP: 30.2 inHg
RH: 37.2%
Barrel/Gun: Test Barrel
Gunner: C. Peddicord
Recorder: Jesse Fulk

Ammunition

Projectile	Lot No.	Powder
(1) 16-grain RCC	16032916E	Bullseye

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 1:40 PM; Block No. 54; Temp: 94.5°F; Drop Depths: 18.9 mm, 19.2 mm, 20.1 mm, 20.0 mm, 21.4 mm
(1) DEA Armor Testing Protocol, dated 2 February 2018
(2) MIL-STD-662F, dated 18 December 1997

Shot No.	Powder/ Seating	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Striking Vel. (ft/s)	Result	Include in V ₅₀	Obliq. (°)	Footnotes
1	8.2	16.0	2204	2269	1908	2271	2270	2156	C	No	0.0	
2	7.6	16.0	2338	2139	2025	2140	2139	2032	C	Yes	0.0	
3	7.3	16.0	2406	2078	2084	2079	2079	1975	P	Yes	0.0	
4	7.7	16.0	2302	2172	1996	2171	2172	2063	C	No	0.0	
5	7.5	16.0	2344	2133	2032	2133	2133	2026	C	Yes	0.0	
6	7.2	16.0	2393	2089	2074	2089	2089	1985	C	Yes	0.0	
7	7.0	16.0	2432	2056	2106	2058	2057	1954	P	Yes	0.0	
8	7.2	16.0	2412	2073	2090	2073	2073	1970	P	Yes	0.0	

Remarks:
Requested starting velocity: 2180 ft/s
Projectile yaw check: 0° yaw on all impacts

Footnotes:

V₅₀ Summary:
No. Points: 3 and 3
V₅₀: 1990 ft/s
High Partial: 1975 ft/s
Low Complete: 1985 ft/s
Range of Results (ROR): 78 ft/s
Range of Mix Results (RMR): NA
Gap: 10 ft/s

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

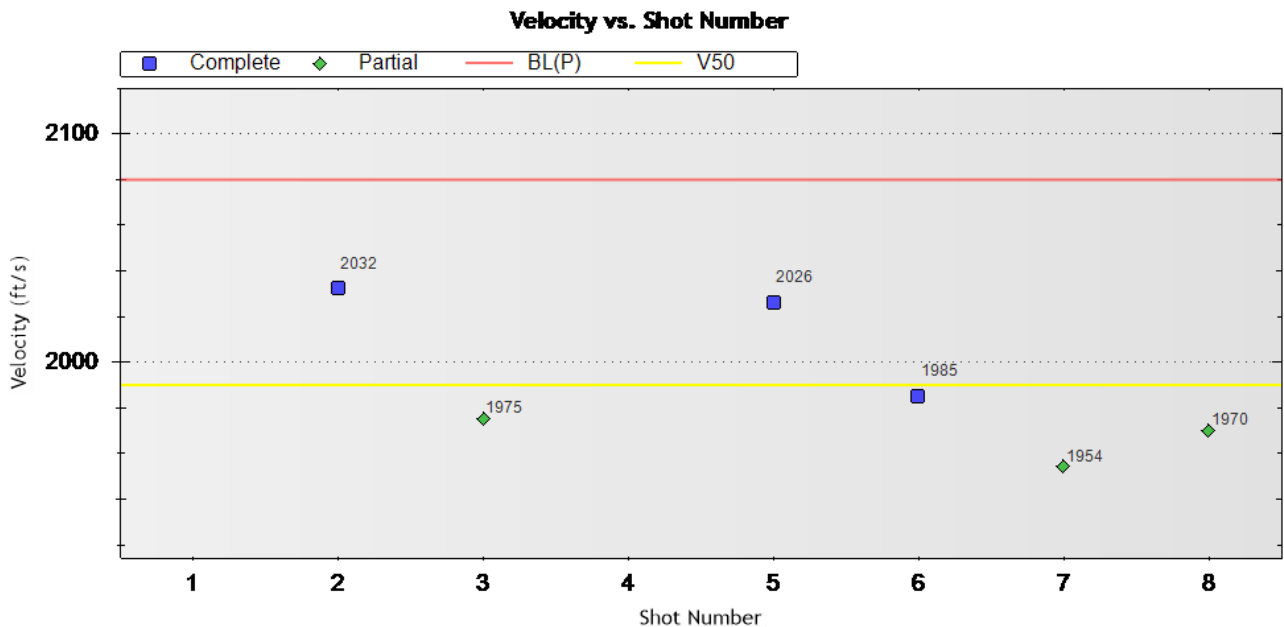
Client: Hardwire LLC
Job No.: 2084-210-3
Test Date: 2/21/2020
Page 2 of 2

Manufacturer: Hardwire LLC

Sample No.: 0041

V₅₀ Summary:

No. Points: 3 and 3
V₅₀: 1990 ft/s
High Partial: 1975 ft/s
Low Complete: 1985 ft/s
Range of Results (ROR): 78 ft/s
Range of Mix Results (RMR): NA
Gap: 10 ft/s



PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-210-4
Test Date: 2/21/2020
Page 1 of 2

Test Panel Description: Proprietary. Soft armor. HW-2019-01-SB

Manufacturer: Hardwire LLC

Sample No.: 0040-0036

Size: C-3
Avg. Thick: NA
Thickness: NA

Weight: 1.12 lbs
Plies/Laminates: NA
Required BL(P): 1620 ft/s

Date Received: 2/13/2020
Via: UPS
Returned: UPS

Setup

Shot Spacing: DEA Armor Testing Protocol
Witness Panel: Clay
Backing Material: 5.5-in clay
Condition: Ambient

Primary Vel. Screens (ft): 5.000, 5.333, 9.667, 10.000
Primary Vel. Location (ft): 7.500
Range to Target (ft): 15.000
Target to Witness (in): 0.000

Range No.: 5
Temp: 67.1 °F
BP: 30.2 inHg
RH: 37.2%
Barrel/Gun: Test Barrel
Gunner: C. Peddicord
Recorder: Jesse Fulk

Ammunition

Projectile	Lot No.	Powder
(1) 64-grain RCC	6411013	Bullseye

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 1:40 PM; Block No. 54; Temp: 94.5 °F; Drop Depths: 18.9 mm, 19.2 mm, 20.1 mm, 20.0 mm, 21.4 mm
(1) DEA Armor Testing Protocol, dated 2 February 2018
(2) MIL-STD-662F, dated 18 December 1997

Shot No.	Powder/Seating	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Striking Vel. (ft/s)	Result	Include in V ₅₀	Obliq. (°)	Footnotes
1	11.0	64.0	2875	1739	2494	1738	1738	1687	C	Yes	0.0	
2	10.4	64.0	2976	1680	2582	1678	1679	1630	C	Yes	0.0	
3	9.8	64.0	3291	1519	2852	1519	1519	1476	P	No	0.0	
4	10.0	64.0	3151	1587	2731	1587	1587	1541	P	No	0.0	
5	10.2	64.0	3155	1585	2731	1587	1586	1540	P	No	0.0	
6	10.5	64.0	2998	1668	2598	1668	1668	1619	P	No	0.0	
7	10.7	64.0	2995	1669	2595	1670	1670	1621	P	No	0.0	
8	10.9	64.0	2953	1693	2556	1695	1694	1645	P	No	0.0	
9	11.2	64.0	2917	1714	2526	1715	1715	1665	P	No	0.0	
10	11.5	64.0	2868	1743	2487	1742	1743	1692	P	Yes	0.0	
11	12.0	64.0	2712	1844	2351	1843	1843	1789	C	No	0.0	
12	11.8	64.0	2745	1821	2385	1817	1819	1765	C	No	0.0	
13	11.6	64.0	2832	1766	2451	1768	1767	1715	P	Yes	0.0	
14	11.7	64.0	2849	1755	2468	1756	1755	1704	P	Yes	0.0	
15	11.8	64.0	2741	1824	2373	1826	1825	1771	C	No	0.0	
16	11.5	64.0	2793	1790	2422	1789	1790	1737	C	Yes	0.0	

Remarks:
Requested starting velocity: 1720 ft/s
Projectile yaw check: 0° yaw on all impacts.
Shot 16 impacted on panel 0036. Panel Weight: 1.12 lbs. Panel Size: C3.

Footnotes:

V₅₀ Summary:
No. Points: 3 and 3
V₅₀: 1694 ft/s
High Partial: 1715 ft/s
Low Complete: 1630 ft/s
Range of Results (ROR): 107 ft/s
Range of Mix Results (RMR): 85 ft/s
Gap: NA

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-210-4
Test Date: 2/21/2020
Page 2 of 2

Manufacturer: Hardwire LLC

Sample No.: 0040-0036

V₅₀ Summary:

No. Points: 3 and 3
V₅₀: 1694 ft/s
High Partial: 1715 ft/s
Low Complete: 1630 ft/s
Range of Results (ROR): 107 ft/s
Range of Mix Results (RMR): 85 ft/s
Gap: NA

