

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC

Job No.: 2084-192-1

Test Date: 12/6/2019

Test Panel

Description: Torso plate tested as stand alone. Part #: 007-015-7300; Size: 10x12 Flat plate; Lot #: LT19-111819.

Manufacturer: Hardwire LLC

Sample No.: SR19-Test 20

Size: 10.00 x 12.00 in
Avg. Thick: NA
Thickness: NA

Weight: 4.48 lbs
Plies/Laminates: NA

Date Received: 11/25/2019
Via: DHL
Returned: NA

Setup

Shot Spacing: NIJ-STD-0101.06 Level III
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Dropped and wet per NIJ-STD-0101.06 sec 6

Primary Vel. Screens (ft): 37.000, 37.333, 46.667, 47.000
Primary Vel. Location (ft): 42.000
Range to Target (ft): 50.200
Target to Witness (in): 0.000

Range No.: 2
Temp: 66.7 °F
BP: 29.9 inHg
RH: 39.1%
Barrel/Gun: Test Barrel
Gunner: Austin Blake
Recorder: Jesse Fulk

Ammunition

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

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 11:50 AM; Block No. 30; Temp: 91.6°F; Drop Depths: 20.6mm, 18.6mm, 17.4mm, 18.8mm, 20.7mm

(1) NIJ-STD-0101.06 Level III (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	148.0	3602	2776	3356	2781	2779	None	33.9	0.0	
2	1	148.0	3573	2799	3329	2804	2801	None	20.3	0.0	
3	1	148.0	3558	2811	3312	2818	2814	None	NA	0.0	
4	1	148.0	3587	2788	3341	2794	2791	None	NA	0.0	
5	1	148.0	3595	2782	3346	2789	2786	None	NA	0.0	
6	1	148.0	3590	2786	3343	2792	2789	None	NA	0.0	

Remarks:

Requested velocity: 2780 ±30 ft/s

Projectiles were provided by NTS-Chesapeake Testing.

Conditioned per NIJ 0101.06 Section 6.

Footnotes:

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC

Job No.: 2084-192-2

Test Date: 12/6/2019

Test Panel

Description: Torso plate tested as stand alone. Part #: 007-015-7300; Size: 10x12 Flat plate; Lot #: LT19-111819.

Manufacturer: Hardwire LLC

Sample No.: SR19-Test 21

Size: 10.00 x 12.00 in
Avg. Thick: NA
Thickness: NA

Weight: 4.21 lbs
Plies/Laminates: NA

Date Received: 11/25/2019
Via: DHL
Returned: NA

Setup

Shot Spacing: NIJ-STD-0101.06 Level III
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Dropped and wet per NIJ-STD-0101.06 sec 6

Primary Vel. Screens (ft): 37.000, 37.333, 46.667, 47.000
Primary Vel. Location (ft): 42.000
Range to Target (ft): 50.200
Target to Witness (in): 0.000

Range No.: 2
Temp: 66.5 °F
BP: 29.9 inHg
RH: 38.4%
Barrel/Gun: Test Barrel
Gunner: Austin Blake
Recorder: Jesse Fulk

Ammunition

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

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 11:25 AM; Block No. 8; Temp: 92.5°F; Drop Depths: 19.4mm, 19.5mm, 21.6mm, 18.6mm, 18.1mm

(1) NIJ-STD-0101.06 Level III (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	148.0	3614	2767	3363	2775	2771	None	37.0	0.0	
2	1	148.0	3607	2772	3358	2779	2776	None	21.0	0.0	
3	1	148.0	3619	2763	3373	2767	2765	None	NA	0.0	
4	1	148.0	3595	2782	3348	2788	2785	None	NA	0.0	
5	1	148.0	3614	2767	3365	2774	2770	None	NA	0.0	
6	1	148.0	3602	2776	3356	2781	2779	None	NA	0.0	

Remarks:

Requested velocity: 2780 ±30 ft/s

Projectiles were provided by NTS-Chesapeake Testing.

Conditioned per NIJ 0101.06 Section 6.

Footnotes:

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-192-3
Test Date: 12/6/2019

Test Panel

Description: Torso plate tested as stand alone. Part #: 007-015-7300; Size: 10x12 Flat plate; Lot #: LT19-111819.

Manufacturer: Hardwire LLC

Sample No.: SR19-Test 22

Size: 10.00 x 12.00 in
Avg. Thick: NA
Thickness: NA

Weight: 4.25 lbs
Plies/Laminates: NA

Date Received: 11/25/2019
Via: DHL
Returned: NA

Setup

Shot Spacing: NIJ-STD-0101.06 Level III
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Dropped and wet per NIJ-STD-0101.06 sec 6

Primary Vel. Screens (ft): 37.000, 37.333, 46.667, 47.000
Primary Vel. Location (ft): 42.000
Range to Target (ft): 50.200
Target to Witness (in): 0.000

Range No.: 2
Temp: 66.5 °F
BP: 29.9 inHg
RH: 40.3%
Barrel/Gun: Test Barrel
Gunner: Austin Blake
Recorder: Jesse Fulk

Ammunition

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

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 11:40 AM; Block No. 30; Temp: 92.4°F; Drop Depths: 18.5mm,19.1mm,20.1mm,19.7mm,18.2mm
(1) NIJ-STD-0101.06 Level III (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	148.0	3614	2767	3368	2771	2769	None	32.5	0.0	
2	1	148.0	3558	2811	3314	2816	2813	None	34.3	0.0	
3	1	148.0	3590	2786	3346	2789	2787	None	NA	0.0	
4	1	148.0	3602	2776	3356	2781	2779	None	NA	0.0	
5	1	148.0	3607	2772	3360	2778	2775	None	NA	0.0	
6	1	148.0	3587	2788	3343	2792	2790	None	NA	0.0	

Remarks:

Requested velocity: 2780 ±30 ft/s
Projectiles were provided by NTS-Chesapeake Testing.
Conditioned per NIJ 0101.06 Section 6.

Footnotes:

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-192-4
Test Date: 12/6/2019

Test Panel

Description: Torso plate tested as stand alone. Part #: 007-015-7300; Size: 10x12 Flat plate; Lot #: LT19-111819.

Manufacturer: Hardwire LLC

Sample No.: SR19-Test 24

Size: 10.00 x 12.00 in
Avg. Thick: NA
Thickness: NA

Weight: 4.30 lbs
Plies/Laminates: NA

Date Received: 11/25/2019
Via: DHL
Returned: NA

Setup

Shot Spacing: NIJ-STD-0101.06 Level III
Witness Panel: Clay
Backing Material: 5.5-in clay/plywood
Condition: Dropped and wet per NIJ-STD-0101.06 sec 6

Primary Vel. Screens (ft): 37.000, 37.333, 46.667, 47.000
Primary Vel. Location (ft): 42.000
Range to Target (ft): 50.200
Target to Witness (in): 0.000

Range No.: 2
Temp: 66.7 °F
BP: 29.9 inHg
RH: 40.0%
Barrel/Gun: Test Barrel
Gunner: Austin Blake
Recorder: Jesse Fulk

Ammunition

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

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 11:00 AM; Block No. 8; Temp: 93.3°F; Drop Depths: 18.4mm,17.6mm,20.8mm,21.0mm,18.6mm
(1) NIJ-STD-0101.06 Level III (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	148.0	3561	2808	3314	2816	2812	None	35.4	0.0	
2	1	148.0	3602	2776	3356	2781	2779	None	29.4	0.0	
3	1	148.0	3600	2778	3351	2785	2782	None	NA	0.0	
4	1	148.0	3624	2759	3375	2765	2762	None	NA	0.0	
5	1	148.0	3605	2774	3356	2781	2778	None	NA	0.0	
6	1	148.0	3612	2769	3360	2778	2773	None	NA	0.0	

Remarks:

Requested velocity: 2780 ±30 ft/s
Projectiles were provided by NTS-Chesapeake Testing.
Conditioned per NIJ 0101.06 Section 6.

Footnotes:

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-192-A
Test Date: 12/6/2019
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Test Panel

Description: Torso plate tested as stand alone. Part #: 007-015-7300; Size: 10x12 Flat plate; Lot #: LT19-111819.

Manufacturer: Hardwire, LLC

Sample No.: SR19-TEST 15-23

Size: See Remarks
Avg. Thick: NA
Thickness: NA

Weight: See Remarks
Plies/Laminates: NA
Required BL(P): NA

Date Received: 11/25/2019
Via: DHL
Returned: NA

Setup

Shot Spacing: NIJ-STD-0101.06 Level III
Witness Panel: Clay
Backing Material: 5.5-in clay
Condition: Dropped per NIJ-STD-0101.06

Primary Vel. Screens (ft): 37.000, 37.333, 46.667, 47.000
Primary Vel. Location (ft): 42.000
Range to Target (ft): 50.200
Target to Witness (in): 0.000

Range No.: 2
Temp: 66.2 °F
BP: 29.8 inHg
RH: 38.7%
Barrel/Gun: Test Barrel
Gunner: Austin Blake
Recorder: Jesse Fulk

Ammunition

Projectile	Lot No.	Powder
(1) 7.62 x 51-mm, 149-grain M80 FMJ	NA	H4350

Applicable Standards or Procedures

Clay Drop 1 - 2:10 PM; Block No. 53; 91.6°F; 18.3 mm, 19.2 mm, 20.1 mm, 18.8 mm, 18.4 mm
(1) NIJ-STD-0101.06 Level III (Modified)
(2) Customer request

Shot No.	Powder/Seating	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Result	Include in V ₅₀	Obliq. (°)	Footnotes
1	64.0	148.0	3612	2769	3368	2771	2770	P	No	0.0	
2	66.0	148.0	3502	2856	3263	2860	2858	P	No	0.0	
3	69.0	148.0	3387	2952	3158	2955	2954	P	No	0.0	
4	71.5	148.0	3275	3053	3050	3060	3057	P	No	0.0	
5	74.0	148.0	3148	3177	2933	3182	3179	P	No	0.0	
6	76.5	148.0	3055	3273	2848	3277	3275	P	No	0.0	
7	79.0	148.0	2972	3365	2770	3369	3367	P	No	0.0	
8	81.5	148.0	2853	3505	2655	3515	3510	P	No	0.0	
9	84.5	148.0	2779	3598	2591	3602	3600	P	No	0.0	(a)
10	84.5	148.0	2794	3579	2605	3583	3581	P	No	0.0	
11	84.5	148.0	2760	3623	2572	3629	3626	P	No	0.0	
12	84.5	148.0	2787	3588	2599	3591	3590	P	No	0.0	

Remarks

Requested velocity: 2780 ±30 ft/s
Projectiles were provided by NTS-Chesapeake Testing.
Conditioned per NIJ 0101.06 Section 6.
Shots 1-6 impacted on plate 15.
Plate SR19-Test 15; Weight: 4.38 lbs.; Size: 10.00 x 12.00 in.
Shots 7-12 impacted on plate 23.
Plate SR19-Test 23; Weight: 4.32 lbs.; Size: 10.00 x 12.00 in.

V₅₀ Summary:

No. Points: NA
V₅₀: NA ft/s
High Partial: NA ft/s
Low Complete: NA ft/s
Range of Results (ROR): NA ft/s
Range of Mix Results (RMR): NA
Gap: NA

Footnotes:

(a) Maximum velocity was reached.

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-192-B
Test Date: 12/6/2019
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Test Panel

Description: Torso plate tested as stand alone. Part #: 007-015-7300; Size: 10x12 Flat plate; Lot #: LT19-111819.

Manufacturer: Hardwire, LLC

Sample No.: SR19-Test 16-17

Size: See Remarks
Avg. Thick: NA
Thickness: NA

Weight: See Remarks
Plies/Laminates: NA
Required BL(P): NA

Date Received: 11/25/2019
Via: DHL
Returned: NA

Setup

Shot Spacing: NIJ-STD-0101.06 Level III
Witness Panel: Clay
Backing Material: 5.5-in clay
Condition: Dropped per NIJ-STD-0101.06

Primary Vel. Screens (ft): 37.000, 37.333, 46.667, 47.000
Primary Vel. Location (ft): 42.000
Range to Target (ft): 50.200
Target to Witness (in): 0.000

Range No.: 2
Temp: 66.9 °F
BP: 29.8 inHg
RH: 40.4%
Barrel/Gun: Test Barrel
Gunner: Austin Blake
Recorder: Jesse Fulk

Ammunition

Projectile	Lot No.	Powder
(1) 7.62 x 51-mm, 149-grain M80 FMJ	NA	H4350

Applicable Standards or Procedures

Clay Drop 1 - 1:10 PM; Block No. 53; 91.8°F; 18.1 mm, 20.4 mm, 19.7 mm, 18.5 mm, 19.1 mm
(1) NIJ-STD-0101.06 Level III (Modified)
(2) Customer request

Shot No.	Powder/Seating	Weight (gr)	Time 1 (µs)	Vel. 1 (ft/s)	Time 2 (µs)	Vel. 2 (ft/s)	Avg. Vel. (ft/s)	Result	Include in V ₅₀	Obliq. (°)	Footnotes
1	64.0	148.0	3592	2784	3348	2788	2786	P	No	0.0	
2	66.0	148.0	3502	2856	3263	2860	2858	P	No	0.0	
3	69.0	148.0	3353	2982	3126	2986	2984	P	No	0.0	
4	72.5	148.0	3138	3187	2923	3193	3190	P	No	0.0	
5	75.0	148.0	3070	3257	2858	3266	3262	P	No	0.0	
6	78.0	148.0	2980	3356	2775	3363	3360	P	No	0.0	
7	81.0	148.0	2858	3499	2662	3506	3503	P	No	0.0	
8	84.0	148.0	2811	3557	2620	3562	3560	P	Yes	0.0	
9	84.5	148.0	2792	3582	2601	3588	3585	P	Yes	0.0	(a)
10	84.5	148.0	2784	3592	2592	3601	3596	C	Yes	0.0	
11	83.5	148.0	2801	3570	2609	3577	3574	C	Yes	0.0	
12	82.5	148.0	2828	3536	2635	3542	3539	P	No	0.0	

Remarks

Requested velocity: 2780 ±30 ft/s
Projectiles were provided by NTS-Chesapeake Testing.
Conditioned per NIJ 0101.06 Section 6.
Shots 1-6 impacted on plate 16.
Plate SR19-Test 16; Weight: 4.15 lbs.; Size: 10.00 x 12.00 in.
Shots 7-12 impacted on plate 17.
Plate SR19-Test 17; Weight: 4.31 lbs.; Size: 10.00 x 12.00 in.

V₅₀ Summary:

No. Points: 2 and 2
V₅₀: 3579 ft/s
High Partial: 3585 ft/s
Low Complete: 3574 ft/s
Range of Results (ROR): 36 ft/s
Range of Mix Results (RMR): 11 ft/s
Gap: NA

Footnotes:

(a) Maximum velocity was reached.

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardwire LLC
Job No.: 2084-192-B
Test Date: 12/6/2019
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Manufacturer: Hardwire, LLC

Sample No.: SR19-Test 16-17

V₅₀ Summary:

No. Points: 2 and 2
V₅₀: 3579 ft/s
High Partial: 3585 ft/s
Low Complete: 3574 ft/s
Range of Results (ROR): 36 ft/s
Range of Mix Results (RMR): 11 ft/s
Gap: NA

