

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardhead Veterans
Project No.: PR151301-1
Test Date: 12/09/2021 - 12/10/2021
Page 1 of 1

Test Panel Description: Helmet.

Manufacturer: Hard Head Veterans LLC

Sample No.: (9mm, V0- ACH On Clay) 1

Size: Medium
Avg. Thickness: 0.319 in
Thicknesses: 0.331 in, 0.332 in,
0.310 in, 0.303 in

Weight: 2.340 lbs
Plies/Laminates: N/A

Date Received: 12/06/2021
Received Via: UPS Ground
Returned Via: UPS Ground

Setup

Shot Spacing: AR/PD 10-02 REV A
Change 7, dated 16
Oct 2014
Witness Panel: Clay
Backing Material: NIJ Head Form
Condition: Ambient

Primary Vel. Screens (ft): 5.000, 5.333,
9.666, 10.000
Primary Vel. Location (ft): 7.500
Range to Target (ft): 15.000
Target to Witness (in): 0.000

Range No.: Range 5
Temp: 67.9 °F
BP: 30.2 inHg
RH: 40.6 %
Barrel/Gun: WC024524
Gunner: Gregory Bonilla
Recorder: Joseph Gerdes

Ammunition

Projectile	Lot No.	Powder
(1) 9-mm, 124-grain FMJ	Remington 23558	Accurate No. 2

Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 2:15 PM; Block No. WC074960; Temp: 91.0 °F, 91.0 °F; Drop Depths: 25.0 mm, 26.2 mm, 25.7 mm
(1) AR/PD 10-02 REV A Change 7, dated 16 Oct 2014 (Modified)
(2) Customer Request

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)	Striking Vel. (ft/s)	Penetration	Deformation (mm)	Obliq. (°)	Footnotes
1	1	5.7	125.1	3492	1432	3028	1431	1431	1421	None	6.4	0.0	(a)
2	1	5.7	125.1	3497	1430	3033	1429	1429	1419	None	8.9	0.0	(b)
3	1	5.7	125.1	3492	1432	3028	1431	1431	1421	None	3.2	0.0	(c)
4	1	5.7	125.1	3463	1444	3004	1442	1443	1433	None	12.5	0.0	(d)
5	1	5.7	125.2	3500	1429	3033	1429	1429	1418	None	16.7	0.0	(e)

Remarks:

Required velocity: 1400 + 50 ft/s.
Head form No.: HB5-1 Head form temp.: 92.6 °F.
Projectile yaw check: 0° yaw on all impacts.

Footnotes:

- (a) Crown
- (b) Front
- (c) Back
- (d) Right
- (e) Left

BALLISTIC RESISTANCE TEST

NTS-Chesapeake Testing

4603B Compass Point Road
Belcamp, MD 21017

Client: Hardhead Veterans

Project No.: PR151301-2

Test Date: 12/09/2021

Page 1 of 1

Test Panel Description: Helmet.

Manufacturer: Hard Head Veterans LLC

Sample No.: (.44 Mag, V0- Air) 1

Size: Medium
Avg. Thickness: 0.326 in
Thicknesses: 0.329 in, 0.328 in,
0.324 in, 0.323 in

Weight: 2.370 lbs
Plies/Laminates: N/A

Date Received: 12/06/2021
Received Via: UPS Ground
Returned Via: UPS Ground

Setup

Shot Spacing: NIJ-STD-0106.01
Witness Panel: 0.02 in 2024-T3
Aluminum
Backing Material: N/A
Condition: Ambient

Primary Vel. Screens (ft): 6.500, 9.500
Primary Vel. Location (ft): 8.000
Range to Target (ft): 16.400
Target to Witness (in): 3.000

Range No.: Range 5
Temp: 67.6 °F
BP: 30.2 inHg
RH: 41 %
Barrel/Gun: WC024524
Gunner: Gregory Bonilla
Recorder: Joseph Gerdes

Ammunition

Projectile	Lot No.	Powder
(1) .44-mag, 240-grain SWCGC	Rim Rock	IMR 4227

Applicable Standards or Procedures

- (1) NIJ-STD-0106.01 (Modified)
- (2) Customer Request

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	11.7	243.6	2108	1423	2111	1421	1422	None	0.0	(a)
2	1	11.7	243.6	2106	1425	2111	1421	1423	None	0.0	(b)
3	1	11.7	243.7	2125	1412	2130	1408	1410	None	0.0	(c)
4	1	11.7	243.7	2133	1406	2137	1404	1405	None	0.0	(d)

Remarks:

Required velocity: 1350-1450 ft/s.
Projectile yaw check: 0° yaw on all impacts.

Footnotes:

- (a) Front
- (b) Back
- (c) Right
- (d) Left

PROTECTION BALLISTIC LIMIT TEST, V₅₀ BL(P)

NTS-Chesapeake Testing
4603B Compass Point Road
Belcamp, MD 21017

Client: Hardhead Veterans
Project No.: PR151301-A
Test Date: 12/09/2021
Page 1 of 2

Test Panel Description: Helmet.

Manufacturer: Hard Head Veterans LLC

Sample No.: (17gr., V50- Air) 1

Size: Medium
Avg. Thickness: 0.330 in
Thicknesses: 0.331 in, 0.330 in,
0.331 in, 0.329 in

Weight: 1.670 lbs
Plies/Laminates: N/A
Required BL(P): N/A

Date Received: 12/06/2021
Received Via: UPS Ground
Returned Via: UPS Ground

Setup

Shot Spacing: AR/PD 10-02 REV A
Change 7, dated 16
Oct 2014
Witness Panel: 0.02 in 2024-T3
Aluminum
Backing Material: N/A
Condition: Ambient

Primary Vel. Screens (ft): 5.000, 5.333,
9.666, 10.000
Primary Vel. Location (ft): 7.500
Range to Target (ft): 15.000
Target to Witness (in): 3.000

Range No.: Range 5
Temp: 67.5 °F
BP: 30.2 inHg
RH: 39.4 %
Barrel/Gun: WC024524
Gunner: Gregory Bonilla
Recorder: Joseph Gerdes

Ammunition

Projectile

Lot No.

Powder

(1) .22-cal., 17-grain FSP

17061021

Bullseye

Applicable Standards or Procedures

- (1) AR/PD 10-02 REV A Change 7, dated 16 Oct 2014
(2) MIL-STD-662F

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)	Striking Vel. (ft/s)	Result	Include in V ₅₀	Obliq. (°)	Footnotes
1	1	8.0	17.0	2291	2182	1984	2184	2183	2090	P	No	0.0	(a)
2	1	9.5	17.0	2025	2469	1757	2466	2468	2362	P	No	0.0	(b)
3	1	10.5	17.0	1910	2618	1657	2615	2616	2505	C	Yes	0.0	(c)
4	1	10.0	17.0	1964	2546	1703	2544	2545	2437	P	Yes	0.0	(d)
5	1	10.5	17.0	1901	2630	1649	2628	2629	2517	C	Yes	0.0	(e)
6	1	10.0	17.0	1996	2505	1730	2505	2505	2398	P	Yes	0.0	(a)
7	1	10.3	17.0	1920	2604	1664	2604	2604	2493	C	Yes	0.0	(b)
8	1	10.0	17.0	1974	2533	1710	2534	2533	2425	P	Yes	0.0	(c)

Remarks:
Requested starting velocity: 2200 ft/s.

V₅₀ Summary:

No. of Points: 3 and 3
V₅₀: 2463 ft/s
High Partial: 2437 ft/s
Low Complete: 2493 ft/s
Range of Results (ROR): 119 ft/s
Range of Mix Results (RMR): N/A
Gap: 56 ft/s

Footnotes:
(a) Crown
(b) Front
(c) Left
(d) Back
(e) Right

BLUNT IMPACT PROTECTION

NTS-Chesapeake Testing 4603B Compass Point Road Belcamp, MD 21017	Client: HardHead Veterans Project No.: PR151301-1 Test Date: 12/8/2021 Page No.: 1 of 8
Manufacturer: HardHead Veterans	Sample ID: Hard Head-03

Sample		
Size: Medium Weight: 2.34 lbs. Color: Green	Model: TBH (High cut) Mfg. Date: NA Lot No.: NA	Date Received: 12/6/2021 Via: UPS Returned: UPS

Setup		
Impact Type: Impact Uni-Axial Drop Mass: 6.044 kg Mount Size: D.O.T. C Mount Type: FMVSS218	Time Gate Flag : 25.32 mm Temperature: 67.5 °F Humidity: 49.2 % Conditioning: Ambient	Tester: Johnathan Harris Recorder: Johnathan Harris Filtering: CFC 1000 1650Hz Sensitivity: 10.83 mV/G

Applicable Standards or Procedures

- (1) AR/PD 10-02 Rev. A
- (2) Customer Request

Requirement Number	Inspection Pass/Fail	Inspection Requirement
1	NA	There shall be no physical damage to the helmet shell such as shell fracture, defined as a separation/split of the ballistic material through the entire thickness of the helmet shell, or indentation depth in excess of 0.2 inches present after impact testing (delamination and ply separation are permitted).
2	Pass	There should be no damage to any part of the retention system or pad system.

Impact Number	Impact Location	Pass/Fail Criteria <150 G	Peak Acc. (G)	Impact Velocity (ft/s)	Drop Height (in)	Strike Energy (J)	Head Injury Criteria (HIC)	Severity Index (SI)	Impact Deformation (in)
1	Crown	Pass	62.0	10.0	19.9	28.2	87.0	115.0	Not Available
2	Crown	Pass	62.4	10.0	19.9	28.1	97.0	121.0	Available
3	Front	Pass	59.1	10.0	19.9	28.2	85.0	107.0	Not Available
4	Front	Pass	83.6	10.0	19.9	28.1	127.0	184.0	Available
5	Rear	Pass	66.3	10.0	19.9	28.3	93.0	127.0	Not Available
6	Rear	Pass	70.1	10.1	19.9	28.4	102.0	135.0	Available
7	L Side	Pass	63.1	10.0	19.9	28.3	90.0	113.0	Not Available
8	L Side	Pass	61.5	10.0	19.9	28.1	101.0	128.0	Available
9	R Side	Pass	63.8	10.1	19.9	28.4	100.0	128.0	Not Available
10	R Side	Pass	74.2	10.1	19.9	28.4	115.0	162.0	Available
11	L Nape	Pass	81.6	10.1	19.9	28.4	131.0	189.0	Not Available
12	L Nape	Pass	78.9	10.0	19.9	28.3	137.0	189.0	Available
13	R Nape	Pass	80.9	10.1	19.9	28.4	137.0	184.0	Not Available
14	R Nape	Pass	75.5	10.0	19.9	28.2	122.0	175.0	Available

Remarks:

The Head Positioning Index (H.P.I) was defined at 2.5 inches and measured from the brim of the helmet to the basic plane on the headform for all impacts.