

NATIONAL TECHNICAL SYSTEMS
NIJ 0106.01 HELMET:
BALLISTIC PENETRATION TEST

Date Received: Jun. 22, 2023
 Via: DHL
 Returned Via: DHL

Record No.: SBD23003-4
 Test Date: Jun. 22, 2023
 Customer: Sestan Busch

Test Conditions

Temperature: 22 °C
 Humidity: 47 %

Range 2

Muzzle to Screen 1: 1.52 m
 Screen 1 - 2: 1.52 m
 Screen 2 - Target: 1.83 m
 Midpoint to Target: 2.59 m

Test Standard: Modified / Abbreviated NIJ Standard 0106.01 for Ballistic Helmets
 December 1981

Test Method: IAW Paragraph 5.2 Ballistic Penetration Test
 Test Ammunition: IAW NIJ Standard 0108.01, September 1985
 Threat Level: IIIA
 Conditioning: Ambient
 Submersion: No

Headform Size: 7 1/4
 Witness Plate: 2024-T3 Alum.
 Barrel Length: 25.40 cm

Sample Tested Description	Test / Ammunition Description					Chronograph		Test Results
	Shot No.	Impact Location	Degree Obliquity	Caliber	Bullet Weight (gr.) / Type	TIME sx-5	VELOCITY m/s	
Manufacturer: Sestan Busch	1	Front	0°	.44 Mag.	240 / LSWC GC	358.1	425.6	No Penetration
Model No.: BK-ACH	2	Back	0°			356.4	427.6	No Penetration
Size: L	3	Left	0°			356.2	427.8	No Penetration
Serial No.: C041933	4	Right	0°			362.2	420.8	No Penetration
Production Date: 06/2023								
Weight (kg.): 1.483								
Threat Level: NIJ IIIA								

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Notes:

•Helmet tested as received from customer with retention / suspension system, chinstrap and pads.

Test Ammunition / Velocity Information:

Test Round: .44 Magnum 240 gr. Lead Semi-Wadcutter Gas Checked (LSWCGC)
 Test Velocity: 426 +/- 15 m/s (1400 +/- 50 ft/s)



Technician(s): Nguyen / Wilson

NATIONAL TECHNICAL SYSTEMS
NIJ 0106.01 HELMET:
BALLISTIC PENETRATION TEST

Date Received: Jun. 22, 2023
 Via: DHL
 Returned Via: DHL

Record No.: SBD23003-3
 Test Date: Jun. 22, 2023
 Customer: Sestan Busch

Test Conditions

Temperature: 22 °C
 Humidity: 47 %

Range 2

Muzzle to Screen 1: 1.52 m
 Screen 1 - 2: 1.52 m
 Screen 2 - Target: 1.83 m
 Midpoint to Target: 2.59 m

Test Standard: Modified / Abbreviated NIJ Standard 0106.01 for Ballistic Helmets
 December 1981

Test Method: IAW Paragraph 5.2 Ballistic Penetration Test
 Test Ammunition: IAW NIJ Standard 0108.01, September 1985
 Threat Level: IIIA
 Conditioning: Ambient
 Submersion: No

Headform Size: 7 1/4
 Witness Plate: 2024-T3 Alum.
 Barrel Length: 25.40 cm

Sample Tested Description	Test / Ammunition Description					Chronograph		Test Results
	Shot No.	Impact Location	Degree Obliquity	Caliber	Bullet Weight (gr.) / Type	TIME sx-5	VELOCITY m/s	Penetration
Manufacturer: Sestan Busch								No Penetration
Model No.: BK-ACH								No Penetration
Size: M	1	Front	0°			354.1	430.4	No Penetration
Serial No.: C041930	2	Back	0°	9mm	124 / FMJ	356.1	428.0	No Penetration
Production Date: 06/2023	3	Left	0°			354.4	430.0	No Penetration
Weight (kg.): 1.446	4	Right	0°			353.2	431.5	No Penetration
Threat Level: NIJ IIIA								

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Notes:

•Helmet tested as received from customer with retention / suspension system, chinstrap and pads.

Test Ammunition / Velocity Information:

Test Round: Remington (23558), 9mm 124 gr. FMJ RN
 Test Velocity: 426 +/- 15 m/s (1400 +/- 50 ft/s)



Technician(s): Nguyen / Wilson

NATIONAL TECHNICAL SYSTEMS
NIJ 0106.01 HELMET:
BALLISTIC PENETRATION TEST

Date Received: Jun. 22, 2023
 Via: DHL
 Returned Via: DHL

Record No.: SBD23003-2
 Test Date: Jun. 22, 2023
 Customer: Sestan Busch

Test Conditions

Temperature: 22 °C
 Humidity: 47 %

Range 2

Muzzle to Screen 1: 1.52 m
 Screen 1 - 2: 1.52 m
 Screen 2 - Target: 1.83 m
 Midpoint to Target: 2.59 m

Test Standard: Modified / Abbreviated NIJ Standard 0106.01 for Ballistic Helmets
 December 1981

Test Method: IAW Paragraph 5.2 Ballistic Penetration Test
 Test Ammunition: IAW NIJ Standard 0108.01, September 1985
 Threat Level: IIIA
 Conditioning: Wet
 Submersion: Yes

Headform Size: 7 1/4
 Witness Plate: 2024-T3 Alum.
 Barrel Length: 25.40 cm

Sample Tested Description	Test / Ammunition Description					Chronograph		Test Results
	Shot No	Impact Location	Degree Obliquity	Caliber	Bullet Weight (gr.) / Type	TIME sx-5	VELOCITY m/s	
Manufacturer: Sestan Busch	1	Front	0°			352.5	432.3	No Penetration
Model No.: BK-ACH	2	Back	0°	.44 Mag.	240 / LSWC GC	351.7	433.3	No Penetration
Size: M	3	Left	0°			346.5	439.8	No Penetration
Serial No.: C041931	4	Right	0°			353.2	431.5	No Penetration
Production Date: 06/2023								
Weight (kg.): 1.449								
Threat Level: NIJ IIIA								

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Notes:

•Helmet tested as received from customer with retention / suspension system, chinstrap and pads.

Test Ammunition / Velocity Information:

Test Round: .44 Magnum 240 gr. Lead Semi-Wadcutter Gas Checked (LSWCGC)
 Test Velocity: 426 +/- 15 m/s (1400 +/- 50 ft/s)



[Handwritten signature]

Technician(s): Nguyen / Wilson

NATIONAL TECHNICAL SYSTEMS
NIJ 0106.01 HELMET:
BALLISTIC PENETRATION TEST

Date Received: Jun. 22, 2023
 Via: DHL
 Returned Via: DHL

Record No.: SBD23003-1
 Test Date: Jun. 22, 2023
 Customer: Sestan Busch

Test Conditions

Temperature: 22 °C
 Humidity: 47 %

Range 2

Muzzle to Screen 1: 1.52 m
 Screen 1 - 2: 1.52 m
 Screen 2 - Target: 1.83 m
 Midpoint to Target: 2.59 m

Test Standard: Modified / Abbreviated NIJ Standard 0106.01 for Ballistic Helmets
 December 1981

Test Method: IAW Paragraph 5.2 Ballistic Penetration Test
 Test Ammunition: IAW NIJ Standard 0108.01, September 1985
 Threat Level: IIIA
 Conditioning: Wet
 Submersion: Yes

Headform Size: 7 1/4
 Witness Plate: 2024-T3 Alum.
 Barrel Length: 25.40 cm

Sample Tested Description	Test / Ammunition Description					Chronograph		Test Results
	Shot No.	Impact Location	Degree Obliquity	Caliber	Bullet Weight (gr.) / Type	TIME sx-5	VELOCITY m/s	Penetration
Manufacturer: Sestan Busch	1	Front	0°			351.3	433.8	No Penetration
Model No.: BK-ACH	2	Back	0°	9mm	124 / FMJ	353.6	431.0	No Penetration
Size: S	3	Left	0°			355.9	428.2	No Penetration
Serial No.: C041936	4	Right	0°			353.0	431.7	No Penetration
Production Date: 06/2023								
Weight (kg.): 1.363								
Threat Level: NIJ IIIA								

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Notes:

•Helmet tested as received from customer with retention / suspension system, chinstrap and pads.

Test Ammunition / Velocity Information:

Test Round: Remington (23558), 9mm 124 gr. FMJ RN
 Test Velocity: 426 +/- 15 m/s (1400 +/- 50 ft/s)



Technician(s): Nguyen / Wilson

NATIONAL TECHNICAL SYSTEMS

V50 BALLISTIC LIMIT TEST

Date Received: Jun. 22, 2023
 Via: FedEx
 Returned Via: FedEx

Record No.: SBD23003-5
 Test Date: Jun. 22, 2023
 Customer: Sestan Busch

Sample Tested

Manufacturer: Sestan Busch
 Model: BK-ACH
 Size: XL
 Style: Finished Helmet Shell
 Serial No.: C041936
 Weight (kg): 1.343
 Threat Level: NIJ IIIA
 Conditioning: Ambient

Threat

Projectile: Fragment Simulating Projectile
 Type: Type 2 (27 +/- 3 HRC / Non-Tumbled)
 Weight: 1.1 g (17 gr.)
 Powder: Bullseye
 Barrel (cm): 60.96
 Obliquity: 0°
 Yaw: ≤ 5°

Test Standard

STANAG 2920 Edition 3,
 NATO STANDARD AEP-2920
 Edition A, Version 2
 September 2016

Range 2

Muzzle to Screen 1: 1.25 m
 Screen 1 - 4: 1.52 m
 Screen 2 - 3: 1.24 m
 Screen 4 - Target: 1.79 m
 Target to Witness: 15 cm
 Midpoint to Target: 3.17 m
 Witness: 2024-T3 Aluminum
 Range Temperature: 22.0 °C
 Range Humidity: 45 %

Shot No.	Powder Charge (gr.)	CHRONOGRAPHS 1-4		CHRONOGRAPHS 2-3		AVERAGE VELOCITY m/s	LOSS VELOCITY m/s	STRIKING VELOCITY m/s	TEST RESULTS		
		TIME sx-5	VELOCITY m/s	TIME sx-5	VELOCITY m/s				Shot Location	Shot Included	Complete Partial
1	4.9	214.9	709.2	175.1	711.0	710.1	38.5	671.6	Crown	N	P
2	5.2	206.8	736.9	168.6	738.4	737.7	39.9	697.8	Front	Y	C
3	5.0	211.3	721.2	172.2	723.0	722.1	39.1	683.0	Right	Y	C
4	4.8	217.4	701.0	177.2	702.6	701.8	38.0	663.8	Back	N	P
5	5.0	212.2	718.2	172.8	720.5	719.3	38.8	680.6	Left	Y	P
6	5.2	209.9	726.1	171.0	728.1	727.1	39.4	687.6	Crown	Y	P
7	5.4	202.5	752.6	165.0	754.5	753.6	40.7	712.9	Front	Y	P
8	5.5	201.3	757.1	164.0	759.1	758.1	41.0	717.1	Right	Y	C
This test was performed in accordance with the specification requirements and the results properly reflect the ballistic performance of the listed sample.				V50 VELOCITY	HIGH PARTIAL	LOW COMPLETE	RANGE OF RESULTS	RANGE OF MIXED RESULTS			
				696.5	712.9	683.0	36.5	29.9			

Notes:

- Muzzle to target measured for each shot to calculate loss.
- Helmet tested as received from customer with retention / suspension system, chinstrap and pads removed prior testing.

Projectile Used:

.22 Caliber, 1.1g +/- 0.03g (17 gr.) Chisel Nose Fragment Simulating Projectile (FSP)
 Starting velocity of: 680.0 m/s

V50 Calculation:

- V50 based on (3) partial and (3) complete penetrations with a range of results ≤ 40 m/s



Technician(s): Nguyen / Wilson

NATIONAL TECHNICAL SYSTEMS

V50 BALLISTIC LIMIT TEST

Date Received: July 13, 2023
 Via: FedEx
 Returned Via: FedEx

Record No.: SBD23004-3
 Test Date: July 17, 2023
 Customer: Sestan Busch

Sample Tested

Manufacturer: Sestan Busch
 Model: BK-ACH-HC
 Size: L
 Style: Finished Helmet Shell
 Serial No.: C058914
 Weight (kg): 1.010
 Threat Level: NIJ IIIA
 Conditioning: Ambient

Threat

Projectile: Fragment Simulating Projectile
 Type: Type 2 (27 +/- 3 HRC / Non-Tumbled)
 Weight: 1.1 g (17 gr.)
 Powder: Bullseye
 Barrel (cm): 60.96
 Obliquity: 0°
 Yaw: ≤ 5°

Test Standard

STANAG 2920 Edition 3,
 NATO STANDARD AEP-2920
 Edition A, Version 2
 September 2016

Range 2

Muzzle to Screen 1: 1.25 m
 Screen 1 - 4: 1.52 m
 Screen 2 - 3: 1.24 m
 Screen 4 - Target: 1.79 m
 Target to Witness: 15 cm
 Midpoint to Target: 3.17 m
 Witness: 2024-T3 Aluminum
 Range Temperature: 22.5 °C
 Range Humidity: 40 %

Shot No.	Powder Charge (gr.)	CHRONOGRAPHS 1 - 4		CHRONOGRAPHS 2 - 3		AVERAGE VELOCITY m/s	LOSS VELOCITY m/s	STRIKING VELOCITY m/s	TEST RESULTS		
		TIME sx-5	VELOCITY m/s	TIME sx-5	VELOCITY m/s				Shot Location	Shot Included	Complete Partial
1	4.8	216.5	703.9	176.3	706.2	705.0	38.5	666.5	Crown	N	P
2	5.0	211.1	721.9	171.9	724.2	723.1	39.4	683.7	Front	Y	P
3	5.2	211.5	720.6	172.3	722.6	721.6	39.5	682.0	Right	Y	C
4	5.0	212.4	717.5	173.0	719.6	718.6	39.2	679.3	Back	Y	C
5	4.8	223.3	682.5	181.9	684.4	683.5	37.1	646.3	Left	N	P
6	5.0	214.9	709.2	175.0	711.4	710.3	38.8	671.5	Crown	N	P
7	5.2	211.5	720.6	172.2	723.0	721.8	39.4	682.4	Front	Y	P
8	5.4	201.9	754.8	164.4	757.3	756.1	41.4	714.7	Right	Y	C
9	5.2	212.5	717.2	173.0	719.6	718.4	39.2	679.2	Left	Y	P

This test was performed in accordance with the specification requirements and the results properly reflect the ballistic performance of the listed sample.	V50 VELOCITY	HIGH PARTIAL	LOW COMPLETE	RANGE OF RESULTS	RANGE OF MIXED RESULTS
	686.9	683.7	679.3	35.5	4.3

Notes:
 •Muzzle to target measured for each shot to calculate loss.
 •Helmet tested as received from customer with retention / suspension system, chinstrap and pads removed prior testing.

Projectile Used:
 .22 Caliber, 1.1g +/- 0.03g (17 gr.) Chisel Nose Fragment Simulating Projectile (FSP)
 Starting velocity of: 650.0 m/s

V50 Calculation:
 •V50 based on (3) partial and (3) complete penetrations with a range of results ≤ 40 m/s

