

# Element U.S. Space & Defense Test Report for Ballistic Resistance Testing

Project No.: PH00013965    Tested: 31 December 2024    P.O. No.: Signed Quote OH23335

**Prepared For**

Ace Link Industrial Inc. | 3 Chrysler Street | Irvine, CA 96218  
Attention: Justin Mills

**Prepared By**

Element U.S. Space & Defense | 4603B Compass Point Road | Belcamp, MD 21017 | (410) 297-8154 |  
[www.elementdefense.com](http://www.elementdefense.com)



Kathleen Zurner  
Technical Writer



Matt Rixham  
Project Manager

Further dissemination only as directed by Ace Link Industrial Inc., March 2025.

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**Revision History**

<b>Rev.</b>	<b>Description</b>	<b>Issue Date</b>
0	Initial Release	March 2025

# BALLISTIC RESISTANCE TEST

## Element U.S. Space & Defense

4603B Compass Point Road  
Belcamp, MD 21017

Client: Ace Link Industrial Inc.

Project No.: PH00013965-1

Test Date: 12/31/2024

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**Test Panel** Description: Soft armor sample.

**Manufacturer:** Ace Link Industrial Inc.

**Sample No.:** Panel A-1 Front

Size: C5  
Avg. Thickness: N/A  
Thicknesses: N/A

Weight: 4.000 lbs  
Plies/Laminates: N/A

Date Received: 12/19/2024  
Received Via: UPS Ground  
Returned Via: UPS Ground

## Setup

Shot Spacing: NIJ-STD-0101.07  
Level HG2  
Witness Panel: Clay  
Backing Material: 5.5-in clay/plywood  
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 3  
Temp: 65 °F  
BP: 30 inHg  
RH: 43 %  
Barrel/Gun: WC020651  
Gunner: Timothy Mackie  
Recorder: Keivin Guzman

## Ammunition

Projectile	Lot No.	Manufacturer	Powder
(1) .44 Mag, 240-grain SJHP	J28W	Speer	Accurate No. 5

## Applicable Standards or Procedures

Clay Drop 1 - Drop Time: 10:40 AM; Block No. WC074180; Temp: 95.3 °F; Drop Depths: 20.8 mm,17.1 mm,20.7 mm, 18.7 mm,19.6 mm

(1) NIJ-STD-0101.07 Level HG2 (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	Deformation (mm)	Obliq. (°)	Footnotes
1	1	14.3	240	3507	1426	3033	1429	1427	None	32.1	0	(a)
2	1	14.3	240	3504	1427	3033	1429	1428	None	31.1	0	
3	1	14.3	240	3517	1422	3041	1425	1423	None	30.7	0	
4	1	14.3	240	3524	1419	3050	1421	1420	None	25.1	45	
5	1	14.3	240	3441	1453	2977	1455	1454	None	28.5	30	
6	1	14.3	240	3517	1422	3041	1425	1423	None	13.4	45	
7	1	14.3	240	3475	1439	3006	1441	1440	None	17.3	0	

### Remarks:

Required Velocity: 1400 - 1460 ft/s.

Projectile Yaw Check: 0° Yaw on All Impacts.

### Footnotes:

(a) Neckline Shot

## ATTACHMENT A CALIBRATION DATA

WC060267	101	YIS/Cowden Group, I	Chrono USB	Chronograph 1	Range 3	6/5/2024	6/5/2025
WC067005	106	YIS/Cowden Group, I	Chrono USB	Chronograph 2	Range 3	6/5/2024	6/5/2025
WC079246	A21106926	RCBS	1500	Powder Scale	Range 3	11/12/2024	11/12/2025
WC060370	26059102	Sartorius	Combics	Floor scale	Range 3	1/17/2025	1/17/2026
WC064334	906	Starrett	530-100	100 ft Tape Measure	Range 3	5/23/2024	5/23/2025
WC074990	WC074990	Dewalt	DWHT36107	25 ft Tape Measure	Range 3	10/12/2023	10/12/2025
EL00004012	EL00004012	Craftsman	CMHT37525	25 ft Tape Measure	Range 3	9/11/2023	9/11/2025
WC067391	192291544	Control Company	4040	Temp and Humidity	Range 3	8/20/2024	8/20/2025
EL00004196	230371969	Control Company	4378	Thermometer	Range 3	10/7/2024	10/7/2026
WC060650	570001	SPI	91-316-0	Angle Block	Range 3	11/13/2023	11/13/2025
EL00004122	23/240027	Starrett	3753A-6/150	DG Tool	Range 3	5/23/2024	5/23/2025
WC079400	18/110094	Starrett	3753A-6/150	BFD Bridge	Range 3	9/12/2024	9/12/2025

Order Information		Sample Information			
Customer Name	Ace Link	ETL Sample ID	ETL-TSI-ACL-25-282-0103	Size (in)	3XL
Customer ID	ACL	Sample Type	Soft Armor	Shape/Curvature	FLAT
Quote #	VERBAL	Model Number	A13-3APEX-3XL	Feature Details	N/A
Customer PO #	VERBAL	Description	A13-3APEX-3XL V50	Weight (lbs)	2.968
Test Order #	ETL-TO-ACL-25-282	Lot Number	N/A	Thickness (in)	0.523
Test Plan #	ETL-TP-ACL-25-282-0103	Serial Number	N/A	Construction	N/A

Ballistic Evaluation								Test Parameters			
Range Configuration				Test Type				Reference Spec.	No. Shots	Shot Pattern	
Temperature	Relative Humidity	Barrel End to Target	Target to Velocity	Target to Witness	Vel Set 1 Dist	Vel Set 1 Dist	Range #	Ballistic Limit - V50	Customer	12	ETL STANDARD
(°F)	(%)	(ft)	(ft)	(in)	(ft)	(ft)		Threat	Velocity (ft/s)	Velocity Tolerance (ft/s)	
70.5	42.5	15	8.21	6	5.33	4.33	1	17gr FSP	1969	±500	
Equipment/Ammunition Details								Backing		Witness Panel	
Receiver	Barrel	Threat	Propellant	Propellant Lot	Casing			Air		Cardboard, 0.125" Thk	
HSP #1187	ETL-BA-22-016	17gr FSP	Accurate #2	50711242026	308 Winchester						

Clay Validation								
Drop 1	Drop 2	Drop 3	Drop 4	Drop 5	Avg.	Temp.	Box	Drop Time
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(°F)	#	
Pre-Test:								
Post-Test:								

Ballistic Evaluation Data												
Shot #	Proj. Wt (gr)	Pwdr Wt (gr)	Time 1 (µs)	Time 2 (µs)	V1 (ft/s)	V2 (ft/s)	Vavg (ft/s)	Obliq. (°)	Result	BFD (mm)	Shot Location	Notes
1	17.0	7.5	2709	2193	1967.52	1974.46	1970.99	0	PP	N/A	TL	
2	17.0	8.0	2780	2254	1917.27	1921.03	1919.15	0	PP	N/A	ML	
3	17.0	8.5	2675	2166	1992.52	1999.08	1995.80	0	PP	N/A	ML	
4	17.0	9.0	2328	1885	2289.52	2297.08	2293.30	0	PP	N/A	BL	
5	17.0	9.7	2244	1820	2375.22	2379.12	2377.17	0	PP	N/A	TR	
6	17.0	10.5	2190	1777	2433.79	2436.69	2435.24	0	PP	N/A	MR	
7	17.0	11.5	2065	1674	2581.11	2586.62	2583.87	0	CP	N/A	MR	
8	17.0	11.0	2083	1695	2558.81	2554.57	2556.69	0	PP	N/A	BR	
9	17.0	11.5	2057	1665	2591.15	2600.60	2595.88	0	CP	N/A	TC	
10	17.0	11.0	2090	1689	2550.24	2563.65	2556.95	0	CP	N/A	C	
11	17.0	10.5	2095	1699	2544.15	2548.56	2546.36	0	CP	N/A	BC	
12	17.0	10.0	2215	1793	2406.32	2414.95	2410.64	0	PP	N/A	BC	

Test Remarks		Acronyms		
V50 (REGRESSION): 2537.9 ft/s V05 (REGRESSION): 2485.4 ft/s V50 (MIL-STD-662F, 4X4): 2507.85 ft/s		Evaluation	Shot Locations	Units
		SIP - Stop in Plate SIV - Stop in Vest PP - Partial Penetration CP - Complete Penetration EV - Excessive Velocity IV - Insufficient Velocity UH - Unfair Hit STEI - Shot-to-Edge Distance Incorrect STSI - Shot-to-Shot Distance Incorrect ICW - In Conjunction With	T - Top B - Bottom M - Middle C - Center L - Left R - Right CR - Crown VP - Viewport	F - Farenheit % - Percent inHg - Inches of Mercury in - Inches ft - Feet mm - Millimeter ° - Degrees µs - Microseconds ft/s - Feet per Second

Test Report History					
Report Revision	Operator 1	Operator 2	Approver	Notes	Date
A	MDenhart	ILyon	AGibson	Initial Release	10/9/2025

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**END OF REPORT**