



Test Report # T16220-01-1 Issue 1  
Custom R&D Test  
Vulcan Pro Tech, LLC  
Vtech Headgear  
24 March 2022



Approved by:

A handwritten signature in black ink that reads "Sarah Henderson".

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Sarah Henderson  
Head Protection, Hand Protection &  
Athletic Equipment - Laboratory Manager

Prepared by:

A handwritten signature in black ink that reads "Shelley Brady".

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Shelley Brady  
Head Protection & Athletic Equipment -  
Laboratory Administrator

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Issued to: Vulcan Pro Tech, LLC  
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Austin, TX 78735  
USA

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**Objective:**

Custom R&D Contract testing to the general requirements of ASTM F1446-2015b “Standard Test Methods for Equipment and Procedures Used in Evaluation the Performance Characteristics of Protective” per Vulcan Pro Tech’s Test Methodology and ASTM F2397-2009 (Reapproved 2015) “Protective Headgear Used on Martial Arts per Vulcan Pro Tech’s specifications.

**Sample(s):**

Description	Qty	Size	Date Received	Sample ID
Red (1) Vtech Headgear	1	M	09 March 2022	0A-1
White (3) Vtech Headgear	1			0A-2
Blue (4) Vtech Headgear	1			0A-3
Black (6) Vtech Headgear	1			Spare

**Procedures:**

Testing protocols in accord with good laboratory practice were employed unless otherwise specified, for all tests.

Testing requirements as specified within ASTM F1446-2015b, ASTM F2397-2009 and client’s specifications were followed.

Samples were stored for a minimum period of 24 hours at constant temperature 17°C to 27°C and a relative humidity of 20% to 80%.

**Equipment:**

Twin Wire apparatus was used to perform all impacts  
Cadex CCS system was employed for data acquisition  
K1A Magnesium Headforms  
1” MEP calibration pad was employed for system checks  
Cadex Impact Software V6.9P2

**Assessment Summary:**

Date Tested: 24 March 2022  
Test Performed By: Pete Turpin – Senior Technician

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**Results:**  
**Impact Test**

Impact Test									
Sample ID	Conditioning (°C)	Impact Location	Anvil Type	Drop Height (cm)	Velocity (m/s)	Acceleration (g)	HIC	Energy (J)	Observations
0A-1	17 - 27	Front	Flat	50.0	3.0	63	118	23.3	-
				50.2	3.0	76	144	23.4	-
				50.1	3.0	79	150	23.2	-
		Right Side		50.0	3.1	61	116	23.8	-
				50.2	3.0	66	132	23.4	-
				50.0	3.1	67	134	23.6	-
		Upper Left Side		50.1	3.1	59	122	23.8	-
				50.0	3.1	65	130	23.5	-
				50.2	3.0	67	134	23.4	-
		Rear		50.2	3.1	54	98	23.6	-
				50.2	3.1	58	107	23.8	-
				50.1	3.1	59	110	23.6	-
0A-2		Front	83.0	4.0	121	327	39.9	-	
		Right Side	83.3	4.0	93	267	39.4	-	
		Upper Left Side	83.0	3.9	94	272	39.0	-	
		Rear	83.0	4.0	82	228	39.7	-	
0A-3		Front	135.0	5.0	367	1652	62.9	-	
		Right Side	135.0	5.0	166	669	63.1	-	
		Upper Left Side	135.0	5.0	205	784	62.6	-	
		Rear	135.0	5.0	137	551	62.8	-	
Specifications:					3.0 ± 0.15 4.0 ± 0.2 5.0 ± 0.2	≤ 100 (at 3.0 m/s) ≤ 300 (at 4.0 m/s) ≤ 300 (at 5.0 m/s)			

Headform Size: J

Observations:  
(-) No observations

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**Sample Photographs:**



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1. Client acknowledges that ICS Laboratories (ICS) performs testing services only as specified by Client. ICS does not design, warrant, supervise or monitor compliance of products or services except as specifically agreed to in writing. By their very nature, testing, analysis, and other ICS services are limited in scope and subject to expected measurement variability.
2. Client retains the right to clarify test requests and reasonable access to monitor test work, with reference to test queue and obligations regarding the confidentiality of other clients.
3. ICS shall keep documents and information related to Client confidential and will not disclose any such information to third parties without written consent. ICS will disclose such information in response to compulsory legal process, (only after providing Client with notice-of and/or a copy of such process).
4. ICS Reports apply only to the standards or procedures identified therein and to the sample(s) assessed. Test results are not definitively indicative of the qualities of the lot from which the sample was taken or of apparently identical or similar products.
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8. Test reports are valid for certification purposes for one year from date of issue, inclusive of retest or variant additions, which must be performed within one year of date of issue to avoid full retest.
9. Client is responsible for procuring, at its cost, insurance protecting the value of its property, extending to provided samples.
10. For the safety of our personnel, Client must advise if samples are known or suspected to contain hazardous substances. Safety Data Sheets must be provided upon request.
11. ICS represents that Services shall be performed according to terms and specification agreed to by Client, and in a manner consistent with good laboratory practice. No other Representations to client, express or implied, and no warranty or guarantee is included or intended in this agreement, or in any other report or document related to the services. ICS does not guarantee product performance or compliance.
12. Schedules are confirmed upon acceptance of quotation. All reasonable efforts will be made to comply with provided timeline. Guarantees are neither implied nor promised.
13. Certain work may be subcontracted to ICS-approved laboratories as required or applicable. Client will be notified of this in advance.
14. Client agrees to pay any and all additional costs associated with unexpected or above-standard communications and/or consultations with Client or third parties as designated by Client.
15. Client agrees to pay any and all additional costs for work additional to the original scope of work as agreed to by Client.
16. Client understands and agrees that ICS, in entering into this Contract and by performing services hereunder, does not assume, abridge, abrogate or undertake to discharge any duty or responsibility of Client to any other party or parties. No one other than Client shall have any right to rely on any Report or other representation or conduct of ICS and ICS disclaims any obligations of any nature whatsoever with respect to such third parties.
17. For statements of conformity (pass/fail/"meets") regarding qualitative test results, ICS utilizes simple acceptance as its basis. For most statements of conformity relating to quantitative test results, the decision rule and associated uncertainty is inherent in the standard method. As such, simple acceptance is typically applied. Results on or near pass/fail thresholds or otherwise upon Client request or appeal will be evaluated with reference to the measurement uncertainty of relevant testing practices, equipment and other inputs/variables.
18. Client agrees, in consideration of ICS undertaking to perform the test(s) hereunder, to protect, defend and indemnify ICS from any and all claims, damages, expenses either direct or consequential for injuries to persons or property arising out of or in consequence of the performance of the testing, inspection and reporting hereunder and/or the performance of the products tested or inspected hereunder, unless caused by the negligence of ICS.
19. It is agreed that if ICS should be found liable for any losses or damages attributable to the services hereunder in any respect, its liability shall not exceed the amount of the fee paid by Client for services rendered and Client's sole remedy at law or in equity shall be the right to recover that sum.
20. Quotations are valid for 30 days from date of issue. Standard Terms: 30% Laboratory/Testing fees invoiced and payable upon acceptance of quotation. 15 days net. Any change to these terms requires written approval by the President, Executive Vice President or Accounting Manager. ICS retains the right to require prepayment in full at any time. Cancelled jobs will be invoiced for work performed and/or set-up costs incurred. All jobs will be assessed a \$25 sample disposition fee. Shipping costs over \$25 incurred by ICS for sample returns will be invoiced at cost +10%.
21. ICS hereby objects to any conflicting terms contained in any order, acceptance or other subsequent correspondence submitted by Client.
22. In the event that payment is not received within 15 days of invoice date, Client agrees to pay a late payment charge on the unpaid balance equal to 1-1/2% per month or the maximum charge allowed by law, whichever is less, and all costs and expenses, including attorney's fees where recovery of the same is not prohibited by law, incurred by ICS in collecting such invoices.
23. All costs associated with compliance with any subpoena (s) for documents, testimony in a court of law, or for any other purpose relating to work performed by ICS in connection with work performed for that Client, shall be paid by Client. Client shall also pay costs related to deposition and trial testimony.
24. Cancelled/discontinued orders: Client responsible for all administrative and testing charges up to point of cancellation.