

TEST REPORT

Defender Safety Inc.

Test Report

SCOPE OF WORK

Industrial Hard Hat (ANSI) Testing, Brand name Defender Safety Inc., Model name H1-CH

REPORT NUMBER

104026910CRT-001

ISSUE DATE

8/21/2019

PAGES

8

DOCUMENT CONTROL NUMBER

GFT-OP-10i (6-July-2017)

© 2019 INTERTEK



TEST REPORT

Defender Safety Inc.
270 Route 109
Farmingdale, NY 11735
United States

Quote Number:	Qu-00998049-0
Reference Number/PO Number:	TESTV2H172219
Certification Type (Initial/Annual/Class I):	Private
Product Type:	Industrial Hard Hat (ANSI)
Brand Name:	Defender Safety Inc.
Model Name:	H1-CH
Type (I or II):	Type I
Class (C,E, or G):	Class C
Suspension:	6-Pt.
Optional Requirements:	N/A
Sample Control Number:	CRT1907291020-001
Sample Received Date:	7/29/2019
Number of Samples Received:	30
Condition received in:	Production Samples
Type of Testing Entity:	Third Party Testing Laboratory ANSI/ISEA Z89.1-2014
Test Standard:	American National Standard for Industrial Head Protection
Evaluation/Testing Location:	Intertek, 3933 US Rt. 11, Cortland NY 13045 Defender Safety Inc.
Manufacturer's Name and Address:	270 Route 109 Farmingdale, NY 11735 United States
Date(s) of Testing:	8/15/2019

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

TEST REPORT

Dear Teddy,

Intertek has completed the evaluation of Industrial Hard Hat Brand name Defender Safety Inc., Model H1-CH to the following client specified clauses of ANSI/ISEA Z89.1-2014. The evaluation was performed at Intertek located in Cortland, NY on the dates posted below. The results of these tests are as indicated below.

Test Completed	Test Date	ANSI/ISEA Z89.1-2014 Clause	Pass/Fail
Instructions and Markings	8/15/2019	6	Pass
Flammability	8/15/2019	10.1	Pass
Force Transmission	8/15/2019	10.2	Pass
Apex Penetration	8/15/2019	10.3	Pass
Impact Energy Attenuation (Type II Only)	N/A	10.4	N/A
Off-Center Penetration (Type II Only)	N/A	10.5	N/A
Chin Strap Retention (Type II Only)	N/A	10.6	N/A
Electrical Insulation	N/A	10.7	N/A
High Visibility Testing	N/A	10.8	N/A

The Industrial Hard Hat identified as Brand name Defender Safety, Model H1-CH manufactured by Defender Safety did meet the above testing requirements identified by quote number Qu-00998049-0. If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact the undersigned.

Please note: this Test Report does not represent authorization for the use of any Intertek certification marks.

Tested By,



Jessica Copes
Technician

Reviewed by,



Matthew Stevens
Reviewer

REPORT REVISION		
Date	Revision Description	Reviewer
8/21/2019	Compliant report: 104026910CRT-001	Matthew Stevens

TEST REPORT

Conditioning Requirements

Clause 8.3 & 8.5 (ANSI/ISEA Z89.1-2014)

Actual Conditions

	Required Temperature	Actual Temperature
Ambient Temperature	20°C to 26°C	21.0°C - 22.0°C
High Temperature	47°C to 51°C	47.3°C - 49.8°C
Low Temperature	-16°C to -20°C	-16.8°C - -17.2°C
Water Temperature	20°C to 26°C	N/A
Higher Temperature (Optional)	58°C to 62°C	N/A
Lower Temperature (Optional)	-28°C to -32°C	N/A
Relative Humidity	45.0% - 55.0%	50.0% - 55.0%

Instructions and Marking Requirements

Clause 6 (ANSI/ISEA Z89.1-2014)

Clause / Requirement	Pass/Fail
6.1 - Each helmet shall be accompanied by manufacturer's instructions explaining the proper method of size and adjustment, use, care, useful service life guidelines and, if applicable, reverse wearing.	Pass
6.2 - Each helmet shall bear permanent markings in at least 1.5 mm(0.06 in.) high letters stating the following information	
6.2a - Name or identification mark of the manufacturer	Pass
6.2b - The date of manufacturer	Pass
6.2c - The American National Standard Designation, ANSI/ISEA Z89.1 - 2014	Pass
6.2d - The applicable Type and Class Designations, followed by the optional criteria markings, if applicable	Pass
If optional criteria are applied, the appropriate markings shall follow the sequence as specified below	
Reverse Donning	N/A
LT - Lower Temperature	N/A
HT - Higher Temperature	N/A
HV - High Visibility	N/A

The test samples were marked with the following date code(s): 15/7/2019

TEST REPORT

Instrumentation Check

Required Drop Height (in.): 33.50
Required Velocity (m/s): 3.97 - 4.03

Pre Test		
Impact Number	Velocity (m/s)	Peak lb's
1	4.03	2216.28
2	4.01	2177.67
3	4.01	2185.00
Average Peak g's		2192.98

Post Test		
Impact Number	Velocity (m/s)	Peak lb's
1	3.98	2160.92
2	3.98	2163.96
3	4.01	2160.42
Average Peak g's		2161.77

Pre-Post Difference (<5%) 1.42%

Flammability

Clause 10.1 (ANSI/ISEA Z89.1-2014)

Helmets shall be tested in accordance with Section 10.1 anywhere above the Static Test Line (STL). No flame shall be visible 5.0 seconds after the removal of the test flame.

Sample	Location	After flame (sec.)	Pass/Fail
12	Rear	0.0	Pass

Force Transmission

Clause 10.2 (ANSI/ISEA Z89.1-2014)

Helmets shall be tested in accordance with Section 10.2 and shall not transmit a force to the test headform that exceeds 4450 N(1000lbs). Additionally, for each test condition specified, the maximum transmitted force of individual test samples shall be averaged. The averaged values shall not exceed 3780 N(850 lbs).

Velocity Range (m/s) 5.45 - 5.55
Actual Drop Height (in) 61
Impactor Mass (kg) (3.55kg - 3.65 Kg) 3.62

TEST REPORT

Hot Conditioning			
Sample	Velocity (m/s)	Force (lbs.)	Pass/Fail
1	5.47	699.13	Pass
2	5.51	680.97	Pass
3	5.48	744.16	Pass
4	5.48*	779.00	Pass
5	5.48	721.05	Pass
6	5.52	767.52	Pass
7	5.48	709.50	Pass
8	5.52*	753.27	Pass
9	5.51*	813.19	Pass
10	5.47*	808.63	Pass
11	5.48*	809.64	Pass
12	5.49	655.55	Pass
Average		745.13	Pass

Cold Conditioning			
Sample	Velocity (m/s)	Force (lbs.)	Pass/Fail
13	5.48	794.76	Pass
14	5.49	781.83	Pass
15	5.49	784.98	Pass
16	5.48	856.63	Pass
17	5.52*	915.66	Pass
18	5.48	779.24	Pass
19	5.46	807.54	Pass
20	5.49*	960.22	Pass
21	5.54	820.61	Pass
22	5.48*	898.40	Pass
23	5.47	864.11	Pass
24	5.49	884.96	Pass
Average		845.75	Pass

Note: * Impacted twice due to being out of velocity, still compliant

Apex Penetration

Clause 10.3 (ANSI/ISEA Z89.1-2014)

Helmets shall be tested in accordance with Section 10.3. The penetrator shall not make contact with the top of the test headform.

Velocity Range (m/s) 6.9- 7.1
 Headform Used: J
 Penetrator Mass (0.95Kg - 1.05Kg): 1.00

Hot Conditioning		
Sample	Velocity (m/s)	Pass/Fail
25	6.96	Pass
26	7.02	Pass
27	6.94	Pass

Cold Conditioning		
Sample	Velocity (m/s)	Pass/Fail
28	6.94	Pass
29	7.00	Pass
30	6.99	Pass

TEST REPORT

System Calibration - Pre Test

Clause 10.2.4 (ANSI/ISEA Z89.1-2014)

Impactor Weight (lbs): 7.98
Drop Height (in.) 8.25

Impact	Peak lbs.	Peak g	Peak g's Converted to lbs
1	842.39	104.83	836.54
2	841.52	104.75	835.91
3	842.9	104.83	836.54
4	842.42	104.90	837.10
5	842.50	104.83	836.54
Average	842.35	104.83	836.53
Percent Difference(+ 2.5%)			0.69%

Measurement Uncertainty

Test	Relative MU (dMU)
Section 6 - Instructions and Markings	1.0%
Section 10.1 - Flammability	1.0%
Section 10.2 - Force Transmission	3.1%
Section 10.3 - Apex Penetration	3.4%
Section 10.4 - Impact Energy Attenuation(2)	3.1%
Section 10.5 - Off Center Penetration (2)	3.4%
Section 10.6 - Chin Strap Retention (2)	NA
Section 10.7 - Electrical Insulation	0.0%
Section 10.8 - High Visibility	NA

TEST REPORT

Sample Pictures

