

June 14, 2011

Intertek Order No.: G100387355

Mr. Don Seeto  
3M Occupational Health & Environmental Safety  
103 Millbury Street  
Auburn, MA 01501

Dear Mr. Seeto:

Enclosed please find one copy of Intertek Report No.: G100387355CRT-001a, covering the test evaluations that were conducted on your 3M, model H-700 cap style non-vented hard hat with 4 Point Pin-Lock and Ratchet suspensions, protective helmet.

The test was authorized by Intertek quote number 500246917 signed by Mr. Don Seeto and 3M Company PO number 4500636492.

Thank you for choosing Intertek for your testing needs. If we can be of further assistance to you please feel free to contact me at (607) 758-6388.

Sincerely,

Tom Lamb  
Technician  
Performance Group



tal

**INTERTEK TEST REPORT**  
3933 US ROUTE 11 CORTLAND, NEW YORK 13045

**TEST REPORT NO.: G100387355CRT-001a**

**HARD HAT TESTING TO ANSI/ISEA Z89.1-2009  
"AMERICAN NATIONAL STANDARD FOR  
INDUSTRIAL HEAD PROTECTION"**

**3M H700  
NON-VENTED HARD HAT**

**TYPE I**

**RENDERED TO:  
3M OCCUPATIONAL HEALTH & ENVIRONMENTAL SAFETY  
103 MILLBURY STREET  
AUBURN, MA 01501**

**Abstract**

The protective helmet, identified as a 3M model H-700 cap style non-vented hard hat with 4 Point Pin-Lock and Ratchet suspensions, submitted by the client, was received in pristine condition on April 27, 2011 and was evaluated in accordance with the requirements of ANSI/ISEA Z89.1-2009 entitled, "American National Standard for Industrial Head Protection" between May 13, 2011 and June 14, 2011.

Details of the instrument calibration are maintained in laboratory records.  
The measurement of uncertainty is available upon request.

**Introduction**

This report describes the results of the test program conducted in accordance with ANSI/ISEA Z89.1-2009 entitled, "American National Standard for Industrial Head Protection", performed on specimens submitted by the client. Test samples requiring cold temperature preconditioning were conditioned according to the "Lower Temperature (Optional)" test of  $-30^{\circ}\text{C} \pm 2^{\circ}\text{C}$  ( $-22^{\circ}\text{F} \pm 3.6^{\circ}\text{F}$ ) for at least 4 hours with the base of the helmet facing upward per Section 8.4.1.2.1 of the standard. Testing of the above mentioned protective helmets began only upon Intertek's receipt of the signed quote number 500246917. Intertek Testing Services, located in Cortland NY, conducted the test evaluations.


**Product Description**

Intertek received 36 mixed color production protective helmets with the date codes 12/10, 1/11 and 2/11. The test samples were identified as specimens 1 – 30 and R1 - R6.

**Authorization**

The test was authorized by Intertek quote number 500246917 signed by Mr. Don Seeto and 3M Company PO number 4500636492.

**INSTRUCTIONS AND MARKINGS**

SECTION	COMPLIANT (Yes/No)
6.1 – Each helmet shall be accompanied by manufacturers’ instructions explaining the proper method of size adjustment, use, care, useful service life guidelines and, if applicable, reverse wearing.	Yes
6.2 – Each helmet shall bear permanent markings in at least 1.5 mm (0.06 in.) high letters stating the following information:	
6.2 – name or identification mark of the manufacturer;	Yes
6.2 – the date of manufacture;	Yes
6.2 – the American National Standard Designation, ANSI/ISEA Z89.1;	Yes
6.2 – the applicable Type and Class Designations, followed by optional criteria markings, if applicable;	Yes
6.2 – the approximate headsize range (see Table 2).	Yes
If optional criteria are applied, the appropriate markings shall follow the sequence as specified below:	APPLICABLE (yes/no)
 - Reverse donning	yes
LT – Lower temperature	yes
HV – High visibility	no

**PERFORMANCE REQUIREMENTS**

**FLAMMABILITY**

Method: The protective helmet was tested in accordance with Section 9.1 above the Static Test Line (STL).

Requirements: No flame shall be visible 5 seconds after removal of the test flame.

Results:

SPECIMEN	LOCATION	AFTER FLAME (sec.)	COMPLIANT
12	Front	0.0	Yes

**FORCE TRANSMISSION**

Method: The protective helmet was tested in accordance with Section 9.2.

Requirements: The protective helmet shall transmit an average force of not more than 3781N (850 lbs.). No individual specimen shall transmit a force more than 4450N (1000 lbs.).

Results:

**VELOCITY RANGE:** 5.45 – 5.55 m/s (5.50 ± 0.05 m/s)

**DROP HEIGHT:** 60.7 inches

HOT CONDITION			COLD CONDITION		
120°F ± 3.6°F			-22°F ±3.6°F		
SPECIMEN NO.	VELOCITY (m/s)	FORCE (lbs.)	SPECIMEN NO.	VELOCITY (m/s)	FORCE (lbs.)
1	5.48	462.18	13	5.50	570.79
2	5.49	495.08	14	5.51	563.61
3	5.48	421.20	15	5.49	567.93
4	5.48	463.48	16	5.50	566.39
5	5.49	470.25	17	5.51	582.92
6	5.48	472.64	18	5.51	581.26
7	5.51	478.44	19	5.49	577.44
8	5.48	455.94	20	5.51	573.39
9	5.51	480.63	21	5.51	558.25
10	5.50	479.35	22	5.51	578.57
11	5.50	474.37	23	5.51	560.03
12	5.51	492.47	24	5.50	571.26
AVERAGE		470.50	AVERAGE		570.99

**RESULTS: COMPLIANT**

**FORCE TRANSMISSION (Reverse Wearing)**

HOT CONDITION			COLD CONDITION		
120°F ± 3.6°F			-22°F ±3.6°F		
SPECIMEN NO.	VELOCITY (m/s)	FORCE (lbs.)	SPECIMEN NO.	VELOCITY (m/s)	FORCE (lbs.)
R1	5.51	500.63	R4	5.51	545.75
R2	5.51	460.31	R5	5.61	590.82
R3	5.51	445.29	R6	5.48	566.63
AVERAGE		468.74	AVERAGE		567.73

**RESULTS: COMPLIANT**

**APEX PENETRATION**

**Method:** The protective helmet was tested in accordance with Section 9.3.

**Requirements:** The penetrator shall not make contact with the top of the test headform under any of the test conditions specified.

**Results:**

**VELOCITY RANGE:** 6.9 – 7.1 m/s (7.0 ± 0.1 m/s)

**DROP HEIGHT:** 98.3 inches

HOT CONDITION			COLD CONDITION		
120°F ± 3.6°F			-22°F ± 3.6°F		
SPECIMEN NO.	VELOCITY (m/s)	COMPLIANT (yes/no)	SPECIMEN NO.	VELOCITY (m/s)	COMPLIANT (yes/no)
25	6.96	Yes	28	6.98	Yes
26	6.99	Yes	29	7.01	Yes
27	6.97	Yes	30	7.04	Yes

**ELECTRICAL INSULATION** (Class E)

**Method:** The protective helmet was tested in accordance with Section 9.7.

**Requirements:** The protective helmet shall withstand 20,000 volts (root mean square), AC, 60 Hertz, for 3 minutes. Leakage shall not exceed 9 milliamperes. At 30,000 volts, the test sample shall not burn through.

**Results:**

SPECIMEN NO.	LEAKAGE (mA)	COMPLIANT
1	3.37	Yes
13	3.38	Yes

**Conclusion**

The protective helmet, identified as a 3M model H-700 cap style non-vented hard hat with 4 Point Pin-Lock and Ratchet suspensions, **met** the minimum performance requirements as defined in ANSI/ISEA Z89.1-2009 entitled, "American National Standard for Industrial Head Protection" for normal and reverse wearing positions. The helmet type and class defined for this model as a result of the evaluations performed in this report are determined to be **Type I - Class E, G & C with optional criteria: Reverse Donning and LT.**

Report Prepared by:



Tom Lamb  
Technician  
Performance Group

Report Reviewed by:



Sara Ensign  
Technician  
Performance Group

**Revision History:**

May 26, 2011 – Original issue date.

June 14, 2011 – Report revised to reflect evaluation of user instructions submitted by the manufacturer for previous non-compliance in areas of Section 6 of the standard. Overall test report has been changed from Non-Compliant to **Compliant**.