



Subject: UL Project Number 4789822270

Dear Karen,

Per your request, project 4789822270 was opened in accordance with your requested test protocol for the evaluation of one model hardhat per ANSI/ISEA Z89.1-2014, Type II, Class E. A copy of the test data has been included at the end of this report.

UL Commercial Test Services did not select the samples, determine whether the samples were representative of production samples, witness the production of the test samples, or were we provided with information relative to the formulation or identification of component materials used in the test samples. The test results apply only to the actual samples tested.

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This letter will serve to report that all tests on the subject product have been completed.

Thank you for the opportunity to provide your company with these services. Please do not hesitate to contact us if you should have any questions or comments.

Sincerely,

Reviewed by:



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Senior Laboratory Technician
Building and Life Safety Technologies

Michael Seward
Laboratory Manager
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**M108 – Industrial Safety Helmet
Assessment Summary:**

Requirements	Compliant	Non-Compliant
6 Instruction and Marking	<i>Excluded</i>	
7 Performance Requirements		
7.1 Requirements for Type I and Type II Helmets		
7.1.1 Flammability	X	
7.1.2 Force Transmission	X	
7.1.3 Apex Penetration	X	
7.1.4 Electrical Insulation Requirement		
7.1.4.3 – Electrical Insulation Requirement – Class E	X	
7.2 Additional Requirements for Type II Helmets		
7.2.1 Impact Energy		X
7.2.2 Off-Center Penetration	X	
7.2.3 Chin Strap Retention	X	
7.3 Requirements for Optional Testing		
7.3.1 Reverse Wearing		
-Force Transmission	Not Applicable	
-Impact Energy Attenuation (Type II)		
-Off-Center Penetration (Type II)		
7.3.2 High-Visibility		
7.3.3 Higher Temperature		
7.3.4 Lower Temperature		

Samples as assessed *do not* meet the mechanical performance requirements of ANSI/ISEAZ89.1 2014 (R2019) for Type II, Class E.

Results:

7.1.1 Flammability

Sample ID	Afterflame (sec)	Pass	Fail
7A-12	0	X	
Specification:	<5		



7.1.2 Force Transmission

Sample ID	Conditioning (°C)	Velocity (m/s)	Force (N)	Specified Value (N)	Observations	Pass	Fail
7A-1	49 ± 2	5.50	3380	≤ 4450	-	X	
7A-2		5.50	3625		-	X	
7A-3		5.51	3547		-	X	
7A-4		5.50	3473		-	X	
7A-5		5.50	3460		-	X	
7A-6		5.50	3532		-	X	
7A-7		5.50	3472		-	X	
7A-8		5.50	3527		-	X	
7A-9		5.50	3455		-	X	
7A-10		5.51	3620		-	X	
7A-11		5.50	3493		-	X	
7A-12		5.50	3584		-	X	
Average					3514	≤ 3780	
7A-13	-18 ± 2	5.50	3863	≤ 4450	-	X	
7A-14		5.51	3773		-	X	
7A-15		5.50	3796		-	X	
7A-16		5.51	3737		-	X	
7A-17		5.50	3777		-	X	
7A-18		5.51	3689		-	X	
7A-19		5.51	3739		-	X	
7A-20		5.51	3731		-	X	
7A-21		5.50	3725		-	X	
7A-22		5.51	3824		-	X	
7A-23		5.51	3778		-	X	
7A-24		5.52	3764		-	X	
Average			3766	≤ 3780		X	
Specification:		5.50 ± 0.05					

Observations:

(-) – No observation



7.1.3 Apex Penetration

Sample ID	Conditioning (°C)	Velocity (m/s)	Electrical Contact (Yes/No)	Observations	Pass	Fail
7A-25	49 ± 2	7.0	No	-	X	
7A-26		7.0	No	-	X	
7A-27		7.0	No	-	X	
7A-28	-18 ± 2	7.0	No	-	X	
7A-29		7.0	No	-	X	
7A-30		7.1	No	-	X	
Specifications:		7.0 ± 0.1	No Electrical Contact Allowed			

Observations:

(-) – No observation

7.1.4.2 Electrical Insulation Requirements (Class E)

Sample ID	Leakage (mA)	Burn Through (Yes/No)	Observations	Pass	Fail
7A-1	4.8	No	-	X	
7A-24	4.8	No	-	X	
Specification	Class G ≤ 3 mA	No Burn Through Allowed			

Class E -20,000 Volts, 60 Hz, 1 minute, 30,000 Volts No Burn Through

Observations:

(-) – No observation



7.2.1 Impact Energy Attenuation

Sample ID	Location	Conditioning (°C)	Velocity (m/s)	Acceleration	Observations	Pass	Fail
7A-2	Front	49 ± 2	3.5	62	-	X	
7A-3	Rear		3.5	124	-	X	
7A-4	Right Side		3.5	47	-	X	
7A-5	Left Side		3.5	49	-	X	
7A-14	Front	-18 ± 2	3.5	68	-	X	
7A-15	Rear		3.5	77	-	X	
7A-16	Right Side		3.5	47	-	X	
7A-17	Left Side		3.5	97	-	X	
7A-6	Front	23 ± 2 (Wet)	3.5	62	-	X	
7A-7	Rear		3.5	152	-		X
7A-18	Right Side		3.5	57	-	X	
7A-19	Left Side		3.5	113	-	X	
Specification			3.5 ± 0.1	≤ 150			

Observations:

(-) – No observation



7.2.2 Off-Center Penetration

Sample ID	Location	Conditioning (°C)	Velocity (m/s)	Headform Contact (Yes/No)	Observations	Pass	Fail	
7A-8	Front	49 ± 2	4.9	No	-	X		
	Rear		4.9	No	-	X		
7A-9	Right Side		4.9	No	-	X		
	Left Side		5.0	No	-	X		
7A-20	Front		-18 ± 2	5.0	No	-	X	
	Rear			4.9	No	-	X	
7A-21	Right Side	5.0		No	-	X		
	Left Side	5.0		No	-	X		
7A-10	Front	23 ± 2 (Wet)		4.9	No	-	X	
	Rear			5.0	No	-	X	
7A-22	Right Side		5.0	No	-	X		
	Left Side		5.0	No	-	X		
Specification			5.0 ± 0.1	No Headform Contact Allowed				

Observations:

(-) – No observation

7.2.3 Chin Strap Retention

Sample ID	Conditioning (°C)	Deflection Value (mm)	Chin Strap Remained Attached (Yes/No)	Pass	Fail
7A-11	49 ± 2	11	Yes	X	
7A-13	-18 ± 2	11	Yes	X	
7A-23	23 ± 2 (Wet)	9	Yes	X	
Specification		≤ 25	Chin Strap Shall Remain Attached to Helmet		

Chin strap shall be made of material not less than 12.7 mm in width; **Result: Pass**



Sample Photographs:

