INTERTEK TEST REPORT

3933 US Route 11 - Cortland, NY 13045

Order No. G102612484 **Date:** November 14, 2016

Libus

Calle 21

1213 Berazategui, Argentina

Intertek Test Report Number:	**102612484CRT-002**
Intertek Signed Quote Number(s):	**Qu-00680372**
Product Type:	**Industrial Hard Hat**
Product Models:	**Libus Milenium Protective Helmet**
Type (I or II):	**Type I**
Class (C,E, or G):	**Class E**
Suspension:	**8 Point Pin-lock**
Optional Requirements:	**N/A**
Certification Type (Initial/Annual):	**N/A**
Type of Testing Entity:	**Third Party Testing Laboratory**
Test Standard:	**ANSI/ISEA Z89.1 - 2014 ed**
Manufacturer's Name and Address:	**Same as addressee**
Evaluation/Testing Location:	**Intertek, 3933 US Route 11 Cortland, NY 13045**
Dates of Testing:	**11/10/2016 - 11/11/2016**

Dear Miguel Caro,

Intertek has completed the evaluation of your Libus, Hard Hat, Model Libus Milenium Protective Helmet , to the client specified sections of ANSI/ISEA Z89.1 - 2104 ed., American National Standard for Industrial Head Protection. The test samples were received on 10/04/2016 in pristine condition.

The results of these tests are as indicated below.

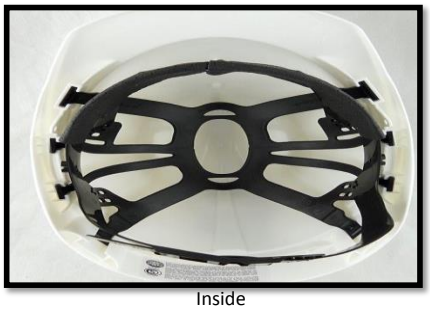
Tests Completed	Test Date	ANSI/ISEA Z89.1	Pass/Fail
Instructions and Markings	11/10/2016	6	Pass
Flammability	11/11/2016	10.1	Pass
Force Transmission	11/10/2016	10.2	Pass
Apex Penetration	11/10/2016	10.3	Pass
Impact Energy Attenuation (Type II Only)	N/A	10.4	N/A
Off-Center Penetration (Type II Only)	N/A	10.5	N/A
Chin Strap Retention (Type II Only)	N/A	10.6	N/A
Electrical Insulation	11/10/2016	10.7	Pass
High Visibility Testing	N/A	10.8	N/A

Please see attached test data for details.


Front


Back


Side


Inside

30 production helmets were submitted by the manufacturer for testing to current ANSI standards for Industrial Head Protection.

The test specimens were marked with the following date code(s): 7-16

This test report concludes that the Libus, Hard Hats, Model Libus Milenium Protective Helmet Helmet complied with the minimum performance requirements of ANSI/ISEA Z89.1 - 14 ed., American National Standard for Industrial Head Protection, for a type I, class E, 8 pt. Pin-Lock Suspension hard hat. If there are any questions regarding this report please contact the undersigned at 607-753-6711.

Tested by,

Zachary Bush
Technician
Performance Group

Reviewed by,

Chad Morey
Project Engineer
Performance Group

Report Revisions		
Date:	Description:	By:
11/14/2016	Original Report: 102612484CRT-002	Zachary Bush

Sample Log				
Model No	Intertek Control No.	Received Date	Quantity (ea)	Condition
Libus Milenium Protective Helmet, Type I Class E	CRT1610041250-001	10/4/2016	30	Pristine

Instrumentation Check

Drop Height: 31.0"

	Impact Number	V: 3.97 - 4.03	Peak lbs
Pre Test	1	4.01	2056.96
	2	4.01	2063.07
	3	4.01	2064.84
		Average Peak lbs	2061.62

	Impact Number	V: 3.97 - 4.03	Peak lbs
Post Test	1	4.02	2057.99
	2	4.02	2061.22
	3	4.01	2059.33
		Average Peak lbs	2059.51

Difference

0.10

Conditioning Environments	Required Ranges	Actual Conditions
Relative Humidity	40% - 60%	41.5% - 58.0%
Ambient Temperature	20°C to 26°C	20.0 C - 21.0 C
High Temperature	47°C to 51°C	47.4 C -49.1 C
Low Temp	(-)16°C to (-)20°C	-17.4 C - -18.6 C
Water Temperature	20°C to 26°C	22.6 C - 24.2 C
Higher Temperature (Optional)	58°C to 62°C	N/A
Lower Temperature (Optional)	(-)28°C to (-)32°C	N/A

Section 6: Instructions and Marking

Instructions and Marking	Compliant (yes/no)
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	Yes
6.2 - Each helmet shall bear permanent markings in at least 1.5 mm(0.06 in.) high letters stating the followinf information	
6.2a - Name or indentification mark of the manufacturer	Yes
6.2b - The date of manfacture	Yes
6.2c - The American National Standard Designation, ANSI Z89.1 - 2014	Yes
6.2d - The applicable Type and Class Designations, followed by the optional criteria markings, if applicable	Yes
If optional criteria are applied, the approriate markings shall follow the sequence as specified below	N/A
 Reverse Donning	N/A
LT - Lower Temperature	N/A
HT - Higher Temperature	N/A
HV - High Visibility	N/A

Section 10.1: Flammability

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.

Specimen No.	Location	After Flame (sec)	Compliant (yes/no)
12	Rear/ Back	0	Yes

Section 10.2: Force Transmission

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 (5.45 m/s - 5.55 m/s) Actual Drop Height (in): 57.5"

Hot Conditioning - Actual Temp: 47.4 C -49.1 C					Cold Conditioning - Actual Temp: -17.4 C - -18.6 C				
Specimen	Date Code	Velocity(m/s)	Force (lbs)	Suspension	Specimen	Date Code	Velocity(m/s)	Force (lbs)	Suspension
1	16-Jul	5.52	394.53	Pin-lock	13	16-Jul	5.52	537.31	Pin-lock
2	16-Jul	5.52	447.80	Pin-lock	14	16-Jul	5.52	698.25	Pin-lock
3	16-Jul	5.53	427.79	Pin-lock	15	16-Jul	5.51	651.99	Pin-lock
4	16-Jul	5.53	454.85	Pin-lock	16	16-Jul	5.51	667.64	Pin-lock
5	16-Jul	5.51	444.61	Pin-lock	17	16-Jul	5.53	685.29	Pin-lock
6	16-Jul	5.51	447.66	Pin-lock	18	16-Jul	5.53	691.15	Pin-lock
7	16-Jul	5.53	407.70	Pin-lock	19	16-Jul	5.53	674.78	Pin-lock
8	16-Jul	5.53	420.75	Pin-lock	20	16-Jul	5.50	710.35	Pin-lock
9	16-Jul	5.53	421.63	Pin-lock	21	16-Jul	5.50	601.72	Pin-lock
10	16-Jul	5.51	444.41	Pin-lock	22	16-Jul	5.53	699.94	Pin-lock
11	16-Jul	5.53	427.77	Pin-lock	23	16-Jul	5.51	555.00	Pin-lock
12	16-Jul	5.53	443.35	Pin-lock	24	16-Jul	5.53	663.30	Pin-lock
		Avg. Force (lbs)	431.90				Avg. Force (lbs)	653.06	

Section 10.3: Apex Penetration

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: 6.9 m/s - 7.1 m/s Test Headform Used: J

Specimen	Date Code	Environment	Impact Location	Suspension	Impact Velocity (m/s)	Compliant (yes/no)
25	16-Jul	Hot	Top/ Crown	Pin-lock	6.99	Yes
26	16-Jul	Hot	Top/ Crown	Pin-lock	7.00	Yes
27	16-Jul	Hot	Top/ Crown	Pin-lock	6.99	Yes
28	16-Jul	Cold	Top/ Crown	Pin-lock	6.99	Yes
29	16-Jul	Cold	Top/ Crown	Pin-lock	7.02	Yes
30	16-Jul	Cold	Top/ Crown	Pin-lock	6.99	Yes

Section 10.7: Electrical Insulation

The protective helmet shall be tested in accordance with Section 10.7.
*** For Class G helmets 2200 Volts shall be applied for a 1 minute durations and leakage (mA) shall not be greater than 3.0 mA.**
***For Class E helmets 20,000 Volts shall be applied for a duration of 3 minutes and the leakage(mA) shall not be greater than 9.0 mA. Then the voltage shall be increase to 30,000 Volts looking for burn through.**

Specimen	Leakage (mA)	Burn Through	Did Flashover Occur (yes/no)	Compliant (yes/no)
1	3.64	No	No	Yes
13	4.12	No	No	Yes

Section 10.2.4: System Calibration - Pre Test

Impactor Weight (lbs): 7.98 Drop Height: 8.25"

Impact No.	Peak lbs	Peak g's	Peak g's Converted to lbs
1	845.12	104.89	837.02
2	850.99	105.64	843.01
3	848.7	105.44	841.41
4	846.56	105.31	840.37
5	848.13	105.35	840.69
Maximum Values	847.90	105.33	840.50
	Percent Difference(± 2.5%)		0.87%

Measurement of Uncertainty

Test	Relative MU (dMU)
Section 6 - Instructions and Markings	1.0%
Section 10.1 - Flammability	1.0%
Section 10.2 - Force Tranmission	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