



March 1, 2016

City of Glendale  
Materials Management  
5850 West Glendale Ave.  
Glendale, AZ 85301

Re: IFB 16-31 Firefighter Turnout Gear

We are pleased to submit our bid for Firefighter Turnout Gear for the City of Glendale Fire Department. United Fire is a family owned business that has been operating in Arizona since 1968. Our main office is located at 335 North 4th Ave, Tucson, AZ 85705. Our second office is located at 125 West Gemini, Suite E-7, Tempe, AZ 85283 (phone number 480-591-5780) which will be the office that would be handling your account. We have taken **NO EXCEPTIONS** to the Turnout Coat, Pants, and Hood Specifications. We have submitted a **NO BID** in regards to the Boots as they are Proprietary to certain vendors, however we would like to submit the Boots that we represent for evaluation when the Fire Department feels it is appropriate to do another evaluation allowing us to participate. As the Helmets and Gloves are also proprietary to other vendor we have submitted alternative bids. Cairns 660C Style Helmets meet or exceed your specifications. We have provided literature, approvals, NFPA 1851 Tracking Information, and Warranty (10-Year). Additionally we have submitted a bid for a Glove manufactured by Lion that meets or exceeds your specifications. We would be more than willing to submit samples for evaluation in regards to the Helmets and Gloves.

If you have any questions please feel free to contact either myself or Tanya Rush our Tempe Branch Manager (TanyaR@ufec.com)

Sincerely,

Paul Fraser  
Product Manager  
United Fire Equipment Company  
125 West Gemini, Suite E-7  
Tempe, AZ 85283  
Cell: 480-276-7925  
Email: PaulF@ufec.com



**SOLICITATION NUMBER: IFB 16-31  
FIREFIGHTER TURNOUT GEAR**

**CITY OF GLENDALE  
Materials Management  
5850 West Glendale  
Avenue, Suite 317  
Glendale, Arizona 85301**

**4.0 CONDITIONAL ACCEPTANCE**

**INVITATION FOR BID NO. IFB # 16-31**

**TITLE: FIREFIGHTER TURNOUT GEAR**

1. Subject to City Council approval, this notification constitutes a conditional acceptance of your bid to provide the materials listed on the Price Sheet. All terms and conditions of the IFB shall apply.
2. The term of the proposed Agreement shall be a one (1) year initial period with the option of the City and with the approval of the Contractor to extend the proposed agreement for four (4) additional years in one (1) year increments based on satisfactory contract performance.
3. A Department administrator will oversee the proposed Agreement for the City. The City's contract administrator is \_\_\_\_\_.
4. This Conditional Acceptance does not constitute a commitment to purchase on the part of the City of Glendale.
5. **You are required to sign three (3) copies of this Acceptance form and return with this Bid.** Failure to furnish signed copies of this document to the City of Glendale will be considered a default, and your refusal to contract with the City. The City is entitled to any remedies or rights as may be granted by law.

**OFFER**

The Undersigned hereby offers and agrees to furnish the material or service in compliance with all terms, conditions, specifications and amendments in the Solicitation and any written exceptions in the bid.

Contractor Name: United Fire Equip. Company Contractor Signature: *Paul Fraser*  
 Company Address: 335 North 4th Avenue Printed Name and Title: Paul Fraser/Product Manager  
Tucson, AZ 85705 Telephone No. (Cell): 480-276-7925  
 Company Federal I.D.: 86-0354-767 Arizona Sales Tax No. 10-069769B  
 Email Address: PaulF@ufec.com

**ACCEPTANCE OF OFFER**

The Offer is conditionally accepted. The Contractor is now bound to sell the materials or services specified in the IFB, including all terms and conditions, specifications, addenda, etc. Contractor is cautioned not to provide any material or service under this proposed Agreement until City Council has approved the expenditure and Contractor receives a Purchase Order.

City of Glendale City Manager or Designee Signature: \_\_\_\_\_ ATTEST: \_\_\_\_\_

Printed Name and Title: \_\_\_\_\_ City Clerk (SEAL)

APPROVED AS TO FORM:

**Kevin R. Phelps City Manager**

Date: \_\_\_\_\_

\_\_\_\_\_  
City Attorney



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**5.0 BIDDING SCHEDULE**

Bidders shall thoroughly complete the Price Sheet as requested. The Unit Price shall include, but is not limited to, shipping, labor, equipment, tools, materials, supplies, licenses, fees, insurance, profit, and any other associated direct or indirect costs. **Sales tax shall not be included in the Unit Price.**

<b>5.1 FIREFIGHTER TURNOUT GEAR</b>					
<b>Item No.</b>	<b>Estimated Quantities (A)</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price (B)</b>	<b>Extended Amount (A X B)</b>
5.1.1	150	Each	STRUCTURAL FIREFIGHTING HELMET Mfg/Model: <u>Cairns 660C FD*</u> * - Color	\$ <u>239.95</u>	\$ <u>35,992.50</u>
5.1.2	150	Each	TURNOUT COATS Mfg/Model: <u>Lion/Super Deluxe CSTM</u>	\$ <u>1,381.34</u>	\$ <u>207,201.00</u>
5.1.3	150	Each	TURNOUT PANTS Mfg/Model: <u>Lion/V-Force PVFM/F</u>	\$ <u>940.16</u>	\$ <u>141,024.00</u>
5.1.4	200	Pair	STRUCTURAL FIREFIGHTING GLOVES Mfg/Model: <u>Lion Ace Commander</u> <u>LPG928BK</u>	\$ <u>72.50</u>	\$ <u>14,500.00</u>
5.1.5	800	Each	STRUCTURAL FIREFIGHTING HOODS Mfg/Model: <u>Majestic/C6 PAC III-23</u>	\$ <u>43.50</u>	\$ <u>34,800.00</u>
5.1.6	100	Pair	STRUCTURAL FIREFIGHTING BOOTS – HONEYWELL BT5007	\$ _____	\$ <u>NO BID</u>
5.1.7	100	Pair	STRUCTURAL FIREFIGHTING BOOTS – GLOBE SHADOW™	\$ _____	\$ <u>NO BID</u>
5.1.8	100	Pair	STRUCTURAL FIREFIGHTING BOOTS – BLACK DIAMOND X2	\$ _____	\$ <u>NO BID</u>
5.1.9	125	<sup>5</sup> Gallons	TURNOUT SOAP/CITROSQUEEZE	\$ <u>128.00</u>	\$ <u>16,000.00</u>
<b>GRAND TOTAL (Items 5.1.1 through 5.1.9)</b>				\$ <u>449,517.50</u>	

**5.2 TAX AMOUNT** Bidders should not include transaction use tax or federal tax in their unit price. For the purpose of determining the lowest cost, the City will not take tax into consideration.

**Tax Rate:** 8.1 %



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**5.3 DELIVERY** Bidder states that all orders shall be delivered per Section 1.2.9 after receipt of purchase order, contract release document or written notice to proceed from the City of Glendale.

**5.4 PROCUREMENT CARD ORDERING CAPABILITY** Please check appropriate box.

- YES, I will accept payment under this contract with the Procurement Card.
- NO, I will not accept payment under this contract with the Procurement Card.

**Company Name:** UNITED FIRE EQUIPMENT COMPANY

	<b>SOLICITATION NUMBER: IFB 16-31</b> <b>FIREFIGHTER TURNOUT GEAR</b>	<b>CITY OF GLENDALE</b> <b>Materials Management</b> <b>5850 West Glendale</b> <b>Avenue, Suite 317</b> <b>Glendale, Arizona 85301</b>
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If NOT Compliant, please be specific about what area is not in compliance and thoroughly explain the differences in a separate letter/memo as to why you chose to take an exception. A written explanation must be submitted referencing the specific paragraph number and adequately defining the exception submitted. Any pictures/digitals photos would also be preferred to show any of the exceptions.

**COMPLIANCE CHECK SHEET**

	<b>Check Response</b>
<b>1.2 <u>COMPLIANCE OF STANDARDS &amp; REGULATIONS</u></b>	
1.2.1 NFPA CERTIFICATION/TRAINING	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.2 CERTIFICATIONS/ADDITIONAL MANUFACTURER REQUIREMENTS	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.3 SAMPLES	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.4 RESEARCH & DEVELOPMENT	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.5 NEW PRODUCT AVAILABILITY	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.6 DISCONTINUATION OF CONTRACTED ITEM	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.7 LIABILITY CONSIDERATIONS	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.8 WARRANTY	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.9 DELIVERY	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.10 USER INFORMATION GUIDE	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.11 CLEANING INSTRUCTIONS	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.12 TRACEABILITY	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.13 LABELING	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.14 QUALITY	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.15 WORKMANSHIP	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.16 REPAIR & REPLACEMENT PARTS	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.2.17 BIDDER'S COMPLIANCE WITH HEALTH, ENVIRONMENTAL & SAFETY	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>1.3 <u>STRUCTURAL FIREFIGHTING HELMET –CONSTRUCTION REQUIREMENTS</u></b>	
<b>SEE ATTACHED PROPOSAL &amp; SPECIFICATIONS</b>	
1.3.2 OUTERSHELL	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1.3.3 SUSPENSION SYSTEM	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1.3.4 BRIM EDGE TRIM	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.3.5 HELMET HARDWARE AND THREAD REQUIREMENTS	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.3.6 HELMET HANGER LOOP AND BRACKET	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1.3.7 FACE SHIELD MOUNTING BRACKETS	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.3.8 INTERNAL PROTECTION SYSTEM	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1.3.9 SUSPENSION HEADBAND AND RETENTIONS SYSTEMS	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1.3.10 EYE PROTECTION MOUNTING SYSTEM	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.3.11 REFLECTIVE TRIM	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>



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**COMPLIANCE CHECK SHEET**

**Check Response**

- |            |   |   |
|------------|---|---|
| 1.3.12     | EAR COVERS/FLAPS  | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 1.3.13     | WINTER LINER  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.3.14     | CHINSTRAP   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.3.15     | WARRANTY  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| <b>1.4</b> | <b><u>TURNOUT GARMENT/COAT &amp; PANT - CONSTRUCTION REQUIREMENTS</u></b> |   |
| 1.4.2      | ADDITIONAL LABELING   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.3      | THREAD  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.4      | STITCH METHODS  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.5      | MATERIALS FOR COAT & PANTS  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.6      | OUTER SHELL MATERIAL  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.7      | MOISTURE BARRIER MATERIAL   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.8      | BREATHABILITY REQUIREMENTS  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.9      | THERMAL LINER   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.10     | MOISTURE BARRIER/THERMAL LINER ATTACHMENT                                 | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.11     | REINFORCEMENT MATERIALS   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|            | 1.4.11.1 CUFF REINFORCEMENT   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|            | 1.4.11.2 SEAM ABRAISION SHIELD  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|            | 1.4.11.3 POCKET REINFORCEMENT   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|            | 1.4.11.4 ELBOW REINFORCEMENT  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.4.12     | REFLECTIVE TRIM   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| <b>1.5</b> | <b><u>COAT - CONSTRUCTION REQUIREMENTS</u></b>                            |   |
| 1.5.2      | PATTERNING REQUIREMENTS COAT  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.3      | THERMAL REINFORCED YOKE   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.4      | SHELL YOKE REINFORCEMENT  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.5      | INSPECTION PORT   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.6      | COAT RISE   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.7      | HANG UP LOOP  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.8      | SIZING  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.9      | COAT LENGTH   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.10     | LABEL LINER POCKET  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.11     | SLEEVES   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.12     | BELLOWS UNDERARMS   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.13     | WRISTLET EXTERNAL   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1.5.14     | WATERWELL & INTERNAL WRISTLET   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |



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**COMPLIANCE INFORMATION**

**Check Response**

- 1.5.15 COLLAR Yes  No
- 1.5.16 SHOULDER CAPS Yes  No
- 1.5.17 LINER & DESIGN ATTACHMENT Yes  No
- 1.5.18 DRAG RESCUE DEVICE Yes  No
- 1.5.19 STORM SHIELD/CLOSURE SYSTEM Yes  No
- 1.5.20 POCKETS Yes  No
- 1.5.21 REFLECTIVE TRIM Yes  No
- 1.5.22 AMERICAN FLAG Yes  No
- 1.5.23 MICROPHONE TAB Yes  No
- 1.5.24 FLASHLIGHT STRAP Yes  No
- 1.5.25 GLOVE HOLDER Yes  No
- 1.5.26 SNAP HOLDER Yes  No
- 1.5.27 REMOVABLE ACCOUNTABILITY PANEL Yes  No
- 1.6 **PANT - CONSTRUCTION REQUIREMENTS**
- 1.6.2 PATTERNING & DESIGN Yes  No
- 1.6.3 MOISTURE BARRIER/THERMAL LINER CONSTRUCTION Yes  No
- 1.6.4 MOISTURE BARRIER/THERMAL LINER ATTACHMENT Yes  No
- 1.6.5 INSPECTION PORT Yes  No
- 1.6.6 SIZING Yes  No
- 1.6.7 KNEE PADDING/THERMAL LAYERING Yes  No
- 1.6.8 FLY CONSTRUCTION Yes  No
- 1.6.9 BOOT CUT Yes  No
- 1.6.10 REFLECTIVE TRIM Yes  No
- 1.6.11 SUSPENDERS Yes  No
- 1.6.12 BELT AND HARNESS Yes  No
- 1.6.13 POCKETS Yes  No
- 1.6.14 TAKE UP STRAPS Yes  No
- 1.7 **STRUCTURAL FIREFIGHTING GLOVES – CONSTRUCTION REQUIREMENTS**
- 1.7.2 OUTERSHELL Submitting Lion Ace Commander Yes  No
- 1.7.3 THERMAL LINER #LPG928BK Yes  No
- 1.7.4 PROTECTIVE BARRIER Yes  No
- 1.7.5 WRIST PULL Yes  No
- 1.7.6 HANGER LOOP Yes  No
- 1.7.7 THREAD Yes  No
- 1.7.8 SIZING Yes  No



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**COMPLIANCE INFORMATION**

**Check Response**

- 1.8 STRUCTURAL FIREFIGHTING HOODS – CONSTRUCTION REQUIREMENTS**
- 1.8.2 MATERIAL SPECIFICATIONS Yes  No
- 1.8.3 FABRIC PERFORMANCE VALUES Yes  No
- 1.8.4 THERMAL PROTECTIVE PERFORMANCE Yes  No
- 1.8.5 OVERALL LENGTH Yes  No
- 1.8.6 FACE OPENING Yes  No
- 1.8.7 BINDING Yes  No
- 1.8.8 SEAMS Yes  No
- 1.9 STRUCTURAL FIREFIGHTING BOOTS – CONSTRUCTION REQUIREMENTS**
- 1.9.2 ADDITIONAL CERTIFICATION Yes  No
- 1.9.3 SIZING Yes  No
- 1.9.4 BOOT SPEC #1 MFG/MODEL: HONEYWELL BT5007 Yes  No
- 1.9.4.1 SIZING Yes  No
- 1.9.5 BOOT SPEC #2 MFG/MODEL: GLOBE SHADOW™ Yes  No
- 1.9.5.1 SIZING Yes  No
- 1.9.6 BOOT SPEC #3 MFG/MODEL: BLACK DIAMOND X2 Yes  No
- 1.9.6.1 SIZING Yes  No
- 1.10 CITROSQUEEZE®**
- 1.10.7 LABELING Yes  No
- 1.10.8 COMPONENTS Yes  No
- 1.10.9 QUANTITY Yes  No





7200 Poe Ave, Suite 400  
Dayton, OH. 45414

Phn 800-421-2926  
Fax 877-803-1032

**ON BEHALF:**  
United Fire Equipment Company

**FOR:**  
Glendale Fire Dept.

PSGQ13271

Description	MFGR Part #
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Custom Turnout Coat - 2015

**Coat Model / Design** **Super-Deluxe™ Coat**

LION® Turnout Super-Deluxe™, Traditional Coat with Freedom design. Fully featured coat with Bi-swing Back for forward mobility.

**Coat Model / Design** **CSTM-32**

32" Male Super Deluxe™ Coat

**Coat Liner & Moisture Barrier** **C7 - Vented**

Vented Liner, Glide™ face cloth quilted to AraFlo®Dri -1.5 oz, CROSSTECH® BLACK (Type 2F) PTFE/Nomex® Pajama Check laminated membrane, 3.0 oz NOMEX® woven face cloth.

**Coat Inner Yoke Reinforcement** **LYR229**

C Liner: 1 layer Semper Dri® (RM1377059) 1 layer RM1376-103 front and back yokes sewn to coat thermal liners. - Super Deluxe & Liberty Coats

**Coat Water Well - Ever-Dri** **CLW207**

(Std) Water Well: Chambray DWR 2 layer AraFlo® NOMEX®/Kevlar® spunlace quilt/pajama check crosstech waterwell with 3/4" loop, male snap, sew to coat liner sleeves.

**Coat Wristlets** **CLW753**

(Std) 8" isodri® over the hand- KEVLAR® / NOMEX® / Spandex® construction

**Coat Outer Shell Material** **PBI® Max Natural**

PBI® Max, 7.0 oz.

**Fabric Color** **Natural**

NATURAL Color Outer Shell

**Reflective Trim** **CT404PTY**

3" ProjectFires Yellow Ventilated Triple Trim

**Drag Rescue Device** **BHS031**

DRD: Firefighter Recovery Harness with 2" welt and 6x3.25" flap with rounded corners. 1 piece 1.5x2" loop for harness storage. 1 piece 1x4.5" loop on shell for flap closure, 1 piece 1x4.5" hook on flap. 1 piece 1.5x2" hook on harness. 1 piece 2x2" loop inside shell above chest trim for harness strap, 1 piece .75x4.5" hook&loop on harness strap with 2.25x2.75" arashield, 1 pair 1x3.5" self-fabric strap with 1x2" hook and

loop. The loop handle shall have a silver retro-reflective LION logo patch.

### Reflective Trim

CTB35PT3R

3" Red Ventilated reflective trim, set horizontal across 6x3.25" flap of firefighter recovery harness, 4 rows lockstitch.

### Coat Collar

CR237

(Std) 3" split self fabric collar with CROSSTECH® PJ lined. 2 pieces 1x3" hook on each end inside and two pieces 1" hook set 1/2" from center along top edge for liner attachment. 1.5x4" hook&loop for front closure.

### Collar Flashing

CLF221

(Std) 3" Self fabric, PJ CROSSTECH lined split collar with 2 pieces 1x3" loop on moisture barrier, 2 pieces 1" loop set 1/2" from center along top edge for attachment to shell. Use with CR236 & CR237

### Liner Inspection System

CLO210

(Std) Coat liner inspection system located at center left front of liner, with 1x9" loop. For regular coats.

### MISC. Fasteners

MF030

(Std) 1x9" hook sewn to left front shell for the Coat Liner Inspection System

### Coat Cuff Reinforcement

CC702-BLK

Black Polymer coated aramid cuff reinforcements

### Coat Elbow Reinforcement

BE26-BLK

Black Polymer w/Lite-N-Dri™ cushioning, Elbows Reinforcement

### Coat Shoulder Reinforcement

SC711

Self fabric shoulder caps w/ Lite - N - Dri foam padding

### Coat Closure System

SF232

Stormflap Left Side: 5" stormflap w/ 2 layer Self-fabric & GORE RT7100 PTFE, Arafil liner, hook & dee in , 2" hook & loop out (hook & (4) 701's on coat front, loop on stormflap & (4) D-Rings on SF side) the first hook & dee is to be placed 2.5" down from top of stormflap. "Chicago" Closure

### Snap Attachment

SAC702

Snap attachment coat-3 female nonlogo snaps & 3 male snaps between hidden hook and dees.

Coat Pockets

### Turn-Out Pockets

FBP1057

(2) 8x8x2" full bellow hanging pocket with KEVLAR® twill fully lined all four sides. BLACK PCA 4" up all 4 sides on outside of pocket. 3 pieces 2x2" loop on pocket, 3 pieces 2x4" hook on flap, bottom of pocket to hang 3" below hem

Note: Hanging pockets are not to be used on coats that are longer than 32" in length.

Use FBP1056 for 35" coats

**Item Location for Above**

LEFT &amp; RIGHT FRONT BOTTOM

**Turn-Out Pockets****RP851**

3.5x6.5x2" Radio Pocket with polycotton full lined 3 sides inside pocket. 2x2" mesh opening below the loop on the pocket. 4.5x8" flap with mitered corners & 2 antenna notches. Set flap 1" above pocket. 1 piece 1x3" hook & 1 female logo snap on flap. 1 piece 1x3" loop & 1 male snap on pocket,

**Item Location for Above**

LEFT CHEST - ANGLED AT 1:00 O'CLOCK, BOTTOM LEFT CORNER OF PKT; JUST ABOVE CHEST TRIM

**Flashlight Strap****FLS577**

1x12" self fabric radio strap with 1 piece 1x5" hook on one end & 1 piece 1x5" loop on opposite end, strap X-stitched to shell, 2 tacks.

**Item Location for Above**

CENTER ON SF; 1/2" BELOW BOTTOM OF MT503

**Flashlight Strap****FLS579**

2x12" self fabric glove holder X-stitch in center. 1 piece 2x2" loop on one end. 1 piece 2x2" hook on the opposite. It will form a circle when closed.

**Item Location for Above**

RIGHT FRONT COAT - CLOSE TO SF &amp; 2" ABOVE FLS510. PLACE VERTICALLY LOOP TO PULL DOWN FROM HOOK

**Flashlight Strap****FLS510**

1x2" 2 layer self fabric 703 flashlite snap holder with 2 bartacks

**Item Location for Above**

RIGHT FRONT COAT- JUST ABOVE HEM TRIM; BETWEEN POCKET &amp; STORMFLAP

**Emblem****EM5**

2x3" American Flag Emblem (Stars on upper right corner)

**Item Location for Above**

RIGHT SLEEVE

**Lettering Patches****LP34**

5x18" contoured 2 layer self fabric one line letter patch to be attached to hem of coat.

BLACK FUSION

**Lettering Patch Attachment****LPV13**

(For LP34): There shall be 1.5x18" hook sewn to top edge of 5x18" patch and 1.5x18" loop sewn with white thread through the trim to coat back inside at hem.

**Letter Patch Attachment****LPS10**

2 Male snaps to letter patch (1 set 6" left of center, 1 set 6" right of center) & 2 female snaps on coat shell for Hanging letter patch attachment.

**Sewn On Lettering****LTSL3YNS**

Sewn On 3" Lime/Yellow 3M™ Scotchlite™ Letters (each line) 6 - 12

Alpha Numeric Name Characters

LTSL2YNS - 2" letters will be used for longer names

### Lettering

Lettering shall be FF NAME

1st Initial & Last Name

#### Location for Lettering

ON ABOVE PATCH

### Mic Tab

MT503

(3) 1x3" triple layer self fabric mic tab bartacked each end.

#### Item Location for Above

1) 2" BELOW TOP OF SF & CENTER ON SF

2) LEFT & RIGHT SIDE; ALIGN WITH TOP OF SF & 1/2" OVER FROM SF

### Coat Inner Yoke Reinforcement

YR118

11" Chambray 2 layer treated AraFlo® yoke sewn completely across pleated back and sleeve reinforcement that is 8" in length & 12" across sleeve. - Super-Deluxe and Liberty only

### Hanger Loop

HL02

(Std) 5/8" x 5 1/2" Self fabric hangerloop.

Custom Turnout Pants - 2015

### Pant Model / Design

PVFM/F

V-Force® Pant w/ Belt

### Pant Liner & Moisture Barrier

C7 - Traditional

Traditional Liner, Glide™ face cloth quilted to AraFlo®Dri -1.5 oz, CROSSTECH® BLACK (Type 2F) PTFE/Nomex® Pajama Check laminated membrane, 3.0 oz NOMEX® woven face cloth.

### Liner Inspection System

PLO200

(Std) Pant liner inspection system with 1x3" loop located at right side of liner waist.

### MISC. Fasteners

MF018

(Std) 1x3" hook sewn to right shell front for the pant liner inspection system.

### Pant Outer Shell Material

PBI® Max  
Natural

PBI® Max, 7.0 oz.

**Fabric Color****Natural**

NATURAL Outer Shell Material

**Pant Fly Closure****FLY233**

(Std) Sewn on pant FLY with PJ CROSSTECH®, closure thermo plastic zipper inside with 1.5" hook & loop, 3/4" hook underneath PJ crosstech for liner attachment. V-Fit

**Take Up Straps****TUP704**

1 pair 1x10" self fabric postman take-up straps, 2 bartacks, 5/8" postman slides.

PULL FORWARD

**Leg Tabs****LGT000-BLK**

(Std) 2 Black Leather leg tabs per leg with non-logo female snaps.

**Pant Knee Reinforcement****KP249**

Contoured black Super Fabric knees with 3 layers of Lite - N - Dri foam padding V-Fit

**Pant Cuff Reinforcement****PC504-BLK**

Black Poly-coated aramid pant cuffs and 3x3.5" kick shield.

**Belts and Harnesses****BHS013**

(Std) 2" wide KEVLAR® belt with 2" self-locking thermoplastic buckle with quick release mechanism.

**Belts and Harnesses****BL007**

(Std) 3 belt loops, 4" wide by 3.5" high, 2-layer self-fabric, double stitched to pant shell, bartacked all four corners

**Suspenders****SB342T=01**

42" (Regular) EZH H-Back Quick Adjust Non-Stretch Suspenders with trim w/ 2" metal loops, Black (Requires PMO210)

**Suspender Tabs****PMO210**

Four 2" wide self material suspender tabs with 1.75x3" leather reinforcement. 2 male and 2 female logo snaps, attached to waist with 2 on the front and 2 on the back. Reinforced with 2 bartacks on each tab.

**Boot Cut****PMO542**

"Boot cut" pant legs.

**Turn-Out Pockets****FBP1012**

9x10x2" Full bellow pocket with BLACK PCA up 5" on outside of pocket, fully lined in all 4 sides with KEVLAR®. Additional 2 layers of outershell fabric lined with KEVLAR® on shell inside pocket. First layer 6.5" high, second layer 4.5" high, both layers stitched in 3" increments to create 6 compartments. 1pc 2x9" loop on pocket, 3 pcs 1.5x3" hook on flap.

**Item Location for Above**

LEFT THIGH

**Turn-Out Pockets****BDP914**

9x8x10x2" Split bellow pocket w/ KEVLAR® twill fully lined all 4 sides and BLACK PCA 4" up outside of pocket, 2 pcs. 2x2" loop on pocket & 2 pcs. 2x2" hook on flap. Inside of pocket divided in half vertically with kevlar twill attached with 3 snaps to front side of pocket & sewn to middle of back of the pocket. 3 snaps on inside top bottom right edge of pocket,

snaps on divider.

**Item Location for Above**

RIGHT THIGH

**Reflective Trim**

**PTC4PT3Y**

3" Lime/Yellow Ventilated Triple Trim Reflective trim around leg bottoms-  
4 rows lockstitch.

Custom Turnout Coat - 2015



# CERTIFICATE



This is to certify that

## Lion First Responder PPE, Inc. dba LION

7200 Poe Avenue  
Suite 400  
Dayton, OH 45414  
United States of America

with the organizational units/sites as listed in the annex

has implemented and maintains a **Quality Management System**.

### Scope:

The design, manufacture and distribution of custom coats, pants, and coveralls for fire and emergency services personnel. The design, manufacture and distribution of uniforms, fire service helmets and helmet accessories for fire and emergency services personnel. The distribution with the provision of embroidery services of protective clothing, equipment and uniforms for first responder, military, civilian and government service personnel.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

## ISO 9001 : 2008

Certificate registration no.	10001779 QM08
Date of original certification	1998-07-30
Date of revision	2015-02-05
Date of certification	2014-12-16
Valid until	2017-12-15



**UL DQS Inc.**

Ganesh Rao  
Managing Director

**Annex to Certificate  
Registration No. 10001779 QM08**

**Lion First Responder PPE, Inc. dba LION**

7200 Poe Avenue  
Suite 400  
Dayton, OH 45414  
United States of America

**Location**

**Scope**

**10003933**

**Lion First Responder PPE, Inc. dba LION  
2000 Composite Drive  
Kettering, OH 45420  
United States of America**

The Kettering, OH off-site is responsible for the following functions: Helmet molding and assembly, receiving, packaging, shipping and training.

**10003934**

**Lion First Responder PPE, Inc. dba LION  
318 Dogwood Lane  
West Liberty, KY 41472  
United States of America**

The West Liberty, KY off-site is responsible for the following functions: Manufacturing, receiving, purchasing, packaging, shipping and training.

**10011131**

**Lion First Responder PPE, Inc. dba LION  
14090 Hwy 191  
Hazel Green, KY 41332  
United States of America**

The Hazel Green, KY off-site is responsible for the following functions: Receiving, pattern making, marker, spreading, cutting, bundling of custom coats, pants and coveralls and shipping to West Liberty, KY for sewing assembly. The receipt and inspection for resale, storage and distribution with the provision of embroidery services of protective clothing, equipment and uniforms for first responder, military, civilian and government service personnel.

**10012676**

**Lion First Responder PPE, Inc. dba LION  
150 W. Franklin Street  
Berlin, WI 54923  
United States of America**

The Design and Manufacture of Emergency Services Gloves.





# CERTIFICATE OF COMPLIANCE

**Certificate Number** 032615-MH14967  
**Report Reference** MH14967-20130218  
**Issue Date** 2015-MARCH-26

**Issued to:** LION FIRST RESPONDER PPE INC DBA LION  
Suite 400  
7200 Poe Ave  
Dayton, OH 45414 USA


**This is to certify that representative samples of** PROTECTIVE GARMENTS FOR STRUCTURAL FIRE FIGHTING  
See Addendums

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

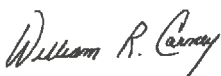
**Standard(s) for Safety:** NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2013 Edition

**Additional Information:** See the UL Online Certifications Directory at [www.ul.com/database](http://www.ul.com/database) for additional information

Only those products bearing the UL Classification Mark should be considered as being covered by UL's Classification and Follow-Up Service.

The UL Classification Mark includes: UL in a circle: with the word "CLASSIFIED"  (as shown); a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and the product category name (product identity) as indicated in the appropriate UL Directory.

Look for the UL Classification Mark on the product.



William R. Carney, Director, North American Certification Programs  
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at [www.ul.com/contactus](http://www.ul.com/contactus)



# CERTIFICATE OF COMPLIANCE

**Certificate Number** 032615-MH14967  
**Report Reference** MH14967-20130218  
**Issue Date** 2015-MARCH-26

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Type	Model	Closure System	UL Certification No.
Coat	Lion Commando (CMDM or CMDF) Lion Super (CSUM or CSUF) Lion Super Deluxe (CSDM or CSDF) (CSTM or CSTF) Lion Custom Deluxe (CDXM or CDXF) Lion Liberty (CLBM or CLBF) (CLTM or CLTF) Lion Traditional (CBGM or CBGF) Lion Express (CCHX or CB2X or CCAX) Lion V-Force (CVFM or CVFF) (CVBM or CVBF)	Zipper Inside/Hook and Loop Outside	14967010601
		4 Hooks and Dees Inside/Hook and Loop Outside	14967010602
		Hook and Loop Inside/4 Hooks and Dees Outside	14967010603
		4 Snap Fasteners Inside/4 Hooks and Dees Outside	14967010604
		Zipper Inside/4 Hooks and Dees Outside	14967010605

*William R. Carney*

William R. Carney, Director, North American Certification Programs

UL LLC

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# CERTIFICATE OF COMPLIANCE

**Certificate Number**    032615-MH14967  
**Report Reference**     MH14967-20130218  
**Issue Date**            2015-MARCH-26

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements (Cont'd)

Type	Model	Closure System	UL Certification No.
Trousers	Lion Super (PSUM or PSUF) Lion Deluxe High Back (PDPM or PDPF) Lion Super Deluxe (PSDM or PSDF) Lion Custom Deluxe (PJVM or PJVF) Lion V-Force (PVFM or PVFF) (PVHM or PVHF)	Zipper Inside/Hook and Loop and Single Snap Fastener Outside	14967010606
	Lion Liberty (PLBM or PLBF) Lion Traditional (PBGM or PBGF) Lion Reliant (POLM or POLF) Lion Express (PCHX or PB2X or PCAX)	Hook and Loop Inside/Single Hook and Dee Outside	14967010607
Coveralls	Lion Navy Coverall (NAVY2K)	Zipper Inside/Hook and Loop Outside	14967010608

*William R. Carney*

William R. Carney, Director, North American Certification Programs  
 UL LLC

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## Safety Components Warranty Statement

Safety Components will place a 5-year warranty on all Safety Components structural fire fighting fabrics against defects in materials and workmanship. It is expected that any defects would surface within a 5-year period and if so the material would be replaced/repaired by Safety Components.

The Safety Components warranty does not cover rips, tears, or holes resulting from normal wear and tear expected to occur during normal firefighter activities. Normal firefighter activities include but are not limited to recruit school, training activities, and response to fire/EMS/traffic calls. Holes in the outer shell resulting from tools puncturing through pockets are expected and considered normal wear. In addition, degradation resulting from UV, chemicals, and direct heat/flame are considered normal and not covered under the warranty.

It should be noted that fabrics are not warranted against change in color. All flame resistant fabrics, regardless of color, will experience a shift in color. Gold/Natural colored fabrics will darken after exposure to light through a process called oxidation. Depending on garment storage, oxidation may occur uniformly or it may occur in specific areas/panels receiving more light. All black outer shells will fade to charcoal after exposure to wash/wear; a red tint will appear after exposure to light. A shift in color alone does not mean the material has experienced a loss of protection or durability performance. Any fabric containing PBI, PBO, meta-aramid (DuPont™ Nomex®, Tejinconex®), para-aramid (DuPont™ Kevlar®, Tejin Twaron®, Tejin Technora®) will experience a change in color, regardless of the textile manufacturer.

Safety Components has been manufacturing textiles for over 100 years. Companies only stay in business that long if they stand behind their product and commit to exceeding customer satisfaction. Safety Components is proud to offer this warranty and looks forward to supplying the fire service with flame resistant fabrics for many years to come.



Technical Products Group 40 Emery Street (29605)

P.O. Box 567 Greenville, SC 29602-0567

Telephone 864-905-3416 800-896-6926 Facsimile 864-240-2660

# Cairns® Modern Fire & Rescue Helmets

Ordering Selection Matrix



A	B	C	D	E	F	G	H	I	J
Model	Color	Eye/Face Protection	Headband Liners	Earlap	Chinstrap	Trim Type	Trim Color	Trim Shape	Accessory Bracket
2 660C Metro	1 Black	0 None *	1 Economy Flannel	0 None *	1 Nomex w/Quick Release	0 None *	1 Lime/Yellow (standard)	1 Tettabar	0 None
5 Commando HP3	2 Red	1 4" TuffShield ▲	2 Standard Flannel	1 Yellow Nomex	2 Nomex w/Quick Release & Postman's Slide	2 Reflexite (Standard)	2 Red/Orange *	2 Bar	9 Frontpiece Bracket
6 Structural 360S	3 Blue †	2 Cairns ESS Goggles	3 Deluxe Leather w/Crown Pad	2 Yellow Nomex w/Underchin Extension	3 3" longer Nomex w/Quick Release & Postman's Slide (360S only)	3 Scotchlite	3 Blue * (Reflexite only)	3 Diamond	3 Frontpiece Bracket and Frontpiece Installed
A Invader 664	4 White	4 ESS Innerzone 3 Goggles		3 PBI/Kevlar	4 Nomex w/Postman's Slide (360S only)		4 White *	4 Triple Trim (Scotchlite only)	D Additional Soft Goods Kit
B Rescue 360R	5 Yellow	5 ESS Innerzone 2 Goggles		4 PBI/Kevlar w/Underchin Extension	6 6" longer Nomex w/Postman's Slide (360S/R/R-13 and non-Defender 660C/664 only)				
C Rescue 360R-13 *	6 Orange ‡	6 ESS Innerzone 1 Goggles		5 Bloodborne Pathogen Resistant	7 3-point w/Quick Release				
D 660C Metro Defender	7 Green † ‡	7 4" Standard Faceshield ▲		8 Black Nomex w/Underchin Extension **					
E Invader 664 Defender	8 Pink † ‡	A 6" Gold-Coated Faceshield ●		9 CFR Aluminized Bonnet w/PBI/Kevlar Shiroud & Nomex Earlap ●					
G Commando HP3 Defender		B ESS StrikeTeam XTO Goggle ★ ◆		A Black Nomex					
		C Defender Visor, Clear ■							
		D Defender Visor, Amber TuffShield ■							

Column: A B C D E F G H I J

C-MOD- 2 \* 1 3 3 2 2 1 1 0

QUANTITY 150

F-PART NUMBER

\* - SPECIFY COLOR

Cairns 660C Metro, 4" TuffShield, Deluxe Leather w/ Crown Pad, PBI/Kevlar Earlap, Nomex Chinstrap w/ Quick Release & Postman Slide, Lime/Yellow Reflexite, Bar

P/N 660CDFD\*

Also compliant to NFPA 1951  
 ★ NFPA 1951 compliant only  
 ■ Must specify Defender Visor in both "Model" & "Eye/Face Protection" selections  
 ‡ Not available on Invader 664  
 † Not available on 360S/R/R-13  
 ▲ Not NFPA 1971 compliant  
 ● Not available on 360R, R-13  
 ◆ Non-Defender 660C/664 only  
 ● 360R/R-13 and HP3 only  
 \* Not available for helmets with Defender visor  
 ▼ Not all trim colors are available in all trim types and shapes



## MSA Cairns® FIRE HELMET PRODUCT SPECIFICATION

### PRODUCT TYPE:

Structural Firefighting Helmet(s) with Proximity Firefighting Option

### PRODUCT MODEL(S):

MSA Cairns 660C Metro® and Invader 664® Fire Helmets

### PURPOSE:

To supply a uniform, standard product specification for a fiberglass composite structural fire helmet.

### SCOPE:

The scope of this product specification encompasses the performance criteria, design, construction and materials deemed necessary for helmets utilized for structural (and proximity as applicable) firefighting.

### GENERAL:

Helmets manufactured in accordance with this specification are designed to mitigate adverse environmental effects to the firefighter's head while providing the specifying authority with what are, in their opinion, essential requirements.

### PERFORMANCE CRITERIA/STANDARDS:

The 660C Metro & Invader 664 Fire Helmets shall meet the requirements of NFPA 1971:2013 (or the current edition) for structural firefighting and proximity firefighting when that option is selected; US-OSHA 1910.156, and CAL-OSHA

All eye/face protection sold as part of the original helmet assembly shall be compliant with the impact requirements of the current versions of ANSI/ISEA Z87.1 and NFPA 1971:2013.

### PERFORMANCE VERIFICATION DATA REQUIREMENT:

Response to this specification shall include a complete and current NFPA 1971 test report from a recognized, accredited test facility detailing all performance data for the helmet(s) and compliant helmet components included in the original assembly. Certificates of conformance and/or letters of certification alone shall not be acceptable. Component testing is not acceptable. Certification testing is conducted every year to a random lot size, as per NFPA requirements.

### MANUFACTURER'S WARRANTY:

MSA warrants MSA Cairns Fire Helmets manufactured on or after January 1, 2015, to be free from defects in materials and/or faulty workmanship for a period of ten (10) years from the date of manufacture by MSA. For warranty details, please see "10-Year Warranty and Terms of Sale" (ID 3600-72-MC / February 2015). For MSA Cairns Fire Helmets manufactured prior to January 1, 2015, please refer to ID 3600-09-MC / Jan 2005. All warranty documents can be found on the MSA website (MSAsafety.com).



## PRODUCT VISUAL(S):



Cairns® 660C Metro™ Fire Helmet



Cairns® Invader 664 Fire Helmet

### HELMET SHELL:

The 660C Metro & Invader 664 helmets shall be of the Modern Fire Helmet style. The shell shall have a down-sloping brim to enhance water shed. The radius of the juncture of the brim and crown shall be no less than 0.1875" to maximize deflection of debris and impact protection.

The shell material shall be a fiberglass composite, consisting of a high-temperature-, flame-, and chip-resistant "through-colored" thermoset resin, reinforced with 1" and 2" chopped fiberglass, compression-molded to form a one-piece shell.

#### *660C Metro Helmet Colors*

The exterior of the shell shall be completely coated with a color pigmented, high gloss, abrasion, high heat and chemical resistant paint finish. The shell color and matched paint finish shall be available in the standard colors of white, red, black, and yellow. Orange, blue, and green painted finishes shall be available over a white composite shell.

#### *Invader 664 Helmet Colors*

The shell shall be available in white, red, black, and yellow with an unpainted, matte finish.

The shell dimensions (w/ edge trim) shall be 14.00" (L), 11.13" (W) and have a crown depth of 5.9". The shell shall have a nominal wall thickness of 0.065".

The shell shall have black or white<sup>1</sup>, high-temperature, flame-resistant, flexible edge trim composed of an aluminum core coated with thermoplastic rubber (TPR). The edge-trim is secured around the entire brim of the helmet by crimping the aluminum core, and secured at the mating ends with a high-temperature adhesive and clamped by the helmet hanger clip at the edge of the rear brim.

The shell shall have a helmet hanger comprised of a 3/4" nickel-plated "D" ring and a stainless steel clip. The helmet hanger shall be attached to the center rear of the brim.

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<sup>1</sup> Available on white helmet shells only





#### **IMPACT CAP:**

The impact cap is designed to help provide increased thermal and impact protection. The impact cap shall be comprised of a rigid cell, high-temperature urethane foam dome attached to a flame-resistant, thermoplastic Polyphenylene Oxide (PPO) inner liner that covers the entire inside crown of the helmet. The impact cap shall be modular and field-removable for periodic inspection of the foam's integrity.

#### **HEAD SUSPENSION:**

The 660C Metro & Invader 664 Fire Helmets shall consist of a six-way head suspension system, attached to the impact cap. The head suspension system comprises three (3) fixed 0.75" wide nylon straps mounted at six points on the impact liner and fastened at their intersection to form the 6-way overhead strap assembly. The straps are attached to the impact cap by means of a rigid plastic strap that locks the straps into a routed round groove in the impact cap.

#### **SHELL RELEASE SYSTEM:**

The impact liner, complete with suspension system and chinstrap assembly (retained as described under "CHINSTRAP") shall be retained to the helmet shell by means of two (2) thermoplastic retention clips mounted under the eye/face protection hardware, and by four (4) pieces of hook-and-pile fastener sections between the impact liner and helmet shell in the crown area. This design will enable the shell to be released from the helmet when impacted from below the brim, reducing the chance of being injured by the chinstrap, and leaving the impact cap on the wearer's head for continued thermal and impact protection.

#### **SIZING ADJUSTMENT:**

The size of the headband may be adjusted to fit the wearer's head by means of a ratchet adjustment system. The headband is attached to the sides of the impact cap liner by four (4) flexible retention tabs. The rear ratchet arms shall have three (3) adjustable positions so that the angle of the ratchet may be set to accommodate the nape of the wearer's head. The headband height shall be adjustable at the front of the helmet via a hook and loop system to provide additional comfort to the wearer.

The headband shall have a head size range of 6-3/8 to 8-3/8, adjustable in 1/8" increments.

#### **COMFORT LINER:**

The 660C Metro & Invader 664 shall have a removable comfort liner, consisting of a headband cushion and a ratchet pad. Both components made of a foam-core laminate system, comprised of a soft black flame-resistant flannel material against the user's head backed by a soft loop material secured to the headband and ratchet with hook fastener. The comfort liner is machine-washable. It can easily be upgraded to a standard flannel or deluxe leather-lined version.

#### **CHINSTRAP:**

The chinstrap shall be constructed of three (3) pieces (or sections) of 3/4" wide, spun-Nomex webbing, which are connected by a high-temperature, durable thermoplastic quick-release buckle on the left side of the helmet, and by an optional cast zinc postman's slide buckle on the right side of the helmet.

The chinstrap is attached at either end of the impact cap by means of a plastic tube that travels the circumference of the impact cap assembly, locking the chinstrap into a groove in the impact cap.





The long middle section, with the female half of the quick-release buckle sewn to the left end, shall pass through the postman's slide buckle on the right. The middle section shall be a minimum of 23.0" in length and the total length of the chinstrap shall be 35.0" at full extension, end to end. The chinstrap includes a hook-and-loop fastener to secure extra material.

**EAR/NECK PROTECTION:**

The 660C Metro and Invader 664 Fire Helmets provide for ear and neck protection with a 6.5" wide, 19.0" long, full-cut earlap. The double-layer earlap consists of a 4.5 oz. / yd., yellow or black colored Nomex outer layer, and a flame resistant black flannel inner layer. The earlap shall be secured to the shell by pieces of hook and pile fastener in no fewer than five (5) locations.

The earlap is machine washable and can be easily upgraded to a PBI/Kevlar or a blood-borne pathogen-resistant earlap. The ear and neck protector shall be removable without interfering with the overhead strap assembly in any way and without removing any part of the helmet suspension.

Earlaps with under-chin extensions shall be available.

**RETRO-REFLECTIVE TRIM:**

The helmet shall have three bar-shaped pieces of retro-reflective, fluorescent Reflexite trim around the exterior of the crown of the helmet shell. There shall be two additional pieces of bar-shaped Reflexite trim on the front of the top of the helmet for maximum daytime and nighttime visibility. Red-orange and lime-yellow retro-reflective, fluorescent Scotchlite bars is also available.

Blue or white Reflexite trim shall be available. (NOTE: Blue or white Reflexite trim is not compliant to NFPA 1971.)

**EYE PROTECTION OPTIONS:**

<i>Name</i>	<i>Description</i>
Defender® Visor	The 660C Metro & Invader 664 Fire Helmets shall have an integral visor that retracts between the helmet shell and impact cap. The visor shall be a wrap-around design, 4.5" high and 8.25" long and have a comfort nose pad. The lens shall be coated with a scratch resistant coating on both inner and outer surfaces to help protect it from abrasion. The lens shall be optically correct to eliminate distortion. The lens shall be available in clear or Tuffshield (yellow tinted). The lens material shall be high-performance, impact-resistant plastic. The lens shall be able to be replaced within 15 seconds and without the use of tools (e.g. Allen wrench, screwdriver). The lens must be retained without the use of spring-loaded mechanics or lever system.
Faceshield and Hardware	<p><i>Faceshield</i></p> <p>The faceshield shall be a wrap-around, high pivot design, 4.5" wide, 19.0" long and 0.150" thick. The lens material shall be high performance, high-temperature, impact-resistant thermoplastic. The lens shall be coated with a scratch resistant coating on both inner and outer surfaces to protect the lens from abrasions.</p> <p><i>Hardware</i></p>



Name	Description
	The faceshield shall be mounted to the helmet shell by means of two (2) glass-reinforced, high-temperature and flame-resistant thermoplastic bracket assemblies, with adjustable thermoplastic knobs one (1) on either side of the helmet shell. The brackets allow the faceshield to be raised above the helmet shell when not in use.
Goggle System	The goggle system shall be comprised of a high-temperature, flame- and impact-resistant goggle lens and frame, a flame-resistant, elastic goggle strap, and a goggle retention system. This retention system will lock the goggle onto the helmet at the back brim, preventing loss of the goggle when either stowed or donned. Both inner and outer surfaces of the goggle lens will have an anti-scratch and anti-fog coating. Both ends of the lens will be reinforced with a fiberglass insulating label for extra durability at elevated temperatures. The lens will be low profile, optically correct with a nominal thickness of 1/16". The goggle strap will require a one-time adjustment to facilitate donning if wearing <b>gloves</b> .

**OPTIONS:**

*Proximity Fire Fighting Helmet*

The 660C Metro and Invader 664 Fire Helmets shall be made available with optional components to enable the helmets to be used in proximity firefighting. The necessary components shall include a proximity bonnet, a proximity shroud, and faceshield. Use of these components shall enable these helmets to be compliant with the proximity firefighting helmet requirements of NFPA 1971: 2013.

- Proximity Bonnet  
The proximity bonnet shall be custom made to specifically fit over the 660C Metro and Invader 664 Fire Helmets. The proximity bonnet shall consist of an outer aluminized PBI/Kevlar layer, and an inner moisture barrier with thermal liner. The proximity bonnet, when attached to the helmet, shall allow a faceshield to be attached to the helmet over the proximity bonnet.
- Proximity Shroud  
The proximity shroud shall be custom made to work specifically with the proximity bonnet. The proximity shroud shall consist of an outer aluminized PBI/Kevlar layer, and an inner moisture barrier and thermal liner. The proximity shroud, when used in conjunction with the proximity bonnet, shall provide continuous radiant reflective protection for the head, face, and neck areas that do not receive primary protection from the helmet or faceshield.
- Faceshield  
The faceshield used in the proximity system shall be a gold-coated 6" faceshield. The faceshield shall provide radiant reflective protection to the head, face, and neck areas that do not receive primary protection from the helmet or proximity bonnet or proximity shroud.

*Accessories*

A full range of fire helmet accessories, such as customizable front pieces and front holders, is available. Please see the MSA Cairns Fire Helmet catalog and/or contact an MSA representative.



**MAINTENANCE, REPAIR and RETIREMENT:**

Proper maintenance, repair, and retirement of the helmet can be found in the MSA Cairns Fire Helmet Owner's Guide and on our web site ([MSASafety.com](http://MSASafety.com)). Users should also refer to NFPA-1851 (current edition) regarding proper inspection, maintenance, repair schedules, and retirement requirements for structural and proximity firefighting helmets. Upon the customer's request, an MSA representative will conduct training explaining the proper maintenance, repair and retirement of MSA Cairns Fire Helmets.

**CONTACT INFORMATION:**

For additional information on MSA Cairns products, please contact MSA Customer Service at 1-877-MSA-FIRE or visit us on [MSAfire.com](http://MSAfire.com).



## 10-Year Warranty and Terms of Sale

1. The Effective Date of this 10-Year Warranty for Cairns® Fire Helmets is January 1, 2015. All Cairns Fire Helmets manufactured on or after January 1, 2015, shall be covered by the terms issued under this warranty. This warranty supercedes any printed or electronic warranties provided with a Cairns Fire Helmet which was manufactured on or after January 1, 2015.
2. All Cairns Fire Helmets manufactured before January 1, 2015, shall be covered by the terms issued under the previous Warranty.
3. **Express Warranty**—Mine Safety Appliances Company, LLC (MSA) warrants MSA Cairns Fire Helmets manufactured on or after January 1, 2015, to be free from defects in materials and/or faulty workmanship for a period of ten (10) years from the date of manufacture by MSA. This warranty applies to all original assembled components of the fire helmet including: shell; impact cap assembly; suspension; retroreflective trim; ear laps; and faceshield or goggle.
4. **Release of Obligations**—MSA shall be released from all obligations under this warranty in the event that repairs or modifications are made by persons other than its own or authorized service personnel, or if the warranty claim results from accident, alteration, misuse, or abuse. MSA makes no warranty concerning replacement components (i.e., one that was not part of the original assembly) or non-certified accessories, but will pass on to the Purchaser all warranties of manufacturers of such components. This warranty is in lieu of all other warranties, express, implied or statutory, and is strictly limited to the terms hereof: MSA specifically disclaims any warranty of merchantability or of fitness for a particular purpose.
5. **Exclusive Remedy**—It is expressly agreed that the Purchaser's sole and exclusive remedy for breach of the above warranty, for any tortious conduct of MSA, or for any other cause of action, shall be the repair and/or replacement, at MSA's option, of any equipment or parts thereof, that after examination by MSA are proven to be defective. Replacement equipment and/or parts will be provided at no cost to the Purchaser, F.O.B. Destination, Freight Prepaid, to the Purchaser's named destination. Failure of MSA to successfully repair any nonconforming product shall not cause the remedy established hereby to fail of its essential purpose.
6. **Exclusion of Accessories**—Accessories are not a part of the certified product but could be attached to the certified product by a means not engineered, manufactured, or authorized by the manufacturer. MSA Cairns Helmet Accessories made available for purchase by MSA are excluded from this warranty. MSA Cairns Helmet Accessories include are but not limited to: front-piece holders, front-pieces, front-piece brackets, and Bourkes.
7. **Exclusion of Consequential Damages**—Purchaser specifically understands and agrees that under no circumstances will MSA be liable to Purchaser for economic, special, incidental, or consequential damages or losses of any kind whatsoever, including but not limited to, loss of anticipated profits and any other loss caused by reason of the non-operation of the goods. This exclusion is applicable to claims for breach of warranty, tortious conduct or any other cause of action against MSA. **This warranty is in lieu of all other warranties, expressed, implied, or statutory including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose. In addition, MSA expressly disclaims any liability for economic, special, incidental, or consequential damages in any way connected with the sale or use of MSA products, including, but not limited to, loss of anticipated profits.**
8. MSA reserves the right to review and update the warranty terms, as needed, to comply with applicable laws or Standards.



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**MSA – The Safety Company**  
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Cranberry Township, PA 16066  
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Fax 724-741-1553





December 11, 2013

Ms. Ashley Lotzmann  
Approvals Specialist  
Mine Safety Appliances Company  
1100 Cranberry Wood Drive  
Cranberry Township, PA 16066-5204

**Certification Letter**

Dear Ms. Lotzmann:

We are pleased to confirm that the Structural Fire Fighting Helmet models below are certified by the Safety Equipment Institute, effective December 11, 2013. Initial certification testing was successfully completed on September 5, 2013 in accordance with the requirements of *NFPA 1971-2013, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*.

<u>SEI Ref. No.</u>	<u>Brand</u>	<u>Model No.</u>
FF MSA 07	MSA-Cairns 660C & 664 Modern Fire Helmets	660C Metro and 664 Invader (unpainted) - FS/GC:4" Faceshield-10143952, 4" Faceshield-10144443; S550 IZ1 Goggle; 10029699 IZ2 Goggle; 10032881 IZ3 Goggle

The SEI Certification Mark may be used in the marketing, packaging and promotion of the model detailed above, in accordance with the provisions of the *SEI Certification Program Manual*.

Per the SEI Certification Program Manual, SEI shall certify the manufacturer's product model(s) and grant the right to use the SEI certification mark when 1) the Testing Laboratory has determined that the product model submitted and tested successfully meets the appropriate product standard, 2) the Quality Assurance Auditor has determined that the manufacturer complies with SEI quality assurance requirements through an on-site audit, including a review of the quality manual and procedures, 3) the manufacturer has paid all fees, and 4) product liability insurance requirements are met.

Following initial certification, SEI conducts annual follow-up testing on samples which are selected by SEI during the annual quality assurance audit. SEI's certification program is accredited as a System Type 5 per ISO/IEC Guide 67:2004(E).

Thank you for your participation in the SEI Certification Program. If you have any questions, please contact the SEI Office.

Sincerely,

Stephen R. Sanders  
Technical Director

Patricia A. Gleason  
President

cc: Jules Pinto, SEI Auditor



Safety Equipment Institute  
1307 Dolley Madison Blvd. Suite 3A McLean, Virginia 22101  
Tel: 703/442-5732 FAX: 703/442-5756  
www.SEInet.org







## PAC III HOOD SPECIFICATIONS

### DESIGN

Head Design	Traditional head design/length
Bib(Apron) Design w/ Shoulder Insert	Longer length, Shoulder insert design

### LAYERS

Head Layers	2 ply material
Bib(Apron) Layers w/ Shoulder Insert	2 ply material

### LENGTH

Head Length	13"
Bib (Apron) Length w/ Shoulder Insert	8"
OVERALL LENGTH	21"

### FACE OPENING

Full Face Opening Circular Measurement	120 mm - 145 mm
Sewn with 1/2" elastic. Elastic is encapsulated in material and cover stitched.	
Elastic Face Opening stretches to accommodate a circumference of at least 31" (800 mm) for ease of donning, snug fit, and proper seal with SCBA.	

### BINDING

Binding of same fabric material to enhance design with a finished look

### SEAMS

Thread	100% Nomex
Head design with traditional center head seam (comfortable central seam)	
Safety lock cover stitch of seams	

Seam burst strength tests are unsurpassed in industry - 2x or 3x NFPA minimum!

**AIT (ADVANCED INSPECTION THREAD)** Hoods regularly have thread that matches the color of the hood (white on white / black on black). When AIT is requested, we use a contrasting thread color, which is especially important for inspection of gear. Any compromise to thread, seams, stitching is easily detected with AIT thread. AIT is available upon request. Contact us for more info.

### SIZING

UNIVERSAL size

### LABELING AND USER INFORMATION

**OWNER IDENTIFICATION** On the label the area of PROPERTY OF: \_\_\_\_\_. Today every Majestic hood is manufactured with our NEW OWNER ID label. Simply identify your ownership with any permanent marker directly on label

Labeling - each hood comes individually labeled to identify fabric, hood style, lot # traceability, DOM, Cleaning and Storage Instructions, and UL Certification.

Users Information Guide - each hood has an Warnings & Users Information Guide attached with imperative information. Please review before wearing.

### CLEANING AND STORAGE

Machine wash only using regular detergent. Do not use chlorine bleach or detergents containing chlorine. Do not use fabric softeners or detergents containing fabric softeners. Water temperature not to exceed 130 degrees F. Do not wring hood. Squeeze hood to remove excess water. Shape and lay flat in a dry, cool, shaded location to dry. Or tumble dry, low heat. Do not commercially dry clean. Do not store your hood in direct sunlight.

### CERTIFICATIONS

NFPA 1971-2013 UL Certified

Complies with CAL-OSHA Requirements Sections 3406 and 3410(d) and OSHA Rule 29 CFR Part 1910, 269

**ARC Rated** hoods comply with NFPA 70E, meeting performance specifications of ASTM F 1959. See material spec sheets for **ATPV** and **HAF** values



Fullest coverage certified to NFPA 1971-2013  
 Shoulder inserts (gusset) for added shoulder protection  
 Long length for optimum coverage  
 Offering the most square inches of protection  
 Wider width for air circulation keeping end user cooler  
 Generous width and size means less fabric stretch  
 The more surface area for moisture disbursement, the quicker moisture will evaporate - keeping end user dry!  
 Maintains protective properties after washing  
 MFA hoods offer the most square inches of protection!  
 You pick the style, you pick the material -  
**CUSTOMIZING your own hood!**

Majestic Fire Apparel is a vertical manufacturer  
 Knitting our own fire retardant materials for over 16 years  
 We knit, cut, sew, and ship - all from our location in PA  
**MADE IN USA**

### WARRANTY INFORMATION

Your protective hood is warranted to be free from defects in material and workmanship for one year. This warranty does not cover normal wear or unusual exposures, including abrasive wearing of close-tolerance accessories—such as voice amplifiers. This warranty is in lieu of all other warranties, expressed or implied, including but not limited to, implied warranties of marketability and/or fitness for a particular purpose. MFA, Inc. shall not be liable for incidental or consequential damages.

**DO NOT ALTER, MODIFY, ADD TO, OR CHANGE YOUR PROTECTIVE HOOD  
 DOING SO WILL VIOLATE WARRANTY AND VOIDS NFPA AND UL CERTIFICATION**

# GEAR matters

Quality People standing behind America's Quiet Heroes for over 100 years

Winter 2002

## On the Fireground

### isodri® Protective Systems proves to be fastest drying in objective evaluation

By Captain Ted Lovett  
Lufkin Fire Department

When the Texas Commission on Fire Protection mandated that all of our turnout gear be updated, I had to find a proven solution for replacing my department's 66 sets with Breathe-Tex moisture barriers. The first step was researching what the market had to offer. The second step was to perform an independent set of tests to evaluate and select the best garment. I contacted Morning Pride, Lion, Globe, and Quest.

#### First discovery

During a live fire class for the Angelina College Fire Academy, I tested the isodri® Protective Systems manufactured by Lion Apparel. The coat was subjected to three hours of burning conditions. The class and I inspected the coat and noticed how dry it was. The garment did not retain water. When we got back from lunch break, the garment was completely dry. I was impressed how light the garment remained.

#### The test garments

I informed Globe, Quest, and Morning Pride that I was looking for a garment to compare with Lion's isodri® Protective Systems. It had to be lightweight and have fast drying time capabilities. The following garments were tested:

	Manufacturer			
	Lion*	Globe	Quest**	Morning Pride
<b>Outer Shell</b>	PBI®	PBI®	Basofil®	PBI®
<b>Moisture Barrier</b>	W.L. Gore	W.L. Gore	W.L. Gore	W.L. Gore
<b>Thermal Liner</b>	Glide™	Caldura® SL	Omni™ 1	Caldura® SL

\*Lion isodri® Protective Systems. \*\*Quest Equi System.

#### Test 1: Comparing wet and dry weights

I used a straightforward, investigative approach to compare and evaluate each garment. First, I weighed each garment when dry. Garments included a coat and pants set. I placed each garment in a container of water for approximately five minutes until it was completely saturated. Next, I re-weighed the garment after a five-minute, drip-drying period. I recorded the approximate amount of time it took for each garment to dry. The results were as follows:

		Manufacturer			
		Lion	Globe	Quest	Morning Pride
<b>Dry Weight (lb.)</b>	Coat	6.0	6.0	6.0	6.5
	Pants	5.5	5.5	6.0	6.0
	Total	11.5	11.5	12.0	12.5
<b>Wet Weight (lb.)</b>	Coat	10.5	15.0	9.5	16.0
	Pants	10.5	13.0	6.5	14.0
	Total	21.0	28.0	16.0	30.0
<b>Approx. Drying Time (hrs.)</b>		3.0	8.0	10.0	20.0

#### Test 2: Burn house evaluation

In the second test, I wore each garment in the burn house. The temperature averaged around 700° F. Four other Lufkin fire fighters took turns wearing the various garments while performing the same exercise. After each exposure, the fire fighters and I would exit the burn house to take a

## Behind the Lines



Donald Ellis, Shipper  
Lion Apparel, Mt. Sterling, KY

*"At Lion Apparel, we take a lot of pride in being the leader in the fire service. It makes no difference whether you're designing the gear, stitching it, or shipping it. We all share a common goal: to be the best."*



Joan Moore, Receiving  
Quality Inspector  
Lion Apparel, Mt. Sterling, KY

*"President Truman used to say 'the buck stops here'. As a quality inspector, I feel the same way. It's my job to make sure there are no errors or mistakes."*



Marla Peoples, Sewing Operator  
Lion Apparel, Mt. Sterling, KY

*"Dedication is contagious. I see that in the brotherhood of fire fighters. I also see it at Lion Apparel. I think dedication is what separates the special from the ordinary."*

## On the Fireground *continued...*

break from the heat source. We then would go back in to the burn house to compare reaction times for heat buildup. The Globe, Lion, and Morning Pride garments were comparable in performance. The Quest Equi System exhibited a rapid reaction time to thermal heat due to the thickness of the thermal liner.

### Conclusions

Based on our test results, we made the decision to purchase the Lion Apparel isodri<sup>®</sup> Protective Systems.

## Behind the Lines *continued...*



*Cristi Jefferson, Receiving  
Quality Inspector  
Lion Apparel, Mt. Sterling, KY*

*"We've always known how important America's fire fighters are. September 11 just reinforces that. Because each fire fighter is willing to put his or her life on the line, I give nothing short of my best at work. They deserve that."*

## Why every fire fighter deserves dry gear

Besides adding lots of weight to your clothing, water absorbs heat and stores it because it is so dense. When water from sweat, hose streams, or rain is sucked into your bunker gear, it displaces the insulating air.

At 200°F, water transfers heat 21 times faster than air. Heated water is volatile and can release explosive energy in the form of dangerous steam. Water can (and frequently does) cause burn injuries without warning or apparent damage to your gear at temperatures well below steam conditions.

Air is lighter than water and, because of its lower density, it's a very poor heat conductor. As air heats, it expands and becomes even less dense. Air is stable and predictable. It is simply the best insulator.

All isodri<sup>®</sup> systems are engineered to reduce the water and, therefore, the heat storage capacity of your turnouts. Each and every layer delivers superior water resistance and remarkably faster drying time – from the outer shell to the moisture barrier to the thermal barrier.

## VISIT OUR FACILITIES

We are a team of individuals dedicated to our craft and proud of the outstanding workmanship we put into every article of clothing. We invite you to come see us in action at our excellent facilities. If you would like to visit, write or Email your request to:

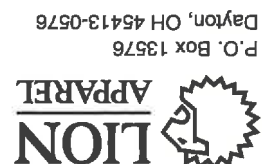
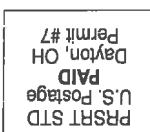
*Gear Matters*  
Lion Apparel  
P.O. Box 13576  
Dayton, OH 45413-0576

Email: [gear@lionapparel.com](mailto:gear@lionapparel.com)

*Gear Matters* is an ongoing publication for the benefit of fire fighters. Please feel free to post and circulate it. We also invite you to visit the Lion Apparel web site at <http://www.lionapparel.com>. The web site contains important information on care and use of gear, as well as other Lion and industry information.

## Share your fireground story with us

Do you have a story or tips to share concerning protective clothing? If you do, send it to *Gear Matters*, Lion Apparel, P.O. Box 13576, Dayton, Ohio 45413-0576. Or, send it via Email to [gear@lionapparel.com](mailto:gear@lionapparel.com).





# BLACK MOISTURE BARRIER

Most breathable in more conditions,  
while providing enhanced durability in use.



- Most breathable in more conditions to help manage heat stress better
- Enhanced durability backed by a 3.5-year limited warranty
- Remained thermally stable, even after exposure to extreme heat
- Long-lasting protection against blood, body fluids, NFPA common chemicals, and water



# CROSSTECH® Black Moisture Barrier



crosstech.com

## Most breathable in more conditions to help manage heat stress better

CROSSTECH® black moisture barrier offers the highest breathability in more conditions. The unique properties of CROSSTECH® black moisture barrier offer lower resistance, allowing for your body's sweat vapor to pass through your gear more easily. This mechanism is essential in helping to maintain lower body core temperatures and thereby diminishing the effects of heat stress in the conditions where it is particularly a problem. CROSSTECH® black moisture barrier continues to have high total heat loss (THL) that exceeds NFPA 1971 requirements.

## Enhanced durability backed by a 3.5-year warranty

Moisture barriers should protect you against liquid penetration on every call, not just the first few. Field testing showed that CROSSTECH® black moisture barrier remained significantly more liquid-proof and less prone to damage, delivering excellent breathability and protection call after call after call. This level of durability is backed by a 3.5-year limited warranty to help you comply with the 2014 edition of the NFPA 1851 Standard.

## Excellent thermal stability

Just because most moisture barriers used in North America meet the minimum requirements specified in NFPA 1971 (2013 edition), they don't all perform equally. CROSSTECH® black moisture barrier maintained its high breathability and waterproof protection even after exposure to extreme heat, and also robustly met all heat and thermal shrinkage requirements.

## Long-lasting protection against liquid penetration

As you work at an emergency scene, some of the most dangerous hazards are the ones you cannot see, and exposure to NFPA common chemicals,<sup>†</sup> blood, and body fluids is a serious concern. Testing showed that CROSSTECH® black moisture barrier provided a level of protection that exceeds the current NFPA 1971 Standard — even after 25 wash/dry cycles and 5 thermal exposures.

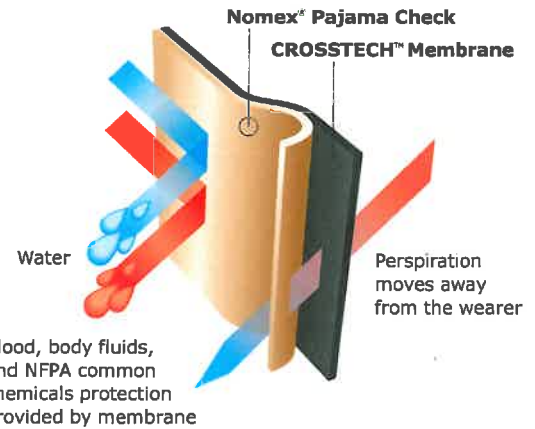
## The Gore Advantage

For over 35 years W. L. Gore and Associates has supported the fire fighting industry and has been trusted by fire departments throughout North America to protect their firefighters. Gore leverages its unparalleled expertise in materials and comfort science to create reliable and innovative products for the most critical of applications in the most demanding of environments. We work closely with end users to understand their needs which enables us to engineer products that do what we say they will do. This is Gore's fitness for use philosophy.

The THL test measures both conductive and evaporative heat loss through a sample in one moderate environmental condition. To understand it's breathability in other conditions, the evaporative resistance component can be determined by using the Resistance to the Evaporation of Sweat (Ret) test. The rotating guarded hotplate is used for both of these tests.



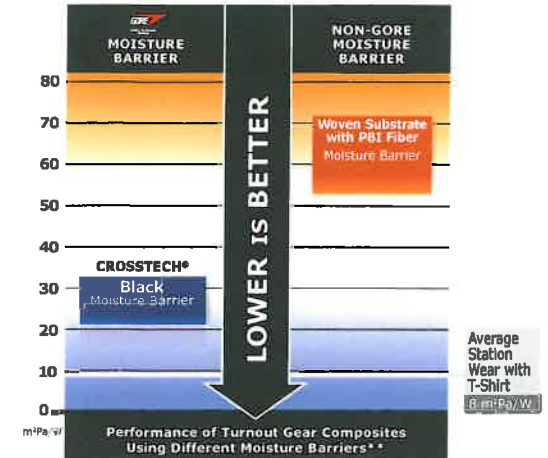
## CROSSTECH® BLACK MOISTURE BARRIER



Blood, body fluids, and NFPA common chemicals protection provided by membrane

Perspiration moves away from the wearer

## Breathability Beyond THL Test Conditions Resistance to the Evaporation of Sweat (Ret)



### Lower is Better.

CROSSTECH® black moisture barrier is more breathable, having lower resistance to the evaporation of sweat vapor than other moisture barriers. Lower resistance allows for your body's sweat vapor to pass through your gear more easily, helping the body to stay cooler, and reducing the effects of heat stress.

### Meets or Exceeds Standards

NFPA 1971 (2013 Edition) Standard on Protective Ensembles for Structural Fire Fighting and Proximity, Fire Fighting Component recognized by Underwriters Laboratories

<sup>†</sup>Common chemicals include battery acid (37% sulfuric), ASTM Ref. Fuel C (unleaded gasoline surrogate), hydraulic fluid (phosphate ester), aqueous film-forming foam (AFFF), and swimming pool chlorine solution (65% free Cl).

<sup>‡</sup>Evaluated in Environment of 95°F/35°C, 40% RH, No Radiant Heat (per ISO 11092/ASTM F1868, Part B)

WARNING: No products, including garments, footwear, and gloves, protect completely, even when new; their protective performance will decline with wear, tear, abrasion, and other damage associated with use.

W. L. Gore & Associates  
Fire & Public Safety  
105 Vieve's Way  
Elkton, MD 21921  
800.431.GORE (4673)  
crosstech.com





# Cairns® Modern Helms **ts**

For structural firefighting and rescue operations



Protecting First Responders  
Since 1836



# Cairns® Modern Helmets

For structural firefighting and rescue operations









Protecting First Responders  
Since 1836



*Because every life has a **purpose...***



						
	Metro 660C™ Helmet	Invader 664™ Helmet	Commando HP3® Helmet	Structural 360S® Helmet	Rescue 360R™ Helmet	Rescue 360R-13 Helmet
NFPA-1971 COMPLIANT	●	●	●	●	●	
NFPA-1951 COMPLIANT			●		●	●
5-YEAR SHELL WARRANTY	●	●	●	●	●	●
DURAGLAS® COMPOSITE	●	●	●			
THERMOPLASTIC				●	●	●
IMPACT CAP	●	●	●	●	●	
SHELL RELEASE SYSTEM	●	●				
DEFENDER® VISOR	●	●	●			
CFR PROXIMITY SYSTEM	●	●				



#### ● Impact Cap

- Impact protection
- Thermal protection
- High-heat resistant
- Flame-resistant
- Exclusive tube-lock shock-absorbing system

#### ● Shell Release System

- Shell releases if your helmet is knocked off by a collapsing structure or hung up during fall through a roof or floor.
- Helmet shell separates from impact cap with 80+ lbs. of pressure.
  - You maintain head impact and thermal protection.

**CAIRNS HELMET EXCLUSIVE!**



#### Defender Visor

- Integrated, retractable eye protection
- Stays clean and protected from heat when stowed
- Easy to use, maintain and change out
- Meets NFPA and ANSI standards



#### CFR Proximity System

- NFPA-1971 compliant
- Easy to use
- Does not interfere with SCBA
- Aluminized PBI/Kevlar, vapor barrier and inner layer

## The Assemble-To-Order System for Cairns Modern Helmets

The ATO System is easy to use, allowing you to order the right configuration to fit your needs. The ATO System allows you to build your own helmet by creating a feature-specific part number.

A	B	C	D	E	F	G	H	I	J
Model	Color	Eye Protection	Headband Liners	Earlap	Chinstrap	Trim Type	Trim Color ▼	Trim Shape	Accessory Bracket
2 660C Metro	1 Black	0 None *	1 Economy Flannel	0 None *	1 Nomex w/ Quick Release	0 None *	1 Lime/Yellow (standard)	1 Tetrabar	0 None
5 Commando HP3 Ⓢ	2 Red	1 4" Tuffshield	2 Standard Flannel	1 Yellow Nomex	2 Nomex w/ Quick Release & Postman's Slide	2 Reflexite (Standard)	2 Red/Orange *	2 Bar *	9 Frontpiece Bracket
6 Structural 360S	3 Blue ‡	2 Cairns ESS Goggles	3 Deluxe Leather w/ Crown Pad	2 Yellow Nomex w/ Underchin Extension	3 3" longer Nomex w/ Quick Release & Postman's Slide (360S only)	3 Scotchlite	3 Blue * (Reflexite only)	3 Diamond *	
A Invader 664	4 White	4 ESS Innerzone 3 Goggles		3 PBI/Kevlar			4 White *	4 Triple Trim * (Scotchlite only)	
B Rescue 360R ▲Ⓢ	5 Yellow ‡	5 ESS Innerzone 2 Goggles		4 PBI/Kevlar w/ Underchin Extension	4 Nomex w/ Postman's Slide (360S only)				
C Rescue 360R-13 ▲★	6 Orange ‡	6 ESS Innerzone 1 Goggles		5 Bloodborne Pathogen Resistant	6 6" longer Nomex w/ Postman's Slide (360S/R/R-13 and non-Defender 660C/664 only)				
D 660C Metro Defender ■	7 Green † ‡	7 4" Standard Faceshield		8 Extended Black Nomex † ‡	7 3-point w/ Quick Release (360R/R-13 and HP3 only)				
E Invader 664 Defender ■		8 6" Standard Faceshield		9 CFR Aluminized Bannet w/ PBI Kevlar Shroud & Nomex Earlap ●					
G Commando HP3 Defender ■Ⓢ		9 4" Gold-Coated Faceshield ●		A Black Nomex					
		A 6" Gold-Coated Faceshield ●							
		B ESS Striketeam XTO Goggle ★ ◆							
		C Defender Visor, Clear ■							
		D Defender Visor, Amber Tuffshield ■							

Ⓢ Also compliant to NFPA 1951

▲ Not available with faceshield

★ NFPA 1951-compliant only

■ Must specify Defender Visor in both model & eye protection sections

‡ Not available on Invader 664 Helmet

‡ Not available on 360S/R/R-13 Helmets

● Non-Defender 660C/664 Helmets only

◆ 360S/R/R-13 and HP3 Helmets only

† Not NFPA 1971-compliant

‡ Not available for helmets with Defender Visor

▼ Not all trim colors are available in all trim types and shapes



Build your front: [www.msanet.com/fronts](http://www.msanet.com/fronts)

Share your Cairns Helmet story: [CairnsCommunity.msanet.com](http://CairnsCommunity.msanet.com)

## Safety is all we do

Born and bred in the USA, we've been helping to protect the lives of first responders for nearly 100 years. Whether it's SCBA, thermal imaging cameras, Cairns® Helmets, or gas detectors, our products can be found in nearly every firehouse in the United States and Canada.



SCBA



THERMAL IMAGING CAMERAS



CAIRNS HELMETS



GAS DETECTION

Connect with us **online**



**Note:** This bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



**ID 3600-08-MC / Nov 2012**

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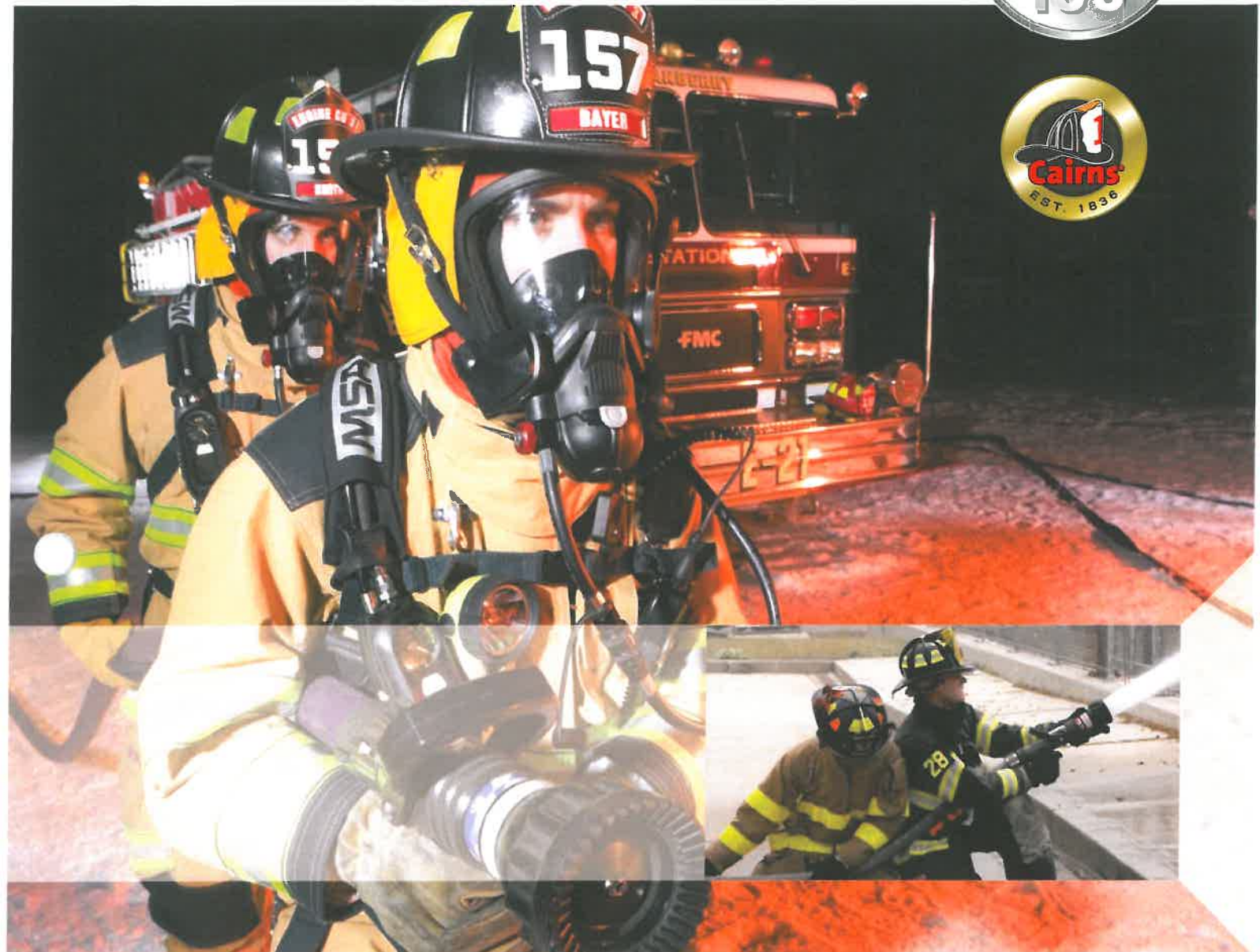
**MSA**  
The Safety Company

[www.MSAfire.com](http://www.MSAfire.com)



# NFPA 1851, 2014 Edition

MSA Compliance Guide for Cairns® Fire Helmets



*Because every life has a **purpose...***



## Introduction

The National Fire Protection Association released a revised edition of the NFPA 1851, "Standard for the Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Firefighting" (the "Standard"). The 2014 edition of the Standard provides guidelines for record keeping, accessory use, cleaning, inspection, repair, and retirement of ensemble elements.

MSA has reviewed this NFPA standard carefully and noted which rules relate to Cairns Fire Helmets. This Guide will help you to meet the specifications of this standard. However, MSA strongly recommends that you obtain a copy of NFPA 1851, 2014 Edition from the NFPA to ensure complete compliance.

Much of the information regarding inspection criteria, cleaning criteria, repair, and retirement of your Cairns Fire Helmet is also available in the Cairns Fire Helmet Owner's Guide, available at [www.MSAfire.com](http://www.MSAfire.com).

MSA has made available an optional online quiz and training certificate for those organizations requiring documentation of NFPA 1851 compliance training for Cairns Fire Helmets. To access Cairns Fire Helmets NFPA 1851 Compliance Training, visit <http://msau.msasafety.com>.

## Record Keeping

The first element of the standard to be considered is record keeping. The standard specifies that the following basic records be kept for each Cairns Fire Helmet:

- 1 Person to whom the helmet is issued
- 2 Date and condition when issued
- 3 Manufacturer and model name or design
- 4 Manufacturer's identification number, lot number or serial number
- 5 Month and year of manufacture
- 6 Date(s) and findings of advanced inspection(s)
- 7 Date(s) and findings of advanced cleaning or decontamination
- 8 Reason for advanced cleaning or decontamination and who performed cleaning or decontamination
- 9 Date(s) of repair(s), who performed repair(s) and brief description of repair(s)
- 10 Date of retirement
- 11 Date and method of disposal

Organizations should have a system for keeping these minimal records for their Cairns Fire Helmets.

To aid with record keeping guidelines, MSA has created an easy-to-use Cairns Fire Helmet Tracking Form (ID 3600-46, or as located on pages 8-11 of this Guide). You may also download this form from [www.MSAfire.com](http://www.MSAfire.com).



# Routine Cleaning

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Cairns Fire Helmets must be cleaned after each use, but before routine inspection to limit exposure to possible contamination that may be present on the fire helmet after firefighting activities. This procedure is referred to in NFPA 1851 as "Routine Cleaning." These instructions are also available in the Maintenance Section of the Cairns Fire Helmet Owner's Guide (MSA P/N 10043529), available on [www.MSAfire.com](http://www.MSAfire.com). Specific instructions for proximity gear can be found separately (MSA P/N 10042222), also available on [www.MSAfire.com](http://www.MSAfire.com). Reference these instructions as a routine cleaning guide for fire helmets after each use.

## To clean faceshields, goggles or the Defender® Visor lens

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- Use mild cleaning agents such as ethyl alcohol or mild detergent and water, and a soft sponge or cloth.
- NEVER use abrasives, solvents, paint removers, acetone, paint or lacquer thinner, or any chlorinated organic solvents.

## To clean Bourke Eye Shields

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- Use a mild detergent and water and a soft sponge or cloth.
- NEVER use abrasives, solvents, paint removers, acetone, paint thinner, lacquer thinner, or any chlorinated organic solvents.

**NOTE: Before cleaning the helmet shell, remove the faceshield/goggles/Bourkes/Defender Visor lens and set aside. Helmets that are not thoroughly cleaned and dried should NOT be worn.**

## To clean leather shells (N6A® Houston & N5A® New Yorker Helmets)

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- Use only mild detergents and lukewarm water.
- To remove tar drips, industrial cleaners (such as DuPont Tar Remover) can be used. Use only on tar spots, not on the entire surface. Other spots can be cleaned with alcohol if an organic solvent is required.

## To clean fiberglass composite shells (Cairns 1010, Cairns 1044, 660C Metro®, Invader 664®, & Commando HP3® Helmets)

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- Use only mild solvents, such as ethyl alcohol, mild detergents and water, mild abrasives, industrial cleaners (such as DuPont Tar Remover), acetone, or paint remover.

## To clean thermoplastic shells (880 Traditional®, 360S® Structural, 360R-13, & 360R Rescue Helmets)

---

- Use mild cleaning agents such as ethyl alcohol or mild detergent and water, and a soft sponge or cloth.
- NEVER use abrasives, solvents, paint removers, acetone, paint or lacquer thinner, or any chlorinated organic solvents.

## To clean flannel headband liners and the Defender Visor heat shield

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- Machine wash and dry on low settings.  
Refer to product instructions for laundering.

## To clean the proximity bonnet and shroud

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- Remove the bonnet and shroud from the helmet. Use mild soap or detergent to wash the shroud in warm soapy water.
- Rinse thoroughly with clean water.
- Air dry at room temperature.

## To clean the 6" gold-coated proximity faceshield

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- Clean the faceshield with mild detergent.
- Rinse with clean water and dry with a soft cloth.

## Routine Inspection

After each use and after cleaning, inspect your Cairns Fire Helmet. This procedure is referred to in NFPA 1851 as "Routine Inspection."

Inspect Cairns Fire Helmets and all helmet accessories after each use for impact, thermal and general damage. A damaged helmet must NEVER be used.

If your Cairns Fire Helmet has been exposed to excessive heat, taken an impact or sustained damage, the helmet must be disassembled and have an advanced inspection performed.

Use the following criteria to inspect your Cairns Fire Helmet after each use:

### Helmet Shell

**Replace if any of these conditions exist:**

*Leather shell (Houston N6A® & New Yorker N5A® Helmets)*

- Shell is punctured.
- Rib stitching is cut or broken.
- Reinforcing wire is exposed.

*Fiberglass composite shells (Cairns 1010, Cairns 1044, 660C Metro®, Invader 664®, & Commando™ HP3 Helmets)*

- Cracks are longer than one inch.
- Any size crack goes completely through shell material.
- Soft spots are equal to or larger to than a thumb pad. Smaller soft spots require removal of the impact cap and advanced inspection.

*Thermoplastic shells (880 Traditional®, 360S, 360R-13, & Rescue 360R Helmets)*

- Shell has a crack of any size.
- Shell has a dull or chalky finish.
- Reinforcing wire is exposed (880 Traditional Helmet).

### Edge Trim

- Reattach if trim is separated but intact.
- Replace if trim is broken or aluminum core is exposed.

### Reflective Trim

*Replace if any of these conditions exist:*

- Trim is charred, partially detached, non-reflective, or missing.

### Faceshield & Hardware

*Replace if any of these conditions exist:*

- Faceshield is blistered, bubbled, cracked, or charred.
- E-ring is missing.
- Shaft is not intact.

### Defender Visor Lens

*Replace if any of these conditions exist:*

- Lens is blistered, bubbled, cracked, or charred.
- Quick-connect clips are broken.
- Lens will not stay in stowed position and cannot be adjusted.

### Goggle

*Replace if damage exists on:*

- Ventilation and filtration areas.
- Lens, frame, straps, adjustment assembly, and mounting hardware.

### Breakaway Tabs

*Replace if any of these conditions exist:*

- Any tabs are missing, bent or damaged.

### Chinstrap

*Replace if any of these conditions exist:*

- Any parts are frayed, missing or broken.
- Any stitching is missing, cut, frayed, or broken.
- Velcro fastener is clogged or worn out.
- Quick-Release button is brittle, broken or missing.
- Postman's slide is loose.

### Suspension Straps

*Ensure that straps lie flat and pass between alignment guides.*

*Replace if any of these conditions exist:*

- Any stitching is missing, cut or broken.
- Straps have any tears or abrasions.
- Straps show any brittleness.
- Straps show any discoloration.



## Earlap

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*Replace if any of these conditions exist:*

- Stitching is missing, cut or broken.
- Nomex layer is discolored, charred or perforated.
- Flannel liner is torn or seared.

## Headband

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*Replace if any of these conditions exist:*

- Headband is brittle, torn, cracked, or broken.
- Headband shows holes in material.
- Ratchet can be opened by tugging on legs.

## Proximity Firefighting Overcovers & Shrouds

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*Replace if any of these conditions exist:*

- Loss of reflectivity.
- Loss of reflective coatings.
- Damage or loss of functionality of overcover to helmet attachment.
- Damage or loss of functionality of shroud to helmet attachment.
- Distortion of face opening, resulting in gaps around faceshield.

*The Cairns Fire Helmet Owner's Guide (MSA P/N 10043529) is available on [www.MSAfire.com](http://www.MSAfire.com).*

*For specific proximity gear instructions, see MSA P/N 10042222, available on [www.MSAfire.com](http://www.MSAfire.com).*

## Advanced Cleaning

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The only difference between routine cleaning and advanced cleaning of Cairns Fire Helmets in the NFPA 1851, 2014 specification is that all detachable items be removed from the helmet and cleaned separately. This requirement includes eye protection, headband liners and impact cap (if applicable).

Advanced cleaning must be performed yearly (or more often as needed). Instructions for disassembling each type of Cairns Fire Helmet model for advanced cleaning are found in the Cairns Fire Helmet Owner's Guide (MSA P/N 10043529), available on [www.MSAfire.com](http://www.MSAfire.com).

The following helmet models have impact caps that must be removed and cleaned: Cairns 1010, Cairns 1044, 660C Metro, Invader 664, Structural 360S, Rescue 360R, and Commando HP3 Helmets.

Houston N6A and New Yorker N5A Leather Helmets employ impact caps, but the caps are only factory-removable and are not considered to be detachable items.

NFPA 1851, 2014, "Advanced Cleaning and Decontamination" specifies that advanced cleaning be performed only by members of the organization who have been trained to a level required by the manufacturer.

Cairns Fire Helmets are designed to be simple to repair and maintain, and can be completely disassembled and reassembled by reading, understanding and following instructions in the Cairns Fire Helmet Owner's Guide. MSA does not require any additional training to complete advanced cleaning of Cairns Fire Helmets.

Records of advanced cleaning should be maintained on Cairns Fire Helmet Tracking Forms (ID 3600-46 or pages 8-11 of this Guide).

## Advanced Inspection

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NFPA-1851:2014 states that advanced inspection should be performed at least every 12 months, or when routine inspection indicates that a problem may exist. Advanced inspection includes disassembly of helmet components in order for each "layer" to be thoroughly evaluated. Advanced inspection should focus upon soiling, contamination, physical damage (including cracks, dents, abrasions, thermal damage, rips, tears, cuts, etc.), loss of physical integrity (ultraviolet or chemical degradation), missing hardware or components, and impact cap damage, among other criteria. To perform advanced inspection, refer to the Cairns Fire Helmet Owner's Guide (MSA P/N 10043529), available on [www.MSAfire.com](http://www.MSAfire.com).

The following helmet models have impact caps that must be removed and inspected: Cairns 1010, Cairns 1044, 660C Metro, Invader 664, Structural 360S, Rescue 360R, and Commando HP3 Helmets.

Houston N6A and New Yorker N5A Leather Helmets employ impact caps; however, impact caps are factory-removable only and are not considered to be detachable items.

After removal of the impact cap, use the inspection guidelines shown at right.

NFPA 1851, 2014, "Advanced Inspection," specifies that advanced inspection be performed only by members of the organization who have been trained to a level required by the manufacturer.

Cairns Fire Helmets are designed to be simple to repair and maintain, and can be completely disassembled, inspected and reassembled by reading, understanding and following instructions in the Cairns Fire Helmet Owner's Guide. MSA does not require any additional training to complete advanced inspections.

Records of advanced inspection should be maintained on Cairns Fire Helmet Tracking Forms (ID 3600-46 or pages 8-11 of this Guide).

### Impact Inspection

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*After removal of impact cap, replace if any of these conditions exist:*

- You see a *halo* effect (ring of discolored foam).
- You find cracking and/or brittleness.
- You see evidence of impact.
- TubeLock System is cracked, mishapen or shows any signs of damage.
- Defender Visor suspension tie is broken.
- Impact cap liner/ring shows holes or blistering.
- Earlaps are missing Velcro.
- Impact cap is cracked or deformed.

## Repair

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Your Cairns Fire Helmet is designed to be easy to maintain and repair. Repairs are necessary **ONLY** when inspection criteria are not met for your particular Cairns Fire Helmet type. Replacement parts can be ordered by calling your authorized MSA Cairns Dealer or MSA Customer Service at 1-800-MSA-FIRE.

NFPA 1851, 2014, "Repair," specifies that repairs be performed only by members of the organization who have been trained to a level required by the manufacturer.

Cairns Fire Helmets can be completely disassembled and reassembled by reading, understanding and following instructions in the Cairns Fire Helmet Owner's Guide. With the exception of MSA Cairns Leather Fire Helmets, MSA does not require any additional training to complete repairs on most Cairns Fire Helmets.

MSA Cairns Leather Helmet repairs can be made **only** by MSA at the Cairns Fire Helmet factory. If the following repairs are needed on a Cairns Leather Helmet, the helmet must be sent to the factory:

- *Repaint*
- *Replace chinstrap*
- *Replace suspension system*
- *Replace earlap*
- *Replace faceshield/hardware*
- *Replace front holder*
- *Replace impact cap*
- *Replace D-ring*
- *Replace ratchet*

Records of all helmet repairs should be maintained on Cairns Fire Helmet Tracking Forms. Please call MSA Customer Service at 1-877-MSA-FIRE to initiate the repair process.

## Retirement of Fire Helmets

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In most cases, Cairns Fire Helmets can be repaired and kept in service. However, if a Cairns Fire Helmet is damaged beyond repair, the helmet must be taken out of service and replaced.

In addition to fire helmet retirement due to damage, NFPA 1851 2014 Edition, specifies that the fire helmet be retired 10 years after date of manufacture. The Cairns Fire Helmet Tracking Form should be used to maintain your helmet's age and repair records. Your helmet must be retired when 10 years of age is reached. **If parts have been replaced throughout the the helmet's life, the helmet must be retired when its oldest component reaches 10 years.**

Records of all helmet retirements should be maintained on Cairns Fire Helmet Tracking Form (ID 3600-46 or pages 8-11 of this Guide) or on [www.MSAfire.com](http://www.MSAfire.com).

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## Optional Online Certification

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Optional quiz and training certificate are available if your organization requires documented understanding of Cairns Fire Helmet NFPA 1851 compliance training. This certification can be obtained by successfully completing a short online quiz to demonstrate your knowledge of Cairns Fire Helmets and NFPA 1851.

Go to the Fire Helmets page on [www.MSAfire.com](http://www.MSAfire.com) and follow instructions to complete the quiz. Your certificate will be immediately available for printing or saving after successfully completing the quiz.



# Cairns® Fire Helmet Tracking Form



Helmet issued to:

Date issued:

Condition when issued:

Helmet Model

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Houston N6A® Helmet    | <input type="checkbox"/> 660C Metro® Helmet      | <input type="checkbox"/> Structural 360S® Helmet |
| <input type="checkbox"/> New Yorker N5A® Helmet | <input type="checkbox"/> Invader 664® Helmet     | <input type="checkbox"/> Rescue 360R-13 Helmet   |
| <input type="checkbox"/> Cairns 1010 Helmet     | <input type="checkbox"/> Commando HP3® Helmet    | <input type="checkbox"/> Rescue 360R Helmet      |
| <input type="checkbox"/> Cairns 1044 Helmet     | <input type="checkbox"/> 880 Traditional® Helmet | Other _____                                      |

Helmet serial number:

Manufactured on:

Month:

Year:

Date retired:

Date disposed of:

Disposal method:



# Cairns® Fire Helmet Tracking Form



## Advanced Inspection

Date	Performed by	Reason
Findings		
Date	Performed by	Reason
Findings		
Date	Performed by	Reason
Findings		
Date	Performed by	Reason
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Date	Performed by	Reason
Findings		

# Cairns® Fire Helmet Tracking Form



## Advanced Cleaning

Date	Performed by	Reason
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Date	Performed by	Reason
Findings		
Date	Performed by	Reason
Findings		
Date	Performed by	Reason
Findings		
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Date	Performed by	Reason
Findings		

10

# Cairns® Fire Helmet Tracking Form



## Repairs

Date	Performed by	Reason
Findings		
Date	Performed by	Reason
Findings		
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Findings		
Date	Performed by	Reason
Findings		
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Date	Performed by	Reason
Findings		



Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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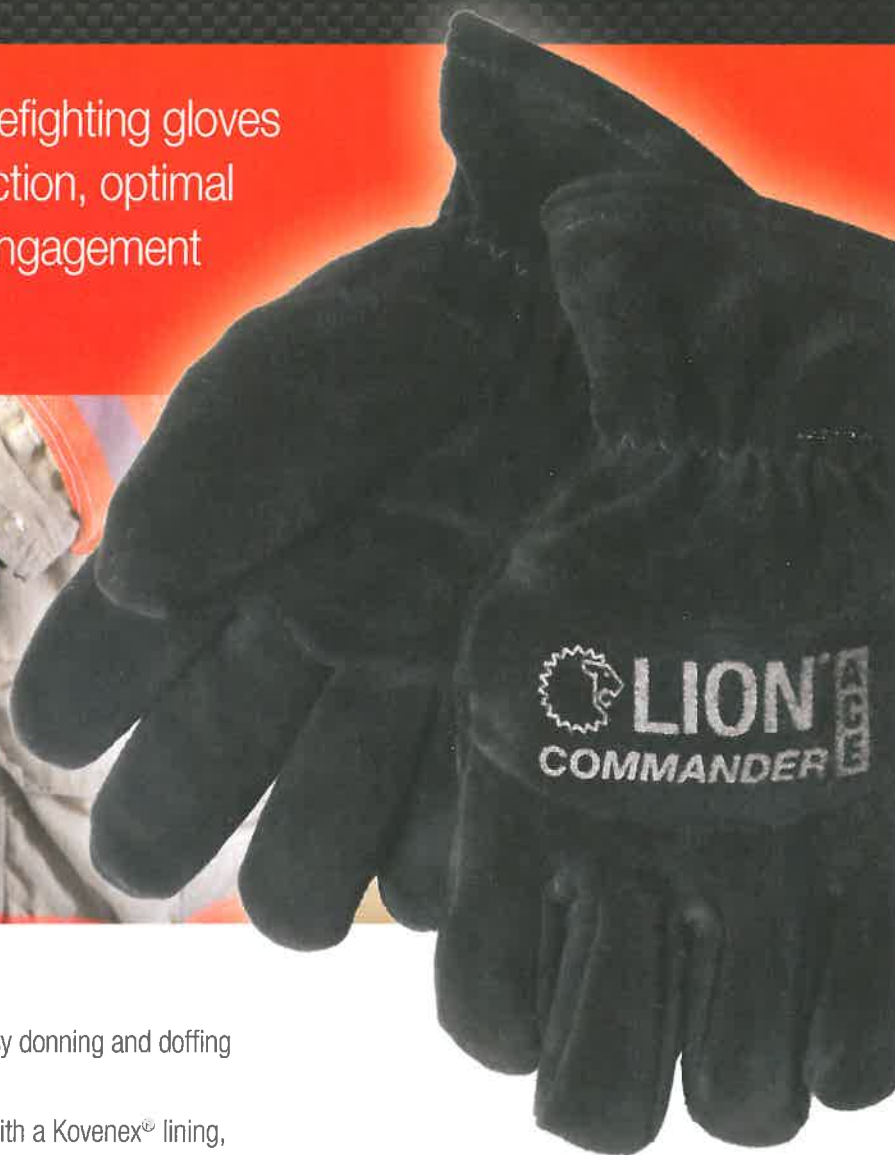
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Email [msa.international@msasafety.com](mailto:msa.international@msasafety.com)

Have an ACE up your sleeve!



# Commander ACE™

High-performance structural firefighting gloves with exceptional thermal protection, optimal dexterity and Advanced Cuff Engagement for easy donning and doffing.



(PRODUCT #LPG928BK)

## FEATURES & BENEFITS INCLUDE:

- An enhanced cuff/turnout sleeve interface for easy donning and doffing – even when wet
- Lite N Dri™ in the back of the hand, combined with a Kovenex® lining, for maximum thermal protection
- A sleek, all-black design that complements any turnout
- A gunn-cut design for optimal dexterity and fit
- CROSSTECH® Insert with Film Technology for lightweight, breathable, liquid penetration protection
- Split grain leather provides ample cut resistance
- Available in sizes XXS to 4XL



To learn more about the Commander ACE and other LION first responder gloves, contact your LION Protective Gloves sales representative or visit [www.lionprotect.com/protective-gloves](http://www.lionprotect.com/protective-gloves).





MAJESTIC FIRE APPAREL, INC. is a registered trademark of Majestic Fire Apparel, Inc.

## Ultra C6

<b>Material Content:</b>	65% Oxidized Polyacrylonitrile (OPF)/ 35% artificial tri-blend
<b>Material Construction:</b>	1 x 1 Rib Knit
<b>Material Weight:</b>	6.5 oz / yd <sup>2</sup> (+1 / -5)
<b>Material Color</b>	Black (Standard)
<b>Color Options Available</b>	

### FABRIC PERFORMANCE VALUES

#### THERMAL PROTECTIVE PERFORMANCE (TPP)

2 ply - as received	33.1 cal/cm <sup>2</sup>
2 ply - after 5 washes	

#### HOOD MATERIAL BURST STRENGTH

402 N

#### FLAME RESISTANCE TEST

After Flame	as received	0 seconds
	after 5 washes	0 seconds
Char Length (wales x cour	as received	4 mm x 4 mm
	after 5 washes	3 mm x 3 mm

#### CLEANING SHRINKAGE RESISTANCE TEST

Hood Measurement		0%
Face Opening Measurement		4%

#### HEAT AND THERMAL SHRINKAGE RESISTANCE TEST

Hood Measurement	as received	0%
	after 5 washes	3%
Face Opening Measureme	as received	3%
	after 5 washes	5%

#### SEAM BREAKING STRENGTH TEST

573 N

#### MELT, DRIP, IGNITE, SEPARATE WHEN EXPOSED TO FLAME

None

#### ARC THERMAL PERFORMANCE VALUE (ATPV)

1 ply	10.6 cal/cm <sup>2</sup> (HRC 2)
2 ply	31.5 cal/cm <sup>2</sup> (HRC 3)

#### HEAT ATTENUATION FACTOR (HAF)

1 ply	79.1%
2 ply	92.1%

4th generation advanced CARBON technology  
 3 elements needed for fire = Oxygen, Heat, and Fuel  
 Without one element, a fire cannot start or continue  
 When exposed to flame, C6 fibers expand,  
 creating an Oxygen starved environment  
 so fire cannot continue. Material is self extinguishing  
 inherently flame resistant (no harsh chemical treatments)  
 Odor neutralizing, Anti-Static, Low Heat Conductivity  
 Maintains performance values after laundering  
 Finished to minimize shrinkage  
 Rib knit allows for stretch and shape retention  
 Majestic Fire Apparel is a vertical manufacturer  
 Knitting our own fire retardant materials for over 16 years  
 We knit, cut, sew, and ship - all from our location in PA  
**MADE IN USA**

#### NFPA 70E PERFORMANCE SPECIFICATIONS OF

##### ASTM F 1959/F 1959M-06aet:

HRC Level 1 = minimum 5 cal/cm<sup>2</sup> to 7 cal/cm<sup>2</sup>  
 HRC Level 2 = minimum 8 cal/cm<sup>2</sup> to 24 cal/cm<sup>2</sup>  
 HRC Level 3 = minimum 25 cal/cm<sup>2</sup> to 39 cal/cm<sup>2</sup>  
 HRC Level 4 = minimum 40 cal/cm<sup>2</sup> and over

Meets CAL-OSHA Requirements  
 Passes Federal Test 191, Method 5903.2; CAL OSHA Sections 3406(d)  
 Complies with OSHA Rule 29 CFR Part 1910, 269

**NFPA 1851 COMPLIANT**

IT'S SIMPLE...  
IT'S ALL ABOUT PROTECTION... AND SAFETY!!!

*Proudly serving the Long Beach Fire Department*

# CITROSQUEEZE

TURNOUT, PPE, AND LIFELINE CLEANER

Preserve the protective quality of your gear with **CitroSqueeze**<sup>®</sup>, the turnout gear cleaner used by some of the largest US fire departments and by authorized turnout gear cleaning and repair centers nationwide.



Available in quarts, gallons, 5 gallons, as well as 55 gallon drums and 255 gallon totes. Read product label for specific detailed info.

## PPE and NFPA 1851

■ By now everyone has heard about NFPA 1851 and understands the importance of keeping your Personal Protection Equipment clean. The tradition of grimy, soiled turnouts as your "badge of courage" is not only a really old-fashioned idea; it could become a deadly habit. Dirt and grime from fires aren't only extremely hazardous themselves; they dangerously reduce the protective quality of turnouts and PPE fabrics and can often ignite. It's simple; *the cleaner your PPE the safer your PPE.*

■ CitroSqueeze<sup>®</sup> helps maintain the protective quality of turnout apparel. It is *the PPE cleaner tested and proven safe* by Dupont, Southern Mills, W.L. Gore & Assocs. (Germany), 3M Products, Safety Components International, Inc., and CIBA Specialty Chemicals\*.

*\*See reverse for product specific info.*



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**NFPA 1851 COMPLIANT**

# CITROSQUEEZE®

TURNOUT, PPE, AND LIFELINE CLEANER



*Citrosqueeze® is available in 1 quart, 1 gallon, 5 gallon, 55 gallon drums and 255 gallon totes.*

**\*Citrosqueeze®**, helps maintain the protective quality of turnout apparel. It is the PPE cleaner tested and proven safe by Dupont for cleaning Nomex®, Southern Mills for cleaning P.B.I.® and Kevlar® fabrics, W.L. Gore & Assocs. (Germany) for cleaning Gore-tex®, 3M Products for cleaning specific Scotchlite® Retroreflective Firecoat Trims #8486/7, 9825, 8930, 8935, 8986/7, 9910, & 9486/7, and Safety Components International, Inc. & CIBA Specialty Chemicals for cleaning the isodri® System (outer shell fabric).

## For firefighters, smoke, back drafts and suffocation

are all obvious hazards on the job, but one of the tools of the trade can be the deadliest threat of all. Soiled and improperly maintained TURNOUT GEAR seriously endangers the lives of firefighters and rescue personnel. Hydrocarbons from fire, smoke and ash become embedded in the protective fabrics, thereby reducing thermal protection; causing turnouts to absorb more

radiant heat. When exposed to the right situation these contaminants on PPE are ignitable and a conductor of electricity rather than an insulator. Potentially even more menacing are the carcinogens that become embedded in the fabric. These can be easily transferred onto the skin and eventually absorbed right into the bloodstream. This hidden peril affects not only the firefighters, but ultimately their loved-ones, families and even the general public.

**Citrosqueeze® is formulated to remove the harmful and stubborn hydrocarbons and soils** resulting from fires and chemical spills, while maintaining the integrity of your turnout gear. It is a specially formulated cleaner that meets the NFPA 1851 Standard. Citrosqueeze® is biodegradable, has near-neutral pH levels, is environmentally safe and user-friendly.



*Solutions carries a complete line of cleaning products and disinfectants that are designed specifically with Fire Department and EMT needs and requirements in mind, and available in 1 quart, 1 gallon, 5 gallon, 55 gallon drums and 250 gallon totes. Contact Solutions to learn more about Citrosqueeze®, Station One™ and SC-14®.*

## NFPA 1851

The NFPA 1851 Standard is the nationally recognized, National Fire Protection Association Standard that defines selection, care and maintenance of Structural Fire Protective Ensembles. Compliance with this directive substantially reduces the safety risks and potential health hazards of poorly maintained, contaminated structural fire protection ensembles. To learn more about the NFPA 1851 Standard, visit [www.citrosqueeze.com](http://www.citrosqueeze.com).



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