



# FR FLAME RESISTANT

HIGH VISIBILITY APPAREL



**ML KISHIGO**

ORIGINAL HIGH-VIZ | est. 1971





**TOMORROW IS  
YOUR REWARD  
FOR WORKING  
SAFELY TODAY.**



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# FR BURN PROFILES

To watch the burn demo, scan with a QR reader on your smart phone.



## STANDARD POLYESTER MESH (Not Chemically Treated)



Standard polyester ANSI compliant mesh material ignites when exposed to flame and will continue to burn, melt and drip. It is not recommended for any environment where Arc, sparks or other fire hazards are present.

## CHEMICALLY TREATED POLYESTER MESH



Indistinguishable from the standard polyester mesh, this material is chemically treated to self extinguish after the flame has been removed. The material will melt and drip and does not meet the ANSI requirements for "FR".

## MODACRYLIC FR MATERIAL



Modacrylic is an inherently flame resistant fiber. It quickly extinguishes and will not melt or drip. The material blackens and contracts into a hard brittle consistency when exposed to flame or high heat. Meets ASTM F1506, ANSI 107 "FR" requirements and has an ATPV (Arc Thermal Performance

Value) of 5.5 cal/cm<sup>2</sup>, NFPA 70E® HRC (Hazard Risk Category) 1 Arc Rated.

## MESH MODACRYLIC FR MATERIAL



Modacrylic is an inherently flame resistant fiber. It quickly extinguishes and will not melt or drip. The mesh material allows greater breathability than solid Modacrylic while still maintaining an HRC Category Arc rating of 1. Meets: ASTM F1506, ANSI 107 "FR" requirements, Arc Rating

/ATPV 5.1 cal/cm<sup>2</sup>, NFPA 70E® HRC (Hazard Risk Category) 1 Arc Rated.

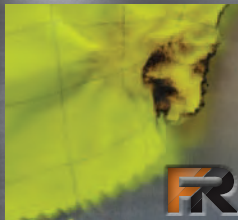
## FR SWEATSHIRT MATERIAL



FR 10.5 oz Modacrylic/Tencel® blended fabric provides warmth, comfort and protection from melting all at the same time. When exposed to flame, the material smolders, blackens and hardens without melting or dripping. Meets: ASTM F1506, ANSI 107 "FR"

requirements, Arc/ATPV 11.3 cal/cm<sup>2</sup>, NFPA 70E® HRC (Hazard Risk Category) 2 ARC Rated.

## ANTI-STAT FR MATERIAL



Electrostatic dissipative carbon fiber strands are woven into the Modacrylic to form an Anti-Static material. Inherently flame resistant fiber quickly extinguishes and will not melt or drip. Available in both mesh and solid. Meets: ASTM F1506, ANSI 107 "FR" requirements, Arc/ATPV 5.1(Mesh) 6.3(solid) cal/cm<sup>2</sup>, NFPA 70E®

HRC (Hazard Risk Category) 1 Arc Rated, ANT-STAT Test Methods: FTS 191A Method 5931, EN1149-5:2008 and EN 1149-3:2004 (test method), Shirley Method 138: 2000.

## ARC FLASH TESTING DEMO

Our FR products must pass an arc test, proving the flame resistance capabilities of



the garment. To witness an arc test in action scan the QR code with your smart phone or visit [mlkishigo.com/products-fr.html](http://mlkishigo.com/products-fr.html).



## STANDARDS & TESTING FOR ANSI 107 COMPLIANT FR GARMENTS

The ANSI standard has provided requirements for garment labeling. For the ANSI label to state "FR" or "Flame Resistance", the material must meet at least one of the below test methods in its entirety. At the present time, High-Visibility polyester material does not meet any of these requirements and therefore should not display "FR" or "Flame Resistance" on the ANSI label.

- NFPA 1971
- NFPA 1977
- NFPA 2112
- ASTM F1506-08
- ASTM F1891-06
- ASTM F2302-08
- ASTM F2733-09

Our products conform to the requirements of many of these testing standards; Primarily:

**NFPA 70E:** Titled Standard for Electrical Safety in the Workplace, NFPA 70E is a comprehensive standard that covers the safety requirements for employees working around high voltage electricity.

**ASTM F1506:** This performance specification covers the flame resistance of textile materials to be used for wearing apparel for use by electrical workers exposed to momentary electric arc and related thermal hazards.



# CLASS 3 FR SWEATSHIRT



## BLACK SERIES FR HOODIE

**F407** Lime

### PERFORMANCE FEATURES:

- 10.5 oz Modacrylic Flame Resistant sweatshirt material with extremely soft fleece like inner texture
- Black bottom enhances worker's appearance
- Nomex® high temp FR zipper front closure
- 2" breathable silver reflective material provides flexibility and comfort

### POCKETS:

- Two outside lower slash pockets

### SIZES: M-5X

### PERFORMANCE SPECS/COMPLIANCE:

- NFPA 70E-2012
- ASTM F1506
- HRC 2
- Arc Rating/ATPV=11.3 cal/cm<sup>2</sup>
- ANSI/ISEA 107 Class 3 Compliant





# CLASS 3 FR T-SHIRT

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## BLACK SERIES FR LONG SLEEVE T-SHIRT

F406 Lime

### PERFORMANCE FEATURES:

- 6.4 oz Modacrylic/cotton Flame Resistant lightweight interlock knit material
- 2" wide breathable silver reflective material greatly reduces hot spots
- Dark FR sides add a sporty look and visual contrast

### POCKETS:

- Left chest pocket

### SIZES: M-5X

### PERFORMANCE SPECS/COMPLIANCE:

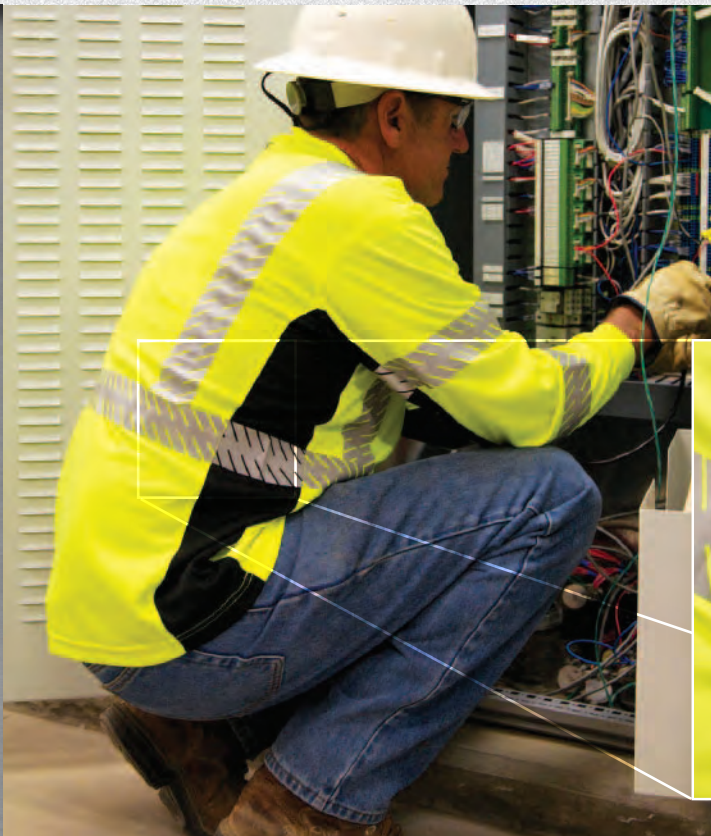
- NFPA 70E-2012
- ASTM F1506
- HRC 2
- Arc Rating/ATPV = 8.6 cal/cm<sup>2</sup>
- ANSI/ISEA 107 Class 3 Compliant



### BREATHABLE REFLECTIVE TAPE UP CLOSE

ML Kishigo's Breathable Reflective Material is designed using a segmented pattern to enhance comfort, flexibility and breathability versus standard solid reflective material. The benefits of the segmented or "breathable" reflective material are even further enhanced when used on a t-shirt. When worn "next to skin", solid reflective materials create "hot spots" by trapping in heat causing perspiration. The segmented

reflective material allows air to flow with less restriction and therefore greater comfort. Lightweight, due to the reduction of mass in the laser cut design, as well as flexibility are performance enhancements over standard solid tapes. Our breathable reflective materials meet all Level 2 performance requirements (the highest level for a reflective material) of ANSI/ISEA 107.





# CLASS 2 FR VESTS



## BLACK SERIES MESH FR VEST

### FM410 Lime Mesh

#### PERFORMANCE FEATURES:

- 6.2 oz Modacrylic Flame Resistant mesh material
- 2" wide silver breathable reflective material greatly reduces hot spots
- Indura® FR black bottom and trim helps keep the vest clean and adds a sporty look
- Nomex® high temp FR zipper
- FR reflective piping
- Optional D-Ring access also available (part# FM410D)

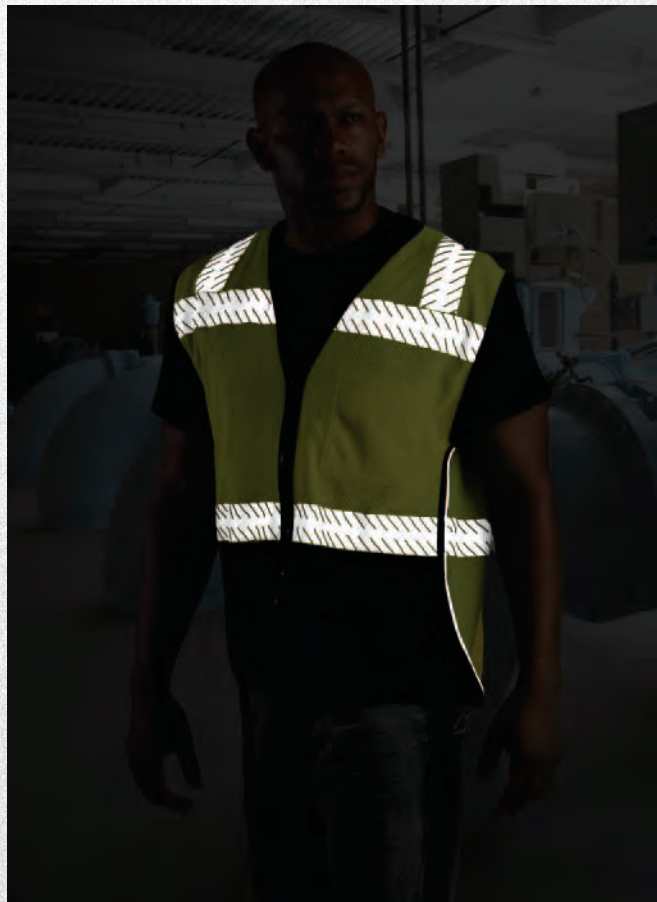
#### POCKETS:

- Two lower inside patch pockets
- Left chest inside 2-tier, 4-division pencil pocket

#### SIZES: M-5X

#### PERFORMANCE SPECS/COMPLIANCE:

- NFPA 70E-2012
- ASTM F1506
- HRC 1
- Arc Rating/ATPV=5.1 cal/cm²
- ANSI/ISEA 107 Class 2 Compliant







## BREATHABLE MESH FR VEST

**FM389** Lime Mesh

### PERFORMANCE FEATURES:

- 6.2 oz Modacrylic Flame Resistant mesh material • 2" wide breathable reflective material • FR hook and loop front closure

### POCKETS:

- Two lower inside patch pockets • Left chest inside 2-tier, 4-division pocket

**SIZES: M-5X**

### PERFORMANCE SPECS/COMPLIANCE:

- NFPA 70E-2012
- ASTM F1506
- HRC 1
- Arc Rating/ATPV = 5.1 cal/cm<sup>2</sup>
- ANSI/ISEA 107 Class 2 Compliant



## ANTI-STAT FR VEST

**ASF300** Solid Lime Anti-Stat w/ Snaps (shown)

**ASFM300** Lime Anti-Stat Mesh w/ Snaps (shown)

**AF300** Solid Lime Anti-Stat w/ Hook & Loop

**AFM300** Lime Anti-Stat Mesh w/ Hook & Loop

**AZF300** Solid Lime Anti-Stat w/ Zipper

**AZFM300** Lime Anti-Stat Mesh w/ Zipper

### PERFORMANCE FEATURES:

- 6.2 oz Modacrylic anti-static mesh material or 6.3 oz Modacrylic anti-static solid material • 2" wide Flame Resistant Reflexite® reflective material • FR hook & loop, Nomex zipper or non-sparking plastic snaps front closure

### POCKETS:

- Two lower inside patch pockets • Left chest inside 2-tier, 4-division pencil pocket

**SIZES: M-5X**

### PERFORMANCE SPECS/COMPLIANCE:

- NFPA 70E-2012 • ASTM F1506 • HRC 1
- Arc Rating/ATPV:  
Anti-Stat Mesh = 5.1 cal/cm<sup>2</sup> | Anti-Stat Solid = 6.3 cal/cm<sup>2</sup>
- ANSI/ISEA 107 Class 2 Compliant



OUR FULL LINE OF FR VESTS ARE AVAILABLE IN SOLID OR MESH LIME ANTI-STAT MATERIALS AS A CUSTOM ORDER. For more information please contact your local rep or our customer service.



# CLASS 2 FR VESTS



## ECONOMY SERIES FR VEST

**F300** Lime | **F301** Orange

**FM300** Lime Mesh



### PERFORMANCE FEATURES:

- 6.2 oz Modacrylic Flame Resistant solid or mesh material
- FR hook & loop front closure
- 2" Flame Resistant Reflexite® reflective material

### POCKETS:

- Two inside lower patch pockets
- One inside upper left 4-division, 2-tier pencil pocket

**SIZES: M-5X**

### PERFORMANCE SPECS/COMPLIANCE:

- NFPA 70E-2012 • ASTM F1506 • HRC 1
- Arc Rating/ATPV:
- Mesh = 5.1cal/cm<sup>2</sup> | Solid = 5.5cal/cm<sup>2</sup> | Anti-Stat = 6.3cal/cm<sup>2</sup>
- ANSI/ISEA 107 Class 2 Compliant



## ADJUSTABLE FR VEST

**F302** Lime | **F303** Orange

**FM302** Lime Mesh



### PERFORMANCE FEATURES:

- Modacrylic Flame Resistant solid or mesh material
- Fully adjustable FR hook & loop front closure
- 2" Flame Resistant Reflexite® reflective material

### POCKETS:

- One inside upper left 3-division pencil pocket

**SIZES: M-XL, 2X-4X**

### PERFORMANCE SPECS/COMPLIANCE:

- NFPA 70E-2012 • ASTM F1506 • HRC 1
- Arc Rating/ATPV: Solid = 5.5cal/cm<sup>2</sup> | Mesh = 5.1cal/cm<sup>2</sup>
- ANSI/ISEA 107 Class 2 Compliant







## PRO SERIES FR VEST

**F306** Lime | **F307** Orange



**FM306** Lime Mesh

### PERFORMANCE FEATURES:

- Modacrylic Flame Resistant solid or mesh material
- FR hook & loop front closure
- 2" Flame Resistant Reflexite® reflective material with 3" contrasting color

### POCKETS:

- Two inside lower patch pockets
- One outside upper left 3-division, 2-tier pencil pocket
- One outside right chest pocket

### SIZES: M-5X

### PERFORMANCE SPECS/COMPLIANCE:

- NFPA 70E-2012 • ASTM F1506 • HRC 1
- Arc Rating/ATPV: Solid = 5.5cal/cm² | Mesh = 5.1cal/cm²
- ANSI/ISEA 107 Class 2 Compliant



## MODACRYLIC FR MATERIAL

Modacrylic material has properties that are similar to an acrylic. However, modacrylics are highly stable in high thermal conditions. Its fibers are extremely difficult to ignite and will self-extinguish. In addition to a modacrylic's flame resistant properties, it is relatively durable compared to wool. One of the biggest advantages of Modacrylic

fabrics is arc flash protection. Modacrylics are poor conductors of heat. When exposed to an arc flash, the resilient material is prone to pilling and matting rather than melting and dripping.

Due to modacrylic's thermal performance it is often worn by utility and transportation workers, fire fighters and used for petrochemical oil and gas services.



# CLASS 3 FR VESTS



## PRO SERIES FR VEST

F312 Lime | F313 Orange

FM312 Lime Mesh



### PERFORMANCE FEATURES:

- Modacrylic Flame Resistant solid or mesh material
- FR hook & loop front closure
- 2" Flame Resistant Reflexite® reflective material with 3" contrasting color

### POCKETS:

- Two inside lower patch pockets
- One outside upper left 3-division, 2-tier pencil pocket
- One outside right chest storage pocket

**SIZES: M-5X**

### PERFORMANCE SPECS/COMPLIANCE:

- NFPA 70E-2012 • ASTM F1506 • HRC 1
- Arc Rating/ATPV: Solid = 5.5 cal/cm² | Mesh = 5.1 cal/cm²
- ANSI/ISEA 107 Class 3 Compliant



## ECONOMY SERIES FR VEST

F310 Lime | F311 Orange

FM310 Lime Mesh



### PERFORMANCE FEATURES:

- Modacrylic Flame Resistant solid or mesh material
- FR hook & loop front closure
- 2" Flame Resistant Reflexite® reflective material

### POCKETS:

- Two inside lower patch pockets
- One outside 2-tier pencil pocket

**SIZES: M-5X**

### PERFORMANCE SPECS/COMPLIANCE:

- NFPA 70E-2012 • ASTM F1506 • HRC 1
- Arc Rating/ATPV: Solid = 5.5 cal/cm² | Mesh = 5.1 cal/cm²
- ANSI/ISEA 107 Class 3 Compliant





# TREATED VESTS

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## CHEMICALLY TREATED POLYESTER MESH VEST

F328 Lime | F329 Orange

### PERFORMANCE FEATURES:

- Chemically treated Ultra-Cool™ 100% polyester mesh
- 2" silver reflective material
- Zipper front closure

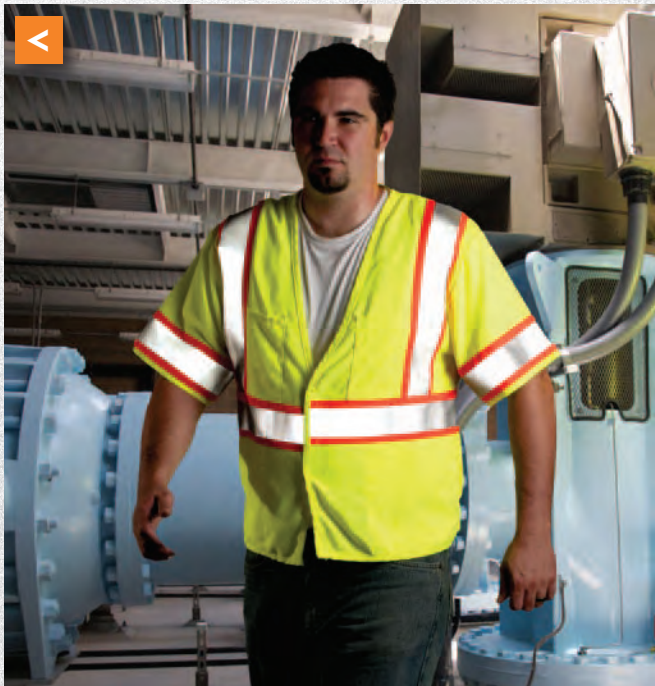
### POCKETS:

- Two inside lower patch pockets
- One inside upper left 4-division, 2-tier pencil pocket

### SIZES: M-5X

### PERFORMANCE SPECS/COMPLIANCE:

- ANSI/ISEA 107 Class 2 Compliant
- Does not meet ANSI FR Requirements



## CHEMICALLY TREATED POLYESTER ADJUSTABLE MESH VEST

FM411 Lime | FM412 Orange

### PERFORMANCE FEATURES:

- Chemically treated Ultra-Cool™ polyester mesh
- Hook & loop front closure
- Fully adjustable sides with 5 point breakaway design
- 2" silver reflective material

### SIZES: M-XL, 2X-4X

### PERFORMANCE SPECS/COMPLIANCE:

- ANSI/ISEA 107 Class 2 Compliant
- Does not meet ANSI FR Requirements







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