

## High-Visibility, Flame Resistant Safety Vests, Lightweight, with Velcro Closure



### 1. Scope

This standard covers the requirements for lightweight, high-visibility, flame resistant, safety vests with Velcro closure.

This standard applies to the following Seattle City Light (SCL) stock numbers:

Stock No.	Size
012962	Small
012963	Medium
012964	Large
012965	XLarge
012966	2XLarge
012967	3XLarge
012968	4XLarge
014603	6XLarge

The requirements for *standard weight*, high-visibility, flame-resistant safety vests are covered in SCL 4015.10.

Standard Coordinator  
Laura Vanderpool

Handwritten signature of Laura Vanderpool.

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## 2. Application

Safety vests are intended to enhance visibility of the user in hazardous situations under any light conditions by day and under illumination by vehicle headlights in the dark.

Safety vests are designed and manufactured with flame resistant textile so as to, at the minimum, not contribute to the injuries of an electrical worker exposed to a momentary electric arc and related thermal hazard.

Safety vests have an arc thermal performance value (ATPV) rating of 4.6 cal/cm<sup>2</sup> and are intended to be layered over other flame resistant personal protective equipment (PPE). Safety vests alone shall not be expected to offer protection against momentary electric arcs.

Standard weight safety vests, specified in SCL 4015.10, serve the same need as lightweight weight safety vests, except that they offer the wearer a more durable option in cooler weather.

## 3. Industry Standards

Safety vests shall meet the requirements of the following industry standards:

**ANSI/ISEA 107-2015**; American National Standard for High-Visibility Safety Apparel and Headwear

**ASTM F 1506-08**; Standard Performance Specification for Flame Resistant Textile Materials for Wearing Apparel for Use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards

**ASTM D 6413-08**; Standard Test Method for Flame Resistance of Textiles (Vertical Test)

**NFPA 70E 2015**; Standards for Electrical Safety in the Workplace, Annex D

**OSHA 1910.269**; Protection from Flame and Electrical Arcs, Appendix E

## 4. Requirements

### 4.1 General

Safety vest minimum areas of visible material shall meet the requirements of ANSI/ISEA 107-2015, Table 1, as clarified below:

<b>Performance class</b>	2
<b>Type</b>	R

Garment design shall follow ANSI/ISEA 107-2015, Appendix C - Examples of Garment Designs, Figure C-6, Vest Pattern 3 and Figure 4.1.

**Figure 4.1. Front and Back of Safety Vest**



**4.2 Base Fabric**

Fabric shall meet the requirements of ASTM F 1506 as clarified below:

<b>Type</b>	Modacrylic blend
<b>Color</b>	Lime
<b>Weight, nominal</b>	5.0 oz/yd <sup>2</sup>
<b>Arc Thermal Performance Value (ATPV)</b>	4.6 cal/cm <sup>2</sup>

**4.3 Binding (Edging)**

Binding shall meet the requirements of ASTM F 1506 as clarified below:

<b>Type</b>	Modacrylic blend
<b>Color</b>	Lime
<b>Weight, nominal</b>	5.0 oz/yd <sup>2</sup>
<b>Arc Thermal Performance Value (ATPV)</b>	4.6 cal/cm <sup>2</sup>

**4.4 Retroreflective Tape**

Horizontal reflective placement: There shall be two horizontal stripes 360 degrees around the torso. The first stripe shall begin 2 inches above the bottom of the vest. The second stripe shall be 2 inches above the top of the first stripe.

Front vertical reflective placement: There shall be a left and right vertical stripe centered on each shoulder beginning at the top shoulder seam and continuing down to the top of the upper horizontal stripe. The vertical tape shall be sewn before the horizontal tape and continue no less than 1/2-in underneath the upper horizontal stripe.

Back “X” Reflective Placement: There shall be a left and right diagonal stripe on each shoulder beginning at the top shoulder seam and continuing down to the top of the upper horizontal stripe. The diagonal tape shall be sewn before the horizontal tape and continue no less than 1/2-in underneath the upper horizontal stripe.

**Figure 4.4. Vest Pattern 3 (Performance Class 2), ANSI/ISEA 107-2015**



Retroreflective tape shall be FR rated, with the following attributes:

<b>Type</b>	Reflexite/Orafol UFR reflective material
<b>Color</b>	Lime
<b>Width</b>	2 in

#### 4.5 Front Closure

Front closure shall be flame resistant and tested to ASTM D 6413 or NFPA 1971.

Front closure shall be:

<b>Type</b>	Flame resistant, black, hook and loop, Velcro® or approved equal
<b>Width</b>	1 in
<b>Length</b>	11 in

#### 4.6 Pockets

Safety vests shall have one inside breast pocket, located on the upper left side, measuring 5 in x 5 in.

#### 4.7 Laundering

Safety vests shall be able to withstand a minimum of five washing cycles before losing their ability to meet the requirements of this standard.

#### 4.8 Logo

Safety vests shall be furnished with the Seattle City Light, Chief Seattle logo as depicted in figures 4.8a and 4.8b. The logo shall be located over the left breast and shall be placed so as to allow separation of approximately 1/4-in from the binding tape on fabric front opening and from the retroreflective tape.

The custom font "Seattle Text" in Bold weight shall be used for the logo lettering.

The logo shall be printed using a two-color application process as specified below and depicted in Fig. 4.8b.

- Black: Logo lettering and Chief Seattle profile portion of medallion
- White: Background of Chief Seattle medallion

**Figure 4.8a. Chief Seattle Logo, Actual Size**



**Figure 4.8b. Chief Seattle Logo, Dimensions**



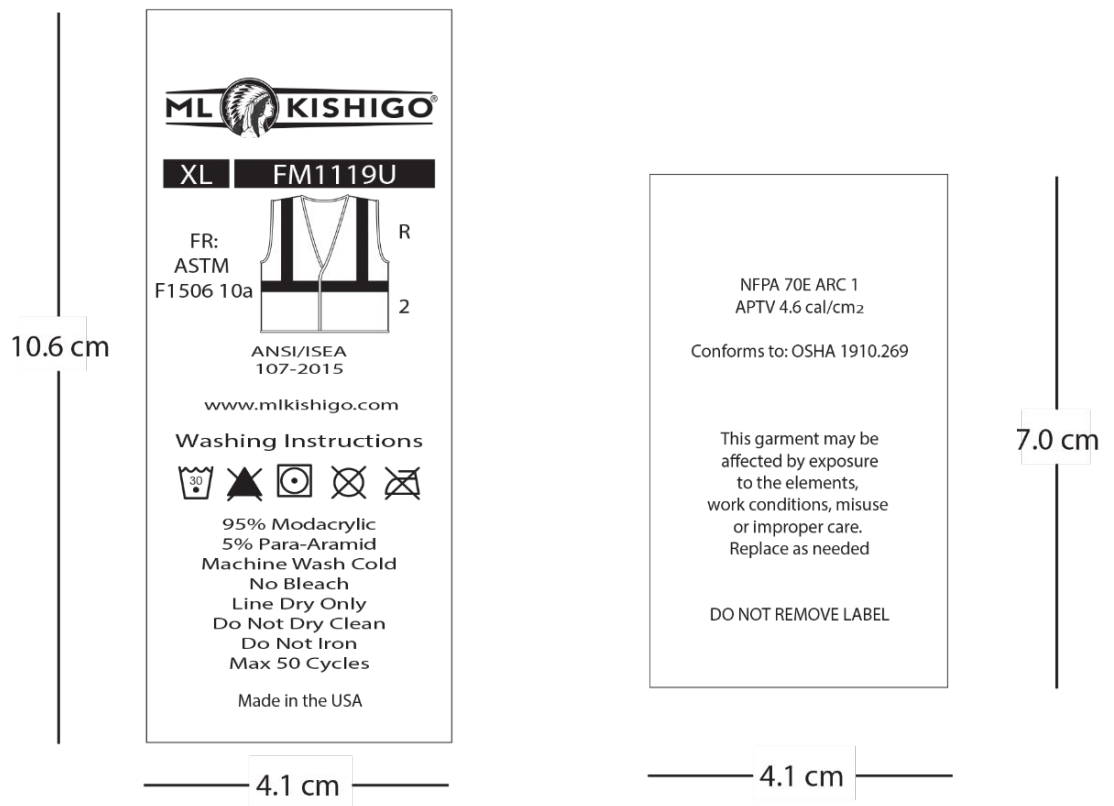
## 5. Marking

Safety vests shall be marked according to the requirements of ANSI/ISEA 107-2015, Sections 10 and 11, where this information includes, but is not limited to:

- Manufacturer's name or symbol
- Product type, commercial name, or code
- Size
- ANSI/ISEA 107-2015
- Performance class
- Washing or cleaning instructions
- A label pictogram designating Z-FR or non-FR garment
- X type of garment
- Y class of garment

Labels shall be attached to the vest in accordance with ANSI/ISEA 107-2015. See Figure 5.

**Figure 5. Labels**



## 6. Testing

The following third-party tests and certifications shall be conducted that establish compliance with the requirements of ANSI/ISEA 107-2015 for flame resistance:

- Third-party certification for base material
- Third-party certification for retroreflective tape
- Third-party test for FR Declaration of Conformity

## 7. Packaging

Each shipping container shall be marked with:

- Seattle City Light purchase order number
- Seattle City Light stock number

## 8. Issuance

EA

## 9. Approved Manufacturer

Stock No.	Size	Chest Range (in)	Minimum Length (in)	M.L. Kishigo Catalog No.
012962	Small	40–42	27	FM650-SMALL
012963	Medium	42–44	27	FM650-MED
012964	Large	46–48	27	FM650-LG
012965	XLarge	50–52	27	FM650-XLG
012966	2XLarge	54–56	27	FM650-XXLG
012967	3XLarge	58–60	28	FM650-3XLG
012968	4XLarge	62–64	28	FM650-4XLG
014603	6XLarge	74-76	32	FM650-6XLG

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## 10. Sources

**Code of Federal Regulations Title 23 (Highways) Part 634:** “Use of High-Visibility Apparel When Working on Federal-Aid Highways;” US Federal Highway Administration, DOT; 2006

**Shipek, John;** SCL Standards Supervisor, subject matter expert, and originator of 4015.15

**WAC 296-800-160,** Personal Protective Equipment (PPE), Core Rules; State of Washington Administrative Code; 2009