HI-VIZ PROTECTION
FAST FACTS

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The **need** to be seen is a critical issue for worker safety, especially for workers who perform tasks on or near moving vehicles or equipment.

Wearing high visibility garments draws attention to workers & helps prevent injuries and fatalities from struck by hazards.

2004 – 15% of 2,460 fatalities from transportation related accidents were from worker being struck by moving vehicle.

2007 - 305 of 639 fatalities that occurred at road construction sites were from “struck by vehicle” accidents.

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**IMPORTANCE OF HIGH VISIBILITY & REACTION TIME**


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**ANSI 107-2015**

The American National Standard for High-Visibility Safety Apparel and Headwear (ANSI/ISEA 107-2015) is a standard established by American National Standards Institute, Inc. (ANSI) and the International Safety Equipment Association (ISEA).

Construction, utility, police, emergency medical services, fire fighters, road workers, flaggers and airport ramp workers are routinely exposed to the hazards of low visibility while on the job. This standard provides guidelines for the selection and use of high-visibility safety vests to improve worker visibility during the day, in low-light conditions, and at night.

ANSI / ISEA 107-2015 guidelines are divided into Multiple Types (O, R, P, and Supplemental) as well as 4 Classes (1, 2, 3 and E ) according to the level of risk present depending on working environment.
### PERFORMANCE CLASS - Garment Type
- **Type O** - Class 1 - Off-road
- **Type R** - Class 2 & Class 3 - Roadway and Temporary Traffic Control
- **Type P** - Class 2 & Class 3 - Public Safety
- **Supplemental Items** - Class E - Pants, Overalls, Shorts, Rain Pants, and Gaiters

### ENSEMBLE
- Class 2 + Class E = Class 3

### ANSI 107-2015 VISIBILITY REQUIREMENTS

**Type O: Class 1**
Class 1 provides the minimum amount of high-visibility materials required to differentiate the wearer visually from non-complex work environments where struck-by hazards will not be approaching at roadway speeds.

**Applications:**
- Warehouse Workers
- Mining
- PetroChem

**Type O: CLASS 1 Minimum Requirements**

<table>
<thead>
<tr>
<th>Background Fabric</th>
<th>Reflective Material</th>
<th>Minimum Reflective Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>217 Square Inches</td>
<td>155 Square Inches</td>
<td>1 Inch</td>
</tr>
</tbody>
</table>

**Type R: Class 2 & 3**
Class 2 provides for the use of additional amounts of high-visibility materials, which may allow design opportunities to define the human form more effectively. Class 3 can offer greater visibility to the wearer in both complex backgrounds and through a full range of body movements by mandatory placement of background, retroreflective and combined-performance materials on sleeves and pant legs (if present). Regardless of the area of materials used, a sleeveless garment or vest alone shall not be considered Performance Class 3.

**Class 2 Applications:**
- Roadway Construction Worker
- Municipalities
- Airline Ramp Personnel

**Class 3 Applications:**
- Flaggers
- Dept of Transportation
- Nighttime Work
- Municipalities
- State of VA

**Class 2 & 3 Applications:**

**Type P: CLASS 2 Minimum Requirements**

<table>
<thead>
<tr>
<th>Background Fabric</th>
<th>Reflective Material</th>
<th>Minimum Reflective Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>775 Square Inches</td>
<td>201 Square Inches</td>
<td>1.375 Inch</td>
</tr>
</tbody>
</table>

**Type P: CLASS 3 Minimum Requirements**

<table>
<thead>
<tr>
<th>Background Fabric</th>
<th>Reflective Material</th>
<th>Minimum Reflective Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>1240 Square Inches</td>
<td>310 Square Inches</td>
<td>2 Inches</td>
</tr>
</tbody>
</table>

**Type P: Class 2 & 3**
Type P provides daytime and nighttime visual conspicuity enhancement for emergency and incident responders and law enforcement personnel in occupational environments which include exposure to traffic (vehicles using the highway for purposes of travel) from public access highway right-of-ways, or roadway temporary traffic control (TTC) zones, or from work vehicles and construction equipment within a roadway temporary traffic control (TTC) zone or from equipment and vehicles within the activity area. Type P HVSA provides additional options for emergency responders, incident responders and law enforcement who have competing hazards or require access to special equipment.

**Class 2 & 3 Applications:**

<table>
<thead>
<tr>
<th>Background Fabric</th>
<th>Reflective Material</th>
<th>Minimum Reflective Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>450 Square Inches</td>
<td>201 Square Inches</td>
<td>2 Inches</td>
</tr>
</tbody>
</table>

**Background Fabric**
- Polyester
- Poly/Cotton
- Poly/Spandex

**Reflective Material**
- Conspicuity Fabric
- Retroreflective Fabric

**Minimum Reflective Width**
- 1 Inch
- 1.75 Inch

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ANSI 107-2015
GARMENT DESIGN REQUIREMENTS

Placement of Materials
Shoulder Area
Tape Width & Placement
Gaps 360° Visibility

PRIMARY COMPONENTS OF ANSI 107-2015

Vest Label Ensures Proper Use of Performance Material and Care of Vest
Contrasting Trim Maximizes Daytime Visibility
Retroreflective Material for Night Time Visibility
Fluorescent High Visibility Background Material for Daytime Visibility

CLASS 2 VEST

Washing Instructions:
- Machine Wash, Cold
- No Bleach
- Tumble Dry Low
- Do Not Iron
- Do Not Dry Clean
Max 25 Cycles

ZIP-N-RIP™ BREAKAWAY ZIPPER

ZIP-N-RIP™ is a patented system which allows a vest to offer a breakaway zipper. Now you can have the convenience of a zipper with the safety of the hook and loop.
(Patent Number 7,735,151)
ANSI 107-2015

BACKGROUND MATERIAL
DAYTIME VISIBILITY

ENVIRONMENT
RISK ASSESSMENT
BACKGROUND COLOR

ANSI APPROVED COLORS
- Fluorescent Orange
- Yellow-Green
- Red

MATERIAL DENSITY
- Minimum hole size of mesh

COLORS
MESH/SOLID

BASE FABRICS - VESTS

Solid Knit
Solid Weave
Mesh Fabric
Micro Mesh

BASE FABRICS - T-SHIRTS

Breezelite™
Breezelite™
Birdseye Mesh
Jersey Knit

REFLECTIVE MATERIALS

Silver Tape or Glass Bead
Gloss or Prismatic Tape
Combined Performance
Contrasting Trim
Segmented Tape

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FLAME RESISTANT GARMENTS

There are multiple types of FR High Visibility garments on the market. NOT ALL ARE CREATED EQUAL.

Under the new ANSI 107:2015 standard, all vests must be labeled either FR or NOT FR.

To be labeled FR, the vest materials must:
1. Be certified to one of six specified standards
2. Be made from an inherently flame resistant fiber such as a Modacrylic.
3. Must be difficult to ignite.
4. Must not melt or drip.

A garment is not truly FR if:
1. It contains polyester - even if treated.
2. It melts or drips when ignited.
3. It has only been tested to NFPA 107 or ANSI D6413
4. It does not have an Arc rating on the tag
5. The manufacturer cannot provide a 3rd party certification of materials.

Why is this so important?
1. Some treated polyester vests and rainwear could have been marked as FR prior to the ANSI 107:2010 standard are still on the market as FR which causes confusion.
2. Use of a treated polyester vest where a flash fire or arc flash hazard can lead to significant injury.

JUST BECAUSE IT Says FR DOESN’T MEAN IT IS FR

To avoid confusion and potential misuse, Radians uses the term “Self Extinguishing” (SE) for treated polyester vests and rainwear.

SE VESTS:
• Made from treated polyester
• Material tested to ASTM D6413
• Labeled as NOT FR per ANSI/ISEA 107
• Will not continue to burn when flame is removed.
• Not for use where arc flash or flash fire hazard exists.
FLAME RESISTANT COMPARISON

REGULAR POLYESTER VEST
Quick Flame Ignition
Continuous Burning
Melting & Dripping

SE TREATED POLYESTER VEST
Quick Flame Ignition
Flame Extinguishes Quickly
Minor Melting & Dripping

FR MODACRYLIC VEST
NO Flame Ignition
Chars But Does Not Burn
NO Melting & Dripping

NOTES: