HI-VIZ PROTECTION
FAST FACTS

www.radians.com
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.

IMPORTANCE OF HIGH VISIBILITY & REACTION TIME

The American National Standard for High-Visibility Safety Apparel and Headwear (ANSI/ISEA 107-2020) 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 107-2020 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 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>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background Fabric</td>
<td>775 Square Inches</td>
</tr>
<tr>
<td>Reflective Material</td>
<td>201 Square Inches</td>
</tr>
<tr>
<td>Minimum Reflective Width</td>
<td>1.375 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

TYPE R: CLASS 2 Minimum Requirements

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

TYPE P: CLASS 2 Minimum Requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background Fabric</td>
<td>775 Square Inches</td>
</tr>
<tr>
<td>Reflective Material</td>
<td>310 Square Inches</td>
</tr>
<tr>
<td>Minimum Reflective Width</td>
<td>2 Inches</td>
</tr>
</tbody>
</table>

TYPE P: CLASS 3 Minimum Requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background Fabric</td>
<td>775 Square Inches</td>
</tr>
<tr>
<td>Reflective Material</td>
<td>310 Square Inches</td>
</tr>
<tr>
<td>Minimum Reflective Width</td>
<td>2 Inches</td>
</tr>
</tbody>
</table>

CLASS 2 & 3 APPLICATIONS:
- Police
- Fire
- EMS
- Sheriff
GARMENT DESIGN REQUIREMENTS

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

PRIMARY COMPONENTS OF ANSI 107

- 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

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)
BACKGROUND MATERIAL
DAYTIME VISIBILITY

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

MATERIAL DENSITY
• Minimum hole size of mesh

COLORS
MESH/SOLID

ENVIRONMENT
RISK ASSESSMENT
BACKGROUND COLOR

BASE FABRICS - VESTS

Solid Knit
Solid Weave
Mesh Fabric
Micro Mesh

BASE FABRICS - T-SHIRTS

Breezelite™
Ultra Breezelite™
Birdseye Mesh
Jersey Knit

REFLECTIVE MATERIALS

Silver Tape or Glass Bead
Gloss or Prismatic Tape
Combined Performance
Contrasting Trim
Segmented Tape
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 and 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 exists can lead to significant injury.

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

**JUST BECAUSE IT SAYS FR DOESN’T MEAN IT IS**

**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: