

# High Visibility Safety Apparel

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Document Number: 153

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The American National Standards Institute (ANSI) and the International Safety Equipment Association (ISEA) have published the ANSI/ISEA 107-2004 standard which specifies different classes of high visibility safety garments based on wearer's activities. This standard was developed in response to workers who are exposed to low visibility conditions in hazardous work zones.

ANSI/ISEA have also recently published the ANSI/ISEA 207-2006 Standard for High-Visibility Public Safety Vests which establishes design, performance specifications and use criteria for highly visible vests that are used by law enforcement, emergency responders, fire officials, and DOT personnel. This public safety vest standard was created in response to public safety user group demand in 2005 for a high visibility safety vest garment differentiated from ANSI/ISEA 107-2004 compliant apparel. The primary concern was a need for flexibility of designs that would provide tactical capability not achievable with ANSI 107 garments. Law enforcement and emergency responders that would be distinct from ANSI 107 to avoid interchangeability with other high visibility vests.

## ANSI/ISEA 107-2004

There are three classes of garments specified in the standard that are based on the wearer's activities.

**Class 3:** These garments provide the highest level of conspicuity for workers. These are for workers with high task loads in a wide range of weather conditions where traffic exceeds 50 mph. The standard "recommends these garments for all roadway construction personnel, vehicle operators, utility workers, survey crews, emergency responders, railway workers and accident site investigators".

**Class 2:** These garments are for workers who work near roadways where traffic exceeds 25 mph and need greater visibility in inclement weather. Workers who would typically wear these garments are: railway workers, school crossing guards, parking and toll gate personnel, airport ground crews and law enforcement personnel directing traffic.

**Class 1:** These garments are worn by workers where traffic does not exceed 25 mph and there is ample separation from the traffic. These workers typically are parking service attendants, warehouse workers in equipment traffic, shopping cart retrievers and those doing sidewalk maintenance.

The three classes of garments are differentiated by the requirements for amounts of retroreflective material that needs to meet specified performance criteria, the width and placement of the material, design and the color of vest used.

**Class 3:** These garments have the greatest visibility of the three classes. These will have more retroreflective material used in its construction than the Class 2 and it must have sleeves with retroreflective material between the shoulders and elbow. This requirement is in accordance with Table 1 in the standard. This table gives minimum areas of background and coverage areas of the retroreflective material. The width of the retroreflective material to be used according to Table 1; shall not be less than 50mm wide.

**Class 2:** These garments have superior visibility and are more conspicuous than the Class 1 garments. The minimum width of the retroreflective material used on these is not less than 35mm.

**Class 1:** These garments need to be conspicuous and use retroreflective materials not less than 25mm in width.

There are charts and figures in the standard that give the minimum requirements for retroreflectivity (chromaticity) and luminance (color of vest) combinations that are acceptable. The luminous colors that are used and accepted as long as they meet the minimum standard are fluorescent yellow-green, fluorescent orange-red, and fluorescent red.

The design of the garments and where the tape should be applied is in Appendix B2 of the standard. The garments vary, but can include coveralls, jackets, vests, trousers and sash belts. Section 5.2.2 of the standard has suggested design configurations. For example, 5.2.2a states "jackets, waistcoats, vest and ponchos shall be designed to permit maximum visibility of the wearer". 5.2.2.b states that these garments should "have one or more horizontal bands of retroreflective material around the torso and bands of retroreflective material joining the uppermost torso band from the front to the back over each shoulder".

## **ANSI/ISEA 207-2006**

The standard will only affect the Law Enforcement, Emergency Responders, Fire Officials, and DOT Personnel sectors. It will improve the safety in multi-agency incidents by improving visibility and identification. It will reduce confusion and enhance communication between agencies. Basic vest requirements will include:

- Vest Dimensions
- Color: (Red for Fire Officials), (Blue for Law Enforcement), (Green for Emergency Responders), and (Orange for DOT Officials)
- Material Performance
- Special design features for users in fire, emergency medical, and law enforcement
- Higher Visibility (checkered color coded reflective trim)

Some of the notable design features reflect the specific needs of public safety workers such as the need to access belt mounted equipment (gun, radio, CPR barrier mask) and the ability for vests to tear away from the body. The primary distinction of ANSI 207 versus ANSI 107 lies in the amount of fluorescent background material. ANSI 207 requires a minimum of 450 in<sup>2</sup>. This would fall between ANSI 107 Class 1 (217 in<sup>2</sup>) and Class II (775 in<sup>2</sup>) garments. The minimum amount of required retroreflective area (207 in<sup>2</sup>) did not change from ANSI 107 and 207. The difference in fluorescent material allow for design accommodation of equipment belts and for flexibility to incorporate colored panels to enhance easy, on-scene identification of wearers.

## **Sources for More Information**

ANSI/ISEA 107-2004 American National Standard for High Visibility Safety Apparel

ANSI/ISEA 207-2006 American National Standard for High-Visibility Safety Vests

## Commonly Asked Questions

**Q.** *Does OSHA require this type of PPE?*

**A.** ANSI/ISEA developed this standard to address to situations in which workers are in danger because of low visibility. These garments meet ANSI/ISEA criteria for performance and visibility. There is not an OSHA standard at this time requiring that vests be worn, although individual municipalities, counties and states may require their use.

**Q.** *How does new ANSI/ISEA 207-2006 affect ANSI/ISEA 107-2004 Standard?*

**A.** It will not change any of the requirements or specifications found in ANSI/ISEA 107-2004. It will only affect four groups of workers found in the public safety sector: Law Enforcement, Emergency Responders, Fire Officials, and DOT Personnel. ANSI/ISEA 207-2006 recognizes the need for these agencies to identify with a specific color during a multi-agency event. ANSI 207 apparel is not intended to replace, or be interchangeable with ANSI 107 apparel.