

High-Visibility Clothing Standards

The need to be seen is critical for worker safety. This is especially true for workers who work on or near moving vehicles or equipment. Workers can draw attention to themselves by wearing high-visibility garments in an effort to help prevent fatalities and injuries from “struck-by” hazards. The U.S. Federal Highway Administration (FHWA) and the Occupational Safety and Health Administration (OSHA) recognize the American National Standards Institute / International Safety Equipment Association (ANSI/ISEA) 107-2010 and 207-2011 as industry consensus standards that specify the performance requirements for high-visibility garments.

ANSI/ISEA 107-2010: American National Standard for High Visibility Safety Apparel and Headwear

Approved in January 2010, the **ANSI/ISEA 107-2010** revision updates the **ANSI/ISEA 107-2004** standard. The standard specifies the types, classes and colors of high-visibility clothing required by workers exposed to traffic hazards, such as road construction workers, surveyors and others who work on or near roadways.

The basic high-visibility garment includes three components: background material, retroreflective material (bands) and combined-performance material (a combination of retroreflective and fluorescent material that may separate the two). The color of the background material and the combined-performance material can either be fluorescent yellow-green or fluorescent orange-red. Combined performance material is considered part of the background for purposes of total area required. Retroreflective material reflects light back to the source when light shines on it.

The standard specifies three classes of high-visibility garments based on the wearer's activities. Garment classes are differentiated by the amount of background material; the width of retroreflective material used and garment design.

Wearer/Activities	Garment Class Type
<p>Class 1: Workers in areas where traffic does not exceed 25 miles per hour (mph) and where there is ample separation from the traffic. These workers often include parking service attendants, warehouse workers in traffic, shopping cart retrievers and those doing sidewalk maintenance.</p>	<p>Class 1: Garment must be relatively conspicuous, with background material equal to 217 inches (in) in total area and retroreflective bands not less than 25 millimeters (mm) wide.</p>
<p>Class 2: Workers who work near roadways where traffic exceeds 25 mph and workers who need greater visibility in inclement weather. Generally includes school crossing guards, parking and toll gate personnel, airport ground crews and law enforcement personnel directing traffic.</p>	<p>Class 2: Greater visibility than the Class 1 garments. Background material must equal 755in and the minimum width of retroreflective bands is 35mm.</p>

Class 3: 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 3: Superior visibility – the highest level of conspicuity. Background material must total 1240in. Garment must have sleeves with retroreflective material between the shoulders and elbows. The width of retroreflective bands shall not be less than 50mm wide.

Class E: When high-visibility pants are worn without other high-visibility garments, they are considered Class E. When pants are added to Class 2 or 3 garments, the ensemble is considered Class 3.

Design requirements and minimum performance criteria are found in Sections 6, 7 and 8 of the standard. **ANSI/ISEA 107-2010** requires that the background material and retroreflective or combined-performance material used in the construction of a finished garment be certified by an accredited, independent third-party laboratory to ensure that the materials meet the specified performance criteria imposed by the standard.

ANSI/ISEA 207-2011: American National Standard for High Visibility Public Safety Vest

The only configuration of apparel addressed in **ANSI/ISEA 207-2011** is a vest. Therefore there is only one performance class for items designated as **ANSI/ISEA 207-2011** compliant. Basic vest design requirements are given in Section 5 and criteria for optional features are found in Section 6 of the standard. Optional features may include pockets, identification panels, lettering, logos and tear-away functionality.

The primary distinction of **ANSI/ISEA 207** versus **ANSI/ISEA 107** lies in the amount of fluorescent background material required. **ANSI/ISEA 207** requires a minimum of 450 in². This would fall between **ANSI/ISEA 107** Class 1 (217 in²) and Class II (775 in²) garments. The difference in fluorescent material allows for the accommodation of equipment belts and for flexibility to incorporate colored panels to enhance easy, on-scene identification of wearers.

Service Life

Both **ANSI/ISEA 107-2010** and **ANSI/ISEA 207-2011** call attention to service-life guidelines for high-visibility apparel – all items have a limited lifetime that varies with use. It is the responsibility of the issuing entity, authorized on-site person, employer or wearer to periodically evaluate the minimum required visibility. According to the FHWA, the useful life of garments worn on a daily basis is approximately six months. Garments that are not worn on a daily basis are expected to have a useful service life of up to three years.

OSHA Issues Interpretation Letter

On August 5, 2009, OSHA published an interpretation letter revising their response to use of high-visibility garments worn by construction workers in highway work zones. In this interpretation letter, OSHA provides a more comprehensive answer to clarify and expand on OSHA's reasons for concluding that section 5(a)(1) (General Duty Clause) requires construction workers in highway/road construction work zones to be protected from road and construction traffic by wearing high-visibility

garments. OSHA determined the need for high-visibility clothing based on the FHWA Worker Visibility final rule published in November of 2008.

Sources

ANSI/ISEA 107-2010 American National Standard for High Visibility Safety Apparel

ANSI/ISEA 207-2011 American National Standard for High-Visibility Safety Vests

2009 Manual on Uniform Traffic Control Devices (MUTCD), <http://MUTCD.FHWA.dot.gov>

Occupational Safety and Health Administration (OSHA), [High-Visibility Garment Interpretation Letter](#), August, 5, 2009

[Federal Register Volume 1, Number 226, November 24, 2006 Rules and Regulations](#)

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