Introduction ANSI/ISEA 107-2010

On June 1 1999, a new standard for High-Visibility Safety Apparel was established. The standard is revised every 5 years and is currently 107-2010. The standard provides a consistent authoritative guide for design, performance specifications, and use of high-visibility garments.

FHWA (Federal Highway Administration) Requirements

Federal Highway Administration's Mandate 23 - CFR Part 634:

- Commencing November 24, 2008, all workers within the right-of-way of a Federal-aid Highway who are exposed either to traffic or construction equipment within the work area will be required to wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of the American National Standard for High Visibility Apparel (ANSI/ISEA 107-2004).
- Garments labeled ANSI 107-2004 and 107-2010 shall comply with the FHWA's mandate. In addition, the 2009 MUTCD (published by the Federal Highway Administration) expands the current requirement for high-visibility garments from Federal Roadways to all public roadways beginning January 1, 2012.

FHWA is emphasizing the need to "be seen" as a critical issue for worker safety.

- There are approximately 700,000 roadway workers in the United States. According to the National Highway Traffic Safety Administration, there were a total of 1,074 fatalities in 2005 that were a result of motor vehicle traffic accidents in construction and maintenance zones.

Performance Classes

The standard defines several classes of garments

- Classes 1, 2 & 3 typically cover vests, shirts, jackets and coveralls
- Class "E" covers pants and shorts
- The ANSI 107-2010 also includes a category referenced as ANSI/ISEA 107-2010 Headwear.

Definitions

Retroreflective, combined-performance, and background materials are to be certified to the performance requirements in the standard. High visibility safety apparel manufacturers must make documentation available to verify that the finished garments also meet the requirements of the standard.

Background material: Colored fluorescent material intended to be highly conspicuous, but not intended to comply with the requirements of this standard for retroreflective material.

Retroreflective material: Material that is a retroreflector and is either (1) not intended to comply with the requirements of the standard for background material, or (2) is a combined-performance, retroreflective material.

Combined-performance material: A retroreflective material that is also a fluorescent material. Combined-performance materials can be counted toward the minimum area requirements for background material specified in Table 1.

	Performance Class 3	Performance Class 2	Performance Class 1	Performance Class E	Headwear
Background Material	1240 sq. in.	775 sq. in.	217 sq. in.	465 sq. in.	78 sq. in.
Retroreflective or combined-performance material used in conjuction with background material	310 sq. in.	201 sq. in.	155 sq. in.	108 sq. in.	10 sq. in.
Combined-performance material used without background material	N/A	N/A	310 sq. in.	N/A	78 sq. in.
Minimum width of retroreflective material	2 in.	1.375 in.	1 in. or 2 in. combined-performance material (without background material)	2 in.	
Minimum number of yards per retroreflective material width	4.3 yds. of 2 in.	4 yds. of 1.375 in. 2.8 yds. of 2 in.	4.3 yds. of 1 in. 3.1 yds. of 1.372 in. 2.15 yds. of 2 in.	1.5 yds. of 2 in.	

Appendix B - Suggested Performance Class Guidelines and Scenarios

(Appendix B is not part of ANSI/ISEA 107-2010, but is included for information only.)

Scenario A: For occupational activities which:

1. permit full and undivided attention to approaching traffic;
2. provide ample separation of the pedestrian worker from conflicting vehicle traffic
3. permit optimum conspicuity in backgrounds that are not complex; and where
4. vehicle and moving equipment speeds not exceeding 25 mph.

Examples of pedestrian workers who could work in this class may include:

1. workers directing vehicle operators to parking/service locations;
2. workers retrieving shopping carts for parking areas;
3. those exposed to the hazards of warehouse equipment traffic;
4. roadside "right-of-way" or sidewalk maintenance workers; and
5. delivery vehicle drivers.

Suggested Performance Class: 1 typical, 2 under certain conditions.

Scenario B: For occupational activities where risk levels exceed those in Scenario A, such as where:

1. greater visibility is desired during inclement weather conditions;
2. complex backgrounds are present
3. employees are performing tasks which divert attention from approaching vehicle traffic;
4. vehicle or moving equipment speeds exceed those in Scenario A; or
5. work activities take place in closer proximity to vehicle traffic.

Examples of pedestrian workers in this class may include:

1. roadway construction & railway workers;
2. utility workers, survey crews & forestry workers;
3. school crossing guards;
4. parking and/or toll gate personnel;
5. airport baggage handlers/ground crew;
6. emergency response and law enforcement; and
7. accident site investigators.

Suggested Performance Class: 2 typical, 1 or 3 based upon certain conditions.

Scenario C: For occupational activities where risk levels exceed those in Scenario B, such as where:

1. workers are exposed to significantly higher vehicle speeds and/or reduced sight-distances;
2. the worker and the vehicle operator have high task loads, clearly placing the worker in danger; or
3. the wearer must be conspicuous through the full range of body motions at a minimum of 390 m (1280 feet) and must be identifiable as a person.

Examples of workers in this class may include:

1. roadway construction personnel;
2. utility workers;
3. survey crews
4. emergency response personnel; and
5. flagging crews.

Suggested Performance Class: 2 or 3 typical based upon certain conditions.

NOTE: It is the intenton of these Performance Class Guidelines and Scenarios to serve as an assessment tool only. Certain specific conditions such as atmospherics, sight/stop distances, training, regulations, proximity, etc. must be taken into account in any final hazard/safety assessment. Vehicle speed should not be considered in isolation to these variables. Extreme conditions might exist which require performance levels in excess of Class 3. PPE should be selected to optimize color conspicuity between the wearer and the work environment.