



WORKPLACE SAFETY

A W A R E N E S S C O U N C I L

Personal Protective Equipment

For those employees working in areas where there are potential electrical hazards, they must be provided with (and must use) electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed.

PPE for the Head

ANSI Z 89.1-1997

In 1997 ANSI revised its head protection standard. The 1997 version of ANSI Z 89.1 contains a few notable changes.

ANSI Z 89.1-1997 no longer uses Type 1 and Type 2 to describe the brim characteristics of a protective helmet. The new Type designation is as follows:

Type I helmets offer protection from blows to the top of the head

Type II helmets offer protection from blows to both the top and sides of the head

Z89.1-1997 also changed the class designations for protective helmets. Under Z89.1-1997, the following three classes are recognized:

- **Class G (General) Helmets** - This is equivalent to the old Class A. Class G helmets are proof tested at 2,200 volts.
- **Class E (Electrical) Helmets** - This is equivalent to the old Class B. Class E helmets are proof tested at 20,000 volts.
- **Class C (Conductive) Helmets** - This class provides no electrical insulation; the class designation did not change from the old standard.



Check the ANSI
designation here

ANSI Z 89.1-2003

The most current ANSI standard is Z89.1-2003 and new protective helmets will reference this current standard. In this revision ANSI made an effort to align with other national standards. The Type and Class designations are the same as the 1997 standard.

This material was produced under grant number SH-16615-07-60-F-12 from the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.



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A W A R E N E S S C O U N C I L

PPE for the Eyes & Face

Employees must wear protective equipment for the eyes or face wherever there is danger of injury to the eyes or face from electric arcs or flashes or from flying objects resulting from electrical explosion.

When working on energized parts, the possibility of arc flash exists and the employee must be protected. Dangers could include heat, flying hazards and molten metal, therefore the PPE must be durable, non-conductive, heat resistant and provide deflection qualities.

As with much of the arc flash PPE, the heat resistance is measured in calorie/cm². Remember an unprotected worker exposed to a 1.2 cal/cm² energy burst would result in second degree burns.

PPE for the Body (FR Clothing)

During an arc flash event the temperatures can reach an excess of 35,000 degrees. Even at temperatures much lower, typical daily wear clothing would do little to protect the worker from being seriously injured. In fact, at such high temperatures, the clothing will ignite and continue to burn on the body well after the arc flash has dissipated. This is where serious injury and death often occur.

To counteract the extreme heat from an arc flash, FR clothing is required. FR clothing can take the form of pants, shirts, coveralls, jackets, parkas and full flash suits. Obviously, fit, comfort and flexibility are important but the greatest indicator of adequate FR clothing for a given task is based on the “arc thermal performance value” (ATPV).

The ATPV is incident energy on a material that results in sufficient heat transfer through the fabric or material to cause the onset of a second degree burn. Manufacturers of FR clothing will provide a ATPV rating on their clothing and you must match the ATPV with the potential exposures in the workplace.

FR clothing must be visually inspected before each use; however additionally inspections during the work day may be necessary. FR clothing that becomes contaminated with grease, flammable liquids etc shall be removed and sent to be laundered.

FAST FACT: Clothing made from acetate, nylon, polyester, rayon (alone or in blends) is prohibited when employees are working around energized electrical parts, unless the employer can demonstrate that the fabric has been treated to withstand the conditions that may be encountered or that the clothing is worn in such a manner as to eliminate the hazard involved