

High visibility meets flame resistance

New ANSI standard recognizes these needs often coincide

By WILLIS CAMPBELL

This year's International Safety Equipment Association (ISEA) updates to its American National Standard for high-visibility safety apparel include criteria and test requirements for high-visibility garments identified as flame resistant (FR). This update reflects the reality that, in many industries, work settings involving moving vehicle hazards often present a risk of arc and flash fire.

Designated as ANSI/ISEA 107-2010, the revised standard does not change the high-visibility classification levels and physical garment requirements established in the previous ISEA guidelines. It does, however, incorporate flame-resistance criteria as an optional feature.

The revised standard does not require that hi-vis clothing also be flame resistant. But if a hi-vis garment is identified and marketed as FR, it must meet the specifications of at least one of seven ASTM or NFPA test methods.

Understanding FR standards

The 107-2010 standard includes a description of flame resistance criteria and intended application for the various test methods referenced. By using ASTM and NFPA testing specifications as its basis, 107-2010 in effect makes the most widely accepted FR testing and labeling requirements the standard for hi-vis garments marketed as flame-resistant.

Formally known as the Standard Performance Specification for Flame Resistant Textile Material for Wearing Apparel for Use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards, ASTM F1506 is widely considered to be the governing standard for FR clothing. Fabrics and garments that meet the requirements of ASTM F1506 are in compliance with two other important FR standards, NFPA 70E and OSHA 1910.269.

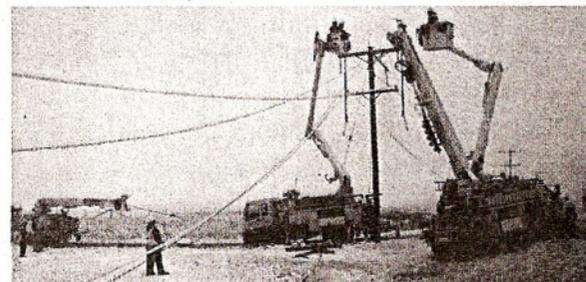
ASTM F1506 is a pass/fail standard that requires a sample of flame-resistant fabric to self-extinguish

with a <2 second afterflame and a <6-inch char length. The FR fabric must continue to meet these requirements after 25 domestic washes or dry cleanings. Additionally, the standard requires arc test ratings for FR fabrics and garments. Specific requirements for garments under ASTM F1506 are:

1. Components of the garment must be flame resistant.
2. Metal components cannot be exposed to the wearer.
3. Labeling must indicate the manufacturer's name, cut number and date of manufacture.
4. Labeling must indicate that the garment complies with ASTM F1506.
5. Labeling must indicate the arc rating of the garment either as a single layer or combination.
6. FR thread must be used in the construction of the garment.

The other set of FR test criteria referenced in 107-2010 is from the National Fire Prevention Association. NFPA 2112 contains FR criteria related to flash fire, while NFPA 70E includes a standard for electric arc flash hazard and the FR clothing characteristics required to protect workers against it.

NFPA 70E requires employers in certain worksite situations to establish a "flash protection boundary" defined by the minimum distance from an arc source where a person could receive a second-degree burn if an arc flash occurred. The employer is further required to determine the appropriate PPE, including FR clothing, required for all employees who work inside the flash protection boundary. Based on hazard risk assessments to determine varying arc hazard levels associated with different job tasks, NFPA 70E establishes five hazard risk categories and specifies minimum arc ratings for garments (and layers of clothing) that may be worn by workers whose jobs fall into those categories. OSHA recognizes NFPA 70E as an industry standard for PPE and FR garments, and has used the standard as a basis for citations.



For workers like these power company crews, flame resistance and high-visibility go hand-in-hand when it comes to PPE garments.

Assessing potential hazards

It is not a coincidence that ISEA has taken action to make optional flame-resistance criteria part of the standard for high-vis safety apparel. Safety professionals and workers in a number of industries, most notably the two million electric utilities workers in the U.S., have recognized for some time that the need for high visibility often coincides with the need for protection from flame and arcing. As ISEA High-Visibility Products Group Chairman Jim Teigen noted, "Due to their widespread use, high-visibility garments have evolved to address other needs of workers, such as flame-resistant properties. The inclusion of these criteria in the revised standard is in direct response to end-user requests."

Industry safety managers, government regulators, PPE consultants and insurance providers all agree that when an arc or flame hazard exists in work situations that require hi-vis clothing, FR clothing is a must. Non-FR hi-vis vests or other outerwear can undermine or negate the arc- and flash fire protection afforded by the other FR clothing a worker is wearing. Even before ISEA revised the standard, users were steadily moving toward making flame-resistant material a standard feature for ANSI/ISEA 107 clothing. **ISHV**

Willis Campbell is vice president of Performance Textiles, Inc. in Greensboro, N.C. Contact Willis at 336-275-5800 or willis@perftex.com.