

A worker wearing a white hard hat, a blue long-sleeved shirt, dark pants, and a full-face green and black protective shield is working on an electrical panel. The worker is also wearing yellow and white gloves and is using a tool on the panel. The background shows a white wall and a doorway.

THE NFPA 70E ARC FLASH PPE CATEGORY 2 DAILY WEAR SOLUTION!

 **CSA Z462
COMPLIANT**

 **WESTEX**[®]
by *Milliken*

Task-Based PPE vs A Daily Wear Solution

Wearing task-based PPE is heavily dependent on the worker's ability to accurately assess an electrical risk. The reality is that workers may not always be able to make an accurate assessment or they may become complacent to the risks. In NFPA 70E (2018), human error is now referenced as part of the risk assessment procedure (Article 110.1 (H)(2)). Stress, assumptions and complacency often lead to human error such as inconsistent use of task-based PPE which could have catastrophic consequences. Westex[®] by Milliken[®] AR/FR fabrics provide a comfortable daily wear solution that decreases the risks associated with human error.

NFPA 70E STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE

The Need

With possible temperatures of 35,000°F, the quick and intense energy of an electric arc flash can both burn the skin directly and cause ignition of clothing made from regular cotton and poly/cotton fabrics. Government reports note that the majority of severe and fatal burn injuries are due to an individual's clothing igniting and continuing to burn — not by the exposure itself. In an arc flash exposure, flame resistant clothing will provide a level of thermal protection (which is listed as an Arc Rating) and will self-extinguish, limiting the potential for more serious burn injuries.

The Standard

The National Fire Protection Association (NFPA) published the latest edition of the NFPA 70E Standard (Standard for Electrical Safety in the Workplace) in 2018. NFPA 70E states in section 130.7 Personal and Other Protective Equipment (C)(6) Body Protection, "Employees shall wear arc-rated clothing wherever there is possible exposure to an electric arc flash above the threshold incident energy level for a second degree burn [1.2 cal/cm² (5 J/cm²)]. Although a voluntary standard, OSHA considers NFPA 70E a "recognized industry practice" and has levied fines to companies that haven't protected their employees when arc flash accidents have occurred.

The Solution

When evaluating fabrics for an FR clothing program to comply with NFPA 70E, Westex[®] brand fabrics are excellent options. With our market-proven technology, you can have flame resistance that is guaranteed for the life of the garment without sacrificing comfort.

Many industry experts and end users have stated that an overwhelming majority of electrical job tasks fall within NFPA 70E PPE Category 1 or 2. The enclosed samples of Westex[®] brand shirt, pant and coverall fabrics meet PPE Category 1 and 2 as a single layer, while providing superior comfort and a better value than other FR fabrics that only meet PPE Category 1. Many companies that have implemented FR clothing programs to comply with NFPA 70E have specified Westex[®] by brand name.

800.334.4842 | WESTEX.COM



AN UNCOMPROMISING BLEND OF PROTECTION, COMFORT AND VALUE

For ultimate peace of mind, specify the fabric first — choose Westex.

	STYLE	DESCRIPTION	ATPV	WEIGHT
 Westex DH	6820/ 6830*	Lightweight Shirts, Coveralls	8.9	6.5 oz./yd ² (220 g/m ²)
 Westex UltraSoft [®] Flex	304	Shirts, Lightweight Coveralls	8.7	7 oz./yd ² (237 g/m ²)
 Westex UltraSoft [®] AC	901	Shirts, Lightweight Coveralls	8.3	7 oz./yd ² (237 g/m ²)
 Westex UltraSoft [®]	301	Shirts, Lightweight Coveralls	8.7	7 oz./yd ² (237 g/m ²)
 Westex UltraSoft [®]	451	Pants, Jackets, Coveralls, Bib Overalls	12.4	9 oz./yd ² (305 g/m ²)
 Westex Indigo [®]	320	Jeans	17	11.75 oz./yd ² (398 g/m ²)

*Style depends on color.

LIFT SWATCHES FOR MORE INFORMATION

ARC FLASH RISK ANALYSIS AND THE SELECTION OF PROPER ARC-RATED FR CLOTHING AND OTHER RELATED PERSONAL PROTECTIVE CLOTHING (PPE)



Chapter 1, Article 130.5 of NFPA 70E requires an arc flash risk analysis to be performed before work on energized systems greater than 50 volts. This is to be conducted to determine to identify arc flash hazards, estimate the likelihood of occurrence and potential severity and whether additional protective measures are required, including PPE. Table 130.5(C) may be used to estimate the likelihood of occurrence. Once the risk analysis is completed and it has been determined PPE is needed, there are two methods available for PPE selection, both of which are highlighted below, including a simplified approach to one of the methods.

Incident Energy Analysis Method

The incident energy analysis shall determine the incident energy exposure to a worker in calories per square centimeter. Arc-rated flame resistant clothing and other PPE shall be used by the worker based upon the incident energy exposure associated with the specific task.

Arc Flash PPE Category Method

After the likelihood of occurrence is determined, tables prescribe the arc flash PPE categories for specific equipment and power system conditions. Table 130.7(C)(15)(a) lists equipment for alternating current (ac) systems and Table 130.7(C)(15)(b) lists equipment for direct current (dc) systems. Once the appropriate arc flash PPE category is determined, Table 130.7(C)(15)(c) shall be used to determine the required PPE.

It is suggested to see Annex H for a simplified approach to ensure adequate PPE for electrical workers within facilities with large and diverse systems.

Informative Annex H Guidance on Selection of Protective Clothing and Other Personal Protective Equipment

Table H.2 Simplified Two-Category, Arc-Rated Clothing System

CLOTHING ^a	APPLICABLE SITUATIONS
<p>Everyday Work Clothing Arc-rated long-sleeve shirt with arc-rated FR pants (minimum arc rating of 8) or arc-rated coveralls (minimum arc rating of 8)</p>	<p>Situations where a risk assessment indicates that PPE is required and where Table 130.7(C)(15)(a) and table 130.7(C)(15)(b) specify arc flash PPE category 1 or 2^b</p>
<p>Arc Flash Suit A total clothing system consisting of arc-rated shirt and pants and/or arc-rated coveralls and/or arc flash coat and pants (clothing system minimum arc rating of 40)</p>	<p>Situations where a risk assessment indicates that PPE is required and where Table 130.7(C)(15)(a) and table 130.7(C)(15)(b) specify arc flash PPE category 3 or 4^b</p>

^a Note that other PPE listed in Table 130.7(C)(15)(c), which include arc-rated face shields or arc flash suit hoods, arc-rated hard hat liners, safety glasses or safety goggles, hard hats, hearing protection, heavy-duty leather gloves, rubber insulated gloves, and leather protectors, could be required. The arc rating for a garment is expressed in cal/cm².

^b The estimated available fault current capacities and fault clearing times or arcing durations are listed in the text of Table 130.7(C)(15)(a) and Table 130.7(C)(15)(b). For power systems with greater than the estimated available fault current capacity or with longer than the assumed fault clearing times, Table H.2 cannot be used and arc flash PPE must be determined and selected by means of an incident energy analysis in accordance with 130.5(G).

Standard for NFPA 70E Safety Requirements for Employee Workplaces – 2018 Edition

130.7(C)(15)(c) Personal Protective Equipment (PPE)		
PPE Category	PPE	MINIMUM ARC RATING (cal/cm ²)
1	Arc-rated long-sleeve shirt and pants or arc-rated coverall	4
2	Arc-rated long-sleeve shirt and pants or arc-rated coverall	8
3	Arc-rated long-sleeve shirt (AR), arc-rated pants (AR), arc-rated coverall (AR), arc-rated arc flash suit jacket (AR), arc-rated arc flash pants (AR), arc-rated jacket, parka, rainwear, or hard hat liner (AN)	25
4	Arc-rated long-sleeve shirt (AR), arc-rated pants (AR), arc-rated coverall (AR), arc-rated arc flash suit jacket (AR), arc-rated arc flash pants (AR), arc-rated jacket, parka, rainwear, or hard hat liner (AN)	40

NOTE: The chart shown above has been condensed to show clothing only.



Westex® Fabric Brands
That Offer Single Layer Category 2 Protection

 Westex UltraSoft®	 Westex Indura®
 Westex UltraSoft AC®	 Westex Indigo®
 Westex UltraSoft® Flex	 Westex DH
 Westex TrueComfort®	For more information visit westex.com/fabrics

Visit westex.com to view and download our arc flash and flash fire testing videos.

WHEN IT COMES TO **FR SAFETY** | WE ARE **ALL IN**

PROTECTION. COMFORT. VALUE.





920 Milliken Road
Spartanburg, SC 29303
800.334.4842
WESTEX.COM

WHEN IT COMES TO **FR SAFETY** | WE ARE **ALL IN**



Follow us for the latest FR insights.

PLEASE NOTE: AS EACH CUSTOMER'S USE OF OUR PRODUCT MAY BE DIFFERENT, INFORMATION WE PROVIDE, INCLUDING WITHOUT LIMITATION, TEST RESULTS, RECOMMENDATIONS, SAMPLES, CARE/LABELING/ PROCESSING INSTRUCTIONS OR MARKETING ADVICE, IS PROVIDED IN GOOD FAITH BUT WITHOUT WARRANTY AND WITHOUT ACCEPTING ANY RESPONSIBILITY/LIABILITY. ANY TEST RESULTS REPORTED ARE BASED ON STANDARD LABORATORY TESTING BUT SHOULD NOT BE USED TO PREDICT PERFORMANCE IN ACTUAL FIRE SITUATIONS. EACH CUSTOMER MUST TEST AND BE RESPONSIBLE FOR THEIR OWN SPECIFIC USE, FURTHER PROCESSING, LABELING, MARKETING, ETC. ALL SALES ARE EXCLUSIVELY SUBJECT TO OUR STANDARD TERMS OF SALE POSTED AT www.milliken.com/terms (ALL ADDITIONAL/ DIFFERENT TERMS ARE REJECTED) UNLESS EXPLICITLY AGREED OTHERWISE IN A SIGNED WRITING. USE CAUTION NEAR SOURCES OF FLAME OR INTENSE HEAT, AND FOLLOW THE CARE INSTRUCTIONS - DO NOT LAUNDRY WITH BLEACH OR FABRIC SOFTENERS. ANY FR LIFETIME GUARANTEES ARE SUBJECT TO THE LIMITATIONS AND CONDITIONS IN THE FORGOING TERMS OF SALE AND CARE INSTRUCTIONS. Indura[®], UltraSoft[®], UltraSoft AC[®], TrueComfort[®], Vinex[®], Moda-Quilt[®], Synergy[®], Indigo[®], AllOut[®], InsulAir[®] and CXP[®] are registered trademarks of Milliken & Company.