

White Paper

The Intersection of Compliance and Protection:

The Case for Daily Wear PPE Programs

Balancing the needs of your workforce and the standards of the industry may seem like a daunting task. With the selection and volume of protective gear available to you, it can be difficult to discern a way forward when creating or updating a PPE program — especially within the electrical industry.

Taking into the account the major elements of a risk assessment, this white paper explains the difference between task-based and daily wear PPE programs. Through the lens of the very latest in consensus standards, we explain how daily wear makes a compelling case for achieving the highest level of protection and compliance.

Given the regulatory atmosphere surrounding today's safety conversations, taking steps towards hazard mitigation is now more important than ever. For the electrical industry, this includes taking into account the potential life-threatening effects of arc flash hazards. NFPA 70E: *Standard for Electrical Safety in the Workplace*® defines arc flash hazard as "a source of possible injury or damage to health associated with the release of energy caused by an electric arc." While often a brief incident, the electric arc can cause potentially catastrophic burns to anyone in the vicinity.

Consensus standards continue to reinforce the importance of protecting your workforce through a systematic approach to risk assessment. Utilizing the hierarchy of risk controls, with AR (arc-rated)/FR (flame resistant) personal protective equipment (PPE) serving as the final layer of defense in combating an arc flash hazard, both employers and employees work together to create and promote the safest possible work environment.

Recently updated in 2018, NFPA 70E continues to be the guiding standard for electrical safety. The latest edition points to PPE usage as a matter of compliance, where employers and employees share a measure of responsibility in specifying and utilizing PPE day in and day out on the job. AR/FR protective apparel incorporates self-extinguishing and insulating fabric properties so that, after an arc flash incident, total body burn injury is significantly mitigated. AR/FR PPE has two primary roles in reducing burn injury: to self-extinguish in order to significantly reduce additional thermal exposure; and to provide insulation against the thermal event, thus reducing second- and third-degree burns.

NFPA 70E provides the framework for creating a compliant environment, of which PPE plays a vital role in accomplishing. In meeting this standard, a formalized PPE program should be established. Employers and workers have the option to incorporate two overarching types of PPE programs — task-based or daily wear. As the name suggests, task-based PPE is put on when performing a specific task, while daily wear PPE is worn throughout the day while on the job. Both programs offer the necessary protection; however, for lower energy Category 1 and 2 type tasks, daily wear, especially in light of the new emphasis on human error in Article 110, is a compelling means to achieve maximum compliance.



Task-Based Wear

Proper AR/FR clothing is put on to perform a specific task

Task-Based Wear Program Defined

Task-based programs, as the name implies, encourage workers to don the appropriate PPE when beginning a task, then remove it once the task is completed. In theory, this process would provide the necessary protection based on the task at hand without needing to wear said PPE all day long. It is important to note, though, that arc flash protection is directly linked to whether the task-based PPE is worn and worn correctly.

Task-based programs are less expensive than daily wear programs when comparing upfront PPE investment. Yet, there are a number of cost-related elements to consider when evaluating a task-based program. According to NFPA 70E, workers must wear natural fiber clothing underneath the PPE, which can be an additional upfront cost to insure workers are not wearing synthetic clothing with the task-based PPE. There is also a time cost, as a worker must take time out of their day to appropriately outfit themselves. Efficiency and productivity delays can further increase the costs realized over the life of the program.



Daily Wear

Proper AR/FR clothing is worn at all times during work hours

Daily Wear Program Defined

When considering your options, the expense of a daily wear program can seem daunting at first. Daily wear clothing is usually meant to operate as a single-layer garment, depending on the category level of protection needed, and that garment would provide protection throughout the day. The user does not need to take an extra step prior to completing hazardous work, as self-extinguishing and insulating fabric properties are built directly into the garment.

With the textile advancements of the last 20 years, AR/FR fabrics offer the mobility and comfort once thought unachievable for protective garments. In fact, the AR/FR clothing can be almost indistinguishable from regular street clothes given fabric characteristics and improved styling performance. Workers are comfortable on the job when in AR/FR clothing and no longer have to contend with the bulky, movement-inhibiting PPE of years ago. Daily wear PPE garments deliver guaranteed protection for the life of the garment, when made with a reputable AR/FR fabric and when properly maintained.

Daily wear PPE garments require few additional steps to provide full body arc flash Category 1 and Category 2 protection, and which include adding necessary PPE for head, face, hands or feet. Additional body PPE layering may be required based on arc-rating requirements for specific higher energy electrical tasks falling in Category 3 or Category 4. Efficiency is greatly improved when wearing daily wear for Category 1 & Category 2 protection, and a worker can better focus on the task at hand when he or she is not expected to divert attention to finding and donning task-based AR/FR clothing. Aside from streamlining a worker's day, daily wear can enhance on-the-job focus simply by eliminating an extra step.

The Underlying Problem of a Task-Based Program

As mentioned, task-based programs may have a number of hidden costs that could make

AR/FR Clothing Programs Start with Fabric

Safety and comfort come from the fabric brand — not the garment brand.

Select a trusted fabric brand that best meets your needs

Specify the fabric in your garments, even with name-brand garments

Avoid garments where the fabric brand isn't identified

Don't accept answers such as "'88/12 FR' fabrics are all the same"

Learn more about the fabric manufacturer's quality control process — how is each fabric lot tested?

Understand the FR fabric's certification and ask for third-party test results

the long-term investment on par with or higher than a daily wear program. From the efficiency argument to the hassle and expense of delays, task-based programs are subject to numerous factors that can hinder overall effectiveness — which can make its lower initial investment seem less important.

With both daily wear and task-based programs, it is important to make sure your AR/FR clothing provides the required level of protection against any hazards identified by the risk assessment. In many cases, the level of protection can be the same across the two types of programs, but the consistency of program use varies greatly. The consistency argument highlights a task-based program's greatest pitfall: is a worker going to put on the appropriate PPE at the appropriate time? There are a number of factors that come into play here — and now with the compliance updates found in NFPA 70E, it presents a greater challenge to workers and to their employers.

The 2018 edition of NFPA 70E specifically directs workers and employers to address and account for human error when conducting a risk assessment: "The risk assessment procedure shall address the potential for human error and its negative consequences on people, process, the work environment and equipment." Under this clear language, the electrical safety program must set out definitive steps to address human error. This directive, along with the error precursors outlined in the newly added Table Q in Informational Annex Q, mean that PPE plays a vital role in lessening the potential consequences of an arc flash incident.

Table Q breaks out four categories of human error precursors — task demands, work environment, individual capabilities and human nature — all of which contribute to elevated risks when approaching electrical work. Many of these error precursors can be substantially lessened with a daily wear program and may be exacerbated by a task-based program because of the need for employees to take an extra step to achieve the same level of protection. Thus, since workers are more likely to be wearing their AR/FR clothing, daily wear programs greatly reduce the likelihood of burn injury occurrence and severity of burn injury a worker may encounter in the event an arc flash occurs from one of these precursors.

While pressure exists at all levels to reduce costs, the cost of implementing a daily wear PPE program may not be as high as it seems, especially when factoring in the compliance and liability aspects now emphasized by consensus standards. Taking a long-term view on safety and risk helps make the case for implementing a daily wear program and greatly reduces the initial cost argument. By harnessing the power of technological developments and improved on-site efficiencies, daily wear prioritizes worker safety and morale while also meeting and exceeding industry requirements.

About the Author:

Scott Francis is the Midwest Regional Market Manager for Westex by Milliken. Involved in the safety industry since 1991, Scott has extensive experience with protective apparel fabrics, as well as protective apparel programs. He participates in a number of industry organizations, and frequently addresses trade associations and groups regarding relevant safety topics.



westex.com

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 launder 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. Milliken® and Westex® are registered trademarks of Milliken & Company.