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# WHAT'S IN A LABEL:

**AN ERGODYNE WHITE PAPER**

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When Arc or Flash fires are the foes you battle each day, the armor you wear is not only mission critical – it's life critical. More and more workers in America – and throughout the world – are using flame-resistant garments to ensure superior protection if they encounter a blast on the job. But how can you know if the garments you've purchased to protect you from these hazards meet the proper standards? The labels on FR garments tell an important and lifesaving story. It's a language that can look challenging and meaningless but not all flame-resistant garments are created equal, and labels offer a guide in safety standards, garment sustainability, and overall construction. That is – only if you understand what they are trying to tell you.

## WHY THIS MATTERS

Each year, hundreds of burn injuries and deaths are recorded from workers exposed to open flame, high heat, flash fire, or arc flash without proper personal protective equipment (PPE). In 2010, the US Bureau of Labor Statistics reported approximately 200 worker fatalities due to fire and explosions. Additional data from the BLS, National Safety Council, and National Fire Protection Association reports that every day 10 arc flash accidents happen across the US with more than 3,600 disabling electrical contact injuries per year.

## THE STANDARDS TO KNOW AND LIVE BY

Product labels are a direct indication that a garment meets the respective standards. In the flame-resistant garment industry, there are three key standards that establish legitimate claims:

- National Fire Protection Association (NFPA) 2112, Standard on Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire
- ASTM International Standard Performance Specification F1506 for Flame Resistant and Arc Rated Textile Materials for Wearing Apparel for Use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards
- NFPA 70E, Standard for Electrical Safety in the Workplace

Manufacturers can only label their products as compliant when they have met all the respective requirements of the individual applicable standard. This is why the label is a key demonstration of compliance and way of communicating to the end user that the garment is flame resistant and will provide a minimum level of protection.

In fact, in both NFPA 2112 (flash fire protection) and ASTM F1506 (electrical arc protection), specific requirements are set for the content of the label. In addition to the typical information identifying the product (manufacturer name, address, model number, size, country of origin, and fabric composition), each standard requires a specific statement for indicating that the respective

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garment is compliant with the standard. For NFPA 2112, this statement is quite specific and entails the following language:

**THIS FLAME-RESISTANT GARMENT MEETS THE REQUIREMENTS OF NFPA 2112, STANDARD ON FLAME-RESISTANT GARMENTS FOR PROTECTION OF INDUSTRIAL PERSONNEL AGAINST FLASH FIRE, 2012 EDITION.**

A simpler statement is specified for ASTM F1506 compliance.

**MEETS REQUIREMENTS OF PERFORMANCE SPECIFICATION ASTM F1506**

When it comes to NFPA 70E for electrical protection, several manufacturers make claims with respect to garment compliance. Unlike either NFPA 2112 or the more applicable ASTM F1506, NFPA 70E is not a product standard. Instead, it is directed at the end user and specifies the use of “appropriate” personal protective equipment, including flame and arc-resistant garments. As such, NFPA 70E provides a system for classifying the garment arc rating according to five PPE categories, formally known as HRCs. It also requires that the flame resistant garment meets the requirements of ASTM F1506.

These PPE category levels are a convenient and easy way for employers to know what their employees should be wearing while performing specific jobsite tasks. Flame resistant garments do not meet NFPA 70E, rather these garments are classified by which PPE category rating they received within the NFPA 70E ranking system and therefore are appropriate for certain applications.

For a garment to meet the NFPA 2112 standard and claim compliance, the product has to be certified by a qualified, independent third-party certification organization. To indicate this requirement has been met, a mark should appear on the certification mark of the product label, as evidenced here by the appearance of the familiar UL in the circle logo printed on the product label.



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This certification mark means that the garment is certified to the standard and has been extensively reviewed and that there is an ongoing process of review for maintaining that certification. Along with the initial testing, the mark also indicates there is an ongoing process of review for maintaining this certification. Periodic audits of the manufacturer quality control procedures and records as well as follow up testing check to ensure that all products manufactured continue to meet the requirements of the NFPA 2112 standard.

Some manufacturers claim that their products “meet” NFPA 2112, but the reality is that flame resistant garments can only be certified to NFPA 2112 and must have the mark of a legitimate, qualified certification organization like UL (NFPA 2112 requires the certification organization to be accredited and all laboratory test capabilities to be separately accredited). The use of “recognized components” or materials is not sufficient for a garment manufacturer to attain certification of their products.

## CARING FOR YOUR FR

Other information provided on the product label includes details on how the garment should be laundered. Instructions on washing, preferred drying conditions, and details on prohibited agents and processes (such as use of bleach and fabric softener or dry-cleaning garments) must be followed in order to maintain the protective qualities of the garment and ensure continued protection.

The NFPA 2112 standard requires the product label itself undergo 100 harsh laundering cycles to ensure longevity and legible label print. Nearly all garments eventually wear out, but if properly maintained, these garments not only remain safe, but will last longer.

## WATCH FOR WARNINGS

Under NFPA 2112, manufacturers are also required to provide further information to the wearer in the form of a warning label. Warnings indicate the intended uses of the garment, but more importantly, they also showcase any limitations for use of the garment.

For example, while garments are intended for short-term high-energy exposure from flash fire or electrical arcs, these garments are not appropriate for continuous high heat exposure as might occur during firefighting. It's up to the employer to perform a risk assessment to determine the sustainability of the garment for their expected use.

Other types of protective clothing may be necessary, such as protective outerwear, gloves, head, eye, or face protection to supplement the protection provided by the flame-resistant garment.

## BUILT IN TRACKING

All garment product labels must also include some form of tracking information such as a lot number or manufacture date. This information is put

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on the product label to allow garments to be tracked after they have been sold in case of any possible safety issues that might be discovered after the sale.

A possible safety issue could be a fabric that turns out to have poor colorfastness so that the garments prematurely fade when laundered. The tracking information is used to identify affected garments with traceability back to the original materials used in the construction of the garment. For those garments identified as being affected, it is then possible to issue a safety alert or under worse circumstances, require a product recall.

### **ALWAYS TAKE THE TIME TO CHECK YOUR LABELS**

While the label on a flame-resistant garment may seem to be a small part of the overall product, it is an essential way of communicating important information and ensuring workers are protected in certified garments. If encountering Arc or Flash fires is inevitable, there's no time for cutting corners. And when it comes to saving a life with a thorough read – it's always worth it.

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## **RESOURCES:**

**ASTM F1506, Standard Performance Specification for Flame Resistant and Arc Rated Textile Materials for Wearing Apparel for Use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards, 2010a.**

**NFPA 70E, Standard for Electrical Safety in the Workplace, 2012.**

**NFPA 2112, Standard on Flame-Resistant Garments for Protection of Industrial Personnel against Flash Fire, 2012.**

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