

**UniFirst**

# Does your business need Flame Resistant (FR) clothing?

Essential workwear solutions designed to protect at-risk workers from multiple hazards.





Do your employees or subcontractors work **on or near energized parts**?

Do they work with **fuel, gas, vapors, or combustible dust** that may linger in the air?

If you answered 'yes' to either of these questions, chances are OSHA requires you to provide them with the appropriate Flame Resistant (FR) clothing as part of its personal protective equipment-related standards or under its broader General Duty Clause.\* Proper arc-rated FR clothing is an important line of protection for employees who work on or near electrical hazards and combustible fuel sources. **FR garments' life-saving feature** is that they **will almost immediately self-extinguish**, which means once the worker is free from the ignition source, the garments will not continue to burn.

There are many potentially dangerous jobs being performed every day. FR clothing for utility and petrochemical workers has become the rule rather than the exception, but there are now many other industries that may require its use as well.

That's because OSHA enforces employer compliance to established personal protective equipment (PPE)-related safety standards, which often include FR garments for workers, and issues citations for violations with monetary penalties that can skyrocket into the hundreds of thousands of dollars. One industrial facility was issued a Citation and Notification of Penalty from OSHA that included \$315,000<sup>1</sup> in PPE-related penalties; another received a staggering \$380,500<sup>2</sup> penalty. And several provisions of OSHA's General Duty Clause can result in citations and costly per-instance fines of up to \$7,000 per related employee.

Additionally, due to a rising number of combustible dust explosions and associated catastrophic events, NFPA 652—the Standard on the Fundamentals of Combustible Dust—was also implemented. This standard provides the general requirements for managing combustible dust fire and explosion hazards and directs employers to the PPE requirements, which may require FR garments, under NFPA 2112 and 2113. Combustible dusts are fine particles that present an explosion hazard when suspended in air in certain conditions.

\*See Reference Guide on back cover

# What's my responsibility as the employer?

According to OSHA's General Duty Clause, it is the employer's ongoing responsibility to provide a workplace free of recognized hazards. And it's every employer's responsibility to provide their workers with the proper PPE on the job, which may include FR garments.

## Employers:

- Must assess the workplace to determine which workers are exposed to flame or electric arc hazards;
- Must estimate the incident energy of potential electric arc hazards to match with proper arc-rated FR garments;
- Are responsible for ensuring the appropriate selection, use, care and maintenance of PPE, including FR workwear, and;
- Must pay for the FR, arc-rated clothing and other arc-flash protective equipment that the electric power generation, transmission, and distribution standards require.

## Why should I comply with FR requirements?

Because protecting workers is the right thing to do. And because compliance can help limit a company's potential liability associated with costly accidents. Of course, you want to protect your employees from various hazards the best that you can. The injuries to workers, lost productivity, and the risk of litigation and fines makes flash fire, electric arc flash, and combustible dust hazards some of the most dangerous hazards companies face today. Compliance sends the right safety message to all employees who will appreciate the concern for their well-being.

## What are the primary regulations I should be concerned with that address FR garments?

- **OSHA Standard 29 CFR Part 1910, Subpart I**, (Enforcement Guidance for Personal Protective Equipment in General Industry) provides enforcement guidance concerning OSHA's policies and procedures for implementing inspection programs to reduce injuries, illnesses and fatalities, and eliminate workplace hazards in general industry employment through the use of PPE, which may include FR garments.
- **General Duty Clause** (Section 5(a)(1) of the Occupational Safety and Health Act) requires employers to identify risks and protect employees from potential hazards in the workplace.
- **NFPA 45** addresses FR clothing requirements as it relates to fires and explosions involving the use of chemicals in commercial, educational, and instructional laboratory operations.
- **NFPA 70E** addresses electrical safety in the workplace and contains guidance on the selection and use of PPE, including arc-rated FR garments.
- **NFPA 652** addresses FR clothing requirements as it relates to combustible dust fire and explosion hazards.
- **NFPA 2112** specifies performance requirements for FR fabrics in flash fire.
- **NFPA 2113** addresses the selection, care, cleaning, and maintenance of FR clothing.



## Common industries that may require FR garments

Aluminum casting  
Chemicals  
Electrical utility  
Fertilizer  
Food (sugar, flour, feed)  
Metal or glass foundries  
Metal processing  
Mining  
Oil and gas  
Petrochemicals  
Pharmaceuticals  
Plastics  
Production related  
Well servicing  
Wood

## Why should I comply with NFPA Standards?

NFPA 70E, the Standard for Electrical Safety in the Workplace, is voluntary in the sense that it hasn't been adopted directly as an official law. However, NFPA 70E is the "industry consensus standard," and although this is a "voluntary" standard, in effect, it can be as mandatory as any of the electrical-related rules enforced by OSHA. OSHA has endorsed NFPA 70E as part of its compliance strategy and is utilizing this standard to provide guidance on the selection and use of PPE protection from electrical shock and arc flash. OSHA can also use NFPA 70E as a reference in General Duty Clause citations. And standards like NFPA 70E are sometimes used as evidence of hazard recognition and method of correction when issuing citations.

OSHA also identified following NFPA 2112 as one means of compliance with its PPE regulations. See Reference Guide on back cover for details.

## My employees need an FR uniform program. Where do I begin?

The first question you may have is: How do I know which FR clothing and fabrics to select? And then you may want to ask yourself: How much time and money do I have to spend on program management? There are many potential costs to consider.

There are two primary choices when it comes to implementing an FR uniform program: purchasing and maintaining the garments yourself or contracting a professional full-service FR uniform rental program provider.



**It's every employer's responsibility to provide their workers with the proper PPE on the job, which may include FR garments.**

<sup>1</sup> Citation and Notification of Penalty to AMD Industries, Inc., and its successors, issuance date 5/24/2011

<sup>2</sup> Citation and Notification of Penalty to Black Mag LLC, dba BMI & Black Mag Industries, issuance date 10/22/2010

# Why should I consider an FR rental program?

A managed FR rental program combines industrial laundry service with garment pickup/deliveries, inspections, repairs, and replacements to help maintain the safety garments' functionality and image as originally designed or intended.

- **Peace of Mind.** The ultimate safety goal is to provide and maintain Flame Resistant characteristics during a garment's life and to retire it when appropriate. The regulatory climate surrounding workplace safety and PPE is rapidly evolving and failing to keep up could prove costly. With a professionally managed rental program, complying with evolving safety standards can be easier and more affordable.
- **Convenience.** With an FR garment rental program, there is no upfront investment—pricing is based on low weekly fees per wearer. And there is no need for employees to worry about the laundering and maintenance of their uniforms. Plus, a managed

rental program can offer a large selection of FR clothing and a wide variety of fabric options, in addition to measuring and fitting employees at your job site, and weekly pickup and delivery.

- **Proper clothing maintenance.** Professional mending and repairs through a managed rental program helps FR garments perform as intended throughout their wear life. With a full-service uniform rental program, you're assured that clean, maintained FR garments are always available.

Accidents may happen, and if they do, one factor that can minimize injuries and greatly improve the chance of survival is the use of high-quality, arc-rated FR garments. Be sure to choose a reputable supplier—one who understands your employees' FR needs, has a working knowledge of the safety standards, and has the ability to help you comply with them.

## Common features of a Flame Resistant uniform rental program



No upfront investment



Uniform sizing and fitting



Branding and personalization



Pickup and delivery



Hygienic laundering



Inspections and compliance



Repairs and replacements

## Why should I choose Armorex FR® by UniFirst?

Armorex FR work garments are made exclusively by UniFirst in ISO 9001-certified facilities to ensure the highest quality. Made from the most innovative and proven arc-rated FR fabrics on the market, they meet international ASTM protective standards, have all the durability and comfort of traditional work apparel, and are UL® Classified to meet NFPA 2112. Armorex FR garments can also help you comply with NFPA 70E, CSA Z462, and OSHA standards.

UniFirst Flame Resistant garments help you **protect** your employees, **comply** with safety regulations, and **limit** your legal liability.

For a **FREE service evaluation**,  
Call **800.225.3364** // Visit **UniFirst.com**



# Do the Math: Purchase vs. Rental

## Employer purchases and self-manages FR garments

### Per employee

- 5 uniforms (@ \$110 per set average) . . . . . **\$550**
- 20% increase for replacements due to wear and tear . . . . . **\$110**
- Cost to launder 5 (@ \$1 per set per week) x 52 weeks . . . . . **\$260**
- Labor to monitor program for compliance: How much of YOUR time will it take to carefully review and repair each garment on a weekly basis? Depending on the amount of employees you have wearing FR garments, this could be a full-time job. . . . . **the X-Factor**



## Rental program with a trusted industrial launderer

### Per employee

- 11 uniforms (@ \$1.10 per set) x 52 weeks . . . **\$629**
- Cost for replacements due to normal wear and tear . . . . . **\$0**
- Cost to launder (included in weekly rental fee) . . . . . **\$0**
- Labor to monitor program for compliance (included in rental fee) . . . . . **\$0**



**Renting could reduce your total cost of ownership by as much as 50%.**

Take the quiz to see if you might benefit from a managed FR uniform rental program

	Yes	No	Not Sure
Do my workers have clothes that properly fit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are my workers trained on how to properly launder their FR garments (no bleach, no softeners or oxidizers, no dryer sheets)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are we inspecting garments prior to each wear?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are damaged garments being repaired automatically?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are garments being replaced when damaged beyond repair?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do we have a plan to replace garments once they've reached the end of their usable life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When we order garments for a new employee or replace garments for an existing employee, are the garments in our building by the next wear date?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**If "No" and "Not Sure" outnumber "Yes", call to speak with a UniFirst FR uniform representative.**

Compare: Who is responsible for your FR uniform program tasks?

	Direct Purchase		Rental Program
	Employer	Worker	Industrial Launderer
Upfront initial investment	✓		✓
Initial sizing & outfitting	✓		✓
Ordering of garments	✓		✓
Weekly laundering		✓	✓
Weekly garment inspection*	✓		✓
Garment repairs	✓		✓
Garment replacements	✓		✓
Garment delivery	✓		✓
Size adjustments	✓		✓
Standards compliance checkups	✓		✓
Garment tracking reports	✓		✓
Management of program	✓		✓
On-hand inventory	✓		✓

\*To help mitigate risks, UniFirst will make every effort to identify FR garment failures prior to their return to our customers. However, the employer is ultimately responsible for garment inspection prior to usage by its own employees.

# Reference Guide

## Who is OSHA, and what is their responsibility to employees?

With the Occupational Safety and Health Act of 1970, Congress created the Occupational Safety and Health Administration (OSHA) to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education, and assistance.

## Who is NFPA?

Founded in 1896, NFPA is a global, nonprofit organization devoted to eliminating death, injury, and property and economic loss due to fire, electrical, and related hazards. The association delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach, and advocacy; and by partnering with others who share an interest in furthering the NFPA mission.

## Standards

OSHA standards are rules that describe the methods that employers must use to protect their employees from hazards. There are OSHA standards for construction work, maritime operations, agriculture, and general industry, which is the set that applies to most work sites. Employers must also comply with the General Duty Clause of the OSH Act, which requires employers to keep their workplace free of serious recognized hazards. This clause is generally cited when no OSHA standard applies to the hazard.

NFPA codes and standards provide ways to prevent the occurrence of disasters, manage their impact, and protect workers. NFPA develops, publishes, and disseminates its codes and standards with the intent of minimizing the possibility and effects of fire and other risks.

The first step toward compliance is knowing which regulations you must meet.

**General Duty Clause** (Section 5(a)(1) of the Occupational Safety and Health Act) requires employers to identify risks and protect employees from hazards in the workplace. The rule applies to many types of personal protective equipment, and has been used to cite employers that did not require the use of Flame Resistant protective apparel for at-risk workers.

**OSHA Standard 29 CFR Part 1910, Subpart I** (Enforcement Guidance for Personal Protective Equipment in General Industry) provides enforcement guidance to OSHA Compliance Safety and Health Officers (CSHOs); national, regional, and area offices; and state programs and federal agencies concerning OSHA's policies and procedures for implementing inspection programs to reduce injuries, illnesses and fatalities, and eliminate workplace hazards in general industry employment through the use of personal protective equipment (PPE).

- 1910.119 contains requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards. While the standard does not specifically require FR garments, OSHA has used this standard more frequently than the General Duty Clause as the basis of citing employers for not requiring FR garments.
- 1910.132 requires employers to select appropriate PPE based on the hazards present or likely to be present in the workplace; prohibits the use of defective or damaged PPE; and requires that employees be trained so that each affected employee can properly use the assigned PPE.
- 1910.269 applies to the operations and maintenance of any system or activity that exists, directly or indirectly, for the sole purpose of generating, transmitting, or distributing electric power and for which only "qualified employees" have access. The maintenance standard mandates that personnel who work around energized parts must not wear clothing that, if exposed to an electric arc, could contribute to the extent of burn injury. Previous versions had more flexibility. However, recent changes now dictate that employees must be in arc-rated garments.

In addition to the OSHA regulations, there are five NFPA standards that are typically given substantial consideration when it comes to protective garments.

**NFPA 45** – The Standard on Fire Protection for Laboratories Using Chemicals, which is the comprehensive source for requirements for the fire-safe design and operation of instructional, educational, and industrial laboratories to avoid injury to lab occupants. Included in the standard is reference to wearing FR clothing.

**NFPA 70E** – The General Consensus Standard produced by NFPA for protection of workers who could be exposed to momentary electric arc exposure. The standard covers industrial electricians who work on or near live electrical power in excess of 50 volts. The employer must conduct a hazard risk assessment in their facility to determine potential incident levels in the event of an electrical event. The assessment will include the required garment protection level, otherwise known as arc thermal protection value (ATPV), to match with arc-rated FR clothing.

NFPA 70E is a voluntary standard developed by the NFPA, is revised every three years, and the 2021 Standard is now the current document.

**NFPA 652** – The Standard on the Fundamentals of Combustible Dust, which provides the general requirements for managing combustible dust fire and explosion hazards and states that when FR clothing is required, it must comply with the requirements of NFPA 2112 and be selected, procured, inspected, worn, and maintained in accordance with NFPA 2113.

**NFPA 2112** – Specifies the minimum performance requirements and test methods for Flame Resistant fabrics and components, and the design and certification requirements for garments used in areas at risk from flash fires. While this standard is most common in oil and gas, it has precedence in other fuel and refining markets. Garments must be certified by a third party (such as UL) and limit second-degree burns to 50% or less of the total body in the "mannequin test".

**NFPA 2113** – Addresses the selection, care, and maintenance of FR clothing, outlining proper cleaning protocols. The number one fine among NFPA 2112 and 2113 is for improper care and maintenance of garments.

---

**For more details visit:**  
[osha.gov](https://www.osha.gov) // [nfpa.org](https://www.nfpa.org)

UniFirst Flame Resistant garments help you **protect** your employees, **comply** with safety regulations, and **limit** your legal liability.

**Disclaimer:** All information provided by UniFirst in this document is solely for general informational purposes. This information should not be considered advice or recommendation to employers about requirements for the managed Flame Resistant (FR) garment program specific to their workers or their workplace. All FR garment program decisions should be based on an employer's unique workplace safety needs and the employer-solicited advice of their legal counsel or health and safety professionals. The employer should not take any action with respect to any specific legal, regulatory, or safety matters based solely on information contained in this document. Further, UniFirst is not liable for any action that the employer does or does not take based on information herein.