

PPE 101



YOUR GUIDE TO UNDERSTANDING FIREFIGHTER PPE SELECTION & MAINTENANCE



x



TABLE OF CONTENTS



p/3 INTRODUCTION

p/4 NFPA TURNOUT STANDARDS

p/6 TURNOUT FEATURES

- Composites
- TPP vs. THL vs. Ret
- Fit and Function

p/14 STRUCTURAL ACCESSORIES

- Helmets
- Hoods
- Gloves
- Boots

p/19 ALTERNATIVE PPE

- Types of Alternative PPE
- Alternative PPE Standards

p/22 GEAR CARE & MAINTENANCE

p/23 THE FUTURE OF PPE

INTRODUCTION

Personal Protective Equipment (PPE) is essential gear that protects firefighters from the extreme hazards they face on the job. This includes (though is certainly not limited to) exposure to high heat, flames, falling debris, sharp objects, hazardous chemicals, and biological contaminants.

PPE is not just a single item, but a system of protective components that work together to ensure safety.

For structural firefighting, PPE typically includes turnout gear (coat and pants), helmet, gloves, boots, hood, and SCBA (Self-Contained Breathing Apparatus). Each piece plays a critical role in shielding the firefighter from specific dangers.

Turnout gear, in particular, is arguably the most vital component. It covers a large portion of the firefighter's body, greatly impacting heat protection, mobility, and overall weight. It also represents one of the biggest investments for fire departments.

For non-structural calls (e.g., motor vehicle accidents), PPE generally includes either a coat and pants or a one-piece coverall garment, a helmet, gloves, and boots.

Non-structural calls require a variety of different PPE specifications to suit the needs of the call. Some calls require two layers, others only a single layer. It's important to first consider the types of calls that gear will be worn in before making purchasing decisions.

When making decisions on PPE purchasing, or even just in how to properly wear and maintain gear, it's important to understand the ins and outs of your gear. In this e-book, we'll explore all the types of PPE first responders wear on a regular basis. We'll walk through the basics to give you a better understanding of how turnouts and alternative PPE protect for the job at hand, the key features that impact performance on (and off) the fireground, and the facts that every firefighter should know about the gear they trust to keep them safe day in and day out.

THE EVOLUTION OF PPE

1700s-1800s

Wool coats and breeches offered very minimal protection

1830s:

First use of "traditional" firefighter helmet design

EARLY 1900S:

Rubber coats and boots introduced, offering better protection at the cost of breathability

1960s:

Synthetic fibers used in modern turnouts (e.g., Kevlar®, PBI®) created, greatly increasing the fire resistance and durability of turnouts

1970s:

Three-layer turnouts introduced, taking advantage of synthetic materials to offer greater thermal and moisture protection

1991:

Fire hoods become part of NFPA standard

TODAY:

Modern materials and design offer lightweight, mobile, durable gear that can be customized to a department's needs

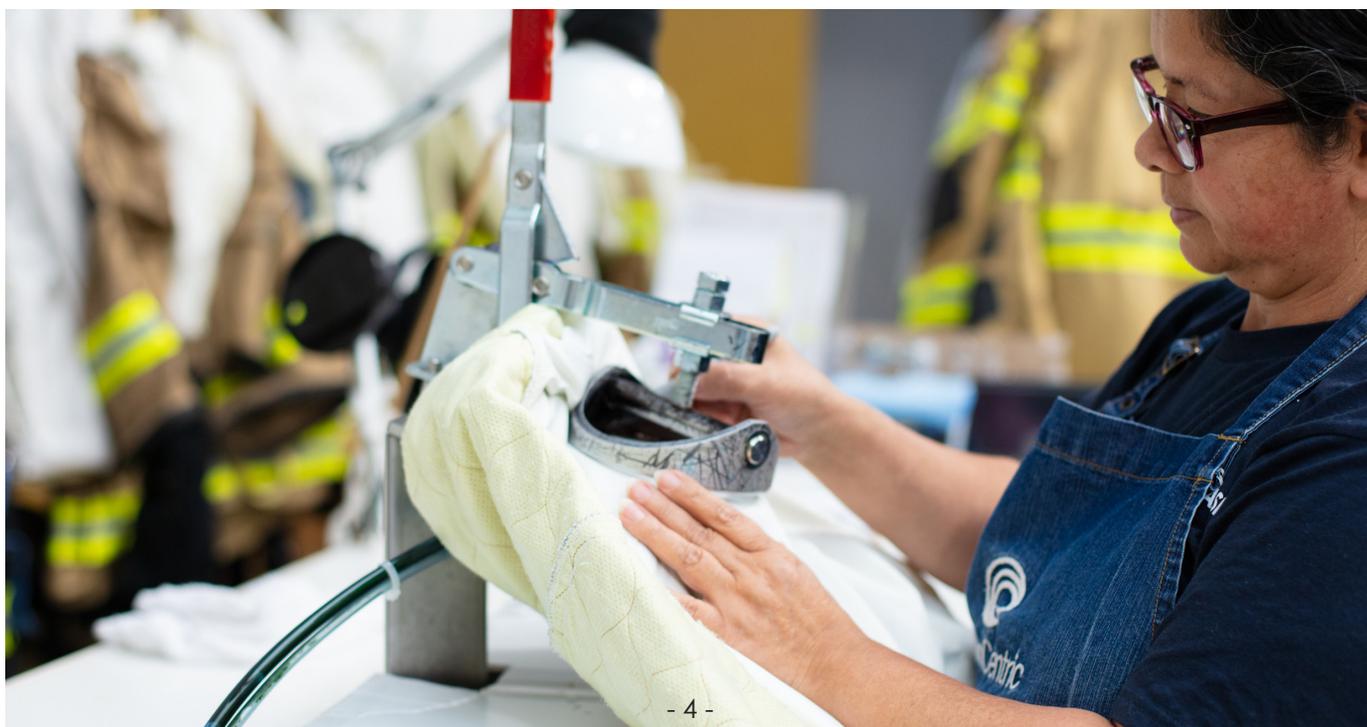
NFPA TURNOUT STANDARDS

The National Fire Protection Association (NFPA) sets the standards that guide the design, performance, and testing of firefighter PPE. The most relevant standard for turnout gear is NFPA 1970, the Standard on Protective Ensembles for Structural and Proximity Firefighting, Work Apparel, Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, and Personal Alert Safety Systems (PASS).

Formerly NFPA 1971, NFPA 1970 is a consolidated version of previous guidelines that was approved in 2025 and rolled out in 2026. It outlines the minimum requirements for protective ensembles used in structural and proximity firefighting.

NFPA 1970 provides details for nearly every aspect of structural PPE, including specifications for thermal protection, flame resistance, and moisture barrier performance. It also mandates rigorous testing protocols to ensure gear can withstand the extreme conditions firefighters face.

CONSOLIDATION OF STANDARDS





HOW NFPA STANDARDS SHAPE PPE

NFPA 1970

**MANUFACTURER
DESIGN**

**TESTING &
CERTIFICATION**

**DEPARTMENT
SELECTION**

**FIREFIGHTER
SAFETY**

Over the years, specifications and tests have increased in complexity, as modern materials make better protection possible. For firefighters and departments, the most important figures regarding turnout gear relate to thermal protection and breathability ([jump to page 8 description of TPP/THL/Ret](#)).

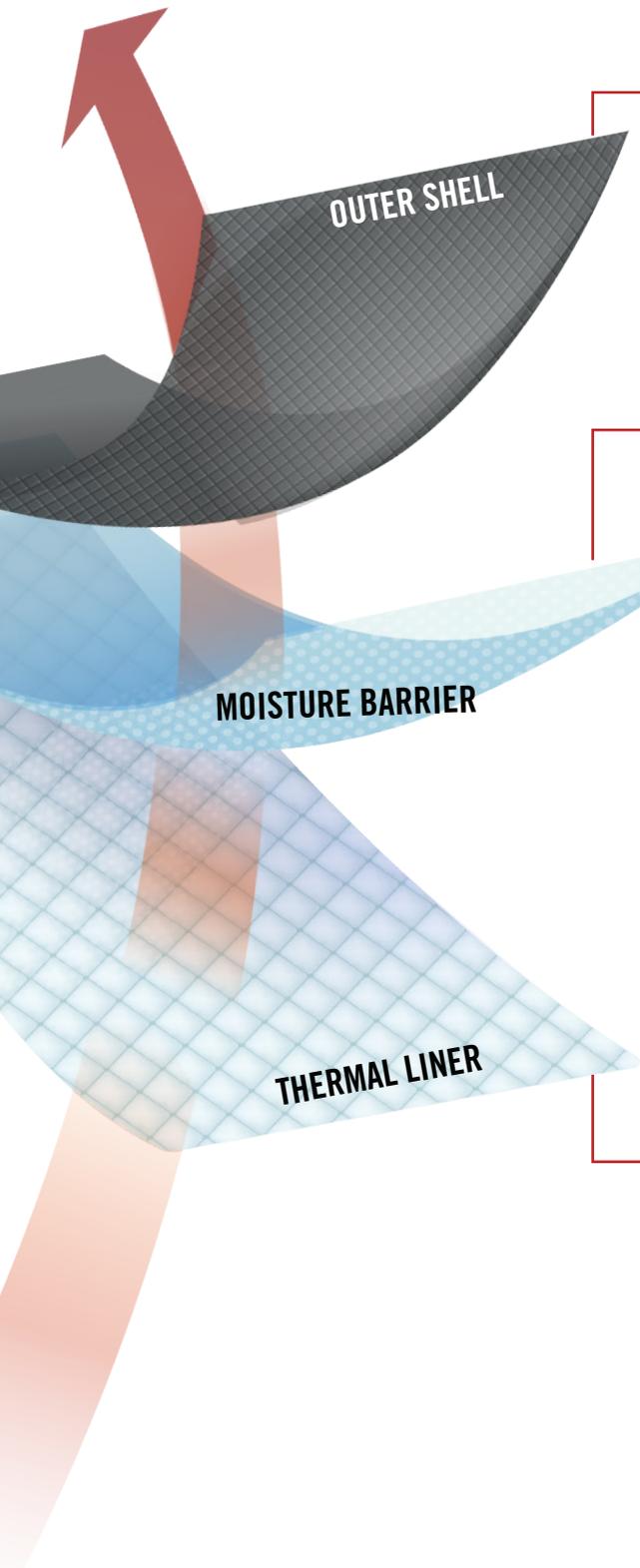
All turnout gear sold in the United States must conform to NFPA standards. But it's important for departments to know that the standard sets only minimums for performance and safety. Other factors like mobility are not necessarily addressed in the standard, and within the standard departments and manufacturers are still able to greatly customize gear to fit specific needs.

Understanding these standards helps chiefs and procurement officers make informed decisions that prioritize firefighter safety. It's also important to understand how gear is put together according to NFPA guidelines, as well as the materials and specifications that have a direct impact on PPE performance and safety.

TURNOUT FEATURES

Composites

Modern turnout gear is constructed from a three-layer (outer shell, moisture barrier, thermal liner) composite system, each layer serving a specific function. The three layers are usually referred to as “the composite.”



The **outer shell** is the first line of defense, made from flame-resistant materials that also provide durability against abrasions and cuts. Outer shells also provide a degree of moisture protection, with treated materials providing resistance to oil or water absorption. Outer shell materials vary in thermal protection, weight, breathability, durability, and color.

The middle layer of turnouts is the **moisture barrier**, which prevents water, chemicals, and bloodborne pathogens from penetrating the gear. Manufacturers are required to pass a “shower test” where gear is placed on a mannequin and sprayed with water that cannot enter the garment. Together, the outer shell and moisture barrier work to repel moisture and protect the wearer.

The need for moisture protection must also be balanced with the need for breathability. While it’s dangerous for hot water to enter gear, it’s equally dangerous for a firefighter’s sweat to be trapped inside the garment (which can lead to heat stress and a host of other health problems). Moisture barriers must balance the need to keep water from getting in while also allowing sweat vapor out.

The innermost layer, the one that touches the firefighter’s body directly, is the **thermal liner**. This layer is designed to insulate the firefighter from extreme heat. Generally made of quilted or laminated fabrics, this layer is the last line of defense from burns and plays a significant role in determining the overall protection of the gear. This layer is tested for its ability to stand up to extreme temperatures and protect the wearer.

With thousands of composite combinations available from PPE manufacturers, departments can choose the options that work best for them. It's important to note that every composite, not just every material, must pass NFPA standards. This ensures that any combination of materials a department chooses provides the necessary protection.

When choosing a composite, departments should consider the environments their gear is most often subjected to. Different departments have different needs. A department in Florida is not likely to face the same weather as a department in Alaska, so different levels of breathability may be needed. Some departments prioritize heat protection while others prioritize mobility.

It's also important to remember that ounces add up when it comes to composite selection. Composite material weight is measured in ounces per square yard (oz/yd²).

AS A GENERAL RULE OF THUMB, FOR EVERY ADDITIONAL OZ/YD² IN A MATERIAL, THE FINAL COMPOSITE WILL WEIGH ABOUT ONE ADDITIONAL EXTRA POUND.

The right composite for every department is a balancing act between weight, breathability, thermal protection, and mobility.



TPP vs. THL vs. Ret

When evaluating turnout gear, departments must consider three key performance metrics: Thermal Protective Performance (TPP), Total Heat Loss (THL), and Resistance to Evaporative Heat Transfer (Ret).



Thermal Protective Performance (TPP)

TPP measures how long a firefighter's gear takes to transfer heat and cause a second-degree burn during a flashover event. The minimum rating for TPP is 35. The higher the TPP number, the more thermal protection it provides. For a quick conversion, divide the TPP number by two for the number of seconds that the gear protects against direct flame exposure. So, for a TPP of 35, the gear would provide 17.5 seconds before a second-degree burn.

For many years, departments only (or at least mostly) considered TPP when selecting gear. Turnouts with extremely high TPP are possible, but departments are now beginning to realize the negative impact of concentrating solely on thermal protection. In general, the higher the TPP, the less breathable the garment (lower THL and higher Ret) and the more it weighs. That in turn traps internal body heat and puts extra stress on the firefighter's body.

To help tell this story, NFPA requires manufacturers to also consider Ret and THL, which both measure breathability.

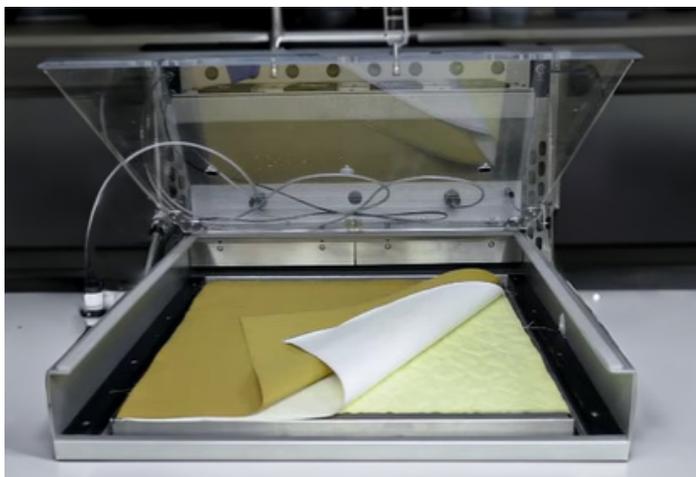
**MINIMUM NFPA
REQUIREMENT**

35

35/2 = 17.5 SECONDS BEFORE A 2ND-DEGREE BURN

Total Heat Loss (THL)

THL has been in the standard for years and measures how much heat and vapor can escape from a fabric. The minimum is 205 and larger numbers mean more breathability. In general, an increase of 20 points can be felt by a firefighter.



But THL doesn't capture the full picture of breathability. Some fabrics may release heat well but struggle to let sweat vapor escape. That's why NFPA 1970 also requires manufacturers to publish Ret values, which measure how effectively gear supports evaporative cooling.

To cool down the body, sweat must be able to evaporate off the skin and carry heat with it. When sweat vapor can't escape, it cannot cool down the body effectively.

**MINIMUM NFPA
REQUIREMENT**

205

**GENERAL RULE = 20 POINTS CAN BE
FELT BY A FIREFIGHTER**

Resistance to Evaporative Heat Transfer (Ret)

Ret is a critical indicator of how well gear helps prevent heat stress.

**A LOWER RET NUMBER MEANS BETTER
BREATHABILITY, AND EVEN A ONE-POINT
DIFFERENCE CAN BE NOTICEABLE TO
FIREFIGHTERS.**

The maximum Ret value for gear is 45; most turnout gear falls within the 20 to 40 range, while the most breathable composites achieve an Ret as low as 15.

**MINIMUM NFPA
REQUIREMENT**

**45
OR LESS**

Composites must balance TPP with Ret and THL to protect firefighters from both internal and external heat. It's also important to remember that while TPP is measured in seconds of thermal protection, research shows that better breathability (meaning higher THL and lower Ret) can make a difference in minutes of extra protection or working time before heat stress sets in.

It's also important to remember that other factors beyond composite choice can affect these numbers. Turnout design varies greatly from manufacturer to manufacturer. Even the same composite can be more or less suited for a department based on the unique design features. For example, Fire-Dex's [AeroFlex® turnouts](#) feature unique AeroVent® Technology that allows sweat vapor to more easily escape. That feature supercharges the breathability of composites compared to turnouts without the technology.

COMPARING STANDARDIZED TESTING FOR FIREFIGHTER PPE

TPP

THL

Ret

	TPP	THL	Ret
STANDARDIZED TEST MEASUREMENT	ASTM F2700 Standard Test Method for Unsteady-State Heat Transfer Evaluation of Flame Resistant Materials for Clothing with Continuous Heating	ASTM F1868 Standard Test Method for Thermal Resistance, Evaporative Resistance, and Total Heat Loss Measurements of Clothing Materials Using a Sweating Hot Plate	ASTM F2370 Standard Test Method for Measuring the Evaporative Resistance of Clothing Using a Sweating Manikin
WHAT IT MEASURES	Time for heat to penetrate layers to cause 2nd-degree burn	How effectively heat + vapor escape the composite (overall breathability)	How easily sweat vapor passes through the gear to allow the body's natural cooling system (evaporation) to work
DATE ESTABLISHED	1986 First introduced into NFPA 1971	2000 Options prior to NFPA 2000 edition	2025 Formal adoption under NFPA 1970
MINIMUM REQUIREMENT	35 or more	205 or more	45 or less
RELATIONSHIP	↑ Higher = more protection	↑ Higher = cooler gear	↓ Lower = more breathable
TRADE-OFFS	Higher TPP typically equates to better flame resistance, but heavier / less breathable garments	A 20-point difference is noticeable Higher THL often lowers TPP slightly	Even a 1-point difference can be felt Critical consideration for preventing heat stress
	HEAT PROTECTION	BREATHABILITY	BREATHABILITY

FIT AND FUNCTION

Beyond composites and hard performance numbers, there are also qualitative factors like fit, function, and comfort that make a big difference in turnout gear.

The best composite and highest TPP/THL numbers mean nothing if gear doesn't fit or if it doesn't have the right features to perform the job. Proper fit and function aren't just about comfort—it's a critical factor in safety and performance. Ill-fitting gear can restrict movement, create gaps in protection, and increase the risk of injury. The right features mean that firefighters can easily access necessary tools when seconds count.

Modern turnout gear is designed with movement in mind. Firefighters are required to perform a range of motions on the fireground (e.g., pulling hose lines, climbing ladders, crawling, kneeling). Well-designed turnout gear moves with the firefighter, reducing fatigue and improving efficiency on the fireground.



FUNCTION



FIT

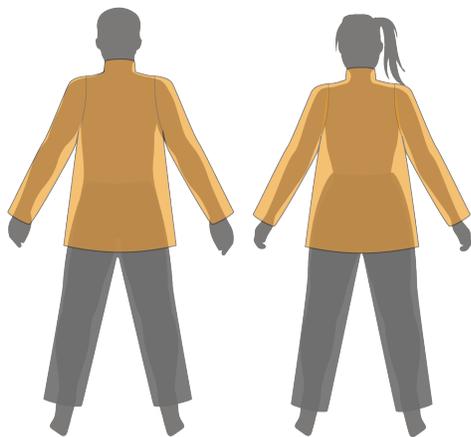


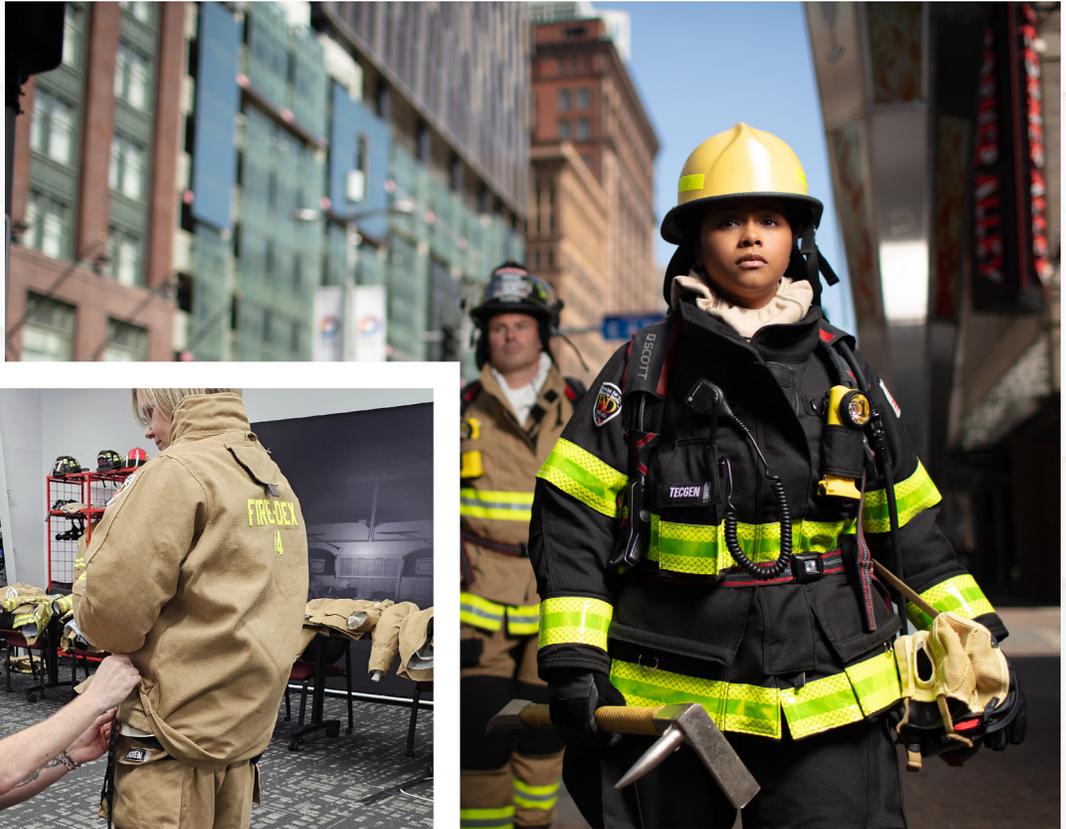
COMFORT

It's easy to tell if gear does or doesn't move well—it's usually the first feedback firefighters give of their gear. But when looking for turnouts, consider how purposefully designed the gear is for movement.

In the past, gear was all based on one basic pattern, with limited thought put into ergonomics. But new turnout gear is different. For example, Fire-Dex's [FXR](#) and [AeroFlex turnouts](#) have a redesigned shoulder seam that increases the amount of shoulder movement firefighters have in their gear. That small change decreases how much the coat rises when reaching up. Other changes like pre-bent elbows mean that gear fits more easily right out of the box because it conforms to the natural shape of the body.

Fit also depends on the pattern used in gear. Most turnouts are customized for pant length, chest size, etc. But those measurements usually only offer minor changes to an established pattern based on a single body type. But firefighters come in all shapes and sizes.





Modern turnouts are uniquely sized for the individual, rather than a single one-size-fits-all pattern. That ensures every firefighter, regardless of body type, can get the protection they need where it matters most.

THIS IS ESPECIALLY TRUE FOR FEMALE FIREFIGHTERS, WHO FOR DECADES HAD TO SETTLE FOR ILL-FITTING TURNOUT GEAR.

To fit firefighters with larger hips, many manufacturers simply increase the size of the chest measurement. That means the coat technically fits, but extra bulk in the chest sags and adds extra weight. With more pattern options and room

for customization, turnouts can be made to fit everyone.

Departments should not only consider a turnout's design, but also sizing for that design. Proper sizing is essential for a proper fit. Modern tools, like the Virtual Sizer from Fire-Dex, take the guesswork out of sizing and ensure a better fit. More customization requires additional measurements for a proper fit, not to mention the need for more accurate measurements. But with the help of AI-assisted tools, sizing has become easier and more accurate.

STRUCTURAL ACCESSORIES

While turnouts are the most obvious part of a firefighter's protective ensemble, they aren't the only necessary pieces of equipment. Accessories play a vital role in protecting firefighters, especially around sensitive areas like the head, hands, and feet that require specialized gear.



p/15 HELMETS



p/16 HOODS



p/17 GLOVES



p/18 BOOTS



HELMETS



Perhaps the best-known symbol of firefighters, the classic firefighter helmet has been in use since the 1830s.

Originally made of leather, the wide brim of the hat is designed to protect against fireground debris. A crest, usually with the name of the department, is traditionally held in place by a bronze eagle (the use of which also began around the 1830s).

Modern helmets have updated materials to increase impact and flame protection. Mechanisms for holding the helmet on the head have also grown more sophisticated. New materials and designs mean that helmets can be more comfortable during use and provide better protection on the fireground.

Helmets are also available in updated forms beyond the standard firefighter helmet shape (often referred to as "modern helmets"). These helmets take advantage of modern manufacturing methods to make a strong shape with very minimal brims (if there are any at all). As previously discussed, turnouts are required to provide a high degree of protection from burns and moisture, largely eliminating the need for a brim-style helmet.

But the traditional fire helmet design seems like it's here to stay, as a constant reminder of the long legacy of firefighters who have gone before.

TOP 3 CONSIDERATIONS WHEN PURCHASING:

1. PROTECTION & CERTIFICATION

Ensure the helmet meets NFPA 1971 (now NFPA 1970) standards for impact, penetration, and heat resistance.

2. FIT & BALANCE

A well-balanced helmet reduces neck fatigue and improves comfort during long operations.

3 WEIGHT & MATERIALS

Lighter materials (like fiberglass or composite shells) improve comfort without sacrificing protection.



HOODS



Hoods are relatively new to the fire service.

First introduced as a barrier to protect the face and neck, the first generations of hoods were little more than a thin layer of fabric. Many firefighters were reluctant to adopt hoods, unconvinced by the protection. Improperly made hoods can limit fireground perception and cause distractions.

But in recent years, research has shown that hoods are a vital piece of any firefighter's PPE ensemble. As firefighters grapple with an epidemic of cancer, researchers have again and again pointed to fireground contaminants as a particular danger. Researchers found that traditional hoods did little to block those contaminants from coming into contact with the skin around the face and neck. Those areas are especially vulnerable because they are more permeable, meaning that they more readily allow harmful contaminants to get into your body.

In response to this, Fire-Dex was the first to develop a [particulate blocking hood](#). Under NFPA 1970 regulations, particulate blocking hoods are now required. These hoods not only provide protection against heat, but also prevent fireground contaminants from coming into contact with a firefighter's face and neck.

In addition, modern hoods have solved many of the issues with previous hoods. Increased fabric technology and design means that hoods are less likely to limit fireground awareness.

TOP 3 CONSIDERATIONS WHEN PURCHASING:

1. PARTICULATE BLOCKING TECHNOLOGY

Look for hoods certified to block fine particles and contaminants per NFPA 1970 requirements.

2. COMFORT AND BREATHABILITY

Make sure the hood doesn't restrict head movement or SCBA seal integrity. Moisture-wicking fabrics are available to help reduce heat buildup around the neck and face.

3. SITUATIONAL AWARENESS

Choose hoods that maintain peripheral auditory awareness.



GLOVES



On the fireground, gloves are one of the most overlooked—but most important—elements of PPE.

It's obvious that hands require significant protection during operations. From protection against cuts and scrapes to protection from heat, gloves play a vital role in protecting one of the most vulnerable parts of the body.

Just like other parts of the PPE ensemble, gloves have evolved over the years. Early firefighting gloves gave little thought to factors like sizing and grip. Modern gloves are built with dexterity, breathability, and fit in mind.

For years, firefighters had to settle for gloves that don't fit. That's because glove sizes were based on an idealized set of hands that doesn't necessarily translate to the real world. New NFPA regulations and other efforts are increasing the variety of glove sizes to ensure a proper fit.

Modern gloves are also much more dexterous. Firefighters require full dexterity to be able to pick up, maneuver, squeeze, brush aside, pull, and all of the other tasks the fireground might throw at them. Gloves must not restrict small movements. That's why modern gloves are made with ergonomics in mind (think about bent fingers to match the natural shape of a person's hand) and with materials that maximize the sensitivity of a firefighter's fingers (thinner materials that still provide the necessary protection, seamless fingertips for better grip).

TOP 3 CONSIDERATIONS WHEN PURCHASING:

1. DEXTERITY & GRIP

Gloves should allow for fine motor tasks like handling tools or manipulating equipment.

2. FIT & SIZING OPTIONS

A proper fit prevents hand fatigue and ensures full protection across all areas of the hand.

3. THERMAL & MOISTURE PROTECTION

Look for gloves that balance insulation with moisture barrier performance for all-weather usability.



BOOTS



Structural boots have long been a part of the firefighter's ensemble. But while some still choose the old-style rubber boots, modern firefighting boots offer significant upgrades in terms of comfort and safety.

Most modern fire boots are made from specially treated leather that enhances its durability and flame resistance. Boots must also have features like extra toe protection (often a composite toe) and heel protection (a steel shank to provide increased puncture resistance and stability).

Boots must be easy to don and doff. Many boots solve this by getting rid of any rigid material. That makes them easier to don or doff but weakens the support they provide while wearing them. Boots should be able to stand up on their own when not in use; boots that slide down or flop will not provide adequate protection.

TOP 3 CONSIDERATIONS WHEN PURCHASING:

1. FIT & COMFORT

Boots should provide arch and ankle support for long wear without causing fatigue.

2. PROTECTIVE FEATURES

Ensure composite toes, puncture-resistant midsoles, and flame-resistant materials meet NFPA standards.

3. EASE OF DONNING & DOFFING

Quick don/doff features, such as pull-on handles or flexible shafts, make a real difference during response times.



ALTERNATIVE PPE

While firefighter PPE is mainly about protection during fires, it's important to remember that turnouts and structural accessories aren't the most appropriate gear for other types of calls.

Structural PPE (PPE designed for the fireground) must provide a high level of protection. It must have many layers, naturally increasing the weight and decreasing the breathability.

That's why many firefighters have begun switching to alternative PPE in recent years. Alternative PPE is gear that is specifically designed for non-structural calls. It can be thought of as a specific tool for a specific job—like using a hammer instead of a sledgehammer to drive a nail.



Types of Alternative PPE

Alternative PPE comes in many forms, from gloves to coats to boots. Generally, these can be much lighter and more breathable than structural gear. They might be only one or two layers, depending on the job requirements for the specific gear. That makes them easier to move in and reduces stress on the firefighter's body (including heat stress). Less stress over time allows firefighters to be more prepared for structural calls because they aren't as exhausted from other types of calls.

Non-structural calls can involve anything from EMS to MVAs. They require different levels of protection (EMS calls require protection against bloodborne pathogens, MVAs require more durability against scratches and abrasions). Alternative PPE is a large category that gives firefighters more flexibility to match their PPE with the job.

Alternative PPE also reduces the amount of turnouts needed to be worn. That decreases the risk of wear and tear, protecting the gear so it's ready to go. Access to more gear options also decreases exposure to particulates that may be on structural gear, reducing the risk of cross-contamination.

As with other types of PPE, modern materials and designs allow alternative PPE to better match the job and maximize firefighter protection and abilities. More specific PPE also allows for more useful features and customizations, such as selective waterproofing or easily accessible pockets.



Alternative PPE Standards

Alternative PPE standards mainly fall under NFPA 1950. NFPA 1950-2025 combines a number of old standards (1977, 1951, 1999) under one unified banner. The unified standard covers technical rescue, wildland firefighting, and EMS gear.

Under the new standard, some gear can be certified as “multifunctional,” indicating that it can be used across a range of calls. These types of PPE provide greater flexibility and allow departments to more easily adopt gear that fits their needs.

Pay close attention to the labels on alternative PPE to determine what calls it may or may not be used for.

CONSOLIDATION OF STANDARDS



WHEN TO USE ALTERNATIVE PPE VS TURNOUTS

ALTERNATIVE PPE

VS

TURNOUT GEAR



ROPE RESCUE:

Get gear with reinforced areas and increased flexibility



MOTOR VEHICLE ACCIDENTS:

Choose lightweight PPE with cut resistance and fluid protection



ELEVATOR RESCUES:

Prioritize breathability and flexibility for confined spaces



WILDLAND FIREFIGHTING:

This also includes urban interface firefighting; choose the appropriate levels of thermal protection and breathability



EMS CALLS:

Certified gear for biohazard protection and easy cleaning



SEARCH AND RESCUE:

Multifunctional PPE provides protection for the many types of scenarios faced during USAR operations



ELECTRICAL EMERGENCY:

Choose appropriate levels of thermal protection (and ensure that gear is properly cleaned; dirty gear can increase the danger of electrocution)



COMMERCIAL & HOUSE FIRES:

Get gear with reinforced areas and increased flexibility



MOTOR VEHICLE FIRES:

Protects against high radiant heat, fuel ignition, and potential explosion hazards.



GAS OR CHEMICAL SPILLS:

Offers protection from potential ignition sources and flash fires until the scene is stabilized.



DUMPSTER OR TRASH FIRES:

Shields from intense heat, smoke, and unknown burning materials that may release toxic vapors.



AIRLINE EMERGENCIES:

Consider proximity turnout gear to provide full-body protection against high radiant heat, jet fuel ignition, and complex debris hazards during rescue and suppression operations.

GEAR CARE AND MAINTENANCE

Gear care and maintenance are defined by NFPA 1850 (formerly NFPA 1851). This standard outlines the procedures for cleaning, maintaining, and repairing structural PPE. Manufacturers can also provide guidance around specific gear care questions.

While fire departments (especially larger departments) can often perform basic cleaning and inspections with the right equipment and training, many departments utilize certified cleaners or Independent Service Providers (ISPs) to provide professional care.

NFPA outlines a series of complex requirements for PPE, from water temperature during cleaning to tests to determining if the moisture barrier is defective.

IT IS IMPORTANT TO PERFORM REGULAR ADVANCED CLEANING AND INSPECTIONS AT LEAST TWICE A YEAR.

There are also strict guidelines for storing PPE. As PPE regularly comes into contact with dangerous fireground contaminants, it should be stored away from living areas. It should also be stored away from UV light sources (including sunlight), which can damage outer shell materials and reduce their effectiveness.

As the first line of defense against the dangers of the fireground, it's important to maintain PPE. If not cleaned or cared for properly, PPE will not provide adequate protection. It's also important to note that turnout gear has a shelf life of 10 years, regardless of how it's stored or cared for, because like all tools it naturally degrades over time. New NFPA standards are also regularly released, so older models are not likely to provide the same level of protection as new ones or may no longer be compliant.



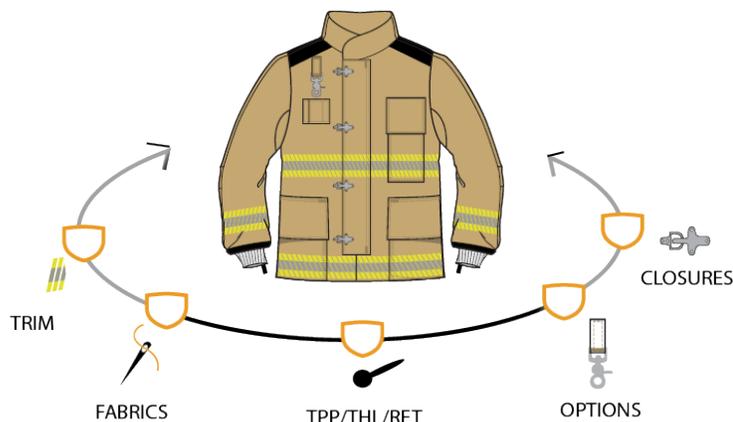


THE FUTURE OF PPE

From wool coats to 3-layer composites to specialized gear for every call, PPE has evolved significantly over the last 100 years.

New materials and designs continue to redefine firefighter safety. Researchers at fabric suppliers continue to develop new and better fibers that in turn make better PPE. Innovative gear manufacturers like Fire-Dex will continue to devote resources to development, introducing new features and fits that ensure every firefighter has access to the best gear possible.

PPE is more than just clothing—it's life-saving equipment. Understanding the basics of PPE, NFPA standards, and performance metrics empowers fire service leaders to make informed decisions that protect their crews. As technology and materials continue to evolve, staying educated on the latest developments ensures that departments can provide the best possible protection for their firefighters.



ABOUT FIRE-DEX

We are the fastest-growing manufacturer of PPE for first responders and the world's largest Independent Service Provider (ISP) of PPE care and maintenance under our sister company, Gear Wash.

Headquartered in Medina, Ohio, with three additional manufacturing locations in Georgia, North Carolina, and Mexico, we are a global company that prides itself on being a family-owned and operated business with a mission "to serve those who serve". For over 40 years, our dedicated team of associates has helped pave the path of innovation for new products and services that focus on the health and safety of first responders by offering turnout gear, alternative PPE, boots, hoods, gloves, helmets, and PPE rentals.

