



Official User Information Guide

DANGER

- *Do not use your Protective Footwear until you have read and understood all labels on your Protective Footwear and this Official User Information Guide.*
- *If attached, only end user shall separate this guide from the footwear. Remove guide from the footwear prior to using the footwear for emergency operations.*

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Fire and Emergency Manufacturers and
Services Association, Inc.

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PROTECTIVE FOOTWEAR
FOR TECHNICAL RESCUE INCIDENTS, EMERGENCY MEDICAL OPERATIONS, AND
WILDLAND/URBAN INTERFACE FIREFIGHTING

2025



Official User Information Guide

Protective Footwear for Technical Rescue
Incidents, Emergency Medical Operations,
and Wildland/Urban Interface Firefighting

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#S2000RH

2026 Edition

Contents

Chapter 1: Introduction 1-1

Organization of Guide	1-1
Key Changes in NFPA 1950 and NFPA 1857	1-2
New or Modified Requirements within NFPA 1950 (for protective footwear)	1-2
New or Modified Requirements for within NFPA 1857 and NFPA 1891 (for protective footwear)	1-3
Types of Warnings	1-6
General Precautions	1-6
How to Reduce Your Risk	1-8
Training by Your Fire Department or Employer	1-8
HAVE YOU READ AND UNDERSTOOD THIS FEMSA OFFICIAL USER INFORMATION GUIDE?	1-9

Chapter 2: Selection Considerations 2-1

Mission Specific Requirements	2-1
Technical Rescue Incidents	2-2
Emergency Medical Operations	2-2
Wildland and Urban Interface Firefighting	2-3
General Selection Approach and Information	2-4
Department or Organization Risk Assessment	2-5
Technical Rescue Incidents	2-5
Emergency Medical Operations	2-5
Wildland and Urban Interface Firefighting	2-5
Types of Protective Footwear	2-6
Footwear for Technical Rescue Incidents	2-1
Footwear for Emergency Medical Operations	2-1
Footwear for Wildland and Urban Interface Firefighting	2-1
Multifunctional Protective Footwear	2-8
Selection for Purchase	2-9
Selection for Use	2-9
Protection Limitations for Different Emergency Hazards	2-10

General Hazard Categories	2-10
Technical Rescue Incidents	2-11
Emergency Medical Operations	2-11
Wildland and Urban Interface Firefighting	2-11
Thermal Hazards	2-12
High Heat Exposures	2-12
Extreme Cold Temperatures	2-14
Chemical, Biological and Radiological Hazards	2-14
Chemical Hazards	2-15
Biological Hazards	2-16
Radiological Hazards	2-16
Physical Hazards	2-17
Electrical Hazards	2-17
Hazards Caused by the Wearing or Use of PPE	2-18
Heat Stress	2-18
Loss of Mobility or Function	2-19
Wet, Soiled, Contaminated, and Damaged PPE	2-19
Skin Allergies	2-20
Improper Fit, Wearing, or Coverage	2-20
Hazards Based on Your Position and Operating Area	2-21
Traffic and Vehicle Hazards	2-21
Other Operating Area Hazards	2-21

Chapter 3: Use and Limitations of Protective Clothing 3-1

NFPA Label	3-2
Donning and Doffing	3-3
Donning Your Footwear	3-3
Doffing Your Protective Footwear	3-3
No Contamination	3-3
Contaminated Protective Footwear	3-4
Modifications, Alterations and Markings	3-4

Chapter 4: Inspection	4-1	Chapter 6: Repair	6-1
General Inspection Requirements and Warnings	4-1	Chapter 7: Storage	7-1
Universal PPE Handling Precautions	4-1	Storage Limitations	7-1
Types of Inspections	4-2	Recommended Storage Area and Conditions	7-2
Technical Rescue Footwear	4-2	Chapter 8: Retirement and Disposal	8-1
Emergency Medical Footwear	4-2	Retirement	8-1
Wildland and		Disposal	8-2
Urban Interface Firefighting Footwear	4-2	Chapter 9: Special Incident Exposures	9-1
Routine Inspections	4-3	Chapter 10: Other Information	10-1
Advanced Inspections	4-3	Warranty	10-1
Limitations of Inspection	4-4	Replacement Guides	10-1
Record Keeping	4-5	Contact Information	10-1
Chapter 5: Cleaning and Decontamination	5-1	References	R-1
General Cleaning Requirements and Warnings	5-1	Glossary	G-1
Health Risks of Soiled or			
Contaminated Protective Footwear	5-2		
Reduced Performance Hazards of			
Contaminated Protective Footwear	5-2		
Other General Warnings	5-2		
Technical Rescue and Emergency Medical Footwear	5-2		
Routine Cleaning	5-2		
Advanced Cleaning and Decontamination	5-6		
Wildland and Urban Interface Firefighting Footwear	5-7		
Acceptable Cleaning Approaches	5-7		
Contract Cleaning	5-7		

Chapter 1

Introduction



DANGER

Emergency operations including technical rescue incidents, emergency medical operations, and wildland/urban interface firefighting are ultra-hazardous and unavoidably dangerous activities. Lack of proper training may lead to death, burns, injuries, diseases, and illnesses. To reduce your risk, do not use your footwear as part of your protective ensemble until you have read this guide, all manufacturer's instructions, and have been thoroughly trained by your fire department or employer in firefighting tactics, safety procedures and the proper use of your protective ensemble.

This FEMSA Official User Information Guide provides warnings, information and instructions related to the selection, care and maintenance of your protective footwear designed for (1) technical rescue incidents, (2) emergency medical operations, and (3) wildland and urban interface firefighting. Where a part of this guide specifically provides unique information on one type of footwear for a specific type of emergency response operation or activity that is not identified for a particular mission type, the narrative text is background highlighted in gray. While this guide addresses some aspects of use, it does not in any way cover tactics for firefighting or emergency operations. To use this guide effectively, you must thoroughly understand its contents and the information provided on the footwear product label. Proper training and supervision for use of personal protective equipment (PPE) in emergency operations and firefighting is critical to your safety. Contact your supervisor immediately if you are unsure about any aspect related to the selection, use, care, and maintenance of your protective footwear.

Organization of Guide

This guide includes warnings and information related to selection, limitations of use, care and maintenance of your protective footwear. It is divided into several chapters addressing specific areas of information and instructions for improving your understanding for the proper selection, use, care, and maintenance of your protective footwear. These sections include:

- Selection Considerations
- Use and Limitations of Protective Clothing
- Inspection
- Cleaning and Decontamination
- Repair
- Storage
- Retirement and Disposal
- Special Incident Procedures

The information in this guide is consistent with the following standards:

- NFPA 1950, *Standard on Personal Protective Equipment for Technical Rescue Incidents, Emergency Medical Operations, and Wildland and Urban Interface Firefighting*, 2025 edition (includes requirements for NFPA 1951 for technical rescue incident PPE, NFPA 1977 for wildland firefighting PPE, and NFPA 1999 for emergency medical operations PPE).
- NFPA 1857, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Technical Rescue Incidents and Wildland Firefighting*, 2026 edition (includes selection, care, and maintenance requirements related to NFPA 1855 for technical rescue incident PPE and wildland firefighting PPE).
- NFPA 1891, *Standard on Selection, Care, and Maintenance of Hazardous Materials, CBRN, and Emergency Medical Operations Clothing and Equipment*, 2022 edition (includes selection, care, and maintenance requirements related to reusable emergency medical protective footwear and ensembles).

A short list of key changes for these standards compared to the prior editions, where applicable, are provided below.

It is important for you to refer to NFPA 1857, 2026 edition or NFPA 1891, 2022 edition, and to other standards that may apply to your fire department or organization. A list of references and how to obtain copies of these references appears later in this guide.

The glossary contains specific terms important in using and understanding this guide.

Key Changes in NFPA 1950 and NFPA 1857

Significant changes have been made in both the product standard defining minimum requirements for technical rescue protective footwear, multiple-use emergency medical footwear, and wildland/urban interface firefighting footwear (NFPA 1950) and the end user standard (NFPA 1857) that specifies the minimum requirements for selection, care, and maintenance of these products by fire departments and other organizations.

New or Modified Requirements within NFPA 1950 (for protective footwear)

NFPA 1950, 2025 edition consolidated three separate product standards into one document, including:

- NFPA 1951, *Standard on Protective Ensembles for Technical Rescue Incidents* (2020 edition).
- NFPA 1999, *Standard on Protective Clothing and Ensembles for Emergency Medical Operations* (2018 edition).
- NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting and Urban Fire Fighting* (2022 edition).

The consolidation involved establishing a uniform set of references, definitions, and certification requirements with separate chapters for each type of PPE addressing unique certification, labeling and information, design, performance, and test method requirements.

Changes are shown by type of footwear based on the prior edition of the product standard and NFPA 1950.

NFPA 1950-2025 versus NFPA 1951-2020 (technical rescue incidents)

- A whole sole equivalent was allowed as an option to having a ladder shank.
- A more permissive requirement was adopted for viral penetration.
- The oven heat and thermal shrinkage oven heat exposure temperature was reduced from 500oF to 400oF.
- For full footwear flame resistance testing, the flame application time was reduced from 12 seconds to 6 seconds with the clarification of interpreting results regarding melting, dripping, and burn-through for components that do not contribute to the footwear protection.
- A mineral oil-based hydraulic fluid replaced the phosphate ester-based hydraulic fluid.
- Provisions were added nonvisual/machine readable tags, if provided.
- New requirements were added to reduce the risk of ignition from electrical circuitry

NFPA 1950-2025 versus NFPA 1999-2018 (emergency medical operations)

- The requirement for flammability testing was removed.
- Provisions were added nonvisual/machine readable tags.

NFPA 1950-2025 versus NFPA 1977-2022 (wildland/urban interface firefighting)

- The oven heat and thermal shrinkage oven heat exposure temperature was reduced from 500oF to 400oF.
- For full footwear flame resistance testing, clarification was provided for interpreting results regarding melting, dripping, and burn-through for components that do not contribute to the footwear protection.
- Provisions were added nonvisual/machine readable tags.

Multifunctional Protective Footwear

A new category of product certification was added to NFPA 1950 to address footwear that can be represented for different emergency operations without having to be individually certified to each respective standard. This category is referred to as Multifunctional Protective Footwear and is required to meet all of the design and performance criteria specified for technical rescue incident footwear with the addition of a separate sole conductive heat resistance that is specified for wildland and urban interface firefighting protective footwear.

The intent of the new multifunctional footwear is to provide protection to emergency response personnel against a range of different hazards that are addressed in NFPA 1950 to be used in lieu of protective ensembles for structural or proximity firefighting, or hazardous materials operations. Intended operations include various types of technical rescue, such as victim vehicle extrication, the provision of emergency medical care, or wildland firefighting where lightweight, lower physiological impact PPE is needed for extended operations.

Electrical Circuitry

New for all footwear are separate requirements to demonstrate the non-incendive and intrinsic safety of any electrical circuitry that is included as part of the footwear, if used. These requirements include classification of this equipment to specific non-NFPA standards.

New or Modified Requirements for within NFPA 1857 and NFPA 1891 (for protective footwear)

Like NFPA 1950, NFPA 1857 represented the consolidation of separate standards:

- NFPA 1855, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Technical Rescue Incidents (2018 edition)*
- NFPA 1877, *Standard on Selection, Care, and Maintenance of Wildland Firefighting Protective Clothing and Equipment (2022 edition)*

The new NFPA 1857 does not address protective footwear for emergency medical operations. Instead, those clothing items are addressed both in Annex C of NFPA 1950 and NFPA 1891.

NFPA 1857-2026 versus NFPA 1855-2018 (technical rescue incidents)

- The maximum acceptable pH permitted for detergents and cleaning agents was reduced from 10.5 to 9.5.

NFPA 1857-2026 versus NFPA 1877-2022 (wildland firefighting)

- Options were expanded for who can perform cleaning, inspection, and repair services
- Guidance on protecting the public and personnel from contaminated gear was clarified, including the use of public laundries.
- The maximum acceptable pH permitted for detergents and cleaning agents was reduced from 10.5 to 9.5.
- The allowable maximum washing and drying temperatures increased from 105oF to 120oF.

As there were no preexisting selection, care, and maintenance requirements specified until the current NFPA 1891 or NFPA 1950, no changes are reported.

Types of Warnings

Each section of this guide is important; however, within each section of this guide, different types of warnings are given to attract your attention to specific limitations or potential hazards. Specific “signal words” indicate the level of the severity (consequences) of the particular warnings as shown at right.

Be sure to read the other text in this Guide accompanying any warning as it provides additional important information to assist you in understanding the warning.

General Precautions

Firefighting and emergency operations are ultra-hazardous, unavoidably dangerous activities. To reduce your risk of death, burns, injuries, diseases, and illnesses, you must carefully read and strictly follow this entire FEMSA Official User Information Guide and all labels on your protective footwear and other parts of your protective ensemble.

When you fight fires or engage in emergency operations, you are constantly at risk of death, burns, injuries, diseases, and illnesses. There is no such thing as a “routine” or “ordinary” fire or emergency operation. While use of safety equipment such as a protective ensemble, including your protective footwear, can reduce your risk of death, burns, injuries, diseases, or illnesses, it does not make firefighting and emergency operations completely safe. Even with the use of your protective ensemble, firefighting is unavoidably dangerous.

This entire guide deals with issues that directly affect your life and safety. Even such matters as how you clean, store and maintain your protective footwear and how well the footwear fits, directly impact your life, safety and well-being. It is important to read and heed this entire guide to reduce your risk of death, burns, injuries, diseases, and illnesses.

- As described in this guide, before and after every use, carefully inspect your protective footwear for cleanliness (soiling and contamination), physical damage, thermal or physical damage, missing components, broken or missing stitching, proper assembly of the shell, any liner, and poor fit. You may need to further inspect and evaluate certain footwear for specific conditions as described in the Inspection Chapter below. Do not use your protective footwear if you detect any condition indicating damage, degradation or weakening of the footwear’s protective capabilities.
- Keep your protective footwear clean and properly maintained as described in this Guide. Soiled, contaminated or damaged footwear present several different hazards that increase your risk for death, burns, injury, diseases, and illnesses.

 DANGER
This indicates a hazardous situation which, if not avoided, will result in death or serious injury.
This red and red border represent Safety Red

 WARNING
This indicates a hazardous situation which, if not avoided, could result in death or serious injury.
This grey and grey border represent Safety Orange

 CAUTION
This indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
This white and black border represent Safety Yellow

- It is impossible for you to test most performance properties of your protective footwear in the field. Knowledgeable, experienced and qualified people within your organization or by qualified facilities should periodically inspect and service all elements of your protective ensemble, including your protective footwear.
- Your protective footwear will age. NFPA 1857, dictates a mandatory retirement for technical rescue footwear of fifteen years from the date of manufacture. However, this should not be construed as meaning that all protective footwear will last for fifteen years. NFPA 1857 does not prescribe a specific retirement requirement for wildland or urban interface firefighting footwear. Similarly, NFPA 1950 Annex C or NFPA 1891 does not set a maximum life for reusable emergency medical protective footwear. The usable service life of your footwear is dependent on the number, type and degree of exposures, the work environment, frequency of use, and the quality of care and maintenance for the footwear. It is the responsibility of both you and your fire department or employer to determine when to take your footwear out of service and how to do so. Do not use any footwear showing signs of damage, weakening or degradation of any protective quality. Most footwear will generally wear out or lose protective properties before their NFPA 1850 (1851) established maximum service life.
- For any operations involving firefighting or potential exposure to high heat, do not wear socks or other items under your protective footwear that may melt or transfer heat onto your skin.
- Never use your protective footwear in firefighting or emergency operations unless you are at the peak of mental alertness and physical fitness. Do not engage in firefighting or emergency operations while under the influence of drugs, alcohol or other conditions or factors that would impair your physical and mental abilities.
- You must use extreme caution at all times for all emergency operations. You must be constantly and fully aware of your surroundings, stay alert, react to changing conditions, know (through training) your limitations and the limitations of your equipment (through training and applying NFPA and OSHA standards). You must avoid exceeding these limitations at all times.

The discussion on hazards in this guide are simply examples of the many circumstances and variable factors that can combine in countless different ways to harm you. It is impossible to list all of the ways in which you may be killed, burned, injured, or suffer disease and illness. No protective ensemble can provide complete protection from all conditions. As a firefighter or emergency responder you work in an ultra-hazardous environment. Even using your protective ensemble, exercising extreme caution, and with the best training and supervision, your firefighting and emergency activities remain ultra-hazardous and unavoidably dangerous.

How to Reduce Your Risk

You can reduce, but not eliminate, your risk of death, burns, injuries, diseases, and illnesses through the following:

- Receiving proper training and continual practice in firefighting and emergency tactics and safety.
- Selecting, maintaining and using your safety equipment properly.
- Exercising extreme caution at all times. Your protective ensemble does not make you completely safe from death, burns, injuries, diseases, or illnesses.
- Understanding the design, performance, and use limitations of applicable versions of NFPA 1550, NFPA 1581, NFPA 1950 (1951, 1977, and 1999), NFPA 1857 (1855 and 1877), NFPA 1891, NFPA 2500, and other NFPA standards, as well as applicable Federal, state and local regulations specific to the selection, use, care, and maintenance of firefighting personal protective equipment (e.g., regulations of the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor contained in 1910.120, “Hazardous Waste Operations and Emergency Response,” 29 CFR Parts 1910.132-140, “Personal Protective Equipment” and 29 CFR Part 1910.1030, “Bloodborne Pathogens.”). You must understand the content of these publications.

Training by Your Fire Department or Employer

This guide does not discuss emergency operations, firefighting tactics, and safety procedures. Your fire department or employer must provide proper training and constant practice in emergency operations, firefighting tactics, and safety procedures consistent with its knowledge and basic approach to all emergency operations that it expects to encounter.

Your fire department or employer is in the best position to know and respond to the dangers present in any fire or emergency operation. Accordingly, your fire department or employer must select the appropriate type of safety gear (including protective ensemble for technical rescue incidents, emergency medical operations, and wildland or urban interface firefighting) for use at every fire scene or emergency operation.

This guide instructs you on how to maintain your protective footwear. It also tells you about the limitations of your protective footwear and your overall protective ensemble. No protective footwear or protective ensemble or any other safety equipment protects you from all burns, injuries, diseases, illnesses, conditions, hazards, or death.

To reduce—but not eliminate—your risk of death, burns, injuries, diseases, or illnesses, you must carefully read, fully understand, and strictly follow this entire guide and all labels on your protective footwear, the applicable NFPA standards, and OSHA and other applicable regulations. The information contained in this guide and on the labels in your protective ensemble are for your safety and can save your life.

Remember, however, that even with the best protective ensemble, safety procedures and training, you are constantly at risk of death, burns, injuries, diseases, and illnesses during firefighting and emergency operations.

HAVE YOU READ AND UNDERSTOOD THIS FEMSA OFFICIAL USER INFORMATION GUIDE?

The FEMSA Official User Information Guide contains vital safety warnings and important user instructions. Do not use your protective footwear until you have read and understand all information contained in it. Below is a simple worksheet that you should complete before using your protective footwear.

1.	Have you completed all required training to properly and safely perform your duties as a firefighter and/or emergency responder?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2.	Have you read and do you understand all warnings, precautions, directions, and instructions contained in this FEMSA Official User Information Guide?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3.	Have you read and do you understand the intended use and limitations of your protective footwear contained in the FEMSA Official User Information Guide?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.	Have you read and do you understand the inspection, cleaning, repair, and maintenance warnings and instructions contained in the FEMSA Official User Information Guide?	<input type="checkbox"/> Yes <input type="checkbox"/> No
5.	Have you read and do you understand the requirements for storage, retirement and disposal of protective clothing contained in the FEMSA Official User Information Guide?	<input type="checkbox"/> Yes <input type="checkbox"/> No
6.	Before using your new protective footwear, have you inspected them and established that they fit you properly as outlined in the FEMSA Official User Information Guide?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.	Are you familiar with how to obtain replacement guides and how to contact your manufacturer for any additional information you may require as outlined in the FEMSA Official User Information Guide?	<input type="checkbox"/> Yes <input type="checkbox"/> No
8.	Do you understand that during wildland firefighting, the human skin will burn at temperatures much, much lower than the fabrics used in your protective footwear and that you may sustain a burn or other injury with little or no warning?	<input type="checkbox"/> Yes <input type="checkbox"/> No
9.	Do you understand that no protective footwear can protect you from all hazards and/or conditions that you might encounter while performing your job?	<input type="checkbox"/> Yes <input type="checkbox"/> No
10.	Have you read, do you understand, and do you agree to accept the risks and responsibilities outlined in the personal responsibility code located on the back cover of the FEMSA Official User Information Guide?	<input type="checkbox"/> Yes <input type="checkbox"/> No

DO NOT WEAR YOUR PROTECTIVE FOOTWEAR UNTIL YOU HAVE ANSWERED **YES** TO EACH OF THESE QUESTIONS.

Chapter 2

Selection Considerations

Mission Specific Requirements

Selecting your protective footwear for technical rescue incidents, emergency medical operations, and wildland and urban interface firefighting first involves that you understand your protective footwear is part of an overall ensemble of different protective clothing and equipment that combined to provide overall protection against anticipated hazards depending on the specific emergency or firefighting operations you face. Depending on the specific response activity, these ensembles will utilize different clothing and equipment items.

Technical Rescue Incidents

Protective ensembles include, but are not limited to garments, helmets, goggles, gloves, and footwear. In some cases, a respirator may also be provided as part of the ensemble for specific incidents where inhalation hazards may be encountered. These ensembles may also include the wearing of special harnesses for fall protection and confined space entry. These ensembles are intended for protecting emergency response personnel during complex rescue incidents, which require specially trained personnel and special equipment to complete the mission. Typical missions can entail search, rescue, treatment, decontamination, recovery, site stabilization, and similar operations. Examples include:

- Vehicle and Machinery Extrication: Using specialized tools to remove victims trapped in cars or industrial equipment.
- Rope Rescue: Rescuing individuals from high-angle environments like cliffs, towers, or cranes.
- Confined Space Rescue: Extracting people from tanks, pipes, silos, or tunnels with limited access.
- Trench Rescue: Stabilizing and rescuing workers from collapsed trenches or excavations.
- Structural Collapse Rescue: Locating and extracting victims trapped in debris from building failures, explosions, or natural disasters.
- Vehicle and Machinery Extrication: Using specialized tools to remove victims trapped in cars or industrial equipment.
- Wilderness/Cave Rescue: Locating and rescuing missing or trapped individuals in remote or subterranean environments.



DANGER

Do not use a technical rescue or multifunctional footwear addressed by this user information guide for any water operations, particularly swift water rescues. This footwear is not suited for this application.

Using this footwear for such operations increases your risk of drowning, injuries, diseases, and illnesses.

This user information guide does not address protective footwear for any type of water rescue operations, including emergencies in fast-moving water, floods, ice, or surf. Refer to NFPA 1955, *Standard on Personal Protective Equipment (PPE) for Surface Water Operations and Contaminated Water Operations* (2025 Edition) for the correct protective footwear, other clothing items, and equipment.

The hazards encountered during these incidents are mainly physical and environmental in nature, but also can involve thermal exposures (e.g., a flash fire from a broken gas line), contact with contaminants such as chemicals, sewage, and potentially infectious body fluids, and being struck by vehicles or heavy moving machinery.

Emergency Medical Operations

Emergency medical operations generally entail a tiered approach for how an ensemble may be configured based on the type of response and the expectations of exposure. These operations include the provision of emergency patient care and transportation prior to arrival at a medical care facility by emergency medical responders, emergency patient care by medical first receivers at a medical care facility, and body recovery by emergency medical responders. Expected hazards principally are any exposure to body fluids or other liquids that may potentially include infectious microorganisms. Emergency medical operations can also entail airborne infections hazards such as diseases spread by droplets and aerosols that are inhaled or deposited on responder mucous membranes. These responses also present physical and environmental hazards.

Ensembles for emergency medical operations typically include a garment, a helmet, gloves, footwear, and some type of eye and face protection that can be either goggles, a face shield, face mask, or respirator. There are several variants of these protective items. For example, footwear may be single-use footwear covers, multiple-use emergency medical footwear, or multiple-use medical facility protective footwear. The latter type of footwear differs from emergency medical protective footwear by lacking some physical protection in the form of toe impact and compression resistance, and outer sole puncture resistance.

Organizations may choose to have their responders wear those items where it believes exposure is most likely depending on the potential volumes of contaminated fluids and responder contact that can occur during emergency medical operations. For example, some organizations will always deploy protective (examination) gloves, sometimes also with a faceshield or mask, and only use emergency medical protective footwear where high volumes of blood may be present such as at a victim extrication or body removal operation. Other organizations may include consistent use of protective footwear for nearly all emergency medical operations.

This user guide addresses only multiple-use protective footwear.

Wildland and Urban Interface Firefighting

The activities of fire suppression and property conservation in woodlands, forests, grasslands, brushlands, prairies, and other similar vegetation, or any combination of vegetation, that is involved in a fire situation but not within buildings or structures is considered wildland firefighting. Urban interface firefighting is defined as activities of fire suppression and property conservation with areas of housing or other structures that are either intermingled with or are next to vegetation of forest lands. For this type of firefighting, the expected exposure hazards are high heat, particularly from radiant sources, and limited flame contact. There are also physical hazards for work in rough terrain and environmental hazards due to operations under a range of climate and weather conditions for extended operations. In urban interface fires, hazards escalate because the risks of remote forest fires or open land fires merge with the complex toxic and structural dangers of populated areas. Contaminants can become more complex because of the transition from vegetative materials to synthetic materials; “artificial” hazards can be encountered such as exploding propane tanks and downed power lines. However, many similar thermal, physical, and environmental hazards can be found in both types of firefighting.

Wildland and urban interface firefighting protective ensembles are comprised of protective garments, a helmet, work gloves, footwear, and goggles. Also included in these ensembles can be face/neck shrouds, load carrying equipment to facilitate carrying gear, and chainsaw protectors in the form of leggings or chaps. Cold weather gear may also be provided for cooler operations. Driving gloves replace work gloves for firefighters or other emergency responders driving vehicles or operating heavy equipment.

Footwear may be described as either wildland firefighting footwear or wildland and urban interface firefighting footwear based on how the footwear is labelled. However, distinctions between the two firefighting activities are not made in the design or performance of the respective footwear.

General Selection Approach and Information

Ensemble and footwear selection entails three parts:

1. Your fire department or employer selects the appropriate protective ensemble including protective footwear to purchase.
2. You, your fire department, or your employer, decide which ensemble to wear for a specific firefighting or other emergency operation.
3. You ensure that your protective ensemble elements, including your protective footwear, are correctly fitted for you and that they work together properly with other clothing and equipment you are required to wear for a specific firefighting or other emergency operation.

While your fire department or employer controls some parts of the selection process, you must be aware of the specific hazards that you face during technical rescue incidents, emergency medical operations, wildland or urban interface firefighting and other emergency operations and ensure that the ensemble and ensemble elements that you are wearing fit correctly and work together to provide the intended protection.

Department or Organization Risk Assessment

Prior to starting the selection process for technical rescue, emergency medical, and wildland and urban interface protective footwear, your fire department or employer must perform a risk assessment.

OSHA regulations (Title 29, Code of Federal Regulations Part 1910.132, "General Requirements" of Subpart I, Personal Protective Equipment) require that fire departments and organizations conduct a hazard assessment in their selection of firefighting and emergency operations protective ensembles and ensemble elements. This hazard assessment identifies the specific hazards that firefighters and emergency responders may encounter and involves a determination of the appropriate personal protective equipment (PPE) to protect individuals against those hazards.

Depending on the type of mission, the risk assessment must include, but not be limited to, the hazards that firefighters and emergency responders can encounter, based on the following factors (by mission type):

Technical Rescue Incidents

- Type of duties performed
- Frequency of use of protective footwear
- Organization's experiences
- Incident operations
- Geographic location and climate

Emergency Medical Operations

The selection of emergency medical protective ensembles and footwear is addressed in NFPA 1891 and Annex C of NFPA 1950. Since NFPA 1891 primarily addresses hazardous materials operations, many of the selection factors related to the risk assessment are specific to chemical exposures. Factors that are specific to emergency medical operations PPE include:

- The likelihood of members to be exposed to biological hazards that occur as the result of exposure to bloodborne pathogens or other infectious diseases that could occur as the result of emergency medical operations.
- Ruggedness or physical hazards with the response environment.
- Operations on elevated platforms, near roadways, or around open water.
- Activities of rescue of affected victims or other protection of civilian personnel.
- Compatibility of emergency medical operations PPE with operational equipment.

Wildland and Urban Interface Firefighting

- Type of duties performed
- Frequency of use of protective footwear
- Organization's experiences
- Incident operations
- Geographic location and climate

Types of Protective Footwear

Footwear certified to NFPA 1950, 2025 Edition are required to meet several specific design criteria and performance criteria that affect how protective footwear for technical rescue incidents, emergency medical operations, and wildland / urban interface firefighting are configured and selected. Some of important requirements my mission type include are given in the sections below.

Footwear for Technical Rescue Incidents

Footwear designed for technical rescue incidents includes the characteristics listed below:

- It consists of a sole with a heel, an upper with a lining, an insole with a puncture resistant device, a ladder shank or a whole-sole equivalent and a permanently attached toe cap.
- The composite for the upper is either a continuous or joined single or multiple layers.
- The footwear height, as measured from the inside to the lowest point of the top line, is 6 inches.
- Moisture protection of the boot must extend to within 2 inches of the top line but must be at least 6 inches high as measured above.
- Similarly physical protection must also extend except to within 2 inches of the top line except for the gusset or tongue area.
- All thread must be inherently flame-resistant.
- Footwear can be of a pull-on or lace-up design where lace-up boots include eyelets or stud hooks. If stud hooks are used, there must be at least 4 stud hooks on each side. Eyelets must be made of coated steel, solid brass, brass-coated nickel, or nickel. Boots can also incorporate a zipper on the front or side or have other forms of closures.
- No metal parts are permitted to penetrate from the outside to the boot interior. Furthermore, metal parts cannot be used for attaching the outer sole to other parts of the footwear.
- The puncture-resistant device must cover the entirety of the insole.
- The toe cap must extend 2 inches from the front edge of the footwear.
- The footwear design must meet the industry standards (ASTM F2412 and ASTM 2413) for impact, compression, and puncture resistance. Footwear is also permitted to offer metatarsal protection by meeting a different part of the same industry standards.
- Footwear must be provided in men's sizes 6-15 and women's sizes 5-10 including half sizes and in a minimum of 3 widths.

Technical rescue footwear is tested for the following performance properties:

- Whole boots are evaluated for electrical insulation, flame resistance, heat resistance, which also includes an evaluation of liquid-tight integrity.
- Thread used in boot construction is separately evaluated for melting resistance.

- Footwear upper materials are tested for abrasion, cut, and puncture resistance.
- The barrier portions and seams of the footwear are evaluated for both penetration resistance to common emergency scene liquids and bloodborne pathogens.
- Outer soles are evaluated for abrasion, puncture, and slip (traction) resistance.
- Toe areas of the footwear are tested for impact or compression resistance.
- The boot ladder shank or its whole sole equivalent is evaluated for bending resistance.
- Stud hooks are tested for attachment strength.
- All footwear metal parts are evaluated for corrosion resistance.
- Labels are evaluated for continued legibility and remaining in place.

Footwear for Emergency Medical Operations

Emergency medical protective footwear is subject to fewer design requirements:

- It must consist of a sole and heel with an upper.
- Its minimum height must be 4 inches, when measured from the inside of the footwear to the lowest point of the top line for the boot.
- It must be provided in a minimum of six individual sizes.

This footwear also must meet the following performance criteria:

- Whole boots are evaluated for liquid-tight integrity.
- Footwear upper materials are tested for cut and puncture resistance.
- The barrier portions and seams of the footwear are evaluated for penetration resistance to bloodborne pathogens.
- Outer soles are evaluated for abrasion, puncture, and slip (traction) resistance. Puncture resistance is not tested on medical care facility footwear.
- Toe areas of the footwear are tested for impact or compression resistance. These properties are not evaluated for medical care facility footwear.
- All footwear metal parts are evaluated for corrosion resistance.
- Labels are evaluated for continued legibility and remaining in place.

Footwear for Wildland and Urban Interface Firefighting

Wildland or urban interface protective footwear also has fewer design requirements compared to technical rescue boots, but with differences:

- Footwear must consist of an outer sole, upper, and insole.
- The adjustable portion of the boot must provide for a snug fit of the areas of the boot around the wearer's ankle. To meet this requirement, this footwear must generally be of a lace-up design where lace-up boots include eyelets or stud hooks but can also use other closure systems that secure the upper around the ankle area such as zippers.

- The height of the heel and the angle of the heel front are specified.
- Footwear must be 8 inches high as measured from the interior of the boot to the lowest part of the boot top line.
- Physical protection must extend to within 2 inches of the top line but be no lower than 8 inches.
- All thread must be inherently flame-resistant.
- No metal parts are permitted to penetrate from the outside to the boot interior.
- The footwear design must meet the industry standards for impact, compression, and puncture resistance.
- Footwear must be provided in men's sizes 7-13 and women's sizes 5-10 including half sizes and in a minimum of 3 widths.
- Footwear is also subject to several performance requirements:
- Whole boots are evaluated for flame resistance, heat resistance (liquid integrity is not evaluated), and conductive heat resistance.
- Thread used in boot construction is separately evaluated for melting resistance and breaking strength.
- Footwear upper materials are tested for cut and puncture resistance.
- Outer soles are evaluated for abrasion, puncture, and slip (traction) resistance.
- Stud hooks are tested for attachment strength.
- All footwear metal parts are evaluated for corrosion resistance.
- Labels are evaluated for continued legibility and remaining in place.

Multifunctional Protective Footwear

NFPA 1950 also addresses footwear for a broad set of missions that can include combinations of technical rescue, emergency medical operations, and wildland or urban interface firefighting. Specific design and performance criteria mimic the criteria from the different missions. In this generalized category of performance, footwear must meet all of the requirements of technical rescue footwear with the addition of conductive heat resistance that is applied to wildland and urban interface firefighting footwear.

Selection for Purchase

Each fire department or organization uses a different process for the selection of PPE for technical rescue incidents, emergency medical operations, and wildland and urban interface firefighting. As a minimum, this process must ensure that the protective footwear comply with the applicable portions of NFPA 1950.

General requirements are provided in NFPA 1857 for fire departments or organizations to consider when they choose specified protective footwear and other protective clothing. These include the conduct of a risk assessment to determine relevant hazards and a process of preparing a specification that reflects the findings of the risk assessment and organizational preferences. Fire departments and organizations may also conduct field trials and other evaluations in assessing protective footwear being considered.

Selection for Use

You should use your protective footwear based on its intended use as instructed by your department or organization consistent with your department's or organization's standard operating procedures or practices. It is essential that you wear the correct footwear for the correct mission. This user guide only covers the following missions:

- Technical rescue incidents
- Emergency medical operations
- Wildland and urban interface firefighting

NFPA standards exist for different types of ensembles used at other emergency incident operations, including but not limited to structural and proximity firefighting (NFPA 1970) and hazardous materials and CBRN operations (NFPA 1990). These standards have significantly different requirements as compared to those in NFPA 1950, which is the subject of this user information guide. Your department is responsible for determining the suitability of specific ensembles for specific emergency operations.

The footwear covered in this user information guide is NOT suitable for structural or proximity firefighting and should not be used in any interior firefighting operations.

- **Structural firefighting** is the physical activity of rescue, fire suppression and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or an emergency. Structural firefighting involves a large range of different fire ground hazards and constantly changing conditions.
- **Proximity firefighting** involves specialized firefighting operations that can include rescue activities, fire suppression and property conservation at incidents involving fires producing high levels of radiant heat as well as conductive and convective heat.

The footwear covered in this user information guide is also NOT suitable for incidents involving hazardous materials or CBRN agents, unless separately certified for a separate category of hazardous materials use such as liquid splash protection under NFPA 1990 (1992), 2020 Edition.



DANGER

Your protective footwear is part of a protective ensemble, which is not suitable for all types of firefighting and all types of emergency operations. DO NOT use this footwear for protection during structural firefighting, proximity firefighting, or hazardous materials operations. Use of an unsuitable protective ensemble and footwear may lead to death, burns, injuries, diseases, and illnesses. In order to reduce your risk, your fire department or employer must make a determination as to whether your protective ensemble is suitable for each specific application.

Protection Limitations for Different Emergency Hazards



DANGER

Protective footwear and their corresponding ensembles addressed in this guide do not protect against all hazards and under all circumstances of use. Use of a protective footwear unsuitable for a specific use may lead to death, burns, injuries, diseases, and illnesses. It is the responsibility of the end user to assess potential hazards and the risk for exposure to determine the suitability of the protection ensemble for a specific use.

General Hazard Categories

It is essential that you understand the different types of ensembles and the limitations of protective ensembles to protect against potential hazards. The general categories of potential hazards that you may encounter during wildland or urban interface firefighting, technical rescue incidents, and emergency operations missions include, but are not limited to:

- Thermal hazards
- Chemical, biological and radiological hazards
- Physical hazards
- Electrical hazards
- Hazards caused by the wearing or use of the equipment itself
- Hazards based on your position and operating area

The frequency and severity of exposure to these hazards vary with the specific locations, operations, conditions, and time. Consequences of exposure to different hazards may range from no effect to death. The risk associated with a hazard is dependent on the likelihood of exposure in combination with the consequences of the exposure. In the sections below, some hazards are generalized to the entire ensemble since many exposures can affect multiple areas of the emergency responder or firefighter.

Many of the specific hazards covered in this part of the guide are explained in terms of the overall ensemble that also includes the protective garments, protective helmet, protective gloves, and protective hoods, in addition to protective footwear.

The type of mission will often but not always will dictate the likelihood of hazards you may encounter as well as their severity. Certain general expectations for protection exist for each type of mission, but there are significant limits to the protection provided against specific hazards. For the specific footwear types covered in this user information guide, the following general expectations exist.

Technical Rescue Incidents

Technical rescue protective footwear is intended to provide limited protection for:

- Thermal hazards during short-duration events, such as an accidental flash fire (not to be confused with a flashover in regular firefighting) or incidental contact with a small flame.
- Physical hazards encountered in rough or difficult operating environments.
- Stepping on live electrical wires or similar electrical hazards.
- General liquid chemical and biological hazards.

This footwear may offer very limited protection against other different hazards, depending on the exposure conditions and duration.

Emergency Medical Operations

Emergency medical protective footwear is intended to provide limited protection for:

- Biological hazards, primarily in the form of bloodborne and other potentially infectious liquids.
- Physical hazards encountered in rough or difficult operating environments.

This footwear does not offer any thermal protection in terms of flame or heat contact.

Wildland and Urban Interface Firefighting

Wildland and urban interface footwear are intended to provide limited for:

- Thermal protection against low levels of radiant heat exposure or incidental contact with a small flame.
- Physical hazards encountered in rough or difficult operating environments.

This footwear does not offer protection from any chemical, biological or radiological hazards. They may or may not offer protection against electrical hazards.

This footwear may offer very limited protection against different hazards, depending on the exposure conditions and duration.



DANGER

If your protective footwear is exposed to any type of heat, including but not limited to radiant, convective or conductive heat, you may be burned underneath the protective footwear with no warning and no sign of damage to the protective footwear. Be constantly alert to the possibility of a type of thermal exposure and other hazards.

Thermal Hazards

Thermal hazards represent extremes of temperatures and heat energy. These hazards arise from either high heat that can be from radiant, convective, and conductive transfer to your clothing and underlying skin resulting in burn injuries, or exposure to similar forms of very low temperatures that cause your body to lose heat and affect your skin and core temperature, which in turn can cause frostbite and hypothermia.

High Heat Exposures

In the case of firefighting, the principal hazard is exposure to high temperatures and heat energy that can cause burn injury. In firefighting, burns are a constant threat regardless of conditions. The three types of heat transfer include:

- **Conductive heat** – caused by direct contact with the heat source. Examples of conductive heat transfer would be standing or kneeling on hot embers or leaning against a hot wall of a structure. They can also occur from contact with molten substances and hot liquids.
- **Convective heat** – caused by contact with heated air currents. Hot air flow driven by a flash fire or coming in contact with a flame, even temporarily, are forms of conductive heat transfer.
- **Radiant heat** – caused by heat energy emanating from a distance of a very hot object. The most common example of radiant heat transfer is standing close to an intense fire.

Your protective ensemble does not protect you from all burns and injuries that arise even during short duration exposures. There are limits to the protection your protective ensemble can provide. Examples of these limitations are given below:

- For technical rescue incidents, a flash fire may occur when combustible gases, liquids, or solid particles are at concentration in the flammable range that encounters an ignition source that results in a relatively short, but intense fireball with extreme amounts of radiant and convective heat. A common example is a burst gas line that leaks into a confined space that is then ignited by a spark, static electricity, or small flame. Generally, the amount of ignited fuel, overall fuel concentration, the environmental conditions, and the characteristics of the operating area will affect intensity of the exposure. If the energy released by such an event reaches your clothing, the amount of heat energy transferred through the protective footwear can exceed the ability of your skin to dissipate that heat quickly enough, and result in any burn injury.
- In wildland and urban interface firefighting, you may be exposed to radiant heat even if operating at a distance from any direct flames from either burning vegetation or structures, in the case of urban interface firefighting. Since burns are a function of exposure energy and time, the closer you are to a fire, then higher levels of heat will impinge on your protective clothing and transfer to your body.
- Both types of protective footwear for technical rescue incidents and wildland/urban interface firefighting are constructed of flame and heat-resistant materials. While these materials may attenuate the effects of both small fires and high heat, they may not offer sufficient insulation from heat transfer that can result in burn injuries. Even though you may not notice any thermal damage to your protective footwear, you can still be burned suddenly and

without warning. Heat can also build up and be stored in your footwear materials, particularly during extended radiant and convective heat exposures, to the point where your skin burns. Your skin burns at temperatures far below the temperatures that cause damage to your footwear materials.

- In any emergency situations, if your protective footwear encounters a heated surface, sufficient heat transfer can occur by conduction resulting in a burn injury. Your weight or how long you press against a heated surface may further increase the rate of heat transfer that results in earlier burn injury.
- You can also be burned by molten substances that may be present near a fire, heated water or other liquids, and by steam. Some molten substances may “stick” to your footwear materials increasing the intensity of conductive heat transfer. Without a liquid barrier (such as for wildland or urban interface firefighting boots), a hot liquid or steam may penetrate and wet your footwear materials and still cause burn injuries.
- Clothing compression will also result in faster convective and radiant heat transfer. This compression does not mean you have to be in direct contact with a hot surface. Footwear stretched across your lower leg and foot such as when kneeling or in a squatting position can bring the footwear interior materials closer to your skin, removing the insulative air layer that attenuates some of the heat transfer from the exterior side of your protective footwear outer surface. This type of occurrence is also possible for protective footwear depending on the position of your feet and ankles and your body orientation with respect to the radiant heat source.
- Further, if your protective footwear is wet either from exterior exposure to water or simply by sweating, wet footwear materials also result in faster heat transfer as the moisture fills the small voids in the materials allowing for greater heat conduction.
- You are at the greatest risk of burn injuries if any portion of your body is unprotected. This is particularly true of an interface area such as the transition from the top of your footwear to the lower torso garment.

Because there are so many variables that are constantly changing in any emergency, it is impractical to anticipate when or if your skin will reach the temperature where enough energy has passed through to increase the risk of burn injury. If you feel heat when being exposed to a thermal condition, then there is a strong likelihood that you will be burned. It is important to limit any exposure that you have to high heat to reduce the likelihood of a burn injury. This means changing a position or taking some action to limit your exposure. The best measures are to avoid any sustained heat exposure or situations that are likely to put you in a high heat environment for anything but a very short duration.

Emergency medical protective footwear is not required to be flame or heat-resistant or offer any exposure to high heat thermal exposures. This footwear cannot be worn in emergency operations where there is no expectation of exposure to even low levels of conductive, convective, and radiant heat. If your emergency medical protective footwear has been evaluated for additional standards related to high heat or flame protection, you must check with your department or organization to understand the limitations of your footwear in high heat thermal exposures.



DANGER

Do not wear your emergency medical protective garment for protection against any high heat-based thermal exposure. If your protective garment is exposed to any type of heat, it may melt and drip, ignite, and result in the high heat exposure, resulting in death or burn injuries.

Extreme Cold Temperatures

Even though your protective footwear may be designed to partially limit your risk to short-term high-temperature thermal exposures, it does not protect you from exposure to cold temperature environments. As with hot environments, the ability of your protective ensemble to insulate you in cold environments depends on many factors, including but not limited to the ambient temperature, wind speed, levels of moisture, your physical activity, and the length of time you spend in the environment in which you are wearing your footwear and overall ensemble. As with heat exposures, longer exposures at cold temperatures increase the risk of health effects, such as hypothermia and frostbite.

Some footwear may be provided with additional insulation layers that offer improved protection during cold weather operations but will not prevent cold temperature injuries. The types of underlying socks will also affect the insulation to your feet, ankles, and lower legs.

Chemical, Biological and Radiological Hazards

Chemical, radiological and biological hazards (poisons, toxins, carcinogens, radioactivity, germs, infectious body fluids, airborne or bloodborne pathogens, etc.) that firefighters and emergency personnel encounter are a matter of life and death. You are at risk of death, injuries, diseases, and illnesses when exposed to these hazards. As an emergency responder or firefighter, you must learn about these hazards and how to protect yourself from them.

There are numerous Federal, state and local environmental regulations and health codes on how to deal with chemical, radiological and biological hazards. For example, OSHA regulations in 29 CFR 1910.120 cover hazardous waste operations and emergency response while 29 CFR 1910.1030 cover employer requirements for reducing employee exposure to bloodborne pathogens. These regulations apply to firefighters and other emergency responders.

This guide does not address all the hazards associated with chemical, biological or radiological exposures or how to protect you from them. This guide provides limited information on these hazards and tells only how you should go about cleaning, donning and doffing your protective footwear to minimize—but not eliminate—your exposure to these hazards. (See later chapters.)



DANGER

Your protective ensemble may not protect you from chemical, biological or radiological hazards that can cause death, burns, injuries, diseases, and illnesses. To reduce your risk, obtain proper training in recognizing and handling these hazards and choose a suitable protective ensemble.

Chemical Hazards

Chemicals present health, flammability, reactivity, or other hazards. The health hazards associated with different chemicals include, but are not limited to, carcinogenicity, toxicity, sensitization, irritation, and corrosiveness (burns). The specific types of hazards and their severity associated with chemicals vary with the specific chemical and how the exposure occurs. The effects of some hazardous exposures may be immediate and show up during or shortly after the exposure occurs, or exposure effects may not appear until much later following the exposure or following repeated exposure to chemicals.

Chemicals create health hazards by contacting or entering the body through inhalation, skin absorption, ingestion, or injection. While respirators, such as SCBA and air-purifying respirators, are designed to protect firefighters and emergency responders from inhalation or ingestion of chemicals, unless protective footwear has a barrier layer that is designed to limit or prevent contact of chemicals with the skin, little or no protection will be offered. The state of the chemicals and their physical properties (density, ease of evaporation, whether present as gas or vapor, liquid or solid) affect how you are potentially exposed to chemicals.

Even with a liquid barrier, either for technical rescue or emergency medical footwear, your footwear will not protect you from all chemical exposures. It is important to realize that:

- **Your protective footwear is not vapor-proof.** Chemical gases and vapors penetrate through many portions of your footwear freely, either through leather and fabric materials, or more likely, through the interface area of your protective footwear with your lower torso protective garment. Depending on the nature of the chemicals, your skin may be exposed to most vapors or gases while wearing your protective ensemble.
- **Your protective footwear is not liquid proof.** Even though the materials in your protective footwear and the overall protective garment design are evaluated for resisting penetration by different liquids, liquids may still penetrate and contact your skin. The ability of liquids to penetrate and contact you depend on the type of chemical, its physical properties, the quantity of chemicals to which you are exposed, and the conditions at the emergency scene.
- **Your protective footwear does not stop exposure to all solid chemicals.** Solid chemicals, particularly soot particles, and other contaminants can still enter through footwear closures and interfaces.

Chemicals may also be flammable. The relative flammability of chemicals depends on many factors, including, but not limited to, the state of the chemical, its ease of evaporation and flammable limits. Chemical gases and vapors may accumulate in areas of the emergency scene and present a flash fire hazard. You must avoid flammable vapor exposures. Your protective footwear may also absorb hazardous and/or flammable vapors and/or liquids that may later ignite.

Certain chemicals may also present cryogenic and liquefied gas hazards. In this form, chemicals present extreme hazards from cold temperatures and upon release into the environment may create relatively highly concentrated areas of the chemical which present further health and flammability hazards. You must avoid contact with cryogenic and liquefied gas hazards.

Chemicals may also be reactive. Some chemicals react violently, explode or create other hazards when put into contact with incompatible substances. For example, sodium metal reacts explosively upon contact with water. Other chemicals may exhibit severe reactions when exposed to air, heat and other substances. You must avoid contact with known reactive chemicals.

Biological Hazards

Bloodborne pathogens are bacteria, viruses, germs, and similar harmful microorganisms and substances carried in blood and body fluids, which can cause death, diseases and illnesses. While technical rescue and emergency medical protective footwear have been tested for overall liquid penetration resistance and material penetration resistance to viruses, this does not mean that your footwear will protect you under all circumstances and from all bloodborne pathogens. Even when wearing protective footwear certified to NFPA 1950 (1999) for emergency medical operations, you are still at risk of death, diseases and illnesses due to contact with such pathogens.

Biological hazards also include, but are not limited to, airborne pathogens, biogenic toxins, biogenic allergens, and bites from insects and animals. The range of effects from exposure to these hazards vary with the type of biological agent. Even when equipped with a liquid barrier material, your protective footwear limits some exposure to some biological hazards, but does not protect against all biological hazards under all conditions. Airborne pathogens warrant the wearing of a suitable NIOSH-approved respirator, which is not addressed in this user information guide.

Radiological Hazards

There are two types of radiation: ionizing and non-ionizing. Ionizing radiation includes alpha particles, beta particles, gamma rays, X-rays, and other forms of highly energetic radiation emitted from radioactive materials. Exposure to ionizing radiation causes changes in the body that can result in serious or fatal health effects. Non-ionizing radiation includes ultraviolet (UV) light, infrared light, microwaves, and radio frequencies. Different health effects exist with exposure to the different types of non-ionizing radiation. The exposure intensity and duration affect how radiological hazards cause effects on the human body. Your protective footwear does not provide protection from radiological hazards. Therefore, you must avoid contact with all radiological hazards to reduce your risk of death, injuries, diseases, and illnesses associated with radiological exposure.

Wildland/urban interface footwear does not provide protection against the majority of liquid chemical and biological hazards. Even the best protective ensemble cannot protect you completely from chemical, radiological and biological hazards. Protective footwear can reduce—but not eliminate—your risk of death, diseases and illnesses due to these hazards.



DANGER

Your protective ensemble may not protect you from all physical hazards. Be constantly alert to the possibility of physical hazards. Failure to do so may lead to death, burns or injuries.

Physical Hazards

Physical hazards include, but are not limited to, falling heavy objects, flying debris, projectiles, abrasive or rough surfaces, sharp or jagged edges, pointed objects, slippery surfaces, and excessive vibration.

Different portions of your ensemble may provide limited protection from some hazards and reduce your risk of death, burns, injuries, diseases, and illnesses for some physical hazards under some conditions. Various objects on the fireground or at the emergency scene can penetrate, wear away, cut, or puncture portions of your protective footwear, exposing your skin or underlying layer to physical trauma. You may also lose traction while walking, running or crawling, or have your body or parts of your body exposed to excessive vibration. You may sustain injury or be killed from physical hazards that overwhelm the protective qualities of your ensemble. Despite the use of a toe cap in technical rescue and emergency medical footwear that is intended to minimize compression and impact to your toes, the forces and weights for some falling objects and debris can still overwhelm the protective capabilities of your footwear.

Medical care facility protective footwear and wildland and urban firefighting protective footwear are not required to have protective toe caps and puncture resistant devices as part of their footwear design. Consequently, these types of NFPA 1950 footwear offer little to no physical protection from impact or compression, impact, or puncture through the sole, when without these protective hardware components.

Electrical Hazards

If your protective footwear comes in contact with a source of electricity, you may be killed, burned or injured due to electrical shock. Similarly, some forms of high voltage equipment can arc flash causing exposure to extremely high forms of electrical energy. Even if your protective ensemble is dry, clean and properly maintained, you may be electrocuted or injured from an electrical shock. Water and other fluids conduct electricity. Wet, dirty and/or contaminated protective footwear may increase your risk of death, burns and injuries due to electrical shock.

Technical rescue protective footwear has been subjected to electrical hazard resistance testing. However, this does not mean that your footwear will protect against electrical hazards under all conditions. Certain electrical hazards can exceed the protective capabilities of your footwear and therefore, you must avoid stepping on or contacting open electrical sources.

Protective footwear that includes electrical circuitry are evaluated for their non-incendive performance and intrinsic safety. While the specific footwear with these devices should not contribute to an explosive situation or create an ignition source, certain conditions can occur where these outcomes are possible, such as when an electrical circuit is damaged.



DANGER

Your protective ensemble may not protect you from all physical hazards. Be constantly alert to the possibility of physical hazards. Failure to do so may lead to death, burns or injuries.



DANGER

Your protective ensemble, wet or dry, may not protect you from electrical shock. Avoid coming into contact with energized electrical wires and equipment, and otherwise avoid electrical currents. Failure to do so may lead to death, burns or injuries.

Hazards Caused by the Wearing or Use of PPE

The wearing of your protective footwear and other clothing and equipment items creates a variety of hazards affecting your body or your ability to safely perform required activities at a firefighting or emergency operation. These hazards are a byproduct of the tradeoffs between providing protection and allowing you to function with restriction. The wearing of any PPE entails these tradeoffs, and the balance between protection and functionality and comfort is a decision made in the selection of your protective footwear by your fire department or organization.

Hazards created by the wearing or use of personal protective equipment include, but are not limited to:

- Heat stress.
- Loss of functionality.
- Wet, soiled, contaminated or damaged PPE.
- Allergic reactions when contacting certain materials.
- Improper fit, wearing, or coverage by protective footwear.

Heat Stress

Heat stress is one of the leading causes of firefighter and emergency responder death and injury. Heat stress is an increase in human body temperature and metabolism caused by physical exertion and/or a heated environment which can lead to exhaustion, mental confusion, disorientation, dehydration, loss of consciousness, heart attack, stroke, and other fatal illnesses. Exerting yourself while wearing your protective ensemble (garments, helmets, gloves, footwear, hoods, eye and face protective devices, and respirators) may increase your level of heat stress. Performing strenuous tasks in the heated environment of an emergency or fire scene or in warm and/or humid weather may also increase your heat stress.

Even though covering a small portion of the body surface area and breathable, protective footwear can be contributory to heat stress in that the wearing of footwear affects the exertion of the firefighter and contributes to energy expenditures. **If your protective footwear also has a liquid barrier, this additional layer or material capability will further affect your body's ability to regulate body temperature under hot, humid, and high work conditions.** Protective footwear also creates some of the overall burden on the firefighter through its weight and coverage of the skin affecting forms of heat exchange between the individual firefighter and the environment. Under heavy work rates, typical of emergency operations, these effects can be amplified.

To reduce your risk of heat stress, you must:

- Know your physical limitations. Consult your physician; be in top physical condition.
- Make sure your protective ensemble, including your protective footwear and equipment fit properly to allow adequate freedom of movement.
- Avoid undue exertion and/or prolonged exposure to heated environments.



DANGER

Wearing your protective ensemble, footwear, or any PPE may increase your risk of heat stress, which may cause heart attack, stroke, dehydration, or other conditions resulting in death, injury or illness. At the first sign of heat stress, immediately seek medical help.

- Recognize and be constantly alert for signs of heat stress. Signs of heat stress include rapid heart rate, labored breathing, feeling of weakness, and excessive sweating, or hot, flushed dry skin. Consult your safety officer or physician to learn and recognize the signs of heat stress.
- Be particularly alert for signs of heat stress during warm and/or humid weather.
- At the first sign of heat stress, immediately seek medical help.

Loss of Mobility or Function

Wearing of your protective ensemble, including your footwear, and even when worn correctly, may limit your ability to move easily, manipulate objects, see clearly, and communicate with others. You must be aware of the effects of your protective ensemble on your ability to perform certain tasks and compensate in ways that do not compromise your safety or increase your risk of death, burns, injuries, diseases, or illnesses.

You must also be aware that your protective ensemble or portions of your protective ensemble may prevent you from entering certain confined spaces, restrict your movement in other ways, or result in you becoming caught on or entangled in equipment, implements, or rough areas of the response environment.

Wet, Soiled, Contaminated, and Damaged PPE

Wet, dirty and/or contaminated protective clothing and equipment can be a breeding ground for germs, bacteria, fungus, and other microorganisms that can cause disease and illness. Your protective footwear must be kept as dry and clean as possible in order to reduce the risk of infections, diseases, and illnesses. Protective clothing that has been exposed to biologically contaminated water, such as flood water that may contain sewage, must be sanitized after exposure to prevent further growth of microbial contamination.

If your protective footwear even becomes slightly dirty or contaminated, do not use it. Dirt or contaminants reduce your footwear's protective qualities and increase your risk of death, burns, injuries, diseases, and illnesses. Many soils on the exterior and interior layers permit material to reflect less and absorb more heat. These soils can also lead to clothing being easier to contaminate. Clean your protective footwear in strict compliance with NFPA 1857, 2026 Edition, with this guide, with manufacturer's instructions, and with all Federal, state and local government environmental regulations and health codes.

Do not use chlorine bleach or low pH (< 6.0) or moderately high pH (>9.5) detergents or cleaning agents when cleaning your protective footwear, as their use may reduce the strength of or degrade your protective footwear. If you are unsure whether or not your protective footwear is free of contaminants or dirt, do not use it. Do not use footwear that is not thoroughly clean and dry.

Common damage to protective footwear includes physical damage such as scuffs (abrasion), cuts, tears, and punctures, broken or missing hardware and closure systems, thermal damage in the form of charring, burn holes, melting or discoloration of any layer, loss of seam integrity and broken or missing stitches, and loss of liquid integrity (observed leakage) for technical rescue and emergency medical footwear.



DANGER

Wearing your protective ensemble, footwear, or any PPE may increase your risk of losing mobility, functioning, or cause entanglement that can impair your ability to operate that can lead to death or injury. Understand and recognize how your protective ensemble or protective footwear can potentially impair your mobility and function.



DANGER

Do not use your protective footwear if it is wet, soiled, or contaminated. Such use may result in death, burns, injuries, diseases, or illnesses. Arrange for proper cleaning and sanitization or decontamination before use.



DANGER

Do not use your protective footwear if it is physically or thermally damaged or improperly altered from its original condition. Such use may result in death, burns, injuries, diseases, and illnesses. Repair (if appropriate) or replace your protective footwear before use.

Even if your protective footwear becomes slightly damaged or degraded, do not use it. Physical and thermal damage greatly decreases your protective footwear's protective qualities and increase your risk of death, burns, injuries, diseases, and illnesses. You and your department or employer should regularly inspect your protective footwear for signs of wear and tear and to ensure that the footwear has not been modified or altered in any way. Even the most harmless looking changes to the protective footwear may increase your risk of death, burns, injuries, diseases, and illnesses.

Skin Allergies

The wearing of your protective footwear may produce skin allergies if you are allergic to specific substances used in the materials of protective footwear or become sensitized to these substances over time. The susceptibility of each individual wearer is different; most individuals do not experience any allergic effects. The wearing of your protective footwear, especially under hot and sweaty conditions, may cause changes in your skin health and make your skin more susceptible to effects by different emergency scene contaminants. Further, the accumulation of different contaminants in your protective footwear may become a source of skin reactions and allergies if your protective clothing is not kept clean. If you experience any unusual skin reactions or allergies that you cannot explain, contact your supervisor and seek medical help.

Improper Fit, Wearing, or Coverage

Before each use of your protective footwear, make sure that it is sized and adjusted to fit properly. Your protective ensemble should fit you so that it does not restrict your movement (see "Loss of Mobility or Function" above). All the items that you wear with your protective footwear should fit together with your other equipment so that the overall protective ensemble protective layers overlap in all body positions. Do not allow gaps in coverage of your body by your protective equipment. As you change your body position, check to make sure that your protective garment's protective layers continue to overlap your footwear. You should go through a range of body motions and orientations to ensure that your protective footwear correctly fits and does not impede specific movements.

You must fasten the footwear closures (laces, zippers, or other devices) on your protective footwear to reduce your risk of death, burns, injuries, diseases, and illnesses. Properly closing your footwear also affords better ankle support, particularly when walking or operating on uneven surfaces or in rough terrain that promotes the risk of strains and sprains. If you do not fasten all closures, there will be gaps in your protection that cause dangerous conditions. Failure to fasten all closures and utilize all components may result in death, burns, injuries, diseases, and illnesses.



DANGER

Your protective footwear must be properly sized and worn with all closures secured to provide limited protection. Your footwear should fit and be properly adjusted. Failure to do so may result in death, burns, injuries, diseases, or illnesses.

Hazards Based on Your Position and Operating Area

Traffic and Vehicle Hazards

Activities that distract your full and undivided attention to approaching traffic are a common physical hazard encountered by firefighters and other emergency personnel. Your protective ensemble, including your protective footwear, is not designed to protect you if you are struck by a vehicle or involved in a vehicle accident. You should always be seated and wear a seat belt when riding in a moving vehicle. You should not operate on or near a roadway without receiving training in the proper way of doing so and without appropriate protective equipment. Exercise extreme caution when operating on or near a roadway or around vehicular traffic. The high visibility materials that may be part of your protective garment or helmet are not always adequate for you to be seen by approaching traffic or equipment. You may be required to wear supplemental high visibility safety apparel that is appropriate for your operations. Your operating conditions may further prevent adequate visibility to drivers or equipment operators from seeing you.

Other Operating Area Hazards

In addition to the hazards described above, which are by no means an all-inclusive list of potential hazards that you might face, you need to be aware that you can encounter hazards that are specific to the circumstances under which you are performing firefighting or emergency operations. Specific hazards include, but are not limited to:

- **Bodies of water.** Exercise extreme caution around bodies of water. Your protective ensemble does not float and may make swimming difficult.
- **Elevated areas.** Exercise extreme caution when operating on roofs, balconies, ladders, and other elevated areas. Your protective ensemble does not protect you from falls. You must be provided with adequate fall protection, which is not addressed in this guide.
- **Moving machinery.** Exercise extreme caution when working around moving machinery. Even with high visibility materials as part of your protective ensemble, you may not be seen by approaching equipment. Your operating conditions may further prevent adequate visibility to equipment operators. Also be alert to the potential that part of your footwear may be caught in operating machinery.



DANGER

Without appropriate levels of high visibility materials, your protective ensemble may not comply with visibility requirements for working on a roadway. It will not protect you if you are struck by a vehicle or in a vehicle accident. You should receive training on proper emergency operations conducted on or near roadways and the appropriate protective equipment for doing so. Be constantly alert to the possibility of vehicle hazards.

Always remain seated and wear a seat belt while riding in a moving vehicle. Failure to do so may lead to death, burns or injuries.

Chapter 3

Use and Limitations of Protective Clothing

OSHA places the responsibility for selection, approval, maintenance, inspection, and training in the proper use and limitations of safety gear on your fire department or employer (Title 29, Code of Federal Regulations, Section 1910.132). By doing this, OSHA recognizes a simple truth: how you use your protective ensemble is beyond the manufacturer's control. Your fire department or employer controls the circumstances under which you use the protective ensemble and is in the better position to assess the hazards at the fire or emergency scene and to direct the appropriate selection and use of safety equipment including protective ensembles.

Consistent with the OSHA regulations, manufacturers offer your protective ensemble for your fire department (paid or volunteer) or employer to evaluate and decide whether or not the protective ensemble provides an acceptable level of protection for any fire or emergency operation. Your department or employer should ensure proper fit and conduct its own testing, evaluation and training in conjunction with qualified safety experts before issuing protective footwear for use by its emergency responders or firefighters.

Matters that your department or employer at the fire scene or emergency scene should consider on a case-by-case basis include:

- Whether to use protective footwear in a specific emergency response.
- The extent of your emergency response activities.
- Areas of the response scene where you can safely operate.
- How long your protection can be safely maintained under the emergency response conditions.

Because the manufacturer of your protective footwear cannot predict the many varying conditions existing at each fire or emergency scene, your department or employer must decide the appropriate use of your protective ensemble and its suitability for that use at each fire scene. The manufacturer makes no guarantees or warranties, express or implied, that your protective ensemble is fit for a particular purpose. (See Warranty Information on inside back cover.)

Use your protective ensemble only under the direct supervision of your fire department or employer in a manner consistent with applicable versions of NFPA 1550 Standard on Emergency Responder Health & Safety, other relevant NFPA standards, 29 CFR 1910.132, and 29 CFR Part 1910.1030, as applicable.

NFPA Label

The NFPA label on your protective footwear states that your footwear is compliant with the requirements in NFPA 1950, 2025 Edition standard for one of the following product areas:

- NFPA 1951: Technical Rescue Protective Footwear.
- NFPA 1999: Multiple-Use Protective Footwear.
- NFPA 1999: Multiple-Use Medical Care Facility Protective Footwear.
- NFPA 1977: Wildland Firefighting Protective Footwear.
- NFPA 1977: Wildland Firefighting and Urban Interface Firefighting Protective Footwear.
- NFPA 1950: Multifunctional Protective Footwear.

Your protective footwear product label may include additional statements of compliance or warnings dictated by NFPA 1950. For example, each type of footwear may have additional statements indicating if the footwear contains electrical circuitry that meets separate non-incendive or intrinsically safe criteria.

Compliance and labeling with the NFPA 1950 standard do not mean that you cannot be seriously injured if you use the protective footwear only for the respective mission(s) addressed in the standard. Even if you limit yourself to specific missions – technical rescue incidents, emergency medical operations, and wildland or urban interface firefighting – you are still at risk of death, burns, injuries, diseases, and illnesses as described on the footwear's label and in this guide. As previously explained, there is no such thing as a “routine” or “ordinary” emergency or fire, and you must realize that you are at risk at all times during emergency and firefighting operations.

The label on your protective footwear will include certain information:

- The name of the manufacturer and their address, including their country.
- A footwear model or style number or other identification, which may be a unique serial number or a lot number.
- The month and year of manufacturer (some labels may provide also provide the day).
- A serial or number or other information identifying the specific clothing item for purposes of traceability.
- The model or style name, number, or design.
- The size of the footwear, as applicable.
- Identifications for the principal materials of construction
- Cleaning precautions.
- A statement indicating compliance with the 2026 Edition of NFPA 1950 or earlier edition of the NFPA 1971 standard, depending on its date of manufacture. All protective footwear manufactured after July 2026 are required to meet the 2026 edition. The mark (logo) of the certification organization should be present on the label of any certified footwear.
- Additional information may also be provided by the manufacturer.

The above information may appear on multiple labels that generally will be adjacent to one another on the interior of the footwear.

Some footwear certified to NFPA 1950 may have additional labels for certification to other NFPA and industry standards. This may include NFPA 1990 under NFPA 1992 for liquid chemical splash protection, ASTM F2413 for industrial impact, compression, and puncture resistance with other areas of protection related to metatarsal and electrical protection based on testing to ASTM F2412, or the equivalent Canadian standard, CSA Z195.

Donning and Doffing

Donning Your Footwear

Put your footwear on after donning your protective trousers. This involves first putting on the protective trousers according to the garment manufacturer's instructions and then stepping into each individual boot, ensuring the footwear is properly secured and then pulling the bottom hem of the trousers over top of your footwear. Specific steps include:

1. Slip on protective trousers and footwear so that all components or layers of each trouser cuff completely cover and overlap the upper part of each boot. Be sure that the overlap remains in all body positions during use.
2. If your footwear has a closure system, ensure that the closure system (i.e., laces or other means) is secured before the trouser cuffs are fully in place.
3. Sit and bend over to check and adjust for comfortable fit.
4. Also walk around and examine the interface of your protective trousers with your footwear to ensure that the trouser bottom cuff fully extends towards the foot transition portion of your footwear.



WARNING

How you don and doff your protective footwear affects your life and safety. You must also wear the protective footwear properly in order for it to reduce your risk of death, burns, injuries, diseases, and illnesses. You must also exercise caution when you remove your protective footwear to avoid contaminating yourself and others with hazardous substances.

Do not wear your footwear if they have not been cleaned or are damaged. Seek replacement footwear if your footwear is soiled or damaged. Wearing an unclean or damaged footwear will increase your risk of death, burns, injuries

Doffing Your Protective Footwear

Doffing procedures vary depending on whether or not your protective footwear has been contaminated during use.

When emergency doffing is required, immediately seek assistance to remove the footwear as quickly as possible, taking care to avoid having unprotected skin or under clothing come in contact with any portion of the footwear or other protective ensemble elements.

No Contamination

1. If there is no contamination, remove your protective footwear in reverse order from that described above for donning the protective footwear.
2. Inspect each footwear item for any damage or change in condition.
3. If damage or change in condition is noted, bring this to the immediate attention of your fire department or employer. Such damage or change in condition must be corrected before you may use your protective footwear.
4. If no damage or change is noted, store your protective footwear as recommended in this Guide under "Storage".

Contaminated Protective Footwear

Doff protective footwear contaminated with fireground soils, blood, body fluids, toxins, radioactivity, chemicals, and/or hazardous materials with special care by taking the following precautions:

1. Avoid unprotected bodily contact with any contaminated area of your protective ensemble.
2. If your footwear uses a closure system such as laces or other means to tighten the top of the footwear around your legs, you must first loose or open the closure systems.
3. One method to remove contaminated footwear to minimize contaminant transfer involves removing your footwear by pulling down your protective trousers by rolling the exterior of the trousers over the footwear so that exterior to exterior surface contact each other. You can then just step out of the footwear at the same time as your trousers.
4. If your footwear is doffing separately, use gloves to pull your footwear off or have some else, also wearing gloves, assist you with their removal. You may also use a device such as three prong legged cane to help ease off your boot by pushing down at the back heel area of the footwear as you step out.
5. Use appropriate protective clothing for handling contaminated footwear (See current versions of NFPA 1950 (1999) and NFPA 1580 for procedures and types of garments and equipment to be used in handling protective footwear contaminated with biologically hazardous materials. See current version of NFPA 1891 for similar information concerning chemical hazards.)
6. Avoid spreading the contaminants from your protective footwear to your personal belongings, your living quarters and/or interior spaces in buildings and vehicles.
7. Place contaminated protective footwear in a sealable, leak-proof, airtight bag.
8. Dispose of contaminated protective footwear that cannot be adequately cleaned or decontaminated in accordance with applicable Federal, state and local laws.
9. If you intend to reuse your protective footwear, it must be cleaned and decontaminated in accordance with the instructions found in this guide before you or anyone else may have unprotected bodily contact with it.



WARNING

Avoid unprotected bodily contact with contaminated areas of your protective footwear.

Avoid contact between contaminated protective footwear and your personal belongings, your living quarters and/or interior spaces in buildings and vehicles. Such contact may increase your risk of death, burns, injuries, diseases, and illnesses.

Modifications, Alterations and Markings

Do not modify, change, mark, paint, or alter your protective elements without the manufacturer's written authorization. Do not write over top of any printed information on the protective footwear product label. Do not remove your protective footwear label. If your protective footwear label becomes damaged or unreadable, contact the manufacturer for a replacement label.



WARNING

Modifying, changing, adding to, marking, painting, or altering your protective footwear in any way may affect its protective qualities and increase your risk of death, burns, injuries, diseases, and illnesses.

Chapter 4

Inspection

General Inspection Requirements and Warnings



WARNING

You must inspect your protective footwear regularly for evidence of damage or changes. If you are uncertain about the condition of your protective footwear, do not wear them and seek assistance from the appropriate person in your fire department or organization.

Failure to regularly inspect your protective footwear increases your risk of death, burns, injuries, diseases, and illnesses.

Inspect your technical rescue and wildland or urban interface firefighting footwear regularly in accordance with NFPA 1857, 2026 Edition. Inspect your emergency medical protective footwear in accordance with Annex C of NFPA 1950, 2025 Edition and NFPA 1891, 2022 Edition.

Universal PPE Handling Precautions

NFPA 1857 requires that universal precautions be observed when handling footwear and other clothing and equipment. This means that you should always assume the protective footwear you are handling is contaminated, even when it does not appear soiled or has obvious visible contamination. At a minimum, individuals conducting inspections should wear examination gloves or cleaning/utility gloves certified to NFPA 1950 (1999).

If you have the potential for extended or repeated contact with heavily soiled or contaminated footwear, you should wear:

- An apron with sleeves or coverall that meets the single or multi-used requirements of NFPA 1950 (1999).
- An N95 or higher filtering facepiece respirator approved by NIOSH.
- A faceshield is also recommended.

Similarly, if the footwear is contaminated with blood or other potentially infectious fluids (including flood water), wear a sleeved apron or coverall, respirator, and facemask.

Types of Inspections

NFPA 1857 (1855) establishes requirements for both routine inspections and advanced inspections for technical rescue footwear. NFPA 1857 (1877) only establishes general inspection requirements for footwear used for wildland and urban interface firefighting. For emergency medical footwear, NFPA 1891 (2022) distinguishes requirements for inspections depending on the disposition of the footwear. The following subsection shows differences in the type and frequency of inspections.

Technical Rescue Footwear

- Individual users routinely must inspect their own protective footwear when obtained, at the beginning of each duty period and before and after each use.
- Independent service providers (ISP) or personnel in your fire department or organization who have received training in the inspection of protective footwear must conduct advanced inspections at a minimum of once every 12 months or whenever routine inspections indicate that a problem could exist.

Independent service providers (ISP) must receive verification according to the criteria in NFPA 1851, 2020 edition. Personnel conducting inspections of protective footwear must have written verification of training from the original manufacturer or verified ISP.



WARNING

Modifying, changing, adding to, marking, painting, or altering your protective footwear in any way may affect its protective qualities and increase your risk of death, burns, injuries, diseases, and illnesses.

Emergency Medical Footwear

Inspection procedures in NFPA 1891, 2022 edition indicate conducting inspections of footwear for the following disposition of the footwear:

- Upon receipt.
- Prior to donning the footwear.
- Following use, cleaning, and decontamination.
- Following repairs.
- Annually or periodically.

This standard leaves it up to the department or organization to set the frequency of the inspection, though recommends at least one year.

Given the similarity between several aspects of emergency medical footwear and technical rescue footwear and the absence of detailed inspection criteria for emergency medical footwear, apply the same inspection practices above for technical rescue footwear to emergency medical footwear.

Wildland and Urban Interface Firefighting Footwear

NFPA 1857 (1877) requires inspections of protective footwear to be conducted at the time of issue, after each use, or at a minimum of every 12 months, to be conducted by either individual members or members who have been trained to perform the inspection. NFPA 1857 (1877) also permits the organizations to have inspections conducted by verified independent service providers (ISPs), ISPs, or contracted organizations that meet the department's standard operating procedures for conducting inspections. No specific requirements exist for inspecting footwear after cleaning or repairs, but this practice is recommended.

Routine Inspections

You and your fire department or employer should inspect your protective footwear upon receipt. You are responsible to inspect your footwear upon issue, at the beginning of each duty period, after each cleaning, and before and after each use of any kind.

Inspect your protective footwear for:

- Soiling.
- Contamination from hazardous materials or biological agents.
- Physical damage such as, but not limited to, cuts, tears, and punctures.
- Thermal damage such as charring, burn holes, melting, or discoloration of any layer.
- Exposed or deformed protective toe, protective midsole, or shank.
- Closure system component damage and functionality.
- Loss of seam integrity and broken or missing stitches.

Remember, whenever you have a question about the condition of the protective footwear, you should temporarily remove the questionable footwear from service and refer to the manufacturer, a verified independent service provider (ISP), or other competent, trained organization for evaluation.

Your fire department or employer must develop and use standards and guidelines for determining whether or not your protective footwear passes inspection and can continue to be used for firefighting and emergency operations.

If an inspection discloses any damage or deterioration to any protective footwear do not use it and do not attempt to repair it. Consult your fire department or employer as to the proper steps to be taken in dealing with the damaged protective footwear.



WARNING

You must inspect your protective footwear regularly for evidence of damage or changes. If you are uncertain about the condition of your protective footwear, do not wear them and seek assistance from the appropriate person in your fire department or organization.

Failure to regularly inspect your protective footwear increases your risk of death, burns, injuries, diseases, and illnesses.

Advanced Inspections

For technical rescue footwear and as recommended for emergency medical footwear, advanced inspections apply to are the responsibility of your fire department or organization. Only trained individuals from your fire department or organization, or other individuals trained by a verified ISP can perform advanced inspections. Outside of your organization, advanced inspections can be performed by the footwear manufacturer or a verified ISP. ISPs must be verified by meeting requirements established in NFPA 1857.

Qualified personnel should conduct advanced inspections at a minimum of every 12 months and whenever routine inspections determine potential damage. Advanced inspections should be performed more frequently as deemed necessary based on the condition of your protective footwear or decisions made by your fire department or organization.

Advanced inspections involve a more detailed and thorough examination of your protective footwear for different types of damage or changes. In addition to the item identified above for routine inspections, a more detailed assessment is made that includes:

- Slitting of any footwear materials or components.
- Loss of seam integrity or delamination of upper materials.
- Loss of water resistance (see below).
- Excessive tread wear.
- The condition of the lining for tears, excessive wear, and separation from the outer layer.
- Heel counter failure (the stiff part of the boot at the back of the heel).
- Label integrity and legibility.

Advanced inspections also a non-destructive water resistance evaluation. In this test, the boot is stuffed with paper towels and placed in a container filled with water to a certain height. After exposing the footwear this way, the paper towels are removed and inspected for any signs of water, which would indicate leakage into the boot.

Limitations of Inspection

Though most performance properties of the protective footwear cannot be tested adequately in the field, OSHA regulations require your department or employer to regularly inspect your protective footwear and other safety equipment. Your fire department or employer should have a systematic, routine and regularly scheduled inspection of your protective footwear and other equipment. Full documentation and records of these inspections should be kept.

Record Keeping

NFPA 1857 (1855), 2026 edition requires that your fire department or employer compile and maintain records on your protective footwear. The following records must be kept:

- Person to whom the protective footwear is issued.
- Date and condition of the footwear when issued.
- Manufacturer name and model name or design.
- Manufacturer's identification number, lot number or serial number.
- Month and year of manufacture.
- Date and findings of advanced inspections.
- Dates and findings of advanced cleaning, disinfection or sanitization, or specialized cleaning.
- Reason for and who performed advanced cleaning, disinfection or sanitization or specialized cleaning.
- Dates of repairs, who performed repairs and brief discussion of repairs.
- Date of retirement.
- Date and method of disposal.

There are no detailed record keeping requirements for emergency medical footwear. In the absence of these requirements, use the same procedures as for technical rescue footwear.

- NFPA 1857 (1877) requires less information for record keeping, including the following records be kept for wildland and urban interface firefighting footwear.
- Manufacturer name and model name or design
- Manufacturer's identification number, lot number or serial number
- Month and year of manufacture

Due to nature of wildland firefighting for some organizations, more detailed record keeping including the individual to which the footwear is assigned and the dates and details for inspection, cleaning, decontamination, repairs, and retirement are not required.

Chapter 5

Cleaning and Decontamination

General Cleaning Requirements and Warnings

It is important to keep protective footwear clean and contamination free. Soiled or contaminated protective footwear is a hazard to end users because fireground and emergency scene soils and contaminants can be flammable, toxic and/or carcinogenic. Additionally, soiled or contaminated protective footwear can have reduced protective performance. Clean protective footwear offers you better protection and proper cleaning, and decontamination can add to the life of the protective footwear; therefore, you should clean protective footwear whenever they become soiled.

The fire/emergency services and manufacturers have been working very hard to get the message across that contaminated and soiled protective clothing and equipment put firefighters and other emergency responders at a grave and unnecessary risk of death, burns, injuries, diseases, or illnesses. Several studies have concluded that cleaning the gear is a very important step towards helping protect the firefighter or emergency responder for a variety of reasons, not least of which, is to prevent continued exposure to carcinogen and other hazardous substances that stay with gear following its use on the fireground or during other emergency operations. You and your fire department or organization are responsible to keep your protective footwear clean and maintain them as set forth in the footwear label(s) and this guide.

In everyday use, personal protective equipment becomes dirty by absorbing sweat from the wearer and soils, soot, and so forth from the outside environment. Cleaning of footwear, other clothing, and equipment will assist in removing these substances. Protective footwear can also become contaminated with other substances, including hazardous materials, particulates, and body fluids or other potentially infectious materials. Different procedures must be followed for cleaning and decontamination processes to be fully effective.



DANGER

You must keep your protective footwear clean and free of contamination. If you do not keep your protective footwear clean, you increase your risk of death, burns, injuries, diseases, and illnesses.

Health Risks of Soiled or Contaminated Protective Footwear



DANGER

Due to potential levels of contamination that may not be removed through cleaning, you must limit your handling and use of your protective footwear, even if cleaned and decontaminated, to those situations where your department or employer require their use. If you do not minimize your handling and use only, when necessary, you increase your risk of death, injuries, diseases, and illnesses from potential continued exposure to contaminants.

Soiled or contaminated protective footwear can expose wearers to toxins, carcinogens, and infectious agents that enter the body through ingestion, inhalation or skin absorption. Some forms of contamination can cause acute or short-term health effects, but others can occur from repeated exposures. Repeated small exposures to some contaminants can add up over time and cause health problems. Although safety is important to avoid injury or inhalation hazards while working at the emergency scene or on the fireground, your protective clothing can inadvertently absorb or carry many of the contaminants that lead to continued exposure and present health risks away from the fire scene from your handling and wearing of protective footwear and equipment.

Based on their state (e.g., gas/vapor, liquid, or solid), contaminants encountered at an emergency or fire scene can get in or on protective footwear in several different ways. Some substances including many chemical gases, vapors, or liquids can permeate into clothing materials and be absorbed within the material. Liquids can also penetrate into or through materials and remain trapped in the material structure.

Likewise, very small solid particulates can penetrate fabrics and other materials and stay within the material unless removed by cleaning or decontamination. The tendency for contaminants to remain in clothing depends on the characteristics of the substances where volatile chemicals or gases may be transient and evaporate from materials over time while less volatile substances can be persistent. Some infectious agents can remain viable on textile or other surfaces for extended periods of time. It is important to recognize that many forms of contamination are not visible or discernible. Just because you cannot see or smell contamination does not mean that your protective footwear is free of contamination.

Since cleaning and decontamination may not be fully effective in removing all contamination, you should further assume that protective footwear is contaminated after any known exposures at a fire or other emergency scene, even following cleaning and decontamination. You must therefore minimize your handling of your protective footwear and relegate their use only for emergencies where your fire department or employer require their use.

Failure to regard your protective clothing in this way increases your risk for death, injuries, illnesses or diseases arising from continued contact with potentially contaminated protective footwear.

Reduced Performance Hazards of Contaminated Protective Footwear

Although less expected than for structural fires, technical rescue, emergency medical, or wildland firefighting protective footwear can become laden with particles, contaminants and chemicals. These contaminants can cause problems other than exposing the end user that include, but not limited to, the following:

- Soiled protective footwear typically reflects less radiant heat. After materials are saturated with hydrocarbons, they tend to absorb rather than reflect the radiant heat from the surrounding fire.
- Protective footwear heavily contaminated with hydrocarbons is more likely to conduct electricity, increasing the danger when entering a building or vehicle where wiring can still be live.
- Protective footwear impregnated with oil, grease and hydrocarbon deposits from soot and smoke can ignite and cause severe burns and injuries, even if the materials are normally flame resistant. Individual responders can still encounter various chemicals in their normal emergency activities, even if they are not directly involved in a response as part of a specialized hazardous materials response team. Exposures to oils, fuels and lubricants can also occur around fire station vehicles. During responses, exposures to liquids ranging from pesticides to acids to chemical solvents can occur, with or without your knowledge.
- These contaminants, in addition to being hazardous, can also degrade footwear in the following ways:
 - Footwear leather, fabrics, and other materials can become weakened and tear more easily.
 - Thread or seam sealing tape can become loose.
 - Flame retardant or water repellent treatments (if present) can be removed.
 - Footwear hardware can become corroded.



WARNING

Soiled or contaminated protective footwear can expose not only you, but also fellow responders, family members and others to the contaminants and carcinogens described in this guide. To reduce the risk of death, injuries, diseases, and illnesses to you and others, do not take soiled or contaminated footwear home or into living quarters.

Other General Warnings

Do not wear or have soiled or contaminated footwear inside in the living quarters of the fire station or other emergency station. Do not take soiled or contaminated footwear home. Do not wash soiled or contaminated footwear in home laundries or in public laundries unless the public laundry has a dedicated business to handle protective footwear.

Do not transport soiled or contaminated footwear in the passenger area of an emergency or personal vehicle.

Do not commercially dry clean your protective footwear. Standard commercial dry cleaning involving hazardous chemical solvents is not recommended for cleaning protective footwear. Some drycleaning and other solvents can damage components of protective footwear. However, certain emerging processes using non-hazardous can be considered for cleaning if adequate information is available to show their safety of use, effectiveness in removing contaminants, and the absence of damage to protective footwear or components. Consult with your protective footwear manufacturer prior to dry cleaning or other cleaning process to learn whether or not a specific dry-cleaning process will damage your protective footwear.

While similar cleaning instructions are provided for the footwear addressed in this user information guide, some differences exist. In the absence of specific cleaning procedures for emergency medical footwear, the same cleaning procedures for technical rescue footwear are specified.

Technical Rescue and Emergency Medical Footwear

Routine Cleaning

Per NFPA 1857 (1955), end users are responsible for carrying out routine cleaning of their issued footwear using the following procedures:

1. Wear at least examination or cleaning gloves that meet NFPA 1950 (1999) criteria; also wear a sleeved-apron, and faceshield.
2. Evaluate the contamination levels and the need for cleaning of your protective footwear at the emergency scene. If in the assessment of contamination, contamination is suspected, isolate the affected protective footwear, place a tag on the footwear indicating its suspected contamination, and place in

a bag for advanced cleaning and decontamination. Refer to your supervisor or appropriate individuals in your department or organization for guidance. Depending on the type and level of contamination, it may not be possible to fully clean and decontaminate your protective footwear.

3. Isolate protective footwear to prevent cross-contamination.
4. Initially brush off any dry debris and rinse footwear exterior with water.
5. Do not use heavy scrubbing or spraying with high velocity water jets such as a power washer.
6. If necessary, use a soft bristle brush to gently scrub and then rinse off the footwear again.
7. Pretreat any heavily soiled or spotted areas. Do not use chlorine bleach, chlorinated solvents, active ingredient cleaning agents, or solvents without the approval of the protective footwear manufacturer.
8. Fill a utility sink with water. Do not use a water temperature in excess of 105oF (40°C).
9. Only use a mild detergent that has a pH range of not less than 6.0 pH and not greater than 9.5 pH as indicated on the product safety data sheet (SDS) or original product container.
10. Use protective gloves and eye/face splash protection while cleaning.
11. Gently scrub the exterior of the protective footwear using a soft bristle brush.
12. Thoroughly rinse the exterior of the protective footwear with clean water.
13. Repeat the process with clean wash water for the footwear interior.
14. Conduct a routine inspection and where necessary rewash the footwear or submit for advanced cleaning. Consult the footwear manufacturer if stronger cleaning agents are required.
15. Do not machine dry using equipment that produces mechanical action from tumbling or agitation. Instead, invert the footwear and air dry it in an area with good ventilation and not in direct or indirect sunlight, under fluorescent lights, or under UV light.
16. Fully rinse the utility sink after cleaning the footwear.
17. Only apply a polish or other treatment to the exterior of the footwear using only products and procedures permitted by the footwear manufacturer.

Advanced Cleaning and Decontamination

Submit your protective footwear for advanced cleaning if soiled or contaminated. Advanced cleaning must be performed by the footwear manufacturer, a manufacturer-trained organization, a verified organization, or a verified independent service provider (ISP). The level of necessary is determined by the training is determined by the footwear manufacturer, a verified ISP, or the organization.

Advanced cleaning should be carried out at the time of the advanced inspection.

Footwear should not be subject to any form of machine cleaning or drying unless expressly permitted by the footwear manufacturer. Some alternative procedures may be used that include ultrasonic cleaning or newer water-less machines (such as carbon dioxide dry cleaning machine); however, these approaches must not be used unless approved by the footwear manufacturer.

In the absence of specific cleaning and decontamination procedures from the footwear manufacturer, use the same procedures for routine cleaning indicated above.

Examine the manufacturer's label for any unique instructions on drying procedures specific to your protective footwear. Where there are no unique manufacturer's instructions or manufacturer's approval of alternative procedures, use either air drying or a drying cabinet as the preferred methods.

Air drying or use of a drying cabinet are the most appropriate methods for drying protective footwear. They cause no mechanical damage and little or no shrinkage. For air drying, the most efficient method involves forced air ventilation. For this method of drying, simply use fans to re-circulate air inside a room where protective footwear is drying. The basic drying room should include floor drains, a method to exchange the air to the outside environment, and drying racks for hanging protective s to provide maximum air exposure. Overall drying time is dependent on the efficiency of the drying room and the ambient conditions. Heating of the room or the inlet air at temperatures up to 100°F (38°C) can further improve the efficiency of the drying process. Drying protective footwear in ambient air, as opposed to drying cabinets or drying rooms, can take a relatively long time depending on the ambient environmental conditions.

Use the following steps, depending on the drying approach selected:

Air Drying

1. Invert the footwear in an area with good ventilation
2. Do not dry in direct or indirect sunlight, under fluorescent light, or under UV light.
3. Do not allow area used for drying to exceed temperature of 120°F (49°C).

Use of Drying Cabinet

1. Invert the footwear in drying cabinet to allow good air circulation between each item of footwear or other clothing in the cabinet.
2. Use a specific drying temperature and duration to provide sufficient drying time.
3. Do not allow area used for drying to exceed 120°F (49°C).

Wildland and Urban Interface Firefighting Footwear

Acceptable Cleaning Approaches

NFPA 1857 (1877) sets the following requirements related to cleaning footwear:

- The department organization must have a means for providing PPE cleaning and decontamination.
- You should refer to the footwear label or other manufacturer-specific information for cleaning instructions.
- Contaminated footwear must not be machine washed or dried unless approved by the manufacturer.
- Footwear must be manually cleaned using a mild detergent with a pH that is not lower than 6.0 or higher than 10.5 according to the product Safety Data Sheet (SDS) or information on the container with water.
- Consult the manufacturer for recommendations on stronger cleaning agents, if required.
- The use of a moderate stiffness brush is recommended.
- Dry footwear in a well-ventilated area, away from direct sunlight, indirect sunlight, or fluorescent light.

Inspect the footwear following cleaning.

Contract Cleaning

If an independent service provider (ISP), a manufacturer trained in cleaning, a verified cleaner or a verified organization cleans your protective footwear rather than trained personnel of your fire department or employer, it is the responsibility of your fire department or employer to ensure that the contract cleaner is knowledgeable enough to provide adequate service and not cause damage to your protective footwear. Contract cleaners must be able to provide documentation of their verification to effectively clean protective footwear. Specific guidelines for making this determination are provided in Annex A (Section A.6.1.10) of NFPA 1857, 2026 revision.

Chapter 6

Repair



DANGER

Do not attempt to repair your protective footwear. Only the original manufacturer, a verified ISP, or an authorized facility should repair your protective footwear. Improper repair of your protective footwear may increase your risk of death, injuries, diseases, and illnesses.

You must maintain your protective footwear. The maintenance of your protective footwear may require repairs. Other than the replacement of boot laces, zipper assemblies, and insoles all repairs to footwear must be performed by the footwear manufacturer or its designated independent service provider (ISP). All replacement boot laces, zipper assemblies, and insoles must be provided by the footwear manufacturer.

Any other repairs must be undertaken by the footwear manufacturer, an ISP, or a repair facility that is authorized by the footwear manufacturer.

Protective footwear may require cleaning, when necessary, before any repair work is performed.

Chapter 7

Storage

Store your protective footwear properly to maximize its service life, minimize effects that may diminish its performance and reduce potential health hazards. Improper storage may result in permanent damage to your protective footwear and increase your risk of death, burns, injuries, diseases, or illnesses.

Storage Limitations

Prolonged exposure to direct light, especially sunlight, can degrade the performance properties of materials used in your protective footwear.

The presence of moisture in your protective footwear can promote the growth of mildew, fungus, bacteria, or other harmful microorganisms that cause skin irritation, rashes, diseases, or illnesses, and may also reduce the performance properties of your protective footwear. It is important to keep your protective footwear away from contact with potential contaminants, including but not limited to oils, solvents, acids, or alkalis. These substances can also create health hazards for wearing protective footwear and reduce the performance properties of your protective footwear.

Your protective footwear must not be stored at temperatures below -32°C (-25°F) or above 82°C (180°F). Prolonged storage of your protective footwear to temperature extremes can reduce the performance properties of your protective footwear.

Sharp objects, tools or other equipment can physically damage your protective footwear and reduce the performance properties of your footwear. If protective footwear must be stored or transported in environments where there are items that can potentially cause physical damage, use a protective case or bag to prevent damage. In addition, remove all sharp tools or other items from the pockets of protective footwear following use to avoid subsequent damage to footwear.



WARNING

Footwear not in use shall not be exposed to lighting that emits UV rays.

Do not store your protective footwear:

- **In fluorescent lighting, direct or indirect light, especially sunlight or expose your protective footwear to direct light when not being worn**
- **When wet or with any layers that are moist**
- **In contact with potential contaminants**
- **Under temperature extremes**

Improper storage may reduce the effectiveness of your protective footwear and increase your risk of death, burns, injuries, diseases, and illnesses.

Recommended Storage Area and Conditions



WARNING

Do not store your protective footwear inside living quarters or with personal belongings. Do not transport your protective footwear within the passenger compartment of personal vehicles. Failing to properly store and transport your protective footwear can expose you and others to toxic and carcinogenic contaminants and increase the risk to you and others of death, injuries, diseases, and illnesses.

Soiling and other substances on protective footwear can lead to increased exposure and cause contamination of personal items if not segregated from personal areas. If protective footwear must be transported or stored inside living quarters or within the passenger compartment of personal vehicles, the protective footwear must be placed in a protective case or bag to prevent cross-contamination.

Issued footwear items are not allowed in living quarters. Contaminated or soiled protective footwear must not be transported in the cab of a fire department apparatus when not being worn for operational duties unless placed in an airtight protective case or bag to prevent cross contamination. If placed in a protective case or bag, the contaminated or wet protective footwear should be removed from such environments as soon as possible following transport.

When protective footwear items are being transported to a verified ISP or cleaning facility, use a plastic bag that is at least 2 mil (0.05 mm) thick that allows for ease of identification and ensures that items are not accidentally discarded.

Store your protective footwear in an area that is:

- Clean, dry and well ventilated
- Out of direct sunlight or not exposed to other sources of ultraviolet radiation (such as fluorescent lights)
- Not subject to temperature extremes
- Away from sharp objects, tools or other equipment that can physically damage footwear
- Free of potential contaminants

Chapter 8

Retirement and Disposal

Retirement

Pursuant to OSHA regulations, your fire department or employer must determine whether or not your protective footwear is ready for retirement and replacement. The actual service life of each footwear varies depending on the amount of use and how well it has been cleaned and maintained. Depending on the type of footwear, NFPA 1857, 2026 Edition may require that you must retire your protective footwear if is older than by a specific number of years past the date the footwear was manufactured. These retirement limits are indicated below:

- Technical rescue footwear must be retired 15 years following the date of the manufacture.
- No specific maximum service life is specified for emergency medical footwear, but NFPA 1950 Annex C requires that the organization set criteria for when footwear should be retired.
- No specific maximum service life or retirement age is specified for wildland and urban interface firefighting footwear. NFPA 1857 (1877) requires the organization to determine when footwear should be removed from service based on the specific manufacturer's instructions and the experience of the organization.

Even when a maximum service life is established, your protective footwear may require retirement earlier than the mandated number of years. The service life of your footwear depends on many factors, including, but not limited to, how you and your fire department or employer use, care for and maintain your protective footwear. The frequency and conditions under which your protective footwear is used will further affect the service life of your footwear. Factors related to removing footwear from service include:

- Wear or damage of the footwear to the extent that it is too costly to repair.
- Contamination of the footwear where it is either too costly to decontaminate or is it not possible to fully decontaminate the footwear.

The responsibility for deciding when to retire and replacing your protective footwear rests with your fire department or employer. This decision must be made by trained personnel working under the direct supervision of your fire department or employer.



DANGER

Using footwear beyond its useful life compromises your protection. Retired protective footwear is not suitable for continued use in any emergency activities.

Do not use any protective footwear that should be retired or that have been retired for any firefighting or emergency activity. Doing so increases your risk of death, burns, injuries, diseases, and illnesses.

Disposal

If retired, your protective footwear must be destroyed or disposed of in a manner that ensures that the footwear cannot be used in any firefighting or emergency activities, including live fire training. Acceptable methods of disposal include, but are not limited to, cutting the footwear into pieces or stapling the footwear together in a manner in which the staples cannot be removed and the clothing cannot be worn.

NFPA 1857 (1855) permits using retired technical rescue footwear in nonemergency training if your organization or employer determines that the footwear are not contaminated, defective, or damaged. For such use of a retired footwear, the protective footwear must appropriately be marked for nonemergency training only.

NFPA 1857 (1877) does not permit use of any retired wildland and urban interface firefighting footwear for any firefighting, emergency activity, or training.

Chapter 9

Special Incident Exposures

NOTE: If you are involved in firefighting or other emergency activity where serious injuries or fatalities occur, contact your supervisor to determine the disposition of your protective clothing and equipment, including your protective footwear, before using these items following the incident.

Your organization or employer must have procedures in place for handling and maintaining the custody of protective elements that are directly related to serious firefighter or emergency responder injuries or fatalities that include at least the following:

- Immediate removal from service and preservation of the protective element(s) involved.
- Custody of the protective element(s) involved in a secure location with controlled, documented access.
- Non-destructive tagging and storage of protective element(s) in paper or cardboard containers (plastic containers must not be used).
- Examination of protective element(s) by qualified members of your organization or employer, the footwear manufacturer or outside experts.

Your fire department or employer must set a specific time period for how long the protective elements, including protective footwear, must be retained.

Chapter 10

Other Information

Warranty

Your protective footwear is warranted by the manufacturer to be free from defects in material and workmanship. This warranty does not cover normal wear or unusual exposures. This warranty is in lieu of all other warranties, expressed or implied, including, but not limited to, implied warranties of marketability and/or fitness for a particular use. Repair or replacement for breach of this warranty shall be the exclusive remedy available. The manufacturer shall not be liable for incidental or consequential damages.

Replacement Guides

Keep this Official User Information Guide in a safe place and refer to it regularly. Replacement guides for your protective footwear may be obtained from the manufacturer. Contact the manufacturer if you lose this guide.

You can also obtain a User Guide online by going to <https://www.femsa.org/uig/categories/view/?id=3>

Keyword: 1950footwear

Text Keyword to: 63975

Contact Information

The manufacturer contact information is provided on the protective footwear label. If you need further information to reach a manufacturer, contact the Fire and Emergency Manufacturers and Services Association, Inc. (FEMSA) online at info@femsa.org.

References

NFPA Standards. NFPA standards may be obtained from the National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269 (800-344-3555 or 617-770-3000); standards may also be ordered online at www.nfpa.org. Below is a sample of some, but not all, available NFPA standards:

- NFPA 1550, *Standard on Standard for Emergency Responder Health and Safety*
- NFPA 1581, *Standard on Fire Department Infection Control Program*
- NFPA 1850, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural and Proximity Firefighting and Open-Circuit Self-Contained Breathing Apparatus (SCBA)*
- NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting* [consolidated into NFPA 1850]
- NFPA 1891, *Standard on Selection, Care, and Maintenance of Hazardous Materials, CBRN, and Emergency Medical Operations Clothing and Equipment*
- NFPA 1950, *Standard on Personal Protective Equipment for Technical Rescue Incidents, Emergency Medical Operations, and Wildland and Urban Interface Firefighting*
- NFPA 1951, *Standard on Protective Ensembles for Technical Rescue Incidents* [consolidated into NFPA 1950]
- NFPA 1970, *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)*
- NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting and Urban Interface Fire Fighting* [consolidated into NFPA 1950]
- NFPA 1990, *Standard on Protective Ensembles for Hazardous Materials and CBRN Operations*
- NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations* [consolidated into NFPA 1950]
- NFPA 2500, *Standard for Operations and Training for Technical Search and Rescue Incidents and Life Safety Rope and Equipment for Emergency Services*

ASTM International Standards. Copies of ASTM International standards can be obtained from ASTM International, 100 Barr Harbor Drive, P. O. Box C700, West Conshohocken, PA 19428-2959 or online at www.astm.org.

- ASTM F2412, *Standard Test Methods for Foot Protection*.
- ASTM F2413, *Standard Specification for Performance Requirements for Protective (Safety) Toe Cap Footwear*.

CSA (Canadian Standards Association) Group Standard. A copy of the CSA Group standards can be obtained from CSA Group, 178 Rexdale Blvd. Toronto, ON M9W 1R3, Canada or online at <https://www.csagroup.org/store>.

Federal Regulations. Copies of Federal regulations may be obtained from the U.S. Government Printing Office, Washington, DC 20402 (202-512-0000). Free copies of government regulations may be obtained online at www.gpoaccess.gov

- Title 29, Code of Federal Regulations, Section 1910.120, "Hazardous Waste Operations and Emergency Response"
- Title 29, Code of Federal Regulations, Subpart I — Personal Protective Equipment, Sections 1910.132 through 1910.140
- Title 29, Code of Federal Regulations, Section 1910.1030, "Bloodborne Pathogens"

GLOSSARY

Accessories/Accessory. An item or items that could be attached to a certified footwear but are not necessary for the certified product to meet the requirements of the standard.

Advanced Cleaning. See definition of Cleaning.

Barrier Layer. The component of the footwear that is intended to provide protection from hazardous liquids.

Body Fluids. Fluids that are produced by the body include, but not limited to, blood, semen, mucus, feces, urine, vaginal secretions, breast milk, amniotic fluids, cerebrospinal fluid, synovial fluid, and pericardial fluid.

Carcinogen/Carcinogenic. A cancer-causing substance which is identified in one of several published lists, including, but not limited to, those prepared by the U.S. National Toxicology Program, the International Agency for Research on Cancer (IARC), the National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH).

Care. Cleaning and storage of protective clothing and equipment.

CBRN. An abbreviation for chemicals, biological agents, and radiological particulate hazards.

Certification/Certified. A system whereby a certification organization determines that a manufacturer has demonstrated the ability to produce a product that complies with the requirements of a specific standard(s), authorizes the manufacturer to use a label on listed products that comply with the requirements of that standard(s) and establishes a follow-up program conducted by the certification organization as a check on the methods the manufacturer uses to determine continued compliance of labeled and listed products with the requirements of that standard(s).

Char. The formation of a brittle residue when material is exposed to thermal energy.

Cleaning. The act of removing soils and contamination from footwear by mechanical, chemical, thermal, or combined processes.

Advanced Cleaning. The act of removing both soiling and contamination.

Routine Cleaning. The cleaning of protective footwear performed by the end user without taking the footwear out of service.

Specialized Cleaning. The act of removing specific hazardous materials, soiling associated with body fluids, or other forms of contamination

Cleaning Facility. An entity, location, or site engaged in the cleaning of footwear and other protective clothing that includes a footwear manufacturer verified in cleaning, a verified cleaner, a verified organization or a verified ISP.

Confined Space Entry. An activity of rescue that takes place in a space that is large enough and so configured that a person can bodily enter and perform assigned work, that has limited restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, and pits), and that is not designed for continuous occupancy.

Contamination. The accumulation of products of combustion and other hazardous materials on or in protective footwear that includes carcinogenic, toxic, corrosive, or allergy-causing chemicals, body fluids, infectious microorganisms, or CBRN terrorism agents.

Cross Contamination. The transfer of contamination from one item to another or to the environment.

Decontamination. The act of removing contamination from or neutralizing contamination in protective clothing and equipment.

Emergency Medical Operations. Delivery of emergency patient care, including patient transportation when provided, prior to arrival at a hospital or other health care facility. Patient care includes, but is not limited to, first aid, cardiopulmonary resuscitation, basic life support, and advanced life support.

Ensemble. The collection of protective clothing and equipment worn by an individual firefighter or emergency responder to provide complete protection during a specific emergency operation or type of firefighting.

Fit. The quality, state and manner in which clothing and equipment, when worn, relate to the human body.

Flame Resistance. (Protective Clothing and Equipment). The property of a material whereby combustion is prevented, terminated or inhibited following the application of a flaming or nonflaming source of ignition, with or without subsequent removal of the ignition source.

Flammable or Explosive Atmospheres. Atmospheres containing solids, liquids, vapors, or gases at concentrations that will burn or explode if ignited.

Functional. The ability of footwear or components of the footwear to continue to be utilized for its intended purpose.

Gusset. The part of the protective footwear that is a relatively flexible material joining the footwear upper (quarter) and the tongue, which is intended to provide expansion of the footwear front to enable donning of the footwear while maintaining physical and liquid integrity of the footwear.

Hardware. Non-fabric components of protective footwear include, but not limited to, those made of metal or plastic.

Hazardous Materials. A substance (solid, liquid or gas) that when released is capable of creating harm to people, the environment and property. Hazardous materials are any solid, particulate, liquid, gas, aerosol, or mixture thereof that can cause harm to the human body through respiration, ingestion, skin absorption, injection, or contact.

Hazardous Materials Emergencies. Incidents involving the release or potential release of hazardous materials.

Independent Service Provider (ISP). An independent third party utilized by an organization to perform advanced cleaning, advanced inspection, and repair services. In order to comply with NFPA 1851, an ISP must be verified. See also Verified Independent Service Provider (ISP).

Insole. The inner part of the protective footwear upon which the foot rests and that conforms to the bottom of the foot.

Integrity. The ability of footwear to remain intact and provide continued minimum performance, particularly in conjunction with water resistance.

Interface Area. An area of the body where the protective garments, helmet, gloves, footwear, or SCBA facepiece meet. Interface areas include but are not limited to: the coat/helmet/SCBA facepiece area, the coat/trouser area, the coat/glove area, and the trouser/footwear area.

Maintenance. The inspection, service and repair of protective clothing and equipment including the determination for removal from service.

Manufacturer. The entity that directs and controls any of the following: compliant product design, compliant product manufacturing or compliant product quality assurance; or the entity that assumes the liability for the compliant product or provides the warranty for the compliant product.

Manufacturer-Trained Organization. A non-verified organization trained by a footwear manufacturer to conduct any one or a combination of advanced cleaning, advanced inspection, and basic repair on the organization's footwear.

Medical Care Facility Footwear. An item of emergency medical protective clothing that is designed and configured to provide protection to the wearer's feet and ankles at medical care facilities.

Medical First Receivers. Clinicians and other medical care staff at a medical care facility who have a role in emergency patient care including initial triage, decontamination, and treatment for patients who are delivered by emergency

medical services or who self-present at a medical care facility, and those staff whose roles support these functions, e.g., security, set up, and patient tracking.

Melt. A response to heat by a material resulting in evidence of flowing or dripping.

Metatarsal Protective Footwear. Specialized safety footwear designed to shield the delicate metatarsal bones on the top of the foot from crushing, falling, or rolling objects.

Multifunctional Protective Footwear. Protective footwear that are designed to meet the protection needs of technical rescue incidents, emergency medical operations, and wildland and urban interface firefighting

NFPA. National Fire Protection Association.

Organization. The entity that provides the direct management and supervision for the emergency services personnel. See also Manufacturer-Trained Organization and Verified Organization.

OSHA. The United States Occupational Safety and Health Administration.

Particulates. Finely divided solid matter that is dispersed in air.

Products of Combustion. The end product when fuels, such as hydrocarbons and materials, remain after the process of combustion in a fire.

Puncture-Resistant Device. A reinforcement to the bottom of the footwear that is designed to provide puncture resistance.

Retirement. The process of permanently removing footwear from emergency operations service in the organization.

Sanitizer. A type of antimicrobial agent that is used to reduce, but not necessarily eliminate, microorganisms from the inanimate environment to levels considered safe as determined by public health regulations.

Seam. Any permanent attachment of two or more materials in a line formed by joining the separate material pieces.

Selection. The process of determining what protective clothing and equipment (PCE) is necessary for protection of fire and emergency services response personnel from an anticipated specific hazard or other activity, the procurement of the appropriate PCE and the choice of the proper PCE for a specific hazard or activity at an emergency incident.

Separate/Separation. A material response evidenced by splitting or delaminating.

Service Life. The period for which compliant product may be useful before retirement.

Shank. The component of footwear that provides additional support to the instep. (also called ladder shank)

Soiling. The accumulation of sweat, dust, dirt, debris, and other nonhazardous materials on or in footwear that could degrade its performance or cause hygiene issues.

Structural Fire Fighting. The activities of rescue, fire suppression and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or an emergency situation.

Technical Rescue Incidents. Complex rescue incidents requiring specially trained personnel and special equipment to complete the mission.

Toecap. A reinforcement to the toe area of footwear design to protect the toes from impact and compression.

Tongue. The part of the protective footwear that is provided with a closure that extends from the vamp to the top line of the footwear between the sides of the footwear upper and exposed to the exterior environment when the footwear is correctly donned.

Top Line. The top edge of the protective footwear that includes the tongue, gusset, quarter, collar, and shaft.

Universal PPE Handling Precautions. An approach used in the handling of protective clothing and related items where the assumption is made the protective footwear or item is contaminated and potentially hazardous if handled by individuals who are not adequately protected.

Upper. The part of the protective footwear including but not limited to the tope, vamp, quarter, shaft, collar, and throat, but not including the sole with heel, puncture-resistant device, and insole.

Urban Interface Firefighting. Activities of fire suppression and property conservation within areas of housing or other structures/improvements that are either intermingled or abut vegetation or forest.

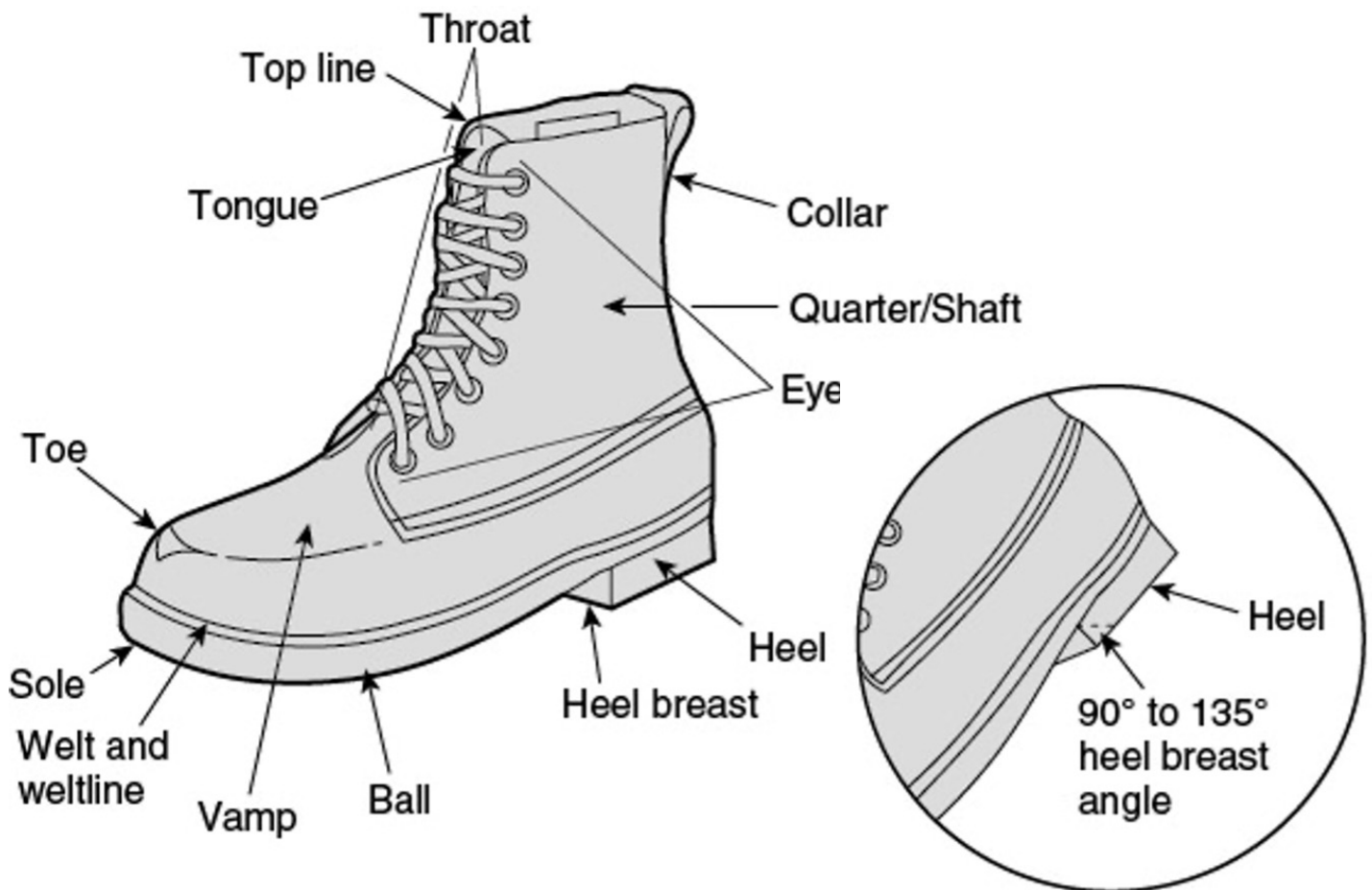
Verified Independent Service Provider (ISP). An independent service provider verified by a third-party certification organization to conduct advanced inspection, advanced cleaning and sanitization, basic repair, and advanced repair service.

Verified Organization. An organization verified by a third-party certification organization to conduct any one or a combination of advanced cleaning, advanced inspection, basic repair, and advanced repair on any organization's footwear.

Wildland Firefighting. The activities of fire suppression and property conservation in woodlands, forests, grasslands, brush, prairies, and other such vegetation, or any combination of vegetation, that is involved in a fire situation but is not within buildings or structures.

Wildland/Urban Interface (WUI). The line or zone where structures and other development meet or intermingle with undeveloped wildland or vegetative fuels and the area within or adjacent to private and public property where mitigation actions can prevent damage or loss from wildfire.

Diagram of Footwear Construction and Components:



PERSONAL RESPONSIBILITY CODE



DANGER

The member companies of FEMSA that provide emergency response equipment and services want responders to know and understand the following:

1. Firefighting and Emergency Response are inherently dangerous activities requiring proper training in their hazards and the use of extreme caution at all times.
2. It is your responsibility to read and understand any user's instructions, including purpose and limitations, provided with any piece of equipment you may be called on to use.
3. It is your responsibility to know that you have been properly trained in Firefighting and/or Emergency Response and in the use, precautions and care of any equipment you may be called upon to use.
4. It is your responsibility to be in proper physical condition and to maintain the personal skill level required to operate any equipment you may be called upon to use.
5. It is your responsibility to know that your equipment is in operable condition, fits properly, and has been maintained in accordance with the manufacturer's instructions.
6. Failure to follow these guidelines may result in death, burns, injury, diseases, and illnesses.



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COPY OF PRODUCT LABEL



DANGER

DO NOT USE THIS PROTECTIVE FOOTWEAR IF YOU HAVE NOT READ AND UNDERSTOOD THE ENTIRE *FEMSA OFFICIAL USER INFORMATION GUIDE* AND ALL LABELS FOR FIREFIGHTING PROTECTIVE FOOTWEAR!

Firefighting and other emergency activities where this protective footwear may be used are ULTRAHAZARDOUS, UNAVOIDABLY DANGEROUS activities. Neither this footwear nor any other will protect you from all burns, injuries, diseases, illnesses, conditions, or hazards, any of which may cause death. No protective footwear can replace proper training and constant practice in firefighting/emergency activity tactics and safety. Consistent with OSHA regulations, you, your department or employer must conduct a hazard assessment and determine if this footwear provides an acceptable level of protection for your operations in firefighting or any emergency activity.

- You will increase your risk of DEATH, BURNS, INJURIES, DISEASES OR ILLNESSES if you do not strictly comply with the entire FEMSA OFFICIAL USER INFORMATION GUIDE and all LABELS. These consequences may occur with NO WARNING and NO SIGN of damage to this footwear.
- Wearing this or any protective footwear may increase your risk of heat stress which may cause heart attack, stroke, dehydration, or other conditions resulting in DEATH, INJURIES OR ILLNESSES.
- You may NOT feel heat under this footwear before suffering a BURN, even when contacting a hot surface. This footwear will lower your ability to feel heat and you may be burned underneath the footwear with NO warning and NO sign of damage to the footwear. Be constantly alert to the possibility of exposure to heat and other hazards.
- Do NOT use this footwear if it is soiled, contaminated, damaged, worn out, or altered from its original condition. Do NOT use this footwear unless it has been properly inspected and maintained by your fire department or employer consistent with the edition of NFPA 1850.
- Wear this footwear ONLY with all layers and components in place and ONLY with all footwear closures secured. This footwear may include special features or be part of an overall ensemble of clothing and equipment. You MUST properly deploy all features and wear ALL ensemble components consistent with the specific manufacturer instructions.
- This footwear is NOT warranted to be fit for a particular purpose. Read carefully the "Warranty Information" in the FEMSA OFFICIAL USER INFORMATION GUIDE.

If you do not have a FEMSA OFFICIAL USER INFORMATION GUIDE, contact the manufacturer.



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