USER INSTRUCTION, SAFETY AND TRAINING GUIDE

NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 Compliant Structural Firefighter Footwear
KnockDown Elite™ Fire Boot

7200 POE AVE.
DAYTON, OHIO 45414
www.LIONprotects.com
March 2026

LION®
FIRE BOOTS BY
Thorogood®

⚠ DANGER

You MUST read this Guide and all Footwear Safety, Cleaning, and Information labels before wearing.

Burns are a function of time and temperature. First degree skin burns can occur when skin reaches a temperature of as low as 118° F (47.8° C).

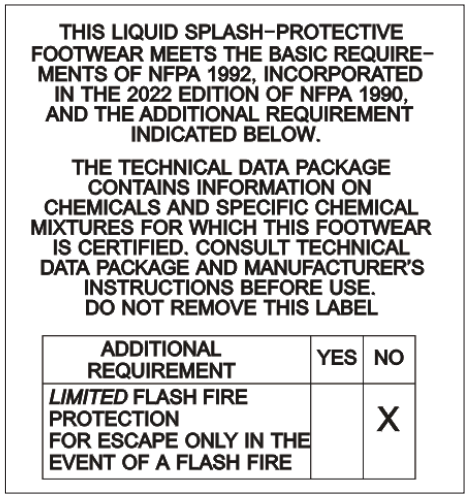
Fire burns at temperatures up to 2000° F (1093.3° C) or higher.

This Footwear provides limited protection against heat and flame in compliance with NFPA 1970 (1971) and NFPA1992. While wearing this Footwear, you may be burned without heat sensation or warning in some circumstances (as contained in NFPA 1990), and without any sign of damage to the Footwear.

Copy of labels used only in NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 Compliant Firefighter Footwear

Safety, Cleaning and Certification Label

Model and Content Label*



1992 Certification Label

*The boot label states that the boots contain PFAS, including the Gore-Tex®PTFE moisture barrier. For more information from W.L. Gore about the safety of Goretex, scan this link below:

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1. INTRODUCTION

Congratulations on purchasing your new LION product. Your NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 Compliant Structural and Proximity Firefighting Footwear (referred to throughout this Guide as "Compliant Footwear" or "Footwear") is designed to provide limited protection in firefighting operations. It and its components are manufactured and certified under the performance requirements of NFPA 1970 (1971): Standard on Protective Ensembles for Structural Firefighting and Proximity Firefighting and NFPA 1990 (1992): (as contained in NFPA 1990: Standard for Protective Ensembles for Hazardous Materials and CBRN Operations) and CSA Z195, The Canada Safety Association Standard for Safety Footwear.

This User Instruction, Safety and Training Guide gives important instructions regarding the use, inspection, care, maintenance, storage and retirement of your Footwear. Immediately upon receipt of your Footwear, you should carefully read and save this Guide for future reference.

Firefighting is an extremely dangerous profession. The circumstances of each hazardous situation are unique and often impossible to predict. This Guide is a training tool to help you understand your NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 Compliant Structural Firefighter Footwear and how to use it in the safest possible manner during dangerous firefighting operations. Please take the time to read it.

For your personal safety be alert for important safety messages in this Guide:

⚠ DANGER

DANGER Indicates immediate hazards that will result in serious personal injury or death if not avoided, or if instructions, including recommended precautions, are not followed. The signal word **"DANGER"** is highlighted in red, both in this Guide and on labels affixed to your Garment, to indicate the extreme hazard of the situation.

⚠ WARNING

WARNING Indicates potentially hazardous situations that could result in serious personal injury or death if not avoided, or if instructions, including recommended precautions, are not followed. The signal word **"WARNING"** is highlighted in orange on applicable labels, and in black in this Guide.

⚠ CAUTION

CAUTION Indicates potentially hazardous situations or unsafe practices that could result in minor or moderate personal injury or product or property damage if instructions, including recommended precautions, are not followed. The signal word **"CAUTION"** is highlighted in gray in this Guide.

2. DEFINITIONS

AFFF – Aqueous Film-Forming Foam agents. A foaming agent capable of forming water-solution films on the surface of flammable hydrocarbon liquids.

ASTM – Acronym for American Society of Testing and Materials

Aramid Fibers – Specially manufactured polymer fibers in which the fiber-forming material consists of linked, long chain-like structures of large molecules. Aramid fibers exhibit higher resistance to flammability, higher strength, and higher elasticity than ordinary synthetic or natural fibers. Fabrics made from aramid fibers maintain their integrity at high temperatures and are used in protective clothing and other industrial applications.

Authority Having Jurisdiction – The organization, office, or individual responsible for approving equipment, an installation, or a procedure.

Body Substance Isolation – A concept practiced by emergency response personnel whereby blood and ALL other body fluids are considered a risk for transmission of bloodborne diseases.

Biological Agent – Biological materials that could be capable of causing disease or long-term damage to the human body.

Biological Terrorism Agents – Liquid or particulate agents that can consist of a biologically derived toxin or pathogen to inflict lethal or incapacitating casualties.

Bloodborne Pathogen – Pathogenic microorganisms that are present in human blood and can cause disease in humans. These include, but are not limited to: Hepatitis B, Hepatitis C, HIV and Syphilis.

Body Fluids – Fluids produced by the body including, but not limited to, blood, semen, mucous, feces, urine, vaginal secretions, breast milk, amniotic fluid, cerebrospinal fluid, synovial fluid, and pericardial fluid.

Body Fluids-Borne Pathogen – An infectious bacterium or virus carried in human, animal, or clinical body fluids, organs or tissue.

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

Chemical Terrorism Agents – Liquid, solid, gaseous and vapor chemical warfare agents and toxic industrial chemicals used to inflict lethal or incapacitating casualties, generally on a civilian population, as a result of a terrorist attack.

Component – Any material, part or subassembly used in the construction of the NFPA 1970 (1971) Compliant Footwear or element of the NFPA 1970 (1971) Compliant Footwear.

Composite – The layer or combination of layers of the protective ensemble, or any elements of the protective ensemble, providing the required limited protection.

CSA – Canada Safety Association Standard.

Emergency Medical Operations – Delivery of emergency patient care and transportation prior to arrival at a hospital or other health care facility.

Entry Firefighting – EXTRAORDINARILY specialized firefighting operations that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing extreme levels of conductive, convective, and radiant heat; such as aircraft fires, bulk flammable gas fires, and bulk flammable liquid fires. Highly specialized thermal protection from exposure to extreme levels of conductive, convective, and radiant heat is necessary for persons involved in such EXTRAORDINARILY specialized operations and because direct entry into the flames is made. NFPA 1970 (1971) Compliant Structural Firefighter Footwear are NEVER to be used for entry firefighting or any direct contact with flames or molten metals, and do not provide the required level of protection.

Exposure Incident – Specific contact of the following with blood or O.P.I.M.: 1) eye; 2) mouth or other mucous membranes; 3) non intact skin; or 4) parenteral contact.

Facecloth – Lining fabric that is used to cover inner surfaces.

Flame Resistance – The property of a material whereby the application of a flaming or non-flaming source of ignition and the subsequent removal of the ignition source results in the termination of combustion. Flame resistance can be an inherent property of the material or it can be imparted by specific treatment.

Flame Retardant – A chemical compound that can be incorporated into materials or a textile fiber during manufacture or treatment to reduce its flammability.

Flash Fire – A fire that rapidly spreads through a diffuse fuel, such as a dust, gas, or the vapors of an ignitable liquid, without the production of damaging pressure.

Fluorescence – The process by which radiant flux of certain wavelengths is absorbed and reradiated, nonthermally in other, usually longer, wavelengths.

Fluorescent Trim – Trim that absorbs and re-radiates light of certain wavelengths, making a surface highly visible to the human eye in order to provide daytime visibility.

Footwear – (Also referred to as NFPA 1970 (1971) Compliant Footwear or Compliant Footwear.) The term footwear used throughout this Guide refers ONLY to NFPA 1970 (1971), NFPA 1990 (1992) (as contained in NFPA 1990) and CSA Z195 Compliant Footwear. Footwear is an element of the protective ensemble designed to provide limited protection required by the NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 standards to the foot, ankle, and lower leg. Footwear is NOT Entry Footwear.

Guide – Means this User Instruction, Safety and Training Guide.

Heat Flux – The thermal intensity indicated by the amount of power per unit area. The heat flow rate through a surface of unit area perpendicular to the direction of heat flow.

ISP (Independent Service Provider) – An independent third party utilized by an organization (fire department) to perform any one or any combination of advanced inspection, advanced cleaning, or repair services.

Interface Area – An area of the body where the protective garments, helmets, gloves, footwear, or SCBA facepiece meet. i.e., The protective coat--helmet--SCBA facepiece area, the protective coat--protective trouser area, the protective coat--protective glove area, the protective trouser--protective footwear area.

Moisture Barrier – The portion of the Footwear composite designed to prevent the transfer of liquids.

NFPA – Acronym for National Fire Protection Association. A private sector, volunteer-based standard-making organization in the United States that develops guidelines related to fire protection and prevention.

NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 Compliant Footwear – Means Footwear certified by a private, third-party certification organization (for example, Underwriters' Laboratories) to meet at the time of manufacture the design and performance requirements of the NFPA 1970 (1971) and NFPA 1990 (1992) standards.

OPIM – Acronym for Other Potentially Infectious Materials. Includes semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, amniotic fluid, and peritoneal fluid.

OSHA – Acronym for Occupational Safety and Health Administration. A government-based standard-making body that develops public health and safety standards for the workplace.

Parenteral – Piercing through the skin barrier, such as a needlestick injury, human bite or a cut or scrape.

PKP or Purple-K – a common name for a dry chemical extinguishing agent based on potassium bicarbonate with a purple dye added.

Protective Ensemble (Structural) – Multiple elements of Garments, Footwear and other equipment designed in accordance with the NFPA 1970 (1971) Standards to provide a limited degree of protection for firefighters from adverse exposures to the inherent risks of firefighting operations and certain other emergency operations. The elements of the protective ensemble are coats, trousers, coveralls, helmets, gloves, footwear, and interface components.

Protective Element – The parts or items that comprise the protective ensemble. The protective ensemble elements are: coats, trousers, coveralls, helmets, gloves, footwear and interface components.

Proximity Firefighting – Specialized firefighting operations that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing very high levels of radiant heat, as well as conductive and convective heat such as aircraft fires, bulk flammable gas fires, and bulk flammable liquid fires. Specialized thermal protection from exposure to high levels of radiant heat, as well as thermal protection from conductive and convective heat, is necessary for persons involved in such operations. Structural firefighting Footwear only certified to the structural firefighting requirements of NFPA 1970 (1971) is NEVER to be used in proximity firefighting and does not provide the required level of protection.

Retroreflection/Retroflective – The reflection of light in which the reflected rays are preferentially returned in the direction close to the opposite of the direction of the incident rays, with this property being maintained over wide variations of the direction of the incident rays.

Retroreflective Markings – A material that reflects and returns a relatively high proportion of light in a direction close to the direction from which it came.

RPP (Radiant Protective Performance) – A test to determine the ability of an outer shell to withstand a measured amount of radiant heat.

SAFER – Acronym for Southern Area Fire Equipment Research. An established body of fire equipment users with expertise in the research and evaluation of firefighting personal protective equipment.

SCBA – Acronym for Self-Contained Breathing Apparatus.

SDS – Acronym for Safety Data Sheets.

Self-Cleaning Tread – A design that prevents the accumulation of stones and debris in the spaces between the tread.

Sewn Seam – A series of stitches joining two or more separate pieces of material(s) of planar structure, such as textile fabrics.

Spunlace – A nonwoven fabric formed by entangling the fibers about each other in a repeating pattern.

Structural Firefighting – 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 emergency situation.

TPP – Acronym for Thermal Protective Performance. A test in the NFPA 1970 (1971) Standards to determine the ability of a Garment composite to protect against a measured amount of thermal and radiant heat.

Trim – Retroreflective and fluorescent materials attached to the outermost surface of the protective ensemble for visibility enhancement. Retroreflective materials enhance nighttime visibility, and fluorescent materials enhance daytime visibility. "Trim" is also known as "visibility markings".

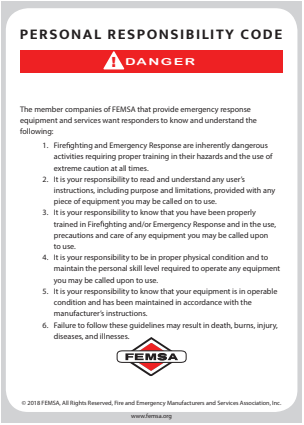
Useful Life – Useful life is normally three years depending on boot construction and materials and conditions of wear, maintenance and storage. Useful life is highly unlikely to be more than five years. Footwear should be retired when the cost of repair would exceed fifty percent of the replacement cost. Footwear more than five years old and made to earlier versions of the NFPA standard is highly likely to have exceeded its useful life and should be retired.

In compliance with NFPA 1851, Footwear must be retired no more than 10 years from the date of manufacture.

UV (Light or Radiation) – Acronym for Ultraviolet Light. A type of radiated electromagnetic energy commonly found in the sun's rays.

Universal Precautions – Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other bloodborne pathogens.

Verified ISP – An Independent Service Provider that has been verified by a certification organization (such as UL or Intertek) to perform moisture barrier repairs and major repairs.



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 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.

FEMSA

www.femsa.org

FIG. 1
Personal Responsibility Code
Also shown on back cover of this Guide.

3. SAFETY CHECKLIST

Do not use this Compliant Footwear until you have checked "YES" to the following:

1. Have you completed formal training in structural and/or proximity fire fighting compliant with the approved standard recognized by the Authority Having Jurisdiction, and on the proper use of structural and/or proximity firefighting equipment and NFPA 1970 (1971) Compliant Structural Footwear and/or Proximity Footwear? ❑ Yes ❑ No

2. Have you read and understood all the instructions and warnings throughout this Guide as well as all the labels on the Footwear? ❑ Yes ❑ No

3. Will you regularly inspect your Footwear inside and out for any tears, holes, thin spots, worn areas, color change, dirt, contaminants, leaks, embrittlement, or any other conditions discussed in Section 6 of this Guide? ❑ Yes ❑ No

4. Have you studied the limitations of your Footwear as described throughout this Guide? ❑ Yes ❑ No

5. Have you checked to make sure that your Footwear fits you properly in accordance with Section 8 of this Guide? ❑ Yes ❑ No

6. Have you, your safety officer, or another appropriate person made plans to ensure that your Footwear is used, inspected, maintained, stored, and retired according to instructions in this Guide? ❑ Yes ❑ No

7. Do you understand that when your skin reaches a temperature as low as 118° F (47.8° C) you will be burned, and that in some situations you may not feel a heat sensation or pain while wearing your Footwear or receive damage to your Footwear prior to being burned? ❑ Yes ❑ No

8. Have you read, do you understand, and do you agree to assume the risks and responsibilities listed in the Personal Responsibility Code? See **FIG. 1** and back cover of this Guide. ❑ Yes ❑ No

If you answered **NO** to any of the questions, **DO NOT WEAR THIS FOOTWEAR** until you have read the appropriate sections of this Guide and have been properly trained by qualified instructors.

4. PURPOSE AND LIMITATIONS

Do not use for entry firefighting.

This Footwear is designed to provide **LIMITED** protection under the requirements of NFPA 1970 (1971), NFPA 1990 (1992) (as contained in NFPA 1990) and CSA Z195 Standards to the foot, ankle, and lower leg against the hazards of STRUCTURAL FIREFIGHTING OPERATIONS, NON-FIRE RELATED RESCUE OPERATIONS, EMERGENCY MEDICAL OPERATIONS, HAZARDOUS MATERIALS LIQUID SPLASH OPERATIONS AND VICTIM EXTRICATION, INCLUDING:

- Heat and flame;
- Liquid splash of six common fire ground chemicals in NFPA 1970 (1971) and ten chemicals in NFPA 1990 (1992) (see Section 10);
- Penetration of blood and other body fluids;
- Cold weather and other environmental conditions;
- Physical hazards, including cuts and abrasion; and
- Water from hose streams and other sources.

Do not use for direct contact with flames or molten metal.

Do not use for protection against hazardous radiological agents.

Do not use for protection against hazardous biological agents.

Do not use for protection against hazardous chemical agents.

⚠ DANGER

DO NOT use this Footwear for the following:

- **Entry firefighting operations (see definitions)**
- **Activities requiring direct contact with flames or molten metal**
- **Hazardous materials emergency operations with the exception of liquid splash operations**
- **Protection against all hazardous material, chemical, biological, radiological, or nuclear agents, or CBRN terrorism agents (see definitions)**
- **Wildland Firefighting**

⚠ DANGER

Firefighters who are exposed to a flashover, backdraft, or other flame and high heat environments are at **EXTREME** risk for extensive burn injuries and death even while wearing their NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 Compliant Protective Ensemble!

Emergency response personnel can encounter many common liquids during normal performance of their duties. The reference to limited protection from liquid splash from the 6 common chemicals defined in NFPA 1970 (1971) and the 10 chemicals defined in NFPA 1990 (1992) (as contained in NFPA 1990) should not be interpreted to mean that the Footwear is suitable or is permitted to be used for protection to the wearer during all hazardous materials situations.

The moisture barrier in the footwear has not been evaluated for protection against all chemicals that can be encountered during fire-fighting operations. Footwear that has been exposed to chemicals should be inspected in accordance with Chapter 6 of this Guide, NFPA 1851 and NFPA 1891, to evaluate for any adverse effects.

⚠ WARNING

Controlled laboratory tests in the NFPA 1970 (1971), NFPA 1990 (1992) (as contained in NFPA 1990) and CSA Z195 Standard “shall not be deemed as establishing performance levels for all situations to which personnel can be exposed”. You should always use extreme caution in any firefighting situation to avoid the risk of injuries. See NFPA 1970 (1971), NFPA 1990 and CSA Z195.

⚠ WARNING

Protective properties in new Compliant Footwear will diminish as the product is worn and ages. To reduce the risk of injuries, you MUST follow the recommendations in this Guide for inspection and retirement of your Footwear to ensure that the Footwear is not used past its Useful Life.

⚠ DANGER

Burns are a function of time and temperature. The higher the temperature of the heat source and the longer the exposure time, the greater the severity of burns.

FIRST DEGREE BURNS
begin when skin temperature reaches approximately **118° F (47.8° C)**.

SECOND DEGREE BURNS
occur when skin temperature reaches approximately **131° F (55° C)**.

THIRD DEGREE BURNS
occur when skin temperature reaches approximately **152° F (66.7° C)**.

You may have **very little or no warning time** from feeling heat or pain before skin begins to burn at 118° F (47.8° C). You need to be constantly aware of the buildup of heat in the surrounding environment and in your Footwear and be ready to escape to a cool area where you can remove hot Footwear quickly to help prevent or reduce the severity of burns.

⚠ WARNING

Many fire fighters attempt to push the limits of their Personal Protective Equipment (PPE) by performing exercises in burn buildings or training centers for prolonged periods of time. This may result in damage to the PPE and its components, as well as a shortened useful life due to continuous exposure to extreme, nonroutine fire training conditions. Damage caused by use in fire training conditions is not covered by the product’s limited warranty.

5. FOOTWEAR CONSTRUCTION, FEATURES AND FUNCTION

In order to understand the limits of protection provided by your Compliant Footwear, you should study its construction, features and function.

5.1 OVERVIEW

NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 Footwear provides a limited barrier against penetration from sharp objects and liquids contacted on the fire grounds. Because it is made of special heat and flame resistant materials, hydrophobic leather and rubber soles, it provides limited resistance to heat and flame for brief periods of time, without itself combusting and burning.

The AHJ in your organization shall comply with the requirements of NFPA 1851 and NFPA 1891 for the selection, care and maintenance of your protective ensemble and ensemble elements.

5.2 LAYERED STRUCTURE

Your Compliant Firefighter Footwear is made with three primary layers: a leather outer layer, a moisture barrier, and an inner lining. The inner lining and moisture barrier are secure inside the boot, and are designed not to come out of the boot while doffing**.**

5.3 LEATHER OUTER SHELL LAYER

The outer layer consists of a hydrophobic, breathable leather that provides initial limited protection against, heat, flame, abrasions, and punctures.

5.4 INNER LINER

The inner lining and moisture barrier are sewn together to make up the inner layer.

Moisture Barrier: The moisture barrier is a film or a coating on a substrate which reduces the amount of water from the environment that might penetrate to the inside of the Footwear. The moisture barrier is bonded to a woven or nonwoven substrate to give it strength and durability. All breathable moisture barriers have the ability to prevent liquid moisture from passing through, while allowing the passage of moisture vapor. This allows some body heat to escape the inner layers and move outside the footwear. This promotes the evaporative cooling of the firefighter's feet, ankles, and lower legs.

Inner Lining: The inner lining attached to the moisture barrier is a breathable fabric that protects the moisture barrier, and absorbs perspiration allowing it to pass through the moisture barrier.

5.5 SAFETY FEATURES

- Top-grain FR Leather
- PTFE waterproof and breathable barrier
- Lenzi® puncture resisting insole
- Dual-density removable insole for extra comfort
- Heavy-duty out sole provides super slip resistance on any surface
- Steel triple-rib ladder shank offers firm support through the mid foot and comfort on ladders
- Composite safety toe provides lightweight, thermal protection
- Heel kick plate aids in taking off the boot

OTHER SAFETY FEATURES:

Label: Located on the inside of the lining, the label contains a statement indicating that the Footwear was manufactured in compliance with the NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195. It also contains information regarding the date of manufacture, the serial number, and the name of the manufacturer.

If applicable, Green CSA tag indicating the boot having been found in compliance with CSA Z195, Protective Footwear.

6. INSPECTION

⚠ WARNING

Most performance properties of the Footwear and its components cannot be tested by the user in the field.

Your Footwear should be cleaned, inspected, and repaired in a frequency and manner consistent with your fire department's protocol, NFPA 1851, NFPA 1970 (1971), NFPA 1891, NFPA 1990 (1992) (as contained in NFPA 1990) and CSA Z195.

6.1 PREPARATION

Read all Safety, Cleaning, and Information Labels (See Section 5 of this Guide for location). If any of the labels are missing, return the Footwear to the manufacturer immediately.

6.2 FREQUENCY

⚠ DANGER

If during firefighting operations, you begin to feel heat more quickly than before, or feel water passing through the moisture barrier or seams, remove the Footwear from service. Have the footwear inspected by an expert who has been trained by LION, LION TotalCare® or a verified Independent Service Provider (ISP).

Routine Inspection:

Inspect your Footwear and components (i.e. laces and insoles) at the following times:

- Upon receipt of your new Footwear or replacement component;
- After each use or at least monthly (whichever is greater) during the useful life of the Footwear;
- After exposure to heat, flames, chemicals, or firefighting agents (including AFFF foam and water);
- After exposure to body fluids (including blood); and
- After washing, repair or decontamination.

Advanced Inspection:

Your Footwear should undergo a regular advanced inspection by an expert in the Fire Department who has been trained by LION, LION TotalCare® or a verified ISP at least annually, or whenever you have a question about whether a Footwear is fit for use.

6.3 INSPECTION PROCESS AND CRITERIA

1. Preparation for Inspection

A. Wear appropriate protective gloves during inspection.

B. Ensure that Footwear is clean. If boots have been contaminated by hazardous materials or biological agents, make sure they have been decontaminated. This is important for your safety, and for assurance that potential problems are not masked by incidental residue.

C. Place Footwear on a clean surface in a brightly lighted area.

D. Separate Footwear components (i.e. laces, removable insoles, etc.) from the Footwear.

Pay close attention to high abrasion areas. Where you see potential damage to the outer layers, examine the corresponding area on the inner layer.

⚠ DANGER

If during firefighting operations, you perceive that water is passing through your Footwear from the outside, remove the Footwear from service. Passage of outside water means that the Footwear is damaged or deteriorated and must be replaced.

2. Inspection of the Outer Layers (Routine and Advanced Procedure)

A. Leather Layer, Composite Toe Cap, and Sole: Examine for dirt, thin spots, holes, tears, embrittlement, burns, abrasions, melted areas, and worn spots.

a. Discoloration could be a sign of overexposure to light or heat.

b. Embrittlement, cracking, or burns are a sign that other layers may be worn out or damaged. The boots may need to be replaced.

c. If leather is punctured or cracked, the Footwear should be retired and disposed of in accordance with Disposal Procedures in this Guide, and then replaced.

d. Soles: If one or more lugs on the sole is worn away or is detaching from upper, the Footwear needs to be replaced.

B. Pull-on Boot Straps: Examine all components to make sure they are securely attached to the Footwear.

C. Stitching and Seams: Examine all seams for loose threads, breaks, skipped stitches, or weakness.

3. Routine and Advanced Inspection of the Inner Layer:

A. Fabric: Examine for dirt, thin spots, holes, tears, embrittlement, burns, abrasions, and worn spots.

a. Inspect by running your hands across the inner liner and feel for thin areas or ridges that indicate breakdown. Special notice should be given to the heel area.

b. Discoloration could be a sign of overexposure to light or heat.

B. Stitching and Seams: Examine all seams for loose threads, breaks, skipped stitches, or weaknesses.

C. Liner: Make sure liner is not pulling out of boot at the heel.

D. Label: Locate and inspect the label on the inside of the Footwear. Check for legibility, abrasions or tears.

E. Removable insole: check that it is thoroughly dry and not worn or compressed.

6.4 RECORDKEEPING

For manual records, record all inspections and your results on the *Inspection, Cleaning, Repair, Retirement and Disposal Record* located in the back of this Guide. Maintain this form unless your organization has provided you with a comparable recordkeeping method for this purpose.

7. DONNING AND DOFFING

PREPARATION:

Before donning, check to make sure that the Footwear, including the inner layer and inner sole, is thoroughly dry, and that the inner sole is placed in the bottom of the Footwear.

DONNING (PUTTING ON YOUR FOOTWEAR)

A. Use the pull-on straps and pull the Footwear securely onto your foot.

B. Check and adjust for comfortable, secure fit.

C. Before entering a hazard area, you must have a partner inspect the area where the Footwear interfaces with your trousers in order to assure proper overlap of all components of your Protective Ensemble, including Trousers and Footwear.

DOFFING (REMOVING YOUR FOOTWEAR)

A. First, never remove your Protective Ensemble until you are certain that you are safely removed from the hazard area. Always wear full Protective Ensemble during all phases of firefighting operations, including overhaul.

B. When you are ready to doff your NFPA 1970 (1971) Compliant Ensemble, you should first remove your helmet, then your SCBA face piece and air pack.

C. Next remove your coat and then disengage fly closure on trousers and remove them. Gently pull off your Footwear.

D. If your Footwear is contaminated with hazardous chemicals, you should remove them, using protective gloves and carefully avoiding any contact with contaminated parts of the Footwear. Place the Footwear in a plastic bag to allow safe handling. Bring this to the immediate attention of your fire department or employer.

E. During and after doffing, always look for signs of chemicals, body fluids, or other contamination, and for signs of wear or damage. See Washing, Decontamination, and disinfecting Procedures, Section 11, and Inspection Procedures, Section 6 of this Guide.

FIG. 3
NFPA Position A

FIG. 4
NFPA Position B

⚠ DANGER

Never wear Footwear that fits improperly. If you have a question, or there is a problem with the fit of the Footwear, contact your safety officer for assistance. Wearing Footwear that does not fit properly could reduce protection and result in severe burns, cuts, or abrasions, or dangerously restrict your ability to avoid injuries in an emergency situation.

8. COMPATIBILITY AND PROPER FIT

SIZE AND FIT

Note: There are different styles of LION Fire Boots by Thorogood. Sizing samples should be the same model that you or your department is purchasing.

Make sure that your Footwear fits securely and comfortably. Footwear should have adequate room for toes to lay flat in the boot, and there should not be too much movement in the heel area. Failure to ensure the proper fit of your Footwear could result in serious injury or reduce the Footwear's useful life.

New Footwear Purchase: To determine the proper size, begin by measuring both feet with a Brannock device. It is not uncommon for one foot to measure slightly larger than the other. Next, try on sample Footwear that matches the size indicated by your Brannock device measurement. (If one foot measured larger than the other, begin with the size of the larger foot.) Then try on a pair that is one half-size down, and then try on another pair that is one half-size up. It is also helpful to try on different widths. Select the size that provides the greatest overall comfort, adequate room in the toe area, and secure fit in the heel area.

Existing Footwear: If the Footwear does not seem to fit properly, check the size in the label to make sure it is your size, and to make sure it is your Footwear.

OVERLAP

Make sure that the lower edges of your NFPA 1970 (1971) Compliant Trousers overlap the tops of your Footwear by 4-6 inches when standing. In addition, check to see if all layers of the Trousers overlap Footwear in any body position during use, including when crawling on the ground. Check NFPA Positions A and B. **(FIGS. 3 and 4).**

9. MARKING CONSIDERATIONS

9.1 NEVER MARK ANYWHERE ON YOUR FOOTWEAR!

⚠ WARNING

Do not apply letters, emblems, trim and/or other types of identification that may penetrate the moisture barrier. Do not write on the inner lining. Damage to the moisture barrier could result in the penetration of water into your Footwear, reducing protection and resulting in scalding or burns.

10. USING YOUR FOOTWEAR SAFELY: HOW TO MINIMIZE THE RISK OF INJURY

10.1 **PREPARATION** Before beginning any emergency operation where there is fire or a threat of fire, your Footwear should be donned according to the procedures in Section 7 of this Guide, along with full protective clothing to include gloves, turnout gear, hood, helmet, SCBA and PASS device. Have a partner check for proper overlap at the interface areas as described in Section 8 of this Guide.

⚠ *DANGER*

Always wear clean and thoroughly dry Footwear used in any firefighting operation. Soiled or contaminated Footwear may be combustible, causing serious burns to the wearer if exposed to high heat or flame.

FIRE CHARACTERISTICS

10.2 Fires are inherently dangerous, unpredictable environments. **Temperatures can range upwards to more than 2000° F (1093° C) in a matter of seconds.** It is important to understand these conditions in order to maximize your protection and to understand the limited ability of your Footwear to protect you from all hazards that may be present in a fire.

Always use your NFPA 1970 (1971) Compliant Footwear properly and in a manner that is consistent with NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program* and **Title 29**, *Code of Federal Regulations,* Part 1910.132, General Requirements of Subpart I, *Personal Protective Equipment*. Users outside the U.S. should consult national or other applicable personal protective equipment regulations.

10.3 BURN HAZARDS: TYPES OF HEAT TRANSFER

There are three types of heat transfer in a fire that could cause burns: conduction, convection, and radiation. **Conduction i**s the direct transfer of heat through contact with a hot object. **Convection** is the transfer of heat through a medium; for example, air. **Thermal radiation** is the transfer of heat in the form of light energy. Firefighters experience all three types of heat in a fire, and must understand their effects on Footwear

Conduction: The danger of being burned by conductive heat while wearing an NFPA 1970 (1971) Compliant Ensemble is frequently underestimated. This very real hazard is significantly increased if your protective elements are wet or compressed. Water can provide a conductive bond between surfaces that might not otherwise touch, increasing the chances of heat conduction by displacing insulating air between and within the layers of the Footwear. Water is a very poor insulator; it conducts heat with dangerous and totally unpredictable efficiency.

You can be burned by conductive heat when you contact heated surfaces or objects. The risk of serious conductive burns is even higher when you contact hot surfaces or objects **while compressing parts of your Ensemble and exposing yourself to too much heat.** Compression **(FIG. 5)** brings surfaces closer together and displaces air, resulting in the transfer of heat between outside surfaces and inner layers. For example, burns can occur on knees while crawling on hot surfaces and on shoulders where the SCBA straps have squeezed the surrounding fabric against the skin. Another common compression burn injury occurs, even without contacting a hot object or surface, when the firefighter's forearm is extended toward the heat source while holding a hose.

FIG. 5

Compression against hot surfaces can cause burns.

⚠ DANGER

Moisture in protective footwear can reduce insulation and lead to scalding burns. Always make sure your Footwear is dry before wearing it in any emergency situation. Dry your Footwear between runs to reduce the risk of serious burn injuries. Inspect your Footwear for holes and other damage, and always secure all the closures to prevent the penetration of moisture from the fire environment. Follow Inspection, Maintenance, Storage, Repair, Retirement, and Disposal Instructions in this Guide to make sure that the Footwear is not worn out or in an unsafe condition.

Convection: Convected heat travels through the air, even if there is no immediate appearance of fire. Convected heat can elevate the temperature of your protective elements to a point at which conductive heat burns can easily occur, particularly if the protective element is wet or damp.

Thermal Radiation: Thermal Radiation is the transfer of heat in the form of light energy into a material, directly from flames or reflected from hot objects. Factors that affect the speed of radiant heat transfer include the temperature difference between two surfaces, their distance from each other, and the reflectivity of each surface. **(Fig. 6).**

FIG. 6

Radiant heat from hot surfaces and flames can cause burns.

⚠ DANGER

Minimize compression of your Footwear at all times. Contact with hot objects can severely reduce insulation and result in scalding and burning without heat sensation or warning in some circumstances. If you feel tingling, immediately move to a cooler location. Failure to react immediately could cause you to be burned.

⚠ DANGER

Convective or Radiant heat can penetrate quickly into your Footwear. Dangerous levels of heat may be present inside or outside a structure despite the lack of flames, and burns can occur at relatively low temperatures. If you feel thermal radiation burns developing, escape to a cool, safe place immediately and remove your protective elements. You may be burned without any warning signals or sustaining any damage to your Footwear or other protective elements.

10.4 BURNS

Burns are a function of time and temperature. The higher the temperature of the heat source and the longer the exposure time, the greater the severity of burns. FIRST DEGREE BURNS begin when the temperature of skin reaches approximately **118° F (47.8° C)**. SECOND DEGREE BURNS occur when the skin reaches approximately **131° F (55° C).** THIRD DEGREE BURNS occur when skin temperature reaches approximately **152° F (66.7° C).**

In terms of heat flux, unprotected skin will receive a second-degree burn after only a 30-second exposure at .45 watts per square centimeter. Studies have shown that flame temperatures of low intensity wastebasket fires can reach almost 1300° F (704.4° C), with a heat flux in excess of over four watts per square centimeter, and with air temperatures ranging up to 750° F (398.9° C). Thus, even small fires can generate several times the level of heat to cause severe burns to firefighters who do not wear ALL their protective ensemble in a secure manner.

⚠ DANGER

Prolonged or repeated exposures to heat will increase Footwear temperatures and can cause burns even after the firefighter is no longer exposed to high temperatures. Minimize exposure to heat by using water to cool the environment, or by escaping quickly after a short period of time. Failure to follow these instructions will result in burns to your feet, ankles, or lower legs.

⚠ DANGER

The buildup of heat in Footwear can lead to burns without any sign of damage to the footwear. Never wait for signs of footwear damage to warn of imminent burns. Always be aware of your surrounding environment and be ready to escape if you begin to feel tingling or burning sensations.

⚠ DANGER

Firefighters who are exposed to a flashover, backdraft, or other flame and high heat environments are at EXTREME risk for extensive burn injuries and death even while wearing their Compliant Footwear.

⚠ WARNING

Do not confuse the component testing requirements that are part of NFPA Standards with the conditions in which firefighters work. For example, the requirement that certain components must not melt, drip, or separate when exposed to convected heat temperatures of 500° F (262° C) for 5 minutes is in no way intended to indicate that firefighters face that condition in their work, or could be expected to withstand that condition EVEN WHILE WEARING NFPA 1970 (1971), NFPA 1990 (1992) (as contained in NFPA 1990) and CSA Z195 COMPLIANT FOOTWEAR CORRECTLY without suffering serious injury or death.

10.5 HEAT STRESS: A SIGNIFICANT CAUSE OF FIREFIGHTER INJURIES

Physical work in a warm or hot environment causes a rise in the temperature inside the body. To protect the body against heat, the heart begins to beat faster so that more blood can be moved to the skin surface. Blood vessels near the skin dilate so that they can carry more blood. In this way, blood in the interior of the body can be brought out near the body's surface and cooled. Most importantly, the body produces sweat that evaporates off the skin to provide cooling. Those natural responses do not work very well for any or all of the following conditions: the ambient air temperature is at least 75° F (23.9° C) or higher, the PPE elements' insulation blocks the transfer of heat away from the body, it blocks the evaporation of sweat, or the exertion of the muscles produces more heat than the system can remove. When the body temperature gets elevated too high, the results can be heat strain, heat exhaustion, or heat stroke.

⚠ WARNING

Overexertion in hot conditions while wearing Compliant PPE, including Footwear, can lead to heat exhaustion, or heat stroke. Symptoms of heat exhaustion are a general feeling of weakness, dizziness, rapid pulse, low blood pressure while standing or sitting, and/or a headache. The skin may feel moist or clammy. If you feel symptoms, get to a cool place, remove your Footwear, other PPE and drink fluids. Failure to seek attention could lead to coma or death.

⚠ DANGER

- You may have very little or no warning time from feeling heat or pain before skin begins to burn at 118° F (47.8° C).
- You need to be constantly aware of the buildup of heat in the surrounding environment and in your Footwear and be ready to escape to a cool area where you can remove hot Footwear quickly to avoid burns.

⚠ WARNING

Your Compliant Footwear is made of different types of materials that may absorb heat at different rates. Some parts may be much hotter than other parts. Avoid contact of skin with outer Footwear surfaces during and after firefighting operations, until you are certain that the Footwear is a safe temperature.

⚠ WARNING

Symptoms of heat stroke are hot, dry skin with no sweating, very high body temperatures, weakness, dizziness, rapid breathing, nausea, unconsciousness, and sometimes mental confusion. If you feel any of the above symptoms at any time, get to a cool area immediately, remove your Ensemble, drink fluids and seek medical attention. Failure to seek attention could lead to coma or death. Immediate cooling is essential for survival in heat stroke cases.

10.6 HEART ATTACKS: A RESULT OF OVEREXERTION

During firefighting operations, the heart beats faster because of the need to move more blood to the working muscles. This blood carries more oxygen to the muscles so that they can handle the increased workload.

Another factor in increasing the rate of the heart is the presence of adrenaline, the “fight or flight” hormone, in the firefighter’s body during an emergency. The adrenaline present in your system causes the heart to pump even faster than during normal activity.

All of these stress factors could place too much strain on the heart, leading to a heart attack. The heart simply cannot handle the load placed on it.

⚠ WARNING

You must be physically fit to safely perform strenuous work under stressful conditions. Regular cardiovascular exercise, abstaining from cigarette smoking, proper training, a healthy diet, and avoidance of obesity, can help to reduce the risk of heart attack.

10.7 LIQUID PENETRATION AND HAZARDOUS MATERIALS

LIMITED Protection against liquid penetration from 6 common chemicals

Your NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 compliant Footwear's moisture barrier is tested for resistance against penetration from liquid splash for the six common fire ground chemicals identified in NFPA 1970 (1971). These chemicals are 1. AFFF; 2. battery acid; 3. hydraulic fluid; 4. surrogate gasoline fuel H; 5. swimming pool chlorine (65% chlorine solution); and 6. automobile antifreeze. The ten chemicals identified in NFPA 1990 (1992) (as contained in NFPA 1990) are 1. Butyl acetate; 2. Dimethylformamide; 3. Surrogate gasoline Fuel H; 4. Isopropyl alcohol; 5. Methyl isobutyl keytone; 6. Nitrobenzene; 7 Sodium hydroxide; 8. Sodium hypochlorite; 9. Sulfuric acid; 10. Tetrachloroethylene. These liquids are tested because they are considered to be the most common chemicals encountered in structural firefighting operations. The purpose of the Footwear is to provide limited protection against incidental contact with these materials encountered during routine operations.

⚠ WARNING

Over time, as the Footwear is worn and ages, its protection against penetration of the 6 common fire ground chemicals will be become more limited. See Useful Life section of this Guide, NFPA 1970 (1971), NFPA 1990 (1992) (as contained in NFPA 1990) and CSA Z195.

No Protection Against Hazardous Materials Exposure

In addition, firefighters face potential exposure to an almost unlimited number of other potentially hazardous chemicals in their operations. **Your Compliant Footwear is NOT designed to protect against exposures to hazardous material operations. You MUST use appropriate protective equipment in situations involving CBRN, liquid or vapor hazardous materials.**

⚠ WARNING

If you experience accidental or incidental exposure to a hazardous material, you need to follow the precautions in Section 11 of this Guide regarding Washing and Decontamination, in order to limit exposure to yourself and others.

10.8 ELECTROCUTION

⚠ DANGER

Your Footwear provides NO PROTECTION AGAINST ELECTROCUTION. When entering a building, you should NEVER touch live wiring, especially if your Footwear is wet. Never allow equipment you are operating to contact live wiring. Any of these hazards could result in serious injuries or death.

10.9 BLOODBORNE PATHOGENS

Your Footwear is designed to protect your feet, ankles, and lower legs from the hazards of exposure to bloodborne pathogens present in body fluids. Exposure incidents are specific contact of the following with blood or OPIM (Other Potentially Infectious Materials): eye; mouth or other mucous membranes; nonintact skin; or parenteral contact. Make sure face, mouth, eyes, nose, and nonintact skin are covered. Avoid contact with hypodermic needles and other sharp objects. Use Body Substance Isolation Procedures when handling Footwear exposed to body fluids. Washing Footwear according to the Procedures in Section 11 of this Guide will generally eliminate hazards of exposure to body fluids arising from incidental contact. For heavier levels of exposure, disinfecting Footwear will substantially reduce hazards arising from exposure of Footwear to potentially hazardous body fluids. See Section 11 of this Guide for more information.

10.10 ADDITIONAL FACTORS AFFECTING SAFETY

The following additional factors may affect the limited protection provided by the Footwear:

- Conditions on the fire ground or other site of emergency operations that are beyond the scope of the limited purposes of this Footwear;
- Unauthorized modifications, repairs or replacement of components of the Footwear not otherwise in compliance with LION's specifications; and
- The addition of accessories that are not approved by LION as compatible with NFPA 1970 (1971), NFPA 1990 (1992) (as contained in NFPA 1990) and CSA Z195 Compliant Footwear. If you have questions about whether accessories will degrade the performance of your Footwear below the applicable Standards, contact LION, a LION TotalCare® Center or a verified ISP.

⚠ DANGER

Always wear clean and thoroughly dry Footwear used in any firefighting operation. Soiled or contaminated Footwear may be combustible, causing serious burns to the wearer.

11. WASHING, DECONTAMINATION, AND DISINFECTION

11.1 HAZARDS OF DIRTY FOOTWEAR: WHY WASHING AND DECONTAMINATING IS IMPORTANT

You can be exposed to many hazardous substances on the job. These substances can contaminate your Footwear, and cause harm to you after your body contacts your Footwear. This section tells you how to wash and decontaminate your Footwear to reduce these hazards.

Routine Fireground Contaminants: Many fire combustion products — including hydrocarbons, polynuclear aromatic compounds, metals such as cadmium and chromium, acids and soot — are hazardous to the firefighter. These substances can become embedded in the fibers of your Footwear, penetrate inner layers, and enter the body through, absorption, inhalation, parenteral contact and ingestion. In addition, particulates and other products of combustion can reduce the flame resistance of your Footwear and increase their ability to conduct electricity. To reduce the risk of long-term harm from hazardous substances present in the products of fire combustion, or hazardous chemicals, you MUST wash your Footwear.

Hazardous Chemicals: If you experience accidental or incidental exposure to a hazardous chemical, follow all precautions in this Section to limit exposure and risk of harm to yourself and others.

You should hose down contaminated Footwear at the scene to limit further exposure to hazardous chemicals, to reduce exposure to others, and to prevent chemicals from settling into your Footwear.

⚠ WARNING

Decontamination of protective clothing and equipment is a complicated process for which there is no guarantee that protective elements are free from contamination. While the purpose of decontamination is to remove all contaminant(s) from the element, decontamination procedures or cleaning processes are not always 100% effective in removing all contamination. See NFPA 1851 and NFPA 1891.

Bloodborne Pathogens: Your Footwear may be exposed to body fluids that may contain bloodborne pathogens. The washing procedures described later in this section will reduce your risk of infection from these hazards.

11.2 FREQUENCY

Wash Footwear at least annually or as soon as possible after exposure to products of combustion, as well as contamination or exposure to smoke, blood or body fluids, or hazardous substances.

⚠ WARNING

Always wash your Footwear separately from other items. Never wash your Footwear at home or at public laundry facilities to avoid the spread of chemical contamination or hazardous combustion products to other laundry.

⚠ WARNING

Never use high velocity power washers or pressure hoses for washing Footwear. These tools can severely damage the raw materials and seams.

11.3 CLEANING PRODUCTS

Routine Washing:

A. Commercially available detergents. Use commercially available detergents with a pH greater than 6.0 and less than 9.5. Many household detergents fall within this range.

B. Specialty Cleaners. StationCare 1851 from LION TotalCare® is designed for Footwear. Always read SDS sheets before use.

C. Spot cleaning and pre-treating. Use commercially available detergents with a pH greater than 6.0 and less than 9.5. Always check SDS and product's instructions before use.

Contact LION or a LION TotalCare® Center for additional information about the compatibility of cleaning products with protective Footwear.

StationCare 1851 is available online at www.lionprotects.com/totalcare.

⚠ WARNING

Never use chlorine bleach or chlorinated products to clean your Footwear.
Even small amounts of chlorine will seriously reduce your Footwear's protective qualities. Non-chlorinated bleaches are acceptable.

no chlorine bleach

11.4 SPOT CLEANING AND PRE-TREATMENT

A. Wear protective gloves and eye/face splash protection.

B. Pre-treat severely soiled areas (e.g., toe caps) by saturating the area with warm water to soften the deposit. Use approved mild cleaning product if necessary. Gently scrub with a soft-bristle brush to help remove stubborn stains.

C. For globs of tar that have adhered to the Footwear surface, allow water or water/cleaning product mixture to soak in to the tar. Then with a plastic or wood scraper, gently attempt to lift the tar.

⚠ WARNING

Do not use petroleum-based or flammable solvents to spot clean. These products are difficult to rinse out and may reduce the limited protective qualities of the Footwear.

11.5 UTILITY SINK CLEANING

A. Wear protective gloves and eye/face splash protection.

B. Fill the sink with approximately 6" (15.4 cm) of water of a temperature no greater than 105° F (40° C).

C. Remove the insole and machine wash, delicate cycle. Air dry the insoles before returning to the Footwear.

D. Add cleaning agent or detergent per detergent manufacturer's instructions on dilution and application.

E. Use a soft-bristle brush to scrub soiled areas.

F. Clean the silver stripe of reflective trim very gently.

G. Drain water from the sink.

H. Rinse under cool running water.

I. Repeat steps A-H if necessary.

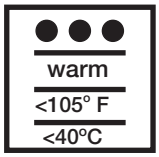
J. Remove excess moisture with a soft cloth.

K. Dry your footwear in a well ventilated area away from sunlight.

L. Clean the sink of any residue from washing.

M. Inspect the dry footwear; rewash if necessary.

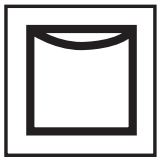
Before washing, make sure you comply with all state, federal, and local guidelines for handling effluents from utility sinks.

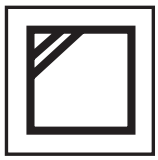


water temperature

do not machine wash


no chlorine bleach


air dry


in the shade


never tumble dry


never dry-clean

11.6 DRYING

Air dry Footwear and insoles separately. Drying racks for hanging Footwear provide maximum air exposure and reduce drying time.

Do not dry Footwear in direct or indirect sunlight, or fluorescent light. Do not machine dry. Do not dry Footwear in front of open windows, hot ovens, or radiators. The Footwear's form will change, and the leather might become brittle. Allow the Footwear to dry slowly.

⚠ *WARNING*

Do not dry your leather Footwear near heaters or radiators. Treat Footwear with the same care as other fine quality leather products. Force drying will cause the foot form to change and the leather to crack. It will also cause damage to the moisture barrier, possibly exposing you to significant amounts of water and hazardous contaminants, which may result in serious injuries.

⚠ *WARNING*

Do not dry Footwear in direct or indirect sunlight, or in fluorescent light. Light will severely reduce the strength of the seams, and will discolor and greatly reduce the strength and protective qualities of the components of the Footwear.

11.7 POLISHING

To prolong the wearlife and maintain the leather exterior of your Footwear, use ONLY a professional-grade silicone leather treatment.

Do NOT use polishes that contain petroleum-based ingredients because:

- These products will significantly reduce the flame and/or heat resistance of your Footwear;
- Most widely available shoe polishes contain up to 70% petroleum distillate such as Stoddard Solvent or Heavy Naptha (mineral spirits). Petroleum distillates adversely affect leather in that they degrade the leather's natural oils over time in much the same way gasoline would "burn" human skin.
- Petroleum distillates are especially harmful to the toe cap and prolonged use may break down the rubber and cause the surface to crack.

⚠ *WARNING*

Never use petroleum-based shoe polish, because it will significantly reduce the flame and/or heat resistance of your NFPA 1970 (1971), NFPA 1990 (1992) and CSA Z195 Compliant Footwear. Use of petroleum-based products may result in serious injuries.

11.8 CONTRACT CLEANING

LION recommends that only a LION TotalCare® Center or verified ISP be used for contract cleaning.

11.9 DECONTAMINATION AND DISINFECTION

Applicable Standard. You must read and have facilities and procedures in compliance with NFPA 1581 Standard for Fire Department Infection Control Program.

⚠ CAUTION

Personnel involved in the handling, sorting, bagging, transporting, and laundering of contaminated Footwear must wear protective gloves and appropriate protective clothing and equipment to prevent occupational exposure during these activities. For more information, read OSHA rules at 29 CFR 1910.1050.

Preparation. Remove contaminated and infected Footwear from wearer and from service before beginning. Footwear should remain out of service until decontaminated and disinfected. Wear protective gloves and appropriate protective clothing and equipment while decontaminating and disinfecting.

⚠ WARNING

To reduce the risk of harm from hazardous substances present in the products of fire combustion, hazardous chemicals, and blood or body fluids, you MUST wash, and if necessary, decontaminate or disinfect your Footwear after each exposure to such hazardous substances.

A. **Hazardous Substances Present in the Products of Fire Combustion (Soot, Smoke, and Debris).**

To reduce the risks associated with exposure to the hazardous substances found in the products of fire combustion, you MUST wash, dry, and store your Footwear according to the procedures in this section.

B. **Hazardous Chemicals**

1. Hose down contaminated Footwear at the scene to limit further exposure to hazardous chemicals, to limit exposure to others, and to limit chemicals from settling into your Footwear.

2. KNOWN MATERIALS: Contact the source of the materials, your local HAZMAT Team, or the Health Department to determine whether the contaminants are hazardous materials. If the contaminant is known, contact a LION TotalCare® Center to determine the feasibility of decontamination.

3. UNKNOWN MATERIALS: If the contaminant is not known, Footwear should remain out of service until the materials are identified. Always demand SDS information and be prepared to share your findings with the LION TotalCare® Center to decontaminate the Footwear.

If your Footwear cannot be decontaminated, it must be retired and disposed of in accordance with federal, state, and local regulations.

If you have questions concerning the use of a particular disinfectant, contact LION or a LION TotalCare® Center.

C. **Blood and Body Fluids**

1. Place Footwear in bags to limit exposure to others. Contact LION TotalCare® or a verified ISP to arrange for disinfection.

⚠ WARNING

Only a trained expert in decontamination should attempt to decontaminate Footwear. Contact a LION TotalCare® Center to seek assistance in determining whether decontamination is possible, and the name of the appropriate organization to perform decontamination.

11.10 LAUNDRY SAFETY

Laundry and housekeeping personnel are considered to be among those at risk to not only hazardous materials, but also to bloodborne pathogens primarily by exposure to sharp objects. Your fire department should have a Bloodborne Pathogens Written Exposure Control Plan. Part of this plan is decontamination, disinfection, and washing of Footwear, and it should include LAUNDRY ROOM SAFETY PROCEDURES and HOUSEKEEPING SAFETY PROCEDURES. You should follow all appropriate federal, state, and local regulations.

12. REPAIRS

⚠ WARNING

Before any repairs are made to your Footwear, it must be washed, decontaminated, and disinfected in accordance with this Guide to protect workers who alter or repair Footwear from exposure to soils and contaminates.

All repairs to Footwear should be done by LION TotalCare® or a verified ISP. Repairs made by any other entity invalidates all warranties and may expose the wearer to hazardous or life threatening conditions.

For a list of LION TotalCare® Centers, visit www.lionprotects.com/totalcare-locations. Call LION at (800) 421-2926 for an updated list of verified ISPs.

13. STORAGE

Between incidents, and for longer-term storage, store your Footwear out of direct and indirect sunlight and fluorescent light, and away from sharp objects.

Use fans to provide good ventilation to dry Footwear that may have absorbed water or sweat after a run, and to assist in the removal of fire ground combustion products that may not have been removed by washing.

Moisture in your Footwear reduces your insulation, comfort and overall protection during firefighting operations.

Failure to dry your Footwear will result in the growth of mildew and bacteria which could lead to skin irritation, rashes, or may affect the protective qualities of the Footwear.

Always wash and dry your Footwear in accordance with Section 11 of this Guide and before placing in long-term storage.

⚠ WARNING

Avoid storing your Footwear in temperature extremes. **Repeated cycles of heating and cooling can reduce the protective qualities and useful life of the Footwear.**

⚠ WARNING

NEVER STORE YOUR FOOTWEAR IN DIRECT SUNLIGHT, INDIRECT SUNLIGHT, OR IN FLUORESCENT LIGHT **(FIG. 7)**. Exposure to light (particularly light in the sun's rays and fluorescent light) will severely weaken and damage components such as the moisture barriers, shoe laces and thread in your Footwear after only A FEW DAYS. Damage caused by exposure to light cannot be repaired, nor will the manufacturer cover such damage in its warranty. (See Warranty Information, Section 17 of this Guide.)

FIG. 7
Never store your Footwear in direct sunlight, indirect sunlight, or in fluorescent light.

⚠ CAUTION

Never store your Footwear in living quarters with personal belongings, or within the passenger compartment of a vehicle. Prolonged exposure to fireground contaminants that may have settled into used or dirty footwear may increase the risk of cancer or other diseases.

HOW LONG IS USEFUL LIFE?

• NFPA 1970 (1971), NFPA 1990 (1992) (as contained in NFPA 1990) and CSA Z195 performance requirements are based on new, unworn Footwear and Composites. Useful life varies depending on, conditions of wear, maintenance, and storage.

• Footwear more than five (5) years old and made to earlier versions of the NFPA Standard are **highly likely to have exceeded their useful life and must be retired!**

⚠ CAUTION

Most performance properties of the Footwear and its components cannot be tested by the user in the field.

14. RETIREMENT

14.1 USEFUL LIFE AND RETIREMENT

NFPA 1970 (1971), NFPA 1990 (1992) (as contained in NFPA 1990) and CSA Z195 performance requirements are based on new, unworn Footwear. Useful life is the period of time that Footwear, which have been properly used and cared for, can be expected to provide reasonable limited protection. Useful life is normally 3 years depending on boot construction and materials and conditions of wear, maintenance and storage. Useful life is highly unlikely to be more than 5 years. Footwear should be retired when the cost of repair would exceed 50% of the replacement cost. Footwear more than five years old and made to earlier versions of the NFPA standard is highly likely to have exceeded its useful life and should be retired.

In compliance with NFPA 1851, Footwear must be retired no more than 10 years from the date of manufacture.

The useful life of Footwear will vary according to the following factors:

- Age and frequency of use
- Number and type of previous repairs
- Type of work the wearer performed
- The length of exposure to extreme heat, and the intensity of the heat
- The length of exposure to hazardous chemicals
- The length of exposure to direct or indirect sunlight, or other light sources such as fluorescent light
- Improper wear
- Improper use
- Footwear more than 5 years old
- Accelerated wear and tear caused by exposure to frequent, repeated training exercises

Your Footwear should be assessed by trained professionals at each regular Advanced Inspection to determine whether they have exceeded their useful life and must be retired. Your Footwear must be removed from service when they can no longer be safely used, and when the cost of repair would exceed 50% of the cost of replacement.

Trained professionals with in-depth knowledge of Footwear and their limitations should handle the details of a retirement program. **If you have any questions about the useful life and retirement of your Footwear, get assistance before wearing your Footwear into any emergency situation! Contact a trained expert within your department, LION, a LION TotalCare® Center or a verified ISP.**

15. DISPOSAL

15.1 DISPOSAL

Retired uncontaminated Footwear must be destroyed to prevent its unauthorized or mistaken use. Cut the uncontaminated, retired Footwear into pieces and dispose of properly. One suggested method of disposal is a landfill.

Retired Footwear that is contaminated with blood or body fluids or hazardous chemicals should be placed in a plastic bag and properly disposed of. You should follow federal, state, and local regulations governing disposal of contaminated materials.

⚠ *WARNING*

Never use retired Footwear for training purposes. Use of retired Footwear in hazardous situations could result in serious injury.

16. LIMITED WARRANTY INFORMATION

Please use this QR code to access the limited warranty information for all LION products.

Contact LION Customer Support at 800-421-2926 or customersupport@lionprotects.com for questions.

18. INSPECTION, CLEANING, REPAIR, RETIREMENT AND DISPOSAL RECORD

Footwear ID_____ **Model**_____ **Date of Footwear Manufacture**_____

In the spaces below, note the activities performed on your Footwear during its wear life.
Types of activities can include: Routine or Advanced Inspection; Routine or Advanced Cleaning; Decontamination; Repair; Alteration; Removal from Service; Retirement; Disposal, etc.

Date of Activity	Type of Activity	Reason for Activity	Description of Repair, Inspection Findings, etc.	Location on Footwear	Inspection/ Cleaning/Repair Site	Activity Performed By	Date Returned to Service

Date of Retirement_____ Date and Method of Disposal_____

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 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.

FEMSA

www.femsa.org

LION® FIRE BOOTS BY Thorogood®

March 2026

LION® ready for action