



# FIRE FIGHTER I

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**TOPIC:** PERSONAL PROTECTIVE EQUIPMENT FOR THE FIRE SERVICE

**TIME FRAME:** 1:00

**LEVEL OF INSTRUCTION:** Level I

**AUTHORITY:** 1997 NFPA 1001 3-1.1.2 and SBFS

**BEHAVIORAL OBJECTIVE:**

**Condition:** A written test

**Behavior:** The student will confirm a knowledge of the appropriate personal protective equipment for the fire service by completing the written test

**Standard:** With a minimum 80% accuracy according to the information contained in the Fire Fighter Occupational Safety, IFSTA, First Edition, Chapter 5 or Firefighter's Handbook, Delmar, 2000 Edition, Chapter 6

**MATERIALS NEEDED:**

- Writing board with markers/erasers
- Appropriate audiovisual equipment
- Appropriate audiovisual materials
- Appropriate personal protective equipment

**REFERENCES:**

- Fire Fighter Occupational Safety, IFSTA, First Edition
- Firefighter's Handbook, Delmar, 2000 Edition

**PREPARATION:**

The environment in which you perform your duties demands that you have the best personal protective equipment (PPE) available. This can aid in reducing injuries and deaths if the proper equipment is worn during fire fighting operations. It is important that you understand the relationship between life-threatening situations and the use of your PPE to meet your safety needs. It is called personal protective equipment for a reason. Wear it. Use it. Let's reduce injuries and disabilities in the fire service. The heat, toxic gases, and debris are reasons to wear PPE. We work in the most dangerous occupation in the country and using PPE is one way we are trying to reduce our injuries and deaths.

# FIRE FIGHTER I

PRESENTATION	APPLICATION
<p><b>I. <u>NEED FOR PERSONAL PROTECTIVE EQUIPMENT</u></b></p> <p>A. <u>Types of injuries on-scene</u></p> <ol style="list-style-type: none"> <li>1. <u>Inhalation/absorption</u></li> <li>2. <u>Puncture/injections</u></li> <li>3. <u>Sprains/strains</u></li> <li>4. <u>Broken bones</u></li> <li>5. <u>Crushing injuries</u></li> <li>6. <u>Internal trauma</u></li> <li>7. <u>Burns</u></li> </ol> <p>B. <u>Sensitive areas</u></p> <ol style="list-style-type: none"> <li>1. <u>Respiratory system</u> <ol style="list-style-type: none"> <li>a) <u>Inhalation of toxic fumes</u></li> <li>b) <u>Absorption into the blood stream</u></li> </ol> </li> <li>2. <u>Eyes</u> <ol style="list-style-type: none"> <li>a) <u>Absorb 100% of fumes exposed to</u></li> </ol> </li> </ol> <p><b>II. <u>STRUCTURAL FIRE FIGHTING PPE</u></b></p> <p>A. <u>Helmets</u></p> <ol style="list-style-type: none"> <li>1. <u>Conventional design</u> <ol style="list-style-type: none"> <li>a) <u>Function to shed water</u></li> <li>b) <u>Little protection from heat and cold</u></li> </ol> </li> </ol>	<p><u>What types of injuries do fire fighters receive at the emergency scene?</u></p> <p><u>What parts of our bodies are most sensitive to exposures?</u></p> <p><u>What are the two types of helmet designs?</u></p>





# FIRE FIGHTER I

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<p>c) <u>Inspect the face shield or goggles</u></p> <ol style="list-style-type: none"> <li>1) <u>Ensure they are clean</u></li> <li>2) <u>Excessive scratches obscure vision</u></li> <li>3) <u>Goggle ventilation should be in place to prevent fogging</u></li> </ol> <p>7. <u>Maintenance</u></p> <ol style="list-style-type: none"> <li>a) <u>Remove dirt and all foreign objects</u></li> <li>b) <u>Remove chemicals, oils, and petroleum</u> <ol style="list-style-type: none"> <li>1) <u>May cause softening of shell</u></li> <li>2) <u>Reduces its impact protection</u></li> <li>3) <u>Reduces dielectric protection</u></li> </ol> </li> </ol> <p>B. <u>Turnout coats and pants</u></p> <ol style="list-style-type: none"> <li>1. <u>Designed for specific range of exposure</u></li> <li>2. <u>Clothing is fire resistant, not fireproof</u> <ol style="list-style-type: none"> <li>a) <u>Use safe practices and common sense</u></li> </ol> </li> <li>3. <u>Standards set by NFPA Standard #1971</u></li> <li>4. <u>Research indicates that multiple layers of lightweight materials with air sandwiches between them provide near optimum protection</u></li> <li>5. <u>Outer shell considerations</u> <ol style="list-style-type: none"> <li>a) <u>Flame resistant</u></li> <li>b) <u>Limited restriction of motion</u></li> <li>c) <u>Cleaning effectiveness</u></li> <li>d) <u>Permeability</u></li> </ol> </li> </ol>	<p><u>What should a face shield be inspected for?</u></p> <p><u>What procedures are used to maintain helmets?</u></p>





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<p>C. <u>Turnout boots</u></p> <ol style="list-style-type: none"> <li>1. <u>Must meet current ANSI standards</u></li> <li>2. <u>Puncture resistant</u></li> <li>3. <u>Fitted as closely as possible</u></li> <li>4. <u>Inspection and maintenance</u> <ol style="list-style-type: none"> <li>a) <u>Check for cracks, splits, or punctures</u></li> <li>b) <u>Worn heels should be replaced</u></li> <li>c) <u>Oil, grease, and debris should be cleaned off</u> <ol style="list-style-type: none"> <li>1) <u>May cause deterioration of rubber</u></li> </ol> </li> </ol> </li> </ol> <p>D. <u>Gloves</u></p> <ol style="list-style-type: none"> <li>1. <u>Made from NFPA recommended materials</u></li> <li>2. <u>Special care gloves for specialized hazards and exposures should be used</u></li> <li>3. <u>Gloves can be cut</u> <ol style="list-style-type: none"> <li>a) <u>Exposure to cuts, bruises, puncture wounds</u></li> </ol> </li> <li>4. <u>Disadvantages</u> <ol style="list-style-type: none"> <li>a) <u>Less manual dexterity</u></li> <li>b) <u>Difficult to get proper fit</u></li> <li>c) <u>Limited protection with use and age as well as extreme hot or cold</u></li> <li>d) <u>Exposure to chemicals and contact will absorb the material</u> <ol style="list-style-type: none"> <li>1) <u>Causes deterioration and increased exposure of the hands and fingers</u></li> </ol> </li> <li>e) <u>Inadequate wrist protection</u></li> </ol> </li> </ol>	<p><u>What are the disadvantages of structural gloves?</u></p>

# FIRE FIGHTER I

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<p><b>III. <u>WILDLAND FIRE FIGHTING PPE</u></b></p> <p>A. <u>Helmet</u></p> <ol style="list-style-type: none"> <li>1. <u>Lightweight</u></li> <li>2. <u>Small brim</u></li> <li>3. <u>Adjustable headband for proper fit</u></li> <li>4. <u>Inspect and clean after each use</u> <ol style="list-style-type: none"> <li>a) <u>Soap and water</u></li> <li>b) <u>Do not clean with solvents</u></li> </ol> </li> </ol> <p>B. <u>Eye protection</u></p> <ol style="list-style-type: none"> <li>1. <u>Goggles are preferred eye protection</u></li> <li>2. <u>Prevents injuries and irritation from smoke and fire brands, as well as penetration injuries</u></li> <li>3. <u>Disadvantages</u> <ol style="list-style-type: none"> <li>a) <u>Excessive scratches can obscure vision</u></li> <li>b) <u>Inadequate ventilation causes fogging</u></li> <li>c) <u>Can melt if exposed to high heat</u></li> </ol> </li> <li>4. <u>Sunglasses are not recommended</u></li> </ol> <p>C. <u>Ear and neck protection</u></p> <ol style="list-style-type: none"> <li>1. <u>Designed to protect the neck, ears, and in some designs the lower face area</u></li> <li>2. <u>Usually a part of or attached to the rear and side of the helmet</u></li> <li>3. <u>Wraparound or as fold down ear and neck flaps</u></li> <li>4. <u>Inspect and clean periodically and after each fire exposure</u></li> </ol>	<p><u>Should sunglasses be worn in lieu of goggles or a shield?</u></p>

# FIRE FIGHTER I

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<p>D. <u>Protective coat</u></p> <ol style="list-style-type: none"> <li>1. <u>Wildland fire fighting Nomex-type coats are usually a thin single layer</u> <ol style="list-style-type: none"> <li>a) <u>Provide for enhanced body heat loss</u></li> <li>b) <u>Offer minimal insulation</u></li> </ol> </li>   <li>2. <u>Cotton undergarments are important for reducing radiant heat exposure</u></li> <li>3. <u>Sleeves must be fastened</u></li> <li>4. <u>All closures used (button, zipper, Velcro™, snap)</u></li> <li>5. <u>Inspect and clean periodically and after each fire exposure according to manufacturer's specifications</u> <ol style="list-style-type: none"> <li>a) <u>Replace if torn, ripped, or threadbare</u></li> </ol> </li> <li>6. <u>Storage</u> <ol style="list-style-type: none"> <li>a) <u>Exposure to high heat and/or sunlight for extended periods of time degrade material</u></li> </ol> </li> </ol> <p>E. <u>Protective pants</u></p> <ol style="list-style-type: none"> <li>1. <u>Wildland fire fighting Nomex-type pants are usually a thin single layer</u> <ol style="list-style-type: none"> <li>a) <u>Provide for enhanced body heat loss</u></li> <li>b) <u>Offer minimal fire exposure protection</u></li> </ol> </li> <li>2. <u>Cotton and other undergarments are important for reducing radiant heat exposure</u></li> <li>3. <u>All closures used (button, zipper, Velcro™, snap)</u></li> </ol>	<p><u>What should be worn under wildland personal protective equipment?</u></p>





# FIRE FIGHTER I

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## **SUMMARY:**

Fire fighter personnel should be aware of the type of personal protective equipment needed for different exposures and have the equipment readily available. Knowledge of the needs for personal protective equipment will assure that fire fighters are adequately protected.

## **EVALUATION:**

The student will complete the written test at a time determined by the instructor.

## **ASSIGNMENT:**

Review your notes and read Fire Fighter Occupational Safety, IFSTA, First Edition, Chapter 5 or Firefighter's Handbook, Delmar, 2000 Edition, Chapter 6 in order to prepare yourself for the upcoming test. Study for our next session.