



# Fire Protection Training

Procedures Handbook 4300

PERSONAL PROTECTIVE EQUIPMENT

**TOPIC:** Structure Protective Clothing

**TIME FRAME:** 60 Minutes

**LEVEL OF INSTRUCTION:**

**BEHAVIORAL OBJECTIVE:**

*Condition:* A written quiz

*Behavior:* The student will identify the components, uses, and limitations of structural personal protective clothing including how it can fail under fire conditions

*Standard:* With a minimum of 70% accuracy

**MATERIALS NEEDED:**

- Chalkboard
- Full personal protective clothing including:
  - Helmet with face shield
  - Turnout coat
  - Turnout pants
  - Gloves
  - Turnout boots
  - Fire resistive hood

**REFERENCES:**

- IFSTA, Firefighters Occupational Safety, 1st Edition, Chapter 5

**PREPARATION:**

As wearers of personal protective clothing and equipment, it is imperative that firefighters recognize the shortcomings and limitations of this gear. Firefighters must understand that no specific item in any category (helmet, boots, turnout coats) can defend against all hazards. Over-confidence in the degree of protection afforded by a piece of equipment may cause the firefighter to take unnecessary risks, which could result in injuries.



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## STRUCTURE PROTECTIVE CLOTHING

| PRESENTATION  | APPLICATION  |
|---|--|
| <p><b>STRUCTURAL PROTECTIVE CLOTHING</b></p> <p><b>I. TERMINOLOGY</b></p> <p>A. Head Protection</p> <ol style="list-style-type: none"><li>1. Helmet</li><li>2. Face shield</li><li>3. SCBA facepiece lens</li><li>4. Chin strap</li><li>5. Ear/neck flaps</li><li>6. Hood</li></ol> <p>B. Torso/Extremity Protection</p> <ol style="list-style-type: none"><li>1. Turnout coat<ol style="list-style-type: none"><li>a. Inner liner</li><li>b. Vapor barrier</li><li>c. Outer shell</li></ol></li><li>2. Turnout pants<ol style="list-style-type: none"><li>a. Inner liner</li></ol></li></ol> | <p>Instructor to have a full set of protective clothing to use as an illustration</p> <p>Sometimes called bunker coat or turnout jacket</p> <p>Sometimes called bunker pants</p> |



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## STRUCTURE PROTECTIVE CLOTHING

| PRESENTATION   | APPLICATION  |
|--|--|
| <ul style="list-style-type: none"> <li>b. Vapor barrier</li> <li>c. Outer shell</li> <li>C. Hand Protection               <ul style="list-style-type: none"> <li>1. Wristlet with thumb strap</li> <li>2. Gloves</li> </ul> </li> <li>D. Foot Protection               <ul style="list-style-type: none"> <li>1. Turnout boots</li> <li>2. Steel toes and soles</li> <li>3. Heavy socks</li> </ul> </li> <li>E. Cotton Undergarments</li> </ul>  |  |
| <p><b>II. USE AND LIMITATIONS</b></p> <ul style="list-style-type: none"> <li>A. Personal Limitations               <ul style="list-style-type: none"> <li>1. Inadequate knowledge of situations</li> <li>2. Improper attitude                   <ul style="list-style-type: none"> <li>a. Peer pressure</li> <li>b. Own invincibility</li> <li>c. Complacent</li> </ul> </li> <li>3. Lack of physical conditioning</li> <li>4. Poor equipment maintenance</li> <li>5. Misuse of equipment</li> </ul> </li> </ul> | <p>Unfamiliar with structural burning characteristics.</p> |



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| <p>6. Failure to use available equipment</p> <p>B. Equipment Considerations</p> <p>1. Head protection</p> <p>a. Helmet</p> <p>(1) Proper type and fit</p> <p>(2) Clean and inspect for damage after each use</p> <p>b. Eye protection</p> <p>(1) Face shields/goggles can melt</p> <p>(2) Scratches/dirt can obscure vision</p> <p>(3) Inadequate ventilation leads to fogging</p> <p>c. Chin strap</p> <p>(1) Can become worn or frayed</p> <p>(2) May become stiff</p> <p>d. Ear/neck flaps</p> | <p>Internal adjustments for secure fit. Can easily be knocked off if not secure</p> <p>Check for cracks or indications of heat or chemical damage</p> <p>Clean or replace</p> <p>Replace</p> <p>Difficult to adjust</p> |

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| PRESENTATION   | APPLICATION   |
|--|---|
| <ul style="list-style-type: none"><li>(1) May become saturated with perspiration or water from firefighting operations (could become moldy)</li><li>(2) May limit hearing</li><li>e. Hood<ul style="list-style-type: none"><li>(1) Offers valuable protection for ears and neck</li><li>(2) May become saturated</li><li>(3) May limit hearing</li></ul></li></ul>   | <p>Clean and allow to thoroughly dry after use</p> <p>Clean and allow to thoroughly dry after use</p> |
| <ul style="list-style-type: none"><li>2. Torso/extremity protection<ul style="list-style-type: none"><li>a. Turnout coat<ul style="list-style-type: none"><li>(1) Designed for only a certain amount of exposure to elements of fire</li><li>(2) All layers of coat must be worn to achieve rated protection<ul style="list-style-type: none"><li>(a) Outer shell-protects against some exposure to heat and mild chemical intrusion</li></ul></li></ul></li></ul></li></ul> | <p>Fire <b>resistive</b> only</p> <p>Clean to manufacturer's specifications</p>                       |



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## STRUCTURE PROTECTIVE CLOTHING

| PRESENTATION   | APPLICATION  |
|--|--|
| <ul style="list-style-type: none"> <li>(b) Vapor barrier-inhibits the transfer of water, corrosive liquids, steam, or hot vapors to the wearer's body. Usually constructed of neoprene or rubberized vinyl</li> <li>(c) Inner layers provide insulation and padding. Usually become soaked with perspiration</li> <li>(3) Some turnout jackets have a wristlet with thumb hose incorporated into their design</li> </ul>                       | <p>Either permeable or impermeable information sheet #1</p> <p>May become cracked with use or age</p> <p>Allow to dry thoroughly after use</p> |
| <ul style="list-style-type: none"> <li>b. Turnout pants               <ul style="list-style-type: none"> <li>(1) Designed for only a certain amount of exposure to elements of fire</li> <li>(2) All layers of pants must be worn to achieve rated protection                   <ul style="list-style-type: none"> <li>(a) Outer shell - protects against some exposure to heat and mild chemical intrusion</li> </ul> </li> </ul> </li> </ul> | <p>Fire <b>resistive</b> only</p>  |



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| <p>(b) Vapor barrier - inhibits the transfer of water, corrosive, liquids, steam, or hot vapors to the wearer's body. Usually constructed of neoprene or rubberized vinyl</p> <p>(c) Inner layers provide insulation and padding. Usually become soaked with perspiration</p>                            | <p>Clean to manufacturer's specifications</p> <p>Either permeable or impermeable</p> <p>May become cracked with use or age</p> <p>Allow to dry thoroughly after use</p> |
| <p>3. Hand protection</p> <p>a. Gloves</p> <p>(1) Limit manual dexterity.</p> <p>(2) Become slippery when wet</p> <p>(3) Difficult to maintain proper fit</p> <p>(a) When gloves get wet the leather or other material weakens; gloves become loose</p> <p>(4) Do not prevent all punctures and cuts</p> |   |





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|---|-------------|
| <p>b. Allow air circulation (i.e. breathes) which helps dissipate body heat</p> |             |



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STRUCTURE PROTECTIVE CLOTHING

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## ***SUMMARY:***

Because of the variety of situations and exposures firefighters encounter, it is very difficult to provide personal protective clothing and equipment that will meet all needs. The firefighter must fully understand the shortcomings and limitations of various items of clothing and not exceed those limitations.

## ***EVALUATION:***

A written quiz.

## ***ASSIGNMENT:***

To be determined by instructor(s).