



# Advanced Inspection for Structural Gear NFPA 1851, 2008 edition

## GENERAL

The Advanced Inspection and required testing shall be performed by a member of the fire department who has been trained by the manufacturer or by a verified ISP.

- ✓ If using a verified ISP, the ISP shall be trained by the manufacturer.

The member of the organization who has been trained by the element manufacturer or a verified ISP shall be responsible for performing or managing the Advanced Inspection.

The element manufacturer or verified ISP shall provide written verification of training.

Advanced Inspections of all elements shall be conducted at a minimum of every 12 months, or whenever Routine Inspections indicate that a problem could exist.

Universal precautions should be followed until it is confirmed that the garment is safe to handle.

The findings of the Advanced Inspection shall be documented.

## **The Advanced Inspection shall include inspecting the following items:**

### **Jacket and Trouser (all three layers shall be examined)**

- ✓ Soiling
- ✓ Contamination
- ✓ Physical damage such as rips, tears, cuts, and abrasions
- ✓ Damaged or missing hardware
- ✓ Thermal damage such as charring, burn holes, melting, or discoloration of any layer
  - ❖ To check for weakening of the fabric, aggressively flex the material and attempt to tear by pushing a finger or thumb through the fabric.
  - ❖ Loss of seam integrity and broken or missing stitches
  - ❖ Material integrity such as UV or chemical degradation as evidenced by discoloration, significant changes in material texture, loss of material strength, loss of liner material, and shifting of liner material
  - ❖ To check for weakening of the fabric, aggressively flex the material and attempt to tear by pushing a finger or thumb through the fabric.

- ✓ Loss of wristlet elasticity, and stretching, runs, cuts, or burn holes
- ✓ Reflective trim integrity, attachment to garment, reflectivity, or damage
- ✓ Label integrity and legibility
- ✓ Hook and loop functionality
- ✓ Liner attachment systems
- ✓ Closure system functionality
- ✓ Accessories for compliance with manufacturer and NFPA standards
- ✓ Correct assembly and size compatibility of shell, liner and DRD
- ✓ Evaluation of system fit and coat/trouser overlap
- ✓ Perform Light Test on thermal liner system from year one to year three
- ✓ Use a light source to check for migrating fibers in your thermal liner shining through the moisture side of the liner. The light shall not produce too much heat so that it would damage the material. The light shall be appropriately sized so that it can fit into the sleeves and legs of the liner system.
- ✓ Perform Leakage Evaluation on moisture barrier from year one to year three
- ✓ Using a bucket or sink, and a water mixture of 1 part rubbing alcohol (70 percent isopropanol alcohol) with 6 parts water. Testing high abrasion areas, position the thermal liner face down and pour 1 cup of mixture on area and let sit for 3 minutes. If any liquid penetrates through to thermal liner, the moisture barrier shall be repaired or replaced.
- ✓ Perform Complete Liner Inspection after year 3\*

## **\*Complete Liner Inspection**

- ✓ The moisture barrier shall be tested using the hydrostatic test specified in NFPA 1851, 2008, Section 12.3, Water Penetration Barrier Evaluation, and shall show no leakage.
- ✓ Complete Liner Inspection of all garment elements shall be conducted at a minimum after 3 years in service and annually thereafter, or whenever Advanced Inspections indicate that a problem may exist.
- ✓ Where the moisture barrier, the CBRN barrier, or both have been replaced, the complete liner inspection shall be conducted following 2 years in service, after replacement, and annually thereafter.
- ✓ Open the liner system to expose all layers for inspection and testing.
- ✓ The moisture barrier and thermal barrier shall be inspected for the following:
  - ✓ Physical damage of each layer such as rips, tears, cuts and abrasions
  - ✓ Thermal damage such as charring, burn holes, melting, or discoloration of any layer
- ✓ Loss of seam integrity, broken or missing stitches, and loose or missing moisture barrier seam tape
- ✓ Delamination as evidenced by separation of film from substrate fabric, flaking, or powdering
- ✓ Thermal Liner material physical integrity; UV or chemical degradation as evidenced by discoloration, significant changes in material texture, loss of material strength, loss of liner material, or shifting of liner material.

## **Hood**

- ✓ Soiling
- ✓ Contamination

- ✓ Physical damage such as rips, tears, and cuts
- ✓ Thermal damage such as charring, burn holes, melting or discoloration of any layer
- ✓ Shrinkage
- ✓ Loss of material elasticity or stretching out of shape
- ✓ Loss of seam integrity or broken or missing stitches
- ✓ Loss of face-opening adjustment

## **Helmet**

- ✓ Soiling
- ✓ Contamination
- ✓ Physical damage to the shell such as cracks, dents, and abrasions
- ✓ Thermal damage to the shell such as bubbling, soft spots, warping, or discoloration
- ✓ Physical damage to the ear flaps such as rips, tears, cuts, loss of seam integrity, or broken or missing stitches
- ✓ Thermal damage to the ear flaps such as charring, burn holes, melting or discoloration of any layer
- ✓ Damaged or missing components of the suspension and retention system
- ✓ Suspension and retention system functionality
- ✓ Damaged or missing components of the faceshield/goggle system, including discoloration or scratches to the faceshield/goggle lens limiting visibility
- ✓ Faceshield/goggle system functionality
- ✓ Damage to the impact cap
- ✓ Damaged or missing reflective trim
- ✓ Accessories for compliance with manufacturer or NFPA standards

## **Glove**

- ✓ Soiling
- ✓ Contamination
- ✓ Physical damage such as rips, tears, and cuts
- ✓ Thermal damage such as charring, burn holes, melting or discoloration of any layer
- ✓ Inverted liner
- ✓ Loss of seam integrity or broken or missing stitches
- ✓ Shrinkage
- ✓ Loss of flexibility
- ✓ Loss of elasticity and shape in wristlets

## **Footwear**

- ✓ Soiling
- ✓ Contamination
- ✓ Physical damage such as cuts, tears, punctures, cracking, or splitting
- ✓ Thermal damage such as charring, burn holes, melting or discoloration of any layer
- ✓ Exposed or deformed steel toe, steel midsole, or shank
- ✓ Loss of seam integrity, delamination, or broken or missing stitches
- ✓ Closure system component damage and functionality
- ✓ Excessive tread wear

- ✓ Condition of lining for tears, excessive wear, or separation from outer layer
- ✓ Heel counter failure
- ✓ Loss of water resistance
- ✓ Accessories for compliance with manufacturer and NFPA standards

### **Drag Rescue Device (DRD) component**

- ✓ Installation in garment
- ✓ Soiling
- ✓ Contamination
- ✓ Physical damage such as cuts, tears, punctures, cracking, or splitting
- ✓ Thermal damage such as charring, burn holes, melting, or discoloration
- ✓ Loss of seam integrity, or broken or missing stitches

### **Interface components**

- ✓ Soiling
- ✓ Contamination
- ✓ Physical damage
- ✓ Loss of seam integrity or broken or missing stitches
- ✓ Loss or reduction of properties that allow component to continue as effective interface such as loss of shape or inability to remain attached to the respective element(s), if attachment is required