

NWCG Equipment Technology Committee

Equipment Bulletin: 24-005

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To: Wildland Fire Community

From: Nathan Hesse, Chair, NWCG Equipment Technology Committee (ETC)

Subject: Personal Protective Equipment (PPE): Inspection, Care, and Maintenance



Issue: The NWCG Equipment and Technology Committee reminds field going personnel to properly inspect, care, and maintain PPE through the year.

Action: PPE serviceability is affected by time, normal wear and tear, and maintenance. Frequent inspections help identify wear and damage, and ensure equipment performs as designed. Follow the manufacturer's equipment inspection instructions for frequency, procedures, and replacement criteria.

General Inspection and Care:

Inspection should occur when PPE is issued, periodically throughout the season, and anytime PPE has been involved in an incident. Some examples include, a hard impact, heat exposure from direct flame contact, or struck by a tool or object.

- Visual inspections – Look for tears, holes, cracks, deformities, heat indications (melt, discoloration, or char), broken components, and poor sizing/fit.
- Physical inspections – Some equipment (e.g., wildland helmet, fire shelter) requires a physical inspection to determine serviceability.
- Cleaning – Follow manufacturer recommendations (refer to *NWCG Standards for Fire Equipment Storage and Refurbishing*, PMS 448, below).
 - Note: clean items can maintain performance, improve personnel visibility in smoky conditions, and reduce your risk of secondary exposures to contaminants.
- Storage – Store equipment in cool, dark, and dry locations. Avoid storing in areas where items can be exposed to chemicals (cleaning supplies, exhaust, etc.) or direct sunlight.

Equipment Inspection Examples:



Fire Shelters

Firefighters should inspect their fire shelter at the beginning of each fire season and periodically throughout the year to ensure serviceability. Fire shelters do not have a shelf life; serviceability depends on the shelter's condition. Inspect for holes, tears, foil wear (grey residue and flaking), or water exposure (white residue) on the PVC bag. Ensure the fire shelter meets the M-2002 Forest Service specification 5100-606, as described in the *Interagency Standards for Fire and Fire Aviation Operations* (Red Book).

NWCG standards are interagency by design; however, the decision to adopt and utilize them is made independently by the individual member agencies and communicated through their respective directives systems.

Fire shelter inspection and care: <https://www.nwcg.gov/publications/pms411/inspection-and-care>

Fire Shelter Inspection Flowchart:

<https://fs-prod-nwcg.s3.us-gov-west-1.amazonaws.com/s3fs-public/publication/pms-411-flowchart-feb-2023.pdf?VersionId=yCuMr.A3677VFr7SD3u.LVjHDSXMwGeL>



Flame-Resistant (FR) Shirt and Trousers

Firefighters should inspect their FR clothing for normal wear and tear (holes, seam blowouts/failures) and signs of heat exposure (stiffening or charring of fabric). FR clothing soiled with ash/soot or petroleum products should be laundered or exchanged. FR clothing with holes or other damage should be repaired or removed from service.

NWCG Standards for Fire Equipment Storage and Refurbishing – Clothing:

<https://www.nwcg.gov/publications/pms448/clothing>

Nomex® Aramid Fiber Laundering Guide (dupont.com):

[https://www.dupont.com/content/dam/dupont/amer/us/en/personal-protection/public/documents/en/Nomex\(R\)%20Aramid%20Fiber%20Laundering%20Guide.pdf](https://www.dupont.com/content/dam/dupont/amer/us/en/personal-protection/public/documents/en/Nomex(R)%20Aramid%20Fiber%20Laundering%20Guide.pdf)



Head Protection

Helmets consist of the shell and the suspension, which work together as a system. Both components require frequent visual and physical inspection and maintenance.

Wildland Firefighter's Helmet Serviceability Guide – <https://fs-prod-nwcg.s3.us-gov-west-1.amazonaws.com/s3fs-public/2024-08/etc-helmet-service-guide.pdf>

Helmet Inspection and Safety – YouTube Video: <https://www.youtube.com/watch?v=OBgd-C9Nyto>



Leg Protection

Chain saw leg protection should be maintained according to manufacturer instructions. It is recommended that operators inspect the chaps for holes and repair if possible or remove from service. Repair and cleaning standards for United States Forest Service (USFS) Specification Chaps are provided in the following tech tip:

Inspecting, Cleaning, Repairing, and Retiring United States Department of Agriculture (USDA) Forest Service Chain Saw Chaps: <https://www.fs.usda.gov/t-d/pubs/htmlpubs/htm05672816/page01.htm>

Background: Wildland firefighters rely on a variety of PPE to carry out the demands of their jobs. PPE is intended to reduce the severity of injuries; however, the use of PPE should never be viewed as a substitute for good risk management practices. Wildland firefighters must understand the importance of inspecting, caring for, and maintaining their PPE to ensure serviceability and performance.

Many PPE items are certified to meet the National Fire Protection Association (NFPA) 1977 Standard for Protective Clothing and Equipment for Wildland Fire Fighting and Urban Interface Fire Fighting. This standard ensures PPE meets minimum design, performance, labeling, testing, and certification requirements.

The USFS National Technology & Development Program (NTDP) maintains and updates specification and performance requirements for PPE supplied through the Defense Logistics Agency and the National Interagency Support Cache System. The equipment specifications are updated through lifecycle evaluations and NTDP is continually assessing options for improvements. Performance and effectiveness are evaluated through input from the wildland firefighter community, and participation in accident, injury, and other mishap reviews involving PPE and fire equipment.

Additional Information:

Interagency Standards for Fire and Fire Aviation Operations (Red Book), Chapter 7 Safety and Risk Management, https://www.nifc.gov/sites/default/files/redbook-files/RedBook_Final.pdf provides agency-specific PPE requirements.

NWCG – Equipment Technology Committee (ETC), <https://www.nwcg.gov/committee/equipment-technology-committee>: The ETC provides national leadership and enables coordinated interagency management in wildland fire equipment, supplies, and chemicals, including planning, development, acquisition, and utilization. The ETC provides oversight of the National Interagency Support Caches and National Fire Equipment System (NFES). The ETC is the parent committee of the Fire Shelter and Personal Protective Equipment Subcommittee (FSPPEs). Find equipment bulletins and safety alerts at, <https://www.nwcg.gov/nwcg-alerts>.

NWCG – Fire Shelter and Personal Protective Equipment Subcommittee (FSPPEs), <https://www.nwcg.gov/committee/fire-shelter-and-personal-protective-equipment-subcommittee>

- Fire Shelter
- Helmet
- PPE (chain saw chaps, FR clothing, gloves)

NWCG Standards for Fire Equipment Storage and Refurbishing, PMS 448, <https://www.nwcg.gov/publications/pms448/introduction-pms-448>

PMS 448 provides general guidelines for inspection, refurbishment, and packaging of NFES equipment. They are developed and maintained by the NFES Subcommittee under the direction of the ETC.

6 Minutes for Safety, <https://www.nwcg.gov/committee/6-minutes-for-safety>
Dirty Nomex, <https://www.nwcg.gov/6mfs/firefighter-health-first-aid/dirty-nomexr>

National Technology and Development Program, <https://www.fs.usda.gov/t-d/index.php>, Tech Tips:

- Women's Firefighter Pants Reintroduced (2022), https://www.fs.usda.gov/t-d/pubs/pdfpubs/pdf21512316/2151_2316_Woman_FFPants_400_dpi_508_05_06_22_gt.pdf
- Modified Wildland Firefighter Flame-Resistant (FR) Shirt (2022), https://www.fs.usda.gov/t-d/pubs/pdfpubs/pdf21512312/2151_2312_Ff_Flame_R_Shirt_400_dpi_508_05-06-22.pdf
- Changes for Firefighter Shirts and Pants (2013), <https://www.fs.usda.gov/t-d/pubs/pdfpubs/pdf13512309/pdf13512309Pdpi300.pdf>
- Hardhat Update: Summer 2012, <https://www.fs.usda.gov/t-d/pubs/htmlpubs/htm12512825/>

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