



U.S. Forest Service
Office of Safety and Occupational Health
FY 2010

Date: March 3, 2010

Topic: Head Protection

Issue: Proper use, care, and replacement of head protection (hard hats)

Background: A recent accident investigation revealed that the victim was wearing a hard hat that had far exceeded its useful service life – it was 17 years old. In addition to its age, the hard hat had been modified and had several holes drilled into the shell. Upon further inspection within the same unit, the safety officer found several other hard hats that were similarly out dated and/or modified. Although the hard hat played no significant role in this accident it was determined to develop and distribute this briefing paper as a reminder to employees about the proper use care and replacements of hard hats.

Key Points: The hard hat is critical in protecting employees against objects falling from above that may strike the head; bumping against fixed objects, such as exposed pipes, beams, tree limbs; or working near exposed electrical conductors.

Incorporated by reference; The [American National Standards Institute](#) (ANSI) established the industry standards for head protection published in ANSI Z89.1. Protective helmets purchased before July 5, 1994, must comply with ANSI Z89.1-1969 and those purchased after that date must comply with the current standard, ANSI Z89.1-2003. The Occupational Safety and Health Act incorporates these standards by reference in [29 CFR 1910.6](#) and further outlines head protection in [29 CFR 1910.135](#). It should be noted that the Occupational Safety and Health Administration (OSHA) does not specify the service life of a hard hat, and there is no set standard for replacement. It is recommended that the user adhere to the replacement guidelines established by the manufacturer. However, the service life of a hard hat can vary greatly depending on the conditions to which it is exposed. The employer is responsible to ensure that all personal protective equipment (PPE) provided by the unit is serviceable and that a program to replace worn, outdated, or broken PPE is established.

Useful life: Determining the time frame to replace a hard hat depends on several variables. As a general guideline, it is recommended that the hard hat be replaced at least every five years. However, replacement time frames may be shorter depending on the conditions to which the hard hat has been exposed. A careful review of the life cycle of the hard hat is imperative.



Each hard hat, when manufactured, has a year and month of manufacture stamped into the inside of the shell. In the example above, the arrow (↑) points to the “9” and the number is “0 4” on each side of the arrow (↑) indicating that this hard hat was manufactured in September 2004 – its useful service life would therefore begin on that date. Subsequent inspections by employees and supervisors can ensure that the hard hat is within its service life and still meets standards.

Maintenance:

- Hard hats can and do get dirty. The hard hat and its suspension system should be cleaned periodically with a mild soap in lukewarm water. Avoid using strong detergents, solvents, degreasers, etc., as they can degrade the protective properties of the hard hat.
- Avoid exposing the hard hat to direct sunlight when not in use. Do not store the hard hat in an area of high or freezing temperatures – both can have an adverse impact on the integrity of the hard hat.
- Do not paint, place adhesive stickers, drill holes, and/or otherwise modify the hard hat.

Inspection: Every hard hat should be inspected routinely to ensure that it is still capable of providing protection.

- Shell: Inspect the shell for dents, cracks, gouges, and any damage due to impact, penetration, abrasion, or wear that might reduce its protective qualities. Check to ensure that the shell is not brittle, faded, dull in color, or exhibits a chalky appearance. A simple field test would be to compress the shell inward about one inch with both hands and then release the pressure without dropping the shell. The shell should quickly return to its original shape, exhibiting elasticity. Compare the elasticity to that of a new shell – if they are not similar or if the shell cracks due to brittleness it is no longer useful. Replace the hard hat should any of these signs be present.
- Suspension: The suspension is critical to the effectiveness of the hard hat and should be inspected to ensure it is properly installed and in good working condition. Suspensions should be inspected for cracks, fraying or cuts, tears or rips, loss of pliability, missing components, or other signs of wear. Perspiration, hair oils, and normal wear can cause degradation. Replace the suspension/hard hat if any of these conditions exist.
- Chin strap: The chinstrap is designed to keep the hard hat in place during helicopter operations or in windy situations, when working on steep slopes, or in other conditions that may cause the hard hat to fall off. It should be free of fraying, cuts, tears, rips, or other signs of wear.

Note: Hard hats are designed to protect you only once. Any hard hat struck by a forcible blow or dropped from height of 20 feet or more should be replaced, even if no damage is visible.

Further guidance for head protection (hard hats) is provided in Missoula Technology Development Center (MTDC) Tech Tips [0267-2331-MTDC](https://www.fs.fed.us/mtdc/tech_tips/0267-2331-MTDC).

Contact: Please direct any questions or comments to Dr. Gary W. Helmer at (703) 605-5139 or ghelmer@fs.fed.us.