

# Protective Headgear

HS97-104B (10-05)

## Goal

This program provides information for the proper selection, use, inspection, and maintenance of protective headgear.

## Objectives

- List classes of hard hats and explain levels of protection;
- Demonstrate how to properly fit and wear protective headgear, and
- Describe inspection and maintenance procedures.

## Background

Occupational Safety and Health Administration (OSHA) surveys show that 1.9 million workers are at risk for head injuries and should use headgear. Using analyses of Bureau of Labor Statistics (BLS), National Institute for Occupational Safety & Health (NIOSH) and OSHA accident data, OSHA estimates that 125 fatal head injuries occur annually. Most fatal head injuries are the result of crushing injuries, falls, explosions and other traumatic events, some are preventable with the use of head protection. Based on a review of OSHA accident records, OSHA estimates that 4 head injury fatality cases are preventable each year by using head protection. (OSHA Preambles - Personal Protection Equipment (PPE) for General Industry) The majority of these workers were injured while performing their normal jobs at regular worksites.

Elimination or control of a hazard leading to an accident should be given first consideration, but many factors causing head injuries are difficult to anticipate and control. According to the Code of Federal Regulations (CFR) 1926.100 and CFR 1910.135, protective headgear or hard hats should be worn by employees working in areas where there is risk of head injury from impact, falling or flying objects, or from electrical shock and burns. Where these conditions exist, head protection must be provided to reduce the chance of injury.

Head protection, usually in the form of hard hats, must do two things—resist penetration and absorb the shock of the blow. This is done by making the shell of the hat from a material hard enough to resist the blow and by using an impact-absorbing

suspension made of a headband and crown straps to keep the shell away from the wearer's skull. Protective headgear is also used to protect against electrical shock. The standards recognized by OSHA for protective hats purchased before July 1994, are in the American National Standards Institute (ANSI) Z89.1-1969 and Z89.2-1971 standards. For protective hats purchased after July 5, 1994, consult ANSI Standard Z89.1-1986.

## Selection

The type of job and hazards in the work environment determine the type and class of protective headgear selection. Protective hats are made in the following types and classes:

- Type 1 - helmets with full brim, not less than 1-1/4 inches wide
- Type 2 - brimless helmets with a peak extending forward from the crown
- Class A: protects against impact hazards and provides limited voltage protection (up to 2,200 volts).
- Class B: protects from impact and penetration by falling/flying objects and from high-voltage shock and burns (up to 20,000 volts).
- Class C: provides lightweight comfort and impact protection where there is no danger from electrical hazards, and on occasions where there is a possibility of bumping the head against a fixed object.

Class A, B, and C hard hats must not be confused with bump hats. Bump hats are made of a more lightweight material than hard hats and are designed for use in areas with low head clearance. Bump hats are not designed for protection from falling or flying objects and are not ANSI approved.

To identify the type of hard hat, look inside the shell for the label. The label will list the manufacturer, ANSI designation, and class. Always use the appropriate class of headgear for the job.

## Proper Fit and Use

---

When selecting a protective hat, it is important to choose one that has an easily adjustable headband to ensure a proper fit (adjustable in 1/8-size increments). When the hard hat is adjusted to the right size, there will be sufficient clearance between the shell and the headband for ventilation and distribution of impact. The hat should not bind, slip, or fall off. Any part of the hat that makes contact with the head should not be irritating to normal skin. Hard hats should be worn over the forehead so that the brim of the hat is parallel with the ground. When wearing a hard hat, don't use the space between the shell and suspension to store items. This can affect the ability of the hat to absorb the shock of an impact.

Other considerations in using protective headgear are the accessories needed while doing the job and the workplace environmental conditions. Some hard hats come with accessory slots that easily accommodate earmuffs, safety glasses, face shields or lights. Optional brims can be purchased to broaden the amount of protection from the sun. Sweatbands and sunshades can be attached to the headband for comfort and protection in the sun. Ear bands and head warmers are available for protection from the cold. Chinstraps can be purchased for workers subject to lateral and overhead impact. Some hard hats have troughs that channel rain off the hat and away from the face. Always use caution when accessorizing a hard hat to avoid compromising its ability to absorb the shock of an impact.

## Inspection and maintenance

---

To extend the useful life of the hard hat, wash it regularly (at least once a month) with hot water (approximately 140°F) and mild soap. Use a gentle scrub brush to clean the shell and a soft sponge to wipe the suspension and headband. Rinse the hard hat in clear hot water and then inspect it carefully for any signs of damage.

Each day, inspect all components of the hard hat, shell, suspension, headband, sweatband, and accessories for dents, cracks, tears, or other damage that might reduce the original degree of safety. Replace the suspension and headband if tears are noticed. Always replace the hard hat if shell damage is visible or when the hard hat sustains an impact, even if the damage is not noticeable.

Never drill holes, paint, or apply labels to protective headgear. This may damage the shell and reduce the level of protection. Do not store hard hats in direct sunlight, such as the rear-window shelf of a car, since sunlight and extreme heat can damage them.

## Training

---

Before using protective headgear (or any personal protective equipment), employees must be trained to know:

- When the headgear is necessary;
- What type of headgear is required;
- How the headgear is to be worn;
- The limitations of the headgear, and
- The proper care, maintenance, useful life, and disposal of the headgear.

## Summary

---

Protective headgear should not be used as a substitute for engineering, work practice or administrative controls. Employees must be aware that hard hats do not eliminate the hazard and are only effective if worn and used properly.

## Review

---

1. Which of the three classes of hard hats provide the highest protection from electrical hazards?
2. Where is the hard hat classification label located?
3. Describe how to adjust a hard hat for proper fit.
4. Describe how to clean protective headgear.
5. When inspecting protective headgear for damage, what components should be examined?
6. When should protective headgear be removed from service and replaced?

## Answers

---

1. Class B hard hats provide the highest protection from electrical hazards.
2. The hard hat classification label is located inside the shell.
3. To fit properly, a hard hat should provide sufficient clearance between the shell and headband and the hat should not bind, slip, or fall off.
4. To clean protective headgear, wash with hot water (approximately 140°F) and mild soap, using a gentle scrub brush to clean the shell and a soft sponge to wipe the suspension and headband.
5. The components of the hard hat to inspect are, shell, suspension, headband, sweatband, and any accessories.
6. Protective headgear should be removed from service and replaced if shell damage is visible or when exposed to an impact, even if the damage is not noticeable.



## RESOURCES

The Texas Department of Insurance - Division of Workers' Compensation (TDI-DWC) Resource Center offers a workers' health and safety video tape library. Call (512) 804-4620 for more information or visit our web site at [www.tdi.state.tx.us](http://www.tdi.state.tx.us).

Safety module created by AgSafe. This publication is compiled from various reference sources and is designed to provide current and authoritative information on the subject matter covered. Information about the Agsafe Project can be obtained by writing to Agsafe, 140 Warren Hall, University of California, Berkeley, CA 94720.