

Before you begin

Have samples of hard hats used by your employees to help with the instruction. Be familiar with helmet markings showing impact types, electrical classes, and other criteria (reverse donning, lower temperature, or high visibility).

What you will learn

You will learn about hard hat impact protection, electrical classes, and other criteria in the choice of hard hats. In addition, you will learn proper use and care of hard hats.



Introduction

Hard hats are a common tool in the workplace to prevent injuries to workers on the job. Since their first use during the 1930s, many changes have improved the protection they provide.

Definitions

Degradation: any sign of reduction of a hard hat's integrity or protection by factors including chemical exposure, UV exposure, excessive heat or cold, faded in color, chalky, or a stiff or brittle appearance.

Harness: the complete assembly used to keep a helmet in correct wearing position on the wearer's head, exclusive of a chin strap or other retention device.

Helmet: a device worn on the head designed to provide limited protection against impact, flying particles, or electric shock.

Shell: the part of a helmet which includes the outermost surface.

Suspension: the part of the harness designed to act as an energy-absorbing mechanism. It may consist of crown straps, protection padding, or a similar mechanism.

Discussion

Hard hats come in various shapes, sizes, and colors. They are designated by impact types and electrical classes.

Impact types

- Type I helmets reduce the force of impact from a blow only to the top of the head.
- Type II helmets reduce the force of impact resulting from a blow to the top or side of the head.

Markings

Hard hats are marked with the following information:

- Name or mark of the manufacturer.
- Date of manufacture.
- The American National Standard Designation (ANSI Z89.1).
- Type (I or II) and Class designations (G, E, or C), followed by optional criteria markings, when applicable.
- Approximate head size range.

Optional criteria markings include:

- Reverse donning.
- Lower temperature (LT).
- High visibility (HV).

Electrical classes

- Class G (General) helmets reduce harm from accidental contact with low voltage conductors and are tested at 2200 volts.
- Class E (Electrical) helmets reduce harm from accidental contact with higher voltage conductors and are tested at 20,000 volts.
- Class C (Conductive) helmets are not intended to provide protection against contact with electrical hazards.

Questions and answers for discussion

Q. How is a hard hat designed?

A. The hard hat has two major components - the outer part (the shell) and the inner part (the harness). The shell has a brim which extends outward, and a peak, which extends forward. The harness consists of several parts: the crown straps rest on the wearer's head; the head band encircles the head; the nape strap fits behind the head; and the sweat band is in the front of the head and absorbs moisture.

Q. How does the hard hat protect against impacts?

A. When a force strikes a properly fitted hard hat, it distributes the force throughout the entire hard hat. It prevents the force from concentrating at one point. It also resists penetration by objects.

Q. How should you wear a hard hat?

A. Wear all hard hats according to the manufacturer's instructions including wearing them with the brim in the front. Hard hats marked for reversed donning, have passed manufacturer's testing for reverse wearing. When wearing hard hats in reverse, also reverse the harness to ensure the nape of the harness fits behind the head.

It is important to have a space between the harness assembly and the shell. The hard hat may not distribute and absorb the striking force properly if this space is not there.

Q. When does a hard hat need inspected?

A. Inspect the hard hat when it is new and first put into use, prior to each day's use, and after a damaging incident such as an impact by a dropped object.

Q. What should a person check on a new hard hat?

A. Ensure the hard hat is proper for the job or the expected exposure. Follow the manufacturer's instructions to attach the harness to the shell. Adjust the headband for proper fit-snug, but not tight.

Q. What do you look for when inspecting a hard hat prior to each day's use?

A. Look for cleanliness of the suspension harness and the shell. Check the shell for:

- Gouges.
- Cracks – squeeze the sides inward 1"
- Penetration.
- Dents.
- Degradation - chalking or flaking.
- Suspension harness properly attached to the shell.
- All straps in good condition.

Q. What do you do with a damaged hard hat?

A. Remove a hard hat with worn, damaged, or defective parts from service. Also, remove a hard hat from service that has received an impact because that may reduce the protection offered.

Q. How do you maintain a hard hat?

A. Clean and wash it with mild soap and rinse with water. Do not clean hard hats with solvents, which may cause deterioration of the hard hat material.

Do not throw, drop, or use a hard hat as a support (don't stand on them). Protect the hard hats from sunlight and unnecessary movement when stored in vehicles. Do not paint a hard hat which may hide cracks in the shell and may also chemically attack and damage the hardhat's shell.

Q. Is it OK to alter a hard hat in the field?

A. No. Alterations to the hard hat alters its integrity and voids the manufacturer's recommendations for use. Manufacturers make provisions on many hard hats to attach devices, such as face shields or hearing protection, without compromising integrity.

Q. How can you keep your head warm during cold weather?

A. Headliners are worn on a person's head under the hard hat. These headliners do not interfere with the protective function of the hard hat. It may be necessary to adjust the headband to accommodate the headliner.

Q. How do you keep a hard hat on your head?

A. Adjust the harness so it is snug on your head. The hard hat should not be tight to the wearer, but comfortable. If necessary, use a chin strap to secure the hard hat to your head.

Conclusion

The hard hat is a vital piece of personal protective equipment on many construction sites and in other operations with head contact hazards. Proper selection, use, and care are critical for the protection of workers who use them.

Group activity

Have each person find the manufacturer, the date of manufacture, the type, and class of their hard hat. Discuss any concerns about the age, type, or class of hard hat they use to perform their everyday tasks.

Inspect your hard hat shell and suspension. Check for cracks, frayed straps, and any signs of damage from wear, abuse, or degradation.

Review the instructions from the manufacturer of your hard hat to cover any specific information provided by the manufacturer.

Resources

[OSHA 1910.135 Head Protection](#) (General Industry)

[OSHA 1926.100 Head Protection](#) (Construction)

[Taking care of your Hard Hat, The Occupational Health and Safety Magazine \(2001\)](#)

[Video - Head Protection: Preventing Head Injuries by The Center for Construction Research and Training](#)