

Hard Hats

By Andrew M. Pawuk

Before you begin

Have samples of hard hats commonly used by your employees to help with the instruction. Be familiar with helmet markings indicating 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 selection of hard hats. In addition, you will learn proper use and care of hard hats.

Introduction

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

Discussion

Hard hats may come in various shapes, size and colors, but they are designated by impact types and electrical classes.

Impact Types

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

Electrical Classes

- Class G (General) helmets are intended to reduce harm from accidental contact with low voltage conductors and are tested at 2200 volts.
- Class E (Electrical) helmets are intended to 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.

Other criteria


In addition to evaluating impact and electrical protection, other criteria, such as the need/desire for reverse wearing, working in low temperatures and the need for high visibility need taken into account.

Markings

Each hard hat is 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).

Questions and answers for discussion

Q. How is a hard hat designed?

A. The hard hat has two major components - The outer portion (the shell) and the inner component (the harness). The shell has a brim, which extends outward, and a peak, which extends forward.

The harness consists of several parts: 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. Also, it will resist penetration by objects.

Q. How should you wear a hard hat?

A. Wear all hard hats according to the manufacturer's instructions. In addition, you usually wear them with the brim in the front. Hard hats, which are marked reversed donning, have passed manufacturer's testing for reverse wearing. When wearing hard hats in reverse, the harness needs to be reversed to ensure the nape of the harness fits behind the head.

It is important to maintain the 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 maintained.

Q. When does a hard hat need inspected?

A. A hard hat is to be inspected when it is new and first put into use, prior to each day's use, and after an incident where its integrity has been challenged.

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

A. Ensure the hard hat is appropriate 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 does a person 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;
- Deterioration - chalking or flaking;
- Suspension harness properly attached to the shell;
- All straps in good condition.

Q. What needs to be done to a damaged hard hat?

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

Q. How should 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.

Hard hats are not to be thrown, dropped or used as support (don't stand on them). Protect the hard hat from sunlight and unnecessary movement when stored in vehicles. Do not paint a hard hat, because paint may hide cracks in the shell.

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

A. No. Alterations to the hard hat would alter its integrity and void 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 its integrity.

Q. How does a person keep his head warm during cold weather?

A. Headliners are available to be 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 is it possible to 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, you may 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.

References

ANSI/ISEA Z89.1-2009 American National Standard for Industrial Head Protection OSHA 1910.135

Author

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