

Some things to consider
when selecting the right hard hat.

Topped OUT

BY DONALD GARVEY

THE ONE PIECE of personal protective equipment (PPE) most associated with construction and heavy industry is the hard hat.

On first glance, it appears to be a simple, one-size-fits-all accessory. But there are multiple factors that any safety director should consider during the selection process, and several critical items the wearer must be aware of and follow, in order to ensure that the hard hat provides expected protection.

Selection

Per OSHA (Occupation Safety and Health Administration) regulations, hard hats used in the United States must meet the design requirements of the ANSI/ISEA Z89.1 standard *Industrial Head Protection*. Hard hats that meet this requirement will have a sticker or other marking showing “ANSI/ISEA Z89.1” and the standard revision year the hard hat was designed to.

Hard hats come in two main styles: ball cap and full brim. For the most part, the choice is up to the individual or employer. For outdoor work, however, the full brim may provide additional shade protection from the sun—and some industries (oil and gas extraction, for example) tend to use the full brim style almost exclusively. Conditions on the work site may also dictate one style over the other—but again, in most cases it is a personal or employer choice.

ANSI Z89.1 specifies two types of hard hat:

- ▶ Type I: designed to reduce impact to the top of the head
- ▶ Type II: designed to reduce impact to the top and side of the head

Employer safety professionals working with project management and workers will need to assess the specific work site and tasks to determine which type is more appropriate for their situation.

Hard hats are rated for one of three levels of electrical protection:

- ▶ C – Conductive: helmet offers no protection against contact with electrical conductors
- ▶ G – General: designed to reduce the danger to contact with low-voltage sources. Proof tested to 2,200 volts
- ▶ E – Electrical: designed to reduce the danger to contact with high-voltage sources. Proof tested to 20,000 volts

Again, the safety professional, along with management and workers, will need to assess the specific job site and tasks to determine if electrical contact hazards exist and what level of protection may be required.

Color, in most cases, is at the discretion of the company. However, on some work sites color may be used to distinguish different trades or work qualifications. In underground mining, rookie miners must wear a distinctly different color of



▲ Hard hats, Type I and Type II.

Donald Garvey (djgarvey@mmm.com) provides construction technical service in 3M's Personal Safety Division.





hard hat (typically red) for their first year underground. Safety professionals may want to ask the general contractor or construction manager if color-coding hard hats will be used on a particular job site.

Optional Features

Once the above features have been selected, the safety professional should review potential optional ANSI Z89.1 features that may enhance worker safety and comfort. These include:

High visibility. Hard hats can meet specifications for high visibility colors and luminescence. “Struck By” and “Caught Between/In” are two of the biggest sources of fatalities on work sites. Enhancing visibility of the worker can help prevent these from occurring.

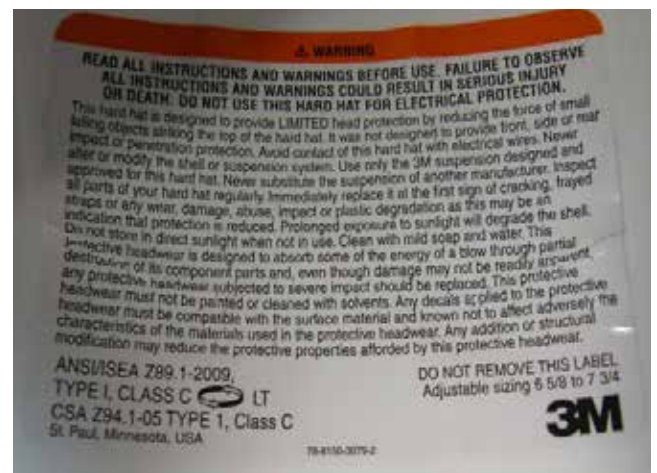
Temperature extremes. Hard hats can meet specifications for use in hot or cold environments. High Temp (HT) means the hard hat has been preconditioned at 140 °F and still meets all Z89.1 criteria. Low Temp (LT) means that the hard hat has been preconditioned to -22 °F and has still passed the required ANSI Z89.1 tests. This may be a valuable feature when working outdoors in, say, North Dakota in January.

Reversing shell. Many workers like to wear their hard hat backwards (for various reasons). Hard hats with the reversing arrows marking can be worn with the shell backwards and still meet Z89.1 criteria. It is critical to note that the reversing arrows marking only allows the *shell* to be backwards. The head suspension must still be worn in the proper manner. This means the suspension must be reversed from its normal position in the hard hat for a reversed shell orientation.

Each hard hat will have a sticker or other marking that will show: that the hat meets Z89.1, the type of hat, the electrical rating and any of the four optional features mentioned above. The photo at right shows a hard hat that meets the Z89.1 standard for a Type I hard hat; Class C – no electrical protection; can be worn with the shell reversed (reversing arrows); and meets the ANSI Z89.1 requirements for low temperature (LT). Note that the sticker will also list important warnings regarding use and limitations that the user must be aware of and follow.

Other non-ANSI optional features include ventilation slots, which may help address potential heat stress conditions, and ultraviolet (UV) indicators. Regarding the latter, most hard hats are made of high-density polyethylene. Age, chemical exposure, impacts and repeated/prolonged exposure to sunlight can eventually degrade the hard hat shell and necessitate replacement. UV indicators can be one part of an overall hard hat replacement scheduling program, particularly for workers who work outdoors in UV-intensive areas.

And as a reminder of why hard hats are so important in the first place, head injuries accounted for 5,730 (approximately 8%) of non-fatal construction injuries in 2014, according to the Bureau of Labor Statistics. Proper selection and use of hard hats based on the specific work site situation is important in helping reduce that number. But remember that hard hats are designed to provide only limited head protection by reducing the force of small, falling objects striking the helmet. So while they are indeed useful and necessary, they should be seen as one component of a comprehensive safety program. ■



▲ A sticker indicating that a hard had meets the requirements of the ANSI/ISEA Z89.1 standard, including the revision year.