

# Howard Talks Tech

## Hard Hats Have Come a Long Way

100 years ago, the hard hat didn't exist. And 50 years ago, head protection wasn't required for workers. But, thanks to advances in technology, the hard hat has evolved over the decades. In 1915, Edward W. Bullard produced a helmet that protected miners from falling objects. He based it on the doughboy, a helmet he'd worn as a soldier in World War I. The Bullard, 'Hard-Boiled Hat', patented in 1919, was so called because of the steam used in its manufacture, "it was made from steamed canvas, glue and black paint. The first official "**Hard Hat Area**" was the Golden Gate Bridge project in San Francisco. The chief engineer, Joseph Strauss, in January 1933, had all workers wear hard hats to protect from falling rivets.

It should go almost without saying that our head is worth protecting. It contains our brain and nerves that we need to do things like think, see, talk, hear and eat. That's why wearing a hard hat on sites where things can fall without notice is a no-brainer. A single head injury can handicap a person for life or even be fatal. 20 million Americans wear hard hats on-the-job, but still approximately 120,000 on-the-job head injuries occur each year, and nearly 1,500 of them are fatal.

29 CFR **1910.135** states that "employers must ensure that their employees wear head protection if any of the following apply:

1. Objects might fall from above and strike the head;
2. They might bump their heads against fixed objects, such as exposed pipes or beams; or
3. There is a possibility of accidental head contact with electrical hazards."

Protective helmets or hard hats must have a hard outer shell and a shock-absorbing lining. The lining should incorporate a head band and straps that suspend the shell 1 - 1 ¼" away from the head.

There are **2 types of hats** categorized by type of impact in **ANSI Z89.1-2009**; "*Protective Requirements for Protective Headwear of Industrial Workers*". The first type of hard hat is a top impact or Type I. The second type of hard hat is a top and lateral impact or Type II hat. The impact test involves dropping an 8-lb steel ball from a height of 5 ft on the top of the hat as it sits on a head form. The penetration test involves dropping a 2.2-lb pointed steel penetrator with a 60° point on the top of the hat from a distance of 8 ft.

There are **three basic categories** of hardhats:

- *Class G* – Hard hats provide impact protection & provide voltage protection up to 2,200 V.
- *Class E* – Hard hats provide impact protection & provide voltage protection up to 20,000 V.
- *Class C* – Light-weight helmets offer limited protection. They protect workers from bumping against fixed objects but do not protect against falling objects or electric shock.

A hard hat is more than just a polyethylene shell. Inside each is a system for securing the hat to your head. There are two basic ways this is done: Pin-lock suspension is a belt that attaches to the users head with a locking mechanism. Ratchet suspension features a quick ratchet adjusting knob. The typical hard hat will have either 4 or 6 point suspension. This is the number of clips that mount the cradle suspension to the shell of the hard hat. The 2009 ANSI standard adds the following identifiers to the label: Helmets marked with a "reverse donning arrow" . can be worn frontward or backward.

Helmets marked with a "LT" indicate that the hard hat meets ANSI testing requirements when preconditioned at a temperature of -22°F. Helmets marked with a "HV" indicate that the hard hat meets ANSI testing requirements for high visibility colors. Hats are now available with built-in ventilation slots and one manufacturer offers a bio-sensor that senses high heat in the interior of the hat and transmits an alarm to reduce the possibility of worker heat stroke.

These talks are distributed with the hope that they spark some dialog. Feel free to use them as the basis for a tool box talk with your colleagues, clients, safety committee members or employees.