Hard hats are among the most commonly worn personal protective equipment, yet head injuries make up a significant number of occupational injuries requiring days away from work.

According to the U.S. Bureau of Labor Statistics more than 76,000 of the 1.2 million workplace injuries requiring at least one day away from work in 2010 were because of occupational head injuries. These injuries range from minor bumps to concussions or even severe trauma, which can result in death. Furthermore, any head injury suffered by a worker can cause significant direct and indirect expenses to a company.

For these reasons, it is important to be aware of hard hat options—as well as their proper use and care—to ensure workers are protected.

Selection & Standards
When it comes to selecting a hard hat, performance should be the number one consideration. The U.S. Occupational Safety and Health Administration (OSHA) and the Canadian Standards Association (CSA) have standards in place to help ensure workers are properly protected. These organizations require compliance with ANSI Z89.1-2009 and CSA Z94.1 standards respectively, and each standard specifies two levels (types) of protection.

Type 1 Versus Type 2
Hard hats labeled ANSI Type I/CSA Type 1 are intended to protect the wearer against impact to and penetration of the crown, or top, only. These are most commonly worn in the U.S. By contrast, ANSI Type II/CSA Type 2 hard hats protect against both lateral and crown impact, and are more commonly worn in Canada due to safety standards there. While Type II/Type 2 hats are slightly larger, heavier and can sometimes be warmer to wear, the added level of protection they provide can be lifesaving. In fact, the adoption of Type II hats is on the rise in the U.S. as employers become increasingly aware of the added protection they provide. Evaluate your site’s hazards to determine the right type of protection. When selecting Type II/Type 2 hats, look for features such as liners that allow ventilation to encourage safe, comfortable all-day wear.

Electrical Hazards & Class Designations E, G and C
In environments where workers can be exposed to electrical hazards, hard hats must protect against electrical shocks, burns and electrocution. Dielectric hats are designed to do just that and are designated as Class E and Class G. Class E hard hats protect at up to 20,000 volts while class G hats protect at up to 2,200 volts. Hard hats marked as Class C hats are conductive, meaning they allow the flow of electric current to pass through the hat to the wearer, and therefore are not recommended around electrical hazards. The ANSI and CSA ratings for dielectric hats are the same, and can be found molded into the underside of the brim. Be sure to do a hazard assessment of the worksite to determine the total amount of possible voltage exposure and whether dielectric protection is required.
In addition to the hard hat itself, be sure to consider the mounting systems used to attach additional face or hearing protection to hard hats. The attachment system may alter the dielectric rating of the cap. Be sure to confirm whether the chosen mounting system is safe for use. Finally, never drill holes into a cap, as this severely affects the cap’s dielectric properties.

**Suspension Options**

A hard hat’s suspension is the internal framework that absorbs and distributes energy upon impact. Hard hats generally come with four-, six- or eight-point suspensions in a variety of materials, including fabric, nylon ribbon and plastic. The number of points indicates how many connections exist between the suspension and cap. Caps with more suspension points have a greater ability to spread weight – and impact – over a wider area, which can help minimize the after effects of an impact. In addition, the greater the number of suspension points the higher the level of comfort and stability. Because the weight of the hat is distributed more evenly, it feels lighter, and reduces the “wobble” feeling some wearers experience. It is very important to note that the hard hat shell and its suspension are designed and tested to perform as a complete system. Therefore, should a cap’s suspension need to be replaced, it must be replaced with one from the same manufacturer to ensure it meets protection criteria. Regardless of whether four-, six- or eight-point, all three suspension types are capable of delivering the impact protection required to meet ANSI and CSA standards.

**Reverse Donning**

Wearing a safety cap backwards is commonplace. However, not all caps are intended to be worn backwards. In response to its popularity, ANSI updated its 2009 standard to include an optional reverse donning test for caps. Today, hard hats meeting the standard for reverse wear are marked with a symbol depicting two arrows adjoined in a circle (see illustration). Look for this symbol when selecting head protection. Hard hats without this symbol are not approved for reverse wear and may put an individual at risk of serious injury when worn backwards.

To reverse a cap, many models require the wearer to remove the suspension, reverse it, and then reinstall it. This process can take several minutes to perform and, to do so safely, the worker should exit the hazard area. This not only costs valuable time, but also puts the wearer at significant risk if the suspension is not reinstalled properly. Look for hard hats with suspensions that are easy to reverse. Caps with swing-hinge headgear take only seconds to reverse, without removing the suspension, thus improving worker compliance, safety and productivity.

**Size & Fit**

Next to performance, wearer comfort is the second most important feature of a hard hat.

Studies have shown that uncomfortable caps are not worn consistently, leaving workers vulnerable to injury. To achieve a comfortable fit, take into account the number of suspension points, the type of suspension material and headband options. In most cases, an adjustable suspension with a replaceable, washable sweatband is preferable. To ensure a safe fit, hats must be worn as snugly as possible, so consider sizing and adjustability options as well. Sizing is most popularly adjusted by pin locks or ratchets, though other options, such as sliding bands, are available. These adjustment features make resizing the cap quick and easy.

**Daily Inspection and Maintenance**

Once you’ve chosen a hard hat, it’s important to care for it properly. Both ANSI and CSA guidelines require end users to conduct a thorough inspection of their hard hats and suspensions before each use. Here are some specific steps to follow:

- Visually inspect the hat for evidence of cracking and gouging. Replace the hat immediately if any such instances are found.

![Illustration of reverse donning](image-url)
• If the hat suffers from any type of impact or impalement, or has experienced a fall greater than eight feet, replace it immediately even if there is no visible damage.

• Check the structural integrity of the cap. Many conditions adversely affect the hat’s useful lifespan, including ultraviolet exposure, temperature extremes, chemical exposure and daily wear. Prolonged exposure to sunlight can degrade the shell and lead to flaking or crazing. Extreme temperatures can also impact protective properties.

ANSI requires hard hats to perform properly in temperatures ranging between 0- and 120-degrees Fahrenheit. Hats used in temperatures outside this range should be tested and approved accordingly. Chemicals, such as those found in paint and insect repellant, interfere with the performance and integrity of the hat and/or suspension. For this reason, it is recommended that a hard hat never be painted or sprayed with any chemicals.

• Inspect the suspension. Check to ensure the fabric is not frayed or torn, and plastic parts are not cracked or damaged. If the suspension exhibits signs of fraying, tearing or cracking, replace it immediately.

• Store your hard hat in a place where it will not be subject to sunlight/UV radiation, chemicals, temperature extremes (hot and/or cold) or accidental impact.

• Gently wash your hard hat with warm, mild, soapy water at least once per week. The buildup of workplace contaminants can hide cracks and gouges and may even degrade the shell. Regular cleaning will help you get the most out of your hard hat.

While ANSI and CSA do not regulate the service life of protective caps, the industry recommendation is to replace a hard hat shell every five years and the suspension every 12 months from its first day of service. An easy way to track a cap’s service life is by noting its first day of service on the ANSI or CSA label found inside the hat.

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Occupational head injuries happen every day, and when they do, a hard hat can be a lifesaving piece of equipment. It is important to choose the right hat for the hazards and to maintain the hat so it is always in proper working condition should an accident occur.

By selecting the right hard hat – one that delivers both maximum protection and all-day comfort – you can ensure a healthier, more productive workforce.

Fibre-Metal® is a leading head protection brand from Honeywell Safety Products. For more information visit www.fibre-metal.com.