



Taking Care of Your Hard Hat

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If the hard hat you put on every day is 10 years old and brittle from age, yet comfortable and familiar, do yourself and your family a favor by retiring it.

The hard hat is one of the oldest, most widely used, and most important pieces of personal protective equipment (PPE) on the job. So, why is it so often misused and abused? There's no question that many workers have been saved from serious injury or even death because they were wearing a hard hat. Even with the best intentions, the effectiveness of any PPE on the job is limited when the product is not properly worn, maintained, and replaced when needed. Here are some essential facts you should know about your hard hat.

General Inspection

The hard hat consists of two components: the shell and the suspension. Both require inspection during assembly and before each use. During shell inspection, you should look for cracks, nicks, dents, gouges, and any damage caused by impact, penetration, abrasions, or rough treatment. Additionally, if your hard hat is made of thermoplastic (polyethylene, polycarbonate) materials, inspect the shell for the following: stiffness, brittleness, fading, dullness of color, or a chalky appearance. If the shell exhibits any of these conditions or if it is obviously otherwise damaged, it should be removed from service and replaced immediately.

Inspecting for Effects of UV Exposure

Ultraviolet light is the hard hat's worst enemy. Although ultraviolet inhibitors are added to some manufacturers' hard hat shells, all hard hats are susceptible to deterioration from UV exposure over time. This is why it is so important that you never store your hard hat in the rear window of a vehicle, or anywhere that it is exposed to sunlight when not in use. If the work environment exposes the worker and hard hat to high levels of sunlight, the hat should be replaced more frequently.

Many times, outdoor workers wear hard hats in high-visibility colors so they will be more visible to fellow workers or to oncoming motorists. In these cases, it is especially critical to monitor hard hat color stability during prolonged daylight exposure. Replace hard hats as soon as fading is evident to ensure continued worker visibility and safety.

Field Testing for Degraded Shells

A simple field test can be performed to determine possible degradation of polyethylene shells: Compress the shell inward from the sides about 1 inch with both hands, then release the pressure without dropping the shell. The shell should quickly return to its original shape, exhibiting elasticity. There should be no residual deformation. Compare the elasticity of the sample with that

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of a new shell. If the sample does not exhibit elasticity similar to that of a new shell, or if it cracks because of brittleness, it should be replaced immediately.

Inspecting Your Suspension

The main purpose of a hard hat's suspension is to absorb the shock of a blow to the top of the hard hat. Considering this, inspection of the hard hat suspension system is equally as important as inspecting the shell, but it is all too often overlooked.

The suspension should be inspected closely for cracks or tears, frayed or cut straps, loss of pliability, or other signs of wear. Whether your hard hat has a 4-point or 6-point suspension (the number of keys that are engaged in the hard hat's shell), all keys should fit tightly and securely into their respective key slots. Refer to the manufacturer's instructions on assembling. Any suspension that shows signs of damage should be removed from service and replaced immediately to ensure ongoing protection of the wearer.

Replacement Program

Hard hats have a reasonable service life when used in normal work environments and properly maintained. However, useful life is not indefinite, and there are some recommended guidelines for hard hat replacement.

Many employers replace all employees' caps every five years, regardless of outward appearance. If the user environment is known to include higher exposure to temperature extremes, sunlight, or chemicals, hard hats should be replaced routinely after two years of use. Most hard hats have manufacture date codes molded on the underside brim of the cap so you can easily determine the age of the cap.

Stickers won't harm the hard hat's performance under normal conditions, but limit their use so the helmet shell can be inspected for signs of damage regularly.

Regardless of length of use, if a hard hat has been struck by a forcible blow of any magnitude, the shell and suspension should be replaced immediately, even if no damage is visible. Dropping a hard hat more than eight to ten feet warrants a replacement. Don't take a chance that it "might" be OK, because it's not worth the risk. Hard hats are designed to provide optimal protection under normal conditions. Any impact can substantially reduce the protection offered.

Warnings and Precautions

- Never alter or modify the hard hat shell or suspension. This can drastically reduce the amount of protection provided.
- Drilling holes in the hard hat shell for ventilation purposes must be prohibited at all times.
- Always avoid contact of the hard hat with electrical wires.
- Never use a suspension that is not intended for use with a particular shell or one that is made by a different manufacturer.
- Never carry or wear anything inside of your hard hat between the suspension and the shell. A clearance must be maintained between the hard hat shell and the wearer's head for the protection system to work properly. A ball cap or other object may limit this clearance. An object placed under the cap may also contain metal parts that may diminish the dielectric protection provided by the hat. There are some products, such as winterliners and sunshades, that are designed specifically to work in conjunction with hard hats. Be sure to follow manufacturer's recommendations for the use of these products.

Use of Adhesive Stickers

It has become a common practice for hard hat users to apply self-adhesive stickers to "personalize" their hard hats or for other marking or identification purposes. Considering the type of adhesive used in typical pressure-sensitive stickers, there is very little potential for chemical interaction between the adhesive and the helmet shell. As a result, the use of stickers would not be expected to negatively affect the performance of the helmet under normal conditions.

There are a couple of rules to follow related to stickers. First, adhesive stickers should be placed at least 3/4 inch away from the edge of the helmet. This prevents the possibility of the sticker's acting as a conductor between the outside and inside of the shell if it were to wrap around the brim. Second, the area of the helmet covered by stickers should be kept to a practical minimum to permit regular inspection of the helmet shell for signs of damage.

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Hard Hats Worn Backward

There is considerable confusion and misinterpretation about whether OSHA allows hard hats to be worn backward. An OSHA Standard Interpretation and Compliance Letter dated July 22, 1992, states, "Because ANSI only tests and certifies hard hats to be worn with the bill forward (sic), hard hats worn with the bill to the rear would not be considered reliable protection and would not meet the requirements of 29 CFR 1926.100 (a) and (b) unless the hard hat manufacturer certifies that this practice meets the ANSI requirements."

Prior to allowing employees to wear their hats backward, always get written verification from the hard hat manufacturer on whether your hard hat model has been tested and found to be compliant to the requirements of the American National Standards Institute standard when worn with the bill turned to the rear. The manufacturer may specify that proper performance requires the suspension to be reversed in the helmet, so that the headband is oriented normally to the wearer's head (i.e., with the brow pad against the forehead and the extended nape strap at the base of the skull). In this manner, only the shell of the helmet is positioned backward on the head.

Conclusion

If you are ever in doubt about the use or maintenance of your hard hat, contact the manufacturer directly for instructions and recommendations. The cost of maintaining and replacing your hard hat is well worth the benefits.

If the hard hat you put on every day is 10 years old and brittle from age, yet comfortable and familiar, do yourself and your family a favor by retiring it. Set it on your shelf as a keepsake and replace it with a hard hat that can provide the intended protection.

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For hard hats to work properly, they must be worn correctly, but what does that mean? Here are some expert insights on head protection.

by Virginia Sutcliffe

Every day, construction workers see a sign similar to this upon entering a job site: "Hard Hat This Area." Do workers actually pay attention to that sign and wear their hard hats correctly? Not always, as anyone who has visited a construction site can attest.

Jim Byrnes, product line manager for head protection at MSA in Pittsburgh, said that, in some cases, the reason workers wear their hard hats backward is legitimate. "Workers in tight areas wear their helmets backward because it is easier to maneuver in close quarters with it placed in that direction, and they don't want it to interfere with their work," Byrnes said. "Others wear them backward because it is easier to see without the brim in front."

Experts agree that most workers wear their hard hats backward because it is the "fad."

"Workers like the look," said Kristin Bacon, product manager for industrial safety at Bullard in Cynthiana, Ky. "In some cases, having the bill in the face reduces overhead visibility for workers, but most like to wear them that way because everyone else does."

Manufacturers do not recommend that workers wear their hard hats backward unless it is necessary for certain job applications. For instance, in welding operations, a worker must also wear a mask, which makes it difficult to wear the hat forward.

Hard hats are made to meet ANSI standard Z89.1- 1997 for top impact. They protect the head from small, falling objects. The shell, or outside, of a hard hat is rounded to mainly protect the crown of the head.

The shell works in combination with the suspension in the inside of the hat to absorb energy and protect the worker from a blow to the head, so wearing it correctly is important.

OSHA specifications require that workers wear hard hats the way they were designed to be worn unless the manufacturer certifies that a hard hat can be worn backward.

MSA and Bullard said that their hard hats can be worn that way when needed because both companies' symmetrical hard hats have been third-party certified for such use. This means that the companies' hard hats will still protect against top impact when backward as long as the suspension also is turned around.

This is done by making sure the headband is oriented normally to the wearer's head (i.e., with the brow pad against the forehead and the extended nape strap at the base of the skull). This way, only the shell of the helmet is backward on the head. Bacon noted, however, that many workers forget to, or simply don't, turn the suspension around in the hat, leaving them at risk when wearing the hat backward.

Another hard hat manufacturer, Fibre-Metal Products in Concordville, Pa., makes a hard hat that eliminates the problem of forgetting to turn the suspension around.

Fibre-Metal's Swingstrap hard hat allows the wearer to swing the ratchet adjustment headband to the front or the rear depending on the protection required for specific job hazards. When the additional protective equipment is no longer needed, the wearer swings the headband back to the normal wearing position.

Wearing It Correctly

Because manufacturers of head protection use different suspensions, Byrnes advises wearers to follow the manufacturer's recommended instructions for properly donning a hard hat.

Bacon said there are some generic instructions wearers can follow, however, to ensure they are donning their hats correctly:

- Be sure the suspension fits properly on the nape of the neck.
- Have the brow cap fit snugly on the forehead.
- Follow manufacturers' specific instructions for sizing the hat for each user.

Manufacturers say the best way employers can encourage their employees to wear hard hats properly is by making their employees aware of the hazards, where they are located and what protection the hard hats afford.

"When employees know the hazards and see what can happen if they don't wear their hard hats, they will wear them," Bacon said.

David Kliwinski, safety manager with American Infrastructure, a construction company conglomerate based in Worcester, Pa., said his company does not have a problem getting workers to wear their hard hats and wear them correctly because of its training program.

Kliwinski said every new hire is required to go through two hours of safety training on hard hats and safety glasses.

"We distribute the hard hats at orientation," Kliwinski said. "The employees are fit with these items, and we also explain the importance of wearing them and wearing them correctly. The support of the president and CEO goes a long way in motivating this behavior."

Service and Care

OSHA's standard does not call for a particular service life of a hard hat, but does advise that hard hats be inspected before and after each use.

Byrnes suggested that users follow the manufacturer's instructions for replacing the suspension of the hard hat or the whole unit.

If the wearer is involved in an impact accident, the hard hat needs to be replaced immediately because the suspension has been stretched.

Also, if the hard hat is dropped from any type of elevation, Bacon said, it needs to be replaced.

"A new hard hat that has fallen may take a blow and show no outside appearance of being damaged, but it must be replaced," Bacon said.

Normally, Byrnes said, a hard hat won't last more than two years if worn every day. MSA tells its wearers to not use a hard hat for more than five years and to replace suspensions after 12 months.

Bullard recommends that their hard hats be replaced after two years even if they don't show signs of cracks or damage. And, Bacon adds, "If you work in an environment of either extreme heat or extreme cold, you may need to replace your hard hat more often because these environments allow for the most damage."

Like any other type of PPE, caring for hard hats properly can help extend service life. In general, manufacturers say to clean the hard hat with mild soap and clean, warm water, and let it air dry. Never use

solvents or a cleaner on a helmet that could affect the integrity of the shell. Many brow pads on hard hats can be replaced without replacing the entire hat.

Proper storage of hard hats can also lead to an extended life span.

"Never store your hat in the back window of your car, and keep it out of the sun when not in use because UV rays can cause the biggest damage to hard hats," Bacon said.

The use of self-adhesive stickers by workers to personalize their hard hats for identification purposes is a common practice. This practice is allowable, according to the manufacturers, as long as the sticker being used is off the shelf.

"Stickers should be placed at least 1/2 inch above the brim. Be sure not to cover up any damage or cracks," Byrnes said.

Bacon added, "If any surface cracks, however small, should appear on the shell surface, either in the vicinity of the stickers or elsewhere, the helmet should be removed from service and replaced immediately."

Bacon also said wearers need to be mindful of what the sticker is made from. "Even if a sticker is not made of metal, it could act as a conductor and cause electric shock, so they should not be placed too close to the brim," Bacon said.

Byrnes added that wearers should never drill a hole in a hard hat to put a name tag on it because it could affect the integrity of the helmet shell.

- Virginia Sutcliffe

Hard Hat FAQ's

Q. What is the service life of a hard hat?

A. According to the 1986 and 1997 ANSI standards, all hard hat components should be inspected daily for signs of dents, cracks, penetration and any damage due to impact, rough treatment or wear. Any hard hat that fails the visual inspection should be removed from service until the problem is corrected.

In addition to everyday wear and tear, ultraviolet (UV) radiation can pose a problem for hats constructed of plastic materials. Damage caused by UV radiation is easy to spot: the hat will lose its glossy finish and eventually take on a chalky appearance. Further degradation could cause the shell to actually start flaking away. Once the effects of UV radiation are detected, the hard hat shell should be immediately replaced.

As long as the hard hat passes inspection, it can remain in service. When inspecting a hard hat, make sure to check both the inside and outside for possible damage. Pay closer attention to those that have stickers on them, for they tend to hide cracks.

Q. How often do I have to replace my hard hat?

A. As a general guideline, employers replace caps every five years, regardless of outward appearance. Most hard hats have manufacture date codes molded on the underside brim of the cap so you can easily determine the age of the cap. If the user environment is known to include higher exposure to temperature extremes, sunlight or chemicals, hard hats should be replaced routinely after two years of use.

Regardless of length of use, if a hard hat has any visible damage or defects, the hard hat should be replaced immediately. Also, if a hard hat has been struck by a forcible blow of any magnitude, the shell and suspension should be replaced immediately, even if no damage is visible. Any impact can substantially reduce the protection offered.

Q. Can I put stickers or decals on my hard hat?

A. Considering the type of adhesive used in typical pressure-sensitive stickers, there is very little potential for chemical interaction between the adhesive and the helmet shell. The use of these types of stickers would not be expected to negatively affect the performance of the helmet under normal conditions.

Two general rules of thumb should be followed if stickers and decals are used. First, adhesive stickers should be placed at least 3/4 inch away from the edge of the helmet. This prevents the possibility of the sticker acting as a conductor between the outside and inside of the shell if it were to wrap around the brim. Second, the areas of the helmet covered by stickers/decals should be kept to a practical minimum to permit regular inspection of the helmet shell for damage.

Q. Can I wear my hard hat backward?

A. OSHA published a standard interpretation and compliance letter dated July 22, 1992 that states: "Because ANSI only tests and certifies hard hats to be worn with the bill forward, hard hats worn with the bill to the rear would not be considered reliable protection and would not meet the requirement of 29 CFR 1926.100 (a) and (b) unless the hard hat manufacturer certifies that this practice meets the ANSI requirements." To comply with this requirement, written verification and instructions from the hard hat manufacturer on whether your hard hat model has been tested and found to be compliant when worn backward should be obtained.

Q. Can I carry or wear anything inside of my hard hat?

A. Per the ANSI Z89.1 standard, a clearance must be maintained between the hard hat shell and the wearer's head for the protection system to work properly. Any object in this space may limit this clearance and the overall performance of the hard hat. Objects placed in this space that contain metal can also diminish the dielectric protection provided by the hat. There are some products designed specifically to work in conjunction with hard hats. Be sure to follow the manufacturer's recommendations for the use of these products