



White Paper

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## **METGUARD SAFETY SHOES**

A guide to metatarsal protection

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Work environments can be dangerous. Falling objects are a common risk for injuries, even when dropped from only a few feet. Safety shoes are important in many work environments, and when there's a risk of foot injury, metguards should be part of an employee's Personal Protective Equipment (PPE). A metguard is a device designed to reduce or prevent metatarsal injury by absorbing the impact of objects falling on the upper foot.

Metguard safety shoes have a shield built within the arch to protect against objects dropping or rolling onto workers' feet. Studies show that 50 percent of all foot injuries in an industrial environment are caused when objects strike or roll over shoes. Most metatarsal injuries occur in the manufacturing, fabrication, construction, transportation, storage, retail, trade and property services industries. The workers most likely to suffer are laborers, tradespeople and machine operators.

Requiring employees to wear safety footwear with metguards is not only a good way to protect their feet, it's the law. The Occupational Safety and Health Administration (OSHA) outlines the necessity for safety footwear in the PPE section of its footwear regulations. OSHA can levy fines ranging from \$2,300 to \$70,000 per incident.

More importantly, however, is the health and safety of employees. The cost of a pair of safety boots is small compared to a foot injury that can put an employee out of work for days or weeks — or cause permanent disability. Injury can result in thousands of dollars of workers' compensation fees and lost productivity.

### Metatarsals defined

The metatarsals are five bones within the foot that extend from the tarsal bones in the heel all the way out to the toes. The five metatarsals are numbered one (extends to the big toe) through five (extends to the pinky toe). They work like levers when walking or running and aid in balance and holding up the body.

The metatarsals have minimal soft tissue to protect them at the top of the foot, so they are easily injured

and can take weeks to heal. A fracture of the big toe—not technically a metatarsal, but part of the same area of concern—can take as long as eight to ten weeks. Metguards can't protect against all foot injuries, but they do offer some protection against direct trauma.

### Metguard work boot regulations

Metguard boots must meet the ASTM F2413-05 standard developed by ASTM International, originally known as the American Society for Testing and Materials. This OSHA-accepted standard requires third-party validation of a manufacturer's metguard boots to perform as follows:

- Footwear must be constructed with a protective toe cap rated I/75 for impact, C/75 for compression and a metatarsal guard rated Mt75 for impact. The shoes must also withstand impact testing without the protective device itself pushing down and injuring the metatarsals.
- Footwear must be properly labeled to indicate that it meets the ASTM standard for toe and metatarsal protection. When purchasing compliant footwear, a male buyer will see a label that lists the metatarsal protection code M I/75 C/75 Mt75. Female buyers will see protection code F I/75 C/75 Mt75.

In the case of electrical hazard protection, the letters EH will follow Mt75 for both male and female shoe models. The ASTM label must also contain the manufacturer's name or logo, the manufacturing date code, model number and shoe size, and the label

should be located in a conspicuous location, such as within the shoe on the tongue.

## Metguard boot styles

Metguard footwear has two general designs. One incorporates an internal metguard and looks like a typical work boot because the metguard is not visible. The other style features an exterior guard that fastens to the toe of the boot, lies over the shoelaces and attaches to the upper part of the boot with a Velcro-style patch or through shoelaces. This exterior-guard style allows a worker to flip the metguard open during work breaks.

Metguard boots are often manufactured with full-grain leather uppers, steel or fiberglass shanks and rubber soles. Recent innovations have introduced new materials and construction methods to provide more worker comfort and flexibility, while still providing the necessary metatarsal impact protection.

Metguards come in multiple boot and shoe styles, such as wellingtons and oxfords. The work boot style the employee selects depends on the employee's occupation and personal footwear preferences. Some workers prefer eight-inch work boots for additional support. Other workers like a six-inch boot for its lighter weight and comfort. Metguard boots cost moderately more than a similar work boot without metguard protection.

## Buying the right metguard work boots

**Decide on a style.** The boot style that works best is highly dependent on the individual. Some workers feel more comfortable when the metguard rests on the exterior, while others prefer interior metguard shields. Depending on the model, metguard work boots can include additional safety features like oil- and slip-resistant soles.

**Choose electrical hazard protection, if necessary.** If the line of work calls for electrical hazard protection,

look for boots that are EH certified and rated. Such footwear is constructed so that the outsole may provide a secondary source of electric hazard protection capable of withstanding 14,000 V (rms) at 60 Hz for one minute under dry conditions.

**Take the time to get the size right.** Sizing the shoes and trying on several pairs before purchase is critically important — even more so than when choosing traditional work boots. Metguards may be harder and stiffer than a regular safety toe boot, causing discomfort in some wearers if not fit properly.

**Get assistance from experts.** We strongly suggest that your employees visit a shoe store specializing in industrial footwear. The store's staff will be able to assist in selecting and fitting the best metguard footwear for each employee's particular job.

## Employer purchasing requirements

- The OSHA rules encourage employers to pay for the protective equipment.
- According to OSHA, employers are responsible for paying for the minimum level of PPE required by the standards.
- If an employer decides to use upgraded PPE to meet the requirements, the employer must pay for the upgraded PPE.
- If an employer provides PPE at no cost and an employee chooses to use different PPE, then the employer is not required to pay for the item.

## There are two key exceptions to the OSHA rules relating to safety footwear and metguards.

- **Exception 1:** Employers are not required to pay for ordinary (non-metguard) safety footwear if the employer allows the employee to wear the footwear off the job site.

- **Exception 2:** Employers are not required to pay for safety footwear with integrated metguard protection if they provide (and cover costs for) metatarsal guards that attach to the shoe or boot.

Employers should help workers find and wear work boots that are appropriate for their jobs. A workplace

hazard assessment by a trained footwear expert can help you determine whether your employees require metguard protection. Although metguard boots cannot protect against all potential foot injuries caused by falling objects, they do provide a vital layer of protection for your most valuable asset — your employees.

#### Convenient for workers

With more than 1,500 U.S. retail locations, 170 Mobile Shoe Stores and over 250 purpose-built designs, your workers won't have to travel far to find the Red Wing footwear they need to do their jobs safely and productively.

#### Simple for you

Our HassleFree® Safety Footwear Program makes it easy to honor your commitment to your workers' well-being. From initial setup through ongoing support, our team of experts will be there to ensure a smooth experience and successful program for you.

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**HassleFree.**  
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