

Protective Footwear Requirements

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Referenced in the Code of Federal Regulations (CFR) Title 29 are OSHA's guidelines for Occupational Foot Protection (1910.136). This OSHA standard refers to American National Standards Institute (ANSI) guidelines for its performance criteria. This document will provide an overview of the OSHA standard and ANSI guidelines that govern foot protection.

Occupational Foot Protection

According to 1910.136(a), "Each affected employee shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards." Appendix B to subpart I identifies the following occupations for which foot protection should be routinely considered: shipping and receiving clerks, stock clerks, carpenters, electricians, machinists, mechanics and repairers, plumbers, assemblers, drywall installers and lathers, packers, wrappers, craters, punch and stamping press operators, sawyers, welders, laborers, freight handlers, gardeners and grounds keepers, timber cutting and logging workers, stock handlers and warehouse laborers.

In terms of what constitutes "protective footwear" under 1910.136(b) OSHA requires that the footwear comply with ANSI Z41(1991), *American National Standard for Personal Protection--Protective Footwear*, or shall be demonstrated by the employer to be equally effective.

Requirements of ANSI Z41

The ANSI Z41 standard defines performance measurements and test methods for protective footwear. Effective with the last revision of this standard, the ANSI Z41-1999 requires suppliers and manufacturers of Protective Footwear to have independent laboratory test results available to confirm compliance with the standard. And all protective footwear that is certified as meeting ANSI Z41 must first meet the requirements of Section 1 "General Requirements for All Types of Footwear--Impact and Compression Resistance". Then the requirements of additional sections such as electrical hazard protection, conductive protection and protection against punctures and penetration can then be met.

An important point to remember is that the ANSI standard does not allow for the use of add-on type devices (strap-on foot, toe or metatarsal guards) as a substitute for protective footwear. According to part 4.1.1 of the standard, "The toe box shall be incorporated into the footwear during construction and shall be an integral part of the footwear."

While ANSI excludes add-on devices, it doesn't necessarily mean they're not acceptable to OSHA. This paradox exists because OSHA states under 1910.136(b) that the footwear shall comply with ANSI or shall be demonstrated by the employer to be equally effective. This means

that if an employer can provide documentation, such as testing data proving their add-on devices provide protection equivalent to ANSI performance standards, then the add-on devices are acceptable to OSHA. Most manufacturers of add-on devices have submitted their products to independent laboratories for testing. This data and its results can be obtained upon request.

Protective footwear can meet all the requirements of the ANSI standard or specific elements of it, as long as it first meets the requirements for toe protection in Section 1. A steel toed workboot that meets the impact and compression requirements of the ANSI standard may not provide protection for metatarsal, electrical or penetration hazards. **All footwear manufactured to ANSI specifications will be marked with the specific portion of the standard with which it complies.**

The ANSI standard incorporates a coding system that manufacturers use to identify the portions of the standard with which the footwear complies. The following is an example of an ANSI code that could be found on protective footwear:

ANSI Z41 PT 91
F I/75 C/75 MT/75
Cd EH
PR

Line #1: ANSI Z41 PT 91:

This line identifies the ANSI standard. The letters PT indicate the protective toe section of the standard. This is followed by the last two digits of the year of the standard with which the footwear meets compliance (1991).

Line #2: F I/75 C/75 MT/75:

This line identifies the applicable gender (M or F) for which the footwear is intended. It also identifies the existence of impact resistance (I), the impact resistance rating (75, 50 or 30 foot-pounds), compression resistance (C) and the compression resistance rating (75, 50 or 30 which correlates to 2500 lbs., 1750 lbs., and 1000 lbs. of compression respectively). This line can also include a metatarsal designation (MT) and rating (75, 50 or 30 foot-pounds).

Lines 3 & 4: Cd EH & PR:

This area of the code designates conductive properties (Cd), electrical hazard (EH) and puncture resistance (PR), if applicable.

The identification code must be legible (printed, stamped, stitched, etc.) on one shoe of each pair of protective footwear.

An occasional point of confusion when selecting protective footwear is the difference between steel shanks and steel midsoles. These terms are not interchangeable. A steel shank is a relatively narrow piece of metal that's inserted into the arch area, strictly for support purposes. Steel midsoles, on the other hand, provide puncture protection on the soles of the footwear. According to the ANSI standard, protective steel midsoles, "shall cover the maximum area of the insole

allowed by the construction of the footwear and shall at least extend from the toe to overlap the breast of the heel."

Protective footwear with steel midsoles can be easily distinguished by the PR marking in the ANSI compliance code. The ANSI standard does not contain a marking to distinguish footwear that incorporate steel shanks.

All footwear requires routine inspection for cuts, holes, tears, cracks, worn soles and other damage that could compromise the footwear's protective qualities. Outsoles should be kept free of stones, tacks, nails and other debris. Footwear should be cleaned according to the manufacturer's instructions.

Sources for More Information

[OSHA 29 CFR 1910.136,](#)
Occupational Foot Protection Standard