



White Paper

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## ASTM UPDATES TO SAFETY FOOTWEAR REGULATORY STANDARDS

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maximize protection

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Every day, safety footwear helps keep workers safe from a wide range of risks, from slipping and falling to electric shock and injury. This footwear must conform to international standards that govern how to test these products and how products are expected to perform. In this paper, we cover some critical safety footwear standards from ASTM International.

### Following the leader in standards

ASTM International is a leader in developing and publishing technical standards for a wide range of products, including safety footwear. Originally known as the American Society for Testing and Materials (ASTM), ASTM International was founded in 1898. It predates similar organizations, such as ISO and ANSI, and remains one of the most dominant and respected standards organizations around the world.

Every five years, ASTM International reviews its standards to ensure they are comprehensive and up to date. If necessary, standards are revised to meet the evolving needs of industries and consumers. The last update, which occurred in 2011, affected four standards, or ASTM Designations:

ASTM F 2412-05

ASTM F 2412-11

ASTM F 2413-05

ASTM F 2413-11

Here's how to decode these designations. The "F" classifies all four standards in the "Materials for Specific Applications" group. The number 2412 refers to the detailed description of how to perform a certain safety test on the product or material, while the number 2413 refers to the performance requirements that these products or materials need to meet when tested according to the F 2412 method. Last but not least, the 11 refers to the year of the revision to the standard.



To make sure safety footwear has been tested according to the proper standard, look for the Designation ASTM F 2413-11 printed on the tongue label in a rectangular box, which indicates a safety-toe product.

### Areas of focus for safety footwear testing

With respect to the ASTM International standards updated in 2011, there are three nuances to be aware of for safety-toe footwear.

#### 1. Higher voltage for EH ratings

According to F 2413-05, performance requirements for Electrical Hazard (EH) ratings required safety footwear to be tested to 14,000 volts with up to 3 milliamperes (mA) of current leakage. For F 2413-11, products must be tested to 18,000 volts with only 1 mA of current leakage. This revision aligns the ASTM EH standard with the Canadian Standard Association (CSA) Electrical Shock Resistance (ESR) standard.

## 2. Pass/fail puncture resistance

In F 2412-11, the method for evaluating Puncture Resistance (PR) was revised slightly. The related performance requirement (F 2413-11) remains 270 lbs. (1200 Newtons of force), but the results are given in pass/fail terms rather than numeric values. Determining the exact puncture value of non-metallic PR plates during dynamic testing is very difficult. To remove this ambiguity, the test stops at 270 lbs. and the presence or absence of a puncture is noted.

## 3. New metatarsal guard test

The test method for metatarsal guards in F 2412-11 allows wax to be poured directly into the cavity of the footwear. The test is performed once the wax has hardened and molded to the cavity. Previously, the test required a specific molded wax last owned by a single test lab. ASTM International no longer allows the use of proprietary equipment in standards testing. The related performance requirement (75 foot-lbs.) and minimum clearance value remain the same.

## Two new standards

When ASTM International updated these standards, it implemented two new standards specifically for safety footwear.

### 1. Soft toe

ASTM F 2892-11 is the "Standard Specification for Performance Requirements for Soft Toe Protective Footwear (Non-Safety / Non-Protective Toe)." Across industries, many jobs do not require toe protection from impact or compression. Adding a soft-toe performance standard allows manufacturers to certify and label soft-toe footwear with safety designations for Electrical Hazard (EH), Static Dissipative (SD) and Puncture Resistance (PR) performance.

### 2. Slip resistance

ASTM F 2913-11 is the "Standard Test Method for Measuring the Coefficient of Friction for Evaluation of Slip Performance of Footwear and Test Surfaces/Flooring Using a Whole Shoe Tester." Although this standard does not yet have a performance requirement, there is now an accepted ASTM test method for evaluating the slip resistance of entire shoes.



Soft-toe products tested to proper safety footwear standards can be identified with the "ASTM F 2892-11" designation printed on the tongue label in an oval, indicating a non-safety-toe product.

Red Wing Shoes achieved compliance with these updated ASTM International standards in 2012 as part of our continued commitment to providing safety footwear that companies can trust.

#### 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.**  
SAFETY FOOTWEAR PROGRAM

To learn more about all the ways Red Wing safety footwear can benefit your workers and your business, please visit [redwingsafety.com](http://redwingsafety.com).



Based in Red Wing, Minnesota, Red Wing Shoe Company has a long tradition of offering premium-quality safety footwear that incorporates the best features available to protect people on the job. Right now, our boots are hard at work in thousands of applications in more than 110 countries.