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**Demystifying the new
safety footwear standard:**

A simple guide to
EN ISO 20345:2022

protecting people



Demystifying the new safety footwear standard: A simple guide to EN ISO 20345:2022

Getting to grips with safety standards can be challenging. Even for experienced industry professionals, navigating the wide array of specifications and requirements can rapidly become overwhelming.

The change in the EN standard for safety footwear now threatens to create further confusion for health & safety managers.

This guide is designed to demystify the new standard. It provides a straightforward overview of everything you need to know about EN ISO 20345:2022 and what – if anything – you need to do now.



Navigating the transition: EN ISO 20345:2011 to EN ISO 20345:2022

The launch of the new standard EN ISO 20345:2022 for safety footwear which took place in March 2023, introduces enhanced safety specifications for occupational footwear.

For manufacturers, the ability to continue production under valid EN ISO 20345:2011 certificates until 11th November 2024 provides a transitional period. After this date, it's important to note, that all existing certificates will expire at their designated date, at which time, safety footwear must be re-tested and certified against the updated requirements of EN ISO 20345:2022.

This transition period, extending up to five years, allows for a gradual integration of the new standard. Customers can therefore expect to encounter safety footwear certified under either the 2011 or 2022 standard until November 2029. Understanding these timelines allows both manufacturers and customers to navigate the shift effectively.

Most of the basic requirements are the same for EN ISO 20345:2011 and EN ISO 20345:2022:

- Minimum requirements for the toe cap:
 - ✓ Drop test at 200 joules of test energy (20 kg from a height of approx. one metre)
 - ✓ Static pressure test at 15 kilonewtons (approx. 1,500 kg of pressure)
 - ✓ Inside length depending on shoe size (e.g. 39 mm in sizes 41-42)
- Corrosion resistance for steel toe caps, behaviour test for non-metallic toe caps when exposed to heat and chemicals
- Resistance, non-toxicity and properties of the materials used in the sole and shoe upper
- Height, ergonomics and comfort of the shoe.

However, EN ISO 20345:2022 includes several key changes to help health & safety professionals ensure they are purchasing the products they need.

Slip resistance

The most significant change is that slip resistance has been added as a basic requirement for all safety footwear classes.

Under the 2011 standard, footwear was marked 'SRA' if it passed a slip resistance test on ceramic tiles with a sodium lauryl sulphate solution. Similarly, 'SRB' marked footwear passed a test on steel surfaces with glycerol. Shoes or boots that excelled in both tests received the 'SRC' designation. All tests (SRA, SRB, and SRC) evaluated slip resistance in two modes: heel slip and flat surface walking.

Under EN ISO 20345:2022, the 'SRA', 'SRB' and 'SRC' markings are no longer used. Instead, **all appropriate safety shoes must demonstrate basic slip resistance** by undergoing a test similar to the previous SRA certification on ceramic tiles.

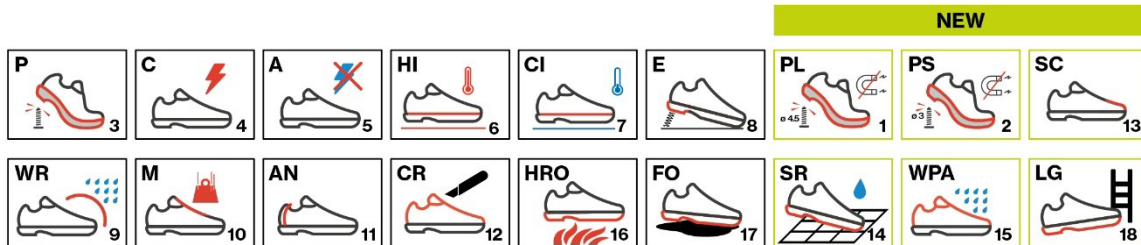
Safety footwear can be marked '**SR**' if they also pass a slip test on a ceramic tile with glycerol. Products with this marking therefore replace those that had a 'SRC' certification under the 2011 standard.

The slip resistance testing procedure has also been improved. Now it must be tested on the two critical contact points during gait: the **backward heel strike area** and the **forward push-off point at the toes**. These areas have minimal contact with the ground but play a crucial role in weight-bearing, distribution, stability and the overall mechanics of walking.

If the slip resistance test cannot be carried out, such as in shoes with metal spikes, the symbol 'Ø' is used.

Beyond the basic requirements

There are now 18 potential additional requirements, which are as follows:



Codes and requirements for special applications		
Symbol	Requirement	
1	PL	Perforation resistance, non-metallic insert, tested with a 4.5 mm test nail
2	PS	Perforation resistance, non-metallic insert, tested with a 3.0 mm test nail
3	P	Perforation resistance (metal insert)
4	C	Partly conductive footwear
5	A	Anti-static footwear
6	HI	Heat insulation of the sole complex
7	CI	Cold insulation of the sole complex
8	E	Energy absorption of seat region
9	WR	Water resistance
10	M	Metatarsal protection
11	AN	Ankle protection
12	CR	Cut resistance of the upper part of the shoe
13	SC	Abrasion resistance of optional overcaps
14	SR	Slip resistance on ceramic tile floors with glycerol
15	WPA	Water penetration and absorption
16	HRO	Heat resistance of the outsole
17	FO	Fuel resistance and oil resistance
18	LG	Outsoles provide hold on ladders

Key changes:

Perforation resistance: Under the old standard, all safety shoes or boots that offered protection against nail penetration had the marking 'P'. Under the new standard, 'P' is used for metallic soles that have been tested with a 4.5 mm nail. Shoes with non-metallic soles are marked with either 'PL' if tested with a 4.5 mm nail or 'PS' if tested with a 3 mm nail. As smaller diameter nails give a higher pressure, 'PS' offers a higher level of protection.

Ladder grip: The outsole of all safety footwear must have a transverse profile with a height of at least 1.5 mm in the ankle area to provide adequate grip on ladders. Previously, this was included in the standard for footwear intended for firefighters. Now, this has been copied for a standalone additional test for all safety shoes or boots and is signalled with an 'LG' marking.

Fuel oil resistance: The previous standard mandated that all safety footwear other than those with an open heel (SB) offered resistance to fuel oil. The new standard includes resistance to hydrocarbons – indicated by an 'FO' marking – as an additional test for environments in which hazards such as oil and petrol are present.



Scuff cap: An 'SC' marking can be used if an overcap does not develop any holes across its entire thickness when subjected to a Martindale abrasion test of 8,000 cycles.

Water resistance: The EN ISO 20345:2011 standard featured 'WRU' markings for shoes/boots with 'water-resistant uppers'. However, this did not indicate that the footwear was waterproof as the test requirement is, that no more than 3cm² of water penetration is allowed. This is because only the upper itself was tested to obtain WRU certification; when the upper is included in a shoe, the shoe as a whole can lose its water-repellent ability because water penetrates into the seams.

Under the new 2022 standard, WRU has been replaced by WPA. 'WPA' now indicates that footwear can allow for some 'water penetration and absorption'. WPA footwear offers some breathability and can be used in working conditions that do not require the feet to be submerged in water.

Also, under the new 2022 standard the '**WR**' (water resistant) is the marking that can be used for footwear. It is the same test for water penetration that is used during the 2011 test, but it is the result that differs. In order to be marked as 'WR' the 2022 standard states for WR, no water penetration inside the footwear shall be detected where, as above, the 2011 test allows for 3cm cubed of water to penetrate the footwear and therefore, the new WR standard is more stringent. To help equate one standard to another, a previous S2 model with WR has now become a S6, and a previous S3 model with WR has become an S7.

Often a membrane is used to achieve this however, footwear without a membrane could pass the water resistance testing but the seams would need to be very watertight. The test itself is referred to as "water resistance" and not waterproof, a term often used by wearers. The term "waterproof" would insinuate that the footwear would never allow water to enter, which over time cannot be guaranteed by any manufacturer due to use, wear and tear, also via the tongue and seams of the footwear, depending on depth of water submersion.

Understanding the new protection levels

There's no getting around it: navigating the protection class codes is more difficult than ever.

Under the 2011 standard, the protection levels were divided into six classes: SB, S1, S2, S3, S4 and S5. Under the new standard, there are now eight main protection classes: **SB, S1, S2, S3, S4, S5, S6 and S7**.

The two new protection classes – **S6** and **S7** – are used to indicate those with higher water resistance properties in line with the new 'WR' certification (see above section on water resistance).

In addition to the new classes, the **class codes may also be followed by 'P', 'L' (or 'PL') and 'S' (or 'PS')** to indicate **additional perforation resistance** in line with the 'P', 'PL' and 'PS' certifications.

Using the chart below, you can identify the protection level you require based on your specific workplace risk requirements.

	Class	Protective toecap	Mandatory slip resistance (similar to SRA)	Fully enclosed heel	A Electrical resistance	E Energy absorption under the heel	Puncture protection			WPA Water-penetration and absorption of upper	Cleared outsole	WR Whole shoe water-proof
							P Metal insert	PL Non-metal insert 4.5mm test nail	PS Non-metal insert 3.0mm test nail			
	SB	•	•									
	S1	•	•	•	•	•						
	S1P	•	•	•	•	•	•					
NEW	S1PL	•	•	•	•	•		•				
	S1PS	•	•	•	•	•			•			
	S2	•	•	•	•	•			•			
	S3	•	•	•	•	•	•		•	•		
NEW	S3L	•	•	•	•	•		•		•	•	
	S3S	•	•	•	•	•			•	•	•	
	S4	•	•	•	•	•						
	S5	•	•	•	•	•	•				•	
	S5L	•	•	•	•	•		•			•	
	S5S	•	•	•	•	•			•		•	
NEW	S6	•	•	•	•	•			•			•
	S7	•	•	•	•	•	•		•	•	•	•
	S7L	•	•	•	•	•		•		•	•	•
	S7S	•	•	•	•	•			•	•	•	•

Note: S1, S2, S3, S6 and S7 shoes are made from leather and other materials (class 1). S4 and S5 shoes are all-rubber or all-polymeric (class 2). SB shoes – which allow for an open heel – can be either class 1 or class 2.



Why was the new standard introduced?

There is no question EN ISO 20345:2022 will make procurement more challenging in the short-term. Nonetheless, the red tape serves a purpose. UK and EU standards are exceptionally high to ensure workers have access to the safety equipment they need to keep injuries and fatalities to a minimum.

In addition to ensuring basic slip resistance in every safety shoe/boot, the new ladder grip certification will be vitally important for many workers. Falls from height are among the most common cause of injuries and fatalities. The new 'LG' markings provide workers with reassurance that their footwear has passed specific tests to ensure the outsoles provide hold on ladders.

The new perforation resistance codes also explicitly state whether soles are metallic or non-metallic, which provides buyers with greater clarity on product selection.

There are now distinctions in the standards between metallic or non-metallic toecaps as well. For example, the flange width for metallic toecaps must be below 12 mm and for non-metallic toecaps it must be 15 mm. These distinctions will mean if a buyer purchases the same product from multiple factories, they no longer risk receiving some with metallic toecaps and some with composite toecaps.



What does the new standard mean for you?

The good news is that – for most health & safety professionals – the new standard will not require any immediate action.

During the transition period, you will be permitted to buy safety footwear that conforms to either the old or the new standard. If you purchase your safety shoes from a reliable manufacturer, they should deliver the same level of protection as those produced according to the new standard. The basic requirements remain largely unchanged and there is no need to replace footwear that is already performing successfully.

You should aim to buy shoes/boots that meet the new standard if:

- Workers have suffered accidents caused by their footwear, such as slips and falls
- You carry out a new risk assessment and identify new workplace hazards
- The footwear is subject to wear and tear that affects their protective features



uvex always sets the standard in safety

You can rest assured that uvex will always comply with all legally required standards. In fact, we believe in creating safety equipment that goes above and beyond and have created our own uvex house norms.

We produce products to overperform – following safety guidance as an Approved Code of Practice (ACOP) and then waiting for the legislation to catch up. If you buy your safety footwear from uvex, you're already ahead of the game.

We want to take the panic out of EN ISO 20345:2022. If you'd like further guidance on selecting the right products for your workplace, please contact one of our PPE Safety Solutions Experts using the following link <https://www.uvex-safety.co.uk/en/about-uvex/how-to-contact-us/regional-contacts/>, or our customer services team on 01252 731200.

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