

## SAFETY FOOTWEAR STANDARDS

The safety footwear standard is referred as EN345, EN ISO 20345:2004, EN ISO 20345:2007 and EN ISO 20345:2011. All footwear designed before 2004 and still manufactured up to today carries EN ISO 20345:2004. EN ISO 20345:2007 standard for footwear designed or retested after 2007 the new standard is the EN ISO 20345:2011 and unlike the previous standards all footwear manufactured after the 31st of July 2013 must meet that standard, now that doesn't mean that footwear made before that date is now of no use what it means is that footwear produced after that date will meet the new tougher standard.

The EN ISO 20345:2007 standard sets out minimum requirements that safety footwear must be successfully tested against.

The EN ISO 20345:2011 standard sets out new tougher minimum requirements that safety footwear must be successfully tested against.

The standard specifies all safety footwear must have toe protection. In addition to different protective features footwear represented by a combination of letters.

All Safety Footwear in this standard is at least SB which means it has toe protection against a 200 Joule impact

Rating	Features
<b>SB</b>	
<b>SB-P</b>	<b>P</b>
<b>S1</b>	<b>A + FO + E</b>
<b>S1-P</b>	<b>A + FO + E + P</b>
<b>S2</b>	<b>A + FO + E + WRU</b>
<b>S3</b>	<b>A + FO + E + WRU + P</b>
<b>S4</b>	<b>A + FO + E + Waterproof</b>
<b>S5</b>	<b>A + FO + E + P + Waterproof</b>

Key	Description
<b>A</b>	Antistatic footwear
<b>C</b>	Cut resistance of upper
<b>CI</b>	Cold insulation of sole complex
<b>E</b>	Energy absorption of heel region
<b>FO</b>	Resistance to fuel oil of outsole
<b>HI</b>	Heat insulation of sole complex
<b>HRO</b>	Resistance to hot contact of outsole
<b>M</b>	Metatarsel Protection
<b>P</b>	Penetration resistance
<b>WR</b>	Water resistant
<b>WRU</b>	Water resistant upper

### **TOE PROTECTION (SB)**

Your toes are a very vulnerable part of your body, especially in a work place. Toe protection must withstand a 200 joule impact. Joule is the unit of energy and this standard is purposefully specific. Something heavy falling from a low height could have a lot less energy than something lighter from a much higher height. As well as impacts the toe area must withstand a resting mass of well over 1000kg.

Most people have heard of steel toe cap boots but the protection doesn't have to be steel. Infact there are advantages to alternatives. Non-metallic protection can be equally as strong but lighter.

### **ANTISTATIC PROTECTION (A)**

Clothing, seating materials, and climate factors can cause a build up a static charge of electricity in the body. Some materials in footwear can over insulate the body causing the charge to be held. When you then touch something the charge can rush from your body quickly causing a spark and a small uncomfortable shock. Antistatic footwear will significantly reduce this effect but does not offer full protection for exposure to electronics and explosives work. You will need Electro-Static Protection (ESD) for this.

### **MIDSOLE PENETRATION PROTECTION (P) - SB-P, S1-P, S3, S5**

Sharp objects where we walk and stand are significant risk not only in the workplace but also outdoors and at home. Midsole protection will guard against nails and other objects. To meet this standard the footwear must be able to resist a penetration force of 1100N. Midsole protection is provided in one of three methods: a stainless steel insert in the sole, aluminium insert in the sole, or by Kevlar insole. The Aluminium and Kevlar solutions are the most flexible and lightest and cover the greatest area of the foot. Kevlar insoles also offer much higher thermal insulation.

#### **• Energy Absorption (E)**

Energy Absorption in the heel region

#### **• Water Resistant Upper (WRU)**

Water resistant upper, not used on all rubber or polymeric footwear.

#### **• Heat Resistant (HRO)**

Heat resistant Outsole: To resist 300°C for 60 seconds

#### **• Insulation against Cold (CI)**

Insulation against cold: tested for 30 minutes at 1 -20°C

#### **• Insulation against heat (HI)**

Insulation against heat: tested for 30 minutes at 150°C

#### **• Electro-Static Discharge (ESD)**

ESD footwear is desined for the electronics and explosives indusry and has to meet ESD CEI EN61340-5-1 standard.

#### **• Non-metallic footwear**

Safety footwear containing no metal parts are ideal for workplaces with metal detectors like airports eliminating the hassle of removing them.

## **SAFETY RATINGS EXPLAINED**

### **SB**

The rating SB indicates that the safety footwear has a 200 joule toe protection, it can have additional features but it is the most basic of safety footwear.

### **SB-P**

SB-P has the same features as the SB rating with the addition of the midsole penetration protection this can be a stainless steel insert in the sole, aluminium insert in the sole or by kevlar insole.

### **S1**

S1 in addition to 200joule toe cap, is classed as antistatic footwear the sole is also resistant to fuel oil and has energy absorption in the heel area.

### **S1-P**

S1-P has the same features as the S1 rating with the addition of the midsole penetration protection this can be a stainless steel insert in the sole, aluminium insert in the sole or by kevlar insole.

### **S2**

S2 in addition to 200joule toe cap, is classed as antistatic footwear the sole is also resistant to fuel oil and has energy absorption in the heel area it also has a water resistant upper

### **S3**

S3 has the same features as the S2 rating with the addition of the midsole penetration protection this can be a stainless steel insert in the sole, aluminium insert in the sole or by kevlar insole.

### **S4**

S4 in addition to 200joule toe cap, is classed as antistatic footwear the sole is also resistant to fuel oil and has energy absorption in the heel area it is waterproof none as leak proof

### **S5**

S5 has the same features as the S4 rating with the addition of the midsole penetration protection this can be a stainless steel insert in the sole, aluminium insert in the sole or by kevlar insole.

All safety footwear can have more features than are listed above but these are the minimum requirements to meet each of the safety ratings, So you could have a S1 CI or S1 HI. we have listed the main ratings above there are more but these are the most common