

# 产品说明书 防静电安全鞋



本产品按欧盟和/或中国国家标准，采用优质原料，引进最新技术，自始至终进行严格的质量控制，安全无害、穿戴舒适、柔韧透气。产品符合欧洲标准EN ISO 20345和/或中国标准GB 21148-2020。符合GB/T 31009-2020足部防护鞋(靴)限量物质要求及测试方法中的产品安全性要求，达到A级。

## 功能说明:

安全鞋由牛皮或织物鞋面，PU或EVA中底，PU或橡胶大底。产品具有以下功能,请参见“安全鞋鞋舌”上的标识确定产品对应功能。

EN 2022 标识	EN 2011 标识	分类	性能组合	GB 强制性标识	GB 可选性能标识
S1	S1	II	防静电保护	SB	—
S1	S1	I	SB+A+E封闭的鞋面区域	SB A	E
S2	S2	—	S1, 加上鞋帮防水性能	SB A	E+WRU
S3	S3	I	S2, 加上金属防刺鞋底和防滑外底	SB P A	E+WRU
S3L S3S	—	I	S2, 加上非金属防刺鞋底和防滑外底	SB P A	E+WRU
S4	S4	II	SB+A+E封闭的鞋面区域	SB A	E
S5	S5	II	S4, 加上金属防刺鞋底和防滑外底	SB P A	E
S5L S5S	—	II	S4, 加上非金属防刺鞋底和防滑外底	SB P A	E
S6	—	I	S2, 加上全鞋防水	SB A	E+WR
S7	—	I	S6, 加上金属防刺鞋底和防滑外底	SB P A	E+WR
S7L S7S	—	I	S6, 加上非金属防刺鞋底和防滑外底	SB P A	E+WR
SBH	SBH	—	混合鞋, II类鞋帮面用其他材料	—	—

某些应用需要附加防护要求, 请见下表(带圈叉(X)=适用/(/)=不适用)。

特别附加要求, 符合以下标准	EN ISO 20345 GB21148-2020	极限参数	符号	类别	类型
防静电性能	防静电性能 金属防刺鞋 类型P 非金属防刺鞋 类型PL 非金属防刺鞋 类型PS	PL使用ø 4.5mm钉钉进行测试 PS使用ø 3mm钉钉进行测试 ≥1100N	P PL PS	X	X
防静电性能	—	电阻:10 <sup>9</sup> -10 <sup>10</sup> Ω	A	X	X
电子防静电性能	—	电阻:10 <sup>9</sup> -10 <sup>10</sup> Ω	ESD	X	-
鞋底的隔热或抗热性能	—	150°C环境中30min后内底表面温升不得超过22°C	HI	X	X
鞋底的抗寒或隔热性能	—	-17°C环境中30min后内底表面温度下降不得超过10°C	CI	X	X
鞋后跟的吸能容量	—	≥20焦耳	E	X	X
防水性能	—	鞋帮与鞋身贴合面在80min期间, 不得存在任何渗水	WR	X	-
踝骨保护	—	≥100±2焦耳	M	X	X
踝关节保护	—	平均<10kN, 最大<15kN	AN	X	X
断裂性能(A类除外)	—	防裂指数>2.5 (防护区域高度≥30mm)	CR	X	X
耐磨鞋头	—	8000次循环摩擦测试, 无磨损	SC	X	X
鞋帮	—	防水和吸水性 60分钟后透水量<0.2g, 吸水率<30%	WRU WPA	X	-
鞋帮	—	耐热性能/直接接触 60±1秒, 300°C	HRO	X	X
鞋帮	—	抗烧性能 体积增大≤12%	FO	X	X
鞋帮	—	爬梯摩擦(鞋面区域) 鞋面区域鞋钉高度至少1.5mm	LG	X	X

上表为EN ISO 20345和GB 21148-2020 (附附录) 标识组合对比, 以上穿穿初期中PL使用ø 4.5mm钉钉进行测试, PS使用ø 3mm钉钉进行测试。

要求	地面类型	摩擦系数	符号
防滑性能 (根据EN ISO 20345:2011要求)	在瓷砖地面上用十二烷基硫酸盐(NaLS)液体进行防滑系数测试	鞋跟滑动 >0.28 平面滑动 >0.32	SRA
	在钢制地面上用甘油油滑剂进行防滑系数测试	鞋跟滑动 >0.13 平面滑动 >0.18	SRB
	—	—	SRA+SRB SRC
防滑性能 (根据EN ISO 20345:2022要求)	基础测试 在瓷砖地面上用十二烷基硫酸盐(NaLS)液体进行防滑系数测试	鞋跟滑动 >0.31 前掌滑动 >0.36	无
	可选测试 在瓷砖地面上用甘油油滑剂进行防滑系数测试	鞋跟滑动 >0.19 前掌滑动 >0.22	SR

GB 21148-2020中防滑性能测试请参考SRA要求, 我可安全鞋鞋舌。



德尔塔官方微信

德尔塔(中国)安全防护有限公司 <http://www.deltaplus.com.cn>  
215221 江苏省苏州市吴江区欧盛大道2号 +86(0)512-63647000

## EN USE INSTRUCTIONS FOR ANTISTATIC SAFETY FOOTWEAR

**Use instructions:** Safety footwear for general use, with use with risks of impact and compression, according to the marking on the safety footwear and the table of slipping requirements. The compatibility of the footwear with other PPE items (pants or leggings) must be verified by the user in order to avoid any risk during use. ANTISTATIC FOOTWEAR: Marking symbol: A1-S1-S2-S3-S3S-S4-S5-S5S-S6-S7-S7S or A1-O1-O2-O3-O3L-O3S-O4-O5-O5L-O5S-O6-O7-O7L-O7S. Antistatic footwear should be used if it is necessary to minimize electrostatic build-up by dissipating electrostatic charges, thus avoiding the risk of spark ignition of, for example, flammable substances and vapours, and if the risk of electric shock from mains voltage equipment cannot be completely eliminated from the workplace. Antistatic footwear introduces a resistance between the foot and ground but may not provide complete protection. Antistatic footwear is not suitable for work on live electrical installations. It should be noted, however, that antistatic footwear cannot guarantee adequate protection against electric shock from a static discharge as it only introduces a resistance between foot and floor. If the risk of static discharge electric shock has not been completely eliminated, additional measures to avoid this risk are essential. These measures, and the additional tests mentioned below, are part of the routine inspections included in a programme of prevention of occupational accidents. Antistatic footwear will not provide protection against electric shock from AC or DC voltages. If the risk of being exposed to any AC or DC voltage exists, then electrical insulating footwear shall be used to protect against serious injury. The electrical resistance of antistatic footwear can be changed significantly by bending, contamination or moisture. This footwear might not perform its intended function if worn in wet conditions. Class I footwear can absorb moisture and can become conductive if worn for prolonged periods in moist and wet conditions. Class II footwear is resistant to moist and wet conditions and should be used if the risk of exposure exists. If the footwear is worn in conditions where the soiling material becomes contaminated, wearers should always check the antistatic properties of the footwear before entering a hazard area. Where antistatic footwear is worn, the resistance of the flooring should be such that it does not invalidate the protection provided by the footwear. It is recommended to wear antistatic socks. It is, therefore, necessary to ensure that the combination of the footwear its wearers and their environment is capable to fulfill the designed function of dissipating electrostatic charges, and of giving some protection during its entire life. Thus, it is recommended, that the user establish an in-house test for electrical resistance, which is carried out at regular and frequent intervals. PERFORMANCE: The overall performance of this model is detailed in the performance table below. (See the performances)PART I: The risks for which the corresponding symbol shown on the footwear are covered. These guarantees are valid for footwear in good condition and we shall bear no responsibility for any use not provided for under the terms of these instructions. The use of accessories not originally provided, such as removable insole, can affect the performance factors, especially for symbols A and **Usage limits:** Do not use out of the scope of use defined by the information marked (pay careful attention to the markings/symbols). Do not use for risks that may cause very serious consequences such as death or irreversible damage to health. If the footwear is equipped with a removable insole, the certified ergonomic and protective functions refer to the whole footwear (including the insole). Always use the footwear with its insole in place. Replace the insole only with an equivalent model from the same original supplier. Footwear without removable insoles must be used without insoles, because its introduction could adversely affect the protective functions. Additional information shall be given regarding perforation resistance. The perforation resistance of this footwear has been measured in the laboratory using standardized nails and forces. Nails of smaller diameter and higher static or dynamic loads will increase the risk of perforation occurring. In such circumstances, additional preventative measures should be considered. Three generic types of perforation resistant inserts are currently available in PPE footwear. These are metal types and those from non-metal materials, which shall be chosen on basis of a job-related risk assessment. All types give protection against perforation risks, but each has different additional advantages or disadvantages including the following: Metal inserts (For example: S1P, S3): Are less affected by the shape of the sharp object/hazard (i.e. diameter, geometry, sharpness) but due to shoemaking techniques may not cover the entire lower area of the foot, non-metallic insert (PS or category S1PS, S3L for example.) May be lighter, more flexible and provide greater coverage area, but the perforation resistance may vary more depending on the shape of the sharp object/hazard (i.e. diameter, geometry, sharpness). Two types in terms of the protection afforded are available. Type PS may offer more appropriate protection from smaller diameter objects than type PL. For more information about the type of penetration resistant insert provided in your footwear please contact the manufacturer or supplier detailed on these instructions. This footwear does not contain any substances known to be carcinogenic, toxic nor which may cause allergies in sensitive persons. Warning: Never use footwear that is damaged. Always carefully inspect footwear before use, to identify signs of damage. It is appropriate to check from time to time the inside of the footwear by hand, in order to detect deterioration of the lining or the toe protection area with the appearance of sharp edges that could cause injury. A daily check before each use must be carried out in order to detect any defect that it may present. Particular attention must be paid to the seams of the upper footwear, to the wear of the outsole and to the state of the joint between the upper footwear and the outsole. Replace it if necessary. The footwear shall not be modified. The resistance properties to the penetration and absorption of water (WPA, S2, S3, S3S, S6, S7, S7S, O2, O3, O3L, O3S, O6, O7, O7L, O7S) are only for the upper materials and do not guarantee a complete waterproofness of the footwear. SHELF LIFE (Obsolescence period): The life of the product depends very much on how it is maintained and the environments in which it is used. Due to many factors (temperature, humidity, substances and materials in contact, etc.), the lifespan of these products cannot be precisely defined. As of the date of manufacture indicated on the footwear and in normal use and storage conditions, this footwear can offer adequate protection for a period of 3 to 5 years. **Storage/Cleaning instructions:** Store in a cool, dry place away from frost and light in their original packaging. Limit significant differences in temperature and humidity. To remove dirt and dust, use a non-metallic brush. For stains, use a wet cloth with soap if necessary. To polish, use a standard product following the manufacturer's instructions. To protect the environment, where possible have your footwear repaired rather than dispose of them. To dispose of your used footwear, please use the appropriate recycling facilities in your area.

## Shoe Categories and Reference Standards

TYPE OF FOOTWEAR → Footwear categories: Reference standards:	SAFETY	OCCUPATIONAL
The markings placed on this product (see marking above) guarantee:	SB or S1 → S7 or SBH EN ISO 20345:2022 PL: nail Ø 4.5 mm / PS: Ø 3 mm	OB or O1 → O5 or OBH EN ISO 20347:2022 PL: nail Ø 4.5 mm / PS: Ø 3 mm
Marking requirements (*In accordance with the reference standards)	The presence of a toe-protection cap offering protection against impacts equivalent to 200 ±4(J) and risks of compression under a maximum load of 1500 ±0.1 daN(*)	No protection toe-cap on work footwear
For ABCDE footwear models of classification I (leather and other materials), some markings are included under the following combined symbols:	SB = basic properties S1 = SB + Closed heel region + A + E2 = S1 + WPA S3 = S2 + P (metallic insert) + deated outsole S3L = S2 + PL (non-metallic insert) + deated outsole S3S = S2 + PS (non-metallic insert) + deated outsole S5 = S2 + water resistance of the whole footwear S7 = S3 + water resistance of the whole footwear S7L = S3L + water resistance of the whole footwear S7S = S3S + water resistance of the whole footwear	OB = basic properties O1 = OB + Closed heel region + A + E O2 = O1 + WPA O3 = O2 + P (metallic insert) + deated outsole O3L = O2 + PL (non-metallic insert) + deated outsole O3S = O2 + PS (non-metallic insert) + deated outsole O5 = O2 + water resistance of the whole footwear O7L = O3L + water resistance of the whole footwear O7S = O3S + water resistance of the whole footwear
For ABCDE footwear models of classification II (all vulcanized rubber or all moulded polymer), some markings are included under the following combined symbols:	SB = basic properties S4 = SB + Closed heel region + A + E S5 = S4 + P (metallic insert) + deated outsole S5L = S4 + PL (non-metallic insert) + deated outsole S5S = S4 + PS (non-metallic insert) + deated outsole	OB = basic properties O4 = OB + Closed heel region + A + E O5 = O4 + P (metallic insert) + deated outsole O5L = O4 + PL (non-metallic insert) + deated outsole O5S = O4 + PS (non-metallic insert) + deated outsole
For the Hybrids footwear, the marking symbol:	SBH = class II footwear incorporating another material which extends the upper. Moulded = vulcanized rubber or all moulded polymeric foot section integrally moulded around the toe cap and often including the outsole, which can be unlined and usually does not incorporate an insole. Mounted = vulcanized rubber or all moulded polymeric foot section that is manufactured separately and then constructed around a conventionally lasted lining /insole construction and often with a separately attached outsole.	OBH = class II footwear incorporating another material which extends the upper. Moulded = vulcanized rubber or all moulded polymeric foot section integrally moulded around the toe cap and often including the outsole, which can be unlined and usually does not incorporate an insole. Mounted = vulcanized rubber or all moulded polymeric foot section that is manufactured separately and then constructed around a conventionally lasted lining /insole construction and often with a separately attached outsole.

Slip resistance (*In accordance with the reference standards) on ceramic floors	Requirements	Coefficient of friction	symbols
	* Basic : Resistance to slipping on Ceramic floor with detergent lubricant Nals (Lauryl) Sulfate	Forward Heel slip ≥0,31 Backward Forepart slip: ≥0,36	None
	* Additional : Resistance to slipping on Ceramic floor with glycerine lubricant	Forward Heel slip: ≥ 0,19 Backward Forepart slip: ≥0,22	SR

## 储存与保养:

- 1.放在原包装内,置于干燥通风场所,防止霉变。堆放离开地面和墙壁20厘米以上,离开一切发热体1米以外,避免受油、酸碱类或其他腐蚀品的影响。
- 2.本安全鞋提供了可移动鞋垫,测试时是鞋垫在适当的位置时进行的。安全鞋只在适当位置使用鞋垫才能发挥相应的功能,请使用代尔塔原厂鞋垫。
- 3.请使用非金属刷子来清除鞋上的泥土和灰尘。对于污渍,必要时应使用湿布沾肥皂液来清除。涂抹鞋油时,应严格按照标准鞋油说明书操作。出于环保,应尽可能将鞋拿去修理;清理你的废旧鞋时,请使用附近适当的再循环设施。
- 4.使用安全鞋时应避免与水长时间接触不可浸泡水洗,否则将影响使用寿命,引起脱胶等问题。建议同时配备两双或以上的鞋,可提高总体使用寿命。
- 5.从安全鞋舌上标明的制造日期算起,在正常存储条件下,安全鞋在3-5年内能够发挥相应的防护功能(一般PU鞋底为3年,橡胶鞋底为5年)。

## 防静电鞋注意事项:

如果必须通过消散电荷来使静电累计减至最小,从而避免诸如易燃物质和蒸汽的火花引燃危险,同时,如果来自任何电器或带电部件的电击危险尚未完全消除,则必须使用防静电鞋。然而,要注意由于防静电鞋仅仅是脚和地面之间加入一个电阻,不能保证对电击有足够的防护,如果电击的危险尚未完全消除,避免这种危险的附加措施是必要的,这类措施与下面提到的附加测试一样应成为工作场所事故预防程序的例行部分。

经验表明,对于防静电用途,在鞋的整个使用期限内的任何时间,通过产品的放电路径通常应有小于1000MΩ的电阻。在电压达到250V操作时,万一出现任何电器故障,为确保对电击或引燃危险提供一些有限的保护,新鞋的电阻最低限值规定为100kΩ。然后在某些情况下,使用者应知道鞋可能提供不充分的保护且应始终采取附加措施以保护穿着者。

这类鞋的电阻会由于曲挠污染或潮湿而发生显著变化,如果在潮湿条件下穿用,鞋将不能实现其预期的功能。因为必须确保产品在整个使用期限内实现其消散静电电荷的设计功能同时提供一些保护。建议使用者建立一个内部电阻测试并定期经常地使用它。如果延长穿用周期,I类鞋能吸潮并在潮湿条件下导电。

如果在鞋底材料被污染的场所穿用鞋,穿着者每次进入危险区域前应经常检查鞋的电阻值在使用防静电鞋的场所,地面电阻不应使鞋提供的防护无效。

在使用中,鞋内底与穿着的脚之间不得有绝缘部件。如果内底和脚之间有鞋垫,则应检查鞋/鞋垫组合体的电阻值。

## 三包卡 (仅限中国大陆)

凡购买本公司合格品安全鞋,本公司承诺如下品质保证:

- 1.三个月内出现开胶(深度≥10mm且长度≥50mm),掉跟、裂跟、跟面脱落、断线,视具体穿着情况,包修。
- 2.两个月内未穿过的鞋,两只顺向,尺码不同、款式不同,或发现存在开胶(深度≥3mm且长度≥30mm),包换。
- 3.一个月内出现断底,断面,断帮,包退。
- 4.产品退换需凭发票通过供货商进行。过期品和处理品,不实行三包。

## For certain applications however, additional requirements may be necessary.

For information on the degree of protection provided by this footwear, please refer to the table below:

Special additional requirements	Limits	Symbols	Class I	Class II	Monted	Moulded
In accordance with standards EN ISO 20345 and EN ISO 20347						
Perforation resistance : Metallic insert type P	(>1100 N)	P				
Non-metallic insert type PL	(>1100 N)	PL	X	X	X	X
Non-metallic insert type PS	(>950 N)	PS				
Partially conductive footwear	(≤ 100 kW)	C	X	X	X	X
Anti-static footwear	(>100 kW and ≤ 1000 MW)	A	X	X	X	X
Heat insulation of sole complex	(At 150°C the temperature increase on the upper surface of the insole after 30 min shall be not greater than 22°C.)	HI	X	X	X	X
Cold insulation of sole complex	(The temperature decrease on the upper surface of the insole shall be not more than 10°C.)	CI	X	X	X	X
Energy absorption of seat region	(≥20 J)	E	X	X	X	X
Water-resistant footwear	Not any water penetration after 100 trough lengths or after 80 ± 5 mins if dynamic test	WR	X	-	-	-
Metatarsal protection (for EN ISO 20345 only)	(≥100±2J) ≥ 40 mm (EU size 41/42)	M	X	X	X	X
Ankle protection	(4v-10kN and single value < 15 kN)	AN	X	X	X	X
Cut resistance of the footwear (for EN ISO 20345 only) - (excluding design A)	≥ 2,5 (index) (protection zone height ≥ 30 mm) + overlap of toe cap ≥ 10 mm)	CR	X	X	X	X
Abrasion resistance of scuff cap	The scuff cap shall not develop any hole after 8000 cycles	SC	X	-	-	-
Slip resistance	On ceramic floor with glycerine	SR	X	X	X	X
Upper	Water penetration and absorption after 60 min (≤ 0.2 g) and (≤ 30 %)	WPA	X	-	-	-
Outer sole	Resistance to hot contact (300°C for 60±1s)	HRO	X	X	X	X
	Resistance to fuel oil (volume increase ≤ 12%)	FO	X	X	X	X
Ladder grip (deat design)		LG	X	X	X	X

Legend: \* X = Applicable / - = Not applicable



202505 V2 EN ISO 20345: 2022 version  
DELTA PLUS GROUP - BP140 - 84405 APT - FRANCE  
Tel.: +33 (0)4 90 74 20 33 - Fax: +33 (0)4 90 74 32 59 - [www.deltaplus.eu](http://www.deltaplus.eu)



Official website