

Safety Footwear

An Expert Guide

Standards

Electrostatic Resistance

Product Assurance

Safety Toe Caps

Safety Midsole

Innovation





contents

OUR SERVICE	2
WHAT TO LOOK FOR IN SAFETY FOOTWEAR	3-4
LEGISLATION AND STANDARDS	5
ELECTROSTATIC RESISTANCE	6
PRODUCT ASSURANCE	7-10
SAFETY TOE CAPS	11-12
SAFETY MIDSOLES	13-14
INNOVATION - GORE-TEX FABRIC TECHNOLOGY	15-16
THE BOA VIBRAM SYSTEM	17
PORON XRD METATARSAL PROTECTION	18



Arco is the UK’s leading supplier of personal protective equipment, workwear and workplace safety products offering a world-class range of over 170,000 products.

As Experts in Safety we are widely recognised as a provider of specialist advice through our sales office network and this is further supported by our training and consultancy division. We reach our customers through an extensive product catalogue, interactive website, local sales offices and a network of over 49 stores. We pride ourselves on providing customers with great availability, performance and price.

Founded in 1884 Arco has a heritage spanning four generations. With traditional family values at the heart of the business we pride ourselves on our core values: respect, hard work, enterprise and excellence in reputation. We fully subscribe to the ETI’s Nine Principles Base Code and have fully incorporated the internationally recognised code of labour practice into our own ethical policy. In 2007 Arco was the first distributor in our industry to become a member of the Ethical Trading Initiative (ETI) and in 2010 we became a member of Sedex, the Supplier Ethical Data Exchange. We continually support local communities and charities donating in excess of 1% of pre tax profits annually. As we are members of the BSIF Registered Safety Suppliers Scheme you can be confident that we will supply safety equipment which is genuine and compliant with the relevant standards and regulations. The BSIF monitor and regulate members of the scheme by conducting regular standards audits.



Safety Footwear Our Service

Here at Arco our core purpose is to keep people safe at work. The Health and Safety Law which regulates the PPE regulation 2016, states that it is the responsibility of the employer to ensure their employees are properly equipped for the work they undertake.

Injuries Caused by Not Wearing the Correct Footwear

In 2014/15 falls and slips & trips, combined, accounted for more than a third (36%) of employee injuries. They accounted for nearly six in ten specified injuries (59%) and almost three in ten (29%) over-seven-day injuries to employees. (RIDDOR*) The specification of the appropriate footwear can go some way to mitigate these risks.
*www.hse.gov.uk/statistics/causinj/kinds-of-accident.pdf

Market Leaders and Leading Suppliers

We are the market leaders in safety footwear, selling 1.5 million pairs of shoes every year. With the largest range of safety footwear in the UK including the largest own brand offering, we offer footwear to suit most applications across a number of sectors. We give you choice of feature, style and brand, and have footwear to suit your budgets. Brands include our own label products; Arco, Arco Essentials, and Trojan.
We offer safety footwear from the industry’s leading suppliers who are specialists in their fields, allowing us to offer you the best footwear for every application. Our suppliers include; Dr. Martens, CAT, Goliath, DeWalt, Haix, Steitz, UVEX, ANVIL Traction, Pezzol, Timberland, Dunlop and Wolverine.

Expert Advice

Our sales force help guide you to the correct selection of footwear appropriate to your site, as well as footwear maintenance and health and wellbeing.
Our technical sales specialists are on hand to offer expert advice. They will come to your site and work with you to identify your needs and the best safety footwear for your application. Our footwear product team has over 50 years’ experience and the category manager here at Arco is the chair of the BSIF safety footwear group and a PH-1 committee member, the committee that influences the European Safety footwear standards.

Service

The Arco mobile sales unit (MSU) can visit your workforce on site, reducing employee downtime for selection and fitting if you have a large number of staff who need safety footwear. The MSU is fully stocked with a choice of styles which staff can try before ordering, and advisors are on hand to help.

Easy to Try and Buy

We have multiple buying channels making the process to buy as easy as possible. With a national network of regional sales offices, our sales team can offer services across multisite organisations. We have approaching 50 retail outlets so you have the opportunity to try on in store, and the ability to purchase online 24 hours a day, 7 days a week.

Product Assurance and Quality

Our Independently Accredited Product Assurance laboratory contains a set of test equipment to allow tests to be carried out to the requirements of EN ISO 20345:2011. This specifies requirements for safety footwear used for general purpose. The standard includes tests against mechanical risks, slip resistance, thermal risks and ergonomic behaviour. Our testing assures our customers that the footwear we sell consistently meets all the standards that they claim to. Recent testing has shown this is not the case across the footwear industry and we have been working with the appropriate bodies to rectify this.

Innovation and Design

Arco are at the forefront of innovation and design. We work with our customers to identify product development and with our suppliers to bring new and innovative products to the market, including the Boa Closure system, the Poron XRD foam and Gore-Tex.

What to look for in safety footwear ?

Looking at the individual components of a safety boot, we can see how each element works to protect the foot from different hazards.

Kick Plate

Positioned at the heel of the boot, the kick plate is designed to protect the footwear, particularly when the wearer is taking the boots off. The kick plate helps to prolong the life of the product, extending the cost in use.

Lining material

All boots have a lining material which cover up the stitch lines, this prevents rubbing and increases comfort. Ideally the lining material used should be breathable, helping to keep feet dry and at an optimum temperature of 28 to 32 degrees.

Page 15 looks at the Gore-Tex membrane which goes inside some boots.

Penetration Resistant Midsoles

Manufactured from a variety of materials including stainless steel and textile, they are designed to stop the penetration of sharp objects coming through the midsole. Inserts are placed between the insole and the outsole. Both materials conform to standard EN ISO 20345:2011. **Page 13 looks at the risks posed by steel midsoles, and the findings from the midsole penetration test.**

Outsole

Outsoles are often made from polyurethane (PU), thermoplastic polyurethane (TPU) and rubber (nitrile rubber).

Choose safety footwear with an outsole material which will offer the best protection for a specific environment.

Different materials will give greater slip resistance depending on the flooring, and rubber soles offer a greater heat and chemical resistance than PU. Some outsoles have the additional support of a ladder grip.

Footbed

This can provide additional cushioning to reduce fatigue and provide comfort at the heel, or at the front of the foot depending on the footbed used.

Padding

The collar and tongue of the footwear are cushioned to help distribute the pressure from the lacing system around the ankle and ensure wearer comfort. Padding around the ankle also provides additional support.

Lacing

Traditional shoelaces are usually used in safety footwear, but an alternative option is the Boa Closure System. **Page 17 looks at the Boa Closure System which allows you to dial in the perfect lace tension.**

Upper material

A range of materials are used including leather. The environment and application where the footwear is used will determine the best material to use. Factors to consider when choosing a material include; breathability, allergy risk, heat conductivity, fire resistance, water permeability and weight.

Metatarsal protection

Footwear may be specified to provide metatarsal protection. Materials used include rigid plates or steel bearings. The innovative Arco Metguard Boot uses Poron XRD. **Page 18 looks at how the Poron XRD foam works.**

Toe cap

A number of materials can be used in toe caps, including steel and composite. Composite toe caps are metal free and can be used in areas where metal detectors are used. Both steel and composite toe caps meet the safety standard EN ISO 20345:2011. **Page 11 looks into the issue of non compliant toecaps.**

Scuffcaps

The role of the scuffcap is to protect the outer material on the toecap from mechanical stress. It reduces wear and tear of the footwear and extends the service life of the shoe.

Insole

This can provide additional shock absorption at the heel or at the front of the foot depending on the insole used. A removable insole will also provide support for the arch of the foot. However, when used in an anti-static shoe, this will interfere with the functionality, so care must be taken when selecting an insole.

Midsole

The midsole is often made with a cushioning material to aid shock absorption and anti-fatigue and to provide extra comfort to the wearer.



Legislation and Standards

Protective Footwear Regulations

Here at Arco our core purpose is to keep people safe at work. The Health and Safety Law which regulates the PPE regulation 2016, states that it is the responsibility of the employer to ensure their employees are properly equipped for the work they undertake.

Standards

EN ISO 20345:2011 specifies basic and additional requirements for safety footwear used for general purpose.

Special risks are covered by complementary job-related standards, such as footwear for firefighters, electrical insulating footwear and footwear protecting against chain saw injuries, chemicals and molten metal splash.

Therefore, anybody issuing footwear needs to ensure it meets at least one of the following standards:

Standard EN ISO 20345:2011 - Personal protective equipment - Safety footwear

This Standard specifies mandatory basic and additional (optional) requirements for safety footwear used for general purpose. It includes, for example, mechanical risks, slip resistance, thermal risks and ergonomic behaviour.

Explanation of marking codes used to define level of protection provided

EN ISO 20345:2011 SB – Safety Basic, footwear protects the wearers toes against mechanical risk, tested with 200J impact energy and 15000N compression force.

CLASS I FOOTWEAR: Footwear made from leather and other materials, excluding all-rubber or all-polymeric footwear	
S1	Safety basic + Closed seat region + Antistatic + Energy absorption of the seat region + Fuel oil resistant outsoles
S2	As S1 plus: Water resistance of the upper
S3	As S2 plus: Penetration resistance of the outsole + Cleated outsoles

CLASS II FOOTWEAR: All-rubber (i.e. entirely vulcanized) or all-polymeric (i.e. entirely moulded) footwear	
S4	Safety Basic + Closed seat region + Antistatic properties + Energy absorption of seat region + Resistance to fuel oil
S5	As S4, plus: Penetration resistance + Cleated outsole

Additional protection may be offered and the following marking codes used		SYMBOL
Whole Footwear	Penetration resistant (<i>Force required to penetrate the sole complex shall be not less than 1100N</i>)	P
	Energy absorption of the seat region (<i>Minimum energy absorption of 20J</i>)	E
	Metatarsal protection (<i>100J impact protection over metatarsals</i>)	M
	Antistatic (<i>Electrical resistance 0.1-1000MΩ tested at 100V DC in both wet and dry atmospheres</i>)	A
	Cold insulation of the sole complex (<i>Exposure to -17°C 30 Minutes, maximum internal temperature decrease 10°C</i>)	CI
	Water resistance (<i>Whole footwear flexed in water for 80 minutes with no significant water penetration</i>)	WR
Outsole	Resistance to hot contact (<i>Exposure to 300°C for 60 seconds with no cracking</i>)	HRO

Electrostatic Resistance

The standards for safety, protective and occupational footwear includes optional categories of protection for products offering electrical safety features. There are three distinct electrical properties that can be claimed within the EN ISO 20345:2011 suite of standards. These are “Conductive” and “Antistatic” which deal with the prevention of static electricity build up within the wearer and the opposite property “Electrical insulation” which deals with prevention of current flow.

The exact electrical properties of the product will be included in the CE marking labels. Product marked with categories or protection A, (S1-S5 or O1-O5) all feature the Antistatic category of protection. Products marked with the category of protection “C” have the Conductive category of protection. Products marked with (double triangle) symbol and accompanying class of protection offer electrical insulation at the stated level. Where these markings are not included in the CE labels the electrical properties are unknown and unsuitable for uses where electrical risks exist.

Anti-Static

Antistatic footwear may be used where there is a need to dissipate static away from the body but the potential of contact with mains voltage electricity or capacitance cannot be removed entirely. This footwear dissipates the majority of static away from the body through the ground contact and helps prevent risks such as explosion from sparking from contact with earthed surfaces. Antistatic products have an electrical resistance through the outsole of between 0.1 and 1000MegaOhms. This under normal circumstances is sufficient to prevent a fatal electric shock for a healthy adult when in contact with nominal mains voltage electricity

Conductive

Similar to Antistatic footwear, this product type is suitable for use in high risk explosive environments but only when the risk of electrocution has been completely removed. The electrical resistance of the product is below 0.1MegaOhms and as such it dissipates all static away from the body with a higher efficiency but does not prevent current flow through the body. These products are suitable for high explosive atmospheres where any sparking could be catastrophic. Although rare they are important for industries such as munitions.

Electrically insulating footwear

Electrically insulating footwear is available only as “classification II” footwear, whole moulded boots that are entirely watertight. These are traditionally termed wellington boots. These products are intended to entirely insulate the worker from earth and prevent or reduce current passing through the footwear to ground to safe levels. These products are intended for use while working on potentially live AC electrical installations where there is a high risk of

live electricity or capacitance. Their intention is to prevent ventricular fibrillation caused by electric shock. The marking on the product will identify the class of protection and the safe working voltage for the product.

ESD

ESD products are tested in the laboratory to EN 61340-5-1 and such products have a measured electrical resistance of 0.1-100MegaOhms or 0.1-35MegaOhms (for environments that use the shoe and floor as the primary method of earthing). The products will carry identification of the type of protection “Dissipative” and the Class of conditioning applied during test. Classes 1, 2 and 3 relates to varying levels of humidity under test and in the end use. The resistance requirements applied to ESD products is narrower than the antistatic resistance range in the safety footwear standards. This means that few antistatic products will achieve the ESD requirements without improvement.

Site testing

In addition to the laboratory test the ESD products are tested daily when entering the electrostatic protected area (EPA). The test in the EPA environment used EN 61340-4-3 and success allows the site manager to apply a yellow “EPA” pictogram to the outside of the footwear to indicate it complies. In many cases the manufacturer applies the “EPA” pictogram to the footwear at manufacture but this is done in such a way that it can easily be removed from the footwear if the product no longer complies with the requirements when entering the EPA.

Product Assurance

Our mission is to influence industry standards and to develop, source and supply the highest quality products.



Our customers tell us that product quality is one of the most important factors of our service to them, they want to feel totally assured that the products we supply them will keep their people safe. With our core purpose to keep people safe at work we are committed to delivering high quality, safe and reliable footwear which meet or exceed our customers' expectations.

To demonstrate this, we have invested heavily and are now the first safety distributor to have our own, in house, independently accredited Product Assurance Laboratory. We are now taking the lead, and aim to drive improvements in quality standards across the industry. We will test footwear to recognised standards, and beyond. Where we think that accepted practices and standards can be improved, we will challenge them and influence change.

The Arco Product Assurance laboratory contains a set of test equipment to allow tests to be carried out to the requirements of EN ISO 20345:2011.

This specifies basic requirements for safety footwear used for general purpose. Additional optional elements may also be tested such as particular hazards on specific flooring. The standard includes tests against mechanical risks, slip resistance, thermal risks and ergonomic behaviour. Testing is carried out in accordance with EN ISO 20344:2011, the standard specifying methods for testing footwear designed as PPE.

Tests carried out in house include Impact Resistance where a weight is dropped onto the protective toe cap area of the footwear, Compression Resistance, a test of a shoe's capacity to protect the toe area of the foot against steadily applied loads, Penetration Resistance tested using a test nail forced into the outsole of the footwear, Electrical Resistance and Water Resistance. We also commission a number of tests external to our laboratory including Metatarsal Protection, measuring the level of protection provided to the upper foot (metatarsal bones) and toe areas.

Independent accreditation

Our Product Assurance laboratory aims to provide our customers with a level of confidence which is second to none in our industry. It is important to us to demonstrate expertise and independence and therefore we have had our laboratory independently accredited by SATRA, the world's leading authority on international legislation and testing of footwear and leather, as well as being accredited by UKAS The United Kingdom Accreditation Service.



Slip Resistance

The slip resistance tester measures the slip resistance between the sole of the footwear and the floor. A normal walking step begins when the heel touches a surface and ends as the toe is lifted. Slip is most likely to occur shortly after the heel touches and just before toe lift when reduced body weight is being applied. The slip resistance tester can be used to test resistance of a piece of footwear on the surfaces specified in the standard. Alternatively, it can be used to measure how alternative flooring materials affect slip resistance by comparing their performance when a particular shoe is used. Where possible we highlight the slip rating scores of our footwear. All safety footwear has to be tested in accordance with EN ISO 13287:2012, the standard for slip resistance.

Slip Rating	Test Method	Test	Coefficient Friction Requirement
	Footwear tested on ceramic tile floor with sodium lauryl solution	Forward heel slip Forward flat slip	Not less than 0.28 Not less than 0.32
	Footwear tested on steel floor with glycerol	Forward heel slip Forward flat slip	Not less than 0.13 Not less than 0.18
	Tested and conforms to both of the above methods	Product meets all of the requirements of SRA & SRB	

Case Study : Safety Sector: AEG & O2 Arena

Bigger than the Manchester Arena and Maddison Square Garden in New York, The O2 arena is now the world's biggest selling and visited entertainment venue, with more than 9 million visitors every year, nearly 200 events and an estimated 12 million forecast post the opening of the Designer Outlet in October 2018.

Within that, the venue boasts the Up at the O2 climb experience with 116,000 thrill seekers enjoying the 52m high, 380m long climb over a suspended walkway, over the O2 each year.



Understanding customer needs across a diverse business

In 2014, Arco were chosen as the Safety partner by the O2 for their "Up@theO2" climb experience, working closely with the team to develop bespoke boots, climb suits and harnesses, specific to their instructors and customers' needs. At such an iconic building and customer experience opportunity where trust, expertise and reputation are at stake, Arco's core values resonate alongside the O2's to ensure safety is managed in partnership.

Product Challenge: Climb shoes with added grip

Outstanding grip: We tested a wide variety of different sole materials on samples of the fabric walkway to achieve a shoe with a high level of grip.

Flexibility and durability: We chose softer sole materials to provide durability, while delivering maximum grip and flexibility.

Exceptional comfort: To ensure a lighter weight, we chose a trainer-style shoe rather than a boot. Manufactured in blue to match the climb suits, it was essential to develop a climb boot that had a breathable waterproof inner membrane to keep feet dry and comfortable. For added comfort and support, it also needed to be cushioned with a breathable ankle support.



Impact Resistance

To test the level of impact resistance, a weight is dropped onto the protective toe cap area of the footwear. Testing is carried out in accordance with EN ISO 20344:2011 and requires that a weight (striker) of 20KG is dropped from a height to create 200 joules of impact energy. The clearance remaining inside the cap after impact is then determined. The clearance is measured using a pre-prepared plasticine cylinder.



Compression Resistance

This is a test of a shoe's capacity to protect the toe area of the foot against steadily applied loads. When testing for compression the toe cap area of the footwear is compressed with a force of 15kN (1.5 metric tonnes) onto the toe cap. The clearance remaining inside the cap after the compression is then determined. This is measured using a pre-prepared plasticine cylinder.



Penetration Resistance

A boot or shoe containing a penetration resistance insert lessens the risk of a sharp object penetrating through the outsole causing injury to the foot. Penetration resistant components are tested using a test nail forced into the outsole of the footwear. The force applied is progressively increased. The force required to puncture the component is measured.



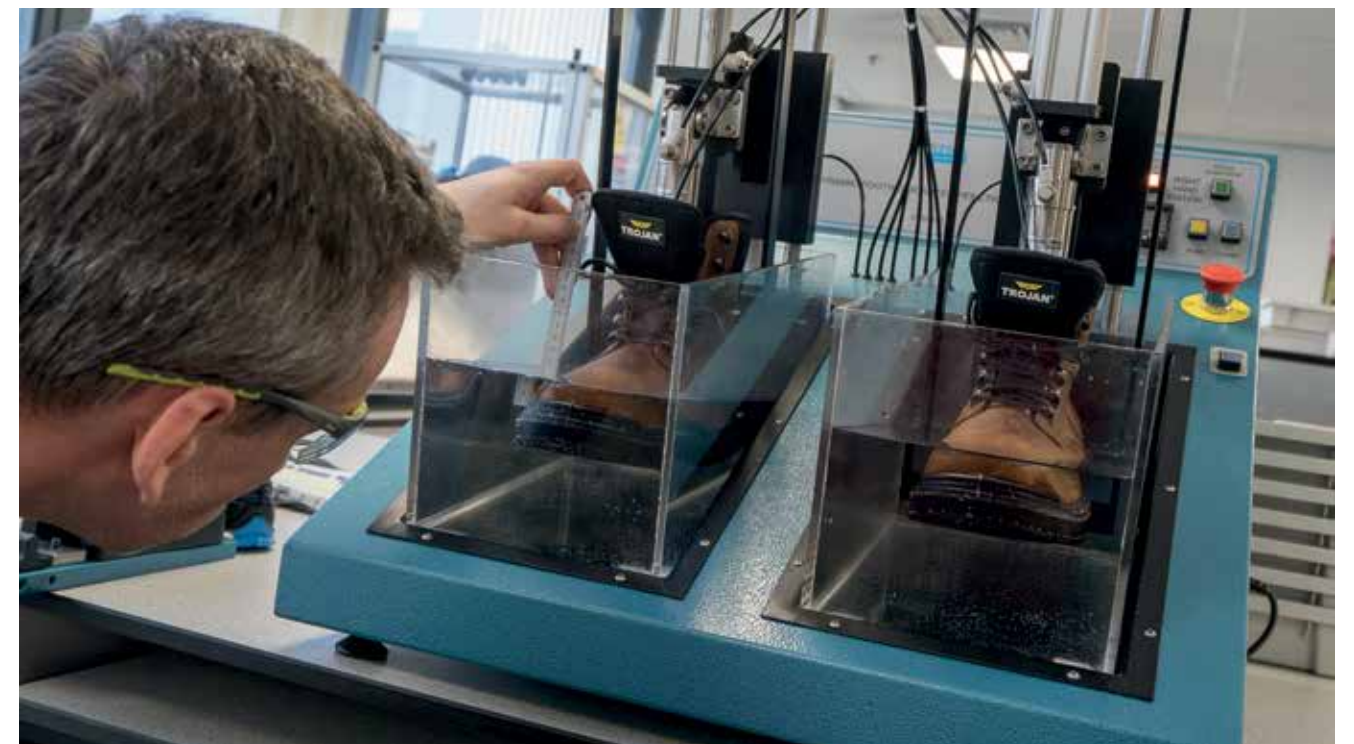
Electrical Resistance

Electrical resistance is carried out by standing a shoe or boot on a metal plate and inserting 4kg of ball bearings into the product. An electrode is then placed amongst the ball bearings and a voltage is applied. The resistance is measured.



Water Resistance

The dynamic footwear water penetration test is carried out by inserting footwear into a trough of water. Each shoe/boot is automatically flexed 4800 times and the level of water ingress is measured once the flexing cycle is complete.



Metatarsal Protection – Commissioned Externally

This test measures the level of protection provided to the upper foot (metatarsal bones) area. Footwear offering metatarsal protection is designed to prevent or reduce injuries when the metatarsal area of the foot is exposed to falling mass.

The metatarsal protective material can be both internal or external and is tested in the same way. To test metatarsal protection, the similar test to impact is carried out. A 20kg striker is dropped to create 100 joules of impact energy onto the metatarsal area. The impact is measured on a specially made wax form which has been inserted into the product before impact.

Safety Toe Caps



Safety Toe Caps

Safety Toe Caps are manufactured using a number of different materials. The most common types of toe caps are either made from steel or they are manufactured using composite nylon materials. Other non-metallic materials have also been used in the production of safety toe caps, however under testing, toe caps made from thermoplastic materials have been found to fail under compression testing.

Arco's UKAS accredited laboratory ran compression tests on ranges of safety footwear, which revealed that despite carrying EC Type approval marks, many thermoplastic models failed to comply with the standards against which they were originally certified. Protective toe caps were traditionally made from steel however; more recently non-metallic toe caps are often the product of choice. There are a number of different non-metallic toe caps available on the market, but they do not all perform alike.

The Findings

Four out of 10 boots containing non metallic toecaps failed the standard compression test, * but glass fibre composite caps performed as they should. However, four of the footwear styles containing thermoplastic toe caps did not perform as expected.

What does the BSIF say?

"This situation poses an obvious risk to end users, and is a timely reminder that only relying on the CE certification for certain product types is no guarantee of ongoing quality assurance."

The BSIF is calling on all those in the industry to make doubly certain and ensure that their supply routes are fully aligned to providing safe, legal and fit for purpose PPE.

Why is this happening?

In the footwear that failed the test, the toe caps had been made with injection moulded plastic and not with glass fibre composite material. These toecaps may not protect the wearer's toes, potentially leaving the individual severely injured with crushed or severed toes in the event of a compression accident.

The EC type approval and CE marks for compliance on failed footwear may be genuine, and does not mean the products are counterfeit. In reality the certification process has its limitations as it allows a manufacturer to send products for testing until they achieve a pass result. The EC Type approval is then valid for a maximum of five years and manufacturers then should not swap components for cheaper alternatives without re-testing the product.

Products are tested and meet the required standard but over a period of time, the key components may have been changed without further testing. So the product may no longer offer the protection claimed. Manufacturers and importers should carry out ongoing sample testing to ensure that production standards are maintained throughout the life of the products, sadly, this may not always be the case.

What we do here at Arco

We do not specify or allow injection moulded thermoplastic toe caps into our own brand safety footwear and we will continue to routinely test Arco safety footwear in our UKAS accredited product assurance laboratory to ensure ongoing compliance. If any product fails a standard safety test, and renders the product unsafe, we immediately quarantine the whole batch and recall as necessary. We will continue to ensure the manufacturing quality and compliance through our five Stage Product Assurance Process and we will continue to pass any product compliance failure data on to the BSIF.

When selecting your safety supplier, there's no room for doubt.

Before making a purchase ask suppliers for a Declaration of Conformity that shows original certification of the safety footwear you are purchasing. You should also ask suppliers about their process of quality assurance at the factory to ensure their products are being manufactured as they were originally certified. It is also worth checking the process of sample testing with your chosen supplier to ensure safety products continue to meet the required standards, and ensure your suppliers are members of the BSIF Registered Safety Suppliers scheme.

Always buy from a trusted source.



Safety Midsole



Safety Midsole

Penetration resistant midsoles are often found in safety footwear. Traditionally the midsoles have been made from stainless steel but in more recent years' composite materials have been used.

When composite materials are used instead of a steel midsole, the weight of the safety shoe or safety boot can be reduced, while offering a similar level of protection. A midsole made out of composite is usually a Kevlar midsole and doesn't conduct heat as easily as steel. A composite midsole is used to increase the flexibility of the outsole.

The risk of sharp objects like nails and screws penetrating footwear is a significant one for many workers. A high proportion of Class 1 safety footwear* in the UK contains a protective midsole. The majority of which are steel. Class

1 safety footwear with midsole protection against this risk must comply with a standard penetration test – the application of a nail to the sole with a force of 1100N, the equivalent of a well-built man stepping onto a nail – and a corrosion test – a cut test piece of the midsole is exposed to a 1% sodium chloride solution for 48 hours. As a result, SATRA state that it is likely that only stainless steel inserts will pass the corrosion test.

The Findings

Arco suspected that some footwear products available on the market had mild steel midsoles despite carrying CE marks. We decided to test the steel used in a range of different footwear brand midsoles. Tests revealed that 50% (7 out of 14) had midsole inserts made from mild steel,

which could become weakened and brittle through corrosion over time. This could leave wearers at risk of suffering a penetrating foot injury. The remaining 7 were made from high chromium, or stainless steel.

Why is this happening?

Some manufacturers may not have responded to the change in EN ISO 20345:2011, which now requires a tougher corrosion test for midsoles used in Class 1 safety footwear. It's also possible that key components could be substituted for cheaper ones during the manufacturing process. However, it is difficult for buyers to determine what kind of steel a midsole insert is made from without cutting it open and testing the composition of the metal used for the midsole. The EC type approval and CE marks for compliance on failed footwear may be genuine, and does not mean the products are counterfeit. However, EC type approval is valid for the life of the product, so although the product may have received a pass at the test stage, they may not have been re-tested to meet more recent corrosion requirements.

Products are tested and meet the required standard but over a period of time, the key components may have been changed without further testing. So the product may no longer offer the protection claimed. Manufacturers and importers should carry out ongoing sample testing to ensure that production standards are maintained throughout the life of the products, sadly, this may not always be the case.

What we do here at Arco

All Arco own-brand Class 1 safety footwear containing metallic midsoles is specified with stainless steel corrosion-resistant midsole inserts. If any product fails a standard safety test, we immediately take appropriate action and we will continue to ensure the manufacturing quality and compliance through our Five Stage Product Assurance Process. We also pass product compliance data on to the BSIF. When selecting your safety supplier, there's no room for doubt. Before making a purchase ask suppliers to demonstrate that their midsole inserts are made from stainless steel.

You should also ask suppliers about their process of quality assurance at the factory to ensure their products are being manufactured as they were originally certified. It is also worth checking the process of sample testing with your chosen supplier to ensure safety products continue to meet the required standards.

Always buy from a trusted source.



Innovation

GORE-TEX® Footwear



GORE-TEX® Footwear

GORE-TEX® Footwear is ideal for a wide range of activities. GORE-TEX® boots and shoes are engineered to keep feet dry and protect them by being durably waterproof, breathable and providing optimised climate comfort.

Gore Walking Simulator

The Gore Walking Simulator tests the waterproofness of GORE-TEX® Footwear. For professional applications, mechanical feet with the test shoes take up 300.000 to 500.000 flex cycles in a water bath 5cm deep. If water enters the shoe, the simulator stops and an LED indicates where the leakage has occurred and counts the number of flexes. The inside lining of the footwear must remain absolutely dry throughout the test. **For comparison:** The footwear standard EN ISO 20345:2011 requires 4,800 simulated steps in shallow water and permits 3 cm² ingress of water.

Gore Centrifugal Test

The Gore Centrifugal Test determines the waterproofness of GORE-TEX® Shoes without harming the quality. Not even the smallest leak can get past this test. Shoes are filled with water; the centrifuge rotates with 240 turns per minute. Any leak is quickly discovered.

Gore Whole Boot Comfort Test

The Gore Whole Boot Comfort Test determines the breathability of GORE-TEX® shoes by testing the whole shoe, not only individual components. The effect of a perspiring foot in the shoe is simulated in a temperature controlled microclimate. Using moisture vapour transfer and absorption, a climatic factor is determined that represents a minimum standard of quality depending on the use of the shoe.

Why invest in GORE-TEX® Footwear?

- Long-lasting quality that is industry proven.
- Quality footwear lowers procurement cost for the employer, you only need to buy one pair of boots rather than multiple cheaper, lower quality pairs.
- Reduces job-related accidents, injuries and illnesses because the wearer is not distracted by uncomfortable footwear.
- Adaptable for multi-climate conditions, in warmer climates perspiration is wicked away from the foot and in colder climates warmth is retained to make sure your feet stay comfortable.
- Perspiration is pulled away from the feet, keeping them dryer from the inside reducing the likelihood of blisters and other problematic foot conditions.
- Quick-drying fabric keeps feet warm and more comfortable.

The GORE-TEX® Laminate is combined with other high-quality fabrics to create uniquely specified footwear. All components (leathers, textile, laces, foams, and threads) as well as the entire shoe construction are application specific and unique.

To get the best results from your GORE-TEX® Footwear

It is best to wear non-cotton socks when wearing GORE-TEX® Footwear as cotton socks act like a sponge. Socks that have the following proportions: over 50% wool or synthetics e.g. polyacrylic fibre, polyamide, polypropylene, will work best and offer the best results.

GORE-TEX®, GORE® and designs are registered trademarks of W. L. Gore & Associates



The Boa System

The Boa System, delivers closure and adjustment solutions purpose-built for performance. Boa's patented system consists of three integral parts: a micro-adjustable dial, super-strong lightweight laces, and low friction lace guides. Boa does what Velcro, shoelaces, buckles, ratchets and others cannot. Each unique configuration is engineered to optimize fit and provide precision, adaptability, and control.

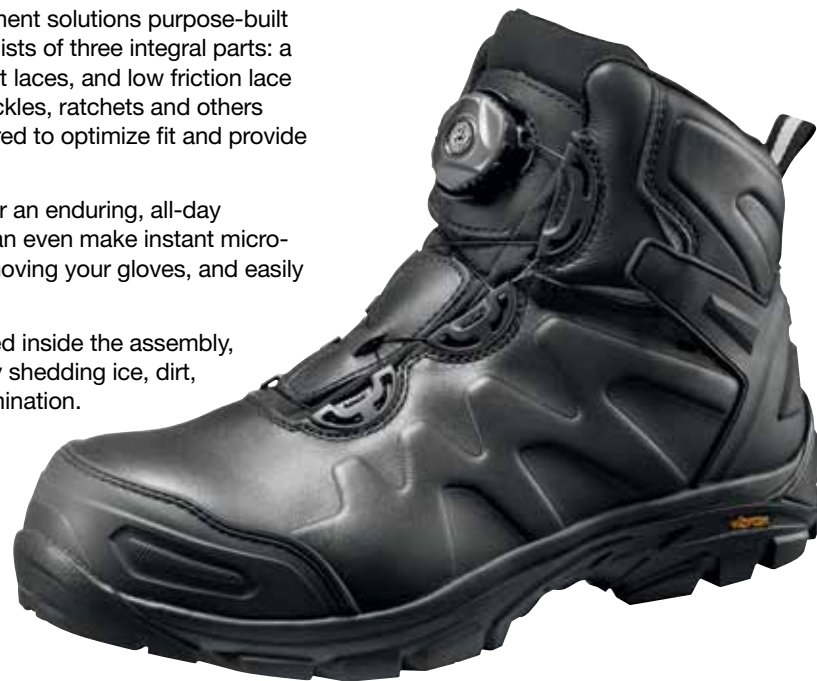
The Boa System lets you dial in a secure fit for an enduring, all-day comfort that stays consistent and true. You can even make instant micro-adjustments while you work, without ever removing your gloves, and easily release pressure when it's time for a breather.

Boa's precision engineered laces are contained inside the assembly, out of your way, and out of machinery. And by shedding ice, dirt, and oil, The Boa System helps reduce contamination.

The Boa System is designed to outlast the product. From the dial to the aircraft-grade stainless steel lace, permeated with abrasion-resistant nylon, The Boa System is built to perform in any environment. This is why The Boa Systems dials and laces are guaranteed for the lifetime of the product on which they are integrated.

Find out more on WWW.THEBOASYSTEM.COM

BOA®



Vibram



Vibram is the world leader in the technological development and manufacture of high-performance rubber soles, for the outdoor, work safety, lifestyle, orthopaedic and repair markets.

For over 80 years now, the unmistakable yellow octagon has been the symbol of a company synonymous with quality, performance, safety, innovation and design.

Behind every Vibram sole lies in-depth study of the specific performance characteristics required of each particular application, with a view to meeting a three-fold quality objective and guaranteeing maximum performance, comfort and durability.

To ensure this, tough static and dynamic tests are conducted both in the laboratory and in action by the Vibram Tester Team.

Poron® XRD foam – The next generation in metatarsal protection

Poron® XRD foam

Poron® XRD foam is flexible under normal conditions, but upon sudden high impact Poron® XRD instantly firms creating a protective shield that takes the absorption of the strike, yet remains comfortable and non-restrictive as it returns to its 'resting' state. It features foam molecules that will not break down on impact or over a period of time, therefore the wearer has maximum protection on every hit.

So how does Poron® XRD protection work?

Like all Poron® microcellular products, Poron® XRD technology is open cell and is easily customised and incorporated in a variety of designs. The XRD protection difference is especially apparent at high speed impact. The soft contouring material instantly dissipates force upon impact – absorbing up to 90% of energy at high speed impact.*

Poron® XRD material gets its softness when at rest while above the 'glass transition temperature' (Tg) of the urethane molecules. When stressed at a high rate or impacted quickly, urethane momentarily 'freezes' – like water freezing into ice. When this happens, the material firms to form a comfortable protective shell that shields the body from impact better than other protective foams currently available.



It is highly flexible and will contour to the correct shape and provide flexibility in movement adding to wearer comfort. It is thin reducing the bulk of the protective shield and the protective plate is lightweight and does not add very much to the overall weight of the safety boot.

The Arco Internal Metguard Safety Boot features the unique shield made from Poron® XRD, designed to give even greater comfort to the wearer. The Poron® XRD protective foam shield is fully encased within the construction of the boot, meaning it cannot be removed accidentally, or without damaging the footwear.



Built-in 'grooved hinges' increase flexibility, comfortably contours around the top of the foot and does not restrict movement.

Moulded shapes and channels improve breathability, allowing air and moisture to move freely.

Contoured, feathered edges enable a sleek, slim design, to be seamlessly incorporated into the tongue of the boot. Shape and greater impact protection built in with no bulk.

To see a demonstration of this innovative material within the Internal Metguard Safety Boot visit www.arco.co.uk/metguard

Contact Us

Call your regional sales office

Aberdeen	01224 249 494
Scotland & Northern Ireland	01506 841 510
North England	0191 499 1555
North West England	0161 869 5807
Yorkshire & Humber	01482 611 611
East Midlands	0115 938 0456
West Midlands	0121 500 6060
Wales & South West	0117 982 3751
London & South East	01923 204 141

Visit your nearest store

Find opening times, address details and directions at
www.arco.co.uk/branchloc

Order online at www.arco.co.uk

In Ireland

Call your regional sales office on **01 409 5000**

Visit Arco Safety Centre in Dublin.

Find opening times, address details

and directions at **www.arcosafety.ie/branchloc**

Order online at www.arcosafety.ie



Arco Limited
P.O. Box 21,
Waverley Street,
Hull HU1 2SJ