

Hazard Protection with GORE-TEX® Fabric Technology

An **Expert Guide**

..... High Visibility Hazardwear

..... GO/ RT Hazardwear

..... Flame Retardant Hazardwear

..... GORE-TEX® Heat & Flame Hazardwear
..... with GORE® PYRAD™ Fabric Technology

..... GORE-TEX® Heat & Flame Hazardwear
..... with GORE Antistatic Technology

..... Waterproof and breathable footwear



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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 branch 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 office and 41 strong Trade Counter network. 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.

Working in partnership with W L Gore and Associates (UK) Limited



Back row, left to right: Jonas Andersson, Fabrics Division, W.L. Gore and Associates (UK) Limited. Nicola Budd, Product and Procurement Manager, Weatherwear, Arco. Richard Sansom, Product and Procurement Manager, Hazardwear, Arco. Front row, left to right: Suzanne Walton, Product Trading Director, Arco. Neil Jowsey, Joint Managing Director, Arco. Graham Dobson, Product Sales Associate, Technical Footwear and Gloves, W.L. Gore and Associates

Arco has developed a unique partnership with W.L. Gore and Associates (UK) Limited, makers of the world famous GORE-TEX® Fabric.

After fifteen years of working together, Arco and Gore saw an opportunity to work more closely together as a “partnership”. This new relationship has enabled the development of progressive new ranges of hazardwear, weatherwear and footwear.

Over the years the two companies have established a mutual respect for each other’s businesses and way of working. Both companies have excellent reputations and are seen as experts in their respective fields and share a passion for innovation and developing quality products.

Arco and Gore have worked together to build world class, functional products. Gore are so passionate about their

products being of the highest quality, they have developed their own suite of quality standards. No other garments and footwear are tested more relentlessly inside and out than GORE-TEX® products. Gore has proven, with rigorous testing, that the new range of Arco GORE-TEX® products far exceed the relevant Arco standards that general weatherwear, hazardwear and footwear are tested to.

Arco products with GORE-TEX® Fabrics have been tested throughout development and through the supply chain. The production methods and prototype products were tested and approved by Gore before proceeding to production. The finished products were also tested for quality to ensure high standards are maintained.

“ We are delighted to announce this strategic partnership with Gore, their reputation has been built on the undoubted quality of its products and, like Arco, is a company focused on discovery and product innovation. We will utilise this partnership to develop state of the art products that will provide protection for those working in critical environments across all industries. ”

Thomas Martin and Neil Jowsey, Arco’s Joint Managing Directors

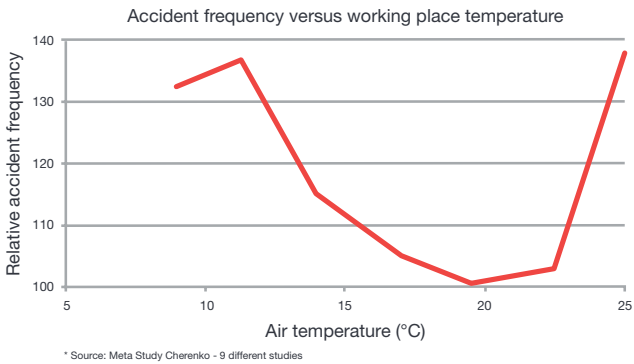


Productivity and Effectiveness Studies



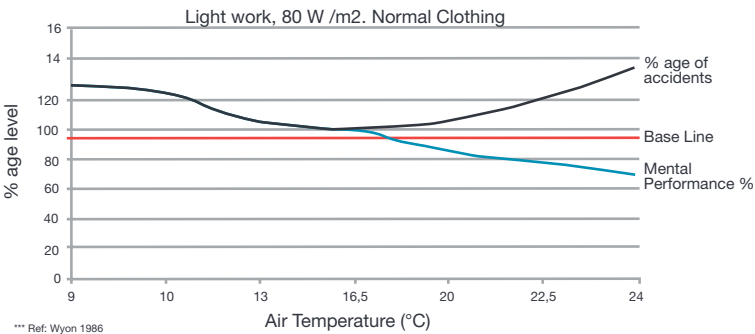
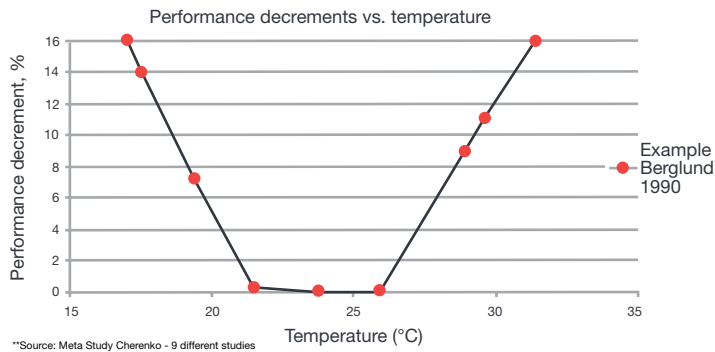
Studies have shown that greater comfort helps concentration and thus increased effectiveness and productivity. If a worker's body temperature gets too high or too low they will be distracted which increases the risk of accidents.

Safety and comfort benefits*
Relative accident frequency increases more than 35% with excessive cold and warm work place temperatures.



Temperature Affects Performance**
Performance deteriorates off if the temperature is too hot or cold.

Temperature affects Accident Levels and Mental Alertness***
The percentage of accidents increases when temperatures are too hot or too cold.



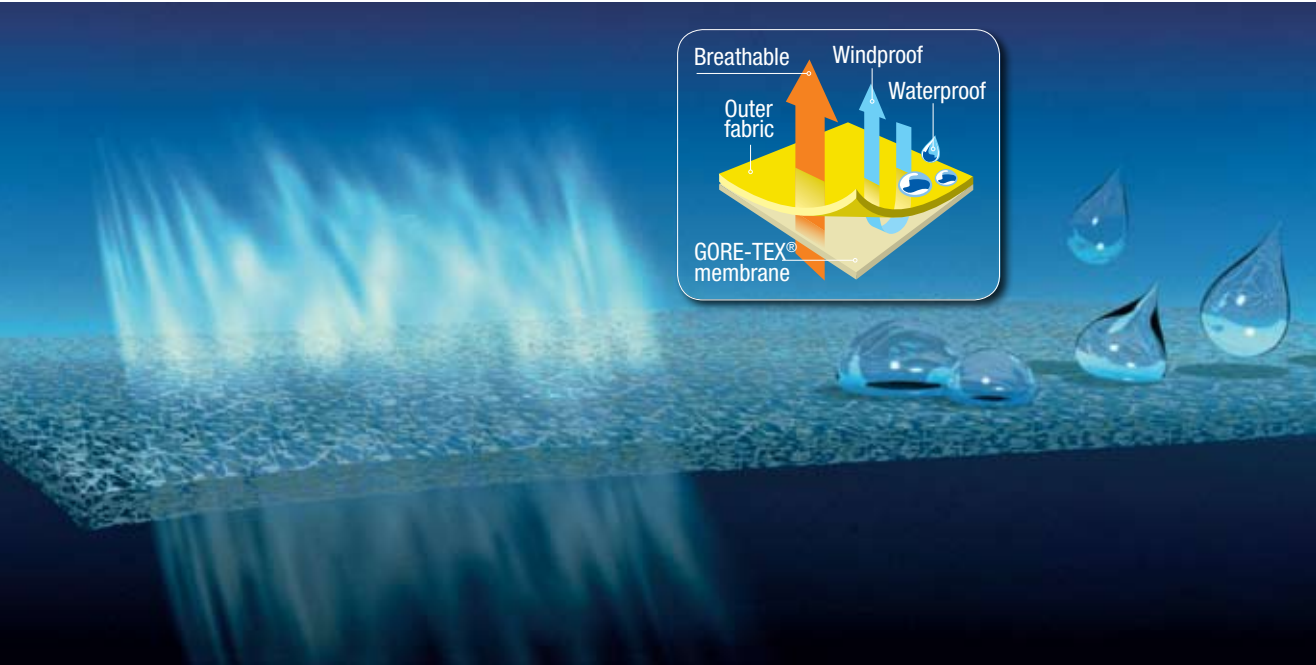
GORE-TEX® Fabric Technology

GORE-TEX® products allow wearers to work in ultimate comfort and with durable protection by providing best-in-class material, construction and technologies. The secret of GORE-TEX® Fabric lies within its revolutionary bi-component membrane.

The GORE-TEX® Membrane is the core of all GORE-TEX® products. It is durably waterproof, windproof and breathable, and is permeable for water vapour. The result, water from the outside will never penetrate, cold winds cannot pass through, and perspiration can escape easily. Therefore the body always stays dry and comfortable with GORE-TEX® Products.

What is the GORE-TEX® Membrane?
The GORE-TEX® Membrane contains over 1.4 billion microscopic pores per square cm (9 billion per inch). These pores are 20,000 times smaller than a water droplet, but 700 times larger than a water vapour molecule, which makes the GORE-TEX® Membrane waterproof from the outside, while allowing perspiration to escape from the inside.

Integrated into the membrane structure is an oleophobic or oil hating substance that allows moisture vapour to pass through, but creates a physical barrier to contaminating substances. In order to meet specific needs of each use, Gore has developed different GORE-TEX® Membranes and applies them as appropriate.



WATERPROOF, WINDPROOF, BREATHABLE

Products Designed to Perform

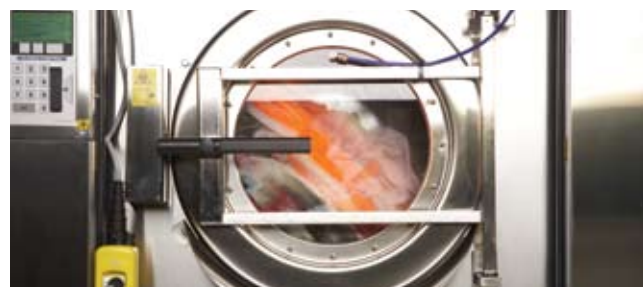


Gore has established a comprehensive set of tools across the entire supply chain to ensure that GORE-TEX® products measure up to their promise. This is unique in the textile and clothing industry.

- GORE-TEX® products are only manufactured in certified factories. Gore certifies every manufacturer and ensures that they adhere to strict Gore Performance Standards (GPS)
- No other performance workwear, hazardwear and footwear is tested more relentlessly inside and out than GORE-TEX® products. Every new GORE-TEX® product prototype is challenged by a series of laboratory tests and then real life tests out in the field.
- Gore not only tests the fabric but the entire system of outer material, insulation, membrane and lining has to prove its excellence under the toughest conditions. Only when the product fulfils the high construction standards of GORE-TEX® products, is it cleared for production.

- Gore's development work concentrates on building up a comprehensive knowledge base about the best materials, designs and technologies as well as analysis of the end product (clothing and footwear)
- Gore is the only laminate manufacturer that supplies seam tape technology to ensure the seams of the garment remain waterproof, even after numerous washes.

To see the full Gore testing regime visit www.arco.co.uk/gore-tex



GORE-TEX® Fabrics Standards & Testing



Gore Climate Chamber

Gore has made it a task to research the physiological interaction between person and clothing on a scientific basis, subjecting it to practical tests. For this reason, Gore carries out physiological clothing tests on a wide variety of clothing in the company's own climate chambers, and scientifically evaluates the clothing's effects on the human body and physical well-being. Inside the Gore climate chambers the most varied climatic conditions are easily created. The temperature range extends from -20 °C to +45 °C, the humidity is adjustable from 20% to 95%, and varying wind speeds can be simulated. This gives Gore the opportunity to simulate even extreme weather conditions, thus allowing us to develop garment constructions that are better suited to end users' needs

Ret test to measure breathability

The Ret test quantifies a fabric's resistance to heat loss by moisture vapour transfer: it depends on the restriction of the passage of a water vapour molecule from an area of high moisture concentration to an area of low moisture concentration. The lower the resistance to moisture vapour transfer (the Ret value), the easier sweat can evaporate from the skin and the lower the Ret value, the more breathable the textile is.

Waterproofness Test (Hydrostatic Head Tester)

The Waterproofness (Suter) Test determines the water pressure resistance of waterproof materials. The pressure range is adaptable. Gore standards are of such a high level that durable waterproofness is ensured even under stress conditions

Martindale Abrasion Test

To test GORE-TEX® Fabrics' resistance to abrasion, the Martindale Abrasion Tester uses wool or sandpaper to rub the fabric repeatedly with considerable pressure. Depending on how tough the fabric needs to be, this rubbing can continue for several hours.

Field Tests

Lab testing, while important and valuable, is only a prediction of performance. What makes or breaks protective garments and footwear is how they perform in the field. After all, machines don't wear clothes, people do. That's why Gore makes sure all fabrics stand up to real life situations. Before they are approved for use, Gore products must survive rigorous field testing, actual use in real environments.

Arco and Gore have worked together to build worldclass functional garments and footwear, and Gore has proven this with rigorous testing.

No other performance workwear is tested more relentlessly inside and out than GORE-TEX® products. We first had our production methods and prototype products tested and approved by Gore before proceeding to production.

Gore Rain Tower Test

Proves the waterproofness of the hazardwear engineered with GORE-TEX® Fabrics. The Gore rain tower is the most important test method to ensure that the garments are waterproof under even the most difficult practical conditions. The Gore rain tower test exceeds the conditions set out in EN14360. This robust test exposes sample garments to a range of rain conditions from moderate to heavy, vertical and wind driven while worn by a rotating mannequin equipped with sensors to detect any leakage. If leaks are detected, construction and functional design is rejected or modified to improve its performance until it passes, thus allowing us to develop garment constructions that are better suited to end users' needs.

European Standards

Our new range of hazardwear garments has been designed and produced to the same high standards you have come to expect from Arco.

We stay informed and are up to date with current regulations so, you can rest assured you are in safe hands. All of our new hazardwear garments have been tested and approved to meet all relevant standards.

High Visibility Clothing

The main feature of high visibility clothing is that it is made from materials that aid conspicuity both day and night. To enhance the visibility of a wearer during the day, garments are made from fluorescent materials of standard colours. The visibility of a person is aided at night by the inclusion of retroreflective tapes within the construction of a garment. Retroreflective materials reflect a high proportion of light back towards its point of origin.

EN 471:2003+A1:2007 – High Visibility Clothing

The standard ensures that the wearer is capable of being seen under any daylight conditions, by vehicle headlights in the dark and in hazardous situations. There are three classes of garment based on the conspicuity levels they provide. All garments must have reflective tape not less than 50mm.

- **Class three – The highest level of conspicuity**
Minimum background material 0.80m²
Minimum retro reflective material 0.20m²
- **Class two – intermediate protection**
Minimum background material 0.50m²
Minimum retro-reflective material 0.13m²
- **Class one – low level protection**
Minimum background material 0.14m²
Minimum retro reflective material 0.10m²



Maintaining Long-Term Visibility

It is essential to maintain the cleanliness of high visibility garments. If high visibility garments are dirty the visibility will be compromised therefore frequent cleaning (including dry-cleaning) is best to maintain high visibility. Arco hazardwear engineered with GORE-TEX® Fabrics can be washed at 60°C (and dry-cleaned) while maintaining durable waterproofness, and colour fastness. The seam tape technology has also been formulated to withstand numerous washes.

The label of EN 471 garments indicates a number of tested washcycles, this figure only relates to the retroreflective tape it does not mean that the garment can be washed so many times and still be waterproof. Arco hazardwear engineered with GORE-TEX® Fabrics can be washed regularly and remain waterproof.



Protection Against Rain

EN 343:2007 – Protection Against Rain

Waterproofness and water vapour permeability are the main requirements for rainproof clothing materials.

- Waterproofness relates to water coming through the protective clothing materials from the outside (e. g. due to rain, fog, snow).

- Water vapour permeability (usually called “breathability”) describes the physical capacity of the material to allow water vapour, sweat etc. to escape from the inside to the outside.

EN 343:2007 also contains requirements concerning the tensile strength, tear strength, seam strength and dimensional change resistance of the material:

- The mechanical strength requirements, i.e. the tensile, tear and seam strengths, apply in each case to the outer layer of material used to make the protective garment – for laminated fabrics, to all layers that are firmly attached to the outer material.

EN 14360:2004 for Protective Clothing Against Rain

Suitable protection against bad weather conditions is one of the central functions of protective clothing. This European standard defines test conditions under which ready-made garments are exposed to heavy rain, and it is a positive addition to EN343.

EN 14360:2004 creates a basis on which the waterproofness of rain-protective clothing can be tested throughout the EU under appropriate practical conditions.

Impermeability to rain is an important characteristic that is tested on the complete garment in order to test in particular its constructional design characteristics. To do so, a stationary test mannequin is exposed to artificial rain.

EN 14360 applies to the testing of jackets, trousers, coats and one or two piece suits.



Arco GORE-TEX® Hazardwear



Arco GORE-TEX® Hazardwear garments will keep the wearer dry and comfortable in real working situations throughout the lifetime of the garment.

The new Arco GORE-TEX® Hazardwear garments have been made from Two layer GORE-TEX® Burano fabric plus GORE-SEAM® Tape sealed seams with special attention to critical points such as fabric joins or seams. Garments have been engineered to keep you dry and comfortable, whilst being long lasting and durable even in the most challenging conditions.

Hazardwear garments are designed to provide breathable comfort and durable waterproof and windproof protection and are ideal for a wide range of professional end uses. Arco GORE-TEX® Hazardwear garments are best in class and exceed the limited requirements of **EN 343:2003** (Protective Clothing against Rain).

Waterproofness: EN 343's highest requirement for waterproofness is only to 13kpa which is not sufficient for real working situations. GORE-TEX® Hazardwear is tested to 100kpa to ensure no water penetration, even with pressure on the shoulders from straps or when kneeling down.

Breathability: Breathability is the key to comfort at work, and therefore safety and productivity. Even **EN 343**, Class 3 only requires Ret of 20, independent institutes show that Ret values of 6-10 are needed for work comfort. GORE-TEX® Laminate rates as the most breathable, durable laminates available in class.

Why Invest in GORE-TEX® Hazardwear garments

- Comprehensive and integrated quality systems ensure a longer garment product life than conventional hazardwear
- Longer lasting products give reduced lifecycle and buying costs
- 30 years experience and real life end user trials clearly demonstrate that garments are "fit for use"
- Greater physiological comfort helps concentration and thus increases safety, effectiveness and productivity
- Durability and compliance to standards after repeated wash

Arco GORE-TEX® Hi Vis Coat

This three quarter length coat offers extended protection against the elements; it will keep you warm and dry and allow your skin to breathe so that you don't overheat while working.

Conforms to: EN 471:2003+A1:2007 Class 3, EN 343:2003/A1:2007 3, 3 and exceeds the test requirements of EN 14360:2004 with no leakage.

Sizes: S-XXL

Ref: 18G2100



Arco GORE-TEX® Hi Vis Bomber Jacket

This GORE-TEX® Hi Vis Bomber jacket provides a shorter length alternative to the three quarter length jacket. For those who prefer a shorter jacket for freedom of movement.

Conforms to: EN 471:2003+A1:2007 Class 3, EN 343:2003/A1:2007 3, 3 and exceeds the test requirements of EN 14360:2004 with no leakage.

Sizes: S-XXL
Ref: 18G2200



Zip off hood & draw cord allows the flexibility of having the hood on or off

Fleece lined collar provides comfort when zipped up

Internal map/tablet pocket

Internal mobile phone pocket allows dry, safe storage of personal items in extreme conditions

Windproof, waterproof & breathable material

Three external pockets

Knitted storm cuff and adjustable wrist closure provides additional warmth from the elements

Fully tapered seams stays waterproof, windproof and breathable

Elasticated waist to rear provides a secure fit

Arco GORE-TEX® Hi Vis Overtrouser

These Arco GORE-TEX® Hi Vis Overtrouser can be paired with either jacket to provide full length hi vis protection, ideal for working outdoors.

Conforms to: EN 471:2003+A1:2007 Class 1, EN 343:2003/A1:2007 3, 3 and exceeds the test requirements of EN 14360:2004 with no leakage.

Sizes: S-XXL
Ref: 18G2300



Elasticated waist provides comfort and a secure fit

Fully tapered seams ensures the garment will stay waterproof, windproof and breathable

Zip access on lower leg enables easy donning and doffing whilst wearing footwear

Arco GORE-TEX® GO/RT Hazardwear



Arco GORE-TEX® GO/RT hazardwear garments are made from GORE-TEX® Burano two layer fabric which has been engineered to keep you dry and comfortable in the most challenging conditions. These garments offer the ultimate in performance, protection and comfort in extreme weather conditions, and the two layer fabric is durable and long lasting.

GO/ RT 3279 Approved High Visibility Workwear

On the UK railway networks it is a mandatory requirement for all people working on the track or lineside to wear High Visibility workwear as part of their Personal Protective Equipment (PPE). This workwear is fluorescent orange in colour and has the addition of retroreflective stripes incorporated in the manufacture.

The **GO/RT 3279** standard ensures garments meet at least **class 2 of EN 471** for the minimum area of high visibility materials used within a garment.

Background material

The background material must be fluorescent orange with chromaticity and luminance. The change in chromaticity after light exposure and colourfastness shall conform to the requirements of BS EN 471: 2003 High Visibility Clothing for Professional Use.

Retro-reflective material

The photometric and physical performance requirements for the retro reflective material shall conform to the requirements stipulated in BS EN 471:2003, class 2 - Intermediate Protection Level: Bands of retro reflective material shall not be less than 50mm wide. Minimum background material 0.50m². Minimum retro reflective material 0.13m².

Marking

Except in the clothing worn by a Rail Incident Officer or First Aider, the background material shall not be obscured by the addition of any other features, unless provision has been allowed for in the specification such that the minimum areas of background and retro reflective material have been preserved.

The only permitted features are the name and logo of the employing company, and titles or designations associated with the management of incidents, as listed:

- Rail Incident Officer (RIO)
- Press Officer
- Recovery Engineer
- First Aider
- Train Operators' Liaison Officer (TOLO)

Arco GORE-TEX® GO/RT Hi Vis Coat

This three quarter length coat offers extreme protection against the elements; it is warm, waterproof and breathable.

Conforms to: EN 471:2003+A1:2007 Class 3, GO/RT 3279, EN 343:2003/A1:2007 3,3 and exceeds the test requirements of EN 14360:2004 with no leakage

Sizes: S-XXL

Ref: 18G2000



Arco GORE-TEX® GO/RT Hi Vis Bomber Jacket

The bomber jacket offers a shorter alternative to the three quarter length coat for those who prefer a waist length jacket for greater freedom of movement, or for those working in better weather conditions.

Conforms to:
EN 471:2003+A1:2007 Class 3, GO/RT 3279,
EN 343:2003/A1:2007 3, 3 and exceeds the test requirements of EN 14360:2004 with no leakage
Sizes: S-XXL
Ref: 18G1900



Arco GORE-TEX® GO/RT Hi Vis Overtrouser

Provides full length hi vis protection when worn with either the hi vis coat or bomber jacket. Additional waterproof, breathable protection against extreme weather conditions.

Conforms to:
EN 471:2003+A1:2007 Class 1, GO/RT 3279,
EN 343:2003/A1:2007 3, 3 and exceeds the test requirements of EN 14360:2004 with no leakage
Sizes: S-XXL
Ref: 18G1800





European Standards

EN 1149-5: 2008 Protective Clothing - Electrostatic Properties - Part 5: Material Performance and Design Requirements

This European Standard specifies material and design requirements for electrostatic dissipative protective clothing, used as part of a total earthed system, to avoid incendiary discharges.

The standard specifies 3 areas -

- 1) Performance requirements of materials
- 2) Design requirements
- 3) Marking & guidance

EN 13034:2005+A1:2009 (type 6 PB) Performance Requirements for Chemical Protective Clothing offering Protective Performance against Liquid Chemicals

This standard specifies the minimum requirements for limited use and re-useable limited performance chemical protective clothing.

Chemical protective suits (Type 6 PB) cover and protect at least the trunk and the limbs, e.g. one-piece coveralls or two piece suits, with or without hood, boot-socks or boot-covers.



EN ISO11612 Protective Clothing to Protect against Heat and Flame

All garments shall meet the requirements of A1. All garments shall meet at least one heat transmission test.

- Code A1** – Limited flame spread to outer surface
- Code B** – Convective heat
- Code C** – Radiant heat

This standard also includes garments that are designed to protect against the risk of exposure to molten metal splash.

EN 11611: 2008 Protective clothing for use in welding and allied processes

Clothing is intended to protect the wearer against spatter (small splashes of molten metal), short contact time with flame, radiant heat from the arc, and minimise the possibility of electrical shock by short-term, accidental contact with live electrical conductors at voltages up to approximately 100v in normal conditions of welding.

Hazardwear with GORE-TEX® heat & flame garments with GORE® PYRAD™ Fabric Technology

GORE® PYRAD™ Fabric Technology is unique to Gore and its accredited suppliers. The fabric provides protection from burns through self extinguishing, thermal stability and thermal insulation of the laminate.

Upon heat and flame exposure the laminate forms a stable and non-flammable char to protect the user and because of the robust technology and the excellent insulation properties the physical integrity of the laminate is maintained after heat and flame exposure which means there is no hole formation.

Flame Retardant (FR) Protection

While many flame retardant garments meet the lower level international standard **EN ISO14116** Protective clothing against limited flame spread materials, all of the Arco PYRAD™ hazardwear garments meet the higher international EN standard **EN ISO11612** Protective Clothing against Heat and Flame. The aim of both standards is to reduce the possibility of clothing burning and causing a hazard to the wearer, but the lower international standard **EN ISO14116**, is more suited to 'circumstances where there is no significant heat hazard and without presence of another type of heat'.

If you are working in an environment where there is a chance of heat you don't want to take a risk that your clothing will burn through to your skin: if it does come into contact with a heat source, you need to be sure that you are protected for any eventuality. With Arco GORE-TEX® PYRAD™ Technology you can be sure that if your garments do start to burn that the flame will quickly extinguish and no hole will be formed, offering effective protection to the wearer.

Lightweight Fabric

With many FR garments the higher the level of protection the more bulky the garment, with the Arco garment made from GORE® PYRAD™ Technology this is not the case. Each garment is lightweight and features a soft lining making them really comfortable to wear.

Excellent Climate Control

Garments made from transfer coated polyamides or other coated FR fabrics tend to retain the wearer's body heat which results in the wearer getting hot, sweaty and uncomfortable which affects physiology and mental awareness. All Arco GORE® PYRAD™ Technology hazardwear possesses the same properties as the GORE-TEX® Hi Vis Garments, they are fully waterproof, windproof and breathable so will keep the wearer comfortable throughout their working day.

Many FR garments require a liner to be worn which can compromise the FR protection provided. With our garments this is not the case, the jacket or salopettes provides full FR protection without the need for a liner.

Antistatic Technology

The hazardwear garments also include durable anti-static properties which are anchored in the membrane which means there is no electrical discharge which prevents ignition of flammable atmospheres. The anti static properties of the garment are embedded into the fabric and will last the life time of the garment even after washing.



Hazardwear with GORE-TEX® heat & flame garments with GORE® PYRAD™ Fabric Technology

The New Arco3 GORE-TEX® PYRAD™ garments are highly innovative, made from an extremely lightweight fabric they are fully waterproof, windproof, breathable and flame retardant.

Made from 220g/m² weight two layer fabric, this is the lightest weight GORE-TEX® ISO 20471 compliant Fabric available offering heat and flame resistance to **ISO 11612**. These garments comply with six European standards, offering the highest level of protection for use in challenging and extreme environments.

Arco3 GORE-TEX® PYRAD™ Jacket

This jacket offers an extremely high level of protection and looks stylish too. Made from 220g/m² lightweight two layer fabric it is functional and durable, it is the lightest weight GORE-TEX® Fabric available offering heat and flame resistance to **ISO 11612**.

Conforms to:
EN ISO 20471:2012 Class 2, EN 343:2003+A1:2007 3, 3 and EN 14360:2004, EN 1149-5:2008, EN 13034:2005+A1:2009 Type 6 (PB), EN ISO 11612:2008 (A1 B1 C1), EN ISO 11611:2008 A1 - class 1

Sizes: S-XXL
Yellow/ Navy Ref: 18G2500
Orange/ Navy Ref: 18G2600



Arco3 GORE-TEX® PYRAD™ Salopettes

When worn together with the Arco3 GORE-TEX® PYRAD™ jacket, these salopettes offer full body protection from heat and flame. Made from the lightest weight fabric, they are easy to wear and very comfortable.

Conforms to: EN ISO 204:2012 Class 1, EN 343:2003+A1:2007 3,3 and EN 14360:2004, EN 1149-5:2008, EN 13034:2005+A1:2009 (Type 6 PB), EN ISO 11612:2008 (A1 B1 C1) and EN ISO 11611:2008 A1 - class 1

Sizes: S-XXL

Yellow/ Navy Ref: 18G2400

Orange/ Navy Ref: 18G2700



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.

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 uniquely tailored for the end use. All shoes and boots are subjected to rigorous quality inspections.

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, such as Trojan® Black Wool Sock Ref: 2647400



GORE-TEX® Footwear Standards and Testing

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 low footwear standard **EN ISO 20345** requires only 1,000 steps in shallow water and permits 3 cm² ingress of water.

Gore's standard for waterproofness is much higher than the EN ISO standard

The table below shows the criteria for the EN ISO standard, compared to Gore's own tests for waterproof footwear.

	GORE-TEX® Footwear	EN ISO 20345/347
Waterproofness	300.000 m	500 m
Tested water level	up to vamp	sole line
Allowed water entry	none	up to 3 cm²

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.



Trojan® GORE-TEX® Safety Trainer

Hardwearing, leather and mesh GORE-TEX® Safety Trainer.

- Waterproof and breathable GORE-TEX® Bootie lining for maximum waterproof protection and comfort.
- Rubber/EVA sole combines durability with excellent slip resistance.
- Lightweight leather and mesh upper aids breathability.
- Anti-static.
- Composite toecap and midsole.
- Smartmask™ deluxe footbed providing extreme comfort, ideal when working on your feet all day.

Approved to: 200 joule EN ISO 20345

Sizes: 6 – 12

Ref: 6P1100



Trojan® GORE-TEX® Safety Hiker Boot

Hardwearing, leather and mesh GORE-TEX® Safety Hiker.

- Waterproof and breathable GORE-TEX® Bootie lining for maximum waterproof protection and comfort.
- Rubber/EVA sole combines durability with excellent slip resistance.
- Lightweight leather and mesh upper aids breathability.
- Anti-static.
- Composite toecap and midsole.
- Smartmask™ deluxe footbed providing extreme comfort, ideal when working on your feet all day.

Approved to: 200 joule EN ISO 20345

Sizes: 6 – 12

Ref: 6P1200



Trojan® GORE-TEX® Walker Black Safety Boot

Stylish, hard wearing, GORE-TEX® walking safety boot.

- Waterproof and breathable GORE-TEX® Bootie lining for maximum waterproof protection and breathability.
- Black full grain durable leather upper.
- Rubber/EVA sole combines durability with excellent slip resistance.
- Anti-static.
- Composite toe cap and midsole.
- Smartmask™ deluxe footbed providing extreme comfort when working on your feet all day.

Approved to: 200 joule EN ISO 20345

Sizes: 3 – 14

Ref: 6P1300

Trojan® GORE-TEX® Walker Brown Safety Boot

Stylish, hard wearing, GORE-TEX® walking Safety boot.

- Waterproof and breathable GORE-TEX® Bootie lining for maximum waterproof protection and breathability.
- Brown oil durable leather upper.
- Rubber/EVA sole combines durability with excellent slip resistance.
- Anti-static.
- Composite toe cap and midsole.
- Smartmask™ deluxe footbed providing extreme comfort when working on your feet all day.

Approved to: 200 joule EN ISO 20345

Sizes: 6 – 12

Ref: 6P1400



DeWALT® Apprentice GORE-TEX® Honey Safety Boot

Lightweight and flexible waterproof GORE-TEX® lined safety boot that keeps feet dry and comfortable.

- Nubuck leather upper.
- Aerospace mesh lining, high-wicking for extra comfort.
- Durable rubber outsole with moulded EVA footbed for increased comfort.
- Anti-bacterial dual-density removable footbed.
- Heat-resistant to 300°C.
- Steel toe cap and midsole.

Approved: 200 joule EN ISO 20345

Sizes: 6 – 12

Ref: 6M9500

Wolverine® Harden GORE-TEX® Safety Boot

An oiled nubuck leather upper hiker boot that is built to last.

- Breathable waterproof GORE-TEX® Membrane lining.
- Removable full-cushion footbed with mesh sock liner.
- Compression moulded EVA midsole.
- Rubber outsole.
- Cement construction.
- Steel toe cap and midsole.

Approved to: 200 joule EN ISO 20345

Sizes: 6 – 12

Ref: 6M8600



Goliath® Orion GORE-TEX® Utility Safety Boot

GORE-TEX® MS Light Rock four ply seam sealed bootie technology.

- 100% Waterproof and breathable to keep the wearer dry and comfortable at all times.
- Excellent shock absorption and cushion comfort sole ensures greater comfort.
- Heat resistant to 300°C.
- Anti-static.
- Midsole.

Approved to: 200 joule EN ISO 20345

Sizes: 6 – 12

Ref: 6P1600



Goliath® Centaurus GORE-TEX® Ankle Safety Boot

Full-grain leather GORE-TEX® Safety ankle boot designed for use in extreme conditions.

- Waterproof and breathable providing excellent user comfort.
- Lightweight full grain leather upper with ridged bump cap for extra durability.
- Excellent shock absorption and cushion comfort sole ensures greater comfort.
- Heat resistant to 300°C.
- Anti-static.
- Midsole.

Approved to: 200 joule EN ISO 20345

Sizes: 6 – 12

Ref: 6P1700



Steitz GORE-TEX® Black Safety Boot

Fully waterproof full-grain leather boots. Breathable GORE-TEX® Lining provides waterproof, breathable protection for your feet. Ideal for when you are working on your feet all day.

- Full length moisture-wicking removable fleece insole.
- Cushioned collar offers ankle support and comfort.
- Hard-wearing durable rubber out sole provides slip resistance in many environments including oil based surfaces.
- VARIO weight balance heel absorption.
- Steel toe cap and midsole.
- Heat-resistant to 220°C.

Approved to: 200 joule EN ISO 20345

Sizes: 6 – 13 Ref: 6S1100



Steitz GORE-TEX® Black Safety Boot

Waterproof and breathable protection for your feet. Full-grain leather boot with waterproof and breathable GORE-TEX® Lining to keep your feet dry comfortable whilst working on your feet all day. Fleece lining makes these boots ideal for when working in colder conditions.

- Full length removable fleece insole provides excellent moisture wicking.
- Hard-wearing PU/Rubber sole unit provides excellent slip-resistance.
- VARIO weight balance heel absorption, with pivot point technology helps reduce fatigue whilst maximising comfort.
- Steel toe cap and midsole.
- Heat-resistant sole unit to 220°C.

Approved to: 200 joule EN ISO 20345

Sizes: 6 – 13

Ref: 6S1200



Steitz Oslo II XB GORE-TEX® Safety Boot

Ideal for when you are working on your feet all day. Full grain waterproof boots with waterproof and breathable GORE-TEX® lining which helps to keep feet dry and comfortable all day long.

- Full length moisture wicking removable fleece insole.
- Cushioned collar offers ankle support and comfort.
- Hard wearing durable rubber out sole with excellent abrasion and cut resistance.
- VARIO weight balance heel absorption.
- Steel toe cap and midsole.
- Heat-resistant to 220°C.

Approved to: 200 joule EN ISO 20345

Sizes: 6 – 13

Ref: 6S1300

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