workMaster™
by RESPIREX

PERFORMANCE PROTECTIVE FOOTWEAR

Workmaster™ boots are used and trusted in the most demanding and safety critical industries. We have built our reputation on the performance, safety and comfort of our products.

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THE WORKMASTER™ STORY

THE HIGHEST SPECIFICATIONS

Our category leading dielectric footwear is used globally to protect high voltage workers and our Hazmax™ boots are used wherever people work with dangerous or aggressive chemicals.

We have developed a new compound, **Cryolite** – a lightweight, environmentally friendly material for boots used in agriculture, food processing and general industry. Additionally our new **Cryotuff** compound delivers durable cut resistant footwear for longer life in tough environments. **Cryotuff** boots include a blown mid-sole for reduced weight and greater cushioning to reduce wearer fatigue.

Workmaster™ boots are manufactured at our automated state of the art footwear factory based in Reigate (in the United Kingdom). The injection moulding manufacturing process guarantees a seamless, leak-free construction. This modern high-volume production facility enables the manufacture of different types and styles of boots within the same operating run, giving the flexibility to meet rapidly changing market demands.

With an in-house UKAS accredited materials testing laboratory we are able to perform a range of chemical permeation and physical testing to European, American and international standards. We have extensive chemical permeation data for our Hazmax™ boots, but if you need data for a different chemical (or boot) please get in touch.

Workmaster™ is a division of Respirex™, a leading supplier of personal protective solutions, specialising in the design and manufacture of high-performance chemical, particulate and respiratory protective clothing.

www.respirexinternational.com

OUR BOOT FEATURES

All of our boots are approved to either EN ISO 20345:2011 or EN ISO 20347:2012 depending on their application. These icons are used throughout the catalogue to highlight the specific features and benefits of each boot.

S5 Category Safety Boot

Complies with the requirements for safety footwear in EN ISO 20345:2011 and additionally includes a closed set region, antistatic properties energy absorption of seat region, resistance to fuel oil, penetration resistance and a cleated out-sole.

S4 Category Safety Boot

Complies with the requirements for safety footwear in EN ISO 20345:2011 and additionally includes a closed set region, antistatic properties energy absorption of seat region and resistance to fuel oil.

SB Category Safety Boot

Complies with the requirements for safety footwear in EN ISO 20345:2011.

OB Category Occupational Footwear

Complies with the requirements for occupational footwear in EN ISO 20347:2012.

Energy Absorbing Heel

Provides a minimum of 20J cushioning at the heel, reducing the risk of fatigue and injury to joints and spine.

Boot Marking: E

Cut Resistant

Resistance to repeated cutting strokes from a sharpened blade (to the method defined in EN 388). Achieves a result of class 4 (minimum pass is 2.5).

Boot Marking: CR

Toecap and Mid-sole

Expoy coated steel toecap fitted tested for 200J impact resistance and 15kN compression. Stainless steel penetration resistant mid-sole fitted with penetration resistance greater than or equal to 1100N.

Boot Marking: P

Toecap

Epoxy coated steel toecap fitted tested for 200J impact resistance and 15kN compression.

Fuel and Oil Resistant

The outer sole is resistant to oil, ensuring the working life of the boot won't be compromised if used in oily environments. The test involves immersion in oil for 22 hours after which the sole is checked for excessive swelling, shrinkage or increased hardness.

Boot Marking: FO

Cold Insulation

The thermal insulation properties of the boot ensure that the temperature decrease idside a boot at 23°C when placed in a cold chamber at -17°C is less than 10°C after 30 minutes when measured at the upper surface of the insole.

Boot Marking: CI

Slip Resistant SRA

Tested and approved for resistance to slip on a ceramic tile floor coated with a dilute soap solution of sodium lauryl sulphate (NaLS). The test measures forward slip on the heel and with the boot flat to the floor.

Boot Marking: SRA

Slip Resistant SRC

Tested and approved for resistance to slip on a ceramic tile floor coated with a dilute soap solution of sodium lauryl sulphate (NaLS). The test measures forward slip on the heel and with the boot flat to the floor.

Boot Marking: SRC

High Voltage

Dielectric boots that comply with the EN50321 standard for electrically insulating footwear.

Hot Contact

The sole has been tested for contact with a hot metal surface at 300°C for 60 seconds.

Boot Marking: HRO

Heat Resistant

Approved to EN15090:2012 F3A, the fire fighter boot standard.

Antistatic

The electrical resistance of the boot falls between 100 kΩ and 1000 MΩ ensuring that any build up of static charge by the wearer will be conducted safely to earth.

Electro-Static Discharge

This boot is suitable for use in Electrically Protective Areas (EPA) conforming to EN 61340-5. The electrical resistance falls between 100 kΩ and 35 MΩ.

Chemical Protection

EN 13832-3:2006 approval for footwear highly resistant to chemicals.

WHAT MAKES OUR BOOTS DIFFERENT?

OUR BOOTS INCORPORATE THE FOLLOWING FEATURES

- Biodegradable
- Light-weight
- Cushioning
- Cut-Resistance
- Vulcanised Rubber Sole
- Chemical Resistance Testing to EN 165...
- 100% High-Voltage Testing on all Dielectric Boots
- AC & DC Electrical Testing (Dielectric Boots)
- Wide Comfort Fitting
- Reach Compliance
- Extended Shelf Life
- CBRN Warfare Agent Testing
- Machine Washable at 40°C

BENEFITS OF A VULCANISED RUBBER SOLE

Over 30% of industrial accidents result from slips, trips and falls - as Workmaster™ boots are frequently used in environments where there are liquids present a slip resistant sole is crucial, which is why we provide the option of a high-performance vulcanised rubber sole on our boots.

This provides a number of important benefits:

- Slip resistance is twice that required by EN 13287 SRA and SATRA TM144 standards
- Grip is 30% better than with a conventional safety boot sole
- Wear resistance is 2 to 3 times that of conventional soles
- Oil resistant, non marking Nitrile Rubber compound
- The sole is resistant to fuel and oil
- Greater cut resistance than conventional soles
- Resistant to hot contact for 60 seconds at 300ºC
- Cold insulation

OUR COMPOUNDS

We have six compound families we use in our Workmaster™ boots that enable us to provide solutions for a wide range of industries and applications:

Hazmax™
Widely used and highly effective chemical protection

Dielectric
Protection for high voltage workers

Cryotuff
Extremely durable providing protection against oils, common cleaning agents and solvents

Cryolite
Lightweight and environmentally friendly with excellent low temperature performance

ISOTEC
Heat and Flame Resistant

Solestar
A cost effective PVC based compound for general purpose footwear

BOOT FEATURES

1. Slip-resistant vulcanised rubber sole
2. Steel toe cap
3. Stainless steel mid-sole
4. Comfort insole
5. Cushioned heel
6. Kick-off lug
7. Adjustable height
8. Single piece injection moulded construction
9. Non-wicking polyester lining

Not all features are present on all boots - please check the product page for the specific boot you are interested in.

WHAT ABOUT THE TECHNICAL DETAILS?

CRYOLITE & THE ENVIRONMENT

PVC & Halogen Free - Our Cryolite boot range contains no Halogens (Halogens include Chlorine, Fluorine, Bromine and Iodine), commonly used in the production of PVC boots. When halogens reach their flammable temperature, they release dangerous plumes of toxic gases, such as hydrogen chloride.

Phthalate Free - Cryolite boots are also phthalate free (these are mainly used as plasticizers, primarily to soften PVC) - Research suggests that Phthalates may be endocrine disruptors that can interfere with hormone systems and may cause cancerous tumours, birth defects, and other developmental disorders.

Biodegradable - Cryolite boots will degrade in UV light or by natural oxidation or ozonolysis over a number of years (steel toe caps and mid-soles, if fitted, will not degrade, but pose no risk to the environment).

THE SCIENCE OF SLIP

There are two slip resistance tests specified in EN ISO 20345:2011 (with the method described in EN13287); the first is soapy water (Sodium Lauryl Suphate solution) on a ceramic tile. If the footwear passes this test then the boot can be marked **SRA**. The second is oil (Glycerol) on a steel plate, if the boot passes this test then it can be marked **SRB**. If a boot passes both the SRA and SRB test then it can be marked **SRC**.

There is a common misunderstanding that SRC is the best for slip resistance - this is not the case! Since the introduction of slip testing, accidents caused by slips have not reduced; this is because to pass the slip requirements on oily steel manufacturers have to sacrifice some slip performance in water, but most slip accidents occur where water is the contaminant (over 95%).

The SRB test (oil on steel) has a very low pass/fail limit and the error in measurement is +/- 50%. The pass value is so low that the probability of a fall in this environment is still high. Because of this it is expected that in the next revision of EN ISO 20345 the SRB test will be significantly changed and SRC removed.

We believe that is better to have a very high value for slip resistance for water on a ceramic tile than compromise the sole design to pass a flawed SRB test, particularly if most accidents occur in water. The recommendation is: to do a risk assessment; if the contaminant is water or water based then choose boots with good SRA performance. The slip test defined in EN 13287 and specified in EN ISO 20345:2011 can be performed on most flooring materials and contaminants. For further information and performance results please get in contact.

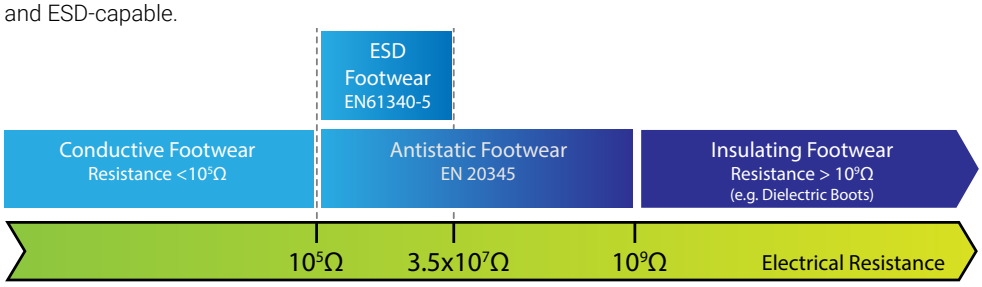
The Workmaster™ vulcanised rubber sole produces very high levels of slip resistance with soapy water on a ceramic tile, and these test results have been confirmed during customer wear tests. Due to the performance characteristics of the sole material, boots with our vulcanised rubber sole also achieve a pass on the SRB (oil on steel test), without compromising SRA performance and are marked SRC.

ANTISTATIC AND ESD FOOTWEAR

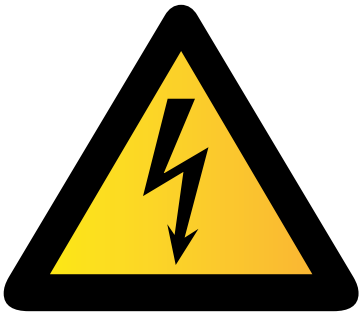
According to EN 20345: 2011, a shoe or boot is considered to be **antistatic** if its' measured electrical contact resistance falls between **100 kΩ** (10^5 ohms) and **1 GΩ** (10^9 ohms). With a lower resistance, a shoe or boot is considered to be conductive and at higher values, to be insulating. This 100kΩ to 1GΩ range is regarded a sensible compromise, giving protection from electrostatic build up and protection from electrical shocks at lower voltages.

For some industries the risk of uncontrolled electrical discharge (sparks) in potentially explosive atmospheres or the protection of sensitive electronic components and devices are also important considerations. In these situations, another standard for Electro-Static Discharge (ESD) control applies: EN 61340-5-1 ("Electrostatics. Protection of electronic devices against electrostatic phenomena").

For **ESD** footwear the lower limit of electrical resistance is **100 kΩ** (the same as for antistatic footwear) and the upper limit is **35 MΩ** (3.5 x 10^7 ohms). This means that a boot that is ESD-capable is by definition also antistatic at the same time. Conversely, not every antistatic boot is ESD-capable e.g. If an electrical resistivity of 100 MΩ is measured, the shoe is antistatic but outside the ESD limits. If the shoe has an electrical resistance of only 1 MΩ, it is both antistatic and ESD-capable.



INSULATING (DIELECTRIC) FOOTWEAR FOR LIVE WORKING



EN 50321-1:2018 is the new standard for insulating footwear for live working and was published earlier this year, it replaces EN 50321:1999 and is currently out for approval as an IEC standard which will make it a global standard, not just European.

The main changes in the 2018 revision are the introduction of new 4 classes (see below) for working up to 36 KV (the old standard only went up to Class 0 - 1 KV). Boots are now tested by filling with water instead of ball bearings to simulate water or perspiration potentiality wicking up the lining and creating a flash over. There is also now an electrical test after perforation of the sole by a nail, to ensure boots still give electrical protection after perforation. Even non-metallic perforation inserts can allow water to pass through them so will allow an electrical current to pass when the sole is punctured. The table below lists the classes and the test requirements:

	Maximum Working Voltage	Withstand Test Voltage	Leakage Current Test Voltage	Maximum Leakage Current
Class 00	**500V**	5kV	2.5kV	3mA
Class 0	**1kV**	10kV	5kV	5mA (8 mA)
Class 1	**7.5kV**	20kV	10kV	10mA (16 mA)
Class 2	**17.5kV**	30kV	20kV	18mA
Class 3	**26.5kV**	40kV	30kV	20mA
Class 4	**36kV**	50kV	40kV	24mA

(Overboot requirements are in brackets where they are different to knee high boots)

The new standard also includes requirements for DC current; all boots used for DC must be tested for DC according to the new standard and this is available as an option (contact us for details).

FOOD PROCESSING

For workers on their feet all day, boots that are comfortable, lightweight and warm are essential. In wet environments the additional slip resistance offered by a vulcanised rubber sole can reduce the potential for accidents and injury, while resistance to common disinfection agents, oil and fats ensures that boots provide a long service life.

FOODMAX

Foodmax is a lightweight safety boot that provides superior comfort, is resistant to the chemicals used in the food processing industry and maintains its flexibility in temperatures as low as -40°C. The boot utilises our Cryotuff compound and includes a blown mid-sole which reduces weight and improves cushioning, a cut and abrasion resistant shaft and a vulcanised rubber sole for superior cut and slip resistance.

- White or blue chemically resistant compound shaft
- Superb low temperature flexibility down to -40ºC
- Cold insulation to EN ISO 20345
- Cut resistance to EN388 Class 4 (requirement 2.5)
- Excellent resistance to oil and animal fats
- Grey vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SATRA TM144 standards two to three times the wear resistance of conventional soles
- Greater cut resistance than conventional soles
- Blown mid-sole improves cushioning by 50%, significantly reducing wearer fatigue and risk of injury to joints and spine

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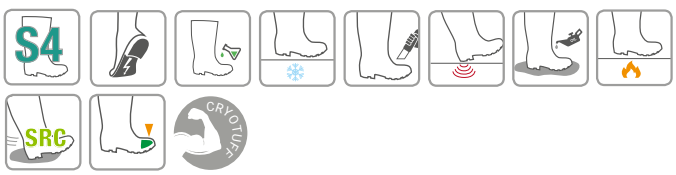

FOODLITE

A new exceptionally lightweight food industry safety boot designed for wearer comfort and low temperature flexibility. The Foodlite boot is available as an S4 safety boot with a steel toecap or as an O4 soft toe boot. Both versions use our Cryolite compound which is halogen and PVC free.

- 30% lighter than conventional boots of the same size
- Combines cold insulation to EN ISO 20345 with superb low temperature flexibility down to -40ºC
- Optional thermal liner
- Comfort insole (removable and machine washable)
- Available in white or blue

Part No. B01663/[EU Size] (white), B01663/B/[EU Size] (blue)

FOODLITE +

A new exceptionally lightweight food industry boot manufactured from our Cryolite material and designed for superior grip, wearer comfort and low temperature performance.

- 30% lighter than conventional boots of the same size
- Environmentally friendly; PVC and halogen free construction
- Vulcanised rubber sole for improved grip and greater durability
- Superb low temperature flexibility down to -40°C
- Resistant to common food industry chemicals and cleaning agents
- Cold insulation to EN ISO 20345
- Oil and fat resistant sole
- Heat resistant out-sole
- 200 Joule epoxy coated steel toe cap (soft toe version also available)
- Antistatic versions available as an option
- Available in white or blue

Part No. B01683/[EU Size] (white), B01683/B/[EU Size] (blue)

FOODMAX LV

Designed for abattoir use the Foodmax LV combines all the features of the standard Foodmax boot with electrical protection to EN 50321-1:2018 Class 0 to protect workers in areas where electrical stunning equipment is used.

- White or blue chemically resistant compound shaft
- Superb low temperature flexibility down to -40°C
- Cold insulation to EN ISO 20345
- Cut resistant shaft to EN388 Class 4 (requirement 2.5)
- Excellent resistance to oil and animal fats
- Vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles
- Fuel and oil resistant
- Greater cut resistance than conventional soles
- Suitable for live working at up to 1kV with every boot tested to 5kV

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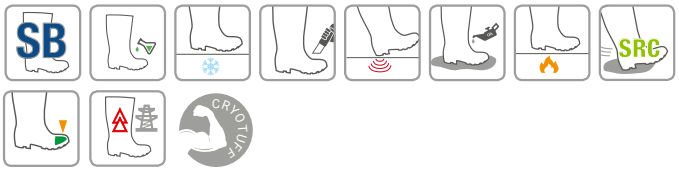


SOLESTAR F

The Solestar F safety work boot is fabricated from a specially formulated compound which is highly resistant to lactic acid and animal fats.

- 200 Joule Epoxy coated steel toe cap to EN ISO 20345
- Moisture absorbing insole (removable and machine washable)
- Oil and animal fat resistant Nitrile/Solestar compound sole
- Slip resistance to EN 13287 and SATRA TM144 standards
- Cleated out-sole for maximum grip

Part No. B01211/[EU Size]

FOODMAX MAXI OVERBOOT

Designed to be resistant to the chemicals used in the food processing industry, the Foodmax overboot features a vulcanised rubber sole for superior slip resistance and is designed to be worn over safety boots.

- Ingenious rear entry design ensures the boot is quick and easy to fit and remove
- Ideal for personnel who have to continually enter and exit hazardous/contaminated areas
- White chemically resistant compound shaft certified to EN 13832
- Excellent resistance to oil and animal fats
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standard

Part No. B01250/[M, L or XL]

FOODMAX COMPACT OVERBOOTS

A chemically protective front-opening overboot with a slip resistant sole designed to be worn over safety trainers.

- Single piece injection moulded construction with integral moulded fastener ensures there are no seams or mounting/fastener holes to leak
- No metal fasteners or components used in the construction, removing the potential for chemical corrosion

Part No. B01176/[M, L or XL]

AGRICULTURE

Our Farmlite and Taskpro boots are designed to provide superior wearer comfort with excellent thermal insulation properties, remaining supple at low temperatures to ensure they remain comfortable whatever the weather. Fitted with an anti-clogging vulcanised rubber sole these boots provide superior slip resistance in wet or muddy conditions.

FARMLITE

A new exceptionally lightweight boot for the farming and agricultural industries, designed using our Cryolite compound for wearer comfort, superior grip and low temperature performance.

- 30% lighter than conventional boots of the same size
- Vulcanised rubber sole for improved grip and greater durability
- Non-clogging outdoor sole
- Resistant to common agricultural chemicals
- Superb low temperature flexibility down to -40°C
- Cold insulation to EN ISO 20345
- 200 Joule epoxy coated steel toe cap (soft toe version also available)
- Environmentally friendly PVC and halogen free construction
- S5 and S4 Antistatic options available
- Comfort insole (removable and machine washable)

Part No. B01813/[EU Size]

TASKPRO

A durable, high-performance S5 safety boot with excellent cut resistance thanks to its' Cryotuff construction with a hard wearing vulcanised rubber sole for long operational life.

- Cut resistance to EN388 Class 4 (requirement 2.5)
- Stainless steel perforation resistant mid-sole (puncture resistant to 1100N)
- Resistant to fuel oil and a range of industrial, construction and mining chemicals
- Superb low temperature flexibility down to -40ºC
- Cold insulation to EN ISO 20345 CI
- Blown mid-sole improves cushioning by 50%, significantly reducing wearer fatigue and risk of injury to joints and spine
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Greater cut resistance than conventional soles
- Two to three times the wear resistance of conventional soles
- Slip resistance performance twice that required by EN 13287 SATRA TM144 standards

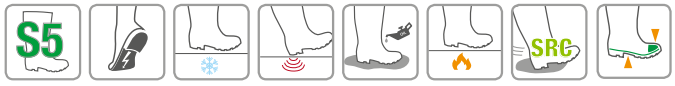
Part No. B01853/[EU Size]

DIGGER BOOT

Designed to resist cutting and wear of the sole through repetitive use with spades and forks, the Digger boot features an integral steel toe cap and mid-sole together with a vulcanised rubber sole for superior slip resistance.

- Greater cut resistance than conventional soles - lasts between two and four times longer than PVC boots when digging
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Two to three times the wear resistance of conventional soles
- Slip resistance performance twice that required by EN 13287 SATRA TM144 standard

Part No. B01527/[EU Size]



CHEMICAL AND INDUSTRIAL

For hazardous or aggressive chemicals our Hazmax™ range of boots offer unrivalled chemical protection in an S5 safety boot or OB antistatic overboot. Permeation data is available for over 100 common industrial chemicals.

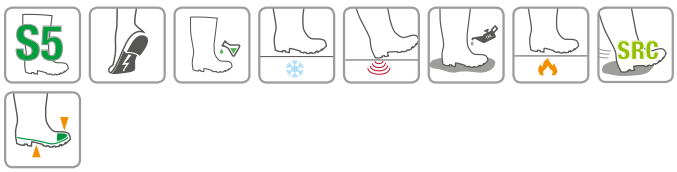
For industrial applications anti-static footwear is desirable and some applications may require specialist electro-static discharge footwear. This needs to be combined with wearer comfort and safety with S4 or S5 protection.

HAZMAX™ BOOT

A chemically protective anti-static boot with an integral steel toe cap and vulcanised rubber sole for superior slip resistance. Applications include petrochemical, pharmaceutical, chemical waste handling and aluminium processing.

- Green Hazmax chemically resistant compound shaft certified to EN 13832-3 (see page 27 for chemical permeation data)
- Also available in black (MOQ of 500 pairs)
- Conforms to EN 943-1 (chemical protective clothing)
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles
- Greater cut resistance than conventional soles
- Machine washable at 40°C
- Also available in a moulded sole version (without fuel & oil resistance, resistance to hot contact or cold insulation for the sole and SRA slip)

Part No. B00847/[EU Size]



HAZMAX ESD BOOT

A chemically protective Electro-Static Discharge (ESD) boot with an integral steel toe cap and vulcanised rubber sole for superior slip resistance. Suitable for applications such as pharmaceutical electro-protective areas.

- Green Hazmax chemically resistant compound shaft certified to EN 13832-3 (see page 27 for chemical permeation data)
- Conforms to EN 943-1 (chemical protective clothing) and certified to this standard as part of an appropriate Respirex™ gas tight suit
- Meets the requirements of NFPA 1991 (chemical vapour protection)
- For use in EPA areas conforming to EN 61340-5 (ESD 99.6 MΩ dry, 11.8 MΩ wet EN ISO 20345)
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles
- Machine washable at 40°C

Part No. B01287/[EU Size]

MAXI CHEMICAL OVERBOOTS

A chemically protective anti-static overboot with a vulcanised rubber sole for superior slip resistance and designed to be worn over safety boots.

- Ingenious rear entry design ensures the boot is quick and easy to fit and remove
- Ideal for personnel who have to continually enter and exit hazardous/ contaminated areas
- Green chemically resistant compound shaft certified to EN 13832-3 (see page 27 for chemical permeation data)
- Conforms to EN 943-1 (chemical protective clothing)
- Meets the requirements of NFPA 1991 (chemical vapour protection)
- Resistant to chemical warfare agents and decontamination solutions
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards

Part No. B01160/[EU Size]

COMPACT CHEMICAL OVERBOOTS

A chemically protective front-opening overboot with a slip resistant sole designed to be worn over safety shoes and trainers.

- Chemically resistant Hazmax™ compound shaft and sole certified to EN 13832-3 (see page 27 for chemical permeation data)
- Conforms to EN 943-1 (chemical protective clothing)
- Meets the requirements of NFPA 1991 (chemical vapour protection)
- Single piece injection moulded construction with integral moulded fastener ensures there are no seams or mounting/fastener holes to leak
- No metal fasteners or components used in the construction, removing the potential for chemical corrosion

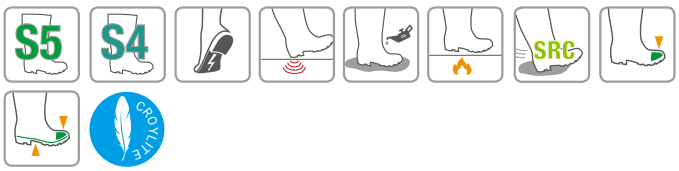
Part No. B01176/[M, L or XL]

TASKLITE+

A new exceptionally lightweight boot for construction and general industrial use; designed using our Cryolite compound for wearer comfort, superior grip and low temperature performance.

- 30% lighter than conventional boots of the same size
- Vulcanised rubber sole for improved grip
- Durable cut-resistant rubber sole extends working life in harsh terrain
- Resistant to concrete and lime
- Superb low temperature flexibility down to -40ºC
- Cold insulation to EN ISO 20345
- Oil and fuel resistant sole
- Heat resistant out-sole
- Environmentally friendly PVC and Halogen free construction
- S5 and S4 Antistatic options available
- Comfort insole (removable and machine washable)

Part No. B01833/[EU Size]



TASKPRO

A durable, high-performance S5 safety boot with excellent cut resistance thanks to its Cryotuff construction and a hard wearing vulcanised rubber sole for long operational life.

- Cut resistance to EN388 Class 4 (requirement 2.5)
- Stainless steel perforation resistant mid-sole (puncture resistant to 1100N)
- Upper and sole are resistant to fuel oil and a range of industrial, construction and mining chemicals
- Superb low temperature flexibility down to -40ºC
- Cold insulation to EN ISO 20345 CI
- Blown mid-sole improves cushioning by 50%, significantly reducing wearer fatigue and risk of injury to joints and spine
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Greater cut resistance than conventional soles
- Two to three times the wear resistance of conventional soles
- Slip resistance performance twice that required by EN 13287 SATRA TM144 standards

Part No. B01853/[EU Size]

SOLESTAR ESD SAFETY BOOTS

The Solestar ESD is a high performance Electro-Static Discharge safety boot; conforming to the latest European standards it incorporates a steel toecap and mid-sole together with an oil resistant non-marking sole and is available in sizes 3 to 15 (UK).

- ESD properties meet the requirements of EN 61340-5
- Electrical resistance meets the requirements of EN ISO 20345:2011 A for antistatic
- Cleated, non-clogging sole for maximum grip
- Oil resistant, non marking Nitrile/Solestar compound
- Slip resistance to EN 13287 SRA and SATRA TM144 standards

Part No. B02100/[EU Size]

CONSTRUCTION

Footwear for use in construction needs to combine all-day comfort with safety for the wearer. Risks include falling objects, crushing and treading on sharp objects such as nails or screws, which is why S5 rated boots are essential.

Our Tasklite and Taskpro boots are lightweight, provide good thermal insulation and remain supple at low temperatures ensuring they remain comfortable whatever the weather.

TASKLITE BOOTS

A new exceptionally lightweight boot for construction and general industrial use; designed using our Cryolite compound for wearer comfort, superior grip and low temperature performance. .

- 30% lighter than conventional boots of the same size
- Vulcanised rubber sole for improved grip
- Durable cut-resistant rubber sole extends working life in harsh terrain
- Resistant to concrete and lime
- Superb low temperature flexibility down to -40°C
- Cold insulation to EN ISO 20345
- Oil and fuel resistant sole
- Heat resistant out-sole
- Environmentally friendly PVC and halogen free construction
- Comfort insole (removable and machine washable

Part No. B01833/[EU Size]

TASKPRO

A durable, high-performance S5 safety boot with excellent cut resistance thanks to its Cryotuff construction and a hard wearing vulcanised rubber sole for long operational life.

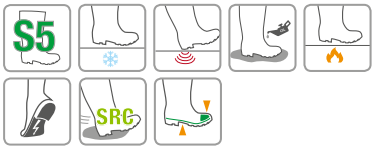
- Cut resistance to EN388 Class 4 (requirement 2.5)
- Stainless steel perforation resistant mid-sole (puncture resistant to 1100N)
- Resistant to fuel oil and a range of industrial, construction and mining chemicals
- Superb low temperature flexibility down to -40°C
- Cold insulation to EN ISO 20345 CI
- Blown mid-sole improves cushioning by 50%, significantly reducing wearer fatigue and risk of injury to joints and spine
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Greater cut resistance than conventional soles
- Two to three times the wear resistance of conventional soles
- Slip resistance performance twice that required by EN 13287 SATRA TM144 standards

Part No. B01853/[EU Size]

DIGGER BOOTS

Designed to resist cutting and wear of the sole through repetitive use with spades and forks, the Digger boot features an integral steel toe cap and mid-sole together with a vulcanised rubber sole for superior slip resistance.

- Greater cut resistance than conventional soles - lasts between two and four times longer than PVC boots when digging
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Two to three times the wear resistance of conventional soles
- Slip resistance performance twice that required by EN 13287 SATRA TM144 standard



Part No. B01527/[EU Size]

SOLESTAR S5

The Solestar S5 is a high performance anti-static safety boot; conforming to the latest European standards it incorporates a steel toecap and mid-sole together with an oil resistant non-marking sole.

- Waterproof, seamless construction
- Comfortable and durable
- Anti-static
- Oil resistant, non marking Nitrile/Solestar compound
- Slip resistance to EN 13287 SRA and SATRA TM144 standards

Part No. B01311/[EU Size]

HIGH VOLTAGE

Dielectric boots should be used where there is a risk of electric shock from high voltages. They provide protection because their insulating properties stop electric current from being grounded.

They are suitable for live working on high voltage installations such as sub-stations, overhead line clearing, excavating or moling close to live cables, electric/hybrid vehicles and electric railways and transportation.

DIELECTRIC HV3+ BOOTS

A Class 3 AC (EN 50321-1:2018) electrically insulating dielectric boot with an integral steel toe cap. The Workmaster™ Dielectric HV3+ boot allows high voltage live working at up to 26.5kV with every boot tested at 30kV.

- Lightweight design for increased wearer comfort
- Low temperature flexibility down to -40ºC
- Durable, slip resistant vulcanised rubber for maximum grip
- Energy absorbing tunnel system in heel and ergonomic cushioning insole (removable and machine washable) for greater wearer comfort
- Cold insulation to EN ISO 20345
- High-visibility green HV3 compound shaft
- Meets the requirements of ASTM 1117 (20kV)
- Also available in a moulded sole version (without fuel & oil resistance, resistance to hot contact or cold insulation for the sole and SRA slip)

Part No. B01703/[EU Size]

DIELECTRIC BOOTS

An electrically insulating Class 2 AC (EN 50321-1:2018) dielectric boot with an integral steel toe cap and vulcanised rubber sole for superior slip resistance. The Workmaster Dielectric boot provides high voltage protection of up to 20kV over the complete boot for over 8 hours, and 35kV over the sole for 3 minutes. This high voltage boot is suitable for use by electricians, utility engineers and live working up to 17kV.

- Every boot tested to 20kV (AC testing as standard, DC testing available on request)
- Leakage current less than 5mA at 5kV and less than 18mA at 20kV
- Meets the requirements of ASTM 1117 (20kV)
- Blue vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRC and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles

Part No. B00950/[EU Size]

FOODMAX LV

Designed for abattoir use the Foodmax LV combines all the features of the standard Foodmax boot with electrical protection to EN 50321-1:2018 Class 0 to protect workers in areas where electrical stunning equipment is used.

- White or blue chemically resistant compound shaft
- Superb low temperature flexibility down to -40°C
- Cold insulation to EN ISO 20345
- Cut resistant shaft to EN388 Class 4 (requirement 2.5)
- Excellent resistance to oil and animal fats
- Vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles
- Fuel and oil resistant
- Greater cut resistance than conventional soles
- Suitable for live working at up to 1kV with every boot tested to 5kV

Part No. B01223/[EU Size] (white), B01223/B/[EU Size] (blue)

DIELECTRIC COMPACT OVERBOOT

A Class 2 (EN 50321-1:2018) electrically insulating dielectric overboot the Workmaster™ Compact dielectric boot is designed to be worn over safety shoes and trainers and allows live working to 17.5kV with every boot tested to 20kV.

- Easy to use front opening and fastening overboot designed for safety shoes/trainers
- Yellow dielectric compound shaft
- Single piece injection moulded construction with integral moulded fastener ensures there are no seams or mounting/fastener holes to leak
- No metal fasteners or components used in the construction
- Slip resistant sole in blue dielectric compound
- Fuel and oil resistant sole
- Meets the requirements of ASTM 1117 (20kV)

Part No. B01180/[M, L, or XL]

DIELECTRIC MAXI OVERBOOT

A Class 1 (EN 50321-1:2018) electrically insulating dielectric overboot with a vulcanised rubber sole for superior slip resistance. The Workmaster™ maxi dielectric overboot is designed to be worn over safety boots and allows live working at up to 7.5kV with every boot tested to 10kV.

- Ingenious rear entry design ensures the boot is quick and easy to fit and remove over conventional safety boots
- Blue vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles
- Fuel and oil resistant sole
- Greater cut resistance than conventional soles
- Resistance to hot contact 60 seconds 300ºC
- Meets the requirements of ASTM 1117 (20kV)

Part No. B01170/[M, L, or XL]

FIRE AND RESCUE, MILITARY AND CBRN

Designed for demanding situations with potential exposure to hazardous chemicals, warfare agents or biological hazards, our Hazmax™ S5 safety boot has proved itself time and again with emergency responders and military units the world over.

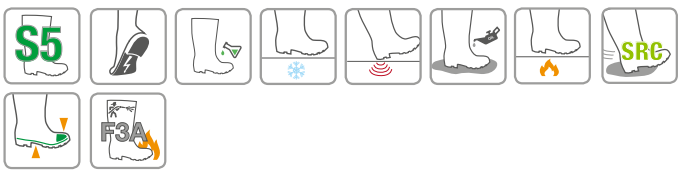
Our vulcanised rubber sole provides superior resistance to slip, oil and fuel, sharp objects and contact with hot surfaces.

HAZMAX™ FPA

A heat resistant version of the Hazmax™ boot conforming to the EN15090 I_3 fire boot standard for flame resistance, radiant heat and heat insulation of the sole.

- Excellent chemical resistance – Permeation data for 100+ chemicals
- Conforms to EN 13832-3 (see page 27 for permeation data)
- Conforms to EN 943-1 (chemical protective clothing)

Part No. B01000/[EU Size]



HAZMAX™ BOOT

A chemically protective anti-static boot with an integral steel toe cap and vulcanised rubber sole for superior slip resistance. Applications include petrochemical, pharmaceutical, chemical waste handling and aluminium processing.

- Green Hazmax chemically resistant compound shaft certified to EN 13832-3 (see page 27 for permeation data)
- Also available in black (MOQ of 500 pairs)
- Conforms to EN 943-1 (chemical protective clothing)
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles
- Greater cut resistance than conventional soles

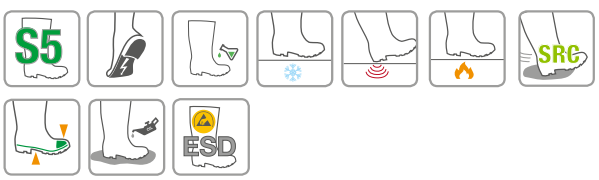
Part No. B00847/[EU Size]

HAZMAX™ ESD BOOT

A chemically protective Electro-Static Discharge (ESD) boot with an integral steel toe cap and vulcanised rubber sole for superior slip resistance. Suitable for applications such as pharmaceutical electro-protective areas.

- Green Hazmax chemically resistant compound shaft certified to EN 13832-3 (see page 27 for permeation data)
- Conforms to EN 943-1 (chemical protective clothing) and certified to this standard as part of an appropriate Respirex™ gas tight suit
- Meets the requirements of NFPA 1991 (chemical vapour protection)
- For use in Electrostatic Protective areas conforming to EN 61340-5 (ESD 99.6 MΩ dry, 11.8 MΩ wet EN ISO 20345)
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles
- Greater cut resistance than conventional soles

Part No. B01287/[EU Size]



CBRN AMBIDEXTROUS OVERBOOT

A chemically protective anti-static overboot with an ambidextrous quick-don design. Tested against a broad range of hazardous chemicals and chemical warfare agents, the boot design allows it to be fastened single-handedly in less than five seconds.

- Ingenious rear entry design ensures the boot is quick and easy to fit and remove
- Single ambidextrous design allows the boot to be worn on either the right or left foot to speed donning and doffing
- Manufactured from a black chemically resistant compound and certified to EN 13832-3:2006 (footwear protecting against chemicals)
- Conforms to EN 943-1 (chemical protective clothing)
- Meets the requirements of NFPA 1991 (chemical vapour protection)
- Quick and easy to decontaminate
- Comfortable, lightweight, flexible design
- Specifically designed to fit and completely cover standard UK military issue combat boots
- Can be rolled and stored in a kit-bag
- Seamless construction
- Kick off lug
- CE marked with date and year of manufacture
- REACH compliant
- Slip resistant, non-clogging sole design
- Fuel and oil resistant
- Available in seven sizes

Part No. B01391/[XS, S, M, L, XL, 2XL or 3XL]]

FLAME RESISTANT

Boots that are resistant to heat and flame for use in areas where there is a risk of sparks from welding or grinding or in proximity to heat and flame.

ISOTEC FLAME BOOTS

A heat resistant safety boot conforming to the EN15090 I_3 fire boot standard for flame resistance, radiant heat (20 kW/m^2) and heat insulation of the sole (250°C for 40 minutes).

- Certified to EN 15090:2012 F3A
- Heat insulation - 40 minutes at 250 °C
- Heat resistant sole HRO 60 seconds at 300 °C
- Fuel and oil resistant Upper and sole.
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles
- Greater cut resistance than conventional soles
- Antistatic, with ESD version available as an option

Part No. B01200/[EU Size]

HAZMAX™ FPA

A heat resistant version of the Hazmax™ boot conforming to the EN15090 I_3 fire boot standard for flame resistance, radiant heat and heat insulation of the sole.

- Excellent chemical resistance – Permeation data for 100+ chemicals
- Conforms to EN 13832-3 (see page 27 for permeation data)
- Conforms to EN 943-1 (chemical protective clothing)
- Black vulcanised rubber sole for maximum grip - 30% better than a conventional safety boot sole
- Slip resistance performance twice that required by EN 13287 SRA and SATRA TM144 standards
- Two to three times the wear resistance of conventional soles
- Greater cut resistance than conventional soles

Part No. B01000/[EU Size]

SIZING CHART

Our boots and overboots are available in a broad range of sizes. Workmaster™ Compact overboots are designed for use over a conventional safety shoe or safety trainer, while the Maxi overboots are designed for use over traditional safety boots.

BOOTS

UK	3	4	5	6	7	8	9	10	11	12	13	14	15
EU	35	36	37	39	41	42	43	44	45	46	47	49	50
US	4	5	6	7	8	9	10	11	12	13	14	15	16

OVERBOOTS

	MEDIUM	LARGE	EXTRA LARGE
UK	6 – 8	9 – 11	12 – 15
EU	39 – 42	43 – 45	46 – 50
US	7 – 9	10 – 12	13 – 16

WHAT ABOUT TESTING?

MECHANICAL TESTING

We test every element of our boots to ensure their safety, performance and comfort. Some testing is carried out at our factory while some is undertaken for us at specialist accredited testing laboratories.

Our factory can conduct, high-voltage testing, deformation testing on toecaps, flex cracking and low temperature flex cracking on boot compounds. Boots are also extensively trialled by users to check for comfort, wear and durability during development.

CHEMICAL RESISTANCE

We test every element of our boots to ensure their safety, performance and comfort. Some testing is carried out at our factory while some is undertaken for us at specialist accredited testing laboratories.

FOODMAX BOOTS — CHEMICAL PERMEATION

CHEMICAL	CAS NO.	METHOD	BREAKTHROUGH TIME
Acetone	67-64-1	EN374-3	Over 0.5 HOUR
Acetonitrile	75-05-08	EN374-3	Over 1 HOUR
Ammonia Gas	7664-41-7	EN374-3	Over 4 HOURS
Carbon Disulphide	75-15-0	EN374-3	Over 1 HOUR
Chlorine Gas	7782-50-5	EN374-3	Over 8 HOURS
Dichlorobenzene	95-50-1, 106-46-7, 541-73-1	EN374-3	Over 7 HOURS
Dichloromethane	75-09-02	EN374-3	Over 1 HOUR
Diethylamine	109-89-7	EN374-3	Over 2 HOURS
Dimethyl Formamide	68-12-2	EN374-3	Over 1 HOUR
Ethanol	64-17-5	EN374-3	Over 8 HOURS
Ethyl Acetate	141-78-6	EN374-3	Over 2 HOURS
Hexane	110-54-3	EN374-3	Over 3 HOURS
Hydrogen Chloride Gas	7647-01-0	EN374-3	Over 8 HOURS
Lactic acid	50-21-5	EN374-3	Over 8 HOURS
Methanol	67-56-1	EN374-3	Over 4 HOURS
Nitro Benzene	98-95-3	EN374-3	Over 8 HOURS
Oleic acid	112-80-1	EN374-3	Over 7 HOURS
Phosphoric acid	7664-38-2	EN374-3	Over 8 HOURS
Potassium Hydroxide 40%	1310-58-3	EN374-3	Over 8 HOURS
Sodium Hydroxide 40%	1310-73-2	EN374-3	Over 8 HOURS
Sodium Hypochlorite 16%	7681-52-9	EN374-3	Over 8 HOURS
Sulphuric Acid 96%	7664-93-9	EN374-3	Over 8 HOURS
Tetrachloroethylene	127-18-4	EN374-3	Over 2 HOURS
Tetrahydofuran	109-99-9	EN374-3	Over 0.5 HOURS
Toluene	108-88-3	EN374-3	Over 3 HOURS

HAZMAX™ BOOTS — CHEMICAL PERMEATION

CHEMICAL	CAS NO.	METHOD	BREAKTHROUGH TIME
Acetic acid (Glacial)	64-19-7	EN 16523	Over 12 HOURS
Acetone	67-64-1	EN374-3	Over 2 HOURS
Acetone Cyanohydrin	75-86-5	EN374-3	Over 8 HOURS
Acetonitrile	75-05-08	EN374-3	Over 6 HOURS
Acrylic Acid	79-10-7	EN374-3	Over 8 HOURS
Acrylonitrile	107-13-1	EN374-3	Over 2 HOURS
Ammonia 5%	1336-21-6	EN374-3	Over 8 HOURS
Ammonia Gas	7664-41-7	EN374-3	Over 8 HOURS
Ammonium Pentadecafluoro-octanoate (30% in water)	3825-26-1	EN374-3	Over 8 HOURS
Aniline	62-53-3	EN374-3	Over 8 HOURS
Anti-knock(Tetraethyl lead 60% Dibromoethane 30%/Dichloroethane 10% TEL-CB)	78-00-2 / 106-03-4 / 107-06-2	EN374-3	Over 8 HOURS
Aqueous Phenol 85%	108-95-2	EN374-3	Over 8 HOURS
Arsenic Acid	7778-39-4	EN374-3	Over 8 HOURS
Benzene	71-43-2	EN374-3	Over 4 HOURS
Benzyl Chloride	100-44-7	EN374-3	Over 8 HOURS
Bromine	7726-95-6	EN374-3	Over 7 HOURS
Buta-1,3diene Gas	106-99-0	EN374-3	Over 3 HOURS
Butyl Acetate	123-86-4	EN374-3	Over 6 HOURS
Cable oil		EN374-3	Over 8 HOURS
Carbazole	86-74-8	EN374-3	Over 8 HOURS
Carbon Disulphide	75-15-0	EN374-3	Over 1 HOUR
Chlorine Gas	7782-50-5	EN374-3	Over 3 HOURS
Chloroacetic Acid 85%	79-11-8	EN 16523	Over 32 Hours
Chromic Acid	1333-82-0	EN374-3	Over 8 HOURS
Cyanogen Chloride	506-77-4	NFPA	No permeation detected
Cyclohexylamine	108-91-8	EN374-3	Over 8 HOURS
Dichloromethane	75-09-02	EN374-3	Over 1 HOUR
Diethylamine	109-89-7	EN374-3	Over 2 HOURS
Diethylene Glycol dimethylether	111-46-6	EN374-3	Over 8 HOURS
Dimethyl Formamide	68-12-2	EN374-3	Over 8 HOURS
Dimethylformamide	68-12-2	EN374-3	Over 3 HOURS
Epichlorohydrin	106-89-8	EN374-3	Over 7 HOURS
Ethanol (Ethyl Alcohol)	64-17-5	EN374-3	Over 8 HOURS
Ethyl Acetate	141-78-6	EN374-3	Over 4 HOURS
Ethylene Glycol	107-21-1	EN374-3	Over 8 HOURS
Ethylene Dichloride	107-06-2	EN374-3	Over 8 HOURS
Ethylene Oxide	75-21-8	EN374-3	Over 2 HOURS
Ethylenediamine tetra-acetic acid tetrasodium salt (EDTA) 5%	64-02-8	EN374-3	Over 8 HOURS
Formaldehyde 37%	79-11-8	EN374-3	Over 8 HOURS
Formic Acid 65%	64-18-6	EN374-3	Over 8 HOURS
Heptane	142-82-5	EN374-3	Over 8 Hours
Hexane	110-54-3	EN374-3	Over 7 HOURS
Hydrazine	302-01-2	EN374-3	Over 8 HOURS
Hydrazine 5%	7803-57-8	EN374-3	Over 8 HOURS
Hydrochloric Acid 37%	7647-01-0	EN 16523	Over 32 HOURS
Hydrochloric Acid 48%	7647-01-0	EN374-3	Over 8 HOURS
Hydrofluoric Acid 48%	7664-39-3	EN374-3	Over 66 HOURS
Hydrofluoric Acid 73%	7664-39-3	EN374-3	Over 8 HOURS
Hydrogen Chloride Gas	7647-01-0	EN374-3	Over 8 HOURS
Hydrogen Fluoride gas anhydrous	7664-39-3	EN374-3	Over 1 HOUR
Hydrogen Peroxide (10 volume (3%) solution)	7722-84-1	EN374-3	Over 8 HOURS
Hydrogen Peroxide 50%	7722-84-1	EN374-3	Over 8 HOURS
Iso-butane	75-28-5	EN374-3	Over 8 HOURS
Iso-butane followed by Hyrdrofluoric acid 71-75%	75-28-5 + 7664-39-3	EN374-3	Over 8 HOURS
Iso-propanol (IPA)	67-63-0	EN 16523	Over 32 HOURS
Lewisite	541-25-3	NFPA	No permeation detected
m-Cresol	108-39-4	EN374-3	Over 8 HOURS
Methanol	67-56-1	EN374-3	Over 8 HOUR
MethyL Ethyl Ketone (M.E.K) 2-Butanone	78-93-3	EN374-3	Over 2 HOURS
Methyl Iodide 99%	74-88-4	EN374-3	Over 1.5 HOURS
Methyl Methacrylate	80-62-6	EN 369	Over 3 HOURS
methyl-1,2-pyrolidone	872-50-4	EN369	Over 8 HOURS
Methylene Chloride Gas	74-87-3	EN374-3	Over 1 HOUR
Monochloroacetic acid	79-11-8	EN374-3	Over 8 HOURS
Mustard Gas	505-60-2	NFPA	No permeation detected
Naphalene	91-20-3	EN374-3	Over 8 HOURS
N,N-Dimethylaniline	121-69-7	EN374-3	Over 8 HOURS
N,N-dimetyl acetamide	127-19-5	EN374-3	Over 8 HOURS
Nitric Acid 50%	7697-37-2	EN 16523	Over 32 HOURS
Nitric Acid 70% conc	7697-37-2	EN 16523	Over 32 HOURS
Nitric Acid Etchant 80/20	7697-37-2	EN374-3	Over 8 HOURS
Nitro Benzene	98-95-3	EN374-3	Over 3 HOURS
Oleum 40% SO_3	8014-95-7	EN374-3	Over 8 HOURS
Oxalic Acid saturated solution	6153-56-6	EN374-3	Over 8 HOURS
Phenol 50% in Methanol	108-95-2/ 67-56-1	EN374-3	Over 8 HOURS
Phosphoric acid 25%	7664-38-2	EN 16523	Over 32 HOURS
Phosphoric acid 75%	7664-38-2	EN 16523	Over 32 HOURS
Propylene 1,2 oxide	75-56-9	EN374-3	Over 1 HOUR
Red Fuming Nitric acid	7697-37-2	EN374-3	Oner 4 HOURS
Saren Gas	107-44-8	NFPA	No permeation detected
Sodium Cyanide 30wt%	143-33-9	EN374-3	Over 8 HOURS
Sodium Hydroxide 40%	1310-73-2	EN374-3	Over 8 HOURS
Sodium Hypochlorite 16%	7681-52-9	EN374-3	Over 8 HOURS
Styrene	100-42-5	EN374-3	Over 8 HOURS
Sulphuric Acid 96%	7664-93-9	EN374-3	Over 8 HOURS
Tetrachlororethylene	127-18-4	EN374-3	Over 3 HOURS
Tetraethyl Lead (Octel Anti Knock)	78-00-2	EN374-3	Over 8 HOURS
Tetrahydofuran	109-99-9	EN374-3	Over 3 HOURS
Toluene	108-88-3	EN374-3	Over 4 HOURS
Toluene 2,4 Diisocyanate	584-84-9	EN374-3	Over 8 HOURS
Trichloroethane	71-55-6	EN374-3	Over 6 HOURS
Trichloroethylene 1,1,2	79-01-6	EN374-3	Over 3 HOURS
Triethanol-amine	102-71-6	EN374-3	Over 8 HOURS
Triethylene Glycol	112-27-6	EN374-3	Over 8 HOURS
Trigonox K-80 Cumyl hydroperoxide 80% / 20% Cumene	80-15-9/ 98-82-8	EN 369	Over 8 HOURS
VX	50782-69-9	NFPA	No permeation detected
Xylene	1330-20-7	EN374-3	Over 4 HOURS

Chemicals in **bold** are the 15 standard test chemicals defined in EN943-2:2002

CHEMICAL PERMEATION EXPLAINED

What is Permeation?

Permeation is the process by which a chemical moves through a protective clothing material on a molecular level.

Permeation involves:

- Sorption of molecules of the chemical into the contacted (outside) surface of a material
- Diffusion of the sorbed molecules in the material
- Desorption of the molecules from the opposite (inside) surface of the material

How is Permeation measured?

The resistance of a protective clothing material to permeation by hazardous liquid and gaseous chemicals is defined by the permeation rate of the chemical through the material and the breakthrough time.

Permeation test methods include ASTM F739, EN374-3 and ISO 6529; exposure of the material to the chemical is total and constant, and emulates total immersion conditions. There are no permeation test methods at this time for chemicals which are solids; generally it is considered that solids do not permeate.

The Permeation Test Cell

The protective clothing material specimen acts as a partition between one chamber of a permeation test cell, which contains the test chemical, and another chamber, which contains the collection medium. The outer surface of the material is exposed to the test chemical. The inner surface of the material is monitored analytically to determine the amount of chemical (if any) permeating the material.

Normalised breakthrough time (according to EN374-3:2003)

The elapsed time measured from the start of the test to the time at which the test chemical reaches a permeation rate of 1.0 µg/(min.cm^2).

Interpreting permeation test results

All permeation tests were conducted with pure chemicals under laboratory controlled conditions on materials only and are not intended to indicate the duration of "safe wear time" for a garment.

A normalised breakthrough time of >480 minutes indicates that the permeation rate did not reach the defined rate of 1.0µg/(min.cm^2) (EN374-3:2003). Permeation however may still have occurred at lower rates; and depending on the chemical toxicity, it is possible that a chemical may be permeating the material and a level of toxicity reached within a protective clothing garment long before the reportable breakthrough of 480 minutes. Breakthrough time alone therefore is only a means of comparing different material performances and does not indicate safe protection for up to the number of minutes reported.

The "safe wear time" of a protective clothing garment depends on a number of factors such as:

- Temperature
- Type of exposure
- Toxicity of chemical

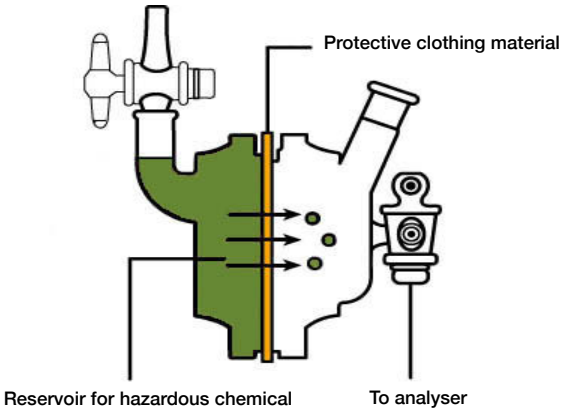
The determination of suitability of a garment for an application should be based on end user risk assessment.

IN-HOUSE TESTING LABORATORY

We thoroughly test our compounds materials for their chemical resistance and have our own independent UKAS accredited laboratory for chemical permeation testing and for testing the physical properties of materials.

This allows us to regularly re-test our fabrics and seams to ensure quality. We can also advise customers on fabric selection for their particular chemical hazard and even conduct specific chemical testing if required.

The laboratory has a broad range of commercial customers outside Respirex™ and is able to offer confidential testing services for chemical permeation, abrasion resistance, flex cracking resistance, puncture resistance, tensile strength, seam tensile strength and trapezoidal tear resistance.



FOOD PROCESSING

	Foodlite	Foodlite+	Foodmax
Protection	S4 or O4	S4 or O4	S4
Lightweight	●	●	●
Wide Comfort Fitting	●	●	●
Chemically Resistant	●	●	●
Vulcanised High-Grip Rubber Sole		●	●
Cut Resistant			●
'Blown' Cushioned Mid-sole			●
PVC, Chlorine & Halogen Free	●	●	
Biodegradable	●	●	
Temperature	-30°C	-40°C	-40°C

AGRICULTURE

	Farmlite+	Taskpro	Digger
Protection	S5, S4 or O4	S5	S5
Lightweight	●	●	
Wide Comfort Fitting	●	●	●
Chemically Resistant	●	●	
Vulcanised High-Grip Rubber Sole	●	●	●
Cut Resistant		●	
'Blown' Cushioned Mid-sole		●	
PVC, Chlorine & Halogen Free	●		
Biodegradable	●		
Temperature	-30°C	-40°C	-10°C

CHEMICAL & INDUSTRIAL

	Hazmax™	Hazmax™ ESD	Tasklite+	Taskpro	Solestar ESD
Protection	S5	S5	S5 or S4	S5	S5
Lightweight			●	●	
Wide Comfort Fitting	●	●	●	●	●
Chemically Resistant	●	●	●	●	
Electrostatic Discharge (ESD)		●			●
Vulcanised High-Grip Rubber Sole	●	●	●	●	
Cut Resistant				●	
'Blown' Cushioned Mid-sole				●	
PVC, Chlorine & Halogen Free			●		
Biodegradable			●		
Temperature	-20°C	-20°C	-30°C	-40°C	-10°C

CONSTRUCTION

	Tasklite+	Taskpro	Digger	Solestar
Protection	S5	S5	S5	S5
Lightweight	●	●		
Wide Comfort Fitting	●	●	●	●
Chemically Resistant	●	●		
Vulcanised High-Grip Rubber Sole	●	●	●	
Cut Resistant		●		
'Blown' Cushioned Mid-sole		●		
PVC, Chlorine & Halogen Free	●			
Biodegradable	●			
Temperature	-30°C	-30°C	-10°C	-10°°C

HIGH VOLTAGE

	HV3+	Dielectric+	Foodmax LV
Protection	SB	SB	SB
Lightweight	●	●	●
Wide Comfort Fitting	●	●	●
Chemically Resistant	●	●	●
Vulcanised High-Grip Rubber Sole	●	●	●
Cut Resistant			●
PVC, Chlorine & Halogen Free	●		
Biodegradable	●		
Temperature	-30°C	-20°C	-40°C

FIRE & RESCUE, MILITARY AND CBRN

	ISOTEC	Hazmax FPA	Hazmax	Hazmax ESD
Protection	SB	S5	S5	S5
Wide Comfort Fitting	●	●	●	●
Chemically Resistant		●	●	●
Warfare agent tested		●	●	●
Heat & Flame Resistant	●	●		
Electrostatic Discharge (ESD)	Option			●
Vulcanised High-Grip Rubber Sole	●	●	●	●
Temperature	-20°C	-30°C	-40°C	-40°C

workMaster™
by RESPIREX

Safetyware®
SAFETYWARE GROUP
Responsibility & Care

SAFETYWARE SDN BHD
200301030551 (632971-X)
Plot 237, Lengkok Perindustrian Bukit Minyak 3,
Bukit Minyak Industrial Park,
14100 Simpang Ampat, penang.

Tel: +603-6262 0882 (4 Lines) **www.safetyware.com**
Fax : +603-6270 0393 **info@safetyware.com**