



TRAINING  
0001M



RESPIREX™

Living + Breathing Personal Protection

# About Us

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

Our comprehensive product range includes chemical protective suits for fire and emergency services teams, work-wear for the chemical and petrochemical industries and air-fed suits for nuclear power facilities and pharmaceutical manufacturing.

Our modern, automated footwear factory produces a range of specialist protective boots for working with aggressive chemicals or high voltages, along with industry specific footwear for food processing, mining and construction.

The in-house Respirex™ testing laboratory is UKAS accredited and offers a range of chemical permeation and physical testing services to European, International and American standards. We continually test the fabrics and seams used in our clothing to ensure the performance of our equipment.

We are unique in offering a complete service that includes standard or tailored equipment solutions supported by unrivalled training, aftercare and support.

Through our network of approved service centres Respirex™ are able to offer our customers repair, testing, training and audit facilities for our reusable gas-tight, non-gas-tight and workwear clothing ranges. This ensures that garments remain safe and fit for purpose, that they are used and maintained safely and correctly and delivers the longest possible service life.

Our distributors cover the globe, offering specialist advice and support, coupled with local market and regulatory knowledge. Whatever your requirement contact us on **+44 (0)1737 778600** to discuss your needs and how we can help.

## New Products



**GLS SUITS**

Page 9



**FLO-POD™ EMERGENCY BREATHERS**

Page 40



**KEMBLOK GLOVE**

Page 42



# Contents

<b>Gas Tight Suits</b>	<b>4</b>
<hr/>	
Type 1 A Suits: GTL, Tychem® TK, GTB • Training Suits • Type 1C Suits	
<b>GLS Suits</b>	<b>9</b>
<hr/>	
Introduction • GLS 300A • GLS 300B • GLS 300C	
<b>Non-Gas-Tight Suits</b>	<b>15</b>
<hr/>	
Air-Fed Type 2 Suits: Simplair Tank Suit, Simplair Suit	
<b>Liquid Tight Protective Suits</b>	<b>18</b>
<hr/>	
Type 3 Splash Suits (Single Use & Reusable): SC1, SC1 Ultra, SC4 • Reusable Type PB 3 Workwear: Jackets, Trousers, One-piece Suits • Single Use One-piece Suit	
<b>Part Body Protection</b>	<b>27</b>
<hr/>	
Air-Fed Hoods & Blouses: Simplair Hood, NIOSH Blouse • Anti-Splash Hood • Neck Flaps & Wraps • Aprons	
<b>Particulate Protective Clothing</b>	<b>30</b>
<hr/>	
Air-Fed Suits to EN 1073: Airprotex FM, Frontair 2, Sellprotex • One-piece Suit to EN 1073: Nuprotex	
<b>Respiratory Protective Devices</b>	<b>34</b>
<hr/>	
PRPS Suit • RJS Suit • Flo-Pod™ Powered Respirator • Flo-Pod™ Suit • Flo-Pod™ Hood	
<b>Kemblok Gloves</b>	<b>42</b>
<hr/>	
Kemblok Chemical Protective Glove	
<b>Protective Footwear</b>	<b>44</b>
<hr/>	
Hazmax Chemical Boots & Overboots • Dielectric Boots • Food, Agriculture and Industry Boots	
<b>CBRN</b>	<b>50</b>
<hr/>	
Body Bags • Casualty Transport Bags • Pre & Post Decon Packs	
<b>Accessories</b>	<b>56</b>
<hr/>	
Gas-Tight Suit Test Unit • Portable Air Filter Cabinet • Hose Reel • Reinforced Air Hose • Swivel coupling • Koolvest	
<b>Technical Data</b>	<b>58</b>
<hr/>	
Materials Data • Chemical Permeation Data • Permasure® • Suit Materials • PPE Standards • Product Applications	



# Gas-Tight Suits



## GTL Lightweight Suit

A lightweight, fully encapsulating, Type 1A - ET gas-tight suit, designed to protect the emergency responder against toxic, corrosive gases, liquids and solid chemicals.

- Ten year shelf life (seven years maintenance free)
- Compatible with the **PermaSure®** Toxicity Modeller for calculation of safe working time with a given chemical based on real world conditions (see page 65)
- Fully encapsulating design to allow breathing apparatus to be worn inside the suit
- Manufactured in yellow Chemprotex™ 400 a light weight high performance chemical barrier, multi-layer non-woven fabric
- Heavy-duty 122cm (48") long gas-tight zip, fitted to the right hand side of the suit; a flap with a hook and loop fastener fitted to cover the teeth of the zip
- Adjustable internal support belt and bat-wing sleeves for optimum wearer comfort
- Flexible, multi-laminated, anti-mist visor giving clear undistorted vision
- Chemically protective, laminated glove welded to the suit material with an elasticated over-sleeve to prevent splash entering the supplied Neoprene outer gloves
- Integral socks with outer splash guards
- Pressure test & inspection required at year seven



Type 1A  
ET



Radioactive  
Particles



Infective  
Agents



Warfare  
Agents

## Tychem® TK Suit

Fully encapsulating Type 1A - ET limited life gas-tight suit manufactured in DuPont™ Tychem® TK a high performance, seven layer, non-woven, chemical barrier fabric.

- Maintenance free for the first five years unless used (see below)
- Ten year shelf-life
- Fully encapsulating design to allow breathing apparatus to be worn inside the suit
- Heavy duty 122cm (48") long gas-tight zip, fitted to the right hand side of the suit - flap with a hook and loop fastener fitted to cover the teeth of the zip
- Adjustable internal support belt and bat-wing sleeves for optimal wearer comfort
- Flexible, multi-laminated, anti-mist visor giving clear undistorted vision
- Detachable gloves fitted using gas-tight locking cuff mechanism
- Bonded inner & outer gloves provide chemical and mechanical protection
- Supplied with detachable Hazmax™ FPA safety boots for speed of donning and increased user comfort, sock feet with outer splash guards available as an option
- Pressure test required annually from year five or after each use

### Options:

- Air-line pass-through for supplementary air
- Equipment attachment points



Type 1A  
ET



Radioactive  
Particles



Infective  
Agents



Warfare  
Agents



# Gas-Tight Suits

## GTB Reusable Suit

The GTB is a Type 1A - ET reusable gas-tight suit suitable for emergency responders and in industrial applications such as HF alkylation facilities. The fully encapsulating suit covers the breathing apparatus and facemask, simplifying decontamination.

Manufactured in either Viton®/Butyl/Viton® (VBV), our hardest wearing material, or Laminate Viton®, our lightest reusable Type 1A-ET suit fabric, with excellent chemical permeation resistance.

- Heavy-duty gas-tight zip fitted to the right hand side of the suit (running from the thigh to the top of the head), protected by double storm flaps with a hook and loop fastener
- Large double-layer rigid visor, provides clear undistorted vision
- Detachable gloves fitted using gas-tight locking cuff mechanism
- Bonded inner & outer gloves provide chemical and mechanical protection
- Supplied with detachable Hazmax™ FPA safety boots for speed of donning and increased user comfort, sock feet with outer splash guards available as an option
- Adjustable internal waist belt allows wearers of varying sizes to use the suit comfortably
- Ten year shelf life
- Pressure test required annually or after each use

### Options:

- Air-line pass-through for supplementary air
- Equipment attachment points & internal radio pocket
- Suit ventilation (GTVB model number)
- Fall arrest system
- Custom marking/identification



Type 1A  
ET



Type 1A



Radioactive  
Particles



Infective  
Agents



Warfare  
Agents



## Training Suit

A training version of our encapsulating gas-tight suits. Manufactured in green PVC and clearly marked training suit to avoid confusion in an emergency.

- Reproduces the design of the operational suit
- Designed for multiple re-use with no testing required
- Fully encapsulating design to allow breathing apparatus to be worn inside the suit
- Heavy-duty 122cm (48") long gas-tight zip, fitted to the right hand side of the suit; a flap with a hook and loop fastener fitted to cover the teeth of the zip
- Adjustable internal support belt and bat-wing sleeves for optimum wearer comfort
- Rigid or flexible visor, depending on model
- Dual glove system for chemical and mechanical protection
- Gloves fitted using the Respirix™ locking cuff
- Detachable Hazmax™ safety boots or sock foot with outer splash guard leg
- Exhalation valves ensure that the suit maintains a comfortable working pressure

DuPont™, Tychem® and Viton® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company  
PermaSURE® is a registered trademark of Industrial Textiles and Plastics Limited  
Hazmax™ and Chemprotex™ are registered trademarks of Respirix International Limited



## Suit Options & Accessories

### Fall Arrest

Available on the GTB suit it incorporates a gas-tight connector that links the customers internal safety harness to a carabiner on the outside of the suit.



### Equipment Attachments

All suits apart from the GTL can be specified with optional attachment points for a torch, life-line, anchor point, and Diktron or Firefly DSU's.



### Dual Glove System

Internal chemical barrier glove and with a durable Neoprene external glove for mechanical protection bonded together at the tips of the fingers for easier donning & doffing (Not bonded in GTL suit).

### Detachable Boots

Detachable Hazmax™ FPA boots provide excellent user comfort and protection and can be easily replaced if required.

### Fixed Boots

Fixed Hazmax™ FPA boots (as above), suit needs to be returned for boot replacement

### Sock Foot and Outer Leg

Socks with outer splash guard leg allows the use of customers own boots and reduces pack size



Detachable Boots



Sock Foot



Locking Cuff



Sure-Loc Cuff



Welded Glove

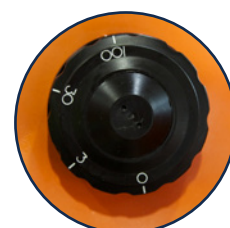


### Suit/Brigade ID

Customer Identification names & codes can be added to the base of the visor or on the back of the suit

### Suit Ventilation

Adjustable ventilation system for the arms and legs of the GTB suit, fed from the wearers BA set. Ventilation is adjustable in steps from 0 to 100 litres per minute (L/min) from a control valve mounted to the chest of the suit.



### Pass-Through

Allows the connection of a second cylinder or an air-line to the second man attachment on the breathing apparatus during decontamination.



### Locking Cuff

Securely fixes the dual-layer gloves to the suit, allowing the suit to be donned quickly when needed. Gloves can be replaced easily after use if required

### Sure-Loc Cuff

Offers the benefits of the standard locking cuff, but is fixed from the front allowing for quicker glove changes.

### Welded Glove & Oversleeve

Used on the GTL, a chemical barrier glove is welded to the suit. An elasticated oversleeve protects the supplied outer glove from chemical splash.

# Gas-Tight Suits

## GTA Reusable Air-Fed Suit

The GTA is a Type 1C reusable gas-tight suit designed to be used with an external compressed air source and is manufactured in a range of chemically resistant fabrics.

- Designed for long duration usage in harmful atmospheres
- Breathing air and ventilation system completely contained within the suit
- An audible warning device activates if the airflow drops below the minimum level required to maintain CO<sub>2</sub> below 1%
- Heavy duty 122cm (48") long gas-tight zip, fitted vertically down the right hand side of the suit
- Choice of detachable Hazmax™ safety boots, or integral socks with outer splash guards
- Gloves compatible with the choice of suit material are fitted using the Respirax™ locking cuff mechanism or new Sure-Loc cuff mechanism, allowing the user to easily change the gloves when necessary
- Seams are stitched and double taped
- Adjustable internal support belt enables wearers of varying sizes to use the suit comfortably
- Exhalation valves ensure that the suit maintains a comfortable working pressure
- Three-point hanging system to prevent damage during storage
- Pressure test required after each use
- Required Airflow: 360(min) to 440(max) L/min



Type 1C



*Shown in white Butyl, as used by NASA and EADS Astrium*





# GLS Suits



In response to requests from several leading European industrial chemical companies Respirex have developed an entirely new concept in chemical protective clothing; the GLS range. This range of single-use garments are flexible, lightweight and manufactured and tested to ISO 17491-1:2012 Method 2 (the gas-tightness inflation standard for protective clothing). They are also CE certified to the DEKRA standard FRM 90.166.0 and the European PPE Directive 89/686/EEC.

The principle behind the development of the GLS range of suits was the changing demographic of the workforce today, with people retiring later. Unlike traditional re-usable chemical suits, which tend to be heavy and require a rigorous maintenance program to ensure that the garment is always fit for use, the GLS range are lightweight and ready to use straight out of the pack.

One of the key requirements in the development was that the GLS range of suits should be usable in potentially explosive environments. Extensive testing was carried out by DEKRA to the ATEX standards which has confirmed that the suits may be used in a number of different EX zones (see the individual suit pages for details).

There are three suits in the GLS range:

- **GLS 300A** is a fully encapsulating suit with SCBA worn inside the suit
- **GLS 300B** is designed for use with either: SCBA worn outside the suit, a facemask and filter or airline respirator
- **GLS 300C** is an air-fed suit used with breathable air from an external compressed air source

### **Gas-Tight Construction**

Every GLS suit is tested to ISO 17491-1:2012 Method 2, the same pressure test used for EN943-2 gas-tight suits.

### **Lightweight, comfortable material**

Chemprotex™ 300 is a soft, flexible chemical barrier material that is far lighter than materials typically used in re-usable gas-tight chemical suits. This improves user comfort and reduces the physical burden of wearing the suits for extended periods.

### **Single use garments**

No risk from cross contamination or from suits that have not been fully decontaminated. No costs for laundering, repairs or testing.

### **ATEX Tested**

All GLS suit models are designed to prevent the build up of electrostatic charge and have been tested by DEKRA according to the ATEX guidelines for use in potentially explosive atmospheres - details of the zones in which they can be used are covered under each model in this brochure.

### **Innovative design features**

Lighter weight gas-tight zippers, easy to don & doff with no taping required, low-noise air system (300C), patented face-mask seal (300B).

### **Permasure™ Toxicity Modeller**

Toxicity modelling database for Chemprotex™ materials that can calculate the safe working time for over 4,000 different chemicals based on real world operating conditions.



## GLS 300 A

The GLS 300A suit in Chemprotex™ 300 is a single use fully encapsulating gas-tight chemical protection suit covering both the wearer and the breathing apparatus. The suit combines the benefits of a lightweight high-performance chemical barrier fabric with a gas-tight construction to method 2 of ISO 17491-1. It incorporates attached antistatic chemical gloves, sock feet and a lightweight gas-tight zip.

- Large laminated anti-mist visor giving clear undistorted vision
- Twin exhalation valves to side of hood to ensure that the suit maintains a comfortable working pressure
- Lightweight gas-tight zip fitted to rear of suit, closing at the top and covered with a double storm flap with hook and loop fastener
- Chemically protective anti-static glove attached to the suit material
- Integral socks in Chemprotex™ 300 material with splash-guard outer legs allowing the wearing of customer's own boots. (Boots not included)
- Must be worn with ESD footwear to ensure a conductive path to ground [when used in potentially explosive atmospheres]



### Testing & Certification:

**TYPE 3**, EN14605:2005+A1 2009  
Liquid-Tight Chemical Protective Clothing

**TYPE 4**, EN14605:2005+A1 2009  
Spray-Tight Chemical Protective Clothing

**TYPE 5**, EN13982-1:2004+A1:2010  
Particulate Protective Clothing

**TYPE 6**, EN13034:2005+A1 2009  
Limited Spray-Tight Chemical Protective Clothing

**METHOD 2**, ISO 17491-1:2012  
Internal pressure test

### ATEX Tested for use in explosive environments:

Dust Ex atmospheres: **ZONES 20, 21 & 22**

Gas Ex atmospheres: **ZONES 1 & 2**

Tested in accordance with EN IEC 60079-32-2: (2015) and CEN/CLC/TR 16832:2015



Type 3    Type 4    Type 5    Type 6



Infective Agents    Warfare Agents    Explosive Environments



## GLS 300 B

The GLS 300B suit in Chemprotex™ 300 is a single use gas-tight chemical protection suit designed for use with breathing apparatus worn outside the suit, a facemask and filter or airline respirator. The suit combines the benefits of a lightweight high-performance chemical barrier fabric with a gas-tight construction to method 2 of ISO 17491-1. It incorporates permanently attached antistatic chemical gloves, sock feet and a lightweight gas-tight zip.

- One-piece construction
- Integral hood with patented facemask seal providing a type 3 liquid jet seal with an outer chemical barrier fabric. Please see list of approved facemasks.
- Lightweight gas-tight zip fitted across the shoulders in rear of suit, with double external cover flaps with a hook and loop fastener
- Chemically protective anti-static glove attached to the suit material
- Integral socks in Chemprotex™ 300 material with splash-guard outer legs allowing the wearing of customer's own boots. (Boots not included)
- Must be worn with ESD footwear to ensure a conductive path to ground [when used in potentially explosive atmospheres]

### Tested for use with the following facemasks:

- MSA Auer 3S
- Draeger Panorama Nova

Please check: [www.respirexinternational.com](http://www.respirexinternational.com) for details of the latest tested facemasks.

### Testing & Certification:

**TYPE 3**, EN14605:2005+A1 2009

Liquid-Tight Chemical Protective Clothing

**TYPE 4**, EN14605:2005+A1 2009

Spray-Tight Chemical Protective Clothing

**TYPE 5**, EN13982-1:2004+A1:2010

Particulate Protective Clothing

**TYPE 6**, EN13034:2005+A1 2009

Limited Spray-Tight Chemical Protective Clothing

**METHOD 2**, ISO 17491-1:2012

Internal pressure test

### ATEX Tested for use in explosive environments:

Dust Ex atmospheres: **ZONES 20, 21 & 22**

Gas Ex atmospheres: **ZONES 0, 1 & 2**

Tested in accordance with EN IEC 60079-32-2: (2015) and GEN/CLC/TR 16832:2015



Type 3



Type 4



Type 5



Type 6



Infective Agents



Warfare Agents



Explosive Environments





## GLS 300 C

The GLS 300C suit in Chemprotex™ 300 is a single use air-fed gas-tight chemical protection suit for use with breathable air supplied from an external compressed air source providing positive pressure.

The suit combines the benefits of a lightweight high-performance chemical barrier fabric with a gas-tight construction to method 2 of ISO 17491-1. It incorporates permanently attached antistatic chemical gloves, sock feet and a lightweight gas-tight zip.

- Semi-rigid laminated visor
- Lightweight gas-tight zip fitted across the chest covered by double external storm flaps with hook and loop fastener
- Chemically protective anti-static glove attached to the suit material
- Integral socks in Chemprotex™ 300 material with splash-guard outer legs allowing the wearing of customer's own boots. (Boots not included)
- Must be worn with ESD footwear to ensure a conductive path to ground [when used in potentially explosive atmospheres]
- The air distribution system in the hood and air permeable collar provide cooling air through the suit, making the wearer more comfortable and better able to focus on tasks
- For use with Bartels & Rieger two piece air control valve (ref. RVD039W), supplied separately
- The hood design provides high protection without the need for a tight-fitting face piece, which means:
  - Many wearers feel less constricted
  - Can be used by wearers with facial hair or glasses
  - Training needs are reduced
  - Face-fit testing is not required



### Testing & Certification:

**TYPE 3**, EN14605:2005+A1:2009  
Liquid-Tight Chemical Protective Clothing

**TYPE 4**, EN14605:2005+A1:2009  
Spray-Tight Chemical Protective Clothing

**TYPE 5**, EN13982-1:2004+A1:2010  
Particulate Protective Clothing

**TYPE 6**, EN13034:2005+A1:2009  
Limited Spray-Tight Chemical Protective Clothing

**METHOD 2**, ISO 17491-1:2012  
Internal pressure test

### ATEX Tested for use in explosive environments:

Dust Ex atmospheres: **ZONES 20, 21 & 22**  
Gas Ex atmospheres: **ZONES 1 & 2**  
Tested in accordance with EN IEC 60079-32-2: (2015) and GEN/CLC/TR 16832:2015



Type 3



Type 4



Type 5



Type 6



Infective Agents



Warfare Agents



Explosive Environments



## BARILINE HH AIR CONTROL VALVE

### BARTELLS RIEGER

Adjustable air control valve with integral warning whistle model RVD039W manufactured by Bartells Reiger. Worn externally the Bariline HH valve connects to an external air supply via an Bartells Reiger BRK coupling and connects to the breathing air input of the GLS 300C suit using a Bartells Reiger AK5 coupling. The valve has been designed for ease of decontamination and to prevent the build up of electrostatic charge. The warning whistle operates at pressures below 3.5 bar.

#### Certification:

EN 14594:2005-07 Class 3B  
Continuous flow compressed air line breathing apparatus

#### When used with the GLS 300C Air System

Working Pressure: 3.5 – 4.5 bar

Airflow:	
Min	170l/min @ 3.5 bar with BR unit in closed/minimum position
Max	300l/min @ 4.5 bar with BR unit in open/maximum position

Noise:	
Min	65dB (@ 170l/min)
Max	70dB (@ 300l/min)

N.B. Antistatic hose & couplings should be used to ensure the ATEX test results for the GLS 300C suit are not compromised.



## KCL BUTOJECT® 898 GLOVE

The KCL Butoject® 898 from Honeywell® is a highly flexible glove made of butyl rubber manufactured using an environmentally-friendly injection moulding process.

This glove is very popular in the field of CBRN protection due to its excellent protection against a wide range of chemicals and gases. This glove also meets the new EN 16350 antistatic standard.



# Non-Gas-Tight Suits

# Non-Gas-Tight Suits

## Suit Options



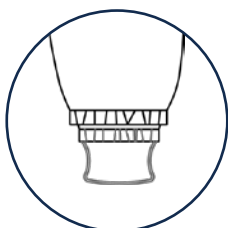
360° Flexible Visor provides all-round vision (not available on tank suit)



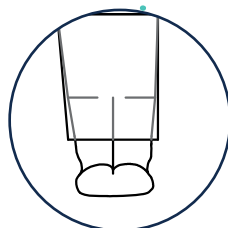
Rigid Visor (& optional cover) for increased durability



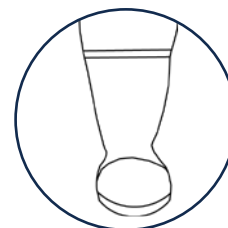
Locking cuff securely fixes the gloves to the suit, allowing the suit to be donned quickly when needed. Gloves can be replaced easily after use if required



Inner leg with elasticated ankle and stirrup, outer leg with elasticated ankle



Sock foot with outer splash guard leg allows the use of customers own boots.



Detachable Hazmax™ Boots





## Simplair Reusable Tank Suit

Type 2 non-gas-tight reusable tank suit available in a range of chemically resistant materials with rigid visor and outer disposable visor.

- 122cm (48") Heavy-duty gas-tight zip, positioned down the right hand side of the suit, closing at the top
- Respirix™ locking cuff system with reinforced cuffs
- Leg options: elasticated inner and outer legs with elasticated stirrups, sock foot or detachable Hazmax™ boots
- Audible warning device designed to activate if the airflow drops below the minimum required to maintain CO<sub>2</sub> below 1%
- Adjustable waist-belt supports the air system and is fitted with a foam back pad for increased comfort
- Air distribution block with twin breathing hoses to either side of the hood and cooling hoses to wearer's arms and legs
- Three-point hanging attachments
- Pigtail yellow PVC 3/8" bore air-hose, terminating in a 1/4" BSP male thread
- Exhalation valves ensure that the suit maintains a comfortable working pressure
- Available in Butyl, Neoprene or C2 PVC materials
- Required airflow: 360(min) to 440(max) L/min



Type 2

## Simplair Reusable Suit

Type 2 non-gas-tight reusable suit available in a range of chemically resistant materials.

- Air system completely contained within the suit that provides breathable and cooling air to the user
- Audible warning device designed to activate if the airflow drops below the minimum required to maintain CO<sub>2</sub> below 1%
- Adjustable waist-belt supports the air system and is fitted with a foam back pad for increased comfort
- Four exhalation valves ensure that the suit maintains a comfortable working pressure
- Flexible PVC visor giving a 360° field of vision, or durable rigid PVC visor (with optional removable outer visor) for undistorted vision
- Three-point hanging system which helps prevent distortion during storage
- 91cm (36") Water-tight zip or double-sided Nylon zip, fitted across the chest
- 15cm (6") Zip flap - plain or with hook and loop fastener
- Respirix™ locking cuff system
- Leg options: elasticated inner and outer legs with elasticated stirrups, sock foot or detachable Hazmax™ boots
- A wide range of approved airline couplings can be fitted to the suit, however it is recommended that large bore couplings are used
- Available in Butyl, Neoprene or C2 PVC materials
- Required airflow: 360(min) to 440(max) L/min



360° PVC Visor



Type 2



# Liquid Tight Protective Suits



## Chemprotex™ 300 SC4 Splash Suit

Lightweight, Type 3 liquid-tight chemical splash contamination suit, designed for SCBA worn inside the suit.

- Compatible with the **Permasure®** Toxicity Modeller for calculation of safe working time with a given chemical based on real world conditions (see page 65)
- Laminated anti-mist visor, giving clear undistorted vision
- Kemblok™ chemically protective laminated glove, welded to the suit material (see page 42)
- Supplied with separate neoprene outer gloves for mechanical protection
- Integral socks and splash guard outer legs in Chemprotex™ 300 material, allowing the wearing of customer's own boots (boots not included)
- Rear 117cm (46") vertical fine toothed zip runs up the back of the suit over the BA pouch, it is covered by a single flap secured with double sided tape.



Type 3

Infective  
AgentsWarfare  
Agents

Antistatic



Rear Vertical Zip



Welded Glove



BA Pouch



Sock Foot



# Liquid Tight Protective Suits

## Chemprotex™ 300 SC1 Splash Suit

Lightweight, Type 3 liquid-tight chemical splash contamination suit, designed for use with breathing apparatus worn outside the suit, or with a face mask and filter.

- Compatible with the **Permasure®** Toxicity Modeller for calculation of safe working time with a given chemical based on real world conditions (see page 65)
- One-piece construction in Chemprotex™ 300
- Integral hood, with Neoprene rubber face grommet, to seal around the wearer's face mask
- 91cm (36") Nylon zip, fitted across the shoulders in the rear of the suit, with double external zip-flaps sealed with double-sided tape
- Kemblok™ chemically protective laminated glove, welded to the suit material (see page 42)
- Supplied with separate neoprene outer gloves for mechanical protection
- Integral socks, with plain outer leg, allowing the wearing of customer's own boots (boots not included)



Flexible neoprene face grommet



Type 3



Type 4



Type 5



Type 6



Infective Agents



Warfare Agents



Antistatic



Radioactive Particles



Welded Glove



Sock Foot



## Chemprotex™ 300 SC1 Ultra

Lightweight, Type 3 liquid-tight chemical splash contamination suit, designed for use with breathing apparatus worn outside the suit, or with a face mask and filter.

- Compatible with the **Permasure®** Toxicity Modeller for calculation of safe working time with a given chemical based on real world conditions (see page 65)
- One-piece construction in Chemprotex™ 300
- Integral hood, with Neoprene rubber face grommet, to seal around the wearer's face mask
- 91cm (36") Nylon zip, fitted across the shoulders in the rear of the suit, with double external zip-flaps sealed with a hook and loop fastener for quicker donning & doffing
- Chemically protective butyl glove, permanently attached to the suit material
- Integral socks, with plain outer leg, allowing the wearing of customer's own boots (boots not included)
- Earthing strip on feet for use with ESD/Conductive boots to provide a conductive path from the gloves to earth for static sensitive applications



Flexible neoprene face grommet



Resealable Zip Flap



Permanently Attached Butyl Glove



Sock Foot



Earthing Strip



Type 3



Type 4



Type 5



Type 6



Infective Agents



Warfare Agents



Antistatic



Radioactive Particles

# Liquid Tight Protective Suits

## Emergency Responder Reusable Suit Options & Accessories

### Rear Shoulders Zip & Flap

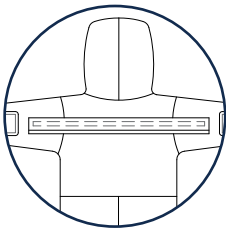
Used on the reusable SC1 this 91cm zip runs across the shoulders with storm flaps secured by a hook and loop fastener

### Gas-Tight Zip

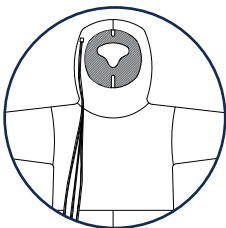
Used on the reusable SC4 and optional on the reusable SC1 this is a 122cm gas-tight zip fitted to the right of the suit running from the top of the thigh to the head.

### Locking Cuff

Securely fixes the gloves to the suit, allowing the suit to be donned quickly when needed. Gloves can be replaced easily after use if required



Rear Shoulder Zip



Gas-Tight Zip



Locking Cuff

### Double Elasticated Legs

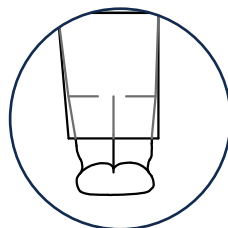
Inner leg with elasticated ankle and stirrup, outer leg with elasticated ankle, allows the use of the responders own chemical protective safety boots

### Sock Foot

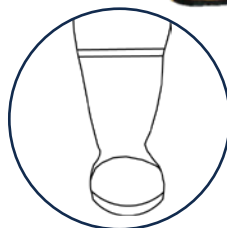
Sock foot with outer splash guard leg allows the use of customers own boots.

### Detachable Boots

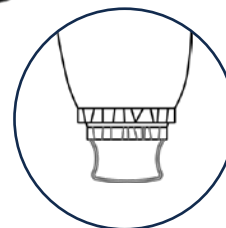
Detachable Hazmax™ boots provide excellent user comfort and protection and can be easily replaced if required.



Sock Foot



Detachable Hazmax™ Boots



Double Elasticated Leg (With Stirrup)



## Reusable SC1 Splash Suit

A reusable Type 3 splash contamination suit designed for Self Contained Breathing Apparatus (SCBA) worn externally.

- One piece construction with integral hood incorporating a face seal that is both shaped and flexible, which provides a tight seal around the breathing apparatus facemask, preventing liquid penetration
- Horizontal 91cm (36") zip positioned across the rear shoulders of the garment with storm flaps secured by hook and loop fastener
- Double layer of material at the rear to prevent wear caused by the breathing apparatus rubbing against the suit
- Elasticated inner legs with stirrups with elasticated outer legs designed to accommodate safety boots of the user's choice
- Safety gloves compatible with the material of the suit, fitted by means of either the Respirex™ locking cuff
- Available in a range of chemical resistant fabrics

### Options:

- Reinforced knees and elbows
- Gas-tight zip
- Self dress version with 122cm (48") gas-tight zip fitted vertically down the right hand side of the suit
- Detachable Hazmax™ boots



Type 3



Type 4

## Reusable SC4 Splash Suit

A fully encapsulating reusable Type 3 splash contamination suit designed for Self Contained Breathing Apparatus (SCBA) worn inside the suit.

- Flexible visor giving wide undistorted field of vision
- Heavy duty 122cm (48") long gas-tight zip, fitted to the right hand side of the suit
- Adjustable internal support belt allows users of varying sizes to wear the suit comfortably
- Elasticated inner legs with stirrups with elasticated outer legs
- Safety gloves compatible with the material of the suit, fitted by means of either the Respirex™ locking cuff
- Exhalation valves ensure that the suit maintains a comfortable working pressure
- Available in a range of chemical resistant fabrics



Type 3

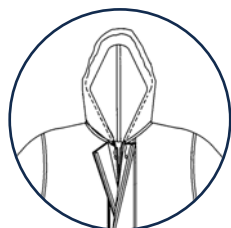


Type 4

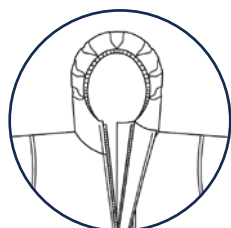


# Liquid Tight Protective Suits

## Reusable Chemical Workwear Options



Draw-string hood



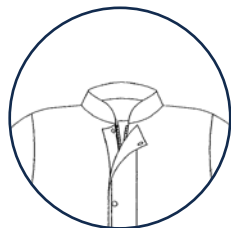
Elasticated hood



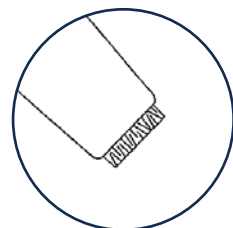
Short 2" Collar



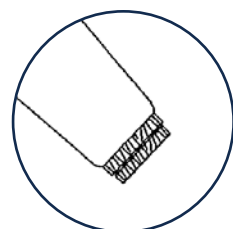
Squared Collar



Mandarin collar  
(pictured)



Elasticated cuff



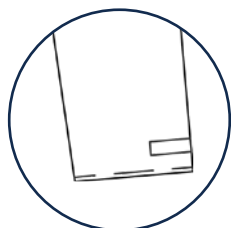
Double Elasticated  
cuff



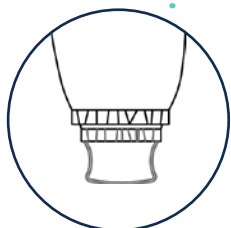
Soft cuff & cone



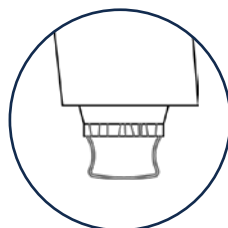
Locking cuff



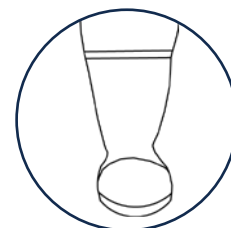
Plain leg with  
adjuster



Inner leg with  
elasticated ankle  
and stirrup, outer  
leg with elasticated  
ankle



Inner leg with  
elasticated ankle  
and stirrup, plain  
outer leg



Detachable  
Hazmax™  
Boots







## Reusable One-Piece Suits

### Siren Suit

Type 4 one-piece siren suit in Butyl, Neoprene or PVC, with a choice of collar. Nylon zip fitted from throat centre to right hand thigh, plain inner zip flap and single outer zip flap with hook and loop fastener. Available with a range of cuff and leg options (see below).

Collar Options: Mandarin, 2" collar, squared collar

Cuff Options: Single elasticated, double elasticated, Soft cuffs and cones, locking cuff.

Leg Options: Plain leg with hook and loop fastener for adjustment, elasticated inner with plain outer, double elasticated, detachable Hazmax™ boots.



Type 3\*



Type 4

**\*N.B.** Certified to Type 3 when used with a Simplair Hood - Requires taping at ankles (depending on leg option) and zip



## Reusable One-Piece Suits

### Cowl Suit

Type 3 one-piece cowl suit in yellow Neoprene with hood, Nylon zip fitted from throat centre to right hand thigh, plain inner zip flap and single outer zip flap with hook and loop fastener. Available with a range of cuff and leg options (see below).

Hood Options: Elasticated or draw string

Cuff Options: Single elasticated, double elasticated, Soft cuffs and cones, locking cuff.

Leg Options: Plain leg with hook and loop fastener for adjustment, elasticated inner with plain outer, double elasticated, detachable Hazmax™ boots.



Type 3\*

**\*N.B.** Taping required at ankles (depending on leg option), zip and facemask for Type 3.



## Reusable Jacket

Type 3\* jacket in Butyl, Neoprene or PVC and available with a choice of collar or hood. Nylon zip, fitted from throat centre to waist with plain inner zip flap and single outer zip flap with hook and loop fastener. For full protection, wear with an appropriate helmet with a Neoprene neck flap.

Collar Options: Mandarin, 2" collar, squared collar

Hood Options: Elasticated or draw string

Cuff Options: Single elasticated, double elasticated, Soft cuffs and cones, locking cuff.

## Reusable Trousers

Type 3\* bib-trousers in yellow Neoprene with red webbing braces and buckles at the front.

Leg Options: Plain leg with hook and loop fastener for adjustment, elasticated inner with plain outer, double elasticated, detachable Hazmax™ boots.



Type 3\*



Type PB[3]

**\*N.B.:** Jacket and trousers individually meet Type PB[3] and PB[4] but meet Type 3 and 4 when worn in combination. Jackets with a hood must be worn with a facemask to meet Type 3, Jackets with a collar must be worn with a protective hood (e.g. Simplair hood or Anti-splash hood).



Type 4\*



Type PB[4]

Taping required at ankles (depending on leg option), zip and facemask/hood for Type 3.



# Liquid Tight Protective Suits

## Lightweight Combi Suit

Lightweight, Type 3 liquid-tight, limited-life cowl suit, designed for use with a with a face mask and filter or appropriate face and head protection.

- Compatible with the **Permasure®** Toxicity Modeller for calculation of safe working time with a given chemical based on real world conditions (see page 63)
- One-piece construction in blue Chemprotex™ 300
- Integral elasticated hood
- Nylon zip, fitted vertically from groin to neck with twin flaps and hook and loop fastener to seal
- Unique zip-flap arrangement ensures liquid tight performance without the need for taping the flap
- Minimal taping required to achieve stated performance - unlike the majority of other suits that require taping at the wrist, ankle zip and facemask, the lightweight combi needs only a single piece of tape at the neck, dramatically reducing donning and doffing times
- Elasticated legs
- Double cuff with elasticated outer and soft elasticated inner for user comfort and thumb loop to ensure sleeves don't ride up the arm in use



Type 3



Type 4



Type 5



Type 6



Infective Agents



Antistatic



Double cuff with thumb loop



# Part-Body Protection

# Part-Body Protection

## Simlair Reusable Hood

Air-supplied hood available in yellow Neoprene material or PVC with a choice of a rigid visor and outer disposable visor or a soft 360° visor.

- Drawstring neck-seal
- PVC Hoods feature 360° soft visor; Neoprene hoods incorporate a rigid wraparound visor
- Three-point hanging attachments
- Adjustable waist-belt with back pad
- Simlair air system mounted in cape incorporating low-flow warning whistle
- Air distribution block with twin breathing hoses to either side of the hood.
- Pigtail yellow PVC 3/8" bore air-hose, terminating in a 1/4" BSP male thread
- Required airflow: 220(min) to 280(max) L/min

### Certification:

CLASS 4A (Head-top)

CLASS 4B (Belt Assembly)

EN 14594:2005, Respiratory protective devices



Type PB [4]



Neoprene



PVC



## NIOSH Reusable Blouse

A reusable blouse with Type C Continuous Flow Class NIOSH Approval (No: TC-19C-378). The blouse is manufactured from fluorescent red Neoprene and fitted with a double layer rigid visor with a removable outer visor.

- An air system contained within the hood that provides breathing air to the wearer
- An internal, adjustable waist-belt supports the air system
- Three-point hanging system
- Twin exhalation valves
- Can be used at between 12psi and 39psi (dependent on air supply hose length)
- Externally taped seams
- Open ended gas-tight zip fitted from the neck to waist
- Respirix™ locking cuff system
- External waist-belt provides a seal to the bottom of the blouse
- Required airflow: 170(min) to 280(max) L/min (6 to 10 CFM)



## Anti-Splash Hood

Reusable anti-splash hoods are available in a range of materials to provide the best possible protection against numerous potentially hazardous situations

- Designed for short duration work
- Highly chemically resistant visor
- Air vents at the front and rear of the hood
- Large front and rear capes providing protection to the chest area, secured by adjustable straps under the wearer's arms
- Hanging point bonded to the top of the hood to allow proper storage

### IMPORTANT NOTES

- Anti-Splash Hoods must not be worn in confined areas where there may be fumes or vapours, or the oxygen content in the air drops below 21%
- Strenuous work that increases the wearer's breathing rate should not be undertaken whilst wearing the hood



Type PB [4]



Neck Flap

Neck Wrap

## Neck Protection

Neoprene neck flaps and wraps secure to a safety helmet with hook and loop fasteners and provide splash protection for a wearers neck and prevent liquid spray entering a suit or jacket collar.

Neck flaps protect the rear and sides of the head, neck wraps provide full head and face protection in conjunction with a suitable helmet visor.

## Aprons

Reusable apron with adjustable neck fastener and ties.

Available in:

- VBV
- Neoprene
- C2 PVC.





# Particulate Protective Clothing





## Airprotex FM Convertible Suit

A versatile single use facemask suit developed for use in the nuclear industry to provide protection against particulate radioactive contamination.

- One piece air cooled suit designed for use with airline breathing apparatus
- For lower risk areas the suit can be easily converted with the Respirix™ breather pack for use without a facemask
- Built-in ventilation to arms and legs provides cooling for user
- Rear entry with double zip flap
- Choice of integral socks and outer legs, or anti-slip feet with ankle ties for internal footwear
- Removable gloves with O-ring cuff and sealing ring, or plain sleeves for taping
- CE marked to EN1073-1:1998, IL Class 5

### Type approved for use in the following configurations:

- Positive pressure demand airline respiratory system using Scott Respiratory Airline System (RAS) and Promask PP
- Constant airflow system using Scott Air Control waist-belt and Promask Combi
- Air fed suit system using Respirix™ breather pack and Scott air control waist-belt
- Please refer to Scott literature for required air flow/pressure

**N.B.** An emergency breather facility is provided in each combination

### Specifications:

Available in anti-static 300 µm unsupported PVC, or thermoplastic polyether based polyurethane film (TPU). Anti-static properties are in accordance with EN1149-1:1996.

### Options:

- Optional Welders version (300 µm PVC suits only)
- Optional Fall Arrest version (300 µm PVC suits only)



Radioactive  
Particles

## Frontair 2 Particulate Suit

The Frontair 2 one-piece suit is a single use air-fed garment that provides the highest level of protection against particulate contamination.

- Manufactured in flame retardant, blue tinted 300 µm unsupported anti-static PVC
- Air-dissipation system completely contained within the garment, that provides breathing and cooling air to the user
- User adjustable variable airflow control valve
- 360° swivelling airline system
- Adjustable, internal waist-belt
- Welded PVC gloves
- Anti-slip feet, with ankle ties
- Rear-entry, with double zip flap
- Clear visor, with horizontal and vertical fields of vision
- Six exhalation valves, fitted with covers
- Evacuation tear off strip across the chest of the suit
- Reinforced knee and elbow pads
- CE marked to EN1073-1:1998, IL Class 5
- Designed for use with breathable air supplied from an external compressed air source, providing positive pressure
- Required airflow: 260(min) to 600(max) L/min



Radioactive  
Particles

# Radioactive Particulate Protection

## Frontair 2 Particulate & Chemical Suit

The Frontair 2 one-piece suit is a single use air-fed garment that provides excellent protection against chemical and particulate contamination.

- Compatible with the **PermaSure®** Toxicity Modeller for calculation of safe working time with a given chemical based on real world conditions (see page 65)
- Manufactured in blue Chemprotex™ 300, a highly chemically resistant barrier laminate
- Air-dissipation system completely contained within the garment, that provides breathing and cooling air to the user
- User adjustable variable airflow control valve
- 360° swivelling airline system
- Adjustable, internal waist-belt
- Kemblok™ chemically protective laminated glove, welded to the suit material (see page 42)
- Anti-slip feet, with ankle ties
- Rear-entry, with double zip flap
- Clear visor, with horizontal and vertical fields of vision
- Six exhalation valves, fitted with covers
- CE marked to EN1073-1:1998, IL Class 5
- Designed for use with breathable air, supplied from an external compressed air source providing positive pressure
- Required airflow: 260(min) to 600(max) L/min

### Options

- Self dress front entry version



Radioactive  
Particles



Infective  
Agents



Anti-Slip Foot



## Nuprotex E Particulate Suit

The Respirax™ Nuprotex E suit provides protection in atmospheres where particulate contamination may be a hazard to the body.

- Elasticated face seal suits a variety of respirator full face masks
- Designed to allow a full range of head movement that will not affect the seal between the suit and face mask
- Contoured upper body for ease of fitting and removal
- Double outer overlapping zip flaps
- Plain cuffs for tape sealing to safety gloves
- Manufactured in flame retardant, blue tinted, 150 µm or 300 µm unsupported anti-static PVC
- CE marked to EN1073-2:2002, IL Class 2

### Approved Facemasks

- Avon N10
- Dräger Panorama Nova
- MSA Auer 3S
- Protector PPR2000 (phantom power assisted respirator)
- Scott Promask

### Options

- Optional Welders version (300 micron PVC suits only)



Type 4



Radioactive  
Particles





## Sellprotex Two-Piece Particulate Suit

The Sellprotex two-piece suit is a single use garment that provides the highest level of protection against particulate contamination.

- Button fasteners at the waist to join blouse and trousers, designed for tape sealing after donning
- Visor provides excellent all-round vision
- Integral sock with outer legs providing sealed protection
- Plain cuffs for tape sealing to safety gloves
- Emergency breather attachment (P3 filter not supplied) - can be blower assisted
- 360° swivel airline system with adjustable waist belt
- Manufactured from 300 micron PVC
- CE marked to EN1073-1:1998, IL Class 5
- Designed for use with breathable air supplied from an external compressed air source providing positive pressure
- Required airflow: 120(min) to 300(max) L/min

### Options

- Permanently attached gloves
- 'O' ring cuff system
- Welders version
- Fall arrest version



Radioactive  
Particles

## Sellprotex BT Two-Piece Particulate Suit

The Sellprotex BT two-piece suit is a single use garment that provides the highest level of protection against particulate contamination.

- Elasticated waist on trousers and blouse
- Elasticated cuffs
- Visor provides excellent all-round vision
- Integral sock with outer legs providing sealed protection
- 360° swivel airline system with adjustable waist belt
- Manufactured from 300 micron PVC
- CE marked to EN1073-1:1998, IL Class 5
- Designed for use with breathable air supplied from an external compressed air source providing positive pressure
- Required airflow: 120(min) to 300(max) L/min

### Options

- Elasticated ankle
- Integral booties with reinforced sole and ankle ties



Radioactive  
Particles





## Powered Respirator Suits & Hoods





## PRPS Suit

The Powered Respirator Protective Suit (PRPS) is a one-piece gas-tight chemical protective suit for use by emergency response personnel after a CBRN incident. The suit was developed in conjunction with the UK National Health Service and is now widely used in the UK and overseas.

- Manufactured from DuPont™ Tychem® TK, a high performance, lightweight, multi-layer chemical barrier material
- Respiratory system comprising a battery powered 3M™ Jupiter™ air filter unit fitted with a visual display unit mounted inside the suit at the base of the visor, and audible alarm
- Battery pack provides 1 hour operational use, plus 15 minutes for decontamination
- Twin 3M™ JRF-85 gas & particle filters provide protection against chemical and biological warfare agents
- Semi-rigid laminated visor
- Heavy duty gas-tight zip fitted across the chest enclosed by double external storm flaps with hook and loop fastener
- Dual glove system comprising protective outer gloves bonded to inner Kemblok™ laminate gloves
- Gas-tight locking cuff mechanism
- Highly chemically resistant Hazmax™ FPA safety boots permanently attached to suit
- Supplied with lightweight disposable Hazbag to quarantine the suit after use
- Available in a range of sizes (see over)

### Features and Benefits

- Powered respirator and loose-fitting hood provide cooling air over the head and through the suit, making the wearer more comfortable and better able to focus on tasks
- The loose-fitting hood design provides high protection without the need for a tight-fitting face piece, which means:
  - Many wearers feel less constricted
  - Can be used by wearers with facial hair
  - Training needs are reduced
  - Face-fit testing is not required
- The clear wide-view visor provides reassurance to casualties and victims by allowing easier, friendly 'whole-face' communication
- Compared to a gas-tight suit with SCBA, the PRPS suit and respirator is significantly lighter and more comfortable, with easier breathing and less equipment in body contact
- The lower weight and increased user comfort results in a lower physiological load than a conventional gas-tight suit
- Improved operational duration over gas-tight SCBA suits
- Up to six times the resource efficiency compared with gas-tight SCBA suits thanks to the lower physiological loading and increased duration
- Uncontaminated or 'decontamination-guaranteed' suits can be re-used following gas-tight re-test and re-certification

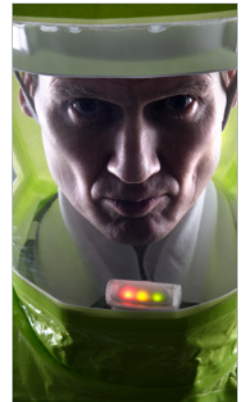
### Options:

- Reusable PVC training suit - PRPS(T)
- Primary (single-use) lithium battery for immediate operational use, and rechargeable battery for training use
- Optional rehydration system and hard-hat
- Choice of lightweight dexterity gloves for medical tasks or heavy-duty gloves for increased physical protection

DuPont™ and Tychem® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company.

3M™ and Jupiter™ are trademarks of the 3M Company

Hazmax™ is a registered trademark of Respirex International Limited



Type 1C\*



Infective  
Agents



Warfare  
Agents



Respiratory  
Protection

\*The PRPS is constructed to meet the requirements of Type 1C gas-tight chemical protective clothing, but cannot be certified to this standard as it uses a powered respirator rather than a compressed air supply for breathable air. Extensive testing of the suit has been undertaken against a variety of hazards - contact us for details.

## RJS Respiratory & Chemical Protective Suit

The RJS 300 Chemical Respirator Suit is a one-piece Type 3 chemical protective suit for use in hazardous industrial and emergency response environments.

Manufactured from Chemprotex™ 300, a high performance, lightweight, chemical barrier fabric the RJS suit protects the wearer against a broad range of industrial chemicals and other agents found in civil emergency situations.



Type 3



Type 4



Type 5



Infective Agents



Chemical Agents



Respiratory Protection

### Applications:

- Liquid chemical and solvent handling
- Hazardous waste remediation
- Asbestos abatement
- Petrochemical applications
- Pharmaceutical manufacture
- Laboratories
- Agriculture
- Infection control
- Mass decontamination
- Hospital first receivers
- Emergency Medical Service
- Casualty Transport
- Triage





### Suit Features:

- Air drawn through the filters enters through a breathing tube in the hood and exits through exhaust valves in the knees, providing a cooling air stream across the body
- Chest zip with double storm flap and hook and loop fastener - no taping is required to seal
- Kemblok™ chemically protective laminated glove welded to the suit material (see page 42), with elasticated over-sleeve for use with gloves providing mechanical protection without the need for taping of gloves
- Integral sock foot with elasticated outer leg allows the user to choose their own boots without compromising the level of protection
- Head-up display in the hood indicates turbo status, hours used and any warnings
- Suit achieves a Type 3 classification without the need for taping at the zip flap, sleeves or ankles, simplifying the donning & doffing process



### 3M™ Jupiter™ Powered Respirator

The Jupiter turbo unit in the RJS suit provides respiratory protection against a wide range of contaminants. An ergonomically designed padded backpack ensures the unit's low weight is comfortably carried on the user's shoulders. As a result, the Jupiter powered air turbo unit is comfortable enough to wear for entire work shifts.

- Head-up display indicates turbo status, hours used and warnings
- Audible and visual low airflow alarm
- Easy to adjust and maintain
- IP53 rating. Suitable for use in a decontamination shower.
- Choice of battery packs with up to 8 hours operational use
- Range of filters available offering protection from particulate, organic vapour, inorganic and acid gases and ammonia.

### 3M™ Jupiter™ Filter Options:

- P R - Particulates
- A2P R - Organic vapours and particulates
- A2BEK1P R - Combination organic vapours, inorganic and acid gases & ammonia and particulates
- ABE1P R - Combination organic vapours, inorganic and acid gases and particulates



3M™ and Jupiter™ are trademarks of the 3M Company  
Chemprotex™ is a trademark of Respirex International Limited

# Respiratory Protective Devices

## Flo-Pod™

The Flo-Pod™ is a simple to use powered air respirator for use against fine dust or particulate spray. Powered by a belt mounted rechargeable battery pack the Flo-Pod™ is designed to fit directly into the visor of compatible suits and hoods, allowing the user full operational freedom.

Designed from the outset to be comfortable and simple to use, the Flo-Pod™ requires little familiarisation prior to use and is lightweight and quiet in operation.

- Low energy, low-noise turbo, designed for optimum flow with maximum comfort
- No calibration required- Performs a full self-test on startup
- Four- or eight-hour rechargeable battery pack with fast charger
- Uses single P3 screw on filter
- Low-flow warning if airflow drops below the Manufacturer's Minimum Design Flow (MMDF) of 130 L/min
- Noise level at the ear 68dBA with a clean filter
- EMC tested for compatibility with other electrical equipment
- Intelligent fast charger prevents battery overcharging or damage (charging in up to three or six hours depending on battery model)
- Low battery warning

### Highly effective particulate filtration

- P3 Particle filter traps solid and liquid particles, e.g. dusts, smoke, mists, micro-organisms and radioactive particles
- Uses microfibre 'paper' media without any electrostatic filtering method. Marked 'R' for "reusable" (EN 143/A1:2006)
- High capacity filter element removes even the smallest particles with >99.99 % efficiency
- Water-repellent (hydrophobic) filter element

### Flo-Pod™ Starter Kits:

Starter kits contain the turbo unit, rechargeable battery pack, filter (x1), fast charger, belt and fixing spanner. Available with either a four or eight hour rechargeable battery and a UK (3 pin) or EU (2 pin) plug. Spare battery packs and replacement filters are also available.





## Flo-Pod™ Hood

A lightweight PVC hood combining excellent particulate protection, all-round visibility and a high degree of user comfort.

- Manufactured in 150 µm PVC
- Balanced single sized design for performance and comfort
- Elasticated draw-string neck seal
- Adjustable chest strap with quick release buckle
- Low pressure balanced exhalation valves developed for maximum protection
- More comfortable than a facemask and filter
- Can be worn by users with glasses or facial hair
- Wide field of vision
- With the Flo-Pod™ turbo unit removed the hood can be washed and re-used



Respiratory  
Protection



# Respiratory Protective Devices

## Flo-Pod™ Suit

A range of full body suits incorporating a large visor for excellent all-round visibility.

- Manufactured in either lightweight 150 µm PVC, heavy-duty 300 µm PVC or blue Chemprotex™ 300 (for chemical protection)
- Elasticated draw-string neck seal
- Horizontal zip on chest, with cover-flap and hook and loop fastener
- No taping required, simplifying donning and doffing
- Low pressure, balanced exhalation valves, developed for maximum protection
- Range of cuff and foot options:
  1. Suit with elasticated arms and legs
  2. Suit with welded Kemblok™ gloves and anti-slip foot
  3. Suit with welded Kemblok™ gloves and sock foot



Type 3



Type 4



Type 5



Infective Agents



Respiratory Protection



## Flo-Pod™ Emergency Breather Suit

A range of full body suits incorporating a large visor for excellent all-round visibility.

- Manufactured in Chemprotex™ 300
- Emergency breather unit fitted with a mouthpiece in the hood and a P3 filter and cover just below the shoulder
- Elasticated draw-string neck seal
- Horizontal zip on chest, with cover-flap and hook and loop fastener
- No taping required, simplifying donning and doffing
- Low pressure, balanced exhalation valves, developed for maximum protection
- Range of cuff and foot options:
  1. Suit with elasticated arms and legs
  2. Suit with welded Kemblok™ gloves and anti-slip foot
  3. Suit with welded Kemblok™ gloves and sock foot



Type 3



Type 4



Type 5



Infective Agents



Respiratory Protection







## Flo-Pod™ Developments

Respirex are currently working with a number of healthcare organisations in Europe on additional developments to the Flo-Pod™ system for use when handling contagious casualties.

The Chemprotex™ 300 suits fitted with the Flo-Pod™ powered respirator have already proved popular in this sector due to the high degree of protection provided, ease of use and simplicity of decontamination. Following a customer request we developed the Flo-Pod™ emergency breather suit (opposite) which is fitted with an emergency breather unit with additional P3 filter.

In the event of a failure of the respirator, or if the battery is exhausted, the suit can continue to be worn and the user can make their way to a decontamination point so that the suit can be doffed safely. This overcomes this risks in conventional suits of a rushed 'emergency' exit where there is insufficient time for proper decontamination.

### Pusher Unit

When transporting a patient the opportunity to safely decontaminate and doff a suit in the event of a failure or exhausted battery might be unavailable. For this scenario Respirex developed a 'pusher' unit with a hose that clips to the front of the filter and uses a shoulder strap mounted variation of the Flo-Pod™ turbo with an integral single use battery back to push air through the filter on the suit visor and into the suit hood maintaining positive pressure and allowing the wearer to continue to work for up to 45 minutes.



### Decontamination Unit

The preferred method of decontamination in many healthcare organisations is to spray the entire suit with a dilute peracetic acid solution before wiping the suit down; this is an irritant with a strong odour that can become unpleasant after extended exposure. The P3 particulate filter used with the Flo-Pod™ is ideal for blocking airborne spores, viruses and bacteria but would not remove the acid vapours. We were asked if it was possible to provide a solution that would prevent the wearer of the suit breathing in the peracetic acid vapour during the decontamination process and before doffing the suit.

Following this enquiry, we developed a portable powered filtration system that clips onto the existing P3 filter on the visor and incorporates four filters that block acid gasses & vapours. The decontamination unit is housed in a small water resistant housing that also holds the 4m air hose and clip to attach it to the Flo-Pod™ filter. Before decontamination begins the decontamination unit is started and wearer of the suit clips the hose from the decontamination unit over their P3 filter, they are then decontaminated as normal and keep the hose attached to the filter on their suit unit they doff the garment. The decontamination unit is then unclipped and can be used again immediately. With a battery life of eight hours the decontamination unit can be used multiple times in an incident, after which the hose & clip can be replaced.

Both of these units are currently undergoing user trails - for further details, please call or sales team.





# Kemblok Glove



## KEMBLOK™ Glove

Manufactured using a seven-layer chemical barrier laminate material, Kemblok™ gloves provide excellent protection against a wide range of chemicals.

- Protection against chemicals and micro-organisms to EN 374-1:2003
- Can be worn as a liner under heavier gloves providing mechanical protection
- Lightweight & comfortable
- Compatible with the Permasure™ toxicity modelling web application which calculates safe working times for over 4,000 chemicals - for more details visit: [www.respirex-permasure.com](http://www.respirex-permasure.com)
- Working temperature -40°C to 70°C
- Silicone and latex free
- REACH compliant

### Certification:

- **EN374-1:2016 - Type A**  
Protective gloves against chemicals & micro-organisms. Permeation Level 6 with reagents A, D, E, G, H & L
- **EN374-5:2016**  
Protective gloves against chemicals & micro-organisms. With EN 374-2:2014 AQL Performance Level 3 including Viral Penetration

### Additional:

- EN 420+A1:2009 Finger Dexterity Level 5

### Chemical Warfare Agent Protection:

Kemblok™ gloves have been tested in accordance with FINABEL O.7.C methods at the respected Proqaeres laboratory for resistance to permeation by chemical warfare agents against the following agents:

Agent	Breakthrough time (hours)	Temperature (°C)
Mustard agent (HD)	>48	37
Sarin (GB)	>48	37
Soman (GD)	>48	37
VX	>48	37

For chemical permeation data see page 61.

### Sizing:

	Small	Medium	Large
EU Size	11-12	13-14	14-15
US Size	12-13	14-15	15-16

### Supply:

Kemblok™ gloves are supplied in sealed bags of 10 pairs. For larger orders these are supplied in an inner carton that holds 5 bags (50 pairs) with an outer carton that holds 5 inner cartons (250 pairs).

	Small	Medium	Large
Product Code (Pack of 10 pairs)	B00385/9	B00385/11	B00385/13

Kemblok™ and Respirex™ are registered trademarks of Respirex International Limited  
Permasure™ is a registered trademark of ITP Limited





# Protective Footwear



## Workmaster™ Boot Features

The Workmaster™ range of boots and overboots are made in the UK at our state of the art automated boot factory. The injection moulding manufacturing process guarantees a seamless, leak-free construction and all our boots are **REACH** compliant. Boots and insoles are machine washable at up to 40°C and have a shelf-life in excess of 10 years.

Over 30% of industrial accidents result from slips, trips and falls - as Workmaster™ boots are used in an environment where there are liquids present, a slip resistant sole is crucial, which is why we fit a high-performance vulcanised rubber sole to the majority of 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 two to three times that of conventional soles
- The sole is resistant to fuel and oil
- Greater cut resistance than conventional soles
- Resistance to hot contact for 60 seconds at 300°C
- Cold insulation



## WORKMASTER™ HAZMAX™

Hazmax™ boots and overboots provide unrivalled protection against a wide range of aggressive chemicals and are widely used by emergency responders and people working with or transporting hazardous or aggressive chemicals. Hazmax™ boots and overboots are certified to EN13832-3, the European standard for chemical protective footwear and meet the requirements of NFPA 1991 for chemical vapour protection. See page 63 for chemical permeation data.

Applications	Hazmax™	Hazmax™ ESD	Hazmax™ Compact Overboot	Hazmax™ Maxi Overboot
Petrochemical	✓	✓	✓	✓
Pharmaceutical	✓	✓	✓	✓
Industrial Chemicals	✓		✓	✓
Hazardous Waste	✓		✓	✓
Emergency Services	✓		✓	✓
Electronics		✓		

### Hazmax™ Boot

A chemically-protective anti-static safety boot with an integral steel toe cap, hard-wearing vulcanized rubber sole for superior slip resistance and kick off lug for hands free removal.

- Conforms to EN 943-1 (chemical protective clothing)
- Stainless steel, penetration resistant mid-sole
- Energy absorbing heel and cushioned insole (removable and machine washable), ensure user comfort
- Fuel and oil resistant sole

#### Certification:

Chemical Protective Footwear EN 13832 pt 3  
 Personal Protective Equipment PPE DIR 89/686/EEC  
 Safety Footwear EN ISO 20345: 2011



### Hazmax™ ESD Boot

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

- For use in EPA areas conforming to EN 61340-5 (ESD 99.6 MΩ dry, 11.8 MΩ wet EN ISO 20345)
- Conforms to EN 943-1 (chemical protective clothing)

#### Certification:

Chemical Protective Footwear EN 13832 pt 3  
 Personal Protective Equipment PPE DIR 89/686/EEC  
 Safety Footwear EN ISO 20345: 2011





## Hazmax™ FPA Boots

Hazmax™ FPA boots offer the same performance as Hazmax™ boots but provide increased heat resistance and conform to the EN 15090:2012 F3A Fire fighter boot standard.



## Chemical Compact Overboot

A chemically-protective anti-static overboot with a front opening design for ease of fitting over typical safety shoes.

- Conforms to EN 943-1 (chemical protective clothing)
- Adjustable two-button fastener
- Single piece Injection moulded construction ensures that there are no seams to leak and no metal fasteners to corrode
- Slip resistant fuel & oil resistant yellow sole
- Kick-off lug

**Certification:**

Chemical Protective Footwear	EN 13832 pt 3
Personal Protective Equipment	PPE DIR 89/686/EEC
Safety Footwear	EN ISO 20347:2012



## Chemical Maxi Overboot

A chemically-protective anti-static overboot with a hard-wearing vulcanized rubber sole for superior slip resistance. The unique rear opening design makes it easier for wearers of large or bulky safety boots to fit.

- Strap is quick and easy to fasten, even when wearing gloves
- Conforms to EN 943-1 (chemical protective clothing)
- Injection moulded construction ensures that there are no seams to leak or metal fasteners to corrode
- Kick-off lug

**Certification:**

Chemical Protective Footwear	EN 13832 pt 3
Personal Protective Equipment	PPE DIR 89/686/EEC
Safety Footwear	EN ISO 20347:2012



## Quick-Don CBRN Overboot

A chemically-protective anti-static overboot with a hard-wearing vulcanized rubber sole for superior slip resistance. The unique rear opening design makes it easier for wearers of large or bulky safety boots to fit.

- Strap is quick and easy to fasten, even when wearing gloves

**Certification:**

Chemical Protective Footwear	EN 13832 pt 3
Personal Protective Equipment	PPE DIR 89/686/EEC
Safety Footwear	EN ISO 20347:2012





## WORKMASTER™ DIELECTRIC

Dielectric boots are 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. High voltage electric current can stop the heart or produce fatal burns.

Dielectric boots are used for working on live power or in the area of live power, as current can jump large distances, especially in wet or damp conditions. There have also been fatalities caused by digging in locations where power cables are buried underground and the cable has been inadvertently cut by a drill, shovel, or with a pneumatic mole.

### Why use Workmaster™ dielectric boots?

- They are waterproof and their performance is not affected if they get wet
- Unlike leather boots, the performance of Workmaster™ dielectric boots is not compromised by perspiration
- The wearer is always protected, unlike dielectric matting, which the user can step off unintentionally
- At 5kV, AC current can jump 40mm, which is greater than the depth of a typical safety shoe sole
- Every single boot is electrically tested before it leaves the factory, ensuring the highest quality & safety
- Boots are available tested against AC or DC voltages, depending on the customer requirement

### What is EN 50321-1:2018?

An updated standard for insulating footwear for live working that adds three new classes of working voltage from 7.5kV to 36kV (up from the previous maximum of 1kV) and includes DC voltages for the first time. It also now includes a test procedure for electrical testing for boots fitted with a midsole.

### DIELECTRIC HV3

EN 50321-1:2018 Class 3 boot incorporating lightweight construction with a with moulded compound sole.

TESTED TO: **30kV**  
WORKING: **26.5kV**



### DIELECTRIC

EN 50321-1:2018 Class 2 boot with a durable, slip resistant, vulcanised rubber sole.

TESTED TO: **20kV**  
WORKING: **17kV**

### FOODMAX D

EN 50321-1:2018 Class 0 boot with a with moulded compound sole.

TESTED TO: **5kV**  
WORKING: **1kV**







## OTHER APPLICATIONS:

### Food Industry

#### FOODMAX

Comfortable hard-wearing S4 boot with a cut resistant upper, cushioned mid-sole for reduced weight, a vulcanised rubber sole for superior grip and excellent low temperature performance. [Colour: white or blue]

#### FOODLITE

A lightweight boot with superb low temperature flexibility, PVC and halogen free construction with the option of a vulcanised sole for superior grip. Available as an S4 boot (with steel toecap) or O4 (soft toe). [Colour: white or blue]



### Agriculture

#### FARMLITE

A lightweight boot with superb low temperature performance, PVC and halogen free construction with a hard wearing vulcanised sole for superior grip. Available as an S5 boot (with steel toecap and midsole) or O4 (soft toe). [Colour: Green]

#### TASKPRO

Comfortable hard-wearing S5 boot with a cut resistant upper, cushioned mid-sole for reduced weight, a vulcanised rubber sole for superior grip, excellent resistance to common farming and industrial chemicals and superior low temperature performance. [Colour: Charcoal Grey]

### Industry

#### TASKLITE

A lightweight S5 safety boot with superb low temperature flexibility, PVC and halogen free construction with a hard wearing vulcanised sole for superior grip. [Colour: Grey]

#### TASKPRO

Comfortable hard-wearing S5 boot with a cut resistant upper, cushioned mid-sole for reduced weight, a vulcanised rubber sole for superior grip, excellent resistance to common farming and industrial chemicals and superior low temperature performance. [Colour: Charcoal Grey]

#### SOLESTAR ESD

Cost effective PVC S5 boot for use in electrostatic protective areas conforming to EN 61340-5 (ESD 99.6 MΩ dry, 11.8 MΩ wet EN ISO 20345) with oil-resistant sole. [Colour: Yellow]





CBRN

# CBRN Incident PPE Selection



## Encapsulated Gas-Tight Suit

Required for entry into an unknown hazardous environment

### Respirex™ Models:

GTL, Tychem® TK, GTB



## PRPS Suit

'Gas-Tight' Powered respirator suit. Used for decontamination and in the hot zone, but only after the hazardous substance has been identified, and upon verification of adequate oxygen in the environment

### Respirex™ Models:

PRPS

## HOT ZONE

Contaminated Area



## Chemical Splash Suit (Type 3)

When used with BA this may be used for decontamination procedures for an unknown substance and for entry into hot zones where the agent is not caustic.

### Respirex™ Models:

SC1, Chemprotex™ 300 SC1



## Chemical Respirator Suit (Type 3)

Used for decontamination once the hazardous substance has been identified, and upon verification of adequate oxygen in the environment

### Respirex™ Models:

RJS

## WARM ZONE

Decontamination Area



## Decontamination Modesty Packs

Unisex pre & post decontamination modesty packs for use by contaminated casualties

### Respirex™ Models:

PRE & Post Decon Kits

## COLD ZONE

Treatment Area

## Decontamination Showers



Lightweight and quick to deploy, the inflatable Decontamination Unit range from MFC International allow for rapid response

Fully inflatable, these Decontamination Shelters can be set up in a matter of minutes, and will stay standing without continuous inflation. With no structural framework the shelters are lightweight to transport and compact to store. The Decontamination units come in three sizes, the **Single Person Decon Shower**, the **Four Person Decon Shower** and the **Mass Decon Shower**.

The Mass Decontamination Shower is internally partitioned into three lanes (male, female & assisted casualty), with pre and post decon changing areas.

Optional raised floor panels prevent contact with contaminated shower wash-off which is collected in a chemically resistant sump. Sleeves for pumped extraction of contaminated water are included as standard.

Showers can be used on hard or soft standing, and guy ropes are provided for securing in position.

### Features:

- Lightweight and compact
- Rapid inflation and deployment
- Low maintenance
- Easily detachable lining
- Integral multi-nozzle shower systems for wash and rinse
- Wash brush hose connection fittings
- Large roll-up doors at each end with zip closure
- Bespoke decontamination showers can be designed to accommodate your specific requirements



**Standard Equipment**

- Single/Four Person Shower
- Waste Water Hose Sleeves
- Guy Ropes
- Transport Valise
- Shower hose & nozzles

**Optional Equipment**

- Raised floor panel
- Waste water pump
- Hoses & brushes
- Electric inflater
- Pillow water tanks
- Waste water containment
- Pressure compensating units
- Lettering/Logos

**Standard Equipment**

- Mass Decon Shower
- Waste Water Hose Sleeves
- Guy Ropes
- Transport Valise
- Shower hose & nozzles
- Heater sleeves
- Ventilation panels

## Body Bag

A gas-tight body bag, designed to contain chemically contaminated mortalities and body parts after a Chemical, Biological, Radiological or Nuclear (CBRN) incident.

- Manufactured with a high performance barrier fabric shell, which provides excellent protection against a broad range of chemicals
- Provides a physical barrier to particulate, liquid, vapour and gas materials with a minimum breakthrough of 48 hours
- Lightweight material for ease of storing, transporting and handling
- Durable material with an abrasion resistant reinforced PVC base
- Enhanced CBRN filter (3M JFR-85) allowing gasses produced by the body as part of the decomposition process to pass out of the bag
- Shut off valve over CBRN filter exhausts
- Sturdy carrying straps
- Absorbent pads in the bottom of the bag capable of holding more than five litres of fluid
- Heavy duty gas-tight zip around three sides of the bag for ease of access, fitted with DuPont™ Viton® ring on slider for ease of use when wearing CPPE gloves
- Disposal by means of either cremation or burial
- Clear hazard warning signs identifying the type of CBRN hazard within the bag
- Two waterproof A4 pouches for identification paperwork Clear viewing window to allow relatives to view the deceased



## Casualty Transportation Bag

The casualty bag is designed for transporting chemically contaminated and seriously injured patients.

- Designed to prevent chemical contamination of staff, vehicles and facilities from casualties in transit or at medical facilities prior to decontamination or treatment
- Manufactured from blue Chemprotex™ 300 material, a high performance barrier material which is extremely flexible
- Provides outstanding protection against hazardous dusts and powders, organic and inorganic acids and bases, blood and blood borne pathogens, and many chemical mixtures in aerosol or spray form
- Full length Nylon zipper
- Elasticated hood
- Ultrasonically welded or sewn and taped seams
- Facemask supplied separately

**Important Note:** Suitable chemical protective clothing should be worn by Paramedics, Ambulance and A&E Department personnel when handling patients that need to be transported in the bag



## Hazbag

Hazardous material containment bag manufactured from Chemprotex™ 300 material. The bag is supplied with a strong cable tie to seal the neck of the bag with a tag and wallet on the tie for identification.

Dimensions: 1050 x 1370mm



## Modesty Pack, Pre-Decontamination

Allows contaminated casualties to change from their own garments in as dignified a manner as possible prior to decontamination in a drench shower.

### Pack Contains:

- Orange zip-up holdall with instructions
- Pair thick grey socks
- Pair black rubber non-slip footwear
- High-Vis thermal orange hooded cape
- Pair disposable blue gloves
- Disposable 'fish' knife
- Disposable facemask
- Personal cleansing face wipe
- Numbered small clear PVC bag with tie for valuables
- Numbered large clear PVC bag with tie for disposed garments



## Modesty Pack, Post-Decontamination

For use after casualties have set aside their own garments and have been decontaminated in a drench shower.

### Pack Contains:

- Orange zip-up holdall with instructions
- Pair thick grey socks
- Pair black rubber non-slip footwear
- Pair of disposable underwear
- Disposable green blouse and trousers
- Disposable white towel
- Sanitary towel
- Olive green waterproof trousers and jacket



## Gas-Tight Suit Test Unit

Computer controlled operated testing unit that automatically inflates a suit from a compressed air supply (max 3.5 bar) and performs a pressure test giving a graphical display with a clear pass or fail indication.

As an option the Automatic Gas-tight Verification Unit is available with a separate pump which allows suits to be inflated without the need of an external compressed air supply.

- Designed specifically for determining the leak tightness of gas-tight chemical protection suits (internal pressure test) to the European standard EN464:1994 as required by clause 6.3 of EN943-1:2002.
- Simple to operate with minimal training required
- Reduction in labour costs
- Cannot damage the suit by over inflation
- Avoids spillage of liquid used by 'manometer' style test rigs
- Single connection to the suit
- CE marked
- Supplied with a suitable region specific power adapter
- Compliant with the European low voltage and EMC directives
- Data collection available via USB

The test cycle can be carried out by the equipment without an operator being present and with the display frozen the operator can return at any time to check on the status of the suit.



## Portable Air-Filter Cabinet

A three stage filter set, designed to ensure that the air-supply is clean and breathable to EN12021:1999.

- Three stage filtration
  1. Grade AO - High efficiency general purpose protection (1 micron)
  2. Grade AA - High efficiency oil removal filtration (0.01 micron)
  3. Grade ACS - Activated carbon filtration for the removal of oil vapour and hydrocarbon odours
- Adjustable pressure regulator with pressure gauge
- Internal low pressure alarm with external whistle
- Cabinet manufactured in durable, lightweight Polyethylene
- Large bore pipe work and regulator allow maximum airflow
- Weatherproof cabinet with carrying handle
- Air can be supplied from most suitably rated compressors
- Customers choice of couplings

## Auto-Rewind 15m Hose Reel

Designed to provide a safe, convenient and efficient way to deploy air hose where required. Constructed in high impact UV stabilized polypropylene for durability, the 15m hose reel can be installed indoors or out.

- Average weight of just 10 kg (22 lb) including hose
- Reels are supplied with hose ready for easy installation
- Mounting bracket included for wall or overhead positioning which allows the reel to swing through up to 270° or to be fixed centrally
- Optional bench or floor mount also available
- Brackets feature a padlock facility to secure the reels in place
- Two-position switch provides latching of hose at 0.5m intervals or a free run of hose for maximum convenience.







## Respirex™ Reinforced Air Hoses

A range of compressed air hoses to EN 270, available in either yellow reinforced PVC or green heavy-duty reinforced PVC.

- Terminated at each end in with customers choice of connector
- Bore size 9.5mm (3/8")
- Outside diameter 16mm for yellow hose, 21mm for green hose
- Working pressure of 10 Bar
- Tested in accordance with EN14594
- Range of lengths available



## Air-line Swivel

Allows long lengths of airline hose to swivel thus avoiding coiling and snagging. Suitable for use with all Respirex™ hose lines. Tested in accordance with EN270:1994. Includes DuPont™ Viton® 'O'-rings and seals stainless steel hose tails and ferrules.

Can be specified as an addition to any standard hose length and will be fitted 600mm from one end of the hose.

## Koolvest™

Provides comfortable cooling for users of unventilated chemical protective clothing.

- Manufactured in PROBAN® flame retardant material
- Absorbs heat generated by the wearer and maintains a comfortable cooling level of 65°F/18°C
- Can be worn directly against the skin
- One size fits all vest with adjustable straps.
- Four internal pockets for the pre-charged KoolPacks
- KoolPacks are simple to recharge in a fridge, portable cooler or even iced water



## Material Testing

Respirex™ thoroughly test all of the materials that we use in our garments and we 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.

## Chemical Permeation

### What is Permeation? <sup>a</sup>

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

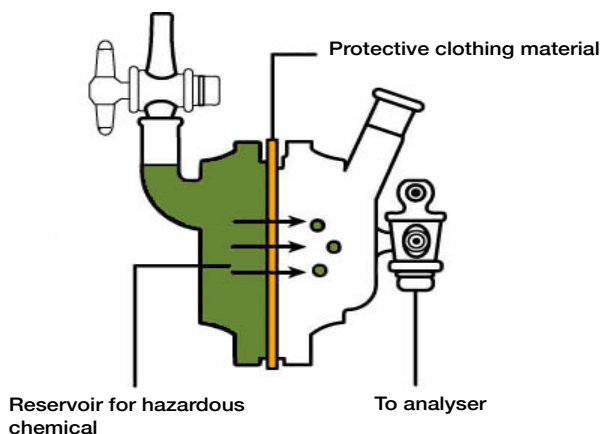
### Permeation involves:

- 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?

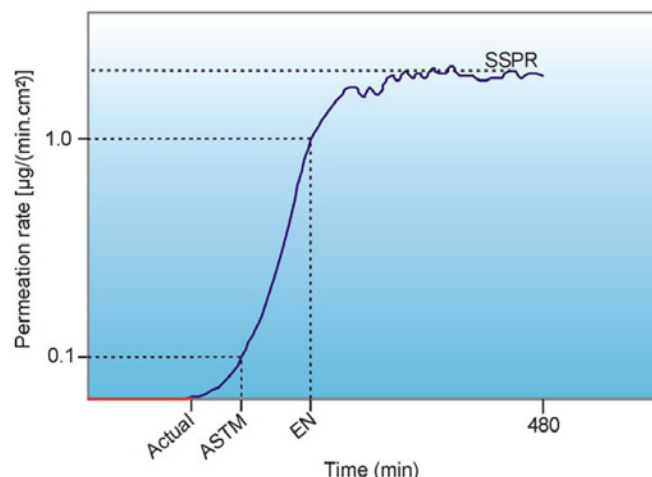
The resistance of a protective clothing material to permeation by hazardous liquid and gaseous chemicals is defined by the permeation rate of the chemical through the material and the breakthrough time.

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 <sup>a</sup>. 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.



## Permeation Rate

The mass of test chemical permeating the protective clothing material for a given exposed surface area per unit time <sup>b</sup>. This is typically expressed as µg/(min.cm²).

### Actual breakthrough time

The elapsed time measured from the start of the test to the time at which the test chemical is first detected <sup>a</sup>. The actual breakthrough time is therefore dependent upon the MDP, which in turn is dependent on the chemical and analytical technique employed.

### Steady State Permeation Rate (SSPR) <sup>a</sup>

The constant rate of permeation that occurs after breakthrough when the chemical contact is continuous and all forces affecting permeation have reached equilibrium. It is possible that steady state permeation may not be achieved during the period for which permeation testing is conducted.

### Minimum Detectable Permeation Rate (MDPR) <sup>c</sup>

The lowest rate of permeation that is measurable with the complete permeation test system. The sensitivity of the test method in detecting low permeation rates is determined by the combination of the analytical technique and collection system selected, and the ratio of material specimen area to collection medium volume or flow rate.

### Normalised breakthrough time (according to ASTM F739-07)

The elapsed time measured from the start of the test to the time at which the test chemical reaches a permeation rate of **0.1 µg/(min.cm²)**.

### 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.cm²).

Performance classification of normalised breakthrough times (EN374-3:2003) <sup>d</sup>

Normalised Breakthrough Time (EN374-3:2003) (minutes)	EN Class
>10	1
>30	2
>60	3
>120	4
>240	5
>480	6



## 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 0.1 µg/(min.cm<sup>2</sup>) (ASTM F739-07) or 1.0µg/(min.cm<sup>2</sup>) (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.

## Other chemicals and mixtures

The permeation characteristics of mixtures of chemicals can be different from those displayed by the individual chemical. Testing can be commissioned from the Respirix™ Testing Laboratory (an independent UKAS accredited laboratory) if there is a chemical or mixture that you use that does not appear within the permeation data tables.

## References used in this section on chemical permeation:

- BS EN ISO 6529:2001 Protective clothing – Protection against chemicals – Determination of resistance of protective clothing materials to permeation by liquids and gases.
- BS EN 374-3:2003 Protective gloves against chemicals and micro-organisms – Part 3: Determination of resistance to permeation by chemicals.
- ASTM F739-07 Standard Test Method for Permeation of Liquids and Gases through Protective Clothing Materials under Conditions of Continuous Contact.
- BS EN 374-1:2003 Protective gloves against chemicals and micro-organisms – Part 1: Terminology and performance requirements.

## Mechanical Properties of Materials

		Viton® /Butyl /Viton®	Laminate Viton®	Viton® /Butyl /Poly.	Tychem® TK	Chemprotex™ 400	Chemprotex™ 300	Butyl	Neoprene	PVC C2	Heavy Duty PVC	300µm PVC	150µm PVC
Abrasion Resistance	EN 530 Method 2												
Flex Cracking Resistance	EN ISO 7854 Method B												
Tear Resistance	EN ISO 9073-4												
Tensile Strength	EN ISO 13934-1												
Puncture Resistance	EN 863												
Resistance to Ignition	EN 13274-4 Method 3												
Seam Permeation Resistance	EN ISO 6529												
Seam Strength	EN ISO 13935-2												

	Abrasion	Flex Cracking	Tear	Strength	Puncture	Permeation	Ignition*	Seam Strength	Seam Permeation
Class 6 (Best)	> 2,000	> 100,000	> 150 N	> 1,000 N	> 250 N	> 480 min	Pass	> 500 N	> 480 min
Class 5	> 1,500	> 40,000	> 100 N	> 500 N	> 150 N	> 240 min	-	> 300 N	> 240 min
Class 4	> 1,000	> 15,000	> 60 N	> 250 N	> 100 N	> 120 min	-	> 125 N	> 120 min
Class 3	> 500	> 5,000	> 40 N	> 100 N	> 50 N	> 60 min	-	> 75 N	> 60 min
Class 2	> 100	> 2,500	> 20 N	> 60 N	> 10 N	> 30 min	-	> 50 N	> 30 min
Class 1	> 10	> 1,000	> 10 N	> 30 N	> 5 N	> 10 min	Fail	>30 N	> 10 min

\* Resistance to Ignition is given purely as pass or fail ( not as a class )

White boxes indicate no test results available at time of publication.

# Suits by Material

		VBV	Laminate Viton®	VBP	Tychem® TK	Chemprotex™ 400	Chemprotex™ 300	Butyl	Neoprene	PVC C2	300 Micron PVC	150 Micron PVC
<b>Gas-Tight Suits</b>												Type 1
GTB (ET)	Type 1A (ET)	•	•							T		
Tychem GT	Type 1A (ET)				•					T		
GTL	Type 1A (ET)					•						
GTA	Type 1C	•		•				•	•			
<b>GLS Suits</b>												
GLS 300A	Type 1A (ET)						•					
GLS 300B	Type 1A (ET)						•					
GLS 300C	Type 1A (ET)						•					
<b>Non-gas-tight Chemical Suits</b>												Type 2
Simplair Suit	Type 2	•		•				•	•	•		
Simplair Tank Suit	Type 2	•		•				•	•	•		
<b>Liquid Tight Chemical Splash Suits</b>												Type 3
SC1 Chemprotex™ 300	Type 3						•					
SC4 Chemprotex™ 300	Type 3						•					
SC1 Reusable	Type 3	•						•	•	•		
SC4 Reusable	Type 3								•	•		
<b>Liquid Tight Chemical Workwear</b>												Type 3
Reusable 1-Piece Suit	Type 3	•						•	•	•		
Reusable Jacket & Trousers	Type 4							•	•	•		
Chemprotex™ 300 Combi	Type 3						•					
<b>Part Body Chemical Protection</b>												
Simplair Blouse	Type C							•	•	•		
Simplair Hood	Type PB[4]	•						•	•	•		
Splash Hood	Type PB[4]							•	•	•		
Neck cloths								•	•			
Aprons		•						•	•	•		
<b>Radioactive Particulate Protective Clothing</b>												EN 1073
Airprotex FM	Class 5										•	
Frontair 2 PVC	Class 5										•	
Frontair 2 Chemprotex™ 300	Class 5						•					
Sellprotex	Class 5										•	
Sellprotex BT	Class 5										•	
Airprotex BS	Class 5										•	
Nuprotex	Class 2										•	•
<b>Powered Respirator Suits &amp; Hoods</b>												EN 12941
PRPS					•					T		
RJS Chemprotex™ 300	Type 3						•					
Flo-Pod Suit							•				•	•
Flo-Pod Hood												•

T - Training Suits Only



## Key to Permeation Tables

### Breakthrough Times:

- Breakthrough times over 480 minutes
- Breakthrough times 241 to 480 minutes
- Breakthrough times 61 to 240 minutes

- Breakthrough times 31 to 60 minutes
- Breakthrough times less than 30 minutes
- Not tested

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

Chemical	CAS Number	Laminate Viton® (A00158 - Orange)	Viton® / Butyl / Viton® (A00003 - Orange)	Viton® / Butyl / Polyester (A00002)	Tychem® TK. (A00097 - Lime)	Chemprotex™ 400 (A00159 - Yellow)	Chemprotex™ 300 (A00132 - Blue)	Butyl (A00027 - Olive)	Neoprene (A00017 - Yellow, A00019 - Orange)	PVC C2 (A00037 - Yellow, A00038 - Green)	Kemblok™ Glove (A00 - Silver)	Hazmax™ Boot
acetaldehyde	75-07-0											
acetic acid, 10%	64-19-7											
acetic acid, glacial	64-19-7											
acetic anhydride	108-24-7											
<b>acetone</b>	67-64-1											
acetonitrile	75-05-8											
acetophenone	98-86-2											
acrylic acid	79-10-7											
acrylonitrile	107-13-1											
allyl chloride	107-05-01											
<b>ammonia gas</b>	7664-41-7											
ammonia solution, 35%	1336-21-6											
ammonium nitrate sat.	6484-52-2											
amyl acetate	628-63-7											
aniline	62-53-3											
aviation fuel	n/a											
benzene	71-43-2											
benzoyl chloride	98-88-4											
benzyl alcohol	100-51-6											
brake fluid Mobil DTE 25	n/a											
bromine liquid	7726-95-6											
butadiene, 1,3-	106-99-0											
butanone (MEK)	78-93-3											
<b>carbon disulphide</b>	75-15-0											
<b>chlorine gas</b>	7782-50-5											
chlorobenzene	108-90-7											
chloroform	67-66-3											
chloromethane gas	74-87-3											
chlorosulphonic acid	7790-94-5											
cyclohexanone	108-94-1											
dibromomethane	74-95-3											
<b>dichloromethane</b>	75-09-2											
<b>diethylamine</b>	109-89-7											
diethylsulphate	64-67-5											
dimethylacetamide, N,N-	127-19-5											
dimethylformamide	68-12-2											
dimethyl sulphate	77-78-1											
epichlorohydrin	106-89-8											
ethanol	64-17-5											
<b>ethyl acetate</b>	141-78-6											
ethyl benzene	100-41-4											
ethylene oxide	75-21-8											
formaldehyde, 37% sol	50-00-0											
formic acid, 30% - 90%	64-18-6											
furfural	98-01-1											
<b>heptane</b>	142-82-5											

# Permeation Data

Chemical	CAS Number	Laminate Viton® (A00158 - Orange)	Viton® / Butyl / Viton® (A00003 - Orange)	Viton® / Butyl / Polyester (A00002)	Tychem® TK. (A00159 - Lime)	Chemprotex™ 400 (A00159 - Yellow)	Chemprotex™ 300 (A00132 - Blue)	Butyl (A00027 - Olive)	Neoprene (A00017 - Yellow, A00019 - Orange)	PVC C2 (A00037 - Yellow, A00038 - Green)	Kemblok™ Glove (A00 - Silver)	Hazmax™ Boot
hexamethylene diisocyanate	822-06-0											
hexane	110-54-3											
hydrazine hydrate	7803-57-8											
hydrochloric acid, 36%	7647-01-0											
hydrofluoric acid 48%	7664-39-3											
hydrofluoric acid 73%	7664-39-3											
<b>hydrogen chloride gas</b>	7647-01-0											
hydrogen fluoride gas	7664-39-3											
hydrogen fluoride liquid	7664-39-3											
hydrogen peroxide, 27.5%	7722-84-1											
lactic acid, 40%	50-21-5											
methacrylic acid	79-41-4											
methane sulphonyl chloride	124-63-0											
<b>methanol</b>	67-56-1											
methyl acrylate	96-33-3											
methyl methacrylate	80-62-6											
methyl vinyl ketone	78-94-4											
nitric acid, 10%	7697-37-2											
nitric acid, 60% - 70%	7697-37-2											
nitric acid, fuming	7697-37-2											
nitrobenzene	98-95-3											
oleum, 30%	8014-95-7											
oxalic acid, saturated	144-62-7											
petrol - unleaded	8006-61-9											
phenol, solid	108-95-2											
phenol, 85%	108-95-2											
phenol, liquid-41 degC	108-95-2											
phosgene	75-44-5											
phosphoric acid, 20%	7664-38-2											
phosphoric acid, 85%	7664-38-2											
phosphorus trichloride	7719-12-2											
potassium hydroxide, 40%	1310-58-3											
propan-2-ol	67-63-0											
propylene oxide	75-56-9											
pyridine	110-86-1											
<b>sodium hydroxide, 40%</b>	1310-73-2											
sodium hypochlorite, 13%	7681-52-9											
styrene	100-42-5											
sulphur dioxide	7446-09-5											
sulphuric acid 10% - 50%	7664-93-9											
<b>sulphuric acid 96%</b>	7664-93-9											
tetrachloroethylene	127-18-4											
<b>tetrahydrofuran</b>	109-99-9											
thionyl chloride	7719-09-7											
<b>toluene</b>	108-88-3											
toluene-2,4-diisocyanate	584-84-9											
toluidine, o-	95-53-4											
trichlorobenzene, 1,2,4-	120-82-1											
trichloroethylene	79-01-6											
triethylamine	121-44-8											
trifluoroacetic acid	76-05-1											
vinyl acetate	108-05-4											
xylene	1330-20-7											

Disclaimer: Every effort is taken to ensure the information in the Material Permeation Guide is up-to-date, but materials manufacturers are constantly refining production techniques and material specifications, which may affect test results. The Permeation Guide is intended for materials selection guidance only, if you are unsure about a materials suitability for your particular application, please contact Respirex™.

## Permasure® Toxicity Modeller

PermaSURE® is a new software tool designed to help answer one simple question: **'How long can I work safely in this environment?'**

PermaSURE® is a toxicity modelling web application and smartphone app for Respirix™ chemical protective suits made from Chemprotex™ 300 and 400 fabrics. Using the latest toxicity modelling techniques, the PermaSURE® app calculates your safe working time based on the chemical you are working with, the suit you are using and the suit temperature.

The permeation data for chemical protective fabric is an important starting point in the decision process of what suit material to choose for working with a given chemical, and provides an excellent means to compare different fabrics, but permeation data alone does not tell you how long you are safe to work, and if used incorrectly can actually give a false sense of security to chemical workers.

The advantages of PermaSURE's toxicity modelling are:

- It accounts for actual suit temperature. Permeation is measured in a laboratory at 23°C, but in use the temperature of the suit fabric may be much higher or lower. As a rough rule of thumb the rate of a chemical process doubles with every 10°C rise in temperature; PermaSURE® models this accurately. Whether the suit is as warm as the wearer (body temperature is typically 37°C), or as cold as the surroundings (potentially below 0°C in winter), PermaSURE® gives reliable information about permeation resistance under real operating conditions.
- Breakthrough measures the time taken to reach an arbitrarily-specified rate of permeation through the suit fabric (typically 1.0µg/cm<sup>2</sup>/min), but by the time permeation reaches this rate how much chemical has already permeated through to the wearer? PermaSURE® models low-level, but potentially-significant, permeation before breakthrough.
- PermaSURE® takes account of the toxicity of the substance your suit is exposed to when calculating a safe working time, thereby discriminating between harmful, toxic and carcinogenic substances, ensuring that the degree of protection matches the potential hazard to the wearer. It also provides clear hazard information.

PermaSURE® is available for use with Respirix™ Suits made from Chemprotex™ 300 and Chemprotex™ 400 materials and uses sophisticated modelling techniques to assess whether the suit will provide protection from a particular chemical for the working time required.

Accessed via the [www.respirex-permasure.com](http://www.respirex-permasure.com) portal from any web enabled laptop, tablet or mobile phone, or as download for smartphones and tablets (search your devices app store for Respirix Permeation Modeller) users can even scan the QR code printed on the suit label to take them directly to the site and automatically configure the suit selection.

To use PermaSURE®, simply select the suit type being used (this is pre-set if you have scanned the suit label), set the exposure time and suit temperature then select the challenge chemical. Once the required information has been entered simply click calculate and PermaSURE will determine the time to reach the toxic limit and confirm if you are safe to work.

Under the advanced options you can select the exposed area of the suit (the default is 100%), and see the toxic limit for the chosen chemical. You can also see the rate of permeation and the amount permeated for the selected working time.

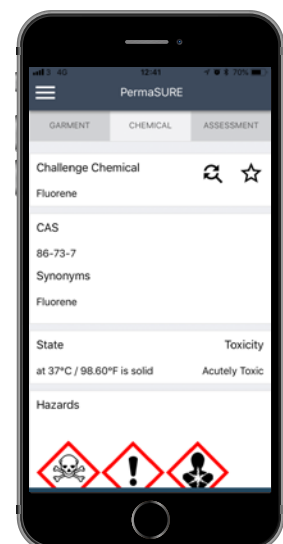
PermaSURE® can be a valuable tool in the assessment of risk when working with potentially hazardous chemicals. Used in conjunction with available test data it can provide the user with a better understanding of the likely performance of a suit in real world conditions.

### Permasure Benefits:

- Easy to use from any web connected laptop, tablet or phone
- Password protected, to ensure only appropriately trained staff have access
- Records incident number along with all app data and results in a log file for traceability
- Clearly displays hazard data for selected chemical
- Countdown timer to show safe working time remaining

Visit [www.respirex-permasure.com](http://www.respirex-permasure.com) or contact the sales team to set up a demonstration account

*PermaSURE® is a registered trademark of Industrial Textiles and Plastics Limited*



## Suit Materials

Respirex™ gas-tight suits are available in a number of high-performance chemical barrier fabrics, the choice of fabric will depend on the type and frequency of use.

### Laminate Viton®

Laminate Viton® provides excellent chemical resistance in a lightweight reusable fabric. It consists of a polyester fabric coated one side with orange fireproof DuPont™ Viton® and one side with grey thermoplastic, with an insert barrier film.

### Viton®/Butyl/Viton® (VBV)

A heavy-duty, flexible, reusable fabric with excellent chemical resistance against a wide range of tested chemicals VBV is ideal for applications where there is greater risk of abrasion or puncture. VBV is a polyester fabric coated one side with orange fireproof Viton® with a black fireproof butyl undercoat and one side with black fireproof Viton® with a black butyl undercoat.

### Viton®/Butyl/Polyester

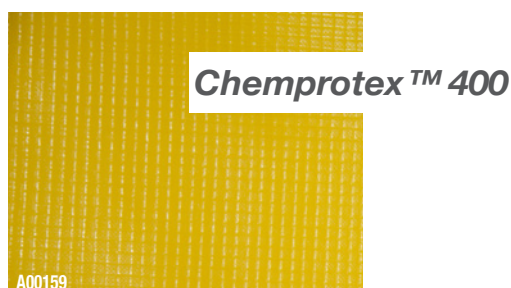
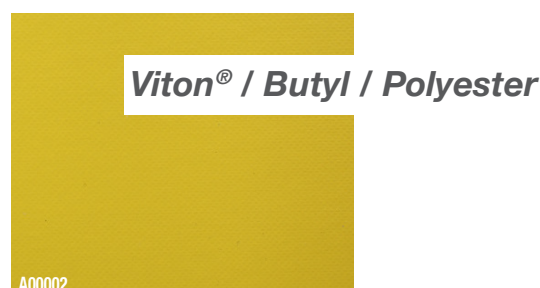
Lighter and more flexible than our other Viton materials VBP is ideal in environments where the chemical hazard has already been identified. A Polyester fabric coated one side with yellow fireproof Viton® with a colourless fireproof Butyl undercoat and one side with white fireproof Butyl.

### Tychem® TK

DuPont™ Tychem® TK is a seven-layer, non-woven chemical barrier fabric used for limited-life gas-tight suits and the PRPS suit. Tychem® TK provides excellent chemical resistance with an extensive database of chemical permeation test data. Limited life suits can be reused until hygienic cleaning becomes necessary or chemical contamination has occurred and disposal is required.

### Chemprotex™ 400

This lightweight high-performance chemical barrier fabric is designed for disposable gas-tight suits and provides over 480 minutes protection against all 15 of the challenge chemicals in EN943-2:2002 (and many more). Chemprotex™ 400 can be used with the Permasure® toxicity modelling web application to calculate a safe working with a given chemical in real-world conditions – see page 63.







### Chemprotex™ 300

A high performance chemical barrier material manufactured by laminating white spun-bonded polythene to a barrier film, which is coated by a blue protective outer polymer coating. It is the combination of film and polymer, which provides a particle-tight material with good resistance to penetration and permeation by many liquids and gases. Designed for use in the manufacture of single use Type 2, (non-gas-tight) Type 3 and Type 4 chemical and biological protective clothing for both the Emergency Services and industrial end-users Chemprotex™ 300 provides the ideal balance between user comfort and protection. Chemprotex™ 300 can be used with the PermaSure® toxicity modelling web application to calculate a safe working with a given chemical in real-world conditions – see page 63.

### Butyl

A light weight and flexible polyester fabric coated with olive Bromobutyl on both sides.

### Neoprene

A high visibility polyester fabric with a coating of yellow or orange Polychloroprene Rubber (Neoprene) on both sides.

### C2 PVC

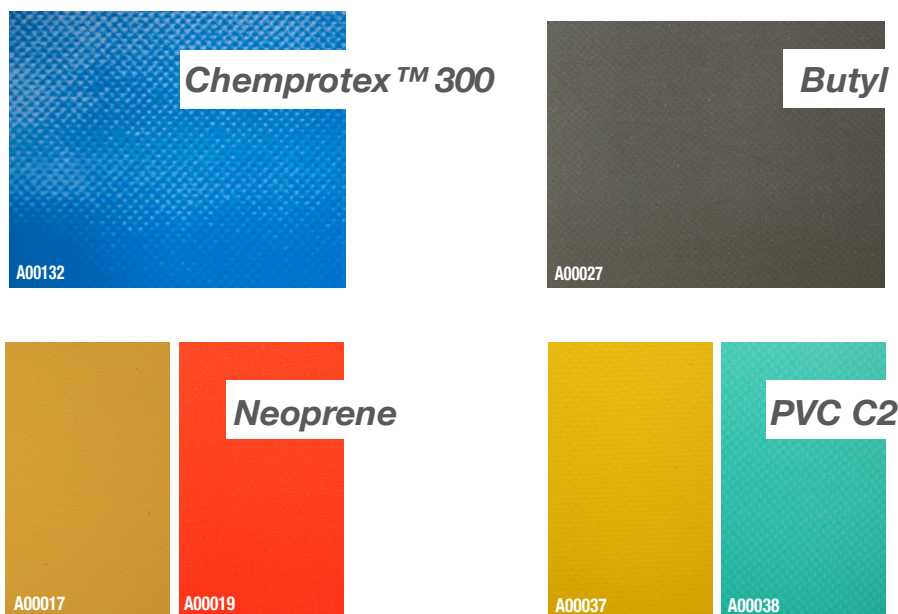
A polyester fabric with a coating of yellow or green PVC on both sides.

### 150 Micron Clear PVC

A 150 micron flexible, cadmium and lead free phthalate plasticised PVC film. The material is clear with a blue tint. This fabric provides excellent particulate protection and is widely used in the nuclear industry

### 300 Micron Clear PVC

A 300 micron flexible, cadmium and lead free phthalate plasticised PVC film which is clear with a blue tint. This fabric is similar to 150µm PVC but with greater tear resistance and seam strength.



## Protective Clothing Standards

### EN 943-2:2002

Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Performance requirements for “gas-tight” (Type 1) chemical protective suits for emergency teams (ET).

### EN 943-1:2002

Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Performance requirements for ventilated and non-ventilated “gas-tight” (Type 1) and “non-gas-tight” (Type 2) chemical protective suits

### EN 14605:2005+A1:2009

Protective clothing against liquid chemicals. Performance requirements for clothing with liquid-tight (Type 3) or spray-tight (Type 4) connections, including items providing protection to parts of the body only (Types PB [3] and PB [4]).

### EN ISO 13982-1:2004+A1:2010

Protective clothing for use against solid particulates. Performance requirements for chemical protective clothing providing protection to the full body against airborne solid particulates (type 5 clothing)

### EN 13034:2005+A1:2009

Protective clothing against liquid chemicals. Performance requirements for chemical protective clothing offering limited protective performance against liquid chemicals (Type 6 and Type PB [6] equipment)

### EN 1149-5:2008

Protective clothing. Electrostatic properties. Material performance and design requirements. It specifies material and design requirements for electrostatic dissipative protective clothing. It covers clothing used as part of a total earthed system, to avoid incendiary discharges.

### EN 1073-1:2016

Protective clothing against radioactive contamination. Requirements and test methods for ventilated protective clothing against particulate radioactive contamination.

### EN 1073-2:2002

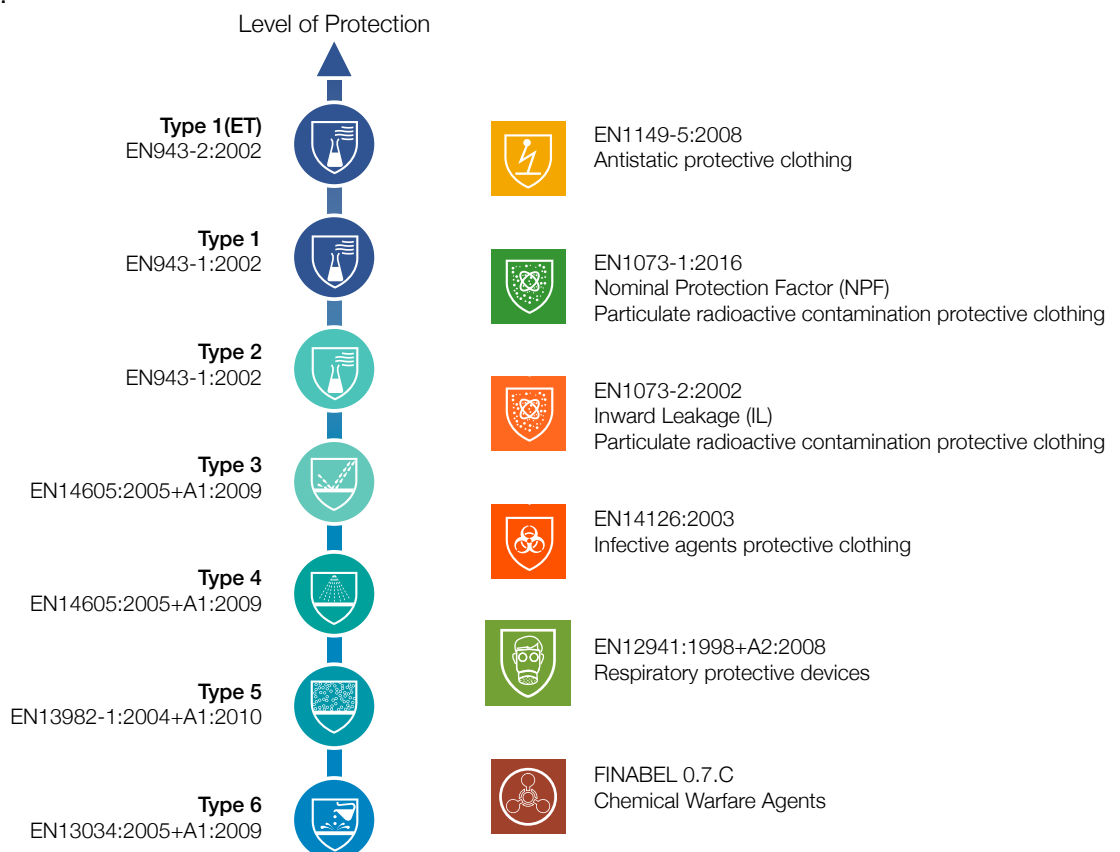
Protective clothing against radioactive contamination. Requirements and test methods for non-ventilated protective clothing against particulate radioactive contamination.

### EN 14126:2003

Protective clothing. Performance requirements and tests methods for protective clothing against infective agents.

### EN 12941:1998+A2:2008

Respiratory protective devices. Powered filtering devices incorporating a helmet or a hood. Requirements, testing, marking. It specifies minimum requirements for powered filtering devices incorporating a helmet or a hood with gas, particle or combined filter(s) for respiratory protection.



## Protective Footwear Standards

### EN 13832-3:2006

Footwear protecting against chemicals. Requirements for footwear highly resistant to chemicals.

### EN 50321:2018

Live Working - Footwear For Electrical Protection - Insulating Footwear And Overboots. Defines the requirements and testing for PPE footwear used as electrical insulating footwear and overboots used for working live or close to live parts on installations up to 36,000V AC, and DC requirements.

### ASTM F1117-03(2013)

Specification for Dielectric Footwear. Covers acceptance testing of dielectric overfoot and overshoe footwear designed to provide additional isolation or insulation of workers if in accidental contact with energized electrical conductors, apparatus, or circuits.

### Directive 89/686/EEC - Personal Protective Equipment

The Directives defines “essential requirements” which PPE must satisfy at the time of manufacture and before it is placed on the European market: the general requirements applicable to all PPE; the additional requirements specific to certain types of PPE; and also the additional requirements specific to particular risks.















### EN ISO 20347:2012

Specifies basic and additional (optional) requirements for occupational footwear that is not exposed to any mechanical risks (impact or compression) on the toe.

### EN ISO 20345:2011

Specifies basic and additional (optional) requirements for safety footwear used for general purpose. It includes, for example, mechanical risks, slip resistance, thermal risks, ergonomic behaviour. Special risks are covered by complementary job-related standards, e.g. footwear for fire-fighters, electrical insulating footwear, footwear protecting against chain saw injuries, chemicals, molten metal splash, and protection for motor cycle riders.

### EN ISO 20345:2011 & Other Footwear Symbols used in this Catalogue:

Outsole - Resistance to hot contact		EN 13832-3:2006 Chemical Protective Footwear	
Slip resistance on ceramic tile floor with NaLS		Electro-Static Discharge (ESD) Footwear that meets EN 61340-5-1:2016	
Outsole - Resistance to fuel oil		Conforms to the EN 15090:2012 F3A Fire fighter boot standard.	
Cold insulation of sole complex		Meets the basic requirements of safety footwear in EN20345:2011	
Energy absorption of seat (heel) region		As SB, but with the following additional requirements: Closed seat region, Antistatic properties, Energy absorption of seat region, Resistance to fuel oil, Penetration resistance, Cleated outsole.	
Penetration resistance			
Cut resistance			
Antistatic			
Insulating			

# Products & Applications

		Fire & Emergency	Police	Health Authorities/Ambulance	CBRN/Civil Defence	Military	Petrochemical	Industrial Chemical	Pharmaceutical	Nuclear	Shipping	Water Companies	Construction	Food Processing	Industrial Cleaning	Electricity Generation/Distribution	Utilities
<b>Gas-Tight Chemical Suits</b>																	<b>Type 1</b>
GTB (ET)	Type 1A (ET)	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Tychem GT	Type 1A (ET)	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
GTL	Type 1A (ET)	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
GTA	Type 1C						•	•	•	•					•		
<b>GLS Chemical Suits</b>																	<b>Type 3 GT</b>
GLS 300A	Type 3 GT	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
GLS 300B	Type 3 GT				•	•			•	•	•	•					
GLS 300C	Type 3 GT						•	•	•	•					•		
<b>Non-Gas-Tight Chemical Suits</b>																	<b>Type 2</b>
Simplair Suit	Type 2						•	•	•								
Simplair Tank Suit	Type 2						•	•	•						•		
<b>Liquid Tight Chemical Splash Suits</b>																	<b>Type 3</b>
SC1 Chemprotex™ 300	Type 3	•	•	•	•	•	•			•	•				•		
SC4 Chemprotex™ 300	Type 3	•	•	•	•	•	•			•	•				•		
SC1 Reusable	Type 3	•	•	•	•	•	•										
SC4 Reusable	Type 3	•	•	•	•	•	•										
<b>Liquid Tight Chemical Workwear</b>																	<b>Type 3</b>
Reusable 1-Piece Suit	Type 3*						•	•				•					
Reusable Jacket & Trousers	Type 3*						•	•				•					
Chemprotex™ 300 Combi	Type 3						•	•			•		•		•		•
<b>Part Body Chemical Protection</b>																	<b>Type 4</b>
Simplair Blouse	Type C						•	•	•								
Simplair Hood	Type PB[4]						•	•	•								
Splash Hood	Type PB[4]						•	•									
Neck cloths							•	•									
Aprons								•	•					•			
<b>Radioactive Particulate Protective Clothing</b>																	<b>EN1073</b>
Airprotex FM	Class 5								•	•							
Frontair 2 PVC	Class 5								•	•							
Frontair 2 Chemprotex™ 300	Class 5								•	•							
Sellprotex	Class 5								•	•							
Sellprotex BT	Class 5								•	•							
Airprotex BS	Class 5								•	•							
Nuprotex	Class 2									•							



	Fire & Emergency	Police	Health Authorities/Ambulance	CBRN/Civil Defence	Military	Petrochemical	Industrial Chemical	Pharmaceutical	Nuclear	Shipping	Water Companies	Construction	Food Processing	Industrial Cleaning	Electricity Generation/Distribution	Utilities
<b>Powered Respirator Suits &amp; Hoods</b>																EN12941
PRPS	•	•	•	•	•				•							
RJS Chemprotex™ 300	•	•	•	•			•	•								
Flo-Pod suit			•					•	•							
Flo-Pod hood			•					•	•							
<b>Footwear</b>																EN ISO 20345
Hazmax™ Chemical Boots	•	•	•	•	•	•	•	•		•	•			•		
Hazmax™ Chemical Overboots	•	•	•	•	•	•	•	•		•	•			•		
Dielectric Boots										•					•	•
Dielectric Overboots										•					•	•
Foodlite Boots			•											•		
Foodmax Boots			•											•		
Foodmax Overboots			•											•		
Agrilite Boots												•	•			•
Taskpro Boots												•				•
Solestar ESD Boots							•	•				•				
<b>CBRN</b>																
MFC Decontamination Showers	•	•	•	•	•											
Tychem® TK Body Bag		•	•	•												
Chemprotex™ 300 Casualty bag		•	•	•												
Chemprotex™ 300 Hazbag			•	•												
Pre & Post-Decon Modesty Packs		•	•	•												
<b>Misc</b>																
Test Box	•															
Filter Box						•	•	•	•							
Koolvest	•					•	•	•								
Hoses & Couplings						•	•	•	•							

# Sizing Guide

## Workmaster™ Boots Sizing Guide

### 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

#### Trademark Notices:

DuPont™ and Tychem® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company.

3M™ and Jupiter™ are trademarks of the 3M Company

PROBAN® is a registered trademark of Rhodia Operations

PermaSURE® is a registered trademark of Industrial Textiles and Plastics Limited

Respirex™, Hazmax™, Workmaster™, Chemprotex™, Kemblok™ and Flo-Pod™ are registered trademarks of Respirex International Limited

#### Disclaimer:

Specifications, configurations and colours are subject to change without notice.





RESPIREX™

Living + Breathing Personal Protection

Respirex International Limited  
Unit F, Kingsfield Business Centre  
Philanthropic Road  
Redhill, RH1 4DP  
United Kingdom

☎: +44 (0)1737 77 86 00

✉: [info@respirex.co.uk](mailto:info@respirex.co.uk)

🌐: [www.respirexinternational.com](http://www.respirexinternational.com)