POWERED RESPIRATOR PROTECTIVE SUIT

TYCHEM® TK

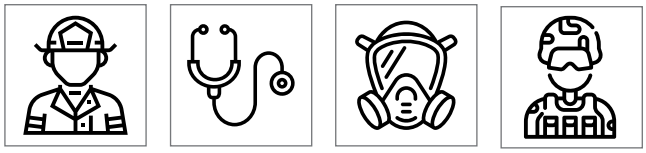
RESPIREX™

Description

The Respirex Powered Respirator Protective Suit (PRPS^3) is a one piece **gas-tight*** chemical protective suit for use by emergency response personnel after a CBRN incident.

The suit is manufactured from DuPont™ **Tychem® TK**, a high performance, seven layer, nonwoven, chemical barrier fabric that is also light in weight.

Applications



Fire Brigades | Health Authorities | Civil Defence | Military

Performance

TYPE 1* | EN 943-2:2019 (ET)
Gas-Tight Chemical Protective Suits for Emergency Teams

EN 12941:1998+A2:2008
Respiratory protective devices - Powered filtering devices

**The Powered Respirator Protective Suit (PRPS) has been assessed by a notified body as satisfying Annex II of the PPE regulation (EU) 2016/425 using technical standards EN 943-2 'Protective clothing against liquid and gaseous chemicals,including liquid aerosols and solid particles Part 2: Performance requirements for"gas-tight" (Type 1) chemical protective suits for emergency teams (ET)'*

Material Performance

FINABEL 0.7.C
Chemical Warfare Agents

Powered Respirator Performance

Airflow (min):	**160l/min**
Noise:	**<75db** (in the hood)
Ingress Protection:	**IP64** *(Suitable for use in a decontamination shower)*

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Key Features

Respiratory system comprising a **battery powered CleanAIR® Chemical 2F** powered respirator fitted with a **Remote Display Device (RDD)** mounted inside the suit at the base of the visor, and audible alarm

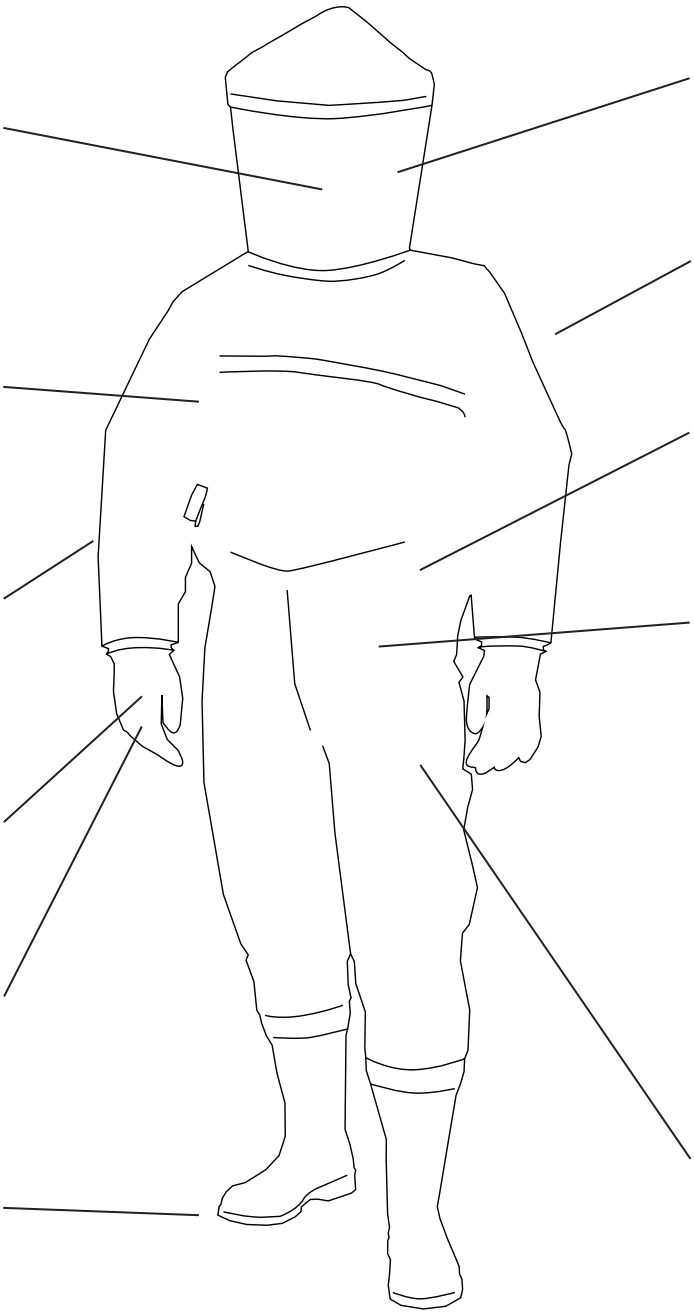
Heavy duty **gas tight zip** fitted across the chest enclosed by double external storm flaps with hook & loop fastener

Twin **CleanAIR® CBRN (A3B2E2K2P) filters** with splash guard cover fitted externally at the rear provide protection against chemical and biological warfare agents

Gas-tight locking cuff system for changing gloves

Dual glove system consisting of a **Kemblok™** chemical barrier inner glove bonded to an outer neoprene glove for mechanical protection.

Permanently attached Hazmax™ **chemical safety boots**



Semi-rigid **laminated visor** for clear undistorted vision

Four exhalation valves maintain a comfortable working pressure inside the suit

Battery pack provides **1 hour operational use**, plus 15 minutes for decontamination

Adjustable internal **support belt**

Ten year shelf-life, with three service inspections and recertifications over the life of the suit.

Internal pressure test based on **ISO 17491-1:2012** (Clause 5.3, Method 2) conducted before despatch to confirm the suit is gas-tight

Powered Respirator

Worn inside the PRPS suit, with the filters mounted externally the Chemical 2F powered respirator combines sophisticated electronics with a durable easy-clean construction. The auto-closing inlets prevent contamination entering the suit while the filters are being changed, while the smart flow control system maintains a constant airflow regardless of filter loading or battery charge.

Rechargeable or primary (single-use, 10 year shelf life) batteries are available and a remote audio and visual alarm fitted in the suit hood indicates when safe working time has elapsed or if there is an issue with the respirator. CleanAIR® **CBRN (A3B2E2K2P) filters** are supplied as standard, providing protection against chemical and biological warfare agents, but a range of other filters are available.

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Benefits

Can be used by wearers with **facial hair and/or glasses**

No requirement for **face-fit testing**

Training needs are reduced

Powered respirator provides **cooling air over the head** and through the suit, making the wearer more comfortable and better able to focus on tasks

A **Large visor** provides reassurance to casualties and victims by maintaining non-verbal communication through facial expression and aids speech recognition through visible lip movements.

Improved operational duration over gas-tight suits with SCBA

Up to six times the resource efficiency compared with gas-tight SCBA suits thanks to the lower physiological loading and increased duration

Significantly **lighter and more comfortable**, with easier breathing and less equipment in body contact than with a gas-tight suit with SCBA

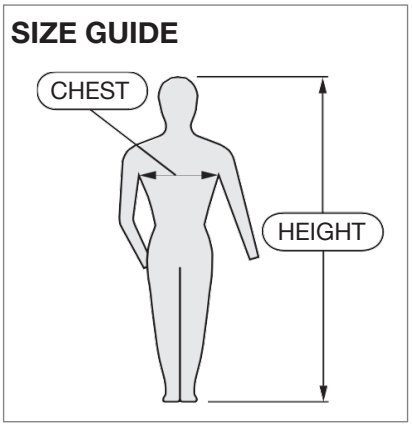
The lower weight and increased user comfort results in a **lower physiological load** than a conventional gas-tight suit

Uncontaminated or 'decontamination-guaranteed' **suits can be re-used** following gas-tight re-test and re-certification

Sizing Chart

Size	Chest (cm)	Height (cm)	Boot Size (UK)
Small	86-94	152-165	6
Medium	94-102	163-175	8
Large	102-112	173-185	10
X-Large	109-124	180-196	12
XX-Large	122-135	188-203	12

Note: Boot sizes shown are for UK National Health Service specification suits, other boot sizes can be fitted on request



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Suit Options

- Or -

Lightweight Gloves

Inner Kemblok™ glove with lightweight nitrile overglove for greater manual dexterity

Heavy-Duty Gloves

Inner Kemblok™ glove with heavy-duty neoprene overglove for improved mechanical protection

Training Suits

A training version of the operational suit manufactured in green PVC and designed for multiple re-use with no re-testing required.

Training suits are supplied with Lithium-Ion rechargeable batteries and charger, and A2BEK1P3RS filters.

Supplied Accessories

Battery

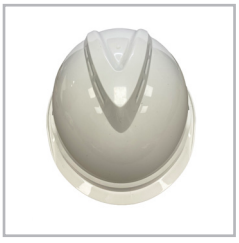
Lithium battery for immediate operational use with an extended storage life

Filters (x2)

CleanAIR® CBRN (A2B2E2K2P) operational filters are supplied with the suit, together with a splash guard cover that clips over both filters once fitted.

Hydration system

Camelback hydration system worn inside the suit



Hard Hat

Peakless hard hat that can be worn comfortably inside the PRPS suit

Hazbag Containment Bag

A hazardous material containment bag manufactured from Chemprotex™ 300 material. Supplied with a cable tie, tag and wallet for sealing and identification. Dimensions: 1050 x 1370mm

Under-gloves and Socks

A pair of under gloves for wearer comfort and a pair of thick socks to accommodate wearers with smaller feet.

Transport/Storage Box

Rigid protective plastic storage and transportation box for suit and all supplied accessories.

Specifications

	PRPS Suit
Pack Size (max)	75 x 50 x 37 cm
Pack Weight (max)	13 kg
Carton Qty	1
Commodity Code	62104000

Specifications are based on an XL sized suit with boots, packed into the included rigid plastic storage/shipping box and are for guidance only

Material Properties

Property	Test Method	Property value of Tychem®TK.	Performance Class of Tychem® TK	Minimum Class Required for EN 943-2:2019
Basis Weight	ISO 536:1995	360 g/m^2	N/A	N/A
Thickness	ISO 534:1998	500 µm	N/A	N/A
Abrasion resistance	EN ISO 12947-2 (inc. pressure drop)	> 2000 cycles	6 (out of 6)	4
Flex cracking resistance	ISO 7854 Method B (inc. pressure drop)	> 1250 cycles	2 (out of 6)	1
Trapezoidal tear resistance	EN ISO 9073-4	> 100 N	5 (out of 6)	3
Puncture resistance	EN 863	> 10 N	2 (out of 6)	2*
Tensile Strength	EN ISO 13934-1	> 250 N	4 (out of 6)	4
Resistance to flame	EN 13274-4 Method 3 modified (inc. pressure drop)	No part ignited or continued to burn on removal from the flame	2 (out of 3)	1
Seam strength	EN ISO 13935-2:2014	> 500 N	6 (out of 6)	5

Material tested in accordance with Table 1 of EN943-2:2019 - Minimum performance requirements of chemical protective clothing materials for regular robustness suits.

** The suit may not be suitable for use where there is a high risk of puncture - see Respirex GTB Reusable gas-tight suit for applications where higher puncture resistance is required.*

Chemical Permeation

Chemical	Physical State	Tychem®TK. Material	Suit Seams	Kemblok™ Glove	Visor
Acetone	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Acetonitrile	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Ammonia	Gas	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Carbon Disulphide	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Chlorine	Gas	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Dichloromethane	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Diethylamine	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Ethyl Acetate	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
n-Heptane	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Hydrogen Chloride	Gas	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Methanol	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Sodium Hydroxide 40%	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Sulphuric Acid 98%	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Tetrahydrofuran	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins
Toluene	Liquid	> 480 mins	> 480 mins	> 480 mins	> 480 mins

All tests carried out under laboratory conditions by independent accredited laboratories in accordance with EN ISO 6529 unless otherwise stated. Table shows average breakthrough times in minutes.

For full details of the chemical permeation performance of Tychem® TK and its performance against chemical warfare and infective agents, please visit the materials section of the Respirex website **www.respirex.com**.

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RESPIREX™

Living + Breathing Personal Protection

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