



Technical Datasheet

Chemprotex PRPS

Introduction

The Chemprotex PRPS* is a Personal Protective Device, marketed by Respirix™ and 3M, which combines a Respirix™ gas-tight chemical protective suit, in DuPont Tychem® TK, with a 3M™ Jupiter™ Powered-Air Respiratory System.

*PRPS = Powered Respiratory Protective Suit

It is designed for protecting operators of mass decontamination systems, but could also be considered for medical tasks, such as triage and casualty transport, or industrial applications, e.g. hazardous waste remediation and various maintenance tasks.

Description

The Chemprotex PRPS consists of:

- A fully encapsulating suit from DuPont Tychem™ TK, ● tested gas-tight, with integrated boots and gloves and laminated visor
- An internally-mounted Jupiter™ ER-02 Powered Air Turbo Unit with in-hood alarm system



RED:
System warning

AMBER:
Time elapsed information

GREEN:
System OK

- Single-use lithium battery
- Externally-mounted orange JFR-85-CE filters
- Optional hard-hat
- Optional integrated rehydration system
- Sealed in one box and ready-for-use with a 5 year shelf-life.
- Customised labelling

This is the 'Operational' version – PRPS – and is designed to be used for emergency situations once - directly from the sealed condition. Once opened and used, it must be decontaminated (if possible), cleaned and returned to the service agent for servicing, testing and resealing before returning to operational readiness with new batteries and filters.

A 'Training' version is offered, called Chemprotex PRPS(T). It is distinctively different from the 'Operational' version to avoid confusion in an emergency situation. It is also designed for multiple re-use.

The PRPS(T) is identical to the Chemprotex PRPS, apart from the following:

- Suit material is dark-green PVC ●
- Visor material is PVC – only
- Blue training filters (JFR-T1 & T2) are used
- NiMH rechargeable battery
- Removable neck seal (to allow laundering)
- 'Training' Label

Performance and Approvals

The Chemprotex PRPS is approved both as Chemical Protective Clothing and as Respiratory Protective Equipment.

Chemical Protective Clothing: No relevant European Standard exists for this type of device, so the Chemprotex PRPS is type approved to a Respirix specification, RILS0002, based upon the requirements for a limited use type 1b-ET gas-tight chemical protective suit as detailed in EN943-2:2002. However, the specification for a full facemask has been replaced by that for a visor.



Respiratory Protective Equipment: No relevant European Standard exists for this type of device, so the Chemprotex PRPS is type approved to a 3M specification, TS0084, based on the relevant requirements of EN12941:1998 class TH3. However, the maximum mass and battery duration requirements have been excluded.

PRPS provides respiratory protection against either liquid or gaseous chemicals to the level of EN12941:1998 TH3, nominal protection factor = 500.

The Jupiter™ Air Filter Unit, when used in conjunction with the Respirix™ PRPS or PRPS(T) has been shown to meet the Basic Safety Requirements under Article 10 of the European Directive 89/686/EEC (SGS UK Ltd, Ellesmere Port, CH65 3EN Notified body number 0120) and is CE marked.

The Jupiter™ Air Filter Unit has been certified as complying with European EMC Directive 89/336/EEC.

The Jupiter™ Air Filter Unit (when fitted with the Intrinsically Safe Battery Pack BAT-21) has been approved for intrinsic safety.

Training suit: Chemprotex PRPS(T): Used for training and simulation purposes only, the Chemprotex PRPS(T) is type-approved only as a Respiratory Protective Device to a 3M specification TS0085, based on the relevant requirements of EN12941:1998 class TH3. However, as Chemprotex PRPS, the maximum mass and battery duration requirements have been excluded. The Chemprotex PRPS(T) is not approved as Chemical Protective Clothing.

PRPS(T) provides respiratory protection against either liquid or gaseous chemicals to the level of EN12941:1998 TH3, nominal protection factor = 500.

Concise Product Specification - PRPS

Chemical Protective Clothing: Respirer™ specification RILS0002 (based upon EN943-2:2002 - limited use type 1b-ET gas-tight chemical protective suit). Specification for a full facemask has been replaced by that for a visor;
Permeation Performance: Suit, boots, gloves, and visor materials tested against each of the 15 liquid chemicals in the standardised test battery ASTM F1001-99a. All results >480 min. **See Respirer User Instructions BS065 for details.**

Physical Properties of Tychem™ TK material: EN14325:2004:

- Abrasion resistance – class 6
- Tensile strength – class 4
- Flex cracking resistance – class 1
- Flex cracking at -30°C – class 3
- Trapezoidal tear resistance – class 6
- Puncture resistance – class 2
- Seam strength – class 5
- Resistance to ignition - pass

Boot: Seamless construction; oil resistant to EN345-S5; compound surpasses NFPA 1991 requirements; EN374-3 chemical permeation; slip/oil resistant sole; stainless steel toecap (200 joule) and mid-sole.

Glove: choice of neoprene outer (heavy- or light-duty), North Silver Shield®/4H inner bonded to outer, optional cotton liner

Respiratory Protection: 3M specification TS0084 (based on EN12941:1998 TH3, nominal PF= 500). Following clauses excluded or modified: battery duration; maximum mass; strength of hoses and couplings; strength of couplings to hood; marking.

Battery: (BAT-21) Lithium, single-use, duration: 3.5 hours.

Filters: (JFR-85-CE) A2B2E2K2P SL + chemical warfare (CW) agents: military challenges, similar to those defined in the NATO Respirator Triptych D/103:1991. See 3M JFR-85 Technical Bulletin for details. IP53, per EN60529 (dust and spraying water).

M MDF (Manufacturer's Minimum Design Flow): 135 l/min; max flow: 230 l/min.

Intrinsic Safety – Jupiter™ Air Filter Unit with BAT-21 only

EN50020 EEx ib IIB T3; ib – incapable of causing ignition in normal operation IIB – gas sub group: (EN 50014) T3 – Max. surface temperature 200°C (Ta = -10°C to +40°C)

Sizing: Available in 5 sizes: S, M, L, XL and XXL.

Size	Chest cms (inches)	Height cms (inches)	Boots	Gloves Light / Heavy
S	86-94 (34"-37")	152-165 (5'-5"5")	39	8 / 10
M	94-102 (37"-40")	163-175 (5'4"-5'9")	42	9 / 10
L	102-112 (40"-44")	173-185 (5'8"-6'1")	44	10 / 10
XL	109-124 (43"-49")	180-196 (5'11"-6'5")	46	11 / 11
XXL	117-140 (46"-55")	191-206 (6'3"-6'9")	46	11 / 11

Gloves and boots are attached to the suit. Individual size combinations can be made to accommodate customer preferences.

Materials – PRPS:

Suit: Du Pont Tychem® TK

Visor: PVC + chemical protection laminate

Boots: PVC body; rubber sole, stainless steel inserts

Gloves: Neoprene outer/ North Silver Shield®/4H inner

Jupiter Air Filter Unit body: Noryl™ (PPO)

Filter body: Polypropylene (PP)

Concise Product Specification – PRPS(T)

Chemical Protective Clothing: no testing

Boot: as per PRPS

Respiratory Protection: 3M specification TS0084 (based upon EN12941:1998 TH3, nominal protection factor = 500). Following clauses excluded or modified: battery duration; maximum mass; strength of hoses and couplings; strength of couplings to hood; marking.

Battery: (BAT-20) NiMH rechargeable, duration: 4 hours.

Filters: (JFR-T1 & T2) – PSL & Nuisance odour; simulates weight and breathing resistance of 'operational' filters. M MDF (Manufacturer's Minimum Design Flow): 135 l/min; maximum flow: 230 l/min.

Sizing: as per PRPS.

Materials – where different from PRPS:

Suit: PVC

Visor: PVC only

Filter body: HIPS



Operational Procedures

The Chemprotex PRPS is intended for use by Emergency Response personnel after a chemical or biological incident. It should only be used after a process of detection, identification and monitoring to establish the potential hazard.

It is important to note that the suit is NOT appropriate for use in environments where the hazard is unknown.

Operational Procedures should be planned to cover the use of this PPE. They should cover areas such as:

- Decisions on suitable environments
- Donning and standby procedures
- Maximum wear time to minimise the risk of heat stress
- A 'buddy' system for team safety, e.g. checking 'buddy's' alarms and system status
- Emergency escape and doffing procedures (e.g. in case of system failure)
- Battery and filter management
- Managing Limitations of Use
- Doffing, cleaning, servicing and re-use.

Cleaning, Maintenance and Servicing


Chemprotex PRPS 'Operational' System

The Chemprotex PRPS ('operational') is intended to be stored for up to 5 years, and then used once, directly from the sealed container in an emergency situation.

Once opened and used, the PRPS cannot be re-used for operational purposes without service and re-test by a qualified service agent. Before returning to the service agent, documentary evidence must be produced confirming that the equipment is chemically and biologically safe to handle. After use, a decision must therefore be made on the feasibility of decontaminating the PRPS before returning to the service agent. A sealable hazbag is included to aid decontamination/disposal.

Battery and filters should be disposed of after each use.

On return to the service agent, a full, hygienic cleaning service, sanitisation, gas-tight retest and repack (with new battery/filters) will be carried out. The system will be certified ready for re-use.

 Maintenance, servicing and repair must only be carried out by properly trained personnel, with the correct specialist equipment. Use of unapproved parts or unauthorised modification could result in danger to life or health and can invalidate any warranty.

Chemprotex PRPS(T) 'Training' System

The Chemprotex PRPS(T) ('training') is intended to be used many times for training and simulation purposes. It is not gas-tight-tested, and therefore more user-servicing can be carried out.

Laundering is not recommended for the PRPS(T). After use, the suit should be wiped with a sponge using warm water and Citrikleen*, rinsed and allowed to dry naturally. The inner surfaces of the suit should be sanitized using Synodor*. However, the neck seal may be removed and laundered separately; it may also be replaced when necessary for hygiene reasons. Do not use solvents or strong cleaning and disinfecting agents on the suit.

Gloves are replaceable by trained personnel, but boots are not.

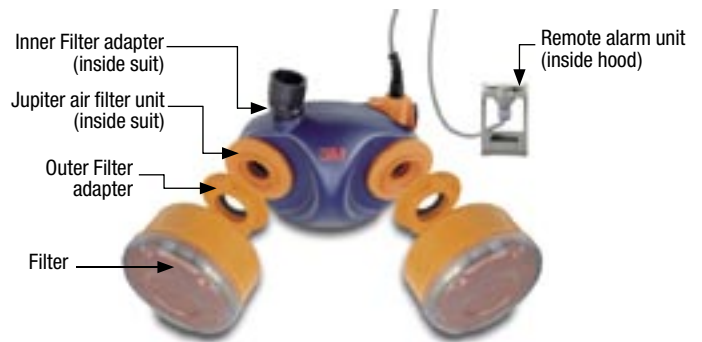
The Jupiter™ air filter unit, battery, filters and adaptors may be reused provided they are in good condition. After many fittings and removals, the training filter retention mechanism may wear and the filters should be replaced. Use a clean cloth dampened with a mild solution of water and liquid household soap to clean the Jupiter™ Air Filter Unit (AFU).

WARNING: Do not use petrol, chlorinated degreasing fluids (such as trichloroethylene), organic solvents, abrasive cleaning agents or compressed air to clean any part of the equipment. To disinfect, use 3M 105 wipes* or Synodor*.

- Do not allow water to enter the breathing tube, any part of the AFU assembly or filters.
- Do not machine wash or dry, bleach, iron or dry clean.
- Replace the battery pack after approximately 500 charges.

* see Spares and Accessories Table

Spares and Accessories	Order from:	
	Respirex	3M
Cotton gloves	H01158	
Socks	H00075	
Peakless safety helmet	G01001	
Re-hydration pack	G01002	
Replacement neck seal	G01011	
Hazbag with tie and tag	G01652	
'Fog-Off' anti-misting agent (100 ml)	F00934	
'Synodor' anti-bacterial cleaner (5 l)	F00937	
'Citrikleen' cleaning agent (5 l)	F00938	
Jupiter Air Filter Unit (with remote alarm unit)		JP-ER-02
Training Filters (6 pairs / pack)		JFR-T1 or JFR-T2
Operational Filters (6 pairs / pack)		JFR-85-CE
Re-chargeable NiMH battery pack		BAT-20
Single-Use Operational battery		BAT-21
Single Station Battery charger – Eu		003-00-58PEU
Single Station Battery charger - UK		003-00-58PUK
10-Station Battery charger		003-00-59P
Disinfectant wipes		105
Outer Filter Adapter		085-09-00P



Disposal of Chemprotex PRPS and its Components

Consideration must be given to contamination of the system or parts during disposal. If contaminated, the system or parts should be disposed of in the same waste stream as all other contaminated or hazardous waste, in accordance with local health & safety and environmental regulations. The following points should also be noted:

- **Filters:** used filter canisters are potential reservoirs of any filtered contamination – particulate or gas.
- **Tychem® TK:** contains non-halogenated films, with associated advantages for incineration.
- **Batteries:** do not dispose of either NiMH or Lithium batteries in a fire or send for incineration.

Training

A key benefit of the Chemprotex PRPS is that it requires minimal training, due to lack of facepiece, face-fit-testing, management of complex air systems, etc. It is nevertheless important that users are trained sufficiently to be able to:

- Operate safely within this PPE
- Become familiar with working inside the suit
- React to the system status messages
- Communicate with colleagues
- Be ready to make the right decisions in an emergency



Because the 'operational' suit (PRPS) is sealed, ready for emergency use, a separate, distinctive, dark-green PVC ● suit designed for multiple use has been developed. (See Description – page 1)

It is thoroughly recommended that 'Training' suits are used for training, to avoid any confusion in an emergency 'Operational' situation. The PRPS(T) training suit is designed for multiple use:

- Dark-green ● PVC material - distinctive from the lime green ● of the PRPS 'operational' suit. The operational suit material has been designed to maximise chemical resistance and mechanical strength, but also with light weight and flexibility. It is not designed for many multiple-uses. The PVC training suits have been designed to be re-used many times;
- PRPS(T) training suits are not gas-tight-tested;
- Knitted neck-seal is removable for laundering;
- Training Battery (BAT-20) is NiMH / rechargeable for multiple training sessions;
- Training Filters (JFR-T1 & JFR-T2) are blue, distinctive from the orange operational filters (JFR-85-CE); with particulate and nuisance odour protection only, but simulate the weight of 'operational' filters.

* Noryl is a trademark of General Electric Company

* Tychem® TK is a registered trademark of E.I. du Pont de Nemours and Co

For more information on 3M products and services please call the 3M Health & Safety Helpline. (Mon-Fri 09:00 – 17:00)

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Summary of Warnings and Limitations of Use



Please note: For FULL Warnings and Limitations of Use, please see User Instructions:

- PRPS ('Operational suit'): BS\065
- PRPS(T) ('Training suit'): BS\066
- Jupiter™ ER-02 Air Filter Unit: QX-38000-1080-8
- JFR Filter Series: CV-0005-1801-5



1. Failure to follow all instructions on the use of this product may adversely affect the wearer's health, may lead to severe illness or permanent disability or even death.
2. RPE and suit not for use against unknown contaminants.
3. RPE not for use above IDLH.
4. RPE not for use in less than 19.5% oxygen.
5. Respiratory Protection against particulate, liquid or gaseous chemicals: nominal protection factor = 500.
6. Operating Conditions:
 - a. Temperature: -10°C to +40°C
 - b. Humidity: <90% R.H.
 - c. Altitude: <400mASL (Above Sea Level)
7. Only for use by trained personnel.
8. Leave the contaminated area immediately if:
 - a. The system is damaged.
 - b. Airflow decreases or stops or the visor mists.
 - c. Breathing becomes difficult.
 - d. Dizziness or other distress occurs.
 - e. Contaminant is tasted or smelt or irritation occurs.
 - f. An alarm condition occurs.
9. Ensure Breathing tube is not twisted.
10. Do not use in 'Power-off' state.
11. Do not modify; replace only with original parts.
12. Keep zip and zip flap closed at all times.
13. Intrinsic Safety: Use of Jupiter Air Filter Unit only with BAT-21:
 - a. Only in Potentially Explosive Atmospheres (gas) Zones 1,2.
 - b. **Not** in Potentially Explosive Atmospheres (gas) Zones 0.
 - c. **Not** in Potentially Explosive Atmospheres (dust) Zones 20, 21 or 22.
14. Note there are currently no safe exposure limits established for biological agents – see User Instruction for full warning text.
15. Materials which may come into contact with the skin not known to cause allergic reactions to the majority of individuals.
16. The system contains no components made from natural rubber.
17. Tychem® TK fabric is designed specifically for limited-use garments. Excessive flexing or folding may have an adverse effect on chemical resistance. Multiple use can be assured by a regular programme of inspection and re-certification.
18. If the suit is heavily contaminated or mechanically damaged in any way it **MUST NOT** be used and **MUST** be disposed of.
19. The wearer's body temperature will rise whilst wearing the suit, particularly during periods of intense physical activity. Operational procedures should be planned to minimise heat stress. Use of the re-hydration facility is recommended.
20. Users should note that resistance to permeation by chemicals varies with temperature.
21. Tychem® TK meets the resistance to ignition requirements of EN943-1:2002 but should not be exposed to flame.
22. Tychem® TK does not have any anti-static treatment or properties: do not wear in potentially explosive environments.
23. Continuous contact with certain chemicals can adversely affect the visor. Do not use in case of any discoloration of the visor.