RESPIREX™

Instructions for use of Nuprotex ‘E’ suit

EN 1073-2: 2002 **EN14605:2005+A1:2009**
TYPE 4

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General Information

The Respirex one-piece Nuprotex 'E' suit is intended for use within certain contaminated environments only. Carefully read and follow these operating instructions closely.
All Nuprotex 'E' suits are CE marked to indicate compliance with the basic safety requirements under Module B and Module D of the European Regulation 2016/425 on personal protective equipment (PPE). The Nuprotex 'E' suit complies with the following European standards:

- EN 1073-2:2002* (non-ventilated protective clothing against particulate radioactive contamination), Inward Leakage Class 2.
- EN 14605:2005+A1:2009* (protective clothing against liquid chemicals), Type 4 spray-tight clothing.

*Standard specifies performance requirements for the suit and its materials of construction.

Nuprotex 'E' suits can be manufactured from two thicknesses of translucent calendered PVC foil, either 150 micron or 300 micron. The materials are easily identified, 150 micron having a blue tint and 300 micron being colourless. For further information on product performance data refer to page 21 of this manual.

Limitations & Warnings 

- **Never use a suit directly from cold storage conditions**. If the suit is removed from cold storage it must be allowed to stabilise at a temperature of at least 10°C before use.
- The recommended temperature range for the suit during use is -3ºC to + 37ºC.
- Extra care should be taken at the extremities of the usable temperature range. At low temperatures the flexibilty of suit materials may lessen whilst at high temperatures suit materials may soften leading to increased flexibility.
- Do not use any suit exposed to extreme temperatures.
- **Nuprotex 'E' suits are manufactured from non-breathable materials. During use the wearer's body temperature will rise and care should be taken to guard against the effects of heat stress. Persons who show any signs of fever, nausea, dizziness, eye irritation, difficulty in breathing, becoming fatigued or any unusual order or taste should leave the work area immediately and remove themselves from the suit.**

- The garment must only be used in the hazardous area for which it is intended. Always follow the instructions carefully otherwise the protection offered by the garment may be drastically affected.
- The Nuprotex 'E' suit is only type approved for use with the following models of full facemask:

Avon N10
Dräger Panorama Nova
MSA Auer 3S
Protector PPR2000 (Phantom Power Assisted Respirator)
Scott Promask

- Extremely hot or cold water temperatures must be avoided during showering.
- Do not use excessive force when removing the suit.
- Always use compatible PPE, e.g. gloves, safety boots, welders over suits, leathers, grinding shields, welding shields, etc advised by Respirex.

For any enquiries please contact the Respirex customer services department on Tel : +44 (0)1737 778600, Fax : +44 (0)1737 779441 or Email : info@respirex.co.uk

Pre-Checks

Respirex recommend these checks are carried out in a clean area at least once per month if the suit has not been used, and always at the start of each shift cycle.

1. Visually inspect the suit for any damage that may impair the correct working of the garment.

2. The suit is free from contamination both internally and externally.

3. The suit is free from tears and holes; pay particular attention to the seam areas.

4. Check that press studs are in good working order.

Donning Procedure

ALWAYS ENSURE THE WEARER HAS SELECTED THE CORRECT SIZE SUIT BEFORE BEGINNING THE DONNING PROCEDURE

It is recommended that before using a Nuprotex 'E' suit full training is given on wearing and decontamination by a competent person and the details of the training recorded. For safety purposes an assistant should help the wearer don and doff the suit. This makes the process simpler and quicker and will help to prevent stumbling or tripping which may result in personal injury or damage to the suit. Personal effects (pens, jewellery, badges, etc.) which may cause damage to the suit should be removed before donning.

Use the following steps when donning the suit:

1. Remove footwear, step into the suit, place arms into the sleeves and fasten the zipper to chest height, Fig.1.

Fig.1

2. Don an appropriate pair of protective boots. The trouser legs of the suit should be worn over the exterior of the protective boots.

3. Before taping around the leg the dressing assistant should pull out an adequate length of tape from the roll to help minimize the effects of contraction after application.

Fig.2

4. The dressing assistant should tape around the circumference of the legs ensuring that the tape overlaps the ends of the trouser legs onto the boots as shown in Fig.2. During taping it is important to ensure that the boot does not 'collapse' as this may have an adverse effect on the seal achieved. On completion double fold the end of the tape by approximately 20mm to allow for easy removal.

NOTE: When taping try to leave as few gaps and ridges as possible. Press the tape down firmly to ensure there is a complete seal.

5. The suit should be worn with two pairs of protective gloves. The dressing assistant should fit the first pair of gloves to the wearer, positioning the sleeves of the suit approximately 6cm over the exterior of the gauntlet ends of the gloves. The excess material of the sleeve should have a double fold around the glove, Figs.3 & 4.

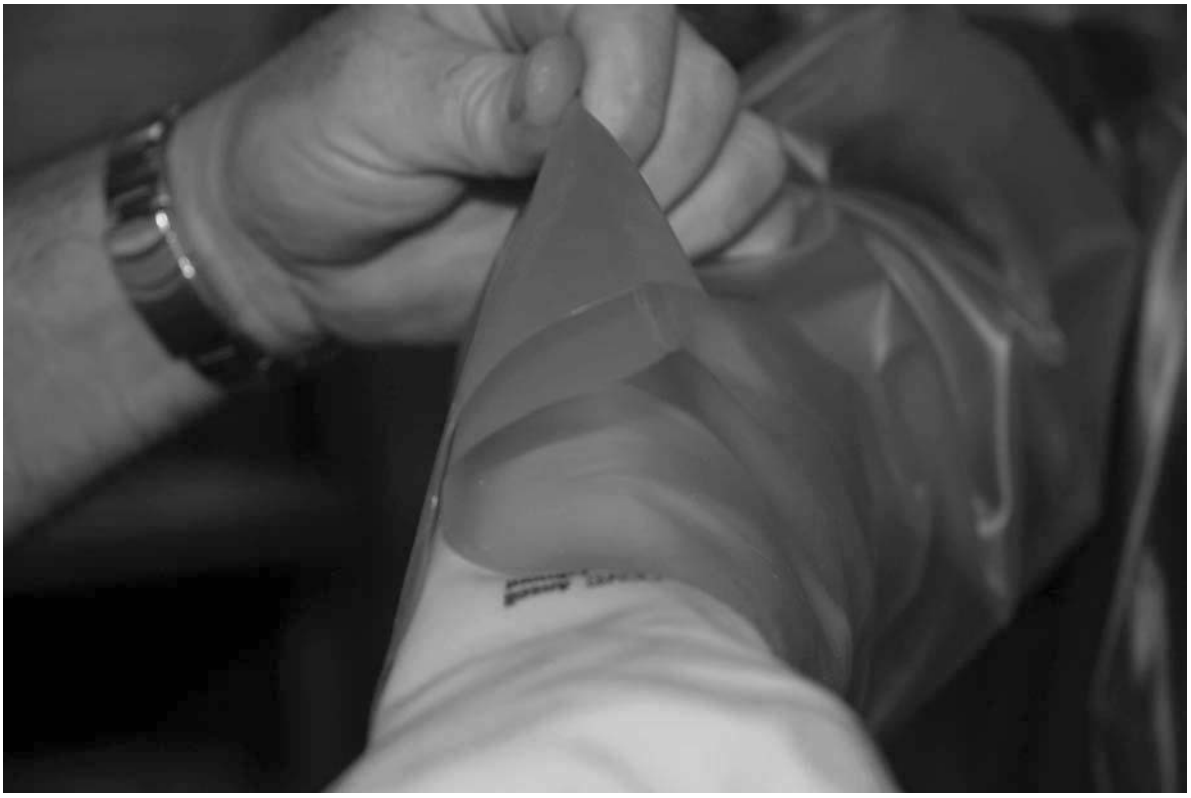


Fig. 3

Fig. 4

6. The wearer should hold the folded sleeve in position as shown in Fig. 5 in readiness for the dressing assistant to start applying 50mm wide sealing tape.

Fig.5

7. Before taping the dressing assistant should pull out an adequate length of tape from the roll to help minimize the effects of contraction after application, Fig. 6.

Fig.6

8. The dressing assistant should tape around the circumference of the wrists ensuring that the tape overlaps the ends of the sleeves onto the gloves as shown in Fig. 7. The wearer should continue to hold the folded sleeve in position.

Fig.7

9. Tape around the circumference of the wrists a minimum of three times. On completion double fold the end of the tape by approximately 20mm to allow for easy removal, Fig.8.

Fig.8

NOTE: When taping try to leave as few gaps and ridges as possible. Press the tape down firmly to ensure there is a complete seal.

10. Fit the second pair of protective gloves over the first pair and over the exterior of the suit sleeves, Fig.9.

Fig.9

11. With the sleeves still folded flat, seal around the second pair of gloves ensuring that the tape overlaps the gloves and the sleeve, Fig.10.

Fig.10

12. Tape around the circumference of the sleeve and glove a minimum of three times. On completion double fold the end of the tape by approximately 20mm to allow for easy removal, Fig.11. When taping try to leave as few gaps and ridges as possible. Press the tape down firmly to ensure there is a complete seal.

Fig.11

Note: The taping procedure is necessary to seal the suit, if not carried out correctly it will affect the protection offered. If you are not satisfied remove all tape and repeat the procedure from the beginning.

13. Following the appropriate manufacturer's user instructions, the wearer should now don one of the full facemasks listed on page 2. **Note:** type approval of the suit is only valid for the full facemasks listed, use of any other mask will render the approval void.

Fig.12

Fig.13

14. Pull the hood of the suit up and over the wearer's head until the elasticated band is located in front of the the facemask visor (do not cover the facemask filter canister), Fig.13.

15. Fasten the zipper to its fullest extent ensuring that the slider and outer flaps and laying flat, Fig.14.

16. Fasten the two press studs fitted to the hood, Fig.15.

Fig.14

Fig.15

17. Pull the elasticated band around each side the facemask visor until it fits as shown in Figs.16 & 17. Ensure that the press studs lay flat against the facemask, Fig. 18.

Fig.16

Fig.17

Fig.18

18. To comply with the requirements of EN14605:2005 (Type 4 spray-tight clothing) the zip flaps must be sealed with 50mm (2”) wide electrical tape as shown in Figs. 19 & 20.

Fig.19

Fig.20

18. If wearing an Avon N10 facemask it is necessary to place a short strip of tape down each side of the hood to achieve an appropriate seal, Fig.21.

Fig.21

19. When wearing a Protector PPR2000 Phantom with the battery pack worn inside in the suit it is necessary to feed the power cable between the mask and elasticated band. It is important that only the uncoiled section of power cable lays against the mask otherwise a proper seal will not be achieved, Fig.22. Adjust the position of the waist belt so that tension between the mask and battery pack is kept to a minimum. If necessary pull the elasticated band slightly forwards to ensure the coiled section of power cable remains within the suit.

Fig.22

20. When wearing a Protector PPR2000 Phantom with the battery pack worn outside in the suit no special adjustments to the elasticated band are necessary, Fig.23.

Fig.23

Doffing Procedure

The doffing procedure should carried out entirely by a dressing assistant wearing appropriate PPE selected by qualified safety personnel.

Fig.24

Fig.25

1. Remove all adhesive tape from wrists, ankles and zip flap then remove the safety gloves.

2. Undo the two press studs fitted to the hood and unfasten the zipper, Fig.24.

3. Fold the hood of the suit up and over the wearers head.

4. Continue to roll the suit down over the wearer's shoulders. Keep the exterior of the suit away from wearer at all times, Fig.25.

5. As the suit continues to be rolled down to waist level the wearer's arms should be removed from the sleeves

6. Finally the wearer should step out of the suit legs and safety boots and remove facemask.

After use decontaminate and dispose according to your company procedures.

Inspection

A regular inspection program should be conducted by users.

The suit should be inspected for damage or excessive wear before and after each use to ensure proper functioning. Immediately remove any suit from service that shows signs of damage that may reduce the degree of protection originally intended.

Recommended Storage Conditions

The recommended temperature range for storage is -5°C to +40°C.
Store suits in the original packaging, correct way up as marked on the box.
Store above ground level in dry conditions away from direct sunlight.
Always rotate stock.
In order to maintain the level of protection offered, care should be taken to minimize the risk of damage occurring to the suits during transportation between work areas.
It is recommended that all suits are transported in a suitably sized rigid container resistant to penetration by sharp objects, abrasive surfaces, chemicals, oils, solvents etc.
Never store outdoors or in damp conditions.
Only remove the suit from original packaging when intending to use.
Care needs to be taken when storing suits at extreme temperatures.
At sub-zero temperatures the flexibility of PVC will be reduced and the suit may suffer damage if not handled with care.
At high temperatures the suit may suffer distortion if incorrectly stored.

For further information please contact Respirex International Ltd.

Suit Labelling

1.Manufacturer of garment;
Respirex International Ltd.

2.Manufacturer's Model No.

3.Manufacturer's Style No.

4.Material of Manufacture.

5.Manufacturer's Order No.

6.Customer Name.

7.Date of manufacture; Day/Month/Year.

8.CE Mark and notified Body code.

9.Pictograms defining protection types:
Chemical Protection Pictogram
Particulate Radiation Pictogram

10.Inward leakage class

11.Garment Size

Size	Chest cms (ins)	Height m (ft ins)
S	88-96 (35"-38")	1.64-1.70 (5'4½"- 5'7")
M	96-104 (38"-41")	1.70-1.76 (5'7"- 5'9")
L	104-112 (41"-44")	1.76-1.82 (5'9" - 5'11½")
XL	112-124 (44"-49")	1.82-1.88 (5'11½"- 6'2")
XXL	124-136 (49"-53½")	1.88-1.94 (6'2"- 6'4½")

12."Open Book Pictogram"; wearer must refer to the "Instructions for use" for further information.

13.Five care pictograms indicating whether clothing is suitable for cleaning and reuse.

- Pictogram 1 Light mechanical washing
- Pictogram 2 Do not bleach
- Pictogram 3 Do not iron
- Pictogram 4 Do not machine dry
- Pictogram 5 Do not dry clean

Cleaning

The Nuprotex 'E' suit should be cleaned and sanitized at least once a week, or more often if subjected to heavy use. Suits used by more than one person must be cleaned, inspected and sanitized after each use. If not cleaned contamination may cause illness or disease.

The suits can be laundered in a washing machine using a water temperature not exceeding 50°C. Note: excessive or hard mechanical washing can reduce the life and protection of your garment. The inner surfaces of the suit should be sanitized using Synodor ®.

Solvents or strong cleaning and disinfecting agents should not be used, these can have damaging effects on suit materials.

After washing hang the suits and allow to dry naturally.

LIGHT MECHANICAL WASHING 

DO NOT SPIN

DO NOT DRY CLEAN 

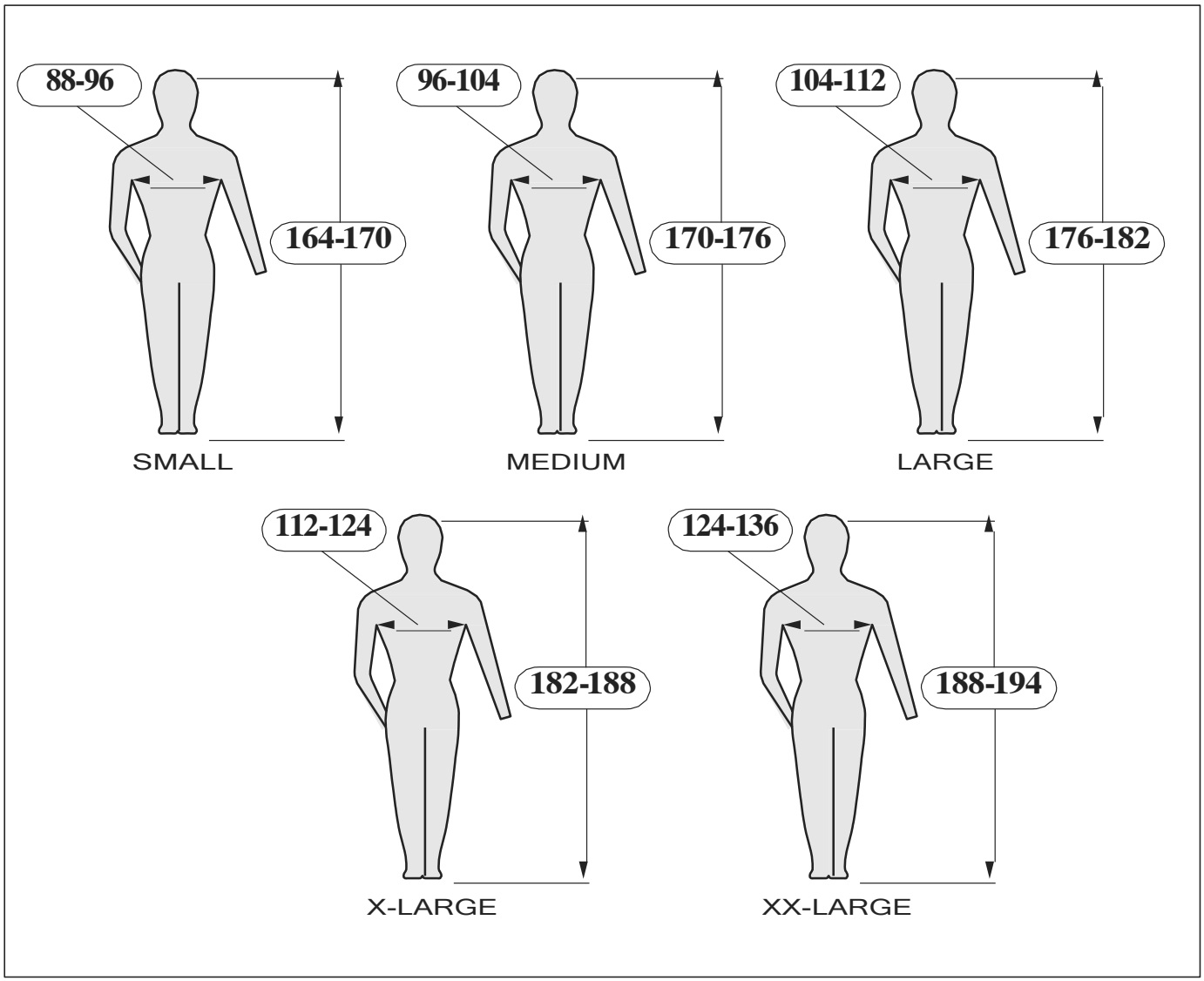
DO NOT BLEACH 

DO NOT IRON 

DO NOT TUMBLE DRY 

DO NOT USE SOLVENT ON PVC FABRIC

Sizing



The following pictograms designate the range of height & chest sizes suitable for specific sizes of Nuprotex 'E' suit, check your body measurements and select the correct size of suit. Body measurements in cm (inch).

Size	Body Height	Chest Girth
S	164-170 (5'4½"-5'7")	88 - 96 (35"-38")
M	170-176 (5'7"-5'9")	96-104 (38"-41")
L	176-182 (5'9"-5'11½")	104-112 (41"-44")
XL	182-188 (5'11½"-6'2")	112-124 (44"-49")
XXL	188-194 (6'2"-6'4½")	124-136 (49"-53½")

Physical properties of calendered PVC foils

Testing performed in accordance with clause 4.2 of EN 1073-2:2002 and clauses 4.1 and 4.2 of EN 14605:2005+A1:2009.

300 micron Foil (natural)

Pretreatment : 5 x Washing : ISO 6330:7A (30°C)
Description : A flexible, fire retardent, calendered PVC foil. Gauge Range 0.250mm-0.350mm, Respirex Part No. A00015.
Emboss/Colour: Unembossed/Natural

Test Method	Requirement	Result	Class	
			EN14605:2005	EN1073-2:2002
EN 530:2010 Meth 2 (inc. pressure drop)	Abrasion Resistance	2000 cycles	6	6
EN ISO 7854:1997 Meth B (inc. pressure drop)	Flex Cracking Resistance	100 000 cycles	6	-
EN ISO 9073-4:1997	Trapezoidal Tear Resistance	> 20.0 N	2	2
EN ISO 13934-1:2013	Tensile Strength	> 160 N	3	-
EN 863:1995	Puncture Resistance	> 10 N	2	2
EN ISO 6529:2001 48% HF	Permeation Resistance - Fabric	Mean breakthrough time > 120 min	4	-
EN ISO 6529:2001 48% HF	Permeation Resistance - Seams	Mean breakthrough time > 120 min	4	-
EN 13274-4:2001 Meth 3	Resistance to ignition	No part ignited or continued to burn on removal from the flame	Pass	Pass
EN 25978:1993	Resistance to blocking	No blocking	-	2
EN ISO 13935-2:2014, A.2	Seam Strength	> 125 N	4	4
EN ISO 17491-4:2008 Method B high-level	Resistance to penetration by liquids - Spray test	< 3 x total calibrated stain area	Pass	-

150 micron Foil (blue tint)

Pretreatment : 5 x Washing : clause 5.1.1 of EN 1073-1:1998

Description : A 150μm flexible, cadmium and lead free phthalate plasticised PVC film, Respirex Part No. A00131.

Emboss/Colour: Unembossed/Blue Tint

Test Method	Requirement	Result	Class	
			EN14605:2005	EN1073-2:2002
EN 530:1994 Meth 2 (inc. pressure drop)	Abrasion Resistance	2000 cycles	6	6
EN ISO 7854:1997 Meth B (inc. pressure drop)	Flex Cracking Resistance	> 15 000 cycles	4	-
EN ISO 9073-4:1997	Trapezoidal Tear Resistance	> 10 N	1	1
EN ISO 13934-1:2013	Tensile Strength	> 100 N	3	-
EN 863:1995	Puncture Resistance	> 10 N	2	2
EN ISO 6529:2001 40% NaOH	Permeation Resistance - Fabric	Mean breakthrough time > 480 min	6	-
EN ISO 6529:2001 40% NaOH	Permeation Resistance - Seams	Mean breakthrough time > 480 min	6	-
EN 13274-4:2001 Meth 3	Resistance to ignition	No part ignited or continued to burn on removal from the flame	Pass	Pass
EN 25978:1993	Resistance to blocking	Blocking	-	1
EN ISO 13935-2:2014, A.2	Seam Strength	> 125 N	4	4
EN ISO 17491-4:2008 Method B high-level	Resistance to penetration by liquids - Spray test	< 3 x total calibrated stain area	Pass	-

EU DECLARATION OF CONFORMITY

RESPIREX INTERNATIONAL LTD
Unit F Kingsfield Business Centre,
Philanthropic Road,
Redhill,
Surrey RH1 4DP
United Kingdom

Declares that the PPE described hereafter:

Respirex (logo) One-Piece Nuprotex 'E' suits, available in
300µm translucent PVC foil (Respirex Part no. A00015)
150µm translucent PVC foil (Respirex Part no. A00131)

Meets the minimum requirements specified by product standards:

EN 1073-2:2002	*Non-ventilated protective clothing against particulate radioactive contamination, total inward leakage performance classification of Class 2*
EN 14605:2005+A1:2009	*Type 4 (Full body chemical protective clothing with spray-tight connections)*

is identical to the PPE which is subject of Module B EU type-examination certificate No CE ****** (Issue 1) and is subject to the procedure set out in Module D of Regulation (EU) 2016/425 under the supervision of the notified body:

BSI
Davy Avenue, Knowhill,
Milton Keynes. MK5 8PP, United Kingdom
EC Notified Body No 0086

BSI Group The Netherlands B.V.
Say Building, John M. Keynesplein 9, 1066 EP
Amsterdam, Netherlands
EC Notified Body No 2797

These garments are described in the manufacturer's technical file TF065, Issue D.

Done at: RESPIREX, Redhill, Surrey, on 22nd August 2019

Signed:……

Mark Bellas Simpson (Managing Director)

Respirex International Limited
Unit F, Kingsfield Business Centre,
Philanthropic Road, Redhill,
Surrey RH1 4DP.
Tel: +44 (0) 1737 778600
Fax: +44 (0) 1737 779441
Email: info@respirex.co.uk
Web: www.respirex.co.uk

RESPIREX INTERNATIONAL LTD,

Unit F Kingsfield Business Centre,
Philanthropic Road,
Redhill,
Surrey, RH1 4DP
ENGLAND

TELEPHONE	+44(0) 1737 778600
FAX	+44(0) 1737 779441
EMAIL	info@respirex.co.uk

EU Module B and D Type Examination By:	**BSI,** Davy Avenue, Knowhill, Milton Keynes, MK5 8PP, ENGLAND	**BSI Group The Netherlands B.V.** Say Building, John M. Keynesplein 9, 1066 EP, Amsterdam, NETHERLANDS
	Notified Body No. 0086	**Notified Body No. 2797**