RESPIREX™

COMB series limited-use chemical protective coveralls instructions for use

Type 3
Type 4
Type 5
Type 6

EN14605:2005+A1:2009
EN ISO13982-1:2004+A1:2010
EN13034:2005+A1:2009

Type 3-B
Type 4-B
Type 5-B
Type 6-B

EN14126:2003

BS\092\C\2018

EN

Contents

General Information

Respirex limited use one-piece chemical protective coveralls conform to the following European standards:

- **EN 14605:2005+A1:2009 Type3, Type 4**
  Protective clothing against liquid chemicals - clothing with liquid-tight or spray-tight connections
- **EN ISO 13982-1:2004+A1:2010 Type 5**
  Protective clothing against solid particulates
- **EN 13034:2005+A1:2009 Type 6**
  Protective clothing offering limited protective performance against liquid chemicals
- **EN 14126:2003 Type 3-B, Type 4-B, Type 5-B and Type 6-B**
  Protective clothing against infective agents

The European standards above specify the performance requirements for the materials of construction (e.g. abrasion resistance, tear resistance, etc.) and for the suit as a whole (e.g. resistance to penetration by liquids). One-piece coveralls are CE marked to indicate compliance with the basic safety requirements under Module B and D of the European Regulation (EU) 2016/425 on personal protective equipment (PPE).

Respirex one-piece chemical protective coveralls are manufactured from high performance CHEMPROTEX™ 300 material engineered for use in chemical protective clothing.

CHEMPROTEX™ 300 offers protection in a wide range of applications including:

- Chemical handling
- Hazardous waste clean-up
- Paint spraying
- Pharmaceutical manufacturing and / or packaging
- Military applications
- Disease and disaster management
- Emergency response services, spill clean-up and accident interventions

“Limited-use” protective clothing is made to provide the full level of protection as needed for limited wear life usage and comparable to the protection provided by “re-useable” protective garments complying with EN14605. Limited-use clothing is typically employed to be worn until hygienic cleaning becomes necessary or limited use chemical contamination has occurred and disposal is required. This includes protective clothing for single use and for limited re-use.

Warnings & Limitations

- Only for use by trained competent personnel
- Exposure to certain very fine particles, intensive liquid sprays and splashes of hazardous substances may require protective clothing of higher mechanical strength and barrier properties than those offered by the limited-use chemical protective coveralls
- Limited-use chemical protective coveralls are designed for single use only, Respirex cannot guarantee the integrity or performance characteristics of coveralls that have seen multiple cycles of usage
- Limited-use chemical protective coveralls should not be used in areas immediately dangerous to life or health (IDLH) or in environments where there is a high risk of puncture occurring
- If coveralls are heavily contaminated or mechanically damaged in any way they MUST NOT be used and MUST be disposed of
- Never modify or alter this product
- Before selecting appropriate protective clothing a detailed assessment of the nature of the hazard and the working environment should be undertaken. There are different factors such as concentration, temperature, pressure and other environmental influences that have significant influence on the barrier properties of limited-use chemical protective coveralls

- Please ensure that you have chosen suitable PPE for your application. The user shall be the sole judge for the correct combination of full body protective coverall, ancillary equipment (gloves, boots, respiratory equipment, etc.), how long a limited-use chemical protective coverall can be worn on a specific application with respect to its protective performance and wear comfort or heat stress
- Materials that may come into contact with the wearer's skin are not known to release substances that are toxic, carcinogenic, mutagenic, allergenic, toxic to reproduction or otherwise harmful to the majority of individuals. These products contain no components made from natural rubber latex
- Always use compatible PPE, e.g. gloves and boots as advised by Respirex
- Flammable material. Keep away from fire

When worn alone a one-piece coverall provides only partial body protection. If full body protection is required always use compatible PPE, e.g. gauntlets, boots and hoods advised by Respirex.

When worn with a face mask which is partially tape sealed to the integral hood under the chin and appropriate gloves and safety boots, a one-piece coverall will meet the performance requirements of Type 3, Type 4 and

Type 6 clothing.

NB: For Type 5 clothing performance on coveralls that are open sleeved, gloves should be taped* to the cuffs of the suit.

CHEMPROTEX™ 300 material does not breathe. The wearer's body temperature will rise whilst wearing the suit and care should be taken not to lose too much body fluid. The wearer should leave the work area and remove the suit before becoming distressed.

For any enquiries please contact the Respirex customer services department on

Tel : +44 (0)1737 778600 or Fax : +44 (0)1737 779441

Pre-checks

1. Visually inspect the coveralls for any damage that may reduce the level of protection offered
2. The coveralls are free from contamination both internally and externally
3. The zipper operates correctly and the slider is in good condition
4. The coveralls are free from tears and holes. Pay particular attention to the seam areas

Wearer's instructions

Consult the body measurement chart (see page 12) and select one-piece coveralls of a suitable size. It is the wearer's responsibility to determine the protection required and to select the appropriate garment type. Suitable boots, gloves and respiratory equipment must be worn with the one-piece coveralls for certain applications. In order to ensure a complete seal against fluid ingress, Respirex recommends taping the hood to face mask, cuffs to gloves and ankles to boots using a suitable liquid impermeable tape*. If the material becomes torn, abraded and/or punctured, the end user should discontinue use to avoid potential exposure to hazard. Respirex International cannot accept responsibility for improper garment use.

*recommended tape width 75mm

Donning procedure

After carrying out the pre-checks as detailed above; open the suit fully and fit gloves where applicable as detailed in the glove fitting instructions. Stand up and put arms into sleeves one at a time, fasten the zip, then make sure the outer flaps are closed correctly. Put on safety boots as outlined in the instructions. Where applicable make sure the hood is worn correctly (see hood instructions). Respirex recommends taping the hood, gloves and boots to prevent ingression of chemical contamination.

Wearing gloves with double elasticated sleeves

1. Put on the suit as usual
2. Roll back the outer sleeve (Fig.1) approximately 15 cm (6 inches)
3. Put on the glove with the inner sleeve of the suit to the inside of the glove (Fig.1)
4. Roll the outer elasticated sleeve down over the exterior of the glove (Fig.2)

Exactly the same procedure should be utilised when wearing suits with elasticated inner sleeves and straight outer sleeves.

Fig. 1

Fig. 2

Wearing gloves with single elasticated sleeves

1. Put on the suit as usual
2. Put on the glove with the elasticated sleeve of the suit to the inside of the glove (Fig.3)
3. Pull the elasticated sleeve over the glove (Fig.4)

Fig. 3

Fig. 4

Wearing gloves in combination with Kemblok™ gloves

1. Put on the suit as usual with the Kemblok™ glove (Fig.5)
2. Put on the neoprene glove over the Kemblok™ glove (Fig.6)

Fig. 5

Fig. 6

Elasticated inner legs and straight outer legs

1. Step into the suit as usual with foot through elastic stirrup (where fitted)
2. Roll outer legs up approximately 20-23cms (Fig.7)
3. Step into protective boots (Fig.8)
4. Roll down outer leg over exterior of boots (Fig.9)

Exactly the same procedure should be utilised when wearing suits with elasticated inner and outer legs, plain inner and outer legs and plain socks with elasticated outer legs or plain outer legs.

Fig. 7

Fig. 8

Fig. 9

Single elasticated legs

1. Step into the suit as usual with foot through elastic stirrup (where fitted)
2. Roll elasticated legs up approximately 20-23cms (Fig.10)
3. Step into protective boots (Fig.11)
4. Roll down elasticated legs over exterior of boots (Fig.12)

Exactly the same procedure should be utilised when wearing suits with straight outer legs.

Fig. 10

Fig. 11

Fig. 12

Fig. 13

Hood instructions

1. Pull the hood over the head (Fig.14)
2. Fasten the zip to its fullest extent i.e. the neck or throat (Fig.15)
3. Close the outer zip flaps securely with the velcro (Fig.16)

Fig. 14

Fig. 15

Fig. 16

Doffing procedure

It is recommended that the doffing procedure is carried out with the aid of a dressing assistant. Depending upon the contaminant encountered, it may be necessary for the assistant to wear appropriate PPE selected by qualified safety personnel. Remove all sealing tape from around the face mask, arms and ankles.

1. Open the zip flaps by unfastening the velcro closures, then unfasten the zipper
2. Fold the hood of the coverall up and over the wearers head
3. Continue to roll the coverall down over the wearer's shoulders keeping the exterior surfaces away from wearer at all times
4. As the coverall continues to be rolled down to waist level, the wearer's arms should be removed from the sleeves
5. Finally the wearer should step out of the garment legs and safety boots and remove the face mask

Storage

Suits must always be stored in a clean and dry condition at ambient temperature, and if being stored for long periods of time, out of direct sunlight. Suits should not be stacked more than four high and a heavy weight must not be placed on top.

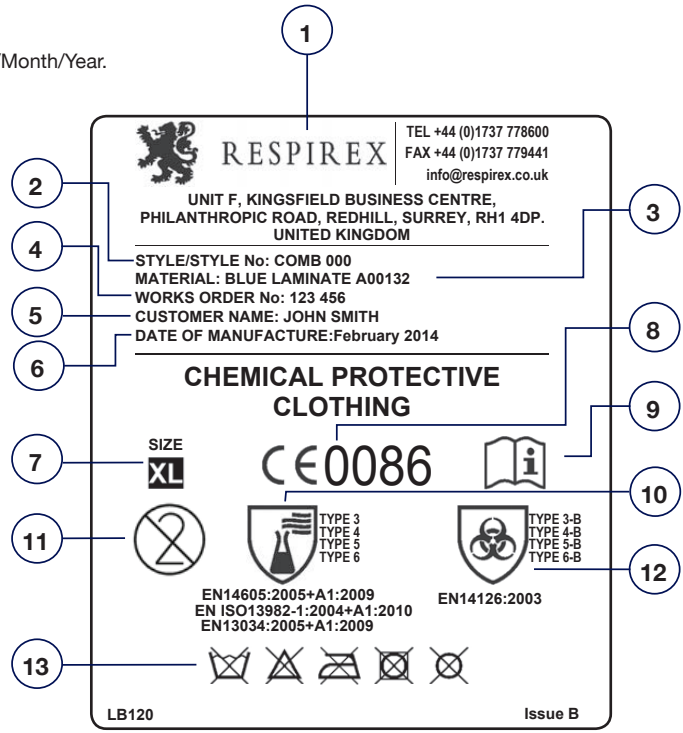
Disposal

Uncontaminated limited-use one-piece coveralls manufactured from CHEMPROTEX™ 300 may be incinerated. Contaminated garments should be handled as contaminated waste in accordance with local and national regulations.

Product labelling

1. Manufacturer of garment;
   Respirex International Ltd.
2. Manufacturer's Model number
3. Material of Manufacture.
4. Manufacturer's Order No.
5. Customer Name.
6. Date of manufacture; Day/Month/Year.
7. Garment Size

Size	Chest (cms)	Body Height (cms)
S	88-96	164-170
M	96-104	170-176
L	104-112	176-182
XL	112-124	182-188
XXL	124-136	188-194



8. CE Mark and notified Body code.
9. "Open Book Pictogram"; wearer must refer to the "Instructions for use" for further information.
10. Protection against liquid chemicals and solid particulates
11. Single Use Garment
12. Protection against biological hazard
13. Five care pictograms indicating that clothing is not suitable for cleaning and reuse.
    - Pictogram 1 Do not wash
    - Pictogram 2 Do not bleach
    - Pictogram 3 Do not iron
    - Pictogram 4 Do not machine dry
    - Pictogram 5 Do not dry clean

Chemical permeation testing at Respirex

Permeation is the process by which a chemical moves through protective clothing material on a molecular level. At its headquarters in Surrey, UK, Respirex operate a chemical permeation testing laboratory equipped with the latest technology. All testing is carried out by fully qualified chemists who are able to test Respirex's own materials against a wide range of chemical substances. In this way the customer can be advised and recommended the most suitable material to use against any challenging chemical encountered in the workplace.

Permeation tests can be carried out in accordance with EN374-3, EN ISO 6529 and ASTM 739. The clothing material is exposed to the challenging chemical in a permeation cell so that breakthrough times and permeation rates can be measured. Breakthrough time is the time taken for the chemical to permeate through the material after continuous contact with the outer surface of a chemical safety suit. Permeation rates, measured in µg (min. cm^2), are an indication of the amount of chemical reaching the wearer inside the suit after breakthrough occurs.

For advice on chemical permeation or decontamination contact the Respirex laboratory on

Tel :+44 (0)1737 778600, Fax :+44 (0) 1737 779441 or Email: laboratory@respirex.co.uk

Outside of normal working hours (9.00am-5.00pm Mon-Fri), please leave details of your enquiry on the answerphone service so that the laboratory staff can deal with your query with the minimum of delay.

Material performance data

Unless otherwise stated, all data shown indicates performance characteristics of the CHEMPROTEX™ 300 material in accordance with the requirements of EN14605:2005+A1:2009, EN 13034:2005+A1:2009, EN ISO 13982-1:2004+A1:2010 and EN 14126:2003, plus additional standards.

• Resistance to permeation by chemicals

Tests carried out under laboratory conditions by independent accredited laboratories in accordance with EN ISO 6529. Table shows average breakthrough times in minutes.

Chemical	Results CHEMPROTEX™ 300 material	Results Kemblok™ Glove	Results Material and Glove Seam	EN Class*
Sodium Hydroxide 40%	> 480 mins	> 480 mins	> 480 mins	6 of 6

Respirex's in-house laboratory can provide permeation data against other chemicals if required.

* EN class specified by EN 14325, the higher the class number the better the performance.

• Repellency to liquid chemicals

Tests carried out under laboratory conditions by independent accredited laboratories in accordance with EN ISO 6530.

Chemical	Repellency index	EN Class**
Sulphuric acid 30%	> 95%	3 of 3
Sodium Hydroxide 10%	> 95%	3 of 3
o-Xylene 99.9%	> 90%	2 of 3
Butan-1-ol 99.9%	> 90%	2 of 3

** EN class specified by EN 14325, the higher the class number the better the performance.

• Resistance to penetration by liquid chemicals

Tests carried out under laboratory conditions by independent accredited laboratories in accordance with EN ISO 6530.

Chemical	Penetration index	EN Class‡
Sulphuric acid 30%	< 1%	3 of 3
Sodium Hydroxide 10%	< 1%	3 of 3
o-Xylene 99.9%	< 1%	3 of 3
Butan-1-ol 99.9%	< 1%	3 of 3

‡ EN class specified by EN 14325, the higher the class number the better the performance.

• Protection against infective agents

Tests carried out under laboratory conditions by independent accredited laboratories.

Test Method	Property	EN Class†
ISO 16603	Resistance to penetration by synthetic blood	6 of 6
ISO 16604	Resistance to penetration by blood-borne pathogens	6 of 6
ISO/DIS 22611	Resistance to penetration by biologically contaminated aerosols	3 of 3
EN ISO 22612	Resistance to dry microbial penetration	3 of 3
EN ISO 22610	Resistance to wet microbial penetration	6 of 6

† EN class specified by EN 14126:2003, the higher the class number the better the performance.

• Physical Properties

Tests carried out under laboratory conditions by independent accredited laboratories.

Test Method	Property	EN Class††
EN 530 Meth 2	Abrasion resistance	6 of 6
EN ISO 7854 Meth B	Flex cracking resistance	1 of 6
EN ISO 7854 Meth B at -30 °C	Flex cracking resistance at -30 °C	2 of 6
EN ISO 9073-4	Trapezoidal tear resistance	4 of 6
EN ISO 13934-1	Tensile strength	3 of 6
EN 863	Puncture resistance	2 of 6
EN ISO 13935-2	Seam strength	*236 N

†† EN class specified by EN 14325, the higher the class number the better the performance.

* Seam Strength performance classification cannot be determined. Fabric tear at jaws of instrument

• Whole Suit Performance

Tests carried out under laboratory conditions by independent accredited laboratories.

Standard	Property	Results
EN 14605:2005+A1:2009	Type 3 Liquid jet test	Pass
EN 14605:2005+A1:2009	Type 4 Liquid spray test	Pass
EN 13982-1:2004+A1:2010	Type 5 Protection against airborne solid particulates	Pass Ljmn,82/90 ≤30%, LS,8/10 ≤15%
EN 13034:2005+A1:2009	Type 6 Liquid spray test (mist test)	Pass
EN 14325:2004	Seam strength	Class 4§

§ EN class specified by EN 14325:2004, the higher the class number the better the performance.

Risk Assessment

The summary of the risks taken into account in the design of the limited use one-piece chemical protective coveralls.

EN 14605: 2005 +A1:2009

- Full-body protective clothing with liquid-tight connections between different parts of the clothing (Type 3: liquid-tight clothing) and with liquid-tight connections to component parts, such as hoods, gloves, boots, visors or respiratory protective equipment, which may be specified in other European Standards.
- Full-body protective clothing with spray-tight connections between different parts of the clothing (Type 4: spray-tight clothing) and spray-tight connections to component parts, such as hoods, gloves, boots, visors or respiratory protective equipment, which may be specified in other European Standards.
- Partial body protection garments offering protection to specific parts of the body against permeation of chemical liquids. Partial body protection only protects the localised parts of the body that are covered by relevant PPE.

EN ISO13982-1:2004 +A1:2010

- The minimum requirements for chemical protective clothing resistant to penetration by airborne solid particles, type 5 clothing.

EN 13034:2005 +A1:2009

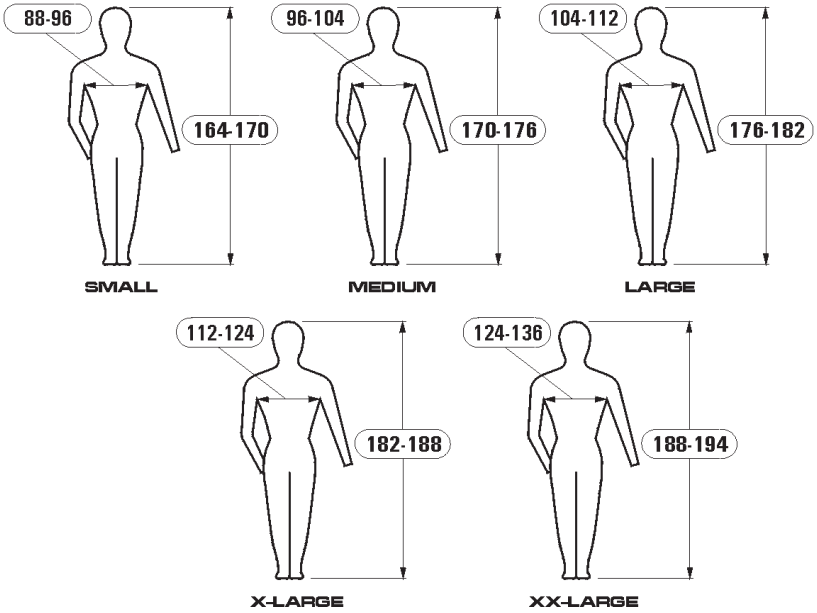
- Chemical protective suits (Type 6) cover and protect at least the trunk and the limbs, e.g. one-piece coveralls or two piece suits, with or without hood, boot-socks or boot-covers; tested by the use of a reduced whole suit spray test using a variant of “EN ISO 17491-4”.

EN 14126: 2003

- Requirements and test methods for re-usable and limited use protective clothing providing protection against infective agents.

Sizes

The following pictograms designate the range of height & chest sizes suitable for specific sizes of one-piece suit, check your body measurements and select the correct size of suit. Body measurements in cm.



Size	Body Height	Chest Girth
S	164-170	88-96
M	170-176	96-104
L	176-182	104-112
XL	182-188	112-124
XXL	188-194	124-136

RESPIREX™

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 COMB series Chemical Protective Coveralls,
manufactured using 165g/m^2 barrier laminate on non-woven fabric
(Chemprotex™ 300, Respirex Part no. A00132)

- meets the minimum requirements specified by product standards;

EN 14605:2005 +A1:2009	***Type 3 & 4*** *(Limited life, full body chemical protective clothing with liquid tight connections)*
EN ISO 13982-1:2004 +A1:2010	***Type 5*** *(Limited life, full body protection against airborne solid particulates)*
EN13034:2005 +A1:2009	***Type 6*** *(Limited life, full body protection against liquid chemicals)*
EN 14126:2003	***Type 3-B, 4-B, 5-B, 6-B*** *(Protective clothing against infective agents)*

- is identical to the PPE which is subject of EU Module B certificate of conformity No GB18/962315 (Issue 1) issued by SGS United Kingdom Ltd, Unit 202b Worle Parkway, Weston-super-Mare, BS22 6WA
- is subject to the procedure set out in Module D of the European PPE 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.

These garments are described in the manufacturer's technical file TF092, Issue D.

Done at: RESPIREX, Redhill, Surrey, on 4th September 2018

Signed:.....

Mark Bellas Simpson (Managing Director)

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