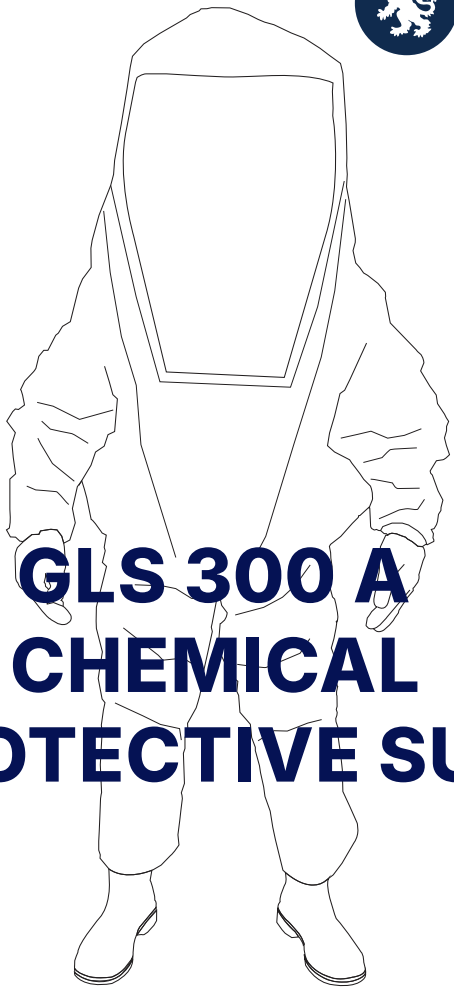
RESPIREX™



GLS 300 A CHEMICAL PROTECTIVE SUIT

USER INSTRUCTIONS

Type 1a, EN 943-1:2015+A1:2019
Type 3, EN14605:2005+A1:2009
Type 4, EN14605:2005+A1:2009
Type 5, EN13982-1:2004+A1:2010
Type 6, EN13034:2005+A1:2009

EN

BS\107\E\2024

Contents

General Information

The Respirex GLS 300 A is a one-piece single use chemical protective type 1a gas tight suit that is CE marked to indicate compliance with the basic safety requirements under Module B and D of the European PPE Regulation 2016/425. The suit has been tested in accordance with EN 943-1:2015+A1:2019, which specifies the performance requirements both for the materials of construction of the suit and for the suit as a whole. All declarations of conformity: http://www.respirex.com/doc

Respirex GLS 300 A chemical protective gas tight suits are manufactured from a high performance barrier laminate material engineered for use in chemical protective clothing. The combination of the barrier laminate and the polymer provide a particle-tight material with good resistance to penetration and permeation by many liquids and gases.

The barrier laminate offers protection in a wide range of applications including:

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

Typical garment features include:

- A large semi-rigid visor bonded to the suit that provides the wearer with an excellent field of vision
- A 112 cm (44") rubber/ textile combination Gas Tight Nylon zip fitted to the rear of the garment with an overflap sealed by Velcro®.
- Integral bootees (sock like extension of the suit leg that encapsulates the entire foot) intended to be worn inside separate (i.e. not attached) protective ESD safety boots that provide protection against mechanical risks.
- Outer legs (splash guards) intended to prevent liquid entering the safety boots
- KCL Butoject and Kemblok™ barrier gloves complying with EN 374-1 & EN 374-5 (only KCL Butoject complies with EN 388)permanently attached to the suit (for data specific to the use of either KCL Butoject or Kemblok™ barrier gloves please refer to the user information supplied). NOTE: The Kemblok™ barrier gloves do not offer any mechanical and thermal protection, outer gloves complying with EN 388 should be worn over the Kemblok™ barrier gloves.
- Two exhalation valves are fitted to the rear of the suit which automatically releases any excess pressure which builds up inside the garment during use.

The suit MUST be worn in combination with self contained open-circuit compressed air breathing apparatus (SCBA) conforming to EN 137 and facemask conforming to EN 136.

Warnings & Limitations

- 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 GLS 300 A suits.
- 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 GLS 300 A suit.
- The suit is designed for SINGLE USE only, Respirex cannot guarantee the integrity or performance characteristics of a suit that has seen multiple cycles of usage.
- Stored in its normal packaging the GLS 300 A suit has a maximum shelf-life of 5 years.
- GLS 300 A suits should not be used in environments where there is a high risk of puncture occurring.
- If the suit is heavily contaminated or mechanically damaged in any way it MUST NOT be used and MUST be disposed of.
- Never modify or alter this product.

- 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 and ancillary equipment (gloves, boots, respiratory equipment etc) and how long a GLS 300 A suit can be worn on a specific application with respect to its protective performance, wear comfort or heat stress.
- Materials that may come into contact with the wearer's skin are not known to cause allergic reactions to the majority of individuals. These products contain no components made from natural rubber latex.
- Continuous contact with certain chemicals can adversely effect the field of vision and protection offered by the visor. If the end-user notices any discolouration of the visor the suit should be withdrawn from use.
- The GLS 300 A suit DOES NOT provide protection against heat or flame, it should therefore not be worn in potentially flammable or unassessed explosive environments. It is not to be used in the handling of explosives.
- The person wearing the electrostatic dissipative protective clothing shall be properly earthed. The resistance between the person's skin and earth shall be less than 10^8 Ω, e.g. by wearing adequate footwear on dissipative or conductive floors;
- Electrostatic dissipative protective clothing shall not be open or removed whilst in presence of flammable or explosive atmospheres or while handling flammable or explosive substances;
- Electrostatic dissipative protective clothing is intended to be worn in Zones 1, 2, 20, 21 and 22 (see EN 60079-10-1 [7] and EN 60079-10-2 [8]) in which the minimum ignition energy of any explosive atmosphere is not less than 0,016 mJ;
- Electrostatic dissipative protective clothing shall not be used in oxygen enriched atmospheres, or in Zone 0 (see EN 60079-10-1 [7]) without prior approval of the responsible safety engineer;
- The electrostatic dissipative performance of the electrostatic dissipative protective clothing can be affected by wear and tear, laundering and possible contamination;
- Electrostatic dissipative protective clothing shall be worn in such a way that it permanently covers all non-complying materials during normal use (including bending movements).
- Electrostatic dissipative clothing should not be worn in oxygen enriched atmospheres without prior approval by a responsible safety engineer.
- When selecting boots it is recommended that consideration be given to their compatibility with the electrostatic properties of the suit.
- Barrier Laminate 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.
- Flammable material. Keep away from fire.

For any enquiries please contact the Respirex customer services department on

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

Email: info@respirex.co.uk

Storage

The GLS 300 A suits should be stored under the following conditions:

In dry conditions above ground level; away from direct sunlight and in an environment free from harmful gases and vapours.

Temperature range of -5°C* to +30°C, < 90% humidity.

**Care should be taken when storing the suits at extreme temperatures. At sub-zero temperatures the flexibility of the material may be reduced, resulting in a potential lowering of the protection offered.*

Only remove the single-use GLS 300 A suit from its original packaging when intending to use.

DO NOT fold or crease the visor, this will help to keep its natural shape.

In order to maintain the level of protection offered, care should be taken to minimize the risk of damage occurring to the GLS 300 A suits during transportation between work areas. It is recommended that all GLS 300 A suits are transported in a suitably sized rigid container resistant to penetration by sharp objects, abrasive surfaces, chemicals, oils, solvents etc.

Pre-checks

1. Visually inspect the suit for any damage that may impair the correct working of the garment together with the gloves.
2. The zip operates correctly and the slider is in good condition.
3. The suit materials are free from tears and holes. Pay particular attention to the seam areas.
4. The visor is good for use.

Dressing Procedure

It is good practice for an assistant to help the wearer don and doff the suit. This makes the process easier and quicker, and will help the wearer to avoid stumbling or tripping which may result in personal injury or damage to the suit.

Follow these steps in donning the suit:

1. Unfasten the zipper by pulling the slider approximately 6 cm (2.4″) at a time, keeping the zip straight with one hand as you pull the slider with the other in line with the zip. Repeat this exercise for the whole length of the zip. **FAILURE TO FOLLOW THIS PROCEDURE MAY RESULT IN THE ZIP SPLITTING**.
2. Remove all personal affects which may result in damage to the suit (e.g. watches, badges, jewellery etc.).
3. Remove shoes or boots. The integral bootees are not designed to accommodate footwear.
4. Tuck trousers into socks to make donning of suit legs and bootees easier.
5. While seated, carefully place each leg in turn into the suit then fold the outer legs (splash guards) upwards over the knees (see Fig. 1 and Fig. 2).

Fig. 1

Fig. 2

6. Don safety boots. It is strongly recommended that you wear a larger size of boot than normal (ideally at least one size larger), not only to accommodate the surplus fabric of the integral bootee, but also to ease in the donning process (see Fig. 3 and Fig. 4).

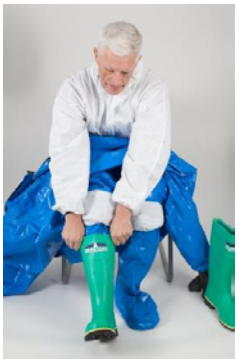


Fig. 3

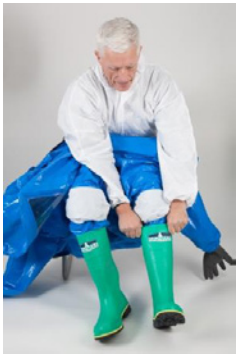


Fig. 4

7. Carefully fold down the outer legs of the suit over the exterior of the safety boots. Once folded down it is important to ensure that the seam where the outer leg joins the suit is flat and does not form a 'channel' where liquid could collect. Liquid will not be able to enter the boots once the outer leg is fully folded down (see Fig. 5 and Fig. 6).

Fig. 5

Fig. 6

8. With the wearer now standing, pull the crotch of the suit up to the waist then clip the belt securely around the waist (see Fig. 7).

Fig. 7

9. With the assistance of the dressing assistant the wearer should now don the breathing apparatus set (SCBA) in accordance with manufacturer's instructions. At this stage the SCBA should not be started and the face mask should be left hanging on its strap around the wearer's neck. The wearer should now carry out all necessary pre-checks of the SCBA. (see Fig. 8 and Fig. 9).

Fig. 8

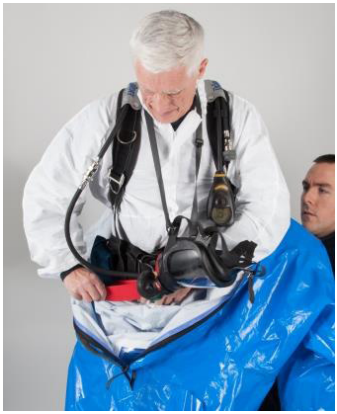


Fig. 9

10. Next, the SCBA cylinder should be switched on in accordance with manufacturer's instructions and the face mask donned by the wearer. The dressing assistant can help the wearer to adjust the head straps of the face mask until comfortable. If necessary the wearer can now don a standard size adjustable 52 - 64 cm firefighter's safety helmet conforming to EN 443. (see Fig. 10 and Fig. 11).

Fig. 10

Fig. 11

11. The wearer should place both arms into the sleeves until the hands are placed comfortably into the attached gloves (it is recommended that cotton gloves are worn inside the gloves attached to the suit). whilst the dressing assistant lifts the suit up and over the head and breathing apparatus set (see Fig. 12 and Fig. 13).

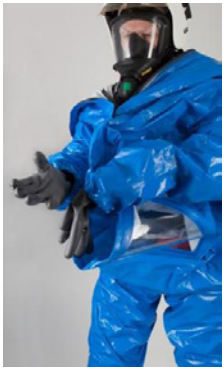


Fig. 12

Fig. 13

12. The dressing assistant should fasten the zipper carefully following the reverse of the procedure outlined in Step 1, keeping the zip straight with one hand as you pull the slider with the other in line with the zip. Seal down the outer flaps. If a Velcro over flap is fitted ensure that both halves of the Velcro are firmly and evenly joined together, leaving no gaps or ridges for possible fluid ingress (see Fig. 14 and Fig. 15).

Fig. 14

Fig. 15

13. The suit is now ready for use (see Fig. 16 and Fig. 17).

Fig. 16

Fig. 17

Decontamination for removal of suit

Because the GLS 300 A suit is designed primarily as a SINGLE USE garment, the end-user will be the sole judge for how long it can be worn on a specific task.

Preliminary washing by means of a high pressure shower will remove most of the contaminant from the outer surfaces of the suit sufficient to allow the wearer to undress from the garment.

Should you not have access to a high pressure shower, the suit can be sprayed with copious quantities of water and a suitable detergent and neutralizer for a minimum period of 5 minutes.

If the garment has been used in acid the recommended neutralizer is a solution of bicarbonate of soda and water (6% bicarbonate of soda w/v). Water will neutralize alkali contamination.

Undressing Procedure

It is essential that the suit is decontaminated sufficiently to safely remove the wearer from the garment. It will be necessary for the dressing assistant to aid the wearer to remove the suit (it is essential that the dressing assistant wears suitable protective clothing).

1. The dressing assistant should break the seal on the flap at the rear of the suit and unfasten the zipper.
2. Carefully fold the suit over the wearer's head and off the SCBA set (following the reverse of the procedure outlined in the dressing instructions), keeping the outer surface of the suit away from the wearer at all times.
3. As the dressing assistant pulls the suit forward the wearer's arms should be withdrawn from the sleeves and safety gloves (this step may turn the sleeves of the suit inside out).
4. The dressing assistant should fold the suit down to the top of the boots so that the wearer can step out of the suit.
5. Finally remove the wearer's face mask and shut down the SCBA cylinder according to the manufacturer's instructions. With the assistance of the dresser the SCBA set can now be removed in the usual way.

Note: Extreme care should always be taken when handling contaminated suits

Disposal

Contaminated garments should be handled as contaminated waste in accordance with local and national regulations.

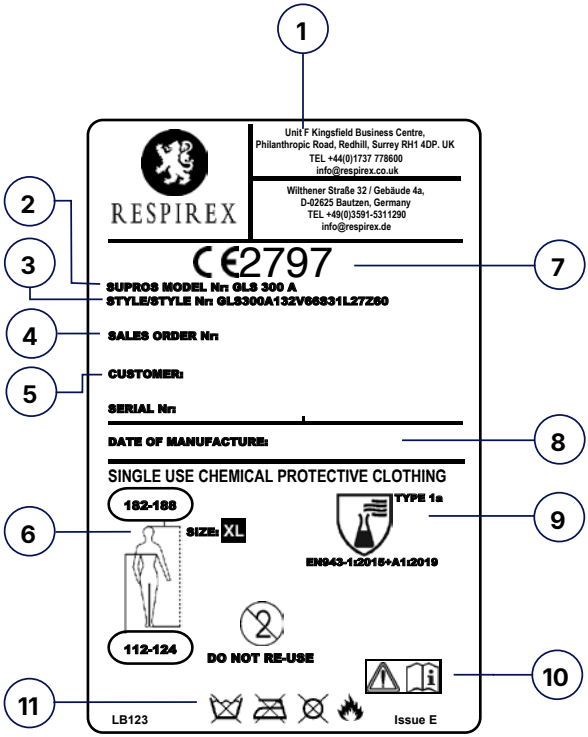
Incineration is acceptable as no halogens are present or used in manufacture of **Chemprotex™300**. The calorific value is the same as oil; however uncontrolled combustion can lead to noxious fumes and un-burnt hydrocarbons. All components are thermoplastic and can be recycled as mixed polyolefin where facilities exist.

Chemprotex™300 is comprised mainly from ethylene gas which is a by-product of oil production and refining which was once flared. No formal carbon footprint has been made on **Chemprotex™300**, however provided it is not incinerated overall carbon dioxide release to the atmosphere during production and disposal will be low.

Product labelling

1. Manufacturer of garment;
   Respirex International Ltd.
2. Manufacturer's Model number
3. Manufacturer's Style No.
4. Manufacturer's Order No.
5. Customer Name.
6. Garment Size.

Size	Chest (cm)
S	86-96
M	96-104
L	104-112
XL	112-124
XXL	124-136



7. CE mark with Notified Body code.
8. Date of manufacture; Day/Month/Year.
9. Protection against liquid chemicals
10. "Open Book Pictogram"; wearer must refer to the "Instructions for use" for further information.
11. Five care pictograms indicating that clothing is not suitable for cleaning and reuse.
    - Pictogram 1 Do not wash
    - Pictogram 2 Do not iron
    - Pictogram 3 Do not dry clean
    - Pictogram 4 Flammable

Chemical Permeation Testing

Respirex will test their own materials against any chemical that the customer requires. 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 is the process by which a chemical moves through protective clothing material on a molecular level. The permeation tests are carried out according to both the European standard ISO 6529 and the American standard 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 person inside the suit after breakthrough occurs.

For advice on chemical permeation or decontamination contact Respirex on Tel : +44 (0)1737 778600, Fax : +44 (0) 1737 779441 or Email: info@respirex.co.uk, where our qualified staff will be happy to help you. Contact outside of normal working hours (9.00am-5.00pm) on Tel : +44 (0)1737 778600 answer phone, leave details of your enquiry and we will deal with your query with the minimum of delay.

Material Performance Data

Unless otherwise stated, all data shown indicates performance characteristics of the barrier laminate material in accordance with the requirements of EN 943-1:2015+A1:2019, EN 14605:2005+A1:2009 and EN 14325:2018, plus additional standards.

Resistance to permeation by chemicals

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

Chemical	Result Barrier laminate material	KCL Butoject Glove	Kemblok™ Barrier Glove	Visor*	EN Class*
Sodium Hydroxide 40%	> 480 mins	> 480 mins	> 480 mins	> 480 mins	6 of 6

Respirex's in-house laboratory can provide permeation data against other chemicals as required. * EN class specified by EN 14325:2018, 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%	> 90%	3 of 3
Sodium Hydroxide 10%	> 90%	3 of 3
o-Xylene 99.9%	> 90%	3 of 3
Butan-1-ol 99.9%	> 90%	3 of 3

* EN class specified by EN 14325:2018, 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 14325:2018, 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 ISO 12947-2	Abrasion resistance	6 of 6
EN ISO 7854 Meth B	Flex cracking resistance	1 of 6
EN ISO 7854 Meth B	Flex cracking resistance (-30^0C)	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 13274-4 Meth 3	Resistance to ignition	Pass
EN 1149-1	Electrostatic properties	≤ 2.5×10^9 Ω

* EN class specified by EN 14325:2018, the higher the class number the better the performance.

Whole Suit Performance

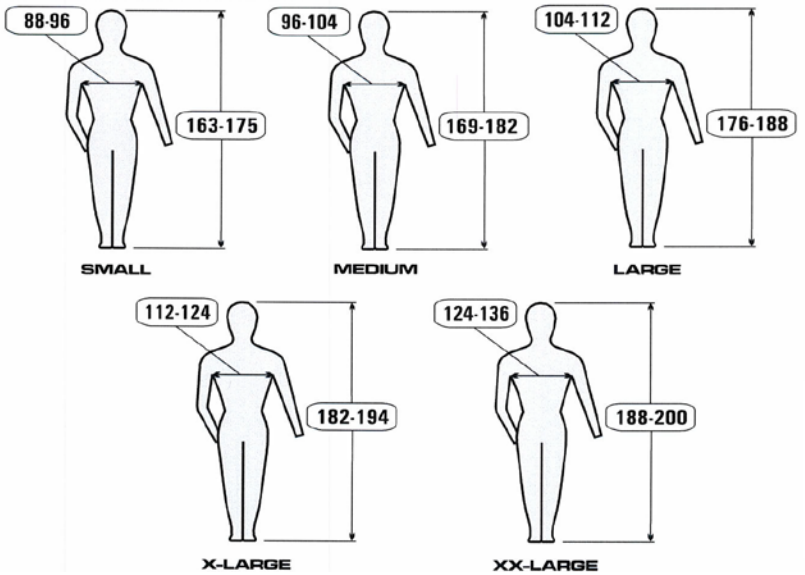
Tests carried out under laboratory conditions by independent accredited laboratories.

Performance	Test Method	Result
Type 3 Liquid jet test	EN 14605:2005+A1:2009	Pass
Type 4 High level liquid spray test	EN 14605:2005+A1:2009	Pass
Type 5 Inward leakage test	EN ISO 13982:2004+A1:2010	Pass $L_{jmn,82/90}$ ≤30%, $L_{S,8/10}$ ≤15%
Type 6 Low level liquid spray test, tested to the whole suit test	EN 13034:2005+A1:2009	Pass
Seam strength	EN ISO 13935-2:2014	Class 5*
Resistance to outward leakage of gases	ISO 17491-1:2012 Method 2	Pass

* EN class specified by EN 14325:2018, the higher the class number the better the performance.

Sizing

The following pictograms designate the range of height & chest sizes suitable for the GLS 300 A suit, check your body measurements to make sure you are suitable. Body measurements in cm.



Size	Height	Chest
S	163-175	88-96
M	169-182	96-104
L	176-188	104-112
XL	182-194	112-124
XXL	188-200	124-136

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