



PFLÜGER - SAFETY

Manufacturer's Information



Authorized distributor :

Traconed B.V. - Safety@sea
Kleidijk 88
3161 HJ Rhoon
info@traconed.com

Chemprotector -Divetex® - Berlin 1b ” Type - EN 943-1 : 2002 with DNVGL Type Approval

| | |
|---------------------|--------------------------|
| Product: | Protection Suit |
| Material: | Divetex® EN 943-1 : 2002 |
| Product No.: | 0032 |
| Color: | bright yellow, Red |



PFLÜGER - SAFETY

Contents

| | |
|--|----|
| 1 Wearing instructions | 3 |
| 2 Before usage | 3 |
| 3 How to put on the Protective Suit | 4 |
| 4 How to take off the Protective Suit | 4 |
| 5 Maintenance | 5 |
| 5.1 Cleaning | 5 |
| 5.2 Disinfection | 5 |
| 5.3 Service | 5 |
| 5.4 Leak Test | 6 |
| 5.5 Test timelines | 6 |
| 5.6 Repairs | 6 |
| 6 Exchange of parts | 6 |
| 6.1 Exchange of gloves | 6 |
| 6.2 Exchange of boots | 7 |
| 7 Transportation and storage | 8 |
| 8 Technical data | 9 |
| 8.1 Technical data Chemprotector -Divetex® "Berlin 1 b" Type | 9 |
| 8.2 Material specifications | 9 |
| 8.3 Resistance to permeation i.r.o. EN 374-3 | 10 |
| 8.4 Sizes i.r.o. EN 340 | 11 |
| 8.5 Spare parts/options | 11 |
| 8.6 Unsuitability | 11 |
| 9 Warning notices | 11 |
| 10 Disposal | 12 |
| 11 Certifying institute | 12 |
| 12 Administrative institute | 12 |



PFLÜGER - SAFETY

1 Wearing instructions

The Chemprotector Divetex® “Berlin 1b” Type is a protective suit to be used while being exposed to toxic chemicals. It offers temporary protection to skin and respiratory tracts when working with harmful liquid chemicals (sodium hydroxide solutions, hydrochloric acid, sulphur-containing acid).

It is resistant against various chemicals which are to be found in item in 8.3 of this manual. It is protecting against all chemicals being examined only. In case of a chemical being not listed or in general uncertainty, please consult the manufacturer for clarification.

All seams of the Chemprotector Divetex® “Berlin 1b ” Type protective suit are hot air welded with foil material being welded on the outer side in order to provide perfect protection against chemicals and mechanical stress. The gloves and boots are designed to be exchangeable. The gloves are made of butyl material as where the boots are manufactured in accordance with EN 345 standard. Its fluid and gas-proof zipper is placed at the back, running from the head to the lower back.

The Chemprotector Divetex® “Berlin 1 b” Type protective suit must only be worn and/or deployed in combination with a full mask (incl. air filter) or a compressed air breathing device. It turned out, during the certifying tests and procedures, that the Auer 3S full face mask is to be considered the perfect replenishment of the Chemprotector Divetex® “Berlin 1 b” Type protective suit.

The maximum time of usage of the protective suit depends on the general operational conditions (full mask, filter or compressed air breathing device), the micro climate underneath the protection overall and the ambient air temperature. By operating in a low ambient air temperature, additional isolating underwear should be used.

In case of danger, the contaminated area must be abandoned immediately.

2 Before usage

Always before using the Chemprotector Divetex® “Berlin 1 b” Type protective suit the user must visually inspect the suit and its accessories for suitability and correct functioning. The suit must be in good condition.

Further, the suit has to be checked generally at regular basis. It must be checked regarding its impermeability and completeness attributes. Only a faultless protective suit can guarantee your safety. Leak-proof attributes of the protective suit should not only be tested after each cleaning, disinfection and exchange of individual parts, but also after longer storage periods - at least once every six months time.

The impermeability test can be carried out by a visual check, with a seam test device or a commercially available leakage spray. Tears or holes in the suit's material must be sealed by the manufacturer only.



PFLÜGER - SAFETY

In case of doubt about its safety, the chemical protective suit may only be used after being tested by the manufacturer or an authorized expert.

The suit, gloves, mask sealing and boots are also to be tested for holes or tears. The leak tightness attributes must be tested as described in per item 5.5.

3 How to put on the Protective Suit

It could be beneficial if a second person assists while putting on the protective suit

- Unpack the protective suit
- Put on underwear
- Step with your legs and/or boots (one leg and/or boot after the other)
- Pull the protective suit up to the crotch
- Put on the fullface mask
- Pull the sealing cap over the mask
- Move into the left and the right sleeve
- Fasten the zipper non-violently and gradually, whereby the link chains have to be connected by stretching, while the other hand pulls the bolt onto the loop upwards slowly
- In order to expel excess air, it is recommendable to crouch down shortly before closing the protective suit completely
- Put on compressed air device (see relevant instructions) or screw the breathing filter onto full face mask

4 How to take off the Protective Suit

The user must leave the contaminated area after completion of work. In case of strong contamination, the suit must be pre-cleaned on the person wearing it after use. Water or, if necessary, suitable cleaning admixtures must be used. Make sure, that a possible helper is also wearing suitable personal protective clothing, e.g. protective gloves, breathing mask and protective suit or a protective sleeve apron.

In order to remove the protective suit, proceed as it is described under Pos. 3 (*How to put on the protective suit*) but in reversed order.

First, remove compressed air breathing apparatus and/or air filter. Then the zipper is opened by a helper and the mask sealing cap pulled off forwards over the head. After that, the entire suit is to be taken off at once.

After removal, avoid contact with the contaminated outside of the suit. A protective suit that has to be cleaned or disinfected is transported from the operational area to the cleaning site in a suitable container (plastic bag, case, etc.) by observing the respective safety measures.



PFLÜGER - SAFETY

5 Maintenance

5.1 Cleaning

Impermeability / tightness and completeness of the suit must be checked regularly. The tightness can be carried out both by the Porta Control tester or a commercial leak spray. The tightness of the suit must be checked after each cleaning, or after prolonged storage - at least once every six months. Punctures or holes may be repaired in accordance with professionally by the manufacturer. After the completion of the work or when leaving the contaminated area, the suit must be cleaned.

For normal contamination of protective clothing can with a conventional

Colored fabrics, not with bleaching effect (eg " Sanomat ," effective disinfection KA -WE GmbH, phone +49 (0) 620 225 004 , Fax +49 (0) 620 225 387) can be washed at 30 ° C in washing machine.

Then open the suit is suspended from the boots. The protective clothing must not o with radiant heat on the radiator be tumble-dried . Recommended would be a drying cabinet.

5.2 Disinfection

Depending on the conditions of use or before the protective clothing is used by another person as well as after being exposed to non-liquid contaminants the clothing should be disinfected with an appropriate disinfectant. Please obey the directions for the use of the disinfectant.

Note: For hygienic reasons it is recommended that protective clothing is worn by one and the same person only.

5.3 Service

As described previously, after each cleaning, disinfection or exchange of parts, the suit must undergo a pressure and leak test performed by using a leak tester for protective clothing.

The zipper must be lubricated slightly with a grease pencil or suitable acid-free grease and operated after each cleaning or after a storage period of six-months.



PFLÜGER - SAFETY

General services intervals:

- Before use: visual and leak testing.
- After repairs: leak test.
- After use: cleaning and disinfecting, visual control and leak test.
- Semi annually: visual and leak testing. If the suit is still in the original packing, a test only needs to be done after a period of two years time.

Note: A suit being strongly contaminated by aggressive chemicals must be withdrawn from use and returned to the manufacturer or an authorized expert repair workshop for testing and servicing.

5.4 Leak Test

The protective suit is tested for leaks with a special leak test device.

- Full mask seal with test adapter.
- Inflate the protective suit to an overpressure of 19 mbar with clean, odorless compressed air.
- Damping period of pressure approx. 3 minutes.
- Drop the overpressure to 16 mbar test pressure.
- Maximum admissible pressure drop within one minute is about 2 mbar.

5.5 Test timelines

The protective suit must undergo a visual inspection and a leak test as per 5.3 above, every six months. In its original packing and in an unused state, a test needs only be carried out after two years time. At this opportunity, the zipper must be lubricated with acid-free grease.

5.6 Repairs

Repairs on material and exchanging of zippers must only be carried out by the manufacturer.

6 Exchange of parts

6.1 Exchange of gloves

a. Disassembly of gloves

- Open the zipper completely.
- Turn the sleeves of the protective suit inside out.
- Unscrew the screw clamps



PFLÜGER - SAFETY

- Pull out the pipe piece.
- Take the glove out of the sleeve.

b. Assembly of gloves

- Insert the pipe piece and the glove into the sleeve.
- Adjust the glove.
- Put the screw clamps on and tighten them.
- The check the protective suit for being leak-proof.

Caution: The cramp protection must cover the cramp lock!

6.2 Exchange of boots

a. Disassembly of boots

- Open the zipper completely.
- Turn the legs of the protective suit inside out.
- Unscrew and remove the screw clamps.
- Pull out the pipe piece.
- Take the boots out of the legs of the protective suit.

b. Assembly of boots

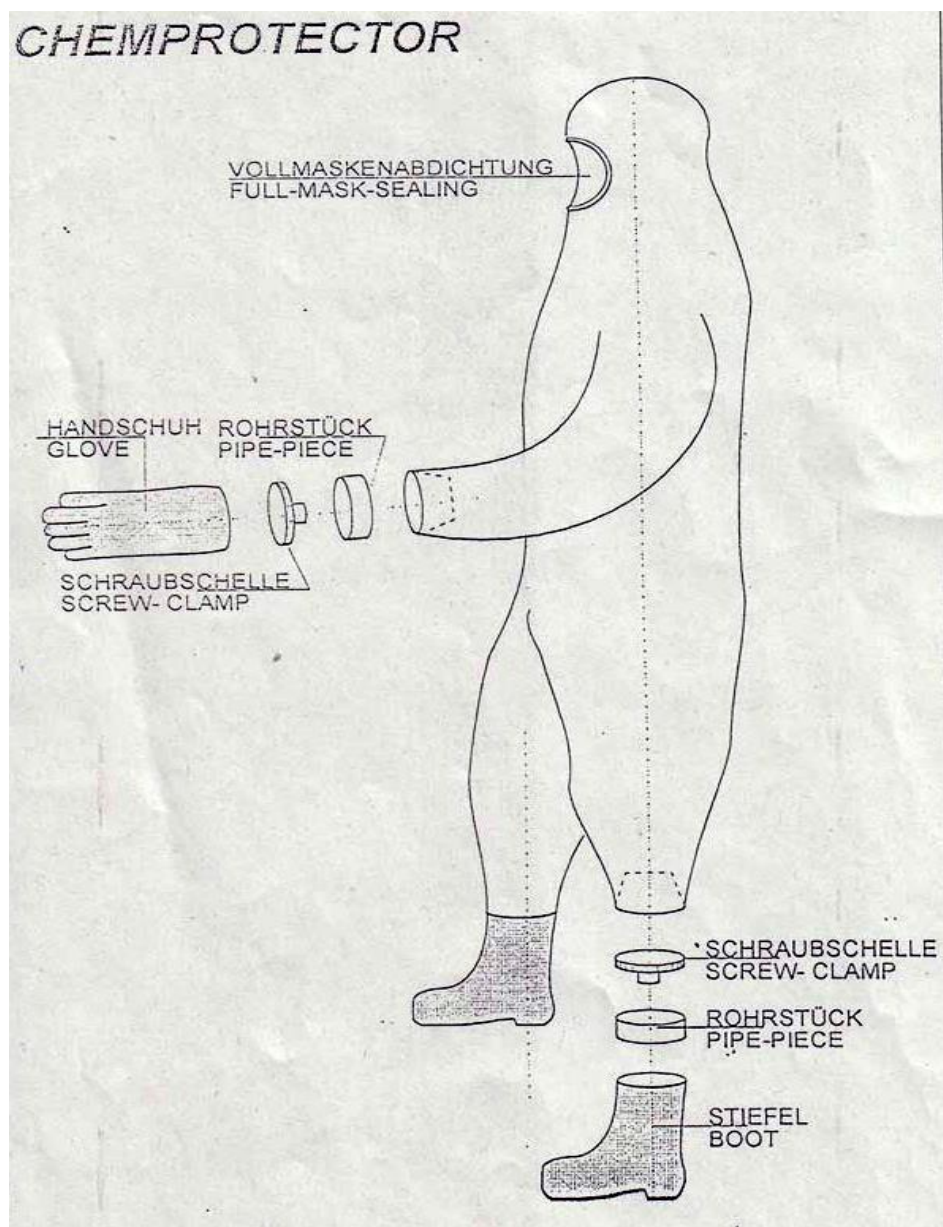
- Insert the boots into the legs of the protective suit.
- Adjust the legs of the protective suit to the boots.
- Insert the pipe piece into boot leg.
- Put the screw clamps on and tighten them.
- Then check the protective suit for being leak tight.

Caution: The cramp protection must cover the cramp lock!

For assembly of the gloves and boots, please see drawing on the upcoming page 8.



PFLÜGER - SAFETY



7 Transportation and storage

The protective suit is folded and not under pressure during delivery and transportation. It must be stored in clean and dry conditions at room temperature, free of hazardous substances, protected against direct sunlight and heating. The suit must be stored ready for use in its cover or in a wardrobe in hanging position. When folding up the protective suit, make sure that neither the material nor the seams and the zipper are put under pressure.



8 Technical data

8.1 Technical data Chemprotector Divetex® "Berlin 1 b" Type

| | |
|--------------------|---|
| Temperature range: | -30 C to +60 C |
| Overall weight: | 6.9 kg (incl. gloves and boots) |
| Interior leakage: | < 0.01% at eye region of full face mask |
| Test aerosol: | NaCl |
| Zipper: | chemical resistant |
| Gloves: | EN 374 |
| Boots: | EN 345 |
| Seams: | Linking seam |

8.2 Material specifications

| | |
|--|-----------------------|
| Colour: | Red |
| Material: | Divetex® |
| Weight: | 580 gm/m ² |
| Dimensional change i.r.o. ISO 5077 | Complies |
| Abrasion resistance i.r.o. EN 530, Process 2: | Performance level 6 |
| Bending tear resistance i.r.o ISO 7854 Process B | Performance level 6 |
| Tear extension resistance i.r.o. ISO 9073-4 | Performance level 5 |
| Bursting resistance i.r.o. EN ISO 13938-1 | Performance level 4 |
| Penetration resistance i.r.o. EN 863 | Performance level 2 |
| Seam security i.r.o. EN ISO 13934-1 | Performance level 5 |



8.3 Resistance to permeation

| No. | Chemical | Breakthrough | Class |
|-----|------------------------|--------------|-------|
| 1 | Acetone | 6 min | - |
| 2 | Acetonitrile | 4 min | - |
| 3 | Dichlorometahne | 2,6 min | - |
| 4 | Carbon disulphide | 2,8 min | - |
| 5 | Diethylamine | 6,8 min | - |
| 6 | Dimethylformamid | 33,4 min | 2 |
| 7 | Ethyl acetate | 9,8 min | - |
| 8 | N-hexane | 20,5 min | 1 |
| 9 | Methanol | > 480 min | 6 |
| 10 | Nitrobenzene | 29,8 min | 1 |
| 11 | Perchlorethylan | 16,1 min | 1 |
| 12 | Tetrahydrofuran | 8,4 min | - |
| 13 | Toluene | 9,6 min | - |
| 14 | Sodium hydroxide 50 % | 52,5 min | 2 |
| 15 | Sulfuric acid 95 % | 49,4 min | 2 |
| 16 | Hydrochloric acid 60 % | > 480 min | 6 |
| 17 | Chlorine | 480 min | 6 |
| 18 | Ammonia | 360 min | 5 |
| 19 | Hydrofluoric acid 73 % | > 1440 min | 6 |
| 20 | Phosphorus trichloride | > 1440 min | 6 |

Class

1
2
3
4
5
6

Penetration Time

>10 mins.
>30 mins.
>60 mins.
>120 mins.
>240 mins.
>480 mins.



8.4 Sizes i.r.o. EN 340

Size L: 54 – 56
Size XL: 58 – 60

8.5 Spare parts/options

- Mask sealing
- Gloves
- Boots (EN345)
- Rings
- Inside Cuffs


8.6 Unsuitability

The Chemprotector Divetex® “Berlin 1 b” Type protective suit is not designed to be used for:

- Sea rescue work
- Fire-fighting (heat protection)
- Working with chainsaws and other sharp devices

9 Warning notices

- The Chemprotector -Divetex® “Berlin 1 b” Type protective suit does not provide any protection in case of damages caused by mechanical nature, by stabs, chain saws, radioactive rays and fire.
- It is mandatory to adhere the admissible permeation times as otherwise the wearer will be exposed to severe danger.
- If other chemicals than those listed in the permeation list are used, please asked the manufacturer for approval.
- The Chemprotector -Divetex® “Berlin 1 b” Type protective suit provides sufficient protection only, when it is worn properly and all parts are attached as designated.

 For environment temperatures below 5° C a thermal insulation is necessary.

- We recommend not wearing the Chemprotector -Divetex® “Berlin 1b “ protective suit directly onto the skin.



PFLÜGER - SAFETY

10 Disposal

The disposal of the Chemprotector -Divetex® "Berlin 1 b" Type protective suit is to be conducted in accordance to official directives.

11 Certifying institute

Centro Tessile Cotoniero e Abbigliamento S.p.A.
Piazza S. Anna, 2
Busto Arsizio (VA)
Italy
CE 0624

12 Administrative institute

Centro Tessile Cotoniero e Abbigliamento S.p.A.
Piazza S. Anna, 2
Busto Arsizio (VA)
Italy
CE 0624