

**TRELLCHEM®**



# SAFETY AND QUALITY STANDARDS

## **TRELLCHEM HPS VP1 (RED)**

Provides maximum protection against hazardous chemicals in liquid, vapor, gaseous and solid form, including warfare agents. Designed to carry the breathing apparatus inside the suit. Trelchem® HPS VP1 is fully certified in accordance with the American standard NFPFA 1991 and the European standard EN 943-1.

### **GARMENT MATERIAL**

The combination of elastomers and plastics with a woven fabric makes a strong and flexible material that offers an outstanding chemical barrier - more than 8 hours protection against a wide range of chemicals - coupled with an excellent resistance to attack from aggressive chemicals, provided by the outer Viton® layer. The material fulfils all garment material requirements of the most demanding standards in the world, including the NFPA 1991 without any added protection requirement.

### **STANDARDS**

Tested and certified according to NFPA 1991 and EN 943-1.

### **USERS**

Trelchem® HPS suits are used by: Shenzhen Fire Bureau, Tokyo Metropolitan Fire Dept., Singapore Civil Defence Force (SCDF), National Fire & Rescue Administration (BOMBA), SWEDEC (Swedish EOD and Demining Centre), US Air Force, Sumitomo Chemical, Japan Coast Guard.



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**TRELLCHEM HPS/VPS SEAM** Stitched with aramide thread for superior strength and durability. Taped with a rubber strip on the outside and a barrier laminate strip welded to the inside. This provides a continuous barrier layer across the seam.



## DESIGN

Encapsulating design with hump, BA worn inside the suit.

## VISOR

Large visor made of impact and chemical resistant 2 mm PVC material.

## VENTILATION

A ventilation system is included as standard for Trelchem® suits. For the safety of the wearer it provides a constant level of overpressure inside the suit. The Trelchem® regulation valve is made of a chemical resistant material. 3 ventilation rates (2, 30 and 100 l/min) plus zero/off position. Large thumbwheel with grooves for a good grip. Different types of passthrough systems are available as an option.

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With the Trelchem® Bayonet glove ring system it is quick and easy to exchange both inner barrier gloves and outer rubber gloves.



**BOOT ATTACHMENT** An ergonomically designed ring attachment simplifying boot exchange and providing a smooth yet tight fit of suit material around the boot shaft.

## **GLOVES & ATTACHMENTS**

The standard glove assembly consists of two layers: Inner 4H SilverShield® barrier glove and outer glove made of flame retardant chloroprene rubber. Alternatively the suit can be delivered with Trelchem® Viton®/butyl rubber gloves in combination with wrist cuffs for added safety. The gloves are attached with the Trelchem® Bayonet glove ring system, which offers quick and simple glove exchange.

## **FOOTWEAR & ATTACHMENTS**

Black nitrile rubber safety boots with European approval as Firemen's boots. The boots are fixed with an ergonomically designed ring attachment, which simplifies boot exchange and provides a smooth yet tight fit of suit material around the boot shaft. Alternatively the suit is equipped with a sewn-on sock/bootie in the suit material.

## **ZIPPER**

Strong and durable gastight zipper. Closing downwards for added safety. The zipper is protected by a splash guard (flap).

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## ACCESSORIES

The visor can be equipped with an antifog lens and/or a tear-off lens. A wide range of other accessories is available for maintenance, storage etc.

## PERMEATION DATA

CHEMICAL	BT TIME (MIN)	CHEMICAL	BT TIME (MIN)
*Acetone	> 480	Lewisite (L)	> 1440
*Acetonitrile	> 480	*Methanol	> 480
*Anhydrous ammonia	> 480	*Methyl chloride	> 480
*1,3 Butadiene	> 480	Mustard gas (HD)	> 1440
*Carbon disulfide 95%	> 480	*Nitrobenzene	> 480
*Chlorine	> 480	Sarine (GB)	> 1440
*Dichloromethane	> 480	*Sodium hydroxide 40%	> 480
*Diethyl amine	> 480	Soman (GD)	> 1440
*Dimethyl formamide	> 480	*Sulphuric acid 98%	> 480
*Ethyl acetate	> 480	Tabun (GA)	> 1440
*Ethylene oxide	> 480	*Tetrachloroethylene	> 480
Heptane	> 480	*Tetrahydrofuran	> 480
*Hexane	> 480	*Toluene	> 480
*Hydrogen chloride	> 480	VX	> 1440

The test chemicals marked with an asterisk (\*) are stipulated (minimum requirement) in the American standard NFPA 1991. The underlined chemicals are stipulated (minimum requirement) in the European standard EN 943-2. The tests are performed in accordance with EN 374-3 and ASTM F 739 with breakthrough criterion 0.1 µg/cm² \*min. The chemical warfare agents (HD, GA, GB, GD, L, VX) are tested in accordance with FINABEL Conv. 0.7.C.

BT TIME = Breakthrough time.

More data is available on request.

## MATERIAL PROPERTIES

PROPERTY	METHOD	RESULT	CLASS*
Abrasion resistance	EN 530, method 2	> 2000 cycles	6
Flex cracking resistance	ISO 7854, method B	> 15000 cycles	4
Flex cracking res. -30°	ISO 7854, method B	> 200 cycles	2
Tear resistance, warp/weft	ISO 9073-4	112 N	5
Tear resistance, warp/weft	ASTM D 2582	64/94 N	N.A.
Tensile strength, warp/weft	ISO 13934-1	1360/1090 N	6
Burst strength	ASTM D 751	1377 N	N.A.
Puncture resistance	EN 863	51 N	3
Seam strength	ISO 5082	532 N	6
Resistance to ignition	EN 13274-4, method 3	5 sec.	3
Flammability resistance	ASTM F 1358	Pass	N.A.

\* Classifications according to EN 943-1.

N.A. = Not applicable



### ANTIFOG LENS & TEAR-OFF LENS

Attached to the inside of the visor, the antifog lens prevents the visor from becoming foggy. Additionally a tear-off lens can be attached to the outside of the visor to prevent scratches and splashes from aggressive chemical substances. Just tear off for a clean and unobstructed visor!

