

## MATERIAL SPECIFICATION - TRELLECHEM® VPS

### Material properties

Material weight	680 g/m <sup>2</sup>
Colour	Yellow or black/graphite

### Mechanical data

EN 943-1/-2	Test method	Result	Class
Abrasion	EN 530	> 2000 cycles	6
Flex cracking	ISO 7854:B	> 100 000 cycles	6
Flex cracking @-30 deg C	ISO 7854:B	> 2000 cycles	5
Tear resistance	EN ISO 9073-4	> 100 N	5
Tensile strength	EN ISO 13934-1	> 1000 N	6
Puncture resistance	EN 863	> 50 N	3
Resistance to flame	EN 13274-4, meth 3	5 Sec	3
Seam strength	ISO 5082	> 500 N	6
Limited flame spread index	EN 14116	No hole	3

Test methods according to EN 943-1 and -2 and classes according to EN 14325. Except Limited flame spread, Antistatic properties and Blocking, which are voluntary tests. N.A. = not applicable.

### Chemical permeation data

Chemical	BT (min)	Chemical	BT (min)
Acetic anhydride	> 480	Isoprene	> 480
*Acetone	> 480 <sup>1</sup>	JP-4	> 480
*Acetonitrile	> 480 <sup>1</sup>	Lewisite (L)	> 1440
Acetyl chloride	> 480	*Methanol	> 480 <sup>1</sup>
Acrylamide 40 %	> 480	*Methyl chloride	> 480
Acrylic acid	> 480	Methyl ethyl ketone	> 480
*Anhydrous ammonia	> 480 <sup>1</sup>	Methyl isocyanate	> 480
Aniline	> 480	Methyl metacrylate	> 480
Arsine (AS)	> 480	Methyl tert-butyl ether	> 480
Benzene	> 480	Monochlorobenzene	> 480
Bromine	> 240	Mustard gas (HD)	> 1440
*1,3-Butadiene	> 480	Nitric acid 65 %	> 480
Butylamine	> 480	*Nitrobenzene	> 480
*Carbon disulphide 95 %	> 480	Nitromethane	> 480
*Chlorine	> 480 <sup>1</sup>	Oleum 30 %	> 240
Chloroform	> 480	Phenol 85 %	> 480
Chlorosulfonic acid	> 240	Phosgene (CG)	> 480
Cyanogen chloride (CK)	> 60	Phosphoric acid 85 %	> 480
*Dichloromethane	> 480 <sup>1</sup>	Phosphorous trichloride	> 480
*Diethyl amine	> 480 <sup>1</sup>	Pyridine	> 480

Diethyl ether	> 480	Sarin (GB)	> 1440
*Dimethyl formamide	> 480	* <u>Sodium hydroxide</u> 50 %	> 480
Dimethyl hydrazine 98 %	> 480	Soman (GD)	> 1440
Dimethylsulfoxide	> 480	Styrene	> 480
Epichlorohydrine	> 480	* <u>Sulphuric acid</u> 99 %	> 480
* <u>Ethyl acetate</u>	> 480 <sup>1</sup>	Sulfur dioxide	> 480
Ethylene glycol	> 480	Tabun (GA)	> 1440
*Ethylene oxide	> 480	*Tetrachloroethylene	> 480
Formaldehyde 37 %	> 480	* <u>Tetrahydrofuran</u>	> 480 <sup>1</sup>
Formic acid 96 %	> 480	* <u>Toluene</u>	> 480 <sup>1</sup>
Furfural	> 480	Toluene di-isocyanate (TDI) 96%	> 480
<u>Heptane</u>	> 480	Tribromophenol	> 480
*Hexane	> 480 <sup>1</sup>	Trichloroacetic acid	> 480
Hydrazine	> 480	Trichloroethylene	> 480
Hydrochloric acid 37 %	> 480	Triethylamine	> 480
Hydrofluoric acid 48 %	> 480	Triethylenetetramine	> 480
* <u>Hydrogen chloride</u>	> 480	Vinyl acetate	> 480
Hydrogen peroxide 50 %	> 480	Vinyl chloride	> 480
		VX	> 1440

**Comments:**

All permeation tests are performed in accordance with ASTM F739, breakthrough criterion 0,1 µg/cm<sup>2</sup>/min and test duration 8 hours except chemical marked:

- (1) which are tested according to EN 374, breakthrough criterion 1 µg/cm<sup>2</sup>/min, test duration 8 hours
- (2) which are tested in accordance with ASTM F739, breakthrough criterion 0,1 µg/cm<sup>2</sup>/min, test duration 1 hour and the chemical warfare agents HD, L, GA, GB, GD and VX, which are tested according to FINABEL Conv. 0.7.C at 37 °C and test duration 24 hours

All chemicals are tested at 99 – 100 % concentration unless otherwise stated.

Chemicals marked \* are stipulated in NFPA 1991 and those underlined are stipulated in EN 943-2.

BT = breakthrough time