

## MATERIAL SPECIFICATION - TRELLCHEM® EVO

### Material properties

|                 |                      |
|-----------------|----------------------|
| Material weight | 680 g/m <sup>2</sup> |
| Colour          | Red or Olive green   |

### 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      | > 60 N           | 4     |
| 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     |
| Antistatic material                          | EN 1149-5          | Pass             | N.A.  |
| Resistance to blocking                       | ISO 5978           | No blocking      | 2     |
| <b>NFPA 1991</b>                             |                    |                  |       |
| Tear resistance                              | ASTM D2582         | 60 N             | N.A.  |
| Burst strength                               | ASTM D751          | 1287 N           | N.A.  |
| Flamability resistance                       | ASTM F1358         | 0 sec/Pass       | N.A.  |
| Optional Overall Flash Fire ensemble test    | NFPA 1991          | Pass             | N.A.  |
| Optional Liquefied gas permeation resistance | NFPA 1991          | Pass             | N.A.  |

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           | > 1440   | JP-4                    | > 480    |
| *Acetonitrile      | > 1440   | Lewisite (L)            | > 1440   |
| Acetyl chloride    | > 480    | *Methanol               | > 1440   |
| Acrylamide 40 %    | > 480    | *Methyl chloride        | > 1440   |
| Acrylic acid       | > 480    | Methyl ethyl ketone     | > 480    |
| *Anhydrous ammonia | > 1440   | 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     | > 1440   | Nitric acid 70 %        | > 480    |

|                                 |                    |                                  |                    |
|---------------------------------|--------------------|----------------------------------|--------------------|
| Butylamine                      | > 240              | Nitric acid, fuming              | > 120 <sup>1</sup> |
| * <u>Carbon disulphide</u> 95 % | > 1440             | *Nitrobenzene                    | > 1440             |
| * <u>Chlorine</u>               | > 1440             | Nitromethane                     | > 480              |
| Chloroform                      | > 480              | Oleum 30 %                       | > 480              |
| Chlorosulfonic acid             | > 480              | Phenol 85 %                      | > 480              |
| Cyanogen chloride (CK)          | > 60 <sup>2</sup>  | Phosgene (Carbonyl chloride, CG) | > 480              |
| * <u>Dichloromethane</u>        | > 1440             | Phosphoric acid 85 %             | > 480              |
| * <u>Diethyl amine</u>          | > 480 <sup>1</sup> | Phosphorous trichloride          | > 480              |
| Diethyl ether                   | > 240              | Pyridine                         | > 480              |
| *Dimethyl formamide             | > 1440             | Sarin (GB)                       | > 1440             |
| Dimethyl hydrazine 98 %         | > 480              | * <u>Sodium hydroxide</u> 40 %   | > 1440             |
| Dimethylsulfate (DMA)           | > 60 <sup>2</sup>  | Soman (GD)                       | > 1440             |
| Dimethylsulfoxide               | > 480              | Styrene                          | > 480              |
| Epichlorohydrin                 | > 480              | * <u>Sulphuric acid</u> 98 %     | > 1440             |
| * <u>Ethyl acetate</u>          | > 1440             | Sulfur dioxide                   | > 480              |
| Ethylene glycol                 | > 480              | Tabun (GA)                       | > 1440             |
| *Ethylene oxide                 | > 1440             | *Tetrachloroethylene             | > 1440             |
| Formaldehyde 37 %               | > 480              | * <u>Tetrahydrofuran</u>         | > 1440             |
| Formic acid 96 %                | > 480              | Thionyl chloride 97 %            | > 480              |
| Furfural                        | > 480              | * <u>Toluene</u>                 | > 1440             |
| <u>Heptane</u>                  | > 480              | Toluene diisocyanate (TDI) 96%   | > 480              |
| *Hexane                         | > 1440             | Tribromophenol                   | > 480              |
| Hydrazine                       | > 480              | Trichloroacetic acid             | > 480              |
| Hydrochloric acid 37 %          | > 480              | Trichloroethylene                | > 480              |
| Hydrofluoric acid 48 %          | > 480              | Triethylamine                    | > 480              |
| * <u>Hydrogen chloride</u>      | > 1440             | Triethylenetetramine             | > 480              |
| Hydrogen cyanide (AC, HCN)      | > 60 <sup>2</sup>  | Vinyl acetate                    | > 480              |
| Hydrogen fluoride, gas          | > 480              | Vinyl chloride                   | > 480              |
| Hydrogen fluoride, liquified    | > 240              | VX                               | > 1440             |
| Hydrogen peroxide 50 %          | > 480              |                                  |                    |

#### 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