

# Technical Data

## And Testing Details

### ASTM F1001 Chemical Test Battery\*

CHEMICAL	Zytron®						Frontline®		ChemTape®
	100	100XP	200	300	400	500	300	500	
Acetone	NT	NT	17	>480	>480	>480	>480	>480	>480
Acetonitrile	NT	NT	52	87	>480	>480	>480	>480	>480
Carbon Disulfide	NT	NT	2	>480	>480	>480	>480	>480	>480
Dichloromethane	NT	NT	2	70	88	>480	10	253	>480
Diethylamine	NT	NT	21	>480	>480	>480	>480	>480	160
Dimethylformamide	NT	NT	77	>480	>480	>480	>480	>480	>480
Ethyl Acetate	NT	NT	14	>480	>480	>480	>480	>480	>480
n-Hexane	NT	NT	7	>480	>480	>480	>480	>480	>480
Methyl Alcohol	NT	NT	>480	55	>480	>480	>480	>480	>480
Nitrobenzene	NT	NT	97	>480	>480	>480	>480	>480	>480
Sodium Hydroxide	>480	>480	>480	>480	>480	>480	>480	>480	>480
Sulfuric Acid	>480	>480	>480	>480	>480	>480	>480	>480	>480
Tetrachloroethylene	NT	NT	21	>480	>480	>480	>480	>480	>480
Tetrahydrofuran	NT	NT	3	>480	>480	>480	>480	>480	>480
Toluene	NT	NT	6	>480	>480	>480	>480	>480	>480
<b>GASES</b>									
Ammonia Gas	NT	NT	NT	39	NT	>480	>480	>480	NT
1,3 Butadiene	NT	NT	NT	>480	NT	>480	>480	>480	NT
Chlorine Gas	NT	NT	NT	>480	NT	>480	>480	>480	NT
Ethylene Oxide Gas	NT	NT	NT	81	305	>480	>480	>480	NT
Hydrogen Chloride Gas	NT	NT	NT	>480	NT	>480	NT	>480	NT
Methyl Chloride Gas	NT	NT	NT	>480	NT	>480	NT	>480	NT

### Chemical Warfare Agent Data\*\*

CHEMICAL AGENT	Zytron®300		Zytron®500		Frontline®500		ChemTape®	
	Breakthrough		Breakthrough		Breakthrough		Breakthrough	
	Time	Criteria	Time	Criteria	Time	Criteria	Time	Criteria
Bis (2-chloroethyl) sulfide (Mustard:HD)	>480	4.0 ug/cm <sup>2</sup>	>480	4.0 ug/cm <sup>2</sup>	>480	4.0 ug/cm <sup>2</sup>	>480	4.0 ug/cm <sup>2</sup>
Isopropyl methylfluorophosphonate (Sarin:GB)	>480	1.25 ug/cm <sup>2</sup>	>480	1.25 ug/cm <sup>2</sup>	>480	1.25 ug/cm <sup>2</sup>	>480	1.25 ug/cm <sup>2</sup>
Chlorovinyl arsinedichloride (Lewisite:L)	>240	4.0 ug/cm <sup>2</sup>	>480	4.0 ug/cm <sup>2</sup>	>240	4.0 ug/cm <sup>2</sup>	NT	NT
O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate (Nerve:VX)	>480	1.25 ug/cm <sup>2</sup>	>480	1.25 ug/cm <sup>2</sup>	>480	1.25 ug/cm <sup>2</sup>	>480	1.25 ug/cm <sup>2</sup>

\* Industrial chemical testing was conducted in accordance with ASTM F 739 with normalized breakthrough times reported in minutes.

\*\* Chemical Warfare Agent testing was conducted in accordance with MIL-STD-282 and/or NFPA 1994-2001 with breakthrough times reported based on total cumulative permeation.

Note: Sources for all chemical test data are independent laboratories. All tests were performed under laboratory conditions and not under actual use conditions. Tests were performed on material samples, not actual garments.