

21 Industrial Chemicals ASTM F1001	CAS #	Physical Phase	Tychem* QC*	Tychem* SL*	Tychem* F	Tychem* ThermoPro	Tychem* CPF 3	Tychem* BR/LV	Tychem* TK	Tychem* Responder* CSM	Tychem* Reflector*
Acetone	67-64-1	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480
Acetonitrile	75-05-8	L	imm.	68	157	>480	imm.	>480	>480	>480	>480
Ammonia	7664-41-7	G	imm.	32	79	>480	12	46	>480	46	>480
1, 3-Butadiene	106-99-0	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480
Carbon disulfide	75-15-0	L	imm.	imm.	>480	>480	16	>480	>480	>480	>480
Chlorine	7782-50-5	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480
Dichloromethane	75-09-2	L	imm.	imm.	imm.	imm.	imm.	432	>480	432	>480
Diethylamine	109-89-7	L	imm.	12	>480	>480	>480	>480	>480	>480	>480
N, N-Dimethylformamide	68-12-2	L	imm.	78	>480	>480	>480	>480	>480	>480	>480
Ethyl acetate	141-78-6	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480
Ethylene oxide	75-21-8	G	imm.	imm.	>480	>480	>480	>480	>480	>480	>480
n-Hexane	110-54-3	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480
Hydrogen chloride	7647-01-0	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480
Methanol	67-56-1	L	imm.	>480	77	>480	imm.	157	>480	>480	>480
Methyl chloride	74-87-3	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480
Nitrobenzene	98-95-3	L	imm.	102	>480	>480	>480	>480	>480	>480	>480
Sodium hydroxide, 50%	1310-73-2	L	>480	>480	>480	>480	>480	>480	>480	>480	>480
Sulfuric acid, 98%	7664-93-9	L	>480	>480	>480	>480	>480	>480	>480	>480	>480
1,1,2, 2-Tetrachloroethylene	127-18-4	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480
Tetrahydrofuran	109-99-9	L	imm.	imm.	464	>480	>480	>480	>480	>480	>480
Toluene	108-88-3	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480
Chemical Warfare Agents**											
Lewisite (L)	541-25-3	L	nt	>360 ¹	360 ²	360 ²	120 ¹	>720 ¹	>720 ²	>720 ¹	>720 ¹
Mustard (HD)	505-60-2	L	nt	180 ¹	>720 ²	>720 ²	120 ¹	>720 ²	>720 ²	>720 ²	>720 ²
Tabun (GA)	77-81-6	L	nt	nt	>720 ⁴	>720 ⁴	nt	>720 ³	>720 ⁴	>720 ³	>720 ³
Sarin (GB)	107-44-8	L	nt	>60 ³	>720 ⁴	>720 ⁴	120 ³	>720 ⁴	>720 ⁴	>720 ⁴	>720 ⁴
Soman (GD)	99-64-0	L	nt	nt	>720 ⁴	>720 ⁴	>480 ³	>720 ³	>720 ⁴	>720 ³	>720 ³
VX Nerve Agent	50782-69-9	L	nt	>480 ³	>720 ⁴	>720 ⁴	>480 ³	>720 ⁴	>720 ⁴	>720 ⁴	>720 ⁴

NOTE: Numbers reported are averages of samples tested. Sample results vary. All DuPont testing is performed by a third party. **Chemical warfare agents are tested according to the following protocols:
1Protocol DN3-MIL-STD-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 10 g/m2.
2Protocol DN4-MIL-STD-282, Method T-209 (HD) or modified for Lewisite, for 12 hours at 100 g/m2 (total coverage).
3Protocol DN5-MIL-STD-282, Method T-208 (GB) or modified for GA, GD and VX, for 12 hours at 10 g/m2.
4Protocol DN6-MIL-STD-282, Method T-208 (GB) or modified for GA, GD and VX, for 12 hours at 100 g/m2 (total coverage). All tests are performed at 22°C and 50% R.H. Actual Breakthrough Times, in minutes, are reported.

Permeation Data Chart

Index of codes: >=greater than, imm.=immediate (<10 minutes), nt=not tested, L=liquid, G=gas

Normalized Breakthrough Time (NBT) shown in minutes. *Serged and/or bound seams are degraded by some hazardous liquid chemicals, such as strong acids, and should not be worn when these chemicals are present. **Actual Breakthrough Time in minutes. Permeation testing on industrial chemicals is in accordance with ASTM F739, Standard Test Method for Resistance of Protective Clothing Materials to Permeation by Liquids or Gases Under Conditions of Continuous Contact. All tests are conducted at room temperature unless otherwise noted. Reported results are Normalized Breakthrough Times defined by ASTM F739 as the time (in minutes) when the permeation rate reaches 0.1 µg/cm2/min. The product information contained is current as of the date of publication, but may be revised as new information is developed. Before relying on any performance data for the purchase or performance of products, you should check www.SafeSPEC .DuPont.com or contact DPP Customer Service at 1-800-931-3456 to determine whether there is new information that relates to your intended use or application of the product.