



TK613T LY

DuPont™ Tychem® 10000

DuPont™ Tychem® 10000 Encapsulated Level A Suit. Certified to NFPA 1994, Class. 2. Expanded Back, Rear Entry. Extra-Wide Visor, 3 Layers: 40 mil PVC / 5 mil Teflon® / 20 mil PVC. Attached Dual Layer Gloves, Internal: Multi-layer laminate / External: Neoprene. Attached Socks with Outer Boot Flaps. Double Storm Flap with Hook & Loop Closure. Two Exhaust Valves. Double Taped Seams. Lime Yellow.

Name	Description
Full Part Number	TK613TLYxx0001yy (xx=size;yy=option code)
Fabric/Materials	Tychem® 10000
Design	Encap. Level A, Expanded Back, Rear Entry. Certified to NFPA 1994, Class 2.
Seam	Double Taped
Color	Lime Yellow
Quantity/Box	1 per case
Sizes	MD, LG, XL, 2X, 3X, 4X
Option Codes	** ,00

FEATURES & PRODUCT DETAILS

Tychem® 10000 exhibits excellent chemical barrier properties and offers an extremely durable fabric that is puncture- and tear-resistant. Tychem® 10000 fabric shows at least 30 minutes of barrier protection to 322 challenge chemicals with no observed breakthrough. Tychem® 10000 is specifically developed for protection against toxic, corrosive gases, liquids and solid chemicals. This high-performance chemical barrier fabric is suited for industrial, HazMat, and domestic preparedness applications.

- Certified compliant to the 2018 edition of NFPA 1994, Class 2 Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents by an independent third party certification organization.
- Class 2 garments are designed for situations where there is an immediate danger to life and health (IDLH) and must be worn with a self-contained breathing apparatus (SCBA). This is the highest level of protection under the NFPA 1994 standard.
- Encapsulated Level A garment design is our highest level of protection from liquid splash and vapor/gas exposures for both the wearer and respiratory equipment
- Double taped seams provide strong chemical resistance against heavy liquid splashes. A sewn seam is covered, both inside and outside of garment with compatible chemical-resistant material by heat-sealing.
- Expanded faceshield provides wide 220 degree viewing angle. EX faceshield is three-layer laminate composed of 40 mil PVC/5 mil Teflon® /20 mil PVC
- Rear entry design keeps closure away from direct contact with frontal chemical exposure and provides ability to change air bottle on SCBA without removing the entire garment
- Expanded back to accommodate self-contained air breathing apparatus (SCBA)
- Vapor tight zipper. Extra long to increase garment opening and aid donning and doffing
- Storm flap covers zipper which can be secured by the wearer with rugged hook and loop material to prevent intrusion at zipper
- Attached internal gloves composed of five layer laminate film for a broad range of chemical protection
- Neoprene gloves provide mechanical and physical durability to help protect inner gloves
- Integrated socks composed of garment material
- Attached flaps are designed to cover boot tops to help reduce potential for liquid intrusion
- Two exhaust valves release higher pressure inside encapsulating garments while simultaneously helping to prevent inward leakage of external vapors or particles into the garment. One-way valves are positive pressure and open on demand. Valves include splash covers made of barrier material to help prevent liquid intrusion. Valves are located on left back of head and right lower back. (146)
- Internal adjustable waist belt system for support and improved fit
- Each suit has a unique serial number and is fully tested at time of manufacture including positive air pressure integrity testing per ASTM F1052.
- Pass-thrus are optional and can be installed upon request when ordering. Some suits are available with optional pass-thrus to accommodate the following SCBA manufacturers: Scott, Interspiro, MSA, Draeger, Survivair®. Please call Customer Service 1-800-931-3456 for additional information. (3377)
- Made in the USA, North American Free Trade Agreement (NAFTA) compliant and Trade Agreement Act (TAA) compliant

AVAILABLE OPTIONS

Option Code	Description	Sizes	Part Number
00	Standard	MD,LG,XL,2X,3X,4X	TK613TLYxx000100

FINISHED DIMENSIONS

Size	Sleeve Length	Chest Width	Inseam	Fits Chest	Fits Height	Inner Glove Size	Outer Glove Size
MD	28	29 1/4	30	45 1/4 - 48 3/4	5'0" - 5'9"	11	10
LG	29	30	31	46 3/4 - 50 1/4	5'9" - 6'3"	11	10
XL	29	30	31	46 3/4 - 50 1/4	5'9" - 6'3"	11	10
2X	31	31 1/2	32 1/2	49 3/4 - 53 1/4	6'3" - 6'5"	11	10
3X	31	31 1/2	32 1/2	49 3/4 - 53 1/4	6'3" - 6'5"	11	10
4X	32 1/2	33	34 1/2	52 3/4 - 56 1/4	6'5" - 6'7"	11	10

ADDITIONAL EQUIPMENT NEEDED

- Please read, understand and follow the Tychem® User Manual.
- Please refer to the technical data package for each garment with NFPA certification for specific equipment that has been tested and certified for use with that garment.
- Suffocation hazard exists. An appropriate open-circuit self-contained breathing apparatus (SCBA) or air-line supplied respirator must be worn with all encapsulating garments.
- Wear other appropriate PPE such as, but not limited to, respiratory, eye, head, hand, and foot protection based on the hazard assessment.
- Wear separate appropriate outer footwear over the garment sock. This garment has attached socks made of garment material. These socks are not suitable to used as outer footwear. They do not have adequate durability or slip resistance to be worn as the outer foot covering. (15)

Physical Properties



Data relating to mechanical performance of the fabrics used in DuPont chemical protective clothing, listed for the selected garment according to the test methods and relevant European standard, if applicable. Such properties, including abrasion and flex-cracking resistance, tensile strength and puncture resistance can help in the assessment of protective performance.

Property	Test Method	Typical Result
Thickness	ASTM D1777	28 mils
Basis Weight	ASTM D3776	12 oz/yd ²
Burst Strength - Ball	ASTM D3787	185 lb _f
Tear Resistance - Trap Tear (MD)	ASTM D5733	75 lb _f
Tear Resistance - Trap Tear (CD)	ASTM D5733	56 lb _f
Breaking Strength - Grab (MD)	ASTM D5034	151 lb _f
Breaking Strength - Grab (CD)	ASTM D5034	170 lb _f
Wearing Apparel Flammability	16 CFR 1610	Class 1

CHEMICAL RESISTANCE

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Acetaldehyde	75-07-0	Liquid	>480
Acetic acid (>95%)	64-19-7	Liquid	>480
Acetic acid 2 ethoxy ethyl ester	111-15-9	Liquid	>480
Acetic acid 2 methoxy ethyl ester	110-49-6	Liquid	>480
Acetic acid ethenyl ester	108-05-4	Liquid	>480
Acetic acid ethyl ester	141-78-6	Liquid	>480
Acetic acid pentyl ester	628-63-7	Liquid	>480
Acetic anhydride	108-24-7	Liquid	>480
Acetic chloride	75-36-5	Liquid	>480
Acetone	67-64-1	Liquid	>480
Acetone cyanohydrin	75-86-5	Liquid	>480
Acetonitrile	75-05-8	Liquid	>480
Acetyl chloride	75-36-5	Liquid	>480
Acroleic acid	79-10-7	Liquid	>480
Acrolein	107-02-8	Liquid	>480
Acrylamide (50%)	79-06-1	Liquid	>480
Acrylic acid	79-10-7	Liquid	>480
Acrylic acid ethyl ester	140-88-5	Liquid	>480
Acrylic acid n-butyl ester	141-32-2	Liquid	>480
Acrylicamide (50%)	79-06-1	Liquid	>480
Acrylonitrile	107-13-1	Liquid	>480
Adipic acid dinitrile	111-69-3	Liquid	>480
Adipic acid nitrile	111-69-3	Liquid	>480
Adiponitrile	111-69-3	Liquid	>480
Allyl alcohol	107-18-6	Liquid	>480
Allyl chloride	107-05-1	Liquid	>480
Amido sulfonic acid (15%)	5329-14-6	Liquid	>480
Amino 2-methylpropane, 2-	75-64-9	Liquid	>480
Amino 3,4-dichlorobenzene, 1-	95-76-1	Solid	>480
Amino 3,4-dichlorobenzene, 1- (70 °C, molten)	95-76-1	Liquid	216*/284

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Amino benzene	62-53-3	Liquid	>480
Amino ethanol, 2-	141-43-5	Liquid	>480
Amino ethylethanolamine	111-41-1	Liquid	>480
Amino ethylethanolamine (60%)	111-41-1	Liquid	>480
Amino ethylpiperazine	140-31-8	Liquid	>480
Amino propane, 2-	75-31-0	Liquid	>480
Ammonia (-70 °C, liquid)	7664-41-7	Liquid	>480
Ammonia (gaseous)	7664-41-7	Vapor	>480
Ammonium fluoride (40%)	12125-01-8	Liquid	>480
Ammonium hydroxide (28% - 30%)	1336-21-6	Liquid	>480
Amyl acetate, n-	628-63-7	Liquid	>480
Amyl ester acetic acid	628-63-7	Liquid	>480
Aniline	62-53-3	Liquid	>480
Arsine	7784-42-1	Vapor	>480
Aziridine	151-56-4	Liquid	>480
Azolidine	123-75-1	Liquid	413
Benzenamine	62-53-3	Liquid	>480
Benzene	71-43-2	Liquid	>480
Benzene carbonyl chloride	98-88-4	Liquid	>480
Benzene sulfone chloride	98-09-9	Liquid	>480
Benzene sulfonyl chloride	98-09-9	Liquid	>480
Benzene thiol	108-98-5	Liquid	>480
Benzidine (25% in Methanol)	92-87-5	Liquid	>480
Benzidine (75% in Methanol)	92-87-5	Liquid	>480
Benzo nitrile	100-47-0	Liquid	>480
Benzoyl chloride	98-88-4	Liquid	>480
Benzyl chloride	100-44-7	Liquid	>480
Biphenyl 4,4'-diamine, 1,1'- (25% in Methanol)	92-87-5	Liquid	>480
Biphenyl 4,4'-diamine, 1,1'- (75% in Methanol)	92-87-5	Liquid	>480
Bis (4-(2,3-epoxypropoxy)phenyl)propane	1675-54-3	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Bis phenol A diglycidyl ether	1675-54-3	Liquid	>480
Black Liquor (mix)	mix	Liquid	>480
Boron fluoride ethyl ether	109-63-7	Liquid	>480
Boron trichloride	10294-34-5	Vapor	>480
Boron trifluoride	7637-07-2	Vapor	>480
Boron trifluoride diethyl etherate	109-63-7	Liquid	>480
Boron trifluoride etherate	109-63-7	Liquid	>480
Bromine	7726-95-6	Liquid	15
Bromine (10 g/m ²)	7726-95-6	Liquid	>480
Bromine (sat vapour)	7726-95-6	Vapor	30*/40
Bromo 4-fluorobenzene, 1-	460-00-4	Liquid	>480
Bromo fluorobenzene, 4-	460-00-4	Liquid	>480
Bromo methane	74-83-9	Vapor	>480
Butadiene, 1,3- (0 °C, liquid)	106-99-0	Liquid	>180
Butadiene, 1,3- (gaseous)	106-99-0	Vapor	>480
Butanal, n-	123-72-8	Liquid	>480
Butanol, 1-	71-36-3	Liquid	>480
Butanol, n-	71-36-3	Liquid	>480
Butanone	78-93-3	Liquid	>480
Butanone oxime, 2-	96-29-7	Liquid	>480
Butenal, 2-	123-73-9	Liquid	>480
Butyl acetate, n-	123-86-4	Liquid	>480
Butyl acrylate, n-	141-32-2	Liquid	>480
Butyl alcohol, n-	71-36-3	Liquid	>480
Butyl amine	109-73-9	Liquid	>480
Butyl amine, tert-	75-64-9	Liquid	>480
Butyl ether, n-	142-96-1	Liquid	>480
Butyraldehyde, n-	123-72-8	Liquid	>480
Carbon disulfide	75-15-0	Liquid	>480
Carbon monoxide	630-08-0	Vapor	330

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Carbon tetrachloride	56-23-5	Liquid	>480
Carbon tetrafluoride	75-73-0	Vapor	>480
Caustic ammonia (28% - 30%)	1336-21-6	Liquid	>480
Caustic soda (50%)	1310-73-2	Liquid	>480
Cellosolve acetate	110-80-5	Liquid	>480
Chlor allylene	107-05-1	Liquid	>480
Chlordane (60-75%)	57-74-9	Liquid	>480
Chlorine (-70 °C, liquid)	7782-50-5	Liquid	>480
Chlorine (gaseous)	7782-50-5	Vapor	>480
Chlorine sulfide	10545-99-0	Liquid	440
Chlorine sulfide (80%)	10545-99-0	Liquid	>480
Chlorine trifluoride	7790-91-2	Vapor	45
Chloro 1,2-propanediol, 3-	96-24-2	Liquid	>480
Chloro 1-methylbenzene, 2-	95-49-8	Liquid	>480
Chloro 2,3-epoxy propane, 1-	106-89-8	Liquid	>480
Chloro acetic acid (80%)	79-11-8	Liquid	>480
Chloro acetyl chloride	79-04-9	Liquid	160
Chloro aniline, p-	106-47-8	Solid	>480
Chloro aniline, p- (70 °C, molten)	106-47-8	Liquid	272*/323
Chloro benzenamine, 4-	106-47-8	Solid	>480
Chloro benzenamine, 4- (70 °C, molten)	106-47-8	Liquid	272*/323
Chloro benzene	108-90-7	Liquid	>480
Chloro ethanol, 2-	107-07-3	Liquid	>480
Chloro ethene	75-01-4	Vapor	>480
Chloro form	67-66-3	Liquid	>480
Chloro methyl methyl ether	107-30-2	Liquid	>480
Chloro phenol, p- (sat in Methanol)	106-48-9	Liquid	>480
Chloro prene, 3-	107-05-1	Liquid	>480
Chloro toluene, alpha-	100-44-7	Liquid	>480
Chloro toluene, o-	95-49-8	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Chlorsulfonic acid	7790-94-5	Liquid	>480
Chromic acid (CrO3) (44.9%)	1333-82-0	Liquid	>480
Cresols, mixed isomers	1319-77-3	Liquid	>480
Cresylic acid	1319-77-3	Liquid	>480
Croton aldehyde	123-73-9	Liquid	>480
Crude oil, California	8002-05-9	Liquid	>480
Cumene	98-82-8	Liquid	>480
Cyanide chloride (20% in Toluene)	108-77-0	Liquid	>480
Cyanobenzene	100-47-0	Liquid	>480
Cyanoethylene	107-13-1	Liquid	>480
Cyanomethane	75-05-8	Liquid	>480
Cyanopropan-2-ol, 2-	75-86-5	Liquid	>480
Cyanwasserstoff (21 °C, flüssig)	74-90-8	Liquid	>480
Cyanwasserstoff (27 °C, gasförmig)	74-90-8	Vapor	>480
Cyclo hexane	110-82-7	Liquid	>480
Cyclo hexanone	108-94-1	Liquid	>480
Diaminobiphenyl, 4,4'- (25% in Methanol)	92-87-5	Liquid	>480
Diaminobiphenyl, 4,4'- (75% in Methanol)	92-87-5	Liquid	>480
Diaminodiphenyl, p- (25% in Methanol)	92-87-5	Liquid	>480
Diaminodiphenyl, p- (75% in Methanol)	92-87-5	Liquid	>480
Diaminodiphenylmethane, 4,4'-	101-77-9	Liquid	>480
Diaminodiphenylmethane, 4,4'- (15% in Methyl Ethyl Ketone)	101-77-9	Liquid	>480
Diaminoethane, 1,2-	107-15-3	Liquid	>480
Diborane (10%)	19287-45-7	Vapor	>480
Dibromoethane, 1,2-	106-93-4	Liquid	>480
Dichlorbenzen, 1,2-	95-50-1	Liquid	>480
Dichlorbenzen, 1,3-	541-73-1	Liquid	>480
Dichlorbenzen, 1,4- (50% in Ethanol)	106-46-7	Liquid	>480
Dichlorethane, 1.2.-	107-06-2	Liquid	>480
Dichloro -2-propanone, 1,3- (95% at 40 °C, molten)	534-07-6	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Dichloro -4,4'-methylenedianiline, 2,2'- (sat in Methanol)	101-14-4	Liquid	>480
Dichloro -6-isopropyl-S-triazine, 2,4- (22% in Toluene)	30894-74-7	Liquid	>480
Dichloro acetone, 1,3- (95% at 40 °C, molten)	534-07-6	Liquid	>480
Dichloro acetyl chloride	79-36-7	Liquid	>480
Dichloro aniline, 3,4-	95-76-1	Solid	>480
Dichloro aniline, 3,4- (70 °C, molten)	95-76-1	Liquid	216*/284
Dichloro ethyl ether	111-44-4	Liquid	>480
Dichloro ethylene, 1,1-	75-35-4	Liquid	>480
Dichloro methane	75-09-2	Liquid	>480
Dichloro propene, 2,3-	78-88-6	Liquid	>480
Dichloro silane	4109-96-0	Vapor	>480
Dicyanobutane, 1,4-	111-69-3	Liquid	>480
Diesel Fuel Grade D-2	mix	Liquid	>480
Diesel fuel	68334-30-5	Liquid	>480
Diethyl amine	109-89-7	Liquid	>480
Diethyl aniline, N,N-	91-66-7	Liquid	>480
Diethyl benzene (95%)	25340-17-4	Liquid	>480
Diethyl ethanamine, N,N-	121-44-8	Liquid	>480
Diethyl ether	60-29-7	Liquid	>480
Diethyl hexyl phthalate	117-81-7	Liquid	>480
Diethyl sulfate	64-67-5	Liquid	>480
Diethylene imide oxide	110-91-8	Liquid	>480
Diethylene triamine	111-40-0	Liquid	>480
Diiodo-1,1,2,2-tetrafluorobutane, 1,4-	755-95-3	Liquid	>480
Dimethyl acetamide, N,N-	127-19-5	Liquid	>480
Dimethyl amine	124-40-3	Vapor	>480
Dimethyl aniline, N,N-	121-69-7	Liquid	>480
Dimethyl dichlorosilane	75-78-5	Liquid	>480
Dimethyl ether	115-10-6	Vapor	>480
Dimethyl formamide, N,N-	68-12-2	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Dimethyl hydrazine, N,N-	57-14-7	Liquid	>480 ⁸
Dimethyl ketal	67-64-1	Liquid	>480
Dimethyl ketone	67-64-1	Liquid	>480
Dimethyl phenylamine, N,N-	121-69-7	Liquid	>480
Dimethyl sulfate	77-78-1	Liquid	>480
Dimethyl sulfoxide	67-68-5	Liquid	>480
Dinitro-o-cresol, 4,6- (sat in Methanol)	534-52-1	Liquid	>480
Dinitrocresol (sat in Methanol)	534-52-1	Liquid	>480
Dioxane, 1,4-	123-91-1	Liquid	>480
Diphenyl methane diisocyanate, 4,4'-	101-68-8	Solid	>480
Diphenyl methane diisocyanate, 4,4'- (50 °C, molten)	101-68-8	Liquid	>480
Disodium sulfide (60% (slurry))	1313-82-2	Liquid	>480
Disulphur dichloride	10025-67-9	Liquid	>480
Epichlorohydrin	106-89-8	Liquid	>480
Epoxy ethane (-70 °C, liquid)	75-21-8	Liquid	>180
Epoxy ethane (0 °C, liquid)	75-21-8	Liquid	>480
Epoxy ethane (10% in HCFC)	75-21-8	Vapor	>480
Epoxy ethane (gaseous)	75-21-8	Vapor	>480
Epoxy propane, 1,2-	75-56-9	Liquid	>480
Ethane 1,2-diol	107-21-1	Liquid	>480
Ethane dioic acid (10.5%)	144-62-7	Liquid	>480
Ethane diol dipropanoate, 1,2-	123-73-9	Liquid	>480
Ethane nitrile	75-05-8	Liquid	>480
Ethane thiol	75-08-1	Liquid	>480
Ethane trichloride	79-00-5	Liquid	>480
Ethanol amine	141-43-5	Liquid	>480
Ethanoyl chloride	75-36-5	Liquid	>480
Ethanoyl chloride	75-00-3	Vapor	>480
Ethoxy ethanol, 2-	110-80-5	Liquid	>480
Ethoxy ethylacetat	111-15-9	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through
Ethyl Cellosolve®	110-80-5	Liquid	>480
Ethyl acetate	141-78-6	Liquid	>480
Ethyl acrylate	140-88-5	Liquid	>480
Ethyl amine (15 °C, liquid)	75-04-7	Liquid	>480
Ethyl benzene	100-41-4	Liquid	>480
Ethyl chloride	75-00-3	Vapor	>480
Ethyl ethanamine, N-	109-89-7	Liquid	>480
Ethyl ether	60-29-7	Liquid	>480
Ethyl glycol acetate	111-15-9	Liquid	>480
Ethyl mercaptan	75-08-1	Liquid	>480
Ethyl nitrile	75-05-8	Liquid	>480
Ethyl parathion	56-38-2	Liquid	>480
Ethylene carboxylic acid	79-10-7	Liquid	>480
Ethylene chlorohydrin	107-07-3	Liquid	>480
Ethylene diamine	107-15-3	Liquid	>480
Ethylene dibromide	106-93-4	Liquid	>480
Ethylene dichloride	107-06-2	Liquid	>480
Ethylene glycol	107-21-1	Liquid	>480
Ethylene glycol mono ethyl ether acetate	111-15-9	Liquid	>480
Ethylene glycol monoethyl ether	110-80-5	Liquid	>480
Ethylene glycol monomethyl ether	109-86-4	Liquid	>480
Ethylene glycol monomethyl ether acetate	110-49-6	Liquid	>480
Ethylene imine	151-56-4	Liquid	>480
Ethylene oxide (-70 °C, liquid)	75-21-8	Liquid	>180
Ethylene oxide (0 °C, liquid)	75-21-8	Liquid	>480
Ethylene oxide (10% in HCFC)	75-21-8	Vapor	>480
Ethylene oxide (gaseous)	75-21-8	Vapor	>480
Ethylene tetrachloride	127-18-4	Liquid	>480
Ethylene trichloride	79-01-6	Liquid	>480
Fluorine	7782-41-4	Vapor	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Fluorobenzene	462-06-6	Liquid	>480
Fluoroform	75-46-7	Vapor	>480
Fluorosulfonic acid	7789-21-1	Liquid	>480
Formaldehyde (100 ppm)	50-00-0	Vapor	>480
Formalin (100 ppm)	50-00-0	Vapor	>480
Formalin (37% (10-15% Methanol))	50-00-0	Liquid	>480
Formic acid (>95%)	64-18-6	Liquid	>480
Furaldehyde, 2-	98-01-1	Liquid	>480
Furfural	98-01-1	Liquid	>480
Gasoline, leaded	mix	Liquid	>480
Gasoline, unleaded	86290-81-5	Liquid	>480
Glutaral (5%)	111-30-8	Liquid	>480
Glutaral (50%)	111-30-8	Liquid	>480
Glutaraldehyde (5%)	111-30-8	Liquid	>480
Glutaraldehyde (50%)	111-30-8	Liquid	>480
Glycol alcohol	107-21-1	Liquid	>480
Glycol chlorohydrin	107-07-3	Liquid	>480
Glycolic acid (sat)	79-14-1	Liquid	>480
Green Liquor (mix)	mix	Liquid	>480
Hexachloro butadiene	87-68-3	Liquid	>480
Hexachloro cyclohexane, 1,2,3,4,5,6- (sat in Acetone)	58-89-9	Liquid	>480
Hexachloro cyclohexane, 1,2,3,4,5,6- (sat in Methanol)	58-89-9	Liquid	>480
Hexafluoro ethane	76-16-4	Vapor	>480
Hexafluoro isobutylene	382-10-5	Vapor	>480
Hexamethyl disilazane	999-97-3	Liquid	>480
Hexamethyl disilazane, 1,1,1,3,3,3-	999-97-3	Liquid	>480
Hexamethylene diamine (45 °C, molten)	124-09-4	Liquid	>480
Hexamethylene diisocyanate	822-06-0	Liquid	>480
Hexane, n-	110-54-3	Liquid	>480
Hexanone	108-94-1	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Hexone	108-10-1	Liquid	>480
Hydrazine	302-01-2	Liquid	>480
Hydrazine hydrate (51%)	10217-52-4	Liquid	>480
Hydrazine hydrate (85%)	10217-52-4	Liquid	440
Hydriodic acid (55-57%)	10034-85-2	Liquid	>480
Hydrochloric acid (37%)	7647-01-0	Liquid	>480
Hydrofluoric acid (48-51%)	7664-39-3	Liquid	>480
Hydrofluoric acid (70%)	7664-39-3	Liquid	>480
Hydrogen bromide (gaseous)	10035-10-6	Vapor	>480
Hydrogen chloride (-90 °C, liquid)	7647-01-0	Liquid	>180
Hydrogen chloride (gaseous)	7647-01-0	Vapor	>480
Hydrogen cyanide (21 °C, liquid)	74-90-8	Liquid	>480
Hydrogen cyanide (27 °C, gaseous)	74-90-8	Vapor	>480
Hydrogen fluoride (20-27 °C, gaseous)	7664-39-3	Vapor	>480
Hydrogen peroxide (30%)	7722-84-1	Liquid	>480
Hydrogen peroxide (70%)	7722-84-1	Liquid	>480
Hydrogen selenide	7783-07-5	Vapor	>480
Hydrogen sulfide	7783-06-4	Vapor	>480
Hydroxy 1-ethanethiol, 2-	60-24-2	Liquid	>480
Hydroxy 2-methylpropionitrile, 2-	75-86-5	Liquid	>480
Hydroxy 2-nitrobenzene, 1- (70 °C, molten)	88-75-5	Liquid	208
Hydroxy acetic acid (sat)	79-14-1	Liquid	>480
Hydroxy chlorobenzene (sat in Methanol)	106-48-9	Liquid	>480
Hydroxy isobutyronitrile	75-86-5	Liquid	>480
Iodomethane	74-88-4	Liquid	>480
Isobutyl methyl ketone	108-10-1	Liquid	>480
Isopropanol	67-63-0	Liquid	>480
Isopropyl alcohol	67-63-0	Liquid	>480
Isopropyl amine	75-31-0	Liquid	>480
Isopropyl benzene	98-82-8	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Isopropylidenediphenol diglycidyl ether, 4,4'-	1675-54-3	Liquid	>480
JP-4 Jet Fuel	50815-00-4	Liquid	>480
JP-8 Jet Fuel	94114-58-6	Liquid	>480
Ketone propane	67-64-1	Liquid	>480
Lewisite (L), MIL-STD-282 (10 g/m ²)	541-25-3	Liquid	>480 ⁸
Lewisite (L), MIL-STD-282 (100 g/m ²)	541-25-3	Liquid	>480 ⁸
Limonene d-	5989-27-5	Liquid	>480
Lindane (sat in Acetone)	58-89-9	Liquid	>480
Lindane (sat in Methanol)	58-89-9	Liquid	>480
Low boiling point naphtha - unspecified	8052-41-3	Liquid	>480
Malathion	121-75-5	Liquid	>480
Mercapto acetic acid	68-11-1	Liquid	>480
Mercapto ethanol	60-24-2	Liquid	>480
Mercuric II chloride (sat)	7487-94-7	Liquid	>480 ⁸
Mercury	7439-97-6	Liquid	>480
Methacrylic acid	79-41-4	Liquid	>480
Methanesulfonyl chloride	124-63-0	Liquid	>480
Methanethiol	74-93-1	Vapor	>480
Methanol	67-56-1	Liquid	>480
Methomyl (29%)	16752-77-5	Liquid	>480
Methoxy 2-methylpropane, 2-	1634-04-4	Liquid	>480
Methoxy chloromethane	107-30-2	Liquid	>480
Methoxy ethanol, 2	109-86-4	Liquid	>480
Methoxy ethylacetate, 2-	110-49-6	Liquid	>480
Methyl 1,5-pentanedinitrile, 2- (87%)	4553-62-2	Liquid	>480
Methyl 2-methyl-2-propenoate	80-62-6	Liquid	>480
Methyl 2-pyrrolidon, N-	872-50-4	Liquid	>480
Methyl 4-isopropenyl-1-cyclohexene, 1-	5989-27-5	Liquid	>480
Methyl acetyl	67-64-1	Liquid	>480
Methyl acrolein	123-73-9	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through
Methyl acrylate	96-33-3	Liquid	>480
Methyl amine (40%)	74-89-5	Liquid	261
Methyl amine (50%)	74-89-5	Liquid	232
Methyl amine (gaseous)	74-89-5	Vapor	>480
Methyl aniline, o-	95-53-4	Liquid	>480
Methyl benzol	108-88-3	Liquid	>480
Methyl bromide	74-83-9	Vapor	>480
Methyl chloride (-70 °C, liquid)	74-83-9	Vapor	>480
Methyl chloride (-70 °C, liquid)	74-87-3	Liquid	>180
Methyl chloride (gaseous)	74-87-3	Vapor	>480
Methyl chloro formate	79-22-1	Liquid	>480
Methyl chloroform	71-55-6	Liquid	>480
Methyl cyanide	75-05-8	Liquid	>480
Methyl ethyl ketone	78-93-3	Liquid	>480
Methyl ethyl ketoxime	96-29-7	Liquid	>480
Methyl fluoride	593-53-3	Vapor	>480
Methyl hydrazine	60-34-4	Liquid	>480
Methyl iodide	74-88-4	Liquid	>480
Methyl isocyanate	624-83-9	Liquid	>480
Methyl ketone	67-64-1	Liquid	>480
Methyl mercaptan	74-93-1	Vapor	>480
Methyl methacrylate	80-62-6	Liquid	>480
Methyl pentan-2-one, 4-	108-10-1	Liquid	>480
Methyl phenols	1319-77-3	Liquid	>480
Methyl propenoic acid, 2-	79-41-4	Liquid	>480
Methyl pyridine, 2-	109-06-8	Liquid	>480
Methyl pyridine, 3-	108-99-6	Liquid	>480
Methyl tert-butyl ether	1634-04-4	Liquid	>480
Methyl trichloromethane	71-55-6	Liquid	>480
Methyl trichlorosilane	75-79-6	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through
Methylene bis(2-Chloroaniline), 4,4- (sat in Methanol)	101-14-4	Liquid	>480
Methylene chloride	75-09-2	Liquid	>480
Methylene dianiline	101-77-9	Liquid	>480
Methylene dianiline (15% in Methyl Ethyl Ketone)	101-77-9	Liquid	>480
Methylene diphenyl diisocyanate, 4,4'-	101-68-8	Solid	>480
Methylene diphenyl diisocyanate, 4,4'- (50 °C, molten)	101-68-8	Liquid	>480
Mineral spirit	64475-85-0	Liquid	>480
Morpholine	110-91-8	Liquid	>480
Méthyl aziridine, 2- (90%)	75-55-8	Liquid	150
Naphthalene (25% in Diethylene glycol dimethylether)	91-20-3	Liquid	>480
Nickel carbonyl	13463-39-3	Liquid	>480
Nicotine	54-11-5	Liquid	>480
Nitric acid (70%)	7697-37-2	Liquid	>480
Nitric acid (90%)	7697-37-2	Liquid	>480
Nitric acid (>95%)	7697-37-2	Liquid	390
Nitric acid, red fuming (90%)	52583-42-3	Liquid	>480
Nitric oxide	10102-43-9	Vapor	>480
Nitro benzene	98-95-3	Liquid	>480
Nitro methane	75-52-5	Liquid	>480
Nitro phenol, o- (70 °C, molten)	88-75-5	Liquid	208
Nitro propane, 2-	79-46-9	Liquid	>480
Nitrogen tetroxide	10544-72-6	Liquid	>480
Nitrogen tetroxide (21 °C, liquid)	10544-72-6	Liquid	450
Nitrogen tetroxide (gaseous)	10544-72-6	Vapor	90
Nitrogen trifluoride	7783-54-2	Vapor	>480
Nitrous oxide	10024-97-2	Vapor	>480
Norflurane	811-97-2	Vapor	>480
Octane, n-	111-65-9	Liquid	>480
Oleum (103% (13% free SO3))	8014-95-7	Liquid	>480
Oleum (40% free SO3)	8014-95-7	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through
Oleum (65% free SO3)	8014-95-7	Liquid	>480
Oxalic acid (10.5%)	144-62-7	Liquid	>480
PCB (50% in Trichlorbenzene)	mix	Liquid	>480
Paraphenylene diisocyanate (PPDI) crude	104-49-4	Liquid	>480
Pentachlorophenol (sat in Methanol)	87-86-5	Liquid	>480
Pentanedial, 1,5- (5%)	111-30-8	Liquid	>480
Pentanedial, 1,5- (50%)	111-30-8	Liquid	>480
Pentene nitrile, 3-	4635-87-4	Liquid	>480
Pentene nitrile, cis-2- (70%)	25899-50-7	Liquid	>480
Pentyl acetate	628-63-7	Liquid	>480
Perchloric acid (70%)	7601-90-3	Liquid	>480
Perfluoro 2-propoxy propionyl fluoride	2062-98-8	Liquid	>480
Perfluoroethane	76-16-4	Vapor	>480
Phenethylene	100-42-5	Liquid	>480
Phenol (45 °C, molten)	108-95-2	Liquid	>480
Phenol (60 °C, molten)	108-95-2	Liquid	125
Phenol (85% at 45 °C)	108-95-2	Liquid	>480
Phenol (85%)	108-95-2	Liquid	>480
Phenyl amine	62-53-3	Liquid	>480
Phenyl chloride	108-90-7	Liquid	>480
Phenyl cyanide	100-47-0	Liquid	>480
Phenyl ethane	100-41-4	Liquid	>480
Phenyl ethanol, 1-	98-85-1	Liquid	>480
Phenyl mercaptan	108-98-5	Liquid	>480
Phenyl propane, 2-	98-82-8	Liquid	>480
Phenyl trichlorosilane	98-13-5	Liquid	>480
Phosgene	75-44-5	Vapor	>480
Phosphine	7803-51-2	Vapor	>480
Phosphor säure trimethylester	512-56-1	Liquid	>480
Phosphoric acid (85%)	7664-38-2	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Phosphorus oxychloride	10025-87-3	Liquid	>480
Phosphorus trichloride	7719-12-2	Liquid	>480
Picoline, 2-	109-06-8	Liquid	>480
Picoline, 3-	108-99-6	Liquid	>480
Pimelic ketone	108-94-1	Liquid	>480
Polymethylene polyphenyle isocyanate (p-MDI)	9016-87-9	Liquid	>480
Potassium acetate (sat)	127-08-2	Liquid	>480 ⁸
Potassium chromate (sat)	7789-00-6	Liquid	>480 ⁸
Potassium hydroxide (45%)	1310-58-3	Liquid	>480
Prop-2-en-1-al	107-02-8	Liquid	>480
Prop-2-yn-1-ol	107-19-7	Liquid	>480
Propan -2-ol	67-63-0	Liquid	>480
Propan -2-one	67-64-1	Liquid	>480
Propargyl alcohol	107-19-7	Liquid	>480
Propen 1-ol, 2-	107-18-6	Liquid	>480
Propenamide (50%)	79-06-1	Liquid	>480
Propene acid	79-10-7	Liquid	>480
Propenenitrile, 2-	107-13-1	Liquid	>480
Propenoic acid butyl ester, 2-	141-32-2	Liquid	>480
Propenoic acid nitrile	107-13-1	Liquid	>480
Propylene aldehyde	123-73-9	Liquid	>480
Propylene dichloride	78-87-5	Liquid	>480
Propylene imine (90%)	75-55-8	Liquid	150
Propylene oxide, 1,2-	75-56-9	Liquid	>480
Pyridine	110-86-1	Liquid	>480
Pyroacetic ether	67-64-1	Liquid	>480
Pyrrolidine	123-75-1	Liquid	413
Sarin (GB), MIL-STD-282 (10 g/m ²)	107-44-8	Liquid	>480 ⁸
Sarin (GB), MIL-STD-282 (100 g/m ²)	107-44-8	Liquid	>480 ⁸
Silane	7803-62-5	Vapor	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Silicon tetrachloride	10026-04-7	Liquid	>480
Sodium hydroxide (50%)	1310-73-2	Liquid	>480
Sodium hypochlorite (15%)	7681-52-9	Liquid	>480
Sodium metabisulphite (38%)	7681-57-4	Liquid	>480
Sodium methylate (50% in Methanol)	124-41-4	Liquid	>480
Soman (GD), MIL-STD-282 (10 g/m ²)	96-64-0	Liquid	>480 ^B
Soman (GD), MIL-STD-282 (100 g/m ²)	96-64-0	Liquid	>480 ^B
Stickoxid	10102-43-9	Vapor	>480
Stoddard solvent	8052-41-3	Liquid	>480
Styrene	100-42-5	Liquid	>480
Sulfamic acid (15%)	5329-14-6	Liquid	>480
Sulfamidic acid (15%)	5329-14-6	Liquid	>480
Sulfaminsäure (15%)	5329-14-6	Liquid	>480
Sulfur Mustard (HD), MIL-STD-282 (10 g/m ²)	505-60-2	Liquid	>480 ^B
Sulfur Mustard (HD), MIL-STD-282 (100 g/m ²)	505-60-2	Liquid	>480 ^B
Sulfur dioxide	7446-09-5	Vapor	>480
Sulfur hexafluoride	2551-62-4	Vapor	>480
Sulfur monochloride	10025-67-9	Liquid	>480
Sulfur trioxide	7446-11-9	Liquid	90
Sulfuric acid (>95%)	7664-93-9	Liquid	>480
Sulfuric acid diethyl ester	64-67-5	Liquid	>480
Sulfuric acid dimethyl ester	77-78-1	Liquid	>480
Sulfuric acid fuming (103% (13% free SO ₃))	8014-95-7	Liquid	>480
Sulfuric acid fuming (40% free SO ₃)	8014-95-7	Liquid	>480
Sulfuric acid fuming (65% free SO ₃)	8014-95-7	Liquid	>480
Sulfuryl chloride	7791-25-5	Liquid	>480
Sulphur dichloride	10545-99-0	Liquid	440
Sulphur dichloride (80%)	10545-99-0	Liquid	>480
Tabun (GA), MIL-STD-282 (10 g/m ²)	77-81-6	Liquid	>480 ^B
Tabun (GA), MIL-STD-282 (100 g/m ²)	77-81-6	Liquid	>480 ^B

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
Tetracarbonylnickel	13463-39-3	Liquid	>480
Tetrachloro ethane, 1,1,2,2,-	79-34-5	Liquid	>480
Tetrachloro ethylene, 1,1,2,2,-	127-18-4	Liquid	>480
Tetrachloro methane	56-23-5	Liquid	>480
Tetraethoxysilane	78-10-4	Liquid	>480
Tetraethyl lead	78-00-2	Liquid	>480
Tetraethylene pentamine	112-57-2	Liquid	>480
Tetrafluoroethane, 1,1,1,2,-	811-97-2	Vapor	>480
Tetrafluoromethane	75-73-0	Vapor	>480
Tetrahydrofuran	109-99-9	Liquid	>480
Tetramethyl ammonium hydroxide (25%)	75-59-2	Liquid	>480
Tetramethyl tin (0.5% in Pentane)	594-27-4	Liquid	>480
Thioalkohol	75-08-1	Liquid	>480
Thioglycolic acid	68-11-1	Liquid	>480
Thionyl chloride	7719-09-7	Liquid	90
Thiophenol	108-98-5	Liquid	>480
Titan(IV) chloride	7550-45-0	Liquid	>480
Titanium tetrachloride	7550-45-0	Liquid	>480
Toluene	108-88-3	Liquid	>480
Toluene diisocyanate, 1,3-	26471-62-5	Liquid	>480
Toluene diisocyanate, 2,4-	584-84-9	Liquid	>480
Toluene diisocyanate, 2,4- (80%)	584-84-9	Liquid	>480
Toluidine, o-	95-53-4	Liquid	>480
Trichloro 1,2,2-trifluoroethane, 1,1,2-	76-13-1	Liquid	>480
Trichloro 1,3,5-triazine, 2,4,6- (20% in Toluene)	108-77-0	Liquid	>480
Trichloro benzene, 1,2,4-	120-82-1	Liquid	>480
Trichloro ethane, 1,1,1-	71-55-6	Liquid	>480
Trichloro ethane, 1,1,2-	79-00-5	Liquid	>480
Trichloro ethanol, 2,2,2-	115-20-8	Liquid	>480
Trichloro ethylene	79-01-6	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through
Trichloro methane	67-66-3	Liquid	>480
Trichloro phenylsilane	98-13-5	Liquid	>480
Trichloro silane	10025-78-2	Liquid	>480
Triethyl amine	121-44-8	Liquid	>480
Triethylenetetramine (60%)	112-24-3	Liquid	>480
Trifluoro 2-(trifluoromethyl)propene, 3,3,3-	382-10-5	Vapor	>480
Trifluoro ethanol, 2,2,2-	75-89-8	Liquid	>480
Trifluoro methane	75-46-7	Vapor	>480
Trifluoro methansulfonic acid	1493-13-6	Liquid	>480
Trimethyl amine	75-50-3	Vapor	>480
Trimethyl aminomethane	75-64-9	Liquid	>480
Trimethyl phosphate	512-56-1	Liquid	>480
Trimethyl phosphite	121-45-9	Liquid	>480
Tripropyl amine	102-69-2	Liquid	>480
Tungsten hexafluoride	7783-82-6	Vapor	>480
VM & P Naphtha	8030-30-6	Liquid	>480
VX Nerve Agent, MIL-STD-282 (10 g/m ²)	50782-69-9	Liquid	>480 ⁸
VX Nerve Agent, MIL-STD-282 (100 g/m ²)	50782-69-9	Liquid	>480 ⁸
Vinyl acetate	108-05-4	Liquid	>480
Vinyl benzol	100-42-5	Liquid	>480
Vinyl carbinol	107-18-6	Liquid	>480
Vinyl chloride	75-01-4	Vapor	>480
Vinyl cyanide	107-13-1	Liquid	>480
Vinyl ethylene (0 °C, liquid)	106-99-0	Liquid	>180
Vinyl ethylene (gaseous)	106-99-0	Vapor	>480
Vinyl magnesium chloride (16.5% in Tetrahydrofuran)	3536-96-7	Liquid	>480
Vinylidene chloride	75-35-4	Liquid	>480
White Liquor	mix	Liquid	>480
Xylene, mixed isomers	1330-20-7	Liquid	>480
m-Cresol 55%, p-Cresol 30%, Phenol 15% (mix)	mix	Liquid	>480

Hazard / Chemical Name	Cas Number	Phase	Normalized Break Through .
t-Sodium-amylate / t-amyl alcohol (mix)	mix	Liquid	120

BT0.1 Normalized breakthrough time at 0.1 µg/cm²/min [mins] CAS Chemical abstracts service registry number min
Minute > Larger than < Smaller than imm Immediate (< 10 min) nm Not tested sat Saturated solution N/A Not
Applicable na Not attained GPR grade General purpose reagent grade * Based on lowest single value 8 Actual

breakthrough time; normalized breakthrough time is not available DOT5 Degradation after 5 min DOT30 Degradation after 30 min DOT60 Degradation after 60 min DOT240 Degradation after 240 min BT1383 Normalized breakthrough time at 0.1 $\mu\text{g}/\text{cm}^2/\text{min}$ [mins] acc. ASTM F1383

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