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DuPont Permeation Guide

DUPONT
Tychem® Tyvek®

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Caution:

This information is based upon technical data that DuPont believes to be reliable on the date issued. It is subject to revision as additional knowledge and experience are gained. The information set forth herein reflects laboratory performance of fabrics, not complete garments, under controlled conditions. It is intended for informational use by persons having technical skill for evaluation under their specific end-use conditions, at their own discretion and risk.

It is the user's responsibility to determine the level of toxicity and the proper personal protective equipment needed. Anyone intending to use this information should first verify that the garment selected is suitable for the intended use. In many cases, seams and closures have shorter breakthrough times and higher permeation rates than the fabric. If fabric becomes torn, abraded or punctured, or if seams or closures fail, or if attached gloves, visors, etc. are damaged, end user should discontinue use of garment to avoid potential exposure to chemical.

Since conditions of use are outside our control, ***DuPont makes no warranties, express or implied, including, without limitation, no warranties of merchantability or fitness for a particular use and assume no liability in connection with any use of this information.***

This information is not intended as a license to operate under or a recommendation to infringe any patent, trademark or technical information of DuPont or others covering any material or its use.

Warning:

- Tychem® and Tyvek® fabrics should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Only Tychem® ThermoPro, Tychem® Reflector® and Tychem® TK styles 600T/601T (with aluminized outer suit) garments are designed and tested to help reduce burn injury during escape from a flash fire. Users of Tychem® ThermoPro, Tychem® Reflector® and Tychem® TK styles 600T/601T (with aluminized outer suit) garments should not knowingly enter an explosive environment.

- Tychem® garments with attached socks must be worn inside protective outer footwear and are not suitable as outer footwear. These attached socks do not have adequate durability or slip resistance to be worn as the outer foot covering.

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.

How to Use this Permeation Guide

To Find Permeation Test Results

1. Locate the desired chemical in the Chemical Index (Appendix).
   The Chemical Index is presented in two ways:
   - Alphabetical Index
   - Chemical Abstract System (CAS) Number Index

   For each chemical, the following information is listed:
   - Chemical name
   - CAS number
   - Chemical class and subclass number(s)
   - Synonyms, if applicable
2. Using the chemical name or CAS number, locate the class and subclass(es) of the chemical in the permeation index table.
3. Using the class and subclass, go to the chemical permeation data tables to locate the chemical. The range of fabrics is listed across the top of the table. If testing was done, the permeation data is reported.

Independent Testing

All testing reported in this guide was performed by a third party laboratory.

Permeation data for industrial chemicals is obtained per ASTM F739. Normalized breakthrough times (the time at which the permeation rate exceeds 0.1 µg/cm^2/min) are reported in minutes. All chemicals have been tested between approximately 20°C and 27°C unless otherwise stated. All chemicals have been tested at a concentration of greater than 95% unless otherwise stated.

Chemical warfare agents (Lewisite, Sarin, Soman, Sulfur Mustard, Tabun and VX Nerve Agent) have been tested at 22°C and 50% relative humidity per military standard MIL-STD-282. "Breakthrough time" for chemical warfare agents is defined as the time when the cumulative mass which permeated through the fabric exceeds the limit in MIL-STD-282 [either 1.25 or 4.0 µg/cm^2].

What is Permeation?

Permeation is the absorption, diffusion and desorption of a chemical through a barrier material at the molecular level. Penetration, on the other hand, is the bulk passage of a chemical through a pore or opening in the barrier material.

To help you understand the difference between these two mechanisms, consider this example. Have you ever opened a bottle of soda to find out that it was flat? There aren't any holes in the bottle. The liquid is still inside. Why is the soda flat? It's flat because the carbon dioxide that gives soda its fizz has permeated through the bottle over time. If you opened a fresh bottle of soda and did not replace the cap, the carbon dioxide would just escape out of the top of the bottle. That would be penetration.

Permeation tests are best suited for testing liquids and vapors.

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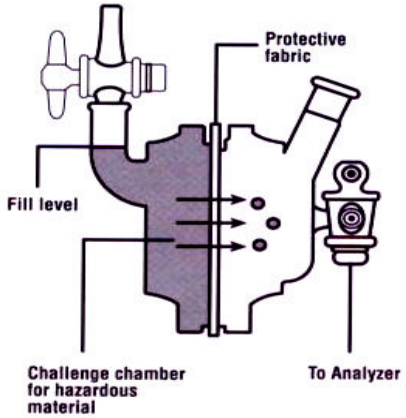
How Permeation Tests Are Conducted

Other than for Chemical Warfare Agents, permeation tests are conducted following ASTM F739 "Test Method for Resistance of Protective Clothing Materials to Permeation by Liquids and Gases." A swatch of test fabric is inserted into a special test cell, with the outside surface of the fabric toward the challenge chamber, thus exposing it to a challenge chemical. The inside surface of the fabric is toward the sampling chamber. If the chemical moves through the fabric and is detected on the inside surface of the fabric, it is said to have permeated through the fabric.



ASTM F739 Test Cell

Definitions of Key Terms for ASTM F739

Breakthough time: In permeation testing, the actual breakthrough time is the length of time it takes for a challenge chemical to permeate the fabric being tested. It is measured from the point of initial contact of the challenge chemical with the outside surface of the fabric to the time that the challenge chemical is detected on the inside of the fabric. Sensitive analytical equipment is often used to measure the amount of chemical permeating the fabric.

Normalized, or sometimes called "standardized" breakthrough time, is a measure of the elapsed time from initial contact with the challenge chemical until the chemical permeates the fabric at a rate of 0.1 ´g/cm²/min. This is defined in ASTM F739 test method. Normalized breakthrough times eliminate biased results due to differences in the sensitivity of the detection equipment and are thus the industry standard measure of breakthrough time. This DuPont Permeation Guide reports normalized breakthrough times using the 0.1 ´g/cm²/min criteria.

A normalized breakthrough time of >480 minutes does not always mean that there was no chemical permeation; it means that the rate of permeation did not exceed 0.1 ´g/cm²/min during the 8 hour test. If the permeation rate exceeds 0.1 ´g/cm²/min in the first 10 minutes of testing, DuPont chooses to report the breakthrough time as "immediate" (imm.).

PLEASE NOTE: In Europe, normalized breakthrough times are based on a permeation rate of 1.0 ´g/cm²/min. This is 10 times less sensitive than the basis used in North America.

Physical phase: The phase of the challenge chemical during the test: solid-S, liquid-L, gas-G.

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Chemical Class & Subclass Listing*

100 Carboxylic acids
- 102 Aliphatic and Alicyclic, Unsubstituted
- 103 Aliphatic and Alicyclic, Substituted
- 104 Aliphatic and Alicyclic, Polybasic

110 Acid Halides, Carboxylic
- 111 Aliphatic and Alicyclic
- 112 Aromatic
- 113 Chloroformates

120 Aldehydes
- 121 Aliphatic and Alicyclic
- 122 Aromatic

130 Amides
- 132 Aliphatic and Alicyclic
- 135 Acrylamides

140 Amines
- 141 Aliphatic and Alicyclic, Primary
- 142 Aliphatic and Alicyclic, Secondary
- 143 Aliphatic and Alicyclic, Tertiary
- 145 Aromatic, Primary
- 146 Aromatic, Secondary and Tertiary
- 148 Aliphatic and Alicyclic Polyamines
- 149 Aromatic Polyamines

150 Hydroxylamines and Ketoximes

160 Anhydrides
- 161 Aliphatic and Alicyclic

210 Isocyanates
- 211 Aliphatic and Alicyclic
- 212 Aromatic

220 Carboxylic Esters
- 221 Formates
- 222 Acetates
- 223 Acrylates and Methacrylates
- 224 Aliphatic, Others
- 226 Benzoates and Phthalates

230 Non-Carboxylic Esters
- 233 Carbamates and Others

240 Ethers
- 241 Aliphatic and Alicyclic
- 242 Aromatic
- 244 Ketals and Acetals
- 245 Glycol Ethers
- 246 Vinylic

260 Halogen Compounds
- 261 Aliphatic and Alicyclic
- 263 Aromatic
- 264 Vinylic
- 265 Alylic
- 266 Benzylic

270 Heterocyclic Compounds
- 271 Nitrogen, Pyridines
- 274 Nitrogen, Others
- 275 Oxygen, Epoxides
- 277 Oxygen, Furans
- 278 Oxygen, Others

280 Hydrazines

290 Hydrocarbons
- 291 Aliphatic and Alicyclic, Saturated
- 292 Aromatic
- 293 Aromatic Polynuclear
- 294 Aliphatic and Alicyclic, Unsaturated
- 296 Polyenes

300 Peroxides

310 Hydroxylic Compounds (includes alcohols)
- 311 Aliphatic and Alicyclic, Primary
- 312 Aliphatic and Alicyclic,Secondary
- 313 Aliphatic and Alicyclic, Tertiary
- 314 Aliphatic and Alicyclic, Polyols
- 315 Aliphatic and Alicyclic, Substituted
- 316 Aromatic, Phenols
- 318 Aromatic, Others

330 Elements

340 Inorganic Salts and Inorganic Salt Solutions
- 345 Inorganic Cyano Compounds

350 Inorganic Gases and Vapors

360 Inorganic Acid Halides
- 365 Inorganic Acid Oxides

370 Inorganic Acids

380 Inorganic Bases

390 Ketones
- 391 Aliphatic and Alicyclic

430 Nitriles
- 431 Aliphatic and Alicyclic
- 432 Aromatic

440 Nitro Compounds
- 441 Unsubstituted
- 442 Substituted

450 Nitroso Compounds

460 Organo-Phosphorus Compounds
- 462 Derivatives of Phosphorus-based acids

470 Organo-Metallic Compounds

480 Organo-Silicon Compounds

500 Sulfur Compounds
- 501 Thiols
- 502 Sulfides and Disulfides
- 503 Sulfones and Sulfoxides
- 504 Sulfonic Acids
- 505 Sulfonyl Chlorides
- 507 Sulfonates, Sulfates,and Sulfites
- 509 Other

550 Organic Salts and Organic Salt Solutions

590 Miscellaneous (Not classified)

990 Cytostatic drugs (Active Pharmaceutical Potent Compound)

*Partial list based on ASTM F1186. A complete copy of ASTM F1186 may be purchased from ASTM (www.astm.org).

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ASTM F1001 List of Challenge Chemicals (Permeation Test Method ASTM F739)

Sub-class	Chemical Name	CAS Number	Phase	Normalized Breakthrough Time (Minutes)										
				Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
390	Acetone (>95%)	67-64-1	L			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
430	Acetonitrile (>95%)	75-05-8	L			imm.	60	imm.	131	>480	>480	>480	>480	>480
350 / 380	Ammonia (>95%, gas)	7664-41-7	G			imm.	26	imm.	20	90	133	>480	>480	>480
290	Butadiene, 1,3- (>95%, gas)	106-99-0	G			imm.	>480	>480	>480	>480	>480	>480	>480	>480
500	Carbon disulfide (>95%)	75-15-0	L			imm.	imm.	16	>480	>480	>480	>480	>480	>480
330 / 350	Chlorine (>95%, gas)	7782-50-5	G			imm.	>480	imm.	>480	>480	>480	>480	>480	>480
260	Dichloromethane (>95%)	75-09-2	L			imm.	imm.	imm.	imm.	imm.	>480	>480	>480	>480
140	Diethylamine (>95%)	109-89-7	L			imm.	15	>480	>480	>480	>480	>480	>480	>480
130	Dimethylformamide, N,N- (>95%)	68-12-2	L			imm.	90	>480	>480	>480	>480	>480	>480	>480
220	Ethyl acetate (>95%)	141-78-6	L			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
270	Ethylene oxide (>95%, gas)	75-21-8	G			imm.	imm.	>480	126	>480	>480	>480	>480	>480
290	Hexane, n- (>95%)	110-54-3	L			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
350	Hydrogen chloride (>95%, gas)	7647-01-0	G			imm.	>480	>480	>480	>480	>480	>480	>480	>480
310	Methanol (>95%)	67-56-1	L			imm.	>480	imm.	117	>480	185	>480	>480	>480
260	Methyl chloride (>95%, gas)	74-87-3	G			imm.	>480	>480	>480	>480	>480	>480	>480	>480
440	Nitrobenzene (>95%)	98-95-3	L			imm.	59	>480	>480	>480	>480	>480	>480	>480
380	Sodium hydroxide (50%)	1310-73-2	L	48	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
370	Sulfuric acid (>95%)	7664-93-9	L		>480	>480	>480	>480	>480	50	>480	>480	>480	>480
260	Tetrachloroethylene, 1,1,2,2- (>95%)	127-18-4	L			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
240	Tetrahydrofuran (>95%)	109-99-9	L			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
290	Toluene (>95%)	108-88-3	L			imm.	imm.	>480	>480	>480	>480	>480	>480	>480

> = greater than imm. = immediate (<10 minutes) {empty} = not tested L = Liquid G = Gas S = Solid

* Actual breakthrough time; normalized breakthrough time is not available.

** Solid tested, vapor phase permeation measured.

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
100	**Carboxylic acids**														
	102	**Aliphatic and Alicyclic, Unsubstituted**													
		Acetic acid (5%)	64-19-7	Liquid	imm										
		Acetic acid (10%)	64-19-7	Liquid	imm										
		Acetic acid (>95%)	64-19-7	Liquid			imm.	>480	84	>480	>480	339	>480	>480	>480
		Acetic acid (84%)	64-19-7	Liquid											
		Acetic acid (2%)	64-19-7	Liquid	imm										
		Acetic acid (30%)	64-19-7	Liquid	imm										
		Acrylic acid (>95%)	79-10-7	Liquid			imm.	>480		>480	>480	270	>480	>480	270
		Formic acid (30%)	64-18-6	Liquid											
		Formic acid (90%)	64-18-6	Liquid											
		Formic acid (>95%)	64-18-6	Liquid			imm.	>480	>480	260	260	>480	>480	>480	>480
		Methacrylic acid (>95%)	79-41-4	Liquid						>480	>480	>480	>480	>480	>480
		Oleic Acid (>95%)	112-80-1	Liquid											
		Peracetic Acid (39%)	79-21-0	Liquid											
	103	**Aliphatic and Alicyclic, Substituted**													
		Chloroacetic acid (>95%)	79-11-8	Liquid								>480	>480	>480	>480
		Chloroacetic acid (70%-80%)	79-11-8	Liquid			370	>480	>480	>480	>480	>480	>480	>480	>480
		Glycolic acid (sat. sol. in water)	79-14-1	Liquid								>480	>480	>480	>480
		Lactic Acid (85%)	50-21-5	Liquid											
		Thioglycolic acid (>95%)	68-11-1	Liquid					>480	>480	>480	>480	>480	>480	>480
		Trichloroacetic acid (>95%)	76-03-9	Liquid						>480	>480				
		Trifluoroacetic acid (>95%)	76-05-1	Liquid				>480		>480	>480		>480		
	104	**Aliphatic and Alicyclic, Polybasic**													
		Citric acid (50% in water)	77-92-9	Liquid					>480						
		Citric acid (30%)	77-92-9	Liquid											
		Oxalic acid (sat.sol. in water)	144-62-7	Liquid					>480						
		Oxalic acid (10.5%)	144-62-7	Liquid								>480	>480	>480	>480
110	**Acid Halides, Carboxylic**														
	110	**Acid Halides, Carboxylic - All**													
		Perfluoro-2-propoxy propionyl fluoride (>95%)	2062-98-8	Liquid								>480	>480	>480	>480
	111	**Aliphatic and Alicyclic**													
		Acetoxyacetyl Chloride (>95%)	13831-31-7	Liquid											
		Acetyl chloride (>95%)	75-36-5	Liquid				63	>480	>480	>480	181	181	>480	181
		Acryloyl Chloride (>95%)	814-68-6	Liquid				imm.	55	334	334				
		Chloroacetyl chloride (>95%)	79-04-9	Liquid				120	77			160	160	160	160
		Dichloroacetyl chloride (>95%)	79-36-7	Liquid						160	160	100	100	>480	100
	112	**Aromatic**													
		Benzoyl chloride (>95%)	98-88-4	Liquid					>480	>480	>480	>480	>480	>480	>480

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
	113	**Chloroformates**													
		Benzyl chloroformate (>95%)	501-53-1	Liquid					>480						
		Methyl chloroformate (>95%)	79-22-1	Liquid								>480	>480	>480	>480
120	**Aldehydes**														
	121	**Aliphatic and Alicyclic**													
		Acetaldehyde (>95%)	75-07-0	Liquid						imm.	>480	>480	>480	>480	>480
		Acrolein (>95%)	107-02-8	Liquid				24	178	63	63	>480	>480	>480	>480
		Acrolein (>95%, 10 g/m² coverage)	107-02-8	Liquid						>480	>480				
		Butyraldehyde, n- (>95%)	123-72-8	Liquid			imm.	41		>480		>480	>480	>480	>480
		Formaldehyde (100 ppm)	50-00-0	Vapor								>480	>480	>480	>480
		Formalin (3.7% Formaldehyde, 1.0-1.5% Methanol)	mixture	Liquid			>480								
		Formalin (37% Formaldehyde, 10-15% Methanol)	mixture	Liquid			imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Glutaraldehyde (5% in water)	111-30-8	Liquid			>480					>480	>480	>480	>480
		Glutaraldehyde (50%)	111-30-8	Liquid				>480		170	170	>480	>480	>480	>480
		trans-Crotonaldehyde (>95%)	123-73-9	Liquid				34				>480	>480	>480	>480
	122	**Aromatic**													
		Benzaldehyde (>95%)	100-52-7	Liquid											
		Furfural (>95%)	98-01-1	Liquid				227	>480	>480	>480	>480	>480	>480	>480
130	**Amides**														
	132	**Aliphatic and Alicyclic**													
		Dimethylacetamide, N,N- (8% in water)	127-19-5	Liquid		>480	>480								
		Dimethylacetamide, N,N- (>95%)	127-19-5	Liquid		imm		96	>480	>480	>480	>480	>480	>480	>480
		Dimethylformamide, N,N- (>95%)	68-12-2	Liquid			imm.	90	>480	>480	>480	>480	>480	>480	>480
		Methyl-2-pyrrolidone, N- (>95%)	872-50-4	Liquid				>480		>480	>480	>480	>480	>480	>480
		Methylformamide, N- (>95%)	123-39-7	Liquid					>480	>480	>480				
	135	**Acrylamides**													
		Acrylamide (50% in water)	79-06-1	Liquid				>480		>480	>480	>480	>480	>480	>480
140	**Amines**														
	141	**Aliphatic and Alicyclic, Primary**													
		Butylamine, n- (>95%)	109-73-9	Liquid					>480	200	200	>480	>480	>480	>480
		Butylamine, tert- (>95%)	75-64-9	Liquid								>480	>480	>480	>480
		Diisopropylethylamine (DIPEA)	7087-68-5	Liquid					>480		>480				
		Ethanolamine (>95%)	141-43-5	Liquid					>480	>480	>480	>480	>480	>480	>480
		Ethylamine (>95% at 15° C)	75-04-7	Liquid								361	361	>480	361
		Ethylamine (70%)	75-04-7	Liquid											
		Isopropylamine (>95%)	75-31-0	Liquid					15	>480	>480	>480	>480	>480	>480
		Methylamine (50% in water)	74-89-5	Liquid								232	232	232	232
		Methylamine (>95%)	74-89-5	Vapor						>480	>480	105	105	>480	105
		Methylamine (40% in water)	74-89-5	Liquid					140			261	261	261	261

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Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Methylamine (40%)	74-89-5	Liquid											
		Propylamine, n- (>95%)	107-10-8	Liquid					100						
	142 Aliphatic and Alicyclic, Secondary														
		Diethanolamine (>95%)	111-42-2	Liquid					>480						
		Diethylamine (>95%)	109-89-7	Liquid			imm.	15	>480	>480	>480	>480	>480	>480	>480
		Dimethylamine (40%)	124-40-3	Liquid											
		Dimethylamine (>95%)	124-40-3	Vapor					>480	>480	>480			>480	
		Hexamethyldisilazane (>95%)	999-97-3	Liquid				>480				>480	>480	>480	>480
		Methylbenzylamine (>95%)	103-67-3	Liquid						>480					
		Morpholine (>95%)	110-91-8	Liquid				158				>480	>480	>480	>480
		N-Methylmorpholine (NMM)	109-02-4	Liquid					>480		>480				
	143 Aliphatic and Alicyclic, Tertiary														
		Tributylamine	102-82-9	Liquid					>480		>480				
		Triethanolamine (>95%)	102-71-6	Liquid											
		Triethylamine (>95%)	121-44-8	Liquid				22				>480	>480	>480	>480
		Trimethylamine (>95%, gas)	75-50-3	Vapor										>480	
		Tripropylamine (>95%)	102-69-2	Liquid								>480	>480	>480	>480
	145 Aromatic, Primary														
		Aminodiphenyl, 4- (1 mg/ml in methanol)	92-67-1	Liquid						>480	>480				
		Aniline (>95%)	62-53-3	Liquid			imm.	>480	320	>480	>480	>480	>480	>480	>480
		Aniline, 4-trifluoromethoxy (>95%)	461-82-5	Liquid						>480					
		Benzidine (75% in methanol)	92-87-5	Liquid										>480	
		Benzidine (25% in methanol)	92-87-5	Liquid								>480	>480	>480	>480
		Chloroaniline, p- (>95% at 70° C)	106-47-8	Liquid				imm.		imm.	imm.	344	344	344	344
		Chloroaniline, p-	106-47-8	Solid								>480	>480**	>480	>480
		Dichloroaniline, 3,4- (solid)	95-76-1	Solid								>480	>480**	>480	>480
		Dichloroaniline, 3,4- (>95%, liquid, 70° C)	95-76-1	Liquid				imm.				284	284	284	284
		Diethyl-m-toluidine crude (>95%)	91-67-8	Liquid				>480					>480		
		Methylene dianiline, 4,4'- (15% in MEK)	101-77-9	Liquid								>480	>480	>480	>480
		Methylene dianiline, 4,4'- (>95% at 190° C)	101-77-9	Liquid											
		Methylene dianiline, 4,4'- (sat. sol. in methanol)	101-77-9	Liquid										>480	
		Toluidine, m- (>95%)	108-44-1	Liquid				>480					>480		
		Toluidine, o- (>95%)	95-53-4	Liquid			imm.	>480		>480	>480	>480	>480	>480	>480
		Xylidin, 2,4- (>95%)	95-68-1	Liquid						>480					
	146 Aromatic, Secondary and Tertiary														
		Diethylaniline (>95%)	91-66-7	Liquid					>480			>480		>480	>480
		Diethylaniline crude (>95%)	91-66-7	Liquid				>480					>480		
		Dimethylaniline, N,N- (>95%)	121-69-7	Liquid					imm.	>480	>480	>480	>480	>480	>480
	148 Aliphatic and Alicyclic Polyamines														

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		1,3-Propanediamine, N,N'-Dimethyl (>95%)	109-55-7	Liquid											
		Aminoethylethanolamine (>95%)	111-41-1	Liquid				imm.	>480	>480	>480	>480	>480	>480	>480
		Aminoethylethanolamine (60%)	111-41-1	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Aminoethylpiperazine (>95%)	140-31-8	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Citrus Terpenes Mixture (>95%)	68956-56-9	Liquid											
		Diethylenetriamine (>95%)	111-40-0	Liquid				321	>480	>480	>480	>480	>480	>480	>480
		Dytek® A (>95%)	15520-10-2	Liquid					>480	>480	>480				
		Ethylenediamine (>95%)	107-15-3	Liquid			>480	>480	>480	>480	>480	>480	>480	>480	>480
		Hexamethylenediamine, 1,6- (>95% at 45° C)	124-09-4	Liquid						>480	>480	>480	>480	>480	>480
		Hexamethylenediamine, 1,6- (>95% at 50° C)	124-09-4	Liquid				80	45				80		
		Methylene bis-cyclohexane diamine, 4,4'- (>95%)	1761-71-3	Liquid				>480		>480	>480		>480		
		Tetraethylenepentamine (>95%)	112-57-2	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Tetramethylethylenediamine (TMEDA)	110-18-9	Liquid					>480		>480				
	149 Aromatic Polyamines														
		Benzidine (25% in methanol)	92-87-5	Liquid								>480	>480	>480	>480
		Benzidine (75% in methanol)	92-87-5	Liquid										>480	
		Methylene bis (o-chloroaniline), 4,4'- (sat. sol. in methanol)	101-14-4	Liquid				>480				>480	>480	>480	>480
		Methylene dianiline, 4,4'- (sat. sol. in methanol)	101-77-9	Liquid										>480	
		Methylene dianiline, 4,4'- (>95% at 190° C)	101-77-9	Liquid											
		Methylene dianiline, 4,4'- (15% in MEK)	101-77-9	Liquid								>480	>480	>480	>480
150 Hydroxylamines and Ketoximes															
	150 Hydroxlamines and Ketoximes - All														
		Methyl ethyl ketoxime (>95%)	96-29-7	Liquid				>480		>480	>480	>480	>480	>480	>480
160 Anhydrides															
	161 Aliphatic and Alicyclic														
		Acetic anhydride (>95%)	108-24-7	Liquid				48	>480	>480		>480	>480	>480	>480
210 Isocyanates															
	211 Aliphatic and Alicyclic														
		Cyclohexyl isocyanate (>95%)	3173-53-3	Liquid				54					54		
		Hexamethylene diisocyanate (>95%)	822-06-0	Liquid			>480	>480	>480	>480	>480	>480	>480	>480	>480
		Hexamethylene diisocyanate in DuPont Activator 193S (>95%)	mixture	Liquid			>480								
		Hexamethylene diisocyanate in DuPont Activator 4505S (>95%)	mixture	Liquid			>480								
		Hexamethylene diisocyanate in DuPont Activator 4507S (>95%)	mixture	Liquid			>480								
		Methyl isocyanate (>95%)	624-83-9	Liquid				imm.	12	imm.	imm.	>480	>480	>480	>480
	212 Aromatic														
		Diphenylmethane Diisocyanate 4,4- (>95% at 50° C)	101-68-8	Liquid			>480	>480	>480	>480	>480	>480	>480	>480	>480
		Diphenylmethane Diisocyanate 4,4-	101-68-8	Solid								>480	>480**	>480	>480

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Paraphenylene diisocyanate (PPDI) crude (>95%)	104-49-4	Liquid								>480	>480	>480	>480
		Polymethylene polyphenyl-polyisocyanate (>95%)	9016-87-9	Liquid			>480	>480	>480	>480	>480	>480	>480	>480	>480
		Toluene-1,3-diisocyanate (>95%)	26471-62-5	Liquid								>480	>480	>480	>480
		Toluene-2,4-diisocyanate (>95%)	584-84-9	Liquid			imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Toluene-2,4-diisocyanate (80%)	584-84-9	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
220	**Carboxylic Esters**														
	221	**Formates**													
		Methyl formate (>95%)	107-31-3	Liquid											>480
	222	**Acetates**													
		Amyl acetate, n- (>95%)	628-63-7	Liquid					>480	>480	>480	>480	>480	>480	
		Bromoethyl Acetate, 2- (>95%)	927-68-4	Liquid											
		Butyl acetate, n- (>95%)	123-86-4	Liquid					>480	>480	>480	>480	>480	>480	>480
		Ethyl acetate (>95%)	141-78-6	Liquid			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
		Iso Amyl Acetate (>95%)	123-92-2	Liquid											
		Isopropyl Acetate (>95%)	108-21-4	Liquid											
		Methyl Acetate (>95%)	79-20-9	Liquid											
		Norbornene-2-yl acetate, 5- (>95%)	6143-29-9	Liquid										>480	
		Propyl Acetate (>95%)	109-60-4	Liquid											
		Vinyl acetate (>95%)	108-05-4	Liquid				82	>480	>480	>480	>480	>480	>480	>480
	223	**Acrylates and Methacrylates**													
		Butyl acrylate, n- (>95%)	141-32-2	Liquid							>480	51	51	>480	51
		Diketene Acetone (>95%)	5394-63-8	Liquid						>480					
		Ethyl acrylate (>95%)	140-88-5	Liquid								14	14	>480	14
		Ethyl methyacrylate (>95%)	97-63-2	Liquid					>480	>480	>480				
		Ethylene glycol acrylate (>95%)	818-61-1	Liquid					>480						
		Methyl acrylate (>95%)	96-33-3	Liquid						>480	>480	>480	>480	>480	>480
		Methyl methacrylate (>95%)	80-62-6	Liquid				23		70	70	>480	>480	>480	>480
	224	**Aliphatic, Others**													
		Dimethylmaleate (>95%)	624-48-6	Liquid				>480	>480				>480		
	226	**Benzoates and Phthalates**													
		Dibutyl Phthalate N- (>95%)	84-74-2	Liquid											
		Diethylhexyl phthalate (>95%)	117-81-7	Liquid						>480	>480	>480	>480	>480	>480
		Methyl salicylate (>95%)	119-36-8	Liquid			imm.	>480					>480		
230	**Non-Carboxylic Esters**														
	233	**Carbamates and Others**													
		Methomyl (29% in water)	16752-77-5	Liquid								>480	>480	>480	>480
240	**Ethers**														
	240	**Ethers - All**													
		Perfluoro-2-propoxy propionyl fluoride (>95%)	2062-98-8	Liquid								>480	>480	>480	>480

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
	241	**Aliphatic and Alicyclic**													
		Butyl ether, n- (>95%)	142-96-1	Liquid					>480	196	196	>480	>480	>480	>480
		Chloromethyl methyl ether (>95%)	107-30-2	Liquid						37	37	>480	>480	>480	>480
		Dichloroethyl ether (>95%)	111-44-4	Liquid					>480	>480	>480	>480	>480	>480	>480
		Dimethyl ether (>95%)	115-10-6	Vapor										>480	
		Ethyl ether (>95%)	60-29-7	Liquid				imm.	>480	>480	>480	>480	>480	>480	>480
		Methyl tert-butyl ether (>95%)	1634-04-4	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Tetrahydrofuran (>95%)	109-99-9	Liquid			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
	242	**Aromatic**													
		Aniline, 4-trifluoromethoxy (>95%)	461-82-5	Liquid						>480					
		Dowtherm, Biphenyl (27%)	92-52-4	Liquid											
	244	**Ketals and Acetals**													
		Diketene Acetone (>95%)	5394-63-8	Liquid						>480					
	245	**Glycol Ethers**													
		(2-Ethoxyethoxy)-ethanol, 2- (>95%)	111-90-0	Liquid				>480					>480		
		2-(2-Butoxyethoxy)-ethanol (>95%)	112-34-5	Liquid						>480					
		Butoxytriglycol (>95%)	143-22-6	Liquid											
		Butyl Cellosolve Acetate (>95%)	112-07-2	Liquid											
		Butyl Cellosolve® (>95%)	111-76-2	Liquid				>480		>480			>480		
		Butyl Dipropasol Solvent (>95%)	29911-28-2	Liquid											
		Diethylene Glycol Monomethyl Ether (>95%)	111-77-3	Liquid											
		Diethylene Glycol Monopropyl Ether (>95%)	6881-94-3	Liquid											
		Dipropylene Glycol Monopropyl Ether (>95%)	29911-27-1	Liquid											
		Ethoxytriglycol (>95%)	112-50-5	Liquid											
		Ethyl Cellosolve® (>95%)	110-80-5	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Ethyl Cellosolve® acetate (>95%)	111-15-9	Liquid				238	>480	>480	>480	>480	>480	>480	>480
		Ethylene Glycol Monohexyl Ether (>95%)	112-25-4	Liquid											
		Hexyl Carbitol Solvent (>95%)	112-59-4	Liquid											
		Methoxytriglycol (>95%)	112-35-6	Liquid											
		Methyl Cellosolve® (>95%)	109-86-4	Liquid				>480	405	>480	>480	>480	>480	>480	>480
		Methyl Cellosolve® acetate (>95%)	110-49-6	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Polyethylene glycol dimethyl ether (>95%)	24991-55-7	Liquid							>480				
		Propoxypropanol (>95%)	1569-01-3	Liquid											
		Propyl Cellosolve N- (>95%)	2807-30-9	Liquid											
		Urethane Catalyst Alkanol (>95%)	83016-70-0	Liquid											
260	**Halogen Compounds**														
	260	**Halogen Compounds - All**													
		Perfluoro-2-propoxy propionyl fluoride (>95%)	2062-98-8	Liquid								>480	>480	>480	>480
	261	**Aliphatic and Alicyclic**													

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Bromoethyl Acetate, 2- (>95%)	927-68-4	Liquid											
		Bromoform (>95%)	75-25-2	Liquid											
		Carbon tetrachloride (>95%)	56-23-5	Liquid					>480	11	11	>480	>480	>480	>480
		Chlordane (>95%)	57-74-9	Liquid								>480	>480	>480	>480
		Chlordane (44%)	57-74-9	Liquid					>480						
		Chloroethanol, 2- (>95%)	107-07-3	Liquid			imm.		>480	>480	>480	>480	>480	>480	>480
		Chloroform (>95%)	67-66-3	Liquid			imm.	imm.	imm.	imm.	imm.	>480	>480	>480	>480
		Chloropicrin (>95%)	76-06-2	Liquid						>480	>480				
		Dibromo-3-chloropropane, 1,2- (>95%)	96-12-8	Liquid					>480						
		Dichloroacetone (>95% at 40° C)	534-07-6	Liquid										>480	
		Dichloroacetone (>95% at 45° C)	534-07-6	Liquid						>480	>480				
		Dichloroethyl ether (>95%)	111-44-4	Liquid					>480	>480	>480	>480	>480	>480	>480
		Dichloromethane (>95%)	75-09-2	Liquid			imm.	imm.	imm.	imm.	imm.	>480	>480	>480	>480
		Dichloropentane (>95%)	628-76-2	Liquid											
		Dichloropropene, 1,3- (>95%)	542-75-6	Liquid				imm.	imm.	25	25		imm.		
		Dichloropropene, 2,3- (>95%)	78-88-6	Liquid						25	25	>480	>480	>480	>480
		Diiodo-1,1,2,2-tetrafluorobutane, 1,4- (>95%)	755-95-3	Liquid								>480	>480	>480	>480
		Epichlorohydrin (>95%)	106-89-8	Liquid				15	67	372	372	>480	>480	>480	>480
		Ethyl chloride (>95%)	75-00-3	Liquid										>480	
		Ethylene dibromide (>95%)	106-93-4	Liquid					>480	288	288	>480	>480	>480	>480
		Ethylene dichloride (>95%)	107-06-2	Liquid				imm.	>480	93	93	>480	>480	>480	>480
		Hexafluoroethane (>95%)	76-16-4	Vapor								>480	>480	>480	>480
		Hexafluoroisobutylene (>95%)	382-10-5	Vapor								>480	>480	>480	>480
		Lindane (sat. sol. in methanol)	58-89-9	Liquid										>480	
		Lindane (sat. sol. in acetone)	58-89-9	Liquid								>480	>480	>480	>480
		Methyl bromide (>95%)	74-83-9	Vapor				>480				>480	>480	>480	>480
		Methyl chloride (>95%, gas)	74-87-3	Vapor			imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Methyl chloride (>95%, liquid, -70° C)	74-87-3	Liquid										>180	
		Methyl fluoride (>95%)	593-53-3	Vapor								>480	>480	>480	>480
		Methyl iodide (>95%)	74-88-4	Liquid				imm.		296	296	>480	>480	>480	>480
		Methylene bromide (>95%)	74-95-3	Liquid					40	imm.	imm.				
		Propylbromide, n- (>95%)	106-94-5	Liquid				12	>480				12		
		Propylene dichloride (>95%)	78-87-5	Liquid								>480	>480	>480	>480
		Refrigerant 141B (>95%)	1717-00-6	Liquid											
		Tetrachloroethane, 1,1,2,2- (>95%)	79-34-5	Liquid				98	>480	>480	>480	>480	>480	>480	>480
		Tetrafluoroethane, 1,1,1,2- (>95%)	811-97-2	Liquid				>480					>480		
		Tetrafluoromethane (>95%)	75-73-0	Vapor								>480	>480	>480	>480
		Trichloro-1,2,2-trifluoroethane, 1,1,2- (>95%)	76-13-1	Vapor					>480			>480	>480	>480	>480
		Trichloro-1,2,2-trifluoroethane, 1,1,2- (>95%)	76-13-1	Liquid											

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Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Trichloroacetone, 1,1,3- (>95%)	921-03-9	Liquid						>480	>480				
		Trichloroethane, 1,1,1- (>95%)	71-55-6	Liquid					>480		>480	>480	>480	>480	>480
		Trichloroethane, 1,1,2- (>95%)	79-00-5	Liquid						232		>480	>480	>480	>480
		Trifluoroacetic acid (>95%)	76-05-1	Liquid				>480		>480	>480		>480		
		Trifluoromethane (>95%)	75-46-7	Vapor								>480	>480	>480	>480
	263 Aromatic														
		Benzene, Dichloro-4-Trifluoro (>95%)	328-84-7	Liquid											
		Benzotrichloride (>95%)	98-07-7	Liquid					>480						
		Bromofluorobenzene, 4- (>95%)	460-00-4	Liquid					>480	>480	>480	>480	>480	>480	>480
		Chloro-benzotrifluoride, 4- (>95%)	98-56-6	Liquid					460						
		Chlorobenzene (>95%)	108-90-7	Liquid				imm.	63	>480	>480	>480	>480	>480	>480
		Chlorobenzotrichloride, 4- (>95%)	5216-25-1	Liquid					>480						
		Chlorophenol, 4- (sat. sol. in methanol)	106-48-9	Liquid								>480	>480	>480	>480
		Chlorotoluene, o- (>95%)	95-49-8	Liquid				13		>480	>480	>480	>480	>480	>480
		Cyanuric chloride (20%, Toluene 80%)	108-77-0	Liquid								>480	>480	>480	>480
		Dichloroaniline, 3,4- (solid)	95-76-1	Solid								>480	>480**	>480	>480
		Dichloroaniline, 3,4- (>95%, liquid, 70° C)	95-76-1	Liquid				imm.				284	284	284	284
		Dichlorobenzene, 1,2- (>95%)	95-50-1	Liquid				76	>480	>480		>480	>480	>480	>480
		Dichlorobenzene, 1,3- (>95%)	541-73-1	Liquid				45	>480	>480		>480	>480	>480	>480
		Dichlorobenzene, 1,4 (50% solution in Ethanol)	106-46-7	Liquid				>480	131	>480		>480	>480	>480	>480
		Fluorobenzene (>95%)	462-06-6	Liquid				imm.	>480	>480	>480	>480	>480	>480	>480
		Nitrochlorobenzene, o-	88-73-3	Solid			15								
		Nitrochlorobenzene, p-	100-00-5	Solid			imm.								
		PCB (50% in trichlorobenzene)	mixture	Liquid					>480			>480	>480	>480	>480
		PCB 1254 (90%)	11097-69-1	Liquid			55	>480					>480		
		PCB 1254 (>95%)	11097-69-1	Liquid											
		PCB 1254 (50% in mineral oil)	mixture	Liquid				>480					>480		
		PCB gas condensate (>95%)	mixture	Liquid						>480	>480				
		PCB in transformer oil (>95%)	mixture	Liquid						>480	>480				
		Tetrachloro-bisphenol -A, 2,2',6,6'	79-95-8	Solid						>480	>480				
		Trichlorobenzene, 1,2,4- (>95%)	120-82-1	Liquid			imm.	87	>480	>480	>480	>480	>480	>480	>480
		Triflouromethylbenzene (>95%)	98-08-8	Liquid											
	264 Vinylic														
		Chloroacrylonitrile, 2- (>95%)	920-37-6	Liquid						>480	>480				
		Hexachlorobutadiene (>95%)	87-68-3	Liquid								>480	>480	>480	>480
		Tetrachloroethylene, 1,1,2,2- (>95%)	127-18-4	Liquid			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
		Trichloroethylene (>95%)	79-01-6	Liquid				imm.	>480	>480	>480	>480	>480	>480	>480
		Vinyl chloride (>95%, gas)	75-01-4	Vapor				>480	>480	>480	>480	>480	>480	>480	>480
		Vinylidene chloride (>95%)	75-35-4	Liquid					170	>480	>480	>480	>480	>480	>480

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Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		trans-1,4-Dichloro-2-butene (>95%)	110-57-6	Liquid			75*								
	265 Alylic														
		Allyl chloride (>95%)	107-05-1	Liquid				imm.	12	447	447	>480	>480	>480	>480
	266 Benzylic														
		Benzyl chloride (>95%)	100-44-7	Liquid					>480	>480	>480	>480	>480	>480	>480
270 Heterocyclic Compounds															
	271 Nitrogen, Pyridines														
		Aminopyridine, 2- (saturated solution)	504-29-0	Liquid				>480					>480		
		Nicotine (>95%)	54-11-5	Liquid					>480	>480	>480	>480	>480	>480	>480
		Picoline, 2- (>95%)	109-06-8	Liquid					>480	>480	>480	>480	>480	>480	>480
		Picoline, 3- (>95%)	108-99-6	Liquid					>480	>480	>480	>480	>480	>480	>480
		Pyridine (>95%)	110-86-1	Liquid				31	>480	>480	>480	>480	>480	>480	>480
		Vinylpyridine, 4- (>95%)	100-43-6	Liquid				15					15		
	274 Nitrogen, Others														
		Aminoethylpiperazine (>95%)	140-31-8	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Dichloro-6-isopropyl-S-triazine, 2,4- (22% in toluene)	30894-74-7	Liquid								>480	>480	>480	>480
		Ethyleneimine (>95%)	151-56-4	Liquid								59	59	>480	59
		Propylene imine (>95%)	75-55-8	Liquid								150	150	150	150
		Pyrrolidine (>95%)	123-75-1	Liquid						100	100	413	413	413	413
		Vinyl Pyrrolidinone (>95%)	88-12-0	Liquid											
	275 Oxygen, Epoxides														
		Bisphenol-A diglycidyl ether (>95%)	1675-54-3	Liquid				>480		>480	>480	>480	>480	>480	>480
		Epichlorohydrin (>95%)	106-89-8	Liquid				15	67	372	372	>480	>480	>480	>480
		Ethylene oxide (>95%, gas)	75-21-8	Vapor			imm.	imm.	>480	126	>480	>480	>480	>480	>480
		Ethylene oxide (>95%, liquid, 11° C)	75-21-8	Liquid					18						
		Ethylene oxide (>95%, liquid, 0° C)	75-21-8	Liquid								>480	>480	>480	>480
		Ethylene oxide (>95%, liquid, -70° C)	75-21-8	Liquid										>180	
		Ethylene oxide mixture (10% in HCFC 124)	mixture	Vapor										>480	
		Phenyl glycidyl ether (>95%)	122-60-1	Liquid				>480					>480		
		Propylene oxide, 1,2- (>95%)	75-56-9	Liquid					30	14	20	>480	>480	>480	>480
		Tetramethylethylene oxide (>95%)	5076-20-0	Liquid										>480	
	277 Oxygen, Furans														
		Furfural (>95%)	98-01-1	Liquid				227	>480	>480	>480	>480	>480	>480	>480
	278 Oxygen, Others														
		Diketene Acetone (>95%)	5394-63-8	Liquid						>480					
		Dioxane, 1,4- (>95%)	123-91-1	Liquid					>480	>480	>480	>480	>480	>480	>480
280 Hydrazines															
	280 Hydrazines - All														
		Dimethylhydrazine, 1,1- (>95%)	57-14-7	Liquid				13				>480*	>480*	>480*	>480*

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Hydrazine (85%)	302-01-2	Liquid											
		Hydrazine (>95%)	302-01-2	Liquid				>480		283	283	>480	>480	>480	>480
		Hydrazine hydrate (50%)	10217-52-4	Liquid										>480	
		Hydrazine hydrate (>95%)	10217-52-4	Liquid											>480
		Hydrazine hydrate (85%)	10217-52-4	Liquid								440	440	440	440
		Methyl hydrazine (>95%)	60-34-4	Liquid						283	283	>480	>480	>480	>480
290	**Hydrocarbons**														
	290	**Hydrocarbons - All**													
		Diethylbenzene (>95%)	25340-17-4	Liquid				31		>480	>480	>480	>480	>480	>480
	291	**Aliphatic and Alicyclic, Saturated**													
		Cyclohexane (>95%)	110-82-7	Liquid					>480	>480	>480	>480	>480	>480	>480
		Diesel automotive test fuel (>95%)	mixture	Liquid			imm.								
		Diesel fuel (>95%)	68334-30-5	Liquid				48	199	>480	>480	>480	>480	>480	>480
		Fuel oil (>95%)	68476-30-2	Liquid			imm.	>480					>480		
		Gasoline (>95%)	86290-81-5	Liquid				imm.	>480	30	30	>480	>480	>480	>480
		Gasoline, E-10 (>95%)	308066-70-8	Liquid				16					16		
		Heptane (>95%)	142-82-5	Liquid					>480						
		Hexane, n- (>95%)	110-54-3	Liquid			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
		JP-4 jet fuel (>95%)	50815-00-4	Liquid				imm.				>480	>480	>480	>480
		JP-8 jet fuel (>95%)	94114-58-6	Liquid				58				>480	>480	>480	>480
		Kerosene (>95%)	8008-20-6	Liquid				58	>480	>480	>480	>480	>480	>480	>480
		Mineral oil (>95%)	8012-95-1	Liquid				>480					>480		
		Mineral spirits (>95%)	64475-85-0	Liquid			imm.	190				>480	>480	>480	>480
		Octane, n- (>95%)	111-65-9	Liquid								>480	>480	>480	>480
		Pentane (>95%)	109-66-0	Liquid											
		Propane (>95%)	74-98-6	Vapor											>480
		Stoddard solvent (>95%)	8052-41-3	Liquid								>480	>480	>480	>480
		VM&P Naphtha (>95%)	8030-30-6	Liquid				imm				>480	>480	>480	>480
	292	**Aromatic**													
		Benzene (>95%)	71-43-2	Liquid				imm.	>480	>480	>480	>480	>480	>480	>480
		Cumene (>95%)	98-82-8	Liquid					364	>480	>480	>480	>480	>480	>480
		Divinyl Benzene (>95%)	1321-74-0	Liquid											
		Ethyl benzene (>95%)	100-41-4	Liquid				imm.	>480	>480	>480	>480	>480	>480	>480
		Naphtha (>95%)	8032-32-4	Liquid											
		P-Tert Butyl Toluene (>95%)	98-51-1	Liquid											
		Styrene (>95%)	100-42-5	Liquid				16	>480	>480	>480	>480	>480	>480	>480
		Toluene (>95%)	108-88-3	Liquid			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
		Xylene, mixed isomers (>95%)	1330-20-7	Liquid					>480	>480	>480	>480	>480	>480	>480
		Xylene, o- (>95%)	95-47-6	Liquid					>480						

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Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
	293	**Aromatic Polynuclear**													
		Anthracene (sat. sol. in toluene)	120-12-7	Liquid					>480	>480	>480				
		Naphthalene	91-20-3	Solid					>480	>480	>480				
		Naphthalene (25% solution in Diethylene glycol dimethyl ether)	91-20-3	Liquid				79	>480	>480		>480	>480	>480	>480
	294	**Aliphatic and Alicyclic, Unsaturated**													
		Crude oil (>95%)	8002-05-9	Liquid			imm.	>480				>480	>480	>480	>480
		Hexene, 1- (>95%)	592-41-6	Liquid											
		Turpentine (>95%)	8006-64-2	Liquid											
	296	**Polyenes**													
		Butadiene, 1,3- (>95%, liquid, 0° C)	106-99-0	Liquid										>180	
		Butadiene, 1,3- (>95%, gas)	106-99-0	Vapor			imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Cyclooctadiene (>95%)	1552-12-1	Liquid					>480						
		Turpentine (>95%)	8006-64-2	Liquid											
		d-Limonene (>95%)	5989-27-5	Liquid					>480	>480	>480	>480	>480	>480	>480
300		**Peroxides**													
	300	**Peroxides - All**													
		Hydrogen peroxide (30%)	7722-84-1	Liquid			>480	>480					>480	>480	
		Hydrogen peroxide (70%)	7722-84-1	Liquid		>480	>480			>480		>480	>480	>480	>480
		Hydrogen peroxide (50%)	7722-84-1	Liquid			>480		>480	>480	>480				
310		**Hydroxylic Compounds (includes alcohols)**													
	311	**Aliphatic and Alicyclic, Primary**													
		2-(2-Butoxyethoxy)-ethanol (>95%)	112-34-5	Liquid						>480					
		Allyl alcohol (>95%)	107-18-6	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Aminoethylethanolamine (60%)	111-41-1	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Aminoethylethanolamine (>95%)	111-41-1	Liquid				imm.	>480	>480	>480	>480	>480	>480	>480
		Butanol, n- (>95%)	71-36-3	Liquid			imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Ethanolamine (>95%)	141-43-5	Liquid					>480	>480	>480	>480	>480	>480	>480
		Ethyl alcohol (>95%)	64-17-5	Liquid	imm			>480	>480		>480		>480		
		Isobutanol (>95%)	78-83-1	Liquid											
		Mercaptoethanol (>95%)	60-24-2	Liquid						>480	>480			>480	
		Methanol (>95%)	67-56-1	Liquid			imm.	>480	imm.	117	>480	185	>480	>480	>480
		Methyl Cellosolve® (>95%)	109-86-4	Liquid				>480	405	>480	>480	>480	>480	>480	>480
		Octanol N- (>95%)	111-87-5	Liquid											
		Pentanol, n- (>95%)	71-41-0	Liquid					>480	>480	>480				
		Propanol N- (>95%)	71-23-8	Liquid											
		Propargyl alcohol (>95%)	107-19-7	Liquid						123	123			>480	
	312	**Aliphatic and Alicyclic,Secondary**													
		Benzyl alcohol (>95%)	100-51-6	Liquid				>480		>480			>480		

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Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Cyclohexanol (>95%)	108-93-0	Liquid											
		Ethyl Butanol (>95%)	97-95-0	Liquid											
		Isoamyl alcohol (>95%)	123-51-3	Liquid				>480					>480		
		Isobutanol (>95%)	78-83-1	Liquid											
		Isopropyl alcohol (70%)	67-63-0	Liquid	imm		imm.	>480			>480				
		Isopropyl alcohol (>95%)	67-63-0	Liquid	imm		imm.	>480	>480	>480	>480	>480	>480	>480	>480
	313	**Aliphatic and Alicyclic, Tertiary**													
		Acetone cyanohydrin (>95%)	75-86-5	Liquid						>480	>480	>480	>480	>480	>480
		Butanol tert. (>95%)	75-65-0	Liquid						205					
	314	**Aliphatic and Alicyclic, Polyols**													
		Chloro-1,2-propanediol, 3- (>95%)	96-24-2	Liquid								>480	>480	>480	>480
		Diethylene Glycol (>95%)	111-46-6	Liquid											
		Ethylene glycol (>95%)	107-21-1	Liquid	imm		>480	>480		>480	>480	>480	>480	>480	>480
		Propylene Glycol (>95%)	57-55-6	Liquid											
	315	**Aliphatic and Alicyclic, Substituted**													
		Chloroethanol, 2- (>95%)	107-07-3	Liquid			imm.		>480	>480	>480	>480	>480	>480	>480
		Trichloroethanol, 2,2,2- (>95%)	115-20-8	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Trifluoroethanol, 2,2,2- (>95%)	75-89-8	Liquid			imm.					>480	>480	>480	>480
	316	**Aromatic, Phenols**													
		Chlorophenol, 4- (sat. sol. in methanol)	106-48-9	Liquid								>480	>480	>480	>480
		Creosote (>95%)	8001-58-9	Liquid						>480	>480				
		Cresol, mixed isomers (>95%)	1319-77-3	Liquid			40*	100		>480		>480	>480	>480	>480
		Cresol, o- (>95%)	95-48-7	Liquid			37	>480	330	180	180		>480		
		Dinitrocresol (sat. sol. in methanol)	534-52-1	Liquid								>480	>480	>480	>480
		Nitrophenol, o- (>95% at 70° C)	88-75-5	Liquid				imm.				208	208	208	208
		Nitrophenol, p- (>95% at 60° C)	100-02-7	Liquid				imm.					imm.		
		Pentachlorophenol (sat. sol. in methanol)	87-86-5	Liquid								>480	>480	>480	>480
		Pentachlorophenol (5% in Kerosene)	87-86-5	Liquid											
		Phenol (>95% at 45° C)	108-95-2	Liquid				44	17	25	25	101	101	>480	>480
		Phenol (85%)	108-95-2	Liquid			imm.	>480	341	>480	>480	>480	>480	>480	>480
		Phenol (85% at 45° C)	108-95-2	Liquid								113	149	>480	>480
		Phenol (>95% at 60° C)	108-95-2	Liquid				imm.	imm.			25		125	87
		Phenol (89%)	108-95-2	Liquid											
		Tetrachloro-bisphenol -A, 2,2',6,6'	79-95-8	Solid						>480	>480				
		m-Cresol 55%, p-Cresol 30%, Phenol 15% (>95%)	mixture	Liquid								>480	>480	>480	>480
	318	**Aromatic, Others**													
		Phenethyl alcohol, 2- (>95%)	60-12-8	Liquid					>480						
		Phenylethanol, 1- (>95%)	98-85-1	Liquid				>480	>480	>480		>480	>480	>480	>480
330	**Elements**														

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Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
	330 Elements - All														
		Bromine (>95%)	7726-95-6	Liquid			imm.		imm.	imm.	imm.	imm.	imm.	15	imm.
		Bromine (>95%, 10 g/m² coverage)	7726-95-6	Liquid										>480	
		Bromine (sat. vapor)	7726-95-6	Vapor										40	
		Chlorine (>95%, liquid, -70° C)	7782-50-5	Liquid					>480					>480	>480
		Chlorine (>95%, gas)	7782-50-5	Vapor			imm.	>480	imm.	>480	>480	>480	>480	>480	>480
		Chlorine (gas, 20 ppm)	7782-50-5	Vapor			>480*								
		Iodine (5% in carbon tetrachloride)	7553-56-2	Liquid				>480					>480		
		Iodine	7553-56-2	Solid			>420*, **								
		Mercury (>95%)	7439-97-6	Liquid			>480	>480	>480	>480	>480	>480	>480	>480	>480
340 Inorganic Salts and Inorganic Salt Solutions															
	340 Inorganic Salts and Inorganic Salt Solutions - All														
		Ammonium Bifluoride (saturated solution)	1341-49-7	Liquid						>480					
		Ammonium chloride (sat. sol. in water)	12125-02-9	Liquid					>480						
		Ammonium fluoride (40%)	12125-01-8	Liquid								>480	>480	>480	>480
		Arsenic trichloride (>95%)	7784-34-1	Liquid						38	38				
		Ferric chloride (50% w/w in water)	7705-08-0	Liquid				>480					>480		
		Ferrous chloride (50% w/w in water)	7758-94-3	Liquid				>480					>480		
		Lithium chloride (20%)	7447-41-8	Liquid			>480								
		Mercuric chloride (sat. sol. in water)	7487-94-7	Liquid				>480		>480	>480	>480*	>480*	>480*	>480*
		Potassium acetate (sat. sol. in water)	127-08-2	Liquid				>480				>480*	>480*	>480*	>480*
		Potassium carbonate (>95%)	584-08-7	Liquid					>480						
		Potassium chromate (sat. sol. in water)	7789-00-6	Liquid				>480		>480	>480	>480*	>480*	>480*	>480*
		Potassium permanganate (>95%)	7722-64-7	Liquid			>480								
		Sodium fluoride (sat. sol. in water)	7681-49-4	Liquid				>480					>480		
		Sodium hypochlorite (15%)	7681-52-9	Liquid	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Sodium hypochlorite (4-6%)	7681-52-9	Liquid											
		Sodium hypochlorite (30%)	7681-52-9	Liquid					>480	>480	>480				
		Sodium hypochlorite (6%)	7681-52-9	Liquid	>480		>480								
		Sodium metabisulfite (38% w/w in water)	7681-57-4	Liquid			imm	>480	23			>480	>480	>480	>480
		Sodium silicate (40-42% in water)	6834-92-0	Liquid			>480								
		Sodium sulfide (60% w/w in water slurry)	1313-82-2	Liquid			>480	>480	>480			>480	>480	>480	>480
	345 Inorganic Cyano Compounds														
		Cyanogen chloride (>95%)	506-77-4	Vapor							>480			>60	>60
		Hydrogen cyanide (>95%, gas)	74-90-8	Vapor					30		>480	>480	>480	>480	>480
		Hydrogen cyanide (>95%, liquid, 21° C)	74-90-8	Liquid								105	105	>480	105
		Potassium cyanide (10%)	151-50-8	Liquid			>480								
		Sodium cyanide (sat. sol. in water)	143-33-9	Liquid				>480					>480		
		Sodium cyanide (45% in water)	143-33-9	Liquid						>480	>480				

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					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
350	**Inorganic Gases and Vapors**														
	350	**Inorganic Gases and Vapors - All**													
		Ammonia (>95%, liquid, < -35°C)	7664-41-7	Liquid					>480		>480			>480	>480
		Ammonia (>95%, gas)	7664-41-7	Vapor			imm.	26	imm.	20	90	133	>480	>480	>480
		Arsine (>95%)	7784-42-1	Vapor								>480	>480	>480	>480
		Boron trichloride (>95%)	10294-34-5	Vapor								>480	>480	>480	>480
		Boron trifluoride (>95%)	7637-07-2	Vapor								>480	>480	>480	>480
		Carbon monoxide (>95%)	630-08-0	Vapor								330	330	330	330
		Chlorine (>95%, liquid, -70° C)	7782-50-5	Liquid					>480					>480	>480
		Chlorine (>95%, gas)	7782-50-5	Vapor			imm.	>480	imm.	>480	>480	>480	>480	>480	>480
		Chlorine (gas, 20 ppm)	7782-50-5	Vapor			>480*								
		Chlorine dioxide (1000 ppm)	10049-04-4	Vapor								>480	>480	>480	>480
		Chlorine dioxide (150 ppm)	10049-04-4	Vapor								>480	>480	>480	
		Chlorine trifluoride (>95%)	7790-91-2	Vapor								45	45	45	45
		Diborane (10%)	19287-45-7	Vapor								>480	>480	>480	>480
		Fluorine (>95%)	7782-41-4	Vapor										>480	
		Hydrogen bromide (>95%, gas)	10035-10-6	Vapor						>480	>480	>480	>480	>480	>480
		Hydrogen chloride (>95%, gas)	7647-01-0	Vapor			imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Hydrogen chloride (>95%, liquid, -90° C)	7647-01-0	Liquid										>180	
		Hydrogen cyanide (>95%, liquid, 21° C)	74-90-8	Liquid								105	105	>480	105
		Hydrogen cyanide (>95%, gas)	74-90-8	Vapor					30		>480	>480	>480	>480	>480
		Hydrogen fluoride (>95%, gas)	7664-39-3	Vapor			imm.	35	170	imm.	imm.	135	135	>480	>480
		Hydrogen selenide (>95%)	7783-07-5	Vapor								>480	>480	>480	>480
		Hydrogen sulfide (>95%)	7783-06-4	Vapor					imm.	>480	>480	>480	>480	>480	>480
		Nitric oxide (>95%)	10102-43-9	Vapor										>480	
		Nitrogen dioxide (>95%)	10102-44-0	Vapor				>480		14	14		>480		
		Nitrogen tetroxide (>95%, liquid, 21° C)	10544-72-6	Liquid										450	
		Nitrogen tetroxide (>95%, gas)	10544-72-6	Vapor								90	90	90	420
		Nitrogen tetroxide (95%, liquid, 0° C)	10544-72-6	Liquid								>480	>480	>480	>480
		Nitrogen trifluoride (>95%)	7783-54-2	Vapor								>480	>480	>480	>480
		Nitrous oxide (>95%)	10024-97-2	Vapor								>480	>480	>480	>480
		Phosgene (>95%)	75-44-5	Vapor					>480	>480	>480	>480	>480	>480	>480
		Phosphine (>95%)	7803-51-2	Vapor						imm.	imm.	>480	>480	>480	>480
		Sulfonyl chloride (>95%)	7791-25-5	Liquid					120	>480	>480	>480	>480	>480	>480
		Sulfur dioxide (>95%)	7446-09-5	Vapor			imm.	>480		38*	38*	>480	>480	>480	>480
		Sulfur hexafluoride (>95%)	2551-62-4	Vapor								>480	>480	>480	>480
		Tungsten hexafluoride (>95%)	7783-82-6	Liquid								>480	>480	>480	>480
360	**Inorganic Acid Halides**														
	360	**Inorganic Acid Halides - All**													

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Antimony pentachloride (>95%)	7647-18-9	Liquid				>480		15	15		>480		
		Boron trichloride (>95%)	10294-34-5	Vapor								>480	>480	>480	>480
		Boron trifluoride (>95%)	7637-07-2	Vapor								>480	>480	>480	>480
		Phosphorus oxychloride (>95%)	10025-87-3	Liquid					410	>480	>480	>480	>480	>480	>480
		Phosphorus trichloride (>95%)	7719-12-2	Liquid				imm.	>480	>480	>480	>480	>480	>480	>480
		Silicon tetrachloride (>95%)	10026-04-7	Liquid				35	>480	>480	>480	>480	>480	>480	>480
		Sulfonyl chloride (>95%)	7791-25-5	Liquid					120	>480	>480	>480	>480	>480	>480
		Thionyl chloride (>95%)	7719-09-7	Liquid					15	21	21	35	35	90	35
		Titanium tetrachloride (>95%)	7550-45-0	Liquid				imm.	120	>480	>480	>480	>480	>480	>480
		Vanadium tetrachloride (>95%)	7632-51-1	Liquid							>480				
	365	**Inorganic Acid Oxides**													
		Sulfur dioxide (>95%)	7446-09-5	Vapor			imm.	>480		38*	38*	>480	>480	>480	>480
		Sulfur trioxide (>95%)	7446-11-9	Liquid					imm.			90	90	90	90
370	**Inorganic Acids**														
	370	**Inorganic Acids - All**													
		Chlorosulfonic acid (>95%)	7790-94-5	Liquid				>480	330	>480	17	180	>480	>480	180
		Chromic acid (60-62%)	1333-82-0	Liquid		>480	>480	>480					>480		
		Fluoroboric acid (48-50%)	16872-11-0	Liquid				>480	>480				>480		
		Fluorosilicic acid (>95%)	16961-83-4	Liquid					>480	>480		>480	>480	>480	>480
		Fluorosulfonic acid (>95%)	7789-21-1	Liquid								>480	>480	>480	>480
		Hydriodic acid (47%)	10034-85-2	Liquid				>480					>480		
		Hydriodic acid (55-57%)	10034-85-2	Liquid					>480	>480	>480	>480	>480	>480	>480
		Hydrobromic acid (48-49%)	10035-10-6	Liquid					>480						
		Hydrochloric acid (16%)	7647-01-0	Liquid	imm										
		Hydrochloric acid (37%)	7647-01-0	Liquid		54	140	>480	>480	>480	>480	>480	>480	>480	>480
		Hydrochloric acid (32%)	7647-01-0	Liquid	imm										
		Hydrochloric acid (10%)	7647-01-0	Liquid											
		Hydrofluoric acid (48-51%)	7664-39-3	Liquid		400	400	>480	180	>480	15	>480	>480	>480	>480
		Hydrofluoric acid (70%)	7664-39-3	Liquid				143	126	35		>480	>480	>480	>480
		Hydrofluoric acid (10%)	7664-39-3	Liquid	imm										
		Hydrofluoric acid (60%)	7664-39-3	Liquid						52					
		Hydrogen bromide (>95%, gas)	10035-10-6	Vapor						>480	>480	>480	>480	>480	>480
		Hydrogen cyanide (>95%, liquid, 21° C)	74-90-8	Liquid								105	105	>480	105
		Hydrogen cyanide (>95%, gas)	74-90-8	Vapor					30		>480	>480	>480	>480	>480
		Hydrogen fluoride (>95%, gas)	7664-39-3	Vapor			imm.	35	170	imm.	imm.	135	135	>480	>480
		Hypophosphorus acid (50%)	6303-21-5	Liquid					>480	>480	>480				
		Nitric acid (50%)	7697-37-2	Liquid							>480				
		Nitric acid (70%)	7697-37-2	Liquid		203	>480	>480		>480	140	>480	>480	>480	>480
		Nitric acid (23%)	7697-37-2	Liquid											

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Nitric acid (90%)	7697-37-2	Liquid					>480			>480	>480	>480	>480
		Nitric acid (65%)	7697-37-2	Liquid											
		Nitric acid, red fuming (>95%)	52583-42-3	Liquid					>480	14	imm	>480	>480	>480	>480
		Oleum (30% free SO3)	8014-95-7	Liquid				450					450		
		Oleum (103% (13% free SO3))	8014-95-7	Liquid			230							>480	
		Oleum (65% free SO3)	8014-95-7	Liquid					15	248				>480	
		Oleum (40% free SO3)	8014-95-7	Liquid			398*			468		>480	>480	>480	>480
		Oleum (20% free SO3)	8014-95-7	Liquid				>480		>480	59		>480		
		Perchloric acid (70%)	7601-90-3	Liquid								>480	>480	>480	>480
		Phosphoric acid (85%)	7664-38-2	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
		Phosphoric acid (50%)	7664-38-2	Liquid											
		Sulfamic acid (15%)	5329-14-6	Liquid			>480					>480	>480	>480	>480
		Sulfuric acid (>95%)	7664-93-9	Liquid		>480	>480	>480	>480	>480	50	>480	>480	>480	>480
		Sulfuric acid (50%)	7664-93-9	Liquid							>480				
		Sulfuric acid (30%)	7664-93-9	Liquid	>480						>480				
		Sulfuric acid (18%)	7664-93-9	Liquid											
		Sulfuric acid (70%)	7664-93-9	Liquid							>480				
		Sulfuric acid (47%)	7664-93-9	Liquid											
380	**Inorganic Bases**														
	380	**Inorganic Bases - All**													
		Ammonia (>95%, gas)	7664-41-7	Vapor			imm.	26	imm.	20	90	133	>480	>480	>480
		Ammonia (>95%, liquid, < -35°C)	7664-41-7	Liquid					>480		>480			>480	>480
		Ammonium hydroxide (28%-30%)	1336-21-6	Liquid			imm.	>480	89	>480	35	160	>480	>480	>480
		Ammonium hydroxide (16%)	1336-21-6	Liquid	imm										
		Ammonium hydroxide (2-3% in household cleaner)	1336-21-6	Liquid				>480			>480		>480		
		Lithium hydroxide (14.9%)	1310-65-2	Liquid		>480	>480								
		Potassium hydroxide (45%)	1310-58-3	Liquid		>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Sodium hydroxide (50%)	1310-73-2	Liquid	48	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Sodium hydroxide (40%)	1310-73-2	Liquid											
		Sodium hydroxide (10%)	1310-73-2	Liquid	>480										
390	**Ketones**														
	390	**Ketones - All**													
		Diketene Acetone (>95%)	5394-63-8	Liquid						>480					
	391	**Aliphatic and Alicyclic**													
		Acetone (>95%)	67-64-1	Liquid			imm.	imm.	>480	>480	>480	>480	>480	>480	>480
		Chloroacetone (>95%)	78-95-5	Liquid				258	>480	>480	>480		258		
		Cyclohexanone (>95%)	108-94-1	Liquid				136		>480	>480	>480	>480	>480	>480
		Di-Isobutyl Ketone (>95%)	108-83-8	Liquid											
		Diacetone Alcohol (>95%)	123-42-2	Liquid											

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Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Dichloroacetone (>95% at 40° C)	534-07-6	Liquid										>480	
		Dichloroacetone (>95% at 45° C)	534-07-6	Liquid						>480	>480				
		Hexone (>95%)	108-10-1	Liquid					>480	>480	>480	>480	>480	>480	>480
		Mesityl oxide (>95%)	141-79-7	Liquid					>480						
		Methyl Isopropyl Ketone (>95%)	563-80-4	Liquid											
		Methyl Propyl Ketone (>95%)	107-87-9	Liquid											
		Methyl ethyl ketone (>95%)	78-93-3	Liquid				18	>480	71	71	>480	>480	>480	>480
		Trichloroacetone, 1,1,3- (>95%)	921-03-9	Liquid						>480	>480				
430	**Nitriles**														
	431	**Aliphatic and Alicyclic**													
		Acetone cyanohydrin (>95%)	75-86-5	Liquid						>480	>480	>480	>480	>480	>480
		Acetonitrile (>95%)	75-05-8	Liquid			imm.	60	imm.	131	>480	>480	>480	>480	>480
		Acrylonitrile (>95%, 10 g/m² coverage)	107-13-1	Liquid								>480	>480	>480	>480
		Acrylonitrile (>95%)	107-13-1	Liquid			imm.	48	13	12	12	>480	>480	>480	>480
		Adiponitrile (>95%)	111-69-3	Liquid					>480	>480	>480	>480	>480	>480	>480
		Chloroacrylonitrile, 2- (>95%)	920-37-6	Liquid						>480	>480				
		Methyl-1,5-pentantedinitrile, 2- (>95%)	4553-62-2	Liquid						>480	>480				
		Methyl-1,5-pentantedinitrile, 2- (87%)	4553-62-2	Liquid								>480	>480		
		Pentenenitrile, 2- (>95%)	13284-42-9	Liquid						>480	>480				
		Pentenenitrile, 3- (>95%)	4635-87-4	Liquid								>480	>480	>480	>480
		cis-2-Pentenenitrile (70%)	25899-50-7	Liquid								>480	>480	>480	>480
	432	**Aromatic**													
		Benzonitrile (>95%)	100-47-0	Liquid					450	>480	>480	>480	>480	>480	>480
		Benzyl cyanide (>95%)	140-29-4	Liquid					>390	>390	>390				
440	**Nitro Compounds**														
	441	**Unsubstituted**													
		Nitrobenzene (>95%)	98-95-3	Liquid			imm.	59	>480	>480	>480	>480	>480	>480	>480
		Nitromethane (>95%)	75-52-5	Liquid						229	229	>480	>480	>480	>480
		Nitropropane, 2- (>95%)	79-46-9	Liquid					>480	>480	>480	>480	>480	>480	>480
	442	**Substituted**													
		Dinitrocresol (sat. sol. in methanol)	534-52-1	Liquid								>480	>480	>480	>480
		Nitrochlorobenzene, o-	88-73-3	Solid			15								
		Nitrochlorobenzene, p-	100-00-5	Solid			imm.								
		Nitrophenol, o- (>95% at 70° C)	88-75-5	Liquid				imm.				208	208	208	208
		Nitrophenol, p- (>95% at 60° C)	100-02-7	Liquid				imm.					imm.		
		Nitrotoluene, o- (>95%)	88-72-2	Liquid				95					95		
		Nitrotoluene, p-	99-99-0	Solid			imm.								
450	**Nitroso Compounds**														
	450	**Nitroso Compounds - All**													

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Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Dimethyl nitrosamine (>95%)	62-75-9	Liquid						>480	>480				
460	**Organo-Phosphorus Compounds**														
	462	**Derivatives of Phosphorus-based acids**													
		Dimethyl Methyl Phosphonate (>95%)	756-79-6	Liquid											
		Ethyl parathion (>95%)	56-38-2	Liquid								>480	>480	>480	>480
		Malathion (>95%)	121-75-5	Liquid								>480	>480	>480	>480
		Malathion (50% in methanol)	121-75-5	Liquid								>480	>480	>480	>480
		Malathion (50% in water)	121-75-5	Liquid				>480					>480		
		Safrotin (>95%)	31218-83-4	Liquid											
		Sarin (>95%, 10 g/m² coverage)	107-44-8	Liquid				>480	120			>480	>480	>480	>480
		Sarin (>95%, 100 g/m² coverage)	107-44-8	Liquid						>480	>480	>480	>480	>480	>480
		Skydrol 500 B-4 (>95%)	126-73-8	Liquid											
		Skydrol® (>95%)	95660-51-8	Liquid			>480								
		Soman (>95%, 100 g/m² coverage)	96-64-0	Liquid						>480	>480			>480	
		Soman (>95%, 10 g/m² coverage)	96-64-0	Liquid					>480			>480	>480	>480	>480
		Tabun (>95%, 10 g/m² coverage)	77-81-6	Liquid								>480	>480	>480	>480
		Tabun (>95%, 100 g/m² coverage)	77-81-6	Liquid						>480	>480			>480	
		Triethyl Phosphate (>95%)	78-40-0	Liquid											
		Trimethyl phosphate (>95%)	512-56-1	Liquid								>480	>480	>480	>480
		Trimethyl phosphite (>95%)	121-45-9	Liquid				210				>480	>480	>480	>480
		VX Nerve agent (>95%, 100 g/m² coverage)	50782-69-9	Liquid						>480	>480	>480	>480	>480	>480
		VX Nerve agent (>95%, 10 g/m² coverage)	50782-69-9	Liquid				>480	>480			>480	>480	>480	>480
470	**Organo-Metallic Compounds**														
	470	**Organo-Metallic Compounds - All**													
		Dimethyl mercury in decane (100 ppm)	593-74-8	Liquid							>480				
		Lewisite (>95%, 100 g/m² coverage)	541-25-3	Liquid						360	360	120	120	>480	120
		Lewisite (>95%, 10 g/m² coverage)	541-25-3	Liquid				>360	120			>480	>480	>480	>480
		Nickel carbonyl (>95%)	13463-39-3	Liquid										>480	
		Tetraethyl lead (>95%)	78-00-2	Liquid					>480			>480	>480	>480	>480
		Triethylaluminum (>95%)	97-93-8	Liquid											>480
		Vinylmagnesium chloride (16.5% in tetrahydrofuran)	3536-96-7	Liquid								>480	>480	>480	>480
		Vinylmagnesium chloride (15% in tetrahydrofuran)	3536-96-7	Liquid				imm.							
480	**Organo-Silicon Compounds**														
	480	**Organo-Silicon Compounds - All**													
		Dichlorosilane (>95%)	4109-96-0	Vapor								>480	>480	>480	>480
		Dimethyldichlorosilane (>95%)	75-78-5	Liquid				46		>480	>480		46	>480	
		Hexamethyldisilazane (>95%)	999-97-3	Liquid				>480				>480	>480	>480	>480
		Methyl trichlorosilane (>95%)	75-79-6	Liquid						>480	>480	>480	>480	>480	>480
		Silane (>95%)	7803-62-5	Vapor								>480	>480	>480	>480

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					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR
		Silicon tetrachloride (>95%)	10026-04-7	Liquid				35	>480	>480	>480	>480	>480	>480	>480
		Tetraethoxysilane (>95%)	78-10-4	Liquid								>480	>480	>480	>480
		Trichlorophenylsilane (>95%)	98-13-5	Liquid				>480		>480	>480		>480	>480	
		Trichlorosilane (>95%)	10025-78-2	Liquid				60			>480	>480	>480	>480	>480
		Trichlorovinylsilane (>95%)	75-94-5	Liquid				100					100		
500	**Sulfur Compounds**														
	501	**Thiols**													
		Ethyl Mercaptan (>95%)	75-08-1	Liquid				imm.	>480	>480	>480	>480	>480	>480	>480
		Mercaptoethanol (>95%)	60-24-2	Liquid						>480	>480			>480	
		Methyl mercaptan (>95%)	74-93-1	Vapor					>480	>480	>480	>480	>480	>480	>480
		Phenyl mercaptan (>95%)	108-98-5	Liquid										>480	>480
		Thioglycolic acid (>95%)	68-11-1	Liquid					>480	>480	>480	>480	>480	>480	>480
	502	**Sulfides and Disulfides**													
		Carbon disulfide (>95%)	75-15-0	Liquid			imm.	imm.	16	>480	>480	>480	>480	>480	>480
		Chlorine sulfide (80%)	10545-99-0	Liquid					imm.			70	70	>480	70
		Chlorine sulfide (>95%)	10545-99-0	Liquid										440	
		Dimethyl sulfide (>95%)	75-18-3	Liquid						271	271				
		Hydrogen sulfide (>95%)	7783-06-4	Vapor					imm.	>480	>480	>480	>480	>480	>480
		Sulfur monochloride (>95%)	10025-67-9	Liquid					210			>480	>480	>480	>480
		Sulfur mustard (>95%, 100 g/m² coverage)	505-60-2	Liquid						>480	>480	>480	>480	>480	>480
		Sulfur mustard (>95%, 10 g/m² coverage)	505-60-2	Liquid				>480	120			>480	>480	>480	>480
	503	**Sulfones and Sulfoxides**													
		Dimethyl sulfoxide (>95%)	67-68-5	Liquid					>480	36	36	>480	>480	>480	>480
	504	**Sulfonic Acids**													
		Chlorosulfonic acid (>95%)	7790-94-5	Liquid				>480	330	>480	17	180	>480	>480	180
		Methanesulfonic acid (70% in water)	75-75-2	Liquid				>480					>480		
		Trifluoromethane sulfonic acid (>95%)	1493-13-6	Liquid				>480		>480	>480	>480	>480	>480	>480
	505	**Sulfonyl Chlorides**													
		Benzene sulfonyl chloride (>95%)	98-09-9	Liquid					>480	>480	>480	>480	>480	>480	>480
		Methane sulfonyl chloride (>95%)	124-63-0	Liquid								>480	>480	>480	>480
	507	**Sulfonates, Sulfates,and Sulfites**													
		Diethyl sulfate (>95%)	64-67-5	Liquid					>480	>480	>480			>480	
		Dimethyl sulfate (>95%)	77-78-1	Liquid				>480	>480	>480	>480	>480	>480	>480	>480
	509	**Other**													
		Sulfamic acid (15%)	5329-14-6	Liquid			>480					>480	>480	>480	>480
		Sulfur hexafluoride (>95%)	2551-62-4	Vapor								>480	>480	>480	>480
550	**Organic Salts and Organic Salt Solutions**														
	550	**Organic Salts and Organic Salt Solutions - All**													
		Sodium methylate (50% in methanol)	124-41-4	Liquid								>480	>480	>480	>480

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		Tetraethyl Ammonium Hydroxide (35%)	77-98-5	Liquid				>480					>480		
		Tetramethylammonium hydroxide (25%)	75-59-2	Liquid			>480	>480		>480	>480			>480	
590	**Miscellaneous (Not classified)**														
	590	**Miscellaneous (Not classified) - All**													
		Black liquor (>95%)	mixture	Liquid		>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Boron trifluoride dimethyletherate (>95%)	353-42-4	Liquid					>480	>480	>480				
		Boron trifluoride etherate (>95%)	109-63-7	Liquid						>480	>480			>480	
		Chemidize 727 ND (>95%)	mixture	Liquid				>480					>480		
		DuPont Activator 193S (>95%)	mixture	Liquid			>480								
		DuPont Activator 4505S (>95%)	mixture	Liquid			>480								
		DuPont Activator 4507S (>95%)	mixture	Liquid			>480								
		Green liquor (>95%)	mixture	Liquid		>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Tetramethyltin (0.5% in n-pentane)	mixture	Liquid								>480	>480	>480	>480
		White liquor (>95%)	mixture	Liquid		>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
		t-Sodium-amylate / t-amyl alcohol	mixture	Solid								120	120**	120	120
990	**Cytostatic drugs (Active Pharmaceutical Potent Compound)**														
	990	**Cytostatic drugs (Active Pharmaceutical Potent Compound) - All**													
		Carboplatin (10 mg/ml)	441575-94-4	Liquid											
		Carmustine (3.3 mg/ml, 10 % Ethanol)	154-93-8	Liquid	>240***		>240***			>240					
		Cisplatin (1 mg/ml)	15663-27-1	Liquid	>240										
		Cyclophosphamide (20mg/ml)	50-18-0	Liquid	>240		>240								
		Doxorubicin HCl (2 mg/ml)	25136-40-9	Liquid	>240		>241								
		Etoposide (20 mg/ml, 33.2 % (v/v) Ethanol)	33419-42-0	Liquid			>240								
		Fluorouracil, 5- (50 mg/ml, 1 N NH3OH)	51-21-8	Liquid	>240		>240								
		Ganciclovir (3 mg/ml)	82410-32-0	Liquid											
		Gemcitabine (38 mg/ml)	95058-81-4	Liquid											
		Ifosfamide (50 mg/ml)	3778-73-2	Liquid											
		Irinotecan (20 mg/ml)	100286-90-6	Liquid											
		Methotrexate (25 mg/ml, 0.1 N NaOH)	59-05-2	Liquid	>240										
		Mitomycin (0.5 mg/ml)	50-07-7	Liquid	>240										
		Oxaliplatin (5 mg/ml)	63121-00-6	Liquid											
		Paclitaxel (6 mg/ml, 49.7 % (v/v) Ethanol)	33069-62-4	Liquid			>240								
		Sodium chloride (9 g/l)	7647-14-5	Liquid											
		Thiotepa (10 mg/ml)	52-24-4	Liquid	>240***		>240***			>240***					
		Vincristine sulfate (1 mg/ml)	2068-78-2	Liquid											
		Vinorelbine (0.1 mg/ml)	71486-22-1	Liquid											

> = greater than imm. = immediate (<10 minutes) {empty} = not tested L = Liquid G = Gas S = Solid

* Actual breakthrough time; normalized breakthrough time is not available.

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Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)										
					Tyvek® 800J	Tychem® 2000 SFR	Tychem® 2000	Tychem® 4000	Tychem® 5000	Tychem® 6000	Tychem® 6000 FR	Tychem® 9000	Tychem® RESPONDER® CSM	Tychem® 10000	Tychem® 10000 FR

** Solid tested, vapor phase permeation measured.

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Permeation data for Tyvek® Plus and Tyvek® Xpert

DuPont™ Tyvek® fabric provides an ideal balance of protection, durability and comfort. Tyvek® garments are composed of flash spun high density polyethylene fabric which creates a unique, nonwoven material available only from DuPont.

Tyvek® Plus and Tyvek® Xpert garments use a special type of Tyvek® fabric which has different physical properties and improved chemical resistance properties when compared to fabric used in standard Tyvek® garments.

Tyvek® Xpert garments have external sewn seams where the seam thread is visible on the outside of the garment. This seam design, when coupled with the enhanced fabric, offers improved overall garment protection levels. Tyvek® Xpert garments are CE certified to Types 5 & 6 (light liquid aerosols and airborne solid particles).

Tyvek® Plus garments have sewn seams which are over-taped. This seam design, when coupled with the enhanced fabric, offers further improved overall garment protection levels. Tyvek® Plus garments are CE certified to Types 4, 5 & 6 (light and heavy liquid aerosols and airborne solid particles).

NOTE

The permeation data provided in the following table only applies to Tyvek® Xpert and Tyvek® Plus garment fabrics.

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Chemical Permeation Data Table

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)		
					Tyvek® 500	Tyvek® 600	Tyvek® 800J
100	**Carboxylic acids**						
	102	**Aliphatic and Alicyclic, Unsubstituted**					
		Acetic acid (30%)	64-19-7	Liquid	imm	imm	imm
380	**Inorganic Bases**						
	380	**Inorganic Bases - All**					
		Ammonium hydroxide (16%)	1336-21-6	Liquid	imm	imm	imm
		Ammonium hydroxide (28%-30%)	1336-21-6	Liquid	imm	imm	
990	**Cytostatic drugs (Active Pharmaceutical Potent Compound)**						
	990	**Cytostatic drugs (Active Pharmaceutical Potent Compound) - All**					
		Carboplatin (10 mg/ml)	441575-94-4	Liquid		>240	
		Carmustine (3.3 mg/ml, 10 % Ethanol)	154-93-8	Liquid		imm	>240***
		Cisplatin (1 mg/ml)	15663-27-1	Liquid		>240	>240
		Cyclophosphamide (20mg/ml)	50-18-0	Liquid		>240	>240
500	**Sulfur Compounds**						
	507	**Sulfonates, Sulfates,and Sulfites**					
		Dimethyl sulfate (>95%)	77-78-1	Liquid	imm	imm	
990	**Cytostatic drugs (Active Pharmaceutical Potent Compound)**						
	990	**Cytostatic drugs (Active Pharmaceutical Potent Compound) - All**					
		Doxorubicin HCl (2 mg/ml)	25136-40-9	Liquid		>240	>240
310	**Hydroxylic Compounds (includes alcohols)**						
	314	**Aliphatic and Alicyclic, Polyols**					
		Ethylene glycol (>95%)	107-21-1	Liquid	imm	imm	imm
990	**Cytostatic drugs (Active Pharmaceutical Potent Compound)**						
	990	**Cytostatic drugs (Active Pharmaceutical Potent Compound) - All**					
		Etoposide (20 mg/ml, 33.2 % (v/v) Ethanol)	33419-42-0	Liquid		>240	
		Fluorouracil, 5- (50 mg/ml, 1 N NH3OH)	51-21-8	Liquid		imm	>240
100	**Carboxylic acids**						
	102	**Aliphatic and Alicyclic, Unsubstituted**					
		Formic acid (30%)	64-18-6	Liquid	imm	imm	

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Chemical Permeation Data Table

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)		
					Tyvek® 500	Tyvek® 600	Tyvek® 800J
990	**Cytostatic drugs (Active Pharmaceutical Potent Compound)**						
	990	**Cytostatic drugs (Active Pharmaceutical Potent Compound) - All**					
		Ganciclovir (3 mg/ml)	82410-32-0	Liquid		>240	
		Gemcitabine (38 mg/ml)	95058-81-4	Liquid		<60***	
370	**Inorganic Acids**						
	370	**Inorganic Acids - All**					
		Hydrochloric acid (32%)	7647-01-0	Liquid	imm	imm	imm
		Hydrochloric acid (16%)	7647-01-0	Liquid	imm	imm	imm
300	**Peroxides**						
	300	**Peroxides - All**					
		Hydrogen peroxide (30%)	7722-84-1	Liquid	imm	imm	
990	**Cytostatic drugs (Active Pharmaceutical Potent Compound)**						
	990	**Cytostatic drugs (Active Pharmaceutical Potent Compound) - All**					
		Ifosfamide (50 mg/ml)	3778-73-2	Liquid		>240	
		Irinotecan (20 mg/ml)	100286-90-6	Liquid		>240***	
		Methotrexate (25 mg/ml, 0.1 N NaOH)	59-05-2	Liquid		>240	>240
		Mitomycin (0.5 mg/ml)	50-07-7	Liquid		>240	>240
		Oxaliplatin (5 mg/ml)	63121-00-6	Liquid		imm	
		Paclitaxel (6 mg/ml, 49.7 % (v/v) Ethanol)	33069-62-4	Liquid		>240	
370	**Inorganic Acids**						
	370	**Inorganic Acids - All**					
		Phosphoric acid (50%)	7664-38-2	Liquid	>480	>480	
990	**Cytostatic drugs (Active Pharmaceutical Potent Compound)**						
	990	**Cytostatic drugs (Active Pharmaceutical Potent Compound) - All**					
		Sodium chloride (9 g/l)	7647-14-5	Liquid		>240	
380	**Inorganic Bases**						
	380	**Inorganic Bases - All**					
		Sodium hydroxide (40%)	1310-73-2	Liquid	>480	>480	
370	**Inorganic Acids**						

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Chemical Permeation Data Table

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)		
					Tyvek® 500	Tyvek® 600	Tyvek® 800J
	370	**Inorganic Acids - All**					
		Sulfuric acid (18%)	7664-93-9	Liquid	>480	>480	
		Sulfuric acid (30%)	7664-93-9	Liquid		>240	>480
990		**Cytostatic drugs (Active Pharmaceutical Potent Compound)**					
	990	**Cytostatic drugs (Active Pharmaceutical Potent Compound) - All**					
		Thiotepa (10 mg/ml)	52-24-4	Liquid		imm	>240***
		Vincristine sulfate (1 mg/ml)	2068-78-2	Liquid		>240	
		Vinorelbine (0.1 mg/ml)	71486-22-1	Liquid		>240	

> = greater than imm. = immediate (<10 minutes) {empty} = not tested L = Liquid G = Gas S = Solid

* Actual breakthrough time; normalized breakthrough time is not available.

** Solid tested, vapor phase permeation measured.

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APPENDIX
CHEMICAL INDEX - Alphabetical Listing - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
111-90-0	(2-Ethoxyethoxy)-ethanol, 2-		240	245
109-55-7	1,3-Propanediamine, N,N'-Dimethyl	3-Dimethylaminopropylamine	140	148
112-34-5	2-(2-Butoxyethoxy)-ethanol	Butyl Carbitol, DEG Monobutyl Ether, Diethylene Glycol Monobutyl Ether	240 / 310	245 / 311
75-07-0	Acetaldehyde		120	121
64-19-7	Acetic acid		100	102
108-24-7	Acetic anhydride		160	161
67-64-1	Acetone		390	391
75-86-5	Acetone cyanohydrin		310 / 430	313 / 431
75-05-8	Acetonitrile		430	431
13831-31-7	Acetoxyacetyl Chloride		110	111
75-36-5	Acetyl chloride		110	111
107-02-8	Acrolein		120	121
79-06-1	Acrylamide		130	135
79-10-7	Acrylic acid		100	102
107-13-1	Acrylonitrile		430	431
814-68-6	Acryloyl Chloride	Acrylic Acid Chloride	110	111
111-69-3	Adiponitrile		430	431
191681-14-8	AFFF		590	590
107-18-6	Allyl alcohol		310	311
107-05-1	Allyl chloride		260	265
17927-65-0	Aluminum sulfate hydrate		340	340
92-67-1	Aminodiphenyl, 4-		140	145
111-41-1	Aminoethylethanolamine	N-Aminoethyl ethanolamine	140 / 310	148 / 311
140-31-8	Aminoethylpiperazine		140 / 270	148 / 274
504-29-0	Aminopyridine, 2-		270	271
7664-41-7	Ammonia	Anhydrous ammonia	350 / 380	350 / 380
1341-49-7	Ammonium Bifluoride	Ammonium Hydrofluoride, Ammonium Hydrogen Difluoride	340	340
12125-02-9	Ammonium chloride		340	340
12125-01-8	Ammonium fluoride		340	340
1336-21-6	Ammonium hydroxide		380	380
628-63-7	Amyl acetate, n-		220	222
62-53-3	Aniline		140	145
461-82-5	Aniline, 4-trifluoromethoxy		140 / 240	145 / 242
120-12-7	Anthracene		290	293
7647-18-9	Antimony pentachloride		360	360
7784-34-1	Arsenic trichloride		340	340
7784-42-1	Arsine		350	350
1332-21-4	Asbestos (all forms)		sol	sol1
mixture	Astromat Orange			590
100-52-7	Benzaldehyde		120	122
71-43-2	Benzene		290	292
98-09-9	Benzene sulfonyl chloride		500	505
328-84-7	Benzene, Dichloro-4-Trifluoro	3,4-Dichlorobenzotrifluoride	260	263
92-87-5	Benzidine		140	145 / 149
100-47-0	Benzonitrile		430	432

CAS Number	Chemical Name	Synonym	Class	Sub-Class
98-07-7	Benzotrichloride		260	263
98-88-4	Benzoyl chloride		110	112
100-51-6	Benzyl alcohol		310	312
100-44-7	Benzyl chloride		260	266
501-53-1	Benzyl chloroformate		110	113
140-29-4	Benzyl cyanide		430	432
7440-41-7	Beryllium		sol	sol1
1675-54-3	Bisphenol-A diglycidyl ether		270	275
mixture	Black liquor		590	590
110-51-0	Borane-pyridine complex		590	590
90043-35-4	Boric Acid-Sulfuric Acid			none
10294-34-5	Boron trichloride		350 / 360	350 / 360
7637-07-2	Boron trifluoride		350 / 360	350 / 360
353-42-4	Boron trifluoride dimethyletherate		590	590
109-63-7	Boron trifluoride etherate		590	590
7726-95-6	Bromine		330	330
74-97-5	Bromochloromethane		260	261
927-68-4	Bromoethyl Acetate, 2-		220 / 260	222 / 261
460-00-4	Bromofluorobenzene, 4-		260	263
75-25-2	Bromoform		260	261
106-99-0	Butadiene, 1,3-	1,3-Butadiene	290	296
75-65-0	Butanol tert.	2-methyl 2-propanol	310	313
71-36-3	Butanol, n-		310	311
143-22-6	Butoxytriglycol		240	245
123-86-4	Butyl acetate, n-		220	222
141-32-2	Butyl acrylate, n-		220	223
112-07-2	Butyl Cellosolve Acetate		240	245
111-76-2	Butyl Cellosolve®		240	245
29911-28-2	Butyl Dipropasol Solvent	Dipropylene glycol mono-n-butyl ether	240	245
142-96-1	Butyl ether, n-		240	241
109-73-9	Butylamine, n-	1-Aminobutane, Aminobutane, 1-, Butan-1-amine	140	141
75-64-9	Butylamine, tert-	tert-Butylamine	140	141
106-88-7	Butylene oxide, 1,2-		270	275
123-72-8	Butyraldehyde, n-	Butanal	120	121
107-92-6	Butyric acid		100	102
10043-52-4	Calcium chloride		340	340
75-15-0	Carbon disulfide		500	502
630-08-0	Carbon monoxide		350	350
56-23-5	Carbon tetrachloride		260	261
441575-94-4	Carboplatin		990	990
154-93-8	Carmustine		990	990
mixture	Chemidize 727 ND		590	590
57-74-9	Chlordane		260	261
7782-50-5	Chlorine		330 / 350	330 / 350
10049-04-4	Chlorine dioxide		350	350

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CAS Number	Chemical Name	Synonym	Class	Sub-Class
10545-99-0	Chlorine sulfide	Sulfur dichloride	500	502
7790-91-2	Chlorine trifluoride		350	350
96-24-2	Chloro-1,2-propanediol, 3-		310	314
126-99-8	Chloro-1,3-butadiene, 2-		260	264
98-56-6	Chloro-benzotrifluoride, 4-		260	263
79-11-8	Chloroacetic acid		100	103
78-95-5	Chloroacetone		390	391
532-27-4	Chloroacetophenone		260	261
79-04-9	Chloroacetyl chloride		110	111
920-37-6	Chloroacrylonitrile, 2-		260 / 430	264 / 431
106-47-8	Chloroaniline, p-	Chloroaniline, 4-	140	145
108-90-7	Chlorobenzene		260	263
5216-25-1	Chlorobenzotrichloride, 4-		260	263
107-07-3	Chloroethanol, 2-		260 / 310	261 / 315
67-66-3	Chloroform		260	261
107-30-2	Chloromethyl methyl ether		240	241
106-48-9	Chlorophenol, 4-		260 / 310	263 / 316
76-06-2	Chloropicrin		260	261
7790-94-5	Chlorosulfonic acid		370 / 500	370 / 504
95-49-8	Chlorotoluene, o-		260	263
1333-82-0	Chromic acid		370	370
25899-50-7	cis-2-Pentenenitrile		430	431
15663-27-1	Cisplatin		990	990
77-92-9	Citric acid		100	104
68956-56-9	Citrus Terpenes Mixture	Dipentene	140	148
8001-58-9	Creosote		310	316
1319-77-3	Cresol, mixed isomers		310	316
95-48-7	Cresol, o-		310	316
8002-05-9	Crude oil		290	294
mixture	Crude oil on wildlife		liq	liq4
98-82-8	Cumene	Isopropylbenzene	290	292
506-77-4	Cyanogen chloride	CK (Cyanogen chloride)	340	345
108-77-0	Cyanuric chloride		260	263
110-82-7	Cyclohexane		290	291
108-93-0	Cyclohexanol		310	312
108-94-1	Cyclohexanone		390	391
3173-53-3	Cyclohexyl isocyanate		210	211
108-91-8	Cyclohexylamine		140	141
1552-12-1	Cyclooctadiene		290	296
50-18-0	Cyclophosphamide		990	990
5989-27-5	d-Limonene		290	296
mixture	Decontaminating agent (DS-2)		590	590
108-83-8	Di-Isobutyl Ketone		390	391
123-42-2	Diacetone Alcohol		390	391
19287-45-7	Diborane		350	350

CAS Number	Chemical Name	Synonym	Class	Sub-Class
96-12-8	Dibromo-3-chloropropane, 1,2-		260	261
84-74-2	Dibutyl Phthalate N-		220	226
764-41-0	Dichloro-2-butene, 1,4-		260	264
30894-74-7	Dichloro-6-isopropyl-S-triazine, 2,4-		270	274
534-07-6	Dichloroacetone		260 / 390	261 / 391
79-36-7	Dichloroacetyl chloride		110	111
95-76-1	Dichloroaniline, 3,4-		140 / 260	145 / 263
95-50-1	Dichlorobenzene, 1,2-		260	263
541-73-1	Dichlorobenzene, 1,3-		260	263
106-46-7	Dichlorobenzene, 1,4	Dichlorobenzene, 1,4-	260	263
111-44-4	Dichloroethyl ether		240 / 260	241 / 261
75-09-2	Dichloromethane	Methylene chloride	260	261
628-76-2	Dichloropentane		260	261
542-75-6	Dichloropropene, 1,3-		260	261
78-88-6	Dichloropropene, 2,3-	Dichloropropene,2,3-	260	261
4109-96-0	Dichlorosilane		480	480
mixture	Diesel automotive test fuel		290	291
68334-30-5	Diesel fuel		290	291
111-42-2	Diethanolamine		140	142
64-67-5	Diethyl sulfate		500	507
91-67-8	Diethyl-m-toluidine crude		140	145
109-89-7	Diethylamine		140	142
91-66-7	Diethylaniline		140	146
91-66-7	Diethylaniline crude		140	146
25340-17-4	Diethylbenzene		290	290
111-46-6	Diethylene Glycol		310	314
111-77-3	Diethylene Glycol Monomethyl Ether		240	245
6881-94-3	Diethylene Glycol Monopropyl Ether		240	245
111-40-0	Diethylenetriamine		140	148
117-81-7	Diethylhexyl phthalate		220	226
755-95-3	Diiodo-1,1,2,2-tetrafluorobutane, 1,4-		260	261
7087-68-5	Diisopropylethylamine (DIPEA)	DIPEA (Diisopropylethylamine)	140	141
5394-63-8	Diketene Acetone		220 / 240 / 270 / 390	223 / 244 / 278 / 390
624-92-0	Dimethyl disulfide		500	502
115-10-6	Dimethyl ether		240	241
593-74-8	Dimethyl mercury in decane		470	470
756-79-6	Dimethyl Methyl Phosphonate		460	462
62-75-9	Dimethyl nitrosamine		450	450
77-78-1	Dimethyl sulfate		500	507
75-18-3	Dimethyl sulfide		500	502
67-68-5	Dimethyl sulfoxide		500	503
127-19-5	Dimethylacetamide, N,N-	DMAc, N,N-	130	132
124-40-3	Dimethylamine		140	142
121-69-7	Dimethylaniline, N,N-		140	146
75-78-5	Dimethyldichlorosilane		480	480

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APPENDIX
CHEMICAL INDEX - Alphabetical Listing - Chemical Names and Synonyms

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.

CAS Number	Chemical Name	Synonym	Class	Sub-Class
68-12-2	Dimethylformamide, N,N-	N,N-Dimethylformamide	130	132
57-14-7	Dimethylhydrazine, 1,1-		280	280
624-48-6	Dimethylmaleate		220	224
534-52-1	Dinitrocresol		310 / 440	316 / 442
123-91-1	Dioxane, 1,4-		270	278
101-68-8	Diphenylmethane Diisocyanate 4,4-	Methylene diphenyl isocyanate	210	212
29911-27-1	Dipropylene Glycol Monopropyl Ether	1-(1-methyl-2-propoxyethoxy)-2-Propanol	240	245
1321-74-0	Divinyl Benzene		290	292
8004-13-5	Dowtherm heat transfer fluid		590	590
92-52-4	Dowtherm, Biphenyl		240	242
25136-40-9	Doxorubicin HCl		990	990
mixture	DuPont Activator 193S		590	590
mixture	DuPont Activator 4505S		590	590
mixture	DuPont Activator 4507S		590	590
15520-10-2	Dytek® A		140	148
106-89-8	Epichlorohydrin		260 / 270	261 / 275
141-43-5	Ethanolamine		140 / 310	141 / 311
112-50-5	Ethoxytriglycol		240	245
141-78-6	Ethyl acetate		220	222
140-88-5	Ethyl acrylate		220	223
64-17-5	Ethyl alcohol	Ethanol, Ethyl hydroxide	310	311
100-41-4	Ethyl benzene		290	292
97-95-0	Ethyl Butanol	2-Ethyl-1-Butanol	310	312
110-80-5	Ethyl Cellosolve®		240	245
111-15-9	Ethyl Cellosolve® acetate		240	245
75-00-3	Ethyl chloride		260	261
60-29-7	Ethyl ether		240	241
75-08-1	Ethyl Mercaptan	Ethanethiol	500	501
97-63-2	Ethyl methyacrylate		220	223
56-38-2	Ethyl parathion		460	462
109-92-2	Ethyl vinyl ether		240 / 260	246 / 261
75-04-7	Ethylamine		140	141
74-85-1	Ethylene		290	294
106-93-4	Ethylene dibromide		260	261
107-06-2	Ethylene dichloride	1,2-Dichloroethane	260	261
107-21-1	Ethylene glycol		310	314
818-61-1	Ethylene glycol acrylate		220	223
112-25-4	Ethylene Glycol Monohexyl Ether		240	245
75-21-8	Ethylene oxide	Dimethylene oxide, Epoxyethane	270	275
mixture	Ethylene oxide mixture		270	275
107-15-3	Ethylenediamine		140	148
151-56-4	Ethyleneimine		270	274
33419-42-0	Etoposide	Toposar®	990	990
7705-08-0	Ferric chloride	Iron trichloride, Iron(III) chloride	340	340
7758-94-3	Ferrous chloride	Iron (II) chloride, Iron dichloride	340	340

CAS Number	Chemical Name	Synonym	Class	Sub-Class
7782-41-4	Fluorine		350	350
462-06-6	Fluorobenzene		260	263
16872-11-0	Fluoroboric acid		370	370
16961-83-4	Fluorosilicic acid		370	370
7789-21-1	Fluorosulfonic acid		370	370
51-21-8	Fluorouracil, 5-		990	990
50-00-0	Formaldehyde		120	121
mixture	Formalin	Formalin	120	121
64-18-6	Formic acid		100	102
68476-30-2	Fuel oil		290	291
98-01-1	Furfural		120 / 270	122 / 277
96-48-0	gamma Butyrolactone			225
82410-32-0	Ganciclovir		990	990
86290-81-5	Gasoline		290	291
308066-70-8	Gasoline, E-10		290	291
95058-81-4	Gemcitabine		990	990
111-30-8	Glutaraldehyde	1,5-Pentanedial, Glutaric acid dialdehyde, Glutaric aldehyde, Gluteraldehyde, Pentanedial, 1,5-	120	121
79-14-1	Glycolic acid		100	103
mixture	Green liquor		590	590
142-82-5	Heptane		290	291
87-68-3	Hexachlorobutadiene		260	264
77-47-4	Hexachlorocyclopentadiene		260	264
76-16-4	Hexafluoroethane		260	261
382-10-5	Hexafluoroisobutylene		260	261
999-97-3	Hexamethyldisilazane	Hexamethyldisilizane	140 / 480	142 / 480
822-06-0	Hexamethylene diisocyanate		210	211
mixture	Hexamethylene diisocyanate in DuPont Activator 193S		210	211
mixture	Hexamethylene diisocyanate in DuPont Activator 4505S		210	211
mixture	Hexamethylene diisocyanate in DuPont Activator 4507S		210	211
124-09-4	Hexamethylenediamine, 1,6-		140	148
110-54-3	Hexane, n-	n-Hexane	290	291
592-41-6	Hexene, 1-	Hexene	290	294
108-10-1	Hexone	MIBK (Methyl isobutyl ketone), Methyl isobutyl ketone	390	391
112-59-4	Hexyl Carbitol Solvent		240	245
460-73-1	Hfc-245Fa	1,1,1,3,3-Pentafluoropropane	260	261
302-01-2	Hydrazine		280	280
10217-52-4	Hydrazine hydrate		280	280
10034-85-2	Hydriodic acid		370	370
10035-10-6	Hydrobromic acid		370	370
7647-01-0	Hydrochloric acid	Muriatic acid	370	370
7664-39-3	Hydrofluoric acid		370	370
10035-10-6	Hydrogen bromide		350 / 370	350 / 370
7647-01-0	Hydrogen chloride		350	350
74-90-8	Hydrogen cyanide	HCN (Hydrogen cyanide), Hydrocyanic acid	340 / 350 / 370	345 / 350 / 370
7664-39-3	Hydrogen fluoride		350 / 370	350 / 370

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CHEMICAL INDEX - Alphabetical Listing - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
7722-84-1	Hydrogen peroxide		300	300
7783-07-5	Hydrogen selenide		350	350
7783-06-4	Hydrogen sulfide		350 / 500	350 / 502
6303-21-5	Hypophosphorus acid		370	370
3778-73-2	Ifosfamide		990	990
7553-56-2	Iodine		330	330
100286-90-6	Irinotecan		990	990
123-92-2	Iso Amyl Acetate		220	222
123-51-3	Isoamyl alcohol		310	312
75-28-5	Isobutane		290	291
78-83-1	Isobutanol		310	311 / 312
538-93-2	Isobutylbenzene		290	292
4098-71-9	Isophorone diisocyanate		210	211
78-79-5	Isoprene		290	296
108-21-4	Isopropyl Acetate		220	222
67-63-0	Isopropyl alcohol	IPA (Isopropyl alcohol), Isopropanol	310	312
75-31-0	Isopropylamine		140	141
50815-00-4	JP-4 jet fuel		290	291
94114-58-6	JP-8 jet fuel		290	291
8008-20-6	Kerosene	Jet A fuel	290	291
50-21-5	Lactic Acid		100	103
7439-92-1	Lead		sol	sol1
541-25-3	Lewisite		470	470
mixture	Lime		sol	sol1
58-89-9	Lindane		260	261
7447-41-8	Lithium chloride		340	340
1310-65-2	Lithium hydroxide		380	380
mixture	m-Cresol 55%, p-Cresol 30%, Phenol 15%		310	316
121-75-5	Malathion		460	462
110-16-7	Maleic acid		100	104
108-31-6	Maleic anhydride		160	161
60-24-2	Mercaptoethanol		310 / 500	311 / 501
7487-94-7	Mercuric chloride		340	340
7439-97-6	Mercury		330	330
141-79-7	Mesityl oxide		390	391
79-41-4	Methacrylic acid		100	102
74-82-8	Methane		290	291
124-63-0	Methane sulfonyl chloride		500	505
75-75-2	Methanesulfonic acid		500	504
67-56-1	Methanol		310	311
16752-77-5	Methomyl		230	233
59-05-2	Methotrexate		990	990
112-35-6	Methoxytriglycol		240	245
79-20-9	Methyl Acetate		220	222
96-33-3	Methyl acrylate		220	223

CAS Number	Chemical Name	Synonym	Class	Sub-Class
74-83-9	Methyl bromide		260	261
109-86-4	Methyl Cellosolve®		240 / 310	245 / 311
110-49-6	Methyl Cellosolve® acetate		240	245
74-87-3	Methyl chloride		260	261
79-22-1	Methyl chloroformate		110	113
78-93-3	Methyl ethyl ketone	MEK (Methyl ethyl ketone)	390	391
96-29-7	Methyl ethyl ketoxime		150	150
593-53-3	Methyl fluoride		260	261
107-31-3	Methyl formate		220	221
60-34-4	Methyl hydrazine		280	280
74-88-4	Methyl iodide		260	261
105-44-2	Methyl Isobutyl Ketoxime			none
624-83-9	Methyl isocyanate		210	211
563-80-4	Methyl Isopropyl Ketone		390	391
74-93-1	Methyl mercaptan		500	501
80-62-6	Methyl methacrylate		220	223
298-00-0	Methyl parathion		460	462
98-86-2	Methyl Phenyl Ketone			392
107-87-9	Methyl Propyl Ketone		390	391
119-36-8	Methyl salicylate		220	226
1634-04-4	Methyl tert-butyl ether		240	241
75-79-6	Methyl trichlorosilane		480	480
4553-62-2	Methyl-1,5-pentantedinitrile, 2-	Methylglutaronitrile, 2-	430	431
872-50-4	Methyl-2-pyrrolidone, N-		130	132
74-89-5	Methylamine		140	141
103-67-3	Methylbenzylamine	Benzyl (Methyl) amine	140	142
101-14-4	Methylene bis (o-chloroaniline), 4,4'-		140	149
1761-71-3	Methylene bis-cyclohexane diamine, 4,4'-		140	148
74-95-3	Methylene bromide		260	261
101-77-9	Methylene dianiline, 4,4'-		140	145 / 149
123-39-7	Methylformamide, N-		130	132
8012-95-1	Mineral oil		290	291
64475-85-0	Mineral spirits		290	291
50-07-7	Mitomycin		990	990
110-91-8	Morpholine		140	142
3887-02-3	N-Methylmethacrylamide	Methylmethacrylamide, N-	130	135
109-02-4	N-Methylmorpholine (NMM)	NMM (N-Methylmorpholine)	140	142
8032-32-4	Naphtha	Petroleum Ether	290	292
91-20-3	Naphthalene		290	293
91-20-3	Naphthalene		290	293
13463-39-3	Nickel carbonyl		470	470
54-11-5	Nicotine		270	271
7697-37-2	Nitric acid		370	370
52583-42-3	Nitric acid, red fuming		370	370
10102-43-9	Nitric oxide		350	350

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APPENDIX
CHEMICAL INDEX - Alphabetical Listing - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
97697-37-4	Nitric/Hydrofluoric Pickling Solution			none
98-95-3	Nitrobenzene		440	441
88-73-3	Nitrochlorobenzene, o-		260 / 440	263 / 442
100-00-5	Nitrochlorobenzene, p-		260 / 440	263 / 442
10102-44-0	Nitrogen dioxide		350	350
10544-72-6	Nitrogen tetroxide		350	350
7783-54-2	Nitrogen trifluoride		350	350
8007-56-5	Nitrohydrochloric Acid			none
75-52-5	Nitromethane		440	441
88-75-5	Nitrophenol, o-		310 / 440	316 / 442
100-02-7	Nitrophenol, p-		310 / 440	316 / 442
79-46-9	Nitropropane, 2-		440	441
88-72-2	Nitrotoluene, o-		440	442
99-99-0	Nitrotoluene, p-		440	442
10024-97-2	Nitrous oxide		350	350
112-20-9	Nonylamine		140	141
6143-29-9	Norbornene-2-yl acetate, 5-		220	222
111-65-9	Octane, n-		290	291
111-87-5	Octanol N-		310	311
112-80-1	Oleic Acid		100	102
8014-95-7	Oleum		370	370
mixture	Organo-Tin Paint		470	470
106602-80-6	Otto fuel II		590	590
144-62-7	Oxalic acid		100	104
63121-00-6	Oxaliplatin		990	990
98-51-1	P-Tert Butyl Toluene		290	292
33069-62-4	Paclitaxel	Taxol	990	990
104-49-4	Paraphenylene diisocyanate (PPDI) crude		210	212
mixture	PCB	Polychlorinated biphenyl	260	263
mixture	PCB 1254	Polychlorinated biphenyl 1254	260	263
11097-69-1	PCB 1254	Polychlorinated biphenyl 1254	260	263
mixture	PCB gas condensate		260	263
mixture	PCB in transformer oil		260	263
87-86-5	Pentachlorophenol		310	316
109-66-0	Pentane		290	291
71-41-0	Pentanol, n-		310	311
13284-42-9	Pentenenitrile, 2-		430	431
4635-87-4	Pentenenitrile, 3-		430	431
79-21-0	Peracetic Acid		100	102 / 302
7601-90-3	Perchloric acid		370	370
2062-98-8	Perfluoro-2-propoxy propionyl fluoride	2-(Hepta Fluoro Propoxy) Tetra Fluoro Propionyl Fluoride, HFPO Dimer	110 / 240 / 260	110 / 240 / 260
60-12-8	Phenethyl alcohol, 2-		310	318
108-95-2	Phenol		310	316
122-60-1	Phenyl glycidyl ether		270	275
108-98-5	Phenyl mercaptan		500	501
98-85-1	Phenylethanol, 1-		310	318
75-44-5	Phosgene		350	350
7803-51-2	Phosphine		350	350
7664-38-2	Phosphoric acid		370	370
10025-87-3	Phosphorus oxychloride		360	360
7719-12-2	Phosphorus trichloride		360	360
109-06-8	Picoline, 2-		270	271
108-99-6	Picoline, 3-		270	271
24991-55-7	Polyethylene glycol dimethyl ether	Selexol	240	245
9016-87-9	Polymethylene polyphenyl-polyisocyanate		210	212
127-08-2	Potassium acetate		340	340
584-08-7	Potassium carbonate		340	340
7789-00-6	Potassium chromate		340	340
151-50-8	Potassium cyanide		340	345
1310-58-3	Potassium hydroxide	Caustic potash, KOH (Potassium hydroxide), Potash lye	380	380
7722-64-7	Potassium permanganate		340	340
74-98-6	Propane		290	291
71-23-8	Propanol N-		310	311
107-19-7	Propargyl alcohol	2-Propyn-1-ol, Propyn-1-ol, 2-	310	311
123-38-6	Propionaldehyde		120	121
79-09-4	Propionic acid		100	102
1569-01-3	Propoxypropanol	1-propoxy-2-propanol	240	245
109-60-4	Propyl Acetate		220	222
2807-30-9	Propyl Cellosolve N-	2-Propoxyethanol	240	245
107-10-8	Propylamine, n-		140	141
106-94-5	Propylbromide, n-	1-Bromopropane, 1-Propyl bromide, Bromopropane, 1-, Propyl bromide, 1-, n-Propylbromide	260	261
78-87-5	Propylene dichloride		260	261
57-55-6	Propylene Glycol		310	314
75-55-8	Propylene imine		270	274
75-56-9	Propylene oxide, 1,2-		270	275
110-86-1	Pyridine		270	271
123-75-1	Pyrrolidine		270	274
306-83-2	Refrigerant 123A	1,1-Dichloro-2,2,2-trifluoroethane	260	261
1717-00-6	Refrigerant 141B	Dichlorofluoroethane	260	261
31218-83-4	Safrotin	Propetamphos	460	462
107-44-8	Sarin		460	462
7803-62-5	Silane		480	480
10026-04-7	Silicon tetrachloride		360 / 480	360 / 480
126-73-8	Skydrol 500 B-4	Tributyl phosphate	460	462
95660-51-8	Skydrol®		460	462
7647-14-5	Sodium chloride		990	990
143-33-9	Sodium cyanide		340	345
10588-01-9	Sodium dichromate		340	340
7681-49-4	Sodium fluoride		340	340
16721-80-5	Sodium hydrosulfide		340	340

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CHEMICAL INDEX - Alphabetical Listing - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
1310-73-2	Sodium hydroxide	Caustic soda, Lye, NaOH (Sodium hydroxide)	380	380 / 591 / 592
7681-52-9	Sodium hypochlorite		340	340
7681-57-4	Sodium metabisulfite	Sodium disulfite, Sodium pyrosulfite	340	340
124-41-4	Sodium methylate		550	550
6834-92-0	Sodium silicate		340	340
1313-82-2	Sodium sulfide	Disodium sulfide	340	340
96-64-0	Soman		460	462
8052-41-3	Stoddard solvent		290	291
100-42-5	Styrene		290	292
5329-14-6	Sulfamic acid		370 / 500	370 / 509
7791-25-5	Sulfonyl chloride		350 / 360	350 / 360
7446-09-5	Sulfur dioxide		350 / 360	350 / 365
2551-62-4	Sulfur hexafluoride		350 / 500	350 / 509
10025-67-9	Sulfur monochloride	Disulfur dichloride, Sulfur chloride	500	502
505-60-2	Sulfur mustard		500	502
7446-11-9	Sulfur trioxide		360	365
7664-93-9	Sulfuric acid		370	370
mixture	t-Sodium-amylate / t-amyl alcohol		590	590
77-81-6	Tabun		460	462
75-65-0	tert-Butyl alcohol	Butyl alcohol, tert-	310	313
79-27-6	Tetrabromoethane		260	261
79-95-8	Tetrachloro-bisphenol -A, 2,2',6,6'	Tetrachloro-bisphenol -A, 2,2',6,6'-	260 / 310	263 / 316
79-34-5	Tetrachloroethane, 1,1,2,2-		260	261
127-18-4	Tetrachloroethylene, 1,1,2,2-	1,1,2,2-Tetrachloroethylene	260	264
78-10-4	Tetraethoxysilane		480	480
77-98-5	Tetraethyl Ammonium Hydroxide	Tetraethylammonium hydroxide; N,N,N,	550	550
78-00-2	Tetraethyl lead		470	470
112-57-2	Tetraethylenepentamine		140	148
811-97-2	Tetrafluoroethane, 1,1,1,2-		260	261
75-73-0	Tetrafluoromethane		260	261
109-99-9	Tetrahydrofuran		240	241
529-34-0	Tetralone		290	292
75-59-2	Tetramethylammonium hydroxide		550	550
5076-20-0	Tetramethylethylene oxide		270	275
110-18-9	Tetramethylethylenediamine (TMEDA)	TMEDA (Tetramethylethylenediamine)	140	148
mixture	Tetramethyltin		590	590
68-11-1	Thioglycolic acid		100 / 500	103 / 501
7719-09-7	Thionyl chloride		360	360
52-24-4	Thiotepa		990	990
7550-45-0	Titanium tetrachloride		360	360
108-88-3	Toluene		290	292
26471-62-5	Toluene-1,3-diisocyanate		210	212
584-84-9	Toluene-2,4-diisocyanate		210	212
108-44-1	Toluidine, m-		140	145
95-53-4	Toluidine, o-		140	145

CAS Number	Chemical Name	Synonym	Class	Sub-Class
156-60-5	trans-1,2-Dichloroethylene		260	264
110-57-6	trans-1,4-Dichloro-2-butene		260	264
123-73-9	trans-Crotonaldehyde		120	121
118-79-6	Tribromophenol,2,4,6-	Tribromophenol, 2,4,6-	310	316
102-82-9	Tributylamine		140	143
76-13-1	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1,1,2-Trichloro-1,2,2-trifluoroethane	260	261
76-03-9	Trichloroacetic acid		100	103
921-03-9	Trichloroacetone, 1,1,3-		260 / 390	261 / 391
120-82-1	Trichlorobenzene, 1,2,4-		260	263
71-55-6	Trichloroethane, 1,1,1-		260	261
79-00-5	Trichloroethane, 1,1,2-		260	261
115-20-8	Trichloroethanol, 2,2,2-		310	315
79-01-6	Trichloroethylene		260	264
98-13-5	Trichlorophenylsilane		480	480
10025-78-2	Trichlorosilane		480	480
75-94-5	Trichlorovinylsilane		480	480
102-71-6	Triethanolamine		140	143
998-30-1	Triethoxysilane		480	480
78-40-0	Triethyl Phosphate		460	462
97-93-8	Triethylaluminum		470	470
121-44-8	Triethylamine		140	143
112-24-3	Triethylenetetramine			
98-08-8	Triflouromethylbenzene		260	263
76-05-1	Trifluoroacetic acid		100 / 260	103 / 261
354-32-5	Trifluoroacetyl chloride		110	111
75-89-8	Trifluoroethanol, 2,2,2-		310	315
75-46-7	Trifluoromethane		260	261
1493-13-6	Trifluoromethane sulfonic acid		500	504
512-56-1	Trimethyl phosphate		460	462
121-45-9	Trimethyl phosphite		460	462
75-50-3	Trimethylamine		140	143
526-73-8	Trimethylbenzene, 1,2,3-		290	292
101-02-0	Triphenyl phosphite		460	462
102-69-2	Tripropylamine		140	143
7783-82-6	Tungsten hexafluoride		350	350
8006-64-2	Turpentine		290	294 / 296
83016-70-0	Urethane Catalyst Alkanol	2-((2-(2-(Dimethylamino)Ethoxy)Ethyl) Methylamino)Ethanol	240	245
7632-51-1	Vanadium tetrachloride		360	360
2068-78-2	Vincristine sulfate		990	990
71486-22-1	Vinorelbine		990	990
108-05-4	Vinyl acetate		220	222
593-60-2	Vinyl bromide		260	264
75-01-4	Vinyl chloride		260	264
88-12-0	Vinyl Pyrrolidinone		270	274
75-35-4	Vinylidene chloride	Dichloroethylene, 1,1-	260	264

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CHEMICAL INDEX - Alphabetical Listing - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
3536-96-7	Vinylmagnesium chloride		470	470
100-43-6	Vinylpyridine, 4-		270	271
8030-30-6	VM&P Naphtha		290	291
50782-69-9	VX Nerve agent		460	462
mixture	White liquor		590	590
1330-20-7	Xylene, mixed isomers		290	292
95-47-6	Xylene, o-		290	292
95-68-1	Xylidin, 2,4-		140	145

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CHEMICAL INDEX - Chemical Abstract System (CAS) Number - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
50-00-0	Formaldehyde		120	121
50-07-7	Mitomycin		990	990
50-18-0	Cyclophosphamide		990	990
50-21-5	Lactic Acid		100	103
51-21-8	Fluorouracil, 5-		990	990
52-24-4	Thiotepa		990	990
54-11-5	Nicotine		270	271
56-23-5	Carbon tetrachloride		260	261
56-38-2	Ethyl parathion		460	462
57-14-7	Dimethylhydrazine, 1,1-		280	280
57-55-6	Propylene Glycol		310	314
57-74-9	Chlordane		260	261
58-89-9	Lindane		260	261
59-05-2	Methotrexate		990	990
60-12-8	Phenethyl alcohol, 2-		310	318
60-24-2	Mercaptoethanol		310 / 500	311 / 501
60-29-7	Ethyl ether		240	241
60-34-4	Methyl hydrazine		280	280
62-53-3	Aniline		140	145
62-75-9	Dimethyl nitrosamine		450	450
64-17-5	Ethyl alcohol	Ethanol, Ethyl hydroxide	310	311
64-18-6	Formic acid		100	102
64-19-7	Acetic acid		100	102
64-67-5	Diethyl sulfate		500	507
67-56-1	Methanol		310	311
67-63-0	Isopropyl alcohol	IPA (Isopropyl alcohol), Isopropanol	310	312
67-64-1	Acetone		390	391
67-66-3	Chloroform		260	261
67-68-5	Dimethyl sulfoxide		500	503
68-11-1	Thioglycolic acid		100 / 500	103 / 501
68-12-2	Dimethylformamide, N,N-	N,N-Dimethylformamide	130	132
71-23-8	Propanol N-		310	311
71-36-3	Butanol, n-		310	311
71-41-0	Pentanol, n-		310	311
71-43-2	Benzene		290	292
71-55-6	Trichloroethane, 1,1,1-		260	261
74-82-8	Methane		290	291
74-83-9	Methyl bromide		260	261
74-85-1	Ethylene		290	294
74-87-3	Methyl chloride		260	261
74-88-4	Methyl iodide		260	261
74-89-5	Methylamine		140	141
74-90-8	Hydrogen cyanide	HCN (Hydrogen cyanide), Hydrocyanic acid	340 / 350 / 370	345 / 350 / 370
74-93-1	Methyl mercaptan		500	501
74-95-3	Methylene bromide		260	261
74-97-5	Bromochloromethane		260	261
74-98-6	Propane		290	291
75-00-3	Ethyl chloride		260	261
75-01-4	Vinyl chloride		260	264
75-04-7	Ethylamine		140	141
75-05-8	Acetonitrile		430	431
75-07-0	Acetaldehyde		120	121
75-08-1	Ethyl Mercaptan	Ethanethiol	500	501
75-09-2	Dichloromethane	Methylene chloride	260	261
75-15-0	Carbon disulfide		500	502
75-18-3	Dimethyl sulfide		500	502
75-21-8	Ethylene oxide	Dimethylene oxide, Epoxyethane	270	275
75-25-2	Bromoform		260	261
75-28-5	Isobutane		290	291
75-31-0	Isopropylamine		140	141
75-35-4	Vinylidene chloride	Dichloroethylene, 1,1-	260	264
75-36-5	Acetyl chloride		110	111
75-44-5	Phosgene		350	350
75-46-7	Trifluoromethane		260	261
75-50-3	Trimethylamine		140	143
75-52-5	Nitromethane		440	441
75-55-8	Propylene imine		270	274
75-56-9	Propylene oxide, 1,2-		270	275
75-59-2	Tetramethylammonium hydroxide		550	550
75-64-9	Butylamine, tert-	tert-Butylamine	140	141
75-65-0	Butanol tert.	2-methyl 2-propanol	310	313
75-65-0	tert-Butyl alcohol	Butyl alcohol, tert-	310	313
75-73-0	Tetrafluoromethane		260	261
75-75-2	Methanesulfonic acid		500	504
75-78-5	Dimethyldichlorosilane		480	480
75-79-6	Methyl trichlorosilane		480	480
75-86-5	Acetone cyanohydrin		310 / 430	313 / 431
75-89-8	Trifluoroethanol, 2,2,2-		310	315
75-94-5	Trichlorovinylsilane		480	480
76-03-9	Trichloroacetic acid		100	103
76-05-1	Trifluoroacetic acid		100 / 260	103 / 261
76-06-2	Chloropicrin		260	261
76-13-1	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1,1,2-Trichloro-1,2,2-trifluoroethane	260	261
76-16-4	Hexafluoroethane		260	261
77-47-4	Hexachlorocyclopentadiene		260	264
77-78-1	Dimethyl sulfate		500	507
77-81-6	Tabun		460	462
77-92-9	Citric acid		100	104
77-98-5	Tetraethyl Ammonium Hydroxide	Tetraethylammonium hydroxide; N,N,N,	550	550
78-00-2	Tetraethyl lead		470	470

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APPENDIX
CHEMICAL INDEX - Chemical Abstract System (CAS) Number - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
78-10-4	Tetraethoxysilane		480	480
78-40-0	Triethyl Phosphate		460	462
78-79-5	Isoprene		290	296
78-83-1	Isobutanol		310	311 / 312
78-87-5	Propylene dichloride		260	261
78-88-6	Dichloropropene, 2,3-	Dichloropropene,2,3-	260	261
78-93-3	Methyl ethyl ketone	MEK (Methyl ethyl ketone)	390	391
78-95-5	Chloroacetone		390	391
79-00-5	Trichloroethane, 1,1,2-		260	261
79-01-6	Trichloroethylene		260	264
79-04-9	Chloroacetyl chloride		110	111
79-06-1	Acrylamide		130	135
79-09-4	Propionic acid		100	102
79-10-7	Acrylic acid		100	102
79-11-8	Chloroacetic acid		100	103
79-14-1	Glycolic acid		100	103
79-20-9	Methyl Acetate		220	222
79-21-0	Peracetic Acid		100	102 / 302
79-22-1	Methyl chloroformate		110	113
79-27-6	Tetrabromoethane		260	261
79-34-5	Tetrachloroethane, 1,1,2,2-		260	261
79-36-7	Dichloroacetyl chloride		110	111
79-41-4	Methacrylic acid		100	102
79-46-9	Nitropropane, 2-		440	441
79-95-8	Tetrachloro-bisphenol -A, 2,2',6,6'	Tetrachloro-bisphenol -A, 2,2',6,6'-	260 / 310	263 / 316
80-62-6	Methyl methacrylate		220	223
84-74-2	Dibutyl Phthalate N-		220	226
87-68-3	Hexachlorobutadiene		260	264
87-86-5	Pentachlorophenol		310	316
88-12-0	Vinyl Pyrrolidinone		270	274
88-72-2	Nitrotoluene, o-		440	442
88-73-3	Nitrochlorobenzene, o-		260 / 440	263 / 442
88-75-5	Nitrophenol, o-		310 / 440	316 / 442
91-20-3	Naphthalene		290	293
91-20-3	Naphthalene		290	293
91-66-7	Diethylaniline		140	146
91-66-7	Diethylaniline crude		140	146
91-67-8	Diethyl-m-toluidine crude		140	145
92-52-4	Dowtherm, Biphenyl		240	242
92-67-1	Aminodiphenyl, 4-		140	145
92-87-5	Benzidine		140	145 / 149
95-47-6	Xylene, o-		290	292
95-48-7	Cresol, o-		310	316
95-49-8	Chlorotoluene, o-		260	263
95-50-1	Dichlorobenzene, 1,2-		260	263
95-53-4	Toluidine, o-		140	145
95-68-1	Xylidin, 2,4-		140	145
95-76-1	Dichloroaniline, 3,4-		140 / 260	145 / 263
96-12-8	Dibromo-3-chloropropane, 1,2-		260	261
96-24-2	Chloro-1,2-propanediol, 3-		310	314
96-29-7	Methyl ethyl ketoxime		150	150
96-33-3	Methyl acrylate		220	223
96-48-0	gamma Butyrolactone			225
96-64-0	Soman		460	462
97-63-2	Ethyl methyacrylate		220	223
97-93-8	Triethylaluminum		470	470
97-95-0	Ethyl Butanol	2-Ethyl-1-Butanol	310	312
98-01-1	Furfural		120 / 270	122 / 277
98-07-7	Benzotrichloride		260	263
98-08-8	Triflouromethylbenzene		260	263
98-09-9	Benzene sulfonyl chloride		500	505
98-13-5	Trichlorophenylsilane		480	480
98-51-1	P-Tert Butyl Toluene		290	292
98-56-6	Chloro-benzotrifluoride, 4-		260	263
98-82-8	Cumene	Isopropylbenzene	290	292
98-85-1	Phenylethanol, 1-		310	318
98-86-2	Methyl Phenyl Ketone			392
98-88-4	Benzoyl chloride		110	112
98-95-3	Nitrobenzene		440	441
99-99-0	Nitrotoluene, p-		440	442
100-00-5	Nitrochlorobenzene, p-		260 / 440	263 / 442
100-02-7	Nitrophenol, p-		310 / 440	316 / 442
100-41-4	Ethyl benzene		290	292
100-42-5	Styrene		290	292
100-43-6	Vinylpyridine, 4-		270	271
100-44-7	Benzyl chloride		260	266
100-47-0	Benzonitrile		430	432
100-51-6	Benzyl alcohol		310	312
100-52-7	Benzaldehyde		120	122
101-02-0	Triphenyl phosphite		460	462
101-14-4	Methylene bis (o-chloroaniline), 4,4'-		140	149
101-68-8	Diphenylmethane Diisocyanate 4,4-	Methylene diphenyl isocyanate	210	212
101-77-9	Methylene dianiline, 4,4'-		140	145 / 149
102-69-2	Tripropylamine		140	143
102-71-6	Triethanolamine		140	143
102-82-9	Tributylamine		140	143
103-67-3	Methylbenzylamine	Benzyl (Methyl) amine	140	142
104-49-4	Paraphenylene diisocyanate (PPDI) crude		210	212
105-44-2	Methyl Isobutyl Ketoxime			none
106-46-7	Dichlorobenzene, 1,4	Dichlorobenzene, 1,4-	260	263

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APPENDIX
CHEMICAL INDEX - Chemical Abstract System (CAS) Number - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
106-47-8	Chloroaniline, p-	Chloroaniline, 4-	140	145
106-48-9	Chlorophenol, 4-		260 / 310	263 / 316
106-88-7	Butylene oxide, 1,2-		270	275
106-89-8	Epichlorohydrin		260 / 270	261 / 275
106-93-4	Ethylene dibromide		260	261
106-94-5	Propylbromide, n-	1-Bromopropane, 1-Propyl bromide, Bromopropane, 1-, Propyl bromide, 1-, n-Propylbromide	260	261
106-99-0	Butadiene, 1,3-	1,3-Butadiene	290	296
107-02-8	Acrolein		120	121
107-05-1	Allyl chloride		260	265
107-06-2	Ethylene dichloride	1,2-Dichloroethane	260	261
107-07-3	Chloroethanol, 2-		260 / 310	261 / 315
107-10-8	Propylamine, n-		140	141
107-13-1	Acrylonitrile		430	431
107-15-3	Ethylenediamine		140	148
107-18-6	Allyl alcohol		310	311
107-19-7	Propargyl alcohol	2-Propyn-1-ol, Propyn-1-ol, 2-	310	311
107-21-1	Ethylene glycol		310	314
107-30-2	Chloromethyl methyl ether		240	241
107-31-3	Methyl formate		220	221
107-44-8	Sarin		460	462
107-87-9	Methyl Propyl Ketone		390	391
107-92-6	Butyric acid		100	102
108-05-4	Vinyl acetate		220	222
108-10-1	Hexone	MIBK (Methyl isobutyl ketone), Methyl isobutyl ketone	390	391
108-21-4	Isopropyl Acetate		220	222
108-24-7	Acetic anhydride		160	161
108-31-6	Maleic anhydride		160	161
108-44-1	Toluidine, m-		140	145
108-77-0	Cyanuric chloride		260	263
108-83-8	Di-Isobutyl Ketone		390	391
108-88-3	Toluene		290	292
108-90-7	Chlorobenzene		260	263
108-91-8	Cyclohexylamine		140	141
108-93-0	Cyclohexanol		310	312
108-94-1	Cyclohexanone		390	391
108-95-2	Phenol		310	316
108-98-5	Phenyl mercaptan		500	501
108-99-6	Picoline, 3-		270	271
109-02-4	N-Methylmorpholine (NMM)	NMM (N-Methylmorpholine)	140	142
109-06-8	Picoline, 2-		270	271
109-55-7	1,3-Propanediamine, N,N'-Dimethyl	3-Dimethylaminopropylamine	140	148
109-60-4	Propyl Acetate		220	222
109-63-7	Boron trifluoride etherate		590	590
109-66-0	Pentane		290	291
109-73-9	Butylamine, n-	1-Aminobutane, Aminobutane, 1-, Butan-1-amine	140	141
109-86-4	Methyl Cellosolve®		240 / 310	245 / 311
109-89-7	Diethylamine		140	142
109-92-2	Ethyl vinyl ether		240 / 260	246 / 261
109-99-9	Tetrahydrofuran		240	241
110-16-7	Maleic acid		100	104
110-18-9	Tetramethylethylenediamine (TMEDA)	TMEDA (Tetramethylethylenediamine)	140	148
110-49-6	Methyl Cellosolve® acetate		240	245
110-51-0	Borane-pyridine complex		590	590
110-54-3	Hexane, n-	n-Hexane	290	291
110-57-6	trans-1,4-Dichloro-2-butene		260	264
110-80-5	Ethyl Cellosolve®		240	245
110-82-7	Cyclohexane		290	291
110-86-1	Pyridine		270	271
110-91-8	Morpholine		140	142
111-15-9	Ethyl Cellosolve® acetate		240	245
111-30-8	Glutaraldehyde	1,5-Pentanedial, Glutaric acid dialdehyde, Glutaric aldehyde, Gluteraldehyde, Pentanedial, 1,5-	120	121
111-40-0	Diethylenetriamine		140	148
111-41-1	Aminoethylethanolamine	N-Aminoethyl ethanolamine	140 / 310	148 / 311
111-42-2	Diethanolamine		140	142
111-44-4	Dichloroethyl ether		240 / 260	241 / 261
111-46-6	Diethylene Glycol		310	314
111-65-9	Octane, n-		290	291
111-69-3	Adiponitrile		430	431
111-76-2	Butyl Cellosolve®		240	245
111-77-3	Diethylene Glycol Monomethyl Ether		240	245
111-87-5	Octanol N-		310	311
111-90-0	(2-Ethoxyethoxy)-ethanol, 2-		240	245
112-07-2	Butyl Cellosolve Acetate		240	245
112-20-9	Nonylamine		140	141
112-24-3	Triethylenetetramine			
112-25-4	Ethylene Glycol Monohexyl Ether		240	245
112-34-5	2-(2-Butoxyethoxy)-ethanol	Butyl Carbitol, DEG Monobutyl Ether, Diethylene Glycol Monobutyl Ether	240 / 310	245 / 311
112-35-6	Methoxytriglycol		240	245
112-50-5	Ethoxytriglycol		240	245
112-57-2	Tetraethylenepentamine		140	148
112-59-4	Hexyl Carbitol Solvent		240	245
112-80-1	Oleic Acid		100	102
115-10-6	Dimethyl ether		240	241
115-20-8	Trichloroethanol, 2,2,2-		310	315
117-81-7	Diethylhexyl phthalate		220	226
118-79-6	Tribromophenol,2,4,6-	Tribromophenol, 2,4,6-	310	316
119-36-8	Methyl salicylate		220	226
120-12-7	Anthracene		290	293
120-82-1	Trichlorobenzene, 1,2,4-		260	263
121-44-8	Triethylamine		140	143

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CHEMICAL INDEX - Chemical Abstract System (CAS) Number - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
121-45-9	Trimethyl phosphite		460	462
121-69-7	Dimethylaniline, N,N-		140	146
121-75-5	Malathion		460	462
122-60-1	Phenyl glycidyl ether		270	275
123-38-6	Propionaldehyde		120	121
123-39-7	Methylformamide, N-		130	132
123-42-2	Diacetone Alcohol		390	391
123-51-3	Isoamyl alcohol		310	312
123-72-8	Butyraldehyde, n-	Butanal	120	121
123-73-9	trans-Crotonaldehyde		120	121
123-75-1	Pyrrolidine		270	274
123-86-4	Butyl acetate, n-		220	222
123-91-1	Dioxane, 1,4-		270	278
123-92-2	Iso Amyl Acetate		220	222
124-09-4	Hexamethylenediamine, 1,6-		140	148
124-40-3	Dimethylamine		140	142
124-41-4	Sodium methylate		550	550
124-63-0	Methane sulfonyl chloride		500	505
126-73-8	Skydrol 500 B-4	Tributyl phosphate	460	462
126-99-8	Chloro-1,3-butadiene, 2-		260	264
127-08-2	Potassium acetate		340	340
127-18-4	Tetrachloroethylene, 1,1,2,2-	1,1,2,2-Tetrachloroethylene	260	264
127-19-5	Dimethylacetamide, N,N-	DMAc, N,N-	130	132
140-29-4	Benzyl cyanide		430	432
140-31-8	Aminoethylpiperazine		140 / 270	148 / 274
140-88-5	Ethyl acrylate		220	223
141-32-2	Butyl acrylate, n-		220	223
141-43-5	Ethanolamine		140 / 310	141 / 311
141-78-6	Ethyl acetate		220	222
141-79-7	Mesityl oxide		390	391
142-82-5	Heptane		290	291
142-96-1	Butyl ether, n-		240	241
143-22-6	Butoxytriglycol		240	245
143-33-9	Sodium cyanide		340	345
144-62-7	Oxalic acid		100	104
151-50-8	Potassium cyanide		340	345
151-56-4	Ethyleneimine		270	274
154-93-8	Carmustine		990	990
156-60-5	trans-1,2-Dichloroethylene		260	264
298-00-0	Methyl parathion		460	462
302-01-2	Hydrazine		280	280
306-83-2	Refrigerant 123A	1,1-Dichloro-2,2,2-trifluoroethane	260	261
328-84-7	Benzene, Dichloro-4-Trifluoro	3,4-Dichlorobenzotrifluoride	260	263
353-42-4	Boron trifluoride dimethyletherate		590	590
354-32-5	Trifluoroacetyl chloride		110	111
382-10-5	Hexafluoroisobutylene		260	261
460-00-4	Bromofluorobenzene, 4-		260	263
460-73-1	Hfc-245Fa	1,1,1,3,3-Pentafluoropropane	260	261
461-82-5	Aniline, 4-trifluoromethoxy		140 / 240	145 / 242
462-06-6	Fluorobenzene		260	263
501-53-1	Benzyl chloroformate		110	113
504-29-0	Aminopyridine, 2-		270	271
505-60-2	Sulfur mustard		500	502
506-77-4	Cyanogen chloride	CK (Cyanogen chloride)	340	345
512-56-1	Trimethyl phosphate		460	462
526-73-8	Trimethylbenzene, 1,2,3-		290	292
529-34-0	Tetralone		290	292
532-27-4	Chloroacetophenone		260	261
534-07-6	Dichloroacetone		260 / 390	261 / 391
534-52-1	Dinitrocresol		310 / 440	316 / 442
538-93-2	Isobutylbenzene		290	292
541-25-3	Lewisite		470	470
541-73-1	Dichlorobenzene, 1,3-		260	263
542-75-6	Dichloropropene, 1,3-		260	261
563-80-4	Methyl Isopropyl Ketone		390	391
584-08-7	Potassium carbonate		340	340
584-84-9	Toluene-2,4-diisocyanate		210	212
592-41-6	Hexene, 1-	Hexene	290	294
593-53-3	Methyl fluoride		260	261
593-60-2	Vinyl bromide		260	264
593-74-8	Dimethyl mercury in decane		470	470
624-48-6	Dimethylmaleate		220	224
624-83-9	Methyl isocyanate		210	211
624-92-0	Dimethyl disulfide		500	502
628-63-7	Amyl acetate, n-		220	222
628-76-2	Dichloropentane		260	261
630-08-0	Carbon monoxide		350	350
755-95-3	Diiodo-1,1,2,2-tetrafluorobutane, 1,4-		260	261
756-79-6	Dimethyl Methyl Phosphonate		460	462
764-41-0	Dichloro-2-butene, 1,4-		260	264
811-97-2	Tetrafluoroethane, 1,1,1,2-		260	261
814-68-6	Acryloyl Chloride	Acrylic Acid Chloride	110	111
818-61-1	Ethylene glycol acrylate		220	223
822-06-0	Hexamethylene diisocyanate		210	211
872-50-4	Methyl-2-pyrrolidone, N-		130	132
920-37-6	Chloroacrylonitrile, 2-		260 / 430	264 / 431
921-03-9	Trichloroacetone, 1,1,3-		260 / 390	261 / 391
927-68-4	Bromoethyl Acetate, 2-		220 / 260	222 / 261
998-30-1	Triethoxysilane		480	480
999-97-3	Hexamethyldisilazane	Hexamethyldisilizane	140 / 480	142 / 480

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APPENDIX
CHEMICAL INDEX - Chemical Abstract System (CAS) Number - Chemical Names and Synonyms

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CAS Number	Chemical Name	Synonym	Class	Sub-Class
1310-58-3	Potassium hydroxide	Caustic potash, KOH (Potassium hydroxide), Potash lye	380	380
1310-65-2	Lithium hydroxide		380	380
1310-73-2	Sodium hydroxide	Caustic soda, Lye, NaOH (Sodium hydroxide)	380	380 / 591 / 592
1313-82-2	Sodium sulfide	Disodium sulfide	340	340
1319-77-3	Cresol, mixed isomers		310	316
1321-74-0	Divinyl Benzene		290	292
1330-20-7	Xylene, mixed isomers		290	292
1332-21-4	Asbestos (all forms)		sol	sol1
1333-82-0	Chromic acid		370	370
1336-21-6	Ammonium hydroxide		380	380
1341-49-7	Ammonium Bifluoride	Ammonium Hydrofluoride, Ammonium Hydrogen Difluoride	340	340
1493-13-6	Trifluoromethane sulfonic acid		500	504
1552-12-1	Cyclooctadiene		290	296
1569-01-3	Propoxypropanol	1-propoxy-2-propanol	240	245
1634-04-4	Methyl tert-butyl ether		240	241
1675-54-3	Bisphenol-A diglycidyl ether		270	275
1717-00-6	Refrigerant 141B	Dichlorofluoroethane	260	261
1761-71-3	Methylene bis-cyclohexane diamine, 4,4'-		140	148
2062-98-8	Perfluoro-2-propoxy propionyl fluoride	2-(Hepta Fluoro Propoxy) Tetra Fluoro Propionyl Fluoride, HFPO Dimer	110 / 240 / 260	110 / 240 / 260
2068-78-2	Vincristine sulfate		990	990
2551-62-4	Sulfur hexafluoride		350 / 500	350 / 509
2807-30-9	Propyl Cellosolve N-	2-Propoxyethanol	240	245
3173-53-3	Cyclohexyl isocyanate		210	211
3536-96-7	Vinylmagnesium chloride		470	470
3778-73-2	Ifosfamide		990	990
3887-02-3	N-Methylmethacrylamide	Methylmethacrylamide, N-	130	135
4098-71-9	Isophorone diisocyanate		210	211
4109-96-0	Dichlorosilane		480	480
4553-62-2	Methyl-1,5-pentantedinitrile, 2-	Methylglutaronitrile, 2-	430	431
4635-87-4	Pentenenitrile, 3-		430	431
5076-20-0	Tetramethylethylene oxide		270	275
5216-25-1	Chlorobenzotrichloride, 4-		260	263
5329-14-6	Sulfamic acid		370 / 500	370 / 509
5394-63-8	Diketene Acetone		220 / 240 / 270 / 390	223 / 244 / 278 / 390
5989-27-5	d-Limonene		290	296
6143-29-9	Norbornene-2-yl acetate, 5-		220	222
6303-21-5	Hypophosphorus acid		370	370
6834-92-0	Sodium silicate		340	340
6881-94-3	Diethylene Glycol Monopropyl Ether		240	245
7087-68-5	Diisopropylethylamine (DIPEA)	DIPEA (Diisopropylethylamine)	140	141
7439-92-1	Lead		sol	sol1
7439-97-6	Mercury		330	330
7440-41-7	Beryllium		sol	sol1
7446-09-5	Sulfur dioxide		350 / 360	350 / 365
7446-11-9	Sulfur trioxide		360	365

CAS Number	Chemical Name	Synonym	Class	Sub-Class
7447-41-8	Lithium chloride		340	340
7487-94-7	Mercuric chloride		340	340
7550-45-0	Titanium tetrachloride		360	360
7553-56-2	Iodine		330	330
7601-90-3	Perchloric acid		370	370
7632-51-1	Vanadium tetrachloride		360	360
7637-07-2	Boron trifluoride		350 / 360	350 / 360
7647-01-0	Hydrochloric acid	Muriatic acid	370	370
7647-01-0	Hydrogen chloride		350	350
7647-14-5	Sodium chloride		990	990
7647-18-9	Antimony pentachloride		360	360
7664-38-2	Phosphoric acid		370	370
7664-39-3	Hydrofluoric acid		370	370
7664-39-3	Hydrogen fluoride		350 / 370	350 / 370
7664-41-7	Ammonia	Anhydrous ammonia	350 / 380	350 / 380
7664-93-9	Sulfuric acid		370	370
7681-49-4	Sodium fluoride		340	340
7681-52-9	Sodium hypochlorite		340	340
7681-57-4	Sodium metabisulfite	Sodium disulfite, Sodium pyrosulfite	340	340
7697-37-2	Nitric acid		370	370
7705-08-0	Ferric chloride	Iron trichloride, Iron(III) chloride	340	340
7719-09-7	Thionyl chloride		360	360
7719-12-2	Phosphorus trichloride		360	360
7722-64-7	Potassium permanganate		340	340
7722-84-1	Hydrogen peroxide		300	300
7726-95-6	Bromine		330	330
7758-94-3	Ferrous chloride	Iron (II) chloride, Iron dichloride	340	340
7782-41-4	Fluorine		350	350
7782-50-5	Chlorine		330 / 350	330 / 350
7783-06-4	Hydrogen sulfide		350 / 500	350 / 502
7783-07-5	Hydrogen selenide		350	350
7783-54-2	Nitrogen trifluoride		350	350
7783-82-6	Tungsten hexafluoride		350	350
7784-34-1	Arsenic trichloride		340	340
7784-42-1	Arsine		350	350
7789-00-6	Potassium chromate		340	340
7789-21-1	Fluorosulfonic acid		370	370
7790-91-2	Chlorine trifluoride		350	350
7790-94-5	Chlorosulfonic acid		370 / 500	370 / 504
7791-25-5	Sulfonyl chloride		350 / 360	350 / 360
7803-51-2	Phosphine		350	350
7803-62-5	Silane		480	480
8001-58-9	Creosote		310	316
8002-05-9	Crude oil		290	294
8004-13-5	Dowtherm heat transfer fluid		590	590

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APPENDIX
CHEMICAL INDEX - Chemical Abstract System (CAS) Number - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
8006-64-2	Turpentine		290	294 / 296
8007-56-5	Nitrohydrochloric Acid			none
8008-20-6	Kerosene	Jet A fuel	290	291
8012-95-1	Mineral oil		290	291
8014-95-7	Oleum		370	370
8030-30-6	VM&P Naphtha		290	291
8032-32-4	Naphtha	Petroleum Ether	290	292
8052-41-3	Stoddard solvent		290	291
9016-87-9	Polymethylene polyphenyl-polyisocyanate		210	212
10024-97-2	Nitrous oxide		350	350
10025-67-9	Sulfur monochloride	Disulfur dichloride, Sulfur chloride	500	502
10025-78-2	Trichlorosilane		480	480
10025-87-3	Phosphorus oxychloride		360	360
10026-04-7	Silicon tetrachloride		360 / 480	360 / 480
10034-85-2	Hydriodic acid		370	370
10035-10-6	Hydrobromic acid		370	370
10035-10-6	Hydrogen bromide		350 / 370	350 / 370
10043-52-4	Calcium chloride		340	340
10049-04-4	Chlorine dioxide		350	350
10102-43-9	Nitric oxide		350	350
10102-44-0	Nitrogen dioxide		350	350
10217-52-4	Hydrazine hydrate		280	280
10294-34-5	Boron trichloride		350 / 360	350 / 360
10544-72-6	Nitrogen tetroxide		350	350
10545-99-0	Chlorine sulfide	Sulfur dichloride	500	502
10588-01-9	Sodium dichromate		340	340
11097-69-1	PCB 1254	Polychlorinated biphenyl 1254	260	263
12125-01-8	Ammonium fluoride		340	340
12125-02-9	Ammonium chloride		340	340
13284-42-9	Pentenenitrile, 2-		430	431
13463-39-3	Nickel carbonyl		470	470
13831-31-7	Acetoxyacetyl Chloride		110	111
15520-10-2	Dytek® A		140	148
15663-27-1	Cisplatin		990	990
16721-80-5	Sodium hydrosulfide		340	340
16752-77-5	Methomyl		230	233
16872-11-0	Fluoroboric acid		370	370
16961-83-4	Fluorosilicic acid		370	370
17927-65-0	Aluminum sulfate hydrate		340	340
19287-45-7	Diborane		350	350
24991-55-7	Polyethylene glycol dimethyl ether	Selexol	240	245
25136-40-9	Doxorubicin HCl		990	990
25340-17-4	Diethylbenzene		290	290
25899-50-7	cis-2-Pentenenitrile		430	431
26471-62-5	Toluene-1,3-diisocyanate		210	212

CAS Number	Chemical Name	Synonym	Class	Sub-Class
29911-27-1	Dipropylene Glycol Monopropyl Ether	1-(1-methyl-2-propoxyethoxy)-2-Propanol	240	245
29911-28-2	Butyl Dipropasol Solvent	Dipropylene glycol mono-n-butyl ether	240	245
30894-74-7	Dichloro-6-isopropyl-S-triazine, 2,4-		270	274
31218-83-4	Safrotin	Propetamphos	460	462
33069-62-4	Paclitaxel	Taxol	990	990
33419-42-0	Etoposide	Toposar®	990	990
50782-69-9	VX Nerve agent		460	462
50815-00-4	JP-4 jet fuel		290	291
52583-42-3	Nitric acid, red fuming		370	370
63121-00-6	Oxaliplatin		990	990
64475-85-0	Mineral spirits		290	291
68334-30-5	Diesel fuel		290	291
68476-30-2	Fuel oil		290	291
68956-56-9	Citrus Terpenes Mixture	Dipentene	140	148
71486-22-1	Vinorelbine		990	990
82410-32-0	Ganciclovir		990	990
83016-70-0	Urethane Catalyst Alkanol	2-((2-(2-(Dimethylamino)Ethoxy)Ethyl) Methylamino)Ethanol	240	245
86290-81-5	Gasoline		290	291
90043-35-4	Boric Acid-Sulfuric Acid			none
94114-58-6	JP-8 jet fuel		290	291
95058-81-4	Gemcitabine		990	990
95660-51-8	Skydrol®		460	462
97697-37-4	Nitric/Hydrofluoric Pickling Solution			none
100286-90-6	Irinotecan		990	990
106602-80-6	Otto fuel II		590	590
191681-14-8	AFFF		590	590
308066-70-8	Gasoline, E-10		290	291
441575-94-4	Carboplatin		990	990
mixture	Astromat Orange			590
mixture	Black liquor		590	590
mixture	Chemidize 727 ND		590	590
mixture	Crude oil on wildlife		liq	liq4
mixture	Decontaminating agent (DS-2)		590	590
mixture	Diesel automotive test fuel		290	291
mixture	DuPont Activator 193S		590	590
mixture	DuPont Activator 4505S		590	590
mixture	DuPont Activator 4507S		590	590
mixture	Ethylene oxide mixture		270	275
mixture	Formalin	Formalin	120	121
mixture	Green liquor		590	590
mixture	Hexamethylene diisocyanate in DuPont Activator 193S		210	211
mixture	Hexamethylene diisocyanate in DuPont Activator 4505S		210	211
mixture	Hexamethylene diisocyanate in DuPont Activator 4507S		210	211
mixture	Lime		sol	sol1
mixture	Organo-Tin Paint		470	470

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APPENDIX
CHEMICAL INDEX - Chemical Abstract System (CAS) Number - Chemical Names and Synonyms

CAS Number	Chemical Name	Synonym	Class	Sub-Class
mixture	PCB	Polychlorinated biphenyl	260	263
mixture	PCB 1254	Polychlorinated biphenyl 1254	260	263
mixture	PCB gas condensate		260	263
mixture	PCB in transformer oil		260	263
mixture	Tetramethyltin		590	590
mixture	White liquor		590	590
mixture	m-Cresol 55%, p-Cresol 30%, Phenol 15%		310	316
mixture	t-Sodium-amylate / t-amyl alcohol		590	590

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