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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.

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 ?g/cm?/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 ?g/cm?].

What is Permeation?

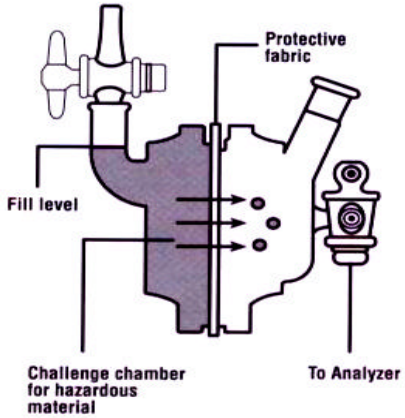
Permeation is the absorption, diffusion and desorption of a chemical through a barrier material at the molecular level. Penetration, on the other hand, is the bulk passage of a chemical through a pore or opening in the barrier material.

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.

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/cm?/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/cm?/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/cm?/min during the 8 hour test. If the permeation rate exceeds 0.1 ?g/cm?/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/cm?/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.

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 Hydroxlamines 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

230 Non-Carboxylic Esters
- 233 Carbamates and Others

240 Ethers
- 241 Aliphatic and Alicyclic
- 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

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)

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

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

Sub-class	Chemical Name	CAS Number	Phase	Normalized Breakthrough Time (Minutes)									
				Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
390	Acetone	67-64-1	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
430	Acetonitrile	75-05-8	L	imm.	60	157	>480	imm.	>480	>480	>480	>480	>480
350 / 380	Ammonia (gas)	7664-41-7	G	imm.	32	79	>480	12	46	46	46	>480	>480
290	Butadiene, 1,3- (gas)	106-99-0	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480	>480
500	Carbon disulfide	75-15-0	L	imm.	imm.	>480	>480	16	>480	>480	>480	>480	>480
330 / 350	Chlorine (gas)	7782-50-5	G	imm.	>480	>480	>480	imm.	>480	>480	>480	>480	>480
260	Dichloromethane	75-09-2	L	imm.	imm.	imm.	imm.	imm.	432	432	432	>480	>480
140	Diethylamine	109-89-7	L	imm.	15	>480	>480	>480	>480	>480	>480	>480	>480
130	Dimethylformamide, N,N-	68-12-2	L	imm.	90	>480	>480	>480	>480	>480	>480	>480	>480
220	Ethyl acetate	141-78-6	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
270	Ethylene oxide (gas)	75-21-8	G	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
290	Hexane, n-	110-54-3	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
350	Hydrogen chloride (gas)	7647-01-0	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480	>480
310	Methanol	67-56-1	L	imm.	>480	77	>480	imm.	157	157	>480	>480	>480
260	Methyl chloride (gas)	74-87-3	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480	>480
440	Nitrobenzene	98-95-3	L	imm.	57	>480	>480	>480	>480	>480	>480	>480	>480
380	Sodium hydroxide (42-50%)	1310-73-2	L	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
370	Sulfuric acid	7664-93-9	L	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
260	Tetrachloroethylene, 1,1,2,2-	127-18-4	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
240	Tetrahydrofuran	109-99-9	L	imm.	imm.	464	>480	>480	>480	>480	>480	>480	>480
290	Toluene	108-88-3	L	imm.	imm.	>480	>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.

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
100 Carboxylic acids														
	102 Aliphatic and Alicyclic, Unsubstituted													
		Acetic acid	64-19-7	L	imm.	>480	>480	>480	84	339	339	>480	>480	>480
		Acrylic acid	79-10-7	L	imm.	>480	>480	>480		270	270	>480	>480	270
		Formic acid	64-18-6	L	imm.	>480	260	260	>480	>480	>480	>480	>480	>480
		Methacrylic acid	79-41-4	L			>480	>480		>480	>480	>480	>480	>480
	103 Aliphatic and Alicyclic, Substituted													
		Chloroacetic acid	79-11-8	L			>480	>480		>480	>480	>480	>480	>480
		Chloroacetic acid (70%-80%)	79-11-8	L	370	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Glycolic acid (sat. sol. in water)	79-14-1	L						>480	>480	>480	>480	>480
		Thioglycolic acid	68-11-1	L			>480	>480	>480	>480	>480	>480	>480	>480
		Trichloroacetic acid	76-03-9	L			>480	>480						
		Trifluoroacetic acid	76-05-1	L		>480	>480	>480				>480		
	104 Aliphatic and Alicyclic, Polybasic													
		Citric acid (50% in water)	77-92-9	L					>480					
		Oxalic acid (10.5%)	144-62-7	L						>480	>480	>480	>480	>480
		Oxalic acid (sat. sol. in water)	144-62-7	L					>480					
110 Acid Halides, Carboxylic														
	111 Aliphatic and Alicyclic													
		Acetyl chloride	75-36-5	L		63	>480	>480	>480	181	181	181	>480	181
		Chloroacetyl chloride	79-04-9	L		120			77	160	160	160	160	160
		Dichloroacetyl chloride	79-36-7	L			160	160		100	100	100	>480	100
	112 Aromatic													
		Benzoyl chloride	98-88-4	L			>480	>480	>480	>480	>480	>480	>480	>480
	113 Chloroformates													
		Benzyl chloroformate	501-53-1	L					>480					
		Methyl chloroformate	79-22-1	L						>480	>480	>480	>480	>480
120 Aldehydes														
	121 Aliphatic and Alicyclic													
		Acetaldehyde	75-07-0	L			imm.	>480		>480	>480	>480	>480	>480
		Acrolein	107-02-8	L		24	63	63	178	>480	>480	>480	>480	>480
		Acrolein (10 g/m²)	107-02-8	L			>480	>480						
		Butyraldehyde, n-	123-72-8	L	imm.	41				>480	>480	>480	>480	>480
		Formaldehyde (100 ppm)	50-00-0	G						>480	>480	>480	>480	>480
		Formalin	mixture	L	imm.	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Formalin (10%)	mixture	L	>480									
		Gluteraldehyde (5% in water)	111-30-8	L	>480					>480	>480	>480	>480	>480
		Gluteraldehyde (50%)	111-30-8	L		>480	170	170		>480	>480	>480	>480	>480
		trans-Crotonaldehyde	123-73-9	L		34				>480	>480	>480	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
	122 Aromatic													
		Furfural	98-01-1	L		227	>480	>480	>480	>480	>480	>480	>480	>480
130 Amides														
	132 Aliphatic and Alicyclic													
		Dimethyl-acetamide, N,N-	127-19-5	L		96	>480	>480	>480	>480	>480	>480	>480	>480
		Dimethyl-acetamide, N,N- (8% in water)	127-19-5	L	>480									>480
		Dimethylformamide, N,N-	68-12-2	L	imm.	90	>480	>480	>480	>480	>480	>480	>480	>480
		Methyl-2-pyrrolidone, N-	872-50-4	L		>480	>480	>480		>480	>480	>480	>480	>480
		Methylformamide, N-	123-39-7	L			>480	>480	>480					
	135 Acrylamides													
		Acrylamide (50% in water)	79-06-1	L		>480	>480	>480		>480	>480	>480	>480	>480
140 Amines														
	141 Aliphatic and Alicyclic, Primary													
		Butylamine, n-	109-73-9	L			200	200	>480	>480	>480	>480	>480	>480
		Butylamine, tert-	75-64-9	L						>480	>480	>480	>480	>480
		Ethanolamine	141-43-5	L			>480	>480	>480	>480	>480	>480	>480	>480
		Ethylamine (15° C)	75-04-7	L						361	361	361	>480	361
		Isopropylamine	75-31-0	L			>480	>480	15	>480	>480	>480	>480	>480
		Methylamine	74-89-5	G			>480	>480		105	105	105	>480	105
		Methylamine (40% in water)	74-89-5	L					140	261	261	261	261	261
		Methylamine (50% in water)	74-89-5	L						232	232	232	232	232
		Propylamine, n-	107-10-8	L					100					
	142 Aliphatic and Alicyclic, Secondary													
		Diethanolamine	111-42-2	L					>480					
		Diethylamine	109-89-7	L	imm.	15	>480	>480	>480	>480	>480	>480	>480	>480
		Dimethylamine	124-40-3	G			>480	>480	>480				>480	
		Hexamethyldisilazane	999-97-3	L		>480				>480	>480	>480	>480	>480
		Morpholine	110-91-8	L		158				>480	>480	>480	>480	>480
	143 Aliphatic and Alicyclic, Tertiary													
		Triethylamine	121-44-8	L		22				>480	>480	>480	>480	>480
		Trimethylamine (gas)	75-50-3	G									>480	
	145 Aromatic, Primary													
		Aminodiphenyl, 4- (1 mg/ml in methanol)	92-67-1	L			>480	>480						
		Aniline	62-53-3	L	imm.	>480	>480	>480	320	>480	>480	>480	>480	>480
		Benzidine (25% in methanol)	92-87-5	L						>480	>480	>480	>480	>480
		Benzidine (75% in methanol)	92-87-5	L									>480	
		Chloroaniline, p-	106-47-8	S						>480	>480	>480**	>480	>480
		Chloroaniline, p- (70° C)	106-47-8	L		imm.	imm.	imm.		344	344	344	344	344
		Dichloroaniline, 3,4- (liquid, 70° C)	95-76-1	L		imm.				284	284	284	284	284

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Dichloroaniline, 3,4- (solid)	95-76-1	S						>480	>480	>480**	>480	>480
		Diethyl-m-toluidine crude	91-67-8	L		>480						>480		
		Methylene dianiline, 4,4'- (15% in MEK)	101-77-9	L						>480	>480	>480	>480	>480
		Methylene dianiline, 4,4'- (sat. sol. in methanol)	101-77-9	L									>480	
		Toluidine, m-	108-44-1	L		>480						>480		
		Toluidine, o-	95-53-4	L	imm.	>480	>480	>480		>480	>480	>480	>480	>480
	146 Aromatic, Secondary and Tertiary													
		Diethylaniline crude	91-66-7	L		>480						>480		
		Dimethylaniline, N,N-	121-69-7	L			>480	>480	imm.	>480	>480	>480	>480	>480
		Tripropylamine	102-69-2	L						>480	>480	>480	>480	>480
	148 Aliphatic and Alicyclic Polyamines													
		Diethylenetriamine	111-40-0	L			>480	>480	>480	>480	>480	>480	>480	>480
		Dytek® A	15520-10-2	L			>480	>480	>480					
		Ethylenediamine	107-15-3	L	201	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Hexamethylenediamine, 1,6- (45° C)	124-09-4	L			>480	>480		>480	>480	>480	>480	>480
		Hexamethylenediamine, 1,6- (50° C)	124-09-4	L		80			45			80		
		Methylene bis-cyclohexane diamine, 4,4'-	1761-71-3	L		>480	>480	>480				>480		
	149 Aromatic Polyamines													
		Benzidine (25% in methanol)	92-87-5	L						>480	>480	>480	>480	>480
		Benzidine (75% in methanol)	92-87-5	L									>480	
		Methylene bis (o-chloroaniline), 4,4'- (sat. sol. in methanol)	101-14-4	L		>480				>480	>480	>480	>480	>480
		Methylene dianiline, 4,4'- (15% in MEK)	101-77-9	L						>480	>480	>480	>480	>480
		Methylene dianiline, 4,4'- (sat. sol. in methanol)	101-77-9	L									>480	
150 Hydroxlamines and Ketoximes														
	150 Hydroxlamines and Ketoximes - All													
		Methyl ethyl ketoxime	96-29-7	L		>480	>480	>480		>480	>480	>480	>480	>480
160 Anhydrides														
	161 Aliphatic and Alicyclic													
		Acetic anhydride	108-24-7	L		48			>480	>480	>480	>480	>480	>480
210 Isocyanates														
	211 Aliphatic and Alicyclic													
		Cyclohexyl isocyanate	3173-53-3	L		54						54		
		Hexamethylene diisocyanate	822-06-0	L	>480	>480	>480	>480		>480	>480	>480	>480	>480
		Hexamethylene diisocyanate in DuPont Activator 193S	mixture	L	>480									
		Hexamethylene diisocyanate in DuPont Activator 4505S	mixture	L	>480									
		Hexamethylene diisocyanate in DuPont Activator 4507S	mixture	L	>480									
		Methyl isocyanate	624-83-9	L		imm.	imm.	imm.	12	>480	>480	>480	>480	>480
	212 Aromatic													
		Methylene diphenyl isocyanate	101-68-8	S						>480	>480	>480**	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Paraphenylene diisocyanate (PPDI) crude	104-49-4	L						>480	>480	>480	>480	>480
		Polymethylene polyphenyl-polyisocyanate	9016-87-9	L		>480	>480*	>480*		>480	>480	>480	>480	>480
		Toluene-1,3-diisocyanate	26471-62-5	L						>480	>480	>480	>480	>480
		Toluene-2,4-diisocyanate	584-84-9	L	imm.	>480	>480	>480		>480*	>480*	>480*	>480*	>480*
		Toluene-2,4-diisocyanate (80%)	584-84-9	L					>480					
220 Carboxylic Esters														
	221 Formates													
		Methyl formate	107-31-3	L										>480
	222 Acetates													
		Amyl acetate, n-	628-63-7	L			>480	>480	>480	>480	>480	>480	>480	
		Butyl acetate, n-	123-86-4	L						>480	>480	>480	>480	>480
		Ethyl acetate	141-78-6	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Norbornene-2-yl acetate, 5-	6143-29-9	L									>480	
		Vinyl acetate	108-05-4	L		82	>480	>480		>480	>480	>480	>480	>480
	223 Acrylates and Methacrylates													
		Butyl acrylate, n-	141-32-2	L						51	51	51	>480	51
		Ethyl acrylate	140-88-5	L						14	14	14	>480	14
		Ethyl methyacrylate	97-63-2	L			>480	>480	>480					
		Ethylene glycol acrylate	818-61-1	L					>480					
		Methyl acrylate	96-33-3	L			>480	>480		>480	>480	>480	>480	>480
		Methyl methacrylate	80-62-6	L		23	70	70		>480	>480	>480	>480	>480
	224 Aliphatic, Others													
		Dimethylmaleate	624-48-6	L		>480			>480			>480		
	226 Benzoates and Phthalates													
		Diethylhexyl phthalate	117-81-7	L			>480	>480		>480	>480	>480	>480	>480
		Methyl salicylate	119-36-8	L	imm.	>480						>480		
230 Non-Carboxylic Esters														
	233 Carbamates and Others													
		Methomyl (29% in water)	16752-77-5	L						>480	>480	>480	>480	>480
240 Ethers														
	241 Aliphatic and Alicyclic													
		Butyl ether, n-	142-96-1	L			196	196	>480	>480	>480	>480	>480	>480
		Chloromethyl methyl ether	107-30-2	L			46	46		>480	>480	>480	>480	>480
		Dichloroethyl ether	111-44-4	L			>480	>480	>480	>480	>480	>480	>480	>480
		Dimethyl ether	115-10-6	G									>480	
		Ethyl ether	60-29-7	L		imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Methyl tert-butyl ether	1634-04-4	L		>480	>480	>480	>480	>480	>480	>480	>480	>480
		Tetrahydrofuran	109-99-9	L	imm.	imm.	464	>480	>480	>480	>480	>480	>480	>480
	245 Glycol Ethers													

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		(2-Ethoxyethoxy)-ethanol, 2-	111-90-0	L		>480						>480		
		Butyl Cellosolve®	111-76-2	L		>480						>480		
		Ethyl Cellosolve®	110-80-5	L		>480	>480	>480	>480	>480	>480	>480	>480	>480
		Ethyl Cellosolve® acetate	111-15-9	L		238	>480	>480	>480	>480	>480	>480	>480	>480
		Methyl Cellosolve®	109-86-4	L		>480	>480	>480	405	>480	>480	>480	>480	>480
		Methyl Cellosolve® acetate	110-49-6	L		>480	>480	>480	>480	>480	>480	>480	>480	>480
		Polyethylene glycol dimethyl ether	24991-55-7	L				>480						
260 Halogen Compounds														
	261 Aliphatic and Alicyclic													
		Carbon tetrachloride	56-23-5	L			11	11	>480	>480	>480	>480	>480	>480
		Chlordane	57-74-9	L						>480	>480	>480	>480	>480
		Chlordane (44%)	57-74-9	L					>480					
		Chloroethanol, 2-	107-07-3	L	imm.		>480	>480	>480	>480	>480	>480	>480	>480
		Chloroform	67-66-3	L	imm.	imm.	imm.	imm.	imm.	>480	>480	>480	>480	>480
		Chloropicrin	76-06-2	L			>480	>480						
		Dibromo-3-chloropropane, 1,2-	96-12-8	L					>480					
		Dichloroacetone (40° C)	534-07-6	L			>480	>480		>480	>480	>480	>480	>480
		Dichloroethyl ether	111-44-4	L			>480	>480	>480	>480	>480	>480	>480	>480
		Dichloromethane	75-09-2	L	imm.	imm.	imm.	imm.	imm.	432	432	432	>480	>480
		Dichloropropene, 1,3-	542-75-6	L		imm.	25	25	imm.			imm.		
		Dichloropropene, 2,3-	78-88-6	L			25	25		>480	>480	>480	>480	>480
		Diiodo-1,1,2,2-tetrafluorobutane, 1,4-	755-95-3	L						>480	>480	>480	>480	>480
		Epichlorohydrin	106-89-8	L		15	372	372	67	>480	>480	>480	>480	>480
		Ethyl chloride	75-00-3	L									>480	
		Ethylene dibromide	106-93-4	L			288	288	>480	>480	>480	>480	>480	>480
		Ethylene dichloride	107-06-2	L		imm.	118	118	>480	>480	>480	>480	>480	>480
		Hexafluoroethane	76-16-4	G						>480	>480	>480	>480	>480
		Hexafluoroisobutylene	382-10-5	G						>480	>480	>480	>480	>480
		Lindane (sat. sol. in acetone)	58-89-9	L						>480	>480	>480	>480	>480
		Lindane (sat. sol. in methanol)	58-89-9	L									>480	
		Methyl bromide	74-83-9	G		>480				>480	>480	>480	>480	>480
		Methyl chloride (gas)	74-87-3	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Methyl chloride (liquid, -70° C)	74-87-3	L									>180	
		Methyl fluoride	593-53-3	G						>480	>480	>480	>480	>480
		Methyl iodide	74-88-4	L		imm.	296	296		>480	>480	>480	>480	>480
		Methylene bromide	74-95-3	L			imm.	imm.	40					
		Propylbromide, n-	106-94-5	L		12			>480			12		
		Propylene dichloride	78-87-5	L						>480	>480	>480	>480	>480
		Tetrachloroethane, 1,1,2,2-	79-34-5	L		98	>480	>480	>480	>480	>480	>480	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Tetrafluoroethane, 1,1,1,2-	811-97-2	L		>480						>480		
		Tetrafluoromethane	75-73-0	G						>480	>480	>480	>480	>480
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	G					>480	>480	>480	>480	>480	>480
		Trichloroacetone, 1,1,3-	921-03-9	L			>480	>480						
		Trichloroethane, 1,1,1-	71-55-6	L			232	232	>480	>480	>480	>480	>480	>480
		Trichloroethane, 1,1,2-	79-00-5	L						>480	>480	>480	>480	>480
		Trifluoroacetic acid	76-05-1	L		>480	>480	>480				>480		
		Trifluoromethane	75-46-7	G						>480	>480	>480	>480	>480
	263 Aromatic													
		Benzotrichloride	98-07-7	L					>480					
		Bromofluorobenzene, 4-	460-00-4	L			>480	>480	>480	>480	>480	>480	>480	>480
		Chloro-benzotrifluoride, 4-	98-56-6	L					460					
		Chlorobenzene	108-90-7	L		imm.	>480	>480	63	>480	>480	>480	>480	>480
		Chlorobenzotrichloride, 4-	5216-25-1	L					>480					
		Chlorophenol, 4- (sat. sol. in methanol)	106-48-9	L						>480	>480	>480	>480	>480
		Chlorotoluene, o-	95-49-8	L		13	>480	>480		>480	>480	>480	>480	>480
		Cyanuric chloride (20%, Toluene 80%)	108-77-0	L						>480	>480	>480	>480	>480
		Dichloroaniline, 3,4- (liquid, 70° C)	95-76-1	L		imm.				284	284	284	284	284
		Dichloroaniline, 3,4- (solid)	95-76-1	S						>480	>480	>480**	>480	>480
		Fluorobenzene	462-06-6	L		imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Nitrochlorobenzene, o-	88-73-3	S	15									
		Nitrochlorobenzene, p-	100-00-5	S	imm.									
		PCB (50% in trichlorobenzene)	mixture	L					>480	>480	>480	>480	>480	>480
		PCB 1254 (50% in mineral oil)	mixture	L		>480						>480		
		PCB 1254 (90%)	11097-69-1	L	55	>480						>480		
		PCB gas condensate	mixture	L			>480	>480						
		PCB in transformer oil	mixture	L			>480	>480						
		Tetrachloro-bisphenol -A, 2,2',6,6'	79-95-8	S			>480	>480						
		Trichlorobenzene, 1,2,4-	120-82-1	L	imm.	87	>480	>480	>480	>480	>480	>480	>480	>480
	264 Vinylic													
		Chloroacrylonitrile, 2-	920-37-6	L			>480	>480						
		Hexachlorobutadiene	87-68-3	L						>480	>480	>480	>480	>480
		Tetrachloroethylene, 1,1,2,2-	127-18-4	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Trichloroethylene	79-01-6	L		imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Vinyl chloride	75-01-4	G		>480	>480	>480	>480	>480	>480	>480	>480	>480
		Vinylidene chloride	75-35-4	L			>480	>480	170	>480	>480	>480	>480	>480
		trans-1,2-Dichloroethylene	156-60-5	L		imm.						imm.		
		trans-1,4-Dichloro-2-butene	110-57-6	L	75*									
	265 Alylic													

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Allyl chloride	107-05-1	L		imm.	>480	>480	12	>480	>480	>480	>480	>480
	266 Benzylic													
		Benzyl chloride	100-44-7	L			>480	>480	>480	>480	>480	>480	>480	>480
270 Heterocyclic Compounds														
	271 Nitrogen, Pyridines													
		Aminopyridine, 2- (saturated solution)	504-29-0	L		>480						>480		
		Nicotine	54-11-5	L			>480	>480	>480	>480	>480	>480	>480	>480
		Picoline, 2-	109-06-8	L			>480	>480	>480	>480	>480	>480	>480	>480
		Picoline, 3-	108-99-6	L			>480	>480	>480	>480	>480	>480	>480	>480
		Pyridine	110-86-1	L		31	>480	>480	>480	>480	>480	>480	>480	>480
		Vinylpyridine, 4-	100-43-6	L		15						15		
	274 Nitrogen, Others													
		Dichloro-6-isopropyl-S-triazine, 2,4- (22% in toluene)	30894-74-7	L						>480	>480	>480	>480	>480
		Ethyleneimine	151-56-4	L						59	59	59	>480	59
		Propylene imine	75-55-8	L						150	150	150	150	150
		Pyrrolidine	123-75-1	L			100	100		413	413	413	413	413
	275 Oxygen, Epoxides													
		Bisphenol-A diglycidyl ether	1675-54-3	L		>480	>480	>480		>480	>480	>480	>480	>480
		Epichlorohydrin	106-89-8	L		15	372	372	67	>480	>480	>480	>480	>480
		Ethylene oxide (gas)	75-21-8	G	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Ethylene oxide (liquid, -70° C)	75-21-8	L									>180	
		Ethylene oxide (liquid, 0° C)	75-21-8	L						>480	>480	>480	>480	>480
		Ethylene oxide (liquid, 11° C)	75-21-8	L					18					
		Ethylene oxide mixture (10% in HCFC 124)	mixture	G									>480	
		Phenyl glycidyl ether	122-60-1	L		>480						>480		
		Propylene oxide, 1,2-	75-56-9	L			14	14	30	>480	>480	>480	>480	>480
		Tetramethylethylene oxide	5076-20-0	L									>480	
	277 Oxygen, Furans													
		Furfural	98-01-1	L		227	>480	>480	>480	>480	>480	>480	>480	>480
	278 Oxygen, Others													
		Dioxane, 1,4-	123-91-1	L			>480	>480	>480	>480	>480	>480	>480	>480
280 Hydrazines														
	280 Hydrazines - All													
		Dimethylhydrazine, 1,1-	57-14-7	L		13				>480*	>480*	>480*	>480*	>480*
		Hydrazine	302-01-2	L		>480	283	283		>480	>480	>480	>480	>480
		Hydrazine hydrate	10217-52-4	L										>480
		Hydrazine hydrate (50%)	10217-52-4	L									>480	
		Hydrazine hydrate (85%)	10217-52-4	L						440	440	440	440	440
		Methyl hydrazine	60-34-4	L			283	283		>480	>480	>480	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
290 Hydrocarbons														
	291 Aliphatic and Alicyclic, Saturated													
		Cyclohexane	110-82-7	L			>480	>480	>480	>480	>480	>480	>480	>480
		Diesel automotive test fuel	mixture	L	imm.									
		Diesel fuel	68334-30-5	L		48	>480	>480	199	>480	>480	>480	>480	>480
		Fuel oil	68476-30-2	L	imm.	>480						>480		
		Gasoline	86290-81-5	L		imm.	30	30	>480	>480	>480	>480	>480	>480
		Gasoline, E-10	308066-70-8	L		16						16		
		Heptane	142-82-5	L					>480					
		Hexane, n-	110-54-3	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
		JP-4 jet fuel	50815-00-4	L		imm.				>480	>480	>480	>480	>480
		JP-8 jet fuel	94114-58-6	L		58				>480	>480	>480	>480	>480
		Kerosene	8008-20-6	L		58	>480	>480	>480	>480	>480	>480	>480	>480
		Mineral oil	8012-95-1	L		>480						>480		
		Mineral spirits	64475-85-0	L	imm.	190				>480	>480	>480	>480	>480
		Octane, n-	111-65-9	L						>480	>480	>480	>480	>480
		Propane	74-98-6	G										>480
		Stoddard solvent	8052-41-3	L						>480	>480	>480	>480	>480
		VM&P Naphtha	8030-30-6	L		18				>480	>480	>480	>480	>480
	292 Aromatic													
		Benzene	71-43-2	L		imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Cumene	98-82-8	L			>480	>480	364	>480	>480	>480	>480	>480
		Ethyl benzene	100-41-4	L						>480	>480	>480	>480	>480
		Styrene	100-42-5	L		16	>480	>480	>480	>480	>480	>480	>480	>480
		Toluene	108-88-3	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Xylene, mixed isomers	1330-20-7	L			>480	>480	>480	>480	>480	>480	>480	>480
		Xylene, o-	95-47-6	L					>480					
	293 Aromatic Polynuclear													
		Anthracene (sat. sol. in toluene)	120-12-7	L			>480	>480	>480					
		Naphthalene	91-20-3	S			>480	>480	>480					
	294 Aliphatic and Alicyclic, Unsaturated													
		Crude oil	8002-05-9	L	imm.	>480				>480	>480	>480	>480	>480
	296 Polyenes													
		Butadiene, 1,3- (gas)	106-99-0	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Butadiene, 1,3- (liquid, 0° C)	106-99-0	L									>180	
		Cyclooctadiene	1552-12-1	L					>480					
		d-Limonene	5989-27-5	L			>480	>480	>480	>480	>480	>480	>480	>480
300 Peroxides														
	300 Peroxides - All													

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Hydrogen peroxide (30%)	7722-84-1	L	>480	>480						>480	>480	
		Hydrogen peroxide (50%)	7722-84-1	L	>480		>480	>480	>480					
		Hydrogen peroxide (70%)	7722-84-1	L	>480					>480	>480	>480	>480	>480
310 Hydroxylic Compounds (includes alcohols)														
	311 Aliphatic and Alicyclic, Primary													
		Allyl alcohol	107-18-6	L		>480	>480	>480	>480	>480	>480	>480	>480	>480
		Butanol, n-	71-36-3	L	imm.	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Ethanolamine	141-43-5	L			>480	>480	>480	>480	>480	>480	>480	>480
		Ethyl alcohol	64-17-5	L		>480			>480			>480		
		Mercaptoethanol	60-24-2	L			>480	>480					>480	
		Methanol	67-56-1	L	imm.	>480	77	>480	imm.	157	157	>480	>480	>480
		Methyl Cellosolve®	109-86-4	L		>480	>480	>480	405	>480	>480	>480	>480	>480
		Pentanol, n-	71-41-0	L			>480	>480	>480					
		Propargyl alcohol	107-19-7	L			123	123					>480	
	312 Aliphatic and Alicyclic,Secondary													
		Benzyl alcohol	100-51-6	L		>480	>480					>480		
		Isoamyl alcohol	123-51-3	L		>480						>480		
		Isopropyl alcohol	67-63-0	L			>480	>480	>480	>480	>480	>480	>480	>480
	313 Aliphatic and Alicyclic, Tertiary													
		Acetone cyanohydrin	75-86-5	L			>480	>480		>480	>480	>480	>480	>480
	314 Aliphatic and Alicyclic, Polyols													
		Chloro-1,2-propanediol, 3-	96-24-2	L						>480	>480	>480	>480	>480
		Ethylene glycol	107-21-1	L	>480	>480	>480	>480		>480	>480	>480	>480	>480
	315 Aliphatic and Alicyclic, Substituted													
		Chloroethanol, 2-	107-07-3	L	imm.		>480	>480	>480	>480	>480	>480	>480	>480
		Trichloroethanol, 2,2,2-	115-20-8	L		>480	>480	>480	>480	>480	>480	>480	>480	>480
		Trifluoroethanol, 2,2,2-	75-89-8	L	imm.					>480	>480	>480	>480	>480
	316 Aromatic, Phenols													
		Chlorophenol, 4- (sat. sol. in methanol)	106-48-9	L						>480	>480	>480	>480	>480
		Creosote	8001-58-9	L			>480	>480						
		Cresol, mixed isomers	1319-77-3	L	40*	100				>480	>480	>480	>480	>480
		Cresol, o-	95-48-7	L	37	>480	180	180	330			>480		
		Dinitrocresol (sat. sol. in methanol)	534-52-1	L						>480	>480	>480	>480	>480
		Nitrophenol, o- (70° C)	88-75-5	L		imm.				208	208	208	208	208
		Nitrophenol, p- (60° C)	100-02-7	L		imm.						imm.		
		Pentachlorophenol (sat. sol. in methanol)	87-86-5	L						>480	>480	>480	>480	>480
		Phenol (45° C)	108-95-2	L		44	25	25	17	101	101	>480	>480	>480
		Phenol (60° C)	108-95-2	L		imm.			imm.	25	25	121	125	87
		Phenol (85-90%)	108-95-2	L	imm.	>480	>480	>480	341	>480	>480	>480	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Phenol (88% at 45° C)	108-95-2	L						135	135	135	150	135
		Tetrachloro-bisphenol -A, 2,2',6,6'	79-95-8	S			>480	>480						
		m-Cresol 55%, p-Cresol 30%, Phenol 15%	mixture	L						>480	>480	>480	>480	>480
	318 Aromatic, Others													
		Phenethyl alcohol, 2-	60-12-8	L					>480					
		Phenylethanol, 1-	98-85-1	L		>480			>480			>480		
330 Elements														
	330 Elements - All													
		Bromine	7726-95-6	L	imm.		imm.	imm.	imm.	imm.	imm.	imm.	15	imm.
		Bromine (10 g/m²)	7726-95-6	L									>480	
		Bromine (sat. vapor)	7726-95-6	G									40	
		Chlorine (gas)	7782-50-5	G	imm.	>480	>480	>480	imm.	>480	>480	>480	>480	>480
		Chlorine (gas, 20 ppm)	7782-50-5	G	>480*									
		Chlorine (liquid, -70° C)	7782-50-5	L					>480				>480	>480
		Iodine	7553-56-2	S	>420*,**									
		Iodine (5% in carbon tetrachloride)	7553-56-2	L		>480						>480		
		Mercury	7439-97-6	L	>480	>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 chloride (sat. sol. in water)	12125-02-9	L					>480					
		Ammonium fluoride (40%)	12125-01-8	L						>480	>480	>480	>480	>480
		Arsenic trichloride	7784-34-1	L			38	38						
		Ferric chloride (50% w/w in water)	7705-08-0	L		>480						>480		
		Ferrous chloride (50% w/w in water)	7758-94-3	L		>480						>480		
		Lithium chloride (20%)	7447-41-8	L	>480									
		Mercuric chloride (sat. sol. in water)	7487-94-7	L		>480	>480	>480		>480*	>480*	>480*	>480*	>480*
		Potassium acetate (sat. sol. in water)	127-08-2	L		>480				>480*	>480*	>480*	>480*	>480*
		Potassium carbonate	584-08-7	L					>480					
		Potassium chromate (sat. sol. in water)	7789-00-6	L		>480	>480	>480		>480*	>480*	>480*	>480*	>480*
		Potassium permanganate	7722-64-7	L	>480									
		Sodium fluoride (sat. sol. in water)	7681-49-4	L		>480						>480		
		Sodium hypochlorite (15%)	7681-52-9	L	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Sodium hypochlorite (30%)	7681-52-9	L			>480	>480	>480					
		Sodium metabisulfite (38% w/w in water)	7681-57-4	L	6	>480			23	>480	>480	>480	>480	>480
		Sodium silicate (40-42% in water)	6834-92-0	L	>480									
		Sodium sulfide (60% w/w in water slurry)	1313-82-2	L	>480	>480			>480	>480	>480	>480	>480	>480
	345 Inorganic Cyano Compounds													
		Cyanogen chloride	506-77-4	G				>480					>60	>60
		Hydrogen cyanide (gas)	74-90-8	G				>480	30	>480	>480	>480	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Hydrogen cyanide (liquid, 21° C)	74-90-8	L	60*	>480				105	105	>480	>480	105
		Potassium cyanide (10%)	151-50-8	L	>480									
		Sodium cyanide (45%)	143-33-9	L			>480	>480						
		Sodium cyanide (sat. sol. in water)	143-33-9	L		>480						>480		
350 Inorganic Gases and Vapors														
	350 Inorganic Gases and Vapors - All													
		Ammonia (gas)	7664-41-7	G	imm.	32	79	>480	12	46	46	46	>480	>480
		Ammonia (liquid, < -35°C)	7664-41-7	L				>480	>480				>480	>480
		Arsine	7784-42-1	G						>480	>480	>480	>480	>480
		Boron trichloride	10294-34-5	G						>480	>480	>480	>480	>480
		Boron trifluoride	7637-07-2	G						>480	>480	>480	>480	>480
		Carbon monoxide	630-08-0	G						330	330	330	330	330
		Chlorine (gas)	7782-50-5	G	imm.	>480	>480	>480	imm.	>480	>480	>480	>480	>480
		Chlorine (gas, 20 ppm)	7782-50-5	G	>480*									
		Chlorine (liquid, -70° C)	7782-50-5	L					>480				>480	>480
		Chlorine dioxide (1000 ppm)	10049-04-4	G						>480	>480	>480	>480	>480
		Chlorine dioxide (150 ppm)	10049-04-4	G						>480	>480	>480	>480	
		Chlorine trifluoride	7790-91-2	G						45	45	45	45	45
		Diborane (10%)	19287-45-7	G						>480	>480	>480	>480	>480
		Fluorine	7782-41-4	G									>480	
		Hydrogen bromide (gas)	10035-10-6	G			>480	>480		>480	>480	>480	>480	>480
		Hydrogen chloride (gas)	7647-01-0	G	imm.	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Hydrogen chloride (liquid, -90° C)	7647-01-0	L									>180	
		Hydrogen cyanide (gas)	74-90-8	G				>480	30	>480	>480	>480	>480	>480
		Hydrogen cyanide (liquid, 21° C)	74-90-8	L	60*	>480				105	105	>480	>480	105
		Hydrogen fluoride (gas)	7664-39-3	G	imm.	35	imm.	imm.	170	135	135	135	>480	>480
		Hydrogen fluoride (liquid, 0° C)	7664-39-3	L					50				290	
		Hydrogen fluoride (liquid, 15° C)	7664-39-3	L										>480
		Hydrogen fluoride (liquid, 18° C)	7664-39-3	L			43	43						
		Hydrogen fluoride (liquid, 4° C)	7664-39-3	L									290	
		Hydrogen selenide	7783-07-5	G						>480	>480	>480	>480	>480
		Hydrogen sulfide	7783-06-4	G			>480	>480	imm.	>480	>480	>480	>480	>480
		Nitric oxide	10102-43-9	G									>480	
		Nitrogen dioxide	10102-44-0	G		>480	14	14				>480		
		Nitrogen tetroxide (gas)	10544-72-6	G						90	90	90	90	420
		Nitrogen tetroxide (liquid, 0° C)	10544-72-6	L						>480	>480	>480	>480	>480
		Nitrogen tetroxide (liquid, 21° C)	10544-72-6	L									450	
		Nitrogen trifluoride	7783-54-2	G						>480	>480	>480	>480	>480
		Nitrous oxide	10024-97-2	G						>480	>480	>480	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Phosgene	75-44-5	G			>480	>480	>480	>480	>480	>480	>480	>480
		Phosphine	7803-51-2	G			imm.	imm.		>480	>480	>480	>480	>480
		Sulfonyl chloride	7791-25-5	L			>480	>480	120	>480	>480	>480	>480	>480
		Sulfur dioxide	7446-09-5	G	imm.	>480	38*	38*		>480	>480	>480	>480	>480
		Sulfur hexafluoride	2551-62-4	G						>480	>480	>480	>480	>480
		Tungsten hexafluoride	7783-82-6	L						>480	>480	>480	>480	>480
360 Inorganic Acid Halides														
	360 Inorganic Acid Halides - All													
		Antimony pentachloride	7647-18-9	L		>480	15	15				>480		
		Boron trichloride	10294-34-5	G						>480	>480	>480	>480	>480
		Boron trifluoride	7637-07-2	G						>480	>480	>480	>480	>480
		Phosphorus oxychloride	10025-87-3	L			>480	>480	410	>480	>480	>480	>480	>480
		Phosphorus trichloride	7719-12-2	L		imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Silicon tetrachloride	10026-04-7	L		35	>480	>480	>480	>480	>480	>480	>480	>480
		Sulfonyl chloride	7791-25-5	L			>480	>480	120	>480	>480	>480	>480	>480
		Thionyl chloride	7719-09-7	L			imm.	imm.	15	35	35	35	90	35
		Titanium tetrachloride	7550-45-0	L		imm.	>480	>480	120	>480	>480	>480	>480	>480
		Vanadium tetrachloride	7632-51-1	L				>480						
	365 Inorganic Acid Oxides													
		Sulfur dioxide	7446-09-5	G	imm.	>480	38*	38*		>480	>480	>480	>480	>480
		Sulfur trioxide	7446-11-9	L					imm.	90	90	90	90	90
370 Inorganic Acids														
	370 Inorganic Acids - All													
		Chlorosulfonic acid	7790-94-5	L		>480	>480	>480	330	180	180	>480	>480	180
		Chromic acid (60-62%)	1333-82-0	L	>480	>480						>480		
		Fluoroboric acid (48-50%)	16872-11-0	L		>480			>480			>480		
		Fluorosilicic acid	16961-83-4	L			>480	>480	>480	>480	>480	>480	>480	>480
		Fluorosulfonic acid	7789-21-1	L						>480	>480	>480	>480	>480
		Hydriodic acid (47%)	10034-85-2	L		>480						>480		
		Hydriodic acid (55-57%)	10034-85-2	L			>480	>480	>480	>480	>480	>480	>480	>480
		Hydrobromic acid (48-49%)	10035-10-6	L					>480					
		Hydrochloric acid (37%)	7647-01-0	L	140	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Hydrofluoric acid (48-51%)	7664-39-3	L	400	>480	>480	>480	180	>480	>480	>480	>480	>480
		Hydrofluoric acid (70%)	7664-39-3	L		imm.	39	39				imm.	>480	
		Hydrofluoric acid (92% at 90° C)	7664-39-3	L						67*	67*	67*	67*	67*
		Hydrogen bromide (gas)	10035-10-6	G			>480	>480		>480	>480	>480	>480	>480
		Hydrogen cyanide (gas)	74-90-8	G				>480	30	>480	>480	>480	>480	>480
		Hydrogen cyanide (liquid, 21° C)	74-90-8	L	60*	>480				105	105	>480	>480	105
		Hydrogen fluoride (gas)	7664-39-3	G	imm.	35	imm.	imm.	170	135	135	135	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Hydrogen fluoride (liquid, 0° C)	7664-39-3	L					50				290	
		Hydrogen fluoride (liquid, 15° C)	7664-39-3	L										>480
		Hydrogen fluoride (liquid, 18° C)	7664-39-3	L			43	43						
		Hydrogen fluoride (liquid, 4° C)	7664-39-3	L									290	
		Hypophosphorus acid (50%)	6303-21-5	L			>480	>480	>480					
		Nitric acid (70%)	7697-37-2	L	>480	>480	>480	>480		>480	>480	>480	>480	>480
		Nitric acid (90%)	7697-37-2	L					>480	>480	>480	>480	>480	>480
		Nitric acid, red fuming	52583-42-3	L			14	14	>480	>480	>480	>480	>480	>480
		Oleum (103%)	8014-95-7	L									>480	
		Oleum (20% free SO3)	8014-95-7	L		>480						>480		
		Oleum (27-33% free SO3)	8014-95-7	L		450						450		
		Oleum (40% free SO3)	8014-95-7	L	398*		>480	>480		>480	>480	>480	>480	>480
		Oleum (65% free SO3)	8014-95-7	L					15				>480	
		Perchloric acid (70%)	7601-90-3	L						>480	>480	>480	>480	>480
		Phosphoric acid (75%)	7664-38-2	L					15					
		Phosphoric acid (85%)	7664-38-2	L		>480	>480	>480		>480	>480	>480	>480	>480
		Sulfamic acid (15%)	5329-14-6	L	>480					>480	>480	>480	>480	>480
		Sulfuric acid	7664-93-9	L	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Sulfuric acid (18%)	7664-93-9	L										
		Sulfuric acid (30%)	7664-93-9	L										
380 Inorganic Bases														
	380 Inorganic Bases - All													
		Ammonia (gas)	7664-41-7	G	imm.	32	79	>480	12	46	46	46	>480	>480
		Ammonia (liquid, < -35°C)	7664-41-7	L				>480	>480				>480	>480
		Ammonium hydroxide (28%-30%)	1336-21-6	L	imm.	>480	>480	>480	89	160	160	>480	>480	>480
		Ammonium hydroxide (in household cleaner, 2-3%)	1336-21-6	L		>480						>480		
		Lithium hydroxide (14.9%)	1310-65-2	L	>480									
		Potassium hydroxide (45%)	1310-58-3	L	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
		Sodium hydroxide (40%)	1310-73-2	L										
		Sodium hydroxide (42-50%)	1310-73-2	L	>480	>480	>480	>480	>480	>480	>480	>480	>480	>480
390 Ketones														
	391 Aliphatic and Alicyclic													
		Acetone	67-64-1	L	imm.	imm.	>480	>480	>480	>480	>480	>480	>480	>480
		Chloroacetone	78-95-5	L		258	>480	>480	>480			258		
		Cyclohexanone	108-94-1	L		136				>480	>480	>480	>480	>480
		Dichloroacetone (40° C)	534-07-6	L			>480	>480		>480	>480	>480	>480	>480
		Hexone	108-10-1	L			>480	>480	>480	>480	>480	>480	>480	>480
		Mesityl oxide	141-79-7	L					>480					
		Methyl ethyl ketone	78-93-3	L		18	71	71	>480	>480	>480	>480	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Trichloroacetone, 1,1,3-	921-03-9	L			>480	>480						
430 Nitriles														
	431 Aliphatic and Alicyclic													
		Acetone cyanohydrin	75-86-5	L			>480	>480		>480	>480	>480	>480	>480
		Acetonitrile	75-05-8	L	imm.	60	157	>480	imm.	>480	>480	>480	>480	>480
		Acrylonitrile	107-13-1	L	imm.	48	12	12	13	>480	>480	>480	>480	>480
		Acrylonitrile (10 g/m²)	107-13-1	L						>480	>480	>480	>480	>480
		Adiponitrile	111-69-3	L			>480	>480	>480	>480	>480	>480	>480	>480
		Chloroacrylonitrile, 2-	920-37-6	L			>480	>480						
		Methyl-1,5-pentantedinitrile, 2-	4553-62-2	L			>480	>480						
		Methyl-1,5-pentantedinitrile, 2- (87%)	4553-62-2	L						>480	>480	>480		
		Pentenenitrile, 2-	13284-42-9	L			>480	>480						
		Pentenenitrile, 3-	4635-87-4	L						>480	>480	>480	>480	>480
		cis-2-Pentenenitrile (70%)	25899-50-7	L						>480	>480	>480	>480	>480
	432 Aromatic													
		Benzonitrile	100-47-0	L			>480	>480	450	>480	>480	>480	>480	>480
		Benzyl cyanide	140-29-4	L			>390	>390	>390					
440 Nitro Compounds														
	441 Unsubstituted													
		Nitrobenzene	98-95-3	L	imm.	57	>480	>480	>480	>480	>480	>480	>480	>480
		Nitromethane	75-52-5	L			229	229		>480	>480	>480	>480	>480
		Nitropropane, 2-	79-46-9	L			>480	>480	>480	>480	>480	>480	>480	>480
	442 Substituted													
		Dinitrocresol (sat. sol. in methanol)	534-52-1	L						>480	>480	>480	>480	>480
		Nitrochlorobenzene, o-	88-73-3	S	15									
		Nitrochlorobenzene, p-	100-00-5	S	imm.									
		Nitrophenol, o- (70° C)	88-75-5	L		imm.				208	208	208	208	208
		Nitrophenol, p- (60° C)	100-02-7	L		imm.						imm.		
		Nitrotoluene, o-	88-72-2	L		95						95		
		Nitrotoluene, p-	99-99-0	S	imm.									
450 Nitroso Compounds														
	450 Nitroso Compounds - All													
		Dimethyl nitrosamine	62-75-9	L			>480	>480						
460 Organo-Phosphorus Compounds														
	462 Derivatives of Phosphorus-based acids													
		Ethyl parathion	56-38-2	L						>480	>480	>480	>480	>480
		Malathion	121-75-5	L						>480	>480	>480	>480	>480
		Malathion (50% in methanol)	121-75-5	L						>480	>480	>480	>480	>480
		Malathion (50% in water)	121-75-5	L		>480						>480		

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		Sarin (10 g/m²)	107-44-8	L		>480			120	>480	>480	>480	>480	>480
		Sarin (100 g/m²)	107-44-8	L			>480	>480		>480	>480	>480	>480	>480
		Skydrol®	95660-51-8	L	>480									
		Soman (10 g/m²)	96-64-0	L					>480	>480	>480	>480	>480	>480
		Soman (100 g/m²)	96-64-0	L			>480	>480					>480	
		Tabun (10 g/m²)	77-81-6	L						>480	>480	>480	>480	>480
		Tabun (100 g/m²)	77-81-6	L			>480	>480					>480	
		Trimethyl phosphate	512-56-1	L						>480	>480	>480	>480	>480
		Trimethyl phosphite	121-45-9	L		imm.				>480	>480	>480	>480	>480
		VX Nerve agent (10 g/m²)	50782-69-9	L		>480			>480	>480	>480	>480	>480	>480
		VX Nerve agent (100 g/m²)	50782-69-9	L			>480	>480		>480	>480	>480	>480	>480
470 Organo-Metallic Compounds														
	470 Organo-Metallic Compounds - All													
		Dimethyl mercury in decane (100 ppm)	593-74-8	L				>480						
		Lewisite (10 g/m²)	541-25-3	L		>360			120	>480	>480	>480	>480	>480
		Lewisite (100 g/m²)	541-25-3	L			360	360		120	120	120	>480	120
		Nickel carbonyl	13463-39-3	L									>480	
		Tetraethyl lead	78-00-2	L					>480	>480	>480	>480	>480	>480
		Triethylaluminum	97-93-8	L										>480
		Vinylmagnesium chloride (15% in tetrahydrofuran)	3536-96-7	L		imm.						imm.		
		Vinylmagnesium chloride (16.5%)	3536-96-7	L						>480	>480	>480	>480	>480
480 Organo-Silicon Compounds														
	480 Organo-Silicon Compounds - All													
		Dichlorosilane	4109-96-0	G						>480	>480	>480	>480	>480
		Dimethyldichlorosilane	75-78-5	L		46	>480	>480				46	>480	
		Hexamethyldisilazane	999-97-3	L		>480				>480	>480	>480	>480	>480
		Methyl trichlorosilane	75-79-6	L			>480	>480		>480	>480	>480	>480	>480
		Silane	7803-62-5	G						>480	>480	>480	>480	>480
		Silicon tetrachloride	10026-04-7	L		35	>480	>480	>480	>480	>480	>480	>480	>480
		Tetraethoxysilane	78-10-4	L						>480	>480	>480	>480	>480
		Trichlorophenylsilane	98-13-5	L		>480	>480	>480				>480	>480	
		Trichlorosilane	10025-78-2	L		60				>480	>480	>480	>480	>480
		Trichlorovinylsilane	75-94-5	L		100						100		
500 Sulfur Compounds														
	501 Thiols													
		Mercaptoethanol	60-24-2	L			>480	>480					>480	
		Methyl mercaptan	74-93-1	G			>480	>480	>480	>480	>480	>480	>480	>480
		Phenyl mercaptan	108-98-5	L									>480	>480
		Thioglycolic acid	68-11-1	L			>480	>480	>480	>480	>480	>480	>480	>480

Chemical Permeation Data Tables

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					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
	502 Sulfides and Disulfides													
		Carbon disulfide	75-15-0	L	imm.	imm.	>480	>480	16	>480	>480	>480	>480	>480
		Chlorine sulfide	10545-99-0	L									440	
		Chlorine sulfide (80%)	10545-99-0	L					imm.	70	70	70	>480	70
		Dimethyl sulfide	75-18-3	L			271	271						
		Hydrogen sulfide	7783-06-4	G			>480	>480	imm.	>480	>480	>480	>480	>480
		Sulfur monochloride	10025-67-9	L					210	>480	>480	>480	>480	>480
		Sulfur mustard (10 g/m²)	505-60-2	L		>480			120	>480	>480	>480	>480	>480
		Sulfur mustard (100 g/m²)	505-60-2	L			>480	>480		>480	>480	>480	>480	>480
	503 Sulfones and Sulfoxides													
		Dimethyl sulfoxide	67-68-5	L			36	36	>480	>480	>480	>480	>480	>480
	504 Sulfonic Acids													
		Chlorosulfonic acid	7790-94-5	L		>480	>480	>480	330	180	180	>480	>480	180
		Methanesulfonic acid (70% in water)	75-75-2	L		>480						>480		
		Trifluoromethane sulfonic acid	1493-13-6	L		>480	>480	>480		>480	>480	>480	>480	>480
	505 Sulfonyl Chlorides													
		Benzene sulfonyl chloride	98-09-9	L			>480	>480	>480	>480	>480	>480	>480	>480
		Methane sulfonyl chloride	124-63-0	L						>480	>480	>480	>480	>480
	507 Sulfonates, Sulfates,and Sulfites													
		Diethyl sulfate	64-67-5	L			>480	>480	>480				>480	
		Dimethyl sulfate	77-78-1	L		>480	>480	>480	>480	>480	>480	>480	>480	>480
	509 Other													
		Sulfamic acid (15%)	5329-14-6	L	>480					>480	>480	>480	>480	>480
		Sulfur hexafluoride	2551-62-4	G						>480	>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	L						>480	>480	>480	>480	>480
		Tetramethylammonium hydroxide (25%)	75-59-2	L	>480		>480	>480					>480	
590 Miscellaneous (Not classified)														
	590 Miscellaneous (Not classified) - All													
		Black liquor	308074-23-9	L	>480	>480				>480	>480	>480	>480	>480
		Boron trifluoride dimethyletherate	353-42-4	L			>480	>480	>480					
		Boron trifluoride etherate	109-63-7	L			>480	>480					>480	
		Chemidize 727 ND	mixture	L		>480						>480		
		DuPont Activator 193S	mixture	L	>480									
		DuPont Activator 4505S	mixture	L	>480									
		DuPont Activator 4507S	mixture	L	>480									
		Green liquor	68131-30-6	L	>480	>480				>480	>480	>480	>480	>480
		Tetramethyltin (0.5% in n-pentane)	mixture	L						>480	>480	>480	>480	>480

Chemical Permeation Data Tables

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)									
					Tychem® QC	Tychem® SL	Tychem® F	Tychem® ThermoPro	Tychem® CPF 3	Tychem® BR	Tychem® LV	Tychem® Responder® CSM	Tychem® TK	Tychem® Reflector®
		White liquor	68131-33-9	L	>480	>480				>480	>480	>480	>480	>480
		t-Sodium-amylate / t-amyl alcohol	mixture	S						120	120	120**	120	120

> = 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.

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.

Chemical Permeation Data Table

Class	Sub-Class	Chemical Name	CAS	Phase	Breakthrough Time (Minutes)	
					Tyvek® Xpert	Tyvek® Plus
380 Inorganic Bases						
	380 Inorganic Bases - All					
		Sodium hydroxide (40%)	1310-73-2	L	>480	>480
370 Inorganic Acids						
	370 Inorganic Acids - All					
		Sulfuric acid (30%)	7664-93-9	L		>240
		Sulfuric acid (18%)	7664-93-9	L	>480	>480

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

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Chemical Name	Synonym	CAS Number	Class	Sub-Class
(2-Ethoxyethoxy)-ethanol, 2-		111-90-0	240	245
Acetaldehyde		75-07-0	120	121
Acetic acid		64-19-7	100	102
Acetic anhydride		108-24-7	160	161
Acetone		67-64-1	390	391
Acetone cyanohydrin		75-86-5	310 / 430	313 / 431
Acetonitrile		75-05-8	430	431
Acetyl chloride		75-36-5	110	111
Acrolein		107-02-8	120	121
Acrylamide		79-06-1	130	135
Acrylic acid		79-10-7	100	102
Acrylonitrile		107-13-1	430	431
Adiponitrile		111-69-3	430	431
AFFF		191681-14-8	590	590
Allyl alcohol		107-18-6	310	311
Allyl chloride		107-05-1	260	265
Aluminum sulfate hydrate		17927-65-0	340	340
Aminodiphenyl, 4-		92-67-1	140	145
Aminopyridine, 2-		504-29-0	270	271
Ammonia	Anhydrous ammonia	7664-41-7	350 / 380	350 / 380
Ammonium chloride		12125-02-9	340	340
Ammonium fluoride		12125-01-8	340	340
Ammonium hydroxide		1336-21-6	380	380
Amyl acetate, n-		628-63-7	220	222
Aniline		62-53-3	140	145
Anthracene		120-12-7	290	293
Antimony pentachloride		7647-18-9	360	360
Arsenic trichloride		7784-34-1	340	340
Arsine		7784-42-1	350	350
Asbestos (all forms)		1332-21-4	sol	sol1
Astromat Orange		mixture		590
Benzene		71-43-2	290	292
Benzene sulfonyl chloride		98-09-9	500	505
Benzidine		92-87-5	140	145 / 149
Benzonitrile		100-47-0	430	432
Benzotrichloride		98-07-7	260	263
Benzoyl chloride		98-88-4	110	112
Benzyl alcohol		100-51-6	310	312
Benzyl chloride		100-44-7	260	266
Benzyl chloroformate		501-53-1	110	113
Benzyl cyanide		140-29-4	430	432
Beryllium		7440-41-7	sol	sol1
Bisphenol-A diglycidyl ether		1675-54-3	270	275
Black liquor		308074-23-9	590	590
Borane-pyridine complex		110-51-0	590	590
Boron trichloride		10294-34-5	350 / 360	350 / 360
Boron trifluoride		7637-07-2	350 / 360	350 / 360
Boron trifluoride dimethyletherate		353-42-4	590	590
Boron trifluoride etherate		109-63-7	590	590
Bromine		7726-95-6	330	330
Bromochloromethane		74-97-5	260	261
Bromofluorobenzene, 4-		460-00-4	260	263
Butadiene, 1,3-	1,3-Butadiene	106-99-0	290	296
Butanol, n-		71-36-3	310	311
Butyl acetate, n-		123-86-4	220	222
Butyl acrylate, n-		141-32-2	220	223
Butyl Cellosolve®		111-76-2	240	245
Butyl ether, n-		142-96-1	240	241
Butylamine, n-	1-Aminobutane, Aminobutane, 1-, Butan-1-amine	109-73-9	140	141
Butylamine, tert-	tert-Butylamine	75-64-9	140	141
Butylene oxide, 1,2-		106-88-7	270	275
Butyraldehyde, n-		123-72-8	120	121
Butyric acid		107-92-6	100	102
Calcium chloride		10043-52-4	340	340
Carbon disulfide		75-15-0	500	502
Carbon monoxide		630-08-0	350	350
Carbon tetrachloride		56-23-5	260	261
Chemidize 727 ND		mixture	590	590
Chlordane		57-74-9	260	261
Chlorine		7782-50-5	330 / 350	330 / 350
Chlorine dioxide		10049-04-4	350	350
Chlorine sulfide	Sulfur dichloride	10545-99-0	500	502
Chlorine trifluoride		7790-91-2	350	350
Chloro-1,2-propanediol, 3-		96-24-2	310	314
Chloro-1,3-butadiene, 2-		126-99-8	260	264
Chloro-benzotrifluoride, 4-		98-56-6	260	263
Chloroacetic acid		79-11-8	100	103
Chloroacetone		78-95-5	390	391
Chloroacetophenone		532-27-4	260	261
Chloroacetyl chloride		79-04-9	110	111
Chloroacrylonitrile, 2-		920-37-6	260 / 430	264 / 431
Chloroaniline, p-	Chloroaniline, 4-	106-47-8	140	145
Chlorobenzene		108-90-7	260	263
Chlorobenzotrichloride, 4-		5216-25-1	260	263
Chloroethanol, 2-		107-07-3	260 / 310	261 / 315
Chloroform		67-66-3	260	261
Chloromethyl methyl ether		107-30-2	240	241
Chlorophenol, 4-		106-48-9	260 / 310	263 / 316
Chloropicrin		76-06-2	260	261
Chlorosulfonic acid		7790-94-5	370 / 500	370 / 504
Chlorotoluene, o-		95-49-8	260	263
Chromic acid		1333-82-0	370	370
cis-2-Pentenenitrile		25899-50-7	430	431
Citric acid		77-92-9	100	104

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Chemical Name	Synonym	CAS Number	Class	Sub-Class
Creosote		8001-58-9	310	316
Cresol, mixed isomers		1319-77-3	310	316
Cresol, o-		95-48-7	310	316
Crude oil		8002-05-9	290	294
Crude oil on wildlife		mixture	liq	liq4
Cumene		98-82-8	290	292
Cyanogen chloride	CK (Cyanogen chloride)	506-77-4	340	345
Cyanuric chloride		108-77-0	260	263
Cyclohexane		110-82-7	290	291
Cyclohexanone		108-94-1	390	391
Cyclohexyl isocyanate		3173-53-3	210	211
Cyclohexylamine		108-91-8	140	141
Cyclooctadiene		1552-12-1	290	296
d-Limonene		5989-27-5	290	296
Decontaminating agent (DS-2)		mixture	590	590
Diborane		19287-45-7	350	350
Dibromo-3-chloropropane, 1,2-		96-12-8	260	261
Dichloro-2-butene, 1,4-		764-41-0	260	264
Dichloro-6-isopropyl-S-triazine, 2,4-		30894-74-7	270	274
Dichloroacetone		534-07-6	260 / 390	261 / 391
Dichloroacetyl chloride		79-36-7	110	111
Dichloroaniline, 3,4-		95-76-1	140 / 260	145 / 263
Dichloroethyl ether		111-44-4	240 / 260	241 / 261
Dichloromethane	Methylene chloride	75-09-2	260	261
Dichloropropene, 1,3-		542-75-6	260	261
Dichloropropene, 2,3-	Dichloropropene,2,3-	78-88-6	260	261
Dichlorosilane		4109-96-0	480	480
Diesel automotive test fuel		mixture	290	291
Diesel fuel		68334-30-5	290	291
Diethanolamine		111-42-2	140	142
Diethyl sulfate		64-67-5	500	507
Diethyl-m-toluidine crude		91-67-8	140	145
Diethylamine		109-89-7	140	142
Diethylaniline		91-66-7		
Diethylaniline crude		91-66-7	140	146
Diethylenetriamine		111-40-0	140	148
Diethylhexyl phthalate		117-81-7	220	226
Diiodo-1,1,2,2-tetrafluorobutane, 1,4-		755-95-3	260	261
Dimethyl disulfide		624-92-0	500	502
Dimethyl ether		115-10-6	240	241
Dimethyl mercury in decane		593-74-8	470	470
Dimethyl nitrosamine		62-75-9	450	450
Dimethyl sulfate		77-78-1	500	507
Dimethyl sulfide		75-18-3	500	502
Dimethyl sulfoxide		67-68-5	500	503
Dimethyl-acetamide, N,N-		127-19-5	130	132
Dimethylamine		124-40-3	140	142

Chemical Name	Synonym	CAS Number	Class	Sub-Class
Dimethylaniline, N,N-		121-69-7	140	146
Dimethyldichlorosilane		75-78-5	480	480
Dimethylformamide, N,N-	N,N-Dimethylformamide	68-12-2	130	132
Dimethylhydrazine, 1,1-		57-14-7	280	280
Dimethylmaleate		624-48-6	220	224
Dinitrocresol		534-52-1	310 / 440	316 / 442
Dioxane, 1,4-		123-91-1	270	278
Dowtherm heat transfer fluid		8004-13-5	590	590
DuPont Activator 193S		mixture	590	590
DuPont Activator 4505S		mixture	590	590
DuPont Activator 4507S		mixture	590	590
Dytek® A		15520-10-2	140	148
Epichlorohydrin		106-89-8	260 / 270	261 / 275
Ethanolamine		141-43-5	140 / 310	141 / 311
Ethyl acetate		141-78-6	220	222
Ethyl acrylate		140-88-5	220	223
Ethyl alcohol	Ethanol, Ethyl hydroxide	64-17-5	310	311
Ethyl benzene		100-41-4	290	292
Ethyl Cellosolve®		110-80-5	240	245
Ethyl Cellosolve® acetate		111-15-9	240	245
Ethyl chloride		75-00-3	260	261
Ethyl ether		60-29-7	240	241
Ethyl methyacrylate		97-63-2	220	223
Ethyl parathion		56-38-2	460	462
Ethyl vinyl ether		109-92-2	240 / 260	246 / 261
Ethylamine		75-04-7	140	141
Ethylene		74-85-1	290	294
Ethylene dibromide		106-93-4	260	261
Ethylene dichloride		107-06-2	260	261
Ethylene glycol		107-21-1	310	314
Ethylene glycol acrylate		818-61-1	220	223
Ethylene oxide	Dimethylene oxide, Epoxyethane	75-21-8	270	275
Ethylene oxide mixture		mixture	270	275
Ethylenediamine		107-15-3	140	148
Ethyleneimine		151-56-4	270	274
Ferric chloride	Iron trichloride, Iron(III) chloride	7705-08-0	340	340
Ferrous chloride	Iron (II) chloride, Iron dichloride	7758-94-3	340	340
Fluorine		7782-41-4	350	350
Fluorobenzene		462-06-6	260	263
Fluoroboric acid		16872-11-0	370	370
Fluorosilicic acid		16961-83-4	370	370
Fluorosulfonic acid		7789-21-1	370	370
Formaldehyde		50-00-0	120	121
Formalin		mixture	120	121
Formic acid		64-18-6	100	102
Fuel oil		68476-30-2	290	291
Furfural		98-01-1	120 / 270	122 / 277

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Chemical Name	Synonym	CAS Number	Class	Sub-Class
gamma Butyrolactone		96-48-0		225
Gasoline		86290-81-5	290	291
Gasoline, E-10		308066-70-8	290	291
Gluteraldehyde	1,5-Pentanedial, Glutaric acid dialdehyde, Glutaric aldehyde, Pentanedial, 1,5-	111-30-8	120	121
Glycolic acid		79-14-1	100	103
Green liquor		68131-30-6	590	590
Heptane		142-82-5	290	291
Hexachlorobutadiene		87-68-3	260	264
Hexachlorocyclopentadiene		77-47-4	260	264
Hexafluoroethane		76-16-4	260	261
Hexafluoroisobutylene		382-10-5	260	261
Hexamethyldisilazane	Hexamethyldisilizane	999-97-3	140 / 480	142 / 480
Hexamethylene diisocyanate		822-06-0	210	211
Hexamethylene diisocyanate in DuPont Activator 193S		mixture	210	211
Hexamethylene diisocyanate in DuPont Activator 4505S		mixture	210	211
Hexamethylene diisocyanate in DuPont Activator 4507S		mixture	210	211
Hexamethylenediamine, 1,6-		124-09-4	140	148
Hexane, n-	n-Hexane	110-54-3	290	291
Hexene, 1-		592-41-6	290	294
Hexone	MIBK (Methyl isobutyl ketone), Methyl isobutyl ketone	108-10-1	390	391
Hydrazine		302-01-2	280	280
Hydrazine hydrate		10217-52-4	280	280
Hydriodic acid		10034-85-2	370	370
Hydrobromic acid		10035-10-6	370	370
Hydrochloric acid	Muriatic acid	7647-01-0	370	370
Hydrofluoric acid		7664-39-3	370	370
Hydrogen bromide		10035-10-6	350 / 370	350 / 370
Hydrogen chloride		7647-01-0	350	350
Hydrogen cyanide	HCN (Hydrogen cyanide), Hydrocyanic acid	74-90-8	340 / 350 / 370	345 / 350 / 370
Hydrogen fluoride		7664-39-3	350 / 370	350 / 370
Hydrogen peroxide		7722-84-1	300	300
Hydrogen selenide		7783-07-5	350	350
Hydrogen sulfide		7783-06-4	350 / 500	350 / 502
Hypophosphorus acid		6303-21-5	370	370
Iodine		7553-56-2	330	330
Isoamyl alcohol		123-51-3	310	312
Isobutane		75-28-5	290	291
Isobutanol		78-83-1	310	311
Isobutylbenzene		538-93-2	290	292
Isophorone diisocyanate		4098-71-9	210	211
Isoprene		78-79-5	290	296
Isopropyl alcohol	IPA (Isopropyl alcohol), Isopropanol	67-63-0	310	312
Isopropylamine		75-31-0	140	141

Chemical Name	Synonym	CAS Number	Class	Sub-Class
JP-4 jet fuel		50815-00-4	290	291
JP-8 jet fuel		94114-58-6	290	291
Kerosene	Jet A fuel	8008-20-6	290	291
Lead		7439-92-1	sol	sol1
Lewisite		541-25-3	470	470
Lime		mixture	sol	sol1
Lindane		58-89-9	260	261
Lithium chloride		7447-41-8	340	340
Lithium hydroxide		1310-65-2	380	380
m-Cresol 55%, p-Cresol 30%, Phenol 15%		mixture	310	316
Malathion		121-75-5	460	462
Maleic acid		110-16-7	100	104
Maleic anhydride		108-31-6	160	161
Mercaptoethanol		60-24-2	310 / 500	311 / 501
Mercuric chloride		7487-94-7	340	340
Mercury		7439-97-6	330	330
Mesityl oxide		141-79-7	390	391
Methacrylic acid		79-41-4	100	102
Methane		74-82-8	290	291
Methane sulfonyl chloride		124-63-0	500	505
Methanesulfonic acid		75-75-2	500	504
Methanol		67-56-1	310	311
Methomyl		16752-77-5	230	233
Methyl acrylate		96-33-3	220	223
Methyl bromide		74-83-9	260	261
Methyl Cellosolve®		109-86-4	240 / 310	245 / 311
Methyl Cellosolve® acetate		110-49-6	240	245
Methyl chloride		74-87-3	260	261
Methyl chloroformate		79-22-1	110	113
Methyl ethyl ketone	MEK (Methyl ethyl ketone)	78-93-3	390	391
Methyl ethyl ketoxime		96-29-7	150	150
Methyl fluoride		593-53-3	260	261
Methyl formate		107-31-3	220	221
Methyl hydrazine		60-34-4	280	280
Methyl iodide		74-88-4	260	261
Methyl isocyanate		624-83-9	210	211
Methyl mercaptan		74-93-1	500	501
Methyl methacrylate		80-62-6	220	223
Methyl parathion		298-00-0	460	462
Methyl salicylate		119-36-8	220	226
Methyl tert-butyl ether		1634-04-4	240	241
Methyl trichlorosilane		75-79-6	480	480
Methyl-1,5-pentantedinitrile, 2-	Methylglutaronitrile, 2-	4553-62-2	430	431
Methyl-2-pyrrolidone, N-		872-50-4	130	132
Methylamine		74-89-5	140	141
Methylene bis (o-chloroaniline), 4,4'-		101-14-4	140	149
Methylene bis-cyclohexane diamine, 4,4'-		1761-71-3	140	148

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Chemical Name	Synonym	CAS Number	Class	Sub-Class
Methylene bromide		74-95-3	260	261
Methylene dianiline, 4,4'-		101-77-9	140	145 / 149
Methylene diphenyl isocyanate		101-68-8	210	212
Methylformamide, N-		123-39-7	130	132
Mineral oil		8012-95-1	290	291
Mineral spirits		64475-85-0	290	291
Morpholine		110-91-8	140	142
N-Methylmethacrylamide	Methylmethacrylamide, N-	3887-02-3	130	135
Naphthalene		91-20-3	290	293
Nickel carbonyl		13463-39-3	470	470
Nicotine		54-11-5	270	271
Nitric acid		7697-37-2	370	370
Nitric acid, red fuming		52583-42-3	370	370
Nitric oxide		10102-43-9	350	350
Nitrobenzene		98-95-3	440	441
Nitrochlorobenzene, o-		88-73-3	260 / 440	263 / 442
Nitrochlorobenzene, p-		100-00-5	260 / 440	263 / 442
Nitrogen dioxide		10102-44-0	350	350
Nitrogen tetroxide		10544-72-6	350	350
Nitrogen trifluoride		7783-54-2	350	350
Nitromethane		75-52-5	440	441
Nitrophenol, o-		88-75-5	310 / 440	316 / 442
Nitrophenol, p-		100-02-7	310 / 440	316 / 442
Nitropropane, 2-		79-46-9	440	441
Nitrotoluene, o-		88-72-2	440	442
Nitrotoluene, p-		99-99-0	440	442
Nitrous oxide		10024-97-2	350	350
Nonylamine		112-20-9	140	141
Norbornene-2-yl acetate, 5-		6143-29-9	220	222
Octane, n-		111-65-9	290	291
Oleum		8014-95-7	370	370
Organo-Tin Paint		mixture	470	470
Otto fuel II		106602-80-6	590	590
Oxalic acid		144-62-7	100	104
Paraphenylene diisocyanate (PPDI) crude		104-49-4	210	212
PCB	Polychlorinated biphenyl	mixture	260	263
PCB 1254	Polychlorinated biphenyl 1254	11097-69-1	260	263
PCB 1254	Polychlorinated biphenyl 1254	mixture	260	263
PCB gas condensate		mixture	260	263
PCB in transformer oil		mixture	260	263
Pentachlorophenol		87-86-5	310	316
Pentanol, n-		71-41-0	310	311
Pentenenitrile, 2-		13284-42-9	430	431
Pentenenitrile, 3-		4635-87-4	430	431
Perchloric acid		7601-90-3	370	370
Phenethyl alcohol, 2-		60-12-8	310	318
Phenol		108-95-2	310	316

Chemical Name	Synonym	CAS Number	Class	Sub-Class
Phenyl glycidyl ether		122-60-1	270	275
Phenyl mercaptan		108-98-5	500	501
Phenylethanol, 1-		98-85-1	310	318
Phosgene		75-44-5	350	350
Phosphine		7803-51-2	350	350
Phosphoric acid		7664-38-2	370	370
Phosphorus oxychloride		10025-87-3	360	360
Phosphorus trichloride		7719-12-2	360	360
Picoline, 2-		109-06-8	270	271
Picoline, 3-		108-99-6	270	271
Polyethylene glycol dimethyl ether	Selexol™	24991-55-7	240	245
Polymethylene polyphenyl-polyisocyanate		9016-87-9	210	212
Potassium acetate		127-08-2	340	340
Potassium carbonate		584-08-7	340	340
Potassium chromate		7789-00-6	340	340
Potassium cyanide		151-50-8	340	345
Potassium hydroxide	Caustic potash, KOH (Potassium hydroxide), Potash lye	1310-58-3	380	380
Potassium permanganate		7722-64-7	340	340
Propane		74-98-6	290	291
Propargyl alcohol	2-Propyn-1-ol, Propyn-1-ol, 2-	107-19-7	310	311
Propionaldehyde		123-38-6	120	121
Propionic acid		79-09-4	100	102
Propylamine, n-		107-10-8	140	141
Propylbromide, n-	1-Bromopropane, 1-Propyl bromide, Bromopropane, 1-, Propyl bromide, 1-, n-Propylbromide	106-94-5	260	261
Propylene dichloride		78-87-5	260	261
Propylene imine		75-55-8	270	274
Propylene oxide, 1,2-		75-56-9	270	275
Pyridine		110-86-1	270	271
Pyrrolidine		123-75-1	270	274
Sarin		107-44-8	460	462
Silane		7803-62-5	480	480
Silicon tetrachloride		10026-04-7	360 / 480	360 / 480
Skydrol®		95660-51-8	460	462
Sodium cyanide		143-33-9	340	345
Sodium dichromate		10588-01-9	340	340
Sodium fluoride		7681-49-4	340	340
Sodium hydrosulfide		16721-80-5	340	340
Sodium hydroxide	Caustic soda, Lye, NaOH (Sodium hydroxide)	1310-73-2	380	380
Sodium hypochlorite		7681-52-9	340	340
Sodium metabisulfite	Sodium disulfite, Sodium pyrosulfite	7681-57-4	340	340
Sodium methylate		124-41-4	550	550
Sodium silicate		6834-92-0	340	340
Sodium sulfide	Disodium sulfide	1313-82-2	340	340
Soman		96-64-0	460	462
Stoddard solvent		8052-41-3	290	291

APPENDIX
CHEMICAL INDEX - Alphabetical Listing - Chemical Names and Synonyms

Chemical Name	Synonym	CAS Number	Class	Sub-Class
Styrene		100-42-5	290	292
Sulfamic acid		5329-14-6	370 / 500	370 / 509
Sulfonyl chloride		7791-25-5	350 / 360	350 / 360
Sulfur dioxide		7446-09-5	350 / 360	350 / 365
Sulfur hexafluoride		2551-62-4	350 / 500	350 / 509
Sulfur monochloride	Disulfur dichloride, Sulfur chloride	10025-67-9	500	502
Sulfur mustard		505-60-2	500	502
Sulfur trioxide		7446-11-9	360	365
Sulfuric acid		7664-93-9	370	370
t-Sodium-amylate / t-amyl alcohol		mixture	590	590
Tabun		77-81-6	460	462
tert-Butyl alcohol	Butyl alcohol, tert-	75-65-0	310	313
Tetrabromoethane		79-27-6	260	261
Tetrachloro-bisphenol -A, 2,2',6,6'	Tetrachloro-bisphenol -A, 2,2',6,6'-	79-95-8	260 / 310	263 / 316
Tetrachloroethane, 1,1,2,2-		79-34-5	260	261
Tetrachloroethylene, 1,1,2,2-	1,1,2,2-Tetrachloroethylene	127-18-4	260	264
Tetraethoxysilane		78-10-4	480	480
Tetraethyl lead		78-00-2	470	470
Tetrafluoroethane, 1,1,1,2-		811-97-2	260	261
Tetrafluoromethane		75-73-0	260	261
Tetrahydrofuran		109-99-9	240	241
Tetralone		529-34-0	290	292
Tetramethylammonium hydroxide		75-59-2	550	550
Tetramethylethylene oxide		5076-20-0	270	275
Tetramethyltin		mixture	590	590
Thioglycolic acid		68-11-1	100 / 500	103 / 501
Thionyl chloride		7719-09-7	360	360
Titanium tetrachloride		7550-45-0	360	360
Toluene		108-88-3	290	292
Toluene-1,3-diisocyanate		26471-62-5	210	212
Toluene-2,4-diisocyanate		584-84-9	210	212
Toluidine, m-		108-44-1	140	145
Toluidine, o-		95-53-4	140	145
trans-1,2-Dichloroethylene		156-60-5	260	264
trans-1,4-Dichloro-2-butene		110-57-6	260	264
trans-Crotonaldehyde		123-73-9	120	121
Tribromophenol,2,4,6-	Tribromophenol, 2,4,6-	118-79-6	310	316
Trichloro-1,2,2-trifluoroethane, 1,1,2-	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	260	261
Trichloroacetic acid		76-03-9	100	103
Trichloroacetone, 1,1,3-		921-03-9	260 / 390	261 / 391
Trichlorobenzene, 1,2,4-		120-82-1	260	263
Trichloroethane, 1,1,1-		71-55-6	260	261
Trichloroethane, 1,1,2-		79-00-5	260	261
Trichloroethanol, 2,2,2-		115-20-8	310	315
Trichloroethylene		79-01-6	260	264
Trichlorophenylsilane		98-13-5	480	480
Trichlorosilane		10025-78-2	480	480

Chemical Name	Synonym	CAS Number	Class	Sub-Class
Trichlorovinylsilane		75-94-5	480	480
Triethoxysilane		998-30-1	480	480
Triethylaluminum		97-93-8	470	470
Triethylamine		121-44-8	140	143
Trifluoroacetic acid		76-05-1	100 / 260	103 / 261
Trifluoroacetyl chloride		354-32-5	110	111
Trifluoroethanol, 2,2,2-		75-89-8	310	315
Trifluoromethane		75-46-7	260	261
Trifluoromethane sulfonic acid		1493-13-6	500	504
Trimethyl phosphate		512-56-1	460	462
Trimethyl phosphite		121-45-9	460	462
Trimethylamine		75-50-3	140	143
Trimethylbenzene, 1,2,3-		526-73-8	290	292
Triphenyl phosphite		101-02-0	460	462
Tripropylamine		102-69-2	140	146
Tungsten hexafluoride		7783-82-6	350	350
Turpentine		8006-64-2	290	294
Vanadium tetrachloride		7632-51-1	360	360
Vinyl acetate		108-05-4	220	222
Vinyl bromide		593-60-2	260	264
Vinyl chloride		75-01-4	260	264
Vinylidene chloride		75-35-4	260	264
Vinylmagnesium chloride		3536-96-7	470	470
Vinylpyridine, 4-		100-43-6	270	271
VM&P Naphtha		8030-30-6	290	291
VX Nerve agent		50782-69-9	460	462
White liquor		68131-33-9	590	590
Xylene, mixed isomers		1330-20-7	290	292
Xylene, o-		95-47-6	290	292

APPENDIX
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
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
57-74-9	Chlordane		260	261
58-89-9	Lindane		260	261
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
71-36-3	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
75-09-2	Dichloromethane	Methylene chloride	260	261
75-15-0	Carbon disulfide		500	502
75-18-3	Dimethyl sulfide		500	502

CAS Number	Chemical Name	Synonym	Class	Sub-Class
75-21-8	Ethylene oxide	Dimethylene oxide, Epoxyethane	270	275
75-28-5	Isobutane		290	291
75-31-0	Isopropylamine		140	141
75-35-4	Vinylidene chloride		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	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
78-00-2	Tetraethyl lead		470	470
78-10-4	Tetraethoxysilane		480	480
78-79-5	Isoprene		290	296
78-83-1	Isobutanol		310	311
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
79-22-1	Methyl chloroformate		110	113

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

CAS Number	Chemical Name	Synonym	Class	Sub-Class
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
87-68-3	Hexachlorobutadiene		260	264
87-86-5	Pentachlorophenol		310	316
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
91-66-7	Diethylaniline			
91-66-7	Diethylaniline crude		140	146
91-67-8	Diethyl-m-toluidine crude		140	145
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
95-53-4	Toluidine, o-		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
98-01-1	Furfural		120 / 270	122 / 277
98-07-7	Benzotrichloride		260	263
98-09-9	Benzene sulfonyl chloride		500	505
98-13-5	Trichlorophenylsilane		480	480
98-56-6	Chloro-benzotrifluoride, 4-		260	263
98-82-8	Cumene		290	292
98-85-1	Phenylethanol, 1-		310	318
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

CAS Number	Chemical Name	Synonym	Class	Sub-Class
100-47-0	Benzonitrile		430	432
100-51-6	Benzyl alcohol		310	312
101-02-0	Triphenyl phosphite		460	462
101-14-4	Methylene bis (o-chloroaniline), 4,4'-		140	149
101-68-8	Methylene diphenyl isocyanate		210	212
101-77-9	Methylene dianiline, 4,4'-		140	145 / 149
102-69-2	Tripropylamine		140	146
104-49-4	Paraphenylene diisocyanate (PPDI) crude		210	212
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		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
107-92-6	Butyric acid		100	102
108-05-4	Vinyl acetate		220	222
108-10-1	Hexone	MIBK (Methyl isobutyl ketone), Methyl isobutyl ketone	390	391
108-24-7	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
108-88-3	Toluene		290	292
108-90-7	Chlorobenzene		260	263
108-91-8	Cyclohexylamine		140	141
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
109-06-8	Picoline, 2-		270	271
109-63-7	Boron trifluoride etherate		590	590
109-73-9	Butylamine, n-	1-Aminobutane, Aminobutane, 1-, Butan-1-amine	140	141

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

CAS Number	Chemical Name	Synonym	Class	Sub-Class
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
110-49-6	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	Gluteraldehyde	1,5-Pentanedial, Glutaric acid dialdehyde, Glutaric aldehyde, Pentanedial, 1,5-	120	121
111-40-0	Diethylenetriamine		140	148
111-42-2	Diethanolamine		140	142
111-44-4	Dichloroethyl ether		240 / 260	241 / 261
111-65-9	Octane, n-		290	291
111-69-3	Adiponitrile		430	431
111-76-2	Butyl Cellosolve®		240	245
111-90-0	(2-Ethoxyethoxy)-ethanol, 2-		240	245
112-20-9	Nonylamine		140	141
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
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
123-51-3	Isoamyl alcohol		310	312
123-72-8	Butyraldehyde, n-		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
124-09-4	Hexamethylenediamine, 1,6-		140	148
124-40-3	Dimethylamine		140	142
124-41-4	Sodium methylate		550	550

CAS Number	Chemical Name	Synonym	Class	Sub-Class
124-63-0	Methane sulfonyl chloride		500	505
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	Dimethyl-acetamide, N,N-		130	132
140-29-4	Benzyl cyanide		430	432
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
143-33-9	Sodium cyanide		340	345
144-62-7	Oxalic acid		100	104
151-50-8	Potassium cyanide		340	345
151-56-4	Ethyleneimine		270	274
156-60-5	trans-1,2-Dichloroethylene		260	264
298-00-0	Methyl parathion		460	462
302-01-2	Hydrazine		280	280
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
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
542-75-6	Dichloropropene, 1,3-		260	261
584-08-7	Potassium carbonate		340	340
584-84-9	Toluene-2,4-diisocyanate		210	212
592-41-6	Hexene, 1-		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

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

CAS Number	Chemical Name	Synonym	Class	Sub-Class
628-63-7	Amyl acetate, n-		220	222
630-08-0	Carbon monoxide		350	350
755-95-3	Diiodo-1,1,2,2-tetrafluorobutane, 1,4-		260	261
764-41-0	Dichloro-2-butene, 1,4-		260	264
811-97-2	Tetrafluoroethane, 1,1,1,2-		260	261
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
998-30-1	Triethoxysilane		480	480
999-97-3	Hexamethyldisilazane	Hexamethyldisilizane	140 / 480	142 / 480
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
1313-82-2	Sodium sulfide	Disodium sulfide	340	340
1319-77-3	Cresol, mixed isomers		310	316
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
1493-13-6	Trifluoromethane sulfonic acid		500	504
1552-12-1	Cyclooctadiene		290	296
1634-04-4	Methyl tert-butyl ether		240	241
1675-54-3	Bisphenol-A diglycidyl ether		270	275
1761-71-3	Methylene bis-cyclohexane diamine, 4,4'-		140	148
2551-62-4	Sulfur hexafluoride		350 / 500	350 / 509
3173-53-3	Cyclohexyl isocyanate		210	211
3536-96-7	Vinylmagnesium chloride		470	470
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
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
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
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
7647-18-9	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
8006-64-2	Turpentine		290	294
8008-20-6	Kerosene	Jet A fuel	290	291

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

CAS Number	Chemical Name	Synonym	Class	Sub-Class
8012-95-1	Mineral oil		290	291
8014-95-7	Oleum		370	370
8030-30-6	VM&P Naphtha		290	291
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
15520-10-2	Dytek® A		140	148
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
25899-50-7	cis-2-Pentenenitrile		430	431
26471-62-5	Toluene-1,3-diisocyanate		210	212
30894-74-7	Dichloro-6-isopropyl-S-triazine, 2,4-		270	274
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
64475-85-0	Mineral spirits		290	291
68131-30-6	Green liquor		590	590
68131-33-9	White liquor		590	590
68334-30-5	Diesel fuel		290	291
68476-30-2	Fuel oil		290	291
86290-81-5	Gasoline		290	291

CAS Number	Chemical Name	Synonym	Class	Sub-Class
94114-58-6	JP-8 jet fuel		290	291
95660-51-8	Skydrol®		460	462
106602-80-6	Otto fuel II		590	590
191681-14-8	AFFF		590	590
308066-70-8	Gasoline, E-10		290	291
308074-23-9	Black liquor		590	590
mixture	Astromat Orange			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		120	121
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
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	m-Cresol 55%, p-Cresol 30%, Phenol 15%		310	316
mixture	t-Sodium-amylate / t-amyl alcohol		590	590

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