

Nil-Cor[®]



Chemical Resistance Guide

The Leader In Advanced Composite Valves



Nil-Cor® Composite Valves Chemical Resistance Guide

Notes on Chemical Resistance

Nil-Cor has carefully developed a family of valve materials to safely handle a wide range of corrosive fluid applications.

This guide has been developed to assist designers and process engineers in the application and selection of corrosion-resistant Nil-Cor Valves. The information contained herein is provided only as a guide for the selection of Nil-Cor products. The information is based on technical data, application experience and testing that Nil-Cor believes to be reliable. It is intended for use by persons having technical skill, at their own discretion and risk.

The final determination of the suitability of any product described in this guide, for the contemplated use and the manner of use, is the sole responsibility of the user. Nil-Cor makes no warranties, expressed or implied and assumes no liability in connection with any of these information.



Nil-Cor® 300: Graphite fiber-reinforced vinyl ester

The graphite fibers offer high strength chemical inertness, high stiffness, and surface lubricity to valve moving parts. The 300 material offers the same broad chemical resistance as the 310 material, but at higher temperatures. In addition, the 300 material resists certain chemicals that might attack the glass fibers in 310 material, such as Hydrofluoric acid. The Nil-Cor® 300 Zirconia Ceramic and UHMWPE-lined Ball Valves are recommended for internal abrasives and external atmospheric corrosion.

Nil-Cor 310: Glass fiber-reinforced vinyl ester

This mixture of high strength specially treated glass fibers with corrosion-resistant thermosetting vinyl ester offers outstanding corrosion resistance and superior retention of properties at high temperatures. The 310 material is most popular as a general purpose resin system, offering excellent resistance to a wide range of industrial chemicals, brine, sea water and non-oxidizing ambient atmospheres.

Nil-Cor® 410: Glass fiber-reinforced polysulfone

The Nil-Cor® 410 Ball Valve is manufactured and designed specifically for troublesome caustic applications such as hot brines, hydroxide and mineral acids. This valve offers outstanding strength and erosion resistance.

Nil-Cor® 500XP: Graphite fiber-reinforced epoxy

The Nil-Cor® 500XP Ball Valves provide chemical resistance to corrosive salt solutions, caustics, solvents and acids in services with temperatures to 300 °F. The material formulation is a non-aqueous system.

Nil-Cor® 610XP: Glass fiber-reinforced epoxy

The Nil-Cor® 610XP Ball Valves provide chemical resistance to corrosive salt solutions, caustics, solvents and acids in services with temperatures to 260 °F. The material formulation is a non-aqueous system.

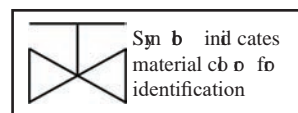


TABLE 1:
Chemical Resistance of
Nil-Cor Composite Materials

(°F/°C) = Max. Temp for Satisfactory Service

NR = Not Recommended
CF = Consult Factory, data under review
Blank = No Data, Coupon Test Recommended

Chemical Environment	Concentration	310	300	410	500XP	610XP
Acetaldehyde	100	NR	NR		100/38	100/38
Acetamide					100/38	100/38
Acetanilide						
Acetic Acid	10	150/65	210/99	210/99	200/99	200/99
Acetic Acid	15	150/65	210/99	210/99	120/49	120/49
Acetic Acid	25	130/54	210/99	210/99	120/49	120/49
Acetic Acid	50	110/43	180/82	180/82	120/49	120/49
Acetic Acid	75	80/27	150/65	100/38	75/24	75/24
Acetic Acid, Glacial	100	NR	100/38	80/27	NR	NR
Acetic Anhydride	100	NR	100/38	NR	100/38	100/38
Acetone	5	150/65	180/82	73/22	200/93	200/93
Acetone	10	150/65	180/82		200/93	200/93
Acetone	100	NR	NR		125/52	125/52
Acetophenone						
Acid Cleaner 31% HCl		130/54	180/82	150/65		
Acid Mine Water		150/65	180/82	150/65		
Acrylamide	50	NR	100/38			
Acrylic Acid	10	100/38	100/38		120/49	120/49
Acrylic Acid	25	100/38	100/38		120/49	120/49
Acrylonitrile Latex Dispersion	2	NR	80/27		100/38	100/38
Adipic Acid	All	160/71	180/82		250/121	250/121
Alcohol-Hexyl	100	120/49	120/49			
Alcohol-Secondary Butyl	10				200/93	200/93
Alkyl Benzene Sulfonic Acid	92	100/38	120/49			
Allyl Chloride	All	NR	80/27		150/65	150/65
Alpha Methyl Styrene	100	100/38	120/49			
Alpha Oleum Sulfates	100	NR	120/49			
Aluminum Fluoride	All	80/27	100/38			
Alum	All	180/82	250/121		275/135	275/135
Aluminum Acetate		200/93	210/99			
Aluminum Chlorhydroxide	50	160/71	210/99			
Aluminum Chloride	All	200/93	250/121	160/71	275/135	275/135
Aluminum Chlorohydrate	50	160/71	210/99			
Aluminum Hydroxide	100	150/65	180/82		200/93	200/93
Aluminum Nitrate	10	160/71	180/82		250/121	250/121
Aluminum Nitrate	100	160/71	180/82		250/121	250/121
Aluminum Potassium Sulfate	All	200/93	250/121		275/135	275/135
Aluminum Stearate		200/93	210/99			
Aluminum Sulfate	All	200/93	250/121		275/135	275/135
Ammonia Aqueous		100/38	100/38		NR	NR
Ammonia Gas	All	100/38	100/38		275/135	275/135
Ammonia Wet		100/38	100/38			
Ammonium Acetate	65	NR	80/27		275/135	275/135
Ammonium Bicarbonate	10	130/55	160/71		225/107	225/107
Ammonium Bicarbonate	50	130/55	160/71	120/49	225/107	225/107
Ammonium Bisulfite black liquor		130/55	180/82			
Ammonium Bisulfite cooking liquor		100/38	150/65			
Ammonium Borate	All	200/93	210/99			
Ammonium Carbonate	All	140/60	150/65		225/107	225/107
Ammonium Chloride	All	200/93	210/99	120/49	225/107	225/107
Ammonium Chromate	All					
Ammonium Chromate	20	130/55	150/65			
Ammonium Citrate	All	140/60	150/65		275/135	275/135
Ammonium Fluoride	All	130/55	150/65		100/38	100/38
Ammonium Fluoride	25	130/55	130/55		100/38	100/38
Ammonium Hydroxide	5	120/49	180/82		200/93	200/93
Ammonium Hydroxide	10	120/49	150/65		200/93	200/93
Ammonium Hydroxide	20	120/49	150/65		200/93	200/93
Ammonium Hydroxide	29	80/27	100/38		200/93	200/93
Ammonium Hydroxide	Conc.	NR	NR	120/49	200/93	200/93
Ammonium Molybdate	All	200/93	210/99			
Ammonium Nitrate	All	180/82	250/121	120/49	210/99	210/99
Ammonium Persulfate	All	180/82	180/82	120/49	100/38	100/38
Ammonium Phosphate	65	200/93	210/99		225/107	225/107
Ammonium Phosphate, dibasic	65	200/93	210/99			
Ammonium Sulfate	All	230/110	250/121		275/135	275/135
Ammonium Thiocyanate	50	100/38	100/38			
Ammonium Thiocyanate	60	100/38	100/38			
Amyl Acetate	All	120/49	120/49		150/65	150/65
Amyl Alcohol	All	200/93	210/99		175/79	175/79
Amyl Alcohol, Vapor		200/93	210/99			



Chemical Environment	Concentration	310	300	410	500XP	610XP
Amyl Chloride	100	100/38	120/49			
Amyl Formate	All	80/27	80/27			
Amyl Naphthalene		200/93	210/99			
Aniline	100	70/21	70/21		150/65	150/65
Aniline Dyes		70/21	70/21			
Aniline Hydrochloride		150/65	180/82		100/38	100/38
Aniline Sulfate	All	200/93	210/99		100/38	100/38
Antimony Trichloride					150/65	150/65
Arsenious Acid	19° Baume	170/76	180/82	100/38	100/38	100/38
Barium Acetate	All	130/55	150/65		275/135	275/135
Barium Chloride	All	200/93	210/99	180/82	275/135	275/135
Barium Hydroxide	10	130/54	150/65	120/49	250/121	250/121
Barium Sulfate	All	200/104	250/121	120/49	275/135	275/135
Barium Sulfide	All	150/65	180/82		275/135	275/135
Battery Acid		100/38	120/49	100/38		
Beet Sugar Liquor		150/65	180/82	180/82		
Benzal Chloride	All	NR	80/27			
Benzaldehyde	100	NR	70/21		200/93	200/93
Benzene	100	80/27	100/38	NR	180/82	180/82
Benzene Sulfonic Acid	50	150/65	150/65		100/38	100/38
Benzene, Ethyl Benzene	1/3 : 1/2	NR	100/38			
Benzene, Hydrochloric Acid (wet)		NR	100/38			
Benzene, Vapor		100/38	130/49			
Benzidine	All					
Benzoic Acid	All	180/82	210/99	120/49	200/93	200/93
Benzyl Alcohol	All	100/38	100/38		150/65	150/65
Benzyl Benzoate		100/38	100/38			
Benzyl Chloride	100	NR	80/27		150/65	150/65
Bisphenol A	All	100/38	120/49			
Bisulfite in Scrubber	Gases	300/149	350/177	210/121		
Black Liquor (Pulp Mill)	All	180/82	180/82	200/93		
Black Liquor (Pulp Mill) Thick	All	200/93	220/104		250/121	250/121
Black Liquor Kraft	Thin	150/65	180/82			
Black Liquor Kraft	Thick	180/82	220/104			
Black Liquor recovery furnace gases		210/99	250/121			
Bleach Liquor (Pulp Mill)	100	150/65	200/93			
Blood Sugar	All	220/104	250/121			
Blow Down (Non-Condensable Gases)		150/65	180/82			
Borax	100	200/93	210/99			
Boric Acid	All	210/99	210/99	180/82	250/121	250/121
Brake Fluid HD 577		120/49	120/49			
Brass Plating Solution (Copper:Zinc:SodiumCyanides: Sodium Carbonate)	3:1:5.6:3	150/65	180/82			
Brine	All	210/99	210/99	200/93	275/135	275/135
Brine, Acid	sat'd	180/82	210/99	250/121		
Brine, Salt	30	250/121	250/121			
Bromic Acid						
Bromine, Dry Gas		80/27	100/38		NR	NR
Bromine, Liquid	100	NR	NR		NR	NR
Bromine, Wet Gas	100	80/27	100/38		75/24	75/24
Bunker C Fuel Oil	100	210/99	220/104			
Butadiene (Monomer)	All				200/93	200/93
Butane		100/38			100/38	100/38
Butene1 -Diol. 1, 4						
Butenes						
Butoxyethanol 2	100	NR	100/38			
Butoxyethoxyethanol 2, 2	100	NR	100/38			
Butyl Acetate	100	NR	80/27	NR	175/79	175/79
Butyl Acrylate		80/27	80/27			
Butyl Alcohol	All	120/49	120/49		200/93	200/93
Butyl Amine						
Butyl Benzoate	70	80/27	100/38		200/93	200/93
Butyl Benzyl Phthalate	100	140/60	150/65		120/49	120/49
Butyl Butyrate		110/43	120/49			
Butyl Carbitol	100	100/38	100/38			
Butyl CELLOSOLVE solvent	100	NR	100/38	73/22	175/79	175/79
Butyl Chloride						
Butyl Ether		200/93	210/99			
Butyl Formate						
Butyl Hypochlorite	98	NR	NR			
Butyl Lactate		200/93	210/99			
Butyl Methacrylate		80/27	80/27			
Butyl Oleate		200/93	210/99			
Butyl Phthalate		200/93	210/99		125/52	125/52
Butyl Propionate		80/27	80/27			



Chemical Environment	Concentration	310	300	410	500XP	610XP
Butyl Stearate		200/93	210/99			
Butylbenzene		110/43	120/49			
Butylene Glycol	100	150/65	180/82			
Butylene Oxide	100	NR	NR			
Butyraldehyde		100/38	100/38			
Butyric Acid	25	190/87	210/99		100/38	100/38
Butyric Acid	50	180/82	210/99		100/38	100/38
Butyric Acid	100	100/38	120/49		100/38	100/38
Cadmium Chloride	All	150/65	180/82			
Cadmium Cyanide Plating Bath		150/65	180/82			
Calcium Acetate		200/93	210/99			
Calcium Bisulfite	All	180/82	180/82		100/38	100/38
Calcium Carbonate	All	180/82	180/82		275/135	275/135
Calcium Chlorate	All	180/82	250/121	160/71	200/93	200/93
Calcium Chloride	All	180/82	250/121	300/149	275/135	275/135
Calcium Cyanate		200/93	210/99			
Calcium Formate		80/27	100/38			
Calcium Hydroxide	15	180/82	180/82	160/71		
Calcium Hydroxide	25	120/49	210/99	160/71		
Calcium Hydroxide	100	100/38	210/99	160/71		
Calcium Hypochlorite	All	160/71			NR	NR
Calcium Lactate		200/93	210/99			
Calcium Nitrate	All	200/93	210/99		275/135	275/135
Calcium Silicate		200/93	210/99			
Calcium Stearate		200/93	210/99			
Calcium Sulfate	All	200/93	250/121		275/135	275/135
Calcium Sulfite		130/55	180/82		100/38	100/38
Cane Sugar Liquor & Sweetwater	All	160/71	180/82		250/121	250/121
Caprylic Acid (see Octanoic Acid)	All	170/76	210/99		100/38	100/38
Carbon Black						
Carbon Dioxide Gas (Dry)		250/121	350/177		275/135	275/135
Carbon Disulfide	100	NR	NR		150/65	150/65
Carbon Disulfide	Fumes	120/49	150/65		150/65	150/65
Carbon Monoxide Gas		200/93	350/177		250/121	250/121
Carbon Tetrachloride	100	150/65	180/82		175/79	175/79
Carbon Tetrachloride, vapor		160/71	200/93		175/79	175/79
CARBOWAX Polyethylene glycol	100	160/71	180/82			
Carboxyl Methyl	10	140/60	150/65			
Castor Oil	100	160/71	160/71		250/121	250/121
Cellosolves					150/65	150/65
Chlorinated Solvents						
Chlorinated Wax	All	160/71	180/82		150/65	150/65
Chlorine Dioxide	15	180/82	180/82		150/65	150/65
Chlorine Dioxide	All	150/65	150/65		NR	NR
Chlorine Dioxide Generator Effluent, R-2 System		NR	180/82	200/93		
Chlorine Dioxide, Wet	Sat'd.	130/55	180/82			
Chlorine Water	Sat'd.	150/65(*)	NR		75/24	75/24
Chlorine Water	5	200/93(*)	NR		NR	NR
Chlorine, dry gas	100	200/93	250/121		NR	NR
Chlorine, wet gas		200/93(*)	NR		NR	NR
Chloroacetic Acid	25	80/27	120/49		100/38	100/38
Chloroacetic Acid	50	80/27	100/38		100/38	100/38
Chloroacetic Acid	Conc.	NR	NR		100/38	100/38
Chloroacetone		NR	NR			
Chloroaniline						
Chlorobenzene	100	NR	100/38		200/93	200/93
Chlorobutanol						
Chloroform	100	NR	NR		185/85	185/85
Chloroprene						
Chloropyridine (tetra)	100	NR	120/49			
Chlorosulfonic Acid	100	NR	NR		75/24	75/24
Chlorotoluene	10	80/27	100/38			
Chrome Bath, 19% Chromic Acid w/Sodium Fluorosilicate and Sulfate	19	150/65	NR			
Chromic Acid	5	150/65	150/65		75/24	75/24
Chromic Acid	10	150/65	150/86		75/24	75/24
Chromic Acid	20	150/65	150/65			
Chromic Acid	30	NR	NR			
Chromium Plate		NR	130/54			
Chromium Sulfate	All	160/71	180/82		100/38	100/38
Citric Acid	All	200/83	210/99	180/82	225/107	225/107
Cobalt Citrate	12	90/32	120/49			
Coconut Oil	All	180/82	200/93		275/135	275/135
Cod Liver Oil		100/38	100/38			
Copper Acetate		200/93	210/99		200/93	200/93
Copper Chloride	All	200/93	220/104	200/93	225/107	225/107



Chemical Environment	Concentration	310	300	410	500XP	610XP
Copper Cyanide	All	160/71	210/99		225/107	225/107
Copper Cyanide Plating Bath	10.5:14:6	120/49	160/71	160/71		
Copper: Sodium Cyanides: Rochelle Salts						
Copper Cyanide, Potassium Cyanide, Potassium Hydroxide	8:3:2 OZ/gal	180/82	180/82			
Copper Fluoride					225/107	225/107
Copper Matte Dipping Bath	30:19	180/82	200/93		200/93	200/93
FeCl ₃ : Hydrochloric Copper Nitrate						
Copper Nitrate	All	200/93	210/99		210/99	210/99
Copper Plating Solution	45:19:8	150/65	180/82	160/71		
Cu(BF ₄) ₂ : Copper Sulfate: Sulfonic						
Copper Sulfate	All	200/93	250/121	160/71	250/121	250/121
Corn Oil		210/99	210/99	200/93	275/135	275/135
Corn Starch	Slurry	200/93	210/99	200/93	275/135	275/135
Corn Sugar	All	200/93	210/99	200/93	275/135	275/135
Cottonseed Oil		170/76	210/99	200/93	275/135	275/135
Cresols		70/21	70/21		200/93	200/93
Crude Oil, Sour	100	220/104	250/121	80/27	275/135	275/135
Crude Oil, Sweet	100	220/104	250/121		275/135	275/135
Cumene (Isopropyl Benzene)		110/43	120/49			
Cyclohexane	100	120/49	150/65		175/79	175/79
Cyclohexanol		130/55	150/65		200/93	200/93
Cyclohexanone		70/21	70/21		125/52	125/52
Decane		160/71	180/82			
Decanol		160/71	180/82			
Deionized Water	100	180/82	180/82	250/121		
Deminerized Water	100	210/99	210/99			
Denatured Alcohol		100/38	100/38			
Detergents, Organic pH 12	100	170/76	180/82			
Detergents, Sulfated	All	200/93	210/99		275/135	275/135
Detergents, Sulfonated	All	160/71	180/82	200/93	275/135	275/135
Di-ammonium Phosphate	65	200/93	210/99		275/135	275/135
Diacetone		70/21	70/21			
Diacetone Alcohol		70/21	70/21			
Diallyl Maleate		160/71	180/82			
Diallyl Phthalate	All	160/71	180/82		150/65	150/65
Dibenzyl Sebacate		160/71	180/82			
Dibromo Phenol		NR	100/38		100/38	100/38
Dibutyl Ether	100	NR	210/99		125/52	125/52
Dibutyl Maleate		160/71	180/82			
Dibutyl Phthalate		200/93	210/99			
Dibutyl Sebacate	All	100/38	150/65			
Dichlorobenzene	100	80/27	120/49		180/82	180/82
Dichloroethane	100	NR	80/27		185/85	185/85
Dichloroethylene	100	NR	NR		185/85	185/85
Dichloromethane	100	NR	NR		100/38	100/38
Dichlorophen-oxyacetic Acid 2,4		100/38	120/49			
Dichloropropane	100	NR	100/38		185/85	185/85
Dichloropropene	100	NR	80/27		185/85	185/85
Diesel Fuel	100	200/93	210/99		275/135	275/135
Diethanol Amine	100	100/38	120/49		150/65	150/65
Diethyl Benzene	100	120/49	150/65		185/85	185/85
Diethyl Carbonate	100	NR	100/38		100/38	100/38
Diethyl Sulfate	100	NR	120/49		100/38	100/38
Diethylene Glycol	100	200/93	210/99		275/135	275/135
Diethylene Glycol N-butyl ether	100	NR	100/38			
Diethylhexyl Phosphoric acid (in kerosene)	20	150/65	150/65			
Diglycol Laurate		200/93	210/99			
Diisobutyl Phthalate	100	120/49	150/65		175/79	175/79
Diisobutylene	100	NR	100/38		225/107	225/107
Diisooctyl Sebacate		200/93	210/99			
Diisopropanol Amine	100	120/49	150/65		120/49	120/49
Dimethyl Formamide	100	NR	NR		100/38	100/38
Dimethyl Morpholine		NR	120/49		100/38	100/38
Dimethyl Phthalate	100	150/65	180/82		175/79	175/79
Dimethyl Sulfide	100	NR	80/27			
Dimethyl Sulfoxide (DMSO)		NR	NR			
Dimethyl Thiazolidine 2,2	1	150/65	180/82			
Diocyl Phthalate	100	160/71	210/99		175/79	175/79
Dioxane					125/52	125/52
Dipentene		200/93	210/99			
Diphenyl Oxide	100	100/38	120/49			
Dipropylene Glycol	100	180/82	210/99		275/135	275/135
Distilled Water	100	100/38	180/82			



Chemical Environment	Concentration	310	300	410	500XP	610XP
Divinyl Benzene	100	NR	120/49		175/79	175/79
DMA* 4 Weed Killer, 2, 4-D (Dimethylamine)		120/49	150/65			
DMA* 6 Weed Killer		NR	120/49			
Dodecene	100	130/55	180/82			
Dodecyl Alcohol (Lauryl)	100	130/55	180/82		225/107	225/107
Dodecyl Benzene Sulfonic Acid: Sulfuric Acid: Water: Oil	85:10:4:1	130/55	150/65			
Dodecyl Benzene Sulfonic Acid	100	100/38	120/49			
DOWANOL EA	100	NR	100/38			
DOWANOL EB (Glycol Ether)		80/27	120/49			
DOWANOL EE	100	NR	NR		100/38	100/38
DOWANOL PM	100	NR	70/21			
DOWCIDE* B Anti-microbial		NR	120/49			
DOWEX* 50 WX4 Ion Exchange Resin		190/87	210/99			
DOWFAX 2A0	40	NR	120/49			
DowFAX* 2A1 Surfactant	45	NR	120/49			
DOWTHERM* A (Heat Transfer Agent)	100	130/55	150/65			
ECR-34	100	100/38	120/49			
ELECTROSOL Antistatic Agent	5	130/55	150/65		225/107	225/107
ENDURA-ETCH	100	NR	90/32			
Epichlorohydrin	100	80/27	NR		100/38	100/38
Epoxidized Soybean Oil	100	130/55	150/65		275/135	275/135
Epoxy Resins						
ESTERON 245	100	130/55	150/65			
ESTERON*99 Herbicide	100	130/55	150/65			
Esters, Fatty Acid	100	150/65	180/82		275/135	275/135
Ethanol	10	120/49	150/65			
Ethanol	50	120/49	150/65			
Ethanol	95	100/38	100/38			
Ethanolamine see (Monoethanolamine)	100	NR	80/27			
Ethers						
Ethyl Acetate		70/21	70/21		150/65	150/65
Ethyl Acetoacetate		70/21	70/21			
Ethyl Acrylate		NR	NR		150/65	150/65
Ethyl Alcohol	10				200/93	200/93
Ethyl Benzene		NR	120/49		185/85	185/85
Ethyl Benzene: Benzene	2/3 : 1/3	NR	120/49			
Ethyl Benzoate		100/38	100/38			
Ethyl Bromide		NR	NR		100/38	100/38
Ethyl Cellosolve						
Ethyl Cellulose						
Ethyl Chloride	100	80/27	80/27		100/38	100/38
Ethyl Chlorocarbonate						
Ethyl Ether	100	NR	NR		120/49	120/49
Ethyl Oxalate		110/43	120/49			
Ethyl Silicate						
Ethyl Sulfate	100	NR	100/38		100/38	100/38
Ethylcyclopentane		130/55	150/65			
Ethylene Chlorohydrin	100	NR	100/38			
Ethylene diamine tetraacetic acid (See VERSENE* 100)		NR	100/38			
Ethylene Dichloride (See Dichloroethane)	100	NR	80/27		185/85	185/85
Ethylene Glycol	All	200/93	210/99	160/71	275/135	275/135
Ethylene Glycol Monobutyl Ether	100	NR	100/38			
Eugenol		80/27	80/27			
Fatty Alcohols		200/93	210/99			
Fatty Acids	All	200/93	250/121	200/93	275/135	275/135
Ferric Chloride	All	200/93	210/99	200/93	275/135	275/135
Ferric Chloride: Ferrous Chloride	5:20	200/93	210/99			
Ferric Chloride: Ferrous Chloride Hydrochloric Acid	48:0.2:0.2	180/82	180/82			
Ferric Chloride: Hydrochloric Acid	29:18.5	150/65	180/82			
Ferric Nitrate	All	200/93	210/99		275/135	275/135
Ferric Sulfate	All	200/93	210/99	160/71	275/135	275/135
Ferrous Chloride	All	200/93	210/99		275/135	275/135
Ferrous Chloride: Ferric Chloride	20:5	200/92	210/99			
Ferrous Nitrate	All	200/93	210/99		275/135	275/135
Ferrous Oxalate		200/93	210/99			
Ferrous Sulfate	All	200/93	210/99		275/135	275/135
Fertilizer 8-8-8		NR	120/49		275/135	275/135
Flue Gas		300/149	350/177			
Fluoboric Acid	All	180/82	210/99	160/71	75/24	75/24



Chemical Environment	Concentration	310	300	410	500XP	610XP
Fluoride Salts + Hydrochloric Acid	30:10	NR	120/49			
Fluosilicic Acid	25	NR	100/38		125/52	125/52
Fluosilicic Acid	32	NR	100/38		125/52	125/52
Formaldehyde	All	120/49	150/65		150/65	150/65
Formaldehyde Aniline						
Formamide						
Formic Acid	10	150/65	180/82		120/49	120/49
Formic Acid	100	80/27	100/38		120/49	120/49
Freon 113 Solvent		100/38	100/38			
Freon-11		100/38	100/38		75/24	75/24
Freon-12		100/38	100/38		75/24	75/24
Freon-22					75/24	75/24
Freon-31						
Fuel Oil	100	200/93	210/99		275/135	275/135
Fumaric Acid		200/93	210/99			
Furan						
Furfural	100	NR	NR		100/38	100/38
Furfuryl Alcohol	100	80/27	80/27			
GALECRON 4EC Insecticide	100	NR	120/49			
Gallic Acid	All	100/38	100/38			
Gasoline	100	150/65	180/82		250/121	250/121
Gasoline (108 Octane)						
Gasoline, Aviation	100	150/65	180/82		250/121	250/121
Gasoline, Ethyl	100	150/65	180/82		250/121	250/121
Gelatin		200/93	210/99			
Gluconic Acid	50	150/65	180/82			
Glucose	100	200/93	250/121		275/135	275/135
Glutaraldehyde	50	NR	120/49		150/65	150/65
Glutaric Acid	50	NR	120/49		150/65	150/65
Glycerine	100	200/93	210/99		275/135	275/135
Glycol	All	200/93	210/99			
Glycolic Acid (Hydroxy acetic)	70	NR	100/38		120/49	120/49
Glycolonitrile						
Glyoxal	40	NR	100/38		125/52	125/52
Gold Plating Solution (23% Potassium Ferrocyanide w/ Gold Cyanide and Sodium Cyanide)		NR	100/38	180/82		
Green Sulfate Liquor		160/71	180/82	250/121		
Halothane						
Heptanal		100/38	100/38			
Heptane	100	180/82	210/99	70/21	225/107	225/107
Heptanoic Acid		110/43	120/49			
Heptenes						
Herbicides		NR	120/49			
Hexamethylene-Tetramine	40	NR	120/49			
Hexane	100	160/71	160/71	70/21	175/79	175/79
Hexenes						
Hexyl Acetate		110/43	120/49			
Hexylene Glycol		160/71	180/82		250/121	250/121
Hydraulic Fluid	100	180/82	180/82		250/121	250/121
Hydrazine	100	NR	NR			
Hydriodic Acid	40	NR	150/65			
Hydrobromic Acid	18	150/65	180/82		150/65	150/65
Hydrobromic Acid	25	120/49	180/82		100/38	100/38
Hydrobromic Acid	48	120/49	150/65		100/38	100/38
Hydrobromic Acid	62	80/27	100/38			
Hydrochloric Acid	10	190/88	230/110	180/82	200/93	200/93
Hydrochloric Acid	15	180/82	230/110	180/82	200/93	200/93
Hydrochloric Acid	20	180/82	230/110	180/82	200/93	200/93
Hydrochloric Acid	37	130/54	180/82	180/82	150/65	150/65
Hydrochloric Acid+ Free Cl ₂	All	NR	230/110			
Hydrochloric Acid, fumes		210/99	250/121			
Hydrocyanic Acid	All	180/82	210/99		100/38	100/38
Hydrofluoric Acid	10	NR	150/65		75/24	75/24
Hydrofluoric Acid	20	NR	100/38		NR	NR
Hydrofluoric Acid	50	NR	NR		NR	NR
Hydrofluosilicic Acid	10	NR	180/82		125/52	125/52
Hydrofluosilicic Acid	35	NR	100/38		150/65	150/65
Hydrogen Bromide, wet gas	100	NR	180/82		NR	NR
Hydrogen Chloride, dry gas	100	210/99	350/177		150/65	150/65
Hydrogen Chloride, wet gas	100	210/99	350/177		NR	NR
Hydrogen Fluoride, vapor		NR	180/82		NR	NR
Hydrogen Peroxide	0 - 10	150/65	150/65	185/84	75/24	75/24
Hydrogen Peroxide	10 - 25	150/65	150/65	185/84	75/24	75/24
Hydrogen Peroxide	25 - 30	150/65	150/65	130/54	75/24	75/24
Hydrogen Peroxide	50	NR	NR	130/54	75/24	75/24
Hydrogen Peroxide	75	NR	NR	120/49	75/24	75/24



Chemical Environment	Concentration	310	300	410	500XP	610XP
Hydrogen Peroxide	100	NR	NR	120/49	75/24	75/24
Hydrogen Sulfide	5	300/149	350/177		150/65	150/65
Hydrogen Sulfide	100	200/93	250/121	120/49	150/65	150/65
Hydrosulfite Bleach-aqueous solution containing 5% zinc hydrosulfite and 2.5% tripolyphosphate			180/82	120/49		
Hydroxy acetic Acid	70	NR	100/39		100/38	100/38
Hypochlorous Acid	10	150/65	90/32	150/65	NR	NR
Hypochlorous Acid	20	130/54	90/32	150/65	NR	NR
Hypophosphorous Acid	50	NR	120/49			
Incinerator Gases			350/177			
Insecticides		NR	120/49			
Iodine, Crystals	100	120/49	150/65			
Iodine, Vapor	100	120/49	150/65		200/93	200/93
Iron and Steel Cleaning Bath, 9% Hydrochloric 23% Sulfuric		180/82	210/99			
Iron Plating Solution 45% FeCl ₂ 15% CaCl ₂ 20% FeSO ₄ 11% (NH ₄) ₂ SO ₄	100	180/82	250/121			
Isoamyl Acetate		110/43	120/49			
Isoamyl Alcohol		200/93	210/99			
Isoamyl Butyrate		120/49	120/49			
Isobutyl Acetate		80/27	80/27			
Isobutyl Acrylate		80/27	80/27			
Isobutyl Alcohol		110/43	120/49			
Isobutyl N-Butyrate		110/43	120/49			
Isobutyraldehyde		100/38	100/38			
Isobutyric Acid		110/43	120/49			
Isodecanal			120/49			
Isooctane		160/71	180/82			
Isooctyl Alcohol		140/60	150/65			
Isophorone		80/27	80/27			
Isoprene						
Isopropyl Acetate		70/21	70/21			
Isopropyl Alcohol	100	120/49	120/49		150/65	150/65
Isopropyl Amine	100	120/49	120/49			
Isopropyl Chloride					150/65	150/65
Isopropyl Ether						
Isopropyl Myristate	100	200/93	230/110			
Isopropyl Palmitate	100	200/93	230/110		275/135	275/135
Jet Fuel (JP-4)	100	180/82	180/82		275/135	275/135
Kerosene	100	180/82	180/82		275/135	275/135
Lactic Acid	All	200/93	210/99		275/135	275/135
Latex		100/38	120/49		275/135	275/135
Lauric Acid						
Lauryl Chloride		100/38	120/49			
Lauryl Alcohol	100	120/49	180/82			
Lauryl Chloride	100	150/65	210/99		200/93	200/93
Lauryl Chloride, Crude Acidic	100	150/65	210/99			
Lead Acetate	All	200/93	230/110		275/135	275/135
Levulinic Acid	All	200/93	230/110		250/121	250/121
Levulinic Acid	25	200/93	230/110		250/121	250/121
Linoleic Acid		200/93	210/99			
Linseed Oil	100	200/93	230/110		275/135	275/135
Lithium Bromide	Sat'd.	210/99	250/121		275/135	275/135
Lithium Carbonate	Sat'd.	130/55	180/82			
Lithium Chloride	Sat'd.	150/65	210/99		275/135	275/135
Lithium Hydroxide	Sat'd.	150/65	180/82		225/107	225/107
Lithium Hypochlorite	All	130/55	150/65			
Lubricating Oils		200/93	210/99	150/65		
Maganese Acetate		200/93	210/99			
Magnesia Slurry		200/93	210/99			
Magnesium Bisulfite	All	160/71	180/82		225/107	225/107
Magnesium Carbonate	All	180/82	180/82		275/135	275/135
Magnesium Chloride	All	200/93	250/121	180/82	275/135	275/135
Magnesium Hydroxide	100	150/65	210/99	160/71	275/135	275/135
Magnesium Nitrate		200/93	210/99		275/135	275/135
Magnesium Salts		200/93	210/99			
Magnesium Sulfate	All	200/93	250/121	160/71	225/107	225/107
MAGNIFLOC 837A	All	NR	150/65			
Maleic Acid	100	200/93	250/121		175/79	175/79
Maleic Anhydride					175/79	175/79
Mannitol Solution		200/93	210/99			
Mercaptoacetic Acid	All	NR	100/38			
Mercuric Chloride	All	180/82	210/99		275/135	275/135
Mercurous Chloride	All	180/82	210/99		275/135	275/135



Chemical Environment	Concentration	310	300	410	500XP	610XP
Mercury	100	200/93	250/121			
Methanol	10	100/38	120/49	70/21	175/79	175/79
Methanol	100	80/27	100/38	70/21	175/79	175/79
Methyl Acetate		NR	NR		150/65	150/65
Methyl Acetoacetate		70/21	70/21			
Methyl Acrylate		NR	NR			
Methyl Aniline		70/21	70/21			
Methyl Benzoate		100/38	100/38			
Methyl Bromide (Gas)	10	NR	80/27			
Methyl Carbonate						
Methyl Cellosolve		NR	NR			
Methyl Ethyl Ketone	100	70/21	70/21		175/79	175/79
Methyl Formate		NR	NR			
Methyl Glucoside	All	200/93	210/99			
Methyl Hexyl Ketone		80/27	80/27			
Methyl Isobutyl Carbitol					150/65	150/65
Methyl Isobutyl Ketone		80/27	80/27		175/79	175/79
Methyl Isopropyl Ketone		70/21	70/21			
Methyl Oleate		200/93	210/99			
Methyl Palmitate		200/93	210/99			
Methyl Pentane		150/65	150/65			
Methyl Propionate		70/21	70/21			
Methyl Salicylate		120/49	120/49			
Methyl Styrene (Alpha)	100	NR	120/49		175/79	175/79
Methylacrylic Acid		NR	NR			
Methylcyclohexanol		120/49	120/49			
Methylcyclohexanone		80/27	80/27			
Methylcyclopentane		150/65	150/65			
Methylene Chloride	100	NR	NR		100/38	100/38
Methylene Dichloride	100	NR	NR			
Milk	100	210/99	210/99			
Mineral Oils	100	200/93	250/121	200/93	275/135	275/135
Monochloroacetic Acid	80	NR	NR		100/38	100/38
Monochloroacetic Acid	100	NR	NR		100/38	100/38
Monochlorobenzene	100	100/38	100/38		200/93	200/93
Monoethanolamine (MEA)	100	NR	80/27		100/38	100/38
Monomethylhydrazine	100	NR	NR	120/49		
Morpholine	100	NR	80/27			
Motor Oil		230/110	250/121	225/107	275/135	275/135
Muriatic Acid (See Hydrochloric Acid)						
Myristic Acid	100	NR	250/121		250/121	250/121
N-Chloro O Tyl (insecticide emulsion)	10	80/27	120/49			
n-Heptane	100	180/82	210/99			
N-Hexaldehyde		100/38	100/38			
Naphtha	100	200/93	210/99		275/135	275/135
Naphtha, Heavy Aromatic		NR	120/49			
Naphthalene	100	200/93	210/99		225/107	225/107
Naphthols		200/93	210/99			
Natural Gas					275/135	275/135
Neutralizer & Desmut		NR	150/65			
Nickel Acetate	All	200/93	210/99	100/38		
Nickel Chloride	All	200/93	210/99	150/65	275/135	275/135
Nickel Nitrate	All	200/93	210/99		275/135	275/135
Nickel Plating Solution #2 (Nickel Sulfate: Ammonium Chloride: Boric Acid)	44:4:4	180/82	180/82	150/65		
Nickel Sulfate	All	200/93	210/99	150/65	275/135	275/135
Nitric Acid	5	150/65	180/82	70/21	150/65	150/65
Nitric Acid	20	100/38	150/65		75/24	75/24
Nitric Acid	40	NR	80/27		NR	NR
Nitric Acid, Fumes		NR	180/82			
Nitroaniline		NR	NR			
Nitrobenzene		NR	100/38		200/93	200/93
Nitroethane		NR	NR			
Nitropropane		NR	NR			
o-Benzoyl Benzoic Acid	All	150/65	210/99			
OAKITE Rust Stripper		150/65	180/82			
Octadecane		200/93	210/99			
Octane		200/93	210/99			
Octanoic Acid	100	180/82	210/99		225/107	225/107
Octene		100/38	100/38			
Oil, Sour Crude	100	210/99	250/121		275/135	275/135
Oil, Sweet Crude	100	200/93	210/99		275/135	275/135
Oleic Acid	All	200/93	200/93	70/21	275/135	275/135
Oleum (fuming sulfuric)		NR	NR		100/38	100/38
Olive Oils	100	230/110	250/121		275/135	275/135



Chemical Environment	Concentration	310	300	410	500XP	610XP
Oxalic Acid	All	200/93	210/99	70/21	225/107	225/107
Ozone		200/93	220/104			
Palmitic Acid	100	230/110	250/121			
Pentanedioic Acid (See Glutaric Acid)	50	NR	120/49			
Perchloroethylene	100	NR	120/49		150/65	150/65
Perchloric Acid	10	130/54	150/65			
Perchloric Acid	30	80/27	100/38			
Perchloric Acid	70					
Peroxide Bleach-aqueous solution		200/93	210/99			
Phenol	88	NR	70/21		100/38	100/38
Phenol (In Water)	0 - 5				175/79	175/79
Phenol Sulfonic Acid	65	NR	80/27			
Phosphoric Acid	30	180/82	210/99	220/104	150/65	150/65
Phosphoric Acid	50	180/82	210/99	220/104	125/52	125/52
Phosphoric Acid	85	200/93	210/99	220/104	120/49	120/49
Phosphoric Acid	100	200/93	210/99	220/104		
Phosphoric Acid (Superphosphoric acid, 76% P ₂ O ₅)	105	200/93	210/99			
Phosphoric Acid (Polyphosphoric Acid)	115	180/82	210/99			
Phosphoric Acid with Phosphorous Pentoxide, Hydrochloric Acid and Sulfuric Dioxide	Fumes	140/60	230/110			
Phosphoric Acid, vapor and condensate	100	150/65	250/121			
Phosphoric Acid: Hydrochloric Acid, Sat'd. with Cl ₂	15:9	200/93	210/99			
Phosphorous Acid	70	NR	100/38			
Phosphorous Pentoxide	0 - 54					
Phosphorous Trichloride		NR	NR			
Phthalic Acid	All	150/65	210/99			
Picric Acid (alcoholic)	10	180/82	210/99			
Platinum Plating Solution		130/55	180/82			
Polyethylene Imine	12	120/49	150/65			
Polyphosphoric Acid (115% H ₃ PO ₄)		180/82	210/99			
Polyvinyl Acetate Adhesives		NR	120/49		250/121	250/121
Polyvinyl Chloride Latex with 35 parts DOP		NR	120/49			
Potassium Acetate	All	200/93	210/99			
Potassium Aluminum Sulfate	All	200/93	250/121		275/135	275/135
Potassium Bicarbonate	10	150/65	150/65		225/107	225/107
Potassium Bicarbonate	50	150/65	180/82		225/107	225/107
Potassium Bromide					275/135	275/135
Potassium Carbonate	10	150/65	150/65	180/82	275/135	275/135
Potassium Carbonate	25	150/65	150/65	180/82	275/135	275/135
Potassium Carbonate	50	150/65	180/82	180/82	275/135	275/135
Potassium Chloride	All	180/82	210/99	250/121	275/135	275/135
Potassium Cyanide		200/93	210/99	180/82	275/135	275/135
Potassium Cyanide	5				275/135	275/135
Potassium Dichromate	All	200/93	210/99			
Potassium Ferricyanide	All	200/93	210/99		275/135	275/135
Potassium Ferrocyanide	All	200/93	210/99		275/135	275/135
Potassium Fluoride	30				150/65	150/65
Potassium Gold Cyanide	12	NR	100/38			
Potassium Hydroxide	10	NR	150/65	200/93	240/116	NR
Potassium Hydroxide	25	NR	150/65	200/93	240/116	NR
Potassium Hydroxide	45	NR	180/82	200/93	240/116	NR
Potassium Hydroxide: Potassium Cyanide: Cooper Cyanide	2:3:8 OZ/gal	NR	180/82			
Potassium Nitrate	All	210/99	210/99		275/135	275/135
Potassium Permanganate	All	180/82	210/99		175/79	175/79
Potassium Persulfate	All	200/93	210/99	180/82		
Potassium Sulfate	All	180/82	210/99	180/82	275/135	275/135
Propane Gas					100/38	100/38
Propionic Acid	50	150/65	180/82		120/49	120/49
Propionic Acid	100	80/27	100/38		100/38	100/38
Propyl Acetate		70/21	70/21			
Propyl Acetone		70/21	70/21			
Propyl Alcohol	100	100/38	100/38			
Propylene Glycol	All	200/93	210/99		275/135	275/135
Pyridine	100	NR	NR		125/52	125/52
Red Liquor	All	120/49	150/65			
Resorcinol		70/21	70/21	200/93		



Chemical Environment	Concentration	310	300	410	500XP	610XP
Rosin Oil		200/93	210/99	200/93		
Seawater (Saltwater)	All	210/99	210/99	200/93		
Sebacic Acid		200/93	210/99			
Selenious Acid	All	210/99	210/99			
Silicic Acid						
Silver Nitrate	All	210/99	210/99		275/135	275/135
Silver Plating Solution, Silver, Potassium:Sodium Cyanides; Potassium Carbonate	4:7:5:2	150/65	180/82	150/65		
Soaps					275/135	275/135
Sodium Acetate	All	210/99	210/99		225/107	225/107
Sodium Akyl Aryl Sulfonates	All	120/49	180/82		225/107	225/107
Sodium Aluminat	All	100/38	120/49		225/107	225/107
Sodium Benzoate	100	160/71	180/82		250/121	250/121
Sodium Bicarbonate	10	160/71	180/82	250/121	275/135	275/135
Sodium Bicarbonate	Sat'd.	160/71	180/82	250/121	275/135	275/135
Sodium Bicarbonate/Sodium Carbonate	15:20	150/65	180/82			
Sodium Bisulfate	All	200/93	210/99	180/82	225/107	225/107
Sodium Bisulfite	Sat'd.	210/99	210/99	180/82	250/121	250/121
Sodium Borate	Sat'd.	NR	210/99	180/82		
Sodium Bromate	5	140/60	150/65			
Sodium Bromide	All	200/93	210/99		275/135	275/135
Sodium Carbonate	10	160/71	180/82	180/82	225/107	225/107
Sodium Carbonate	25	160/71	180/82	180/82	225/107	225/107
Sodium Carbonate	32	160/71	180/82	180/82	225/107	225/107
Sodium Carbonate	35	160/71	180/82	180/82	225/107	225/107
Sodium Carbonate: Sodium Bicarbonate	20:15	150/65	180/82			
Sodium Chlorate	50	200/93	210/99	210/99	200/93	200/93
Sodium Chlorate	100	200/93	210/99	200/93	200/93	200/93
Sodium Chloride pH 10.5, Cl ₂	Sat'd.	180/82	200/93	NR		
Sodium Chloride pH 11, Some Cl ₂	Sat'd.	180/82	180/82	NR		
Sodium Chloride pH 3.5	Sat'd.	210/99	210/99	200/93	275/135	275/135
Sodium Chloride: Sodium Chlorate	Sat'd. 3.2 M	150/65	210/99	210/99		
Sodium Chlorite	10	120/49	150/65	180/82		
Sodium Chlorite	50	80/27	100/38	180/82		
Sodium Chromate	50	200/93	210/99	180/82		
Sodium Citrate		200/93	210/99	200/93		
Sodium Cyanate		180/82	180/82	160/71		
Sodium Cyanide	Alkl	190/87	210/99	180/82	250/121	250/121
Sodium Di-phosphate	100	200/93	210/99			
Sodium Dichromate	100	200/93	210/99	160/71		
Sodium Dimethyldithio-carbamate						
Sodium Dithionite			80/27			
Sodium Dodecylben-zene-sulfonate		130/55	160/71			
Sodium Ferricyanide	All	200/93	210/99		275/135	275/135
Sodium Ferrocyanide	All	200/93	210/99	160/71	275/135	275/135
Sodium Fluoride	All	NR	180/82	160/71	200/93	200/93
Sodium Fluoro Silicate	All	100/38	120/49	160/71		
Sodium Formate		100/38	100/38			
Sodium Gluconate		200/93	210/99			
Sodium Hexameta-phosphate	10	80/27	100/38			
Sodium Hydrosulfide	All	180/82	210/99	180/82		
Sodium Hydroxide	5	NR	NR	250/121	200/93	NR
Sodium Hydroxide	10	NR	NR	250/121	200/93	NR
Sodium Hydroxide	25	NR	100/38	250/121	200/93	NR
Sodium Hydroxide	50	NR	100/38	210/99	240/116	NR
Sodium Hypochlorite	5 1/4	NR	NR	200/93	NR	NR
Sodium Hypochlorite	10	NR	NR	200/93	NR	NR
Sodium Hypochlorite	18	NR	NR	200/93	NR	NR
Sodium Hypochlorite, 5% NaoH Scrubbing Cl ₂ ClO ₂		NR	NR	160/71	NR	NR
Sodium Lauryl Sulfate	All	150/65	160/71	160/71		
Sodium Methoxide	40					
Sodium Monophosphate	All	180/82	200/93	200/93		
Sodium Nitrate	All	200/93	210/99		275/135	275/135
Sodium Persulfate	20	130/55	130/55	140/59		
Sodium Phosphate	10	200/93	210/99	140/59		
Sodium Polyacrylate, pH 9-10.5	25	160/71	180/82			
Sodium Silicate	All	200/93	210/99	180/82	225/107	225/107
Sodium Sulfate	All	200/93	210/99	180/82	275/135	275/135
Sodium Sulfide	All	200/93	210/99	180/82	250/121	250/121
Sodium Sulfide	15			180/82	250/121	250/121
Sodium Sulfite	All	210/99	210/99			
Sodium Tetraborate	Sat'd.	160/71	180/82			



Chemical Environment	Concentration	310	300	410	500XP	610XP
Sodium Thiocyanate	57	160/71	180/82	180/82	225/107	225/107
Sodium Thiosulfate	All	160/71	180/82	180/82	200/93	200/93
Sodium Tripolyphosphate	Sat'd.	160/71	210/99		225/107	225/107
Sodium Xylene Sulfonate	All	130/55	160/71			
Soduim Diacetate		200/93	210/99			
Soduim Peroxide						
Solder Plate		120/49	150/65			
Solvent Excracton Solution		180/82	180/82			
3% Isodecanel						
6% Alamine 336'						
91% Kerosene						
Solvent Extraction Solutions		180/82	180/82			
4% Trioctylphosphine Oxide (TOPO); 4% Diethylhexyl Phosphoric Acid (DEPHA);92% Kerosene						
Sorbic Acid		200/93	210/99			
Sorbitol		150/65	160/71			
Sorbitol Solutions	All	170/76	180/82		225/107	225/107
Soya Oil	100	190/87	210/99		275/135	275/135
Stannic Chloride	All	200/93	210/99	160/71	225/107	225/107
Stannous Chloride	All	160/71	210/99	160/71	225/107	225/107
Steam		200/93	220/104	300/121		
Stearic Acid	All	200/93	210/99	160/71	275/135	275/135
Stearyl Alcohol		160/71	180/82			
Styrene	100	NR	120/49		185/85	185/85
Styrene Acrylic Emulsion		110/43	120/49			
Succinic Acid		200/93	210/99			
Succinic Acid Peroxide						
Succinic Anhydride						
Succinonitrile, Aqueous		NR	100/38		120/49	120/49
Sucrose		200/93	210/99	200/93		
Sugar, Beet, Liquor		160/71	180/82	200/93	275/135	275/135
Sugar, Cane, Liquor & Sweetwater	All	170/76	180/82			
Sugar/Sucrose	All	200/93	210/99		275/135	275/135
Sulfamic Acid	10	200/93	210/99		150/65	150/65
Sulfanilic Acid	All	200/93	210/99			
Sulfate Process		150/65	180/82			
Non Condensable Gases						
Sulfated Detergents	All	200/93	210/99		225/107	225/107
Sulfite/Sulfate Liquors (Pulp Mill)		180/82	200/93			
Sulfonated Detergents	100	160/71	180/82	200/93		
Sulfur Dioxide (dry or wet)		200/93	210/99	160/71		
Sulfur Trioxide			210/99			
Sulfur, Molten		190/87	300/149			
Sulfur, Wettable, Fungicide		150/65	180/82			
Sulfuric Acid	0 - 10	210/99	210/99	250/121	200/93	200/93
Sulfuric Acid	25	190/87	210/99	200/93	175/79	175/79
Sulfuric Acid	70	150/65	180/82	NR	175/79	175/79
Sulfuric Acid	93	NR	NR	NR	120/49	120/49
Sulfuric Acid	98	NR	NR	NR	120/49	CF
Sulfuric Acid: Ferrous Sulfate	10: Sat'd.	170/76	210/99			
Sulfuric Acid: Phosphoric Acid	10:20	130/55	180/82			
Sulfurous Acid	0 - 7				75/24	75/24
Sulfurous Acid	10	120/49	120/49			
Superphosphoric Acid (76% P ₂ O ₅)	105H ₃ PO ₄	180/82	210/99	220/104		
Tall Oil Reactor Tannic Acid	All	180/82	210/99	180/82	225/107	225/107
Tartaric Acid	All	200/93	210/99	140/59	275/135	275/135
Terephthalic Acid	All	200/93	210/99			
Terpenes		180/82	180/82			
Terpineol		180/82	180/82			
Tetrachloroethylene	100	NR	120/49		175/79	175/79
Tetrachloropyridine		NR	120/49			
Tetraethyl Lead						
Tetrahydrofuran					100/38	100/38
Tetrahydrofurfuryl-Alcohol						
Tetrahydronaphthalene		180/82	180/82			
TETRALIN						
Tetrapotassium Pyrophosphate	60	130/55	150/65			
Tetrasodium Ethylene-Diamine	All	120/49	120/49			
TEXTONE Liquid product 50% aqueous solution of sodium chlorite		200/93	210/99			
Thioglycolic Acid (Mercaptoacetic Acid)	All	NR	100/38			
Thionyl Chloride		NR	NR			



Chemical Environment	Concentration	310	300	410	500XP	610XP
Tin Fluoborate		200/93	210/99	180/82		
Plating Bath 18% Stannous Fluoborate; 7% Tin, 9% Fluoboric Acid; 2% Boric Acid						
Tobias Acid (2-naphthylamine-1-sulfonic acid)	All	NR	210/99			
Toluene	100	120/49	120/49		200/93	200/93
Toluene Sulfonic Acid	All	NR	210/99			
Toluene-2m 4- Di isocyanate						
Transformer Oils		250/121	300/149		100/38	100/38
Triacetin		70/21	70/21			
Tributoxyethyl Phosphate		140/60	140/60			
Tributyl Phosphate	100	NR	140/57			
Trichlorethane					175/79	175/79
Trichloroethane	100	120/49	120/49		175/79	175/79
Trichloroacetic Acid	50	NR	210/99			
Trichloroethylene	100	NR	NR		150/65	150/65
Trichloromonofluor-methane	100	NR	100/38		120/49	120/49
Trichlorophenoxyacetic Acid (2,4,5) Acid, Salts, Esters and Formulations)		NR	150/65			
Tricresyl Phosphate	100	150/65	160/71			
Triethanolamine	100	NR	150/65		150/65	150/65
Triethyl Phosphate						
Triethylamine						
Trimethylene Chlorobromide		NR	NR		150/65	150/65
Trioctyl phosphine oxide, diethyl hexyl phosphoric acid; kerosen 4/4/92		160/71	180/82			
Trisodium Phosphate	All	200/93	250/121	180/82	225/107	225/107
TRITON X-100 Wetting Agent		NR	100/38			
Tung Oil						
Turpentine	100	150/65	160/71	70/21	150/65	150/65
TWEEN Surfactant	All	150/65	180/82			
TYDEX 12 Flocculant	12	130/55	150/65			
ULTRAWET Surfactants	All	150/65	180/82			
URAN Fertilizer Urea-Ammonium Nitrate Composition: 44.3% Ammonium Nitrate 35.4% Urea 20.3% Water Urea	50	130/54	150/65			
Urea					225/107	225/107
Urine Sugar		200/93	240/116			
VERSENE Chelating Agents		NR	120/149			
Vinegar	100	200/93	210/99		120/49	120/49
Vinyl Acetate		70/21	70/21		120/49	120/49
Vinyl Chloride		NR	NR			
Vinyl Toluene	100	110/29	120/49		200/93	200/93
VORANOL P-400 Polyol	100	120/49	120/49			
Waste, Organic H ₂ O, HCl CL ₂ Vapors		120/49	180/82			
Water, 50 ppm Phenol		120/49	120/49		175/79	175/79
Water, Deionized	100	180/82	180/82		275/135	275/135
Water, Distilled		210/99	210/99		275/135	275/135
Water, Sea desalination pH 7.5	1.75 x Normal	180/82	180/82		275/135	275/135
Water, Sea desalination pH 7.5	2.75 x Normal	180/82	180/82		275/135	275/135
Water, Steam Condensate	100	180/82	210/99			
White Liquor (Pulp Mill)		100/40	120/49	200/93	275/135	275/135
Xylene	100	120/49	120/49	70/21	200/93	200/93
Xylenol		NR	80/27			
Zinc Chloride	70	250/121	310/154	230/110	250/121	250/121
Zinc Cyanide		160/71	180/82			
Zinc Cyanide Plating Bath, 9% Zinc and 4% Sodium Cyanides 9% Sodium Hydroxide		100/40	100/40	180/82		
Zinc Electrolyte		140/60	150/65			
Zinc Fluoborate		180/82	200/93	180/82		
Plating Bath, 49% Zinc Fluoborate; 5% Ammonium Chloride; 6% Ammonium Fluoborate						
Zinc Nitrate	Sat'd	250/121	250/121		250/121	250/121
Zinc Phosphate (slurry)	All	180/82	180/82			
Zinc Sulfate	All	200/93	250/121	180/82	275/135	275/135

1. Nil-Cor 310: Vinyl Ester Reinforced with Glass Fiber
 2. Nil-Cor 300: Vinyl Ester Reinforced with Graphite Fiber
 3. Nil-Cor 500XP: Novolac Epoxy Reinforced with Graphite Fiber

4. Nil-Cor 410: Glass Fiber-Reinforced Polysulfone
 5. Nil-Cor 510: Glass Fiber-Reinforced PPS
 6. Nil-Cor 610XP: Novolac Epoxy Reinforced with Glass Fiber



NR: Not Recommended
 * Use of a 310 ball & stem is recommended for these applications.
 ** A blank space in the table indicates no data available at the time temperature ratings were assigned.

**TABLE 2:
 Chemical Resistance Guide for
 Seats, Seals and Valve Trim**

**A = Little/No Effect
 B = Some Effect, Testing is recommended
 C = Severe Effect, Not Recommended
 (°F/°C) = Max. Temp for Satisfactory Service**

Service	PTFE/PFA	Viton®	EPDM	Hypalon®	Silicone	Hast. C276®	Titanium C2
Acetic acid (5%)	450	C	A	B	B	A	A
Acetic acid (10%)	450	C	A	B	B	A	A
Acetic acid (50%)	450	C	A	C	B	A	A
Acetic acid (80%)	450	C	B	C	B	A	A
Acetic acid, glacial	450	C	B	C	B	A	A
Acetic anhydride	450	C	B	A	C	A	
Acetone (10%)	450	C	A	B	C	A	A
Acetone (100%)	450	C	A	B	C	A	A
Acetonitrile	450	C	B		C	B	
Acetylene	450	176/80	A	B	B	A	A
Acetylene Tetrabromide	450	A to 200 F	A				
Acetylene Tetrachloride	450	A to 200 F	C		C		
Acrylonitrile	450	C	C		C	B	
Adipic Acid	450	176/80	140/60				
Alum	450	200/93	A		A	A	A
Aluminum Chloride, aq.	450	200/93	A	A	B	A	C
Aluminum Fluoride	450	A to 212 F	A	A	B	B	C
Aluminum Hydroxide	450	A to 176 F	A				A
Aluminum Nitrate	450	A to 212 F	A		B		
Alum. Pot. Sulfate	450	A to 176 F	A	A	A		
Ammonia, anhydrous (liquid)	450	C	A		C	A	B
Ammonia, anhydrous (dry gas)	450	C	A	A	C	A	A
Ammonia liquid	450	C	A		C	B	
Ammonium Carbonate (saturated)	450	A to 212 F	A		C	B	A
Ammonium Chloride (saturated)	450	A to 212 F	A	A	C	B	B
Ammonium Dichromate	450	NA	A				
Ammonium Hydroxide (1%)	450	73/23	A	A	A	A	
Ammonium Hydroxide (10%)	450	73/23	A	A	A	A	
Ammonium Hydroxide (30%)	450	73/23	A	A	A	A	A
Ammonium Metaphosphate	450	A to 176 F	A				
Ammonium Nitrate (saturated)	450	A to 176 F	A		C	A	
Ammonium Phosphate	450	A to 176 F	A	A	A	A	
Ammonium Sulfate (saturated)	450	73/23	A	A	A	B	A
Aniline	450	68/20	B	C	C	B	B
Aniline Hydrochloride (10%)	450	AB to 140 F	B		C		
Arsenic Acid	450	A to 140 F	A		A	A	
Barium Carbonate	450	A to 248 F	A			A	A
Barium Chloride	450	A to 248 F	A	A	A	A	A
Barium Hydroxide	450	A to 248 F	A	A	A	A	A
Barium Sulfate	450	A to 248 F	A		A	A	A
Barium Sulfide	450	A to 248 F	A	A	B		
Benzene	450	C	C	C	C	B	A
Benzene Sulfonic Acid	450	A 10% to 140F	C		C		
Benzoyl Chloride	450	BC at 70 F	C		C		
Benzyl Alcohol	450	140/60	B				
Benzyl Chloride	450	A to 200 F	C		C		
Black Liquor	450	A to 212 F	C	C	B		
Borax		A to 176 F	A	A	B	A	A
Boric Acid	450	A to 176 F	A	A	A	A	B
Brine (acid)	450	A to 70 F	A	A		B	B
Brine (basic)	450	A to 248 F	A	A			
Bromine (dry gas)	450	212/100	C	C	C	B	C
Bromine (water-3% saturated)	450	140/60	C	B	C	B	B
Bromine (liquid)	450	140/60	C	C	C	B	C
Butane	450	68/20	C	A	C	B	



Service	PTFE/PFA	Viton®	EPDM	Hypalon®	Silicone	Hast. C276®	Titanium C2
Calcium Bisulfite	450	A to 176 F	C		A	A	A
Calcium Carbonate	450	A to 248 F	A		A	A	A
Calcium Chlorate	450	A to 140 F	B			B	
Calcium Chloride	450	A to 140 F	A	A	A	A	B
Calcium Hydroxide	450	A to 212 F	A	A	A	A	A
Calcium Hypochlorite	450	A to 70 F	A	B	B	B	A
Calcium Nitrate	450	A to 212 F	A		B		
Calcium Oxide	450	A to 140 F	A		A		
Calcium Sulfate	450	A to 140 F	A			B	A
Calcium Sulfide	450	A to 212 F	A		B		
Carbon Tetrachloride	450	100/38	C	C	C	B	A
Carbonic Acid	450	A to 176 F	A		A	A	A
Castor Oil	450	302/150	B	A	A	A	
Chlorine Dioxide	450	68/20	C	C	C	A	
Chlorine, gas (dry)	300	158/70	C	C	C	A	C
Chlorine, gas (wet)	300	158/70	C	C	C		
Chromic Acid, 10%	450	A 10% to 70 F	A	A	C	A	A
Chromic Acid, 30%	450	NA	A	A	C	A	A
Chromic Acid, 40%	450	NA	B	B	C	A	A
Chromic Acid, 50%	450	NA	B	B	C	B	A
Citric Acid	450	A to boiling	A	A	A	A	A
Coconut Oil	450	A to 212 F	B		A		
Copper Acetate	250	NR @ 70 F	A		C	A	
Copper Chloride	450	A to 212 F	A	B	A	A	A
Copper Cyanide	450	A to Boiling	A		A	A	A
Copper Nitrate	450	A to 212 F	A			B	B
Copper Sulfate	450	A to 70 F	A	A	A	A	A
Cresol	450	212/100	C	B	C		
Creosote	300	A to 212 F	C		C	A	
Crude Oil	450	302/150	C		C		
Cupric Chloride	450	A to 212 F	A		A	C	B
Cyclohexane	450	68/20	C		C	A	
Dextrose	450	A to 212 F	A		A		
Dichloroethylene (Ethylene Dichloride)	450	C	C			B	A
Diesel fuels	450	73/23	C		C		
Diethyl Amine (aq.)	450	B to 140 F	B		B		
Diethyl Ether	450	NR @ 70 F	C		C		
Diethylene Glycol Ethers	450	C to 70 F	A		B		
Di-isobutylene	450	68/20	C		C		
Dowtherm A	450	212/100	C		C		
Epichlorohydrin	450	C	B		C		
Ether	450	C @ 70 F	C	B	C		
Ethyl Acetate	450	C	B	C	B	B	
Ethyl Alcohol (Ethanol)	450	C	A	A	A	A	
Ethyl Benzene	450	A to 70 F	C		C	A	
Ethyl Chloride	450	A to 140 F	B	B	C	A	A
Ethyl Ether	450	C	C		C		
Ethylene Dichloride	450	B to 200 F	B		C	C	
Ethylene Glycol	450	212/100	A	A	A	A	A
Ethylene Oxide (5% aq.)	450	NR @ 70 F	B		C	A	A
Ethylene Trichloride	450	A to 70 F	C		C		
Ferric Chloride, Aq.	450	B @ 212 F	A	A	B	A to 175	B
Ferric Chloride + HCl	450	NA	A		B		
Ferric Nitrate	450	A to 212 F	A		B	A	A
Ferric Sulfate	450	B @ 212 F	A	A	B	B	B
Ferrous Chloride	450	A to 176 F	A			B	A
Ferrous Chloride + HCl	450	NA	A				
Ferrous Nitrate	450	A to 212 F	B			B	A
Ferrous Sulfate	450	B @ 212 F	A			B	A
Flourine Gas, Dry		A to 300 F	C		C	A	
Flourine Gas, Wet		A to 104 F	C		C		
Formaldehyde (37%)	450	170/80	A	A	B	A	A
Formaldehyde (50%)	450	68/20	A	A	B	A	A
Formic Acid	450	C	A	A	B	A	C
Fuel Oil	450	158/70	C	B	C	A	A
Furfural	450	C	B	B	C	B	
Gas (manufactured)	450	A to 70 F	C	C	C		
Gas (Natural)	450	A to 176 F	C	C	C		
Gasoline, Leaded	450	68/20	C	C	C	A	C
Hydraulic Oil	300	A to 70 F	C		B		
Hydrobromic Acid (10%)	450	A to 140 F	A	A	C	A	A
Hydrobromic Acid (50%)	450	A to 140 F	A	A	C	B	C
Hydrochloric Acid (10%)	450	158/70	120/49	A	C	A	C



Service	PTFE/PFA	Viton®	EPDM	Hypalon®	Silicone	Hast. C276®	Titanium C2
Hydrochloric Acid (20%)	450	158/70	120/49	A	C	A	C
Hydrochloric Acid (35%)	450	158/71	C	B	C	B	C
Hydrocyanic Acid	450	A to 140 F	B	A	B	C	A
Hydrofluoric Acid (37%)	450	21/100	C	A	C	B	C
Hydrofluoric Acid (48%)	450	A to 176 F	C	B	C	B	C
Hydrofluoric Acid (60%)	450	130/54	C	B	C	C	C
Hydrofluoric Acid (100%)	450	NA	C	B	C	C	C
Hydrogen Peroxide (3-8%)	450	A to 200 F	B	B	A	A	B
Hydrogen Peroxide (30%)	450	A to 140 F	B	B	B	B	B
Hydrogen Peroxide (90%)	450	68/20	C	A	B		
Hydrogen Sulfide (dry)	450	212/100	A	A	B	A	
Hydrogen Sulfide (wet)	450	212/100	A	A	B	B	A
Hydroquinone	450	B to 140 F	C				
Hypochlorous Acid	450	B 10% 176F	B				
Iodine (gas)	450	NA	B			A	
Iodine (10%)	450	A to 140 F	B				
Isopropyl Alcohol	450	A to 170 F	A		A		
Isopropyl Chloride	450	A to 160 F	C		C		
Isopropyl Ether	450	NR @ 70 F	C		C	A	
Jet Fuels, JP-4,-5,-6,-7	450	158/70					
Kerosene	450	A to 158 F	C	B	C	A	
Ketones	200	NR @ 70 F	A				
Lactic Acid (80%)	450	B	B	A	A	B	A
Lard Oil	450	A to 140 F	C		B		
Lead Acetate	450	A to 140 F	A		C		
Lead Nitrate	300	A to 212 F	A		B		
Lead Sulfate	300	A to 212 F	A				
Magnesium Chloride	450	A to 176 F	A	A	A	A	A
Magnesium Hydroxide	450	A to 212 F	A	A	B	A	A
Maleic Anhydride	450	A to 140 F	C			A	
Malic Acid	450	A to 70 F	C		B	A	A
Methane	450	A to 176 F	C		C	A	
Methyl Acetate	300	NR @ 70 F	B		C	A	
Methyl Alcohol (Methanol)	450	68/20	140/60	A	A		
Methyl Amine	300	C to 70 F	A				
Methyl Bromide	450	A to 160 F	B				
Methyl Chloride	450	A to 140 F	B	C		A	A
Methyl Ethyl Ketone	450	NR @ 70 F	A	B	C	A	A
Methyl Isobutyl Ketone	450	C	B		C	A	A
Methyl Methacrylate	450	C	C		B		
Methylene Chloride	450	C	C		C	A	A
Mineral Oil	450	A to 70 F	C	B	B	A	
Monochlorobenzene	200	A to 200 F	C		C		
Naptha	450	A to 158 F	C		C	B	A
Napthalene	450	A to 176 F	C		C	A	A
Nickel Chloride	450	A to 212 F	A	A	A	A	A
Nickel Nitrate	450	A to 248 F	B				
Nickel Sulfate	450	C @ 70 F	A	A	A	A	B
Nitric Acid (5-10%)	450	100/38	B	A	B	A	A
Nitric Acid (30%)	450	100/38	B	A	C		
Nitric Acid (50%)	450	C	C	A	C		
Nitric Acid (70% fuming)	450	C	C	B	C		
Nitrobenzene	450	A to 140 F	C	C	C	A	A
Nitromethane	450	NR @ 70 F	B		C		
Oleum	450	B to 140 F	C		C	A	A
Ozone	450	A to 70 F	A		A	A	
Paraffin	250	A to 150 F	C		C	A	
Petroleum Oils	450	A to 70 F	C	B	C		
Phenol (5%)	450	140/60	C		C	A	B
Phenol (90%-100%)	450	140/60	C		C		
Phosphoric Acid (10%-50%)	450	100/38	130/54	A	C	A	B
Phosphoric Acid (50%-85%)	450	100/38	130/54	A	C	A	C
Phosphorous Trichloride	450	A to 70 F	A				
Plating sol. - Chrome	450	A to 140 F	B		C	A	A
Polyvinyl Acetate	450	C @ 70 F	A		C		
Potash (Potassium Carbonate)	400	A to 212 F	A			A	
Potassium Chlorate (aq.)	450	A to 140 F	A		B	B	A
Potassium Chloride	450	A to 212 F	A	A	A	B	A
Potassium Cyanide	450	A to 70 F	A	A	A	A	A
Potassium Dichromate	450	A to 212 F	A		A	B	A
Potassium Hydroxide (10%)	450	C	A	A	A		B
Potassium Hydroxide (50%)	450	C	B	A	B		
Potassium Hydroxide (60-90%)	450	C	B	A	C	B	B



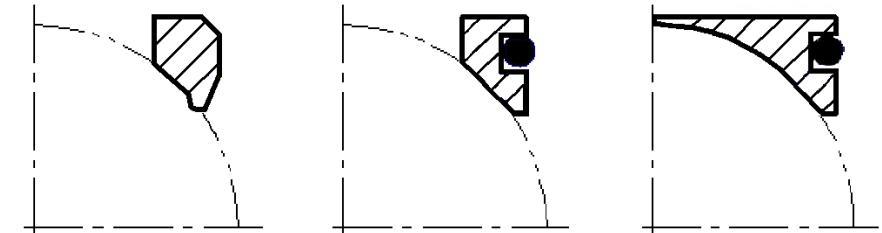
Service	PTFE/PFA	Viton®	EPDM	Hypalon®	Silicone	Hast. C276®	Titanium C2
Potassium Nitrate	450	A to 212 F	A		A	A	A
Potassium Permanganate	450	C	A			B	B
Potassium Sulfate	450	A to 212 F	A	A	A	A	A
Potassium Sulfide	450	A to 70 F	A		A	A	
Potassium Sulfite	300	A to 70 F	A		A		
Propylene Glycol	450	A to 140 F	A		A		
Propylene Oxide	450	NR @ 70 F	B		C		
Sodium Bicarbonate	450	A to 212 F	A	A	A	A	
Sodium Bisulfate	450	A to 212 F	A	A	A		
Sodium Bisulfite	450	A to 212 F	A		A	A	
Sodium Borate (Borax)	450	A to 176 F	A		A		
Sodium Carbonate	450	A to 212 F	A		A	A	A
Sodium Chlorate	450	A to 140 F	A		B		
Sodium Chloride	450	A to 212 F	A	A	A	A	A
Sodium Cyanide (sat.)	450	A to 176 F	A	A	A		B
Sodium Dichromate	450	A to 70 F	A				B
Sodium Fluoride (sat.)	450	A to 140 F	A				B
Sodium Hydroxide (<10%)	450	130/54	212/100	A	A	A	A
Sodium Hydroxide (10-50%)	450	130/54	176/80	A	A		
Sodium Hydroxide (50%)	450	130/54	176/80	B	B		
Sodium Hydroxide (>50%)	450	70/21	70/21	B	B		
Sodium Hypochlorite (5%)	450	70/21	A	A	B	B	A
Sodium Hypochlorite (5-15%)	450	A to 130 F	B	A	B		
Sodium Hypochlorite (>15%)	450	C	C	A	B	B	A
Sodium Silicate	450	A to 212 F	A	A	A	A	
Sodium Sulfate	450	A to 212 F	A	A	A	A	
Sodium Sulfide	450	A to 176 F	A	A	A		
Sodium Sulfite	450	A to 140 F	A		A	A	
Stannic Chloride	450	A to 140 F	B	A	B	C	B
Starch	300	A to 212 F	A			A	
Steam	450	212/100	350/177				
Sulfur Dioxide (wet or dry gas)	450	A to 140 F	A	B	B	A	
Sulfur Dioxide (liquid)	450	B to 70 F	A	B	B	A	C
Sulfur Trioxide (liquid or gas)	450	A to 140 F	B	B	B	A	
Sulfuric Acid (10%)	450	212/100	A	A	C	A	C
Sulfuric Acid (16%)	450	212/100	A	A	C	A	C
Sulfuric Acid (30%)	450	176/80	B	A	C	A	C
Sulfuric Acid (60%)	450	176/80	B	A	C	A	C
Sulfuric Acid (85%)	450	158/70	B	A	C	A	C
Sulfuric Acid (93%)	450	158/70	B	A	C	A	C
Sulfuric Acid (96%)	450	C	C	B	C	A	C
Sulfuric Acid (98%)	450	C	C	B	C	A	C
Sulfuric Acid (>98%-fuming)	450	B to 140 F	C	C	C	B	C
Sulfurous Acid	450	A to 140 F	C	A	C	B	A
Tall Oil	450	A to 158 F	C			A	
Tannic Acid	450	A to 140 F	A	A	B	A	A
Titanium Tetrachloride	450	A to 160 F	C		C		
Toluene (Toluol)	450	100/38	C	C	C	A	
Trisodium Phosphate	450	A to 70 F	A		A		
Water, acid mine	212	180/82	A	A	B	B	
Water, deionized	212	180/82	212/100	A	A	A	
Water, demineralized	212	180/82	212/100	A	A		
Water, distilled	212	212/100	A	A	B	A	
Water, fresh	212	212/100	A	A	A		
Water, potable	212	212/100	A	A	A	A	
Water, salt	212	140/60	A	A	A	A	
Water, sea	212	140/60	A	A	A	A	
Water, sewage	212	140/60	A	A			
White Liquor	250	A to 140 F	A		A		
Xylene	450	140/60	C	C	C	A	
Zinc Acetate	250	B to 176 F	A		C		
Zinc Chloride	450	A to 212 F	A	A	A	C	A
Zinc Sulfate	450	A to Boiling	A	A	A	C	A

• Viton® Fluorelastomer and Hypalon® chlorosulfonated polyethylene are registered trademarks of the DuPont Performance Elastomers Co.

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Nil-Cor Ball Valve Seat Designs



ST-SEAT:

Virgin PTFE
Self-Relieving
Clean Service
Moderate Temp.
Moderate Pressure

SR-SEAT:

Reinforced PTFE
Self-Relieving
Some Solids
High Temperature
High Pressure

R-SEAT:

Reinforced PTFE
Back-Up O-Ring
Dirty Service
High Temperature
High Pressure

CF-SEAT:

Reinforced PTFE
Back-Up O-Ring
Dirty Service or Slurry
High Temperature
High Pressure

Availability By Valve Type, Size and Material

VALVE TYPE	SIZE	300	310	410	500XP	610XP
FLANGED BALL VALVES						
	1"	X	X	X	X	X
	1-1/2"	X	X	X	X	X
	2"	X	X	X	X	X
	2-1/2"	X	X	CF	X	X
	3"	X	X	X	X	X
	4"	X	X	X	X	X
	5"	X	X		X	X
	6"	X	X		X	X
	8"	X	X		X	X
	10"	X	X		X	X
CERAMIC & UHMWPE-LINED BALL VALVES						
	1" - 8"	X	CF	CF	CF	CF
CONTROL VALVES, Flanged Ball Valve						
Linear Trim	1" - 3"	X	X	X	X	X
V-Port Trim	1" - 6"	X	X	X	X	X
THREADED-END BALL VALVES						
	1/2" - 2"			X		
BUTTERFLY VALVES:						
Offset-Disc BFV, Wafer Style	3" - 12"	X	X			
Offset-Disc BFV, FF & Lug Style	3" - 8"	X	X			
HD BFV, FF Wafer and Lug	14" - 42"	CF	X			
BFV, Elastomer-Lined 700 Series	2" - 12"	CF	X			
BFV, PTFE-Lined 710 Series	2" - 12"	CF	X			
CHECK VALVES:						
Ball Check Valves	1" - 4"	X	X	X	X	X
Ball Check Valves	6"	X	X		X	X
Wafer Swing Check Valves	2" - 12"	X	X			
Wafer Swing Check Valves	14" - 42"	CF	CF			

*Glass-Reinforced Vinyl Ester Structural Composite

The Leader in Advanced Composite Valves

ELIMINATE DAMAGE AND FAILURE DUE TO CORROSION



EXCELLENT ALTERNATIVE TO HIGH ALLOY VALVES. NIL-COR® BALL VALVES ARE 50% - 80%+ LOWER COST & 1/3 THE WEIGHT.



Ball Valves
1" - 10" size range



Ceramic & UHMWPE Lined Ball Valves
1" - 8" size range



ButterFly Valves
2" - 42" size range



Threaded Ball Valves
1/2" - 2" size range



Ball & Swing Check Valves
1" - 42" size range



Certified to ISO 9001



TSSA Certified



Type Approved Certified



PED Directive Certified



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