

Chemical Resistance Guide

The data in the following tables was obtained from numerous sources in the industry. The information is based primarily on the immersion of unstressed strips in the chemicals at ambient temperature and, to a lesser degree, on field experience. The end user should be aware of the fact that actual service conditions will affect the chemical resistance. It should be noted in the following charts that the "A" rating does not mean or imply that material will perform within original specification. The chemical resistance table should be used for reference only. It is the ultimate responsibility of the end user to determine the compatibility of the chemical being used in his or her particular application. Contact Hayward for information on Eatar® products.

CHEMICALS	CPVC	PP	PIFE	PVC	PVC-GF (Fibrelac™)	PIVDF	Ultram® (GF 40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel®	18-8 SS	316 SS	416 SS	Titanium
Acetal Benzene			A				A	X	X							
Acetal Oxide			A				B	X	C							
Acetaldehyde	X	B	A	X	X	C	B	X	X				A	A	A	
Acetaldehyde, Aq.	X	A	A	X	X	X	A	A	B	A	A	A	A	A	A	A
Acetamide		A	A				A	A	C	A	A		A	A		
Acetate Solv., Crude	X	X		X	X	A				A		A	A	B		
Acetate Solv., Pure	X	X	A	X	X	A	C	X	X	A		A	A	A		
Acetic Acid 10%	A	A	A	A	A	A	B	X	B				A	A	B	
Acetic Acid 20%	B	A	A	A	A	A	B	C	B				A	B	A	
Acetic Acid 30%	B		A	A	A	A	A	C	B							
Acetic Acid 5%	A		A	A			A	A	A	B						
Acetic Acid 50%	B	A	A	A	A	A	A	B	C	A			A	C		
Acetic Acid 60%	B	B	A	A	A	A	A	C	C				A	X		
Acetic Acid 80%	B	C	A	B	C	A	A	B	C	C			A	X		
Acetic Acid, Glacial	X	B	A	X	C	B	C	B	X	X			A	X	B	
Acetic Aldehyde			A				A	X	X							
Acetic Anhydride	C	B	A	X	X	B	C	X	C	A	AB	A	X	B		
Acetic Ester			A				B	X	X							
Acetic Ether			A				B	X	X							
Acetol			A													
Acetone	X	B	A	X	X	C	A	X	C	A	A	A	AB	A		
Acetonitrile		B	A	X	X	A	C	A	C	C			A	A	AB	
Acetophenone	X	A	A	X		A	A	X	C				A	A	X	
Acetyl Acetone	X		A	X	X	X	A	X	X				A	AB		
Acetyl Bromide			A		A											
Acetyl Chloride	X	A	A	X	X	A	X	C	C		BC	AC	AB			
Acetyl Propane			A				B	X	X							
Acetylene Dichl.			A					A					X			
Acetylene Tetrachl.			A				X	A	X	A	A	A	A			
Acetylene	C	A	A	C	C	A	A	A	A	A			A	A	A	
Acid Mine Water	A	B	A	A	A	A		A								
Acrylic Acid	X		A	X	X	A							A			

CHEMICALS	CPVC	PP	PIFE	PVC	PVC-GF (Fibrelac™)	PIVDF	Ultram® (GF 40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel®	18-8 SS	316 SS	416 SS	Titanium
Acrylic Emulsions		X														
Acrylonitrile	X	B	A	X	X	A	X	X	C	AB	A	A	A	A	A	A
Adipic Acid, Aq.	A	A	A	A	A	A	A	A	A	A	AB	A	A	A	A	A
Air	A	A	A	A	A	A	A	A	A	A						
Alcohol	C		A				A	B	A	A	A	A	A	AC	AB	
Aldehyde			A				A	X	X							
Alkanes			A				X	A	A							
Alkazene			A				X	B	X							
Allyl Alcohol	X	A	A	X	C	A	A	B	A	A	A	A	A	A		
Allyl Aldehyde			A					A	B							
Allyl Bromide			A					B	X							
Allyl Chloride	X		B	X	X	A	X	B	X	A			AB		A	
Allyl Trichloride			A					A	X							
Alum	A	A	A	A	A	A	A	A	A	A	AB	AC	AB	X	A	
Aluminum Acetate	A		A				A	C	B	A	AC	A	AB	AC	A	
Aluminum Bromide			A				A	A	A							
Aluminum Chloride	A	A	A	A	A	A	A	A	A	A	X	X	X	AB		
Aluminum Fluoride	A			A	C	A	A	A	A	AB	A	X	C	X	A	
Aluminum Formate			A					X	X							
Aluminum Salts		A	A	A	A	A	A	A	A				X	X		
Aluminum Sulfate	A	A	A	A	A	A	A	A	A				B	X	A	
Amber Acid	A	A	A	A	A	A	A	A								
Amines	X		A	C	C	B		X	X	AB	A	A	A	A	AB	
Ammon. Metaphosph.	A	A	A	A	A	A	A	A	A							
Ammonia 10%	X	A	A	A	A			A	X				A	A	A	
Ammonia, Anhydrous	X	A	A	X	X	B	A	X	C	A	AB		A	A	AB	
Ammonia, Aq. 25%	A	A		A	A	A								B		
Ammonia, Dry Gas	A	A	A	A	A		A	X	A			A	A			
Ammonia, Liquid	X	A	A	X	X	A	C	A	X	B	A	A	AB	A	A	AB
Ammonia. Nitrate	B			B	C	A		A	A	B				A	A	
Ammonium Acetate	A	A	A	A	A		A	A	A	A	A		A		X	
Ammonium Alum	X	A	A	X	C	A		A	A	B	A	BC	A	A	A	

A = Excellent, no effect • B = Good, minor effect • C = Fair, data not conclusive, testing recommended • X = Not recommended.
 Ratings are based on testing at an ambient temperature of 70°F. The chemical resistance table is for reference only. End users should test to determine application suitability.
 Butterfly valves, Solenoid valves, Diaphragm valves and all other valves with elastomers fully exposed to process media should derate elastomer scores by one level (i.e. "B" becomes "C", "C" becomes "X").

Chemical Resistance Guide, CONTINUED

CHEMICALS	CPVC	PP	PTFE	PVC	PVC-GF (Fiberc®)	PVDF	Ultram® (GF 40%)	EPDM	FFM	Nitrile (Butyl N)	Hastelloy® C	Monel® C	18-8 SS	316 SS	416 SS	Titanium
Ammonium Bichrom.			A				A	A								
Ammonium Bifluoride	A	A	A	A	A	A	A	A	B	A	B	X	X			X
Ammonium Bisulfide			A	A	A											
Ammonium Carbonate	A	A	A	A	A	A	A	A	C	AB	AB	AB	AB	B		A
Ammonium Casenite														A		
Ammonium Chloride	A	A	A	A	A	A	A	A	B	AB	A	X	AB	X		A
Ammonium Dichromate	A		A	A	A		A	A								
Ammonium Fluoride 20%	A	A	A	A	C	A	A	A								
Ammonium Fluoride	A		A	A					B	A			X			BC
Ammonium Hydroxide	X	A	A	A	A	A	X	A	B	B	A	X	AC	A	A	A
Ammonium Nitrate	B	A		B	A	A	A	A	A	AB	C	A	A	B		A
Ammonium Oxalate									A	A	A	A	A	A		
Ammonium Persulfate	A	C	A	A	A	A	B	C	C	B	X	AC	A	AC	A	
Ammonium Ph. Di Basic	A	A	A	A	A		A	A	A	AB	AB	BC	A	AC	A	
Ammonium Ph. Mono	A	A	A	A	A		A	A	A	A	B	C	A	A		A
Ammonium Ph.Tri.	A	A	A	A	A		A	A	A	A	AB	AB	A	AB	A	
Ammonium Phosphate	A	A	A	A	A	A	A	A	A							A
Ammonium Salts		A	A	A	A	A	A	C	A				X			
Ammonium Sulfate	A	A	A	A	A	A	A	C	B	A	AB	AB	A	B		A
Ammonium Sulfide	A	A	A	A	A	A	A	C	A	A		BC	A	C		
Ammonium Thiocyanate	A	A	A	A	A		A	A	A	A			A			
Ammonium Thiosulfate			A				A	A	A			AB	A	C	A	
Ammonium, Fluoride 10%	A	A	A	A	C	A	A	A								
Ammonium, Fluoride 25%	A	A		X	X	A										
Amyl Acetate	X	X	A	X	X	C	A	X	C	A	A	AB	A	AB	A	
Amyl Alcohol	B	A	A	C	C	A	A	A	A	A	A	AB	A	A		AB
Amyl Borate			A			A	X	A	A							
Amyl Bromide			A				X	B	X							
Amyl Chloride	X	X	A	X	X	A	X	A	X	A	A	AB	A	AC	X	
Aniline Chlorohydrate				X	X											
Aniline Hydrochloride	X	A	A	X	X	A	B	B	C							X
Aniline	X	A	A	X	X	C	B	B	X	A	B	AB	A	B		AC
Anthraquinone Sulf. Ac.	A	A		A	A	A		A								
Antichlor			A				A	A	A							
Anti-Freeze		A	A	A	A	C	A	A	A	A				A		
Antimony Chloride		A	A				A	X								
Antimony Pentachloride			A					X								
Antimony Trichloride	A	A	A	A		A	A	A	A	AB	X	A	X			AB

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Aqua Regia	X	X	A	X		A	C	C	C	X	X	X	X	X		A
Argon	X		A	X			A	A	C		A	A	A	A		
Arochlor								A	X	A	A		B			A
Aromatic Hydrocarbons	X			X	X		X	A	X				A			
Arsenic Acid	A	A	A	A	A	A	A	A	B	AB	A	AB	AB	B		AB
Arsenous Acid																
Aryl Sulfonic Acid	X	X		X	X											
Asphalt	X	A	A	X	X	A	X	A	B	A	A	A	A	AB		A
Aviation Fuel			A							A	A	A	A	A		
Aviation Turbine Fuel			A							A	A	A	A	A		A
Baking Soda			A				A	A	A					A		
Barium Carbonate	A	A	A	A	A	A	A	A	A	B	AB	AB	B	AB		A
Barium Chloride	A	A	A	A	A	A	A	A	A	A	AB	A	AB	BC		A
Barium Cyanide									A	C	A		A	A		C
Barium Hydrate			A				A	A	A	A	A	A	A	A		
Barium Hydroxide	A	A	A	A	A	A	A	A	A	B	A	AB	AB	AB		A
Barium Nitrate	A	A	A	A	A			A	A		X	AB	B	B		A
Barium Salts		A	A	A	A	A		A	A	A			A			
Barium Sulfate	A	A	A	A	A	A		A	A	A	AB	AB	AB	C		AB
Barium Sulfide	A	A	A	A	A	A		A	A	A		A	A	AB		A
Beer	A	A	A	A	A	A	A	A	C	A	A	A	A	A		A
Beet Sugar Liquid	A	A	A	A	A	A		A	A	A			A	A		
Beet Sugar Liquor	A	A	A	A	A	A		A	A	A	A	A	A	B		A
Benzaldehyde	X	C		X	X	C	C	C	X	A	B	A	A	C		A
Benzalkonium Chl.				A												
Benzene Sulf Ac .	X	X	A	X	X	B	X	A	C	B	B	A	AB			AB
Benzene Sulf. Ac. 10%	X	X	A	X	X	B		A								
Benzene	X	C	A	X	X	B	C	X	B	C	AB	A	A	AB		A
Benzoic Acid	A	A	A	A	A	A	B	A	X				B	B		A
Benzyl Alcohol	X	A	A	X	X	A	X	C	A	X		A	C	AB		A
Benzyl Benzoate			A					C	A	X			C	AB		C
Benzyl Chloride	X	A	A				X	A	X	B			C	AB		C
Bismuth Carbonate	A	A	A	A	A	A	A	A	A							
Black Liquor	A	A	A	A	A	A	B	A	A	AC		A	A	AC		
Borax	A	A	A	A	A	A	A	A	A	A	A	A	A	A		A
Boric Acid	A	A	A	A	A	A	A	A	B	A	AC	B	B	BC		A
Brake Fluid			A				C	A	X	C	A	A	A	A		
Brewery Slop									A	A				A		
Brine Acid	A	A	A	A	A	A	A	A	A							

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	CPVC	PP	PTFE	PVC	PVC-GF (Fibertec™)	PVDF	Ultram® (GF-40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel®	18-8 SS	316 SS	416 SS	Titanium
Brine Acid	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Brine	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Bromic Acid	A	X	A	A	A	A	B	A	A	A	X	X	X	X	A	
Bromine Gas		X	A	C	C	A	X	A	X	A	X	X	X	X	A	
Bromine Dry			A				X	A	X	A	A	X	X	X	AB	
Bromine Liquid, Br	X	X	A	X	X	A	X	A	X	A	A	X	X	X	X	
Bromine Water	C	C	A	X	X	A	X	A	C	A	X	X	X	X	A	
Bromobenzene	X		A	X	X		X	A	C							
Bromotoluene	X	X		X	X											
Butadiene Gas	A	A	A	B	C	A	X	A	X	AC	A	A	A	A		
Butane	A	A	A	A	A	A	X	A	A	A	A	A	A	A	A	
Butanediol	B			A	A	A	X	A								
Butter			A					A	A				A	A		
Buttermilk			A					A	A				A	A		
Butyl Acetate	X	C	A	X	X	B	C	B	X	C	A	A	A	A	A	A
Butyl Acrylate Pure	X	X	A	X	X	A		A	X							
Butyl Acrylate Satur.								A	X							
Butyl Alcohol (Butanol)	A	A	A	C	C	A	A	A	A	A	A	A	A	A	A	A
Butyl Amine	X	X	A	X	X	B	X	X	C	AB			A	A	AB	
Butyl Benzoate			A					A	A	X						
Butyl Bromide			A					B	X							
Butyl Butyrate			A					B	C	X						
Butyl Carbitol	X		A					A	A	C						
Butyl Cellosolve	X		A	A	A	A		B	X	C	A	A	C	A	AC	AB
Butyl Chloride			A					A	X	A	A	A	A	A		A
Butyl Diol	A	A	A	B	C	A		A	A							
Butyl Ether	X	X	A	X	X	A		X	X	B			A	A	A	
Butyl Formate			A						X							
Butyl Hydrate			A					B	A	A						
Butyl Hydride			A					X	A	A						
Butyl Hydroxide			A					B	A	A						
Butyl Mercaptan			A	X	X	A										
Butyl Phenol	A	A		C	C	A				A			A	A		
Butyl Phthalate	X	A	A	X	X	A		B	C	X	AB	AB	AB	AB	A	A
Butyl Stearate			A					B	A	B			C	A	AC	
Butylbenzene			A						A	X						
Butylene	A	X	A	A	A	A		X	A	B	A	A	A	A	A	
Butyraldehyde			A					B	X	X	A					

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Butyric Acid	B	A	A	X	A		B	B	X	A	A	AC	AB	X	A	
Cadmium Cyanide	A			A	A			A								
Cadmium Salts	A	A			A			A								
Caffeine Citrate			A	A	A											
Calamine			A					A	B							
Calcium Acetate	A	A	A	A	A	A		A	X	B		AB	C	AB	C	
Calcium Bisulfate	A	A	A	A	A	A		X	A	A			C	X	X	
Calcium Bisulfide	A	A	A	A	A	A		X	A	A	A			AB		A
Calcium Carbonate	A	A	A	A	A	A		A	A	A	B	AB	A	AB	A	AB
Calcium Chlorate	A	A	A	A	A	A		A	A	A	AB	AC	A	B	C	A
Calcium Chloride	A	A	A	A	A	A		A	A	A	A	AC	X	B	X	A
Calcium Cyanide			A					A	A							
Calcium Hydroxide	A	A	A	A	A	A		A	A	A	A	A	AB	AB	A	A
Calcium Hypochloride			A					A	A	X						
Calcium Hypochlorite	A	B	A	A	A	A		A	A	B	A	X	X	AB	X	A
Calcium Nitrate	A	A	A	A	A	A		A	A	B	AB	A		AB		AB
Calcium Oxide	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A
Calcium Phosphate			A					A	A	A	AB		C	AB	C	AB
Calcium Sulfate	A	A	A	A	A	A		A	A	A	AB	A		A	AB	A
Calcium Sulfide	A	A	A	A	A	A		A	A	A		AB	A	AB	BC	
Calcium Thiosulfate			A					A	A	B						
Calgon		C	A					A	A				A	A	A	
Cane Sugar Liquors	A	A	A	A	A	A		A	A	A			A	A	A	B
Caprylic Acid			A							A			C			
Carbinol			A						A	X	A					
Carbolic Acid	A	A								C	A	B	A	A	AB	AB
Carbon Bisulfide	X	X	A	X	X	A			A	X				C		
Carbon Dioxide	A	A	A	A	A	A		B	A	A	A	A	A	A	A	A
Carbon Disulfide	X	X	A	X	X	A		X	A	C	A	B	A	A	AC	AB
Carbon Monoxide	A	A	A	A	A			A	A	A	A	A	A	A	A	A
Carbon Tetrachloride	X	X	A	X	X	A		X	B	C	A	A	AB	AB	A	A
Carbonic Acid	A	A	A	A	A	A		A	A	B	A	A	AB	A	AC	AB
Casein			A					A	A	A						
Castor Oil	C	A	A	A	A	A		B	A	A	A	A	A	A	A	A
Catsup	A	A		A	A				A	A	A			A	A	
Caustic Lime																(See Calcium Hydroxide)
Caustic Potash																(See Potassium Hydroxide)
Caustic Soda																(See Sodium Hydroxide)

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CHEMICALS	Material													CHEMICALS	Material																	
	CPVC	PP	PTFE	PVC	PVC-GF (Fiberglass)	PVDF	Ultem® (GF 40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel®	18-8 SS		316 SS	416 SS	Titanium	CPVC	PP	PTFE	PVC	PVC-GF (Fiberglass)	Ultem® (GF 40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel®	18-8 SS	316 SS	416 SS	Titanium
Cellosolve	X	A	A	B	A	C	B	C	C	A	A	C	C	AC	AB	Copper Fluoride	A	A	A	A	A	A	A	A	A	A	C	A				
Chloral Hydrate	A	A		A	A			A	C							Copper Nitrate	A	A	A	A	A	A	A	A	A	X	AB	A	B	A		
Chloric Acid 20%	A	X		A	A											Copper Salts	A	A	A	A	A	A										
Chloric Acid	A		A	A	A				X	AB	X	X	X	X		Copper Sulfate 5%	A	A	A	A	A		A	A				A	B	A		
Chlorinated Glue							B	A	C					A		Copper Sulfate	A	A	A	A	A	A	A	B	B	A	AB	AB	A	AB	A	
Chlorine Dioxide	A	C	A	A	A	A	X	A		A	X	X	X	X	AB	Corn Oil	A	A	A	A	A		B	A	A	A	A	A	A	A		
Chlorine Gas, Dry	X	X	A	X	X	A	X	B	C	A	AB	B	B	BC	X	Corn Syrup	A	A	A	A	A		B	A	A			A				
Chlorine Gas, Wet	X	X	A	X	X	A	C	X	C	C	A	C	X	X	A	Cottonseed Oil	A	A	A	A	A		B	A	B	A	A	AB	A	A		
Chlorine Water	A	C	A	A	A	A	B	A	C	A	C	X	X	X	A	Cream	A	A					A	A				A				
Chlorine, Dry	X		A				B	C	X					A	X	Creosol	X	C	A	X	X	C	X	A	X		A	A				
Chlorine, Liquid	X	X	C	X	X	A			C							Creosote	X		A	X	X		X	A	B	A	A	A	AB	A		
Chloroacetic Acid		X	A	A			B	X	X	A	B	X	X	X	A	Cresols	X	C	A	X	X	A	X	A	X	AB		A	A	AB		
Chlorohydr. Alum			A													Cresylic Acid	C	A	A	C		A	X	A	X	A	A	A	A	A		
Chlorosulfonic Acid	X	X	A	X	X	C	X	X	X	A	AC	X	X	X	A	Croton Aldehyde	X	A	A	X	X	C	B	A								
Chocolate Syrup		A						A	A	AB	AB	A	A	A		Crude Oil	A	A	A	A	A	A	X	A	X	A	AB	A	A	A		
Chresylic Acid 50%				A	B			A	X					A	Cryolite	B	A	A	B		A		A	A	B							
Chrome Alum	A	A		A	A			A	A						Cupric Fluoride	A	A	A	A	A	A		A	A								
Chrome Alum	A	A		A	A	A		A	A						Cupric Nitrate			A				A	A	A								
Chromic Acid 10%	A	B	A	A	A	A	B	A	X						Cupric Salts		A	A	A	A	A	A	A					X				
Chromic Acid 20%	A	X	A	B	C	A	B	B	C						Cupric Sulfate	A	A	A	A	A	A	A	A	A								
Chromic Acid 30%	A	X	A	B	C	A		A	X						Cutting Oil			A				X	A	A			A	A	A			
Chromic Acid 5%	A	X		A	A		A	A	X					A	A	Cyanic Acid			A				A	A		B		A				
Chromic Acid 50%	X	X	A	X	X	A	C	B	A	X				X	A	Cyclohexane	X	X	A	X	X	A	A	X	A	C	AB	A	AC	A	AC	A
Chromium Alum	A	A	A	A	A	A		A	A							Cyclohexanol	X	A	A	X	X	C	B	A	B	A		C	A	AC		
Citric Acid	A	A	A	A	A	A	A	A	B	A	AB	AB	B	BC	A	Cyclohexanone	X	B	A	X	X	C	C	X	C	A	BC	C	A	BC		
Citric Oils	X	A	A				B	A	A	A				A	Decalin	X	A	A	X	X	A		X	A	X							
Cobalt Chloride			A				A	A	A						Decanal			A					X	X								
Coconut Oil	A	A	A	A	A	A	B	A	A	A	BC		A	AC	Decane			A				X	A	B								
Cod Liver Oil			A				A	A	B	A	A	A	A	A	Detergents	B	B	A	A	A	A	A	A	A	A	AB	A		A	A	A	
Coffee	A	A					A	A	A	A	AC	A	A	A	Detergents, Heavy Duty	A	A		A	A	A											
Coke Oven Gas	A	A	A	X	X	A	A	A	X				A	A	Developers			A							A	A	AB	A	A	A	A	
Cola Concentrates		A													Dextrin	A	A	A	A	A	A	A	A	A			A	A				
Copper Acetate	A	A	A	A	A	A	A	X	B	A	X	A	A	AB	Dextrose	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
Copper Borofluoride	A	A	A	A	A	A	A	A							Diacetone Alcohol	X	C	A	X	X	B	A	X	C	A	A	A	A	A	A		
Copper Carbonate	A	A	A	A	A	A	A	A	X	A	X	A	A	BC	A	Diallyl Phthalate																
Copper Chloride	A	A	A	A	A	A	A	A	A	A	X	X	X	BC	A	Diazo Salts	A	A		A	A	A										
Copper Cyanide	A	A	A	A	A	A	A	A	B	A	X	A	B	AB	A	Dibenzyl Ether			A				C				A	A	A			
Copper Fluoborate			A	A	A			A	B	B	C	X			Dibutyl Amine			A				X	C	C								

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Chemical Resistance Guide, CONTINUED

CHEMICALS	CPVC	PP	PTFE	PVC	PVC-GF (Fiberc®)	PIVDF	Ultram® (GF-40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel® C	18-8 SS	316 SS	416 SS	Titanium	CHEMICALS	CPVC	PP	PTFE	PVC	PVC-GF (Fiberc®)	PIVDF	Ultram® (GF-40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel® C	18-8 SS	316 SS	416 SS	Titanium
Dibutyl Ether			A		A		C	C	C			A	A	A			Disodium Phosphate	A	A	A	A	A		A		A							
Dibutyl Phthalate	X	B	A	X	X	A	A	B	X	AB			AB	A			Distilled Water	A	A		A	A	A										
Dibutyl Sebacate			A	B		A		B	C								Divinylbenzene	X	X		X	X	X										
Dichlorobenzene	X		A	X	X	A	X	X	B	X	A		A	A	A		Dolomite			A					B	A	A						
Dichloroethane			A	X	X		X		C		A	A	A	A	A	AB	Dowtherm											A	A	A	A	A	
Dichloroethylene	X	X	A	X	X	A	X	A	X	AB	A		BC				Dry Cleaning Solvents			A		X		X	A	A		A	A	A			
Dichloroisopropyl Ether					A												Epichlorohydrin	X	A	A	X		A	X	X		A	A	A	A			
Dichloromethane			A			X	X	B	X								Epsom Salt		A	A	A	A		A	A	A	A	A	A	AB	AB	A	
Diethyl Phthalate										A		AB	A				Esters	X	C	A	X	X	A										
Diesel Fuel	A	B	A	A	A	A	A	X	A	A	A	A	A	A	A		Ethane			A				X	A	A		A	A	A	A		
Diethanolamine										A	A	A	A	A	A		Ethanol	B	A	A	A	A	A	A	B	A			A	B	A		
Diethyl Cellosolve					A		X										Ethanolamine	X	X	A	X	X	X	A	X	B	AB	A	A	A	A	A	
Diethyl Ether	X	B	A	X	X	A	C	C	X	A	B	AB	A	AB	A		Ether Alcohol			A				A	B	C							
Diethyl Ketone			A				B	X	X								Ethers	X	C	A	X	X		C	C	X	A	A	A	A	A	A	
Diethyl Oxide			A				X	X	B								Ethyl Acetate	X	C	A	X	X	A	C	B	X	X	A	A	AB	A	A	A
Diethylamine	X	A	A	X	X	C	B	X	B		BC	A	A	A	X		Ethyl Acetoacetate	X		A	X	X	A		A	X	X						
Diethylbenzene			A				X	A	X								Ethyl Acrylate	X	X	A	X	X	A	C	B	X	X	A	A	A	A	BC	
Diethylene Glycol	A	A	A			A		A	A	B	AB	A	A	A	A		Ethyl Alcohol	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	
Diethylenetriamine			A		A				B								Ethyl Benzene	X		A		A		X	A	X	A	A	A	A	A		
Diglycolic Acid	A	A	A	A	A	A	A	A									Ethyl Bromide												A	A	A		
Diisobutyl Ketone					A		X	X									Ethyl Chloride	X	X	A	X	X	A		A	A	B	B	AB	A	A	A	A
Diisobutylene			A		A		X	A					A				Ethyl Ether	X	B	A	X	X	A	A	X	C	X	A	B	AB	AB	AB	A
Diisooctyl Phthalate			A			A	B	B									Ethyl Formate			A				B	B	X			A	A	A		
Diisopropyl Ketone			A		B		B	X			C	A	A	A			Ethyl Hexanol			A		A		A	A	B							
Dimethyl Amine	X	A	A	X	X	B	C	X	B								Ethyl Sulfate			A				X	C	A	A	C	X	A			
Dimethyl Benzene			A				X	A	X								Ethylene Bromide	X	C	A	X	X	A	C	B	X	AB		AB	B	BC		
Dimethyl Ether			A				B	B	B	C	C	C	C	C	A		Ethylene Chloride	X	C	A	X	X	A	C	A	X	A	AB	A	A	A	AB	
Dimethyl Formamide	X	A	A	X	X	A	X	B	C	B	A	A		A			Ethylene Chlorohydrin	X	A	A	X	X	A	A	A	X	B		AB		BC		
Dimethyl Ketone			A				A	X	X								Ethylene Diamine	X	A	A	X	X	C	X	A	X	A	AC	A	A	A	A	
Dimethyl Phthalate			A		B		B	B	X	A			A				Ethylene Dichloride	X	C	A	X	X	A	X	A	X	A	AB	A	A	A	AB	
Dimethylamine	X	A		X	X	X	X	X									Ethylene Glycol	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Dioctyl Phthalate	X	X	A	X	X	A	B	A	X	A		A	A	A			Ethylene Oxide	X	X	A	X	X	A	X	X	X	A	A	A	AB	A		
Dioxane	X	B	A	X	X	X	B	X	X	X	A	A	AB				Extrin	A	A	A	A		A	A									
Dioxolane					X		X	X									Fatty Acids	B	A	A	A	A	A	X	A	B	A	A	A	A	B	A	
Diphenyl Ether										A			A				Ferric Acetate			A	B	B		X	X								
Diphenyl Oxide							X	A	X		B	AB	B	B	A	A	Ferric Chl. Anhydrous	A	A	A	A	A	A	A	A	B			X	X	A		
Diphenyl			A				X	A	X	B	AB	B	B	A	A		Ferric Hydroxide	A	A	A	A	A		A	C								
Dipropylene Glycol			A				A	A									Ferric Nitrate	A	A	A	A	A	A	A	A	A	AB	X	A	B	B	A	

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Chemical Resistance Guide, CONTINUED

CHEMICALS	CPVC	PP	PTFE	PVC	PVC-GF (Fiberglass)	PVDF	Ultem® (GF 40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	18-8 SS	316 SS	416 SS	Titanium	CHEMICALS	CPVC	PP	PTFE	PVC	PVC-GF (Fiberglass)	PVDF	Ultem® (GF 40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	18-8 SS	316 SS	416 SS	Titanium			
	Ferric Sulfate	A	A		A	A	A	A	A	B	A	B	A	B	B		A	Glycerol	A	A	A	A	A	A	A	A	A							
Ferrous Chloride	A	A	A	A	A	A		A	A	B	AB	X	X	X	A	Glycolic Acid	A	A	A	A	A	A	A	A	A	A								
Ferrous Nitrate	A	A	A	A	A	A		B	A	A						Glycols	A	A	A	A	A	A		A	A	A		AB						
Ferrous Sulfate	A	A	A	A	A	A		A	A	A	A	AB	A	C	B	A	Glyoxal								A									
Fish Solubles	A	B		A	A											Gold Monocyanide								A	A						A			
Fluoboric Acid	A	A		A	A	B	A	A	B	A	A		B		X	Grape Juice	A			A	A			A	A						A			
Fluorine Gas (Wet)	A	B	A	A	C	A		A	A	X	A	A				Grape Sugar	A	A	A	A	A	A		A	A	A								
Fluorine Liquid		X	B	C	X	A		C	B	X			X		X	Grease		A	A	A	A	A		X	A	B	A	A	A	A				
Fluosilicic Acid 25%	A	A	A	A		A		A	A	A	B	A	X	B	C	X	Green Liqueur	A	A	A	A	A	A		A	A	B		A					
Formaldehyde 35%	A	A	A	A	A	A		A	A						B	Helium			A					A	A	A				A				
Formaldehyde 50%	A	A	A	A	A	A		X	B							Heptane	A	B	A	A	A	A		X	A	A	A	A	A	A	A			
Formaldehyde	A	A	A	X	B	A		A	B	B	B	B	A	A	B	A	Hexane	A	B	A	X	X	A	A	X	A	A	A	A	A	A			
Formic Acid	A	A	A	A	A	A		B	A	X	C	A	AB	B	B	C	Hexene			A				X	A	A								
Freon 11	A	A	A	X	X	A		X	B	B	A	A	A	A	A	Hexyl Alcohol	A	A	A	A	A	A		B	A	A	A	A	A	A		A		
Freon 113	B	X	A	B	C	A		X	B	A	A	A	A	A	A	Honey		A	A	A	A	A			A	A	A				A			
Freon 114			A	A	A	A		C	A	A			A			Hydraulic Oil (Synth.)		X			C				A	C	A	A	A	A				
Freon 12 (Wet)			A	A	B	C		B	A	A			X	A		Hydraulic Oil			A			A	X	A	A	A	A	A						
Freon 12	A	A	A	C	C	A		A	B	B	A	AB	A	A	A	Hydrazine	X	X	A	X	X	X		A	X	C				A	A			
Freon 22	X	A	A	X	X	A		B	X	X			A	A	A	Hydrobromic Acid 20%	A	A	A	A	A	A		A	A	X					X	X	A	
Freon TF	(See Freon 113)															Hydrobromic Acid 50%	A	B	A	A	A	A		A	A	X					X	C	X	X
Fructose	A	A	A	A	A	A		A	A	A	A	A	A	A		Hydrobromic Acid	A	B	A	A	A	A		A	A	X	A	X	X	X	X	A		
Fruit Juice	A	A	A	A	A	A			A	A	A	A	A	A		Hydrochloric Acid 10%	A	A	A	A	A	A	A	A	A	B				X		X	C	
Fruit Pulp	A	A		A	A	A		A								Hydrochloric Acid 20%	A	A	A	A	A	A	A	A	A	B				X	X	X	C	
Fuel Oil		B	A	B	C	A		X	A	A	A	A	A	A	A	Hydrochloric Acid 25%	A	A	A	A	A	A	A	A	A	C				X		X		
Fumaric Acid			A					A	A			A				Hydrochloric Acid 37%	A	A	A	A	A	A	A	C	A	C				X	X	X	C	
Furan			A					X	X		B					Hydrochloric Acid	A		A	A		A	A				B	X	X	A				
Furfural (Ant Oil)	X	C	A	X	X	B		B	X	X	AB	B	AB	A	A	Hydrocyanic Acid 10%	A	A	A	A	A	A		A	A	B				X	X			
Furfuryl Alcohol			A					C	X			A				Hydrocyanic Acid	A	A	A	A	A	A		A	A	B	A	AB	A	A	B	A		
Gallic Acid	A	A	A	A	A	A		A	A	A	B	B	A	A	B	Hydrofluoric Acid 10%	A	A	A	A	C	A		A	A	B				X		X		
Gas, Natural	A	A		A	A	A		X	A	A	A	A				Hydrofluoric Acid 20%	A	A	A	A	C			A	A	X				X	X	X	X	
Gasoline, Leaded	X	X	A	A	A	A		X	B	A	A	A	A	A	X	Hydrofluoric Acid 30%	A	A	A	A	C	A		A	A					X		X		
Gasoline, Sour	B	X	A	A	A	A		X	A	A	A	X	A	A	A	X	Hydrofluoric Acid 40%	C	A	A	B	C	A		A	A					X		X	
Gasoline, Unleaded	X	X	A	C	C	A		X	B	A	A	A	A	A	X	Hydrofluoric Acid 50%	C	A	A	X	X	B	A		A	A	C				X	X	X	
Gelatin	A	A	A	A	A	A		A	A	A	A	A	A	A	A	Hydrofluoric Acid 65%	C		A					B	A	X				X		X		
Gin	A	A	A	A	A	A		A	A							Hydrofluoric Acid 75%	C	A	A	X	X	A		X	A	X	A	A	X	X	X	X		
Glucose	A	A	A	A	A	A		A	A	A	A	A	A	A	A	Hydrofluosilic Acid	A	A	A	A	A	A		A	A	A	B	A	X	X	X	A		
Glue	A	A	A	A	A	A		B	A	A	A	A	A	A	A	Hydrofluosilicic Acid 20%	A	A	A	A	A			A	A	B				X	X	X		
Glycerine	A	A	A	A	A	A		A	A	A	A	A	A	A	A	Hydrogen Chl. Gas Dry	A				A									A	A	A	X	

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Hydrogen Cyanide	A	A	A	A	A	A	A	A	B	A	B	A				C	Latex	A	A						B	A	B	A						
Hydrogen Fluoride	X	A		X	X	A				B	AB	AB				C	Lauric Acid	A	A	A	A	A												
Hydrogen Peroxide 10%	A	A	A	A	A	A			A						C	B	C	Lauryl Chloride	A	A	A	A	A											
Hydrogen Peroxide 30%	A	C	A	A	A		A	B	A	X					B	B	B	Lead Acetate	A	A	A	A	A		A	C	B	AB	A	B	B	B	A	
Hydrogen Peroxide 5%	A	A	A	A	A	A		A	A								B	Lead Chloride	A	A	A	A	A		A	A								
Hydrogen Peroxide 50%	A	A	A	B	C	A		C	A	X							C	Lead Nitrate	A	A	A	A	A		A	A	A	B	B	C			B	
Hydrogen Peroxide 90%	X	X	A	X	C	A		C	B	X							X	Lead Sulfate	A	A	A	A	A		A	A	A							
Hydrogen Peroxide		A	A	A	A	A		B	A	C	A	AB	AB		B	B	B	Lemon Oil	A	X	X	A	A					A						
Hydrogen Phosphide	A	A		X	C	A				C								Ligroin	X	C		X	X	A		C	A	A	A	A	A	A		
Hydrogen Sulf. (Aq. Sol.)	A	A	A	A	A			A	C	C					A	C	A	Lime - Sulfur Solution	A	A		A	A				X						B	
Hydrogen Sulfide (Dry)	A	A	A	A	A	A		A	A	A	A	B	C	A	A	C	Lime	(See Calcium Oxide)																
Hydrogen Sulfide	A	A	A	A	A	A		A	A		A	BC	AB				C	Linoleic Acid	A	A	A	B	C	A		X	B	B	A	A	A		A	
Hydrogen	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A		Linseed Oil	A	A	A	A	A			B	A	A	A	A	A		A	
Hydroquinone	A	A	A	A	A	A		A	A	X	B	A	C					Lithium Bromide		A	A	A	A			A	A	AB	AB					
Hydroxide Alum	A	A	A	A	C	A		A	C	A					A	A	A	Lithium Chloride	A			A						AB	A	A		X		
Hydroxyacetic Acid 70%	A			A	A			A	A	A							B	LPG		A								A	A	A				
Hydroxyacetic Acid	A							A	A									A	Lubricants		A	A	A				A	A			A	A	A	
Hydroxylamine Sulfate	A	A		A	A	A		A										Lubricating Oil	A	A	A	A	A			A		A	A	A		A		
Hypochlorous Acid	A	A	A	A	A	A		B	B	X	A		X	X				Lye Solution										A	A	A				
Ink		A			A				A	A	AC	A	A					Machine Oil	A	A	A	A	A			A								
Iodine Solution	A	C	A	X	X	A		A	A	C	A	A	B	X	X	A	Magnesium Acetate		A							X	X							
Isobutyl Alcohol			A			A		A	A	B	A	A					A	Magnesium Carbonate	A	A	A	A	A		B	A	A	AB	A	AB	A	A		
Isooctane	A	A	A	A	A	A		X	A	A	A	A	A					Magnesium Chloride	A	A	A	A	A		A	A	A	A	A	X	B	B	A	
Isophorone	X			X	X			X	X		A							Magnesium Citrate	A	A	A	A	A		A	A								
Isopropyl Acetate			A					B	X	X	B	AB			B			Magnesium Hydroxide	A	A	A	A	A		A	A		A	A	A				
Isopropyl Alcohol	A	A	A	A	A	B		A	A	B	A	AB	AB		A		A	Magnesium Nitrate	A	A	A	A	A		B	A	A	A	B	AB	A	A	A	
Isopropyl Ether	X	C	A	X	X	A		X	X	B	A	A						Magnesium Oxide	A		A				A	A	A	A	AB		A	B		
Jet Fuel JP-3		A	A					X	A	A	A	A	A	A				Magnesium Sulfate (Epsom Salts)	A	A	A	A	A		C	A	A	A	A	A	A	A	A	
Jet Fuel JP-4	A	C	A	A	A	A		X	A	B	A	A	A	A	A			Maleic Acid	A	A	A	A	A		C	A	X	A	AC	B	A	A	A	
Jet Fuel JP-5	A	C	A	A	A	A		X	A	A	A	A	A	A	A			Maleic Anhydride									A	X	A					
Kerosene	A	A	A	A	A	A		X	A	A	A	A	A	A	A			Malic Acid	A	A	A	A	A		X	A	A	A	A	A	A	B	A	
Ketones	X	A	A	X	X	A		C	X	X	A	A	A	A				Manganese Sulfate	A	A	A	A	A		A	A	A	A	A					
Kraft Liquor	A	A		A	A	A												Mash									A	A	A		A			
Lacquer Thinner		B	A	C	C			A		X	A	A	A	A			A	Mayonnaise		A	A					A	A	A	AC	A	A			
Lacquer		A	A					X	X	X	A	A	A	A				Melamine										C			X			
Lactic Acid	A	A	A	A	A	A		B	B	B	A	AB	A	A	C	B		Mercuric Chloride	A	A	A	A	A		A	A	A	AB	X	X	X	X	A	
Lard Oil	A	A	A	A	A	A		C	A									Mercuric Cyanide	A	A	A	A	A		B	A	A	A	X	A	A	X	A	
Lard	A	A	A	A	A	A		C	A	A	A	AC	A	A	A			Mercuric Nitrate	A		A				A	A		A					A	

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Chemical Resistance Guide, CONTINUED

CHEMICALS	CHEMICALS															
	CPVC	PP	PTFE	PVC	PVC-GF (Fiberc®)	PVDF	Ultem® (GF 40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel®	18-8 SS	316 SS	416 SS	Titanium
Mercuric Sulfate	A	A	A	A	A	A	A	A	A							
Mercurous Nitrate	A	A	A	A	A	A	A	A		X	A					
Mercury	A	A	A	A	A	A	A	A	A	B	A	A	A	B		
Methacrylic Ac. Glacial				X												
Methane Sulfonic Ac.			A		A											
Methane	A	A	A	A	A	A	C	A	A	A	A	A		A		
Methanol (Methyl Alcohol)	X	A	A	A	A	A	A	X	A	A	A	AB	A		A	
Methoxyethyl Oleate				A	A											
Methyl Cellosolve	X	A		X	X	A	B	X	X	A	A	AC				
Methyl Acetate	X	B	A	X	X	A	B	X	X	AB	A	A				
Methyl Acetone			A					X	X	AB	A	A				
Methyl Acrylate			A		A		B	X	X	AB	A	A				
Methyl Alcohol	X	A	A	A	A	A	A	X	A				A		A	
Methyl Benzene	(See Toluene)															
Methyl Bromide	X	X	A	X	X	A	C	A	X	AB		A				
Methyl Butanol			A					B	A							
Methyl Butyl Ketone			A				B	X	X				A			
Methyl Chloride	X	X	A	X	X	A	C	C	C	A	A	A	A	B	A	
Methyl Chloroform	X	C	A	X	X	A	X	B		A	C					
Methyl Ether			A				C	C	B	C	C	C				
Methyl Ethyl Ketone	X	C	A	X	X	X	C	A	X	X	A	A	A	A		A
Methyl Formate	X							A	X	AB		A				
Methyl Isobutyl Alcohol										X						
Methyl Isopropyl Ketone	X	B	A	X	X	A	C	X	X			A	A			
Methyl Isobutyl Carbinol			A					A	A							
Methyl Isobutyl Ketone	X	C	A	X	X	A	B	X	X				A		A	
Methyl Methacrylate	X		A	A		C	X	X	X		C					
Methyl Propanol			A				B	A	A							
Methyl Salicylate	A	A		A	A	A										
Methyl Sulfate	A	A		B	C	A										
Methylamine	X	X	A	X	X	C		A		B			A			
Methylene Bromide				X	X	X										
Methylene Chloride	X	X	A	X	X	C	X	B	X	A	A	AC	A	B	A	
Methylene Iodine			A	X	X	C		A								
Methylhexane			A				X	A	A							
Methylisobutyl Carb.	A	A		A	A	A	A	A								
Methylmethacrylate			A		A		X	X								
Methylsulfuric Acid	A	A	A	A	A	A										
Milk	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A
Mineral Oil	A	A	A	B	A	A	A	X	A	A	A	A	A	A		A
Molasses	A	A	A	A	A			C	A	A	A	A	A	A	A	A
Monochlorobenzene		B	A			A		X	A		A	A	AB			
Monochloroacetic Acid	A	B	A	A	A	A		C	B		A	B			X	
Monoethanolamine	X		A	X	X	X		A	A	A	AB	A	A		A	
Morpholine			A								A				A	
Motor Oil	A	C	A	A	A	A	A	X	A	A	A	A				
Mustard	A	A		A	A				A	B	A	BC	A	A		
Naphtha	A	A	A	A	A	A	A	X	A	B	A	A	A	A	A	A
Naphthalene	X	B	A	X	X	A		X	B	X	A	A	B	B	A	A
Natural Gas	A	A		A	A	A		X	A	A	A	A	A			
Neon			A					A	A	A			A			
Nickel Acetate	A	A	A	A	A	A		A	X	B		A	C			
Nickel Chloride	A	A	A	A	A	A		A	A	B	A	AB	AC	B	X	A
Nickel Cyanide	A			A	A											
Nickel Nitrate	A	A	A	A	A	A		B	A	A	B	B	A		B	
Nickel Sulfate	A	A	A	A	A	A		A	A	A	AB	AB	A	C	B	
Nickel	A	A	A	A	A			A	A	A						
Nicotine Acid	A	A	A	A	A	A		A								
Nicotine	A	X	A	A	A	C										
Nitrate Alum	A	A	A	A	A	A		A	B	A						A
Nitric Acid 10%	A	A	A	A	A	A	A	B	A	X	B	X	A	A	B	A
Nitric Acid 20%	A	A	A	A	A		A	X	A	X	B	X	A		B	
Nitric Acid 30%	A	A	A	A	A	B	A	B	A	X	B	X	A		B	
Nitric Acid 40%	A	C		A	A	B	A	X	A	X	B	X	A		C	
Nitric Acid 50%	A	C	A	A	A	B		X	A	X	B	X	A		X	
Nitric Acid 70%	A	X	A	X	X	X	A	X	C	X	B	X	A		X	
Nitric Acid Concentr.	A	X	A	X	X	X		X	C	X	B	X	A		C	
Nitric Acid Fuming	X	X		X	X	X										C
Nitrobenzene	X	C	A	X	X	A	C	C	C	C	A	AB	B	B	B	A
Nitroethane			A			A		A	X			A				
Nitrogen Dioxide			A			A										
Nitrogen			A					A	A	A	A	A	A		A	
Nitroglycerine				X				A			A	A	A			
Nitromethane			A			A		B			A	A				
Nitrous Oxide	A	A	A	A	A	A		A	A	A	A	X	C			
Ocenol	A	X		A	A	A										

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Chemical Resistance Guide, CONTINUED

CHEMICALS	CPVC	PP	PTFE	PVC	PVC-GF (Fiberglass™)	PVDF	Uitem® (GF-40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel® C	18-8 SS	316 SS	416 SS	Titanium	CHEMICALS	CPVC	PP	PTFE	PVC	PVC-GF (Fiberglass™)	PVDF	Uitem® (GF-40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel® C	18-8 SS	316 SS	416 SS	Titanium
Octane			A		A	X	A										Peracetic Acid 40%	X	X	A	X	X	A	B	A								
Octyl Acid			A		A			C									Perchloric Acid 10%	A	A	A	A	A	B	A	X							B	
Octyl Alcohol								A	B	A		A	A	A			Perchloric Acid 70%	X	A	A	X	X	A	X	A	X						X	
Octylamine			A					X	C								Perchloroethylene	X	C	A	X	X	A	X	A	X	A	A	AB	A			
Oils, Crude Sour	X														C		Perphosphate	A	A	A	A	A	A	A	A								
Oils	X	A		A	A	A											Petrolatum	A	A	A	A	A	A	C	A	A	A	A	A	A			
Oils, Aniline		A	A	X	X		B	A	X					A	A		Petroleum (Sour)				A	A	X	A	A						C		
Oils, Anise														A			Petroleum Oils	A	B	A	A	A	A	X	A	A					A		
Oils, Bay									A					A			Phenols 100%	A	A	A	X	X	A	X	C	B	X	A	B	A	A	C	
Oils, Bone								A	A					A			Phenylacetate			A				B	X	X							
Oils, Castor				A			B	A	A					A			Phenylhydrazine Hydrochl	A	X		X	X	A										
Oils, Cinnamon				A				A						A			Phenylhydrazine	X	X	A	X	X	A	C	C	X							
Oils, Citric		A						A	A					A			Phosgene Gas	X	C		X	X	A	A	X	X							
Oils, Clove		B						A						A			Phosgene Liquid	X	X		X	X	C	A	X	X							
Oils, Coconut		A					A	A	A					A			Phosphate Alum			A				A	A	A							
Oils, Cod Liver		A					A	A	A					A			Phosphoric Acid 10%	A	A	A	A	A	A	A	A	C	A	A	A	A	B		
Oils, Corn	X	A					C	A	A					A			Phosphoric Acid 100%	A	A	A	A	A		B	A	X	A	A	B		B		
Oils, Cotton Seed	X	A	A	A	A		C	A	A					A			Phosphoric Acid 20%	A	A	A	A	A	A	A	A	C	A	A					
Oils, Creosote	X			X			X	A	B					A			Phosphoric Acid 40%	A	A	A	A	A	A	B	A	X	A	A	A	A			
Oils, Diesel Fuel		A		A			X	A	A					A			Phosphoric Acid 50%	A	A	A	A	A	A	A	A	C	A	A	B		B		
Oils, Fuel			A	A	A		X	A	B					A		A	Phosphoric Acid 80%	A	A	A	A	A	A	A	A	A	A	AB					
Oils, Linseed	X	A		A	A		X	A	A					A			Phosphoric Acid 85%	A	A	A	A	A	B	A	A	C	A	AB	B		C		
Oils, Mineral		A		A	A		X	A	A	A	A	A	A	A	A		Phosphoric Acid Crude			A				B	A	C			C		C		
Oils, Olive	X	A	A	A	A		B	A	A	A	A	A	A	A			Phosphorous Oxychloride			A								X					
Oils, Pine	X		A	A	A		X	A	C		A	A	A				Phosphorous Red	A	A	A	A	A	A										
Oils, Silicone		A			A			A	A					A			Phosphorous Trichloride	X	C	A	X	X	A	C	C	X	A	A	A	A			
Oils, Vegetable	X	A		A	A	A		A	A	A	A	A	A	A			Phosphorous Yellow	A	A	A	A	A	A										
Oleic Acid	B	A	A	A	A	A	C	B	B	A	A	A	A	B			Photographic Developer	A	A		A	A	A		A	A	A	A	C	A		A	
Oleum	X	X	A	X	X	X	X	X	X					A			Photographic Solutions	A	A	A	A	A	A		A	A	AB	AC	C				
Orange Extract		A	A		A												Phthalic Acid	X	X	A	X	X	A	A	A	A	X	C			B		
Oxalic Acid	A	A	A	A	A	A		A	A	B	A	B	A	B	C	C	Phthalic Anhydride	X	X	A	X	X		A	A	C	A	A	B	B	A		
Oxychloride Alum	A	A		A	A	A		X									Pickle Brine	A	A		A	A	A										
Oxygen Gas	A	A	A	A	A	A		A	A	C	A	A	A				Pickling Solutions	A	A	A	A	A	A	C	B	X							
Ozone	B	C		B	B	A		A	A	X	A	A	A				Picric Acid	C	A	A	X	X	A	C	A	B	B	X	AB	A	B		
Palmitic Acid 10%	A	A	A	A	A	A		B	A	A							Plating Solutions, Antimony	A	A	A	A	A			A	A	A	A			A		
Palmitic Acid 70%	A	A	A	X				B	A	A							Plating Solutions, Arsenic	A	A		A	A			A	A	A			A		A	
Paraffin	A	A	A	A	A	A		X	B	A	A	A	A	A	A		Plating Solutions, Brass	A	A	A	A	A	A		A	A	A	A		A		A	
Pentane			A				X	A	A	A	A	A	A	C			Plating Solutions, Bronze	A	A	A	A	A			A	A	A			A		A	

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CHEMICALS	CPVC	PP	PTFE	PVC	PVC-GF (Fiberloc™)	PVDF	Uitem® (GF 40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel®	18-8 SS	316 SS	416 SS	Titanium	CHEMICALS	CPVC	PP	PTFE	PVC	PVC-GF (Fiberloc™)	PVDF	Uitem® (GF 40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel®	18-8 SS	316 SS	416 SS	Titanium
Silver Nitrate	A	A	A	A	A	A	C	A	C	AB	X	B	B	B	A		Sodium Nitrate	A	A	A	A	A	A	A	B	C	AB	B	A	B	B	A	
Silver Salts		A	A	A	A	A	A	A						A			Sodium Nitrite	A	A	A	A	A	A	A	A	AC	BC	A	B				
Silver Sulfate	A	A	A	A	A	A	A	A	C								Sodium Palmitate	A	A	A	A	A	A										
Soap Solutions	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		Sodium Perborate	A	A	A	A	A	A	A	A	C	A	A	AB	C	B		
Soda Ash		A					A	A	A								Sodium Perchlorate	A	A	A	A	A	A				B	A					
Sodium Acetate	A	A	A	A	A	A	A	C	C	A	A	AB	B	B	A		Sodium Peroxide	A	A	A	A	A	A	B	A	C	AB	AC	A	A	A		
Sodium Aluminate	A	A	A	A	A	A	A	A	A	AB	AB	AB	A	C	B		Sodium Phosphate Acid	A	A	A	A	A	A	A	A	A	A	A	B				
Sodium Benzoate	A	A	A	A	A	A				A	AB						Sodium Phosphate Alkaline	A	A	A	A	A	A	A	A	A	A	A	A				
Sodium Bicarbonate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		Sodium Phosphate Neutral	A	A	A	A	A	A	A	A	A	A	AB	AC				
Sodium Bichromate	A	A	A	A	A	A	A	A		B	AC		B				Sodium Polyphosphate		A					A	A	B			A	A			
Sodium Bisulfate	A	A	A	A	A	A	A	A	B	B	AB	X	A	A	A		Sodium Silicate	A	A		A	A	A	A	A	A	A	AB	B	B	A		
Sodium Bisulfite	A	A	A	A	A	A	A	A	A	B	B	C	A	C	A		Sodium Sulfate	A	A	A	A	A	A	A	A	A	A	A	B	B	A		
Sodium Borate	A	A	A	C	C	A	A	A	A	A	AB	A		A			Sodium Sulfide	A	A	A	A	A	A	A	A	C	A	AB	AC	B	X	A	
Sodium Bromide	A	A	A	A	A	A	A	A		AB	AC	A		C			Sodium Sulfite	A	A	A	A	A	A	A	A	A	A	B	A	C	B	A	
Sodium Carbonate	A	A	A	A	A	A	A	A	A	A	A	A	A		A		Sodium Tetraborate			A				A	A	A	AB	A	A	A			
Sodium Chlorate	A	A	A	A	A	A	A	A	C	A	X	BC	B	B	A		Sodium Thiocyanate	A	A	A	A	A	A	A	A								
Sodium Chloride	A	A	A	A	A	A	A	A	A	A	A	A	C	B	A		Sodium Thiosulfate	A	A	A	A	A	A	A	A	B	A	AB	A	A	A		
Sodium Chlorite	X	X	B	X	X		X	X									Sodium	A	A	A	A	A	A	A	A								
Sodium Chromate	A	A	A				B	A	A	AB	AC	A	B				Sorghum							A	A			A					
Sodium Cyanide	A	A	A	A	A	A	A	A	A	A	X	A	A	A	A		Soy Sauce								A	A			A				
Sodium Dichromate	A	A	A	A	A	A	A	A									Soybean Oil	A	A	A	A	A	A	A	A	A	AB	A					
Sodium Ferricyanide	A	A	A	A	A	A	A	A		A	AC	C		B			Stannic Chloride	A	A	A	A	A	A	A	A	A	AB	X	X	A	X	A	
Sodium Ferrocyanide	A	A	A	A	A	A	A	A		A	A						Stannic Salts		A	A	A	A	A	A	A								
Sodium Fluoride	A	A	A	A	A	A	A	B	C	A	A	B		C	A		Stannous Chloride	A	A	A	A	A	A	B	B	C	B	C	X	C	C	A	
Sodium Hydrosulfide										A	A						Starch	A	A	A	A	A		A	A	A	A	AB	A				
Sodium Hydrosulfite		A	C				A		A	A							Stearic Acid	A	B	A	A	A	A	C	A	B	A	A	A	B	B	A	
Sodium Hydroxide 15%	A	A	A	A	A	A	A	C	A	A			B	B	A		Stoddard Solvent	X	C	A	X	X	A	X	A	B	A	A	A	A	A		
Sodium Hydroxide 20%	A	A	A	A	A	A	A	C	A	A			B	B	A		Styrene			A		A	X	C	X		AC	A	A				
Sodium Hydroxide 30%	A	A	A	A	A	A	A	C		A			B	B			Succinic Acid	A	A	A	A	A	A	A	A	A	A	AC	B				
Sodium Hydroxide 50%	A	A	A	A	A	A	A	C	X	A			B	C	A		Sugar Solutions	A	A	A				A	A				A	A			
Sodium Hydroxide 70%	A	B	A	A	A	B	A	X	X	A			X	A			Sulfamic Acid	X	X		X	X	X				B						
Sodium Hydroxide Conc	A	A	A	A	A	A	A	B	X	A	AB	A		C			Sulfate Liquors	A	A		A	A	A	A	A	A	A	B	X	C	A		
Sodium Hypochlorite 20%	A	C	A	A	A	A	X	A	C	A				C	A		Sulfated Detergents	A	A		A	A	A										
Sodium Hypochlorite 5% (Bleach)	A	C	A	A	A	A	A	B	A	X	AB	X	X	B	X	AC	Sulfite Liquor	A	A	A	A	A	A	A	A	B	A	C	C		X		
Sodium Hypochlorite	A	C	A	A	A	A	X	X	X	AB	X	X		X			Sulfur 10%	A	A	A	A	A		X	A	C	A	A	A	C	A		
Sodium Hyposulfate		A											A				Sulfur Chloride	A	C	A	A	A	A	X	A	X	A	C	X	X	C		
Sodium Metaphosphate	A	C	A	A	A	A	A	A	A	A	A	A					Sulfur Dioxide Dry	A	A	A	A	A	A	A	A	X	B	A	B	B			
Sodium Metasilicate	A	A	A	A	A	A	A	A	A	A	A	A	A				Sulfur Dioxide Wet	A	A	A	X	X	A	A	A	X	AC	X	A		B		

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Sulfur Dioxide	X	A	X	C		A	C	X				A		A	
Sulfur Slurries	A	A		A	A										
Sulfur Trioxide Dry	C	X	B	C	C	X	C	C	C	AB	A	C	B		
Sulfur	A	X	A	A	A	A	C	A	C	A	BC		A		
Sulfuric Acid 10%	A	A	A	A	A	A	B	A	C			C	X	A	
Sulfuric Acid 100%	A	X	B	X	X	C	X	C	X			C	C	X	
Sulfuric Acid 30%	A	A	A	A	A	A	A	A	C			X	X	C	
Sulfuric Acid 50%	A	A	A	A	A	A	B	A	C			X	X	C	
Sulfuric Acid 60%	A	A	A	A	A	B	B	A	X			X	X	C	
Sulfuric Acid 70%	A	C	A	A	A	A	A	A	C			X	X	C	
Sulfuric Acid 80%	A	A	A	X	X	A	A	A	C			X	X	X	
Sulfuric Acid 90%	A	C	A	X	X	A	A	A	C			X	X	X	
Sulfuric Acid 95%	A	X	A	X	X	A	X	X	A	X		X	X	X	
Sulfuric Acid 98%	A	X	B	X	X	A	X	X				X	X		
Sulfurous Acid	A	A	A	A	A	A	C	A	X	B	X	BC	B	C	A
Sulfuryl Chloride			A	A											
Syrup		A	A	A	A			A	A			A			
Tall Oil	A	A	A	A	A	A	X	A	A	A	A	C		X	
Tallow		A	A		A		A	A	A	B	A	A			
Tannic Acid	A	A	A	A	A	A	B	A	C	A	A	AC	C	B	A
Tanning Liquors	A	A	A	A	A	A	B	A	C	A			A		A
Tar	X	B	A	X	X	A	X	A	C	A	A	A		B	
Tartaric Acid	A	A	A	A	A	A	B	A	C	A	A	A	B	B	A
Tertiary Butyl Alcohol	A	A	A	A	A	A	B	A							
Tetrachlorethane		A	A	X	X		X	A	X	A	A	AB	A		A
Tetrachloroethane			A		X	A	X	A		A	A	A			
Tetraethyl Lead	A	A	A	B	C	A	X	B	C		A				
Tetrahydrofuron	X	B	A	X	X	B	X	X	X	A	B		A		
Tetralin	X	X	A	X	X	A	X	A	X						
Thionylchloride	X	X	A	X	X	X									
Thread Cutting Oils	A	A		A	A	A	X			A		A			
Titanium Tetrachloride	X	X	A	X	X	X	X	A	C	A	B	A			
Titanous Sulfate	A	A	A	A	A	A									
Toluene (Toluol)	X	C	A	X	X	B	C	X	C	X	A	A	A	A	A
Tomato Juice	A	C	A	A	A	A	A		A	A	AB	A	A	C	
Toxaphene-Xylene	X	X		X	X	A									
Transformer Oil	A	A	A	A	A	A	X	A	A	A	A	A			
Tributyl Phosphate	X	C	A	X	X	A	A	X	X						
Trichloroacetic Acid	A	C	A	A	A	A	X	X	X	A	BC	X	X	X	
Trichloroethane			A		X		X	X	A	X	A	C		A	A
Trichloroethylene	X	B	A	X	X	A	X	X	A	C	A	B	A	A	B
Trichloropropane			A		X				A	A	A	A	A	A	
Tricresyl Phosphate			A	X	X				A	B	X	A		A	B
Triethanolamine		C		B	C	C			A	X		A	A		
Triethyl Phosphate	A	A	A	A	A	A	C	A	A					A	
Triethylamine	A	X		A	A	C	A		A	A		A	A		
Trimethylpropane	A	A	A	A	A	A									
Trisodium Phosphate	A	A	A	A	A	A			A	A	A			A	B
Turbine Oil	A	B	A	A	A				X	A	B		A		
Turpentine	A	B	A	X		A	A	C	A	C	A	AB	AB	A	B
Urea	A	A	A	A	A	A	A	A	C	A					
Urine	A	A	A	A	A	A	A	A	A		A		A		
Vanilla Extract		A	A		A										
Varnish		A	A			A	X	A	B	A	A	A	A	A	
Vaseline	A	A	A	X	X	A	X	A	A	A	A	A	A		
Vegetable Oil	C	A	A	A	A	A			A	A	A	A	A	A	
Vinegar	A	A	A	A	A	A	A	A	C	A	A	A	A	A	A
Vinyl Acetate	X		A	X	X	A	X	B	X	X	A	AC			
Vinyl Chloride			A					C	A	X	A	B	B		A
Vinyl Ether			A						X	B					
Water Potable	A	A	A	A	A	A			A	A	A	A	A	A	A
Water Salt	A	A	A	A	A	A			A	A	A	B	AB	A	C
Water Sewage	A	A	A	A	A	A			A	A	A				
Water, Acid Mine	A	A	A	A	A	A			A	A	A			A	C
Water, Deionized	A	A	A	A	A	A			A	B	A	A	A	A	A
Water, Demineralized	A	A		A	A	A			A	A	A	A	A	A	
Water, Distilled	A	A	A	A	A	A			A	A	A	A	A	A	A
Weed Killers										A	B			A	
Whey										A	A			A	
Whiskey	A	A	A	A	A	A			A	A	A	A	AB	A	A
White Acid			A			A									
White Liquor	A	A	A	A	A	A			A	A	B	A	A		A
Wines	A	A	A	A	A	A			A	A	A	A	AB	A	C
Xenon			A						A	A	A		A		
Xylene	X	X	A	X	X	A	X	X	B	X	A	A	A	A	
Xylol	X	X	A	X	X	A	X	A	C						

A = Excellent, no effect • B = Good, minor effect • C = Fair, data not conclusive, testing recommended • X = Not recommended.
 Ratings are based on testing at an ambient temperature of 70°F. The chemical resistance table is for reference only. End users should test to determine application suitability.
 Butterfly valves, Solenoid valves, Diaphragm valves and all other valves with elastomers fully exposed to process media should derate elastomer scores by one level (i.e. "B" becomes "C", "C" becomes "X").

Chemical Resistance Guide, CONTINUED

CHEMICALS	CPVC	Pp	PTE	PVC	PVC-GF (Fiberglass™)	PI/DI	Uitem® (GF-40%)	EPDM	FPM	Nitrile (Buna N)	Hastelloy® C	Monel® C	18-8 SS	316 SS	416 SS	Titanium
Yeast	A	A			A		A	A								
Zeolite			A				A	A	B							
Zinc Acetate	A	A	A	A	A	A	A	C	B	A						
Zinc Carbonate	A		A					A	A	B	B	C		B		
Zinc Chloride	A	A	A	A	A	A	A	A	A	A	B	X	B	C	A	
Zinc Chromate			A													
Zinc Nitrate	A	A	A	A	A	A	A	A								
Zinc Salts		A	A		A	A	A	A	A							
Zinc Sulfate	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
Zirillite			A				A	C	B							

A = Excellent, no effect • B = Good, minor effect • C = Fair, data not conclusive, testing recommended • X = Not recommended.

Ratings are based on testing at an ambient temperature of 70°F. The chemical resistance table is for reference only. End users should test to determine application suitability. Butterfly valves, Solenoid valves, Diaphragm valves and all other valves with elastomers fully exposed to process media should derate elastomer scores by one level (i.e. "B" becomes "C", "C" becomes "X").