	Material																			
Chemical/Process Fluid	Iron	Steel	304 SS	316 SS	Alloy 20	Hastelloy C	Acyrlic	Tyril	PVC/Clear PVC	CPVC	PE	PP	PVDF	PTFE	Hypalon	Viton	EPDM	Ceramic	Glass
Acetaldehyde	A	B	A	A	A	A	C	C	C	C	B	B	A	A	C	C	B	A	A
Acetic Acid to 10%	C	C	B	A	A	A	C	A	A	B	A	A	A	A	B	C	B	A	A
Acetic Acid to 20%	C	C	B	A	A	A			A	B	A	A	A	A	B	C	B	A	A
Acetic Acid to 50%	C	C	B	A	A	A			A	B	A	A	A	A	B	C	B	A	A
Acetic Acid to 80%	C	C	B	A	A	A	C	C	C	C	A	A	A	A	C	C	C	A	A
Acetic Acid to 100%	C	C	B	A	A	A			C	C	A	A	A	A	C	C	C	A	A
Acetic Anhydride	C	C	B	A	A	A	C	C	C	C	A	A	B	A	A	C	C	B	A
Acetone	A	A	A	A	A	A	C	C	C	C	A	A	C	A	B	C	A	A	A
Acetyl Chloride	C	C	B	A	A	A		C	C	C	A	C	B	A	C	C	C		A
Activated Carbon Slurry (Note 4)	C	C		A	A	A		A	A			A		A	A	A		A	B
Activated Silica	B	B		A	A	A		A	A			A		A	B	A			A
Aluminum Ammonium Sulfate	C	C	A	A	A	A	A	A	A			A		A	A	A			A
Aluminum Chloride (Alum)	C	C	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Aluminum Ferro Sulfate									A	A	A	A	A	A				A	A
Aluminum Fluoride to 100%		B				B			A		A	A	A	A	A	A	C	A	A
Aluminum Hydroxide Slurry 5%	B	C	B	A	A	A	A	A	A	A	A	A		A	A	B	A	A	B
Aluminum Nitrate		C	A	A	A	A			A	A	A	A	A	A		A	A	A	
Aluminum Oxalate	C	C		A	A	A		A	A			A		A	A	A			A
Aluminum Potass. Sulfate (Potash Alum)	C	C		A	A	A		A	A	A	A	A	A	A	A	A	A	A	A
Aluminum Sulfate to 10% (Alum)	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Aluminum Sulfate to 20% (Alum)	C	C	B	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A
Aluminum Sulfate to 48% (Alum)	C	C	B	B	A	A		A	A	A	A	A		A	A	A	A	A	A
Aluminum Sulfate to 100% (Alum)								A					A	A					
Ammonia, Aqua	A	A	A	A	A	A		A	A		A	A	A	A	A	B	A		A
Ammonia, Anhydrous	A	A	A	A	A	A	A	C	C	C	A	C	C	A	B	C	A	C	A
Ammonium Bicarbonate	C	A		A	A	A		A	A			A		A	A	A			A
Ammonium Bifluoride	C	C		B	A	A		A	A	A		A	A	A	A	A		A	A
Ammonium Bromide	C	C		A		A		A	A			A	A	A	A	A	A	A	A
Ammonium Carbonate	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Chloride to 10%			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Chloride to 20%	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Chloride to 50%			C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Chloride to 100%	C	C	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Hydroxide			A	A		A			A	A	A	A	A	A	A	A	A	A	A
Ammonium Nitrate	C	C	A	A	A	B	A	A	A	B	A	A	A	A	A	A	A	A	A
Ammonium Oxalate	C	C	A	A	A	A		A	A		A	A	A	A	A	A			A
Ammonium Persulfate to 30%	C	C		A	A	A	A	B	A	A		A	A	A	A	A		A	A
Ammonium Persulfate to 100%		C		B					A				A	A					
Ammonium Phosphate	C	C	A	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Silicafluoride	C	C		A	B	B			A			A	A	A	A	A			A
Ammonium Sulfate to 10%				A					A	A	A	A	A	A	A	A	A	A	A
Ammonium Sulfate to 30%	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Sulfate to 40%	C	C	B	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Sulfate to 50%			B	A		A			A		A	A	A	A	A	A	A	A	A
Amyl Alcohol	B	B		A	A	A	C	A	A	B	A	A	A	A	C	B	A	A	A
Aniline 3%	B	B	A	A	A	A	C	C	C	C	B	B	A	A	A	A	A	A	A
Aniline 50%	B	B	A	A	A	A	C	C	C	C	B	A	A	A	C	B	A	A	A
Aniline 100%	B	B	A	A	A	A	C	C	C	C	B	B	A	A	C	B	A	A	A
Anti-Freeze (see Ethylene Glycol)																			
Aqua Regia	C	C	C	C	C	C			B				A	A	C	C	C		
Asphalt	A	A	A	A	A	A		A	C	C	C	A	A	A	C	A	C	A	A

General Data ■ Chemical Resistance Chart

	Material																		
Chemical/Process Fluid	Iron	Steel	304 SS	316 SS	Alloy 20	Hastelloy C	Acyrlic	Tyril	PVC /Clear PVC	CPVC	PE	PP	PVDF	PTFE	Hypalon	Viton	EPDM	Ceramic	Glass
Barium Carbonate Slurry 5%	B	B	B	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	B
Barium Chloride	C	C	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Barium Hydroxide	B	B	A	A	A	B	A	A	A	A	A	A	C	A	A	A	A	A	A
Barium Nitrate	C	C	A	A	A	A		A	A	A	A	A		A	A	A		A	A
Barium Sulfate Slurry	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A
Beer	C	C	A	A	A	A	C	B	A	A	A	A	A	A	A	A	A	A	A
Bentonite Slurry 3%	A	A		A	A	A		A	A			A		A	A				B
Benzaldehyde	C	C	A	A	A	A	C	C	C	C	A	A	A	A	C	A	C	A	A
Benzene	A	A	A	A	A	A	C	C	C	C	B	C	A	A	C	B	C	A	A
Benzoic Acid	C	C	A	A	B	A	C	A	A	A	A	A	A	A	C	A	C	A	A
Benzoyl Chloride	C	C		C		A		C	C		B	B	A	A	C	B			A
Benzylamine 98%	A	A		A	A	A		C	A			C		A	C	C			A
Black Liquor									A	A	A	A	A	A	A	A	B	A	A
Borax Solutions	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Boric Acid	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Brine (see Salt Brine)																			
Butane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	A	A
Butyl Alcohol	A	A	A	A	A	A	C	B	A	A	A	A	A	A	A	A	A	A	A
Butyl Mercaptan	C	C	B	A	A	A			A				A	A	C	B	A		A
Butyric Acid	C	C	B	A	A	A	C		C	B	A	A	A	A	C	C	B	A	A
Calcium Bisulfite	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	C	A	A
Calcium Carbonate		B		A		A			A		A	A	A	A				B	A
Calcium Chlorate		B	C	A		A			A		A	A	A	A				A	A
Calcium Chloride	C	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Calcium Fluoride	C	C		A	A	A		A	A		A	A		A	A	A		C	A
Calcium Hydroxide Slurry 5%	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	B
Calcium Hypochlorite	C	C	B	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Calcium Nitrate (50%)			A	A		A			A	A	A	A	A	A	A	A	A	A	A
Calcium Oxide	A	A		A	A	A		B	A			A	A	A	A	B		A	A
Calcium Phosphate, Mono	C	C		A	A	A		A	A		A	A		A	A	A			A
Calcium Phosphate, Tri	B	B		A	A	A		A	A		A	A		A	A	A			A
Calcium Sulfate Slurry 5%	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B
Calcium Thiosulfate	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Carbolic Acid (see Phenol)																			
Carbon Bisulfide	B	A	A	C	A	A	A	A	C	C	C	C	A	A	C	A	C	A	A
Carbon Slurry (see Activated Carbon S.)																			
Carbon Tetrachloride	C	C	A	A	B	A	C	C	C	C	C	C	A	A	C	A	C	A	A
Carbonic Acid	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Castor Oil	B	B	A	A	A	A	A	A	A		A	A	A	A	A	A	B		A
Caustic Alkalies to 50%	B	B		A	A	A		B	A			A		A	A	C			A
Caustic Soda (see Sodium Hydroxide)																			
Chlorine, pressurized to liquid state (Note 3)	C	C	C	C	C	A	C	C	C	C	C	C	A	A	C	C	C		A
Chlorine, gas dissolved in water (Note 3)	C	C	B	B	B	A	B	B	B	B	B	B	B	A	C	B	C	A	A
Chloroacetic Acid (50%)	B	B	B	B	B	B			A	A	A	A	A	A	B	C	C	A	A
Chloroacetic Acid (100%)				C		C			A	A	A	A	A	A	B	C	C	A	A
Chlorobenzene	C	C	B	A	A	A	C	C	C	C	C	B	A	A	C	B	C	A	A
Chloroform	B	B	A	A	A	A	C	C	C	C	C	B	A	A	C	B	C	A	A
Chlorosulfonic Acid	C	C	C	C	B	A		C	B	B	C	C	B	A	C	C	C	C	A
Chromic Acid to 10%	C	C	A	A		A			A	A	A	A	A	A	B	A	C	A	A
Chromic Acid to 20%	C	C				A			A	A	A	A	A	A	B	A	C	A	A
Chromic Acid to 30%	C	C	C	B	B	A	C	C	A	A	B	B	A	A	C	A	C	A	A

	Material																				
Chemical/Process Fluid	Iron	Steel	304 SS	316 SS	Alloy 20	Hastelloy C	Acyrlic	Tyril	PVC/Clear PVC	CPVC	PE	PP	PVDF	PTFE	Hypalon	Viton	EPDM	Ceramic	Glass
Chromic Acid to 50%	C	C	C	C	B	A	C	C	A	A	B	B	A	A	C	A	C	A	A
Citric Acid	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Copper Chloride	C	C	C	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Copper Nitrate	C	C	A	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A
Copper Sulfate	C	C	A	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A
Cottonseed Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	A	A
Creosote	C	C	A	A	A	A		C	C	C	C	B	C	A	C	A	C		A
Cresols	C	C	A	A	A	A	C	C	C	B	A	A	A	A	C	A	C		A
Cresylic Acid	C	C	A	A	A	B		A	A	A	C	C	B	A	C	A	C	A	A
Cyclohexane	B	B	A	A	A	A	C	C	C	C	A	A	A	A	C	A	C	A	A
Cyclohexylamine to 10%	A	A		A	A	A		C	A			C		A	A	C			A
Cyclohexylamine to 98%	A	A		A	A	A		C	A			C		A	C	C			A
Dextrose Solutions (Sugar Solutions)			A	A	A	A			A	A	A	A	A	A	A	A	A	A	A
Diatomaceous Earth Slurry 5%	A	A		A	A	A		A	A			A		A	A	A			B
Dibutyl Phthalate	C	C		A	A	A		C	C	C	A	A	A	A	C	B	A	A	A
Diesel Fuel	A		A	A					A	A	A	C	A	A	B	A	B		
Diethylamine (DEA) 99%	A	A		A	A	A		C	C	C	A	B	C	A	C	C	B		A
Diethylene Glycol			A	A		A					B	B		A	A	A	A	A	A
Diethyl Phthalate	C	C		A	A	A		C	C			C	A	A	C	C			A
Dimethylamine 99%	A	A	A	A	A	A		C	C	C	A	A	C	A	C	C	B		A
Dimethyl Sulfide	C	C			B			C	C			B		A					A
Disodium Phosphate	B	B		A	A	A	A	A	A	A	A	A	A		A	A	A		A
Dumasol	C	C		A				C						A					A
Epichlorohydrin	A	A	A	A				C	C	C		B	A	A	B	C	C		A
Esters	A	A		A	A	A		C	C	C		C		A	C	C			A
Ethanol	B	A	A	A	A	A	C	A	A	A	C	A	A	A	A	B	A	A	A
Ethanolamine to 5%	B	B		A	A	A			C	C	C	C	C	A	A	C			A
Ethanolamine to 99%	B	B		A	A	A		C	C			C		A	C	C			A
Ethers	B	B	A	A	A	A	C	C	C	C	C	C	A	A	C	C	C	A	A
Ethyl Alcohol (see Ethanol)																			
Ethyl Amine 2%	A	A		A	A	A	C	A	A			C		A	A	C			A
Ethyl Amine 100%	A	A		A	A	A	C	A	A			C		A	C	C			A
Ethyl Chloride (Chlorethane)	A	A	A	A	A	A	C	C	C	C	B	B	A	A	C	B	C	A	A
Ethyl Ether	B	B	A	A	A	A	C	C	C	C	B	B	A	A	C	C	C		A
Ethyl Mercaptan	B	B		A	A	A		C	C					A	C	C			A
Ethylene Bromide	B	B			B			C	C	C	B	C	A	A	C	B	C		A
Ethylene Dichloride	C	C	B	A	A	A	C	C	C	C	C	C	A	A	C	B	C	A	A
Ethylene Glycol	A	A	A	A	A	A	A	A	A	C	A	A	A	A	A	A	A	A	A
Ethylene Mercaptan	B	B		A	A	A		C	C			B		A					A
Ethylene Oxide	A	B	A	A	A	A	C	C	C	C	C	C	A	A	C	C	C	A	A
Fatty Acids	C	C	A	A	A	A	A	A	A	B	C	A	A	A	C	A	C	A	A
Ferric Chloride - $FeCl_3$	C	C	C	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Ferric Hydroxide	C	C		A	A	A		A	A	A		A			A	C	A	A	A
Ferric Nitrate	C	C	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Ferric Sulfate - $Fe_2(SO_4)_3$	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ferrous Chloride - $FeCl_2$	C	C	C	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Ferrous Sulfate - $FeSO_4$			A	A		A			A	A	A		A	A	A	A	A	A	A
Fish Oils	B	B		A	A	A		A	A	A	B	B		A	A	A			A
Fluosilicic Acid - H_2SiF_6 (see Hydrofluosilicic Acid)	C	C	C	B	B	B	A	B	A	A	A	A	A	A	B	A	B	C	C
Forane 8CFC 1416™	A	A	A	A	A	A	C	C	C	C	C	C	C	A	A	C	A	A	A
Formaldehyde	B	B	B	A	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A

General Data ■ Chemical Resistance Chart

	Material																		
Chemical/Process Fluid	Iron	Steel	304 SS	316 SS	Alloy 20	Hastelloy C	Acyrlic	Tyril	PVC /Clear PVC	CPVC	PE	PP	PVDF	PTFE	Hypalon	Viton	EPDM	Ceramic	Glass
Formic Acid, saturated	C	C	A	A	A	A	C	C	A	A	A	A	A	A	A	A	A	A	A
Freons	B	B	A	A	A	A		C	A			A		A	A	C	B	A	A
Freon 12	B	B		A	A	A	C	A	A	A	C	C	B	A	B	B	B	A	A
Freon 22	B	B		A	A	A	C	C	A	C	A	A	A	A	B	C	B	A	A
Fruit Juice	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Fuel Oil	A	A	A	A	A	A		A	A		B	B	A	A	C	A	C	A	A
Furfural	B	B	A	A	A	A	C	C	C	C	B	B	B	A	B	C	B	A	A
Gasoline, refined, unleaded	B	A	A	A	A	A	B	B	A	C	A	B	A	A	C	A	C	A	A
Glucose	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Glycerine	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Glycol	B	B		A	A	A		A	A	A	A	A	A	A	A	A	A		A
Heptane	A	B	A	A	A	A		A	A	A	A	A	A	A	A	A	C	A	A
Hexane	A	B	A	A	A	A		A	C	A	A	A	A	A	A	A	C	A	A
Hydraulic Oil (petroleum)	A		A	A	A	A			A		B	C	A	A	B	A	C	A	A
Hydraulic Oil (synthetic)			A	A	A	A			A		A	C	A	A		A	C	A	A
Hydrazine to 35%	C	C	A	A		B	A		A	C	A	A	A	A	A	C	A	B	A
Hydrazine to 100%	C	C	B	B		B			A	C	A	A	A	A					
Hydrobromic Acid	C	C	C	C	C	B			A	A	A	A	A	A	A	A	A	B	A
Hydrochloric Acid to 10% - HCl (Note 3)	C	C	C	C	C	B			A	A	A	A	A	A	A	A	A		
Hydrochloric Acid to 36% - HCl (Note 3)	C	C	C	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Hydrocyanic Acid to 10%	C	C	A	A	A	A			A	A	A	A	A	A	A	A	A	A	A
Hydrofluoric Acid to 20% - HF (Note 3)	C	C	C	C	C	B	C	B	A	A	A	A	A	A	A	A	C	A	
Hydrofluoric Acid to 90% - HF (Note 3)	C	C	C	C	C	B	C	C	C	C	C	B		A	C	A		C	
Hydrofluoric Acid to 100% - HF (Note 3)	C	B	C	C	C	B	C	C	C	C	C	C		A	C	A		C	
Hydrofluosilicic Acid - H_2SiF_6 (Note 2)	C	C	C	B	B	B	A	B	A	A	A	A	A	A	B	A	B	C	C
Hydrogen Peroxide to 10% (Notes 6&7)	C	C	C	A	B	A	A	B	A	A	A	A	B	A	A	A	A	A	A
Hydrogen Peroxide 10 - 40% (Notes 6&7)	C	C	C	C	B	A	A	C	A	A	A	A		A	A	A	C		A
Hydrogen Peroxide to 90% (Notes 6&7)			C	C						A	A	C	A	A	B	B	B		
Hydrogen Sulfide	C	C	A	A	A	A	A		A	A	A	A	A	A	A	A	A	A	A
Hyposulfite Soda	C	C		A	A	A		A	A		A	A	A	A	A	A	A		A
Ink	C	C	A	A	A	A		A	A		C	A	A	A	A	A		A	A
Iodine 100%	C	C	C	C	C	B	C	C	C	C	B	C	A	A	C	A		A	A
Isobutyl Alcohol	A	A		A	A	A		B	B		A	A	A	A	A	A	A		A
Isopropyl Alcohol	B	B	A	A	A	A		B	A	A	A	A	B	A	A	A	A		A
Iso Octane	A	A		A	A	A		A	A	A		A	A	A	B	A	C		A
Isopropyl Ether	A	A		A	A	A		C	C	C	C	C	A	A	C	C	C	A	A
Kerosene	A	A	A	A	A	A	A	A	A	A	C	C	A	A	C	A	C	A	A
Ketones, various	A	A		A	A	A		C	C			C		A	C	C	C	A	A
Kraft Liquor	C	C		A	A	A			A	A		A	A	A	A	A			A
Lacquers	C	C	A	A	A	A		C			C	A		A	C	C	C	A	A
Lactic Acid (Milk Acid) to 50%	C	C	B	A	A	A	A	A	A	A	A	A	A	A	C	A	B	A	A
Lactic Acid (Milk Acid) to 90%		C	B	B		A			A	A	A	A	A	A	C	B	B	A	A
Lead Acetate	C	C	A	B	A	A		A	A	A	A	A	A	A	A	A	A	A	A
Lime Slurry 5% (see Calcium Hydroxide)																			
Linoleic Acid	C	C		A	A	A		A	B	A		A	A	A	B	B	C		A
Linseed Oil (Flaxseed Oil)	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A	B	A	A
Lubricating Oil	A	A	A	A	A	A		C	A	A		B	A	A	A	A	C	A	A
Magnesium Carbonate Slurry 5%	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B
Magnesium Chloride	C	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

	Material																			
Chemical/Process Fluid	Iron	Steel	304 SS	316 SS	Alloy 20	Hastelloy C	Acyrlic	Tyril	PVC/Clear PVC	CPVC	PE	PP	PVDF	PTFE	Hypalon	Viton	EPDM	Ceramic	Glass
Magnesium Hydroxide (Note 5)	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	C	B
Magnesium Nitrate	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Magnesium Sulfate	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Maleic Acid	C	C	A	A	A	A		A	A	A	A	A	A	A	C	A	B	A	A
Malic Acid (Apple Acid)	C	C	A	A	B	A		A	A	A	C	B	A	A	B	A	C	A	A
Manganese Carbonate Slurry 5%	B	B	A	A	A	A		B	A			A		A	A	A		A	B
Manganese Chloride	C	C	C	C	A	A		A	A			A	A	A	A	A	A	A	A
Mecuric Chloride 10%	C	C	C	C	B	A	C	A	A	A	A	A	A	A	A	A	A	A	A
Mecurous Nitrate	C	C	A	A	A	A		A	A	A	A	A	A	A	A	A	A		A
Methyl Acetate				A		A			C	C	A	A	A	A	C	C	B		
Methyl Alcohol (Methanol)	A	A	A	A	A	A	C	C	A	A	A	A	A	A	A	B	A	A	A
Methyl Amine									B	B	A	A	B	A	A	A	A	A	A
Methyl Chloride	A	B	C	A	A	A	C	C	C	C	C	C	A	A	C	C	B	A	A
Methyl Ethyl Ketone (MEK)	A	A	A	A	A	A	C	C	C	C	A	A	C	A	C	C	A	A	A
Milk	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Mineral Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	C		A
Molasses	A	A	A	A	A	A		B	A	A	A	A	A	A	A	A	A	A	A
Molybdic Acid 5%	C	C		A	A	A								A	C	C			A
Monoethanolamine	B	B		A	A	A		C	C			C		A	C	C			A
Monosodium Phosphate	C	C		A	A	A		A	A			A		A	A	A			A
Muriatic Acid 28 to 35% (diluted form of HCl)	C	C	C	C	C	C		B	A	A		A	A	A	A	A	A	C	A
Morpholine 5%	A	A	A	A	A	A		C	A			C	C	A	C	C		A	A
Morpholine 99%	A	A		A	A	A		C	C		C	C	C	A	C	C		A	A
Naphtha	A	A	A	A	A	A	A	A	A	A	C	C	A	A	C	A	B	A	A
Naphthalene (Tar Campher)	A	A	A	A	A	A	B	A	C	C	A	A	A	A	C	A	C	A	A
Nickel Chloride	C	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Nickel Nitrate	C	C	A	A	A	B		A	A	A	A	A	A	A	A	A	A	A	A
Nickel Sulfate	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Nitric Acid to 10% - HNO_3 (Note3)	C	C	A	A	B	B	A	A	A	A	A	A	A	A	A	A	C	A	A
Nitric Acid to 30% - HNO_3 (Note3)	C	C	A	A	A	B	C	A	A	A	A	C	A	A	C	A	B	A	A
Nitric Acid to 70% - HNO_3 (Note 3)	C	C		B	A	B		C	A			C		A	C	A	C	A	A
Nitric Acid to 100% - HNO_3 (Note3)	C	C	B	C	A	B	C	C	C	C	C	C	C	A	C	C	C	A	A
Nitrobenzene	A	A	A	B	A	A	C	C	C	C	A	A	A	A	C	C	C	A	A
Nitrotoluene									C	C	A	A	A	A	C	B	C	A	A
Nitrous Acid to 10% - HNO_2	C	C	A	A	A	A		A	A	A		A	A	A	A	A			A
Nitrous Acid to 70% - HNO_2	C	C	A	A	A	A		C				C		A	C	A			A
Octadecylamine to 2%	A	A		A	A	A						C		A	A	C			A
Octadecylamine to 98%	A	A		A	A	A						C		A	C	C			A
Oils & Fats, Animal	A	A	A	A	A	A	A		A		B	A		A		A	A	A	A
Oleic Acid (Red Acid)	C	C		A	A	A		A	A	B	C	B	A	A	C	A	C	A	A
Oleum	C	C	B	A	A	A	C	C	C	C	C	C	C	A	C	B	C	A	A
Orthodichlorobenzene	B	B		A	A	A		C	C			C		A	C	A			A
Oxalic Acid 5%	C	C	B	B	A	A	A	A	A	A	A	A	A	A	B	A	B	A	A
Oxalic Acid 20%			C	C					A	A	A	A	A	A		A		C	
Oxalic Acid 50%			C	C						A	A	A	A	A		A		C	
Palmitic Acid	C	C	A	A	A	A		A	A	A	B	B	A	A	B	A	B		A
Pentane (Amyl Hydrate)	A	A		A	A	A		A				C		A	A	A		A	A
Pentanol (see Amyl Alcohol)																			
Petroleum (see Hydraulic Oil)																			
Peracetic Acid to 40%									C	C		C	A	A		A	B		
Perchloric Acid to 10%									A		A	A	A	A	A	A	A		
Perchloric Acid to 70%									B		A	B	A	A	A	A	A		

General Data ■ Chemical Resistance Chart

	Material																		
Chemical/Process Fluid	Iron	Steel	304 SS	316 SS	Alloy 20	Hastelloy C	Acyrlic	Tyril	PVC /Clear PVC	CPVC	PE	PP	PVDF	PTFE	Hypalon	Viton	EPDM	Ceramic	Glass
Perchloroethylene	B	B	A	A	A	A	C	C	C	C	B	C	A	A	C	A	C	A	A
Phenol	C	C	B	A	A	B	C	C	B	A	A	A	A	A	C	A	A	C	A
Phosphoric Acid to 50%	C	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Phosphoric Acid to 85%	C	C	C	C	A	A	C	C	A	A	A	A	A	A	A	A	A	A	A
Photographic Emulsion									A		A	A	A	A	A	A	A	A	A
Photographic Developer			A	A		A			A	A	A	A	A	A	A	A	A	A	A
Photographic Fixer			B	B					A		A	A	A	A	A	A	A	A	A
Potassium Bromide	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Carbonate (Pot Ash)	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Chlorate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Chloride to 10%	C	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Chloride 10 to 100%	C	C	C	B	A	A		A	A		A	A	A	A	A	A	A	A	A
Potassium Chromate	B	A	A	B	A	A		C	A	A	A	A	A	A	A	A	A	C	A
Potassium Cyanide	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Dichromate	B	A		B	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A
Potassium Ferrocyanide	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Hydroxide (Caustic Potash)	B	B	B	B	A	A	A	B	A	A	A	A	B	A	A	C	B	C	B
Potassium Iodide	C	C		B	A	A		A	A	A	A	A	A	A	A	A	A		A
Potassium Nitrate	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Permanganate	B	B	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A
Potassium Sulfate	B	B	A	A	A	A		A	A		A	A		A	A	A			A
Potassium Sulfite	B	B	A	A	A	A		A	A		A	A		A	A	A			A
Propane, liquid			A	A		A			A		A	A	A	A	C	A	C	A	A
Propyl Alcohol (Propanol)	B	B	A	A	A	A	C	B	A	A	A	A	A	A	B	A	A	A	A
Propylene Glycol	A	A	A	A	A	A		A	C	C	A	A		A	A	A	A	A	A
Salicylic Acid to 10%	C	C	B	B	A	A		A	A		A	A	A	A	A	A	A		A
Salicylic Acid to 50%			B	B									A	A		A			
Saline Solution	C	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	
Salt Brine	C	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	
Sea Water			C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	
Silicon Oil	A		B	A	A	A			A	A	A	A	A	A	C	A	B	A	A
Silver Nitrate	C	C	A	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A
Soap Solutions	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A
Sodium Acetate	A	A	A	A	A	A		A	A	A	A	A	A	A	B	A	A	A	A
Sodium Aluminate	B	B	A	A	A	A		B	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	A	A	A	A
Sodium Bichromate	B	B	A	A	A	A	A	C	A	A	A	A	A	A	A	A	A		A
Sodium Bisulfate	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Bisulfite	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	C	A	A	A
Sodium Borate (Borax)	A	C	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A		A
Sodium Bromide	C	C	B	B	A	A		A	A	A	A	A	A	A	A	A	A		A
Sodium Carbonate (Soda Ash)	B	B	A	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A
Sodium Chlorate	C	C	A	B	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Sodium Chloride (Salt)	C	C	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Chlorite to 20%	C	C	C	C	A	A		A	C	C	A	A	A	A	A	A	A	A	A
Sodium Cyanide	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Dichromate	B	A	A	A	A	A		C	A	A	A	A	A	A	A	A	A		A
Sodium Ferricyanide - $Na_3Fe(CN)_6$	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		A
Sodium Ferrocyanide - $Na_4Fe(CN)_6$	C	C			A	A		A	A	A	A	A	A	A	A	A	A	C	B
Sodium Fluoride	C	C	B	B	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Hexametaphosphate (Calgon)	C	C		A	A	A		A	A			A		A	A	A			A

	Material																				
Chemical/Process Fluid	Iron	Steel	304 SS	316 SS	Alloy 20	Hastelloy C	Acyrlic	Tyril	PVC/Clear PVC	CPVC	PE	PP	PVDF	PTFE	Hypalon	Viton	EPDM	Ceramic	Glass
Sodium Hydrosulfite	C	C		A	A	A		A	C			A		A	A	A		A	A
Sodium Hydroxide (Caustic) to 10%	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	C	A	C	B
Sodium Hydroxide (Caustic) to 25%			A	A	A	A			A	A	A	A	B	A	A	C	A	C	B
Sodium Hydroxide (Caustic) to 50%	B	B	B	A	A	A	C	C	A	A	A	A	B	A	A	C	A	C	B
Sodium Hydroxide (Caustic) to 80%	B	B	B	B	B				A		A	A	B	A	B	C	A	C	B
Sodium Hypochlorite (Notes 6,8,9)	C	C	C	C	C	A	A	A	A	A	B	A	A	A	B	A	A	C	A
Sodium Metaphosphate	C	C	A	A	A	A	A	A	A	A		C	A	A	A	A	A	A	A
Sodium Silicate	B	B	A	A	A	A		B	A	A	A	A	A	A	A	A	A	A	A
Sodium Sulfate - Na_2SO_4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Sulfide - Na_2S	A	B	A	A	A	A		A	A	A	A	A	B	A	A	C	A	A	A
Sodium Sulfite - Na_2SO_3	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Thiosulfate	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Soybean Oil	A	A	A	A	A	A		A	A	A	B	A	A	A	B	A	B	A	A
Stannic Chloride (Stannous Chloride)	C	C		C	C	A		A	A	A	A	A	A	A	A	A	A	A	A
Starch (Amylum)	B	B	A	A	A	A		A	A	A	B	A	A	A	A	A	A	A	A
Stearic Acid	C	C	A	B	A	A		A	A	A	A	A	A	A	B	A	A	A	A
Sugar Solutions	B	B	A	A	A	A		A	A		A	A	A	A	A	A	A	A	A
Sulfamic Acid	C	C		B	B	A		A	C	C		A		A	A	A			A
Sulfur Dioxide - SO_2 - liquid, tech. pure			B	B		B			C	C	C	C	A	A	C	C	C	A	A
Sulfuric Acid to 50% - H_2SO_4 (Notes 1&3)	C	C	C	C	A	A	B	C	A	A	A	A	A	A	A	A	A	A	B
Sulfuric Acid to 80% - H_2SO_4 (Notes 1&3)	C	C	C	C	A	A			A		A	A	A	A	A	A	A	A	B
Sulfuric Acid 85 to 95% - H_2SO_4 (Notes 1&3)	B	B	C	C	A	A	C	C	A	A	C	C	A	A	C	A	C	A	B
Sulfuric Acid to 100% - H_2SO_4 (Notes 1&3)			A	A	A	A			B		C	C	A	A	C	A	C	A	B
Sulfurous Acid 10% - H_2SO_3	C	C	B	B	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
Tannic Acid	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tetrachloroethylene	B	B	A	A	A	A	C	C	C	C	B	C	A	A	C	A	C	A	A
Titanium Tetrachloride	C	C	A	A	A	A		C	C	C		B	C	A	A	A	C	A	A
Toluene	A	A	A	A	A	A	C	C	C	C	B	B	A	A	C	B	C	A	A
Tributyl Phosphate	B	B	A	A	A	A	C	C	C	C	A	A	A	A	C	C	A	A	A
Trichloroethylene	B	B	A	A	A	A	C	C	C	C	C	C	A	A	C	A	C	A	A
Tricresyl Phosphate	B	B	A	A	A	A	C	C	C	C	A	A		A	C	C		A	A
Triethylamine	A	B		A	A	A		C	C			C	B	A	B	C		A	A
Triethanolamine to 99%	B	B		A	A	A	A	C	C		A	A	A	A	C	A	C	A	A
Trisodium Phosphate	A	A	A	A	A	A		A	A		A	A	A	A	A	A	A	A	A
Turpentine	A	A	A	A	A	A	A	C	A	A	B	C	A	A	C	A	C	A	A
Urea	A	A	A	A	A	A			A	A	A	A	A	A	A	A	A	A	A
Vegetable Oil	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A	A		A
Vinegar	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A
Vinyl Acetate			A	A		A			C		A	A	B	A	A	A	A	A	A
Water, demineralized	C	C		A	A	A		A	A	A	A	A	A	A	A	A	A	A	A
Water, Salt	C	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Whiskey	C	C	A	A	A	A		C	A	A	C	A	A	A	A	A	A	A	A
White Liquor			A	A		A			A	A		A	A	A		A	A	A	A
Xylene	B	B	A	A	A	A	C	C	C	C	C	C	A	A	C	A	C	A	A
Zinc Borate	A	A		A	A	A		A	A			A		A	A	A			A
Zinc Chloride	C	C	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Zinc Nitrate	C	C		A	A	A		A	A		A	A	A	A	A	A	A		A
Zinc Phosphate	C	C		A	A	A		A	A		A	A	A	A	A	A	A		A
Zinc Stearate	B	B		A	A	A		A	A			A		A	A	A			A
Zinc Sulfate	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

Chemical Resistance Chart Notes

Note 1

Sulfuric Acid (H2SO4) service:

- Concentration <70%: Apply Polypropylene
- Concentration 70 - 95%: Apply Alloy 20
- Concentration >95%: Apply 316 SS

Note: Alloy 20 has an A-rating for all concentrations, but is more expensive. Elastomers must not be used at point of injection, when sulfuric acid is metered into water. This reaction will generate heat that may destroy materials.

Note 2

Hydrofluosilicic Acid (H_2SiF_6) service:

- Seals in Viton
- Check Valve Balls in Teflon

Note 3

Process fluids that affect soft PVC-tubing (apply PVC-piping instead):

- Hydrochloric Acid (HCl) at 25% and above
- Hydrofluoric Acid (HF) at every concentration
- Nitric Acid (HNO_3) at 20% and above
- Sulfuric Acid (H_2SO_4) at 70% and above

Note 4

Use Ureathan seats and ceramic ball checks, available in the 1730 and 1740 series.

Note 5

Use Tungston Carbide seats and balls, available in the 1730 and 1740 series.

Note 6

Hydrogen Peroxide (H_2O_2) and Sodium Hypochlorite (up to 5% known as Bleach) outgas strongly and may cause the discharge to decrease or may prevent the pump from metering at all. To ensure proper operation, equip pump with the Automatic Vented Head (MAGDOS 03,07,2,4,8), Manual Vent (MAGDOS 12, MEMDOS 4, 8, 15, 26) or Autovent (for up to 12 gph or up to 105 gph with optional connections). Operation will gain additional support if Priming Aid is applied.

Note 7

CAUTION, strong oxidizer! Process fluids should not contact organic materials such as oil.

Note 8

Glass has an A-rating for “old” Hypochlorite that has been stored in vessels. If Hypochlorite is freshly generated in an on-site electrolyte plant and exceeds 68oF, Teflon must be chosen for the ball material.

Note 9

Lutz-JESCO America Corporation uses virgin PP as the wetted end material. Other manufacturers may apply glass-filled PP wetted end material, which only has an A-rating for Sodium Hypochlorite up to 5%.