

ENGINEERING

Chemical Resistance Chart

A Word about our Chemical Resistance Guide

The chemical resistance data provided here and on the following pages has been assembled from a wide variety of sources in our industry. This information is based on practical field experience and actual laboratory testing conducted by the manufacturers of various plastic resins and finished products. Please keep in mind that this information should only be used as a guideline for recommendations and not a guarantee of chemical resistance. Some performance variations may be noticed between homopolymers and copolymers as well as emulsion and suspension type resins of the same general type. In addition, actual service conditions including temperature, concentration and contaminants will affect variances in chemical resistance.

In assembling the chemical resistance data presented here, several sources were checked. When conflicts were uncovered, we took a conservative approach and used the lower of two or more ratings. In addition, special consideration was given to material as supplied by a particular vendor; i.e. our polyethylene ratings are based on information

provided by tank manufacturers rather than pipe suppliers. This was done primarily because of the volume of tanks we supply as compared to polyethylene pipe. Our ratings are as follows:

- A = Excellent, no effect
- B = Good, minor effect
- C = Fair, data not conclusive, testing recommended
- D = Not recommended

NOTE: When "C" is indicated, we recommend checking further into possible suitability of a given product. Most manufacturers publish their own chemical resistance charts based on the particular resins they use. In most cases, we recommend testing the material under your actual operating conditions. This is often achieved with test coupons available through you local service center.

All data provided here is based on ambient temperatures between 68°F and 73°F. Unless otherwise indicated, all chemicals listed are assumed to be full concentrations or saturated solutions of normal purity.

CHEMICALS		APPROX. SP. GR. AT 100% CONCENTRATION	PLASTICS			ELASTOMERS			ALLOYS											
			POLYETHYLENE-CROSS LINKED (XLPE)	POLYVINYLDENE FLUORIDE (PVDF)	POLYPROPYLENE (PP)	CPVC	PVC	RYTON	TEFLON	VINYLESTER	POLYSULFONE	EPOXY	HYPALON	EPDM	VITON	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C	
Acetaldehyde*	CH ₃ CHO		D	D	B	C	D	D	A	A	C		D	B	C	D	C	A	A	A
Acetaldehyde Aqueous 40%	CH ₃ CONH ₂		D	D	A	D			A	A		B	A							
Acetamide				A					A	A	A	C	A	C	A	B		A	B	
Acetate Solvents, Crude			D	D	D	A														
Acetate Solvents, Pure			D	D	D	A	B			A	A		D	C	D	D	D	A	B	
Acetic Acid* 05%										A				A	A	A	B	A		
Acetic Acid* 10%			A	A	A	A	A	A	A	A	B	B		D	B	B	B	A	A	A
Acetic Acid* 20%			A	B	A	A	A	A	A	A	D	B	A	C	B	B	B	A	A	A
Acetic Acid* 30%										A				C	A	B	B	B	A	A
Acetic Acid* 50%			A	A	A	A	A	A	A	A	D	B	A	C	B	C	A	C	A	A
Acetic Acid* 60%			A	B	A				A	A	D			C	C	C			A	
Acetic Acid* 80%			B	B	C	A			B	A	A	D	C	C	B	C	C	A	A	A
Acetic Acid Glacial* 100%	CH ₃ COOH	1.05	D	D	B	B				A	D	D		D	B	C	D	A	B	B
Acetic Aldehyde (Acetaldehyde)		1.08								A				D	A	C	D	C		
Acetic Anhydride	(CH ₃ CO) ₂ O		D	C	B	B	A		A	A	A	D	D	D	C	B	C	A	A	B
Acetic Ester (See Ethyl Acetate)																				
Acetic Ether (See Ethyl Acetate)										A				D	B	D	D	D		
Acetol										A										
Acetone*	CH ₃ •CO•CH ₃	0.8	D	D	B	D	B	C	A	A	A	C	D	D	A	C	C	C	A	A
Acetonitrile (Methyl Cyanide)									B	A	C	A	A	C	D	C	A	A	C	B
Acetophenone	C ₆ H ₅ COCH ₃	1.03							A	A		A			D	A	D	C	D	A
Acetyl Acetone									D	D	D	A			D	A	D	D	D	

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Chemical Resistance Chart

CHEMICALS	PLASTICS				ELASTOMERS				ALLOYS				
	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	POLYPROPYLENE (PP)	PVC	TEFLON	VINYL ESTER	POLYSULFONE	VITON	HYPALON	EPDM	BUNA N (NITRILE)	304 STAINLESS STEEL	HASTELLOY C
Acetyl Benzene					A				D	A	D	D	D
Acetyl Bromide					A								
Acetyl Chloride	CH ₃ COCl	1.1	D D A A		A A A				C D D C D				A B
Acetyl Oxide					A				D B B C D				
Acetyl Propane					A				D B D D D				
Acetylene	HC•CH		C C A A		A A A				A A B A C				A A
Acetylene Dichloride					A				A D D D D				
Acetylene Tetrachloride					A				A D D D D				
Acid Mine Water			A A B A		A				A				
Acrylic Acid			D A		A C C								
Acrylic Emulsions*			D D B A		A A A C				D D D C C				
Acrylonitrile	CH ₂ =CHCN		A A A A A A		A A A A A A				A A A A A A				
Adipic Acid Aqueous			A A A A A A		A A A A A A				A A A A A A				
Air			A A A A		A A A A				A A A A A A				
Alcohol (See Ethyl Alcohol)									B A A A A A				
Alcohol, Allyl			D D A A		A A				B A A A A A				
Alcohol, Amyl	C ₄ H ₉ CH ₂ OH		C B A A A A		A A A A A C				A A A A A A				
Alcohol, Benzyl	C ₆ H ₅ CH ₂ OH		D D A A D		A				A C C D				
Alcohol, Butyl	C ₃ H ₇ CH ₂ OH	.806	C A A A A A		A A A A A A				A A A A A A				
Alcohol Diacetone	(CH ₃) ₂ COHCH ₂ COCH ₃		D C B		A A				D A C C A				
Alcohol, Ether									B A C C B				
Alcohol, Ethyl	CH ₃ CH ₂ OH		A A A A A A		A A A A A A				B A A A A A				
Alcohol, Hexyl	C ₅ H ₁₁ CH ₂ OH		A A A A A A		A A A A A A				A A B A				
Alcohol, Isobutyl	C ₃ H ₇ CH				A A				A A A B				
Alcohol, Isopropyl	C ₂ H ₅ CH ₂ OH		A A A B A		A A B				A A A B				
Alcohol, Methyl	CH ₃ OH		A A A A A A		A A A A A A				D A A A A A				
Alcohol, Octyl	CH ₃ H ₁₅ CH ₂ OH								A A B				
Alcohol, Polyvinyl			A A A		A A C				A A				
Alcohol, Propargyl			A										
Accohol, Propyl	C ₂ H ₅ CH ₂ OH		A A A A A A		A A A				A A A A A A				
Aldehyde									D A C D C				
Alkanes									A D A D				
Alkazene									B D D D D				
Allyl Aldehyde									A B B				
Allyl Bromide									B D D D				
Allyl Chloride			D A A		A B A D				B D D D D				
Allyl Trichloride					A				A D D D				
Alum			A A A A A A		A A A A A A				A A A A A A				
Alum, Ammonium			D D A A		A				A A A A A A				
Alum, Chrome			A A A		A				A A A A A A				
Alum, Potassium			A A A A A A		A A A D				A A A A A A				
Aluminum, Acetate					A				C A B B B				
Aluminum, Ammonium Sulfate					A A				A A B B				
Aluminum, Bromide					A				A A A A A A				
Aluminum, Chloride	AlCl ₃	2.44	A A A A A A		A A A A A A				A A A A A A				C C C C A

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Aluminum, Chlorohydroxide								A	B												
Aluminum, Citrate								A	A												
Aluminum, Fluoride								A	A												
Aluminum, Formate								A	A												
Aluminum, Hydroxide	2.88	AI(OH) ₃						A	A										D		
Aluminum, Nitrate								A	A									C	A		
Aluminum, Oxychloride								A	A									B	A		
Aluminum, Phosphate								A	A									D	C		
Aluminum, Potassium Sulfate								A	A									A	A		
Aluminum, Salts								A	A									B	B		
Aluminum, Sulfate	2.7	AI(SO ₄) ₃						A	A									A	A		
Amber Acid								A	A									D	C		
Amines	R - NH ₂							C	B									A	A		
Ammonia 10%								A	A									D	C		
Ammonia 15%								A	A	B			A				A	A	D		
Ammonia, Anhydrous 99.5%	NH ₃							D	D	A	B	B					A	B	B	A	
Ammonia, Aqueous 25%								A	A	A	A										
Ammonia, Dry Gas								A	A	A	A	A	A				D	A	A	A	
Ammonia, Liquid	NH ₄ OH							C	A	A	D		A	A			D	A	A	B	
Ammonia, Nitrate	NH ₄ NO ₃							B	B	A	A		A	A			A	A	C	B	
Ammonium Phosphate, Monobasic								A	A	B							A	A	A	A	
Ammonium Phosphate, Tribasic								A	A	B							A	A	A	A	
Ammonium, Acetate								A	A	A							A	A	A	A	
Ammonium, Alum																		B	B		
Ammonium, Bichromate																		A	A	A	
Ammonium, Bifluoride																		A	C	B	
Ammonium, Bisulfide																		A	A	B	
Ammonium, Carbonate	(NH ₄) ₂ CO ₃																	B	A	A	
Ammonium, Casenite																		A	A	B	
Ammonium, Chloride	NH ₄ Cl	1.5						A	A	A	A	A	A				A	A	B	A	
Ammonium, Dichromate								A									A	A	A	A	
Ammonium, Fluoride	NH ₄ F	1.3																B	B		
Ammonium, Fluoride 10%																					
Ammonium, Fluoride 20%																					
Ammonium, Fluoride 25%																					
Ammonium, Hydroxide	NH ₄ OH																	B	A	B	A
Ammonium, Metaphosphate																	A	A	B	A	
Ammonium, Nitrate	NH ₄ NO ₃	1.7																A	A	B	A
Ammonium, Oxalate	NH ₄ C ₂ O ₄																	A	A	A	A
Ammonium, Persulfate	(NH ₄) ₂ S ₂ O ₈	2.0																C	B	A	C
Ammonium, Phosphate																	A	A	A	A	
Ammonium, Phosphate Di Basic	(NH ₄) ₂ HPO ₄																A	A	A	A	

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Ammonium, Phosphate											
Monobasic	(NH ₄)H ₂ PO ₄				A A	A			A A A	C	A A
Ammonium, Phosphate											
Tribasic	(NH ₄) ₃ H ₂ PO ₄				A A	A			A C A	A	A A
Ammonium, Salts					A A A A A	A A A			C A A A A	D	
Ammonium, Sulfate	(NH ₄)SO ₄	1.8	A A A A A	A A A	A A A	A A A			C A A B A	B	A A A
Ammonium, Sulfide									C A A		
Ammonium, Thiocyanate	NH ₄ SCN	1.3	A A A	A	A A A	A A A			A A A A A		
Ammonium, Thiosulfate	(NH ₄) ₂ S ₂ O ₃								A A A A A	A	A A
Amyl Acetate	CH ₃ CO ₂ C ₅ H ₁₁	.86	D D D	C C C	A A A	A A C			D A A C D	A A D	A
Amyl Alcohol* (See Alcohol Amyl)					0.8	C B A	A A A A A	C	A A A A	A	C C
Amyl Borate						A	A		A D A A A		
Amyl Bromide							A		B D D D D		
Amyl Chloride	CH ₃ (CH ₂) ₃ CH ₂ Cl	0.8	D D D	A D D	A A A	A C			A D D D	B C C	B
Aniline*	C ₆ H ₅ NH ₂	1.02	D D A	C C A	A A A	D D			B B D D D	A A B	C
Aniline Chlorohydrate					A					B	
Aniline Hydrochloride					C D A A		A A		B B D C D		
Anisole	C ₆ H ₅ OCH ₃	1.0				A					
Anthraquinone Sulfonic Acid					A A A A	A			A		
Anti-Freeze					A A B	A A A			A A A A	A A	A
Antichlor						A			A A A A A		
Antimony Chloride	SbCl ₃	3.1			A A A A	A A			A D D		
Antimony Pentachloride						A A A	A A A		D D D		
Antimony Trichloride					A A A				A A A		
Aqua Regia 80% HCL, 20% Nitric					D D D A B	D A A D D			C C C C D	D D B	C
Argon						A			A A D C D		
Archlor 1248						B	A		A D D		
Aromatic Hydrocarbons					D D	C	A A		A D D D	A	
Arsenic Acid	H ₃ ASO ₄				A A A A A	A A A A A			A A B B	B A	
Arsenous Acid							A A				
Aryl Sulfonic Acid					D D D D						
Asphalt					D D A A D	A A A			A D B B C	A A	
Aviation Fuel (115-145 OCT)						B A					
Aviation Turbine Fuel						B A					
Baking Soda (See Sodium Bicarbonate)							A		A A A A A		
Barium Acetate								A A			
Barium Carbonate	BaCO ₃	4.3	A A A A A	A A A A A					A A A A A	B A A	A
Barium Chloride	BaCl ₂	3.1	A A A A A	A A A A A					A A A A A	B B A	A
Barium Cyanide					B	A			A A C		
Barium Hydrate						A			A A A A A		
Barium Hydroxide	Ba(OH) ₂	2.2	A A A A A	A A A A A					A A A A A	A C B	B
Barium Nitrate	BaNO ₃		A A A			A B			A A A	A A	
Barium Salts			A A A A A			A A			A A A A A	A A	

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Barium Sulfate	BaSO ₄	4.4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Barium Sulfide	BaS	4.3	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Beer			A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	A	A	A	A	
Beet Sugar Liquid			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Beet Sugar Liquors			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Benzaldehyde*	C ₆ H ₅ CHO	1.05	D	D	C	C	D	A	B	D			C	C	D	D	D	A	A	A	A	
Benzalkonium Chloride					A																	
Benzene	C ₆ H ₆	0.9	D	D	C	B	D	D	A	A	A	C	D	B	D	C	C	D	B	A	B	
Benzene Sulfonic Acid*	C ₆ H ₅ SO ₃ H		D	D	D	B	A	A	A	A	A	A	A	A	D	B	C	B	A			
Benzene Sulfonic Acid 10%			D	D	D	B	D	A	A	A	A	A	A	A								
Benzil Chloride	C ₆ H ₅ CH ₂ Cl	1.1																				
Benzoic Acid	C ₆ H ₅ COOH	1.3	A	A	A	A	A	A	A	A	A	A	A	A	B	C	D	B	B	A	A	
Benzol (See Benzene)																						
Benzyl Alcohol (See Alcohol, Benzyl)	C ₆ H ₅ CH ₂ OH	1.05			A				A	A				A	B	D	C					
Benzyl Benzoate											A			A	A	C	D	D	D			
Benzyl Chloride	C ₆ H ₅ CH ₂ Cl	1.1			A	D			C	A				D	D	D	D					
Bismuth Carbonate	(B10) ₂ CO ₃	6.8	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Black Liquor			A	A	A	A	A	A	A	A	B	B		A	B	A	A	A				
Bleach (See Sodium Hypochlorite)									A	A	A	A	A	A	A	A	D	D	A	A	A	
Borax	Na ₂ B ₄ O ₇				A	A	A	A	A	A	A	A	A	A	A	A	C	A	A	A	A	
Boric Acid	H ₃ BO ₃	1.4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	
Brake Fluid									A					A	D	B	C	B				
Brewery Slop										A				A	A	A	A	A				
Brine					A	A	A	A			A			A	A	A	A	A				
Brine Acid					A	A	A	A	A	A	A	A	A	A	A	A	A	A		A		
Bromic Acid					A	A	D	A	A	A	A	A	A	A	A	B						
Bromine Dry														A	D	D	D	D				
Bromine Gas					C	D	A	D	D	C	A	A	C		A	D	D	D	C			
Bromine Liquid	Br	3.1	D	D	D	A	D	D	A	D	D	A	D	D	A	D	D	D	D	D		
Bromine Water			C	C	C	A	D		D	A	D	D	D		A	D	D	C	D	D		
Bromobenzene			A						A					A	A	D	D	C	D	D		
Bromotoluene			D	D												A	D	D	D	D		
Butadiene Gas			B	A	A	A	A		A	A	A	A	A		A	D	B	D	B	A		
Butane	CH ₃ (CH ₂) ₂ CH ₃	0.8	A	A	A	A	C		A	A	A	A	A		A	D	A	A	B	A		
Butanediol* (Butylene Glycol)			A	B	A	A									A	D						
Butanol (See Alcohol, Butyl)									A					C								
Butter								A							A	B	A	B	A	B		
Buttermilk									A						A	A	A	A	A	A		
Butyl Acetate	CH ₃ COO(CH ₂) ₃ CH ₃	0.9	D	D	C	B	D		A	A	B	C			D	B	D	C	C	C		
Butyl Acrylate Pure			D	D	D	A			A						D	A						
Butyl Acrylate Saturated			D	D	D	B									D	A						
Butyl Amine			D	D	D	B			A	A					D	D	D	C	C	A		
Butylbenzene (Phenylbutane)									A						A	D	D	D	D			
Butyl Benzoate									A						A	A	D	D	D			

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Butyl Bromide					A				B		D	D
Butyl Butyrate (Butyl Butanoate)								A	C	B	D	D
Butyl Carbitol								A	A	B	C	A
Butyl Cellosolve (Ethylene Glycol Monobutyl Ether)				A	A			A	A	C	C	B
Butyl Chloride (Chlorobutane)				A				A	A	B	D	D
Butyl Diol		B	A	A	A				A	A		
Butyl Ether		D	D	D	A	A			D	D	C	B
Butyl Formate							A			D	D	
Butyl Hydrate						A			A	B	A	A
Butyl Hydride (See Butane)						A			A	D	A	B
Butyl Hydroxide						A			A	B	A	A
Butyl Mercaptan					A							
Butyl Phenol				C	A	A						
Butyl Phthalate				D	D	A	A		C	B	D	D
Butyl Stearate					A				A	B	D	B
Butylene (Liquified Petroleum Gas)					A	A	D	A	A	A	D	C
Butyraldehyde	CH ₃ (CH ₂) ₂ CHO					B			A	A	C	B
Butyric Acid	CH ₃ (CH ₂) ₂ COOH				D	B	A	A	A	B	B	C
Cadmium Cyanide					A	A				B	B	C
Cadmium Salts						A	A	A		A	A	A
Caffeine Citrate						A	A	A				
Calamine			3.5					A		A	B	B
Calcium Acetate						A	A	A		D	A	B
Calcium Bisulfide						A	A	A	A	A	D	A
Calcium Bisulfite						A	A	A	A	A	D	A
Calcium Carbonate	CaCO ₃	2.7				A	A	A	A	A	A	A
Calcium Chlorate	Ca(ClO ₃) ₂	2.7				A	A	A	A	A	A	A
Calcium Chloride	CaCl ₂	2.1				A	A	A	A	A	A	A
Calcium Cyanide							A	A	A	A	A	A
Calcium Hydroxide	Ca(OH) ₂	2.3				A	A	A	A	A	A	A
Calcium Hypochloride							A	A	A	A	D	D
Calcium Hypochlorite	Ca(ClO) ₂	2.3				A	A	B	A	A	A	D
Calcium Nitrate		1.820				A	A	A	A	A	A	B
Calcium Oxide						A	A	A	A	A	A	A
Calcium Phosphate	CaHPO ₄	2.3					A	A	A	A	A	B
Calcium Sulfate	CaSO ₄	2.9				A	A	A	A	A	A	A
Calcium Sulfide						A	A	A	A	A	A	B
Calcium Thiosulfate			1.872				A			A	A	A
Calgon (Sodium Hexametaphosphate)	(NaPO ₃) ₆					C	A	D	A	A	A	A
Cane Sugar Liquors						A	A	A	A	A	A	A
Caprylic Acid (Octanic Acid)							A		A	A	A	C
Carbinol (See Alcohol, Methyl)								A	A	A	A	B

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ENGINEERING

Chemical Resistance Chart

CHEMICALS	APPROX. SP.GR. AT 100% CONCENTRATION	PLASTICS				ELASTOMERS				ALLOYS															
		PVC	CPVC	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	RYTON	TEFLON	VINYL ESTER	POLYSULFONE	HYPALON	BUNA N (NITRILE)	NEOPRENE	EPDM	VITON	TITANIUM	HASTELLOY C									
Carbolic Acid (See Phenol)	C ₆ H ₅ OH	A	A							C	C	D		A	B	A									
Carbon Bisulfide*		D	D	A	D	D	A	A	A	A	C	D	D	C	A										
Carbon Dioxide (Wet or Dry)	CO ₂	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A									
Carbon Disulfide	CS ₂	D	D	D	A	C	D	C	A	A	D	C	C	D	A	A									
Carbon Monoxide	CO	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A									
Carbon Tetrachloride	CCl ₄	1.6	D	D	D	A	D	D	C	A	B	D	D	C	D	A	C	A	A						
Carbonic Acid	H ₂ CO ₃	A	A	A	A	A	A	A	A	A	A	A	B	A	A	B	A	A							
Casein						A					A	A	A	A	A										
Castor Oil*		0.95	A	A	A	A	C	A	A	A	A	B	A	A	A										
Catsup		A	A	A						A	A	C	A			A	A								
Caustic Lime (Calcium Hydroxide)								A			B	A	A	A	A										
Caustic Potash (Potassium Hydroxide)						A	A	A	A	A	A	D	A	B	A	A									
Caustic Soda (Sodium Hydroxide)						A	A	A	A	A	A	B	A	B	C	A									
Cellosolve (See Butyl Cellosolve)					B	A	A		A	A	C	B	C		A										
Cetyl Alcohol								A																	
Chloral Hydrate (Knockout Drops)		1.901	A	A	A	A		A			A	B	C												
Chlorasetic Acid*			A	D	D			A	B		D	B	D	D		D	D	A	A						
Chloric Acid			A	A				A	C		D	D				D	D								
Chloric Acid 20%			A	A	D	A																			
Chlorinated Glue								A			A	B	D	C		A	A								
Chlorine Dioxide						A	A	C	A		A	D	B												
Chlorine Dry							C	A	D		C	B	C	D	C	A	A	D	A						
Chlorine Gas Dry					D	D	D	A		A	D	A	B	D	C	C	D								
Chlorine Gas Wet					D	D	D	A		A	D	A	C	D	D	C	D								
Chlorine Liquid	Cl ₂				D	D	D	A	C	C	A	C	A	C											
Chlorine Water					A	A	C	A	A	A	A	B	A	A	B	C	C	B	D	A	B				
Chlorosulfonic Acid	CISO ₂ HO	1.770			D	D	D	C	D	D	A	C	D	D	D	D	D	D	A	B					
Chlorox Bleach 5.5% CL2					A	A	C	A		C	A	A	A	B	C	B	A	A	A	A					
Chocolate Syrup						A				A				A	A	A									
Chresylic Acid 50%						A		B	D	A	D	D		A	D	D	A		A	B					
Chrome Alum (Chr. Potass. Sulf.)						A	A	A	A	A	A	A	A	A	A	A									
Chromic Acid 05%						A	A	D	B	A	B	A	D	A	A	D	D		A	A	A				
Chromic Acid 10%						A	A	B	A		A	C	D	A	B	D	D		B	A	A				
Chromic Acid 20%						B	B	D	A	A	A	C	C	D	B	B	C	C	A	C	A				
Chromic Acid 30%						B	B	D	A		A	D	D	A	D	D	D		B	A	A				
Chromic Acid 50%	H ₂ CrO ₄				D	D	D	A	D	A	B	A	C	C	D	A	B	D	D	A	D	C	A	A	
Chromium Alum					A	A	A	A		A					A	A									
Citric Acid*	C ₆ H ₈ O ₇ •H ₂ O	1.543			A	A	A	A	C	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	
Citric Oils						A				A		A			A	B	D	A	D	A	A	A			
Cobalt Chloride		3.348								A				A		A	A	A	A	A	A				
Coconut Oil						A	A	A	A	A	A	A	A	A	A	B	B	A	B	B	A	B			

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ENGINEERING

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CHEMICALS	PLASTICS			ELASTOMERS			ALLOYS										
	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	POLYPROPYLENE (PP)	CPVC	PVC	RYTON	TEFLON	VINYLESTER	POLYSULFONE	HYPALON	BUNA N (NITRILE)	EPDM	VITON	304 STAINLESS STEEL	316 STAINLESS STEEL	HASTELLOY C	TITANIUM
Cod Liver Oil						A					A A B B B						
Coffee					A A						A A A A A					A A	
Coke Oven Gas					D A A A			A			A A B D						
Cola Concentrates					A	A											
Copper Acetate					A A A A			A A A			D A B B C						
Copper Borofluoride					A A A A			A			A A						
Copper Carbonate					A A A A			A A			A A D						
Copper Chloride	$\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$	3.4			A A A A B	A A A A A		A A B A			A A C A A				B D A A	A A	
Copper Cyanide	$\text{Cu}(\text{CN})_2$				A A A A B	A A A A A		A B A			A A A B A				A A A A	A A A A	
Copper Fluoborate	$\text{CuBF}_6 \cdot 4\text{H}_2\text{O}$				A			A A			A A B				D D	B	
Copper Fluoride	CuF_2	2.9			A A A A A			A A A			A A A						
Copper Nitrate	$\text{Cu}(\text{NO}_3)_2$	2.3			A A A A B	A A A A A		A A A			A A A A A				A A A A	A A A A	
Copper Salts					A A A A A			A			A A A A A						
Copper Sulfate	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	2.3			A A A A A			A A A A A			B A A B A				A C A A	A A	
Copper Sulfate 5%					A A A B			A A A A			A A A A				A A A A	A A A A	
Corn Oil					A A A			A A A			A B A A B						
Corn Syrup					A A A A			A A A			A B A						
Cottonseed Oil*					A A A A C	A A A A A		A A A A A			A B A B				A		
Cream					A A			A			A C A				A A	A A	
Creosol	$\text{CH}_3\text{C}_6\text{H}_4\text{OH}$	1.05			C D C C C	D A A A A		A A A A A			A D D D				A A	A A	
Creosote					D D			A			A D D B C						
Cresols*	$\text{C}_6\text{H}_5\text{OH} \cdot \text{CH}_3$				D D C A D	A A A A A		A D D D C			A D D D C				A A	A A	
Cresylic Acid					C C A A C			A D D			A D D D				A A A A B	A A A A	
Croton Aldehyde					D D A C			D A			A B						
Crude Oil					A A A A			B A A A A			A D B D				A		
Cryolite					B B A A			A			A A A B						
Cupric Cyanide (See Copper Cyanide)						A											
Cupric Fluoride					A A A A A			A A A			A A						
Cupric Nitrate					A			A			A A A A A						
Cupric Salts					A A A A A			A			A A D				D		
Cupric Sulfate (See Copper Sulfate)					A A A A A			A A			A A A						
Cutting Oil								A			A D B A B						
Cyanic Acid (Isocyanic Acid)	HO CN							A A			A A A A A				A		
Cyclohexane					A A D A C			A A A B A			A D D C				A A	A A	
Cyclohexanol	$\text{C}_6\text{H}_{11}\text{OH}$	0.94			D D A C			A A A B			A B B				A	A	
Cyclohexanone*	$\text{C}_6\text{H}_{10}\text{O}$	0.95			D D B C D	D B A		D			D C C				A	A	
Decalin					D D A A			A A			A D D D D						
Decanal								A			D D D D						
Decane								A			A D C B C						
Detergents*					A A B A C	A A A A A		A A A A A			A A A A A				A A	A A	
Detergents, Heavy Duty					A A A A												
Developers								A A			A A A A				A A	A A	
Dextrin								A A			A A A A						
Dextrose								A A			A A A A						

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ENGINEERING

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		PVC	CPVC	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	RYTON	TEFLON	VINYL ESTER	POLYSULFONE	BUNA N (NITRILE)	HYPALON	NEOPRENE	EPDM	VITON	304 STAINLESS STEEL	316 STAINLESS STEEL	HASTELLOY C
Diacetone Alcohol		D	D	A	B		A			D	A	C	D	B			
Diallyl Phthalate								A	A								
Diazo Salts		A	A	A	A	A	A										
Dibenzyl Ether	(C ₆ H ₅ CH ₂) ₂ O			A		A				C	D						
Diethyl Amine				A		A				C	D	D	C	C			
Diethyl Ether	CH ₃ (CH ₂) ₃ O(CH ₂) ₃ CH ₃			A		A				C	C	D	C	C			
Diethyl Phthalate		D	D	B	A	C	A	A	A	B	A	D	D	D			
Diethyl Sebacate		B		A		A				C	B			D			
Dicalcium Phosphate								A	A								
Dichlorethane		D		D		A	A			C	D				A	A	A
Dichloro Benzene		D				A	A	D		B	D		D	D			
Dichlorobenzene				A		A	B	D		A	D	D	D	D			
Dichloroethylene	CIHC	1.25	D	D	A		A			A	D	D	D	D			
Dichloroisopropyl Ether				A													
Dichloromethane							A	D	D	B	D	D	D	D			
Diethyl Phthalate							B	B									
Diesel Fuel		A	A	B	A	D	A	A	A	A	D	D	A	D	A	A	A
Diethanolamine	(HOCH ₂ CH ₂) ₂ NH	1.1						D	D								
Diethyl Cellosolve				A		A				D							
Diethyl Ether		D	D	B	A		A	A	B	D	D	C	C	C	D	C	
Diethyl Ketone							A	D		D	B	D	D	D			
Diethyl Oxide							A			D	D	C	B	C			
Diethylamine		D	D	A	C		A	A	C	D	D	B	B	B	C		A
Diethylbenzene							A			A	D	D	D	D			
Diethylene Glycol*	O(CH ₂ CH ₂ OH) ₂		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A
Diethylenetriamine				A		A	A	D	D		B	C					
Diglycolic Acid			A	A	A	A	A	A		A	A						
Diisobutyl Ketone				A		A				D	D						
Diisobutylene						A		A		A	D		A		A		A
Diisoctyl Phthalate							A		A	B	B						
Diisopropyl Ketone	(CH ₃) ₂ CHCOCH(CH ₃) ₂		D	D	A	B		A		D	B		B	D			
Dimethyl Amine								A		D	C						
Dimethyl Benzene								A		A	D	D	D	D			
Dimethyl Ether								A		B	B	C	B	C			
Dimethyl Formamide						D	D	A	A	D	D	C	B	B	D		A
Dimethyl Ketone								A		A	D	A	C	D	C		
Dimethyl Phthalate						B		A	C	C	B	B	D	D	D		A
Dimethylamine		D	D	A	D	C	A		D	D	D	D	D	D			
Diocetyl Phthalate		D	D	D	A	D	D	A	A		A	B	D	D	D		A
Dioxane		D	D	B	D		D	A			D	B	D	D	D		C
Dioxolane	1.065		D								D	D					
Diphenyl	1.0							A			A	D	D	D	D		
Diphenyl Ether (See Diphenyl Oxide)																	
Diphenyl Oxide										A	B	D	D	D			
Dipropylene Glycol	1.252							A	A	A	A	D	D	D	A	A	A

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ENGINEERING

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	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	POLYPROPYLENE (PP)	PVC	TEFLON	VINYL ESTER	EPON	VITON	HYPALON	NEOPRENE	EPDM	304 STAINLESS STEEL	316 STAINLESS STEEL	HASTELLOY C
Disodium Methylarsonate						A								
Disodium Phosphate					A	A	A	A	A	A	A	A	A	
Distilled Water					A	A	A							
Divinylbenzene					D	D	D	D	A					
Dolomite									A			A	B	A
Dowtherm (Ethylene Glycol)									A			D		
Dry Cleaning Solvents									A			A	D	C
Epichlorohydrin	OCH ₂ CHCH ₂ Cl				D	D	A	A	A			D	D	A
Epsom Salts					A	A	A		A	A		A	A	A
Esters					D	D	C	A	A			A	A	B
Ethane									D	A	A	A	D	B
Ethanol (See Alcohol, Ethyl)										A	B	A	B	A
Ethanolamine	HOCH ₂ CH ₂ NH ₂	1.02			D	D	D	D	A	A	A	D	A	D
Ethers					D	D	C	C	A	A	A	C	C	D
Ethyl Acetate	CH ₃ COO•C ₂ H ₅				D	D	C	A	C	D	A	D	B	D
Ethyl Acetoacetate					D	D	A	A	A	A		D	A	D
Ethyl Acrylate	CH ₂ CHCOOC ₂ H ₅				D	D	D	A		B	A	D	B	D
Ethyl Alcohol*		0.8			A	A	A	A	D	A	A	A	B	A
Ethyl Benzene									A			A	D	D
Ethyl Bromide									D	D				
Ethyl Butyrate									D	D				
Ethyl Cellosolve											B	D		
Ethyl Chloride (Chloroethane)	CH ₃ CH ₂ Cl	0.92			D	D	D	A	D	D		A	A	C
Ethyl Ether	C ₂ H ₅ OC ₂ H ₅				D	D	B	A	D	D		C	D	D
Ethyl Formate										A		B	B	D
Ethyl Hexanol								A		A		A	A	B
Ethyl Sulfate										A	A	D	C	D
Ethylcellulose												A	A	A
Ethylene Bromide										C	A	B	C	D
Ethylene Chloride									D	D	A	C	D	D
Ethylene Chlorohydrin									D	A	A	B	D	B
Ethylene Diamine									D	A	D	D	A	A
Ethylene Dichloride*	(Dichloroethane)	CH ₂ CL•CH ₂ •CL	1.25		D	D	C	A	D	D	A	B	D	D
Ethylene Glycol*	HOCH ₂ •CH ₂ OH	1.1155			A	A	A	A	B	A	A	A	A	A
Ethylene Oxide	(CH ₂) ₂ O	0.9			D	D	D	A	A	D	A	A	D	D
Extrin					A	A	A	A				A	A	
Fatty Acids*					A	B	A	A	C	A	A	A	D	B
Ferric Acetate (Iron Acetate, Basic)								B			A	A	B	D
Ferric Chloride, Anhydrous	FeCl ₃	2.9			A	A	A	A	B	A	A	A	A	B
Ferric Hydroxide						A	A	A				C	A	
Ferric Nitrate	FeNO ₃	1.7			A	A	A	A	B	A	A	A	A	A
Ferric Sulfate	Fe(SO ₄) ₃	3.1			A	A	A	A	A		A	A	A	B
Ferrous Chloride	FeCl ₂	3.2			A	A	A	A	B	A	A	A	B	B
Ferrous Nitrate					A	A	A	A		A	A	B	B	A

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Ferrous Sulfate	FeSO ₃	1.9	A A A A B A A A A A A								A A A A A A					C A A B		
Fish Solubles*			A A B		B A													
Fluoboric Acid (Fluoro Boric Acid)	HBF ₄	1.8	A A A A A A				D A		A A		A A A B A					B D D A		
Fluorine Gas (Wet)			A A B A															
Fluorine, Liquid		1.108	C D A C C		B D D							B C C D D				D D D A		
Fluosilicic Acid	H ₂ SiF ₆		C A A A B A A A C C									A A A A A A				B D D B		
Formaldehyde*	HCHO	1.01	A A A A B A A A B A A									B B B B B				A B A B		
Formaldehyde* 35%			A A A A				A					A A						
Formaldehyde* 50%			A A A A				A					B D						
Formic Acid*	HCOOH	1.2201	A A A A A A A A D C								D A A C B					B A C A		
Freon 11 (MF)	CCl ₃ F		A A A A C A A A								B D D B A					A A		
Freon 113 (TF)	C ₂ Cl ₃ F ₃		A A A A A A A A								B D A A					A A		
Freon 114			A A A A				A A					A C A				A A		
Freon 12			C A A A A A		A A A A						B A A B A					A A		
Freon 12 (Wet)			B A A C		A A A A						A B B A					D		
Freon 22	CClF ₂		D D A A A A A A								C	D B B D A				A A		
Freon TF			B B D D		A A A A							B D A A				A A		
Fructose			A A A A A A A A									A A A A A A				A A		
Fruit Juice			A A A A B A A A									A A A A A A				A A		
Fruit Pulp*			A A A A A A A A									A						
Fuel Oil*			B B A D A A A A									A D D A A A				A A A A A		
Fumaric Acid (Boletic Acid)							A					A B A B						
Furan		0.938					A					D D A				A		
Furfural (Ant Oil) (Bran Oil)	C ₄ H ₃ OCHO	1.2	D D C B D C A A D D									D B D D C				A A B		
Furfuryl Alcohol			B D C A									D C						
Gallic Acid			A A A A D A A									A A A A				A A A		
Gas, Natural			A A A A A A									A D A						
Gasoline,* Leaded			A A D A D A A A									B D B A D				A A D A		
Gasoline,* Sour			A B D A D A A A									A D B A D				A A D A		
Gasoline,* Unleaded			C A D A D A A A									B D B A D				A A D A		
Gelatin			A A A A A A A A									A A A A A A				A B A		
Gin*			A A A A D A A A									A A						
Gluconic Acid 50%							B C											
Glucose	C ₆ H ₁₂ O ₆		A A A A A A A A				A A A A A A A A					A A A A A A				A		
Glue			A A A A				A A					A B A A A A				A B A A		
Glycerin (See Glycerol)			A A A A A A				A A A A A A A A					A A A A A A A A				A A A A A A		
Glycerol (Glycyl Alcohol)	C ₃ H ₅ (OH) ₃	1.3	A A A A B A				A A					A A A A A A A A				A		
Glycolic Acid* (See Hydroxyacetic Acid)			A A A A B A A A				A A A A B A A A					A A A A A A A A				A A A A A A		
Glycols*			A A A A A A A A				A A A A A A A A					A A A A A A A A				A A A A A A		
Glyoxal							B					A						
Gold Monocyanide							A					A A A A A A				A		
Grape Juice			A A B				A					A A A A A A				A A A A A A		
Grape Sugar			A A A A A A				A					A A A A A A				A A A A A A		
Grease			A A A A A A				A					A D B B C				A A A A A A		

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Chemical Resistance Chart

CHEMICALS	PLASTICS				ELASTOMERS				ALLOYS				
	PVC	CPVC	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	RYTON	TEFLON	VINYL ESTER	POLYSULFONE	BUNA N (NITRILE)	HYPALON	304 STAINLESS STEEL	316 STAINLESS STEEL	HASTELLOY C
Green Liquor				A A A A		A	A	A	A A B B B				
Helium					A				A A A A A				
Heptane*			CH ₃ (CH ₂) ₅ CH ₃	A A B A D	A	A A A A			A D B A B				A A A
Hexane*			CH ₃ (CH ₂) ₄ CH ₃	0.6594	B A B A D	A A A B A			A D B A B				A A A
Hexene				0.6734		A			A D B A C				
Hexyl Alcohol (Hexanol)				A A A A		A			A B				
Honey				A A A A A		A A			A A A A				A A
Hydraulic Oil					D	A A A			A D B A B				
Hydraulic Oil (Synthetic)						A A A			A C C				A A
Hydrazine				1.004	D D D D A	A C			D A C C C				
Hydrobromic Acid	HBr			48% = 1.5	A A B A B	A B B			A A D D				A A A
Hydrobromic Acid 20%					A A A A	A B			A A C D				A A A
Hydrobromic Acid 50%					A A B A A A	A			A A A D				C D B
Hydrochloric Acid (Dry Gas)	HCl				A		A A			A			A C A
Hydrochloric Acid 10%					A A A A	A B A A			A A A B				C A
Hydrochloric Acid 20%					A A A A A	C A B A A			A A B B A				D D C A
Hydrochloric Acid 25%					A A A A	A			A A B C A				
Hydrochloric Acid 37% (Muriatic Acid)				1.19	A A A A A A D	A C B A			A C C C				D D C B
Hydrocyanic Acid	HCN				A A A A A A A	A A A A			A A A B A				A A A A
Hydrocyanic Acid 10%					A A A A A A A	A A A A			A A B B A				D D
Hydrofluoric Acid 10%					A A A A	A			A A A B A				
Hydrofluoric Acid 20%	HF•H ₂ O				A A C A A A A B D				A A C D C				D D D B
Hydrofluoric Acid 30%					A A A A	A			A A				
Hydrofluoric Acid 40%					B D A A	A			A A				
Hydrofluoric Acid 50%					B D A B C A A A		C		A A B C A				D D D B
Hydrofluoric Acid 65%						A			A B C D A				
Hydrofluoric Acid 75%	HF			0.987	C C A A D A C A				A D D D A				D
Hydrofluosilicic Acid	H ₂ SiF ₆				D D A A A A A	A A			A A C A A				D D A C
Hydrofluosilicic Acid 20%					D A	A C			A A B B				D D D B
Hydrogen	H				A A A A A A A A A	A A A A			A A A A A				A
Hydrogen Chloride Gas Dry					A A A A A A A A A	A							
Hydrogen Cyanide					A A A A	A			A A B B A				
Hydrogen Fluoride					D D A A								
Hydrogen Peroxide 05%					A D A A	A			A A				
Hydrogen Peroxide 10%					A A A A A	B A D				D A			C C C A
Hydrogen Peroxide 30%					A D C A A C A B C				A B D D C				B C C B A
Hydrogen Peroxide 50%					B B A A B A A				A C D D A				
Hydrogen Peroxide 90%					D D D A C A A				B C D D C				
Hydrogen Peroxide	H ₂ O ₂				A A A B A C A C B				A B C C B				B A B A
Hydrogen Phosphide (See Phosphine)					D A A A A A				C				
Hydrogen Sulfide	H ₂ S				A A A A A A	A A A A			A A A				
Hydrogen Sulfide (Aq. Sol.)					A A A A A A A A A	A A A A			C A C C A				A A A A
Hydrogen Sulfide (Dry)					A A A A A A A A A	A A A A			A A A A A				A C A A
Hydroquinone					A A A A A A A A A	A			A A A D A				

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ENGINEERING

Chemical Resistance Chart

CHEMICALS		APPROX. SP.GR. AT 100% CONCENTRATION	PLASTICS			ELASTOMERS			ALLOYS										
			POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	POLYPROPYLENE (PP)	CPVC	PVC	RYTON	TEFLON	VINYLESTER	POLYSULFONE	HYPALON	BUNA N (NITRILE)	NEOPRENE	EPDM	VITON	TITANIUM	HASTELLOY C	304 STAINLESS STEEL
Hydroxyacetic Acid (Glycolic Acid)																			
Hydroxyacetic Acid 70%	HOCH ₂ COOH		A	A									A	A	A			A	
Hydroxylamine Sulfate			A	A	A	A							A						B
Hypochlorous Acid			A	A	A	A	A	A	A	A	A		B	B	D	D	D	D	
Ink*					A	A	D	A		A	A			A	A	A	A	A	A
Iodine Solution	I ₂		B	A	C	A	D	D	B	A	A	C		A	A	C	C	A	D
Isobutyl Alcohol (See Alcohol, Isobutyl)	(CH ₃) ₂ CHOH	0.806			A								A	A					B
Isooctane	(CH ₃) ₃ CCH ₂ CH(CH ₃) ₂	0.7	A	A	A	A							A	A	D	A	A	A	
Isophorone			D	D										D	D				
Isopropyl Acetate		0.9226			B								A	A	D	B	D		
Isopropyl Alcohol (See Alcohol, Isopropyl)														D	B	D	D		B
Isopropyl Chloride (See Chlorpropene)																			
Isopropyl Ether		0.723	D	D	C	A	D			A			D	D	D	B	D		A
Jet Fuel JP-3					A		D		C	A	A	A	A	A	D	C	A	D	A
Jet Fuel JP-4					A	A	C	A	C	A	A	A		A	D	D	B		A
Jet Fuel JP-5					A	A	C	A	C	A	A	A		A	D	C	A	D	A
Kerosene*		0.81	A	A	A	A	D	D	B	A	A	A		A	D	D	A	D	A
Ketones					D	D	A	A	D	A	A	C		D	C	D	D	D	A
Kraft Liquor					A	A	A	A											A
Lacquer						A		D		A	A			D	D	D	D	D	A
Lacquer Thinner					C	B								A	D	D		A	A
Lactic Acid* (Milk Acid)	CH ₃ CHOHCOOH	1.2	A	A	A	A	B	A	A	A	A	A		B	B	B	B	A	A
Lard					A	A	A	B		A	A	A		A	C	C	A	C	A
Lard Oil					A	A	A	A						A	A				
Latex*						A		A	A		A	B	B		A	B	C	B	C
Lauric Acid		0.833	A	A	A	A			A	A	A	A							A
Lauryl Chloride	C ₁₂ H ₂₅ Cl				A	A	A	A											
Lead Acetate (Sugar of Lead)	Pb(C ₂ H ₃ O ₂) ₂ 3H ₂ O	2.5	A	A	A	A	B	A	A	A	A	A		C	A	B	B	C	B
Lead Chloride	PbCl ₂				A	A	A	A						A	A	B			A
Lead Nitrate	Pb(NO ₃) ₂				A	A	A							A	A	A	A	B	
Lead Sulfate					A	A	A	A						A	A	B	A	A	
Lemon Oil					A	A	D	A						A	D				
Levulinic Acid														A	A				
Ligroin (Benzine)					D	D	C	A	D					A	C	B	A		A
Lime (Calcium Oxide)	CaO				A	A	A	A						A	C	A	A	A	A
Lime-Sulfur Solution					A	A	A	A											D
Linoleic Acid (Linolic Acid)		0.905	B	A	A	A			A	A				B	D	D	B	D	
Linseed Oil (Flaxseed Oil)					A	A	A	A	D	A	A	A	A		A	B	B	A	B
Lithium Bromide	Li Br				A		A							A					
Lithium Chloride	Li Cl													B	A				

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ENGINEERING

Chemical Resistance Chart

CHEMICALS	APPROX. SP.GR. AT 100% CONCENTRATION	PLASTICS				ELASTOMERS				ALLOYS									
		POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	POLYPROPYLENE (PP)	PVC	CPVC	RYTON	TEFLON	VINYL ESTER	POLYSULFONE	EPOXY	HYPALON	BUNA N (NITRILE)	NEOPRENE	VITON	EPDM	304 STAINLESS STEEL	316 STAINLESS STEEL	HASTELLOY C
LPG										A									A
Lubricants					A	A				A	A				A	D	A		A A A A
Lubricating Oil					A	A	A			A					A				
Lye Solution (See Sodium Hydroxide & Potassium Hydroxide)																			
Machine Oil					A	A	A	A		A					A	D			
Magnesium Acetate										A					D		D	A	
Magnesium Carbonate	MgCO ₃	3.0	A	A	A	A	B	A	A	A	A	B			A	B	A	A	A
Magnesium Chloride	MgCl ₂	2.3	A	A	A	A	B	A	A	A	A	A			A	A	A	A	B
Magnesium Citrate			A	A	A	A				A					A	A			B
Magnesium Hydroxide (Milk of Magnesia)	Mg(OH) ₂	2.36	A	A	A	A				A					A	A			
Magnesium Nitrate	Mn(NO ₃) ₂ • 6H ₂ O	2.03	A	A	A	A	A	A	A	A	A	A			A	B	B	A	A
Magnesium Oxide										A	A				A	A	A	A	A
Magnesium Sulfate (Epsom Salts)	MgSO ₄	2.6	A	A	A	A	A	A	A	A	A	A			A	C	A	A	B
Maleic Acid			A	A	A	A	A			A	A	A			A	C	B	D	C
Maleic Anhydride							D			A					A	D	D		
Malic Acid (Apple Acid)			A	A	A	A	D			A	A	A			A	D	C	A	B
Manganese Sulfate			A	A	A					A					A	A	A	A	A
Mash											A						A	A	
Mayonnaise					A					A	A				A		A	A	
Melamine (Triazane)	N•C(NH ₂)N•C(NH ₂)N•C(NH ₂)									A					C		D	D	
Mercuric Chloride	HgCl ₂	5.4	A	A	A	A	A			A	A	A			A	A	A	A	B
Mercuric Cyanide	Hg(CN) ₂	4.0	A	A	A	A	A			A	A	A			A	B	B	A	A
Mercuric Nitrate	HgNO ₃	4.8								A					A	A	A	A	
Mercuric Sulfate			A	A	A	A				A					A	A	A		
Mercurous Chloride											A	A							
Mercurous Nitrate			A	A	A	A	A			A	A				A	A			
Mercury (Quicksilver)	Hg	13.59	A	A	A	A	A	A	A	A	A	A			A	A	A	A	A
Methacrylic Acid Glacial		1.015	D							D	D								B A
Methane (Methyl Hydride)	CH ₄		A	A	A	A				A					A	C	B	A	B
Methane Sulfonic Acid					A					A									
Methanol (See Alcohol, Methyl)	CH ₃ OH	0.8								A					A	D	A	A	A
Methoxyethyl Oleate		0.898	A												D	B	D	D	
Methyl "Cellosolve" TM			D	D	A	A				A					D	B	C	D	C
Methyl Acetate	CH ₃ CO ₂ CH ₃	0.9244	D	D	B	A				A					D	B	D	D	A
Methyl Acetone					D					A	C				D	D	D		
Methyl Acrylate	CH•CHOOCH ₃			A						A	A				D	B	C	D	A
Methyl Alcohol*	CH ₃ OH		A	A	A	C	A			A	A				C	A	A	A	
Methyl Benzene (See Toluene)										A					A	D	D	D	
Methyl Bromide	CH ₃ Br	1.732	D	D	D	A	D	C	A	A					A	C	D	D	

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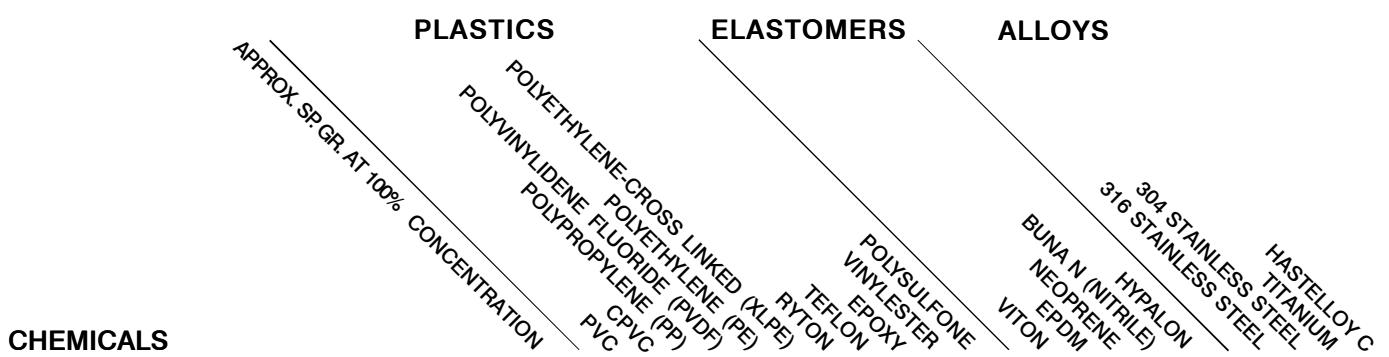
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ENGINEERING

Chemical Resistance Chart



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	POLYETHYLENE-CROSS LINKED (XLPE)	POLYVINYLDENE FLUORIDE (PVDF)	POLYPROPYLENE (PP)	PVC	CPVC	RYTON	TEFLON	POLYSULFONE	VINYL ESTER	EPOXY	BUNA N (NITRILE)	HYPALON	NEOPRENE	EPDM	VITON	304 STAINLESS STEEL	316 STAINLESS STEEL	HASTELLOY C	TITANIUM			
Methyl Butanol (See Alcohol, Amyl)								A			B		A	A	A							
Methyl Butyl Ketone	CH ₃ CO(CH ₂) ₃ CH ₃						A	B			D	B	D	D	D				A			
Methyl Chloride*	CH ₃ Cl	1.3	D	D	D	A	D	A	A	C	D		C	C	D	C	D	A	C	A		
(Chromomethane)								D	D	C	A					B	D					
Methyl Chloroform																						
(Trichloroethane)																						
Methyl Ether (See Dimethyl Ether)																						
Methyl Ethyl Ketone* (MEK)	CH ₃ CO•CH ₂ CH ₃	0.82	D	D	C	D	D	C	A	C	D		C	C	C	B	C	D	A	A		
Methyl Formate	HC ₂ OCH ₃												D	A	D	D	D					
Methyl Isobutyl Alcohol																						
Methyl Isobutyl Carbinol																						
Methyl Isobutyl Ketone	CH ₃ C•NOHCH(CH ₃) ₂		D	D	C	A		C	A	B	D		D	B	D	D		A	A	A		
Methyl Isopropyl Ketone			D	D	B	A		A	B				D	C	D	D	D					
Methyl Methacrylate*	CH ₂ C(CH ₃)COCH ₃	0.95	A					A	C	D			D	D	C	D	B					
Methyl Propanol								A					A	B	A	A	A					
Methyl Salicylate (Wintergreen Oil)		1.180	A	A	A	A											C					
Methyl Sulfate			B	A	A	A											A	A	B	A		
Methylamine	CH ₃ NH ₂		D	D	D	C																
Methylene Bromide	BrCH ₂	2.47				D																
Methylene Chloride*	CH ₂ Cl ₂	1.335	D	D	D	C	D	D	A	A	D	D	B	D	D	D	D	A	A	A		
Methylene Iodine	CH ₂ I ₂		D		C			A					A									
Methylhexane								A					A									
Methylisobutyl Carbinol								A	A	A												
Methylmethacrylate								A														
Methylsulfuric Acid			A	A	A	A	C	A	A	A												
Milk			A	A	A	A	A	A	A	A												
Mineral Oil			B	A	A	A	D	D	C	A	A	A	A	D	C	A	B		A	A		
Molasses			A	A	A	B	A	A	A	A			A	C	A	A						
Monochloracetic Acid (See Chloroacetic Acid)								A	A	B	A					B	C					
Monochlorobenzene (See Chlorobenzene)								B	A							A	D					
Monoethanolamine	C ₆ H ₅ Cl							D	D	A	A					A	A	D	A			
Morpholine		1.002											A		D					A		
Motor Oil			A	A	C	A						A			A	D	A					
Mustard			A	A	A							A			A	C	B		A	A		
Naphtha*			A	A	A	A	D	D	A	A	A	A			A	D	D	B	C	A	A	A
Naphthalene* (Tar Camphor)	C ₁₀ H ₈	1.15	D	D	B	A	C	C	A	A	A	A			B	D	D	D	D	B	A	A
Natural Gas			A	A	A	A						A			A	D	A	A	A			
Neon													A			A	A	A	A			
Nickel			A	A	A							A			A	A	A	A				
Nickel Acetate			A	A	A	A						A			D	A	B	B	D			
Nickel Chloride	NiCl ₂	3.5	A	A	A	A	B	A	A	A	A	A			A	A	A	B	A	B	A	A

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			PVC	CPVC	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	POLYPROPYLENE (PP)	TEFLON	RYTON	VINYL ESTER	POLYSULFONE	EPOXY	HYPALON	BUNA N (NITRILE)	NEOPRENE	EPDM	VITON	304 STAINLESS STEEL	316 STAINLESS STEEL	HASTELLOY C
Nickel Cyanide		<chem>Ni(CN)2 • 4H2O</chem>			A A															
Nickel Nitrate		<chem>Ni(NO3)2 • 6H2O</chem>	2.1		A A A A A A A A A A									A B B A A						
Nickel Sulfate		<chem>NiSO4</chem>	3.7		A A A A A A A A A A									A A B A A				C		B
Nicotine*					A A D C C A A												C			
Nicotine Acid*					A A A A A A A A A A															
Nitric Acid 10%					A A A A A A C A A C									A B B D A				A A A A A		
Nitric Acid 20%					A A A A A C A C C C									A D D D						
Nitric Acid 30%					A A A B A A D A C									A B D D D						
Nitric Acid 40%					A A C B C B D									A D D D						
Nitric Acid 50%					A A C B C A C A C									A D D D C						
Nitric Acid 70%					D D D D C C D A									C D D D D						
Nitric Acid Concentrate*		<chem>HNO3</chem>	1.5		D D D D D D D A D									C D D D C						
Nitric Acid Fuming*		<chem>HNO3</chem>			D D D D															
Nitrobenzene* (Oil of Mirbane)		<chem>C6H5NO2</chem>	1.1987		D D C A D D B A B D									C C D C D				B A A B		
Nitroethane		<chem>CH3NO2</chem>	1.13			A					A			D A						
Nitrogen		<chem>N</chem>					A A							A A A A A				A		
Nitrogen Dioxide		<chem>NO2</chem>				A		A												
Nitrogen Solutions									B C						A A					
Nitroglycerine			1.6009		D		A							A						
Nitromethane						A		A						B						
Nitrous Oxide					A A A A			A A						A A		A A				
Ocenol					A A D A															
Octane						A		A						A D						
Octyl Acid (Caprylic Acid)		<chem>CH3(CH2)6COOH</chem>	0.9105			A		A A A A							C B					
Octylamine							A	A A C						D		C C				
Oils*					A A A A C				A A A											
Oils, Aniline					D A			A A						A B D D			A A A D			
Oils, Anise								A							D		A A			
Oils, Bay*									A					A	D		A A			
Oils, Bone*									A					A	D A		A A			
Oils, Castor*					A				A					A B A A			A A			
Oils, Cinnamon*					A				A					A	D		A A			
Oils, Citric*						A			A					A	D A		A A			
Oils, Clove*						B			A						A		A A			
Oils, Coconut*						A			A					A	A A A A		A A			
Oils, Cod Liver							A			A					A A A A A		A A			
Oils, Corn*					A A				A					A C D A			A A			
Oils, Cotton Seed*					A A A			A A A						A C D A			A A			
Oils, Creosote						D			A					A D C B			A A			
Oils, Crude Sour*									A A						A A					
Oils, Diesel Fuel						A A			A A A					A D D A			A A			
Oils, Fuel						A			A A					A D D B			A A A A A			
Oils, Linseed						A A A				A				A D D A			A A			
Oils, Mineral						A A A			A A					A D A A A			A A			
Oils, Olive						A A A			A A A					A B D A A			A A			
Oils, Pine						A A			A A					A D C			A			

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		PVC	CPVC	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	TEFLON	VINYL ESTER	EPDM	HYPALON	BUNA N (NITRILE)	304 STAINLESS STEEL	TITANIUM
Oils, Silicone					A		A		A	A A		A A
Oils, Vegetable*					A A A A	A			A A			
Oleic Acid (Red Oil)	0.895			A B A A	D D A A A A				B C B B B	A A		B
Oleum				D D D D	D D A D D D				D D D D D D	A		
Orange Extract				A A A A	A A A A							
Oxalic Acid	(COOH) ₂	1.7		A A A A A A	A A A A A A A A				A A B B A		B A C	B
Oxygen Gas				A A A A	A A A A				A A A C A			
Ozone				B B C A C C	C A A				A A B D A			
Palmitic Acid 10%				A A A A B	A A A A A A				A B C A C			
Palmitic Acid 70%				C A A B	A A A A A A				A B C A C			
Paraffin				A A A A		A A			B D B A D	A A		
Pentane (Amyl Hydride)						A A			A D B A B	C C		B
Peracetic Acid 40%		1.15		D D D A		A			A B			
Perchloric Acid 10%				A A A A A A	A A A D				A B D D D			
Perchloric Acid 70%	HClO ₄	1.764		D D A A	D A D				A A D D D			
Perchloroethylene	(CCl ₂) ₂	1.6		D D C A	A A B D				A D D D D D	A A		
Perphosphate				A A A	A				A A			
Petrolatum (Petroleum Jelly)				A A A A		A A			A C B A B	A		
Petroleum (Sour)*				A					A D A			
Petroleum Oils				A A B A		A			A D C A C			
Phenols 100% (Carbolic Acid)	C ₆ H ₅ OH	1.1		D A A A B D A	A A D D				B C D D C	A A C A		
Phenylacetate		1.073				A			D B D D C			
Phenylhydrazine				D D D A		A			C C D D D			
Phenylhydrazine Hydrochloride					A A D A							
Phosgene Gas				D D C A	A				D A C D			
Phosgene Liquid		1.392		D D D C	A				D A C D			
Phosphoric Acid 10%				A A A A	A A A C A				A A C C A	A D B A		
Phosphoric Acid 20%				A A A A		A			A A B C A			
Phosphoric Acid 40%				A A B	A A A A A				A B D D	A B A A		
Phosphoric Acid 50%				A A A A A A	A A A C A A				A A C C B	B D B A		
Phosphoric Acid 80%				A A A A A	A				A A			
Phosphoric Acid 85%		1.8		A A A B B A A A	C A				A A C C B	B D C A		
Phosphoric Acid 100%				A A C A A A A	C A A C A A				A B D D C	B C B A		
Phosphoric Acid Crude	H ₃ PO ₄	1.834			C A A C A				A B D C A	C D C A		
Phosphorus Oxychloride		1.675			A	D			D D			
Phosphorus Red				A A A A	A A							
Phosphorus Trichloride	PCl ₃	1.574		D D C A A	D A				C C D D	A A		
Phosphorus Yellow				A A A A	A A A				C			
Photographic Developer				A A A A B A	A A A				A A A A		A C A A	
Photographic Solutions*				A A A A A A A	A A A				A A A			
Phthalic Acid (Terephthalic Acid)				D D D A	A				A A			
Phthalic Anhydride	C ₆ H ₄ (CO) ₂ O			D D D	A B A				A A C	B A A		
Pickle Brine				A A A A					A A A	A A A		
Pickling Solutions*				A A A A	A				B C D D D			

A = Excellent, No Effect

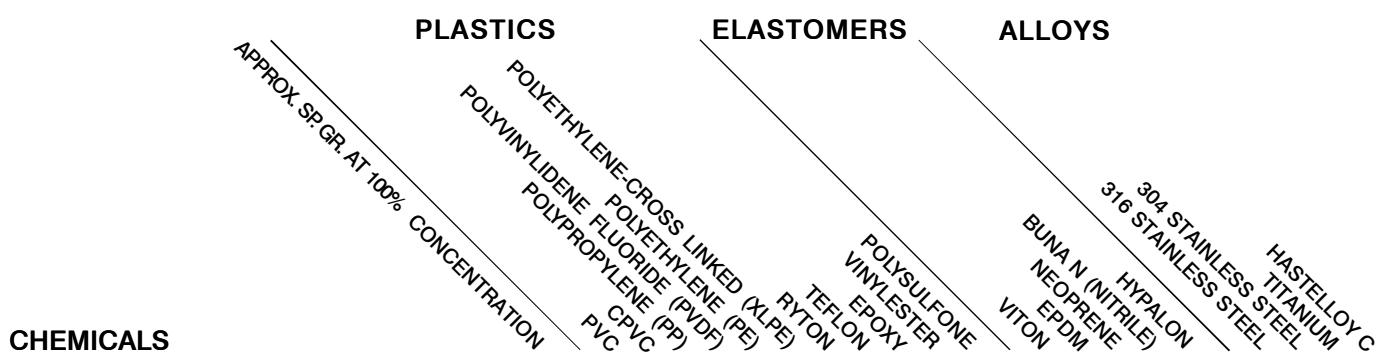
B = Good, Minor Effect

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ENGINEERING

Chemical Resistance Chart



CHEMICALS

		PLASTICS	ELASTOMERS	ALLOYS	
Picric Acid		C C A A C A A A C	A C A B A	A A A A	
Pine Oil		A B B	A D C B D		
Plating Solutions, Antimony		A A A	A A A	A A A	
Plating Solution, Arsenic		A A A	A A A	A A A	
Plating Solutions, Brass		A A A A A A A B	A A A A A	A A A	
Plating Solutions, Bronze		A A A A A A A B	A A A A A	A A A	
Plating Solutions, Cadmium		A A C A A A A A B	A A C A	A A A	
Plating Solutions, Chrome		A A C A A B A D	C B C D D	C A A	
Plating Solutions, Copper		A A A A A A A D	A A A A A	D A A	
Plating Solutions, Gold		A A C A A A A A A	A A A A A	C A A	
Plating Solutions, Indium		A A A A A A A A	A A A A A	C A A	
Plating Solutions, Iron		D A C	A D	C C A D	
Plating Solutions, Lead		A A A A A A A A	A A C B	C D A	
Plating Solutions, Nickel		A A A A A A A D	A A A A A	C A A	
Plating Solutions, Rhodium		A A A A A A A A	A A B A	D D D	
Plating Solutions, Silver		A A A A A A A A	A A A A A	A A A	
Plating Solutions, Tin		A A A A A A A A	A A C B	C D A	
Plating Solutions, Zinc		A A A A A A A A	A A A A A	D A D	
Polyethylene Glycol		A A A A	A	A A A A	
Polyvinyl Acetate Emulsion		A	A C	A A B B	
Polyvinyl Alcohol		A A A A	A B C	A A	
Potash (Potassium Carbonate)	K ₂ CO ₃	1.6	A A A A B	C B D C A	A A A
Potassium Acetate	KC ₂ H ₃ O ₂		A A A A	D A B B B	
Potassium Alum (Aluminum Potassium Sulfate)			A A A A	A A A A A	
Potassium Bicarbonate	KHCO ₃	2.2	A A A A A A A A B	A A A A A A	B A A B
Potassium Bichromate			A A A A A A A A	A A B A A A	
Potassium Bisulfate	KHSO ₄		A A A A	A A A A A A	
Potassium Bromate	KBrO ₃	3.3	A A A A A A A A A	A A A A A A	
Potassium Bromide	KBr	2.7	A A A A B A B A A A	A A A A A A A	B A A A B
Potassium Carbonate (Potash)	K ₂ CO ₃	2.4	A A A A B A A A C C	A A A B A A	A A A A B
Potassium Chlorate, Aqueous	KClO ₃	2.3	A A A A B A A A A A	A A C A	A A A A B
Potassium Chloride	KCl	2.0	A A A A B A A A A A	A A A A A A A	A C A B
Potassium Chromate	K ₂ CrO ₄	2.7	A A A A B A A A C	A A A A A C	B B
Potassium Coppercyanide			A A A A A	A A	
Potassium Cyanide	KCN	1.5	A A A A B A A B A	B A A A A A	B A A A A
Potassium Dichromate	K ₂ Cr ₂ O ₇	2.7	A A A A A A A B B	A A A A A A	A A A A B
Potassium Ferricyanide			A A A A A A A A A	A A A A A A A	
Potassium Ferrocyanide	K ₄ Fe(CN) ₆	1.9	A A A A A A A B A	A A C	A B
Potassium Fluoride	KF	2.5	A A A A A A A A A	A A A A A A A	
Potassium Hydroxide*					
(Caustic Potash)	KOH	2.0	A A A A C A A B B	C B B C A	C C C B
Potassium Hydroxide* 25%			C B A		
Potassium Hydroxide* 50%		A A A B	B		
Potassium Hypochlorite		A A A A	A A	A A D D B	

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ENGINEERING

Chemical Resistance Chart

CHEMICALS		APPROX. SP.GR. AT 100% CONCENTRATION	PLASTICS			ELASTOMERS			ALLOYS			
			PVC	CPVC	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	POLYPROPYLENE (PP)	RYTON	TEFLON	VINYLESTER	POLYSULFONE	HYPALON
Potassium Iodide	KI		A	A	A	A		A		A	A	A
Potassium Nitrate (Salt Peter)	KNO ₃	2.1	A	A	A	B	C	A	A	A	B	A
Potassium Perborate			A	A	A	A	A	A			A	
Potassium Perchlorate	KClO ₄	2.5	A	A	A	A	A	A			A	C
Potassium Permanganate	KMnO ₄	2.7	A	A	B	A	B	A	A	D	C	B
Potassium Persulfate			A	A	A	A	A	A	A	D	B	A
Potassium Phosphate									B	C		A
Potassium Salts					A	A	A	A	A	A	A	A
Potassium Sulfate	K ₂ SO ₄	2.7	A	A	A	A	B	A	A	A	A	B
Potassium Sulfide	K ₂ S	1.8	A			A	A		A		A	A
Potassium Thiosulfate	K ₂ S ₂ O ₃						A			A	A	A
Propane (Dimethylmethane)	C ₃ H ₈		A	A	B	A		A	A	B	C	A
Propanol (See Alcohol, Propyl)							A			A	D	B
Propargyl Alcohol			A	A	A	A	A	A			A	A
Propyl Acetate	C ₃ H ₆ OOCCH ₃	0.887			A			A			D	B
Propyl Alcohol	CH ₃ CH ₂ CH ₂ OH	0.8	A	A	A	A	A	A			A	A
Propylene	CH ₃ CH=CH ₂						A				A	D
Propylene Dichloride			D	D	C	A	C	D	A		B	D
Propylene Glycol	CH ₂ OHCHOHCH ₃	1.0			B	A	A	A	A	A	A	C
Pyridine*	C ₅ H ₅ N	1.0	D	D	C	C	A	A	B	A	D	C
Pyrogallic Acid (Pyrogallol)			B	D			A	A		A	A	A
Quaternary Ammonium Salts							B					A
Rayon Coagulating Bath*			A	A	A	A	C	A				
Rhodan Salts			A	A	A	A		A			A	A
Rosins					A			A	A		A	A
Rum			A	A				A	A		B	A
Rust Inhibitors					A			A			A	C
Salad Dressings			A	A				A			A	A
Salicylaldehyde			D		C		B	A			A	A
Salicylic Acid	C ₆ H ₄ (OH)(COOH)		A		A		A	A			A	C
Saline Solutions			A	A	A						A	A
Salt Brine			A	A	A	A		A			A	A
Sea Water			A	A	A	A	B	A	A		A	A
Selenic Acid	H ₂ SeO ₄	2.609	A	A	A	A	B	A				C
Sewage			A	A	A	A		A	A		A	A
Shellac Bleached					A			A	A			A
Shellac Orange					A			A	A			A
Silicic Acid	SiO ₂ •nH ₂ O		A	A	A	A	A	A			A	A
Silicone Oil			A	A	A			A			A	A
Silver Bromide	AgBr							A				C
Silver Cyanide	AgCN		A	A	A		A	A			A	A
Silver Nitrate	AgNO ₃		A	A	A	B	A	A	A	B	C	A
Silver Salts			A	A	A	A	A	A		A	A	A
Silver Sulfate	AgSO ₄		A	A	A	A		A		A	A	C
Soap Solutions*			A	A	A	B	A	A	A	A	B	A
Soda Ash (Sodium Carbonate)	NaCO ₃						A			A	A	B

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ENGINEERING

Chemical Resistance Chart

CHEMICALS		APPROX. SP.GR. AT 100% CONCENTRATION	PLASTICS				ELASTOMERS				ALLOYS						
			PVC	CPVC	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	RYTON	TEFLON	VINYLESTER	POLYSULFONE	BUNA N (NITRILE)	HYPALON	316 STAINLESS STEEL	NEOPRENE	EPDM	VITON	HASTELLOY C
Sodium	Na		A	A	A	A		A		A	A	C	A	B	C	B	B A A
Sodium Acetate	NaC ₂ H ₃ O ₂	1.5	A	A	A	A	B	A	A	B	A	A	A	A	A	A	A B B
Sodium Alum			A	A	A	A			A			A	A	A	A	A	A A A
Sodium Aluminate	Na ₂ Al ₂ O ₄							A	A	A		A	A	A	A	A	A A B
Sodium Benzoate	C ₆ H ₅ COOH ₂		A	A	A	A			A	B	A						A A A B
Sodium Bicarbonate	NaHCO ₃	2.2	A	A	A	A	B		A	A	A		A	A	A	A	A A A
Sodium Bichromate			A	A	A	A			A	A			A	A			A A A
Sodium Bisulfate	NaHSO ₄ • H ₂ O	2.4	A	A	A	A	B	A	A	A	A		A	A	A	B A A	A A A B
Sodium Bisulfite	NaHSO ₃	1.5	A	A	A	A	A	A	A	A	A		A	A	A	A	A A A B
Sodium Borate (Borax)	Na ₂ •B ₄ O ₇	1.7	C	A	A	A	A	A	A	A			A	A	A	A	A A A
Sodium Bromate	NaBrO ₃										B						
Sodium Bromide	NaBr						A	A	A	A	A	A	A	A	A	A	A A A A
Sodium Carbonate (Soda Ash)	NaCO ₃						A	A	A	B	A	A	C	B			A A A A A
Sodium Chlorate	NaClO ₃	2.5	A	A	A	A	B	A	A	A	A	B		A	A	C A A	B A A B
Sodium Chloride (Salt)	NaCl	2.2	A	A	A	A	B	A	A	A	A	A		A	A	A	C C A A
Sodium Chlorite	NaClO ₂						D	D	D	A	B		D	D			
Sodium Chromate	Na ₂ CrO ₄						A			A	C		B	A	A	C	A A A B
Sodium Cyanide	NaCN						A	A	A	A	A	A	A	A	A	A	A A A A
Sodium Dichromate	Na ₂ Cr ₂ O ₇	2.5	A	A	A	A	A	A	A	A	A		A	A	B	B	A A A B
Sodium Ferricyanide	Na ₃ Fe(CN) ₆	1.5	A	A	A	A	A	A	A	A	A		A	A			
Sodium Ferrocyanide	Na ₄ Fe(CN) ₆	1.5	A	A	A	A	A	A	A	A	A		A	A			
Sodium Fluoride	NaF	2.6	A	A	A	A	A		A				B	A	C C		C A A
Sodium Hydrosulfide									B								
Sodium Hydrosulfite							C			A			A	A			
Sodium Hydroxide 15%							A	A	A	A	A	C	A	C	A A A A	B A A	
Sodium Hydroxide 20%							A	A	A	C	A	A	A	C	A A A A	B A A A	
Sodium Hydroxide 30%							A	A	A	C	A	A	C	C	A A A A	B	
Sodium Hydroxide* 50%							2.1	A	A	A	A	A	C	C	A	C A B D A	B B A A
Sodium Hydroxide* 70%							A	A	B	B	C	A	A	D	A B D A	A B	
Sodium Hydroxide Conc.																	
(Caustic Soda)	NaOH							A	A	A	D	A	B	A	A	B D B	
Sodium Hypochlorite 20%																	
(Bleach)	NaOCl							A	A	B	A	B	A	C	D	B D C	C C A A
Sodium Hypochlorite Conc.	NaClO							A	A	B	A	A	A	D	D	D D A	
Sodium Hyposulfite												A	C		C		A A
Sodium Iodide	NaI								A								
Sodium Metaphosphate	Na(PO ₃)N							A	A	C	A						A
Sodium Metasilicate								A	A	A	A						A
Sodium Nitrate	NaNO ₃	2.3	A	A	A	A	A	A	A	A	A	A		B	A	B C A	B A A B
Sodium Nitrite	NaNO ₂	2.2	A	A	A	A			A	A	A	A		A	A	A	B
Sodium Palmitrate								A	A	A	A						
Sodium Perborate	NaBO ₃							A	A	A	A						
Sodium Perchlorate								A	A	A	A						
Sodium Peroxide	Na ₂ O ₂							A	A	A	A						
Sodium Phosphate Acid								N ₂ HPO ₄	A	A	A	A					
(Di Basic)												A		A A	A A	A A B	

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ENGINEERING

Chemical Resistance Chart

CHEMICALS	APPROX. SP. GR. AT 100% CONCENTRATION	PLASTICS				ELASTOMERS				ALLOYS								
		POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	POLYPROPYLENE (PP)	CPVC	PVC	TEFLON	VINYLESTER	POLYSULFONE	RYTON	HYPALON	BUNA N (NITRILE)	EPDM	VITON	TITANIUM	HASTELLOY C	304 STAINLESS STEEL	316 STAINLESS STEEL
Sodium Phosphate Alkaline (Mono Basic)	NaH ₂ PO ₄	A	A	A	A		A		A	A	A					B		
Sodium Phosphate Neutral (Tri Basic)	Na ₃ PO ₄	A	A	A	A		A	A	A	A	A	A	A	D	B	B	A	A
Sodium Polyphosphate																		
Sodium Silicate	NaSiO ₃	A	A	A	A		A	A	A	A	A	A	A	A	A	B	A	A
Sodium Sulfate	Na ₂ SO ₄	2.7	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A
Sodium Sulfide	Na ₂ S	1.4	A	A	A	A	A	A	A	A	B	A	A	A	C	B	A	A
Sodium Sulfite	Na ₂ SO ₃	2.6	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	A
Sodium Tetraborate																		
Sodium Thiocyanate	NaSCN		A	A	A	A		A	B	B		A	A					
Sodium Thiosulfate	Na ₂ S ₂ O ₃ •5H ₂ O	1.7	A	A	A	A		A	A	B	A	A	A	B		A		
Sorghum																A	A	A
Soy Sauce																A	A	A
Soybean Oil																A	A	A
Stannic Chloride	SnCl ₄	2.3	A	A	A	A	B	A	A	A	A	A	A	C	A	A	A	A
Stannic Salts																A	A	A
Stannous Chloride (Tin Salts)																B	B	C
Starch (Amylum)	C ₆ H ₁₀ O ₅	1.513	A	A	A	A		A	A	A	A	A	B	B	C	C	A	D
Stearic Acid*	CH ₃ (CH ₂) ₁₆ COOH		A	A	B	A	C	A	A	A	A	A	A	C	C	B	C	A
Stoddard Solvent			D	D	C	A	D	A	A	A				D	D	B	A	A
Strontium Carbonate	SrCO ₃																	
Styrene																C	D	D
Succinic Acid (Butanedioic Acid)	CO ₂ H(CH ₂) ₂ CO ₂ H		A	A	A	A		A	A					A	A			
Sugar Solutions																B	A	A
Sulfamic Acid	HSO ₃ NH ₂		D	D	D	D		A						A	A	C	A	A
Sulfate Liquors			A	A	A	A										C	C	A
Sulfated Detergents			A	A	A	A												
Sulfer 10%			A	A			B		A	A	A			D	D	C	C	D
Sulfer Dioxide			D	D		C		A	A	C				C	A	B	D	A
Sulfite Liquor			A	A	A	A			A	B	A			A	A	C	B	A
Sulfur			A	A	D	A	B	A	A	A				C	B	C	A	
Sulfur Chloride	S ₂ Cl ₂	1.690	A	A	C	A	A		D	A	C	D		D	D	D	A	D
Sulfur Dioxide Dry	SO ₂		A	A	A	A		C	A				A	A	D	D	D	B
Sulfur Dioxide Wet			C	A	A	A	B		A	A	D	A		A	A	C	D	C
Sulfur Slurries			A	A	A	A												
Sulfur Trioxide Dry	SO ₃		C	C	D	D			C	B	A	B		C	C	C	C	C
Sulfuric Acid 10%			A	A	A	A	B		A	A	A			A	B	C	C	B
Sulfuric Acid 30%			A	A	A	A	A		A	A	B	B	A	A	A	C	A	D
Sulfuric Acid 50%		1.8	A	A	A	A	A	A	D	A	B	A	A	B	C	C	B	D
Sulfuric Acid 60%			A	A	A	B	B		A	A	C	C	A	A	B	D	D	C
Sulfuric Acid 70%			A	A	C	A	B		A	A	C	C	A	A	D	C	D	C
Sulfuric Acid 80%			D	A	A	A	C		A	A	D	A		A	A	D	C	A
Sulfuric Acid 90%			D	A	C	A	D		A	A	D	D		A	A	D	C	D
Sulfuric Acid 95%			D	C	D	A	D	A	D	A	D	D	D	A	D	D	C	A

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ENGINEERING

Chemical Resistance Chart

CHEMICALS		APPROX. SP.GR. AT 100% CONCENTRATION	PLASTICS				ELASTOMERS				ALLOYS								
			PVC	CPVC	POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	RYTON	TEFLON	VINYLESTER	POLYSULFONE	HYPALON	BUNA N (NITRILE)	NEOPRENE	EPDM	VITON	304 STAINLESS STEEL	HASTELLOY C	TITANIUM	
Sulfuric Acid 98%*	H_2SO_4	1.84	D	D	D	A	D	D	B		D	D	D	D	D	D			
Sulfuric Acid 100%	H_2SO_4		D	D	D	C		C	B	D	D	C	D	D	D	C	D	B	
Sulfurous Acid	H_2SO_3	1.03	A	A	A	A	B	A	A	A	A	A	C	D	D	B	C	A	B
Sulfuryl Chloride		1.667	A						A	A									
Syrup			A		A				A	A		A	B	A		A	A		
Tall Oil			A	A	A	A		A	A	D	A	A	D	B	A	C		A	A
Tallow		0.86			A	A	B	A	A	A	A	A	A	B	A	B	A	A	
Tannic Acid*	$\text{C}_{76}\text{H}_{52}\text{O}_{46}$		A	A	A	A	C	A	A	A	A	A	B	A	C	A	C	A	B
Tanning Liquors			A	A	A	A			A	A	A	A	A	B	A	C	A	A	A
Tar			D	D	B	A				A			A	D		C			
Tartaric Acid (Dihydrixsuccinic Acid)	$\text{C}_4\text{H}_6\text{O}_6$	1.8	A	A	A	A	B	A	A	A	A	A	A	B	B	C	A	B	A
Tertiary Butyl Alcohol			A	A	A	A				A				A	B				
Tetrachlorethane	$(\text{Cl}_2\text{HC})_2$		D	A					A	A			A	D	D		A	A	A
Tetrachloroethane					A				A				D	A	D				
Tetraethyl Lead	$\text{Pb}(\text{C}_2\text{H}_5)_4$		B	A	A	A			A	A	C			B	D	C			
Tetrahydrofuran*			D	D	B	B	D	D	A	A				D	D	D	D	A	A
Tetralin	$\text{C}_{10}\text{H}_{12}$		D	D	D	A			A					A	D	D	D		
Thionyl Chloride	SOCl_2	1.638	D	D	D	D		D	A	D	D								
Thread Cutting Oils			A	A	A	A			A						D				
Titanium Tetrachloride			D	D	D	D		C	A	A				A	D	D	C	D	
Titanous Sulfate		1.47	A	A	A	A			A										
Toluene*	$\text{CH}_3\text{C}_6\text{H}_5$	0.9	D	D	C	A	D	D	D	A	B	D	D	B	D		A	A	
TolueneToluol	C_7H_8		D	D	C	B	D		A	A	A			C	D	D	D	A	A
Tomato Juice			A	A	C	A			C	A	A			A	A	A	A	A	A
Toxaphene-Xylene			D	D	D	A													
Transformer Oil			A	A	A	A	C	A	B	A	A	A		A	D	B	A	D	
Tributyl Phosphate	$(\text{C}_4\text{H}_9)_3\text{PO}_4$		D	D	C	A			A	A		D		D	A	D	D	D	
Trichloroacetic Acid	CCl_3COOH	1.6	A	A	C	A			D	A				D	D	D	D	D	D
Trichloroethane	$\text{C}_2\text{Cl}_3\text{Cl}_3$								A	A				A	D	D	D	A	C
Trichloroethylene	$\text{CICH}=\text{CCl}_2$	1.1	D	D	B	A	D	D	D	A	C	D	D	A	D	D	C	D	A
Trichloropropane									A	A	C			A	C	A		A	
Tricresyl Phosphate		1.3888	D					A	A	A				B	A	D	D	A	B
Triethanolamine			B		C	C				B				D	A				
Triethyl Phosphate			A	A	A	A			D	A				A	A			A	A
Triethylamine			A	A	D	C			A	C				A	C	A			
Trimethylpropane			A	A	A	A			A										
Trisodium Phosphate			A	A	A	A	A	A	C	A	A	B		A	A	A	A	A	A
Turbine Oil			A	A	B				A					A	D	D	B	D	
Turpentine*	$\text{C}_{10}\text{H}_{16}$	0.9	C	A	B	A	D	D	A	A	B	C		A	C	D	C	D	A
Urea*	$\text{CO}(\text{NH}_2)_2$	1.3	A	A	A	A	C	A	A	A	A	A		A	A	A	C	A	A
Urine			A	A	A	A	A	A	A	A	A	A		A	A	D	A	A	A
Vanilla Extract*			A		C	A			A					A	D	D	B	D	A
Varnish					A	A			A	A				A	D	D	B	D	A
Vaseline			A	A	A	A			A					A	D	B	A	B	
Vegetable Oil			A	A	A	A			A					A	A	D	A	A	

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B = Good, Minor Effect

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D = Not Recommended

ENGINEERING

Chemical Resistance Chart

CHEMICALS		APPROX. SP.GR. AT 100% CONCENTRATION	PLASTICS				ELASTOMERS				ALLOYS										
			POLYVINYLDENE FLUORIDE (PVDF)	POLYETHYLENE-CROSS LINKED (XLPE)	POLYPROPYLENE (PP)	CPVC	PVC	TEFLON	VINYLESTER	POLYSULFONE	EPOXY	RYTON	HYPALON	BUNA N (NITRILE)	NEOPRENE	EPDM	VITON	304 STAINLESS STEEL	316 STAINLESS STEEL	HASTELLOY C	TITANIUM
Vinegar			A	A	A	A	A	A	A	A	B	A	A	B	C	B	A	A	A	A	
Vinyl Acetate		0.9345	D	D	A			A	B	D		D	B	C	D	C					
Vinyl Chloride		CH ₂ CHCL						A				A	C	A	D	D					
Vinyl Ether		CH ₂ CHOCH : CH ₂	0.769					A				D		B	B	B					
Water Acid Mine			A	A	A	A		A	A	A	A	A	A	A	C	A	A	A	A	A	
Water Delonized			A	A	A	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A	
Water Demineralized			A	A	A	A		A		A	A	A	A	A	A	A	A	A	A	A	
Water Distilled			A	A	A	A		A	A	A	A	A	A	A	C	A	A	A	A	A	
Water Potable		H ₂ O	A	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A	A	
Water Salt			A	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A	A	
Water Sewage			A	A	A	A		A	A			A	A	A	A	A	A	A	A	A	
Weed Killers									A			A		C	B			A	A	A	
Whey									A			A		A	A			A	A	A	
Whiskey		0.9	A	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A	A	
White Acid							A		A												
White Liquor							A	A	A	A		A	A	C	B	A	A	A	A	A	
Wines							A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Xenon		XE								A				A	A	A	A	A	A	A	
Xylene*		C ₆ H ₄ (CH ₃) ₃	0.9	D	D	D	A	C	C	B	A	C	D	D	B	D	D	D	A	A	
Xylool			D	D	D	A				A	D				A	D	D	C	D		
Yeast							A	A	A	A		A	A			A	A	A			
Zeolite										A					A	A	C	B	A		
Zinc Acetate							A	A	A	A		A	A	A	C	A	B	B	C		
Zinc Carbonate		ZnCO ₃								A					A	A	A	A	A		
Zinc Chloride		ZnCl ₂	2.9	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	C	
Zinc Chromate										A							C				
Zinc Nitrate							A	A	A	A		A				A	A				
Zinc Phosphate		Zn ₃ (PO ₄) ₂										A									
Zinc Salts								A	A	A	A	A	A	A	A	A	A	A	A	A	
Zinc Sulfate		ZnSO ₄ •7H ₂ O	2.0	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	B	
Zirlite											A				C	A	A	B			

*These chemicals can cause stress-cracking of LDPE and HDPE under certain conditions. Rotomolded tanks are essentially stress-free and are not usually affected by stress-cracking chemicals. However, these chemicals may affect the service life of tanks with welded fittings or seams, and unsupported tanks operating under heavy loads. Use XLPE tanks which have excellent environmental stress-crack resistance.

To the best of our knowledge the information contained in this publication is accurate. However, we do not assume any liability whatsoever for the accuracy or completeness of such information. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible long-term adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. Final determination of the suitability of any information or product for the use contemplated by any user, the manner of that use, and whether there is any infringement of patents, is the sole responsibility of the user. We recommend that anyone intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy himself as to such suitability and that he meet all applicable safety and health standards. We strongly recommend that users seek and adhere to manufacturer or supplier's current instructions for handling each material they use.

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