



MARCH PUMPS

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HDPE CHEMICAL RESISTANCE GUIDE

This chemical guide serves as a starting point for pump selection. The information found in this guide should be used as only a recommendation, not as a guarantee. March has done its best to compile the information and to determine its accuracy, but March does not warrant that the information located below is accurate or complete. It is recommended a pump should be tested under working conditions to determine the suitability of the pump for specific applications whenever possible. All chemicals listed have been evaluated at 68°F. To review an application, contact March Manufacturing. March Manufacturing does not warranty applications under any circumstances.

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REVISED

**A-Recommended **B-Questionable **C-Not Recommended				
Chemical Solution	FORMULA	Chemical Resistance @ % Concentration	Specific Gravity @ 100% Concentration	High Density Polyethylene
Acetic Acid (Glacial)	CH ₃ COOH	97		A
Acetic Acid	CH ₃ COOH	50	1.05	A
Acetic Anhydride	(CH ₃ CO) ₂ O	100	1.08	B
Acetone	CH ₃ COCH ₃	100	0.80	A
Acetophenone	C ₆ H ₅ COCH ₃	100	1.03	
Acetyl Chloride	CH ₃ COCl	100	1.10	
Aluminum Chloride	AlCl ₃		2.44	A
Aluminum Fluoride	AlF ₃		2.88	A
Aluminum Sulfate (Alum)	Al ₂ (SO ₄) ₃		2.70	A
Ammonia (Aqueous)	NH ₃ (aq)	10		A
Ammonium Carbonate	(NH ₄) ₂ CO ₃	SAT.		
Ammonium Chloride	NH ₄ Cl	SAT.	1.50	A
Ammonium Fluoride	NH ₄ F	20	1.30	A
Ammonium Hydroxide	NH ₄ OH	30		A
Ammonium Nitrate	NH ₄ NO ₃	SAT.	1.70	A
Ammonium Persulfate	(NH ₄) ₂ S ₂ O ₈	SAT.	2.00	A
Ammonium Sulfate	(NH ₄) ₂ SO ₄	SAT.	1.80	A
Ammonium Sulfide	(NH ₄) ₂ S	SAT.		A
Ammonium Thiocyanate	NH ₄ SCN	SAT.	1.30	A
Amyl Acetate	CH ₃ CO ₂ C ₅ H ₁₁	100	0.86	B

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Chemical Solution	FORMULA	Chemical Resistance @ % Concentration	Specific Gravity @ 100% Concentration	High Density Polyethylene
Amyl Alcohol	C ₅ H ₁₁ OH	100	0.80	A
Amyl Chloride	CH ₃ (CH ₂) ₃ CH ₂ Cl	100	0.80	B
Aniline	C ₆ H ₅ NH ₂	100	1.02	B
Aqua Regia				C
Barium Carbonate	BaCO ₃	SAT.	4.30	A
Barium Chloride	BaCl ₂	SAT.	3.10	
Barium Hydroxide	Ba(OH) ₂		2.20	A
Barium Sulfate	BaSO ₄	SAT.	4.40	A
Barium Sulfide	BaS	SAT.	4.30	A
Beer				A
Benzaldehyde	C ₆ H ₅ CHO	100	1.05	A
Benzene	C ₆ H ₆	100	0.90	B
Benzene Sulfonic Acid	C ₆ H ₅ SO ₃ H	100		A
Benzoic Acid	C ₆ H ₅ COOH		1.30	A
Benzyl Alcohol	C ₆ H ₅ CH ₂ OH	100	1.05	C
Benzyl Chloride	C ₆ H ₅ CH ₂ Cl		1.10	
Bismuth Carbonate	(BiO) ₂ CO ₃	SAT.	6.80	
Boric Acid	H ₃ BO ₃		1.40	A
Brine		SAT.		A
Bromine Liquid	Br	100	3.10	C
Butane	CH ₃ CH ₂ CH ₂ CH ₃		0.80	
Butyl Acetate	CH ₃ COO(CH ₂) ₃ CH ₃		0.90	B
Butyl Alcohol	CH ₃ (CH ₂) ₂ CH ₂ OH		0.90	A
Butyl Ether	C ₄ H ₉ OC ₄ H ₉			
Calcium Carbonate	CaCO ₃	SAT.	2.70	A
Calcium Chlorate	Ca(ClO ₃) ₂	SAT.	2.70	A
Calcium Chloride	CaCl ₂	50	2.10	
Calcium Hydroxide (Lime)	Ca(OH) ₂		2.30	A
Calcium Hypochlorite	Ca(OCL) ₂	20	2.30	A
Calcium Nitrate	Ca(NO ₃) ₂	50	1.80	A
Calcium Phosphate	CaHPO ₄	50	2.30	
Calcium Sulfate	CaSO ₄		2.90	
Carbon Dioxide (Wet)	CO ₂			A
Carbon Disulfide	CS ₂	100	1.30	C
Carbon Tetrachloride	CCl ₄	100	1.60	B
Carbonic Acid	H ₂ CO ₃			A

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Chemical Solution	FORMULA	Chemical Resistance @ % Concentration	Specific Gravity @ 100% Concentration	High Density Polyethylene
Castor Oil			0.95	A
Cetyl Alcohol	C ₁₆ H ₃₃ OH	100	0.81	
Chlorine (Liquid)	Cl ₂			B
Chlorobenzene	C ₆ H ₅ Cl	100	1.10	B
Chloroform	CHCl ₃	100	1.50	B
Chlorosulfonic Acid	ClSO ₂ HO	100	1.80	C
Chrome Alum			1.80	A
Chromic Acid	CrO ₃	50	2.70	A
Chromic Acid	CrO ₃	10	2.70	A
Cider				A
Citric Acid	C ₆ H ₈ O ₇ H ₂ O		1.50	A
Copper Chloride	CuCl ₂	SAT.	3.40	A
Copper Cyanide	Cu(CN) ₂	SAT.		A
Copper Fluoride	CuF ₂	2	2.90	A
Copper Nitrate	Cu(NO ₃) ₂	SAT.	2.30	A
Copper Sulfate	CuSO ₄	SAT.	2.30	A
Cottonseed Oil			0.90	A
Cresol	CH ₃ C ₆ H ₄ OH	100	1.05	C
Cuprous Chloride	CuCl	SAT.	4.14	A
Cyclohexane	C ₆ H ₁₂	100	0.80	C
Cyclohexanol	C ₁₀ H ₁₁ OH	100	0.94	
Cyclohexanone	C ₆ H ₁₀ O	100	0.95	C
Detergents		2		A
Developers (Photographic)				A
Dibutyl Phthalate	C ₆ H ₄ (COOC ₄ H ₉) ₂	100	1.05	
Dichloroethylene	ClHC	100	1.25	
Diesel Fuel		100		
Diethanolamine	(HOCH ₂ CH ₂) ₂ NH	100	1.10	
Dimethylformamide	HCON(CH ₃) ₂	100	0.95	A
Dimethylsulfoxide	(CH ₃) ₂ SO	100	1.01	A
Dowtherm		100		
Ethanolamine	HOCH ₂ CH ₂ NH ₂	100	1.02	
Ether				C
Ethyl Acetate	CH ₃ COOC ₂ H ₅	100		B
Ethyl Alcohol	C ₂ H ₅ OH	100	0.80	A
Ethyl Chloride	C ₂ H ₅ Cl	100	0.92	C

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Chemical Solution	FORMULA	Chemical Resistance @ % Concentration	Specific Gravity @ 100% Concentration	High Density Polyethylene
Ethyl Ether	(C ₂ H ₅) ₂ O	100	0.71	
Ethylene Dichloride	ClCH ₂ CH ₂ Cl	100	1.25	
Ethylene Glycol	CH ₂ OHCH ₂ OH		1.10	A
Fatty Acids		100		A
Ferric Chloride	FeCl ₃	SAT.	2.90	A
Ferric Nitrate	Fe(NO ₃) ₃	SAT.	1.70	A
Ferric Sulfate	Fe ₂ (SO ₄) ₃	SAT.	3.10	A
Ferrous Chloride	FeCl ₂	SAT.	3.20	
Ferrous Sulfate	FeSO ₄	SAT.	1.90	A
Fluoric Acid	HF		1.80	A
Fluosilicic Acid	H ₂ SiF ₆	32		A
Formaldehyde	HCHO	40	1.01	A
Formic Acid	HCOOH	100	1.20	A
Freon 11				
Fructose (Fruit Sugar)	C ₆ H ₁₂ O ₆			A
Fruit Juices				A
Furfural	C ₄ H ₃ OCHO	100	1.20	C
Gelatin				
Glucose	C ₆ H ₁₂ O ₆	20	1.54	A
Glycerin (Glycerol)	C ₃ H ₅ (OH) ₃	100	1.30	A
Glycolic Acid	CH ₂ OHCOOH	30	1.30	A
Hexane	CH ₃ (CH ₂) ₄ CH ₃	100	0.70	B
Hydrobromic Acid	HBr	50	48% 1.50	A
Hydrochloric Acid (Muriatic)	HCl	30	30% 1.15	A
Hydrochloric Acid (Muriatic)	HCl	35	38% 1.19	A
Hydrofluoric Acid	HF	48		A
Hydrogen Peroxide	H ₂ O ₂	90	1.50	A
Hydrogen Sulfide	H ₂ S		1.20	A
Hydroquinone	C ₆ H ₄ (OH) ₂		1.30	A
Inks				A
Iodine Tincture				
Isooctane		100	0.70	
Isopropyl Alcohol	(CH ₃) ₂ CHOH		0.80	A
Kerosene			0.81	B

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Chemical Solution	FORMULA	Chemical Resistance @ % Concentration	Specific Gravity @ 100% Concentration	High Density Polyethylene
Ketones				
Lactic Acid	CH ₃ CHOHCOOH	85	1.20	A
Lanolin		100		A
Lead Acetate	Pb(C ₂ H ₃ O ₂) ₂ ·3H ₂ O	SAT.	2.50	A
Linseed Oil		100	0.94	A
Lubricating Oil		100		
Magnesium Carbonate	MgCO ₃	SAT.	3.00	A
Magnesium Chloride	MgCl ₂	SAT.	2.30	A
Magnesium Hydroxide	Mg(OH) ₂	SAT.	2.40	A
Magnesium Nitrate	Mg(NO ₃) ₂	SAT.	1.50	A
Magnesium Sulfate	MgSO ₄	SAT.	2.60	A
Mercuric Chloride	HgCl ₂	40	5.40	A
Mercuric Cyanide	Hg(CN) ₂	SAT.	4.00	A
Mercurous Nitrate	HgNO ₃	SAT.	4.80	A
Methyl Alcohol (Methanol)	CH ₃ OH	100	0.80	A
Methylene Chloride	CH ₂ Cl ₂	100	1.30	C
Methyl Ethyl Ketone	CH ₃ COCH ₂ CH ₃	100	0.82	C
Methyl Methacrylate	CH ₂ C(CH ₃)COOCH ₃		0.95	
Milk				A
Mineral Oil		100		B
Molasses				A
Motor Oil		100		
Naphthalene	C ₁₀ H ₈	100	1.15	B
Nickel Chloride	NiCl ₂	SAT.	3.50	A
Nickel Nitrate	Ni(NO ₃) ₂ ·6H ₂ O	SAT.	2.10	A
Nickel Sulfate	NiSO ₄	SAT.	3.70	A
Nitric Acid	HNO ₃	10	1.50	A
Nitric Acid (Fuming)	HNO ₃			C
Nitrobenzene	C ₆ H ₅ NO ₂	100	1.20	C
Oleic Acid			0.90	
Olive Oil		100	0.90	A
Oxalic Acid (Aqueous)	(COOH) ₂	50	1.70	A
Paraffin		100		B
Perchloroethylene	(CCl ₂) ₂		1.60	C

Chemical Solution	FORMULA	Chemical Resistance @ % Concentration	Specific Gravity @ 100% Concentration	High Density Polyethylene
Petroleum Ether		100	0.70	C
Phenol	C ₆ H ₅ OH	100	1.10	C
Phosphoric Acid	H ₃ PO ₄	85	1.80	A
Phosphorus Trichloride	PCl ₃	100	1.60	
Plating Solutions				
Acid Copper				
Brass				A
Cadmium				A
Chromium				A
Copper				A
Gold				A
Indium				A
Lead				A
Nickel				A
Rhodium				A
Silver				A
Tin				A
Zinc				A
Potassium Acetate	KC ₂ H ₃ O ₂	40	1.60	
Potassium Bicarbonate	KHCO ₃	SAT.	2.20	A
Potassium Borate	KBO ₂	1		A
Potassium Bromate	KBrO ₃	10	3.30	A
Potassium Bromide	KBr	SAT.	2.70	A
Potassium Carbonate	K ₂ CO ₃	SAT.	2.40	A
Potassium Chlorate	KClO ₃	SAT.	2.30	A
Potassium Chloride	KCl	SAT.	2.00	A
Potassium Chromate	K ₂ CrO ₄	40	2.70	A
Potassium Cyanide	KCN	SAT.	1.50	A
Potassium Dichromate	K ₂ Cr ₂ O ₇	40	2.70	A
Potassium Ferrocyanide	K ₄ Fe(CN) ₆		1.90	A
Potassium Fluoride	KF		2.50	
Potassium Hydroxide	KOH	50	2.00	A
Potassium Nitrate	KNO ₃	SAT.	2.10	A
Potassium Perborate		SAT.		A
Potassium Perchlorate	KClO ₄	10	2.50	A
Potassium Permanganate	KMnO ₄	20	2.70	A
Potassium Sulfate	K ₂ SO ₄		2.70	A

Chemical Solution	FORMULA	Chemical Resistance @ % Concentration	Specific Gravity @ 100% Concentration	High Density Polyethylene
Potassium Sulfide	K ₂ S		1.80	A
Propyl Alcohol	CH ₃ CH ₂ CH ₂ OH	100	0.80	A
Propylene Glycol	CH ₃ CHOHCH ₂ OH		1.00	A
Pyridine	N(CH) ₄ CH	100	1.00	B
Silicone Oil		100		A
Soap Solution (Concentrated)				A
Sodium Acetate	NaC ₂ H ₃ O ₂	SAT.	1.50	A
Sodium Bicarbonate	NaHCO ₃	SAT.	2.20	A
Sodium Bisulfate	NaHSO ₄	SAT.	2.40	A
Sodium Bisulfite	NaHSO ₃	SAT.	1.50	A
Sodium Borate (Borax)	Na ₂ B ₄ O ₇		1.70	A
Sodium Bromide				
Sodium Carbonate				A
Sodium Chlorate	NaClO ₃	SAT.	2.50	A
Sodium Chloride	NaCl	SAT.	2.20	A
Sodium Chlorite	NaClO ₂	20		
Sodium Cyanide	NaCN	SAT.		A
Sodium Dichromate	Na ₂ Cr ₂ O ₇	SAT.	2.50	A
Sodium Ferricyanide	NaFe(CN) ₆	SAT.		A
Sodium Ferrocyanide	Na ₄ Fe(CN) ₆	SAT.	1.50	A
Sodium Fluoride	NaF	SAT.	2.60	A
Sodium Hydroxide Caustic Soda	NaOH	100	2.10	A
Sodium Hypochlorite	NaOCl	15		A
Sodium Nitrate	NaNO ₃		2.30	A
Sodium Nitrite	NaNO ₂		2.20	A
Sodium Silicate	Na ₂ SiO ₃			
Sodium Sulfate	Na ₂ SO ₄	SAT.	2.70	
Sodium Sulfide	Na ₂ S	25	1.40	A
Sodium Sulfite	Na ₂ SO ₃	SAT.	2.60	A
Sodium Thiosulfate/Thiosulphate	Na ₂ S ₂ O ₃	10	1.70	A
Stannic Chloride	SnCl ₄	SAT.	2.30	A
Stannous Chloride	SnCl ₂	SAT.	4.00	A
Starch				A
Sulfamic Acid	HSO ₃ NH ₂		2.10	
Sulfur	S		2.10	
Sulfuric Acid	H ₂ SO ₄	60	50%1.39	A

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Chemical Solution	FORMULA	Chemical Resistance @ % Concentration	Specific Gravity @ 100% Concentration	High Density Polyethylene
Sulfuric Acid	H ₂ SO ₄	98	1.80	B
Tannic Acid	C ₇₆ H ₅₂ O ₄₆	10		A
Tartaric Acid			1.80	A
Tetrahydrofuran	CH ₂ CH ₂ CH ₂ CH ₂ O	100	0.90	B
Tetralin		100		
Toluene	CH ₃ C ₆ H ₅	100	0.90	B
Transformer Oil		100		A
Trichloroacetic Acid	CCl ₃ COOH	100	1.60	C
Trichloroethylene	C ₂ H ₃ Cl ₃	100	1.50	C
Triethanolamine	(HOCH ₂ CH ₂) ₃ N	100	1.10	
Turpentine	C ₁₀ H ₁₆	100	0.90	B
Urea	CO(NH ₂) ₂		1.30	A
Urine				A
Vinegar				A
Water (Fresh)	H ₂ O		1.00	A
Water (Salt)				A
Whiskey			0.90	A
Wines				A
Xylene	C ₆ H ₄ (CH ₃) ₂	100	0.90	B
Zinc Chloride	ZnCl ₂	SAT.	2.90	A
Zinc Oxide	ZnO		5.50	A
Zinc Sulfate	ZnSO ₄	SAT.	2.00	A