

The information contained in this Drum Pump Chemical Resistance Guide is to be used only as a general guide for proper drum pump tube selection. No warranty is implied nor is any guarantee provided. When compatibility data are inconclusive, field testing is recommended. An asterisk indicates the material is flammable and may only be handled with a stainless steel pump tube and appropriate drive motor which are properly grounded and bonded according to Operating Instructions. Always consult with a safety engineer for proper drive motor selection when pumping flammables. All test data listed is at room temperature (72°F, 22°C) unless otherwise stated.

R = Recommended

M = Minor to moderate, should be field tested

X = Not recommended

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* = Flammable or explosive



Use only explosion-proof motors on flammable liquids. Only metallic pumps should be used for transferring flammable or explosive liquids.

All pumps and containers must be properly grounded and bonded to prevent static discharge and sparking, which could cause electric shock, fire or explosion. A ground wire should be used on any explosion-proof motor as well as the container when transferring explosive material. Always consult with a Safety Engineer for proper pump / motor selection.

	POLY (PHT) HIGH-TEMP - MAX 170°F (77°C)	POLYPROPYLENE - MAX 175°F (80°C)	CPVC - MAX 175°F (80°C)	STAINLESS STEEL 316 - MAX 175°F (80°C)	POLY (PHT) HIGH-TEMP - MAX 170°F (77°C)	POLYPROPYLENE - MAX 175°F (80°C)	CPVC - MAX 175°F (80°C)	STAINLESS STEEL 316 - MAX 175°F (80°C)	
* Acetaldehyde	X	X	R	X	Ammonium persulfate	R	R	R	R
Acetamide (PVDF, R to 75°F/24°C)	—	R	R	—	Ammonium phosphate, dibasic	R	R	R	R
* Acetate solvents	X	X	R	X	Ammonium phosphate, monobasic	R	R	R	R
Acetic acid (10% -80%)	R	R	M	R	Ammonium phosphate, tribasic	R	R	R	R
Acetic acid (80%)	—	R	M	X	Ammonium sulfate	R	R	R	R
Acetic acid, glacial (PVDF, R to 120°F/49°C) (PP, R to 100°F/38°C)	R	R	M	X	Ammonium sulfide (PVDF & CPVC / PVDF, R to 125°F/52°C)	—	R	—	R
Acetic anhydride	X	X	R	X	Ammonium thiocyanate	—	R	—	R
* Acetone	X	X	R	X	Ammonium thiosulfate	—	R	R	R
* Acetyl chloride	X	X	M	X	* Amyl acetate	X	X	R	X
* Acetylene	X	X	R	X	* Amyl chloride	X	X	R	X
* Alcohols	X	X	R	X	Aniline (PVDF, R to 75°F/24°C)	M	R	R	X
Aluminum chloride	R	R	X	R	Aniline dyes	—	—	M	—
Aluminum fluoride	R	R	X	R	Aniline hydrochloride (PVDF, R to 75°F/24°C)	—	R	X	X
Aluminum hydroxide	R	R	R	R	Anisole	—	—	R	—
Aluminum nitrate	R	R	R	R	Aqua regia (80%) (PVDF, R to 75°F/24°C)	X	R	X	X
Aluminum potassium sulfate	R	R	R	R	Arsenic acid	R	R	R	R
Aluminum sulfate	R	R	R	R	Barium carbonate	R	R	R	R
Amines	—	—	R	X	Barium chloride	R	R	M	R
* Ammonia, aqua (10%)	X	X	R	X	Barium hydroxide	R	R	R	R
* Ammonia, aqueous	X	X	R	X	* Barium nitrate	X	X	R	X
* Ammonia, (concentrated)	X	X	R	X	Barium sulfate	R	R	R	R
Ammonium bifluoride (PP, R to 70°F/21°C)	R	R	R	R	Barium sulfide	R	R	R	R
Ammonium carbonate	R	R	R	R	Benzaldehyde (PVDF, R to 75°F/24°C)	X	R	R	X
Ammonium chloride	R	R	M	R	Benzene, benzol	X	X	R	X
Ammonium fluoride (10%)	—	R	—	R	Benzene sulfonic acid (PVDF, R to 75°F/24°C)	—	R	M	X
Ammonium fluoride (25%)	R	R	—	R	Benzoic acid	M	R	R	R
Ammonium hydroxide	R	R	R	X	Bismuth carbonate	R	R	—	R
Ammonium nitrate	R	R	R	R	Black liquors	R	R	—	—
Ammonium nitrite (PP, R to 70°F/21°C)	R	—	—	—	Boric acid	R	R	R	R
Ammonium oxalate	R	—	R	—	Brine acid	—	R	—	—

DRUM PUMP Chemical Resistance Guide (cont'd.)

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Use only explosion-proof motors on flammable liquids. Only metallic pumps should be used for transferring flammable or explosive liquids. All pumps and containers must be properly grounded and bonded to prevent static discharge and sparking, which could cause electric shock, fire or explosion. A ground wire should be used on any explosion-proof motor as well as the container when transferring explosive material. Always consult with a Safety Engineer for proper pump / motor selection.

	POLY (PHT) HIGH TEMP - MAX 170°F (77°C) POLYPROPYLENE - MAX 175°F (80°C) PVDF (KYNAR®) - MAX 175°F (80°C) CPVC - MAX 175°F (80°C) STAINLESS STEEL 316 - MAX 175°F (80°C)				POLY (PHT) HIGH TEMP - MAX 170°F (77°C) POLYPROPYLENE - MAX 175°F (80°C) PVDF (KYNAR®) - MAX 175°F (80°C) CPVC - MAX 175°F (80°C) STAINLESS STEEL 316 - MAX 175°F (80°C)				
Bromic acid	R	R	—	R	Cresylic acid (PVDF, R to 150°F/66°C)	—	R	R	M
Bromine liquid (PVDF, R to 150°F/66°C)	—	R	X	X	* Cyclohexane	X	X	R	X
Bromine water	—	R	M	X	* Cyclohexanol	X	X	M	X
* Butane	X	X	R	X	* Cyclohexanone	X	X	M	X
* Butyl acetate	X	X	M	X	Diacetone alcohol	X	X	R	X
Butyl phenol	—	—	—	—	* Dichloroethylene	X	X	X	X
* Butylene	X	X	R	X	Diesel fuels	X	R	R	X
Butyric acid	R	R	R	X	* Diethyl ether	X	X	M	X
Calcium bisulfide	R	R	M	R	* Diisobutylene	X	X	M	X
Calcium bisulfite	R	R	M	R	Dimethyl formamide	—	X	R	X
Calcium chlorate	R	R	R	R	Diethyl phthalate	—	—	R	—
Calcium chloride	R	R	M	R	Dyes	—	—	R	—
Calcium hydroxide	R	R	R	R	* Epichlorohydrine	X	X	R	X
Calcium hypochlorite (PVDF & CPVC / PVDF, R to 70°F/21°C)	R	R	R	R	* Ethanolamine	X	X	R	X
Calcium nitrate	R	R	M	R	* Ether	X	X	R	X
Calcium sulfate	R	R	R	R	* Ethyl acetate	X	X	R	X
Calcium sulfite	R	—	M	—	* Ethyl chloride	X	X	R	X
* Carbon disulfide	X	X	R	X	* Ethyl ether	X	X	R	X
Carbonic acid	R	R	R	R	* Ethylene chloride	X	X	R	X
Carbon tetrachloride	X	R	R	X	* Ethylene dichloride	X	X	R	X
Cellosolve®	R	R	M	X	Ethylene glycol	R	R	R	R
* Cetyl alcohol	X	X	R	X	* Ethylene oxide	X	X	—	X
Chlorine liquid	X	R	X	X	Fatty acids	M	M	R	M
Chloroacetic acid	X	X	X	X	Ferric chloride	R	R	M	R
* Chlorobenzene	X	X	R	X	Ferric nitrate	R	R	R	R
Chlorobenzyl chloride (PVDF, R to 125°F/52°C)	—	R	—	X	Ferric sulfate	R	R	R	R
Chloroform (PVDF, R to 125°F/52°C)	X	R	R	X	Ferrous chloride	R	R	X	R
Chlorosulfonic acid (100%)	X	X	X	X	Ferrous sulfate	R	R	M	R
Chromic/sulfuric acid	X	X	X	X	Fluoboric acid (CPVC / PVDF, R to 140°F/60°C)	R	R	M	R
Chromic acid (10%) (PVDF & CPVC / PVDF, R to 120°F/49°C)	R	R	R	R	Fluosilicic acid	R	M	—	M
Chromic acid (50%) (PVDF, R to 120°F/49°C) (CPVC / PVDF, R to 70°F/21°C)	R	R	M	R	Formaldehyde (PVDF, R to 120°F/49°C)	R	R	R	X
Citric acid	R	R	R	R	Formic acid	R	R	R	X
Citric oils	R	—	R	—	Furfural	X	M	R	X
Copper chloride	R	R	X	R	Gallic acid (PVDF & CPVC / PVDF, R to 75°F/24°C)	M	R	M	R
Copper cyanide	R	R	R	R	Gelatin	X	R	R	R
Copper nitrate	R	R	R	R	Glue P.V.A.	M	R	R	R
* Copper sulfate	R	R	R	R	Glycerin	R	R	R	R
					Glycolic acid (PP, R to 70°F/21°C) (PVDF & CPVC / PVDF, R to 75°F/24°C)	R	R	—	R
					Glycols	—	R	M	R


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	CPVC - MAX 175°F (80°C) STAINLESS STEEL 316 - MAX 175°F (80°C) PVDF (KYNAR®) - MAX 130°F (54°C) POLYPROPYLENE - MAX 175°F (80°C) POLY (PHT) HIGH TEMP - MAX 170°F (77°C)				CPVC - MAX 175°F (80°C) STAINLESS STEEL 316 - MAX 175°F (80°C) PVDF (KYNAR®) - MAX 130°F (54°C) POLYPROPYLENE - MAX 175°F (80°C) POLY (PHT) HIGH TEMP - MAX 170°F (77°C)				
* Heptane	X	X	R	X	Muriatic acid (37%) (hot)	—	R	X	R
* Hexane	X	X	R	X	* Naptha	X	X	R	X
Hydrobromic acid	M	R	X	R	* Napthalene	X	X	M	X
Hydrochloric acid (20%)	R	R	X	R	Nickel chloride	R	R	R	R
Hydrochloric acid (37%) (cold)	R	R	X	R	Nickel sulfate	R	R	R	R
Hydrochloric acid (37%) (hot)	—	R	X	R	Nitric acid (5-10%)	R	R	R	R
Hydrofluoric acid (20%)	R	R	X	X	Nitric acid (20%)	R	R	R	R
Hydrofluoric acid (50%)	X	R	X	X	Nitric acid, (conc.) (PVDF, R to 120°F/49°C)	X	R	R	X
Hydrofluoric acid (75%)	X	R	X	X	Nitric acid, red fuming	—	X	R	X
Hydrofluoric acid (conc.) (cold)	—	R	—	X	Nitrobenzene (PVDF, R to 75°F/24°C)	M	R	M	X
Hydrofluosilicic acid (20%)	R	R	X	R	Oleic acid	R	R	R	X
Hydrogen fluoride	R	—	R	—	Oleum	X	X	R	X
* Hydrogen peroxide	X	X	R	X	Oxalic acid (cold) (PVDF, R to 125°F/52°C)	R	R	R	R
* Hydrogen sulfide (cold)	X	X	R	X	Palmitic acid	M	R	R	R
* Hydrogen sulfide (hot)	X	X	R	X	Perchloric acid (PVDF, R to 125°F/52°C)	—	R	X	M
Hypochlorous acid	—	R	X	R	Perchloroethylene	X	R	R	X
Iodine (PVDF, R to 150°F/66°C)	M	R	X	M	Petrolatum	—	R	R	R
* Isopropyl ether	X	X	R	X	Phenol (carbolic acid)	R	R	R	R
* Jet fuel (JP3, JP4, JP5)	X	X	R	X	Phosphoric acid (20%)	R	R	M	R
* Lacquer solvents	X	X	R	X	Phosphoric acid (20%-40%)	R	R	R	R
Lactic acid (PVDF & CPVC / PVDF, R to 120°F/49°C)	R	R	R	R	Phosphoric acid (45%)	R	R	M	R
Lead acetate	R	R	M	R	Phosphorus, red	—	—	R	—
Lead sulfamate	R	—	—	—	Phosphorus, yellow	—	—	R	—
* Ligroin	X	X	R	X	Photographic solutions	R	—	R	—
Magnesium carbonate	R	R	R	R	Plating solutions, chrome 40	R	R	R	R
Magnesium chloride	R	R	R	R	Plating solutions, copper	R	R	R	R
Magnesium hydroxide	R	R	R	R	Plating solutions, gold	R	—	R	—
Magnesium sulfate	R	R	R	R	Plating solutions, iron	R	R	R	R
Maleic acid	M	R	R	R	Plating solutions, lead	R	R	—	R
Mercuric chloride (dilute solution)	R	R	X	R	Plating solutions, nickel	R	R	—	R
Mercuric cyanide	R	R	R	R	Plating solutions, silver	R	R	R	R
* Methyl acetone	X	X	R	X	Plating solutions, tin	R	R	R	R
Methyl chloride	X	R	R	X	Plating solutions, zinc	R	R	R	R
* Methyl ethyl ketone	X	X	R	X	Potassium bicarbonate	R	R	M	R
* Methyl isobutyl ketone	X	X	R	X	Potassium bromide	R	R	R	R
Methylene chloride	X	X	R	X	Potassium carbonate	R	R	R	R
Milk	R	R	R	R	Potassium chlorate	R	R	R	R
* Monoethanolamine	X	X	R	X	Potassium chloride	R	R	R	R
Muriatic acid (20%)	R	R	X	R	Potassium chromate	R	R	M	R
Muriatic acid (37%) (cold)	R	R	X	R	Potassium dichromate	R	R	R	R

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Potassium hydroxide (PVDF & CPVC / PVDF, R to 150°F/66°C)	R	R	R	R	Sodium thiosulfate	R	R	R	R
Potassium nitrate	R	R	R	R	Stannic chloride	R	R	X	R
Potassium permanganate	M	R	M	R	Stearic acid	X	R	R	R
Potassium sulfate	R	R	M	R	Sulfate liquors	R	—	X	—
Propionic acid (CPVC / PVDF, R to 140°F/60°C)	—	R	M	R	Sulfur	R	R	R	R
Silicone oil	R	R	R	R	Sulfur chloride (PVDF, R to 75°F/24°C)	X	R	X	R
Silver nitrate	R	R	R	R	Sulfur dioxide	X	R	R	X
Soap solutions	R	R	R	R	Sulfuric acid (10%)	R	R	M	R
Sodium acetate	X	X	R	X	Sulfuric acid (10%-75%)	R	R	M	R
Sodium bicarbonate	R	R	R	R	Sulfuric acid (66° Baumè) (PVDF & CPVC / PVDF, R to 120°F/49°C)	X	R	M	R
Sodium bisulfate	R	R	R	R	Sulfurous acid	R	R	M	R
Sodium bisulfite	R	R	R	R	Tannic acid	R	R	R	R
Sodium borate	—	R	M	R	Tartaric acid	R	R	R	R
Sodium bromide	R	R	R	R	* Tetrahydrofuran	X	X	R	X
Sodium carbonate	R	R	R	R	Tetralin	—	—	R	—
Sodium chlorate (50%)	R	R	R	R	Titanium tetrachloride (PVDF, R to 150°F/66°C)	—	R	M	X
Sodium chloride	R	R	R	R	* Toluene (toluol)	X	X	R	X
Sodium cyanide	R	R	R	R	Transformer oil	R	—	R	—
Sodium hydroxide (20%)	R	R	R	R	Trichloroacetic acid (PVDF & CPVC/PVDF, R to 75°F/24°C)	—	R	X	R
Sodium hydroxide (50%)	R	X	M	X	1, 1, 1, Trichloroethane	—	—	X	—
Sodium hydroxide (80%)	R	X	X	X	Trichloroethylene	X	R	R	X
Sodium hypochlorite to 20%	X	R	X	R	Tricresylphosphate	—	X	R	X
Sodium metaphosphate	X	—	R	—	Triethylamine (PVDF, R to 125°F/52°C)	—	R	—	X
Sodium nitrate	R	R	R	R	* Vinyl chloride	X	X	—	X
Sodium perborate	R	—	X	—	* Woodoil	X	X	R	X
Sodium phosphate	R	R	M	R	* Xylene (xylo)	X	X	R	X
Sodium silicate	R	R	R	R	Zinc hydrosulfite	—	R	R	R
Sodium sulfate	R	R	R	R					
Sodium sulfide	R	R	R	R					