



Chemical Resistance and Material Selection Guide for Drum Pumps

The information in the following guide lists the corrosion resistance of four materials used in the drum pump outer tubes. Additional wetted materials may be found inside the pump tube such as Alloy 625, PTFE, Viton, etc. Refer to the series specific flier (PF Series flier for example) for a complete list of wetted components.

This information is to be considered as a basis for recommendation, but not as a guarantee. Where chemical compatibility is in question, the material should be tested under actual field conditions to determine the best choice. All test data listed is at ambient temperature (72° Fahrenheit / 22° Celsius) unless otherwise stated.

Compatibility

R = Recommended **F** = Fair, should be tested under field conditions
NR = Not recommended **-** = Unknown, contact chemical supplier

* Use only air or explosionproof electric motors with stainless steel tubes and static protection kit when pumping flammable and combustible materials

Note: When pumping solvents, the TTS Series is generally the best choice.

Motor Type

A = air **T** = TEFC (totally enclosed, fan cooled)
O = open weatherproof **X** = explosionproof electric

Tube Construction to Pump Series Key:

CPVC = TTC Series **Polypropylene** = EP, PFP, TBP Series
PVDF = PFV Series **Stainless Steel** = BTS, PFS, TBS, TM, TTS Series

Chemical	Tube Construction				Motor Type
	CPVC (max 150°F)	Polypropylene (max 160°F)	PVDF (max 120°F)	Stainless Steel (max 150°F for TTS, 220°F for PFS)	
Acetaldehyde*	NR	NR	NR	R (Use TTS only)	A, X
Acetate Solvents*	NR	NR	NR	R (Use TTS only)	A, X
Acetic Acid, 100%	NR	NR	NR	R (Use TTS only)	A, X
Acetic Acid, 10-80%	NR	R (Use TTS, do not use PFP)	R	R (Use TTS only)	A, O, T
Acetone*	NR	NR	NR	R (Use TTS only)	A, X
Alcohols*	NR	NR	NR	R	A, X
Aluminum Chloride	R	R	R	NR	A, O, T
Aluminum Hydroxide	R	R	R	R	A, O, T
Ammonia, Aqua, 10%*	NR	NR	NR	R	A, X
Ammonium Nitrate	NR	R	R	R	A, O, T
Ammonium Sulfate	NR	R	R	R	A, O, T
Amyl Acetate*	NR	NR	NR	R (Use TTS only)	A, X
Arsenic Acid	R	R	R	R	A, O, T
Barium Carbonate	R	R	R	F	A, O, T
Benzene* (Benzol)*	NR	NR	NR	R	A, X
Bleach (sodium hypochlorite, 1-15%)	R	NR	R	NR	A, O, T
Borax (sodium borate)	R	R	R	R	A, O, T
Boric Acid	R	R	R	R	A, O, T
Brine	R	R	R	R	A, O, T
Butyl Acetate*	NR	NR	NR	R (Use TTS only)	A, X
Butylene*	NR	NR	NR	R	A, X
Butyric Acid	-	R	R	R	A, O, T
Calcium Carbonate	R	R	R	R	A, O, T
Calcium Chloride	R	R	R	R	A, O, T
Calcium Hypochlorite	R	R	R	NR	A, O, T
Calcium Sulfate	R	R	R	R	A, O, T
Carbon Disulfide*	NR	NR	NR	R	A, X
Carbon Tetrachloride	NR	NR	R	R	A, O, T
Carbonic Acid	R	R	R	R	A, O, T
Caustic Soda	R	R	NR	R	A, O, T
Chlorinated water	NR	NR	R	R	A, O, T

Chemical	Tube Construction				Motor Type
	CPVC (max 150°F)	Polypropylene (max 160°F)	PVDF (max 120°F)	Stainless Steel (max 150°F for TTS, 220°F for PFS)	
>3,500 ppm					
Chlorobenzene*	NR	NR	NR	R	A, X
Chromic Acid 40%	R	NR	R	NR	A, O, T
Citric Acid	R	R	R	R	A, O, T
Copper Cyanide	R	R	R	R	A, O, T
Cyclohexane*	NR	NR	NR	R	A, X
Cyclohexanol*	NR	NR	NR	R	A, X
Cyclohexanone*	NR	NR	NR	R (Use TTS only)	A, X
Detergent Solutions	R	R	R	R	A, O, T
Diacetone Alcohol*	NR	NR	NR	R (Use TTS only)	A, X
Dichloroethylene *	NR	NR	NR	R	A, X
Diesel Fuel*	NR	NR	NR	R	A, X
Diethyl Ether*	NR	NR	NR	R (Use TTS only)	A, X
Ether*	NR	NR	NR	R (Use TTS only)	A, X
Ethyl Acetate*	NR	NR	NR	R (Use TTS only)	A, X
Ethyl Chloride*	NR	NR	NR	R	A, X
Ethyl Ether*	NR	NR	NR	R (Use TTS only)	A, X
Ethylene Chloride*	NR	NR	NR	R	A, X
Ethylene Glycol	R	R	R	R	A, O, T
Fatty Acids	R	R	R	R	A, O, T
Ferric Chloride	R	R	R	NR	A, O, T
Ferric Nitrate	R	R	R	R	A, O, T
Ferrous Chloride	R	R	R	NR	A, O, T
Formaldehyde 37%	R	R	R	R	A, O, T
Formic Acid	R	R	R	R	A, O, T
Fuel Oils*	NR	NR	NR	R	A, X
Furfural*	NR	NR	NR	R (Use TTS only)	A, X
Gasoline*	NR	NR	NR	R	A, X
Glucose	R	R	R	R	A, O, T
Glycerine (Glycerol)	R	R	R	R	A, O, T
Heptane*	NR	NR	NR	R	A, X
Hexane*	NR	NR	NR	R	A, X
Hydrobromic Acid, 20%	NR	F	R	NR	A, O, T
Hydrochloric Acid, 37%	R	R	R	NR	A, O, T
Hydrofluoric Acid,	NR	NR	R	NR	A, O, T

	Tube Construction				
Chemical	CPVC (max 150°F)	Polypropylene (max 160°F)	PVDF (max 120°F)	Stainless Steel (max 150°F for TTS, 220°F for PFS)	Motor Type
50%					
Hydrogen Peroxide	F (To 50%)	F (To 50%)	R	R	A, O, T
Ink	-	-	-	R	A, O, T
Iodine	NR	R	R	NR	A, O, T
Isopropyl Alcohol*	NR	NR	NR	R	A, X
Isopropyl Ether*	NR	NR	NR	R (Use TTS only)	A, X
Jet Fuels*	NR	NR	NR	R	A, X
Kerosene*	NR	NR	NR	R	A, X
Lacquers*	NR	NR	NR	R (Use TTS only)	A, X
Lacquer Solvents*	NR	NR	NR	R (Use TTS only)	A, X
Lactic Acid	R	R	R	R	A, O, T
Latex	-	-	-	R	A, O, T
Lubricants	NR	NR	NR	R	A, O, T
Magnesium Chloride	R	R	R	F	A, O, T
Magnesium Hydroxide	R	R	R	R	A, O, T
Mercuric Chloride	R	R	R	NR	A, O, T
Mercuric Cyanide	R	R	R	R	A, O, T
Methyl Acetone*	NR	NR	NR	R (Use TTS only)	A, X
Methyl Ethyl Ketone*	NR	NR	NR	R (Use TTS only)	A, X
Methyl Isobutyl Ketone*	NR	NR	NR	R (Use TTS only)	A, X
Methylene Chloride	NR	NR	F	R	A, O, T
Naptha*	NR	NR	NR	R	A, X
Naphthalene*	NR	NR	NR	R	A, X
Nickel Chloride	R	R	R	R	A, O, T
Nickel Sulfate	R	R	R	R	A, O, T
Nitric Acid, 10-40%	F	F	R	R	A, O, T
Nitric Acid, 40-70%	NR	NR	R	R	A, O, T
Nitrobenzene*	NR	NR	NR	R (Use TTS only)	A, O, T
Oleic Acid	R	R	R	R	A, O, T
Oleum	NR	NR	NR	F	A, O, T

Chemical	Tube Construction				Motor Type
	CPVC (max 150°F)	Polypropylene (max 160°F)	PVDF (max 120°F)	Stainless Steel (max 150°F for TTS, 220°F for PFS)	
Phenol	F	NR	R	R	A, O, T
Phosphoric Acid, 20%	R	R	R	R	A, O, T
Phosphoric Acid, 40%	R	R	R	R	A, O, T
Plating Solution, Chrome	R	NR	R	NR	A, O, T
Plating Solutions, Copper	R	R	R	-	A, O, T
Plating Solution, Lead	R	R	R	R	A, O, T
Plating Solution, Nickel	R	R	R	R	A, O, T
Plating Solution, Zinc	R	R	R	NR	A, O, T
Potassium Bicarbonate	R	R	R	R	A, O, T
Potassium Chloride	R	R	R	R	A, O, T
Potassium Cyanide	R	R	R	R	A, O, T
Potassium Hydroxide, 25%	R	R	NR	R	A, O, T
Potassium Nitrate	R	R	R	R	A, O, T
Soap Solutions	R	R	R	R	A, O, T
Sodium Acetate	R	NR	NR	R (Use TTS only)	A, O, T
Sodium Bicarbonate	R	R	R	R	A, O, T
Sodium Carbonate	R	R	R	R	A, O, T
Sodium Chloride	R	R	R	F	A, O, T
Sodium Hydroxide, 20%	R	R	NR	R	A, O, T
Sodium Hydroxide, 50%	R	R	NR	R	A, O, T
Sodium Hydroxide, 70%	R	R	NR	R	A, O, T
Sodium Hypochlorite, 1- 15%	R	NR	R	NR	A, O, T
Sodium Nitrate	R	R	R	R	A, O, T
Sulfuric Acid, <70%	R	R	R	NR	A, O, T
Sulfuric Acid, >70%	F	NR	R	NR	A, O, T
Tannic Acid	R	R	R	R	A, O, T
Tetrahydrofurane *	NR	NR	NR	R (Use TTS only)	A, X
Toluene*	NR	NR	NR	R (Use TTS only)	A, X

Chemical	Tube Construction				Motor Type
	CPVC (max 150°F)	Polypropylene (max 160°F)	PVDF (max 120°F)	Stainless Steel (max 150°F for TTS, 220°F for PFS)	
Trichloroethylene	NR	NR	R	R	A, O, T
Turpentine*	NR	NR	NR	R	A, X
Urea	R	R	R	R	A, O, T
Vinegar	R	R (Do not use PFP due to Viton o-rings)	R	R (Use TTS only)	A, O, T
Water	R	R	R	R	A, O, T
White Liquor	R	R	R	R	A, O, T
Xylene (xylol)*	NR	NR	NR	R	A, X
Zinc Chloride	R	R	R	R	A, O, T
Zinc Sulfate	R	R	R	R	A, O, T

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