

Pump Tubing Compatibility Charts

Don't risk it!

- Check chemical compatibility before selecting tubing to ensure best performance
- For use with all Masterflex tubing sizes
- All ratings indicate tubing condition after exposure to the chemical at 21°C (70°F)

Ratings & Materials Legend

Ratings

- A: No effect; little noticeable change
 B: Minor effect; slight corrosion or discoloration
 C: Moderate effect; not recommended for continuous use; softening, loss of strength, swelling and/or shrinkage
 D: Severe effect; not recommended for use; severe softening, swelling and/or shrinkage
 — No data available

Tubing formulations

- PN: PharMed® BPT, High-Pressure PharMed® BPT, PharmaPure®, Norprene®, Norprene® Food, Puri-Flex™
 CF: C-Flex® and C-Flex® ULTRA
 S: Silicone (peroxide/platinum-cured), BioPharm, BioPharm Plus, GORE® STA-PURE® PCS
 T: Tygon® E-Lab, Tygon® E-LFL, Tygon® E-Food
 TU: Tygon® Fuel & Lubricant
 TC: Tygon® Chemical
 CD: Chem-Durance® Bio
 PFL: Solve-Flex®, GORE® STA-PURE® PFL
 V: Viton®
 FP: Polytetrafluoroethylene (PTFE)

Pump head materials

- PSF: Polysulfone
 PC: Polycarbonate
 PPS: Polyphenylene sulfide
 SS: Stainless steel
 PP: Polypropylene

Fluid	Tubing formulation											Pump head material				
	PN	CF	S	T	TU	TC	CD	PFL	V	FP	PSF	PC	PPS	SS	PP	
Acetaldehyde	D	A	B	D	D	C	D	A	—	A	D	—	A	A	A	
Acetate LMW	A	A	—	D	D	C	D	—	—	A	D	—	A	A	D	
Acetic acid <5%	A	A	A	A	A	B	A	A	—	A	A	A	A	B	B	
Acetic acid >5%	A	A	A	B	A	B	A	A	B	A	A	C	A	B	A	
Acetic anhydride	A	B	C	D	D	A	A	A	D	A	D	D	A	B	C	
Acetone	D	C	C	D	D	C	B	A	D	A	D	D	A	A	A	
Acetonitrile	B	A	—	D	D	B	B	—	D	A	D	D	A	A	—	
Acetyl bromide	C	A	—	D	D	C	D	—	—	A	—	—	—	—	—	
Acetyl chloride	C	A	C	D	D	C	D	A	A	A	D	D	A	A	D	
Air	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Aliphatic hydrocarbons	D	D	—	D	B	D	D	—	—	—	—	—	—	B	—	
Aluminum chloride	A	A	B	A	A	A	A	—	A	A	A	A	A	D	A	
Aluminum sulfate	A	A	A	A	A	A	A	—	A	A	A	A	A	B	A	
Alums	A	A	A	A	A	A	A	—	A	A	—	—	—	—	A	
Ammonia, gas / liquid	A	A	C	B	B	B	B	—	D	A	A	D	A	B	A	
Ammonium acetate	A	A	—	A	A	A	A	A	D	A	—	A	—	B	A	
Ammonium carbonate	A	A	C	A	A	A	A	A	A	A	A	—	A	B	A	
Ammonium chloride	A	A	C	A	A	A	A	A	A	A	A	—	A	C	A	
Ammonium hydroxide	A	A	A	B	C	A	A	A	B	A	A	D	A	A	A	
Ammonium nitrate	A	A	C	A	A	A	A	A	A	A	A	—	A	A	A	
Ammonium phosphate	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	
Ammonium sulfate	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	
Amyl acetate	B	D	D	D	D	D	D	B	D	A	D	D	A	A	D	
Amyl alcohol	D	D	D	D	A	A	A	A	A	A	—	—	—	A	A	
Amyl chloride	C	D	D	D	D	D	D	—	A	A	D	D	D	A	D	
Aniline	C	B	D	D	D	D	D	A	B	A	D	D	A	A	A	
Aniline hydrochloride	C	B	D	D	D	D	D	A	B	A	D	D	—	D	D	
Aqua regia (80% HCl, 20% H)	D	—	D	D	D	A	A	—	B	A	D	D	D	D	B	
Aromatic hydrocarbons	D	D	—	D	D	D	D	—	A	—	—	—	—	B	—	
Arsenic salts	A	—	—	A	A	A	A	—	D	—	—	—	—	—	—	
Barium salts	A	A	A	A	A	A	A	A	A	A	A	—	A	B	B	
Benzaldehyde	D	D	B	D	D	C	C	A	D	A	C	C	A	B	C	
Benzenesulfonic acid	D	A	D	D	D	D	D	A	A	A	D	D	A	B	D	
Bleaching liquors	A	B	B	A	A	A	A	—	A	A	—	—	—	—	B	
Boric acid	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	
Bromine	D	A	D	D	D	D	D	—	A	A	—	D	D	D	C	
Butane	A	D	D	A	A	B	B	B	A	A	—	—	A	A	B	
Butanol (butyl alcohol)	D	B	B	D	A	A	A	A	A	A	A	C	A	A	B	
Butyl acetate	B	D	D	D	D	D	D	B	D	A	D	D	A	B	D	
Butyric acid	B	A	D	D	C	D	D	A	B	A	—	—	A	B	C	
Calcium oxide	A	—	A	A	A	A	A	—	A	A	—	—	—	A	A	
Calcium salts	A	A	B	A	A	A	A	A	A	A	—	—	A	B	A	
Carbon bisulfide	D	D	D	D	D	D	D	—	—	A	—	—	—	A	C	
Carbon dioxide	A	A	B	A	A	A	A	A	A	A	—	A	A	A	A	
Carbon tetrachloride	D	B	D	D	D	D	D	B	A	A	A	D	A	B	D	
Chlorine, dry	C	A	D	A	A	C	C	—	A	A	D	—	D	A	D	
Chlorine, wet	D	A	D	C	A	C	C	—	B	A	D	—	D	C	D	
Chloroacetic acid	B	A	—	A	D	A	A	B	D	A	D	D	A	B	D	
Chlorobenzene	D	D	D	D	D	D	D	A	A	B	D	D	A	A	D	
Chlorobromomethane	B	D	D	D	D	—	D	—	A	A	D	—	—	—	A	
Chloroform	C	D	D	D	D	D	D	B	A	A	D	D	A	A	D	
Chlorosulfonic acid	D	A	D	D	D	D	D	A	D	A	D	—	—	D	D	
Chromic acid, 30%	A	A	C	C	C	B	B	—	A	A	D	D	A	B	A	
Chromium salts	A	A	—	A	A	A	A	—	—	—	—	—	—	—	—	
Copper salts	A	A	A	A	A	A	A	—	A	A	—	—	A	B	A	
Cresol	D	D	D	B	C	A	A	A	A	A	D	D	A	A	C	
Cyclohexane	D	D	D	D	C	D	D	B	A	A	A	B	A	A	D	
Cyclohexanone	D	D	D	D	D	C	C	—	D	A	D	D	A	A	D	
Diacetone alcohol	A	A	B	D	D	A	A	A	D	A	—	D	—	B	C	
Dimethyl formamide	B	B	B	D	D	A	A	A	D	A	D	D	A	A	A	
Dimethyl Sulfoxide (DMSO)	A	—	—	—	—	—	—	—	—	A	A	C	A	A	A	
Essential oils	D	B	C	D	C	D	D	—	—	—	—	—	—	—	—	
Ethanol (ethyl alcohol)	C	B	A	D	B	A	A	A	A	A	B	B	A	A	A	
Ether	C	D	D	D	C	D	D	B	D	A	D	D	A	A	B	
Ethyl acetate	B	D	B	D	D	D	D	A	D	A	A	D	A	B	A	
Ethyl bromide	D	A	D	D	D	C	D	—	A	A	—	—	—	—	D	
Ethyl chloride	C	A	D	D	D	D	D	—	A	A	D	D	—	A	D	
Ethylamine	D	A	C	D	D	B	B	B	D	—	—	—	—	—	—	
Ethylene chlorohydrin	A	A	C	D	B	A	A	—	A	A	D	D	A	B	D	
Ethylene dichloride	C	A	D	D	D	D	D	B	A	A	D	D	A	B	A	
Ethylene glycol	A	B	A	A	A	A	A	A	A	A	A	C	A	B	A	
Ethylene oxide	A	A	D	A	A	A	A	B	D	A	A	D	D	B	D	
Fatty acids	C	B	C	B	B	C	C	A	A	A	—	C	—	B	A	
Ferric chloride	A	A	B	A	A	A	A	—	A	A	A	—	A	D	A	
Ferric sulfate	A	A	B	A	A	A	A	A	A	A	A	—	A	B	A	
Ferrous chloride	A	A	C	A	A	A	A	—	A	A	A	D	A	D	A	
Ferrous sulfate	A	A	C	A	A	A	A	A	A	A	A	A	A	B	A	
Fluoboric acid	D	A	A	C	D	A	A	—	—	A	—	—	—	B	A	
Fluoroborate salts	A	A	—	A	A	A	A	—	—	—	—	—	—	—	—	
Fluosilicic acid	C	A	D	A	A	A	A	—	A	A	A	—	A	C	A	
Formaldehyde	D	A	B	D	D	C	C	A	D	A	A	A	A	C	A	
Formic acid, 25%	A	A	B	B	C	A	A	A	D	A	C	D	A	B	A	
Gasoline, high-aromatic	D	D	D	D	B	D	D	A	B	A	C	C	A	A	D	
Gasoline, nonaromatic	D	D	D	D	B	D	D	B	A	A	A	A	—	—	C	
Glucose	A	A	A	A	A	A	A	A	A	A	—	A	—	A	A	
Glue, P.V.A.	A	A	A	A	A	—	A	—	A	A	—	—	—	A	C	
Glycerin	A	B	A	A	A	A	A	—	A	A	A	A	A	A	A	
Hydriodic acid	D	A	—	A	A	A	A	—	A	—	—	—	—	—	—	
Hydrobromic acid, 30%	D	A	D	B	A	A	A	—	A	A	B	D	A	D	A	
Hydrochloric acid (dil)	A	A	D	A	A	A	A	A	A	A	A	A	A	D	A	
Hydrochloric acid (med)	B	A	D	C	D	A	A	A	A	A	A	D	D	D	A	
Hydrochloric acid (conc)	—	B	D	C	D	A	A	A	A	A	A	B	D	D	A	
Hydrocyanic acid	A	A	C	A	A	A	A	A	A	A	—	—	—	B	A	
Hydrocyanic acid, gas, 10%	A	A	C	A	A	A	A	—	A	A	—	—	—	—	C	
Hydrofluoric acid, 50%	D	A	D	C	D	A	A	D	D	A	—	D	A	D	A	
Hydrofluoric acid, 75%	—	A	D	D	D	—	C	D	D	A	—	D	A	D	C	

†Do not use the L/S® PTFE-tubing pump head with gases due to excessive heat buildup.

Tubing Test Procedure

1. Measure and weigh a sample of tubing.
2. Immerse the sample in the fluid for 72 hours in a closed vessel.
3. Dry sample, then measure and weigh it. Inspect carefully for signs of deterioration such as swelling, embrittlement, cracking, softness, or change of size or weight.
4. If there is no sign of deterioration, test a sample in pump under the conditions of your application.

