Hei-FLOW Peristaltic Pumps Tubing

TUBING SPECIFICATIONS								COMPATIBILITY						
Tubing Type		Application	Features	Color and Material	Standard Compliant	Temp. Range	Sterilization	Restrictions	Acids	Lyes	Solvents	Pressure	Vacuum	Viscous media	Sterile media
Tygon® standard		General applications in the laboratory	Non-toxic, non-oxidizing Good resistance to acids, lyes and inorganic media Very low gas permeability, long service life	Transparent Thermoplastic soft PVC	FDA (21 CFR 177.2601) and GLP	−50 to +75 °C	✓ Can be autoclaved for 30 min at 1 bar and 120 °C (material may change color) or with ethylene oxide	Release of plasticizers possible	B Good	B Good	D Unsuitable	B Good	B Good	A Excellent	C Conditional
Tygon® 2001 for food		Ideal for products with a high fat content	Extremely chemical-resistant, e.g. appropriate for the use of polar solvents Plasticizer- and oil-free Particularly long service life Translucent to aid visual inspection Outstanding flexibility	Transparent Thermoplastic	USP Class VI, FDA (21 CFR 177.2600) and GLP	−78 °C to +71 °C	✓ Can be autoclaved for 30 min at 1 bar, sterilized by irradiation or with ethylene oxide	-	A Excellent	A Excellent	B Good	B Good	B Good	B Good	B Good
Tygon® for hydrocarbons		Especially for hydrocarbons, petroleum products and distillates	Ideal for petrol, kerosene, heating oil, cutting solutions and coolants on a glycol base Resistant to ozone and UV	Translucent Yellow Thermoplastic soft PVC	GLP	−40 to +75 °C	-	Not suitable for strong lyes and acids as well as food and pharmaceuticals.	B Good	B Good	C Conditional	B Good	B Good	A Excellent	C Conditional
PharMed®		Ideal for medical, laboratory and research applications	High flexural fatigue strength Non-toxic, biocompatible Very low gas permeability Well suited for acids and lyes	Opaque Beige Polypropylene-based thermoplastic elastomer with plasticizers	USP Class VI, GLP, USP and Ph. Eur.	−51 to +135 °C	✓ Can be autoclaved or sterilized with ethylene oxide or sterilized by irradiation	Release of additives possible	B Good	B Good	D Unsuitable	C Good	A Excellent	B Good	A Excellent
Silicone		For use in pharmacy and biology	Extremely smooth interior prevents bacterial growth Biocompatible, minimal adsorption and absorption Best flow properties, high temperature stability Absolutely inert, plasticizer-free	Translucent White Polydimethylsiloxane with silica earth and silicone additives, excellent contact pressure resistance	USP Class VI, meets GLP and NSF	−80 to +200 °C	✓ Can be autoclaved for 30 min at 1 bar or sterilized by irradiation	Unsuitable for concentrated solvents, oils, acids or diluted caustic soda, relatively high gas permeability	C Conditional	C Conditional	D Unsuitable	C Conditional	B Good	C Conditional	A Excellent
Viton®		Excellent acid resistance - at high temperatures	Low gas permeability Resistant to solventsand corrosive media	Opaque Black Fluorocarbon rubber, thermoformed Viton B (67% fluorinated)	GLP	−30 to +205 °C	-	Limited service life	A Excellent	A Excellent	- Varying Tests recommended	B Good	B Good	B Good	C Conditional

Tubing Resistance Index

KEY

Tubing

P = PharMed®
S = Silicone
T = Tygon® standard
TU = Tygon® for hydrocarbons
TK = Tygon® 2001 for food
V = Viton®

Resistance

A = excellent
B = good
C = conditional
D = unsuitable
– = not tested

	Chemical	P	S	T	TU	TK	V
A	Acetaldehyde	D	C	D	D	D	D
	Acetic acid, 10 % in W.	A	A	A	A	A	-
	Acetic acid, (100 % glacial acetic acid)	B	D	D	D	-	-
	Acetic anhydride	A	A	D	D	A	D
	Acetone	D	C	D	D	C	D
	Acetonitrile	C	D	D	D	B	D
	Acetyl bromide	C	D	D	D	C	-
	Acetyl chloride	C	D	D	D	C	A
	Aliphatic hydrocarbons	D	D	D	B	D	-
	Aluminum chloride, 53 % in W.	A	A	A	A	A	A
	Aluminum Salts	A	A	A	A	A	-
	Aluminum sulfate, 50 % in W.	A	A	A	A	A	A
	Ammonia, anhydrous	A	D	B	B	B	D
	Ammonium acetate, 45 % in W.	A	A	A	A	A	-
	Ammonium carbonate, 20 % in W.	A	A	A	A	A	A
	Ammonium chloride	A	C	A	A	A	A
	Ammonium hydroxide, 30 % in W.	A	D	A	C	A	B
	Ammonium nitrate	A	C	A	A	A	-
	Ammonium phosphate	A	A	A	A	A	-
	Ammonium sulfate	A	A	A	A	A	A
	Amylacetate	B	D	D	D	D	D
	Amylalcohol	D	D	D	A	A	A
	Amylchloride	C	D	D	D	D	-
	Aniline	C	D	D	D	D	D
	Aniline hydrochloride	C	D	D	D	D	B
	Aqua regia (80 % HCl, 20 % HNO)	D	D	D	D	A	-
	Aromatic hydrocarbons	D	D	D	D	D	-
	Arsenic salts	A	A	A	A	A	-
B	Barium salts	A	A	A	A	A	-
	Benzaldehyde	D	C	D	D	C	D
	Benzene	D	D	D	D	-	-
	Benzenesulfonic acid	D	D	D	D	D	A
	Boric acid, 4 % in W.	A	A	A	A	A	A
	Bromine (anhydrous liquid)	D	D	D	D	D	A
	Butane	A	A	A	A	B	A
	Butanol (butyl alcohol)	D	B	D	D	A	A
	Butyl acetate	B	D	D	D	D	D
	Butyric acid	B	D	D	C	D	-
C	Calcium oxide	A	A	A	A	A	-
	Carbon disulfide	D	D	D	D	D	-
	Carbon tetrachloride	D	D	D	D	D	A
	Chlorine gas, wet	D	D	B	B	C	B
	Chloroacetic acid, 20 % in W.	B	A	A	D	A	D
	Chlorobenzene (Mono, Di, Tri)	D	D	D	D	C	A
	Chloroform	D	D	D	D	C	A
	Chlorobromomethane	B	D	D	D	-	A
	Chromic acid, 20 % in W.	A	D	B	C	B	A
	Chromic acid, 50 % in W.	C	D	C	D	-	-
	Chlorosulfonic acid	D	D	D	D	D	D
	Cupric Chloride 40% in W.	A	A	A	A	A	-
	Cyclohexane	D	D	D	C	D	A
	Cyclohexanone	D	D	D	D	C	D
D	Diesel	D	D	D	B	-	-
	Dimethylformamide	B	B	D	D	A	D
E	Ethanol (ethyl alcohol)	A	B	D	B	A	A
	Ether	C	D	D	C	D	-
	Ethyl acetate	B	D	D	D	D	D
	Ethylamine	D	C	D	D	B	-
	Ethyl bromide	D	D	D	D	C	-
	Ethyl chloride	C	D	D	D	D	A
	Ethylene chlorohydrin	A	B	D	B	A	A
	Ethylenedichloride	C	D	D	D	D	B
	Ethylene glycol	A	A	A	A	A	A
	Ethylene oxide	A	D	A	A	A	D
F	Fatty acids	C	B	B	C	C	C
	Fluoroborate salts	A	-	A	A	A	-
	Formaldehyde, 37 % in W.	D	C	D	D	C	D
	Formic acid, 25 % in W.	A	A	A	C	A	D
	Freon 11	A	A	A	A	-	-
	Fruit juice	A	A	A	A	A	A
G	Glycerin	A	A	A	A	A	A
H	Hydrobromic acid, 20 – 50 %	D	D	A	A	A	A
	Hydrochloric acid, 10 % in W.	A	D	A	A	A	A
	Hydrochloric acid, 37 % in W.	B	D	A	D	A	B
	Hydrofluoric acid, 10 % in W.	D	D	C	A	A	B
	Hydrofluoric acid, 50 %	D	D	D	D	A	A
	Hydrogen cyanide	A	A	A	A	A	A
	Hydrogen peroxide, 10 % in W.	A	A	A	A	A	A
	Hydrogen peroxide, 90 % in W.	B	C	D	D	B	-
	Hydroiodic acid	B	B	A	A	A	-
	Hypochlorous acid, 25 % in W.	A	A	A	A	A	A
I	Iodine solutions	A	C	A	A	A	-
	Iron II chloride 40 % in W.	A	A	A	A	A	B
	Iron II sulfate 5 % in W.	A	A	A	A	A	A
	Iron III chloride 43 % in W.	A	A	A	A	A	-
	Iron III sulfate 5 % in W.	A	A	A	A	A	-
K	Kerosene	D	D	D	D	B	A
	Ketones	D	D	D	D	C	-
L	Lactic acid, 10 % in W.	A	A	A	A	A	-
	Lactic acid, 85 % in W.	B	D	D	D	-	-
	Lead acetate, 35 % in W.	A	A	A	A	A	-
M	Magnesium chloride, 35 % in W.	A	A	A	A	A	A
	Magnesium sulfate, 25 % in W.	A	A	A	A	A	-
	Manganese salts	A	A	A	A	A	-
	Mercury salts	A	A	A	A	A	-
	Methane	A	-	A	A	A	A
	Methanol	A	B	D	B	A	D
	Methyl Ethyl Ketone	D	D	D	D	C	D
	Monoethanolamine	C	D	D	D	D	D
N	Naphthalene	D	D	D	D	D	A
	Nickel salts	A	A	A	A	A	-
	Nitric acid, 10 % in W.	A	C	A	D	A	A
	Nitric acid, 35 % in W.	A	D	A	D	A	A
	Nitric acid, 68 – 71 % in W.	D	D	D	D	D	-
	Nitrobenzene	D	D	D	D	C	-
	Nitrous acid, 10 % in W.	A	B	A	C	A	-
O	Oils, animal	C	A	D	A	B	-
	Oils, mineral	D	D	C	A	D	A
	Oleic acid	C	B	D	B	D	B
P	Perchlorethylene	C	D	D	D	D	A
	Perchloric acid, 67 % in W.	A	D	C	D	A	A
	Phenol	A	D	D	C	A	-
	Phosphoric acid 25 % in W.	A	D	A	A	A	A
	Phthalic acid, 9 % in Alc.	A	B	D	C	B	-
	Potassium carbonate, 55 % in W.	A	A	A	A	A	-
	Potassium cyanide, 33 % in W.	A	A	A	A	-	-
	Potassium hydroxide, <10 % in W.	A	A	A	D	-	B
	Potassium iodide, 56 % in W.	A	A	A	A	A	-
	Propanol (propyl alcohol)	C	A	D	D	A	B
	Pyridine	C	D	D	D	C	D
S	Silicone oils	C	D	B	A	B	A
	Silver nitrate, 55 % in W.	A	A	A	A	A	A
	Soap solutions	B	A	A	A	A	A
	Sodium bicarbonate, 7 % in W.	A	A	A	A	A	A
	Sodium bisulfate	A	-	A	A	A	-
	Sodium borate	A	A	A	A	A	A
	Sodium carbonate	A	A	A	A	A	B
	Sodium dithionite	A	-	A	A	-	-
	Sodium ferrocyanide	A	A	A	D	-	-
	Sodium hydroxide, 10 – 15 % in W.	A	A	A	D	A	B
	Sodium hydroxide, 30 – 40 % in W.	A	C	C	D	A	B
	Sodium nitrate, 3.5 % in W.	A	A	A	A	A	-
	Sodium sulfate, 3.6 % in W.	A	A	A	A	-	A
	Sodium sulfide, 13 % in W.	A	A	A	A	A	-
	Stearic acid, 5 % in Alc.	C	D	D	B	B	-
	Sulfuric acid, 10 % in W.	A	A	A	B	A	A
	Sulfuric acid, 30 % in W.	A	B	A	B	A	A
	Sulfuric acid, 95 – 98 % in W.	D	D	D	D	C	A
	Sulfurous acid	A	A	A	A	A	A
T	Tannic acid, 75 % in W.	B	A	B	A	D	-
	Tartaric acid, 56 % in W.	A	A	A	A	A	A
	Tin salts	A	A	A	A	A	-
	Toluene	D	D	D	D	C	A
	Trichloroacetic acid, 90 % in W.	B	D	A	D	A	C
	Trichlorethylene	C	D	D	D	C	A
	Trisodium phosphate	A	A	A	A	A	A
	Turpentine	D	D	D	B	A	A
U	Urea, 20 % in W.	A	A	A	A	A	-
	Uric acid	A	A	A	C	A	-
X	Xylene	D	D	D	D	C	B
Z	Zinc chloride, 80 % in W.	A	A	A	A	A	A

Please note:
All information provided here is not guaranteed to be correct.
Recommended testing of tubing prior to application use.