

## I/P® PRECISION AND HIGH-PERFORMANCE PRECISION PUMP TUBING

- ▶ Tubing Life
- ▶ Pressure Guidelines
- ▶ Vacuum/Suction Lift
- ▶ Gas Permeability

Ensure top performance with your Masterflex® pump head by using precision-extruded Masterflex® tubing to deliver accurate flow rates. Nineteen different material formulations are available.

To order the correct tubing:

1. Consider all the aspects of your application: flow rate, pressure, etc.
2. Review the chemical compatibility data on pages 30–31, as well as specific information about individual tubing materials on pages 22–29.
3. Use the “Tubing Material Life Comparison” graph and table at right to select the tubing with the longest life.

If your application requires the generation of high pressure or a strong vacuum/ suction lift, refer to the “Pressure Guidelines” and “Vacuum/ Suction Lift” graphs at right. These graphs help you determine which tubing will pressurize the most rapidly or develop the strongest vacuum/suction lift in your application.

If your application requires pumping air-sensitive gases or liquids, refer to the “Gas Permeability” graph below right to choose the tubing with the lowest permeability.

If you are pumping a viscous fluid, refer to the “Tubing Selection Guide for Pumping Viscous Fluids” graph on page 191 to select the best tubing size.

### FREE TUBING TEST KIT!

Our FREE Tubing Test Kit is a simple way to test your chemicals against different tubing formulations. Kit contains samples of different pump tubing formulations, formulation descriptions, a selection guide, instructions on how to test your tubing, and complete ordering information. Call today! Request item HL-00101-10.

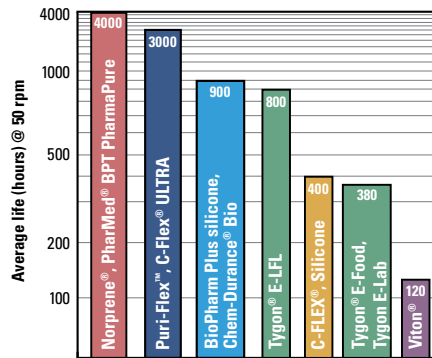
**Call or go online to request your FREE test kit today!**



#### WHERE TO ORDER TUBING

C/L® TUBING.....	34, 36
L/S® TUBING.....	68–73
I/P® TUBING.....	126–130
B/T® TUBING.....	153

### TUBING MATERIAL LIFE COMPARISON

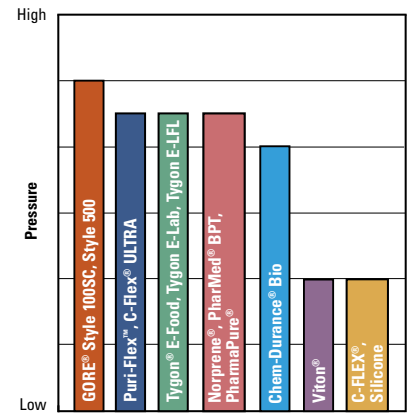


The graph above displays the average tubing life in hours of Masterflex® I/P® 73 tubing. This tubing was tested in a Masterflex® Standard pump head continuously pumping water at 21°C (70°F) and 0 bar (0 psig). Tubing life is calculated to time of failure or of 50% reduction in flow rate, whichever comes first. Reduce drive speeds to extend tubing life. Average tubing life for L/S® 16, I/P® 73, and B/T® 91 tubing at various speeds are listed in the table below.

Tubing class	L/S® 16		I/P® 73		B/T® 91	
	Drive rpm 50	600	50	600	50	321
Norprene®, PharMed® BPT, PharmaPure®	10,000	1000	4000	800	3000	600
Puri-Flex™, C-Flex® ULTRA	5000	1000	3000	500	500	100
Tygon® E-LFL	2500	600	800	400	600	200
C-FLEX®, Silicone	500	100	400	80	250	100
Tygon® E-Food	320	80	—	125	—	—
Tygon® E-Lab	320	80	180	380	100	30
Viton®	150	30	120	25	—	—

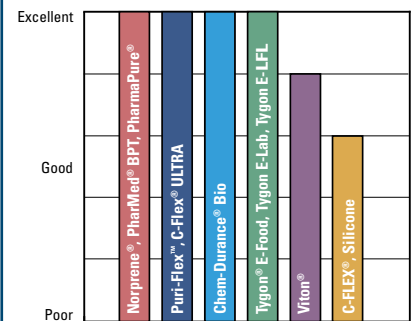


### PRESSURE GUIDELINES



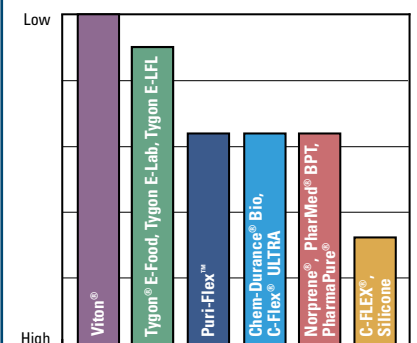
All tubing types accept pressure, but the firmer formulations accept more pressure than the softer types of tubing.

### VACUUM/SUCTION LIFT

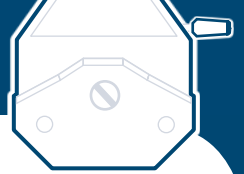


Vacuum/suction lift capability depends greatly on the tubing’s ability to maintain its shape. Thus, a firmer tubing type in the smallest possible bore size will generate a stronger vacuum for your application. Higher drive speeds are required to generate the strongest possible vacuum with some tubing sizes.

### GAS PERMEABILITY



To minimize permeation of gases through the tubing wall, use firm tubing. Masterflex® I/P® High-Performance precision tubing (I/P® 70, I/P® 88, and I/P® 89) is less permeable than Precision tubing sizes. See pages 20–23 for tubing permeability to various gases.

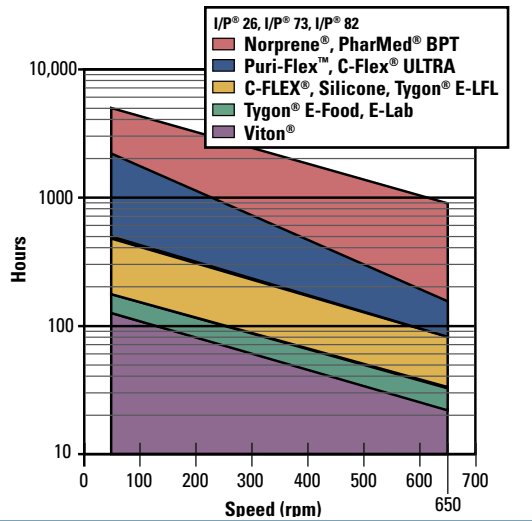


## I/P® PRECISION TUBING LIFE CHARACTERISTICS

Like the L/S® tubing sizes, I/P® sizes I/P® 26, I/P® 73, I/P® 82, I/P® 70, I/P® 88, and I/P® 89 offer excellent pressure generation, suction lift, tubing life, and the ability to pump viscous fluids—all at higher flow rates. This tubing is ideal for industrial applications that require flow rates up to 19 LPM (5.0 GPM).

The graph at right shows average tubing life while pumping water through a Standard pump head at 21°C (70°F).

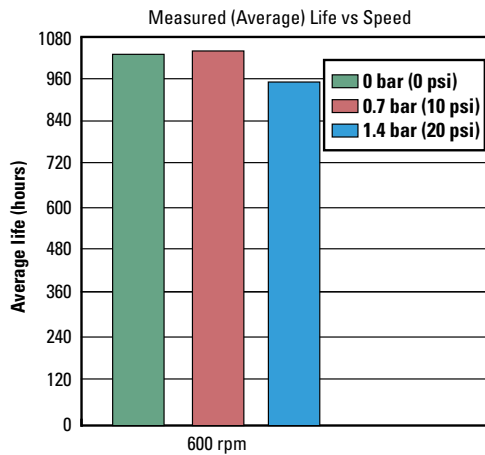
For example, using this graph it can be determined that the expected average life of Masterflex® I/P® 73 silicone tubing at 300 rpm is about 200 hours.



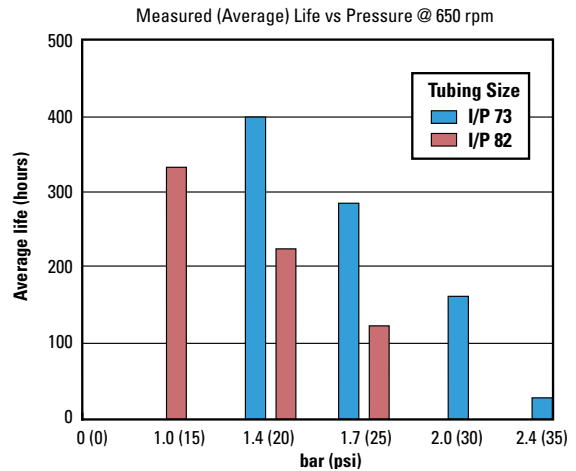
## NOTES

Peroxide-cured silicone tubing offers up to 40% more tubing life. Platinum-cured silicone tubing offers better chemical compatibility. Biopharm Plus silicone tubing lasts up to five times longer than other platinum silicone tubings.

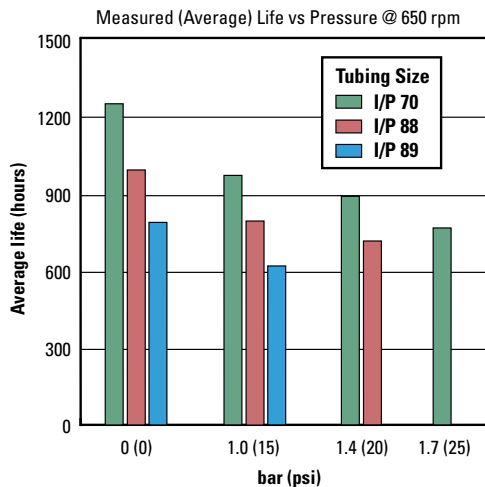
### NORPRENE®, PHARMED® BPT I/P® 73 TUBING IN I/P® STANDARD HEAD (07019-series)



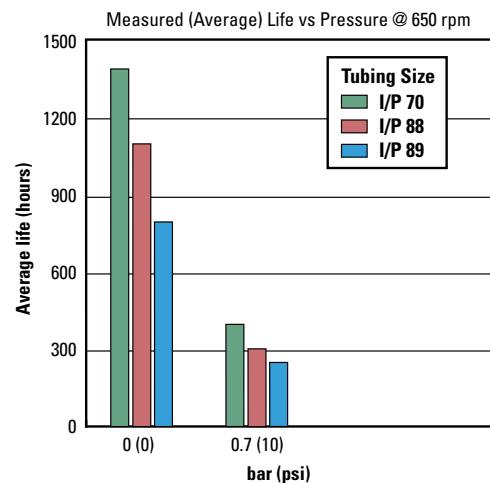
### NORPRENE® IN I/P® EASY-LOAD® PUMP HEAD (77601-series)



### NORPRENE®, PHARMED® BPT IN I/P® HIGH-PERFORMANCE PUMP HEAD (77600-62)



### PEROXIDE-CURED SILICONE IN I/P® HIGH-PERFORMANCE PUMP HEAD (77600-62)



## I/P® PRECISION AND HIGH-PERFORMANCE PRECISION PUMP TUBING

