

## L/S® PRECISION AND HIGH-PERFORMANCE PRECISION 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. Twenty-two 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 can assist you in determining which tubing will pressurize 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.

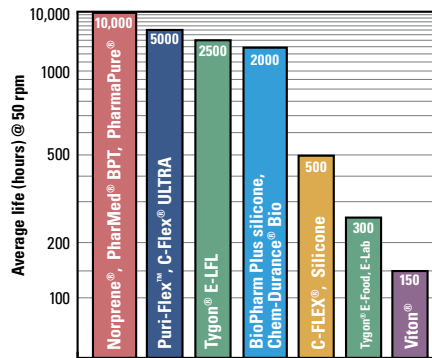
**Call or go online to request your FREE test kit today!**



SEE PAGES 68-73

for L/S® pump tubing ordering information.

### TUBING MATERIAL LIFE COMPARISON

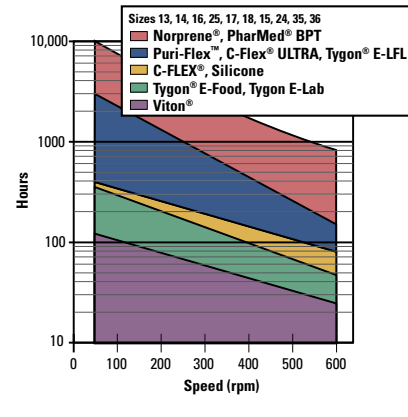


The graph above displays the average tubing life in hours of Masterflex® L/S® 16 tubing. This tubing was tested in a Masterflex® Standard pump head continuously pumping water at 21°C (70°F) and 0 psig (0 bar). Tubing life is calculated to time of failure or of 50% reduction in flow rate, whichever comes 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.

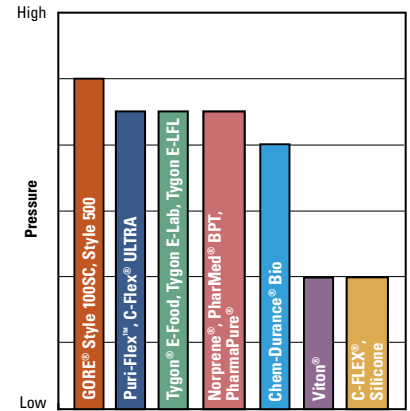
Tubing class	L/S® 16		I/P® 73		B/T® 91	
	50	600	50	600	50	321
Norprene®, PharMed® BPT, PharmaPure®	10,000	1000	4000	800	3000	600
Puri-Flex™, C-Flex® ULTRA	5000	1000	3000	500	500	100
Tygon® E-LFL	2500	600	800	400	600	200
C-FLEX®, Silicone	500	100	400	80	250	100
Tygon® E-Food	320	80	—	125	—	—
Tygon® E-Lab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

### L/S® PRECISION TUBING LIFE CHARACTERISTICS

The graph below shows average tubing life vs motor rpm for selected L/S® tubing formulations.

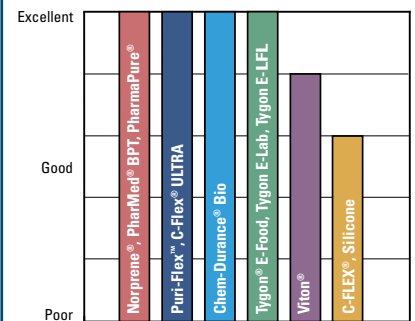


### PRESSURE GUIDELINES



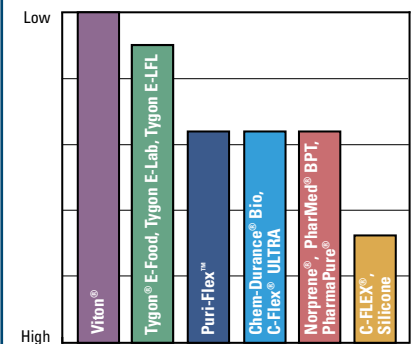
All tubing types accept pressure, but the firmer formulations accept more pressure than the softer types of tubing.

### 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® L/S® High-Performance precision tubing (L/S® 15, L/S® 24, L/S® 35, and L/S® 36) is less permeable than Precision tubing sizes. See pages 20-23 for tubing permeability to various gases.

## L/S® PRECISION AND HIGH-PERFORMANCE PRECISION PUMP TUBING

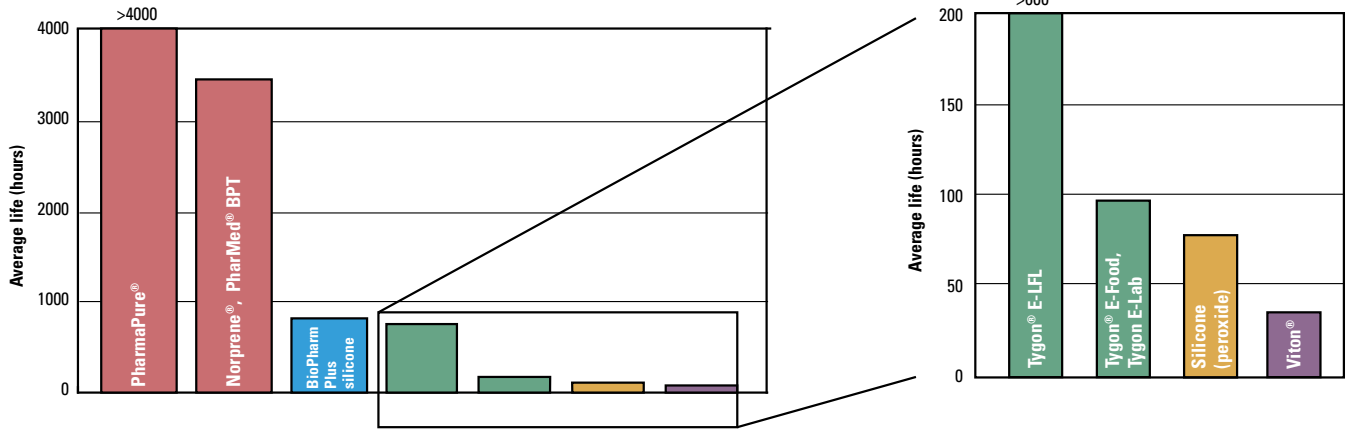
PERFORMANCE DATA FOR PHARMAPURE®, NORPRENE®, PHARMED® BPT, BIOPHARM PLUS SILICONE, SILICONE, TYGON®, AND VITON® TUBING FORMULATIONS

SEE PAGES 68-73

for L/S® pump tubing ordering information.

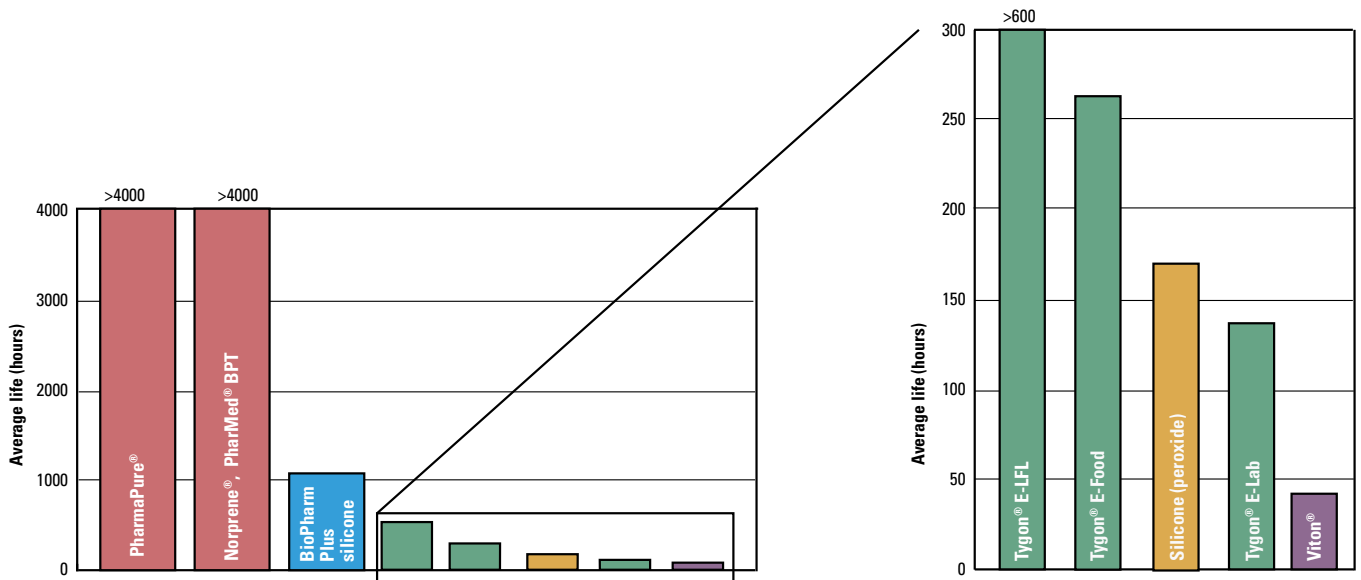
### L/S® PRECISION TUBING

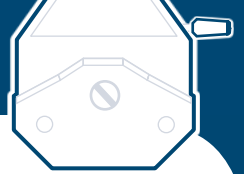
Precision tubing (L/S® 13, L/S® 14, L/S® 16, L/S® 25, L/S® 17, and L/S® 18) is made to tight tolerances that ensure accurate flow rates and long tubing life. The graph below shows average tubing life while pumping water through an Easy-Load® II pump head at 21°C (70°F), 0 psi, 600 rpm.



### L/S® HIGH-PERFORMANCE PRECISION TUBING

High-performance precision tubing (L/S® 15, L/S® 24, L/S® 35, and L/S® 36) improves pressure generation, suction lift, tubing life, and the ability to pump viscous fluids. The graph below shows average tubing life while pumping water through an Easy-Load® II pump head at 21°C (70°F), 0 psi, 600 rpm.

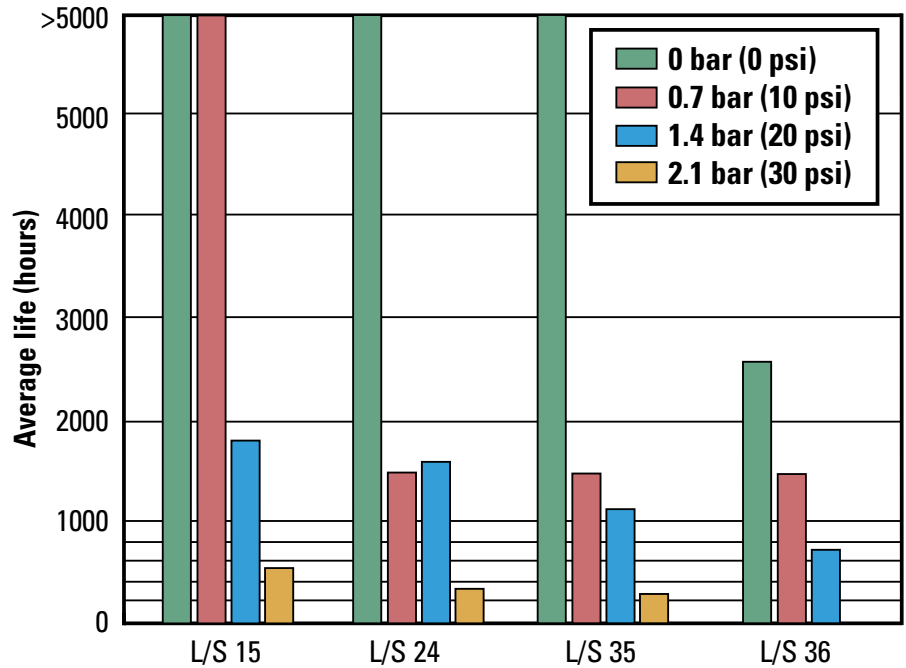




## PERFORMANCE DATA FOR NORPRENE® AND PHARMED® BPT TUBING FORMULATIONS L/S® HIGH-PERFORMANCE PUMP HEAD PUMPING WATER AT 21°C (70°F)

### L/S® HIGH-PERFORMANCE PRECISION TUBING

High-performance precision tubing (L/S® 15, L/S® 24, L/S® 35, and L/S® 36) improves pressure generation, suction lift, tubing life, and the ability to pump viscous fluids. The graph at right shows average tubing life while pumping water through a High-Performance pump head at 21°C (70°F), 600 rpm.



## PERFORMANCE DATA FOR SILICONE (PEROXIDE-CURED) TUBING FORMULATION L/S® HIGH-PERFORMANCE PUMP HEAD PUMPING WATER AT 21°C (70°F)

### L/S® HIGH-PERFORMANCE PRECISION TUBING

High-performance precision tubing (L/S® 15, L/S® 24, L/S® 35, and L/S® 36) improves pressure generation, suction lift, tubing life, and the ability to pump viscous fluids. The graph at right shows average tubing life while pumping water through a High-Performance pump head at 21°C (70°F), 600 rpm.

