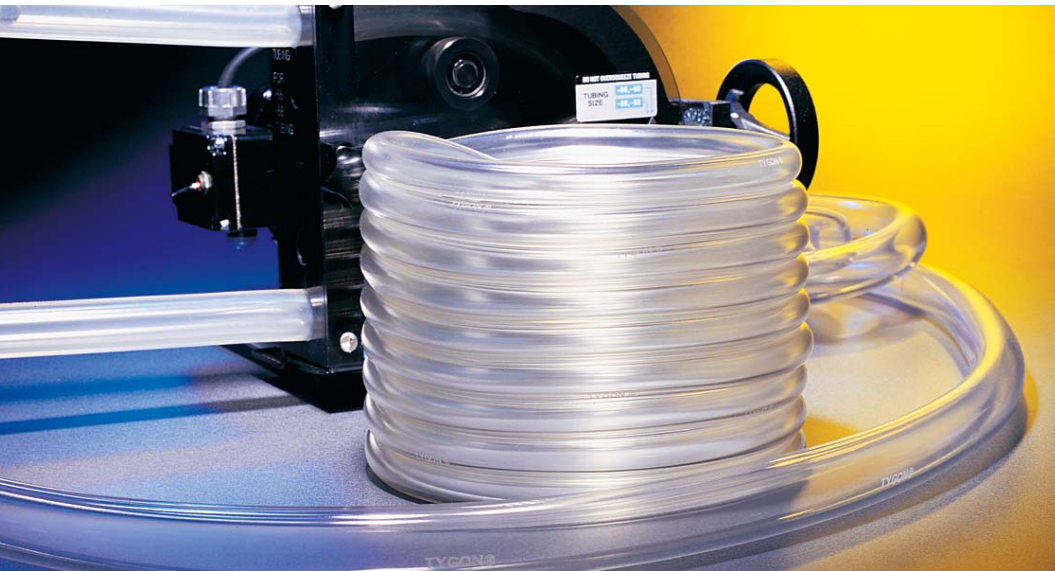


# TYGON® LFL Long Flex Life Pump Tubing



Crystal-clear TYGON® Long Flex Life Pump Tubing optimizes peristaltic pump performance in numerous applications including bulk transfer.

## Peristaltic Pump Systems Limit Risk of Fluid Contamination

Peristaltic pumping offers the advantage of efficiently transporting fluids without risking contact with any portion of the pump itself. To accomplish this, flexible tubing is inserted between the pump rollers and housing. As the rollers rotate around a stationary rotor, the tubing is “squeezed,” or occluded, pushing the fluid along through the inside tubing surface. As the tubing behind each roller recovers its shape, a vacuum is created, draining additional fluid from behind the occluded tubing. During this process the fluid is contained entirely within the flexible tubing, eliminating exposure (and risk of fluid contamination) to any components of the pump.

## Proper Tubing Selection Leads to Optimal Performance

Crystal-clear TYGON® Long Flex Life Pump Tubing is formulated specifically for use in peristaltic pump applications. With its superior flex life characteristics, manufacturing processes can be simplified by reducing production downtime due to pump tubing failure. (See Comparative Peristaltic Pump Tubing Life chart on back of page.) In-house tests indicate the excellent wear properties of TYGON® Long Flex Life Pump Tubing also lead to a reduction of particulate spallation. Limiting particle spallation can reduce the need for frequent downstream filter replacement. This unique feature can also reduce the risk of sensitive-fluid contamination critical to many applications found in the pharmaceutical, cosmetic, food and high purity chemical industries.

## Numerous Benefits to Specifying TYGON Long Flex Life Tubing

Non-aging characteristics and broad chemical resistance provide users with versatility for a wide variety of applications. Safe and non-toxic TYGON® Long Flex Life Pump Tubing can be produced in up to a 6" inside diameter, making it the ideal choice in bulk transfer applications. Additionally, TYGON® Long Flex Life Tubing will withstand virtually all commercial cleaning agents and bactericides without danger of corrosion (as with metals) or oxidation (as with rubber). TYGON® Long Flex Life Tubing can also be sterilized through conventional autoclave methods (steam 30 minutes at 15 psi), making it ideal for use in high purity process applications. TYGON® Long Flex Life Pump Tubing has a masterfile with the U.S Food and Drug Administration.

## BIOPHARMACEUTICAL PRODUCTS

*Long flex life pump tubing formulated specifically for use in peristaltic pump applications*

### Features/Benefits

- Longest Flex Life of Any Clear TYGON® Tubing
- Extremely Low Particulate Spallation
- Broad Chemical Resistance
- Meets USP Class VI and FDA Criteria

### Typical Pump Applications

- Production Filtration and Fermentation
- Food and Cosmetic Processing
- Flavor and Vitamin Concentrate Dispensing
- Surfactant Delivery
- Printing Ink Transfer
- Plating Chemicals Delivery
- Drum and Tank Drainage
- Highly Viscous Fluid Transfer
- Shear-sensitive Fluid Transfer

## TYGON® LFL Tubing Inventoried Sizes

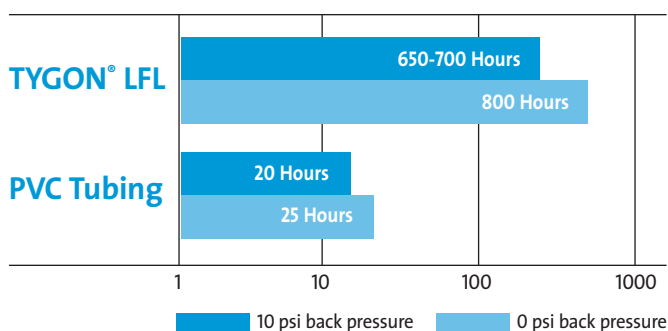
Part Number	I.D. (inches)	O.D. (inches)	Wall Thickness (inches)	Length (feet)	Minimum Bend Radius (inches)	Max. Suggested Working Pressure at		Vacuum Rating	
						73°F (psi)*	60°F (psi)*	73°F	160°F
AVW42003	1/16	3/16	1/16	25	1/4	50	14	29.9	29.9
AVW42007	1/8	1/4	1/16	25	1/2	33	10	29.9	29.9
AVW42012	3/16	5/16	1/16	25	3/4	25	7	29.9	20.0
AVW42017	1/4	3/8	1/16	25	1	20	6	15.0	5.0
AVW42019	1/4	1/2	1/8	25	3/4	35	9	29.9	29.9
AVW42022	5/16	7/16	1/16	25	1-1/4	15	5	10.0	5.0
AVW42029	3/8	5/8	1/8	25	1	25	7	29.9	10.0
AVW42038	1/2	3/4	1/8	25	1-1/2	20	6	20.0	10.0
AVW06057	3/4	1-1/4	1/4	10	1-3/4	24	9	29.9	15.0
AVW06064	1	1-3/8	3/16	10	3-1/4	15	5	5.0	<2.0

\*Working pressures are calculated at a 1.5 ratio relative to burst pressure using ASTM D1599.

The values listed for working and burst pressures are derived from tests conducted under controlled laboratory conditions. Many factors will reduce the tubing's ability to withstand pressures, including temperature, chemical attack, stress, pulsation and the attachment to fittings. It is imperative that the user conduct tests simulating the conditions of the application prior to specifying the tubing for use.

## Comparative Peristaltic Pump Tubing Life

The table below depicts hours until failure of 1/4" ID x 3/8" OD tubing. In each case, a 3-roller pump head was utilized operating at 600 rpm under room temperature (73° F). Tubing failure is measured in hours of use prior to rupture.



The performance of tubing in peristaltic pumping applications is affected by the conditions of use and equipment utilized, along with size and wall thickness of the tubing tested. The data above is presented for information only and should not be utilized for specification purposes.

TYGON® is a registered trademark.

## TYGON® LFL Typical Physical Properties

Property	ASTM Method	Value or Rating
Durometer Hardness Shore A, 15 Sec	D2240-91	56
Color	—	Clear
Tensile Strength psi (MPa)	D412-92	1,550 (10.7)
Ultimate Elongation, %	D412-92	380
Tear Resistance lb-f/inch (kN/m)	D1004-93	122 (21)
Specific Gravity	D792-91	1.16
Water Absorption, % 24 hrs. @ 23°C	D570-81	0.18
Compression Set Constant Deflection, % @ 158°F (70°C) for 22 hrs.	D395-89 Method B	64
Brittleness by Impact Temp., °F (°C)	D746-79	-65 (-54)
Maximum Recommended Operating Temp., °F (°C)	—	165 (74)
Low Temp. Flexibility, °F (°C)	D380-87	-94 (-70)
Dielectric Strength v/mil (kV/mm)	D149-93	414 (16.3)
Tensile Modulus, @ 100% psi (MPa) @ 200% psi (MPa)	D412-92	600 (4.1) 900 (6.2)
Tensile Set, %	D412-92	44

Unless otherwise noted, all tests were conducted at room temperature (73°F). Values shown were determined on 0.075" thick extruded strip or 0.075" thick molded ASTM plaques or molded ASTM durometer buttons.

**TYGON TUBING IS NOT INTENDED FOR USE AS AN IMPLANT MATERIAL**

## BIOPHARMACEUTICAL PRODUCTS

*Come through clean.™*

### Saint-Gobain Performance Plastics

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**IMPORTANT:** It is the user's responsibility to ensure the suitability and safety of Saint-Gobain Performance Plastics tubing for all intended uses. Laboratory and clinical tests must be conducted in accordance with applicable regulatory requirements in order to determine the safety and effectiveness for use of tubing in any particular application.

For a period of 6 months from the date of first sale, Saint-Gobain Performance Plastics Corporation warrants this product to be free from defects in materials and workmanship. Our only obligation will be to replace any portion proving defective, or at our option, to refund the purchase price thereof. User assumes all other risk, if any, including the risk of injury, loss or damage, direct or consequential, arising out of the use, misuse, or inability to use, this product. THIS WARRANTY IS IN LIEU OF THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. No deviation is authorized.

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