

TYGON S3™ E-LFL MEETS NSF-51



Tygon S3™ E-LFL

Peristaltic Pump Tubing for Food and Beverage Dispensing

Tygon S3™ E-LFL tubing from Saint-Gobain Performance Plastics is now phthalate-free. Saint-Gobain is proud to be among the first companies to offer sustainable flexible tubing products. The bio-based Tygon S3™ product line combines the high performance standards customers demand with an eco-friendly tubing design. Tygon S3™ E-LFL tubing is our best performing peristaltic pump tubing and has no industry equivalent. It has been tested rigorously to ensure that it meets the same physical standards as the old Tygon® LFL tubing, including 1,000 hours of peristaltic pump tubing life at 0 bar back pressure, low particulate spallation and chemical resistance.

Optimal Peristaltic Pump Performance

Crystal-clear Tygon S3™ E-LFL tubing is formulated specifically for use in peristaltic pump applications. The new Tygon S3™ E-LFL non-DEHP tubing has even longer pump life not only at 0 bar but also at back pressure of up to 1,7 bar. The peristaltic pump life performance at different back pressures is shown on the back page. With its superior flex life characteristics, Tygon S3™ E-LFL tubing reduces production downtime due to pump tubing failure. Our tests demonstrated reduced particle spallation, which eliminates the need for frequent downstream filter replacement and diminishes the risk of sensitive-fluid contamination. This is critical in several applications, such as pharmaceutical, high-purity chemicals, cosmetics and food. The non-aging and broad chemical resistance properties of Tygon S3™ E-LFL tubing enable users to utilize the new tubing for transferring food and beverages without danger of corrosion (as with metals) or oxidation (as with rubber).

Regulatory Standards

Tygon S3™ E-LFL complies with FDA, NSF**, and 3-A standards, and meets USP Class VI, ISO 10993, Japan Food Sanitation Law # 370/1959, REACH, 1935/2004/EC and 10/2011/EU for many foods and beverages. Tygon S3™ tubing products do not contain chemicals listed in California's Proposition 65.



Features and Benefits

- Long flex life – reduces downtime due to pump failure
- Broad chemical resistance
- Extremely low particle spallation – reliable for sensitive-fluid applications
- Contains no BPA or phthalates

Regulatory Compliance*

- FDA
- NSF**
- 3-A
- USP Class VI
- ISO 10993
- REACH
- 1935/2004/EC and 10/2011/EU
- Japan Food Sanitation Law #370/1959
- Contains no chemical listed in California's Proposition 65

* For complete compliance information and appropriate use instructions, please refer to the detailed document of compliance. The complete compliance information and use instructions can be found at www.TygonS3.com.

** Only US manufacturing sites are NSF compliant. For EU manufacturing sites, NSF compliance is in progress.

Tygon S3™ E-LFL

| Part Number | ID | | OD | | Wall Thickness | | Length | | Min. Bend Radius | | Max. Working Pressure | | Vacuum Rating | |
|-------------|------|------|-------|-------|----------------|------|--------|------|------------------|-------|-----------------------|------------|---------------|--------------|
| | (in) | (mm) | (in) | (mm) | (in) | (mm) | (ft) | (m) | (in) | (mm) | 73°F (psi) | 23°C (bar) | inHg at 73°F | mmHg at 23°C |
| AVX42003 | 1/16 | 1,6 | 3/16 | 4,8 | 1/16 | 1,6 | 25 | 7,62 | 1/4 | 6,4 | 50 | 3,5 | 29.9 | 760 |
| AVX42007 | 1/8 | 3,2 | 1/4 | 6,4 | 1/16 | 1,6 | 25 | 7,62 | 1/2 | 12,7 | 34 | 2,3 | 29.9 | 760 |
| AVX42012 | 3/16 | 4,8 | 5/16 | 7,9 | 1/16 | 1,6 | 25 | 7,62 | 3/4 | 19,0 | 25 | 1,7 | 29.9 | 760 |
| AVX42017 | 1/4 | 6,4 | 3/8 | 9,5 | 1/16 | 1,6 | 25 | 7,62 | 1 | 25,4 | 20 | 1,4 | 15.0 | 381 |
| AVX42019 | 1/4 | 6,4 | 1/2 | 12,7 | 1/8 | 3,2 | 25 | 7,62 | 3/4 | 19,0 | 35 | 2,4 | 29.9 | 760 |
| AVX42022 | 5/16 | 7,9 | 7/16 | 11,1 | 1/16 | 1,6 | 25 | 7,62 | 1-1/4 | 31,75 | 16 | 1,1 | 10.0 | 254 |
| AVX42029 | 3/8 | 9,5 | 5/8 | 15,9 | 1/8 | 3,2 | 25 | 7,62 | 1 | 25,4 | 25 | 1,7 | 29.9 | 760 |
| AVX42038 | 1/2 | 12,7 | 3/4 | 19,0 | 1/8 | 3,2 | 25 | 7,62 | 1-1/2 | 38,1 | 20 | 1,4 | 20.0 | 508 |
| AVX06057 | 3/4 | 19,0 | 1-1/4 | 31,75 | 1/4 | 6,4 | 10 | 3,04 | 1-3/4 | 44,4 | 24 | 1,7 | 29.9 | 760 |
| AVX06064 | 1 | 25,4 | 1-3/8 | 34,9 | 3/16 | 4,8 | 10 | 3,04 | 3-1/4 | 82,5 | 15 | 1,0 | 5.0 | 127 |

Working pressures are calculated at a 1:5 ratio relative to burst pressure using ASTM D1599.

Typical Physical Properties

| Property | ASTM Method | Value or Rating |
|--|-------------|------------------------|
| Durometer Hardness, Shore A, 15s | D2240 | 56 |
| Tensile Strength, psi (MPa) | D412 | 1,800 (12.4) |
| Ultimate Elongation, % | D412 | 400 |
| Tensile Stress, at 100% psi (MPa) at 200% psi (MPa) | D412 | 550 (3.8) 950 (6.6) |
| Tear Resistance, lb-f/in (kN/m) | D1004 | 184 (32.2) |
| Compression Set Constant Deflection, % at 158°F (70°C) for 22 hrs. | D395 | 68 |
| Brittleness by Impact Temp., °F (°C) | D746 | -51 (-46) |
| Cold Temp. Flexibility, at 5°C increments, °F (°C) | D380 | -67 (-55) |
| Maximum Recommended Operating Temp., °F (°C) | — | 165 (74) |
| Specific Gravity | D792 | 1.17 |
| Water Absorption, % at 73°F (23°C) for 24 hrs. | D570 | 0.20 |
| Tensile Set, at 75% Elongation | D412 | 54 |
| Color | — | Clear |

More sizes available upon request.

Peristaltic Pump Tubing Life

The table below illustrates hours until failure of 1/4" ID x 3/8" OD (6,35 mm ID x 9,525 mm OD) tubing for 0, 10, and 15 psi (0, 0.7, and 1.0 bar) and 1/4" ID x 7/16" OD (6,35 mm ID x 11,11 mm OD) tubing for 25 psi or 1.7 bar. In each case, a 3-roller pump head was utilized operating at 600 rpm under room temperature 73°F (23°C). Tubing failure is measured in hours of use prior to rupture.

Tygon S3™ E-LFL Tubing

| | | | |
|---------|-------------|--|--|
| 0 bar | 1,000 HOURS | | |
| 0,7 bar | 600 HOURS | | |
| 1 bar | 200 HOURS | | |
| 1,7 bar | 150 HOURS | | |

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.

TYGON S3™ E-LFL TUBING IS NOT INTENDED FOR USE AS AN IMPLANT MATERIAL.



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NOTE: The data and details given in this document are correct and up to date. This document is intended to provide information about the product and possible applications. This document is not the product specification and does not provide specific features, nor does it guarantee product performance in specific applications. Saint-Gobain cannot anticipate or control the conditions of the field and for this reason strongly recommends that practical tests are conducted to ensure that the product meets the requirements of a specific application.

Tygon S3™ is a trademark of Saint-Gobain Performance Plastics.