



Food and Beverage Dispensing



Tygon S3™ E-3603 Tubing is now phtalate-free. The bio-based Tygon S3™ line combines the high performance standards customers demand with an eco-friendly tubing design. Crystal-clear and flexible, long-lasting and crack-resistant, the new Tygon S3™ E-3603 Tubing delivers the same superior performance you have come to expect, but now in a formulation that contains a phtalate-free plasticizer.

Tygon S3™ E-3603 Tubing handles the most stringent foods and beverages. It is non-oxidizing and non-contaminating, and less permeable than rubber Tubing. The glassy smooth inner bore helps prevent buildup to facilitate cleaning. Coils are marked at 30,4 cm intervals for easy measuring.

Engineered to Last

Tygon S3™ E-3603 Tubing is specially formulated for resistance to flex-fatigue and abrasion. Tygon S3™ E-3603 offers superior life, which minimizes the labor and expense of replacement.

Available in Vacuum Tubing Sizes

Tygon S3™ E-3603 Vacuum Tubing has extra-heavy walls that will withstand a full vacuum at room temperature (759 mm of mercury at 23°C and up to 686 mm of mercury at 60°C). Tygon S3™ E-3603 Vacuum Tubing resists most inorganic and can be used in corrosive atmospheres.

Regulatory Standards

Tygon S3™ E-3603 Tubing complies with FDA, NSF, meets USP class VI, Japan Food Sanitation Law #370/1959, REACH, 1935/2004/EC and 10/2011/EU for many foods and beverages. Tygon S3™ Tubing do not contain chemicals listed in California's Proposition 65.

Features and Benefits

- Outstanding chemical resistance
- Lot-to-Lot consistency for reproducible results
- Non-oxidizing and non-contaminating
- Smooth, polished inner wall
- Slips easily over fittings and grips securely for simple lab set-ups
- Contains no BPA or phtalates
- Standard sizes available to hold full vacuum at room temperature

Typical Applications

- Food and Beverage dispensing
- Vacuum applications
- Laboratory
- Analytical Measurement
- Peristaltic Pumps

OPTUBUS GmbH – www.optubus.de – info@optubus.de

OPTUBUS believes that the information in this technical data sheet is an accurate description of the typical uses of the product. OPTUBUS, however, disclaims any liability for incidental or consequent damages, which may result from the use of the product that are beyond its control. Therefore it is the user's responsibility to thoroughly test the product in their particular application to determine its performance, efficiency and safety. Nothing contained herein is to be considered as permission or a recommendation to infringe any patent or any other intellectual property right.

Tygon S3™ E-3603 Tubing Standard Sizes

Part Number	ID	OD	Wall	Min. Bend Radius	Max. Working Pressure* 22°C (73°F)	Vacuum Rating at 22°C (73°F)
TY0,79ST2,38	0,79 mm (1/32")	2,38 mm (3/32")	0,79 mm (1/32")	3,1 mm	5,5 bar (80 psi)	760 mmHg
TY1,59ST3,18	1,59 mm (1/16")	3,18 mm (1/8")	0,79 mm (1/32")	6,3 mm	3,1 bar (45 psi)	760 mmHg
TY1,59ST4,76	1,59 mm (1/16")	4,76 mm (3/16")	1,59 mm (1/16")	3,1 mm	3,1 bar (45 psi)	760 mmHg
TY2,0ST4,0	2,0 mm	4,0 mm	1,0 mm	7,0 mm	2,7 bar (30 psi)	760 mmHg
TY2,38ST3,97	2,38 mm (3/32")	3,97 mm (5/32")	0,79 mm (1/32")	9,5 mm	2,0 bar (30 psi)	760 mmHg
TY2,38ST5,56	2,38 mm (3/32")	5,56 mm (7/32")	1,59 mm (1/16")	6,3 mm	3,7 bar (55 psi)	760 mmHg
TY3,0ST5,0	3,0 mm	5,0 mm	1,0 mm	13,0 mm	2,0 bar (30 psi)	760 mmHg
TY3,18ST4,76	3,18 mm (1/8")	4,76 mm (3/16")	0,79 mm (1/32")	12,7 mm	1,7 bar (25 psi)	508 mmHg
TY3,18ST6,35	3,18 mm (1/8")	6,35 mm (1/4")	1,59 mm (1/16")	9,5 mm	3,1 bar (45 psi)	760 mmHg
TY3,97ST5,56	3,97 mm (5/32")	5,56 mm (7/32")	0,79 mm (1/32")	9,5 mm	1,3 bar (20 psi)	304 mmHg
TY3,97ST7,14	3,97 mm (5/32")	7,14 mm (9/32")	1,59 mm (1/16")	12,7 mm	2,4 bar (35 psi)	760 mmHg
TY4,0ST6,0	4,0 mm	6,0 mm	1,0 mm	16,0 mm	1,7 bar (25 psi)	533 mmHg
TY4,76ST14,29	4,76 mm (3/16")	14,29 mm (9/16")	4,76 mm (3/16")	6,3 mm	4,1 bar (60 psi)	760 mmHg
TY4,76ST6,35	4,76 mm (3/16")	6,35 mm (1/4")	0,79 mm (1/32")	25,4 mm	1,3 bar (20 psi)	228 mmHg
TY4,76ST7,94	4,76 mm (3/16")	7,94 mm (5/16")	1,59 mm (1/16")	15,8 mm	2,0 bar (30 psi)	760 mmHg
TY4,76ST9,53	4,76 mm (3/16")	9,53 mm (3/8")	2,38 mm (3/32")	12,7 mm	2,7 bar (40 psi)	760 mmHg
TY4,76ST11,11	4,76 mm (3/16")	11,11 mm (7/16")	3,18 mm (1/8")	9,5 mm	3,7 bar (55 psi)	760 mmHg
TY5,0ST8,0	5,0 mm	8,0 mm	1,5 mm	19,0 mm	2,0 bar (30 psi)	760 mmHg
TY6,0ST9,0	6,0 mm	9,0 mm	1,5 mm	22,0 mm	1,7 bar (25 psi)	558 mmHg
TY6,35ST7,94	6,35 mm (1/4")	7,94 mm (5/16")	0,79 mm (1/32")	41,1 mm	1,0 bar (15 psi)	127 mmHg
TY6,35ST9,53	6,35 mm (1/4")	9,53 mm (3/8")	1,59 mm (1/16")	25,4 mm	1,7 bar (25 psi)	508 mmHg
TY6,35ST11,11	6,35 mm (1/4")	11,11 mm (7/16")	2,38 mm (3/32")	19,0 mm	2,4 bar (35 psi)	760 mmHg
TY6,35ST12,7	6,35 mm (1/4")	12,7 mm (1/2")	3,18 mm (1/8")	12,7 mm	2,7 bar (40 psi)	760 mmHg
TY6,35ST15,88	6,35 mm (1/4")	15,88 mm (5/8")	4,76 mm (3/16")	12,7 mm	3,4 bar (50 psi)	760 mmHg
TY7,0ST10,0	7,0 mm	10,0 mm	1,5 mm	29,0 mm	1,3 bar (20 psi)	381 mmHg
TY7,94ST11,11	7,94 mm (5/16")	11,11 mm (7/16")	1,59 mm (1/16")	34,9 mm	1,3 bar (20 psi)	330 mmHg
TY7,94ST12,7	7,94 mm (5/16")	12,7 mm (1/2")	2,38 mm (3/32")	25,4 mm	2,0 bar (30 psi)	760 mmHg
TY7,94ST14,29	7,94 mm (5/16")	14,29 mm (9/16")	3,18 mm (1/8")	22,2 mm	2,4 bar (35 psi)	760 mmHg
TY7,94ST15,88	7,94 mm (5/16")	15,88 mm (5/8")	3,97 mm (5/32")	19,0 mm	3,1 bar (45 psi)	760 mmHg
TY8,0ST12,0	8,0 mm	12,0 mm	2,0 mm	29,0 mm	1,7 bar (25 psi)	533 mmHg
TY9,53ST12,7	9,53 mm (3/8")	12,7 mm (1/2")	1,59 mm (1/16")	38,1 mm	1,3 bar (20 psi)	228 mmHg
TY9,53ST14,29	9,53 mm (3/8")	14,29 mm (9/16")	2,38 mm (3/32")	34,9 mm	1,7 bar (25 psi)	533 mmHg
TY9,53ST15,88	9,53 mm (3/8")	15,88 mm (5/8")	3,18 mm (1/8")	28,5 mm	2,0 bar (30 psi)	760 mmHg
TY9,53ST22,23	9,53 mm (3/8")	22,23 mm (7/8")	6,35 mm (1/4")	15,8 mm	3,4 bar (50 psi)	760 mmHg
TY10,0ST14,0	10,0 mm	14,0 mm	2,0 mm	42,0 mm	1,3 bar (20 psi)	355 mmHg
TY11,11ST14,29	11,11 mm (7/16")	14,29 mm (9/16")	1,59 mm (1/16")	57,1 mm	1,0 bar (15 psi)	177 mmHg

OPTUBUS GmbH – www.optubus.de – info@optubus.de

OPTUBUS believes that the information in this technical data sheet is an accurate description of the typical uses of the product. OPTUBUS, however, disclaims any liability for incidental or consequent damages, which may result from the use of the product that are beyond its control. Therefore it is the user's responsibility to thoroughly test the product in their particular application to determine its performance, efficiency and safety. Nothing contained herein is to be considered as permission or a recommendation to infringe any patent or any other intellectual property right.

Part Number	ID	OD	Wall	Min. Bend Radius	Max. Working Pressure* 22°C (73°F)	Vacuum Rating at 22°C (73°F)
TY11,11ST15,88	11,11 mm (7/16")	15,88 mm (5/8")	2,38 mm (3/32")	44,4 mm	1,3 bar (20 psi)	381 mmHg
TY11,11ST17,46	11,11 mm (7/16")	17,46 mm (11/16")	3,18 mm (1/8")	34,9 mm	1,7 bar (25 psi)	711 mmHg
TY12,7ST15,88	12,7 mm (1/2")	15,88 mm (5/8")	1,59 mm (1/16")	73,0 mm	0,6 bar (10 psi)	127 mmHg
TY12,7ST17,46	12,7 mm (1/2")	17,46 mm (11/16")	2,38 mm (3/32")	57,1 mm	1,3 bar (20 psi)	304 mmHg
TY12,7ST19,05	12,7 mm (1/2")	19,05 mm (3/4")	3,18 mm (1/8")	38,1 mm	1,7 bar (25 psi)	533 mmHg
TY12,7ST20,64	12,7 mm (1/2")	20,64 mm (13/16")	3,97 mm (5/32")	38,1 mm	2,0 bar (30 psi)	760 mmHg
TY12,7ST28,58	12,7 mm (1/2")	28,58 mm (1-1/8")	7,94 mm (5/16")	22,2 mm	3,1 bar (45 psi)	760 mmHg
TY14,29ST19,05	14,29 mm (9/16")	19,05 mm (3/4")	2,38 mm (3/32")	63,5 mm	1,0 bar (15 psi)	228 mmHg
TY14,29ST20,64	14,29 mm (9/16")	20,64 mm (13/16")	3,18 mm (1/8")	50,8 mm	1,3 bar (20 psi)	431 mmHg
TY15,88ST20,64	15,88 mm (5/8")	20,64 mm (13/16")	2,38 mm (3/32")	76,2 mm	1,0 bar (15 psi)	177 mmHg
TY15,88ST22,23	15,88 mm (5/8")	22,23 mm (7/8")	3,18 mm (1/8")	60,3 mm	1,3 bar (20 psi)	330 mmHg
TY15,88ST23,81	15,88 mm (5/8")	23,81 mm (15/16")	3,97 mm (5/32")	50,8 mm	1,7 bar (25 psi)	533 mmHg
TY15,88ST34,93	15,88 mm (5/8")	34,93 mm (1-3/8")	9,53 mm (3/8")	25,4 mm	2,7 bar (40 psi)	760 mmHg
TY17,46ST22,23	17,46 mm (11/16")	22,23 mm (7/8")	2,38 mm (3/32")	88,9 mm	1,0 bar (15 psi)	152 mmHg
TY19,05ST25,4	19,05 mm (3/4")	25,4 mm (1")	3,18 mm (1/8")	82,5 mm	1,2 bar (18 psi)	228 mmHg
TY19,05ST26,99	19,05 mm (3/4")	26,99 mm (1-1/16")	3,97 mm (5/32")	69,8 mm	1,3 bar (20 psi)	381 mmHg
TY19,05ST28,58	19,05 mm (3/4")	28,58 mm (1-1/8")	4,76 mm (3/16")	60,3 mm	1,7 bar (25 psi)	533 mmHg
TY19,05ST31,75	19,05 mm (3/4")	31,75 mm (1-1/4")	6,35 mm (1/4")	50,8 mm	2,0 bar (30 psi)	760 mmHg
TY19,05ST28,58	22,23 mm (7/8")	28,58 mm (1-1/8")	3,18 mm (1/8")	10,4,7 mm	1,0 bar (15 psi)	177 mmHg
TY19,05ST38,1	19,05 mm (3/4")	38,1 mm (1-1/2")	9,53 mm (3/8")	38,1 mm	2,4 bar (35 psi)	760 mmHg
TY22,23ST30,16	22,23 mm (7/8")	30,16 mm (1-3/16")	3,97 mm (5/32")	88,9 mm	1,3 bar (20 psi)	279 mmHg
TY25,4ST31,75	25,4 mm (1")	31,75 mm (1-1/4")	3,18 mm (1/8")	120,6 mm	1,0 bar (15 psi)	127 mmHg
TY25,4ST34,93	25,4 mm (1")	34,93 mm (1-3/8")	4,76 mm (3/16")	101,6 mm	1,3 bar (20 psi)	304 mmHg
TY25,4ST38,1	25,4 mm (1")	38,1 mm (1-1/2")	6,35 mm (1/4")	76,2 mm	1,7 bar (25 psi)	533 mmHg
TY25,4ST50,8	25,4 mm (1")	50,8 mm (2")	12,7 mm (1/2")	47,6 mm	2,4 bar (35 psi)	760 mmHg
TY28,58ST38,1	28,58 mm (1-1/8")	38,1 mm (1-1/2")	4,76 mm (3/16")	114,3 mm	1,2 bar (18 psi)	228 mmHg
TY31,75ST38,1	31,75 mm (1-1/4")	38,1 mm (1-1/2")	3,18 mm (1/8")	200,0 mm	0,8 bar (12 psi)	76 mmHg
TY31,75ST41,38	31,75 mm (1-1/4")	41,28 mm (1-5/8")	4,76 mm (3/16")	139,7 mm	1,0 bar (15 psi)	177 mmHg
TY31,75ST44,45	31,75 mm (1-1/4")	44,45 mm (1-3/4")	6,35 mm (1/4")	111,1 mm	1,3 bar (20 psi)	330 mmHg
TY38,1ST47,63	38,1 mm (1-1/2")	47,63 mm (1-7/8")	4,76 mm (3/16")	184,1 mm	1 bar (15 psi)	127 mmHg
TY38,1ST50,8	38,1 mm (1-1/2")	50,8 mm (2")	6,35 mm (1/4")	149,2 mm	1,2 bar (18 psi)	228 mmHg
TY44,45ST57,15	44,45 mm (1-3/4")	57,15 mm (2-1/4")	6,35 mm (1/4")	190,5 mm	1,1 bar (16 psi)	177 mmHg
TY50,8ST63,5	50,8 mm (2")	63,5 mm (2-1/2")	6,35 mm (1/4")	238,1 mm	1,0 bar (15 psi)	127 mmHg

*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.

OPTUBUS GmbH – www.optubus.de – info@optubus.de

OPTUBUS believes that the information in this technical data sheet is an accurate description of the typical uses of the product. OPTUBUS, however, disclaims any liability for incidental or consequent damages, which may result from the use of the product that are beyond its control. Therefore it is the user's responsibility to thoroughly test the product in their particular application to determine its performance, efficiency and safety. Nothing contained herein is to be considered as permission or a recommendation to infringe any patent or any other intellectual property right.

Typical Physical Properties of Tygon S3™ E-3603 Tubing

Property	ASTM Method	Value of Rating
Durometer Hardness	D2240	56° Shore A, 15s
Color	-	Clear
Tensile Strength	D412	12.1 MPa (1.750 psi)
Ultimate Elongation	D412	425,00%
Tear Resistance	D1004	31,0 kN/m (173 lb-f/In)
Specific Gravity	D792	1,21
Compression set Constant Deflection, 22 hrs. @ 70°C	D395 Method B	64,00%
Tensile Stress @100% Elongation	D412	4.0 MPa (582 psi)
Tensile Set @75% Elongation	D412	95
Maximum Recommended Operating Temperature	-	74 °C (165°F)
Brittleness by Impact Temperature	D746	-46°C (-51°F)
Water Absorption, 24 hrs. @ 23°C	D570	0.21 %

Unless otherwise noted, all tests were conducted at room temperature 23°C (73°F). Values shown were determined on 1.905 mm (0,075") thick extruded strip or 1.905 mm (0,075") thick molded ASTM plaques or molded ASTM durometer buttons.