

TYGON E-3603

The only choice for phthalate-free flexible tubing

Non-DEHP Tubing for Laboratory, Food & Beverage and Vacuum Applications

Tygon S3™ E-3603 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™ 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 non-DEHP tubing delivers the same superior performance you have come to expect, but now in a formulation that contains a non-DEHP plasticizer.

Tygon S3™ E-3603 Tubing handles most inorganic chemicals found in the laboratory. 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. As a tubing for instrumentation connection, vent, drain and other general laboratory applications, Tygon S3™ E-3603 Tubing offers superior life, which minimizes the labor and expense of replacement. It can be sterilized through conventional autoclave methods (steam 30 minutes at 1,0 bar, 121° C) and Ethylene Oxide.

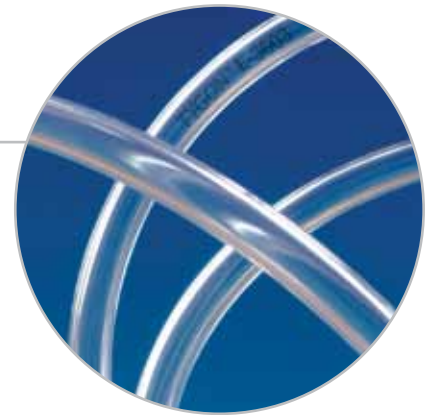
Available in Vacuum Tubing Sizes

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

Regulatory Standards

Tygon S3™ complies with FDA, NSF, 3-A, 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 products do not contain chemicals listed in California's Prop 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.



Tygon S3™ E-3603 Features/Benefits

- The new bio-based formulation delivers the same excellent performance
- 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 phthalates
- Standard sizes available to hold full vacuum at room temperature

Typical Applications

- General laboratory
- Food & beverage*
- Biopharmaceutical
- Analytical instruments
- Peristaltic and vacuum pumps
- Ideal for condensers, incubators, desiccators, gas lines and drain lines

Tygon S3™ E-3603 Non-DEHP Tubing—Available Sizes

Saint-Gobain Part Number	I.D. (mm)	O.D. (mm)	Wall Thickness (mm)	Length (m)	Minimum Bend Radius (mm)	Maximum Working Pressure at 23°C (bar)	Vacuum Rating of Mercury mm at 23°C
ACF00001	0,8	2,4	0,8	15	3,2	4,8	760
ACF00002	1,6	3,2	0,8	15	6,4	2,5	760
ACF02002	1,6	3,2	0,8	30,5	3,2	2,5	760
ACF04002	1,6	3,2	0,8	152	3,2	2,5	760
ACF00003	1,6	4,8	1,6	15	3,2	4,8	760
ACF00004	2,4	4,0	0,8	15	9,5	1,7	760
ACF02004	2,4	4,0	0,8	30,5	9,5	1,7	760
ACF00005	2,4	5,6	1,6	15	6,4	3,2	760
ACF00006	3,2	4,8	0,8	15	12,7	1,4	508
ACF04006	3,2	4,8	0,8	152	12,7	1,4	508
ACF00007	3,2	6,4	1,6	15	9,5	2,5	760
ACF02007	3,2	6,4	1,6	30,5	9,5	2,5	760
ACF04007	3,2	6,4	1,6	152	9,5	2,5	760
ACF00009	4,0	5,6	0,8	15	9,5	1,2	305
ACF00010	4,0	7,1	1,6	15	12,7	2,1	760
ACF02010	4,0	7,1	1,6	30,5	12,7	2,1	760
ACF00011	4,8	6,4	0,8	15	25,4	1,0	229
ACF00012	4,8	7,9	1,6	15	15,9	1,7	760
ACF02012	4,8	7,9	1,6	30,5	15,9	1,7	760
ACF04012	4,8	7,9	1,6	152	15,9	1,7	760
ACF00013	4,8	9,5	2,4	15	12,7	2,5	760
ACF00014	4,8	11,1	3,2	15	9,5	3,2	760
ACF00016	6,4	7,9	0,8	15	41,3	0,8	127
ACF00017	6,4	9,5	1,6	15	25,4	1,4	508
ACF02017	6,4	9,5	1,6	30,5	25,4	1,4	508
ACF04017	6,4	9,5	1,6	152	25,4	1,4	508
ACF00018	6,4	11,1	2,4	15	19,0	1,9	760
ACF00019	6,4	12,7	3,2	15	12,7	2,5	760
ACF02019	6,4	12,7	3,2	30,5	12,7	2,5	760
ACF00022	7,9	11,1	1,6	15	34,9	1,2	330
ACF00023	7,9	12,7	2,4	15	25,4	1,6	760
ACF00024	7,9	14,3	3,2	15	22,2	2,1	760
ACF00025	7,9	15,9	4,0	15	19,0	2,5	760
ACF00027	9,5	12,7	1,6	15	38,1	1,0	229
ACF00028	9,5	14,3	2,4	15	34,9	1,4	533
ACF00029	9,5	15,9	3,2	15	28,6	1,7	760
ACF00032	11,1	14,3	1,6	15	57,2	0,9	178
ACF00033	11,1	15,9	2,4	15	44,4	1,2	381
ACF00034	11,1	17,5	3,2	15	34,9	1,5	711
ACF00036	12,7	15,9	1,6	15	73,0	0,8	127
ACF00037	12,7	17,5	2,4	15	57,2	1,0	305
ACF02037	12,7	17,5	2,4	30,5	57,2	1,0	305
ACF00038	12,7	19,0	3,2	15	38,1	1,4	533
ACF00039	12,7	20,6	4,0	15	38,1	1,7	760
ACF00041	14,3	19,0	2,4	15	63,5	1,0	229
ACF00042	14,3	20,6	3,2	15	50,8	1,2	432
ACF00045	15,9	20,6	2,4	15	76,2	0,9	178
ACF00046	15,9	22,2	3,2	15	60,3	1,2	330
ACF00047	15,9	23,8	4,0	15	50,8	1,4	533
ACF00050	17,5	22,2	2,4	15	88,9	0,8	152
ACF00053	19,0	25,4	3,2	15	82,6	1,0	229
ACF00054	19,0	27,0	4,0	15	69,8	1,2	381
ACF00055	19,0	28,6	4,8	15	60,3	1,4	533
ACF00057	19,0	31,8	6,4	15	50,8	1,7	760
ACF00059	22,2	28,6	3,2	15	104,8	0,9	178
ACF00060	22,2	30,2	4,0	15	88,9	1,0	279
ACF00062	25,4	31,8	3,2	15	120,6	0,8	127
ACF00064	25,4	34,9	4,8	15	101,6	1,1	305
ACF00065	25,4	38,1	6,4	15	76,2	1,4	533
ACF00068	28,6	38,1	4,8	15	114,3	1,0	229
ACF00069	31,8	38,1	3,2	15	200	0,7	76
ACF00070	31,8	41,3	4,8	15	139,7	0,9	178
ACF00073	38,1	47,6	4,8	15	184,2	0,8	127
ACF00074	38,1	50,8	6,4	15	149,2	1,0	229
ACF00076	44,4	57,2	6,4	15	190,5	0,9	178
ACF00078	50,8	63,5	6,4	15	238,1	0,8	127
ACF05078	50,8	63,5	6,4	6	238,1	0,8	127

Tygon S3™ E-3603 Non-DEHP Tubing—Available Sizes

Saint-Gobain Part Number	I.D. (mm)	O.D. (mm)	Wall Thickness (mm)	Length (m)	Minimum Bend Radius (mm)	Maximum Working Pressure at 23°C (bar)	Vacuum Rating of Mercury mm at 23°C
Vacuum Sizes							
ACF00015	4,8	14,3	4,8	15	6,4	4,8	760
ACF00020	6,4	15,9	4,8	15	12,7	3,7	760
ACF00030	9,5	22,2	6,4	15	15,9	3,2	760
ACF00040	12,7	28,6	7,9	15	22,2	3,1	760
ACF00049	15,9	34,9	9,5	15	25,4	3,0	760
ACF00058	19,0	38,1	9,5	15	38,1	2,5	760
ACF00066	25,4	50,8	12,7	15	47,6	2,5	760
ACF05066	25,4	50,8	12,7	6	47,6	2,5	760

Unipacs (10/25,4cm lengths per carton)

ACFUN007	3,2	6,4	1,6	10/3	9,5	3,1	760
ACFUN012	4,8	7,9	1,6	10/3	15,9	2,0	760
ACFUN017	6,4	9,5	1,6	10/3	25,4	1,7	508
ACFUN019	6,4	12,7	3,2	10/3	12,7	2,8	760
ACFUN027	9,5	12,7	1,6	10/3	38,1	1,4	229
ACFUN036	12,7	15,9	1,6	10/3	73,0	0,7	127
ACFUN053	19,0	25,4	3,2	10/3	82,6	1,2	229
ACFUN062	25,4	31,8	3,2	10/3	120,6	1,0	127

Vacuum-Unipacs (10/3,04m or 4/3,04m lengths per carton as shown below)

ACFUN015	4,8	14,3	4,8	10/3	6,4	4,2	760
ACFUN020	6,4	15,9	4,8	10/3	12,7	3,5	760
ACFUN030	9,5	22,2	6,4	10/3	15,9	3,5	760
ACFUN040	12,7	28,6	7,9	10/3	22,2	3,1	760
ACFUN049	15,9	34,9	9,5	10/3	25,4	2,8	760

Metric Sizes

Saint-Gobain Part Number	I.D. mm	O.D. mm	Wall Thickness mm	Length m	Minimum Bend Radius mm	Maximum Working Pressure Bars at 23°C	Vacuum Rating mm of Mercury at 23°C
ACF1S1502	2	4	1	15	7	2,5	760
ACF1S1517	3	5	1	15	13	1,7	760
ACF1S1518	4	6	1	15	16	1,4	533
ACF1S1503	5	8	1,5	15	19	1,6	760
ACF1S1504	6	9	1,5	15	22	1,4	559
ACF1S1506	8	12	2	15	29	1,4	533

Unless otherwise noted, all tests were conducted at room temperature 23°C. Values shown were determined on 1,905 mm thick extruded strip or 1,905 mm thick molded ASTM plaques or molded ASTM durometer buttons.

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

Please consult factory for availability.

Metric dimensions are nominal.

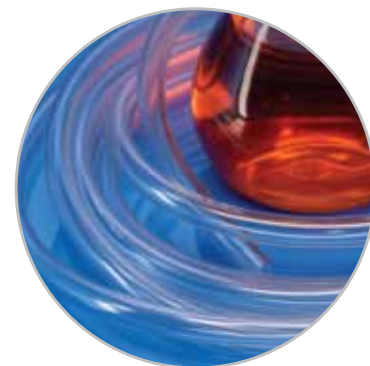
For more than four decades, Saint-Gobain Performance Plastics and its family of companies have supplied the world with innovative, high-performance polymer products for the most demanding applications. Our tradition of excellence goes back more than 300 years through our parent company, Compagnie de Saint-Gobain, one of the world's top 100 industrial corporations, with operations in 64 countries. This successful corporation has been built with the single purpose of serving the customer and a commitment to quality and leadership in each of the industries served.



Relative Chemical Resistance Properties*

Category	Chemical Tested	Performance
Acids	Conc.	F
	Med.	E
	Weak	E
Bases	Conc.	F
	Med.	E
	Weak	E
Salts		E
Alcohols		F
Ketones		U
Hydrocarbons		U

E = Excellent F = Fair U = Unsatisfactory
 *All tests conducted at room temperature.



Product Characteristics†

Opacity	Clear
FDA Approved for Food Contact	Yes
NSF 51 Standard	Yes
USP Class VI	Approved

† 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.

Typical Physical Properties

Property	ASTM Method	Value or Rating E-3603
Durometer Hardness (Shore A), 15 sec	D2240	56
Color	–	Clear
Tensile Strength, MPa	D412	12,1
Ultimate Elongation, %	D412	425
Tear Resistance, kN/m	D1004	31
Specific Gravity	D792	1,21
Water Absorption, % 24 hrs. @ 23°C	D570	0,21
Compression Set Constant Deflection, % @ 70°C for 22 hrs.	D395 Method B	64
Brittle Temperature, °C	D746	-46
Maximum Recommended Operating Temp., °C	–	74
Tensile Stress, @ 100% elongation MPa	–	4,0
Tensile Set, %	D412	95

Unless otherwise noted, all tests were conducted at room temperature 23°C. Values shown were determined on 1,905 mm thick extruded strip or 1,905 mm thick molded ASTM plaques or molded ASTM durometer buttons.

Saint-Gobain Performance Plastics Manufacturing Facilities

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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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