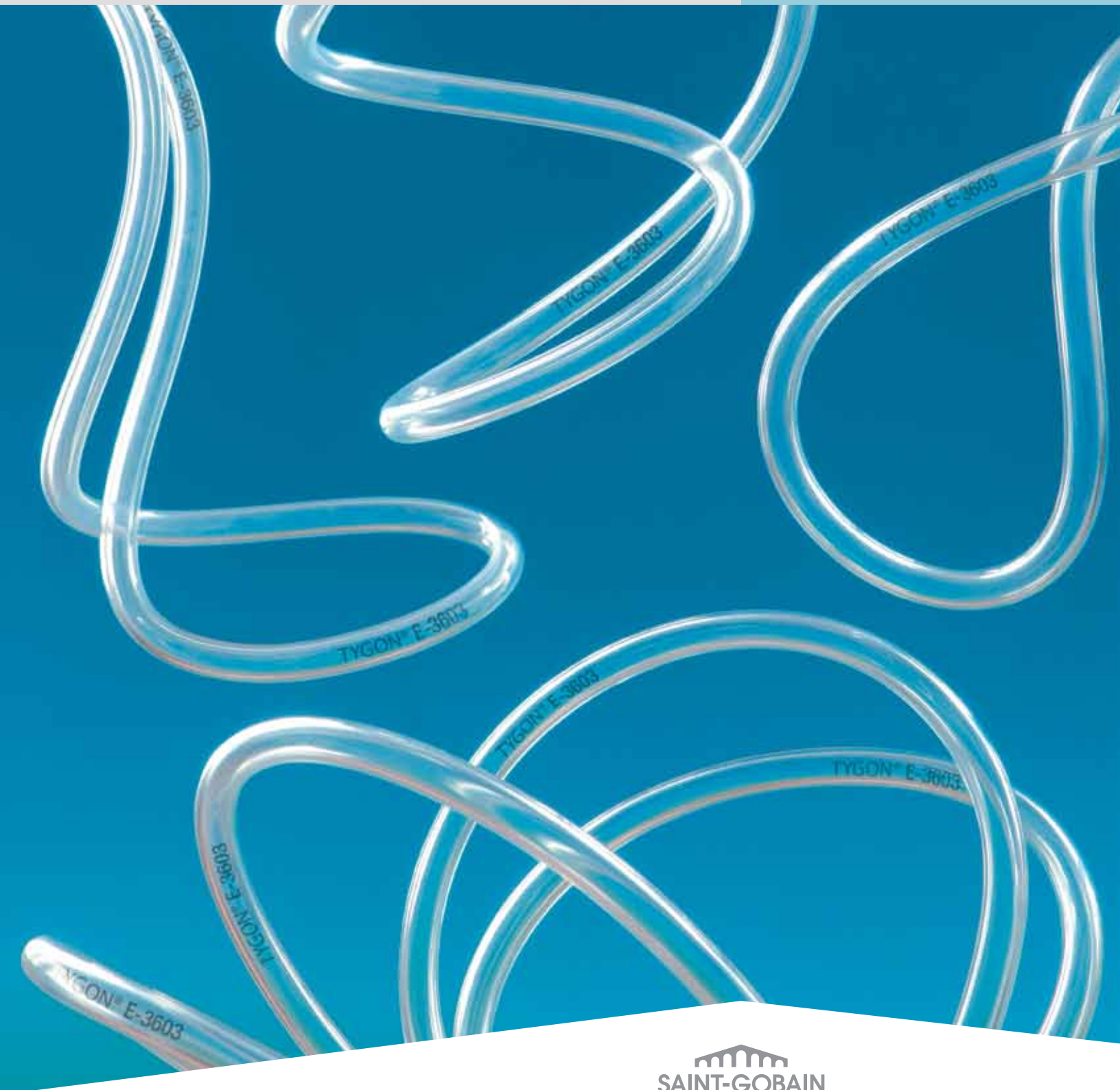


# TYGON® E-3603

Let the Evolution Begin

NON-DEHP  
LABORATORY AND  
VACUUM TUBING



# TYGON® E-3603

## NON-DEHP LABORATORY AND VACUUM TUBING

### Let the Evolution Begin

Crystal clear and flexible, long-lasting and crack-resistant, new TYGON® E-3603 Non-DEHP Laboratory and Vacuum Tubing delivers the same superior performance you've come to expect, but now in a formulation that contains a non-DEHP plasticizer. Replacing DEHP with a globally accepted substitute eliminates concerns about potentially harmful health effects from repeated exposure to high levels of DEHP leachates.

TYGON® E-3603 Laboratory 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, and coils are marked at 1-foot (30.4 cm) intervals for easy measuring.

TYGON® E-3603 Laboratory Tubing may be safely sterilized by autoclaving and, due to its excellent chemical resistance, may also be sterilized chemically or by gas (ethylene oxide).

### Engineered to Last

TYGON® E-3603 Laboratory Tubing is specially formulated for resistance to flex-fatigue and abrasion. In many peristaltic pump applications, it will outlast its nearest competitor by at least 2 to 1. As a tubing for instrumentation connection, vent, drain and other general laboratory applications, TYGON® E-3603 Laboratory Tubing offers superior life, which minimizes the labor and expense of replacement.



### Available in Vacuum Tubing Sizes

TYGON® E-3603 Vacuum Tubing has extra heavy walls that will withstand a full vacuum at room temperature (29.9" [759mm] of mercury at 73°F [23°C]) and up to 27" [686mm] of mercury at 140°F [60°C]). Like standard TYGON® Laboratory Tubing, TYGON® E-3603 Vacuum Tubing resists most inorganic chemicals and can be used in corrosive atmospheres.

## TYGON® E-3603 Non-DEHP Tubing Available Sizes

Saint-Gobain Part Number	I.D.		O.D.		Wall Thickness		Length		Minimum Bend Radius		Maximum Working Pressure		Vacuum Rating of Mercury at	
	In.	mm	In.	mm	In.	mm	Ft.	m	In.	mm	psi at 73°F **	bars at 23°C**	inches at 73°F	mm at 23°C
ACF00001	1/32	0.8	3/32	2.4	1/32	0.8	50	15	1/8	3.2	80	5.5	29.9	760
ACF00002	1/16	1.6	1/8	3.2	1/32	0.8	50	15	1/4	6.4	45	3.1	29.9	760
ACF02002	1/16	1.6	1/8	3.2	1/32	0.8	100	30.5	1/8	3.2	45	3.1	29.9	760
ACF04002	1/16	1.6	1/8	3.2	1/32	0.8	500	152	1/8	3.2	45	3.1	29.9	760
ACF00003	1/16	1.6	3/16	4.8	1/16	1.6	50	15	1/8	3.2	75	5.2	29.9	760
ACF00004	3/32	2.4	5/32	4.0	1/32	0.8	50	15	3/8	9.5	30	2.0	29.9	760
ACF02004	3/32	2.4	5/32	4.0	1/32	0.8	100	30.5	3/8	9.5	30	2.0	29.9	760
ACF00005	3/32	2.4	7/32	4.0	1/16	1.6	50	15	1/4	6.4	55	3.8	29.9	760
ACF00006	1/8	3.2	3/16	4.8	1/32	0.8	50	15	1/2	12.7	25	1.7	20	508
ACF04006	1/8	3.2	3/16	4.8	1/32	0.8	500	152	1/2	12.7	25	1.7	20	508
ACF00007 *	1/8	3.2	1/4	6.4	1/16	1.6	50	15	3/8	9.5	45	3.1	29.9	760
ACF02007 *	1/8	3.2	1/4	6.4	1/16	1.6	100	30.5	3/8	9.5	45	3.1	29.9	760
ACF04007	1/8	3.2	1/4	6.4	1/16	1.6	500	152	3/8	9.5	45	3.1	29.9	760
ACF00009	5/32	4.0	7/32	5.6	1/32	0.8	50	15	3/8	9.5	20	1.4	12	305
ACF00010	5/32	4.0	9/32	7.1	1/16	1.6	50	15	1/2	12.7	35	2.4	29.9	760
ACF02010	5/32	4.0	9/32	7.1	1/16	1.6	100	30.5	1/2	12.7	35	2.4	29.9	760
ACF00011	3/16	4.8	1/4	6.4	1/32	0.8	50	15	1	25.4	20	1.4	9	229
ACF00012 *	3/16	4.8	5/16	7.9	1/16	1.6	50	15	5/8	15.9	30	2.0	29.9	760
ACF02012	3/16	4.8	5/16	7.9	1/16	1.6	100	30.5	5/8	15.9	30	2.0	29.9	760
ACF04012	3/16	4.8	5/16	7.9	1/16	1.6	500	152	5/8	15.9	30	2.0	29.9	760
ACF00013	3/16	4.8	3/8	9.5	3/32	2.4	50	15	1/2	12.7	40	2.8	29.9	760
ACF00014	3/16	4.8	7/16	11.1	1/8	3.2	50	15	3/8	9.5	55	3.8	29.9	760
ACF00016	1/4	6.4	5/16	7.9	1/32	0.8	50	15	1-5/8	41.3	15	1.0	5	127
ACF00017 *	1/4	6.4	3/8	9.5	1/16	1.6	50	15	1	25.4	25	1.7	20	508
ACF02017	1/4	6.4	3/8	9.5	1/16	1.6	100	30.5	1	25.4	25	1.7	20	508
ACF04017	1/4	6.4	3/8	9.5	1/16	1.6	500	152	1	25.4	25	1.7	20	508
ACF00018 *	1/4	6.4	7/16	11.1	3/32	2.4	50	15	3/4	19.0	35	2.4	29.9	760
ACF00019	1/4	6.4	1/2	12.7	1/8	3.2	50	15	1/2	12.7	40	2.8	29.9	760
ACF02019	1/4	6.4	1/2	12.7	1/8	3.2	100	30.5	1/2	12.7	40	2.8	29.9	760
ACF00022	5/16	7.9	7/16	11.1	1/16	1.6	50	15	1-3/8	34.9	20	1.4	13	330
ACF00023	5/16	7.9	1/2	12.7	3/32	2.4	50	15	1	25.4	30	2.0	29.9	760
ACF00024	5/16	7.9	9/16	14.3	1/8	3.2	50	15	7/8	22.2	35	2.4	29.9	760
ACF00025	5/16	7.9	5/8	15.9	5/32	4.0	50	15	3/4	19.0	45	3.1	29.9	760
ACF00027 *	3/8	9.5	1/2	12.7	1/16	1.6	50	15	1-1/2	38.1	20	1.4	9	229
ACF00028	3/8	9.5	9/16	14.3	3/32	2.4	50	15	1-3/8	34.9	25	1.7	21	533
ACF00029 *	3/8	9.5	5/8	15.9	1/8	3.2	50	15	1-1/8	28.6	30	2.0	29.9	760
ACF00032	7/16	11.1	9/16	14.3	1/16	1.6	50	15	2-1/4	57.2	15	1.0	7	178
ACF00033	7/16	11.1	5/8	15.9	3/32	2.4	50	15	1-3/4	44.4	20	1.4	15	381
ACF00034	7/16	11.1	11/16	17.5	1/8	3.2	50	15	1-3/8	34.9	25	1.7	28	711
ACF00036	1/2	12.7	5/8	15.9	1/16	1.6	50	15	2-7/8	73.0	10	0.7	5	127
ACF00037	1/2	12.7	11/16	17.5	3/32	2.4	50	15	2-1/4	57.2	20	1.4	12	305
ACF02037	1/2	12.7	11/16	17.5	3/32	2.4	100	30.5	2-1/4	57.2	20	1.4	12	305
ACF00038*	1/2	12.7	3/4	19.0	1/8	3.2	50	15	1-1/2	38.1	25	1.7	21	533
ACF00039	1/2	12.7	13/16	20.6	5/32	4.0	50	15	1-1/2	38.1	30	2.0	29.9	760
ACF00041	9/16	14.3	3/4	19.0	3/32	2.4	50	15	2-1/2	63.5	15	1.0	9	229
ACF00042	9/16	14.3	13/16	20.6	1/8	3.2	50	15	2	50.8	20	1.4	17	432
ACF00045	5/8	15.9	13/16	20.6	3/32	2.4	50	15	3	76.2	15	1.0	7	178
ACF00046	5/8	15.9	7/8	22.2	1/8	3.2	50	15	2-3/8	60.3	20	1.4	13	330
ACF00047	5/8	15.9	15/16	23.8	5/32	4.0	50	15	2	50.8	25	1.7	21	533
ACF00050	11/16	17.5	7/8	22.2	3/32	2.4	50	15	3-1/2	88.9	15	1.0	6	152
ACF00053 *	3/4	19.0	1	25.4	1/8	3.2	50	15	3-1/4	82.6	18	1.2	9	229
ACF00054	3/4	19.0	1-1/16	27.0	5/32	4.0	50	15	2-3/4	69.8	20	1.4	15	381
ACF00055	3/4	19.0	1-1/8	28.6	3/16	4.8	50	15	2-3/8	60.3	25	1.7	21	533
ACF00057	3/4	19.0	1-1/4	31.8	1/4	6.4	50	15	2	50.8	30	2.0	29.9	760
ACF00059	7/8	22.2	1-1/8	28.6	1/8	3.2	50	15	4-1/8	104.8	15	1.0	7	178
ACF00060	7/8	22.2	1-3/16	30.2	5/32	4.0	50	15	3-1/2	88.9	20	1.4	11	279
ACF00062 *	1	25.4	1-1/4	31.8	1/8	3.2	50	15	4-3/4	120.6	15	1.0	5	127
ACF00064	1	25.4	1-3/8	34.9	3/16	4.8	50	15	4	101.6	20	1.4	12	305
ACF00065	1	25.4	1-1/2	38.1	1/4	6.4	50	15	3	76.2	25	1.7	21	533
ACF00068	1-1/8	28.6	1-1/2	38.1	3/16	4.8	50	15	4-1/2	114.3	18	1.2	9	229
ACF00069	1-1/4	31.8	1-1/2	38.1	1/8	3.2	50	15	7-7/8	200	12	0.8	3	76
ACF00070	1-1/4	31.8	1-5/8	41.3	3/16	4.8	50	15	5-1/2	139.7	15	1.0	7	178
ACF00071	1-1/4	31.8	1-3/4	44.4	1/4	6.4	50	15	4-3/8	111.1	20	1.4	13	330
ACF00073	1-1/2	38.1	1-7/8	47.6	3/16	4.8	50	15	7-1/4	184.2	15	1.0	5	127
ACF00074	1-1/2	38.1	2	50.8	1/4	6.4	50	15	5-7/8	149.2	18	1.2	9	229
ACF00076	1-3/4	44.4	2-1/4	57.2	1/4	6.4	50	15	7-1/2	190.5	16	1.1	7	178
ACF00078	2	50.8	2-1/2	63.5	1/4	6.4	50	15	9-3/8	238.1	15	1.0	5	127
ACF05078	2	50.8	2-1/2	63.5	1/4	6.4	20	6	9-3/8	238.1	15	1.0	5	127

## TYGON® E-3603 Non-DEHP Tubing Available Sizes

Saint-Gobain Part Number	I.D.		O.D.		Wall Thickness		Length		Minimum Bend Radius		Maximum Working Pressure		Vacuum Rating of Mercury at	
	In.	mm	In.	mm	In.	mm	Ft.	m	In.	mm	psi at 73°F **	bars at 23°C**	inches at 73°F	mm at 23°C

### Vacuum Sizes

ACF00015	3/16	4.8	9/16	14.3	3/16	4.8	50	15	1/4	6.4	60	4.1	29.9	760
ACF00020	1/4	6.4	5/8	15.9	3/16	4.8	50	15	1/2	12.7	50	3.5	29.9	760
ACF00030	3/8	9.5	7/8	22.2	1/4	6.4	50	15	5/8	15.9	50	3.5	29.9	760
ACF00040	1/2	12.7	1-1/8	28.6	5/16	7.9	50	15	7/8	22.2	45	3.1	29.9	760
ACF00049	5/8	15.9	1-3/8	34.9	3/8	9.5	50	15	1	25.4	40	2.8	29.9	760
ACF00058	3/4	19.0	1-1/2	38.1	3/8	9.5	50	15	1-1/2	38.1	35	2.4	29.9	760
ACF00066	1	25.4	2	50.8	1/2	12.7	50	15	1-7/8	47.6	35	2.4	29.9	760
ACF05066	1	25.4	2	50.8	1/2	12.7	20	6	1-7/8	47.6	35	2.4	29.9	760

### Unipacs (10/10' lengths per carton)

ACFUN007	1/8	3.2	1/4	6.4	1/16	1.6	10/10'	3/3	3/8	9.5	45	3.1	29.9	760
ACFUN012	3/16	4.8	5/16	7.9	1/16	1.6	10/10'	3/3	5/8	15.9	30	2.0	29.9	760
ACFUN017	1/4	6.4	3/8	9.5	1/16	1.6	10/10'	3/3	1	25.4	25	1.7	20	508
ACFUN019	1/4	6.4	1/2	12.7	1/8	3.2	10/10'	3/3	1/2	12.7	40	2.8	29.9	760
ACFUN027	3/8	9.5	1/2	12.7	1/16	1.6	10/10'	3/3	1-1/2	38.1	20	1.4	9	229
ACFUN036	1/2	12.7	5/8	15.9	1/16	1.6	10/10'	3/3	2-7/8	73.0	10	0.7	5	127
ACFUN053	3/4	19.0	1	25.4	1/8	3.2	10/10'	3/3	3-1/4	82.6	18	1.2	9	229
ACFUN062	1	25.4	1-1/4	31.8	1/8	3.2	10/10'	3/3	4-3/4	120.6	15	1.0	5	127

### Vacuum Unipacs (10/10' or 4/10' lengths per carton as shown below)

ACFUN015	3/16	4.8	9/16	14.3	3/16	4.8	10/10'	3/3	1/4	6.4	60	4.2	29.9	760
ACFUN020	1/4	6.4	5/8	15.9	3/16	4.8	10/10'	3/3	1/2	12.7	50	3.5	29.9	760
ACFUN030	3/8	9.5	7/8	22.2	1/4	6.4	10/10'	3/3	5/8	15.9	50	3.5	29.9	760
ACFUN040	1/2	12.7	1-1/8	28.6	5/16	7.9	10/10'	3/3	7/8	22.2	45	3.1	29.9	760
ACFUN049	5/8	15.9	1-3/8	34.9	3/8	9.5	10/10'	3/3	1	25.4	40	2.8	29.9	760
ACFUN058	3/4	19.0	1-1/2	38.1	3/8	9.5	10/10'	3/3	1-1/2	38.1	35	2.4	29.9	760
ACFUN066	1	25.4	2	50.8	1/2	12.7	4/10'	1.2/3	1-7/8	47.6	35	2.4	29.9	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	2.8	760
ACF1S1517	3	5	1	15	13	2.0	760
ACF1S1518	4	6	1	15	16	1.7	533
ACF1S1503	5	8	1.5	15	19	2.0	760
ACF1S1504	6	9	1.5	15	22	1.7	559
ACF1S1505	7	10	1.5	15	29	1.4	381
ACF1S1506	8	12	2	15	29	1.7	533
ACF1S1507	10	14	2	15	42	1.4	356

Unless otherwise noted, all tests were conducted at room temperature (73°F/23°C). Values shown were determined on 0.075"/1.9 mm thick extruded strip or 0.075"/1.9 mm thick molded ASTM plaques or molded ASTM durometer buttons.

\* Available inventoried sizes.

\*\* 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

## Features/Benefits

- The new non-DEHP formulation delivers the same excellent performance
- Outstanding chemical resistance
- Lot-to-lot consistency for reproducible results
- Increases productivity in peristaltic pumps – outlasts other clear tubing 2 to 1
- Non-oxidizing and non-contaminating
- Smooth, polished inner wall
- Slips easily over fittings and grips securely for simple lab set-ups
- Contains no BPA
- Standard sizes available to hold full vacuum at room temperature

## Typical Applications

- General laboratory
- Analytical instruments
- Peristaltic and vacuum pumps
- Ideal for condensers, incubators, desiccators, gas lines and drain lines

### TYGON® E-3603 Non-DEHP Tubing Typical Physical Properties

Property	ASTM Method	Value or Rating
Durometer Hardness Shore A, 15 Sec	D2240-02	55
Color	–	Clear
Tensile Strength, psi (MPa)	D412-98	1,650 (11.4)
Ultimate Elongation, %	D412-98	450
Tear Resistance, lb-f/inch (kN/m)	D1004-94	125 (22)
Specific Gravity	D792-00	1.18
Water Absorption, % 24 hrs. @ 23°C	D570-98	0.24
Compression Set Constant Deflection, % @ 158°F (70°C) for 22 hrs.	D395-01 Method B	61
Brittleness By Impact Temp., °F (°C)	D746-98	-58 (50)
Maximum Recommended Operating Temp., °F (°C)	–	165 (74)
Dielectric Strength, v/mil (kV/mm)	D149-97	608 (23.9)
Tensile Modulus, at 100% elongation psi (MPa)	D412-98	650 (4.5)
Tensile Set, %	D412-98	107

*Unless otherwise noted, all tests were conducted at room temperature (73°F/23°C). Values shown were determined on 0.075"/1.9 mm thick extruded strip or 0.075"/1.9 mm thick molded ASTM plaques or molded ASTM durometer buttons.*

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.



## LABORATORY AND BIOPHARMACEUTICAL PRODUCTS MANUFACTURING FACILITIES

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*Consult a Saint-Gobain Performance Plastics Sales Representative for the product and material formulation that best suits your specific application needs.*

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**WARNING:** The content of Saint-Gobain tubing materials is not certified by the FDA for implant devices and is neither designed nor intended to be used in medical applications involving permanent implantation in the human body or permanent contact with body fluids or tissues. Failure to comply with this warning may lead to serious bodily injury or death.

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

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