

# TYGON® R-3603 Laboratory and Vacuum Tubing



*The most consistently reliable tubing for the transfer of liquids and gases, Tygon® Laboratory Tubing handles virtually all inorganic chemicals found in today's laboratories.*

## Provides Versatility for Today's Laboratories

Crystal clear and flexible, Tygon® Laboratory Tubing handles virtually all inorganic chemicals found in the lab. It is non-oxidizing and non-contaminating.

Long-lasting and crack-resistant, Tygon® Laboratory Tubing is less permeable than rubber tubing. The glassy-smooth inner bore helps prevent buildup so that cleaning is facilitated. Coils are marked at 3-foot intervals for easy measuring.

Tygon® Laboratory Tubing may be safely sterilized by coiling loosely in surgical muslin and autoclaving at 15 psi of steam for 30 minutes. Following initial sterilization, a shrinkage of 2%-4% may be noted. However, no further shrinkage should occur with subsequent sterilizations.

Due to its excellent chemical resistance, Tygon® Laboratory Tubing may also be sterilized chemically or by gas (ethylene oxide). Coil tubing and wrap loosely in muslin or linen and follow the directions of your sterilization equipment manufacturer. Where aeration equipment such as vacuum and drying is required, follow the recommended times for degassing to ensure against gas retention and to reduce any residual concentration below known safety limits.

## Secure Fitting Attachment

Tygon® Laboratory Tubing has a Shore A Durometer of 55, which enables it to be slipped over fittings quickly and easily, and to grip securely. Its ability to bend readily to sharp radius curves speeds and simplifies laboratory set-ups.

Tygon® 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® Laboratory Tubing offers superior life, which minimizes the labor and expense of replacement.

## Available in Vacuum Tubing Sizes

Tygon® 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" [686 mm] of mercury at 140°F [60°C]). Like standard Tygon® Laboratory Tubing, Tygon® Vacuum Tubing resists most inorganic chemicals and can be used in corrosive atmospheres. Clarity allows monitoring for possible backups, which could result in equipment damage. Tygon® Vacuum Tubing will not swell closed if vacuum pump oil should happen to back into it. Tygon® Vacuum Tubing has a low vapor pressure – less than  $3 \times 10^{-2}$  mm Hg at 140°F.

## Consistent performance for reliable analysis

### Features/Benefits

- Outstanding chemical resistance
- Lot-to-lot consistency for reproducible results
- Increases productivity in peristaltic pumps – outlasts other clear tubing 2 to 1
- Standard sizes available to hold full vacuum at room temperature
- Smooth, polished inner wall
- Non-aging and non-oxidizing
- Meets FDA CFR part 175.300 criteria

### Typical Applications

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

## TYGON® R-3603 Tubing Inventoried Sizes

Saint-Gobain Part Number	I.D. (Inches)	O.D. (Inches)	Wall Thickness (Inches)	Length (feet)	Minimum Bend Radius (Inches)	Maximum Working Pressure at 73°F (psi)*	Vacuum Rating, In. of Mercury at 73°F
AAC00001	1/32	3/32	1/32	50	1/8	80	29.9
AAC00002	1/16	1/8	1/32	50	1/4	45	29.9
AAC02002	1/16	3/16	1/16	100	1/8	45	29.9
AAC04002	1/16	3/16	1/16	500	1/8	45	29.9
AAC00003	1/16	3/16	1/16	50	1/8	75	29.9
AAC00004	3/32	5/32	1/32	50	3/8	30	29.9
AAC02004	3/32	5/32	1/32	100	3/8	30	29.9
AAC00005	3/32	7/32	1/16	50	1/4	55	29.9
AAC00006	1/8	3/16	1/32	50	1/2	25	20
AAC04006	1/8	3/16	1/32	500	1/2	25	20
AAC00007	1/8	1/4	1/16	50	3/8	45	29.9
AAC02007	1/8	1/4	1/16	100	3/8	45	29.9
AAC04007	1/8	1/4	1/16	500	3/8	45	29.9
AAC00009	5/32	7/32	1/32	50	3/8	20	12
AAC00010	5/32	9/32	1/16	50	1/2	35	29.9
AAC02010	5/32	9/32	1/16	100	1/2	35	29.9
AAC00011	3/16	1/4	1/32	50	1	20	9
AAC00012	3/16	5/16	1/16	50	5/8	30	29.9
AAC02012	3/16	5/16	1/16	100	5/8	30	29.9
AAC04012	3/16	5/16	1/16	500	5/8	30	29.9
AAC00013	3/16	3/8	3/32	50	1/2	40	29.9
AAC00014	3/16	7/16	1/8	50	3/8	55	29.9
AAC00016	1/4	5/16	1/32	50	1-5/8	15	5
AAC00017	1/4	3/8	1/16	50	1	25	20
AAC02017	1/4	3/8	1/16	100	1	25	20
AAC04017	1/4	3/8	1/16	500	1	25	20
AAC00018	1/4	7/16	3/32	50	3/4	35	29.9
AAC00019	1/4	1/2	1/8	50	1/2	40	29.9
AAC02019	1/4	1/2	1/8	100	1/2	40	29.9
AAC00022	5/16	7/16	1/16	50	1-3/8	20	13
AAC00023	5/16	1/2	3/32	50	1	30	29.9
AAC00024	5/16	9/16	1/8	50	7/8	35	29.9
AAC00025	5/16	5/8	5/32	50	3/4	45	29.9
AAC00027	3/8	1/2	1/16	50	1-1/2	20	9
AAC00028	3/8	9/16	3/32	50	1-3/8	25	21
AAC00029	3/8	5/8	1/8	50	1-1/8	30	29.9
AAC00032	7/16	9/16	1/16	50	2-1/4	15	7
AAC00033	7/16	5/8	3/32	50	1-3/4	20	15
AAC00034	7/16	11/16	1/8	50	1-3/8	25	28
AAC00036	1/2	5/8	1/16	50	2-7/8	10	5
AAC00037	1/2	11/16	3/32	50	2-1/4	20	12
AAC02037	1/2	11/16	3/32	100	2-1/4	20	12
AAC00038	1/2	3/4	1/8	50	1-1/2	25	21
AAC00039	1/2	13/16	5/32	50	1-1/2	30	29.9
AAC00041	9/16	3/4	3/32	50	2-1/2	15	9
AAC00042	9/16	13/16	1/8	50	2	20	17
AAC00045	5/8	13/16	3/32	50	3	15	7
AAC00046	5/8	7/8	1/8	50	2-3/8	20	13
AAC00047	5/8	15/16	5/32	50	2	25	21
AAC00050	11/16	7/8	3/32	50	3-1/2	15	6
AAC00053	3/4	1	1/8	50	3-1/4	18	9
AAC00054	3/4	1-1/16	5/32	50	2-3/4	20	15
AAC00055	3/4	1-1/8	3/16	50	2-3/8	25	21
AAC00057	3/4	1-1/4	1/4	50	2	30	29.9
AAC00059	7/8	1-1/8	1/8	50	4-1/8	15	7
AAC00060	7/8	1-3/16	5/32	50	3-1/2	20	11
AAC00062	1	1-1/4	1/8	50	4-3/4	15	5
AAC00064	1	1-3/8	3/16	50	4	20	12
AAC00065	1	1-1/2	1/4	50	3	25	21
AAC00068	1-1/8	1-1/2	3/16	50	4-1/2	18	9
AAC00069	1-1/4	1-1/2	1/8	50	7-7/8	12	3
AAC00070	1-1/4	1-5/8	3/16	50	5-1/2	15	7
AAC00071	1-1/4	1-3/4	1/4	50	4-3/8	20	13
AAC00073	1-1/2	1-7/8	3/16	50	7-1/4	15	5
AAC00074	1-1/2	2	1/4	50	5-7/8	18	9
AAC00076	1-3/4	2-1/4	1/4	50	7-1/2	16	7
AAC00078	2	2-1/2	1/4	50	9-3/8	15	5
AAC05078	2	2-1/2	1/4	20	9-3/8	15	5

\*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.

TYGON® is a registered trademark.

### Saint-Gobain Performance Plastics



**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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## TYGON® R-3603 Tubing Inventoried Sizes

Saint-Gobain Part Number	I.D. (Inches)	O.D. (Inches)	Wall Thickness (Inches)	Length (feet)	Minimum Bend Radius (Inches)	Maximum Working Pressure at 73°F (psi)*	Vacuum Rating, In. of Mercury at 73°F
AAC00015	3/16	9/16	3/16	50	1/4	60	29.9
AAC00020	1/4	5/8	3/16	50	1/2	50	29.9
AAC00030	3/8	7/8	1/4	50	5/8	50	29.9
AAC00040	1/2	1-1/8	5/16	50	7/8	45	29.9
AAC00049	5/8	1-3/8	3/8	50	1	40	29.9
AAC00058	3/4	1-1/2	3/8	50	1-1/2	35	29.9
AAC00066	1	2	1/2	50	1-7/8	35	29.9
AAC05066	1	2	1/2	20	1-7/8	35	29.9

### Vacuum Sizes

Saint-Gobain Part Number	I.D. (Inches)	O.D. (Inches)	Wall Thickness (Inches)	Length (feet)	Minimum Bend Radius (Inches)	Maximum Working Pressure at 73°F (psi)*	Vacuum Rating, In. of Mercury at 73°F
AACUN007	1/8	1/4	1/16	10/10'	3/8	45	29.9
AACUN012	3/16	5/16	1/16	10/10'	5/8	30	29.9
AACUN017	1/4	3/8	1/16	10/10'	1	25	20
AACUN019	1/4	1/2	1/8	10/10'	1/2	40	29.9
AACUN027	3/8	1/2	1/16	10/10'	1-1/2	20	9
AACUN036	1/2	5/8	1/16	10/10'	2.7/8	10	5
AACUN053	3/4	1	1/8	10/10'	3-1/4	18	9
AACUN062	1	1-1/4	1/8	10/10'	4-3/4	15	5

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

Saint-Gobain Part Number	I.D. (Inches)	O.D. (Inches)	Wall Thickness (Inches)	Length (feet)	Minimum Bend Radius (Inches)	Maximum Working Pressure at 73°F (psi)*	Vacuum Rating, In. of Mercury at 73°F
AACUN007	1/8	1/4	1/16	10/10'	3/8	45	29.9
AACUN012	3/16	5/16	1/16	10/10'	5/8	30	29.9
AACUN017	1/4	3/8	1/16	10/10'	1	25	20
AACUN019	1/4	1/2	1/8	10/10'	1/2	40	29.9
AACUN027	3/8	1/2	1/16	10/10'	1-1/2	20	9
AACUN036	1/2	5/8	1/16	10/10'	2.7/8	10	5
AACUN053	3/4	1	1/8	10/10'	3-1/4	18	9
AACUN062	1	1-1/4	1/8	10/10'	4-3/4	15	5

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

Saint-Gobain Part Number	I.D. (Inches)	O.D. (Inches)	Wall Thickness (Inches)	Length (feet)	Minimum Bend Radius (Inches)	Maximum Working Pressure at 73°F (psi)*	Vacuum Rating, In. of Mercury at 73°F
AACUN015	3/16	9/16	3/16	10/10'	1/4	60	29.9
AACUN020	1/4	5/8	3/16	10/10'	1/2	50	29.9
AACUN030	3/8	7/8	1/4	10/10'	5/8	50	29.9
AACUN040	1/2	1-1/8	5/16	10/10'	7/8	45	29.9
AACUN049	5/8	1-3/8	3/8	10/10'	1	40	29.9
AACUN058	3/4	1-1/2	3/8	10/10'	1-1/2	35	29.9
AACUN066	1	2	1/2	4/10'	1-7/8	35	29.9

### Metric Sizes

Saint-Gobain Part Number	I.D. (mm)	O.D. (mm)	Wall Thickness (mm)	Length (meters)	Minimum Bend Radius (mm)	Maximum Working Pressure at 73°F (psi)*	Vacuum Rating, In. of Mercury at 73°F
AAC1S1502	2	4	1	15	7	40	29.9
AAC1S1517	3	5	1	15	13	30	29.9
AAC1S1518	4	6	1	15	16	25	21.0
AAC1S1503	5	8	1.5	15	19	30	29.9
AAC1S1504	6	9	1.5	15	22	25	22.0
AAC1S1505	7	10	1.5	15	29	20	15.0
AAC1S1506	8	12	2	15	29	25	21.0
AAC1S1507	10	14	2	15	42	20	14.0

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

## TYGON® R-3603 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, @ 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). 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.**

