

TYGON®

S-50-HL Medical Tubing



Medical Products

Sets the Standard for Performance and Durability in Blood Contact Applications

Features/Benefits

- Crystal clear for easy visualization of fluid flow
- Ideal for contact with blood
- Flexible and resilient with established performance in peristaltic pump applications
- Non-wetting surface permits complete drainage
- Documented biocompatibility to ISO 10993 standards
- Meets USP Class VI criteria

Typical Applications

- Minimally invasive devices
- Medical laboratories
- Blood and IV solutions
- Dialysis equipment
- Wound drainage
- Inhalation equipment
- Chemotherapy drug delivery
- Pharmaceutical handling

TYGON® S-50-HL Medical Tubing

Since the first open-heart surgery in the 1960s, doctors, surgeons and other healthcare professionals have come to recognize TYGON® as the definitive tubing to use with blood in peristaltic pump applications. Today, TYGON® S-50-HL continues to be the tubing of choice for bypass procedures as well as for use in numerous clinical, biological and pharmaceutical applications.

Characteristics

Tygon® S-50-HL meets the increasingly complex challenges of medical devices used in applications such as chemotherapy, dialysis and minimally invasive surgery.

Once the compound is approved, in-process inspection protocols specify exact processing parameters so that tubing clarity and appearance are optimized. Dimensional control starts with custom tooling and is assured through use of continuous in-line laser micro-meters and off-line verification with computerized imaging equipment. Final product inspection can include flow rate testing, burst testing and measurement of other key performance characteristics in our own testing laboratory.

A major factor when selecting a tubing material is the type of component parts to be bonded to the tubing. Effective bonding of TYGON® S-50-HL is easily accomplished using a variety of methods including heat, electronic (RF)/ultrasonic, solvent and adhesive. Factors to be considered in selecting the components include security of the bond required, effect on the integrity of the materials to be joined, and presence of residues or extractables that may affect biocompatibility. When bonding procedures are not used, mechanical clamps are recommended to provide secure attachment.

Biocompatibility

Demonstrating consistency in material from lot to lot once a medical device or drug is marketed is increasingly important. Saint-Gobain Performance Plastics is the first manufacturer to fully characterize our medical tubing to ISO 10993 standards and FDA guidelines for biocompatibility. TYGON® S-50-HL tubing fully complies with the requirements of USP Class VI criteria and is non-toxic, non-hemolytic and non-pyrogenic.

TYGON® S-50-HL Manufactured Sizes and Pressures

Part Number	I.D. (inches)	O.D. (inches)	Wall Thickness (inches)	Length (feet)	Minimum Bend Radius (inches)	Max. Suggested Working Pressure at 73°F (psi)*	Vacuum Rating In. of Mercury at 73°F
AAx00001	1/32	3/32	1/32	50	1/8	100	29.9
AAx00002	1/16	1/8	1/32	50	1/4	55	29.9
AAx00003	1/16	3/16	1/16	50	1/8	100	29.9
AAx00004	3/32	5/32	1/32	50	3/8	40	29.9
AAx00005	3/32	7/32	1/16	50	1/4	70	29.9
AAx00006	1/8	3/16	1/32	50	1/2	30	25
AAx00007	1/8	1/4	1/16	50	3/8	55	29.9
AAx00009	5/32	7/32	1/32	50	3/4	25	15
AAx00010	5/32	9/32	1/16	50	1/2	45	29.9
AAx00011	3/16	1/4	1/32	50	1	20	10
AAx00012	3/16	5/16	1/16	50	5/8	40	29.9
AAx00013	3/16	3/8	3/32	50	1/2	55	29.9
AAx00014	3/16	7/16	1/8	50	3/8	70	29.9
AAx00016	1/4	5/16	1/32	50	1-5/8	18	5
AAx00017	1/4	3/8	1/16	50	1	30	25
AAx00018	1/4	7/16	3/32	50	3/4	45	29.9
AAx00019	1/4	1/2	1/8	50	5/8	55	29.9
AAx00022	5/16	7/16	1/16	50	1-3/8	25	15
AAx00023	5/16	1/2	3/32	50	1	35	29.9
AAx00024	5/16	9/16	1/8	50	7/8	45	29.9
AAx00027	3/8	1/2	1/16	50	1-3/4	20	10
AAx00028	3/8	9/16	3/32	50	1-3/8	30	25
AAx00029	3/8	5/8	1/8	50	1-1/8	40	29.9
AAx00032	7/16	9/16	1/16	50	2-1/4	20	8
AAx00033	7/16	5/8	3/32	50	1-3/4	25	18
AAx00034	7/16	11/16	1/8	50	1-3/8	35	29.9
AAx00036	1/2	5/8	1/16	50	2-7/8	18	6
AAx00037	1/2	11/16	3/32	50	2-1/8	25	15
AAx00038	1/2	3/4	1/8	50	1-3/4	30	25
AAx00041	9/16	3/4	3/32	50	2-1/2	20	10
AAx00045	5/8	13/16	3/32	50	3	20	9
AAx00046	5/8	7/8	1/8	50	2-3/8	25	15
AAx00047	5/8	15/16	5/32	50	2	30	25
AAx00053	3/4	1	1/8	50	3-1/4	20	10
AAx00059	7/8	1-1/8	1/8	50	4-1/8	20	8
AAx00062	1	1-1/4	1/8	50	5-1/8	18	5
AAx02002	1/16	1/8	1/32	100	1/4	55	29.9
AAx02003	1/16	3/16	1/16	100	1/8	100	29.9
AAx02004	3/32	5/32	1/32	100	3/8	40	29.9
AAx02006	1/8	3/16	1/32	100	1/2	30	25
AAx02007	1/8	1/4	1/16	100	3/8	55	29.9
AAx02011	3/16	1/4	1/32	100	1	20	10
AAx02012	3/16	5/16	1/16	100	5/8	40	29.9
AAx02017	1/4	3/8	1/16	100	1	30	25
AAx02018	1/4	7/16	3/32	100	3/4	45	29.9
AAx02022	5/16	7/16	1/16	100	1-3/8	25	15
AAx02027	3/8	1/2	1/16	100	1-3/4	20	10
AAx02028	3/8	9/16	3/32	100	1-3/8	30	25
AAx02029	3/8	5/8	1/8	100	1-1/8	40	29.9
AAx02037	1/2	11/16	3/32	100	2-1/8	25	15
AAx02038	1/2	3/4	1/8	100	1-3/4	30	25

*Safety factor of 5:1 ratio of burst pressure to working pressure.

TYGON® S-50-HL Typical Physical Properties

Property	ASTM Method	Value or Rating
Durometer Hardness, Shore A, 15 sec.	D2240	66
Color	—	Clear
Tensile Strength, psi (MPa)	D412	2,000 (13.8)
Ultimate Elongation, %	D412	350
Tear Resistance, lb-f/inch (kN/m)	D1004 Die C	165 (28.9)
Specific Gravity	D792	1.20
Water Absorption, % 24 hrs. @ 23°C	D570	0.14
Compression Set, Constant Deflection, % @ 158°F (70°C) for 22 hrs.	D395 Method B	53
Brittleness by Impact Temp., °F (°C)	D746	-55 (-48)
Maximum Recommended Operating Temp., °F (°C)	—	165 (74)
Dielectric Strength v/mil (kV/mm)	D149	620 (24.4)
Tensile Modulus, @ 200% Elongation, psi (MPa)	D412	1,100 (7.6)

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® S-50-HL Product Characteristics

The biocompatibility of TYGON® S-50-HL has been tested and found to be non-toxic in the following test protocols:

ISO 10993 - Cytotoxicity	Pass
ISO 10993 - Systemic Toxicity	Pass
ISO 10993 - Irritation/Sensitization	Pass
ISO 10993 - Genotoxicity	Pass
USP Class VI	Pass
USP Bacteriostasis Fungistasis	Pass
USP Physicochemical Testing	Pass
USP Pyrogens	Pass
Subchronic Intravenous Toxicity	Pass
Hemocompatibility	Pass
C3a Complement Activation Assay	Pass

Sterilization Methods

Autoclavable	Yes
Gas	Yes
Radiation	Yes (2.5 MRad)

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® tubing is not intended for use as an implant material.

TYGON® is a registered trademark.



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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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