

TABLE OF CONTENTS

BY MAJOR MARKETS

CHEMICAL PROCESSING



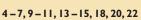
5-7, 10, 13-18, 21, 22

ENVIRONMENTAL

5, 8, 10, 11, 14, 18, 22



FOOD AND BEVERAGE





INDUSTRIAL

4-11, 13-18, 20-22



LABORATORY

5, 7 – 13, 18, 20, 22



MEDICAL

7, 10-14, 18



PERISTALTIC PUMP

6-14, 16, 17, 21, 22



PHARMACEUTICAL BIOTECH

7, 9 - 13, 18



SEMICONDUCTOR PROCESSING

13, 14, 18



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TUBING AND	
TUBING FORMULATIONS 4-	2, 3
TYGON [®] BEVERAGE TUBING	
FORMULATION B-44-3 TYGON® FOOD, MILK	4
AND DAIRY TUBING FORMULATION B-44-4X	4
TYGON [®] PRESSURE TUBING FORMULATION B-44-4X I.B.	5
TYGON [®] SILVER Antimicrobial Tubing	5
NORPRENE® FOOD PROCESS TUBING FORMULATION A-60-F	6
NOPRENE® PRESSURE TUBING FORMULATION A-60-F I.B.	6
TYGOPRENE [®] PUMP TUBING	
FORMULATION XL-60	7
PHARMED® BPT TUBING	7
TYGON [®] LABORATORY TUBING FORMULATION R-3603	8
TYGON [®] VACUUM TUBING FORMULATION R-3603	8
TYGON [®] ULTRA-SOFT TUBING FORMULATION R-1000	9
TYGON [®] LONG FLEX LIFE PUMP TUBING FORMULATION LFL	9
VERSILIC® HIGH-STRENGTH SILICONE TUBING FORMULATION SPX-50	10
VERSILIC [®] HIGH-STRENGTH	
SILICONE PRESSURE TUBING FORMULATION SPX-70 I.B.	10
TYGON [®] SANITARY SILICONE TUBING FORMULATION 3350	ш
TYGON [®]	''
SANITARY SILICONE PRESSURE TUBING FORMULATION 3370 I.B.	П
TYGON® MEDICAL/ SURGICAL TUBING FORMULATION S-50-HL	12
TYGON [®] MICROBORE TUBING	
FORMULATION S-54-HL	12

TYGON[®] HIGH PURITY TUBING FORMULATION 2275 TYGON® HIGH PURITY PRESSURE TUBING FORMULATION 2275 I.B. TYGON® ULTRA CHEMICAL RESISTANT TUBING FORMULATION 2075 TYGON® PLASTICIZER FREE TUBING FORMULATION 2001 TYGOTHANE® PRECISION POLYURETHANE TUBING FORMULATION C-210-A 15 TYGOTHANE® PRECISION POLYURETHANE PRESSURE TURING FORMULATION C-544-A I.B. NORPRENE® INDUSTRIAL GRADE TUBING FORMULATION A-60-G 16 TYGON® FUEL AND LUBRICANT TUBING FORMULATION F-4040-A 16 TYGON® UV RESISTANT TUBING FORMULATION R-3400 17 FLURAN® SEVERE ENVIRONMENT TUBING FORMULATION F-5500-A 17 TYGON® INERT TUBING FORMULATION SE-200 CHEMFLUOR® TUBING FEP, PFA, PTFE **CUSTOM PRODUCTS 19-22** CHEMICAL RESISTANCE PROPERTIES OF **TUBING** PHYSICAL PROPERTIES OF TUBING 27, 28 **WORKING PRESSURES** OF TUBING 29-32 SIZE LISTINGS OF INVENTORIED **TUBING** 33-35 **VACUUM RATINGS** AND BEND RADIUS **VALUES** 36-39 STORAGE, CLEANING AND STERILIZATION **PROCEDURES** 40 **TUBING SELECTION**

GUIDE

41

MARKET OVERVIEW

Durometer Hardness Maximum Recommended Operating Temperature

Tubing Formulations		Product Description	(Shore A, 15s)	Color	°F (°C)
Tygon® Beverage Tubing Formulation B-44-3	page 4	Most widely specified clear, flexible tubing	63	Clear	165 (74)
Tygon [®] Food, Milk and Dairy Tubing Formulation B-44-4X	page 4	The preferred clear, flexible tubing for food processing applications	65	Clear	165 (74)
Tygon® Pressure Tubing Formulation B-44-4X I.B.	page 5	Most flexible reinforced tubing available	65	Clear (between braid)	165 (74)
Tygon [®] Silver Antimicrobial Tubing	page 5	Antimicrobial tubing that decreases bacterial growth	72	Silver	160 (71)
Norprene® Food Process Tubing Formulation A-60-F	page 6	Provides long service life in many hot food/beverage applications	61	Cream	275 (135)
Norprene® Pressure Tubing Formulation A-60-F I.B.	page 6	Provides long service life even when exposed to heat, abrasion and pressure	61	Cream	275 (135)
Tygoprene® Pump Tubing Formulation XL-60	page 7	Designed specifically for use in peristaltic pumps	60	Translucent	250 (121)
PharMed® BPT Tubing	page 7	Long life peristaltic pump/cell culture tubing	64	Cream	275 (135)
Tygon [®] Laboratory Tubing Formulation R-3603	page 8	For consistently reliable analysis in the lab	55	Clear	165 (74)
Tygon® Vacuum Tubing Formulation R-3603	page 8	The clear choice for vacuum lines	55	Clear	165 (74)
Tygon® Ultra-Soft Tubing Formulation R-1000	page 9	An extremely soft and flexible tubing that offers minimal resistance to compression	40	Clear	125 (52)
Tygon® Long Flex Life Pump Tubing Formulation LFL	page 9	For the longest peristaltic pump flex life of any clear, flexible tubing	56	Clear	165 (74)
Versilic® High-Strength Silicone Tubin Formulation SPX-50	1g page 10	Provides long life, strength and durability	50	Translucent	350 (177)
Versilic® High-Strength Silicone Pressure Formulation SPX-70 I.B.	e Tubing page 10	Provides elevated working pressures in a silicone tubing	71**	Translucent	320 (160)
Tygon® Sanitary Silicone Tubing Formulation 3350	page 11	The platinum-cured silicone tubing with the smoothest inner surface for transfer of sensitive fluids	50**	Translucent	400 (204)
Tygon® Sanitary Silicone Pressure Tubi Formulation 3370 I.B.	i ng page 11	A platinum-cured silicone tubing that handles up to four times the pressure of Tygon® 3350	70	Translucent (between braid)	320 (160)
Tygon® Medical/Surgical Tubing Formulation S-50-HL	page 12	A tubing designed for use in open heart surgery and other medical applications	66	Clear	165 (74)
Tygon® Microbore Tubing Formulation S-54-HL	page 12	For precision injection and dispensing	80	Clear	185 (85)
Tygon® High Purity Tubing Formulation 2275	page 13	Provides a high level of purity not previously available in a clear, flexible tubing	72	Clear	125 (52)
Tygon® High Purity Pressure Tubing Formulation 2275 I.B.	page 13	High purity, low sorption, flexibility and clarity in a single tubing	72	Clear (between braid)	125 (52)
Tygon [®] Ultra Chemical Resistant Tubi Formulation 2075	i ng page 14	Provides the highest degree of chemical resistance in a clear, flexible tubing	72	Clear	125 (52)
Tygon® Plasticizer Free Tubing Formulation 2001	page 14	Provides low compression set properties of a thermoset rubber in a clear, flexible tubing	69	Clear	135 (57)
Tygothane® Precision Polyurethane Tubi Formulation C-210-A	i ng page 15	For polyurethane applications requiring tight dimensional tolerances	82**	Transparent	200 (93)
Tygothane® Precision Polyurethane Pressu Formulation C-544-A I.B.	re Tubing page 15	High-performance polyurethane tubing for physically demanding environments	85**	Clear (between braid)	180 (82)
Norprene® Industrial Grade Tubing Formulation A-60-G	page 16	Outlasts and outperforms neoprene, EPDM and other specialty rubber tubings	61	Black	275 (135)
Tygon® Fuel and Lubricant Tubing Formulation F-4040-A	page 16	Resists embrittlement caused by hydrocarbon-based fluids, remains flexible	57	Translucent Yellow	165 (74)
Tygon® UV Resistant Tubing Formulation R-3400	page 17	Stays flexible in ultraviolet environments	64	Black	165 (74)
Fluran® Severe Environment Tubing Formulation F-5500-A	page 17	Withstands the harshest of chemicals, even under high temperatures	60**	Black	400 (204)
Tygon® Inert Tubing Formulation SE-200	page 18	Complete clarity and high flexibility with the inertness of a fluoropolymer	67***	Clear	170 (77)
Chemfluor® FEP Tubing	page 18	For the ultimate in purity, chemical	55*		400 (204)
Chemfluor® PFA Tubing	page 18	resistance and temperature resistance	60*	Translucent	500 (260)
Chemfluor® PTFE Tubing τ/φ (495) 980-29-37,311-22-09,319-22-78	page 18		58*		500 (260)
		*Shore D Scale. **1-second	reading. ***	Durometer measure	d on outer jacket.



т/ф (495) 980-29-37,311-22-09,319-22-78













Chemical Processing	Environmental	Food and Beverage	Industrial	Laboratory	Medical	Peristaltic Pump	Pharmaceutical/ Biotech	Semiconductor Processing
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The most widely specified clear, flexible tubing, Tygon® Beverage Tubing is frequently chosen for its taste- and odor-free characteristics.



With its smooth, nonporous bore, Tygon® Food, Milk and Dairy Tubing belps ensure a bacteriafree fluid path in a wide variety of food processing applications.

TYGON® BEVERAGE TUBING

FORMULATION B-44-3

- Taste-free and odor-free
- Non-wetting surface permits thorough cleaning and complete drainage
- Broad chemical resistance to virtually all non-solvent chemicals
- Lightweight and flexible for easy, quick installation
- Meets FDA, 3-A and NSF 51 criteria

Tygon® Beverage Tubing is specially formulated for transferring a wide variety of beverages including soft drinks, fruit juices, flavored teas and bottled water. In virtually all cases, Tygon® Beverage Tubing will not affect the taste or odor of product transferred through it, while its excellent non-wetting properties facilitate complete drainage and permit simple flush-cleaning.

Many of the unique properties inherent to Tygon® Beverage Tubing also apply to a wide variety of complex applications ranging from fine cosmetic production to the dispensing of water-based printing inks found in the publishing industry. The versatility and proven performance of Tygon® Beverage Tubing have made it today's most widely specified clear, flexible plastic tubing.

TYGON® FOOD, MILK AND DAIRY TUBING

FORMULATION B-44-4X

- Smooth, non-porous bore will not trap particulates or promote bacterial growth
- Compatible with foods containing a high oil content
- Resistant to harsh alkaline cleaners and sanitizers
- Excellent alternative to rigid piping systems
- Meets FDA, 3-A and NSF 51 criteria

Producers of food, milk and dairy products insist upon Tygon® Food, Milk and Dairy Tubing for dependable performance in countless filling, draining, transfer and processing applications. Its smooth, non-porous bore inhibits particle entrapment, promoting a sanitary fluid path by minimizing potential for bacterial growth. It has outstanding resistance to harsh alkaline cleaners and is equally unaffected by commonly used sanitizers.

Non-toxic, taste-free and odor-free, Tygon® Food, Milk and Dairy Tubing meets applicable regulatory standards for contact with food products. Offering complete clarity for positive visual inspection and flow control, it is available in up to a 6" inside diameter, making it a flexible replacement for rigid piping systems.

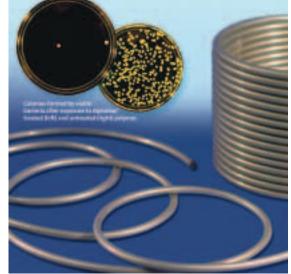
A special construction of Tygon® Food, Milk and Dairy Tubing also is available for applications involving elevated working pressure.







Reinforced for elevated working Tygon® Pressure Tubing is the most flexible of the reinforced tubings available today.



Tygon ® Silver tubing decreases bacterial growth and added value

TYGON® PRESSURE TUBING

FORMULATION B-44-4X I.B.

- Handles four times the pressure of non-reinforced tubing
- Smooth, non-porous bore won't trap particulate matter
- Clear wall for visualization of flow
- Meets FDA, 3-A and NSF 51 criteria

Tygon® Pressure Tubing's unique flexibility gets it into service quickly and easily. This means less tubing footage, fittings and labor than required for rigid systems. Reinforced with a tough polyester inner-braid imbedded in the wall, it can handle four times the pressure of non-reinforced tubing. Tygon® Pressure Tubing is compatible with virtually all non-solvent chemicals, meeting the needs of many industries in hundreds of applications where flexibility and higher pressure are required. Its clear wall permits positive flow monitoring and inspection.

The smooth inner bore of Tygon® Pressure Tubing (smoother than virtually all stainless steel) will not trap bacteria-harboring particles, making it ideal for food and beverage use. It is non-toxic, odorless, taste-free and exhibits outstanding resistance to the alkaline cleaners used in this industry.

TYGON® SILVER **ANTIMICROBIAL** TUBING



- Plasticizer-free inner bore
- Reduces formation of biofilm and mildew
- Inhibits growth of microbes
- Meets FDA criteria
- Meets NSF 51 criteria

Tygon® Silver Antimicrobial Tubing decreases microbe growth that can lead to foul odors, discoloration and formation of mildew and biofilm on tubing. Microbes can contaminate the material being transferred through tubing as well as degrade the tubing itself. Tygon® Silver Antimicrobial Tubing has been treated on the inner surface to provide protection to the fluids being transferred.

Cleaning procedures, such as washing with detergent and hot water, can kill microbes. This process can be time consuming and costly, and does not provide residual protection against fresh contamination. The additional use of a durable and safe antimicrobial treatment is the best way to provide protection against microbial contamination.

Tygon[®] Silver Antimicrobial Tubing is FDA registered for food contact and meets NSF 51 criteria.















Formulated for flexural resistance and high temperatures, Norprene® Food Process Tubing does not easily crack or deteriorate, even in physically demanding applications.



Norprene® Pressure Tubing is ideal for clean-inplace and steam-inplace cleaning sterilization systems.

NORPRENE® FOOD PROCESS TUBING

FORMULATION A-60-F

- Temperature resistant from -75°F to 275°F
- Compatible with virtually all common sanitizers and cleaners
- Can be autoclaved repeatedly
- Meets FDA, 3-A and NSF 51 criteria

Formulated to withstand the high temperatures frequently occurring during food and beverage processing, Norprene® Food Process Tubing will outlast and outperform virtually all other food grade tubings. Even following extended exposure to heat and ozone, Norprene® Food Process Tubing will not crack or deteriorate as commonly found when using traditional rubber tubings.

Extremely flexible, Norprene® Food Process Tubing resists kinks and retains its shape while installing quickly and easily. Its excellent flexural fatigue resistance makes it the absolute best choice for use in peristaltic pumps often found in dispensing equipment.

Repeatedly autoclavable, Norprene® Food Process Tubing can be steam cleaned in place, eliminating the need for frequent tubing replacement. When harsh sanitizing solutions are used, it exhibits exceptional chemical resistance and is entirely unaffected by a wide variety of cleaning solutions.

Also available with reinforcement to withstand elevated working pressure.

NORPRENE® PRESSURE TUBING

FORMULATION A-60-F I.B.

- Provides long service life
- Performs well at a range of temperatures
- Ozone and UV light resistant
- Repeatedly autoclavable
- Meets FDA, 3-A and NSF 51 criteria

Ideal for use in clean-in-place and steam-in-place cleaning and sterilization systems, Norprene® Pressure Tubing has excellent alkali resistance and is compatible with numerous oxidizing agents such as hydrogen peroxide, sodium hypochlorite and ozone.

Norprene® Pressure Tubing exhibits excellent resistance to ozone and UV light, with little or no signs of deterioration in laboratory testing to the equivalent of 10 years of outdoor exposure. Norprene® Pressure Tubing provides long service life when exposed to heat, abrasion and pressure. It is temperature resistant up to 275°F and retains flexibility to -75°F.











Tygoprene® XL-60 provides flexibility and long life in peristaltic pump applications



Created with a unique combination of long flex life and biocompatibility, PharMed* BPT Tubing is ideal for life science applications employing peristaltic pumps.

TYGOPRENE® PUMP TUBING

FORMULATION XL-60

- Long life in peristaltic pumps
- Temperature resistant up to 250°F
- DEHP-free
- FDA approved for food contact
- Meets NSF 51 criteria

Designed specifically for use in peristaltic pump applications, Tygoprene® Pump Tubing maintains a pump life of over 500 hours. With a durometer of Shore A60, it is extremely flexible and exhibits superior flex life. Tygoprene® Pump Tubing can be considered an alternative to silicones and PVC when longer pump life is required.

Tygoprene® Pump Tubing is translucent in color and has excellent chemical resistance to a wide range of fluids, including acids and bases. It remains flexible at -40°F and has a maximum recommended temperature of 250°F. Tygoprene® Pump Tubing has passed the UL 94-HB flammability resistance classification.

PHARMED® BPT TUBING

FOR PERISTALTIC PUMPS

AND CELL CULTURE

- Outlasts silicone tubing in peristaltic pumps by up to 30 times
- Can be autoclaved repeatedly
- Heat weldable for sterile access in closed systems
- Documented biocompatibility to the ISO 10993 Standard
- Meets USP Class VI, FDA and NSF 51 criteria

PharMed® BPT Tubing is less permeable to gases and vapors than silicone tubing. It is ideal for cell culture, fermentation, synthesis, separation, purification and process monitoring and control. Independent tests show that PharMed® BPT Tubing is safe for use in sensitive cell culture applications.

PharMed® BPT Tubing has very good general chemical resistance and excellent acid, alkali and oxidation resistance. Opaque to visible and UV light, it helps protect sensitive fluids. Continuous service temperature range is -60°F (-51°C) to 275°F (135°C).







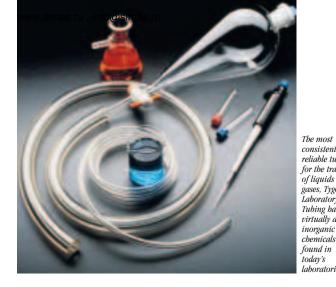


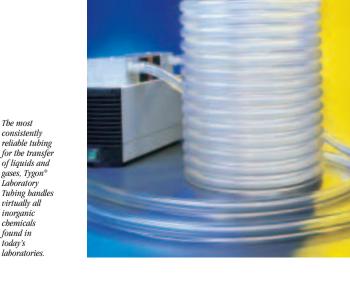












Crystal-clear
Tygon®
Vacuum
Tubing
outlasts and
outperforms
traditional
rubber tubing
in vacuum
pump
applications.

TYGON® LABORATORY TUBING

FORMULATION R-3603

- Outstanding chemical resistance
- Lot-to-lot consistency for reproducible results
- Increases productivity in peristaltic pumps outlasts other clear tubing 2 to 1
- Ideal for condensers, incubators, desiccators, gas lines and drain lines
- Meets FDA criteria

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 1-foot intervals for easy measuring. Autoclavable. Remains flexible at -45°F (-43°C). Durometer hardness: Shore A, 55.

TYGON® VACUUM TUBING

FORMULATION R-3603

- Holds full vacuum at room temperature
- Will not crack and age like rubber tubing
- Excellent clarity for visual inspection
- Meets FDA criteria

Tygon® Vacuum Tubing has extra-heavy walls that will withstand a full vacuum at room temperature (29.9" [759 mm] 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 back up into it.

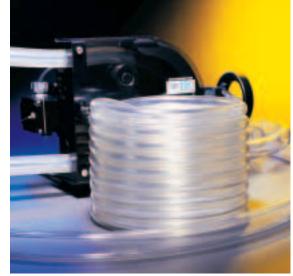
Low vapor pressure (low outgassing) makes it suitable for vacuum applications down to 3 x 10⁻² mm Hg at 165°F (74°C). Ideal for analytical testing of gases or vapors. Well-suited for use in making manometers.







Tygon® Ultra-Soft Tubing provides unmatched flexibility and drapeability – characteristics beneficial to numerous laboratory set-ups.



Tygon® Long
Flex Life
Tubing offers
the longest
peristaltic
pump life
of any
clear Tygon®
tubing
formulation

TYGON® ULTRA-SOFT TUBING

FORMULATION R-1000

- Ultra-soft and flexible
- Performs well at low temperatures (to -100°F)
- Excellent for use in low-torque pump applications
- Meets FDA and NSF 51 criteria

Tygon® Ultra-Soft Tubing resists a broad range of aqueous chemicals and provides an excellent alternative to silicone tubing in applications where corrosive chemicals are used. Its minimal resistance to compression permits use in low-torque pump applications, including battery-driven types.

Tygon® Ultra-Soft Tubing stays flexible at temperatures as low as -100°F (-73°C). Its smooth bore facilitates easy cleaning and helps prevent possible buildup. Tygon® Ultra-Soft Tubing is not autoclavable. Durometer hardness: Shore A, 40.

TYGON® LONG FLEX LIFE PUMP TUBING

FORMULATION LFL

- Longest flex life of any clear Tygon® tubing
- Extremely low particulate spallation
- Broad chemical resistance
- Meets USP Class VI and FDA criteria

Crystal-clear Tygon® Long Flex Life Pump Tubing is formulated specifically for use in peristaltic pump applications. With its superior flex life characteristics, manufacturing processes can be simplified by reducing production downtime due to pump tubing failure.

The excellent wear properties of Tygon® Long Flex Life Pump Tubing also lead to a reduction of particulate spallation. This feature limits the risk of sensitive-fluid contamination critical to the pharmaceutical, cosmetic, and food and beverage industries.

Non-aging characteristics and broad chemical resistance provide users with versatility in use for a wide variety of applications. Safe and non-toxic Tygon® Long Flex Life Pump Tubing can be produced in up to a 6" inside diameter.













Provides long life, strength and durability in many applications.



A silicone tubing that provides . elevated working pressures in a variety of applications

VERSILIC® HIGH-STRENGTH SILICONE TUBING

FORMULATION SPX-50

- Ultra-smooth inner bore reduces risk of particle entrapment
- Taste and odor free
- Withstands temperature extremes from -75°F to 350°F
- Meets FDA, 3-A, NSF 51, and USP Class VI criteria

Peroxide-cured Versilic® High-Strength Silicone Tubing is designed for use in applications where flexibility, resiliency and durability are required. Its smooth inner surface reduces the risk of particulate entrapment and microscopic buildup during fluid transfer. In addition, its high and low working temperatures help the tubing retain its flexibility under extreme conditions.

Because of its consistently reliable performance, Versilic® High-Strength Silicone Tubing is ideal for applications such as food & beverage dispensing & processing, appliance manufacturing, cosmetic production and electronic equipment.

Custom formulations can be designed to provide a combination of features, including ultra-high temperature resistance, electrical conductivity, pigmented colors and long flexural life.

VERSILIC® HIGH-STRENGTH SILICONE PRESSURE TUBING

FORMULATION SPX-70 I.B.

- Tough braid reinforcement permits use under elevated working pressures
- *Taste and odor free*
- Temperature resistant from -112°F to 320°F
- Withstands repeated CIP and SIP cleaning and sterilization
- Meets FDA, 3-A, NSF 51, and USP Class VI criteria

Produced form a proprietary combination of silicone elastomers, Versilic® SPX-70 IB Tubing optimizes critical physical properties such as tensile strength, elongation and compression set, resulting in a more physically durable product. Its ultra-smooth inner bore reduces the risk of particle entrapment during fluid transfer.

In addition, Versilic® High-Strength Silicone Pressure Tubing will remain resilient and durable under extreme operating temperatures and repeated cleaning and sterilization.

Versilic® Silicone Tubing complies fully with the requirements of the USP Class VI Criteria and is entirely non-toxic, non-hemolytic and non-pyrogenic.





























In a comparison of images of the inner surfaces of Tygon® 3350 silicone tubing and two competitors (captured at 500x magnification with an electron scanning microscope), Tygon® clearly exhibits superior smoothness. As a result, the potential for particle entrapment is greatly



Tygon® Silicone Pressure Tubing with sanitary fittings, the efficient transfer of high purity

By combining

TYGON® SANITARY SILICONE TUBING

FORMULATION 3350

- Ultra-smooth inner bore reduces potential for particle entrapment
- Minimal extractables help maintain fluid integrity
- Hydrophobic surface improves fluid flow
- Documented biocompatibility to the ISO 10993 standard
- Meets USP Class VI, FDA, 3-A and NSF 51 criteria

Designed for high-purity applications, Tygon® Sanitary Silicone Tubing's ultra-smooth inner bore can reduce the risk of particle entrapment and microscopic buildup during sensitive fluid transfer. In-house analysis of the inner surface of Tygon® Sanitary Silicone Tubing compared to other silicone tubing shows that it is up to three times smoother. In addition, this smoother fluid path facilitates complete system cleaning and sterilization.

Using a platinum-curing process, Tygon® Sanitary Silicone Tubing eliminates the concern of extraction often encountered when alternative curing methods are used. It also has been fully characterized using the ISO 10993 standard, reducing user cost and time associated with process validation.

Also available with reinforcement to withstand elevated working pressure.

TYGON® SANITARY SILICONE PRESSURE TUBING

FORMULATION 3370 I.B.

- Consistently smooth inner surface reduces potential for particle entrapment
- Withstands repeated CIP and SIP sterilization
- Tough braid reinforcement for elevated working pressures
- Meets USP Class VI, FDA and NSF 51 criteria

Often specified in high-purity applications, Tygon® Sanitary Silicone Pressure Tubing is produced from a platinum-curing process that helps ensure the highest level of biocompatibility available. The ultra smooth inner surface and the ability to be cleaned and sterilized repeatedly in CIP and SIP systems helps to maintain fluid integrity throughout sensitive fluid transfer or processing. When used in combination with sanitary fittings, complete assemblies can be constructed that provide the sanitary conditions critical to pharmaceutical, biotechnology, cosmetic, food, dairy and beverage applications.

Braid-reinforced for increased pressure resistance, it also provides flexibility, durability, and chemical and temperature resistance to make it the ideal pressure tubing for a wide variety of industries.

























Crystal-clear Tygon® Medical/ Surgical Tubing provides proven performance in countless medical device applications.



Tygon® Microbore
Tubing is designed for precision injection and dispensing in bospital, surgical and laboratory applications.

TYGON® MEDICAL/ SURGICAL TUBING

FORMULATION S-50-HL

- Ideal for contact with blood
- Flexible and resilient with established performance in peristaltic pump applications
- Fully characterized to ISO 10993 and FDA guidelines for biocompatibility
- Meets USP Class VI criteria

Originally developed for use in cardiac surgery, Tygon® Medical/Surgical Tubing's consistent quality provides dependable performance in medical device applications. Saint-Gobain Performance Plastics compounds its own materials to specific formulation requirements using select ingredients that have been carefully qualified and specified. To ensure formulation integrity, full characterization of chemical make-up and physical property and biological safety testing are performed. Tygon® Medical/Surgical Tubing has been fully tested for biological safety to the ISO 10993 standard. Durometer hardness: Shore A, 66.

Tygon® Medical/Surgical Tubing can be sterilized by radiation, ethylene oxide, steam or chemical methods.

TYGON® MICROBORE TUBING

FORMULATION S-54-HL

- Stiff enough for easy handling, soft enough to resist puncturing
- Micro-diameter sizes fit needle gauges 30 to 17
- Ideal for precision injection and dispensing applications
- Meets USP Class VI criteria

Select Tygon® Microbore Tubing for intravenous and arterial infusion as well as other surgical, hospital and laboratory applications. It is flexible enough to permit use of a single size tubing with several different needle gauges, yet sufficiently rigid to minimize the danger of wall collapse. Tygon® Microbore Tubing is non-toxic, non-pyrogenic and biocompatible. Durometer hardness: Shore A, 83.

Tygon[®] Microbore Tubing can be sterilized by radiation, ethylene oxide, steam or chemical methods.

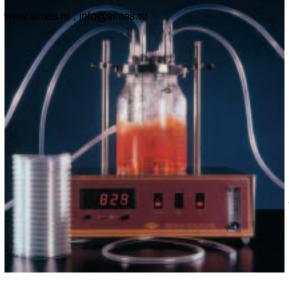












With an extremely low sorption plasticizer to alter fluids, Tygon® High Purity Tubing maintains the integrity of sensitive



2275 I.B. is bydrophobic and resists the sorption of aqueous fluids, it minimizes the risk of fluid alteration in single-use or repeat-use applications.

Since Tygon®

TYGON® HIGH PURITY TUBING

FORMULATION 2275

- Provides an uncompromising fluid path for sensitive solutions
- Low sorption maintains fluid integrity
- Plasticizer-free virtually no extractables
- Environmentally friendly safe to dispose of through incineration
- Documented biocompatibility to the ISO 10993 standard
- Meets USP Class VI, FDA and NSF 51 criteria

Tygon® High Purity Tubing is ideal for handling sensitive fluids such as pharmaceutical or biological solutions. There is virtually no absorption of key fluid constituents into the tubing material or fluid adsorption onto the tubing walls. As a result, fluid alteration and loss is limited. There is no plasticizer to leach into or contaminate the fluid, yet the tubing remains flexible.

Tygon® High Purity Tubing can be sterilized by radiation, ethylene oxide, steam or chemical methods.

Frequently, incineration is used to dispose of contaminated materials. While many tubings release hazardous byproducts when burned, Tygon® High Purity Tubing only releases carbon dioxide and water when properly incinerated, providing safe disposal.

Also available with reinforcement to withstand elevated working pressure.

TYGON® HIGH PURITY PRESSURE TUBING

FORMULATION 2275 I.B.

- Low sorption to aqueous fluids
- Plasticizer-free
- Tough braid reinforcement for elevated working pressures
- Meets USP Class VI and FDA criteria

Tygon® 2275 I.B. helps maintain product integrity during fluid transfer in pharmaceutical and biotechnology applications. Loss of fluid through migration into the tubing or adherence of fluid onto the tubing walls may create inconsistencies in final product results. Tygon® 2275 I.B. is hydrophobic and resists the sorption (absorption/adsorption) of aqueous fluids. This reduction in sorption minimizes the risk of fluid alteration in single-use or repeat-use applications.

Tygon® 2275 I.B. is virtually unaffected by chemical sanitizers and cleaners. As a result, it can be cleaned repeatedly without decreasing its service life. The nonwettable surface of the product facilitates complete drainage of fluid during the cleaning process. In addition, Tygon® 2275 I.B. can be sterilized easily using conventional gamma radiation, gas (ethylene oxide) and autoclave methods.



















After being immersed in aggressive MEK for 16 hours (plus 4 bours drying time), Tygon[®] Ultra Chemical Resistant Tubing is still clear and flexible while PVC tubing is completely degraded and rendered useless



An entirely plasticizer-free Tygon® formulation , developed for use in applications where extractables are a concern

TYGON® ULTRA CHEMICAL RESISTANT TUBING

FORMULATION 2075

- Resistant to highly aggressive chemicals
- Plasticizer-free minimizes risk of fluid contamination
- Exceptionally smooth inner surface inhibits particulate buildup
- Low sorption maintains fluid integrity

Tygon® Ultra Chemical Resistant Tubing offers an unequaled combination of chemical resistance, clarity and flexibility. Tygon® Ultra Chemical Resistant Tubing is virtually unaffected by acids, bases, ketones, salts and alcohols, fitting the requirements of many applications from battery acid filling to hazardous material handling. It's entirely plasticizer-free, eliminating fluid contamination and the premature embrittlement and cracking common with many flexible tubings. Its exceptionally smooth inner surface inhibits particulate buildup and reduces the potential for contamination.

TYGON® **PLASTICIZER** FREE TUBING

FORMULATION 2001

- Superior flex life in peristaltic pumps
- Chemically resistant to a wide range of fluids
- Temperature resistant from -108°F to 135°F
- Clear for easy visual flow monitoring
- Meets FDA criteria for food contact

Tygon® Plasticizer Free Tubing is a uniquely engineered product that offers the low compression set properties of a thermoset rubber. Tygon® Plasticizer Free Tubing provides the most flexibility, highest temperature resistance and longest pump life available in a clear, plasticizer / oil free tubing. It is ideal for a broad range of applications including peristaltic pump applications, soap and detergent dispensing, water purification lines, food contact applications and chemical transfer. This uniquely engineered tubing will not embrittle or crack prematurely like other tubings that contain plasticizer or extender oils, benefiting the user with less downtime and tubing changes.





















With close dimensional tolerances and outstanding elasticity, Tygothane® Precision Polyurethane Tubing provides worry-free attachment to fittings.

TYGOTHANE® PRECISION POLYURETHANE TUBING

FORMULATION C-210-A

- Consistently tight dimensional tolerances
- Excellent abrasion and tear resistance
- Fuel and lubricant resistant
- Sub-zero temperature capabilities
- Meets FDA criteria

Our rigidly controlled manufacturing process makes Tygothane® Precision Polyurethane Tubing the flexible polyurethane tubing that has consistently tight tolerances from lot to lot. Precision tolerances and high elasticity provide the user with an easy, worry-free attachment to fittings. Made of a tough, ester-based polyurethane, Tygothane® Precision Polyurethane Tubing's clarity, high tear strength and excellent abrasion resistance make it ideal for many applications, including fuel and lubricant lines, pneumatic lines, abrasive product transfer and cable jacketing. It also offers exceptional resistance to oils, greases, fuels and many chemicals.

Able to withstand rugged daily use, Tygothane® Precision Polyurethane Tubing resists weathering and can be safely used in temperatures ranging from -100°F (-73°C) to 200°F (93°C). It meets FDA criteria for food and beverage use and is also available in ether-based, medical grade and reinforced formulations.



Because of its excellent wear properties, Tygothane® frequently outperforms rubber, plastic and metal materials in the most physically demanding applications

TYGOTHANE® PRECISION POLYURETHANE PRESSURE TUBING

FORMULATION C-544-A I.B.

- Abrasion and tear resistant
- Braid reinforcement for elevated working pressures
- Resistant to oils, greases and fuels
- Flexible even in sub-zero temperatures
- Meets FDA criteria for food contact
- Meets NSF 61 criteria for potable water contact*

More flexible than many other reinforced urethane tubings, Tygothane® Pressure Tubing can be used in the most physically demanding applications, such as those requiring a tight bend radius. Specially formulated from tough, ether-based polyurethane resin, Tygothane® tubing is resistant to a range of chemicals, including oils, greases, solvents and chemicals.

Because of its excellent wear properties, Tygothane® frequently outperforms traditional rubber, plastic and metal materials when exposed to abrasive conditions. Tygothane® also is plasticizer-free, and remains flexible even when cycled through temperature extremes.

*NSF has length restriction, determined by tubing size, for NSF 61 applications.







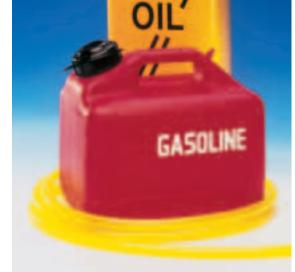








For extended service in a a wide variety of applications, Norprene® Industrial Grade Tubing outlasts virtually all multi-service rubber tubings.



Designed for safe and efficient bandling of most petroleum-based products, Tygon" Fuel and Lubricant Tubing resists embritlement, cracking and swelling.

NORPRENE® INDUSTRIAL GRADE TUBING

FORMULATION A-60-G

- Superior weathering
- Abrasion resistant
- Outstanding flexural fatigue resistance
- Wide temperature range
- Low gas permeability versus rubber tubing

Norprene® Industrial Grade Tubing outperforms neoprene, EPDM and other general-purpose tubings in test after test and application after application. It will not weaken or crack after years of exposure to heat and ozone.* This provides long service in a wide range of applications such as gasketing, abrasion-resistant sleeving and cable insulation. Performance formulated for on-the-job reliability, Norprene® handles temperatures from -75°F (-60°C) to 275°F (135°C), allowing the use of one material with a broad range of temperatures. It is heat sealable and can be joined without fittings. It also has excellent resistance to inorganic (acids and bases) fluids.

With its outstanding flexural fatigue resistance and high temperature capability, Norprene® Industrial Grade Tubing outlasts and outperforms virtually all other general service tubings in peristaltic and vacuum pump applications.

*500 pphm







TYGON® FUEL AND LUBRICANT TUBING

FORMULATION F-4040-A

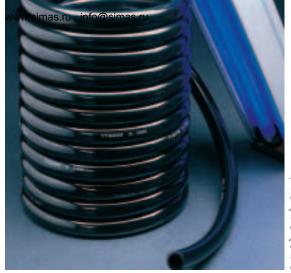
- Resists embrittlement
- Compatible with most petroleum-based products
- Resists swelling and cracking
- Ozone and UV light resistant

A consistent performer lot after lot, Tygon® Fuel and Lubricant Tubing is the most requested fuel and lubricant tubing for a variety of applications — from small engine fuel lines to coolant transfer. Specifically designed to handle most fuels and industrial lubricants, Tygon® Fuel and Lubricant Tubing resists the swelling and hardening caused by hydrocarbon-based fluids. This significantly reduces the risk of failure due to cracking and leakage. Its minimum extractability safeguards the liquid or vapor being transferred against adulteration.

Extremely flexible (Shore A, 57), Tygon® Fuel and Lubricant Tubing simplifies installation, even in tight places. It is translucent yellow for positive identification and to allow easy flow monitoring. It is routinely used to handle gasoline, kerosene, heating oils, cutting compounds and glycol-based coolants.







Tygon® UV Resistant Tubing protects light-sensitive fluids while resisting degradation ozone and ultraviolet



corrosive chemicals and solvents, Fluran® Severe Environment Tubing is designed to bandle the most aggressive solutions at temperatures as high as 400°F.

TYGON® UV RESISTANT TUBING

FORMULATION R-3400

- Black in color, protects light-sensitive fluids
- Wide range of chemical resistance
- Ozone resistant
- Excellent burn resistance

Ideal for virtually any permanent or temporary chemical transfer application, Tygon® UV Resistant Tubing combines suppleness and flexibility with resistance to a wide range of chemicals. It shows exceptional resistance to strong acids and many alkalies. The flexibility of Tygon® UV Resistant Tubing makes it quick and easy to put into service, providing considerable savings on installation time and cost. Black in color, it is resistant to ultraviolet light, ozone and weathering, making it ideal for many outdoor applications. Standard inventoried sizes of Tygon® UV Resistant Tubing have sufficient wall thickness to block transmission of all UV light.

In-house testing also indicates a UL 94V-O and UL 94HB flammability rating.

FLURAN® SEVERE ENVIRONMENT TUBING

FORMULATION F-5500-A

- Provides continuous service at temperatures up to 400°F (204°C)
- Excellent resistance to corrosive chemicals, oils, fuels and solvents
- Resists ozone, sunlight and weathering
- Opaque black color helps protect light sensitive fluids

Made of a proprietary fluoroelastomer, Fluran® Severe Environment Tubing has both the physical and chemical characteristics that make it ideal for severe environments, such as dry cleaning fluid lines and solvent recovery systems, where other flexible tubings fail. Fluran® Severe Environment Tubing can be used in continuous service with temperatures as high as 400°F (204°C) and has excellent resistance to corrosive chemicals, oils, fuels, solvents and most mineral acids.

This opaque, black tubing helps protect light-sensitive materials being transferred and will not prematurely crack and age when exposed to ozone, sun and weather. It is highly flexible and resilient, making it the ideal choice in peristaltic pumping of extremely corrosive materials. A food grade formulation is available on request.









Chemically resistant and noncontaminating Tvgon® Inert Tubing provides the outstanding clarity and flexibility of Tygon® tubing, combined with the inertness of a uoropolymer



Chemfluor® tubings are made using fluoropolymers under strictly controlled processing onditions

TYGON® INERT TUBING

FORMULATION SE-200

- Crystal clear for easy visual flow monitoring
- Better flexibility than typical rigid fluoropolymer tubings
- Chemically resistant and inert
- Non-contaminating fluid path
- Meets FDA criteria

Without sacrificing the flexibility, glass-like clarity or outstanding bend radius for which Tygon® tubing is known, Tygon® Inert Tubing can handle many applications where flexible tubing of the past could not be used. Its FEP inner liner provides the ultimate in chemical resistance and can handle a wide variety of fluids from corrosives to MEK-based solvents. The liner is inert, meaning it will not extract or contaminate fluids being transferred. The fluid path will not impart odor or taste, making it well-suited for food and beverage use. It meets FDA criteria for food and beverage applications.

Tygon® Inert Tubing combines all the benefits of Tygon® with the inertness of a fluoropolymer, providing superior performance in many applications and industries.

CHEMFLUOR® TUBING

FEP, PFA, PTFE

- *Ultra-pure*
- Non-toxic
- Chemically inert
- Wide temperature capabilities
- Meets FDA criteria
- FEP and PFA meet USP Class VI criteria

Chemfluor® fluoropolymer tubings have outstanding chemical and physical properties and can be used in a broad range of temperatures, from -400°F to 500°F, depending on the polymer type. Chemfluor® tubings are available in a variety of different polymer types including FEP, PFA and PTFE. The primary differences among them are use temperature, clarity and mechanical strength, while several chemical and physical properties are common to all.

Chemfluor® tubings are manufactured from resins that meet FDA criteria. No plasticizers, stabilizers or fillers are used, so they are pure and non-contaminating. Unlike metal and rubber alternatives, Chemfluor® tubings are non-corroding and non-oxidizing. Unlike other plastic materials, they are unaffected by solvents, acids and fuels.

Chemfluor® FEP and PFA tubings fully comply with the requirements of USP Class VI criteria and are nontoxic, non-hemolytic and non-pyrogenic.



























Custom Products

VENDFLOW® TASTE BARRIER TUBING

FORMULATION E-70-V-CE

- Plasticizer-free fluid pathway
- Hydrophobic inner surface reduces taste transfer
- Extremely low absorption rate
- Smooth inner surface
- Meets FDA requirements for food contact

Specially formulated to transfer water and beverages, Vendflow[®] E-70-V-CE will not impart any "plastic" taste, as is sometimes found with other tubing. Its exceptional flexibility allows for tight bends and easy installation. Vendflow[®] E-70-V-CE can be produced in a variety of hardnesses, colors, sizes and lengths to match user requirements.



Specially made for water and beverage transfer applications with strict taste requirements







TYGON® PARATUBING

- Available in a wide variety of sizes and durometers
- Can be color-coded with surface inking, in the wall stripe or colored tube
- Heat sealed to allow separation of tubes if necessary

Tygon® Paratubing speeds and simplifies complicated piping jobs by utilizing the electrical "wiring harness" concept in fluid and gas transmission. Fabricated to meet the specific needs of the user, Tygon® Paratubing consists of two or more lengths of Tygon® tubing joined side-by-side. Individual tubes can be of the same or different diameters, and they can be of the same or different formulations. Individual tubes can be easily separated and cut to accommodate varying fitting locations. Tygon® Paratubing can be color-coded to include any combination of desired colors to meet the needs of each individual application.







Available in a nearly infinite range of combinations and configurations

New TYGON® LP 100

ABOVE DECK AND SMALL ENGINE LOW PERMEATION FUEL LINE

- Above deck ratings for the marine industry
- Meets upcoming EPA standards
- SAE J1527 and ISO 8469 ratings
- UL94 V-0 (liner) and UL 94 HB (cover)

Tygon® LP 100 Above Deck and Small Engine Low Permeation Fuel Line is a specially formulated, multi-layer barrier tube, designed to reduce the permeation of fuels yet remain flexible at lower temperatures. With an excellent resistance to hydrocarbons, fuels, greases and oils, this product exceeds all current and proposed permeation standards.







Norprene® Barrier Tubing

- Plasticizer-free bore
- Long flex life in peristaltic pumps
- Excellent chemical resistance
- Available in both food grade and industrial grade

Norprene® Barrier Tubing is a high performance coextruded product specifically formulated for use in applications where extractables are a concern. Its inert plasticizer-free bore is taste-free and ultra-smooth for improved flushability. Norprene® Barrier Tubing is available in various durometers to meet the needs of your pump application, has excellent chemical resistance to harsh chemicals, and is available in both food grade and industrial grade.





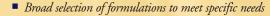


Provides outstanding chemical resistance and long flex life



Custom Products

AUTOANALYZER TUBING



 Technical assistance available to assist in tubing formulation and configuration choices

Major autoanalyzer equipment and micro-pump manufacturers rely on Saint-Gobain's knowledge of polymers and extensive experience with the specific demands required of peristaltic pump tubing. To assure optimum tubing formulation and configuration choices are made, Saint-Gobain can provide technical assistance in the early stages of development. Choices can be tailored to your own specifications or selected from hundreds of current formulations.



Saint-Gobain leads the way in Autoanalyzer Tubing



CUSTOM TUBING FORMULATIONS

- Over 1,000 formulations currently available
- Durometer ranges from Shore A38 to Shore D72
- Custom compounds can be formulated to match user requirements

Saint-Gobain Performance Plastics' commitment to materials research and development continually provides innovative solutions to the challenges of today's applications. Saint-Gobain Performance Plastics compounds its own materials to specific formulation requirements using select ingredients which have been carefully qualified and specified. Final product inspection can include burst testing, flow rate testing or measurement of other key performance characteristics in Saint-Gobain Performance Plastics' own testing laboratory.













Quality begins with controlling the "mix"



HEMICAL RESISTANCE PROPERTIES OF TUBING

The ratings in the charts on pages 18 to 21 are based on the results of laboratory tests. They reflect the relative capabilities of various Saint-Gobain Performance Plastics' tubing formulations to withstand specific chemicals. NOTE: The ratings in the charts DO NOT reflect the extent to which extraction may occur, or the extent to which fluids may undergo any physical changes in properties or composition, as a result of coming into contact with the tubing. Saint-Gobain Performance Plastics makes no representation or warranty with respect to the susceptibility of any fluid to become contaminated or undergo changes in properties or composition as a result of possible extraction of tubing ingredients by the fluid to be transmitted. Certain corrosives that would be destructive to tubing with prolonged exposure can be satisfactorily handled for short periods of time if flushed with water after use. All ratings are based on room temperature (73°F). Chemical resistance will be adversely affected by elevated temperatures.

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

Check out our chemical resistance applications on our website at www.tygon.com.

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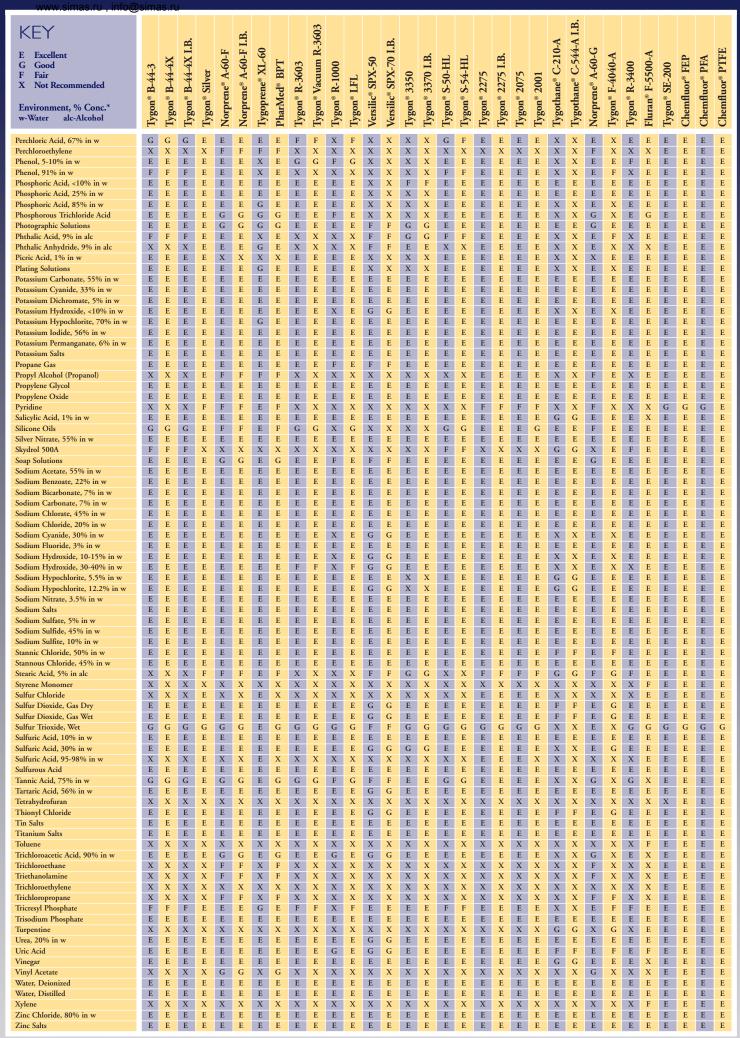
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Coldinar Nitrata 550/ in an	Б	Е	Б	Б	Б	Е	Е	Е	Е	г	Е	Е	Е	E	Б	Б	Б	Е	Б	Е	Б	Е	Е	Б	Б	E	Б	Е	Е	Е	E E
Calcium Nitrate, 55% in w Calcium Salts	E E	E E	E E	E E	E E	E	E E	E E	E	E E	E	E E	E	E	E E	E E	E E	E E	E E	E	E E	E	E	E E	E E	E E	E E	E E	E	E E	E E
Calcium Sulfate, 1% in w	Е	E	E	E	E	E	E	E	Е	E	E	E	E	E	E	E	E	E	E	Е	Е	E	E	E	E	Е	E	E	Е	E	E E
Carbon Dioxide, Wet/Dry	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	Е	E	E	E	E	E	E E
Carbon Disulfide Carbon Monoxide	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	G E	E E	E E	E E E
Carbon Tetrachloride	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	E	E	E E
Carbonic Acid	E	E	E	E	E	E	E	E	Е	E	E	E	G	G	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E E
Castor Oil	F	F	F	G	F	F	F	F	X	X	X	X	E	E	E	E	F	G	G	G	G	G	E	E	F	E F	G	E	E	E	E E
Cellosolve Cellosolve Acetate	X	X X	X	X X	F F	F F	X X	F F	X X	X X	X X	X	X	X	X	X X	X X	X	X	X X	X X	X X	X X	X X	F F	F	X	X X	E E	E E	E E E
Chlorine, Dry Gas	E	E	E	F	F	F	G	F	E	E	F	E	X	X	X	X	E	E	F	F	F	F	F	F	F	E	E	E	E	E	E E
Chlorine, Wet Gas	E	E	E	F	X	X	F	X	G	G	X	G	X	X	X	X	G	G	F	F	F	F	X	X	X	E	E	E	E	E	E E
Chloroborrono Mono Di Tri	E X	E X	E	E X	G	G	E	G X	E	E X	G	E X	G	G	E	E X	E	E	E	E X	E	E	X	X	G	X	E	X	Е	E	E E E
Chlorobenzene, Mono, Di, Tri Chloroform	X	X	X	X	X	X	X	X	X	X	X X	X	X	X	X	X	X	X	X	X	X	X X	X	X	X X	X	X	X F	E E	E E	E E E
Chlorosulfonic Acid	X	X	X	X	X	X	E	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	E	E	E E
Chromic Acid, 10-20% in w	Е	E	E	E	Е	E	E	E	G	G	G	G	X	X	X	X	E	E	E	E	E	E	X	X	Е	F	Е	E	Е	Е	E E
Chromic Acid, 50% in w Citric Acid, 10-20% in w	E E	E E	E E	G E	F E	F E	G E	F E	F E	F E	X E	F E	X E	X E	X E	X E	G E	G E	G E	G E	G E	G E	X G	X G	F E	X E	E E	E E	E E	E E	E E E
Coconut Oil	F	F	F	G	F	F	F	F	X	X	X	X	E	E	E	E	F	G	G	G	G	G	E	E	F	E	G	E	E	E	E E
Corn Syrup	E	E	E	E	E	E	G	E	Е	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	Е	E	E	E	E	E	E E
Cottonseed Oil	F	F	F	G	F	F	F	F	X	X	X	X	E	E	E	E	F	G	G	G	G	F	E	E	F	E	G	E	Е	E	E E
Cresol (m, o, or p) Cresylic Acid	F X	F X	F X	E X	X G	X G	X	X G	X	X X	X X	X X	G X	G X	G X	G X	F X	F X	E X	E X	E X	E X	X	X X	X G	F F	F X	E X	E E	E E	E E E
Cupric Chloride, 40% in w	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	Е	E	E	E	E	E	E	E	E	E	E	E	E E
Cupric Nitrate, 70% in w	E	E	E	E	E	E	Е	E	Е	E	E	E	E	E	E	E	E	E	Е	Е	Е	E	E	E	E	E	E	E	E	E	E E
Cupric Sulfate, 13% in w Cyclohexane	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E X	E G	E G	E X	E F	E X	E E	E E	E E	E E E
Cyclohexanone	X	X	X	F	X	X	X	X	X	X	X	X	X	X	X	X	X	X	F	F	F	F	X	X	X	X	X	X	E	E	E E
Detergent Solutions	Е	E	E	E	G	G	G	G	E	E	E	E	G	G	E	E	E	E	E	E	Е	E	E	E	G	E	E	E	Е	E	E E
Dibutyl Phthalate	F	F	F	E	E	E	F	E	F	F	X	F	E	E	E	E	F	F	E	E	E	E	X	X	E	F	F	E	E	E	E E
Diesel Fuel Diethylamine, 2.5% in w	X E	X E	X E	X E	X E	X E	X E	X E	X E	X E	X G	X E	X	X	X	X X	X E	X E	X E	X E	X E	X E	G E	G E	X E	G F	X E	E X	E E	E E	E E E
Diethylene Glycol	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E E
Dimethylformamide	X	X	X	E	G	G	E	G	X	X	X	X	G	G	E	E	X	X	E	E	E	E	X	X	G	X	X	X	E	E	E E
Dimethylsulfoxide Dioctyl Phthalate	X F	X F	X F	G E	G E	G E	X F	G E	X F	X F	X X	X F	X E	X E	F E	F E	X F	X F	G E	G E	G E	G E	X X	X X	G E	X F	X F	X E	E E	E E	E E E
Dioxane	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	E	E	E E
Ether	X	X	X	X	F	F	X	F	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	F	F	X	X	E	E	E E
Ethyl Acetate	X	X	X	X	G	G	Е	G	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	G	X	X	X	E	Е	E E
Ethyl Alcohol (Ethanol) Ethyl Benzoate	X	X	X	E X	F X	F X	E X	F X	X	X X	X X	X	F X	F X	F X	F X	X	X	E X	E X	E X	E X	X	X X	F X	G X	X	X	E E	E E	E E E
Ethyl Chloride	X	X	X	X	F	F	E	F	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	F	X	X	X	E	E	E E
Ethyl Ether	X	X	X	X	F	F	X	F	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	F	F	X	X	E	E	E E
Ethylene Bromide Ethylene Chlorohydrin	X	X X	X	F E	X E	X E	X E	X E	X X	X X	X X	X	E G	E G	E G	E G	X X	X X	F E	F E	F E	F E	X X	X X	X E	X G	X	E X	G E	E E	E E E
Ethylene Dichloride	X	X	X	X	F	F	E	F	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	F	X	X	X	E	E	E E
Ethylene Glycol	E	E	E	E	E	E	E	E	Е	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E E
Ethylene Oxide	E	E	E	E	E	E	E	E	E	E	F	E	F	F	E	E	E	E	E	E	E	E	E	E	Е	E	E	E	E	E	E E
Fatty Acids Ferric Chloride, 43% in w	X E	X E	X E	F E	F E	F E	E E	F E	X E	X E	X E	X E	F E	F E	G E	G E	X E	X E	F E	F E	F E	F E	G E	G E	F E	G E	F E	E E	E E	E E	E E E
Ferric Nitrate, 60% in w	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E E
Ferric Sulfate, 5% in w	E	Е	E	E	E	E	Е	E	E	E	Е	E	E	E	Е	E	Е	E	Е	E	E	E	E	E	Е	Е	Е	E	Е	E	E E
Ferrous Chloride, 40% in w Ferrous Sulfate, 5% in w	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E E
Fluoboric Acid, 48% in w	E	E	E	E	X	X	E	X	E	E	E	E	X	X	X	X	E	E	E	E	E	E	X	X	X	X	X	E	E	E	E E
Fluorine Gas	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	G	X	G	G G
Fluosilicic Acid, 25% in w Formaldehyde, 37% in w	E	E X	E X	E F	E X	E X	E	E X	E X	E X	E X	E X	X F	X F	F F	F F	E X	E X	E F	E F	E F	E F	E X	E X	E X	E X	E X	E X	E E	E E	E E E
Formic Acid, 25% in w	E	E	E	E	E	E	E E	E	E	E	G	E	G	G	E	E	E	E	E	E	E	E	F	F	E	F	E	E	E	E	E E
Formic Acid, 40-50% in w	G	G	G	E	G	G	E	G	G	G	F	G	F	F	E	E	G	G	E	E	E	E	X	X	G	X	G	F	E	E	E E
Formic Acid, 98% in w	G	G	G	E	G	G	E	G	G	G	F	G	F	F	E	E	G	G	Е	E	E	E	X	X	G	X	G	X	E	E	E E
Freon 11 Freon 12	E E	E E	E E	E E	E E	E E	G G	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	G G	F F	F F	E E E
Freon 22	E	E	E	E	E	E	G	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	F	F	E E
Fruit Juice	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	Е	E	E	E	E	E	E	E	Е	E	E	E	Е	E	E E
Fuel Oil Furfural	X	X	X	X X	X	X	X	X X	X	X X	X X	X	X	X	X	X X	X X	X	X	X	X X	X X	G X	G X	X	G X	X	E X	E X	E E	E E E
Gallic Acid, 17% in acetone	X	X	X	X	G	G	X	G	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	G	F	X	X	E	E	E E
Gasoline, Automotive	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	G	G	X	G	X	E	E	E	E E
Gelatin	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	Е	E	E	E	E	E	Е	E	Е	E	E	E	E E
Glucose, 50% in w Glycerol, (Glycerin)	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E	E E E
Glycolic Acid, 70% in w	G	G	G	E	G	G	G	G	E	E	G	E	E	E	E	E	E	E	E	E	E	E	X	X	G	E	E	X	E	E	E E
Heptane	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	G	G	X	G	F	G	E	E	E E
Hexane	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	G	G	X	G	F	G	E	E	E E
Hydrazine Hydrobromic Acid, 20-50% in w	X E	X E	X E	X E	F X	F X	X E	F X	X E	X E	X E	X E	X	X	X	X X	X E	X E	X E	X E	X E	X E	X	X X	F X	X E	X E	X E	E E	E E	E E E
Hydrobromic Acid, 100% in w	E	E	E	E	X	X	E	X	E	E	E	E	X	X	X	X	E	E	E	E	E	E	X	X	X	X	X	E	E	E	E E
Hydrochloric Acid, 10% in w	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F	Е	Е	E	E	E	E	E E
Hydrochloric Acid, 37% in w Hydrocyanic Acid	E E	E E	E E	E E	G E	G E	E E	G E	E E	E E	F E	E E	X E	X E	X E	X E	E E	E E	E E	E E	E E	E E	X G	X G	G E	X E	E E	G X	E E	E E	E E E
Tydrocyanic Acid	E	E	E	E	£	E	E	E	£	£	E	E	E	E	E	L	£	£	E	£	Ľ	L	ď	G	E	E	E	Λ	£	£	LE

* If concentration is not indicated, assume 100% concentration or the maximum percent solubility in water.
NOTE: Concentrations of room temperature liquids are given in % volume. Concentrations of room temperature solids are given in % weight.

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Posterior Methods Marches Marc	w-Water alc-Alcohol	T	Ty	Ty	Tyg	ž	ž	Ty	Ph	Ty	Tyg	Ty	Tyg	Ve	Ve	Tyg	Ty	Ty	Ty	Tyx	Tyg	Ty	Tyg	Ty	Tyg	ž	Ty	Tyg	Hu	Tyg	S	S S	S
Posterior Methods Marches Marc	Hydrofluoric Acid, 10% in w	E	E	E	E	X	X	E	X	E	E	E	E	X	X	X	X	E	E	E	E	E	E	X	X	X	E	E	E	E	E	E	E
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Megenism Milkrost (29%) as well as 18																																	
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Malk-Acid, 30% in w Malk-Acid, 30% in w Relik Acid, 30% in w Re																																	
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Natural Gas E E E E E E E E E	•																																
Nickel Chloride, 40% in w E E E E E E E E E E E E E	•																																
Nickel Salts	Nickel Chloride, 40% in w	E	E	E	E	E	E	E	E	E	E	E	E	E	E	Е	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
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Nitric Acid, 10% in w E																																	
Nitroine Acid, 68-71% in w X		E	Е	E	E	E	E	E	E	E	E	E	E	F	F	F	F	E	E	Е	E	E	E	X	X	Е	X	E	E	E	E	E	E
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Oils, Animal																																	
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Oils, Hydrocarbon X	Oils, Essential	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	G	G	X	F	X	E	E	E	E	E
Oils, Vegetable F F F G F F F F F F F F F F F F F F F																																	
Oleic Acid X X X F F F F X X X X X F F F F X X X X	•																																
Ortho Dichlorobenzene	Oleic Acid	X	X	X	F	F	F	F	F	X	X	X	X	F	F	G	G	X	X	F	F	F	X	G	G	F	G	F	E	E	E	E	E
Oxalic Acid, 12% in w G G G G G G G G G G G G G																																	_
Oxygen E E E E E E E E E E E E E E E E E E E																																	
Palmitic Acid, 100% in ether X X X F F F F X F F F F F F F F F G G F F G F E E E E E	Oxygen	E	E	Е	E	E	E	E	E	E	E	E	E	E	E	Е	E	E	E	E	E	E	E	E	E	Е	E	E	E	Е	E	E	E
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OTE: Concentrations of room temberature liquids are given in % volume. Concentrations of room temberature solids are given in % volume. Concentrations of room temberature liquids are given in % volume.	* If concentration is not indicated, assume 10	00% co	oncent.	ration																													

^{*} If concentration is not indicated, assume 100% concentration or the maximum percent solubility in water.

NOTE: Concentrations of room temperature liquids are given in % volume. Concentrations of room temperature solids are given in % weight.



^{*} If concentration is not indicated, assume 100% concentration or the maximum percent solubility in water. NOTE: Concentrations of room temperature liquids are given in % volume. Concentrations of room tempera

TYPICAL PHYSICAL PROPERTIES OF TYGON® & OTHER TUBINGS

Physical properties of a tubing produced from a specific compound will vary depending on its diameter and wall thickness. The following typical physical properties are average values as measured using test methods of the American Society for Testing and Materials. 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.

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

NOTE: The ratings in the charts DO NOT reflect the extent to which extraction may occur, or the extent to which fluids may undergo any physical changes in properties or composition, as a result of coming into contact with the tubing. Saint-Gobain Performance Plastics makes no representation or warranty with respect to the susceptibility of any fluid to become contaminated or undergo changes in properties or composition as a result of possible extraction of tubing ingredients by the fluid to be transmitted. Certain corrosives that would be destructive to tubing with prolonged exposure can be satisfactorily handled for short periods of time if flushed with water after use. All ratings are based on room temperature (73°F). Chemical resistance will be adversely affected by elevated temperatures.

	Durometer Hardness Shore A, 15s	Color	Maximum Recommended Operating Temp. °F (°C)	Tensile Strength psi (M Pa)	Ultimate Elongation, %	Tensile Set,⁺%	Tear Resistance Ibf/in. (kN/m)	Compression Set ** Constant Deflection, %	Brittle Temperature °F (°C)	Specific Gravity	Water Absorption, %
ASTM Method	D2240-03			D412-98	D412-98	D412-98	D1004-03	D395-03	D746-98	D792-00	D570-98
Tygon® B-44-3	63	Clear	165 (74)	2300 (15.8)	410	81	180 (32)	65	-49 (-45)	1.20	0.13
Tygon® B-44-4X	65	Clear	165 (74)	2100 (14.5)	450	78	200 (35)	62	-47 (-44)	1.21	0.15
Tygon® B-44-4X I.B.	65	Clear	165 (74)	2100 (14.5)	450	78	200 (35)	62	-47 (-44)	1.21	0.15
Tygon [®] Silver	72	Silver	160 (71)	2300 (15.8)	240	65	190 (33.3)	71	-47 (-44)	1.20	<0.01
Norprene® A-60-F	61	Cream	275 (135)	1000 (6.9)	375	57	120 (21)	30	-75 (-60)	0.98	0.30
Norprene® A-60-F I.B.	61	Cream	275 (135)	1000 (6.9)	375	57	120 (21)	30	-75 (-60)	0.98	0.30
Tygoprene® XL-60	60	Translucent	250 (121)	1630 (11.2)	770	100	190 (33.3)	55	-87 (-66)	0.90	0.07
PharMed® BPT Tubing	64	Cream	275 (135)	1000 (6.9)	375	47	120 (21)	27	-75 (-60)	0.98	0.30
Tygon® R-3603	55	Clear	165 (74)	1650 (11.4)	450	107	125 (22)	61	-58 (-50)	1.18	0.24
Tygon®R-3603 Vacuum	55	Clear	165 (74)	1650 (11.4)	450	107	125 (22)	61	-58 (-50)	1.18	0.24
Tygon® R-1000	40	Clear	125 (52)	1200 (8.3)	375	73	52 (9)	57	-103 (-75)	1.12	0.30

^{* 1-}second reading.

^{† 75%} of ultimate elongation

	Durometer Hardness Shore A, 15s	Color	Maximum Recommended Operating Temp. °F (°C)	Tensile Strength psi (M Pa)	Ultimate Elongation, %	Tensile Set,† %	Tear Resistance Ibf/in. (kN/m)	Compression Set ** Constant Deflection, %	Brittle Temperature °F (°C)	Specific Gravity	Water Absorption, %
ASTM Method	D2240-03			D412-98	D412-98	D412-98	D1004-03	D395-03	D746-98	D792-00	D570-98
Tygon® LFL	56	Clear	165 (74)	1550 (10.7)	380	44	122 (21)	64	-65 (-54)	1.16	0.18
Versilic® SPX-50	50	Translucent	350 (177)	1500 (10.3)	450	8	148 (26)	10	-112 (-80)	1.17	0.06
Versilic® SPX-70 I.B.	71	Translucent (between braid)	320 (160)	1200 (8.3)	300	10	130 (22.8)	10	-112 (-80)	1.20	0.08
Tygon® 3350	50*	Translucent	400 (204)	1450 (10.0)	770	13	200 (35)	7	-112 (-80)	1.14	0.11
Tygon® 3370 I.B.	70*	Translucent (between braid)	320 (160)	1200 (8.3)	500	25	250 (44)	3	-112 (-80)	1.18	0.11
Tygon® S-50-HL	66	Clear	165 (74)	2000 (13.8)	350	76	165 (28.9)	53	-55 (-48)	1.20	0.14
Tygon® S-54-HL	80	Clear	185 (85)	2700 (18.6)	320	33	305 (53)	34	-25 (-31)	1.24	0.11
Tygon® 2275	72	Clear	125 (52)	2000 (13.8)	700	187	220 (39)	84	-108 (-78)	0.90	<0.01
Tygon® 2275 I.B.	72	Clear (between braid)	125 (52)	2000 (13.8)	700	187	220 (39)	84	-108 (-78)	0.90	<0.01
Tygon® 2075	72	Clear	125 (52)	2000 (13.8)	700	187	220 (39)	84	-108 (-78)	0.90	<0.01
Tygon® 2001	69	Clear	135 (57)	800 (5.51)	500	110	140 (24.5)	40	-108 (-78)	0.88	0.04
Tygothane® C-210-A	82*	Transparent	200 (93)	6050 (41.7)	500	98	475 (83.1)	68	-100 (-73)	1.20	1.12
Tygothane® C-544-A I.B.	85*	Clear (between braid)	180 (82)	5000 (34.5)	400	45	350 (61.3)	19	-100 (-73)	1.12	1.80
Norprene® A-60-G	61	Black	275 (135)	1000 (6.9)	375	47	120 (21)	30	-75 (-60)	0.98	0.30
Tygon® F-4040-A	57	Translucent Yellow	165 (74)	1820 (12.5)	310	50	167 (29)	65	-35 (-37)	1.26	0.49
Tygon® R-3400	64	Black	165 (74)	2250 (15.5)	350	56	185 (32)	64	-6 (-21)	1.31	0.19
Fluran® F-5500-A	60*	Black	400 (204)	1400 (9.3)	300	13	100 (17.5)	37	-60 (-51)	1.90	0.23
Tygon® SE-200	67***	Clear	170 (77)	2000 (13.8)	350	76	165 (29)	53	-40 (-40)	1.45	<0.01
Chemfluor® FEP	55D*	Translucent	400 (204)	2600 (17.9)	275	N.A.	N.A.	N.A.	-100 (-73)	2.17	<0.01
Chemfluor® PFA	60D*	Translucent	500 (260)	2500 (17.2)	300	N.A.	N.A.	N.A.	-320 (-196)	2.17	<0.03
Chemfluor® PTFE	58D*	Translucent	500 (260)	2650 (18.3)	250	N.A.	N.A.	N.A.	-450 (-268)	2.18	<0.01

^{* 1-}second reading.

^{**} Test performed at 158°F (70°C) for 22 hours.

[†] at 75% of ultimate elongation

^{***} Durometer measured on outer jacket.



SUGGESTED MAXIMUM WORKING PRESSURES FOR TYGON® & OTHER TUBINGS

The maximum working pressure of Tygon® tubing varies with the different formulations. In addition, working pressure is affected by temperature, size and wall thickness, time and material transmitted as explained below:

■ TEMPERATURE

Since Tygon® tubing is produced from a variety of polymers, elastomers and rubbers, temperature should be considered in the selection of a Tygon® formulation for an end-use application. As a rule, tubing will stiffen as ambient temperature is reduced from standard room temperature (73°F/23°C). At higher temperatures, the tubing will become more flexible and physical properties such as tensile strength will become lower.

SIZE AND WALL THICKNESS

Working pressure increases as the wall thickness increases relative to the bore size.

TIME

If pressure exceeding the maximum suggested working pressure is maintained over a period of time, the tubing will gradually swell and eventually rupture.

■ MATERIAL TRANSMITTED

Even materials such as solvents that attack Tygon® tubing can be handled over short periods of time. However, prolonged exposure tends to cause swelling, loss of normal tensile strength and reduced pressure resistance.

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

NOTE: The ratings in the charts DO NOT reflect the extent to which extraction may occur, or the extent to which fluids may undergo any physical changes in properties or composition, as a result of coming into contact with the tubing. Saint-Gobain Performance Plastics makes no representation or warranty with respect to the susceptibility of any fluid to become contaminated or undergo changes in properties or composition as a result of possible extraction of tubing ingredients by the fluid to be transmitted. Certain corrosives that would be destructive to tubing with prolonged exposure can be satisfactorily handled for short periods of time if flushed with water after use. All ratings are based on room temperature (73°F). Chemical resistance will be adversely affected by elevated temperatures.

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			Tygon®	Tygon®	Tygon®	Tygon®	Norpre	ene®	Norpi	rene®	Tygoprene®	Phar	Med®	Tygon® '	Tygon® R-3603	Tygon®	Tygo	n®
Inside	Outside	Wall	Tygon® B-44-3	Tygon® B-44-4X	Tygon® B-44-4X I.B.	Silver	A-60-	-F	A-60-I	F I.B.	Tygoprene® XL-60	B	PT	R-3603	Vacuum	R-1000	Tygo LFI	
Diameter (inches)	Diameter (inches)	Thickness (inches)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 73°F (psi) Max. Working Pressure at	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 180°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 180°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 180°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 160°F (psi)			
(inches)	(inches)	(inches)	ax. Wo Pressur 73°F (J	ax. Wo Pressur 73°F (J	Pressur 73°F (ax. Wo	ax. Wo Pressur 73°F (p	ax. Wc Pressur 73°F (ax. Wo Pressur 80°F (ax. Wc Pressur 73°F (ax. Wo Pressur 80°F (ax. Wo Pressur 73°F (ax. Wc Pressur 73°F (ax. Wo Pressur 80°F (ax. Wo Pressur 73°F (p	ax. Wo Pressur 73°F (p	ax. Wo Pressur 73°F (ax. Wc Pressur 73°F (ax. Wo Pressur 60°F (
.020	.145	.062	M I	Ž .	M. M.	Z Z	M .	Ž	≅	Ä T T	M I	115	72	Ž I	N I	Ä .	× -	Ž
1/32	3/32 5/32	1/32		100								78	49	80				
1/16	1/8 3/16	1/32	70 108	60 100			34	21			35	24 43	14 27	45 75		55	50	14
.080 3/32	.140 5/32	.030	47	43			31	21			33	15	2/	30		7,7		- 11
5752	3/16 7/32	3/64 1/16	78	-5								30	19	55				
1/8	3/16 1/4	1/32 1/16	45 62	34 60		65	19	12			20	13 24	8 15	25 45		30	33	10
5/32	3/8 7/32	1/8 1/32	31	28										20				
	1/4 9/32	3/64 1/16	52	50										35				
3/16	1/4 5/16	1/32 1/16	34 45	25 43		50	13	8			13	17	10	20 30		20	25	7
	3/8 7/16	3/32 1/8	62 78	60										40 55				
	.443 9/16	.1278 3/16													60			
1/4	5/16 3/8	1/32 1/16	28 36	34		40	10	6			15	13	8	15 25		15	20	6
	7/16 1/2	3/32 1/8	49 62	47 60	250 90		19	12	125	70		24	15	35 40		30	35	9
510.6	.515 5/8	.1325 3/16													50			
5/16	3/8 7/16 1/2	1/32 1/16 3/32	30 41	28 40			8	5			11	11	6	20 30		15	15	5
	9/16	1/8	52	50										35				
3/8	5/8 13/16 1/2	5/32 1/4 1/16	26	60 25		30	7	4			11	9	5	45 20		10		
3/6	9/16 5/8	3/32 1/8	36 45	34 44	170 90	30	13	8	105	65	11	17	10	25 30		20	25	7
	.687 7/8	.1560	- 1)		1/0)0		13	0	10)	0)		1/	10	50	50	20	2)	/
7/16	1 1/2	5/16 1/32													, jo			
7710	9/16 5/8	1/16		22 30										15 20				
1/2	11/16 5/8	1/8 1/16	39 20	19										25 10		10		
	11/16 3/4	3/32	28 36	27 34	200 95	38	10	6	100	60	15	10	8	20 25		15	20	6
	13/16 .847	5/32 .1735		40										30				
9/16	1-1/8 5/8	5/16 1/32													45			
	3/4 13/16	3/32 1/8												15 20				
5/8	3/4 13/16	1/16 3/32		23										15				
	.980	1/8 .1775	30	29	165 105		8	5	95	55	11	11	6	20				
11/1/	15/16 1-3/8	5/32 3/8		35										25	40			
11/16	3/4 7/8	1/32 3/32	20											15				
3/4	15/16 7/8 15/16	1/8 1/16 3/32	28															
	1-1/16	1/8 5/32	26	25 30	145 85		7	4	85	45	11	9	5	18 20				
	1-1/8 1.150	3/16		34					8)	7)				25				
	1-1/4 1-1/2	1/4 3/8		43										30	35		24	9
7/8	1-1/8	1/16	23	22										15				
1	1-3/16 1-1/8	5/32 1/16												20				
	1-1/4 1-5/16	1/8 5/32	20	20 24										15				
	1-3/8 1.390	3/16 .1950	28	27	100 60				75	40				20			15	5
	1-1/2 2	1/4	36	34										25	35			
1-1/8	1-3/8 1-1/2	1/8 3/16		18										18				
1-1/4	1-1/2	1/8 3/16	17 24	23	85 55									12 15				
1-1/2	1.636	.1930 1/4	30											15				
1-1/2	1-7/8 1.900	3/16 .2000	20	25	75 45									15				
1-3/4 2	2 2-1/4 2-1/2	1/4 1/4 1/4	26 23 20	19	75 45									18 16 15				
	2-3/4 3	3/8 1/2	36	34	60 40									1)				
2-1/4 2-1/2	2-3/4 3	1/4	19	16														
3	3-1/4 3-1/2	3/8 1/4		23 14														
	3-3/4	3/8 1/2		17	40 25													
4 6	5 6-1/2	1/2		19														
.010 © .020	.030	.010																
030 040	.090 .070	.030 .015																
≥ .050	.090	.020																

WORKING PRESSURE RATINGS

			Ver	rsilic®	Versi	lic®	Tvo			• ·		Tygon® S54-HL	Tygon®	Tvo	on®	Tyoon®	Tygon®	Tygot	hane®
Inside	Outside	Wall	SP	X-50	SPX-70	I.B.		gon® 850	Tygon 3370 I.		Tygon® S-50-HL	Microbore	2275	Tyg ₀ 2275		Tygon® 2075	Tygon® 2001	Tygot C-21	
Diameter (inches)	Diameter (inches)	Thickness (inches)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 320°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 320°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 320°F (psi)	Max. Working Pressure at 73°F (psi)	Pressure at 320°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 125°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 175°F (psi)			
.020 1/32	.145 3/32	.062 1/32	22	21			22	21			100								
1/16	5/32 1/8	1/16 1/32	14	13			14	13			55		-				,,	70	40
.080	3/16 .140 5/32	1/16 .030 1/32	22	21 10			22	21 10			100		60			50	45		
	3/16 7/32	3/64 1/16	18	16			18	16			70								
1/8	3/16 1/4	1/32 1/16	9 14	8 13			9 14	8 13			30 55		45			30	30	45 74	25 45
5/32	3/8 7/32 1/4	1/8 1/32 3/64	7	6			7	6			25								
3/16	9/32 1/4	1/16 1/32	7	6			7	6			45 20							34	19
	5/16 3/8	1/16 3/32	11 14	10 13			11 14	10 13			40 55		35	150	00	20	22	56 70	33 44
	7/16 .443 9/16	1/8 .1278 3/16	18	16	180	175	18	16	170	125	70			150	80				
1/4	5/16 3/8	1/32 1/16	5 9	4 8			5 9	4 8			18 30		25			18	17	28 42	12 25 28
	7/16 1/2	3/32 1/8	12 14	11 13	1/5	1/0	12 14	11 13	150	105	45 55			150	85			58 70	28 45
5/16	.515 5/8 3/8	.1325 3/16 1/32			145	140			150	105									
	7/16 1/2	1/16 3/32	7 10	6 9			7 10	6 9			25 35 45		17			15	14	36	22
	9/16 5/8 13/16	1/8 5/32 1/4	7	6							45								
3/8	1/2 9/16	1/16 3/32	9 11	8 10			9 11	8 10			20 30		15			13	12	34 45	19 27
	5/8 .687	1/8 .1560	6	5	210	190	12	11	130	95	40			135	80			54	33
7/16	7/8 1 1/2	1/4 5/16 1/32																	
//10	9/16 5/8	1/16 3/32	8	7			4 8	3 7			20 25							40	21
1/2	11/16 5/8	1/8 1/16	5	4			5	4			20 25 35 18							49 26	29 14
	11/16 3/4 13/16	3/32 1/8 5/32	7	6 8			7	6 8			25 30		20	125	70	18	16	36 46	18 27
	.847 1-1/8	.1735 5/16			185	165			125	90									
9/16	5/8 3/4	1/32 3/32									20								
5/8	13/16 3/4 13/16	1/8 1/16 3/32	6	5			6	5			20							24 32	11 16
	7/8 .980	1/8 .1775	7	6	135	125	7	6	110	80	25		17	120	65	15	13	38	21
11/16	15/16 1-3/8 3/4	5/32 3/8									30								
11/16	7/8 15/16	1/32 3/32 1/8																	
3/4	7/8 15/16	1/16 3/32																26	13
	1 1-1/16 1-1/8	1/8 5/32 3/16	7	6			7	6			20		16	120		13	11	33	20
	1.150	.200			170	105			100	75									
7/8	1-1/2	3/8 1/16									20								
1	1-1/8 1-3/16 1-1/8	1/8 5/32 1/16									20								
	1-1/4 1-5/16	1/8 5/32	5	4			5	4			18							28	14
	1-3/8 1.390 1-1/2	3/16 .1950 1/4			105	75			70	50			19	100	55	14	13		
1-1/8	2	1/2																	
1-1/4	1-1/2 1-1/2	3/16 1/8	5	4			5	4											
	1-5/8 1.636 1-3/4	3/16 .1930 1/4			80	65			55	40									
1-1/2	1-7/8 1.900	3/16			70	45			40	30									
1-3/4	2 2-1/4	1/4 1/4	6	5			6	5						65	50				
2	2-1/2 2-3/4 3	1/4 3/8 1/2												50	40				
2-1/4 2-1/2	2-3/4 3	1/4 1/4																	
3	3-1/4 3-1/2	3/8 1/4																	
4	3-3/4 4 5	3/8 1/2 1/2																	
6 .010	6-1/2 .030	1/4 .010										130							
.020 .030	.060 .090 .070	.020 .030 .015										130 130 40							
040 ≥ .050	.0/0	.015										40 60							

Inside	Outside	Wall	Tygo C-54	thane® 4-A I.B.	Nor A-0	prene® 60-G	Tygon® F-4040-A	Tygon® R-3400	Flur F-550		Tyg SE-	on® 200	Cl	nemfluor FEP	9	C	hemfluor PFA	,00	C	nemfluor PTFE	is.
Diameter (inches)			Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 175°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 180°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 275°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 160°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 212°F (psi)	Max. Working Pressure at 400°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 212°F (psi)	Max. Working Pressure at 400°F (psi)	Max. Working Pressure at 73°F (psi)	Max. Working Pressure at 212°F (psi)	Max. Working Pressure at 400°F (psi)
.020 1/32 1/16	.145 3/32 5/32 1/8	.062 1/32 1/16 1/32						60	18	12	100	45	412	148	N/A	412	190	103	336	180	97
.080 3/32	3/16 .140 5/32 3/16	1/16 .030 1/32 3/64			34	21	40 50	45													
1/8	7/32 3/16 1/4 3/8	1/16 1/32 1/16 1/8	420	220	19 34	12 21	50	80 60	19	13	85	40	417	150	N/A	417	192	104	339	182	98
5/32	7/32 1/4 9/32	1/32 3/64 1/16	420	220	34	21		50					289	104	N/A	289	133	72	236	126	68
3/16	1/4 5/16 3/8 7/16	1/32 1/16 3/32 1/8			13 19	8 12	35	25 45 60	15	9	75	38	177 312	64 112	N/A N/A	177 312	81 143	44 78	144 254	77 136	42 73
1/4	.443 9/16 5/16 3/8	.1278 3/16 1/32 1/16			34 10	21	30	35	13	8	55	35	140 250	50 90	N/A N/A	140 250	64 115	35 63	114 204	61 109	33 59
	7/16 1/2 .515 5/8	3/32 1/8 .1325 3/16	275	150	15 19 26	9 12 16		50						/.	27/4		50	20	00	/0	26
5/16	3/8 7/16 1/2 9/16 5/8	1/32 1/16 3/32 1/8 5/32			8 12	5 7	25	30	11	6			113	41	N/A	113	52	28	92	49	26
3/8	13/16 1/2 9/16 5/8	1/4 1/16 3/32 1/8	205	115	28 7 10 13	17 4 6 8	20	25 45	10	5	50	25	97	35	N/A	97	45	24	79	42	23
7/16	.687 7/8 1 1/2	.1560 1/4 5/16 1/32											83	30	N/A	83	38	21	67	36	19
1/2	9/16 5/8 11/16 5/8 11/16	1/16 3/32 1/8 1/16			6 8	3 5	15	20					139	50	N/A	139	64	35	113	61	33
	3/4 13/16 .847 1-1/8	3/32 1/8 5/32 .1735 5/16	195	110	10	6	30	35			45	18									
9/16	5/8 3/4 13/16	1/32 3/32 1/8											65	23	N/A	65	30	16	53	29	15
5/8	3/4 13/16 7/8 .980	1/16 3/32 1/8 .1775	175	105	7 8	4 5	25	30					114	41	N/A	114	52	28	93	50	27
11/16	15/16 1-3/8 3/4 7/8 15/16	5/32 3/8 1/32 3/32 1/8											54	19	N/A	54	25	13	44	24	13
3/4	7/8 15/16 1 1-1/16	1/16 3/32 1/8 5/32	150	100	7	4	20	25			30	12									
	1-1/8 1.150 1-1/4 1-1/2	3/16 .200 1/4 3/8																			
7/8	1 1-1/8 1-3/16 1-1/8	1/16 1/8 5/32 1/16																			
1	1-1/4 1-5/16 1-3/8 1.390	1/16 1/8 5/32 3/16 .1950	120	80	6	3															
1-1/8	1-1/2 2 1-3/8 1-1/2	1/4 1/2 1/8 3/16																			
1-1/4	1-1/2 1-5/8 1.636 1-3/4 1-7/8	1/8 3/16 .1930 1/4 3/16	95	65																	
1-3/4	1.900 2 2-1/4 2-1/2	.2000 1/4 1/4 1/4	80 70	50 40																	
2-1/4 2-1/2	2-3/4 3 2-3/4	3/8 1/2 1/4																			
3	3 3-1/4 3-1/2 3-3/4	1/4 3/8 1/4 3/8 1/2																			
4 6	4 5 6-1/2	1/2 1/4																			
.010 0 .020 0 .030	.030 .060 .090	.010 .020 .030																			

SIZE LISTINGS OF INVENTORIED TUBING

JIZL	LIJ				-11			11011LD 10D					1 10		(0,+,+)			a (T, N2)		
										Tygon [®] B-44-4X I.B.		Tygon* B-44-4X I.B. UNIPACS				Tygoprene® Pump Tubing				
Inside Diameter (inches)	Outside Diameter (inches)	Wall Thickness (inches)					. ×			XI		XIX		Norprene® A-60-F	Norprene® A-60-F I.B.	ene Fubi	PharMed® BPT			
ide ume ches	tsid ume ches	II ickr		Tygon® B-44-3			Tygon® B-44-4X			30 n 4.4		0.07 74.44 11 PA	Tygon [®] Silver	pre 0-F	pre 0-F	du	I W		Tygon® R-3603	
Ins Dia (in		(in Thi		Tyg B-4			Tyg B-4			Tyg B-4		T. P. P. S.	Tyg Silv	No. A-6	No.	Tyg Pur	Pha BP		Tyg R-3	
			20' 5		500'	10'	20'	50'	10'		50'	10 pcs. @10'	50'	50'	50'	50'	25'	20'	50' 100	' 500'
.020 1/32	.145 3/32	.062 1/32						•									•		•	
1/16	5/32 1/8 3/16	1/16	•		•			•									•			•
	3/16	1/32 1/16	•					•						•		•	•		•	
.080 3/32	.140 5/32	.030 1/32 3/64	•					•												
	5/32 3/16 7/32	3/64 1/16	•														•		•	
1/8	3/16	1/32	•	•				•									•		•	•
	1/4 3/8	1/32 1/16 1/8	•	•				•					•	•		•	•		• •	•
5/32	7/32 1/4	1/32	•					•											•	
	9/32	3/64 1/16	•					•											• •	
3/16	1/4 5/16	1/32 1/16	•					•					•	•		•	•		•	•
	3/8 7/16	3/32 1/8 .0655	•					•											•	
	.443	.0655	•																•	
1/4	9/16 5/16	3/16 1/32	•																•	
	3/8 7/16	1/16	•					•			•		•	•		•	•		•	•
	1/2 .515	3/32 1/8 .1325	•					•						•	•		•			
	.515 5/8	3/16																		
5/16	3/8 7/16	1/32 1/16														•				
	1/2	3/32	•					•						•		•	•		•	
	9/16 5/8	1/8 5/32 1/4	•					•											•	
2/0	5/8 13/16	1/4 1/16																		
3/8	1/2 9/16	3/32	•					•					•	•		•	•		•	
	5/8 .687	1/8 .156	•					•			•			•	•		•		•	
	7/8	1/4																		
7/16	1 1/2	5/16 1/32																		
	9/16	1/16						•											•	
1/2	5/8 11/16	3/32 1/8	•																•	
1/2	5/8 11/16	1/16 3/32	•					•											•	
	3/4 13/16	3/32 1/8 5/32	•					•			•		•	•	•	•	•		•	
	.847	.1735						Ť												
9/16	1-1/8 5/8 3/4	5/16 1/32																		
	3/4 13/16	3/32 1/8																	•	
5/8	3/4 13/16	1/16 3/32																		
	7/8	1/8	•					•			•			•	•	•	•		•	
	7/8 .980 15/16	.1775 5/32						•											•	
11/16	1-3/8 3/4	3/8 1/32																		
11/16	7/8	3/32																	•	
3/4	15/16 7/8	1/8 1/16	•																	
	7/8 15/16 1	3/32 1/8	•					•			•			•		•	•		•	
	1-1/16	5/32	·					•						•	•	•			•	
	1-1/8 1.150	3/16 .200						•											•	
	1-1/4	1/4						•											•	
7/8	1-1/2	3/8 1/16																		
	1-1/8 1-3/16	1/8 5/32	•					•											•	
1	1-1/8 1-1/4	1/16 1/8																	•	
	1-5/16	5/32	•					•								•			•	
	1-3/8 1.390	3/16 .195	•					•			•				•				•	
	1-1/2	1/4 1/2	•					•											•	
1-1/8	1-3/8 1-1/2	1/8						•												
1-1/4	1-1/2	3/16 1/8	•																•	
	1-5/8 1.636	3/16 .1930	•					•			•								•	
1.1/2	1-3/4	1/4	•																	
1-1/2	1-7/8 1.900	3/16 .2000																		
1-3/4	2 2-1/4	1/4 1/4	•					•	•	•	•								•	
2	2-1/2 2-3/4	1/4	•				•	•		•						•		•	•	
	3	3/8 1/2	•				•													
2-1/4 2-1/2	2-3/4 3	1/4 1/4	•				•													
3	3-1/4 3-1/2	3/8 1/4					•													
3	3-3/4	3/8					•			•										
4	4 5	1/2 1/2				•	•													
6	6-1/2	1/4																		
010 0 .020 0 .030	.030 .060	.020																		
030 040	.090 .070	.030 .015																		
.050	.090	.020																		

SIZE LISTINGS OF INVENTORIED TUBING

	LIJ	11110		1 11	1 V	LIVI			\sim				
								œ.					
Inside Diameter (inches)	e ter	Wall Thickness (inches)	. E .	Tygon® R-3603 UNIPACS			*. C	Versilic® SPX-70 L.B.		, ei	<u>,</u> ∃	Tygon® S-54-HL Microbore	
ide ume	Outside Diameter (inches)	icku ches	Tygon [®] Vacuum R-3603	300° 3603 IIPA	Tygon® R-1000	Tygon® LFL	Versilic [®] SPX-50	Versilic® SPX-70	Tygon® 3350	Tygon® 3370 I.B.	Tygon® S-50-HL	gon® 4-H crot	Tygon®
Insi Dia (inc	Ou Dia (inc	in Tha	Tyg Vac R-3	Tys R-3 UN	Tyg R-1	Tys LFI	Ver SP	Ver SP	Ту <u>в</u> 335	Тув 337	Tyg S-5	Tyg S-5 Mi	Тув 227
020	.145		20' 50'	10 pcs@10'	50'	10' 25'	25' 50'	25' 50'	50'	25' 50'	50' 100'	500'	25' 50'
.020 1/32	3/32	.062 1/32 1/16 1/32					•		•		•		
1/16	3/32 5/32 1/8	1/16 1/32					•		•		• •		
	3/16				•	•	•		•		•		•
.080 3/32	.140 5/32 3/16	1/32					•		•		• •		
	7/32 3/16	.030 1/32 3/64 1/16 1/32 1/16					•		•		•		
1/8	3/16 1/4	1/32 1/16			•	•	•		•		• •		•
5/32	3/8	1/8					•		•		•		
3/32	7/32 1/4	1/32 3/64											
3/16	9/32 1/4 5/16	1/16 1/32					•		•		• •		
	5/16 3/8	1/32 1/16 3/32			•	•	•		•		• •		•
	7/16	1/8					•		•		•		
	.443 9/16	3/16	A	AB				•		•			
1/4	5/16	1/8 .0655 3/16 1/32 1/16 3/32			•	•	•		•		•		•
	3/8 7/16 1/2	3/32 1/8			•	•	•		•		• •		
	.515	1325				•		•		•			
5/16	5/8 3/8	3/16 1/32 1/16	A	A =				•					
	7/16	1/16			•	•	•		•		• •		•
	1/2 9/16	3/32 1/8					•				•		
	5/8 13/16	5/32 1/4											
3/8	1/2 9/16	1/16 3/32			•		•		•		• •		•
	5/8	1/8 .1560			•	•	•	•	•		• •		
	7/8	1/4	A	AH				•		•			
7/16	1 1/2	5/16 1/32											
,,,,,	9/16 5/8	1/16 3/32					•		•		•		
	11/16	1/8 1/16			•								
1/2	5/8 11/16	1/16 3/32			•		•		•		•		
	3/4 13/16	1/8			•	•	•		•		• •		•
	.847 1-1/8	.1735						•		•			
9/16	5/8	5/32 .1735 5/16 1/32 3/32 1/8	A	A									
	3/4 13/16	3/32 1/8									•		
5/8	3/4 13/16	1/16 3/32					•		•		•		
	7/8	1/8 .1775					•		•		•		•
	7/8 .980 15/16	5/32						•		•			
11/16	1-3/8 3/4	3/8 1/32	A	A =									
11/10	7/8	3/32 1/8											
3/4	15/16 7/8 15/16	1/8 1/16 3/32											
	15/16 1	3/32 1/8					•		•		•		•
	1-1/16 1-1/8	5/32 3/16											
	1.150	.200						•		•			
	1-1/4 1-1/2	1/4 3/8	A			•							
7/8	1 1-1/8	1/16 1/8									•		
1	1-3/16 1-1/8	5/32 1/16											
1	1-1/4	1/8					•		•		•		
	1-5/16 1-3/8	5/32 3/16 .1950				•							•
	1.390 1-1/2	.1950 1/4						•		•			
1-1/8	2 1-3/8	1/2 1/8	A										
	1-1/2	3/16											
1-1/4	1-1/2 1-5/8	1/8 3/16					•		•				
	1.636 1-3/4	.1930 1/4						•		•			
1-1/2	1-7/8	3/16						•		•			
	1.900	.2000					•		•				
1-3/4 2	2-1/4 2-1/2	1/4 1/4											
	2-3/4	3/8 1/2											
2-1/4	2-3/4	1/4											
2-1/2	3 3-1/4	1/4 3/8											
3	3-1/2 3-3/4	1/4 3/8											
4	4 5	1/2 1/2											
6	6-1/2	1/4											
.010 0 .020	.030 .060	.010 .020										•	
.030 .040	.090	.030										•	
.040	.0/0	.01)											

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SIZE LISTINGS OF INVENTORIED TUBING

Inside Diameter (inches)	Outside Diameter (inches)	Wall Thickness (inches)	Tygon [®] 2275 I.B.	Tygon® 2075	Tygon®	Tygothane® C-210-A	Tygothane® C-544-A I.B.	Norprene® A-60-G	.c. Tygon [®] .F-4040-A	Tygon [®] R-3400	Fluran® F-5500-A	Tygon®	Chemfluor® : FEP	Chemfluor® PFA	Chemfluor® PTFE
.020	.145	.062	10' 25' 50'	25' 50'	50'	100'	50' 100'	50'	50'	50'	50'	50'	50'	50'	50'
1/32	3/32 5/32	1/32													
1/16	1/8	1/16 1/32				•				•	•	•	•	•	•
.080	3/16 140	1/16		•	•			•	•						
3/32	.140 5/32	1/32								•					
	3/16 7/32 3/16	3/64 1/16							•	•					
1/8	3/16 1/4	1/32 1/16			•	•		•	•	•	•	•	•	•	•
	3/8 7/32	1/10 1/8 1/32					•	A				_			
5/32	1/4	3/64											•	•	•
3/16	9/32	1/16 1/32				•		•		•			•	•	•
5/10	1/4 5/16	1/16		•	•	•		•	•	•	•	•	•	•	•
	3/8 7/16 .443	3/32 1/8 .0655	•			•		•		•					
	.443 9/16	.0655 3/16						A							
1/4	5/16	1/32			•	•							•	•	•
	3/8 7/16	1/16 3/32		•		•		•	•	•	•	•	•	•	•
	1/2 515	1/8 .1325	•			•	•	•							
5/1/6	.515 5/8	3/16						A							
5/16	3/8 7/16	1/32 1/16		•	•	•		•	•	•	•		•	•	•
	1/2 9/16	3/32 1/8						•							
	5/8 13/16	5/32													
3/8	1/2	1/4 1/16		•	•	•		•	•	•	•		•	•	•
	9/16 5/8	3/32 1/8	•			•	•	•	•	•		•			
	.687	.156													
	7/8 1	1/4 5/16													
7/16	1/2 9/16	1/32 1/16						•	•	•			•	•	•
	5/8 11/16	3/32 1/8				•									
1/2	5/8	1/16				•		•	•				•	•	•
	11/16 3/4	3/32 1/8	•	•	•	•	•	•	•	•		•			
	13/16 .847	5/32 .1735													
	1-1/8	5/16													
9/16	5/8 3/4	1/32 3/32													
5/8	13/16 3/4	1/8 1/16				•							•	•	•
	13/16	3/32	•	•	•	•		•	•	•					
	7/8 .980	1/8 .1775	•	•		, in the second	•								
	15/16 1-3/8	5/32 3/8													
11/16	3/4 7/8	1/32 3/32											•	•	•
	15/16	1/8 1/16													
3/4	7/8 15/16	3/32				•									
	1 1-1/16	1/8 5/32	•	•	•	•	•	•	•	•		•			
	1-1/8	3/16													
	1.150 1-1/4	.200 1/4													
7/8	1-1/2 1	3/8 1/16													
	1-1/8 1-3/16	1/8 5/32													
1	1-1/8	1/16													
	1-1/4 1-5/16	1/8 5/32				•		•							
	1-3/8	3/16	•	•	•		•								
	1.390 1-1/2	.195 1/4 1/2													
1-1/8	2 1-3/8	1/8													
1-1/4	1-1/2 1-1/2	3/16 1/8													
	1-5/8	3/16													
	1.636 1-3/4	.1930 1/4					•								
1-1/2	1-7/8 1.900	3/16 .2000													
1-3/4	2 2-1/4	1/4 1/4	•				•								
2	2-1/2	1/4					•								
	2-3/4	3/8 1/2													
2-1/4 2-1/2	2-3/4 3	1/4 1/4													
3	3-1/4 3-1/2	3/8 1/4													
3	3-3/4	3/8													
4	5	1/2 1/2													
6	6-1/2 .030	1/4													
.020	.060	.020													
≥ .040	.090 .070	.030 .015													
.050	.090	.020													

[•] Indicates standard off-the-shelf items. \blacktriangle Sizes for vacuum applications; standard off-the shelf item. T/\$\phi\$ (495) 980-29-37,311-22-09,319-22-78

Tygon® Silver

Tygon® B-44-4X I.B. PharMed® BPT

Inside	Outside	Wall		44-3		4-4X		4-4X I			lver		A-60-1			-60-F I			₋ -60		BPT			603
Diameter (inches)	Diameter (inches)	Thickness (inches)	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 160°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 180°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 180°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 180°F	Minimum Bend Radius (inches)	um Kating of Mercury at 73°F
			Mini	Vacu In. o	Mini	Vacu In. c	Mini	Vacu In. c	Vacu In. e	Mini	Vacu In. c	Mini	Vacu In. c	Vacu In. o	Mini Radi	Vacu In. c	Vacu In. e	Mini	Vacu In. c	Mini	Vacu In. o	Vacu In. o	Mini Radi	Vacu In. c
	.145 3/32	.062 1/32			1/8	29.9														1/8	29.9	29.9	1/8	29.9
1/16	5/32 1/8	1/16 1/32	1/4	29.9	1/4	29.9														1/8 1/4	29.9 29.9	29.9 29.9	1/4	29.9
	3/16	1/16	1/8	29.9	1/8	29.9						1/4	29.9	29.9				1/2	29.9	1/8	29.9	29.0	1/8	29.9
3/32	.140 5/32	.030 1/32	3/8	29.9	3/8	29.9																	3/8	29.9
	3/16 7/32	3/64 1/16	1/4	29.9																1/4	29.9	29.9	1/4	29.9
1/8	3/16 1/4	1/32 1/16	1/2 3/8	25.0 29.9	1/2 3/8	25.0 29.9				1/2	29.9	1/2	29.9	29.9				1/2	29.9	1/2 1/2	25.0 29.9	15.0 29.9	1/2 3/8	20.0 29.9
5/32	3/8 7/32	1/8 1/32	3/4	16.0	3/4	16.0																	3/8	12.0
3132	1/4	3/64																						
3/16	9/32 1/4	1/16	1/2	29.9 11.0	1/2	29.9 11.0				-1/		-1/						-1/		- 10			1/2	29.9 9.0
	5/16 3/8	1/16 3/32	5/8 1/2	29.9 29.9	5/8 1/2	29.9 29.9				3/4	29.9	3/4	29.9	23.0				3/4	29.9	5/8	29.9	27.0	5/8 1/2	29.9 29.9
	7/16 .443	.1278	3/8	29.9																			3/8	29.9
1/4	9/16 5/16	3/16 1/32	1-5/8	6.0																			1-5/8	5.0
	3/8 7/16	1/16 3/32	1 3/4	25.0 29.9	1 3/4	25.0 29.9	1-1/2	29.9	29.9	3/4	29.9	1-1/4	26.0	13.0				1	29.9	7/8	25.0	15.0	1 3/4	20.0 29.9
	1/2	1/8	5/8	29.9	5/8	29.9	1-1/2	2).)	27.7			3/4	29.9	29.9	3/4	29.9	29.9			3/4	29.9	29.9	1/2	29.9
	.515 5/8	.1325 3/16																						
5/16	3/8 7/16	1/32 1/16	1-3/8		1-3/8	16.0						1-1/2	17.0	8.0				1-1/2	20.0	1-1/4	15.0	9.0	1-3/8	13.0
	1/2 9/16	3/32 1/8	1 7/8	29.9 29.9	1 7/8	29.9 29.9																	1 7/8	29.9 29.9
	5/8 13/16	5/32 1/4			3/4	29.9																	3/4	29.9
3/8	1/2 9/16	1/16	1-3/4		1-3/4 1-3/8	11.0 25.0				1-1/2	25.0	2-1/4	11.0	5.0				2	15.0	1-3/8	10.0	6.0	1-1/2 1-3/8	9.0 21.0
	5/8	1/8	1-1/8		1-1/8	29.9	1-1/8	29.9	25.0			1-1/4	29.9	23.0	1-1/4	29.9	20.0			1-1/8	29.9	27.0		29.9
	.687 7/8	.1560 1/4																						
7/16	1 1/2	5/16 1/32																						
	9/16 5/8	1/16 3/32			2-1/4 1-3/4	8.0 19.0																	2-1/4 1-3/4	7.0 15.0
1/2	11/16 5/8	1/8 1/16	1-3/8 2-7/8		2-7/8	6.0																	1-3/8 2-7/8	28.0
1/2	11/16	3/32	2-1/8	14.0	2-1/8	14.0	2.1/0	20.0	10.0	1.2//	20.0	2	26.0	12.0	2.1/6	25.0	15.0	2.1/2	20.0	1.1/0	25.0	15.0	2-1/4	12.0
	3/4 13/16	1/8 5/32	1-3/4	25.0	1-3/4 1-1/2	25.0 29.9	2-1/8	29.9	10.0	1-3/4	29.9	2	26.0	13.0	2-1/4	23.0	15.0	2-1/2	29.9	1-1/8	25.0	15.0	1-1/2 1-1/2	21.0 29.9
	.847 1-1/8	.1735 5/16																						
9/16	5/8 3/4	1/32 3/32																					2-1/2	9.0
5/8	13/16 3/4	1/8 1/16																					2	17.0
	13/16 7/8	3/32 1/8	2-3/8	16.0	3 2-3/8	9.0 16.0	2-3/8	25.0	10.0			3_1/4	17.0	8.0	2-1/2	20.0	10.0	3	20.0	2-3/4	15.0	9.0	3 2-3/8	7.0 13.0
	.980 15/16	.1775 5/32	2-310	10.0	2	26.0	2-3/0	25.0	10.0			J-1/1	17.0	0.0	2-1/2	20.0	10.0	3	20.0	2-3/1	15.0	7.0		21.0
-11/16	1-3/8	3/8			2	20.0																	2	21.0
11/16	3/4 7/8	1/32 3/32																					3-1/2	6.0
3/4	15/16 7/8	1/8 1/16	2-7/8	13.0																				
	15/16 1	3/32 1/8	3-1/4	11.0	3-1/4	11.0	3-1/4	20.0	5.0			4	11.0	5.0				4	20.0	3-1/2	10.0	6.0	3-1/4	9.0
	1-1/16 1-1/8	5/32 3/16			2-3/4	18.0 26.0									3-1/4								2-3/4 2-3/8	15.0
	1.150 1-1/4	.200				29.9																	2	
7/8	1-1/2	3/8				29.9																		2).)
//8	1-1/8	1/8	4-1/8	8.0																			4-1/8	
1	1-3/16 1-1/8	5/32 1/16																					3-1/2	
	1-1/4 1-5/16	1/8 5/32		6.0	4-3/8	10.0																	4-3/4	5.0
	1-3/8 1.390	3/16 .1950					3-3/4	20.0	5.0						5	12.0	7.0							
	1-1/2 2	1/4 1/2	3	25.0	3	25.0																	3	21.0
1-1/8	1-3/8 1-1/2	1/8 3/16			6-1/4	5.0																	4-1/2	9.0
1-1/4	1-1/2 1-1/2 1-5/8	1/8					5 1/2	10.0	2.0														7-7/8	3.0
	1.636	3/16 .1930			3-1/2	9.0	5-1/2	10.0	5.0														5-1/2	7.0
1-1/2	1-3/4 1-7/8	1/4 3/16		16.0 6.0																			7-1/4	5.0
	1.900 2	.2000 1/4	5-7/8	11.0	5-7/8	11.0	5-7/8	10.0	2.0														5-7/8	
1-3/4	2-1/4 2-1/2	1/4 1/4	7-1/2	8.0		6.0																	7-1/2 9-3/8	7.0
	2-3/4	3/8 1/2					6-7/8	25.0	10.0															
2-1/4 2-1/2	2-3/4 3	1/4		4 5.0		4.0																		
	3-1/4	3/8			10	9.0																		
3	3-1/2 3-3/4	1/4 3/8					13-1/4	10.0	1.0															
4	4 5	1/2 1/2			17	6.0																		
6 .010	6-1/2 .030	.010																						
.020	.060	.020																						

VACUUM RATINGS* AND BEND RADIUS VALUES

V / (7111			/ (1		<i>)</i> L	<u>'</u> _) I	V \			V /					
Inside	Outside	Wall		⁹ Vacuum 3603		gon® .000		Tygon [®] LFL	,		Versilic SPX-50		s	Versilio PX-70			Tygon ^o 3350	9		Tygon 3370 I.	
	Diameter						end (sac		ing ury	end nes)						end nes)		ing ury			
(inches)	(inches)	(inches)	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 160°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 320°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 320°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 320°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 320°F
.020 1/32	.145 3/32	.062 1/32								1/8	29.9	29.9				1/8	29.9	29.9			
1/16	5/32 1/8	1/16								1/4	25.0	15.0				1/4	29.9	29.9			
.080	3/16	1/16 .030			1/8	29.9	1/4	29.9	29.9	1/4	29.9	29.9				1/4	29.9	29.9			
3/32	5/32 3/16 7/32	1/32 3/64 1/16								1/4	20.0	20.0				1/4	29.9	29.9			
1/8	3/16 1/4	1/32			3/8	29.9	1/2	29.9	29.9	3/8 1/2	15.0 29.9	15.0 29.9				3/8 1/2	20.0	15.0 29.9			
5/32	3/8 7/32	1/8			3,0	27.7	1,2	27.7	27.7	3/4	5.0	5.0				3/4	10.0	10.0			
	1/4 9/32	3/64 1/16																			
3/16	5/16	1/32			5/8	25.0	3/4	29.9	20.0	1/2	5.0	5.0				1/2	5.0 25.0	5.0 25.0			
	3/8 7/16 .443	3/32 1/8 .1278								3/8 3/8	29.9 29.9	29.9 29.9	1/4	29.9	29.9	3/8 3/8	29.9 29.9	29.9 29.9	1/4	29.9	29.9
1/4	9/16 5/16	3/16 1/32	1/4	29.9						1-1/2	0.0	0.0	1/4	2).)	2).)	1-1/2	1.0	1.0	1/1	2).)	2).)
	3/8 7/16	1/16 3/32			1	13.0	1	15.0	5.0	3/4 5/8	20.0 29.9	20.0 29.9				3/4 5/8	15.0 29.9	15.0 29.9			
	.515	.1325			5/8	29.9	3/4	29.9	29.9	5/8	29.9	29.9	1/2	29.9	29.9	5/8	29.9	29.9	1/2	29.9	29.9
5/16	5/8 3/8 7/16	3/16 1/32 1/16	1/2	29.9	1.2/0	0.0	1.1/4	10.0	5.0	1.1/4	10.0	10.0				1.1/4	5.0	5.0			
	1/2 9/16	3/32 1/8			1-3/8	9.0	1-1/4	10.0	5.0	1-1/4 5/8 3/4	10.0 29.9 29.9	10.0 29.9 29.9				1-1/4 5/8	5.0 20.0	5.0 20.0			
	5/8	5/32								3/1	2).)	2).)									
3/8	1/2 9/16	1/16 3/32			1-3/4	6.0				1-1/2 1	10.0 15.0	5.0 15.0				1-1/2 1	5.0 20.0	5.0 15.0			
	.687	1/8 .1560			1-1/8	25.0	1	29.9	10.0	1	29.9	29.9	3/4	29.9	29.9	1	29.9	29.9	3/4	29.9	29.9
7/1/	7/8	1/4 5/16	5/8	29.9																	
7/16	9/16 5/8	1/32 1/16 3/32								1-3/4	15.0	10.0				1-1/2 1-3/4	2.0 10.0	2.0 10.0			
1/2	11/16	1/8			2-7/8	3.0				3	0.0	0.0				3	1.0	1.0			
	11/16 3/4	3/32			1-3/4	13.0	1-1/2	20.0	10.0	1-3/4 1-1/2	15.0 29.9	15.0 20.0				1-3/4 1-1/2	5.0 15.0	5.0 15.0			
	13/16 .847	5/32 .1735											1	29.9	29.9				1-1/4	29.9	29.9
9/16	1-1/8 5/8	5/16 1/32	7/8	29.9																	
5/8	3/4 13/16 3/4	3/32 1/8 1/16																			
5/16	13/16 7/8	3/32								3 2-1/2	5.0 20.0	5.0 20.0				3 2-1/2	5.0 10.0	0.0 10.0			
	.980 15/16	.1775 5/32											1-1/2	29.9	29.9				1-1/2	29.9	29.9
11/16	1-3/8 3/4	3/8 1/32	1	29.9																	
2//	7/8 15/16	3/32 1/8																			
3/4	7/8 15/16 1	1/16 3/32 1/8								2-1/2	15.0	10.0				2-1/2	1.0	1.0			
	1-1/16 1-1/8	5/32 3/16								2-172	15.0	10.0				2-1/2	1.0	1.0			
	1.150 1-1/4	.200 1/4					1-3/4	29.9	15.0				2-1/4	29.9	29.9				2-1/4	29.9	29.9
7/8	1-1/2	3/8 1/16	1-1/2	29.9																	
1	1-1/8 1-3/16 1-1/8	1/8 5/32 1/16																			
•	1-1/4	1/8								5	0.0	0.0				5	0.0	0.0			
	1-3/8 1.390	3/16 .1950					3-1/4	5.0	<2.0				2-1/2	29.9	29.9				3-1/2	15.0	10.0
	1-1/2	1/4	1-7/8	29.9																	
1-1/8	1-3/8 1-1/2 1-1/2	1/8 3/16 1/8								6	1.0	0.0				6	0.0	0.0			
1-1/4	1-5/8 1.636	3/16 .1930												25.0				0.0		10.0	5.0
1-1/2	1-3/4 1-7/8	1/4 3/16																			
	1.900 2	.2000 1/4								7	5.0	5.0	5-1/4	10.0	10.0	7	1.0	1.0	6-3/4	5.0	0.0
1-3/4 2	2-1/4	1/4																			
2-1/4	2-3/4 3 2-3/4	3/8 1/2 1/4																			
2-1/4	3-1/4	1/4 1/4 3/8																			
3	3-1/2 3-3/4	1/4 3/8																			
4	4 5	1/2																			
6 .010	.030	.010																			
020 030 040	.060 .090 .070	.020 .030 .015																			
.050	.090	.020																			

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V / (\		Tygon [®]			S-50-HL		zon®		Tygon*	_1 \		gon®		gon [®]		ygothan	e [®]		gothane	B	
Inside	Outside	Wall	S-5	ō-HL	MICR	OBORE		gon® 275		2275 I.B.		20	75	2	001		C-210-A	1	C-:	544-A I.I	В.
Diameter (inches)	Diameter (inches)	Thickness (inches)	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 125°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 180°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 180°F
			finimu tadius (at 7	finimu tadius (acuum n. of N at 7	finimu tadius (acuum n. of N at 7.	finimu tadius (acuum n. of M at 7.	'acuum n. of N at 12	finimu tadius (acuum n. of N at 7	finimu tadius (acuum n. ofM at 7	finimu tadius (acuum n. of M at 7	'acuum n. of N at 18	finimu kadius (acuum n. of M at 7	'acuum n. of N at 18
.020	.145	.062			2 11	>-	ZH	<i>></i>	24	>-		24	> -	24	>-	N III	>-		N III		
1/32	3/32 5/32 1/8	1/32 1/16 1/32	1/8	29.9												2/16	20.0	20.0			
.080	3/16 .140	1/16	1/8	29.9			1/4	29.9				1/4	29.9	1/4	29.9	3/10	29.9	29.9			
3/32	5/32 3/16	1/32 3/64	3/8	29.9																	
1/8	7/32 3/16	1/16	1/4	29.9 25.0			- /-					-1/		- /-		1/2	29.9	29.9			
5/32	1/4 3/8 7/32	1/16 1/8 1/32	3/8	29.9			3/8	29.9				1/4	29.9	1/2	29.9	5/16	29.9	29.9	1/4	29.9	29.9
5/52	1/4 9/32	3/64 1/16	3/4	15.0 29.9																	
3/16	1/4	1/32	1 5/8	10.0 29.9			5/8	29.9				1/2	29.9	1/2	29.9	1 5/8	29.9 29.9	20.0 29.9			
	3/8 7/16	3/32 1/8	1/2 3/8	29.9 29.9					1/2	29.9	29.9					7/16	29.9	29.9			
	.443 9/16	3/16	1.510	5.0												1.0/16	20.0	5.0			
1/4	5/16 3/8 7/16	1/32 1/16 3/32	1-5/8 1 3/4	5.0 25.0 29.9			1	29.9				3/4	29.9	1	29.9	1-9/16 15/16 11/16	20.0 29.9 29.9	5.0 29.9 29.9			
	1/2	1/8 .1325	5/8	29.9					3/8	29.9	10.0					9/16	29.9	29.9	3/4	29.9	29.9
5/16	5/8 3/8	3/16 1/32																			
	7/16 1/2	1/16 3/32	1-3/8	15.0 29.9			1-3/8	29.9				1-1/4	29.9	1-1/2	25.0	1-15/16	29.9	29.9			
	9/16 5/8	1/8 5/32	7/8	29.9																	
3/8	13/16 1/2 9/16	1/4 1/16 3/32	1-3/4 1-3/8	10.0 25.0			1-5/8	25.0				1-1/2	20.0	2	15.0	1-3/4 1-5/16	29.9 29.9	25.0 29.9			
	5/8	1/8	1-1/8	29.9					1	29.9	10.0					1-1/16	29.9	29.9	1-1/2	29.9	29.9
	7/8 1	1/4 5/16																			
7/16	1/2 9/16	1/32	2-1/4	8.0																	
1/2	5/8 11/16	3/32 1/8 1/16	1-3/4	18.0												1-11/16	29.9	29.9 29.9			
1/2	5/8 11/16 3/4	3/32 1/8	2-7/8 2-1/8 1-3/4	6.0 15.0 25.0			1-7/8	29.9	1-1/4	29.9	10.0	1-1/2	29.9	1-1/2	29.9	2-7/8 2-1/8 1-3/4	20.0 29.9 29.9	5.0 29.9 29.9	2	29.9	29.9
	13/16 .847	5/32	1-3/1	25.0			1-770	2).)	1-1/1	2).)	10.0	1-1/2	2).)	1-1/2	2).)	1-3/1	2).)	2).)	2	2).)	2).)
9/16	1-1/8 5/8	5/16 1/32																			
	3/4 13/16	3/32 1/8	2-1/2	10.0																	
5/8	3/4 13/16 7/8	1/16 3/32 1/8	3 2-3/8	9.0 15.0			2-7/8	20.0	1-3/4	29.9	10.0	2-1/2	20.0	2-1/2	25.0	4-1/8 3 2-3/8	10.0 29.9	5.0 15.0 29.9	2	29.9	25.0
	.980 15/16	.1775	2-316	15.0			2-/10	29.9	1-3/4	29.9	10.0	2-1/2	29.9	2-1/2	2).0	2-316	29.9	29.9	3	29.9	25.0
11/16	1-3/8 3/4	3/8 1/32																			
	7/8 15/16	3/32 1/8																			
3/4	7/8 15/16	1/16 3/32	2.1/4	10.0			2	20.0				2.2//	20.0	2	15.0		15.0				
	1 1-1/16 1-1/8	1/8 5/32 3/16	3-1/4	10.0			3	29.9	2-1/4	29.9	10.0	2-3/4	20.0	3	15.0	5-1/4	29.9	23.0	3-1/2	29.9	25.0
	1.150 1-1/4	.200																			
7/8	1-1/2 1	3/8 1/16																			
	1-1/8	1/8 5/32	4-1/8	8.0																	
	1-1/8 1-1/4 1-5/16	1/16 1/8 5/32	5-1/8	5.0												5-1/8	15.0	10.0			
	1-3/8	3/16 .1950					3	29.9	3-1/2	29.9	10.0	3-1/4	25.0	3-3/4	17.0				4-3/4	29.9	15.0
	1-1/2 2	1/4 1/2																			
1-1/8	1-3/8	1/8 3/16																			
1-1/4	1-1/2 1-5/8 1.636	1/8 3/16 .1930																			
1-1/2	1-3/4	1/4 3/16																	6	29.9	20.0
	1.900 2	.2000 1/4							5	25.0	5.0								7-1/2	29.9	15.0
1-3/4	2-1/4 2-1/2	1/4																	13		10.0
2.14	2-3/4 3	3/8 1/2																			
2-1/4 2-1/2	2-3/4 3 3-1/4	1/4 1/4 3/8																			
3	3-1/4 3-1/2 3-3/4	3/8 3/8																			
4	4 5	1/2 1/2																			
6 .010	.030	.010			1/8	29.9															
0.020 0.030 0.040	.060 .090 .070	.020 .030 .015			1/8 1/8 1/4	29.9 29.9 29.9															
≥ .050	.090	.020			1/4	29.9															
*		C 24-inch-lor																			

VACUUM RATINGS* AND BEND RADIUS VALUES

			Norpren	e®	Туд	gon®	Тур	gon®		Fluran®		Tyg	on®		ıfluor®		ıfluor®		fluor®	
Inside	Outside Diameter	Wall	Pi (s	A-60-G			40-A	R-3	400		F-5500-A		SE-	200		EP 50 S		FA		FE on
(inches)	(inches)	(inches)	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 180°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Vacuum Rating In. of Mercury at 275°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F	Minimum Bend Radius (inches)	Vacuum Rating In. of Mercury at 73°F
	.145 3/32	.062 1/32						2					~				~			
1/16	5/32 1/8	1/16 1/32						1/4	29.9	1/4	29.9	29.9	1/2		1/2	29.9	1/2	29.9	1/2	29.9
.080	3/16 .140 5/32	1/16 .030 1/32	1/4	29.9	29.9	1/4	29.9	3/8	29.9											
3132	3/16 7/32	3/64 1/16				1/4	29.9	1/4	29.9											
1/8	3/16 1/4	1/32	1/2	29.9	29.9	3/8	29.9	3/8	29.9	1/2	29.9	29.9	1		1/2	29.9	1/2	29.9	1/2	29.9
5/32	3/8 7/32 1/4	1/8 1/32 3/64	1/2	29.9	29.9										3/4	29.9	3/4	29.9	3/4	29.9
3/16	9/32 1/4	1/16						1/2 1	29.9 11.0						1	29.9	1	29.9	1	29.9
	5/16 3/8	1/16 3/32	3/4 1/2	29.9 29.9	29.9 29.9	5/8	29.9	5/8 1/2	29.9 29.9	3/4	29.9	29.9	1-1/2		1-1/2	29.9	1-1/2	29.9	1-1/2	29.9
	7/16 .443 9/16	1/8 .1278 3/16	1/4	29.9	29.9															
1/4	5/16 3/8	1/32	7/8	29.9	15.8	1	22.0	1	25.0	1	25.0	20.0	2		1-3/4 1	29.9 29.9	1-3/4	29.9 29.9	1-3/4 1	29.9 29.9
	7/16 1/2	3/32 1/8	3/4 3/4	29.9 29.9	29.9 29.9			3/4	29.9											
5/16	.515 5/8 3/8	.1325 3/16 1/32	1/2	29.9	29.9									S	2-1/2	29.9	2-1/2	29.9	2-1/2	29.9
3733	7/16 1/2	1/16 3/32	1-1/4 1	20.2 29.9	10.1 25.0	1-3/8	14.0	1-3/8	16.0	1-1/4	15.0	10.0		Z	2-1/2	27.7	2-1/2	2).)	2-1/2	27.7
	9/16 5/8 13/16	1/8 5/32 1/4	1./2	20.0	20.0									I 0						
3/8	1/2	1/16	1/2 1-3/8 1-1/2	29.9 14.1 29.9	29.9 7.0 15.0	1-7/8	10.0	1-3/4	11.0	2	10.0	5.0	3-1/2	A T	2	29.9	2	29.9	2	29.9
	5/8 .687	1/8 .1560	1-1/8	29.9	27.7	1-1/8	29.9	1-1/8	29.9				3 1/2	I C.						
7/16	7/8 1 1/2	1/4 5/16 1/32												\dashv		29.9		20.0	4	20.0
//10	9/16 5/8	1/16	2-1/4	5.0	0.0	2-3/8	7.0	2-1/4	8.0					P P	4	29.9	4	29.9	4	29.9
1/2	11/16 5/8	1/8 1/16	3	15.0	0.0	2-7/8	5.0							A	3	29.9	3	29.9	3	29.9
	11/16 3/4 13/16	3/32 1/8 5/32	2-1/4 1-1/8	20.0 29.6	10.0 15.6	1-3/4	22.0	1-3/4	25.0				4	Z						
	.847	.1735												U U						
9/16	5/8 3/4	1/32 3/32												C						
5/8	13/16 3/4 13/16	1/8 1/16 3/32	3-1/4	10.0	5.0									ΛV	6	29.9	6	29.9	6	29.9
	7/8 .980	1/8 .1775	2-3/4	20.0	9.9	2-1/2	14.0	2-3/8	16.0					Z						
11/16	15/16 1-3/8 3/4	5/32 3/8 1/32												—	8	29.9	0	29.9	8	29.9
11/16	7/8 15/16	3/32 1/8												E D	8	29.9	8	29.9	8	29.9
3/4	7/8 15/16	1/16 3/32												S						
	1 1-1/16 1-1/8	1/8 5/32 3/16	3-1/2	13.9	6.9	3-1./4	10.0	3-1/4	11.0				4-1/2	D						
	1.150	.200												BE						
7/8	1-1/2	3/8 1/16												0						
	1-1/8 1-3/16 1-1/8	1/8 5/32 1/16												H						
	1-1/4 1-5/16	1/8 5/32	5	5.0	5.0									H						
	1-3/8 1.390 1-1/2	3/16 .1950 1/4												0 Z						
1-1/8	2 1-3/8	1/2 1/8																		
1-1/4	1-1/2 1-1/2	3/16 1/8																		
	1-5/8 1.636 1-3/4	3/16 .1930 1/4																		
1-1/2	1-7/8 1.900	3/16 .2000																		
1-3/4	2-1/4	1/4 1/4 1/4																		
2	2-1/2 2-3/4 3	3/8 1/2																		
2-1/4 2-1/2	2-3/4 3	1/4 1/4																		
3	3-1/4 3-1/2 3-3/4	3/8 1/4 3/8																		
4	4 5	1/2 1/2																		
.010	.030	1/4 .010																		
.020 .030 .040	.060 .090 .070	.020 .030 .015																		
.050	.090	.020																		

STORAGE, CLEANING & STERILIZATION PROCEDURES

STORAGE

Storing Tygon® tubing is simple and presents no unusual problems. Whenever possible, it is desirable to store the tubing in a carton or box to eliminate or minimize its collecting dust. It is a good idea to dry store the tubing after cleaning, with ends open to permit thorough drying. If it is impossible to store Tygon® tubing in cartons, place it loosely coiled or laid out straight on a clean dry shelf, free from contact with painted surfaces, rubber, oils and greases. In any case, avoid kinking by not hanging the tubing over a nail or sharp edge.

CLEANING

Generally, cleaning Tygon® tubing is as simple as the flushing of the bore with soap and water, followed by a clear water rinse. Its low surface tension facilitates complete drainage. In addition, Tygon® tubing will withstand virtually all commercial cleaning agents and bactericides without danger of corrosion (as with metals) or oxidation (as with rubber). When using these preparations, do not increase the temperature or the concentration of the solution beyond that recommended by the manufacturer. If the tubing shows excessive swelling during cleaning, reduce pressure and temperature. Contact with paint, rubber, oils, greases, hand creams and perspiration, or prolonged exposure to strong sunlight will also affect clarity. Certain strong sanitizing agents, such as those containing iodine or bromine, also have a tendency to cause some staining. However, these are surface discolorations and in no way affect the performance or life of the tubing. After exposure to moisture, a slight cloudiness will be noted. This is simply a surface film of moisture, and clarity will return shortly if the tubing is allowed to dry and air thoroughly.

STERILIZATION

Listed to the right are commonly used methods of sterilization and tubing compatibility. It is required that the user conduct tests using the conditions of the application prior to specifying a particular tubing formulation.

	STERII	_IZATI	ON
Tubing	ME	THOD	S
Formulations	Autoclavable(1)	Gas ⁽²⁾	Radiation(3)
H 0.D // 0	**	3.7	N.T.
Tygon® B-44-3	Yes	Yes	No
Tygon® B-44-4X	Yes	Yes	No
Tygon® B-44-4X I.B.	No	Yes	No
Tygon® Silver	No	Yes	No
Norprene® A-60-F	Yes	Yes	Yes
Norprene® A-60-F I.B.	Yes	Yes	Yes
Tygoprene® XL-60	Yes	Yes	Yes
PharMed® BPT Tubing	Yes	Yes	Yes
Tygon® R-3603	Yes	Yes	No
Tygon® R-3603 Vacuum	Yes	Yes	No
Tygon® R-1000	No	Yes	No
Tygon® LFL	Yes	Yes	No
Versilic® SPX-50	Yes	Yes	Yes
Versilic® SPX-70 I.B.	Yes	Yes	Yes
Tygon® 3350	Yes	Yes	Yes
Tygon® 3370 I.B.	Yes	Yes	Yes
Tygon® S-50-HL	Yes	Yes	Yes
Tygon® S-54-HL	Yes	Yes	Yes
Tygon® 2275	Yes	Yes	Yes
Tygon® 2275 I.B.	Yes	Yes	Yes
Tygon® 2075	Yes	Yes	Yes
Tygon® 2001	Yes	Yes	Yes
Tygothane® C-210-A	N.A.	N.A.	N.A.
Tygothane® C-544-A I.B.	N.A.	N.A.	N.A.
Norprene® A-60-G	N.A.	N.A.	N.A.
Tygon® F-4040-A	N.A.	N.A.	N.A.
Tygon® R-3400	N.A.	N.A.	N.A.
Fluran® F-5500-A	N.A.	N.A.	N.A.
Tygon® SE-200	No	Yes	No
Chemfluor® FEP	Yes	Yes	No
Chemfluor® PFA	Yes	Yes	No
Chemfluor® PTFE	Yes	Yes	No

⁽¹⁾ Steam 30 minutes at 15 psi (250°F [121°C]) (2) Ethylene oxide (3) Radiation up to 2.5 MRad.

Manufacturing Facilities

Saint-Gobain Performance Plastics 2664 Gilchrist Road Akron, Ohio 44305 Tel: (800) 798-1554, (330) 798-9240

Fax: (330) 798-6968

TYGON® Brand Flexible Tubing, Chemfluor® Tubing

www.tygon.com www.biopharm.saint-gobain.com www.medical.saint-gobain.com

Saint-Gobain Performance Plastics 3910 Terry-Diane Drive Beaverton, Michigan 48612 Tel: (888) 387-0067, (989) 435-9533 Fax: (989) 435-2355

TYGON® Brand Extruded Silicone and Molded Components

www.biopharm.saint-gobain.com www.medical.saint-gobain.com www.industrialsilicone.com

Saint-Gobain Performance Plastics 460 Milltown Road Bridgewater, New Jersey 08807 Tel: (800) 435-3992, (908) 218-8888 Fax: (908) 218-9009

Flexible Components, ReSeal®, Sani-Tech[®] Products. Tanks

www.flexiblecomponents.com www.reseal.com www.sanitechrigid.com www.tanks.saint-gobain.com

Saint-Gobain Performance Plastics I-295 @ Harmony Road Mickleton, New Jersey 08056 Tel: (800) 543-8823, (856) 423-6630 Fax: (856) 423-8182

Roll Cover, Engineered Extrusions, Chemfluor® Fluoropolymers www.bunnell-plastics.com www.acutechplastics.com

Saint-Gobain Performance Plastics 700 Warner Blvd. Taunton, Massachusetts 02780 Tel: (508) 823-7701 Fax: (508) 823-1438

Specialty Extruded and Molded Silicone Products

www.biopharm.saint-gobain.com www.medical.saint-gobain.com

Saint-Gobain Performance Plastics La Mothe-aux-Aulnaies F-89120 Charny France Tel: (33) 3-86-63-78-78 Fax: (33) 3-86-63-77-77 Silicone Products, Hose Assemblies www.verneret.com

Saint-Gobain Performance Plastics P.O. Box 1344, 11 Sichio Drive Poestenkill, New York 12140 Tel: (518) 283-5963 Fax: (518) 283-1418 Chemware® Labware, Specialty Closures www.labpure.com

Saint-Gobain Performance Plastics 2316 West Wisconsin Street Portage, Wisconsin 53901 Tel: (800) 236-7600, (608) 742-8541 Fax: (608) 742-3179

www.packagepure.com

Specialty Molded Silicone Components www.medical.saint-gobain.com

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Saint-Gobain Norton KK, **Performance Plastics** 3-7, Kojimachi, Chiyoda-ku Tokyo 102-0083, Japan Tel: (81) 3-3263-0285 Fax: (81) 3-3263-0286

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Saint-Gobain Ceramicas e Plasticos Ltda Rua Antonio Matheus Sobrinho No. 120 Jardim Sao Matheus CEP 13280-000

Vinhedo - Sao Paulo - Brazil Tel: (55) 19-3876-8153 Fax: (55) 19-3876-8077

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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