

# SaniPure™ BDF™ Biopharmaceutical Tubing



*SaniPure™ BDF™ has unsurpassed biocompatibility and is heat sealable, sterile-weldable, and is a certified animal-free material.*

## SaniPure™ BDF™ (Bovine Derivative Free)

Saint-Gobain Performance Plastics has developed SaniPure™ BDF™, a breakthrough innovation in polymer high-performance materials. SaniPure™ BDF™ is completely certified to be free of materials of animal origin and is the ideal choice for handling sensitive biological fluid transfer applications. SaniPure™ BDF™ combines the features of traditional silicone tubing with superior peristaltic pump life performance and low absorption characteristics. This tubing answers the industry's requirements for performance, characterization, and animal-free origination.

## Characteristics

SaniPure™ BDF™ has an ultra-smooth inner bore which drastically reduces potential particle entrapment and microscopic build-up during critical fluid transfer processes. This smooth fluid path also helps facilitate complete sanitation of the fluid transfer system and improves flow characteristics by reducing surface area.

The innovative design of SaniPure™ BDF™ creates an advanced tubing formulation that has an absorption rate lower than virtually all elastomeric tubing currently in use, making it the obvious selection when fluid integrity must be maintained throughout the process. This will also ensure that common preservatives which are added during processing are fully optimized.

## Biocompatibility

SaniPure™ BDF™ tubing complies fully with the requirements of USP Class VI, European Pharmacopeia 3.2.9 and FDA 21 CFR Part 177.1210 criteria and is entirely non-cytotoxic, non-pyrogenic, and non-hemolytic.

To ensure the superior characteristics of SaniPure™ BDF™ the following tests were also performed: Genotoxicity Tests, Bacteriostasis – Fungistasis Tests, Physicochemical Testing for Elastomeric Closures (USP <381>), Physicochemical Testing for Plastics (USP <661>), and Total Extractables (per 21 CFR 177.2600). SaniPure™ BDF™ tubing has a masterfile with the U.S Food and Drug Administration.

## BIOPHARMACEUTICAL PRODUCTS

### Features/Benefits

- Certified to be free of materials of animal origin
- Ultra-smooth inner bore reduces potential for particle entrapment
- Documented biocompatibility for sensitive applications
- Meets USP Class VI, EP 3.2.9 & FDA criteria
- Non-cytotoxic, non-pyrogenic, and non-hemolytic
- Extremely low absorption and adsorption compared to silicone tubing
- Heat sealable, bondable, sterile-weldable, and custom moldable for assemblies
- Superior peristaltic pump life
- Fully autoclavable and sterilizable

### Typical Applications

- Sterile filling and processing
- Cell harvest and media process systems
- Vaccine production
- Production filtration and fermentation
- Cell and tissue culture transport
- Drug delivery systems
- Diagnostic equipment and laboratory research
- Bioreactor process lines
- High-purity water transfer
- Buffer solutions

## SaniPure™ BDF™ Tubing Inventoried Sizes

Part Number	I.D. (inches)	O.D. (inches)	Wall Thickness (inches)	Length (feet)	Minimum Bend Radius (inches)	Maximum Working Pressure at 73°F (psi)*	Maximum Working Pressure at 180°F (psi)*
AR400001	1/32	3/32	1/32	50	1/4	20	11
AR400002	1/16	1/8	1/32	50	1/4	19	8
AR400003	1/16	3/16	1/16	50	1/2	35	14
AR400007	1/8	1/4	1/16	50	1/2	20	9
AR400012	3/16	5/16	1/16	50	3/4	13	6
AR400013	3/16	3/8	3/32	50	3/4	23	10
AR400017	1/4	3/8	1/16	50	1	15	7
AR400018	1/4	7/16	3/32	50	1	20	8
AR400019	1/4	1/2	1/8	50	1	26	9
AR400027	3/8	1/2	1/16	50	2	11	5
AR400029	3/8	5/8	1/8	50	1-1/4	16	6
AR400038	1/2	3/4	1/8	50	2-1/2	15	6

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

The values listed for working and burst pressures are derived from tests conducted under controlled laboratory conditions. Many factors will reduce the tubing's ability to withstand pressures, including temperature, chemical attack, stress, pulsation and the attachment to fittings. It is imperative that the user conduct tests simulating the conditions of the application prior to specifying the tubing for use.

## Relative Chemical Resistance Properties\*

Acids			Bases			Salts	Alcohols	Ketones
conc.	med.	weak	conc.	med.	weak			
G	G	E	G	G	E	E	F-G	F-G

E = Excellent G = Good F = Fair U = Unsatisfactory

\* All tests conducted at room temperature.

## Product Approvals

USP Class VI	Yes
European Pharmacopoeia 3.2.9	Yes
FDA Approved for Food Contact	Yes

## Sterilization Methods

Autoclavable	Yes
Gas (Ethylene Oxide)	Yes
Radiation (Up to 5.0 MRad)	Yes

SaniPure™ and BDF™ are trademarks.

## BIOPHARMACEUTICAL PRODUCTS

Come through clean.™

## SaniPure™ BDF™ Typical Physical Properties

Property	ASTM Method	Value or Rating
Durometer Hardness Shore A, 15 Sec	D2240	60
Tensile Strength psi (MPa)	D412	1,630 (11.2)
Ultimate Elongation, %	D412	770
Tear Resistance lb-f/inch (kN/m)	D1004 Die C	190 (33.3)
Compression Set Constant Deflection, % @ 158°F (70°C) for 22 hrs.	D395 Method B	55
Brittle Temperature @ °F (°C)	D746	-87 (-66)
Specific Gravity	D792	0.90
Water Absorption, % 24 hrs. @ 73°F (23°C)	D570	0.07
Maximum Recommended Temp., °F (°C)	—	275 (135)
Color	—	Clear
Dielectric Strength v/mil (kV/mm)	D149	550 (21.6)
Tensile Modulus @ 300% psi (MPa)	D412	555 (3.83)
Tensile Set, % (@75% of ultimate elongation)	D412	100
Low Temp. Flexibility, -40°F (-40°C)	D380	Passed (still flexible)

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.

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**SANIPURE™ BDF™ TUBING IS NOT INTENDED FOR USE AS AN IMPLANT MATERIAL**