

WESTOPRENE Low Spallation Pump Tubing



BIOPHARMACEUTICAL PRODUCTS
High Performance Peristaltic Pump Tubing

Features / Benefits

Ultra-low Particulate Spallation

Outlasts Silicone Tubing in Peristaltic Pumps by upto 30 times

Provides an Excellent Barrier with very Low Permeability

Withstands Repeatrf Autoclaving and Serilization

Meets all USP Class VI and FDA Criteria

Custom Mold and Design Capabilities

Typical Applications

Cell Harvest and Mesia Process Systems

Vaccine Manufacturing

Bioreactoe Process Lines

Sterile Filling

Diagnostic Test Products

Production Filtration and Fermentation

WESTOPRENE FLEXIBILITY

WESTOPRENE is a premium, low spallation, biologically compatible peristaltic pump tubing developed especially for pharmaceutical, biotechnology, and laboratory applications. This tubing meets the demanding challenges of providing unsurpassed pump life with ultra-low particulate spallation and very low permeability.

WESTOPRENE Characteristics

WESTOPRENE'S superior flex life characteristics simplifies the manufacturing process by reducing production downtime due to pump tubing failures. WESTOPRENE'S excellent wear properties allow the product to provide extremely low rates of spallation as compared to silicone and other alternate materials.

Because WESTOPRENE has low permeability and superior absorptior characteristics, it is ideak for protecting sensitive cell cultures, fermentation, seperation, purification, process monitoring, and sterile fill ap

BIOCOMPATABILITY

WESTOPRENE tubing compleis fully with the requirments ofUSP classVI, European Pharmacopela 3.2.9 and FDA 21 CFR part 177.2600 criteria and is entirely non-cytotoxic, non-pyrogenic, and non-hemolytic.

To confirm the superior characteristics of WESTOPRENE the following tests were also performed: Genotoxicity Tests, Bacteriosis-Fungistasis Tests, Physiochemical Testing for Elastomeric Clousures (USP <381>), Physiochemucal Testing for Plastics (USP <661>), Total Extrables (per 21 CFR 177.2600), and full Preservative Absorption Test protocol evaluating Benzyl Alcohol, Phenol, Meta-Cresol, Methyl Paraben, and Propyl Parnaben. WESTOPRENE tubing has a masterfile with the U.S. Food and Drug Administration.

WESTOPRENE Tubing Inventory Sizes

Comparitive Peristaltic Pump Tubing

Part Number	I.D. (Inches)	O.D. (Inches)	Wall Thk (Inches)	Length (Feet)	Minimum Bend Radius	Max. Suggested Working Pressure at 73 F (psl)	Max. Suggested Working Pressure at 180 F (psl)	Vacuum Rating In of Mercury at 73 F	Vacuum Rating In of Mercury at 180 F
WS01	.1/32	.5/32	.1/16	25	.1/2	38	23	29.9	29.9
WS02	.1/16	.1/8	.1/32	25	.1/2	20	13	29.9	29.9
WS03	.1/16	.3/16	.1/16	25	.1/2	27	18	29.9	29.9
WS04	.3/32	.7/32	.1/32	25	.1/2	27	13	29.9	29.9
WS05	.1/8	.3/16	.1/16	25	.3/4	10	8	29.9	10
WS06	.1/8	.1/4	.1/16	25	.3/4	24	12	29.9	29.9
WS07	.3/16	.5/16	.1/16	25	.3/4	20	10	29.9	25
WS08	.1/4	.3/8	.1/16	25	.1-1/4	15	7	29.9	15
WS09	.1/4	.1/2	.1/8	25	.1-1/4	26	13	29.9	29.9
WS10	.5/16	.7/16	.1/16	25	.1-1/2	13	7	29.9	10
WS11	.3/8	.1/2	.1/16	25	.1-3/4	10	6	15	5
WS12	.3/8	.5/8	.1/8	25	.1-1/2	19	10	29.9	29.9
WS13	.1/2	.3/4	.1/8	25	.2-1/2	15	7	29.9	20
WS14	.5/8	.7/8	.1/8	25	.2-3/4	12	6	25	10
WS15	.3/4	1	.1/8	25	.3-3/4	10	4	15	5

Working pressures are calculated at a 1"5 ratio relative to burst pressure using ASTM D1599

Life. The table below depicts hours until failure of 1/4" ID X 3/8" OD tubing. In case, a 3 roller pump head was utilized operating at 600 rpm under room temperature (73 F) Tubing failure is measured in hours of use prior to

rupture			
WESTOPRENE Tubing	50 Hrs	75 Hrs	+1000 Hours
Silicone Tubing	50 Hrs	75 Hrs	+1000 Hours
	1	50	100
	10 psi back pressure		1 psi back pressure
			1000

The performance of tubing in peristaltic pumping application is affected by the conditions of use and equipment utilized along with size and wall thickness of the tubing tested. The data above is presented and information only and should not be utilized for specification purposes

Product Characteristics

Opacity	Opaque
FDA Approved for Food Contact	Yes
USP Class VI	Yes
Sterilization	Autoclavable/Gas/Radiation

Okay at 2.5 Mrad (25 Kilogray)

Spallation Rate Tubing Comparison

The following test data summarizes the spallation results of select tubing used in a peristaltic pump. In each case 1/4" ID Tubing was in a 3 roller pump head operating at 600 RPM under room temperature (73 F) Results from minimum of 5 samples were averaged to obtain values.

Pharmapure tube	24 Hrs	72 Hrs				
	14 days					
Thermoplastic Elastomer Tube					24 Hrs	48 Hrs
Silicone Tube				24 Hrs		48 Hrs
	0	0	0.2	0.5	0	5
						10

(Average Spallation Weight (mgs.))

Typical Physical Properties

Property	ASTM Method	Value or Rating
Durometer Hardness Shore A, 15 Sec	D2240-00	65
Tensile Strength, psi (Mpa)	D412-98	700(4.8)
Ultimate Elongation, %	D412-98	400
Tensile Stress @ 100% psi (Mpa)	D412-98	375(2.6)
Tensile SET % @ 75% of Ultimate Elongation	D412-98	38
Colour	-----	Off White
Tear Resistance, lb-F/inch (kN/m)	D1004-94	110(19.3)
Compression Set	D395-98	36
Constant Deflection, % @ 158 F (70 C) for 22 hours	Method B	
Specific Gravity	D792-00	0.92
Water Absorption, %, 24 hours @ 73 F (23 C)	D570-98	0.04
Brittle Temperature F(C)	D746-98	-.89 (-67)
Low Temperature Flexibility @-40 F (-40 C)	D380-94	passed (stillflexible)
Flame Resistance Classification	UL 94-HB	Passed
Maximum Recommended Operating Temp., F (C)	-----	275 (135)
Dielectric Strength, v/mil (kV/mm)	D149-97a	567 (22.3)

Unless otherwise noted, all tests were conducted at room Temperature (73 F). Values shown were determined on .075" thk extruded strip or .075" thk molded ASTM plaques or molded ASTM durometer buttons.

**WESTOPRENE TUBING IS NOT INTENDED
FOR USE AS AN IMPLANT MATERIAL**

Relative Chemical Resistance Properties'

Acids			Bases			Salts	Alcohols	Ketones
conc.	Med.	Weak	conc.	Med.	Weak			
U	F	F	F	E	E	E	F	U

E-Excellent F-Fair U- Unsatisfactory

All tests conducted at room temperatures.

BIOPHARMACEUTICAL PRODUCTS

Come through clean

WESTOPRENE * is a registered trademark