OPTUBUS
Fluid Transfer Components

PharMed® BPT

Biocompatible **P**eristaltic Pump **T**ubing

SAINT-GOBAIN

Biocompatible Peristaltic Pump Tubing

High Performance Peristaltic Pump Tubing

PharMed® BPT tubing has been formulated to withstand the rigors of peristaltic pumping action while providing the biocompatible fluid surface required in sensitive bioprocess applications. With its superior flex life characteristics, PharMed® BPT tubing simplifies biopharmaceutical manufacturing processes by reducing production downtime due to pump tubing failure.

Simplifies Cleaning and Sterilization

PharMed® BPT tubing is ideal for use in clean-in-place and steam-in-place cleaning and sterilization systems. It is compatible with virtually all commercial cleaners and sanitizers and can be repeatedly autoclaved up to five cycles without affecting overall service life. PharMed BPT also withstands 50kGy of gamma radiation with minimal effect on physical properties.

Superior Barrier Properties

PharMed® BPT tubing is less permeable to gases and vapors than silicone tubing. It is ideal for protecting sensitive fluids in a variety of biopharmaceutical operations including media mixing, cell culture, harvest, and purification. PharMed® BPT tubing has very good general chemical resistance and excellent acid, alkali and oxidation resistance. Opaque to visible and UV light, PharMed® BPT tubing will help to protect light-sensitive fluids.

Fully Characterized and Biocompatible

PharMed® BPT tubing comes complete with biocompatibility, physiochemical and extractable testing.

Features and Benefits

- Outlasts silicone tubing in peristaltic pumps
- Withstands repeated autoclaving
- Withstands repeated CIP and SIP cleaning and sterilization
- Documented Biocompatibility
- Multiple Manufacturing sites

Typical Applications

- Cell harvest and media process systems
- Bioreactor process lines
- Production filtration and fermentation
- Aseptic filling
- Shear-sensitive fluid transfer
- Diagnostics and laboratory testing

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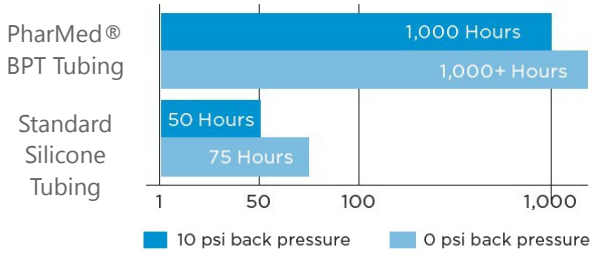
Comparative Peristaltic Pump Tubing Life

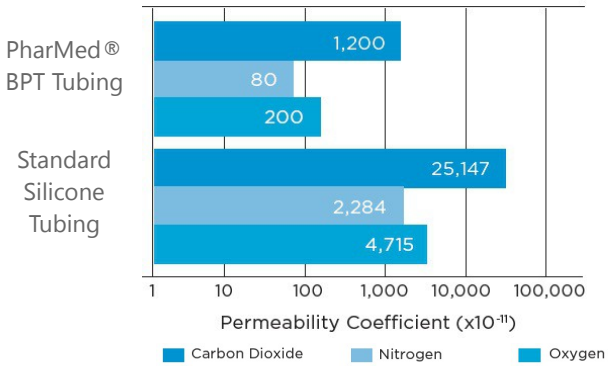
The table below depicts hours until tubing rupture of ¼" (6.4mm) ID x 3/8" (9.5mm) OD tubing. In each case, a 3-roller pump head was utilized operating at 600 rpm at room temperature 73°F (23°C).



The performance of tubing in peristaltic pumping applications 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 for information only and should not be utilized for specification purposes.

Permeability Coefficient Comparison

$$\text{Permeability Coefficient} = \frac{\text{amount of gas (cm3) x tubing wall thickness (cm)}}{\text{surface area of tubing ID (cm2) x time (sec) x pressure drop across tubing wall (cm Hg)}}$$



Part Number	ID	OD	Wall	Min. Bend Radius	Max. Working Pressure* 22°C (73°F)	Max. Working Pressure* 82°C (180°F)	Vacuum Rating at 22°C (73°F)	Vacuum Rating at 82°C (180°F)
PM0,25BP2,05	0,25 mm	2,05 mm	0,9 mm	-	-	-	-	-
PM0,38BP2,18	0,38 mm	2,18 mm	0,9 mm	-	-	-	-	-
PM0,51BP2,31	0,51 mm	2,31 mm	0,9 mm	-	-	-	-	-
PM0,51BP3,68	0,51 mm (0.02")	3,68 mm (0,145")	1,59 mm (1/16")	3,2 mm	7,9 bar	5,0 bar	760 mmHg	760 mmHg
PM0,64BP2,44	0,64 mm	2,44 mm	0,9 mm	-	-	-	-	-
PM0,76BP2,46	0,76 mm	2,46 mm	0,85 mm	-	-	-	-	-
PM0,79BP3,97	0,79 mm (1/32")	3,97 mm (5/32")	1,59 mm (1/16")	3,2 mm	5,4 bar	3,4 bar	760 mmHg	760 mmHg
PM0,89BP2,59	0,89 mm	2,59 mm	0,85 mm	-	-	-	-	-
PM1,02BP2,72	1,02 mm	2,72 mm	0,85 mm	-	-	-	-	-
PM1,14BP2,84	1,14 mm	2,84 mm	0,85 mm	-	-	-	-	-
PM1,3BP3,0	1,3 mm	3,0 mm	0,85 mm	-	-	-	-	-
PM1,42BP3,12	1,42 mm	3,12 mm	0,85 mm	-	-	-	-	-
PM1,52BP3,22	1,52 mm	3,22 mm	0,85 mm	-	-	-	-	-
PM1,59BP3,18	1,59 mm (1/16")	3,18 mm (1/8")	0,79 mm (1/32")	6,4 mm	1,7 bar	1,0 bar	760 mmHg	760 mmHg
PM1,59BP4,76	1,59 mm (1/16")	4,76 mm (3/16")	1,59 mm (1/16")	3,2 mm	3,0 bar	1,9 bar	760 mmHg	760 mmHg
PM1,65BP3,35	1,65 mm	3,35 mm	0,85 mm	-	-	-	-	-
PM1,85BP3,55	1,85 mm	3,55 mm	0,85 mm	-	-	-	-	-
PM2,06BP3,5	2,06 mm	3,5 mm	0,85 mm	-	-	-	-	-
PM2,29BP3,99	2,29 mm	3,99 mm	0,85 mm	-	-	-	-	-
PM2,38BP5,56	2,38 mm (3/32")	5,56 mm (7/32")	1,59 mm (1/16")	6,4 mm	2,1 bar	1,3 bar	760 mmHg	760 mmHg

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Part Number	ID	OD	Wall	Min. Bend Radius	Max. Working Pressure* 22°C (73°F)	Max. Working Pressure* 82°C (180°F)	Vacuum Rating at 22°C (73°F)	Vacuum Rating at 82°C (180°F)
PM2,54BP4,24	2,54 mm	4,24 mm	0,85 mm	-	-	-	-	-
PM2,79BP4,49	2,79 mm	4,49 mm	0,85 mm	-	-	-	-	-
PM3,18BP4,76	3,18 mm (1/8")	4,76 mm (3/16")	0,79 mm (1/32")	12,7 mm	0,9 bar	0,6 bar	635 mmHg	381 mmHg
PM3,18BP6,35	3,18 mm (1/8")	6,35 mm (1/4")	1,59 mm (1/16")	12,7 mm	1,7 bar	1,0 bar	760 mmHg	760 mmHg
PM4,76BP7,94	4,76 mm (3/16")	7,94 mm (5/16")	1,59 mm (1/16")	15,8 mm	1,2 bar	0,7 bar	760 mmHg	686 mmHg
PM6,35BP9,53	6,35 mm (1/4")	9,53 mm (3/8")	1,59 mm (1/16")	22,2 mm	0,9 bar	0,6 bar	635 mmHg	381 mmHg
PM6,35BP12,7	6,35 mm (1/4")	12,7 mm (1/2")	3,18 mm (1/8")	19,0 mm	1,7 bar	1,0 bar	760 mmHg	760 mmHg
PM7,94BP11,11	7,94 mm (5/16")	11,11 mm (7/16")	1,59 mm (1/16")	31,7 mm	0,8 bar	0,4 bar	381 mmHg	229 mmHg
PM9,53BP12,7	9,53 mm (3/8")	12,7 mm (1/2")	1,59 mm (1/16")	34,9 mm	0,6 bar	0,3 bar	254 mmHg	152 mmHg
PM9,53BP15,88	9,53 mm (3/8")	15,88 mm (5/8")	3,18 mm (1/8")	28,5 mm	1,2 bar	0,7 bar	760 mmHg	686 mmHg
PM12,7BP19,05	12,7 mm (1/2")	19,05 mm (3/4")	3,18 mm (1/8")	28,5 mm	0,7 bar	0,6 bar	635 mmHg	381 mmHg
PM15,88BP22,23	15,88 mm (5/8")	22,23 mm (7/8")	3,18 mm (1/8")	69,8 mm	0,8 bar	0,4 bar	381 mmHg	229 mmHg
PM19,05BP25,4	19,05 mm (3/4")	25,4 mm (1")	3,18 mm (1/8")	88,9 mm	0,6 bar	0,3 bar	254 mmHg	152 mmHg

*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.

PharMed® BPT with collar

Color-code	ID	OD	Wall	Part Number 2-Stops	Part Number 3-Stops	Part Number autoclavable
orange-blue	0,25 mm	2,05 mm	0,90 mm	PM0,25OR2BL	PM0,25OR3BL	PM0,25OR2BLA
orange-green	0,38 mm	2,18 mm	0,90 mm	PM0,38OR2GR	PM0,38OR3GR	-
orange-yellow	0,51 mm	2,31 mm	0,90 mm	PM0,51OR2GL	PM0,51OR3GL	PM0,51OR2GLA
orange-white	0,64 mm	2,44 mm	0,90 mm	PM0,64OR2WS	PM0,64OR3WS	-
black-black	0,76 mm	2,46 mm	0,85 mm	PM0,76SW2SW	PM0,76SW3SW	-
orange-orange	0,89 mm	2,59 mm	0,85 mm	PM0,89OR2OR	PM0,89OR2OR	PM0,89OR2ORA
white-white	1,02 mm	2,72 mm	0,85 mm	PM1,02WS2WS	PM1,02WS3WS	PM1,02WS2WSA
red-red	1,14 mm	2,84 mm	0,85 mm	PM1,14RT2RT	PM1,14RT3RT	-
grey-grey	1,30 mm	3,00 mm	0,85 mm	PM1,30GR2GR	PM1,30GR3GR	PM1,30GR2GRA
yellow-yellow	1,42 mm	3,12 mm	0,85 mm	PM1,42GL2GL	PM1,42GL3GL	-
yellow-blue	1,52 mm	3,22 mm	0,85 mm	PM1,52GL2BL	PM1,52GL3BL	PM1,52GL2BLA
blue-blue	1,65 mm	3,35 mm	0,85 mm	PM1,65BL2BL	PM1,65BL3BL	-
green-green	1,85 mm	3,55 mm	0,85 mm	PM1,85GN2GN	PM1,85GN3GN	-
purple-purple	2,06 mm	3,76 mm	0,85 mm	PM2,06VO2VO	PM2,06VO3VO	PM2,06VO2VOA
purple-black	2,29 mm	3,99 mm	0,85 mm	PM2,29VO2SW	PM2,29VO3SW	-
purple-orange	2,54 mm	4,24 mm	0,85 mm	PM2,54VO2OR	PM2,54VO3OR	-
purple-white	2,79 mm	4,49 mm	0,85 mm	PM2,79VO2WS	PM2,79VO3WS	PM2,06VO2WSA

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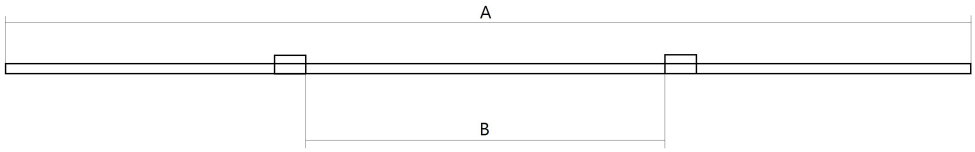
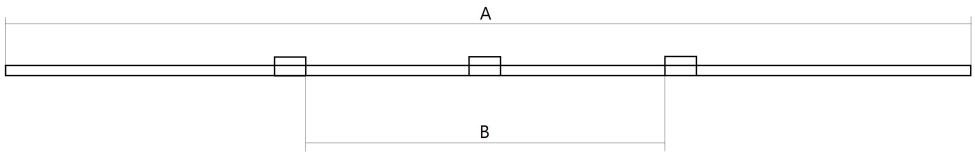


Length A = 381 mm
Collar Distance B = 152 mm



Length A = 381 mm
Collar Distance B = 152 mm

Typical Physical Properties of PharMed® BPT Tubing

Property	ASTM Method	Value of Rating
Durometer Hardness	D2240	64° Shore A, 15s
Color	-	Opaque Cream
Maximum Service Temperature	-	275 °F (135°C)
Low Temperature Embrittlement	D746	-75°F (-59°C)
Water Absorption, % 24 hrs. @ 23°C	D570	0.30

Sterilization Methods

Autoclavable	30 min at 121°C
Gas (Ethylene Oxide)	D2240
Gamma	50kGy

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