



PUMPSIL
BIOPRENE
STA-PURE

MARPRENE
NEOPRENE
CHEM-SURE
FLUOREL
PVC

WATSON
MARLOW
Tubing

TUBING GUIDE

For more than 50 years Watson-Marlow has been the provider of premium pumps and tubing.

This booklet will give a detailed explanation of the tubing we supply to help you make an informed choice for your product.

Choosing the right tube

The best way to select a tube is to decide which materials are chemically suitable, and choose the one which best meets the physical demands of your application. Normally, use the longest tube life material, which will usually be Bioprene or Marprene if they are chemically and physically suitable. Otherwise, Pumpsil or Pumpsil-D are most often chosen for sizes up to 9.6mm (3/8in), and Neoprene tubing for bore sizes of 12.7mm (1/2in) or more.

- For maximum tube life use a large-bore tube at low speed.
- For maximum flow rate use the largest tube at maximum speed.
- For maximum accuracy use a small bore tube at high speed.

Suction lift depends on the tube restituting fully before the advance of the next roller. If it does not, the flow rate will be reduced. For maximum suction lift use the smallest practicable bore size of tubing and run the pump at the slowest speed.

Tubing performance and selection

Ordinary tubing is not designed for peristaltic pumping. The characteristics of the pump, including suction lift, pressure, life, flow rate and

efficiency are all largely determined by the tubing. Watson-Marlow peristaltic pumps are designed around Watson-Marlow tubing, and the results of using other tubing are unpredictable. Every Watson-Marlow company and distributor provides qualified technical support. If you have any question about tube performance or the selection of tubing for a new application, they will always be pleased to give you the best possible advice.

Checking with an immersion test

Immerse half a tube sample in a closed container for 48 hours. Then examine against the remaining half for signs of attack, swelling, embrittlement or any other kind of deterioration. Request a tube sample card for samples of tubing materials.

Chemical compatibility

Chemical compatibility tables are available at www.wmtubing.com and from any Watson-Marlow distributor.

Validation packs

Validation packs are available for Pumpsil-D, Bioprene and STA-PURE. Contact your Watson-Marlow tubing representative.



Watson-Marlow Pumpsil and Bioprene are manufactured in an ISO 14644 -1 Class 7(Class J/10,000) clean room to guarantee our customers a product without impurities

Your tubing options

Watson-Marlow tubing is available in nine materials and over 40 sizes, giving an extraordinary range of chemical and application capability. Watson-Marlow pumps are designed for Watson-Marlow tubing tolerances and performance, and no other tubing will provide comparable results. The tubing largely dictates pump performance: its restitution creates suction, its strength resists pressure, its flex resistance determines pumping life, its bore defines the flowrate, and its wall thickness controls pumping efficiency.

Marprene




Marprene is Watson-Marlow's exclusive thermoplastic elastomer. Always our first recommendation. Marprene is the longest life tubing with a wide chemical compatibility, and is highly resistant to oxidising agents such as ozone and peroxides and sodium hypochlorite. Marprene is beige in colour, opaque to both visible and ultra-violet light with low permeability to gases such as oxygen, carbon dioxide and nitrogen, and meets USDA standards for food handling.

Working Temperature range
5°C - 80°C

Other information
Autoclavable. Medium pressure resistance, high pressure options available for some pumpheads. High restitution. Low permeability.

Pumpsil / Pumpsil-D



Pumpsil silicone is an excellent tube for biopharmaceutical applications and general laboratory use. Pumpsil is fully post-cured platinum silicone which meets or exceeds the requirements of USP VI, FDA CFR 177.2600, ISO10993/EP3.1.9. A comprehensive validation pack gives full specification details and all approvals. Developed for the biopharmaceutical industry, Pumpsil offers an ultra-smooth bore which helps minimise protein binding and ensure high purity levels in the finished product. Pumpsil is fully post-cured, a process which removes cytotoxic cyclic siloxanes and other volatile process aids, resulting in an exceptionally pure tube.

It is ideal for fermentation/bioreactors, medical devices, chemical analysis and pharmaceutical production applications. All Pumpsil tubing is fully lot-traceable, with the lot number, part number and use-by date on the box label, bag label and carried through to LaserTraceability the laser etching of this information on the surface of the tube. Pumpsil-D provides higher accuracy and longer life for fill/finish and dispensing applications. Pumpsil-D is a platinum-cured silicone with a superior flex memory which doubles the accuracy of dispensed volumes compared to standard platinum-cured silicone tubing. Extruded specifically for use with 500 series dispensing pumps. Fewer pump calibrations are needed, so maximising process efficiency.

Working Temperature range

-20°C - 80°C (higher in non-pump applications)

Other information

Higher permeability to gases, translucent, autoclavable, gamma and ethylene oxide sterilisable. Medium pressure resistance. High restitution. Average permeability.

Bioprene

Bioprene has the same long life as Marprene but complies with USP Class VI, FDA requirements 21CFR 177.2600 for aqueous foods and NSF and USDA standards for food handling. It has wide chemical compatibility, and can handle repeated autoclaving. Bioprene can also be sterilised by ethylene oxide or gamma irradiation.

Working Temperature range
5°C - 80°C

Other information

Beige. Medium pressure resistance, high pressure options available for some pumpheads. High restitution. Low permeability.



CHEM-SURE®

CHEM-SURE® is a high performance composite of ePTFE and a high-grade fluoroelastomer, giving extraordinary chemical resistance, life and very high burst pressures. It is USP Class VI and food grade approved, and is suitable for foods and pharmaceuticals as well as aggressive chemicals.

Working Temperature range
-20°C - 80°C

Other information

Medium pressure resistance. High restitution. Average permeability.



STA-PURE[®]

STA-PURE[®] has a unique composite construction of silicone in a ePTFE lattice giving it superior burst resistance up to 7 bar (100psi) and 18 times longer life than silicone tubing. It produces virtually no spalling, is USP Class VI approved and is non toxic, making it ideal for a wide range of bio-pharm applications.

Working Temperature range

-20°C - 80°C

Other information

Opaque white. Autoclavable.
SIP and CIP compatible. High pressure resistance. High restitution. Low permeability.



Neoprene

Neoprene offers excellent performance with abrasive slurries and sustained pressure applications. Good suction and pressure capabilities.

Working Temperature range

0°C - 80°C

Other information

Black. Medium pressure resistance.
High restitution. Low permeability.



PVC

PVC has a high shore hardness giving excellent pressure and suction performance. Low gas permeability.

Working Temperature range

10°C - 70°C

Other information

Clear. High pressure resistance.
Medium restitution. Low permeability.



Fluorel

Good for aggressive acids, solvents and alkalis.

Working Temperature range

-5°C - 80°C

Other information

Black. Medium pressure resistance.
Medium restitution. Low permeability.



102 tube life range(hours)	
Zero pressure. Water. 32rpm. Clockwise rotation. 4.8mm (3/16") bore tubing.	
Pumpsil	900
313 and 314 pumphead tube life range (hours)	
Zero pressure. Water. 110rpm. 6.4mm bore tubing.	
Marprene/Bioprene	10,000
Neoprene	230
Pumpsil/Pumpsil-D	280
STA-PURE	10,000
520R pumphead tube life range (hours) clockwise rotation	
Zero pressure. Water. 220rpm. Clockwise rotation. 6.4mm bore tubing except Marprene which was 4.8mm bore.	
Marprene/Bioprene	10,000
Neoprene	40
Pumpsil	200
Pumpsil-D	250
CHEM-SURE	6000
STA-PURE	10,000
PVC	90
620R tube life range (hours)	
Zero pressure. Water. 100rpm. Clockwise rotation. 12.7mm bore tubing.	
Marprene/Bioprene	6000
Neoprene	60
Pumpsil/Pumpsil-D	230
CHEM-SURE	5000
STA-PURE	6000
PVC	90
720R tube life range (hours)	
Zero pressure. Water. 100rpm. Clockwise rotation. 12.7mm bore tubing.	
Marprene/Bioprene	3000
Neoprene	100
Pumpsil	300
CHEM-SURE	3000
STA-PURE	5000

Bulk buy and save
on your tubing



Ordering Information

			Pumpsil	Pumpsil-D	Marprene	Bioprene	STA-PURE	CHEM-SURE	Neoprene	PVC	Fluorel
#	Bore				1.6mm (0.063in) wall						
112	0.5mm	1/50in	913.A005.016		902.0005.016	903.0005.016					
13	0.8mm	1/32in	913.A008.016		902.0008.016	903.0008.016			920.0008.016		
	1.2mm	3/64in	913.A012.016								
14	1.6mm	1/16in	913.A016.016		902.0016.016	903.0016.016	960.0016.016	965.0016.016	920.0016.016	950.0016.016	970.0016.016
	2.4mm	3/32in	913.A024.016		902.0024.016	903.0024.016					
16	3.2mm	1/8in	913.A032.016		902.0032.016	903.0032.016	960.0032.016	965.0032.016	920.0032.016	950.0032.016	970.0032.016
25	4.8mm	3/16in	913.A048.016		902.0048.016	903.0048.016	960.0048.016	965.0048.016	920.0048.016	950.0048.016	970.0048.016
17	6.4mm	1/4in	913.A064.016		902.0064.016	903.0064.016	960.0064.016	965.0064.016	920.0064.016	950.0064.016	970.0064.016
18	8.0mm	5/16in	913.A080.016		902.0080.016	903.0080.016	960.0080.016	965.0080.016	920.0080.016	950.0080.016	970.0080.016
2.4mm (0.094in) wall											
105	0.5mm	1/50in	913.A005.024	913.D005.024							
108	0.8mm	1/32in	913.A008.024	913.D008.024							
119	1.6mm	1/16in	913.A016.024	913.D016.024	902.0016.024	903.0016.024	960.0016.024	965.0016.024			
120	3.2mm	1/8in	913.A032.024	913.D032.024	902.0032.024	903.0032.024	960.0032.024	965.0032.024			
15	4.8mm	3/16in	913.A048.024	913.D048.024	902.0048.024	903.0048.024	960.0048.024	965.0048.024			
24	6.4mm	1/4in	913.A064.024	913.D064.024	902.0064.024	903.0064.024	960.0064.024	965.0064.024			
35	8.0mm	5/16in	913.A080.024	913.D080.024	902.0080.024	903.0080.024	960.0080.024	965.0080.024			
36	9.6mm	3/8in	913.A096.024	913.D096.024	902.0096.024	903.0096.024	960.0096.024	965.0096.024			
3.2mm (0.126in) wall											
	4.8mm	3/16in	913.A048.032		902.0048.032	903.0048.032					
26	6.4mm	1/4in	913.A064.032		902.0064.032	903.0064.032	960.0064.032	965.0064.032	920.0064.032	950.0064.032	
73	9.6mm	3/8in	913.A096.032		902.0096.032	903.0096.032	960.0096.032	965.0096.032	920.0096.032	950.0096.032	
82	12.7mm	1/2in	913.A127.032		902.0127.032	903.0127.032	960.0127.032	965.0127.032	920.0127.032	950.0127.032	
184	15.9mm	5/8in	913.A159.032		902.0159.032	903.0159.032	960.0159.032	965.0159.032	920.0159.032	950.0159.032	
4.0mm (0.157in) wall											
185	8.0mm	5/16in	913.A080.040		902.0080.040	903.0080.040			920.0080.040		
186	12.0mm	15/32in	913.A120.040		902.0120.040	903.0120.040			920.0120.040		
187	16.0mm	5/8in	913.A160.040		902.0160.040	903.0160.040			920.0160.040		
4.8mm (0.189in) wall											
86	9.6mm	3/8in	913.A096.048		902.0096.048	903.0096.048	960.0096.048		920.0096.048		
88	12.7mm	1/2in	913.A127.048		902.0127.048	903.0127.048	960.0127.048		920.0127.048		
89	15.9mm	5/8in	913.A159.048		902.0159.048	903.0159.048	960.0159.048		920.0159.048		
90	19.0mm	3/4in	913.A190.048		902.0190.048	903.0190.048	960.0190.048		920.0190.048		
92	25.4mm	1in	913.A254.048		902.0254.048	903.0254.048	960.0254.048		920.0254.048		

United Kingdom

Telephone +44 (0) 1326 370370

Email info@watson-marlow.co.uk

Belgium

Telephone +32 (0) 9 225 94 57

Email info@watson-marlow.be

Brazil

Telephone +55 (11) 2155 4000

Email info4brazil@watson-marlow.com

China

Telephone +86 21 6485 4898

Email mingshao@cn.spiraxsarco.com

Denmark

Telephone +45 43 94 00 65

Email info@watson-marlow.dk

France

Telephone +33 (0) 1 34 87 12 12

Email info@watson-marlow.fr

Germany

Telephone +49 (0) 2183 42040

Email info@watson-marlow.de

Italy

Telephone +39 030 6871184

Email info@watson-marlow.it

Korea

Telephone +82 (0) 32 820 3973

Email wmb@kr.spiraxsarco.com

Malaysia

Telephone +60 (3) 5635 3323

Email sales@my.SpiraxSarco.com

Mexico

Telephone +52 81 8220 3614

Email info@watson-marlow.mx

Netherlands

Telephone +31 (0) 10 462 1688

Email info@watson-marlow.nl

Russia

Telephone +7 (495) 755 90 62

Email info@wmpg.ru

South Africa

Telephone +27 11 796 2960

Email info@wmbpumps.co.za

Sweden

Telephone +46 8 556 556 00

Email info@watson-marlow.se

Switzerland

Telephone +41 (0) 44 813 60 70

Email info@watson-marlow.ch

United States of America

Telephone 800 282 8823

Email support@wmbpumps.com



www.wmtubing.com

The information in this document is believed to be correct, but Watson-Marlow Pumps Group accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING

These products are not designed for use in, and should not be used for, patient-connected applications.

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