



MASTERFLEX[®]

TUBING APPLICATION GUIDE

PUSHING THE BOUNDARIES OF PERISTALTIC PUMP TECHNOLOGY WITH UNIQUE FORMULATIONS



 **Cole-Parmer[®]**
Delivering Solutions You Trust

MASTERFLEX® Tubing Application Guide

Pharmaceuticals ♦ Drug Discovery

BIOPHARM PLUS TUBING

Longer life (up to five times) and lower spallation compared to other platinum silicone tubing. Ultra-smooth inner surface. Biocompatible for sensitive applications. Autoclavable. Meets FDA, USP Class VI, and EP standards, and exceeds 3A sanitary standards. Max temp: 450°F (232°C).



Applications: filtration; fermentation; dispensing solutions and media.

- Excellent pumping accuracy for high repeatability and consistent performance over time
- No leachable additives or plasticizers to impart taste or contamination
- Smooth inner bore results in less particle entrapment
- Sterilize to maintain system sterility
- Low spallation maintains purity of fluid
- Tolerates high-pressure applications

Biopharmaceuticals ♦ Nutraceuticals

C-FLEX® TUBING

Excellent biocompatibility; contains no toxic materials. Heat sealable and weldable. Autoclavable. Meets FDA and USP Class VI standards. Max temp: 275° F (135°C).



Applications: biopharmaceutical processing and storage; botanical production.

- Combines the biocompatibility of silicone with chemical resistance of Tygon®, but with longer pumping life
- Low protein binding ensures minimal degradation or loss of sample
- Nonpyrogenic, noncytotoxic, and nonhemolytic properties maintain purity and sterility of fluids
- Chemically resistant to acids and bases for longer tubing life

Pharmaceutical ♦ Life Science ♦ Electronics ♦ Semiconductor

PHARMAPURE® TUBING

Nontoxic and nonhemolytic, excellent biocompatibility. Longest pumping life of any high-performance formulation; low extractability. Autoclavable. Meets FDA, EP, and USP Class VI standards. Max temp: 275°F (135°C).

Applications: sterile filling; filtration; transfer of cell media.

- Ultra-low spallation maintains fluid purity and extends the life of filters
- Tolerates continuous-pressure applications up to 40 psi (2.7 bar)
- Low permeability provides barrier to chemicals that damage tubing
- Long tubing life means time and cost savings

Chemical • **Printing** • **Automotive**

CHEM-DURANCE™ TUBING

Best combination of pumping life and chemical resistance. Excellent durability. Plasticizer-free inner liner provides low spallation. Autoclavable. Meets FDA standards. Max temp: 165°F (74°C).



MASTERFLEX®

Applications: transfer of sensitive fluids; ink and solvent production.

- Chemical-resistant inner liner allows use with harsh chemicals
- Low spallation maintains purity of fluid
- Flexible outer jacket dissipates heat generated from rollers for longer tubing life
- Hydrophobic, smooth-bore inner liner means negligible absorption of fluids or leachables

Chemical • **Pharmaceutical** • **Food & Beverage**

TYGON® CHEMICAL TUBING

Best chemical resistance of any Tygon formulation. Compatible with many popular solvents. Autoclavable. Complies with FDA 21 CFR 177.2600 criteria. Max temp: 135°F (57°C).

MASTERFLEX® TYGON®

Applications: disinfectant transfer; dispensing of food additives.

- Plasticizer- and oil-free to ensure accurate results from analytical tests; does not yield taste into fluids
- Clear tubing for easy flow monitoring
- Sterilize to maintain system sterility
- Low gas permeability and extractability maintains integrity of fluid
- Very good chemical compatibility affords longer tubing life

Chemical • **Manufacturing** • **Semiconductor**

VITON® TUBING

Resistant to corrosives, solvents, and oils at elevated temperatures. Low gas permeability. Max temp: 400°F (205°C).



MASTERFLEX 6412 13

Applications: transfer harsh chemicals through process line.

- Exclusive Masterflex® formulation—highest fluorine content of any Viton for enhanced chemical compatibility
- Tolerates some of the harshest chemicals used in the semiconductor industry
- Resistant to corrosive solvents and aliphatic and aromatic hydrocarbons
- Ultra-low gas permeability maintains integrity of fluid



In the U.S.

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Phone: 847-549-7600
Fax: 847-247-2929
www.coleparmer.com

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Fax: 514-355-7119
www.coleparmer.ca

In the United Kingdom

Free phone: 0500-345-300
Phone: 020-8574-7556
Fax: 020-8574-7543
www.coleparmer.co.uk

In India

Phone: 91-22-6716-2222
Fax: 91-22-6716-2211
www.coleparmer.in

International customers

Call 847-549-7600 to reach our International Sales Department or contact your local dealer.

FREE TECHNICAL APPLICATIONS ASSISTANCE!

Electronics ♦ Semiconductor ♦ Industrial ♦ Chemical ♦ Food & Beverage

PTFE TUBING

The only peristaltic-compatible PTFE tubing available!



Excellent fluid purity, chemical resistance, and very low gas permeability. Autoclavable. Meets FDA and USP Class VI standards. Max temp: 500°F (260°C).

Applications: vulcanization; feeding and metering of aggressive chemicals; dispensing of fruit extracts and flavoring.

- Chemically inert; offering the best chemical resistance of any pump tubing
- Rigid tubing structure provides tolerance for high-pressure applications up to 100 psi (6.8 bar)
- Inert fluoropolymer will not leach into or absorb out of fluid being pumped

Pharmaceutical ♦ Water ♦ Wastewater

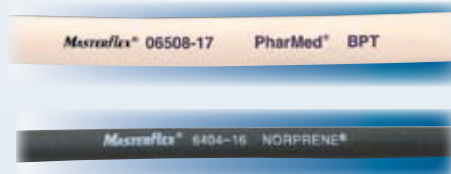
HIGH-PRESSURE PHARMED® BPT AND HIGH-PRESSURE NORPRENE® TUBING

High-Pressure PharMed BPT: Over 10,000 hours of tubing life. Heat sealable, bondable, and autoclavable. Resists ozone and UV radiation. Meets FDA and USP Class VI standards. NSF-listed. Max temp: 270°F (135°C).

High-Pressure Norprene: Up to 10,000 hours tubing life. Resists heat, ozone, acids, and alkalis. Heat sealable, non-aging, non-oxidizing, and autoclavable. Best choice for pressure/vacuum applications. Max temp: 270°F (135°C).

Applications: sterile filtration; chemical injection.

- Thick-walled tubing withstands pressures up to 100 psi (6.8 bar) with precise, repeatable flow
- Noncytotoxic and nonhemolytic properties make PharMed BPT ideal for tissue and cell culture work
- Chemical-resistant Norprene handles a variety of chemicals and solutions



GLOSSARY

Cytotoxic—having a toxic effect on cells
Hemolytic—causing the destruction of red blood cells
Leachables—chemicals released from tubing that may contaminate fluid being pumped
Pyrogenic—showing measurable traces of bacterial endotoxins
Spallation—the generation of particles from the inner bore of the tubing

MASTERFLEX® RESOURCES ONLINE

Pump system selection:
Masterflex.com/pumpconfigurator

Tubing compatibility:
Masterflex.com/mflexChem

Peristaltic pump applications:
Masterflex.com/pumpSolutions

