



# MASTERFLEX<sup>®</sup>

## TUBING APPLICATION GUIDE

Authorised distributor

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**ThermoFisher**  
SCIENTIFIC

### PUSHING THE BOUNDARIES OF PERISTALTIC PUMP TECHNOLOGY WITH UNIQUE FORMULATIONS



 **Cole-Parmer<sup>®</sup>**  
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).



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

- Chemical-resistant inner liner allows use with harsh chemicals
- Flexible outer jacket dissipates heat generated from rollers for longer tubing life
- Low spallation maintains purity of fluid
- 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).



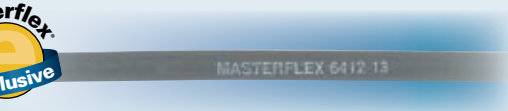
**Applications:** disinfectant transfer; dispensing of food additives.

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

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

## VITON® TUBING

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



**Applications:** transfer harsh chemicals through process line.

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

## In the U.S.

625 E. Bunker Court  
Vernon Hills, IL 60061  
Call toll-free 800-323-4340  
Phone: 847-549-7600  
Fax: 847-247-2929  
[www.coleparmer.com](http://www.coleparmer.com)

## In Canada

Call toll-free 800-363-5900  
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Fax: 514-355-7119  
[www.coleparmer.ca](http://www.coleparmer.ca)

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[www.coleparmer.in](http://www.coleparmer.in)

## In the United Kingdom

Free phone: 0500-345-300  
Phone: 020-8574-7556  
Fax: 020-8574-7543  
[www.coleparmer.co.uk](http://www.coleparmer.co.uk)

## 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**

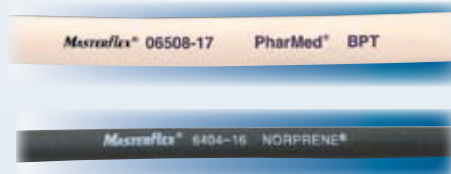
## HIGH-PRESSURE PHARMED® BPT AND HIGH-PRESSURE NORPRENE® TUBING

**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](http://Masterflex.com/pumpconfigurator)

**Tubing compatibility:**  
[Masterflex.com/mflexChem](http://Masterflex.com/mflexChem)

**Peristaltic pump applications:**  
[Masterflex.com/pumpSolutions](http://Masterflex.com/pumpSolutions)

