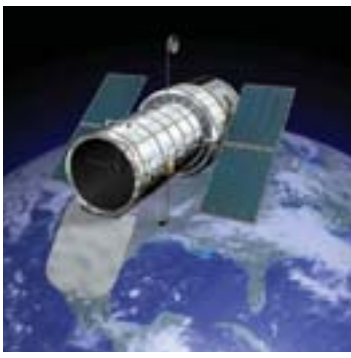
aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Fluoropolymer Extrusions

Fluid Handling & Electrical Insulation Products



Parker

ENGINEERING YOUR SUCCESS.

The Parflex Division fluoropolymer tubing operation, located at Parker TexLoc in Fort Worth, TX, specializes in the development and extrusion of fluoropolymer tubing for fluid handling applications. These products operate in high temperature applications from up to 500°F (260°C) and in cryogenic applicaitons with temperatures ranging as low as -100°F (-75°C).

Our extrusions are resistant to UV radiation and moisture and offer the lowest coefficient of friction of any material available. Additionally, all of our tubing products are made from resins and colors that are certified to be free of mercury, heavy metals and other materials that are restricted in accordance with the RoHS directive. In fact, the quality engineered into our products makes them suitable for critical applications in the medical, pharmaceutical and instrumentation markets.

Some of the products may require minimum quantities at time of order. Also, any product can be custom engineered to fit your exact application. In addition, special sizes, profiles, cut lengths and minimum continuous lengths are also available upon request.

All of the tables in this catalog are supplied with inch and mm sizes. Working pressure is calculated using a Safety Factor of 5 to 1. Custom packaging and sizes are quoted upon request.

Thank you allowing us to serve your fluoropolymer needs.

Parflex Division
Ravenna, Ohio

TexLoc Facility
Fort Worth, Texas

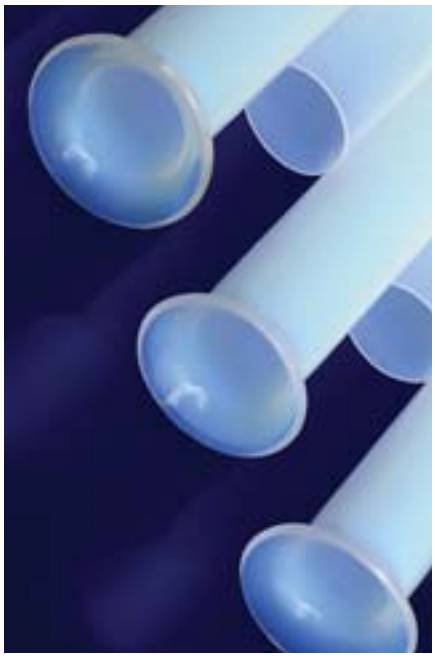
Table of Contents

Fluoropolymer Tubing Overview

Fluoropolymer tubing features a low coefficient of friction and anti-stick properties, high temperature capabilities and the most corrosion and chemical resistance of all polymers. Within normal use temperatures, fluoropolymers are attacked by so few chemicals that it is easier to describe the exceptions rather than list the chemicals they are compatible with (see Chemical Resistance Summary, pg. 32). In addition, these chemically inert tubes are FDA and USP Class VI compliant, non-wetting and non-leaching making them ideal for a wide range of fluid and material handling applications.

Parker TexLoc™ fluoropolymer tubing is available in PTFE, FEP, PFA and PVDF with some materials operating at temperatures up to 500°F/260°C. Specialty materials such as HP PFA, Low Permeation PFA, ETFE, ECTFE, MFA and THV are also available. Each material has specific dominant characteristics, but all operate in high-temperature, corrosive environments.

Parker TexLoc PTFE tubing features unmatched chemical resistance and a non-stick surface that facilitates flow and eliminates media buildup.



When clarity is an application issue as well, FEP tube offers the highest clarity in the market and is a close second to PTFE in chemical resistance.

It is also available in long, continuous lengths (1,000 feet and longer) whereas the PTFE lengths range from 200 to 1,000 feet, depending on size and wall thickness.

When temperature and clarity are both factors, PFA is the resin of choice because it offers the high-temperature attributes of PTFE , long continuous lengths, and almost as much clarity as FEP. Parker TexLoc also offers a High Purity PFA tubing for fluid handling applications that require the lowest possible level of inpurities and extractables, as well as Pureshield™ PFA tubing, a low permation PFA Tubing. Although this unique tubing was designed to meet the increasing needs of the semiconductor industry, PureShield™ Low Permeation PFA Tubing is useful in any industry where permeation is a problem and could affect the purity of process chemicals.

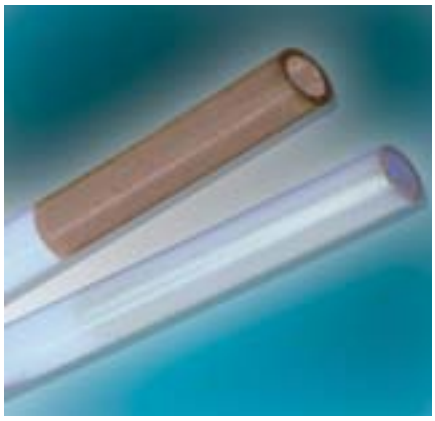
Parker TexLoc extrudes custom sizes from 0.010" I.D. to 4" I.D. Please contact Customer Service if you do not see the exact size you need in the catalog.

Fully Conductive and Conductive I.D. tubing are also available

Fluoropolymer Overview

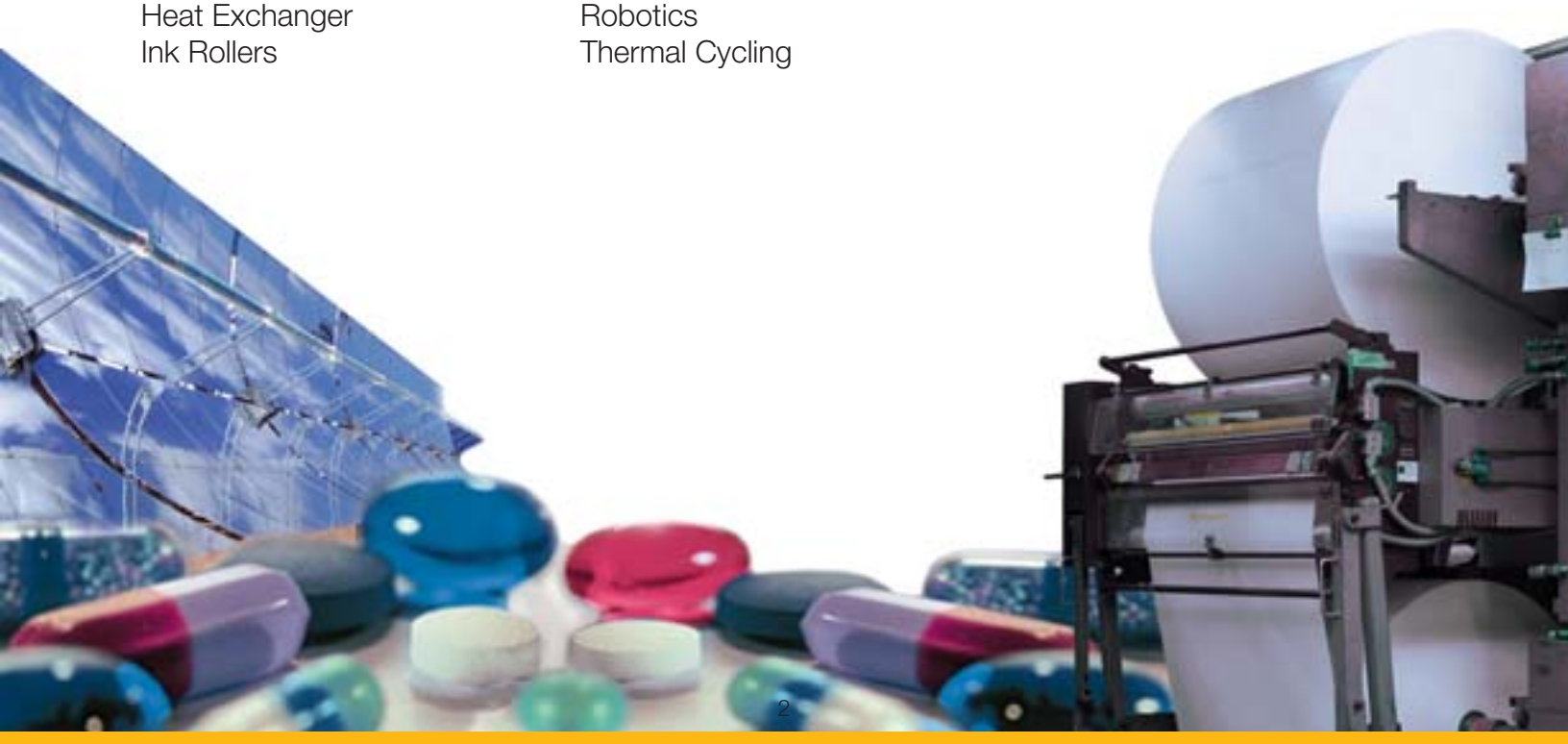
Etching is Available on All Products

Because the lubricity of the Fluoropolymer tubing surface hampers its bondability, etching is required to alter the molecular structure of the surface. The chemical reaction between the etch medium and the tubing strips the fluorine molecules exposing the carbon molecules. Once the surface lubricity has been altered, the tubing can be bonded to almost any surface.



Where Can You Find Fluoropolymer Tubing?

- Pharmaceutical
- Solar Panels
- Pulp & Paper
- Food Processing
- Environmental Sampling
- Chemical Delivery
- Chromotography
- Paint Equipment
- Instrumentation
- Heat Exchanger
- Ink Rollers
- Dispensers
- Filler Tubes
- Down Hole Pumps
- Oil Drilling
- Pumps
- DI Water
- Flow Monitoring Systems
- Medical Devices
- Sight Glass
- Robotics
- Thermal Cycling



High Purity PFA Tubing

High Purity PFA (Perfluoroalkoxy) tubing, made from 100% virgin resin, has the highest molecular weight available. It is manufactured for use in hostile environments where purity is critical. Testing has proven that these High Purity PFA products are able to withstand corrosive surfactants for longer periods of time than the standard products. High Purity PFA products are available in various sizes upon request.

Specifications

Materials:
Products in this section are manufactured using resins complying with ASTM D 3307 Type II Specification.

Flammability:
Listed VW-1 by the Underwriters' Laboratories, Inc. in its burning test classification for polymeric materials and passes the UL 83 vertical flame test. In a flame situation, High Purity PFA tubing resists combustion and does not promote flame spread.

FDA Compliance:
Most high-purity PFA resins qualify for use in contact with food in compliance with FDA regulation 21 CFR 177.1550.

Pressure and Temperature Ranges:
Pressure and temperature information is available from the factory upon request.

Value Proposition

- No process contamination
- Lowest levels of extractables
- Higher flow
- High purity semiconductor and pharmaceutical conformance
- Longer product life and less downtime
- Translucent and flexible materials
- Chemically inert to nearly all industrial chemicals and solvents
- Smooth nonstick surface resulting in the lowest coefficient of friction
- Nonflammable materials
- FDA Compliant

Applications/Markets

- Flow monitoring systems
- High purity applications
- Food
- DI water dispensers
- DI recirculators
- Heat exchangers
- Pure chemical dispensers
- Where corrosive chemicals are used in plating
- Laboratory
- Fluid & Handling

Options

- Smoothbore
- Convoluted
- Corrugated
- Retractable coil
- Pipe
- Colors

Part numbers below are for standard configurations. For complete part numbers and options for material, color, packaging, etc., please contact Customer Service.

105 – HP PFA Industrial Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
105-0125031	1/8"	0.125	± .005	0.064	± .004	0.031	500	34	2500	172	3.18	1.63	0.79
105-0188031	3/16"	0.188	± .005	0.125	± .005	0.031	320	22	1600	110	4.76	3.18	0.79
105-0250031	1/4"	0.250	± .005	0.188	± .005	0.031	230	16	1150	79	6.35	4.77	0.79
105-0375031	3/8"	0.375	± .005	0.312	± .005	0.031	140	10	700	48	9.53	7.92	0.79

PFA products are also available in a Low Permeation PFA resin.
Contact Customer Service for details.

105 – HP PFA Heavy Wall Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
105-0250047	1/4"	0.250	± .005	0.156	± .005	0.047	360	25	1800	124	6.35	3.95	1.19
105-0250062	1/4"	0.250	± .005	0.125	± .005	0.062	500	34	2500	172	6.35	3.18	1.57
105-0375062	3/8"	0.375	± .005	0.250	± .005	0.062	320	22	1600	110	9.53	6.35	1.57
105-0500062	1/2"	0.500	± .005	0.375	± .005	0.062	230	16	1150	79	12.7	9.53	1.57
105-0750062	3/4"	0.750	± .006	0.625	± .006	0.062	140	10	700	48	19.0	15.88	1.57
105-1000062	1"	1.000	± .010	0.875	± .010	0.062	100	7	500	34	25.4	22.22	1.57

205 – Metric HP PFA Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Inch		
	mm	mm	Tolerance	mm	Tolerance	mm	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
205-0300100	3	3	± .11	1	± .11	1	680	47	3400	234	0.118	0.039	0.039
205-0400100	4	4	± .11	2	± .11	1	500	34	2500	172	0.157	0.078	0.039
205-0600100	6	6	± .11	4	± .11	1	320	22	1600	110	0.236	0.157	0.039
205-0800100	8	8	± .11	6	± .11	1	230	16	1150	79	0.315	0.236	0.039
205-0900100	9	9	± .13	7	± .13	1	200	14	1000	69	0.354	0.276	0.039
205-1000100	10	10	± .13	8	± .13	1	180	12	900	62	0.393	0.315	0.039

Operating Temperature: -100 to 500˚F / -75 to 260˚C

Working pressure calculated using a Safety Factor of 5. Note other manufacturers may use a Safety Factor of 4. Custom packaging and sizes are quoted upon request.

505 – HP PFA Schedule 40 Pipe

PN	Order Size	Actual O.D.		Minimum Wall		Reference I.D.	Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	O.D.	Wall	I.D.
505-0540088	1/4"	0.540	± .010"	0.088	+ .020"	0.364	13.72	2.24	9.25
505-0840109	1/2"	0.840	± .010"	0.109	+ .020"	0.622	21.33	2.77	15.80
505-1050113	3/4"	1.050	± .010"	0.113	+ .020"	0.824	26.67	2.87	20.93
505-1315133	1"	1.315	± .015"	0.133	+ .020"	1.049	33.40	3.38	26.64
505-2375154	2"	2.375	± .015"	0.154	+ .020"	2.067	60.32	3.91	52.50

Continuous Operating Temperature: -100 to 500˚F / -75 to 260˚C
Minimum quantities may apply. Custom packaging, sizes, lengths, and colors are quoted upon request.
Pipe is supplied in 5- and 10-ft. straights (i.e. 505-0540088-NC120.00). Please consult factory for pricing and delivery. Custom packaging, lengths, and schedule 80 pipe are quoted upon request.

HP PFA – More Product Options

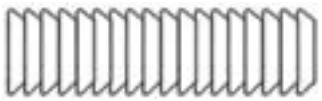
Convoluted Tubing

Convoluted tubing is used in applications where smaller bend diameters are required. Convoluted tubing is made to order. Please turn to the convoluted section for available size details. All HP PFA convoluted is a non-standard product.

For special sizes, colors or configurations, make a copy of the Convo-Tubing RFQ in the back of the book and fax to **1-800-438-9562**.

Convoluted Tubing

Corrugated Tubing



Corrugated tubing is used in applications where *extremely* small bend diameters are required to turn sharp corners without reducing the inside diameter. Corrugated tubing is made to order. Please turn to the Corrugated section for available size details.

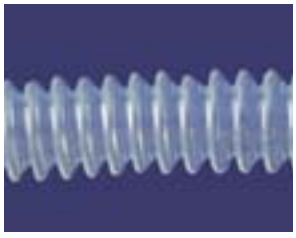
To request a quote, make a copy of the Corr-Tubing RFQ in the back of the book and fax to **1-800-438-9562**.

Retractable Coiled Tubing

Retractable Coiled Tubing

Retractable coiled tubing is used in applications where space restrictions require the tubing to have a very tight bend radius. This non-standard product is available as a single or dual containment tube. Please turn to the Retractable Coiled section for available size details.

To request a quote, make a copy of the Coiled Tubing RFQ in the back of the book and fax to **1-800-438-9562**.



Corrugated Tubing

PFA Tubing

TexFluor™ PFA tubing is well-suited for any corrosive or high purity application. PFA Tubing Products are available in several grades and sizes, and are offered in numerous lengths. PFA (Perfluoroalkoxy) is the material of choice in applications requiring excellent chemical resistance, high temperature exposure, clarity and long continuous lengths. Parker TexLoc's resin is a standard grade with a high molecular weight and high resistance to stress cracking. The tubing can be used with flare or conventional fittings, and is available in a wide range of sizes. Schedule 40 Pipe is also available.

Specifications

Materials:
Products in this section are manufactured using resins complying with ASTM D 3307 Type II Specification.

Flammability:
Listed VW-1 by the Underwriters' Laboratories, Inc. in its burning test classification for polymeric materials and passes the UL 83 vertical flame test. In a flame situation, High Purity PFA tubing resists combustion and does not promote flame spread.

FDA Compliance:
Most PFA resins qualify for use in contact with food in compliance with FDA regulation 21 CFR 177.1550.

Pressure and Temperature Ranges:
Pressure and temperature information is available from the factory upon request.

Value Proposition

- No process contamination
- Lowest levels of extractables
- Higher flow
- Longer product life and less downtime
- Translucent and flexible materials
- Chemically inert to nearly all industrial chemicals and solvents
- Smooth nonstick surface resulting in the lowest coefficient of friction
- Nonflammable materials
- Low permeability
- FDA compliant
- Weather resistant

Applications/Markets

- Flow monitoring systems
- Chemical
- Food
- Gas service
- Instrumentation
- Medical devices
- Laboratory
- Air sampling
- Sight glass
- Wetbench
- Fluid & Handling

Options

- Smoothbore
- Convoluted
- Corrugated
- Retractable coil
- Pipe
- Colors
- High-purity resins

Part numbers below are for standard configurations. For complete part numbers and options for material, color, packaging, etc., please contact Customer Service.

104 – PFA Industrial Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
104-0094031	3/32"	0.094	± .004	0.031	± .002	0.031	680	47	3400	234	2.40	0.79	0.79
104-0125031	1/8"	0.125	± .004	0.064	± .004	0.031	500	34	2500	172	3.18	1.63	0.79
104-0156031	5/32"	0.157	± .005	0.094	± .003	0.031	390	27	1950	134	3.99	2.39	0.79
104-0188031	3/16"	0.188	± .005	0.125	± .005	0.031	320	22	1600	110	4.78	3.18	0.79
104-0250031	1/4"	0.250	± .005	0.188	± .005	0.031	230	16	1150	79	6.35	4.78	0.79
104-0312031	5/16"	0.312	± .005	0.250	± .005	0.031	180	12	900	62	7.92	6.35	0.79
104-0375031	3/8"	0.375	± .005	0.312	± .005	0.031	140	10	700	48	9.52	7.92	0.79
104-0438031	7/16"	0.438	± .005	0.375	± .005	0.031	120	8	600	41	11.13	9.53	0.79
104-0500031	1/2"	0.500	± .005	0.438	± .005	0.031	100	7	500	34	12.70	11.13	0.79

104 – PFA Heavy Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	Wall	I.D.
104-0188062	3/16"	0.188	± .005"	0.062	± .005	0.062	680	47	3400	234	4.78	1.57	1.57
104-0250040	1/4"	0.250	± .005"	0.170	± .005	0.040	300	21	1500	103	6.35	1.02	4.32
104-0250047	1/4"	0.250	± .005"	0.156	± .005	0.047	370	26	1850	128	6.35	1.19	3.96
104-0250062	1/4"	0.250	± .005"	0.125	± .005	0.062	500	34	2500	172	6.35	1.57	3.18
104-0312062	5/16"	0.312	± .005"	0.188	± .005	0.062	390	27	1950	134	7.92	1.57	4.78
104-0375062	3/8"	0.375	± .005"	0.250	± .005	0.062	320	22	1600	110	9.52	1.57	6.35
104-0438062	7/16"	0.438	± .005"	0.312	± .005	0.062	270	19	1350	93	11.13	1.57	7.92
104-0500062	1/2"	0.500	± .005"	0.375	± .005	0.062	230	16	1150	79	12.70	1.57	9.53
104-0750062	3/4"	0.750	± .006"	0.625	± .006	0.062	140	10	700	48	19.05	1.57	15.88
104-1000062	1"	1.000	± .010"	0.875	± .010	0.062	100	7	500	34	25.40	1.57	22.22

204 – Metric PFA Tubing

PN	Order Size	Nominal O.D.		Reference Wall	Nominal I.D.		Working Pressure		Burst Pressure		Inch		
	mm	mm	Tolerance	mm	mm	Tolerance	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	Wall	I.D.
204-0400100	4	4	± .11	1	2	± .11	500	34	2500	172	0.157	0.039	0.079
204-0600100	6	6	± .11	1	4	± .11	320	22	1600	110	0.236	0.039	0.157
204-0800100	8	8	± .11	1	6	± .11	230	16	1150	79	0.315	0.039	0.236
204-1000100	10	10	± .11	1	8	± .11	180	12	900	62	0.393	0.039	0.315
204-1200100	12	12	± .15	1	10	± .15	140	10	700	48	0.472	0.039	0.393

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C
Minimum quantities may apply.

Working pressure calculated using a Safety Factor of 5. Note other manufacturers may use a Safety Factor of 4. Custom packaging and sizes are quoted upon request.

504 – PFA Schedule 40 Pipe

PN	Order Size	Actual O.D.		Minimum Wall		Reference I.D.	Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	O.D.	Wall	I.D.
504-0540088	1/4"	0.540	± .010	0.088	+ .020	0.364	13.72	2.24	9.25
504-0840109	1/2"	0.840	± .010	0.109	+ .020	0.622	21.33	2.77	15.80
504-1050113	3/4"	1.050	± .010	0.113	+ .020	0.824	26.67	2.87	20.93
504-1315133	1"	1.315	± .015	0.133	+ .020	1.049	33.40	3.38	26.64
504-2375154	2"	2.375	± .015	0.154	+ .020	2.067	60.32	3.91	52.50

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C
Minimum quantities may apply. Custom packaging, sizes, lengths, and colors are quoted upon request.
Pipe is supplied in 5- and 10-ft. straights (i.e. 504-1050113-NC120.00). Please consult factory for pricing and delivery.
Custom packaging, lengths, and schedule 80 pipe are quoted upon request.

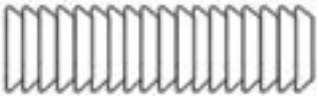
PFA – More Product Options

Convoluted Tubing

Convoluted tubing is used in applications where smaller bend diameters are required. Convoluted tubing is made to order. Please turn to the convoluted section for available size details. All HP PFA convoluted is a non-standard product.

For special sizes, colors or configurations, make a copy of the Convo-Tubing RFQ in the back of the book and fax to **1-800-438-9562**.

Corrugated Tubing

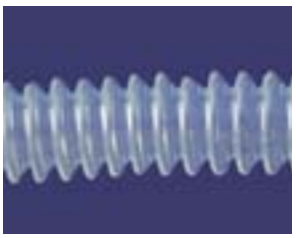


Corrugated tubing is used in applications where *extremely* small bend diameters are required to turn sharp corners without reducing the inside diameter. Corrugated tubing is made to order. Please turn to the Corrugated section for available size details.

To request a quote, make a copy of the Corr-Tubing RFQ in the back of the book and fax to **1-800-438-9562**.

Convoluted Tubing

Retractable Coiled Tubing



Corrugated Tubing

Retractable Coiled Tubing

Retractable coiled tubing is used in applications where space restrictions require the tubing to have a very tight bend radius. This non-standard product is available as a single or dual containment tube. Please turn to the Retractable Coiled section for available size details.

To request a quote, make a copy of the Coiled Tubing RFQ in the back of the book and fax to **1-800-438-9562**.

PFA Fully Conductive tubing is also available.

FEP Tubing

TexFluor™ FEP (Fluorinated Ethylene Propylene) tubing exhibits the highest clarity offered. This clarity makes this tubing ideal for flow monitoring applications. TexFluor™ FEP also uses a high molecular weight resin that has the best stress crack resistance. It is widely used in water purification systems due to its excellent transmission of UV light.

TexFluor™ FEP resin meets the FDA requirements for repeated food contact. The product is available in various sizes of tubing and pipe.

Specifications

Materials:
FEP products in this section are manufactured using resins complying with ASTM D 3296-98 Specification.

Flammability:
Listed VW-1 by the Underwriters' Laboratories, Inc. in its burning test classification for polymeric materials and passes the UL 83 vertical flame test. In a flame situation, FEP tubing resists combustion and does not promote flame spread.

FDA Compliance:
Most FEP resins qualify for use in contact with food in compliance with FDA regulation 21 CFR 177.1550.

Pressure and Temperature Ranges:
Pressure and temperature information is available from the factory upon request.

Value Proposition

- Chemically inert to nearly all industrial chemicals and solvents
- Non wetting
- Weldable
- Translucent and flexible materials
- Smooth, nonstick surface resulting in the low coefficient of friction
- Nonflammable materials
- Low refractive index
- Long continuous lengths
- FDA compliant
- Lower cost alternative to PFA

Applications/Markets

- UV applications
- Chemical
- Food
- Thermal cycling
- Instrumentation
- Medical devices
- Laboratory
- Robotics
- Gas sampling

Options

- Smoothbore
- Convoluted
- Corrugated
- Retractable coil
- Colors

Part numbers below are for standard configurations. For complete part numbers and options for material, color, packaging, etc., please contact Customer Service.

103 – FEP Industrial Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	Wall	I.D.
103-0062016	1/16"	0.062	± .003	0.031	± .003	0.016	48	33	2400	165	1.57	0.41	0.79
103-0094031	3/32"	0.094	± .005	0.031	± .002	0.031	630	43	3150	217	2.40	0.79	0.79
103-0125031	1/8"	0.125	± .003	0.062	± .003	0.031	470	32	2350	162	3.18	0.79	1.57
103-0156031	5/32"	0.157	± .005	0.094	± .005	0.031	360	25	1800	124	3.99	0.79	2.39
103-0188031	3/16"	0.188	± .005	0.125	± .005	0.031	290	20	1450	100	4.78	0.79	3.18
103-0250031	1/4"	0.250	± .005	0.188	± .005	0.031	210	14	1050	72	6.35	0.79	4.78
103-0312031	5/16"	0.312	± .005	0.250	± .005	0.031	160	11	800	55	7.92	0.79	6.35
103-0375031	3/8"	0.375	± .005	0.312	± .005	0.031	130	9	650	45	9.52	0.79	7.92
103-0438031	7/16"	0.438	± .005	0.375	± .005	0.031	110	8	550	38	11.13	0.79	9.52
103-0500031	1/2"	0.500	± .006	0.438	± .006	0.031	90	6	450	31	12.70	0.79	11.13
103-0563031	9/16"	0.563	± .006	0.500	± .006	0.031	80	6	400	28	14.30	0.79	12.70

103 – FEP Heavy Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	Wall	I.D.
103-0188062	3/16"	0.188	± .005	0.031	± .005	0.062	630	43	3150	217	4.78	1.57	0.79
103-0250040	1/4"	0.250	± .005	0.062	± .005	0.040	280	19	1400	97	6.35	1.02	4.32
103-0250047	1/4"	0.250	± .005	0.094	± .005	0.047	340	23	1700	117	6.35	1.19	3.96
103-0250062	1/4"	0.250	± .005	0.125	± .005	0.062	470	32	2350	162	6.35	1.57	3.18
103-0312062	5/16"	0.312	± .005	0.188	± .005	0.062	360	25	1800	124	7.92	1.57	4.78
103-0375062	3/8"	0.375	± .005	0.250	± .005	0.062	290	20	1450	100	9.52	1.57	6.35
103-0438062	7/16"	0.438	± .005	0.312	± .005	0.062	250	17	1250	86	11.13	1.57	7.92
103-0500062	1/2"	0.500	± .005	0.375	± .005	0.062	210	14	1050	72	12.70	1.57	9.53
103-0625062	5/8"	0.625	± .006	0.500	± .006	0.062	160	11	800	55	15.88	1.57	12.70
103-0750062	3/4"	0.7524	± .006	0.625	± .006	0.062	130	9	650	45	19.05	1.57	15.88
103-0100062	1"	1.000	± .010	0.875	± .010	0.062	90	6	450	31	25.40	1.57	22.22

203 – Metric FEP Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	mm	mm	Tolerance	mm	Tolerance	mm	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	Wall	I.D.
203-0300100	3	3	± .11	1	± .11	1	630	43	3150	217	0.118	0.039	0.039
203-0400100	4	4	± .11	2	± .11	1	460	32	2300	159	0.157	0.039	0.079
203-0500100	5	5	± .11	3	± .11	1	360	25	1800	124	0.197	0.039	0.118
203-0600100	6	6	± .11	4	± .11	1	290	20	1450	100	0.236	0.039	0.157
203-0700100	7	7	± .11	5	± .11	1	240	17	1200	83	0.276	0.039	0.197
203-0800100	8	8	± .13	6	± .13	1	210	14	1050	72	0.315	0.039	0.236
203-0900100	9	9	± .13	7	± .13	1	180	12	900	62	0.354	0.039	0.276
203-1000100	10	10	± .13	8	± .13	1	160	11	800	55	0.393	0.039	0.315
203-1200100	12	12	±.15	10	±.15	1	130	9	650	45	0.472	0.039	0.393

Continuous Operating Temperature: -100 to 400˚F/-75 to 204˚C
Minimum quantities may apply.

Working pressure calculated using a Safety Factor of 5. Note other manufacturers may use a Safety Factor of 4. Custom packaging and sizes are quoted upon request.

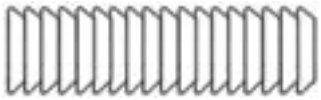
FEP – More Product Options

Convoluted Tubing

Convoluted tubing is used in applications where smaller bend diameters are required. Convoluted tubing is made to order. Please turn to the convoluted section for available size details. All HP PFA convoluted is a non-standard product.

For special sizes, colors or configurations, make a copy of the Convo-Tubing RFQ in the back of the book and fax to **1-800-438-9562**.

Corrugated Tubing

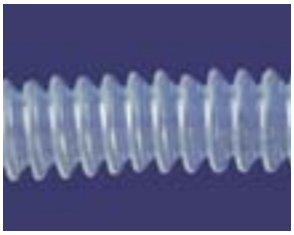


Corrugated tubing is used in applications where *extremely* small bend diameters are required to turn sharp corners without reducing the inside diameter. Corrugated tubing is made to order. Please turn to the Corrugated section for available size details.

To request a quote, make a copy of the Corr-Tubing RFQ in the back of the book and fax to **1-800-438-9562**.

Convoluted Tubing

Retractable Coiled Tubing



Corrugated Tubing

Retractable Coiled Tubing

Retractable coiled tubing is used in applications where space restrictions require the tubing to have a very tight bend radius. This non-standard product is available as a single or dual containment tube. Please turn to the Retractable Coiled section for available size details.

To request a quote, make a copy of the Coiled Tubing RFQ in the back of the book and fax to **1-800-438-9562**.

Value-Added Capabilities

Secondary operations are offered in Parker TexLoc's on-site Value-Added Service department on most product types.

- Etching
- Hole punching
- Sealing
- Bonding
- Flaring
- Flanging
- Forming
- Printing
- Tapering
- Tube slitting
- Tube scoring
- Fittings
- Prototyping
- Laser cutting
- Cleaning
- Kits
- Assemblies
- Spiral cutting
- Design assistance

PTFE Tubing

Parker TexLoc's line of TexFluor™ PTFE (Polytetrafluoroethylene tubing is the most flexible product offered. PTFE tubing resists corrosive liquids and gases, and has the broadest temperature range of all Fluoropolymer products. The tubing has a smooth non-stick surface with low permeability.

Value Proposition

- Most flexible Fluoropolymer available
- Chemically inert to nearly all industrial chemicals and solvents
- Smooth nonstick surface resulting in the low coefficient of friction
- Non wetting
- Low permeability
- Nonflammable materials
- Excellent electrical properties
- FDA compliant

Applications/Markets

- Chemical
- High-temp applications
- Food
- Instrumentation
- Medical devices
- Laboratory
- Gas sampling
- Electrical Insulation
- Fluid & Handling

Options

- Smoothbore
- Convoluted
- Colors
- Color stripes
- Miniature Beading
- Spiral Wrap

Specifications

Materials:
PTFE products in this section are manufactured using resins complying with ASTM D 3295 Specification.

Flammability:
Listed VW-1 by the Underwriters' Laboratories, Inc. in its burning test classification for polymeric materials and passes the UL 83 vertical flame test. In a flame situation, PTFE tubing resists combustion and does not promote flame spread.

FDA Compliance:
Most PTFE resins qualify for use in contact with food in compliance with FDA regulation 21 CFR 177.1550.

Pressure and Temperature Ranges:
Pressure and temperature information is available from the factory upon request.

PTFE Fractional and Spaghetti Tubing is ideal for insulation sleeving applications that require high-temperature resistance (withstands soldering), chemical and abrasion resistance, and UL or CSA recognition. Standard sizes are manufactured in natural and ten colors (per MIL-STD-104). All colors require minimum run quantities. Precision cutting is available at a minimum charge. High-speed rotary equipment yields excellent cut-length tolerances with clean, square ends. PTFE-cutpieces can be used as spacers, insulation for wire leads, or a protective outer layer in harsh chemical environments.




PTFE Fractional Tubing

Size (inch)	Nom ID	Standard Wall		Thin Wall		Light Wall		Standard Packaging
		Part Number	Nom Wall	Part Number	Nom Wall	Part Number	Nom Wall	
1/8"	.125	TFS1/8	.020	TFT1/8	.015	TFL1/8	.008	Random Length Coil
3/16"	.188	TFS3/16	.020	TFT3/16	.015	TFL3/16	.010	Random Length Coil
1/4"	.250	TFS1/4	.020	TFT1/4	.015	TFL1/4	.010	Random Length Coil
5/16"	.318	TFS5/16	.020	TFT5/16	.015	TFL5/16	.012	Random Length Coil
3/8"	.381	TFS3/8	.025	TFT3/8	.015	TFL3/8	.015	Random Length Coil
7/16"	.444	TFS7/16	.025	TFT7/16	.018	TFL7/16	.018	Random Length Coil
1/2"	.507	TFS1/2	.025	TFT1/2	.018	TFL1/2	.018	Random Length Coil
5/8"	.632	TFS5/8	.025	TFT5/8	.020			Random Length Coil
3/4"	.760	TFS3/4	.030	TFT3/4	.035			Random Length Coil
7/8"	.885	TFS7/8	.035					Random Length Coil
1"	1.010	TFS1.00	.035					Random Length Coil

Fractional tubing is supplied in random length coils, with a minimum coil length of 15 feet. Custom packaging, sizes and lengths are quoted upon request.

Specifications: Light Wall – ASTM D 3295, Class 1, AMS 3654; Thin Wall – ASTM D 3295, Class 2, AMS 3655; Standard Wall – ASTM D 3295, Class 3, AMS 3653

Parker TexLoc also offers Colortrax™ tubing for identification purposes. Colortrax™ offers positive identification of media lines without obstructing view and is available in sizes up to 1" O.D. with up to ten striping colors. Contact Customer Service for details.

Fluoropolymer Tubing - PTFE

PTFE AWG Heavy Wall

Size (AWG)	Nom ID (inch)	Min ID (inch)	Max ID (inch)	Heavy Wall		Standard Packaging
				Part Number	Nom Wall	
24	.022	.020	.026	TFH24	.016 ± .003	1,000 ft. Spool
23	.026	.023	.029	TFH23	.016 ± .003	1,000 ft. Spool
22	.028	.025	.032	TFH22	.016 ± .003	1,000 ft. Spool
21	.032	.029	.035	TFH21	.016 ± .003	1,000 ft. Spool
20	.034	.032	.040	TFH20	.018 ± .003	1,000 ft. Spool
19	.038	.036	.044	TFH19	.020 ± .004	1,000 ft. Spool
18	.042	.040	.049	TFH18	.020 ± .004	1,000 ft. Spool
17	.048	.045	.054	TFH17	.020 ± .004	1,000 ft. Spool
16	.053	.051	.061	TFH16	.020 ± .004	1,000 ft. Spool
15	.059	.057	.067	TFH15	.020 ± .004	1,000 ft. Spool
14	.066	.064	.074	TFH14	.020 ± .004	500 ft. Spool
13	.076	.072	.082	TFH13	.020 ± .004	500 ft. Spool
12	.085	.081	.091	TFH12	.020 ± .004	500 ft. Spool
11	.095	.091	.101	TFH11	.020 ± .004	500 ft. Spool
10	.106	.102	.112	TFH10	.025 ± .005	500 ft. Spool
9	.118	.114	.124	TFH09	.025 ± .005	500 ft. Spool
8	.133	.129	.141	TFH08	.030 ± .005	Random Length Coil
7	.148	.144	.158	TFH07	.030 ± .005	Random Length Coil
6	.166	.162	.178	TFH06	.030 ± .005	Random Length Coil
5	.185	.182	.196	TFH05	.032 ± .005	Random Length Coil

Spaghetti tubing is supplied in random lengths with a minimum length of 25 feet. Continuous lengths and colors quoted upon request. AWG spaghetti tubing is also available in FEP and PFA. Consult factory for pricing and minimum lengths.

Specification: Heavy Wall – ASTM D 3295, Class 4

PTFE AWG Standard Wall

Size (AWG)	Nom ID (inch)	Min ID (inch)	Max ID (inch)	Standard Wall		Standard Packaging
				Part Number	Nom Wall	
30	.012	.010	.015	TFS30	.009 ± .002	1,000 ft. Spool
28	.015	.013	.018	TFS28	.009 ± .002	1,000 ft. Spool
26	.018	.016	.022	TFS26	.009 ± .002	1,000 ft. Spool
24	.022	.020	.026	TFS24	.012 ± .003	1,000 ft. Spool
23	.026	.023	.029	TFS23	.012 ± .003	1,000 ft. Spool
22	.028	.025	.032	TFS22	.012 ± .003	1,000 ft. Spool
21	.032	.029	.035	TFS21	.012 ± .003	1,000 ft. Spool
20	.034	.032	.040	TFS20	.016 ± .003	1,000 ft. Spool
19	.038	.036	.044	TFS19	.016 ± .003	1,000 ft. Spool
18	.042	.040	.049	TFS18	.016 ± .003	1,000 ft. Spool
17	.048	.045	.054	TFS17	.016 ± .003	1,000 ft. Spool
16	.053	.051	.061	TFS16	.016 ± .003	1,000 ft. Spool
15	.059	.057	.067	TFS15	.016 ± .003	1,000 ft. Spool
14	.066	.064	.074	TFS14	.016 ± .003	500 ft. Spool
13	.076	.072	.082	TFS13	.016 ± .003	500 ft. Spool
12	.085	.081	.091	TFS12	.016 ± .003	500 ft. Spool
11	.095	.091	.101	TFS11	.016 ± .003	500 ft. Spool
10	.106	.102	.112	TFS10	.016 ± .003	500 ft. Spool
9	.118	.114	.124	TFS09	.020 ± .004	500 ft. Spool
8	.133	.129	.141	TFS08	.020 ± .004	Random Length Coil
7	.148	.144	.158	TFS07	.020 ± .004	Random Length Coil
6	.166	.162	.178	TFS06	.020 ± .004	Random Length Coil
5	.185	.182	.196	TFS05	.020 ± .004	Random Length Coil
4	.208	.204	.224	TFS04	.020 ± .004	Random Length Coil
3	.234	.229	.249	TFS03	.020 ± .004	Random Length Coil
2	.263	.258	.278	TFS02	.020 ± .004	Random Length Coil
1	.294	.289	.311	TFS01	.020 ± .004	Random Length Coil

Spaghetti tubing is supplied in random lengths with a minimum length of 25 feet. Continuous lengths and colors quoted upon request. AWG spaghetti tubing is also available in FEP and PFA. Consult factory for pricing and minimum lengths.

Specifications: Standard Wall – ASTM D 3295, Class 3, AMS 3653, MIL-I-22129, UL-224 600V 200°C, CSA 9032-01 600V

PTFE AWG Thin Wall

Size (AWG)	Nom ID (inch)	Min ID (inch)	Max ID (inch)	Thin Wall		Standard Packaging
				Part Number	Nom Wall	
32	.010	.008	.012	TFT32	.007 ± .002	1,000 ft. Spool Only
30	.012	.010	.015	TFT30	.009 ± .002	1,000 ft. Spool
28	.015	.013	.018	TFT28	.009 ± .002	1,000 ft. Spool
26	.018	.016	.022	TFT26	.009 ± .002	1,000 ft. Spool
24	.022	.020	.026	TFT24	.010 ± .003	1,000 ft. Spool
23	.026	.023	.029	TFT23	.010 ± .003	1,000 ft. Spool
22	.028	.025	.032	TFT22	.010 ± .003	1,000 ft. Spool
21	.032	.029	.035	TFT21	.010 ± .003	1,000 ft. Spool
20	.034	.032	.040	TFT20	.012 ± .003	1,000 ft. Spool
19	.038	.036	.044	TFT19	.012 ± .003	1,000 ft. Spool
18	.042	.040	.049	TFT18	.012 ± .003	1,000 ft. Spool
17	.048	.045	.054	TFT17	.012 ± .003	1,000 ft. Spool
16	.053	.051	.061	TFT16	.012 ± .003	1,000 ft. Spool
15	.059	.057	.067	TFT15	.012 ± .003	1,000 ft. Spool
14	.066	.064	.074	TFT14	.012 ± .003	500 ft. Spool
13	.076	.072	.082	TFT13	.012 ± .003	500 ft. Spool
12	.085	.081	.091	TFT12	.012 ± .003	500 ft. Spool
11	.095	.091	.101	TFT11	.012 ± .003	500 ft. Spool
10	.106	.102	.112	TFT10	.012 ± .003	500 ft. Spool
9	.118	.114	.124	TFT09	.015 ± .003	500 ft. Spool
8	.133	.129	.141	TFT08	.015 ± .003	Random Length Coil
7	.148	.144	.158	TFT07	.015 ± .003	Random Length Coil
6	.166	.162	.178	TFT06	.015 ± .003	Random Length Coil
5	.185	.182	.196	TFT05	.015 ± .003	Random Length Coil
4	.208	.204	.224	TFT04	.015 ± .003	Random Length Coil
3	.234	.229	.249	TFT03	.015 ± .003	Random Length Coil
2	.263	.258	.278	TFT02	.015 ± .003	Random Length Coil
1	.294	.289	.311	TFT01	.015 ± .003	Random Length Coil
0	.330	.325	.347	TFT00	.015 ± .003	Random Length Coil

Spaghetti tubing is supplied in random lengths with a minimum length of 25 feet. Continuous lengths and colors quoted upon request. AWG spaghetti tubing is also available in FEP and PFA. Consult factory for pricing and minimum lengths.

Specifications: Thin Wall – ASTM D 3295, Class 2, AMS 3655, UL-224 300V 200°C, CSA 9032-01 300V

PTFE AWG Light Wall

Size (AWG)	Nom ID (inch)	Min ID (inch)	Max ID (inch)	Light Wall		Standard Packaging
				Part Number	Nom Wall	
32	.010	.008	.012	TFL32	.005 ± .002	1,000 ft. Spool Only
30	.012	.010	.015	TFL30	.006 ± .002	1,000 ft. Spool
28	.015	.013	.018	TFL28	.006 ± .002	1,000 ft. Spool
26	.018	.016	.022	TFL26	.006 ± .002	1,000 ft. Spool
24	.022	.020	.026	TFL24	.006 ± .002	1,000 ft. Spool
23	.026	.023	.029	TFL23	.006 ± .002	1,000 ft. Spool
22	.028	.025	.032	TFL22	.006 ± .002	1,000 ft. Spool
21	.032	.029	.035	TFL21	.006 ± .002	1,000 ft. Spool
20	.034	.032	.040	TFL20	.006 ± .002	1,000 ft. Spool
19	.038	.036	.044	TFL19	.006 ± .002	1,000 ft. Spool
18	.042	.040	.049	TFL18	.006 ± .002	1,000 ft. Spool
17	.048	.045	.054	TFL17	.006 ± .002	1,000 ft. Spool
16	.053	.051	.061	TFL16	.006 ± .002	1,000 ft. Spool
15	.059	.057	.067	TFL15	.008 ± .002	1,000 ft. Spool
14	.066	.064	.074	TFL14	.008 ± .002	500 ft. Spool
13	.076	.072	.082	TFL13	.008 ± .002	500 ft. Spool
12	.085	.081	.091	TFL12	.008 ± .002	500 ft. Spool
11	.095	.091	.101	TFL11	.008 ± .002	500 ft. Spool
10	.106	.102	.112	TFL10	.008 ± .002	500 ft. Spool
9	.118	.114	.124	TFL09	.008 ± .002	500 ft. Spool
8	.133	.129	.141	TFL08	.008 ± .002	Random Length Coil
7	.148	.144	.158	TFL07	.008 ± .002	Random Length Coil
6	.166	.162	.178	TFL06	.010 ± .003	Random Length Coil
5	.185	.182	.196	TFL05	.010 ± .003	Random Length Coil
4	.208	.204	.224	TFL04	.010 ± .003	Random Length Coil
3	.234	.229	.249	TFL03	.010 ± .003	Random Length Coil
2	.263	.258	.278	TFL02	.010 ± .003	Random Length Coil
1	.294	.289	.311	TFL01	.012 ± .003	Random Length Coil
0	.330	.325	.347	TFL00	.012 ± .003	Random Length Coil

Spaghetti tubing is supplied in random lengths with a minimum length of 25 feet. Continuous lengths and colors quoted upon request. AWG spaghetti tubing is also available in FEP and PFA. Consult factory for pricing and minimum lengths.

Specifications: Light Wall – ASTM D 3295, Class 1, AMS 3654, UL-224, 150V 200°C

Part numbers below are for standard configurations. For complete part numbers and options for material, color, packaging, etc., please contact Customer Service.

101 – PTFE Industrial Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
101-0094031	3/32”	0.094	± .005	0.031	± .002	0.031	390	27	1950	134	2.40	0.79	0.79
101-0125031	1/8”	0.125	± .005	0.062	± .002	0.031	290	20	1450	100	3.18	1.57	0.79
101-0156031	5/32"	0.156	± .005	0.094	± .003	0.031	220	15	1100	76	3.99	2.39	0.79
101-0188031	3/16”	0.188	± .005	0.125	± .005	0.031	180	12	900	62	4.78	3.18	0.79
101-0250031	1/4”	0.250	± .005	0.190	± .005	0.031	130	9	650	45	6.35	4.83	0.79
101-0312031	5/16"	0.312	± .005	0.250	± .007	0.031	100	7	500	34	7.92	6.35	0.79
101-0375031	3/8”	0.375	± .005	0.312	± .006	0.031	80	6	400	28	9.52	7.92	0.79
101-0438031	7/16"	0.438	± .005	0.375	± .007	0.031	70	5	350	24	11.13	9.52	0.79
101-0500031	1/2"	0.500	± .006	0.438	± .008	0.031	60	4	300	21	12.70	11.13	0.79
101-0563031	9/16"	0.563	± .007	0.500	± .010	0.031	55	4	275	19	14.30	12.70	0.79
101-0625031	5/8"	0.625	± .007	0.563	± .010	0.031	50	3	250	17	15.88	14.30	0.79
101-0688031	11/16"	0.688	± .010	0.625	± .012	0.031	45	3	225	16	17.48	15.88	0.79
101-0750032	3/4"	0.750	± .010	0.688	± .012	0.032	40	3	200	14	19.05	17.48	0.81
101-0830040	.830"	0.830	± .014	0.750	± .014	0.040	45	3	225	16	21.08	19.05	1.02
101-0965045	.965"	0.965	± .016	0.875	± .016	0.045	45	3	225	16	24.51	22.22	1.14
101-1100050	1.100"	1.100	± .020	1.000	± .020	0.050	40	3	200	14	27.94	25.40	1.27

Valued Added Capabilities

101 – PTFE Heavy Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
101-0188062	3/16	0.188	± .005	0.062	± .002	0.062	390	27	1950	134	4.78	1.57	1.57
101-0250047	1/4"	0.250	± .005	0.157	± .005	0.047	210	14	1050	72	6.35	3.99	1.19
101-0250062	1/4”	0.250	± .005	0.125	± .005	0.062	290	20	1450	100	6.35	3.18	1.57
101-0312062	5/16"	0.312	± .005	0.188	± .006	0.062	222	15	1110	77	7.92	4.76	1.57
101-0375062	3/8”	0.375	± .005	0.250	± .005	0.062	180	12	900	62	9.52	6.35	1.57
101-0438062	7/16"	0.438	± .005	0.312	± .007	0.062	150	10	750	52	11.13	7.92	1.57
101-0500062	1/2"	0.500	± .005	0.375	± .005	0.062	130	9	650	45	12.70	9.52	1.57
101-0563062	9/16"	0.563	± .007	0.438	± .008	0.062	110	8	550	38	14.30	11.13	1.57
101-0625062	5/8"	0.625	± .007	0.500	± .010	0.062	100	7	500	34	15.88	12.70	1.57
101-0688062	11/16"	0.688"	± .010	0.563	± .010	0.062	90	6	450	31	17.48	14.30	1.57
101-0750062	3/4"	0.750	± .010	0.625	± .010	0.062	80	6	400	28	19.05	15.88	1.57
101-0875062	7/8"	0.875	± .014	0.750	± .014	0.062	70	5	350	24	22.22	19.05	1.57
101-0100062	1"	1.000	± .010	0.875	± .014	0.062	100	6.9	490	33.8	25.40	22.22	1.57

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C
Minimum quantities may apply.
Working pressure calculated using a Safety Factor of 5. Note other manufacturers may use a Safety Factor of 4. Custom packaging and sizes are quoted upon request.

201 – Metric PTFE Tubing

PN	Order Size	Nominal O.D.		Reference Wall	Nominal I.D.		Working Pressure		Burst Pressure		Metric (mm)		
	mm	mm	Tolerance	mm	mm	Tolerance	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	Wall	I.D.
201-0300100	3	3	± .11	1	1	± .11	390	27	1950	134	0.118	25.4	0.039
201-0400100	4	4	± .11	1	2	± .11	290	20	1450	100	0.157	25.4	0.079
201-0500100	5	5	± .11	1	3	± .11	220	15	1100	76	0.197	25.4	0.118
201-0600100	6	6	± .13	1	4	± .13	180	12	900	62	0.236	25.4	0.157
201-0700100	7	7	± .13	1	5	± .13	150	10	750	52	0.276	25.4	0.197
201-0800100	8	8	± .13	1	6	± .13	130	9	650	45	0.315	25.4	0.236
201-0900100	9	9	± .13	1	7	± .13	110	8	550	38	0.354	25.4	0.275
201-1000100	10	10	± .13	1	8	± .13	100	7	500	34	0.393	25.4	0.315
201-1200100	12	12	± .15	1	10	± .15	80	6	400	28	0.472	25.4	0.394
201-1400100	14	14	± .15	1	12	± .15	70	5	350	24	0.551	25.4	0.472
201-1600100	16	16	± .15	1	14	± .15	60	4	300	21	0.630	25.4	0.551

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C
Minimum quantities may apply.
Working pressure calculated using a Safety Factor of 5. Note other manufacturers may use a Safety Factor of 4. Custom packaging and sizes are quoted upon request.

PTFE – More Product Options

Convoluted Tubing

Convoluted tubing is used in applications where smaller bend diameters are required. Convoluted tubing is made to order. Please turn to the convoluted section for available size details.

For special sizes, colors or configurations, make a copy of the Convo-Tubing RFQ in the back of the book and fax to **1-800-438-9562**.

Convoluted Tubing

ColorTrax™ Tubing

ColorTrax™ provides instant positive identification of lines without obstructing the view of the media flowing through the tube.

For a quotation, contact Customer Service.

ColorTrax™ Tubing

PTFE Fully Conductive and PTFE Conductive I.D. tubing are also available.

PTFE Round Beading/Miniature Rod

PTFE round beading/miniature rod is excellent as a filler in loose bundles of cables, as a pull cord, as o-ring seals, or cut into pieces as bearings and spacers. The smoother finish, greater flexibility, and longer lengths outperform "granular" extrusions. PTFE Beading is a standard item but FEP or PFA extrusions are available. When supplied in FEP and PFA, this product works as a bonding agent, i.e. welding rod.

PTFE Round Beading/Miniature Rod

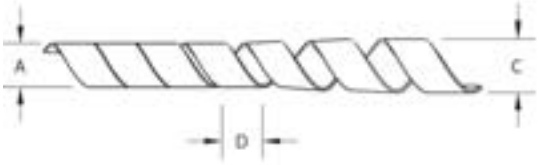
Part Number	Diameter	Tolerance	Standard Packaging
TFB015	.015	± .002	1,000 ft. Spool
TFB020	.020	± .002	1,000 ft. Spool
TFB025	.025	± .002	1,000 ft. Spool
TFB028	.028	± .002	1,000 ft. Spool
TFB031	.031	± .002	1,000 ft. Spool
TFB035	.035	± .002	1,000 ft. Spool
TFB039	.039	± .002	1,000 ft. Spool
TFB043	.043	± .002	1,000 ft. Spool
TFB047	.047	± .002	1,000 ft. Spool
TFB050	.050	± .002	1,000 ft. Spool
TFB055	.055	± .003	1,000 ft. Spool
TFB060	.060	± .003	1,000 ft. Spool
TFB062	.062	± .003	1,000 ft. Spool
TFB070	.070	± .003	1,000 ft. Spool
TFB072	.072	± .003	1,000 ft. Spool
TFB078	.078	± .004	500 ft. Spool
TFB080	.080	± .004	500 ft. Spool
TFB084	.084	± .004	500 ft. Spool
TFB090	.090	± .004	500 ft. Spool
TFB094	.094	± .004	500 ft. Spool
TFB100	.100	± .004	500 ft. Spool
TFB109	.109	± .004	500 ft. Spool
TFB115	.115	± .004	500 ft. Spool
TFB125	.125	± .004	Random Length
TFB150	.150	± .004	Random Length
TFB188	.188	± .004	Random Length

Round beading/miniature rod is supplied in non-continuous spool lengths as noted above. Custom packaging, sizes, and colors are quoted upon request.

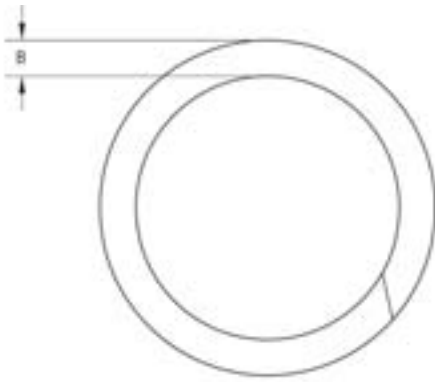
Specification: ASTM D1710, Type 1, Grade 1, Class B

PTFE Spiral Cut Cable Wrap

Fluoropolymer spiral cut cable wrap provides harnessing for wires and cable, while allowing for leads at various points. Ideal applications include cable harnessing, wiring closets, station wiring, fibre optic cabling, aerospace and automotive end uses. This product has a "VO" flammability rating and is excellent for bundling cables in plenum areas. It is also durable, flexible and has outstanding electrical properties. Spiral wrap is offered in both left- and right-hand cut, and natural/ten colors, which allows for color coding and identification.



DEPICTS RIGHT HAND CUT

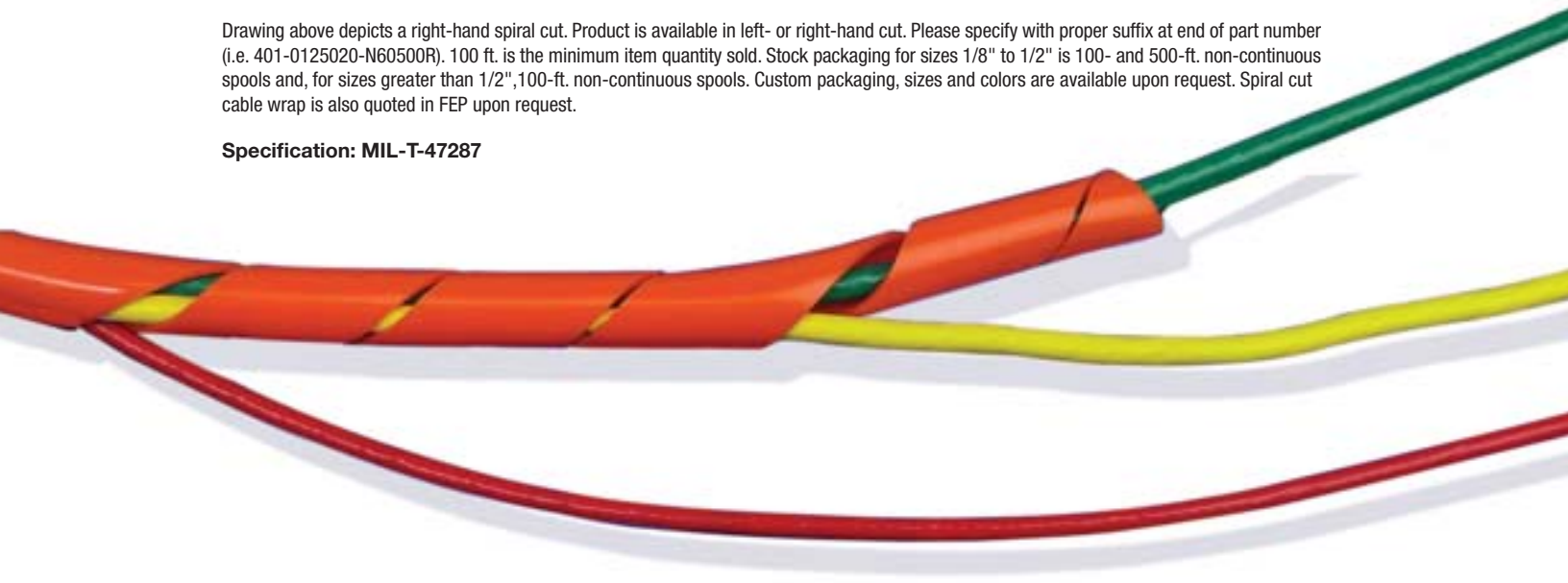


TOP SECTION CUT

Part Number	Size O.D. "A"	O.D. Tolerance	Wall "B"	Wall Tolerance	Pitch "D"	Pitch Tolerance	Max Bundle O.D. "C"
TSWTF-1/8-NT	.125	± .005	.020	± .008	.212	± .015	1/2"
TSWTF-3/16-NT	.188	± .005	.030	± .008	.312	± .015	1"
TSWTF-1/4-NT	.250	± .005	.030	± .008	.375	± .015	2"
TSWTF-3/8-NT	.375	± .005	.030	± .008	.437	± .015	2-1/2"
TSWTF-1/2-NT	.500	± .006	.030	± .008	.562	± .015	3"
TSWTF-3/4-NT	.750	± .007	.040	± .008	.875	± .015	4"
TSWTF-1.00-NT	1.000	± .010	.040	± .008	1.000	± .015	6"

Drawing above depicts a right-hand spiral cut. Product is available in left- or right-hand cut. Please specify with proper suffix at end of part number (i.e. 401-0125020-N60500R). 100 ft. is the minimum item quantity sold. Stock packaging for sizes 1/8" to 1/2" is 100- and 500-ft. non-continuous spools and, for sizes greater than 1/2",100-ft. non-continuous spools. Custom packaging, sizes and colors are available upon request. Spiral cut cable wrap is also quoted in FEP upon request.

Specification: MIL-T-47287



PVDF Tubing

PVDF (Polyvinylidene Fluoride) is a tough engineering Fluoropolymer that offers a combination of properties beneficial for use in many critical applications requiring chemical resistance with low permeability. PVDF exhibits low extractable levels, while providing high mechanical strength, excellent abrasion resistance, and good resistance to many chemicals and solvents. Parker TexLoc's PVDF tubing is excellent for use in ultra-pure water systems and ground water monitoring.

Specifications

Materials:
PVDF products in this section are manufactured using resins complying with ASTM D 3222 Specification.

Flammability:
Listed 94-VO rated by the Underwriters' Laboratories, Inc. in its burning test classification for polymeric materials and passes the UL 83 vertical flame test. In a flame situation, PVDF tubing resists combustion and does not promote flame spread.

FDA Compliance:
Most PVDF resins qualify for use in contact with food in compliance with FDA regulation 21 CFR 177.1500.

Pressure and Temperature Ranges:
Pressure and temperature information is available from the factory upon request.

Value Proposition

- Good chemical resistance
- Low permeability
- Nonflammable materials
- Weather resistant
- High abrasion resistance and thermal stability
- High mechanical strength
- UV and radiation resistant
- FDA compliant

Applications/Markets

- Applications with long cycle life
- Chemical
- Food
- Gas
- Thermal cycling
- Outdoor/extreme conditions
- Water systems
- Ground water monitoring
- Fluid & Handling

Options

- Smoothbore
- SuperFlex®
- Colors

Part numbers below are for standard configurations. For complete part numbers and options for material, color, packaging, etc., please contact Customer Service.

110 – PVDF Flex® Industrial Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
110-0125031	1/8"	0.125	± .005"	0.062	± .005"	0.031	950	65	4750	327	3.18	1.57	0.79
110-0188031	3/16"	0.188	± .005"	0.125	± .005"	0.031	600	41	3000	207	4.78	3.18	0.79
110-0250031	1/4"	0.250	± .005"	0.188	± .005"	0.031	430	30	2150	148	6.35	4.78	0.79
110-0375031	3/8"	0.375	± .005"	0.312	± .005"	0.031	280	19	1400	97	9.52	7.92	0.79
110-0500031	1/2"	0.500	± .005"	0.438	± .005"	0.031	200	14	1000	69	12.70	11.13	0.79

110 – PVDF Flex® Heavy Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
110-0250047	1/4"	0.250	± .005"	0.156	± .005	0.047	650	45	3250	224	6.35	3.96	1.19
110-0250062	1/4"	0.250	± .005"	0.125	± .005	0.062	940	65	4700	324	6.35	3.18	1.57
110-0312062	5/16"	0.312	± .005"	0.188	± .005	0.062	740	51	3700	255	7.92	4.78	1.57
110-0375062	3/8"	0.375	± .005"	0.250	± .005	0.062	600	41	3000	207	9.52	6.35	1.57
110-0500062	1/2"	0.500	± .005"	0.370	± .005	0.062	440	30	2200	152	12.70	9.40	1.57
110-0625062	5/8"	0.625	± .005"	0.500	± .005	0.062	340	23	1700	117	15.88	12.70	1.57
110-0750062	3/4"	0.750	± .006"	0.625	± .006	0.062	280	19	1400	97	19.05	15.88	1.57
110-1000062	1"	1.000	± .010"	0.875	± .008	0.062	200	14	1000	69	25.40	22.22	1.57

Continuous Operating Temperature: -80 to 265˚F/-62 to 130˚C
Minimum quantities may apply.

PVDF – SuperFlex®

111 – PVDF SuperFlex® Industrial Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
111-0188031	3/16"	0.188	± .005"	0.125	± .005	0.031	600	41	3000	207	4.78	3.18	0.79
111-0250031	1/4"	0.250	± .005"	0.188	± .005	0.031	440	30	2200	152	6.35	4.78	0.79
111-0375031	3/8"	0.375	± .005"	0.312	± .005	0.031	280	19	1400	97	9.53	7.92	0.79

111 – PVDF SuperFlex® Heavy Wall Fractional Size Tubing

PN	Order Size	Nominal O.D.		Nominal I.D.		Reference Wall	Working Pressure		Burst Pressure		Metric (mm)		
	Inch	Inch	Tolerance	Inch	Tolerance	Inch	PSI/72˚F	Bar/23˚C	PSI/72˚F	Bar/23˚C	O.D.	I.D.	Wall
111-0250062	1/4”	0.250	± .005"	0.125	± .005	0.062	950	65	4750	327	6.35	3.18	1.57
111-0375062	3/8”	0.375	± .005"	0.250	± .005	0.062	600	41	3000	207	9.52	6.35	1.57
111-0500062	1/2"	0.500	± .005"	0.375	± .005	0.062	440	30	2200	152	12.7	9.52	1.57

Continuous Operating Temperature: -80 to 265˚F/-62 to 130˚C
Minimum quantities may apply.

Working pressure calculated using a Safety Factor of 5. Note other manufacturers may use a Safety Factor of 4. Custom packaging and sizes are quoted upon request.

Heat Shrink Tubing

Fluoropolymer heat shrink products are excellent in corrosive environments. They are abrasive and shock resistant, flexible, and non-flammable. PTFE will withstand long-term exposure to temperatures in excess of 500°F. It is available in a 2:1 and 4:1 ratio, while FEP is available in a 1.3:1 and 1.6:1 ratio. However, FEP only operates in temperatures up to 400°F. All of the these products meet the industry standard AMS-DTL-23053 for the specified material, sizes and shrink ratio.

In addition, Parker TexLoc offers ETFE heat shrink with a shrink ratio of 1.5:1. This product is a non-standard and may require a minimum run quantity if not available from stock. However, it also meets the industry standard AMS-DTL-23053.

Other heat shrinkable products offered by Parker TexLoc are FEP large diameter Roll Covers, Double Shrink tubing and PFA heat shrink tubing. PFA heat shrink is a non-standard item.

FEP roll covers are available with a ratio of 1.25:1 and in sizes from 1/2" to 8" expanded ID.

Double Shrink tubing is used to protect cable assemblies from moisture. This product consists of an outer layer of PTFE Heat Shrink with an inner layer of FEP tubing that melts when heated. The FEP encapsulates wires and assemblies, thus creating a moisture barrier.

PFA heat shrink is used when you need the temperature range of PTFE and the clarity of FEP. PFA heat shrink is available with a 1.3/1 or 1.67/1 shrink ratio.

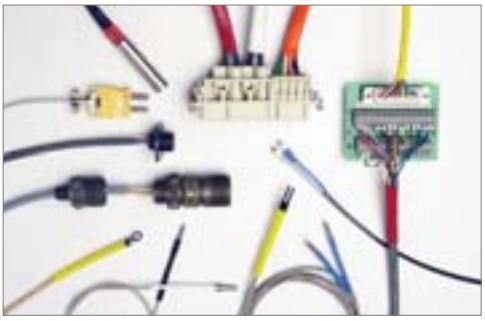
Standard Heat Shrink Products	Continuous Use Temperature	Shrink Temperature
PTFE H.S., 4:1 Shrink PTFE 2:1 H.S., Standard Wall – Insulation PTFE 2:1 H.S., Thin Wall – Insulation PTFE 2:1 H.S., Light Wall – Insulation PTFE 2:1 H.S., Fractional Insulation, SW & TW	-100 to 500°F/-75 to 260°C	662°F/350°C for 10/minutes
FEP H.S., 1.3:1 Shrink FEP H.S., 1.6:1 Shrink	-100 to 400°F/-75 to 231°C	1" Dia. and below – 410°F/210°C Over 1" Dia. – 430°F/221°C
FEP Roll Cover	-100 to 400°F/-75 to 231°C	347°F/175°C for 10/minutes
PTFE/FEP Double Shrink, (PTFE Outside-FEP Inside)	-100 to 450°F/-75 to 231°C	680°F/360°C
Custom Heat Shrink Products	**Continuous Use Temperature**	**Shrink Temperature**
PTFE 2:1 H.S., Heavy Wall, Quoted on Request	-100 to 500°F/-75 to 260°C	662°F/350°C for 10/minutes
ETFE H.S., 1.5:1 Shrink, Quoted on Request	-100 to 302°F/-73 to 150°C	347°F/175°C for 10/minutes
PFA Heat Shrink, Quoted on Request	-100 to 500°F/-75 to 260°C	400°F/204°C for 10/minutes

PTFE Fractional Heat Shrink Tubing (2:1)

Size (Inch)	Min Expanded ID	Max Recovered ID	Standard Wall			Thin Wall			Light Wall		
			Mil Spec*	Part Number	Nom Rec. Wall	Mil Spec*	Part Number	Nom. Rec. Wall	Mil Spec*	Part Number	Nom. Rec. Wall
1/8"	.215	.130	-215	HS2TFS1/8	.020 ± .004	-319	HS2TFT1/8	.015 ± .003	-415	HS2TFL1/8	.008 ± .002
1/4"	.410	.260	-222	HS2TFS1/4	.020 ± .004	-326	HS2TFT1/4	.015 ± .004	-422	HS2TFL1/4	.010 ± .003
5/16"	.470	.329	-225	HS2TFS5/16	.020 ± .004	-329	HS2TFT5/16	.015 ± .004	-425	HS2TFL5/16	.012 ± .003
3/8"	.560	.399	-228	HS2TFS3/8	.025 ± .006		HS2TF 3/8	.015 ± .004			
7/16"	.655	.462	-229	HS2TFS7/16	.025 ± .006		HS2TFT7/16	.018 ± .004			
1/2"	.750	.524	-230	HS2TFS1/2	.025 ± .006		HS2TFT1/2	.018 ± .004			
5/8"	.930	.655	-231	HS2TFS5/8	.030 ± .006		HS2TF 5/8	.020 ± .004			
3/4"	1.125	.786	-232	HS2TFS3/4	.035 ± .008		HS2TFT3/4	.025 ± .004			
7/8"	1.130	.911	-233	HS2TFS7/8	.035 ± .008		HS2TFT7/8	.025 ± .004			
1"	.1.500	1.036	-234	HS2TFS1.00	.035 ± .008		HS2TFT1.00	.025 ± .004			

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C. Dielectric Strength: ≥ 1,400 V/M*. PTFE Fractional Heat Shrink tubing is available in stock packaging of 4-ft. straight lengths. Minimum quantities may apply. Custom packaging, sizes, lengths and colors are quoted upon request.

Specifications: Standard Wall – AMS-DTL-23053/12, Class 2; Thin Wall – AMS-DTL-23053/12, Class 3; Light Wall – AMS-DTL-23053/12, Class 4



PTFE Fractional Heat Shrink Tubing (2:1), Industrial Heavy Wall

Size (inch)	Mil Spec*	Part Number	Minimum Expanded ID	Maximum Recovered ID	Nom. Recovered Wall	Wall Tolerance Recovered
1/8"	-101	HS2TFI1/8	.166	.130	.030	± .005
3/16"	-102	HS2TFI3/16	.250	.193	.030	± .005
1/4"	-103	HS2TFI1/4	.333	.257	.030	± .005
5/16"	-104	HS2TFI5/16	.415	.320	.030	± .005
3/8"	-105	HS2TFI3/8	.498	.383	.030	± .005
7/16"	-106	HS2TFI7/16	.580	.448	.030	± .006
1/2"	-107	HS2TFI1/2	.666	.510	.030	± .006
9/16"	-108	HS2TFI9/16	.748	.572	.030	± .006
5/8"	-109	HS2TFI5/8	.830	.637	.030	± .006
11/16"	-110	HS2TFI11/16	.915	.700	.032	± .006
3/4"	-111	HS2TFI3/4	1.000	.764	.040	± .007
7/8"	-112	HS2TFI7/8	1.170	.891	.045	± .007
1"	-113	HS2TFI1.00	1.330	1.020	.050	± .008

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C. Dielectric Strength: ≥ 1,400 V/M*. PTFE Fractional Heat Shrink tubing is available in stock packaging of 4-ft. straight lengths. Minimum quantities may apply. Custom packaging, sizes, lengths and colors are quoted upon request.

Specification: AMS-DTL-23053/12, Class 1

*Per ASTM D 149 Short Term Test of 10 Mil Thickness (Volts/Mil)

PTFE AWG Heat Shrink Tubing

Standard Wall (2:1)

Size (AWG)	Min Exp ID	Max Rec ID	Standard Wall		
			Mil Spec*	Part Number	Nom. Rec. Wall
24	.050	.027	-201	HS2TFS24	.012 ± .002
22	.055	.032	-202	HS2TFS22	.012 ± .002
20	.060	.039	-203	HS2TFS20	.016 ± .003
19	.065	.043	-204	HS2TFS19	.016 ± .003
18	.076	.049	-205	HS2TFS18	.016 ± .003
17	.085	.054	-206	HS2TFS17	.016 ± .003
16	.093	.061		HS2TFS16	.016 ± .003
15	.110	.067	-207	HS2TFS15	.016 ± .003
14	.120	.072	-208	HS2TFS14	.016 ± .003
13	.140	.080	-210	HS2TFS13	.016 ± .003
12	.150	.089	-211	HS2TFS12	.016 ± .003
11	.170	.101	-212	HS2TFS11	.016 ± .003
10	.191	.112	-213	HS2TFS10	.016 ± .003
9	.205	.124	-214	HS2TFS09	.020 ± .004
8	.240	.141	-216	HS2TFS08	.020 ± .004
7	.270	.158	-217	HS2TFS07	.020 ± .004
6	.302	.178	-218	HS2TFS06	.020 ± .004
5	.320	.198	-219	HS2TFS05	.020 ± .004
4	.370	.224	-220	HS2TFS04	.020 ± .004
3	.390	.249	-221	HS2TFS03	.020 ± .004
2	.430	.278	-223	HS2TFS02	.020 ± .004
1	.450	.311	-224	HS2TFS01	.020 ± .004
0	.470	.347	-226	HS2TFS00	.020 ± .004

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C. Dielectric Strength: ≥ 1,400 V/M*. Minimum quantities may apply. Custom packaging, sizes, lengths, and colors are quoted upon request.

Specifications: Standard Wall – AMS-DTL-23053/12, Class 2

Thin Wall (2:1)

Size (AWG)	Min Exp ID	Max Rec ID	Thin Wall		
			Mil Spec*	Part Number	Nom. Rec. Wall
30	.034	.015	-301	HS2TFT30	.009 ± .002
28	.038	.018	-302	HS2TFT28	.009 ± .002
26	.046	.022	-303	HS2TFT26	.010 ± .003
24	.050	.027	-304	HS2TFT24	.010 ± .002
22	.055	.032	-305	HS2TFT22	.012 ± .003
20	.060	.039	-306	HS2TFT20	.012 ± .003
19	.065	.043	-307	HS2TFT19	.012 ± .003
18	.076	.049	-308	HS2TFT18	.012 ± .003
17	.085	.054	-309-	HS2TFT17	.012 ± .003
16	.093	.061	310	HS2TFT16	.012 ± .003
15	.110	.067	-311	HS2TFT15	.012 ± .003
14	.120	.072	-312	HS2TFT14	.012 ± .003
13	.140	.080	-313	HS2TFT13	.012 ± .003
12	.150	.089	-314	HS2TFT12	.012 ± .003
11	.170	.101	-316	HS2TFT11	.012 ± .003
10	.191	.112	-317	HS2TFT10	.012 ± .003
9	.205	.124	-318	HS2TFT09	.015 ± .004
8	.240	.141	-320	HS2TFT08	.015 ± .004
7	.270	.158	-321	HS2TFT07	.015 ± .004
6	.302	.178	-322	HS2TFT06	.015 ± .004
5	.320	.198	-323	HS2TFT05	.015 ± .004
4	.370	.224	-324	HS2TFT04	.015 ± .004
3	.390	.249	-325	HS2TFT03	.015 ± .004
2	.430	.278	-327	HS2TFT02	.015 ± .004
1	.450	.311	-328	HS2TFT01	.015 ± .004
0	.470	.347	-330	HS2TFT00	.015 ± .004

Specifications: Standard Wall – AMS-DTL-23053/12, Class 3

Light Wall (2:1)

Size (AWG)	Min Exp ID	Max Rec ID	Light Wall		
			Mil Spec*	Part Number	Nom. Rec. Wall
24	.050	.025	-401	HS2TFL24	.006 ± .002
22	.055	.031	-402	HS2TFL22	.006 ± .002
20	.060	.038	-403	HS2TFL20	.006 ± .002
19	.065	.043	-404	HS2TFL19	.006 ± .002
18	.076	.046	-405	HS2TFL18	.006 ± .002
17	.085	.054	-406	HS2TFL17	.006 ± .002
16	.093	.057	-407	HS2TFL16	.006 ± .002
15	.110	.063	-408	HS2TFL15	.006 ± .002
14	.120	.072	-409	HS2TFL14	.008 ± .002
13	.140	.080	-410	HS2TFL13	.008 ± .002
12	.150	.089	-411	HS2TFL12	.008 ± .002
11	.170	.099	-412	HS2TFL11	.008 ± .002
10	.191	.110	-413	HS2TFL10	.008 ± .002
9	.205	.122	-414	HS2TFL09	.008 ± .002
8	.240	.139	-416	HS2TFL08	.008 ± .002
7	.270	.154	-417	HS2TFL07	.008 ± .002
6	.302	.172	-418	HS2TFL06	.010 ± .003
5	.320	.192	-419	HS2TFL05	.010 ± .003
4	.370	.214	-420	HS2TFL04	.010 ± .003
3	.390	.241	-421	HS2TFL03	.010 ± .003
2	.430	.270	-423	HS2TFL02	.010 ± .003
1	.450	.301	-424	HS2TFL01	.010 ± .003
0	.470	.347	-426	HS2TFL00	.012 ± .003

Specifications: Light Wall – AMS-DTL-23053/12, Class 4

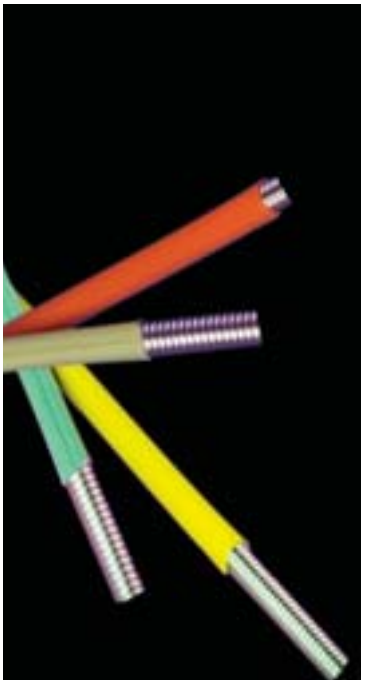
For full recovery, expanded diameter should be 50% larger than the diameter of the object to be recovered over.

PTFE Industrial Wall Heat Shrink Tubing (4:1)

Size (inch)	Mil Spec*	Part Number	Minimum Expanded ID	Maximum Recovered ID	Nom. Recovered Wall	Wall Tolerance Recovered
5/64"	-501	HS4TFI5/64	.078	.025	.009	± .002
1/8"	-502	HS4TFI1/8	.125	.037	.012	± .002
3/16"	-503	HS4TFI3/16	.187	.050	.012	± .002
1/4"	-504	HS4TFI1/4	.250	.063	.012	± .002
5/16"	-505	HS4TFI5/16	.312	.078	.012	± .002
3/8"	-506	HS4TFI3/8	.375	.096	.012	± .002
7/16"	-507	HS4TFI7/16	.438	.112	.012	± .002
1/2"	-508	HS4TFI1/2	.500	.144	.015	± .004
5/8"	-510	HS4TFI5/8	.625	.178	.015	± .004
3/4"	-512	HS4TFI3/4	.750	.224	.015	± .004
7/8"	-513	HS4TFI7/8	.875	.244	.015	± .004
1"	-514	HS4TFI1.00	1.000	.278	.015	± .004
1-1/4"	-515	HS4TFI1.25	1.250	.347	.015	± .004

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C. Dielectric Strength: ≥ 1,400 V/M*. Heat Shrink tubing is supplied in 4-ft. straight lengths. Minimum quantities may apply. Custom packaging, sizes, lengths and colors are quoted upon request.

*Per ASTM D 149 Short Term Test of 10 Mil Thickness (Volts/Mil)



FEP AWG Heat Shrink Tubing (1.3:1)

Size (AWG)	Mil Spec*	Part Number	Minimum Expanded ID	Maximum Recovered ID	Nom. Recovered Wall	Wall Tolerance Recovered
24	-101	HS1.3FEP24	.031	.027	.008	± .002
22	-102	HS1.3FEP22	.036	.032	.008	± .002
20	-103	HS1.3FEP20	.045	.039	.008	± .002
18	-104	HS1.3FEP18	.060	.049	.008	± .002
16	-105	HS1.3FEP16	.075	.061	.009	± .002
14	-106	HS1.3FEP14	.092	.072	.009	± .002
12	-107	HS1.3FEP12	.115	.089	.009	± .002
10	-108	HS1.3FEP10	.141	.114	.010	± .003
9	-109	HS1.3FEP09	.158	.124	.010	± .003
8	-110	HS1.3FEP08	.180	.143	.010	± .003
7	-111	HS1.3FEP07	.197	.158	.011	± .004
6	-112	HS1.3FEP06	.225	.180	.011	± .004
5	-113	HS1.3FEP05	.248	.198	.011	± .004
4	-114	HS1.3FEP04	.290	.226	.011	± .004
3	-115	HS1.3FEP03	.310	.249	.011	± .003
2	-116	HS1.3FEP02	.365	.280	.012	± .004
1	-117	HS1.3FEP01	.400	.311	.012	± .004
0	-118	HS1.3FEP00	.440	.349	.012	± .004

Continuous Operating Temperature: -100 to 400˚F/-75 to 200˚C. Dielectric Strength: >2,000 V/M*. Heat Shrink tubing is supplied in 4-ft. straight lengths. Minimum quantities may apply. Custom packaging, sizes, lengths and colors are quoted upon request.

Specifications: AMS-DTL-23053/11, Class 1, also meets ASTM D2902 Type II

FEP Heat Shrink is easier to shrink than PTFE because of the lower shrinking temperature. However, FEP also has a lower operating temperature.

FEP Fractional Heat Shrink Tubing (1.3:1)

Size (inch)	Mil Spec*	Part Number	Minimum Expanded ID	Maximum Recovered ID	Nom. Recovered Wall	Wall Tolerance Recovered
3/8"	-119	HS1.3FEP3/8	.500	.383	.015	± .004
7/16"	-120	HS1.3FEP7/16	.580	.448	.020	± .004
1/2"	-121	HS1.3FEP1/2	.666	.510	.020	± .004
5/8"	-122	HS1.3FEP5/8	.830	.637	.025	± .004
3/4"	-123	HS1.3FEP3/4	1.000	.764	.030	± .004
7/8"	-124	HS1.3FEP7/8	1.170	.891	.035	± .004
1"	-126	HS1.3FEP1.00	1.330	1.020	.035	± .004
1-1/8"	-133	HS1.3FEP1.13	1.500	1.145	0.035	± .004
1-1/4"	-134	HS1.3FEP1.25	1.666	1.270	0.035	± .004
1-3/8"	-135	HS1.3FEP1.38	1.833	1.390	0.035	± .004
1-1/2"	-136	HS1.3FEP1.50	2.000	1.520	0.035	± .004

Continuous Operating Temperature: -100 to 400˚F/-75 to 200˚C, Dielectric Strength: ≥2,000 V/M*. Heat Shrink tubing is supplied in 4-ft. straight lengths. Minimum quantities may apply. Custom packaging, sizes, lengths and colors are quoted upon request.

Specifications: AMS-DTL-23053/11, Class1, also meets ASTM D2902 Type II

*Per ASTM D 149 Short Term Test of 10 Mil Thickness (Volts/Mil)

FEP Fractional Heat Shrink Tubing (1.6:1)

Size (inch)	Mil Spec*	Part Number	Minimum Expanded ID	Maximum Recovered ID	Nom. Recovered Wall	Wall Tolerance Recovered
3/32"	-201	HS1.6FEP3/32	.093	.056	.008	± .003
1/8"	-202	HS1.6FEP1/8	.125	.075	.010	± .003
3/16"	-203	HS1.6FEP3/16	.188	.115	.010	± .003
1/4"	-204	HS1.6FEP1/4	.250	.150	.010	± .003
3/8"	-205	HS1.6FEP3/8	.375	.225	.012	± .003
1/2"	-206	HS1.6FEP1/2	.500	.300	.015	± .004
3/4"	-207	HS1.6FEP3/4	.750	.450	.020	± .004
1"	-208	HS1.6FEP1.00	1.000	.600	.025	± .005
1-1/2"	-209	HS1.6FEP1.25	1.500	.900	.030	± .005
2"	-210	HS1.6FEP1.50	2.000	1.200	.030	± .005

Continuous Operating Temperature: -100 to 400˚F/-75 to 200˚C. Dielectric Strength: ≥2,000 V/M*. Heat Shrink tubing is supplied in 4-ft. straight lengths. Minimum quantities may apply. Custom packaging, sizes, lengths and colors are quoted upon request.

Specification: AMS-DTL-23053/11, Class 2

Custom sizes and colors quoted upon request

FEP Roll Cover Heat Shrink (1.25:1)

Size (inch)	Part Number	Minimum Expanded ID	Maximum Recovered ID	Nom. Recovered Wall	Wall Tolerance Recovered
1/2"	HS1.25FEP1/2	.550	.440	.020	± .004
5/8"	HS1.25FEP5/8	.700	.540	.020	± .004
3/4"	HS1.25FEP3/4	.800	.640	.020	± .004
7/8"	HS1.25FEP7/8	.950	.760	.020	± .004
1"	HS1.25FEP1.00	1.100	.880	.020	± .004
1 1/4"	HS1.25FEP1.25	1.300	1.000	.020	± .004
1-1/2"	HS1.25FEP1.50	1.700	1.300	.020	± .004
2"	HS1.25FEP2.00	2.100	1.700	.020	± .004
2-1/4"	HS1.25FEP2.25	2.260	2.000	.020	± .004
2-1/2"	HS1.25FEP2.50	2.600	2.100	.020	± .004
3"	HS1.25FEP3.00	3.100	2.600	.020	± .004
3-1/2"	HS1.25FEP3.50	3.500	3.100	.020	± .004
4"	HS1.25FEP4.00	4.300	3.500	.020	± .004
5"	HS1.25FEP5.00	5.200	4.300	.020	± .004
6"	HS1.25FEP6.00	6.200	5.200	.020	± .004
7"	HS1.25FEP7.00	7.200	6.200	.020	± .004
8"	HS1.25FEP8.00	8.300	7.200	.020	± .004

Continuous Operating Temperature: -100 to 400˚F/-75 to 200˚C. Dielectric Strength: ≥ 2,000 V/M*. Roll Cover is supplied in 1- to 10-ft. straight lengths. Minimum quantities may apply. Custom packaging, sizes, lengths and colors are quoted upon request.

Specification: ASTM D2902 TYPE II

*Per ASTM D 149 Short Term Test of 10 Mil Thickness (Volts/Mil)

PTFE/FEP Double Shrink Tubing

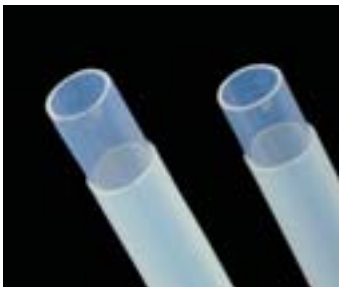
Part Number	Minimum Expanded ID	Maximum Recovered ID	Expanded Nominal Recovered Wall
Standard Wall			
TSSS036	.036	.000	.023
TSSS060	.060	.000	.028
TSSS130	.130	.000	.032
TSSS160	.160	.000	.032
TSSS190	.190	.061	.035
TSSS250	.250	.125	.035
TSSS350	.350	.190	.035
TSSS450	.450	.312	.055
TSSS700	.700	.440	.055
TSSS950	.950	.680	.065
Light Wall			
TSSL065	.065	.000	.015
TSSL115	.115	.045	.015
TSSL130	.130	.060	.015
TSSL180	.180	.065	.015
TSSL190	.190	.070	.015
TSSL240	.240	.150	.020
TSSL350	.350	.210	.025
TSSL480	.480	.315	.032
TSSL700	.700	.500	.040
TSSL1000	1.000	.700	.045

Continuous Operating Temperature: -100 to 450˚F/-75 to 231˚C. Heat Shrink tubing is supplied in 4-ft. straight lengths. Minimum quantities may apply. Custom packaging, sizes, lengths and colors are quoted upon request.

Double Shrink consists of an outer layer of PTFE Heat Shrink with an inner layer of FEP tubing. Double Shrink is especially effective for protecting cable assemblies from moisture.

Key Benefits:

- Protects cables, tubes and other objects
- Increases lubricity for easy sliding
- Almost universal chemical resistance
- Very low moisture absorption
- Good anti-stick/release surface possible



ETFE Heat Shrink offers increased abrasion resistance

ETFE Industrial Wall Heat Shrink Tubing (1.5:1)

Size (inch)	Mil Spec*	Part Number	Minimum Expanded ID	Maximum Recovered ID	Nom. Recovered Wall	Wall Tolerance Recovered
3/32"	-001	HS1.5ETFE3/32	.093	.062	.010	± .003
1/8"	-002	HS1.5ETFE1/8	.125	.083	.010	± .002
3/16"	-003	HS1.5ETFE3/16	.188	.125	.011	± .003
1/4"	-004	HS1.5ETFE1/4	.250	.166	.013	± .003
3/8"	-005	HS1.5ETFE3/8	.375	.250	.013	± .003
1/2"	-006	HS1.5ETFE1/2	.500	.345	.013	± .003
3/4"	-007	HS1.5ETFE3/4	.750	.500	.018	± .004
1"	-008	HS1.5ETFE1.00	1.000	.665	.022	± .004
1-1/4"	-009	HS1.5ETFE1.25	1.250	.835	.030	± .004
1-1/2"	-010	HS1.5ETFE1.50	1.500	1.000	.030	± .004

Continuous Operating Temperature: -148 to 302˚F/-100 to 150˚C. Dielectric Strength: >1,400 V/M*. Heat Shrink tubing is supplied in 4-ft. straight lengths. Minimum quantities may apply. Custom packaging, sizes, lengths and colors are quoted upon request.

Specification: AMS-DTL-23053/14, Class 1

*Per ASTM D 149 Short Term Test of 10 Mil Thickness (Volts/Mil)

Convoluted Tubing Overview

Parker TexLoc is a pioneer in the manufacture of flexible Convoluted and Corrugated tubing products, setting many of the standards for fluid handling in the chemical, pharmaceutical and pulp and paper industry. With years of extensive experience in design, manufacturing and application engineering, Parker TexLoc offers the most comprehensive selection of sizes, custom designs and materials available.

Specialty products include Low Profile Convoluted Tubing, offering a larger I.D. to promote additional flow or Heavy Wall Convoluted to aid in flaring or the attachment of fittings.

Convoluted tubing is made to order. Custom sizes, colors, packaging, and special materials such as PFA and ETFE are quoted upon request.

Convoluted Products	Continuous Use Temperature	Standard Color	Comment
PTFE Convo-Tex™	-100° to 500°F/-75° to 260°C	Natural/ Milky White	PTFE – PTFE has better flex properties than any other resin.
PTFE Low Profile PTFE Heavy Wall	-100° to 500°F/-75° to 260°C	Natural/ Milky White	PTFE – Low Profile offers a larger I.D. for increased flow. Heavy Wall offers a thicker wall to handle higher vacuum and/or pressures.
FEP Convo-Tex™ FEP Convo-Flon™	-100° to 400˚F/-75° to 204˚C	Natural/ Clear	FEP – Standard is natural. FEP is the clearest resin offered by Parker TexLoc.
M81914/1 M81914/2	-100° to 500°F/-75° to 260°C	Black	PTFE – /1 is standard convolution, /2 is close convolution.
M81914/3 M81914/4	-100° to 400˚F/-75° to 204˚C	Natural/ Clear	FEP – /3 is standard convolution, /4 is close convolution. Can be supplied in long, continuous lengths.
M81914/5 M81914/6	-148° to 348˚F/-100° to 176˚C	Natural/ Clear	ETFE – /5 is close convolution, /6 is standard convolution. Extreme abrasion resistance.

Convoluted product styles can be manufactured in PTFE, FEP, PFA or ETFE. All of these products are available with wire reinforcement on the inside or outside diameter.

PTFE and PFA convoluted tubing can be supplied as a fully conductive tube to dissipate static build-up and reduce the risk of discharge or explosion. PTFE is also available with a conductive liner. Colors are available on request.

Fully Conductive & Conductive I.D. Tubing

Parker TexLoc offers a wide variety of anti-static and conductive convoluted tubing to fit each customer's specific needs. This tubing is supplied as a conductive liner or as a fully conductive tube.

Parker TexLoc fully conductive tubing is available in PTFE and PFA. Industrial grade conductivity conforms to AMS-H-27267 having a minimum conductance of 10-20 micro amps with 1,000 vdc applied over a 14" length. Upon special request an ISO grade is available conforming to a maximum of a 1 mega ohm resistance over a one meter length when tested in accordance with ISO 8031.

TexLoc specifies conductive tubing for combustible fluid transfer applications, dissipating static charge build-up to ground which reduces the risk of discharge or explosion.

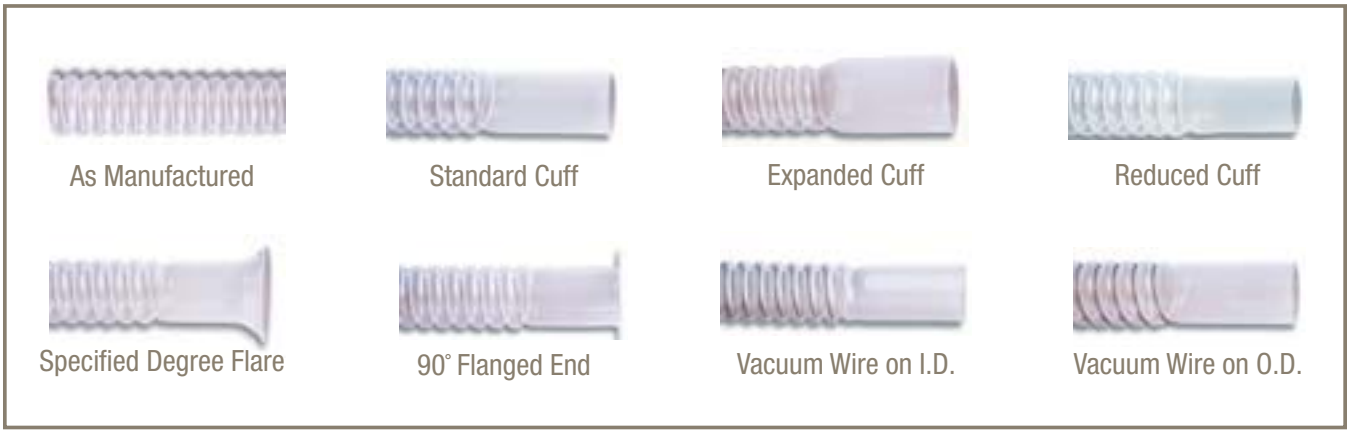
Fully Conductive and Conductive I.D. tubing are also available in smoothbore tubing.

Value-Added Capabilities for Convoluted Tubing

Secondary operations are offered in Parker TexLoc's on-site Value-Added Service department on all resin types.

- Close convolutions
- Reverse convolutions
- Custom convolutions
- Bellows
- Cuffing
- Flanging
- Flaring
- Forming
- Tube slitting
- Prototyping
- Jacketing
- Slitting
- Wire reinforcement
- Assemblies with fittings

Cuffing Styles



Convo-Tex™ Tubing Products – PTFE

Convo-Tex™ is our most popular PTFE cuffed convoluted tubing but it is also available in coils. It is normally supplied in natural PTFE, but Convo-Tex™ is available in FEP, PFA, MFA, ETFE, ECTFE or PVDF. Cuffs can be sized on the inside or outside diameter.

In applications where a tighter bend radius, increased pressure handling or crush resistance is needed, Convo-Tex™ can be reinforced with a wire wrap. In addition, our value added service department can modify the cuffs to assist in connecting to your specific application or with adding flanges or fittings. They also offer cutting, drilling, flaring, forming, kitting and slitting.

Some of the products on this page may not be considered a standard item. Contact Customer Service for details.

PTFE Convo-Tex™ Convoluted

(Standard tubing is natural)

Part Number	Size	Standard Cuff I.D. "A"		Standard Cuff Length "B"		Wall Thickness "C"		Min. Inside Diameter "D"		Max. Inside Diameter "D"		Max. Outside Diameter "E"		**Min. Bend Radius	
		Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM
CV01-1/8-NT	CONV-2	1/8	3.18	3/4	19.1	0.010	0.25	0.083	2.10	0.087	2.21	.153	3.87	0.375	9.5
CV01-1/4-NT	CONV-4	1/4	6.35	3/4	19.1	0.015	0.38	0.181	4.60	0.188	4.78	.320	813	0.500	12.7
CV01-5/16-NT	CONV-5	5/16	7.94	1	25.4	0.020	0.51	0.273	6.93	0.281	7.1	.414	10.5	0.750	19.1
CV01-3/8-NT	CONV-6	3/8	9.53	1	25.4	0.020	0.51	0.303	7.7	0.312	7.9	.450	11.4	1.750	44.4
CV01-1/2-NT	CONV-8	1/2	12.7	1	25.4	0.020	0.51	0.425	10.8	0.438	11.1	.590	15.0	1.250	31.2
CV01-5/8-NT	CONV-10	5/8	15.9	1-1/4	31.8	0.025	0.64	0.485	12.3	0.500	12.7	.660	16.8	1.500	38.1
CV01-3/4-NT	CONV-12	3/4	19.1	1-1/2	38.1	0.023	0.58	0.608	15.4	0.625	15.9	.780	19.8	1.750	44.4
CV01-1.00-NT	CONV-16	1	25.4	2	50.8	0.030	0.76	0.849	21.6	0.875	22.2	1.100	27.9	2.250	57.2
CV01-1.25-NT	CONV-20	1-1/4	31.8	2-1/2	63.5	0.035	0.89	1.150	29.2	1.190	30.2	1.560	39.6	2.750	69.9
CV01-1.50-NT	CONV-24	1-1/2	38.1	2-1/2	63.5	0.040	1.02	1.410	35.8	1.490	37.8	1.910	48.5	3.000	76.2
CV01-2.00-NT	CONV-32	2	50.8	2-1/2	63.5	0.043	1.09	1.955	49.7	1.985	50.4	2.450	62.2	4.250	107.9
CV01-2.50-NT	CONV-40	2-1/2	63.5	2-1/2	76.2	0.062	1.57	2.460	62.5	2.540	64.5	3.210	81.6	5.000	127.0
CV01-3.00-NT	CONV-48	3	76.2	2-1/2	76.2	0.062	1.57	2.940	74.7	3.060	77.7	3.750	95.3	7.000	177.8
CV01-4.00-NT	CONV-64	4	101.6	2-1/2	76.2	0.070	1.78	3.940	100.1	4.060	103.1	4.750	120.6	9.000	228.6

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C
** Minimum 36" length.

Standard Cuffs for **Convo-TEX™**, **Low Profile** and **Heavy Wall** are sized on the **I.D.**

With Cuffs

Without Cuffs

Low Profile PTFE Convoluted (Larger Inside Diameter)

TexFluor™ Low Profile PTFE convoluted is used when improved flow is required. The larger inside diameter allows liquids to travel at a much faster rate. It also promotes easy cleaning. Low profile is available in any of our fluoroplastic resins.

Low Profile PTFE Convoluted

(Standard tubing is natural)

Part Number	Size To Order	Min. Inside Diameter		Max. Inside Diameter		Max. Outside Diameter		Nominal Wall thickness		**Min. Bend Radius	
		Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM
CVL01-3/8-NT	3/8"	0.394	10.0	0.406	10.3	0.560	14.2	0.023	.58	0.500	13
CVL01-1/2-NT	1/2"	0.490	12.5	0.510	13.0	0.700	17.8	0.025	.64	0.750	19
CVL01-3/4-NT	3/4"	0.740	18.8	0.760	19.3	0.980	24.9	0.035	.89	1.88	48
CVL01-1.00-NT	1"	0.990	25.1	1.010	25.7	1.260	32.0	0.035	.89	2.25	57
CVL01-1.25-NT	1-1/4"	1.210	30.7	1.250	31.8	1.539	39.1	0.035	.89	3.00	76
CVL01-1.50-NT	1-1/2"	1.520	38.6	1.540	39.1	1.870	47.5	0.044	1.12	3.50	89
CVL01-1.75-NT	1-3/4"	1.690	42.9	1.750	44.5	2.100	53.3	0.040	1.02	4.25	108
CVL01-2.00-NT	2"	2.010	51.1	2.030	51.6	2.370	60.2	.043	1.09	4.75	121

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C
** Minimum 36" length.

Some of the products on this page may not be considered a standard item. Contact Customer Service for details.

Heavy Wall PTFE Convoluted Tubing

TexFluor™ Heavy Wall PTFE convoluted tubing is available in sizes from 1/4" inside diameter up to a 4" inside diameter. The increased wall thickness allows Heavy Wall TexFluor™ PTFE convoluted tubing to handle environments of high vacuum or applications where very high pressures are involved. Also, the increased wall thickness reinforces the strength of the tube, allowing for stainless steel braiding or a neoprene jacket. If flanging or flaring of the cuffs is necessary, the thicker wall aids in the process.

Heavy Wall PTFE Convoluted

(Standard tubing is natural)

Part Number	Size To Order	Min. Inside Diameter		Max. Inside Diameter		Max. Outside Diameter		Nominal Wall thickness		**Min. Bend Radius	
		Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM
CVH01-1/4-NT	1/4"	0.257	6.5	0.265	6.7	0.415	10.5	.025	.38	0.750	19
CVH01-3/8-NT	3/8"	0.335	8.5	0.345	8.8	0.510	13.0	.025	.64	1.00	25
CVH01-1/2-NT	1/2"	0.454	11.5	0.466	11.8	0.700	17.8	.035	.89	1.50	38
CVH01-3/4-NT	3/4"	0.683	17.4	0.701	17.8	1.010	25.7	0.50	1.27	1.88	48
CVH01-1.00-NT	1"	0.841	21.4	0.859	21.8	1.210	30.7	.053	1.35	2.50	64
CVH01-1.25-NT	1-1/4"	1.125	28.6	1.145	29.1	1.610	40.9	.062	1.57	3.13	79
CVH01-1.50-NT	1-1/2"	1.420	36.1	1.480	37.6	1.880	47.8	.062	1.57	3.75	95
CVH01-1.75-NT	1-3/4"	1.540	39.1	1.600	40.6	2.100	53.3	.062	1.57	4.50	114
CVH01-2.00-NT	2"	1.770	45.0	1.830	46.5	2.432	61.8	.062	1.57	4.75	120
CVH01-2.50-NT	2-1/2"	2.460	62.5	2.540	64.5	3.210	81.5	.062	1.57	5.00	127
CVH01-3.00-NT	3"	2.940	74.7	3.060	77.7	3.750	95.3	0.062	1.57	7.00	178
CVH01-4.00-NT	4"	3.940	100	4.060	103	4.750	121	.070	1.77	9.00	229

Continuous Operating Temperature: -100 to 500˚F/-75 to 260˚C
** Minimum 36" length.

FEP Convoluted Tubing Products

Parker TexLoc FEP Convoluted Tubing is available in Convo-Flex (dimensions similar to PTFE Convo-Tex) and operates in temperatures up to 400˚F/204˚C. FEP is ideal for applications where high visibility or long, continuous tubing lengths are required.

The clarity of FEP allows operators to visually monitor media passing through the tubing.

FEP Convo-Flex is our standard convoluted FEP tube and FEP Convo-Flon™ is a modified version sized on the outside diameter.

Some of the products on this page may not be considered a standard item. Contact Customer Service for details.

FEP Convo-Flex Convoluted

(Standard tubing is natural)

Part Number	Size To Order	Standard Cuff I.D. "A"		Standard Cuff Length "B"		Wall Thickness "C"		Min. Inside Diameter "D"		Max. Inside Diameter "D"		Max. Outside Diameter "E"		**Min. Bend Radius	
		Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM
CV03-1/4-NT	1/4"	1/4	6.35	3/4	19.1	0.020	0.380	0.251	6.38	0.265	6.73	0.405	10.3	0.365	9
CV03-5/16-NT	5/16"	5/16	7.94	1	25.4	0.023	0.508	0.273	6.93	0.281	7.14	0.424	10.8	0.500	13
CV03-3/8-NT	3/8"	3/8	9.53	1	25.4	0.023	0.508	0.364	9.25	0.375	9.53	0.530	13.5	0.875	22
CV03-1/2-NT	1/2"	1/2	12.7	1	25.4	0.025	0.635	0.485	12.3	0.500	12.7	0.660	16.8	0.625	16
CV03-5/8-NT	5/8"	5/8	15.9	1-1/4	31.8	0.025	0.635	0.609	15.5	0.625	15.9	0.780	19.8	1.500	38
CV03-3/4-NT	3/4"	3/4	19.1	1-1/2	38.1	0.025	0.635	0.730	18.5	0.750	19.1	0.975	24.8	3.500	89
CV03-1.00-NT	1"	1	25.4	2	50.8	0.030	0.762	0.975	24.8	1.000	25.4	1.26	32.0	2.250	57
CV03-1.25-NT	1-1/4"	1-1/4	31.8	2-1/2	63.5	0.040	0.889	1.210	30.7	1.250	31.8	1.54	39.1	2.500	64
CV03-1.50-NT	1-1/2"	1-1/2	38.1	2-1/2	63.5	0.045	1.02	1.49	37.8	1.53	38.9	1.94	49.2	3.000	76
CV03-2.00-NT	2"	2	50.8	2-1/2	63.5	0.045	1.02	1.99	50.5	2.02	51.3	2.37	60.2	4.25	108
CV03-2.50-NT	2-1/2"	2-1/2	63.5	3	73.2	0.065	1.65	2.44	61.9	2.50	63.5	3.00	76.2	6.50	165
CV03-3.00-NT	3"	3	76.2	3	73.2	0.065	1.65	2.92	74.2	3.02	76.7	3.74	95.0	7.50	191

Continuous Operating Temperature: -100 to 400˚F/-75 to 204˚C
** Minimum 36" length.

Standard Cuffs for **Convo-Flex** are sized on the **I.D.**

Without Cuffs

With Cuffs

FEP Convo-Flon™ Convoluted

(Standard tubing is natural)

Part Number	Size	Standard Cuff O.D. "D"		Standard Cuff Length "E"		Wall Thickness "C"		Min. Inside Diameter "B"		Max. Inside Diameter "B"		Max. Outside Diameter "A"		**Min. Bend Radius	
		Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM
Contact Customer Service	1/4 x 3/8	1/4	6.35	3/4	19.1	0.020	.508	0.251	6.38	0.265	6.73	0.375	9.53	0.625	16
	3/8 x 1/2	5/16	7.94	1	25.4	0.023	.584	0.364	9.25	0.375	9.53	0.500	12.7	0.875	22
	1/2 x 5/8	3/8	9.53	1	25.4	0.025	.635	0.480	12.2	0.500	12.7	0.625	15.9	1.250	32
	5/8 x 3/4	1	25.4	2	50.8	0.025	.635	0.609	15.5	0.625	15.9	0.750	19.1	1.500	38
	3/4 x 7/8	1-1/4	31.8	2-1/2	63.5	0.025	.635	0.730	18.5	0.750	19.1	0.875	22.2	1.750	44
	.800 x 1	1-1/2	38.1	2-1/2	63.5	0.030	.762	0.800	20.3	0.820	20.8	1.000	25.4	2.250	57
	1-1/4 1-1/2 2	Contact Customer Service for actual dimensions.													

Continuous Operating Temperature: -100 to 400˚F/-75 to 204˚C
** Minimum 36" length.

Standard Cuffs for **Convo-Flon™** are sized on the **O.D.**

Without Cuffs

With Cuffs

AMS-DTL-81914 Tubing Products

PTFE Convoluted Tubing (AMS-DTL-81914/1)

(Standard tubing is black)

Part Number	MIL Spec*	Maximum Inside Diameter		Minimum Inside Diameter		Maximum Outside Diameter		Maximum Wall Thickness		Minimum Bend Radius		Pitch	Weight p/100 ft.	
		Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	±1	Lb.	Kg.
81914/1-1001-0TC	-01	.188	4.78	.181	4.60	.320	8.13	.023	.584	.500	13	8	2.0	2.98
81914/1-1002-0TC	-02	.281	7.14	.273	6.93	.414	10.5	.027	.686	.750	19	7.5	2.9	4.31
81914/1-1003-0TC	-03	.312	7.93	.303	7.70	.450	11.4	.027	.686	.875	22	7.5	3.6	5.36
81914/1-1004-0TC	-04	.375	9.53	.364	9.25	.530	13.5	.029	.737	1.00	25	7	4.2	6.25
81914/1-1005-0TC	-05	.437	11.1	.425	10.8	.590	15.0	.029	.737	1.25	32	7	4.9	7.29
81914/1-1006-0TC	-06	.500	12.7	.485	12.3	.660	16.8	.029	.737	1.50	38	7	5.2	7.74
81914/1-1007-0TC	-07	.625	15.9	.608	15.4	.780	19.9	.035	.889	1.75	44	7	6.9	10.3
81914/1-1008-0TC	-08	.750	19.1	.730	18.5	.975	24.8	.035	.889	1.88	48	6	10.4	15.5
81914/1-1009-0TC	-09	.875	22.2	.850	21.6	1.100	27.9	.035	.889	2.25	57	6	11.3	16.8
81914/1-1010-0TC	-10	1.000	25.4	.975	24.8	1.260	32.0	.035	.889	2.50	64	4.5	12.6	18.8
81914/1-1011-0TC	-11	1.125	28.6	1.10	27.9	1.390	35.3	.035	.889	2.75	70	4.5	13.8	20.5
81914/1-1012-0TC	-12	1.250	31.8	1.21	30.7	1.539	39.1	.035	.889	3.00	76	4	15.5	23.1
81914/1-1013-0TC	-13	1.500	38.1	1.44	36.6	1.850	47.0	.040	1.02	3.75	95	4	21.7	32.3
81914/1-1014-0TC	-14	1.750	44.5	1.69	42.9	2.100	53.3	.045	1.14	4.25	108	4	25.3	37.6
81914/1-1015-0TC	-15	2.000	50.8	1.94	49.3	2.350	59.7	.045	1.14	4.75	121	4	29.0	43.2

Continuous Operating Temperature: -88 to 500˚F/-67 to 260˚C PTFE convoluted tubing is provided in BLACK without cuffs direct from inventory. Black part numbers are designated with "0TC" and Natural part numbers are designated with "NT" after the Mil Spec number (ie 81914/1-1014-NT). Natural and/or custom cuffs are quoted upon request. Stock packaging is random coils.

Specifications: AMS-DTL-81914/1; additional sizes including /2, are also available.

FEP Convoluted Tubing (AMS-DTL-81914/3)

(Standard tubing is natural)

Part Number	MIL Spec*	Maximum Inside Diameter		Minimum Inside Diameter		Maximum Outside Diameter		Maximum Wall Thickness		Minimum Bend Radius		Pitch	Weight p/100 ft.	
		Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	±1	Lb.	Kg.
81914/3-1001-NT	-01	.187	4.75	.181	4.60	.320	8.13	.018	.457	.500	13	8	1.5	2.23
81914/3-1002-NT	-02	.281	7.14	.273	6.93	.414	10.5	.018	.457	.750	19	8	1.7	2.53
81914/3-1003-NT	-03	.312	7.93	.306	7.77	.450	11.4	.018	.457	.750	19	8	1.9	2.83
81914/3-1004-NT	-04	.375	9.53	.364	9.25	.510	13.0	.018	.457	.875	22	8	2.2	3.27
81914/3-1005-NT	-05	.437	11.1	.427	10.9	.571	14.5	.018	.457	.875	22	8	3.1	4.61
81914/3-1006-NT	-06	.500	12.7	.485	12.3	.650	16.5	.023	.584	1.25	32	7	4.0	5.95
81914/3-1007-NT	-07	.625	15.9	.608	15.4	.770	19.6	.023	.584	1.50	38	7	4.8	7.14
81914/3-1008-NT	-08	.750	19.1	.730	18.5	.930	23.6	.023	.584	1.75	44	6	6.1	9.07
81914/3-1009-NT	-09	.875	22.2	.860	21.8	1.073	27.3	.023	.584	2.00	51	5	7.0	10.4
81914/3-1010-NT	-10	1.000	25.4	.975	24.8	1.226	31.1	.023	.584	2.37	60	5	8.5	12.7
81914/3-1011-NT	-11	1.125	28.6	1.105	28.1	1.390	35.3	.023	.584	2.37	60	5	9.3	13.8
81914/3-1012-NT	-12	1.250	31.8	1.210	30.7	1.539	39.1	.023	.584	2.75	70	4	10.9	16.2
81914/3-1013-NT	-13	1.500	38.1	1.437	36.5	1.832	46.5	.023	.584	3.38	86	4	12.6	18.8
81914/3-1014-NT	-14	1.750	44.5	1.688	42.9	2.082	52.9	.023	.584	3.88	98	4	14.8	22.0
81914/3-1015-NT	-15	2.000	50.8	1.937	49.2	2.332	59.2	.023	.584	4.25	108	4	16.8	25.0

Continuous Operating Temperature: -88 to 392˚F/-67 to 200˚C FEP convoluted tubing is provided in NATURAL without cuffs direct from inventory. Natural part numbers are designated with "NT" after the Mil Spec number (ie 81914/3-1014-NT). Colors and/or custom cuffs are quoted upon request. Stock packaging is random coils.

Specifications: AMS-DTL-81914/3; additional sizes including /4, are also available.

AMS-DTL-81914 Tubing Products

ETFE Convoluted Tubing (AMS-DTL-81914/6)

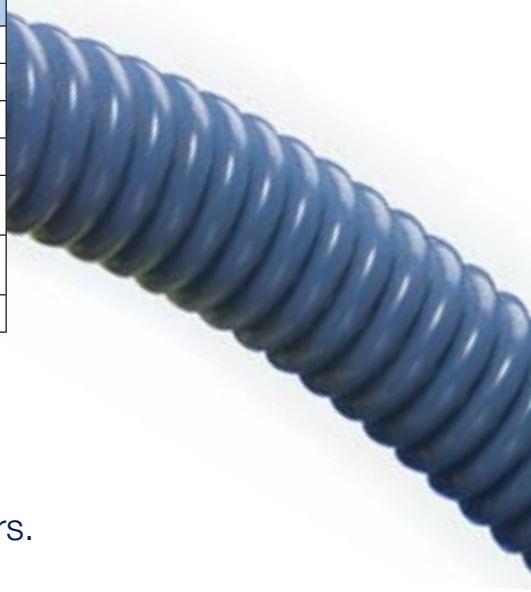
(Standard tubing is natural)

Part Number	MIL Spec*	Maximum Inside Diameter		Minimum Inside Diameter		Maximum Outside Diameter		Maximum Wall Thickness		Minimum Bend Radius		Pitch	Weight p/100 ft.	
		Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	±1	Lb.	Kg.
81914/6-1001-NT	-01	.187	4.77	.181	4.60	.320	8.13	.018	.457	.500	31	8	1.2	1.79
81914/6-1002-NT	-02	.281	7.14	.273	6.93	.414	10.5	.018	.457	.750	19	8	1.4	2.08
81914/6-1003-NT	-03	.312	7.93	.306	7.77	.450	11.4	.018	.457	.750	19	8	1.5	2.23
81914/6-1004-NT	-04	.375	9.53	.359	9.12	.510	13.0	.018	.457	.875	22	8	1.8	2.68
81914/6-1005-NT	-05	.437	11.1	.427	10.9	.571	14.5	.018	.457	.875	22	8	2.5	3.72
81914/6-1006-NT	-06	.500	12.7	.485	12.3	.650	16.5	.023	.584	1.250	32	7	3.2	4.76
81914/6-1007-NT	-07	.625	15.9	.608	15.4	.770	19.6	.023	.584	1.500	38	7	3.9	5.80
81914/6-1008-NT	-08	.750	19.1	.730	18.5	.930	23.6	.023	.584	1.750	44	6	4.9	7.29
81914/6-1009-NT	-09	.875	22.2	.860	21.8	1.073	27.3	.023	.584	2.000	51	5	5.6	8.33
81914/6-1010-NT	-10	1.000	25.4	.975	24.8	1.226	31.1	.023	.584	2.370	60	5	6.8	10.12
81914/6-1011-NT	-11	1.125	28.6	1.105	28.1	1.390	35.3	.023	.584	2.370	60	5	7.5	11.16
81914/6-1012-NT	-12	1.250	31.8	1.205	30.7	1.539	39.1	.023	.584	2.750	70	4	8.8	13.09
81914/6-1013-NT	-13	1.500	38.1	1.437	36.5	1.832	46.5	.023	.584	3.380	86	4	10.2	15.18
81914/6-1014-NT	-14	1.750	44.5	1.688	42.9	2.082	52.9	.023	.584	3.880	99	4	11.9	17.71
81914/6-1015-NT	-15	2.000	50.8	1.937	49.2	2.332	59.2	.023	.584	4.250	108	4	13.5	20.01

Property Comparison of Convoluted Tubing

Properties	PTFE	FEP	PFA	ETFE
Shore D Durometer Hardness	D50-65	D55	D55-D60	D75
Specific Gravity	2.17	2.15	2.15	1.70
Tensile Strength at Break (PSI)	3500	3400	3600	6200
Elongation at Break (%)	200-400	250-325	280-300	225-300
Min/Max Continuous Operating Temperature	-450° to 500°F -235° to 260°C	-100° to 400°F -75° to 205°C	-450° to 500°F -235° to 260°C	-88° to 302°F -67° to 150°C
Vacuum at Room Temp. – Every 2° rise in temperature vacuum drops 1%	*27 inch Hg at 72°F	*27 inch Hg at 72°F	*27 inch Hg at 72°F	*27 inch Hg at 72°F
Flammability	Non-flammable	Non-flammable	Non-flammable	Non-flammable

* Size 1/4" - 2"



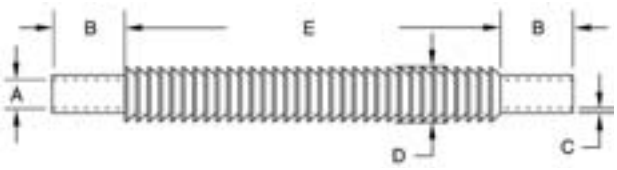
Convoluted Tubing is available in colors.

Corrugated Tubing

Tex-Flex™ corrugated tubing is a flexible tube capable of turning sharp corners with very small bend diameters without reducing the inside diameter of the tube. These tubes also have a non-stick surface that allows for easy cleaning and they are excellent electrical insulators, resisting most strong corrosive liquids like hot acids.

Tex-Flex™ is manufactured from virgin TexFluor™ FEP and is non-contaminating. PFA and High Purity PFA Tex-Flex are quoted on request.

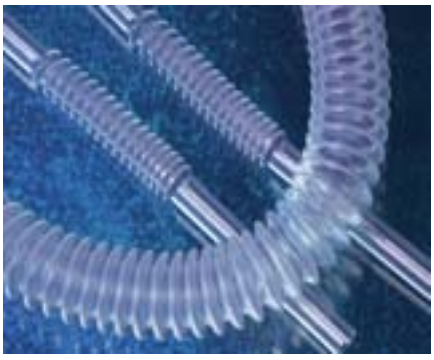
Corrugated tubing is also available in specialty configurations where corrugated and straight tubing run intermittently along the tube.



FEP Tex-Flex™ Corrugated

Part Number	Size To Order	Maximum Cuff I.D. "A"		Standard Cuff Length "B"		Wall Thickness "C"		Ref. Outside Diameter "D"		Corrugated Length "E"	Min. Bend Radius	
		Inch	MM	Inch	MM	Inch	MM	Inch	MM		Inch	MM
CR03-1/4-NT	1/4	0.250	6.35	3/4	19.1	0.015	.38	0.375	9.53	To be specified at the time of order. Unless otherwise indicated, material will be supplied with "B" dimension cuffs. Maximum Length 12 Ft / 3M	0.125	3.18
CR03-3/8-NT	3/8	0.375	9.53	1	25.4	0.020	.508	0.625	15.88		0.187	4.76
CR03-1/2-NT	1/2	0.500	12.7	1	25.4	0.025	.638	0.750	19.05		0.250	6.35
CR03-5/8-NT	5/8	0.625	15.9	1	25.4	0.025	.638	0.938	23.83		0.312	7.94
CR03-3/4-NT	3/4	0.750	19.1	1-1/2	38.1	0.030	.762	1.063	26.99		0.375	9.53
CR03-7/8-NT	7.8	0.875	22.2	1-1/2	38.1	0.030	.762	1.250	31.75		0.438	11.11
CR03-1.00-NT	1	0.975	24.8	2	50.8	0.035	.889	1.438	36.53		0.500	12.70
CR03-1.25-NT	1-1/4	1.250	31.8	2	50.8	0.035	.889	1.625	41.28		0.625	15.88
CR03-1.50-NT	1-1/2	1.500	38.1	2	50.8	0.035	.889	1.813	46.05		0.750	19.05
CR03-2.00-NT	2	2.000	50.8	2	50.8	0.040	1.02	2.625	66.68		1.000	25.4
CR03-2.50-NT	2-1/2	2.510	63.8	2-1/2	63.5	0.070	1.78	3.360	85.30		2.500	63.50

Vacuum Service: 29.9 IN. Hg (759M Hg)
Bend Diameter: 1/2 of Tubing Inside Diameter
Extension-Compression Length Ratio: Approximately 2:1



Maximum Continuous Operating Temperature:

FEP – up to 200˚F/93˚C @ 0 pressure
PFA – up to 300˚F/148˚C @ 0 pressure

Retractable Coiled Tubing

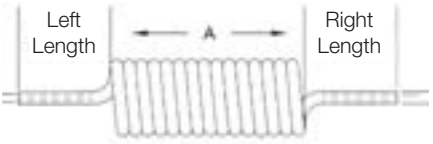
Parker TexLoc's retractable coil tubing is manufactured from TEXfluor™ Fluoroplastic materials that are rated for critical service applications including elevated temperature and ultrapure fluid and gas dispensing applications. The coils are produced in a variety of sizes and custom lengths and can be designed with an internal tube that can be utilized for fluid recirculation. TexFluor™ materials are uniquely suited to handle the demanding requirements of chemical handling and ultrapure fluid dispensing applications. Coiled tubing can be provided in custom and standard lengths and sizes begin at 1/16" (1.58 mm) up to 2" (54.8 mm). Tubes manufactured in TEXfluor™ FEP should remain stable up to 200˚F (93˚C). TexFluor™ PFA will hold its shape up to 300˚F (149˚C). High Purity PFA is also available.

Above these temperatures the coils dimensions are not stable and the coils will lose their shape.

Part Number	Size To Order	Coil ID		Retracted Length "A"		Extended Length	
		Inch	MM	Inch	MM	Inch	MM
70X-0188062-xx0003	3/16" x 1/16"	.750	19.1	3	76	12	305
70X-0188062-xx0006	3/16" x 1/16"	.750	19.1	6	152	24	610
70X-0188062-xx0012	3/16" x 1/16"	.750	19.1	12	305	48	1219
70X-0188062-xx0018	3/16" x 1/16"	.750	19.1	18	457	72	1829
70X-0250062-xx0003	1/4" x 1/8"	1.00	25.4	3	76	12	305
70X-0250062-xx0006	1/4" x 1/8"	1.00	25.4	6	152	24	610
70X-0250062-xx0012	1/4" x 1/8"	1.00	25.4	12	305	48	1219
70X-0250062-xx0018	1/4" x 1/8"	1.00	25.4	18	457	72	1829
70X-0312062-xx0003	5/16" x 3/16"	1.625	41.3	3	76	12	305
70X-0312062-xx0006	5/16" x 3/16"	1.625	41.3	6	152	24	610
70X-0312062-xx0012	5/16" x 3/16"	1.625	41.3	12	305	48	1219
70X-0312062-xx0018	5/16" x 3/16"	1.625	41.3	18	457	72	1829
70X-0375062-xx0003	3/8" x 1/4"	1.625	41.3	3	76	12	305
70X-0375062-xx0006	3/8" x 1/4"	1.625	41.3	6	152	24	610
70X-0375062-xx0012	3/8" x 1/4"	1.625	41.3	12	305	48	1219
70X-0375062-xx0018	3/8" x 1/4"	1.625	41.3	18	457	72	1829
70X-0438062-xx0003	7/16" x 5/16"	3.00	76.2	3	76	12	305
70X-0438062-xx0006	7/16" x 5/16"	3.00	76.2	6	152	24	610
70X-0438062-xx0012	7/16" x 5/16"	3.00	76.2	12	305	48	1219
70X-0500062-xx0003	1/2" x 3/8"	3.00	76.2	3	76	12	305
70X-0500062-xx0006	1/2" x 3/8"	3.00	76.2	6	152	24	610
70X-0500062-xx0012	1/2" x 3/8"	3.00	76.2	12	305	48	1219

X = Resin Type Replace X with 3 for FEP, 4 for PFA and 5 for HP PFA.
ie: 703-0500062-xx0012 – designates FEP Coil, 1/2" OD x .062 wall, 12" long

Standard left/right tail length is 6 inches. Please consult factory for custom size coils, pricing and delivery.



Maximum Continuous Operating Temperature:
FEP – up to 200˚F/93˚C @ 0 pressure
PFA – up to 300˚F/148˚C @ 0 pressure

Retractable Coiled Tubing

First Name _____ Email _____

Last Name _____ Phone # _____

Company _____ City _____ Zip _____

Application

☐ Electrical ☐ Medical ☐ Robotics ☐ Environmental

☐ Industrial ☐ Military ☐ Semiconductor ☐ Instrumentation

Application Media

Material

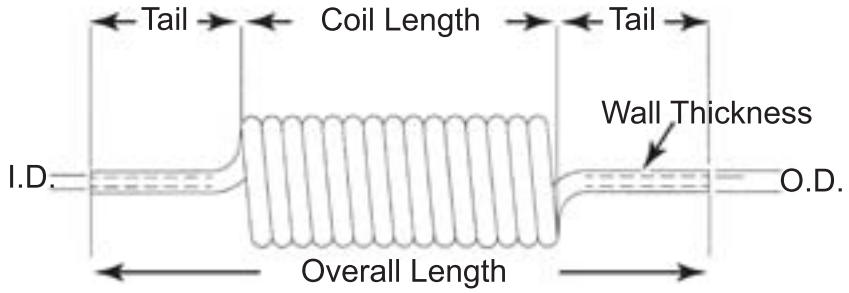
☐ FEP ☐ PFA ☐ High Purity PFA

☐ Other (Specify)_____

Operating Temperature

_____°F _____°C

Pressure



Overall Length _____ Tolerance _____

Tube I.D. _____ Tolerance _____

Tube O.D. _____ Tolerance _____

Wall Thickness _____ Tolerance _____

You must fill in 2 out of 3 in order to receive a quote. (I.D. and Wall, I.D. and O.D., or O.D. and Wall)

Product will be quoted with TexLoc standard tolerances unless otherwise specified.

Coil I.D. _____

Number of Coils. _____

Compressed Coil Length _____

Packaging (Please check all that apply)

Standard Bagged ☐ Individual Bagged ☐

Double Bagged ☐ Nitrogen Purged ☐

Details

Annual Quantity _____ Customer Part Number _____

Quantity per Release _____ Description _____

Comments

Parker TexLoc 4700 Lone Star Blvd., Fort Worth, TX 76106 phone 800-423-6551 or 817 625 5081 email: texloc@parker.com

Fax to 800-438-9562 or 817-624-9095

Convoluted Tubing

First Name _____ Email _____

Last Name _____ Phone # _____

Company _____ City _____ Zip _____

Application

☐ Electrical ☐ Medical ☐ Robotics ☐ Environmental

☐ Industrial ☐ Military ☐ Semiconductor ☐ Instrumentation

Application Media

Material

☐ PTFE ☐ PFA ☐ Low Perm PFA ☐ Other

☐ FEP ☐ High Purity PFA ☐ ETFE Please Specify

Additional Comments

Convoluted Dimensions

Size _____ Minimum Bend Radius _____

Sized on the I.D. ☐ Yes ☐ No Convolutions per Inch _____

Sized on the O.D. ☐ Yes ☐ No

Supplied in Pieces

Overall Length of Piece _____ Overall Length Tolerance _____

(D) Cuff I.D. _____ Cuff I.D. Tolerance _____

(E) Cuff Length _____ Cuff Length Tolerance _____

Supplied by the Foot

Product will be quoted with TexLoc standard tolerances unless otherwise specified.

Product will be supplied in random length coils, 10 foot minimum unless specified.

Customizing

Without Wire ☐ Yes ☐ No With Flange or Flange ☐ Yes ☐ No

Wire on I.D. ☐ Yes ☐ No If Flange/Flare please include angle in degrees and tolerance

_____

Wire on O.D. ☐ Yes ☐ No

Details

Annual Quantity _____ Customer Part Number _____

Quantity per Release _____ Description _____

Comments

Parker TexLoc 4700 Lone Star Blvd., Fort Worth, TX 76106 phone 800-423-6551 or 817 625 5081 email: texloc@parker.com

Fax to 800-438-9562 or 817-624-9095

Corrugated Tubing

First Name _____ Email _____

Last Name _____ Phone # _____

Company _____ City _____ Zip _____

Application

☐ Electrical ☐ Medical ☐ Robotics ☐ Environmental

☐ Industrial ☐ Military ☐ Semiconductor ☐ Instrumentation

Application Media

Material

☐ FEP ☐ High Purity PFA ☐ Other

☐ PFA ☐ Low Perm PFA Please Specify

Additional Comments

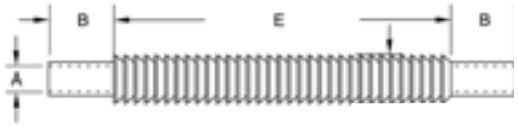
Corrugated Dimensions

Size _____ Minimum Bend Radius _____

Sized on the I.D. ☐ Yes ☐ No Corrugations per Inch _____

Sized on the O.D. ☐ Yes ☐ No

Supplied in Pieces

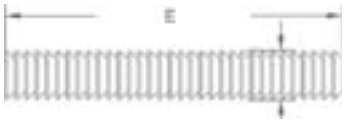


(E) Length of Corrugated Section _____

(A) Cuff I.D. _____ Cuff I.D. Tolerance _____

(B) Cuff Length _____ Cuff Length Tolerance _____

Supplied by the Foot



Maximum available length is 12 feet.

(E) Overall Compressed Length of Piece _____

(E) Overall Expanded Length of Piece (if applicable) _____

Product will be quoted with TexLoc standard tolerances unless otherwise specified.

Details

Annual Quantity _____ Customer Part Number _____

Quantity per Release _____ Description _____

Comments

Parker TexLoc 4700 Lone Star Blvd., Fort Worth, TX 76106 phone 800-423-6551 or 817 625 5081 email: texloc@parker.com

Fax to 800-438-9562 or 817-624-9095

Quick Reference – Properties

PTFE (Polytetrafluoroethylene)
Working Temperature: 500°F (260°C)
Color: Opaque to transulucent, light blue tint
- Chemically Inert
- Lowest coefficient of friction
- Superior dielectric strength
- Exceptional heat resistance
- Self extinguishing
- Nonwetting
- Excellent flexlife
- Laser markable

PFA (Perfluoroalkoxy)
Working Temperature: 500°F (260°C)
Color: Clear with light blue or tint
- High purity resins available
- Low permeation resins available
- Use when you need the temperature range of PTFE and the clarity of FEP
- Exceptional heat resistance
- Self extinguishing
- Nonwetting
- Good flexlife
- Laser markable

FEP (Fluorinated Ethylene Propylene)
Working Temperature: 400°F (205°C)
Color: Clear
- Excellent chemical resistance
- Nonwetting
- Weldable
- Tubes can be sealed by melting
- Long continuous lengths
- Low refractive index
- Improved clarity over PFA
- Lower cost alternative to PFA

ETFE (Ethylene Tetrafluoroethylene)
Working Temperature: 302°F (150°C)
Color: Translucent and clear
- Increased mechanical strength
- Excellent chemical resistance
- Long continuous lengths
- Radiation resistant

ECTFE (Ethylene Chloro-trifluoroethylene)
Working Temperature: 285°F (140°C)
Color: White with brown tint
- Excellent chemical resistance
- Nylon like durability
- Excellent impact resistance
- Nonwetting

PVDF (Polyvinylidene Fluoride)
Working Temperature: 265°F (130°C)
Color: Varies
- Very good chemical resistance
- Excellent resistance to creep and fatigue
- UV Resistant
- Weldable
- Exceptional corrosion resistance for chlorine, fluorine, or bromine environments

THV (Tetrafluoroethylene hexafluoropropylene vinylidene fluoride)
Working Temperature: 176°F - 248°F (80°C - 120°C)
Color: Transparent
- Permits bondability to other substrates without surface atreatment
- Wettable
- Exceptional optical clarity
- Low refractive index
- Excellent chemical resistance
- Unmatched flexibility for melt processable fluoroplastics
- Excellent permeation resistance

PEEK™ (Polyetheretherketone)
Working Temperature: 392°F (200°C)
Color: Light tan, amber
- Excellent steam resistance
- Excellent chemical resistance
- Excellent strength to weight ratio
- Outstanding wear resistance
- Excellent outgassing characteristics
- Self extinguishing
- Exceptional tensile strength

PEI ULTEM® (Polyetherimide)
Working Temperature: 392°F (200°C)
Color: Transparent amber to opaque
- Excellent steam resistance
- Excellent chemical resistance
- UV & gamma resistant
- Exceptional tensile strength

Summary of Properties

The table below lists a generally accepted summary of properties that we believe to be reliable. Please note that many of these resins are produced in several varieties and property characteristics may vary. Therefore, determination of resin is dependent on the application and this table is only meant to serve as a general guideline.

Property Comparison of Fluoropolymer Resins

Properties	ASTM or Unit	PTFE	FEP	PFA	ETFE	PVDF
MECHANICAL PROPERTIES						
Specific Gravity	D792	2.13-2.20	2.12-2.17	2.12-2.17	1.70-1.76	1.76-1.78
Elongation %	D638	200-450	250-330	280-400	420-460	300-450
Tensile Strength (psi)	D638	2000-7000	2800-5000	4000-4500	6100-6800	4500-6200
Flexural Strength (psi)	D790	no break	no break	no break	5500	8600-9500
Compressive Strength (psi)	D695	3500	2200		2500	11,600
Tensile Elastic Modulus (Young's Modulus) (psi)	D638	57,000	50,000	72,500-87,000	85,000-95,000	160,000
Flexural Modulus	D790(psi) D790 103MPa (103kgf/cm2)	71,000-85,000 0.5-0.6 (5.0-6.0)	78,000-92,000 0.5-0.6 (5.5-6.5)	94,000-99,000 0.6-0.7 (6.6-7.0)	128,000-171,000 0.9-1.4 (9.0-14.0)	90,000-168,000 na
Flex Life MIT cycles)	D2176	>1,000,000	5,000-80,000	10,000-500,000	10,000-27,000	na
Hardness Durometer Shore D	D636	D50-65	D55	D55-60	D75	D75-D85
Coefficient of Friction	(on steel)	0.02	0.05	0.2	0.06	0.4
Abrasion Resistance 1000 revs.	Taber	12	14-20	9-17	na	5-15
Impact Strength IZO.D. 73°F/23°C notched ft/lbs/in	D256	3	no break	no break	no break	4
THERMAL PROPERTIES						
Melting Point	°C °F	327 621	260 500	305 582)	267 512	171 340
Upper Service Temperature(20000h)	°C °F	260 500	204 400	260 500	176 348	130 260
Flammability	UL 94	V-0	V-0	V-0	V-0	V-0
Thermal Conductivity BTU/hr/sq ft/deg F in		1.7	1.4	1.3	1.65	1.3
Thermal Conductivity Cal-cm/s-cm2, ºC		6 x 10-4	6 x 10-4	6 x 10-6	5.7 x 10-4	3.0 x 10-4
Linear Coefficient of Thermal Expansion	D696 10-5ºC	>11.6	8.3-10.5	13	13	4.2
Heat of Fusion	BTU/LB	29-37	11	13	20	na
Heat of Combustion	BTU/LB	2200	2200	2300	8100	na
Low Temperature Embrittlement	°C °F	-268 -450	-268 -450	-268 -450	-100 -148	-62 -80
ELECTRICAL PROPERTIES						
Dielectric Constant	D150/103Hz D150/106Hz	2.1 2.1	2.1 2.1	2.1 2.1	2.6 2.6	7.72 6.43
Dielectric Strength	D149/125 MIL D149/10 MIL	500 ≥1400	500 >1400	500 ≥1400	na 1600	na >1080
Volume Resistivity	D257/ohm-cm	$>10^{18}$	$>10^{18}$	$>10^{18}$	$>10^{16}$	2×10^{14}
Surface Resistivity	D257/ohm-cm	$>10^{17}$	$>10^{17}$	$>10^{17}$	$>10^{15}$	5×10^{14}
GENERAL PROPERTIES						
Chemical/Solvent Resistance	D543	Excellent	Excellent	Excellent	Excellent	Very Good
Water Absorption 24h,%	D570	<0.01	<0.01	<0.03	<0.03	<0.04
Deformation Under Load	*D621 100ºC **D621 25ºC	5 7	5 3	2.4 2.7	5.4 2.3	2.4 0.7
Refractive Index		1.35	1.338	1.34	1.4	1.42
Limiting Oxygen Index, %	D2863	>95	>95	>95	31	43

Chemical Resistance Summary

Within normal use temperatures, fluoroplastics are attacked by so few chemicals that it is easier to describe the exceptions rather than list the chemicals with which TexFluor™ is compatible.

DO NOT USE FLUOROPLASTICS WITH THE FOLLOWING:

- Alkali metals such as elemental sodium, potassium, lithium, etc. The alkali metals remove fluorine from the polymer molecule.
- Extremely potent oxidizers, fluorine (F2) and related compounds (e.g., chlorine trifluoride, CIF3). These can be handled by TexFluor™, but only with great care, as fluorine is absorbed into the resins, and the mixture becomes sensitive to a source of ignition such as impact.
- 80% NaOH (Sodium Hydroxide) or KOH (Potassium Hydroxide), metal hydrides such as Borances (e.g., B2H6), Aluminum Chloride, Ammonia (NH3), certain Amines (R-NH2) and imines (R=NH) and 70% Nitric Acid at temperatures near the suggested service limit.

Chemical Resistance Guide

PTFE, FEP, PFA Chemical Resistance Guide

This chart is intended to be used as a general guide only. Since each pair of ratings listed is for ideal conditions, all factors affecting chemical resistance must be considered. **First letter of each pair applies to conditions at 68°F/20°C, the second to those at 122°F/50°C.**

Chemical	LDPE	HDPE	PP/PA	PMP	FEP PFA PTFE	PC	PVC	PSF
Acetaldehyde	GN	GF	GN	GN	EE	FN	GN	NN
Acetamide, Sat.	EE	EE	EE	EE	EE	NN	NN	NN
Acetic Acid, 5%	EE	EE	EE	EE	EE	EG	EE	EE
Acetic Acid, 50%	EE	EE	EE	EE	EE	EG	EG	GG
Acetone	EE	EE	EE	EE	EE	NN	NN	NN
Acetonitrile	EE	EE	FN	FN	EE	NN	NN	NN
Acrylonitrile	EE	EE	FN	FN	EE	NN	NN	NN
Adipic Acid	EG	EE	EE	EE	EE	EE	GG	EG
Alanine	EE	EE	EE	EE	EE	NN	NN	NN
Allyl Alcohol	EE	EE	EE	EG	EE	GF	GF	GF
Aluminum Hydroxide	EG	EE	EG	EG	EE	FN	EG	GG
Aluminum Salts	EE	EE	EE	EE	EE	EG	EE	EE
Amino Acids	EE	EE	EE	EE	EE	EE	EE	EE
Ammonia	EE	EE	EE	EE	EE	NN	EG	GF
Ammonium Acetate, Sat.	EE	EE	EE	EE	EE	EE	EE	EE
Ammonium Glycolate	EG	EE	EG	EG	EE	GF	EE	GG
Ammonium Hydroxide, 5%	EE	EE	EE	EE	EE	FN	EE	GG
Ammonium, Hydroxide, 30%	EG	EE	EG	EG	EE	NN	EG	GG
Ammonium Oxalate	EG	EE	EG	EG	EE	EE	EE	EE
Ammonium Salts	EE	EE	EE	EE	EE	EG	EG	EE
n-Amyl Acetate	GF	EG	GF	GF	EE	NN	NN	NN
Amyl Chloride	NN	FN	NN	NN	EE	NN	NN	NN
Aniline	EG	EG	GF	GF	EE	FN	NN	NN
Benzaldehyde	EG	EE	EG	EG	EE	FN	NN	FF
Benzene	FN	GG	GF	GF	EE	NN	NN	NN
Benzoic Acid, Sat.	EE	EE	EG	EG	EE	EG	EG	FF
Benzyl Acetate	EG	EE	EG	EG	EE	FN	NN	NN
Benzyl Alcohol	NN	FN	NN	NN	EE	GF	GF	NN
Bromine	NN	FN	NN	NN	EE	FN	GN	NN
Bromobenzene	NN	FN	NN	NN	EE	NN	NN	NN
Bromoform	NN	NN	NN	NN	EE	NN	NN	NN
Butadiene	NN	FN	NN	NN	EE	NN	FN	NN
n-Butyl Acetate	GF	EG	GF	GF	EE	NN	NN	NN
n-Butyl Alcohol	EE	EE	EE	EG	EE	GF	GF	GF
sec-Butyl Alcohol	EG	EE	EG	EG	EE	GF	GG	GF
tert-Butyl Alcohol	EG	EE	EG	EG	EE	GF	EG	GF
Butyric Acid	NN	FN	NN	NN	EE	FN	GN	GG
Calcium Hydroxide, Conc.	EE	EE	EE	EE	EE	NN	EE	GG
Calcium Hypochlorite, Sat.	EE	EE	EE	EG	EE	FN	GF	EE
Carbazole	EE	EE	EE	EE	EE	NN	NN	NN
Carbon Disulfide	NN	NN	NN	NN	EE	NN	NN	NN
Carbon Tetrachloride	FN	GF	GF	NN	EE	NN	GF	NN
Cedarwood Oil	NN	FN	NN	NN	EE	GF	FN	FF
Cellosolve Acetate	EG	EE	EG	EG	EE	FN	FN	NN
Chlorine, 10% in Air	GN	EF	GN	GN	EE	EG	EE	NN
Chlorine, 10% (Moist)	GN	GF	FN	GN	EE	GF	EG	NN
Chloroacetic Acid	EE	EE	EG	EG	EE	FN	FN	NN
p-Chloroacetophenone	EE	EE	EE	EE	EE	NN	NN	NN
Chloroform	FN	GF	GF	NN	EE	NN	NN	NN
Chromic Acid, 10%	EE	EE	EE	EE	EE	GF	EG	NN
Chromic Acid, 50%	EE	EE	GF	GF	EE	FN	EF	NN
Cinnamon Oil	NN	FN	NN	NN	EE	GF	NN	FF
Citric Acid, 10%	EE	EE	EE	EE	EE	EG	GG	EE
Cresol	NN	FN	GF	NN	EE	NN	NN	NN
Cyclohexane	FN	FN	FN	NN	EE	EG	GF	NN
Decalin	GF	EG	GF	FN	EE	NN	EG	NN
o-Dichlorobenzene	FN	FF	FN	FN	EE	NN	NN	NN
p-Dichlorobenzene	FN	GF	GF	GF	EE	NN	NN	NN
Diethyl Benzene	NN	FN	NN	NN	EE	FN	NN	NN
Diethyl Ether	NN	FN	NN	NN	EE	NN	FN	NN

LDPE = Low Density Polyethylene
HDPE = High Density Polyethylene
PP/PA = Polypropylene/Polyallomer
PMP = Polymethylpentene

FEP
PFA
PTFE =Fluoroplastics /Fluoropolymers

PC = Polycarbonate
PVDC = Polyvinylchloride
PSF = Polysulfone

Chemical Resistance Guide (cont.)

PTFE, FEP, PFA Chemical Resistance Guide

This chart is intended to be used as a general guide only. Since each pair of ratings listed is for ideal conditions, all factors affecting chemical resistance must be considered. **First letter of each pair applies to conditions at 68°F/20°C, the second to those at 122°F/50°C.**

Chemical	LDPE	HDPE	PP/PA	PMP	FEP PFA PTFE	PC	PVC	PSF
Diethyl Ketone	GF	GG	GG	GF	EE	NN	NN	NN
Diethyl Malonate	EE	EE	EE	EG	EE	FN	GN	FF
Diethylene Glycol	EE	EE	EE	EE	EE	GF	FN	GG
Diethylene Glycol Ethyl Ether	EE	EE	EE	EE	EE	FN	FN	FF
Dimethyl Formamide	EE	EE	EE	EE	EE	NN	FN	NN
Dimethylsulfoxide	EE	EE	EE	EE	EE	NN	NN	NN
1,4-Dioxane	GF	GG	GF	GF	EE	GF	FN	GF
Dipropylene Glycol Ether	EE NN	EE FN	EE NN	EE NN	EE EE	GF NN	GF FN	GG NN
Ethyl Acetate	EE	EE	EE	EG	EE	NN	NN	NN
Ethyl Alcohol (absolute)	EG	EE	EG	EG	EE	EG	EG	EG
Ethyl Alcohol, 40%	EG	EE	EG	EG	EE	EG	EE	EG
Ethyl Benzene	FN	GF	FN	FN	EE	NN	NN	NN
Ethyl Benzoate	FF	GG	GF	GF	EE	NN	NN	NN
Ethyl Butyrate	GN	GF	GN	FN	EE	NN	NN	NN
Ethyl Chloride	FN	FF	FN	FN	EE	NN	NN	NN
Ethyl Cyanoacetate	EE	EE	EE	EE	EE	FN	FN	FF
Ethyl Lactate	EE	EE	EE	EE	EE	FN	FN	FF
Ethylene Chloride, Liquid	GN	GF	FN	NN	EE	NN	NN	NN
Ethylene Glycol	EE	EE	EE	EE	EE	GF	EE	EE
Ethylene Glycol Methyl Ether	EE	EE	EE	EE	EE	FN	FN	FF
Ethylene Oxide	FF	GF	FF	FN	EE	FN	FN	EE
Fluorides	EE	EE	EE	EE	EE	EE	EE	EE
Fluorine	FN	GN	FN	FN	EG	GF	EG	NN
Formaldehyde, 10%	EE	EE	EE	EG	EE	EG	GF	GF
Formaldehyde, 40%	EG	EE	EG	EG	EE	EG	GF	GF
Formic Acid, 3%	EG	EE	EG	EG	EE	EG	GF	GG
Formic Acid, 50%	EG	EE	EG	EG	EE	EG	GF	GG
Formic Acid, 98-100%	EG	EE	EG	EF	EE	EF	FN	FF
Fuel Oil	FN	GF	EG	GF	EE	EG	EE	EG
Gasoline	FN	GG	GF	GF	EE	FF	GN	FF
Glacial Acetic Acid	EG	EE	EG	EG	EE	NN	EG	FN
Glycerin	EE	EE	EE	EE	EE	EE	EE	EE
n-Heptane	FN	GF	FF	FF	EE	EG	GF	EG
Hexane	NN	GF	GF	FN	EE	FN	GN	EG
Hydrochloric Acid, 1-5%	EE	EE	EE	EG	EE	EE	EE	EE
Hydrochloric Acid, 20%	EE	EE	EE	EG	EE	GF	EG	EE
Hydrochloric Acid, 35%	EE	EE	EG	EG	EE	NN	GF	EE
Hydrofluoric Acid, 4%	EG	EE	EG	EG	EE	GF	GF	GF
Hydrofluoric Acid, 48%	EE	EE	EE	EE	EE	NN	GF	FN
Hydrogen Peroxide, 3%	EE	EE	EE	EE	EE	EE	EE	EE
Hydrogen Peroxide, 30%	EG	EE	EG	EG	EE	EE	EE	EE
Hydrogen Peroxide, 90%	EG	EE	EG	EG	EE	EE	EG	EE
Isobutyl Alcohol	EE	EE	EE	EG	EE	EG	EG	EG
Isopropyl Acetate	GF	EG	GF	GF	EE	NN	NN	NN
Isopropyl Alcohol	EE	EE	EE	EE	EE	EE	EG	EE
Isopropyl Benzene	FN	GF	FN	NN	EE	NN	NN	NN
Kerosene	FN	GG	GF	GF	EE	EE	EE	GF
Lactic Acid, 3%	EG	EE	EG	EG	EE	EG	GF	EE
Lactic Acid, 85%	EE	EE	EG	EG	EE	EG	GF	EE
Methoxyethyl Oleate	EG	EE	EG	EG	EE	FN	NN	NN
Methyl Alcohol	EE	EE	EE	EE	EE	GF	EF	GF
Methyl Ethyl Ketone	EG	EE	EG	NN	EE	NN	NN	NN
Methyl Isobutyl Ketone	GF	EG	GF	FF	EE	NN	NN	NN
Methyl Propyl Ketone	GF	EG	GF	FF	EE	NN	NN	NN
Methylene Chloride	FN	GF	FN	FN	EE	NN	NN	NN
Mineral Oil	GN	EE	EE	EG	EE	EG	EG	EE
Nitric Acid, 1-10%	EE	EE	EE	EE	EE	EG	EG	EF
Nitric Acid, 50%	GG	GN	FN	GN	EE	GF	GF	GF
Nitric Acid, 70%	FN	GN	NN	GF	EE	NN	FN	NN

LDPE = Low Density Polyethylene
HDPE = High Density Polyethylene
PP/PA = Polypropylene/Polyallomer
PMP = Polymethylpentene

FEP
PFA
PTFE
=Fluoroplastics /Fluoropolymers

PC = Polycarbonate
PVDC = Polyvinylchloride
PSF = Polysulfone

Chemical Resistance Guide (cont.)

PTFE, FEP, PFA Chemical Resistance Guide

This chart is intended to be used as a general guide only. Since each pair of ratings listed is for ideal conditions, all factors affecting chemical resistance must be considered. **First letter of each pair applies to conditions at 68°F/20°C, the second to those at 122°F/50°C.**

Chemical	LDPE	HDPE	PP/PA	PMP	FEP PFA PTFE	PC	PVC	PSF
Nitrobenzene	NN	FN	NN	NN	EE	NN	NN	NN
n-Octane	EE	EE	EE	EE	EE	GF	FN	GF
Orange Oil	FN	GF	GF	FF	EE	FF	FN	FF
Ozone	EG	EE	EG	EE	EE	EG	EG	EE
Perchloric Acid	GN	GN	GN	GN	GF	NN	GN	NN
Perchloroethylene	NN	NN	NN	NN	EE	NN	NN	NN
Phenol, Crystals	GN	GF	GN	FG	EE	EN	FN	FF
Phosphoric Acid, 1-5%	EE	EE	EE	EE	EE	EE	EE	EE
Phosphoric Acid, 85%	EE	EE	EG	EG	EE	EG	EG	EE
Pine Oil	GN	EG	EG	GF	EE	GF	FN	FF
Potassium Hydroxide, 1%	EE	EE	EE	EE	EE	FN	EE	EE
Potassium Hydroxide, Conc.	EE	EE	EE	EE	EE	NN	EG	EE
Propane Gas	NN	FN	NN	NN	EE	FN	EG	FF
Propylene Glycol	EE	EE	EE	EE	EE	GF	FN	GG
Propylene Oxide	EG	EE	EG	EG	EE	GF	FN	GG
Resorcinol, Sat.	EE	EE	EE	EE	EE	GF	FN	NN
Resorcinol, 5%	EE	EE	EE	EE	EE	GF	GN	NN
Salicylaldehyde	EG	EE	EG	EG	EE	GF	FN	FF
Salicylic Acid, Powder	EE	EE	EE	EG	EE	EG	GF	EE
Salicylic Acid, Sat.	EE	EE	EE	EE	EE	EG	GF	EE
Salt Solutions, Metallic	EE	EE	EE	EE	EE	EE	EE	EE
Silver Acetate	EE	EE	EE	EE	EE	EG	GG	EE
Silver Nitrate	EG	EE	EG	EE	EE	EE	EG	EE
Sodium Acetate, Sat.	EE	EE	EE	EE	EE	EG	GF	EE
Sodium Hydroxide, 1%	EE	EE	EE	EE	EE	FN	EE	EE
Sodium Hydroxide,50% to Sat.	GG	EE	EE	EE	EE	NN	NN	EG
Sodium Hypochlorite, 15%	EE	EE	EE	EE	EE	GF	EE	EE
Stearic Acid, Crystals	EE	EE	EE	EE	EE	EG	EG	GG
Sulfuric Acid, 1-6%	EE	EE	EE	EE	EE	EE	EG	EE
Sulfuric Acid, 20%	EE	EE	EG	EG	EE	EG	EG	EE
Sulfuric Acid, 60%	EG	EE	EG	EG	EE	GF	EG	EE
Sulfuric Acid, 98%	GG	GG	FN	GG	EE	NN	GN	NN
Sulfuric Dioxide, Liq., 46psi	NN	FN	NN	NN	EE	GN	FN	GG
Sulfuric Dioxide, wet or dry	EE	EE	EE	EE	EE	EG	EG	GG
Sulfur Salts	FN	GF	FN	FN	EE	FN	NN	GG
Tartaric Acid	EE	EE	EE	EE	EE	EG	EG	EE
Tetrahydrofuran	FN	GF	GF	FF	EE	NN	NN	NN
Thionyl Chloride	NN	NN	NN	NN	EE	NN	NN	NN
Toluene	FN	GG	GF	FF	EE	FN	NN	NN
Tributyl Citrate	GF	EG	GF	GF	EE	NN	FN	FF
Trichloroethane	NN	FN	NN	NN	EE	NN	NN	NN
Trichloroethylene	NN	FN	NN	NN	EE	NN	NN	NN
Triethylene Glycol	EE	EE	EE	EE	EE	EG	GF	EE
Tripropylene Glycol	EE	EE	EE	EE	EE	EG	GF	EE
Turpentine	FN	GG	GF	FF	EE	FN	GF	NN
Undecyl Alcohol	EF	EG	EG	EG	EE	GF	EF	FF
Urea	EE	EE	EE	EG	EE	NN	GN	NN
Vinylidene Chloride	NN	FN	NN	NN	EE	NN	NN	NN
Xylene	GN	GF	FN	FN	EE	NN	NN	NN
Zinc Stearate	EE	EE	EE	EE	EE	EE	EG	EE

LDPE = Low Density Polyethylene
HDPE = High Density Polyethylene
PP/PA = Polypropylene/Polyallomer
PMP = Polymethylpentene

FEP
PFA
PTFE
=Fluoroplastics /Fluoropolymers

PC = Polycarbonate
PVDC = Polyvinylchloride
PSF = Polysulfone

Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such items, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer, Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.**
NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.

5. Limitation Of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INC.
INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it non infringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.
If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer. Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

9/91-P

Index

We make Custom Tubing to *your* specifications everyday.

Contact Customer Service for more information. 800.423.6551
texloc@parker.com

CAT 4150-55D GL 1/09

Parker Hannifin Corporation
Parflex Division/Parker TexLoc
4700 Lone Star Blvd.
Fort Worth, TX 76106
phone 817 625 5081
fax 817 624 9095
www.texloc.com