

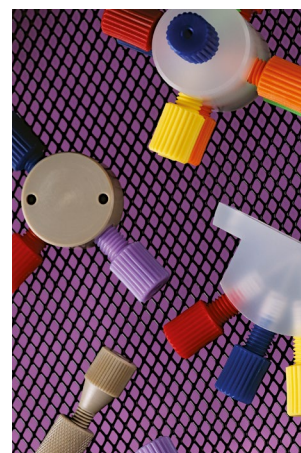
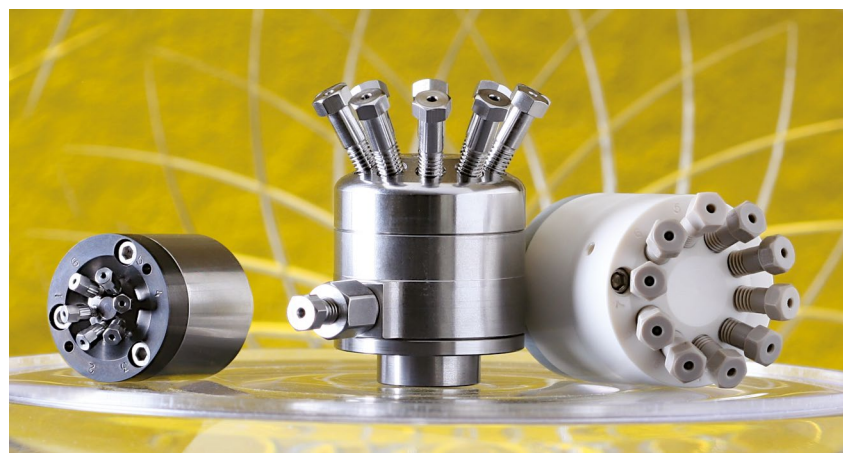
**VALCO
CHEMINERT
CATALOG**

VICI

TOOLS FOR SCIENCE AND MEDICINE

INJECTORS
VALVES
DETECTORS
FITTINGS
SYRINGES
TUBING

CATALOG 65 INT



Welcome to VICI

VICI is an acronym for Valco Instruments Company Inc. VICI now defines multiple companies which manufacture various products for the analytical industry.

VICI Valco Instruments

For over 40 years, Valco Instruments has been the leading designer and manufacturer of standard and custom components for precision analytical, biomedical, and biocompatible instrumentation. In addition to Valco and Cheminert® valves and fittings, we offer a wide range of related products such as electric and pneumatic actuators, tubing and sampling loops, heated enclosures, valve sequence and temperature controllers, gas purifiers, GC detectors, and digital interfaces.



Fafnir, one of a long line of Valco Saint Bernards, at the Houston, Texas office

VICI AG International

VICI AG International, in Schenkon, Switzerland, is an independent site for the manufacturing of Valco and Cheminert valves and the handling of all VICI product lines in Europe, Africa, the Middle East, and the Far East. Present certification is ISO 9001:2008 and 14001:2004.

VICI Metronics

VICI Metronics, Inc. is the leading manufacturer of devices and instruments that are used in the generation of calibration gas standards. The line includes Dynacal and G-Cal permeation tubes, Dynacalibrator calibration gas generators, and gas monitors. Metronics is the leading provider of



Our engineering/development facility on Waterbury Drive in Houston

explosives, narcotics, and chemical warfare dopants for TSA airport security (ammonia, DCM), law enforcement, border patrol, military, and other trace detection industry professionals.

We offer high performance gas specific purifiers suitable for use in GC/MS and LC/MS systems. The helium, hydrogen, nitrogen, and air purifiers remove sulfur and nitrogen compounds, halocarbons, hydrocarbons, moisture, oxygen, and other contaminants.

The Metronics facility also houses production of and support for Valco-Bond and ValcoPLOT capillary columns.

VICI Precision Sampling

Your resource for syringes, Mininert® valves, probes, and tubing. Our pre-cut stainless steel tubing is available in standard lengths, or cut and bent to your specifications. All our syringes feature ultra smooth bores, easily replaceable parts, low dead volume, crisp clean gradations, and precision calibrations.

VICI Valco Canada

Products from all VICI companies are available in Canada directly from this location. We also supply and support our Canadian dealers and OEMs.



VICI Precision Sampling Baton Rouge, Louisiana



VICI AG International in Schenkon, Switzerland



VICI Metronics Poulsbo, Washington



VICI Valco Canada Brockville, Ontario

CONTACT US

See box on facing page for:

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VICI Precision Sampling

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Email precision@vici.com
P.O. Box 15886
Baton Rouge, LA 70895

Tubing

METAL AND POLYMERIC

We offer chromatography grade tubing in ODs of 360 μm , 1/32", 1/16", and 1/8". Tubing can be ordered in economical pre-cut standard lengths, or can be custom cut to meet your specific instrumentation requirements. All VICI metal tubing is chromatographic grade seamless drawn tubing of the highest available quality. Stainless tubing is 316 series.

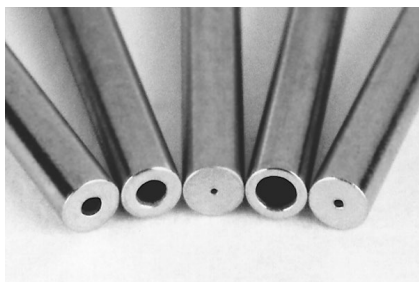
Cutting and Cleaning

The improper cutting and cleaning of metal tubing is the largest single cause of chromatographic problems and premature valve failure. The use of our precision cut and finished tubing with VICI fittings and valves maintains the flow uniformity and cleanliness that high performance systems require.

VICI's electrolytic cutting process yields polished tubing with flat ends, minimizing the potential for dead volumes or leaks caused by the uneven ends and burrs left by the tools common in the general laboratory environment – wire cutters, files, jewelers' saws, and most

tubing cutters. These non-precision cutters are likely to generate particulates and deform inner and outer diameters, which can introduce dead volume and flow anomalies.

Each piece of VICI pre-cut metal tubing is specially cleaned with micro-filtered steam from deionized water to remove both organic and inorganic contaminants, representing a major improvement over the common practice of using organic solvents to "clean" tubing. Our test reports have been confirmed by most of the major instrument suppliers: the VICI process provides analytically clean tubing.



Electrolytically cut and polished



File cut



Plier cut

TECH TIP

Forty years of Valco experience show that the particles left in poorly cut tubing are the number one cause of valve damage.

TECH TIP

For optimal zero dead volume connections, make sure your tubing meets the best industry standards—OD tolerance should be nominal dimension $\pm .002$ ".

Fractional dimension	Nominal dimension
1/32"	.031
1/16"	.062
1/8"	.125
1/4"	.250
3/8"	.375
1/2"	.500



1/16" OD x .040" ID
1/32" OD x .004" ID
360 μm OD x .001" ID

Three sizes of electroformed nickel tubing

Electroformed nickel tubing

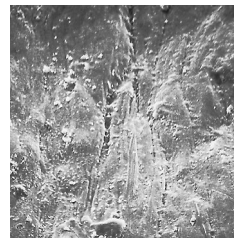
Our microbore EFNi tubing is made by electroplating nickel over a diamond-drawn mandrel in a continuous process. When the mandrel is removed, an internal surface with a mirror-like 1-2 microinch finish remains. The ductile nature of nickel allows the tubing to be easily manipulated. Unlike glass- or silica-lined stainless, EFNi can accept tight bends and cutting without heating, and does not release damaging glass fragments or silica particles.

A comparison of the interiors of commonly used tubing (below) shows the quality of the electroformed nickel tubing surface. (All photos are x500 magnification.) The rough interior surface of the mill-drawn Nickel 200 tubing has potential for carryover or cross contamination, and both the Nickel 200 and the stainless steel contain pits, voids, striations, and particles – problems which intensify as the ID decreases.

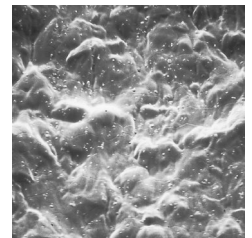
Custom IDs/ODs are available upon request.



Electroformed nickel (EFNi)



Nickel 200 alloy



Type 316 stainless steel

PRICING PER FOOT

For pricing purposes, the length is rounded up to the next foot. For example, a 5" piece is charged as one foot; an 18" piece as two feet. The price per foot is based on the length of each piece, not the total quantity ordered. Cutting and cleaning charges are included in the price per foot for EFNi tubing.

CONVERSIONS

- 0.05 mm = .002"
- 0.10 mm = .004"
- 0.12 mm = .005"
- 0.25 mm = .010"
- 0.50 mm = .020"
- 0.75 mm = .030"
- 1.0 mm = .040"
- 1.5 mm = .060"
- 2.0 mm = .080"
- 4.6 mm = .180"
- 6.0 mm = .236"
- 6.4 mm = .253"
- 7.0 mm = .275"
- 10.0 mm = .400"
- 27.0 mm = 1.08"
- 1/32" = 0.8 mm
- 1/16" = 1.6 mm
- 1/8" = 3.2 mm
- 1/4" = 6.4 mm
- 3/8" = 9.5 mm
- 1/2" = 12.7 mm

360 μm OD EFNi tubing

Custom lengths

Prices are per foot. See pricing note in box at left.

Tubing ID	Prod No	Max length
.001"	TEFNI.101	1 foot
.002"	TEFNI.102	2 feet
.004"	TEFNI.104	20 feet
.005"	TEFNI.105	30 feet
.007"	TEFNI.110	50 feet

1/32" OD EFNi tubing

Custom lengths

Prices are per foot. See pricing note in box at left.

Tubing ID	Prod No	Max length
.002"	TEFNI.502	2 feet
.004"	TEFNI.504	20 feet
.005"	TEFNI.505	30 feet
.007"	TEFNI.507	50 feet
.010"	TEFNI.510	50 feet
.012"	TEFNI.512	50 feet
.015"	TEFNI.515	50 feet
.020"	TEFNI.520	50 feet

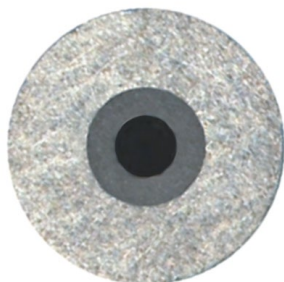
1/16" OD EFNi tubing

Custom lengths

Prices are per foot. See pricing note in box at left.

Tubing ID	Prod No	Max length
.020"	TEFNI120	25 feet
.030"	TEFNI130	35 feet
.040"	TEFNI140	50 feet

VICI electrochemically plates PEEK and fused silica tubing with pure nickel. This strengthens the tubing and allows direct connections using metal ferrules while maintaining the chemical benefits of the wetted surfaces inside.



Nickel-clad fused silica

- Inert, flexible transfer lines
- Improved heat transfer
- Thick wall version allows direct connection using metal ferrules
- Rated for up to 40,000 psi (dependant on size and plating thickness)

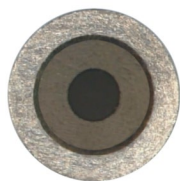
We take polyimide-coated fused silica (FS) and remove the polyimide layer. Then we electrochemically plate the FS with pure nickel. The resulting nickel-plated FS tube provides superior heat transfer to the FS lining, permitting use as a flexible transfer line with the best qualities of silica-lined stainless but with improved heat transfer and a shorter bend radius.

For high pressure applications, we recommend using our 1/32" 316 stainless ferrules.

1/32" OD tubing is available in IDs from 10 to 250 µm, permitting use of metal ferrules for improved leak-tight connections.

800µm (1/32") OD nickel-clad fused silica *Custom lengths*

<i>Tubing ID</i>	<i>Prod No</i>
10 µm	TNFS800360010
15 µm	TNFS800360015
20 µm	TNFS800360020
25 µm	TNFS800360025
50 µm	TNFS800360050
100 µm	TNFS800360100
180 µm	TNFS800360180
250 µm	TNFS800360250



Nickel-clad polyimide-coated fused silica

- Thin wall version for resistive heating offers improved heat transfer as compared to wire-wrapped designs
- Thin wall version results in column packages with even less mass, critical when temperature measurement is based on the change in resistance

Any polyimide-coated FS can be electroplated with pure nickel. This results in a ruggedized traditional FS column (or transfer line with deactivated FS), which can be resistively heated, if desired. Temperature is measured using the resistance of the nickel, removing any need for external sensors. A thin-wall, low mass version optimized for resistive heat applications is available in eight different diameters. We offer several options for tubing connections.

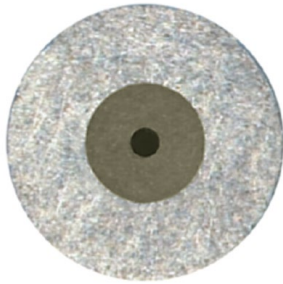
Please contact the factory to discuss your application.

TECH TIP

For best results, order clad tubings in the precise length required. Clean cuts are difficult to achieve with the tools normally available.

PRICING PER FOOT

For pricing purposes, the length is rounded up to the next foot. For example, a 5" piece is charged as one foot; an 18" piece as two feet. The price per foot is based on the length of each piece, not the total quantity ordered. Cutting and cleaning charges are included in the price per foot for TNF tubing.



Nickel-clad PEEK

- Permits use of PEEK tubing at 30,000 psi
- Direct connection with metal ferrules

Since we can manufacture virtually any size of PEEK tubing from 360 μm OD/ .002" ID on up, the possibilities are endless. In any size, the mechanical properties of nickel combined with the chemical properties of PEEK produce enhanced performance with robust metal ferrule connections.

NEW Nickel-clad PEEK

Custom lengths

Tubing OD: <i>Tubing ID</i>	800 μm (1/32") <i>Prod No</i>	1600 μm (1/16") <i>Prod No</i>
50 μm	TNPK800360050	TNPK16001140050
75 μm	TNPK800360075	TNPK16001140075
100 μm	TNPK800360100	TNPK16001140100
125 μm	TNPK800360125	TNPK16001140125
180 μm	TNPK800360180	TNPK16001140180
205 μm	TNPK800360205	—
250 μm	TNPK800404250	TNPK16001140250
305 μm	TNPK800510305	TNPK16001140305
380 μm	TNPK800535380	—
510 μm	TNPK800660510	TNPK16001140510
760 μm	—	TNPK16001140760
1015 μm	—	TNPK160011401015

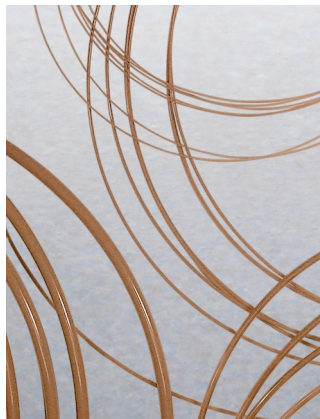
CONVERSIONS

50 μm = .002"
75 μm = .003"
100 μm = .004"
125 μm = .005"
150 μm = .006"
180 μm = .007"
205 μm = .008"
250 μm = .010"
305 μm = .012"
380 μm = .015"
510 μm = .020"
760 μm = .030"
1015 μm = .040"
800 μm = 1/32"
1600 μm = 1/16"

TUBING

Natural PEEK tubing

PEEK tubing has the strength required to withstand continuous use at HPLC pressure without swelling or bursting, and is not affected by halide salts, high strength buffers, or other aggressive mobile phases that corrode stainless steel. The polymer surface will not leach metal ions into the eluent or extract metal-sensitive components from the sample. Note, however, that dichloromethane, THF, and DMSO may cause swelling in PEEK, and concentrated nitric and sulphuric acid will attack PEEK.



OD and ID tolerances for our PEEK tubing are $\pm .0005''$ for 360 micron and 1/32" tubing; $\pm .0005''$ for 1/16" tubing with ID up to .010" and $\pm .001''$ for IDs above .010"; and $\pm .003''$ for 1/8".

360 μ m PEEK tubing

Custom lengths

Custom-length 360 μ m PEEK tubing is square-cut and ready to use. Specify the length required, in meters

	.002" ID <i>Prod No</i>	.004" ID <i>Prod No</i>	.005" ID <i>Prod No</i>	.006" ID <i>Prod No</i>
Priced per meter	TPK.102	TPK.104	TPK.105	TPK.106

1/32" OD PEEK tubing

<i>Length</i>	.0025" ID <i>Prod No</i>	.005" ID <i>Prod No</i>	.010" ID <i>Prod No</i>	.015" ID <i>Prod No</i>
5 meters	TPK.502-5M	TPK.505-5M	TPK.510-5M	TPK.515-5M
10 meters	TPK.502-10M	TPK.505-10M	TPK.510-10M	TPK.515-10M
25 meters	TPK.502-25M	TPK.505-25M	TPK.510-25M	TPK.515-25M

1/16" OD PEEK tubing

<i>Length</i>	.006" ID <i>Prod No</i>	.010" ID <i>Prod No</i>	.020" ID <i>Prod No</i>	.030" ID <i>Prod No</i>
5 meters	TPK106-5M	TPK110-5M	TPK120-5M	TPK130-5M
10 meters	TPK106-10M	TPK110-10M	TPK120-10M	TPK130-10M
25 meters	TPK106-25M	TPK110-25M	TPK120-25M	TPK130-25M

1/8" OD PEEK tubing

<i>Length</i>	.060" ID <i>Prod No</i>
5 meters	TPK260-5M
10 meters	TPK260-10M
25 meters	TPK260-25M

PEEK TUBING ELBOWS

Tubing elbows (90° and 180°) are ideal for routing 1/16" PEEK tubing through an LC system. These elbows are proportioned to bend PEEK tubing at the optimum radius for maximum chemical resistance and burst pressure. Installation is simple – just snap the tubing into the elbow.

<i>Package of 5:</i>	<i>Prod No</i>
90° elbow	JR-357090-5
180° elbow	JR-357180-5

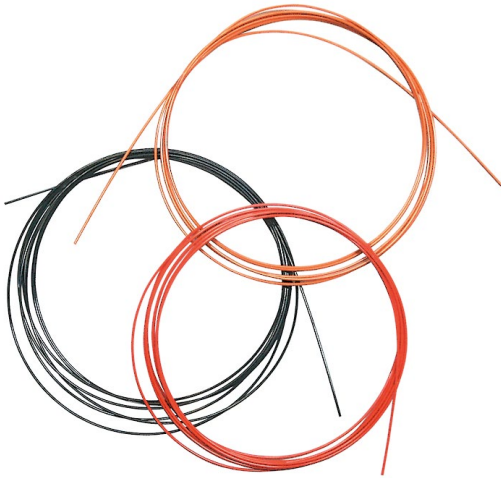


MORE INFORMATION

Polymeric tubing	
PTFE	page 92
FEP	92
ETFE	92

CUSTOM PEEK TUBING

We offer PEEK tubing custom-manufactured to meet your specific OD, ID, and color requirements. The OD range is .014" (360 micron) to 1/8", with a minimum ID of .002" for tubing up to 1/16" OD. (Maximum ID varies according to the OD.) Color coding can be solid or striped.



Color-coded PEEK tubing

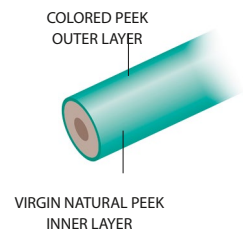
Color-coded tubing helps you identify the ID of your PEEK tubing – each ID is coded with a different color. Use this tubing where maximum chemical resistance and biocompatibility are required.

1/16" OD dual layer color-coded PEEK tubing

Custom lengths

Our dual layer PEEK tubing eliminates any concern that a critical sample stream could be contaminated by the pigments used to color code the tubing.* It looks like any other color-coded tubing at first glance, but a closer look reveals that the pigmented layer surrounds a separate but integrally-bonded inner layer of natural PEEK.

Tube ID	Color	bar	psi	Prod No
.004"	Black	460	6700	JR-TD-5804
.005"	Red	420	6100	JR-TD-6007
.007"	Yellow	400	5800	JR-TD-6008
.010"	Blue	386	5600	JR-TD-6009
.020"	Orange	350	4500	JR-TD-6010
.030"	Green	240	3500	JR-TD-6011



1/16" OD striped color-coded PEEK tubing

Custom lengths

A stripe is added to the outside, so dye never contacts the fluid stream.*

Specify the length required, in inches or feet. For pricing custom tubing, the length is rounded up to the next foot. For example, a 5" piece is charged as one foot; an 18" piece as two feet.

Tube ID	Color	bar	psi	Prod No
.004"	Black	460	6700	JR-T-5804
.005"	Red	420	6100	JR-T-5999
.007"	Yellow	400	5800	JR-T-6000
.010"	Blue	386	5600	JR-T-6001
.020"	Orange	350	4500	JR-T-6002
.030"	Green	240	3500	JR-T-6003
.040"	Grey	165	2400	JR-T-60031

1/16" OD striped color-coded PEEK tubing

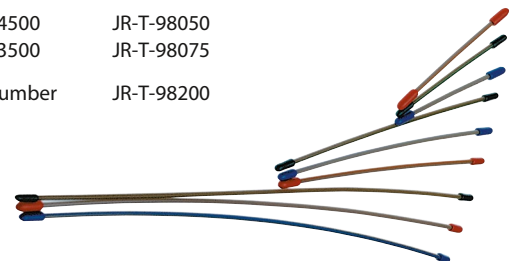
Pre-cut kits

A stripe is added to the outside, so dye never contacts the fluid stream.*

Includes 15 pieces of tubing; 5 each of 5 cm, 10 cm, and 20 cm pre-cut lengths.

Tube ID	Color	bar	psi	Prod No
.005"	Red	420	6100	JR-T-98013
.007"	Yellow	400	5800	JR-T-98017
.010"	Blue	386	5600	JR-T-98025
.020"	Orange	350	4500	JR-T-98050
.030"	Green	240	3500	JR-T-98075

Super kit, one of each above product number
(75 pieces total) JR-T-98200



CONVERSIONS

10 ft	=	3.05 m
25 ft	=	7.62 m
100 ft	=	30.48 m
50 µm	=	.002"
100 µm	=	.004"
125 µm	=	.005"
150 µm	=	.006"
0.25 mm	=	.010"
0.50 mm	=	.020"
0.75 mm	=	.030"
1.0 mm	=	.040"
1.5 mm	=	.060"
2.0 mm	=	.080"
4.6 mm	=	.180"
6.0 mm	=	.236"
6.4 mm	=	.253"
7.0 mm	=	.275"
10.0 mm	=	.400"
27.0 mm	=	1.08"
1/32"	=	0.8 mm
1/16"	=	1.6 mm
1/8"	=	3.2 mm
1/4"	=	6.4 mm
3/8"	=	9.5 mm
1/2"	=	12.7 mm

*All colorants used in the manufacture of this tubing are RoHS-compliant (Restriction of Hazardous Substances)

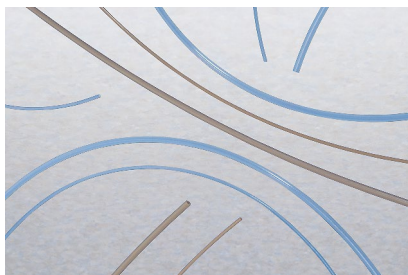
Polymeric tubing

TUBING

PTFE, FEP, and ETFE tubing

Polymeric tubing is square cut and ready to use. Each package of polymeric tubing contains one piece of the specified length.

See also PEEK tubing, pages 90-91.



1/16" OD polymeric tubing

	.006" ID <i>Prod No</i>	.010" ID <i>Prod No</i>	.015" ID <i>Prod No</i>	.020" ID <i>Prod No</i>	.030" ID <i>Prod No</i>
PTFE					
5 meters	TTF106-5M	TTF110-5M	TTF115-5M	TTF120-5M	TTF130-5M
10 meters	TTF106-10M	TTF110-10M	TTF115-10M	TTF120-10M	TTF130-10M
25 meters	TTF106-25M	TTF110-25M	TTF115-25M	TTF120-25M	TTF130-25M
FEP					
5 meters	—	TFEP110-5M	—	TFEP120-5M	TFEP130-5M
10 meters	—	TFEP110-10M	—	TFEP120-10M	TFEP130-10M
25 meters	—	TFEP110-25M	—	TFEP120-25M	TFEP130-25M
ETFE					
5 meters	—	TTZ110-5M	—	TTZ120-5M	TTZ130-5M
10 meters	—	TTZ110-10M	—	TTZ120-10M	TTZ130-10M
25 meters	—	TTZ110-25M	—	TTZ120-25M	TTZ130-25M

1/8" OD polymeric tubing

	.030" ID <i>Prod No</i>	.060" ID <i>Prod No</i>	.085" ID <i>Prod No</i>
PTFE			
5 meters	TTF230-5M	TTF260-5M	TTF285-5M
10 meters	TTF230-10M	TTF260-10M	TTF285-10M
25 meters	TTF230-25M	TTF260-25M	TTF285-25M
FEP			
5 meters	—	TFEP260-5M	—
10 meters	—	TFEP260-10M	—
25 meters	—	TFEP260-25M	—
ETFE			
5 meters	—	TTZ260-5M	—
10 meters	—	TTZ260-10M	—
25 meters	—	TTZ260-25M	—

– Not available

MORE INFORMATION

PEEK tubing
 Natural page 90
 Color-coded 91
 Striped 91

CUSTOM LENGTHS

Custom lengths of PTFE tubing up to a maximum of 250' available on request. Additional charges may apply.

TUBING POLYMERS

PTFE Inert; very soft, easily cold flows. Produced as Teflon®

FEP Chemically resistant like PTFE, but lower creep and higher friction. More transparent than PTFE.

ETFE Resistant to most chemical attack; some chlorinated solvents will cause tubing to swell. Produced as Tefzel®

CONVERSIONS

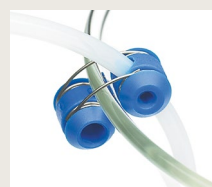
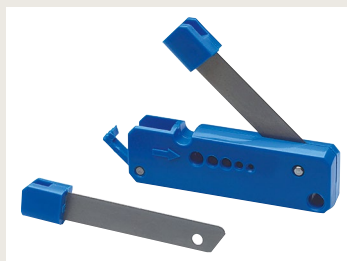
10 ft = 3.05 m
 25 ft = 7.62 m
 100 ft = 30.48 m

CLEAN-CUT POLYMER TUBING CUTTER

For leak-free tubing connections in an LC system, right angles and clean cuts are essential. The Clean-Cut makes burr-free perpendicular cuts on polymeric tubing without distorting the outside diameter or closing the inside diameter. The handy pocket-sized tool features a unique safety locking mechanism to secure the blade when not in use.

Prod No

Clean-Cut tubing cutter JR-797
 Replacement blade JR-798



TUBING CLIP – THE LC TUBING ORGANIZER

The tubing clip holds 1/16" and 1/8" polymer tubing precisely where you want them in your beakers, flasks, bottles, etc. up to 4 mm wall thickness. The stainless steel spring ensures a long lifetime.

Package of 5: *Prod No*

Tubing clip JR-9001-5

Metal tubing, bulk quantities

Bulk metal tubing is not electrolytically cut or cleaned. The annealing process provides tubing which is sufficiently clean for most chromatography applications. (See note at left for custom-cleaned tubing.)

To order, specify the length required in one meter increments.

CLEANED CUSTOM LENGTH TUBING

You can order custom length tubing which has been electrolytically cut, deburred, and steam cleaned. Please contact VICI or your local distributor for product numbers and pricing.

The maximum lengths available depends on the ID of the tubing:

Tubing ID	Max length
.005"	90 cm
.007"	150 cm
.010"	300 cm
.020"	600 cm
.026"	1200 cm
.030"	1500 cm
>.030"	1500 cm

Tubing up to 6 feet in length will be supplied straight. Longer tubes will be supplied coiled.

CONVERSIONS

50 μm	=	.002"
100 μm	=	.004"
125 μm	=	.005"
150 μm	=	.006"
0.25 mm	=	.010"
0.50 mm	=	.020"
0.75 mm	=	.030"
1.0 mm	=	.040"
1.5 mm	=	.060"
2.0 mm	=	.080"
4.6 mm	=	.180"
6.0 mm	=	.236"
6.4 mm	=	.253"
7.0 mm	=	.275"
10.0 mm	=	.400"
27.0 mm	=	1.08"
1/32"	=	0.8 mm
1/16"	=	1.6 mm
1/8"	=	3.2 mm
1/4"	=	6.4 mm
3/8"	=	9.5 mm
1/2"	=	12.7 mm

316 stainless

Bulk quantities

Tubing ID	1/32" OD	1/16" OD	1/8" OD
	Prod No	Prod No	Prod No
.005"	TSS.505	TSS105	—
.007"	TSS.507	—	—
.010"	TSS.510	TSS110	—
.015"	—	TSS115	—
.020"	TSS.520	TSS120	—
.026"	—	TSS126	—
.030"	—	TSS130	TSS230
.040"	—	TSS140	TSS240
.060"	—	—	TSS260
.070"	—	—	TSS267
.085"	—	—	TSS285

Nickel 200

Bulk quantities

Tubing ID	1/32" OD	1/16" OD	1/8" OD
	Prod No	Prod No	Prod No
.005"	—	TNI105	—
.010"	TNI.510	—	—
.020"	TNI.520	TNI120	—
.030"	—	TNI130	—
.040"	—	TNI140	—
.085"	—	—	TNI285

Hastelloy C

Bulk quantities

Tubing ID	1/32" OD	1/16" OD	1/8" OD
	Prod No	Prod No	Prod No
.010"	—	THC110	—
.020"	—	THC120	—
.030"	—	THC130	—
.040"	—	THC140	—
.070"	—	—	THC270
.085"	—	—	THC285

Inconel 600

Bulk quantities

Tubing ID	1/32" OD	1/16" OD	1/8" OD
	Prod No	Prod No	Prod No
.061"	—	—	TINCO261
.082"	—	—	TINCO282

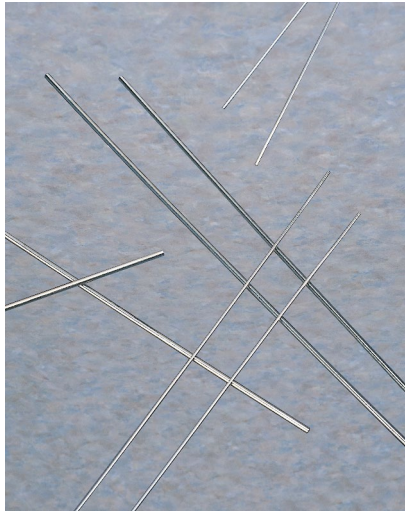
– Not normally available

TUBING

Pre-cut stainless tubing

These packages of pre-cut Type 316 stainless tubing provide an economical solution to the problems that are caused by “seat-of-the-pants” cutting in the lab or field. They are priced to give a saving over the charge for custom-cut tubing.

All tubing is electrolytically cut and specially steam-cleaned with micro-filtered steam from deionized water, which removes both organic and inorganic contaminants.



1/32" OD stainless tubing

Pre-cut lengths

<i>Length</i>	.005" ID <i>Prod No</i>	.010" ID <i>Prod No</i>	.020" ID <i>Prod No</i>
<i>2 pieces per package</i>			
5 cm	T5N5D	T5N10D	T5N20D
10 cm	T10N5D	T10N10D	T10N20D
20 cm	T20N5D	T20N10D	T20N20D
30 cm	T30N5D	T30N10D	T30N20D
50 cm	T50N5D	T50N10D	T50N20D
100 cm	—	T100N10D	T100N20D
<i>10 pieces per package</i>			
5 cm	T5N5-10	T5N10-10	T5N20-10
10 cm	T10N5-10	T10N10-10	T10N20-10
20 cm	T20N5-10	T20N10-10	T20N20-10
30 cm	T30N5-10	T30N10-10	T30N20-10
50 cm	T50N5-10	T50N10-10	T50N20-10
100 cm	—	T100N10-10	T100N20-10
<i>50 pieces per package</i>			
5 cm	T5N5-50	T5N10-50	T5N20-50
10 cm	T10N5-50	T10N10-50	T10N20-50
20 cm	T20N5-50	T20N10-50	T20N20-50
30 cm	T30N5-50	T30N10-50	T30N20-50
50 cm	T50N5-50	T50N10-50	T50N20-50
100 cm	—	T100N10-50	T100N20-50
<i>100 pieces per package</i>			
5 cm	T5N5-100	T5N10-100	T5N20-100
10 cm	T10N5-100	T10N10-100	T10N20-100
20 cm	T20N5-100	T20N10-100	T20N20-100
30 cm	T30N5-100	T30N10-100	T30N20-100
50 cm	T50N5-100	T50N10-100	T50N20-100
100 cm	—	T100N10-100	T100N20-100

TECH TIP

Forty years of Valco experience show that the particles left in poorly cut tubing are the number one cause of valve damage.

CONVERSIONS

5 cm	=	1.97"
10 cm	=	3.94"
20 cm	=	7.87"
30 cm	=	11.82"
50 cm	=	19.68"
100 cm	=	39.37"
0.12 mm	=	.005"
0.25 mm	=	.010"
0.50 mm	=	.020"
0.75 mm	=	.030"
1.0 mm	=	.040"
1.5 mm	=	.060"
2.0 mm	=	.080"
4.6 mm	=	.180"
6.0 mm	=	.236"
6.4 mm	=	.253"
7.0 mm	=	.275"
10.0 mm	=	.400"
27.0 mm	=	1.08"
1/32"	=	0.8 mm
1/16"	=	1.6 mm
1/8"	=	3.2 mm
1/4"	=	6.4 mm
3/8"	=	9.5 mm
1/2"	=	12.7 mm

1/16" OD stainless tubing

Pre-cut lengths

<i>Length</i>	.005" ID <i>Prod No</i>	.010" ID <i>Prod No</i>	.020" ID <i>Prod No</i>	.030" ID <i>Prod No</i>	.040" ID <i>Prod No</i>
<i>2 pieces per package</i>					
5 cm	T5C5D	T5C10D	T5C20D	T5C30D	T5C40D
10 cm	T10C5D	T10C10D	T10C20D	T10C30D	T10C40D
20 cm	T20C5D	T20C10D	T20C20D	T20C30D	T20C40D
30 cm	T30C5D	T30C10D	T30C20D	T30C30D	T30C40D
50 cm	T50C5D	T50C10D	T50C20D	T50C30D	T50C40D
100 cm	—	T100C10D	T100C20D	T100C30D	T100C40D
<i>10 pieces per package</i>					
5 cm	T5C5-10	T5C10-10	T5C20-10	T5C30-10	T5C40-10
10 cm	T10C5-10	T10C10-10	T10C20-10	T10C30-10	T10C40-10
20 cm	T20C5-10	T20C10-10	T20C20-10	T20C30-10	T20C40-10
30 cm	T30C5-10	T30C10-10	T30C20-10	T30C30-10	T30C40-10
50 cm	T50C5-10	T50C10-10	T50C20-10	T50C30-10	T50C40-10
100 cm	—	T100C10-10	T100C20-10	T100C30-10	T100C40-10
<i>50 pieces per package</i>					
5 cm	T5C5-50	T5C10-50	T5C20-50	T5C30-50	T5C40-50
10 cm	T10C5-50	T10C10-50	T10C20-50	T10C30-50	T10C40-50
20 cm	T20C5-50	T20C10-50	T20C20-50	T20C30-50	T20C40-50
30 cm	T30C5-50	T30C10-50	T30C20-50	T30C30-50	T30C40-50
50 cm	T50C5-50	T50C10-50	T50C20-50	T50C30-50	T50C40-50
100 cm	—	T100C10-50	T100C20-50	T100C30-50	T100C40-50
<i>100 pieces per package</i>					
5 cm	T5C5-100	T5C10-100	T5C20-100	T5C30-100	T5C40-100
10 cm	T10C5-100	T10C10-100	T10C20-100	T10C30-100	T10C40-100
20 cm	T20C5-100	T20C10-100	T20C20-100	T20C30-100	T20C40-100
30 cm	T30C5-100	T30C10-100	T30C20-100	T30C30-100	T30C40-100
50 cm	T50C5-100	T50C10-100	T50C20-100	T50C30-100	T50C40-100
100 cm	—	T100C10-100	T100C20-100	T100C30-100	T100C40-100

CLEANED CUSTOM LENGTH TUBING

You can order custom length tubing which has been electrolytically cut, deburred, and steam cleaned. Please contact VICI or your local distributor for product numbers and pricing.

The maximum lengths available depends on the ID of the tubing:

Tubing ID	Max length
.005"	90 cm
.007"	150 cm
.010"	300 cm
.020"	600 cm
.026"	1200 cm
.030"	1500 cm
>.030"	1500 cm

Tubing up to 6 feet in length will be supplied straight. Longer tubes will be supplied coiled.

VOLUME CHART

Tubing ID	Volume		Tubing ID	Volume	
	<i>µl/cm</i>	<i>µl/in</i>		<i>µl/cm</i>	<i>µl/in</i>
.005"	0.13	0.32	.030"	4.56	11.58
.010"	0.51	1.29	.040"	8.11	20.59
.015"	1.14	2.90	.060"	18.24	46.33
.020"	2.03	5.15	.070"	24.83	63.06
.025"	3.17	8.04	.085"	36.61	92.99

Typical ID tolerances for our tubing are ±.001". This is much tighter than normal commercial grades of tubing; however, it is enough to result in noticeable error if exact volumes are not measured.