

# TUBING



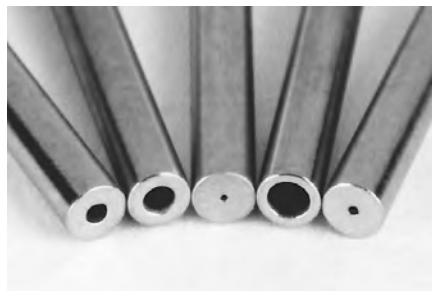
## METAL AND POLYMERIC

Use of our precision cut and finished tubing along with VICI fittings and valves maintains the flow uniformity and cleanliness required by high performance systems.

We offer chromatography grade tubing in ODs of 360  $\mu\text{m}$ , 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.

### VICI CUTTING AND CLEANING

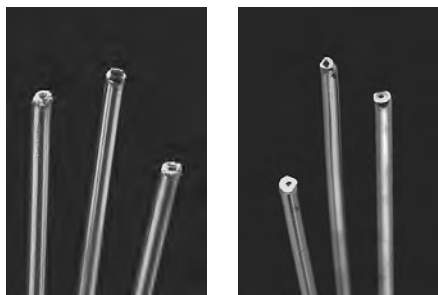
VICI's electrolytic cutting process yields polished tubing with flat ends. Each piece of VICI pre-cut metal tubing is specially cleaned with micro-filtered steam from deionized water to remove both organic and inorganic contaminants, representing a major improvement over the common practice of using 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 TUBING FROM VICI**

### IMPROPER CUTTING

Tools commonly used to cut tubing in the general laboratory environment – such as wire cutters, files, jewelers' saws, and most tubing cutters – can leave uneven ends and burrs, which create potential for dead volumes or leaks. These non-precision cutters are likely to generate particulates and deform inner and outer diameters, which can introduce dead volume and flow anomalies.



**AVOID UNEVEN ENDS AND BURRS, DUE TO FILES (L) AND PLIER CUTS (R)**

#### **t** TECH TIP

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

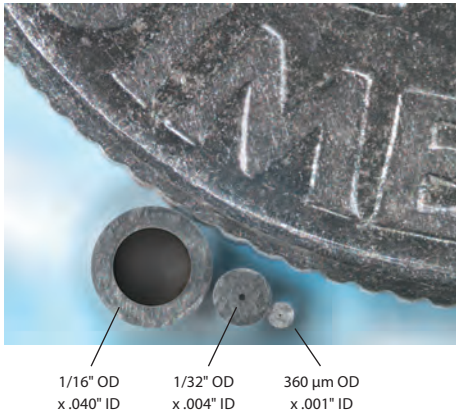
#### **t** TECH TIP

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"



**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.

**COMPARISON OF INTERIOR FINISHES**

A comparison of the interiors of commonly used tubing (below) shows the quality of the electroformed nickel tubing surface. (All photos are 500x 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.



ELECTROFORMED NICKEL (EFNI)      NICKEL 200 ALLOY      TYPE 316 STAINLESS STEEL

**COMPARISON OF INTERIOR FINISHES OF COMMONLY USED TUBING**

**i CUSTOM ID/OD**

Custom IDs/ODs are available upon request.

**\$ 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**

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	20 feet
.007"	TEFNI.107	20 feet

**1/32" OD EFNi tubing**

**CUSTOM LENGTHS**

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	20 feet
.007"	TEFNI.507	20 feet
.010"	TEFNI.510	30 feet
.012"	TEFNI.512	30 feet
.015"	TEFNI.515	30 feet
.020"	TEFNI.520	30 feet

**1/16" OD EFNi tubing**

**CUSTOM LENGTHS**

See pricing note in box at left.

Tubing ID	Prod No	Max length
.020"	TEFNI120	30 feet
.030"	TEFNI130	50 feet
.040"	TEFNI140	50 feet



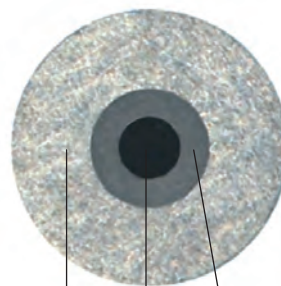
### NICKEL-CLAD FUSED SILICA TUBING

- 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 316 stainless ferrules.

Nickel-clad fused silica tubing is available in IDs from 10  $\mu\text{m}$  to 700  $\mu\text{m}$ , permitting use of metal ferrules for improved leak-tight connections.



**CROSS SECTION**  
Nickel-clad FS tubing

### 1/32" (800 $\mu\text{m}$ ) OD nickel-clad fused silica

Tubing ID	Prod No
10 $\mu\text{m}$	TNFS800010
15 $\mu\text{m}$	TNFS800015
20 $\mu\text{m}$	TNFS800020
25 $\mu\text{m}$	TNFS800025
50 $\mu\text{m}$	TNFS800050
100 $\mu\text{m}$	TNFS800100
180 $\mu\text{m}$	TNFS800180
250 $\mu\text{m}$	TNFS800250

### 1/16" OD nickel-clad fused silica

Tubing ID	Prod No
50 $\mu\text{m}$	TNFS1600050
75 $\mu\text{m}$	TNFS1600075
100 $\mu\text{m}$	TNFS1600100
200 $\mu\text{m}$	TNFS1600200
250 $\mu\text{m}$	TNFS1600250
300 $\mu\text{m}$	TNFS1600300
400 $\mu\text{m}$	TNFS1600400
500 $\mu\text{m}$	TNFS1600500
700 $\mu\text{m}$	TNFS1600700

#### **t** TECH TIP

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

#### **i** 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.

#### **t** TECH TIP

VICI electrochemically plates 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.

#### **↔** CONVERSIONS

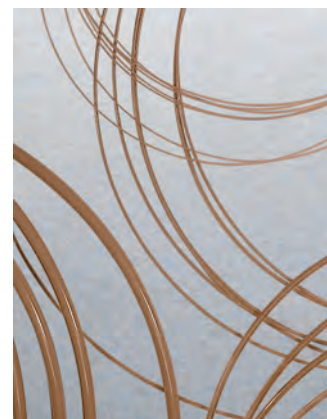
50 $\mu\text{m}$	≈ .002"
75 $\mu\text{m}$	≈ .003"
100 $\mu\text{m}$	≈ .004"
125 $\mu\text{m}$	≈ .005"
150 $\mu\text{m}$	≈ .006"
180 $\mu\text{m}$	≈ .007"
205 $\mu\text{m}$	≈ .008"
250 $\mu\text{m}$	≈ .010"
305 $\mu\text{m}$	≈ .012"
380 $\mu\text{m}$	≈ .015"
510 $\mu\text{m}$	≈ .020"
760 $\mu\text{m}$	≈ .030"
1015 $\mu\text{m}$	≈ .040"
800 $\mu\text{m}$	≈ 1/32"
1600 $\mu\text{m}$	≈ 1/16"



## 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 tubing;  $\pm .001''$  for 1/32" and 1/16" tubing; and  $\pm .003''$  for 1/8".



### 1/32" OD PEEK tubing

Length	.0025" ID	.005" ID	.010" ID	.015" ID
	Prod No	Prod No	Prod No	Prod No
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

Length	.006" ID	.010" ID	.020" ID	.030" ID
	Prod No	Prod No	Prod No	Prod No
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

Length	.060" ID	.088" ID
	Prod No	Prod No
5 meters	TPK260-5M	TPK288-5M
10 meters	TPK260-10M	TPK288-10M
25 meters	TPK260-25M	TPK288-25M

#### **i** MAXIMUM PRESSURE FOR PEEK TUBING

Tubing ID    Maximum Pressure

#### 1/32"

.0025"    6600 psi  
.005"    6000 psi  
.010"    5800 psi  
.015"    3900 psi

#### 1/16"

.005"    6100 psi  
.010"    5600 psi  
.020"    4500 psi  
.030"    3500 psi

#### 1/8"

.060"    3600 psi  
.088"    2500 psi

#### **→** SEE ALSO

Polymeric tubing

PTFE ..... page 72

FEP..... 72

ETFE..... 72

#### **i** 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.

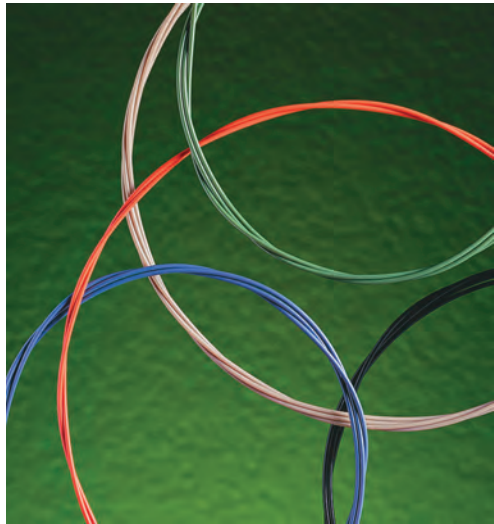
#### **i** PEEK TUBING ELBOWS

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.



Package of 5:    Prod No

90° elbow	JR-357090-5
180° elbow	JR-357180-5



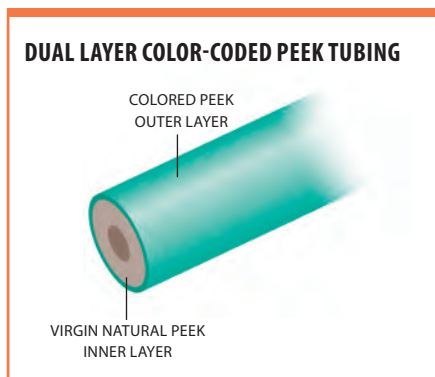
### COLOR-CODED PEEK TUBING

Color-coded tubing helps you identify the ID of your PEEK tubing, since each ID is a different color. Use this tubing where maximum chemical resistance and biocompatibility are required. Tolerances are  $\pm .002''$  on the OD and  $\pm .001''$  on the ID.

### 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 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.

<i>Tubing ID</i>	<i>Color</i>	<i>bar</i>	<i>psi</i>	<i>Prod No</i>
.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



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



## 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 meters.

<i>Tubing ID</i>	<i>Color</i>	<i>bar</i>	<i>psi</i>	<i>Prod No</i>
.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 Solid color-coded PEEK tubing CUSTOM LENGTHS

All colorants used in the manufacturing of this tubing are RoHS-compliant.

Specify the length required, in meters.

<i>Tubing ID</i>	<i>Color</i>	<i>bar</i>	<i>psi</i>	<i>Prod No</i>
.0025"	Natural	460	6700	JR-T-5998
.004"	Black	460	6700	JR-T-6020
.005"	Red	420	6100	JR-T-6007
.006"	Purple	410	5950	JR-T-6030
.007"	Yellow	400	5800	JR-T-6008
.010"	Blue	386	5600	JR-T-6009
.015"	Grey	365	5300	JR-T-6040
.020"	Orange	350	4500	JR-T-6010
.030"	Green	240	3500	JR-T-6011

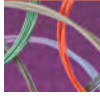


### CONVERSIONS

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 69-71.

### 1/16" OD polymeric tubing

	<b>.006" ID</b> <i>Prod No</i>	<b>.010" ID</b> <i>Prod No</i>	<b>.015" ID</b> <i>Prod No</i>	<b>.020" ID</b> <i>Prod No</i>	<b>.030" ID</b> <i>Prod No</i>
<b>PTFE</b>					
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
	<b>.010" ID</b> <i>Prod No</i>	<b>.020" ID</b> <i>Prod No</i>	<b>.030" ID</b> <i>Prod No</i>		
<b>FEP</b>					
5 meters	TFEP110-5M	TFEP120-5M	TFEP130-5M		
10 meters	TFEP110-10M	TFEP120-10M	TFEP130-10M		
25 meters	TFEP110-25M	TFEP120-25M	TFEP130-25M		
<b>ETFE</b>					
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

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

#### 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.

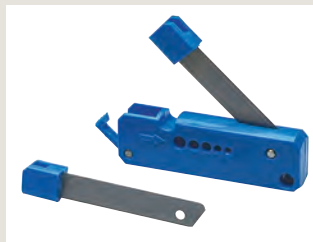


Package of 5: *Prod No*

Tubing clip	JR-9001-5
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#### 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

#### SEE ALSO

PEEK tubing  
 Natural . . . . . page 69  
 Color-coded . . . . . 70-71  
 Striped . . . . . 71

#### CUSTOM LENGTHS

Custom lengths of PTFE, FEP, and ETFE tubing up to 75 meters 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



## 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 cleaned custom-length tubing.)

To order, specify the length required in 1 meter increments.

### 360 µm OD metal tubing

BULK QUANTITIES

	75 µm ID Prod No	150 µm ID Prod No
<b>316 stainless</b>	TSS360075	TSS360150

### 1/32" OD metal tubing

BULK QUANTITIES

	.005" ID Prod No	.007" ID Prod No	.010" ID Prod No	.020" ID Prod No
<b>316 stainless</b>	TSS.505	TSS.507	TSS.510	TSS.520
<b>Nickel 200</b>	—	—	TNI.510	TNI.520

### 1/16" OD metal tubing

BULK QUANTITIES

	.005" ID Prod No	.010" ID Prod No	.012" ID Prod No	.015" ID Prod No
<b>316 stainless</b>	TSS105	TSS110	TSS112	TSS115
<b>Hastelloy C</b>	—	THC110		
<b>Nickel 200</b>	TNI105	TNI110		

	.020" ID Prod No	.026" ID Prod No	.030" ID Prod No	.040" ID Prod No
<b>316 stainless</b>	TSS120	TSS126	TSS130	TSS140
<b>Hastelloy C</b>	THC120	—	THC130	THC140
<b>Nickel 200</b>	TNI120	—	TNI130	TNI140

### 1/8" OD metal tubing

BULK QUANTITIES

Type 316 stainless tubing is also available in .010 and .020" ID's.

	.030" ID Prod No	.040" ID Prod No	.060" ID Prod No
<b>316 stainless</b>	TSS230	TSS240	TSS260

	.067" ID Prod No	.085" ID Prod No
<b>316 stainless</b>	TSS267	TSS285

Also available in Hastelloy C, Nickel 200, and Inconel 600. Call for a quote.

#### **i** 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.

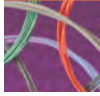
The maximum lengths available depends on the ID of the tubing:

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

#### **↔** CONVERSIONS

50 µm	≈ .002"
75 µm	≈ .003"
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





**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 savings 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 KITS**

Length	.005" ID Prod No	.010" ID Prod No	.020" ID Prod No
<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

**t TECH TIP**

Fifty years of experience have shown 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 KITS

Length	.005" ID		.010" ID		.020" ID		.030" ID		.040" ID	
	Prod No	Prod No	Prod No	Prod No	Prod No	Prod No	Prod No	Prod No	Prod No	Prod No
<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					

**i 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

**i VOLUME CHART**

Tubing ID	Volume		Tubing ID	Volume	
	µl/cm	µl/in		µl/cm	µl/in
.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.