316 L Stainless Steel Chromatography Tubing

AFP
Schivo Group

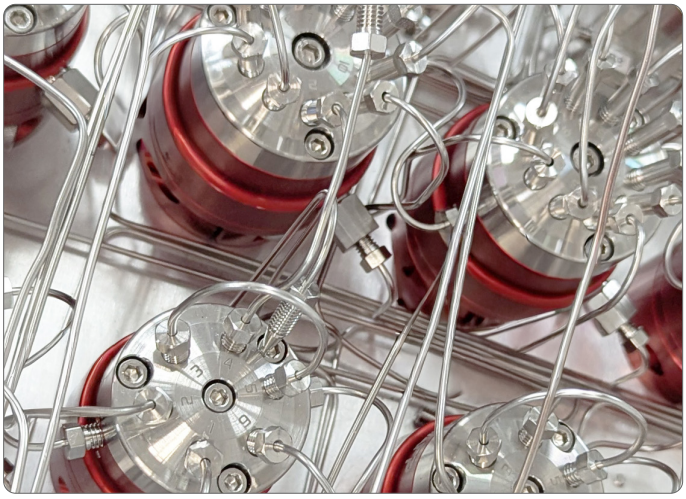
Stainless Steel Pre-cut and Coiled Tubing for Chromatography Applications

AFP offers a complete range of off-the-shelf pre-cut tubing, or custom-cut lengths, and bulk tubing options in both 304 and 316 stainless steel for gas chromatography applications. Available in coated or uncoated, seamless or seamed configurations, our tubing is engineered for superior performance, corrosion resistance, and reliability in demanding environments. Manufactured to exacting standards, AFP tubing ensures smooth internal surfaces, precise ID tolerances, and exceptional cleanliness—supporting accurate, consistent, and contamination-free results. Backed by ISO 9001-certified quality control and full traceability, AFP delivers tubing solutions that optimize system integrity, longevity, and purity.

AFP provides a comprehensive range of long-length seamless coil tubing with outer diameters under 1" (25.4 mm). Available in corrosion-resistant stainless steels and high nickel alloys, this tubing is engineered to perform in demanding environments. With continuous lengths up to and exceeding 5,000 feet, the seamless design eliminates welds, reducing installation time, lowering the need for additional fittings, and minimizing the risk of leaks.

Our ultra-small diameter (USD™) capillary tubing is precisely manufactured for chromatography, flow measurement, and sensing applications. Designed to withstand pressures exceeding 36,000 psi (2500 bar), this tubing is produced to exacting specifications, resulting in smoother internal surfaces and consistently uniform ID tolerances. The result is greater accuracy, reliability, and extended service life in high-performance systems.

From raw material selection through every stage of production, AFP ensures strict quality control and tight tolerances. This end-to-end commitment delivers tubing that not only meets but exceeds industry standards, giving customers dependable solutions that enhance efficiency, safety, and overall system performance.



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Seamless coil tubing eliminates the potential leak points of welds providing the highest integrity tubing-runs available.

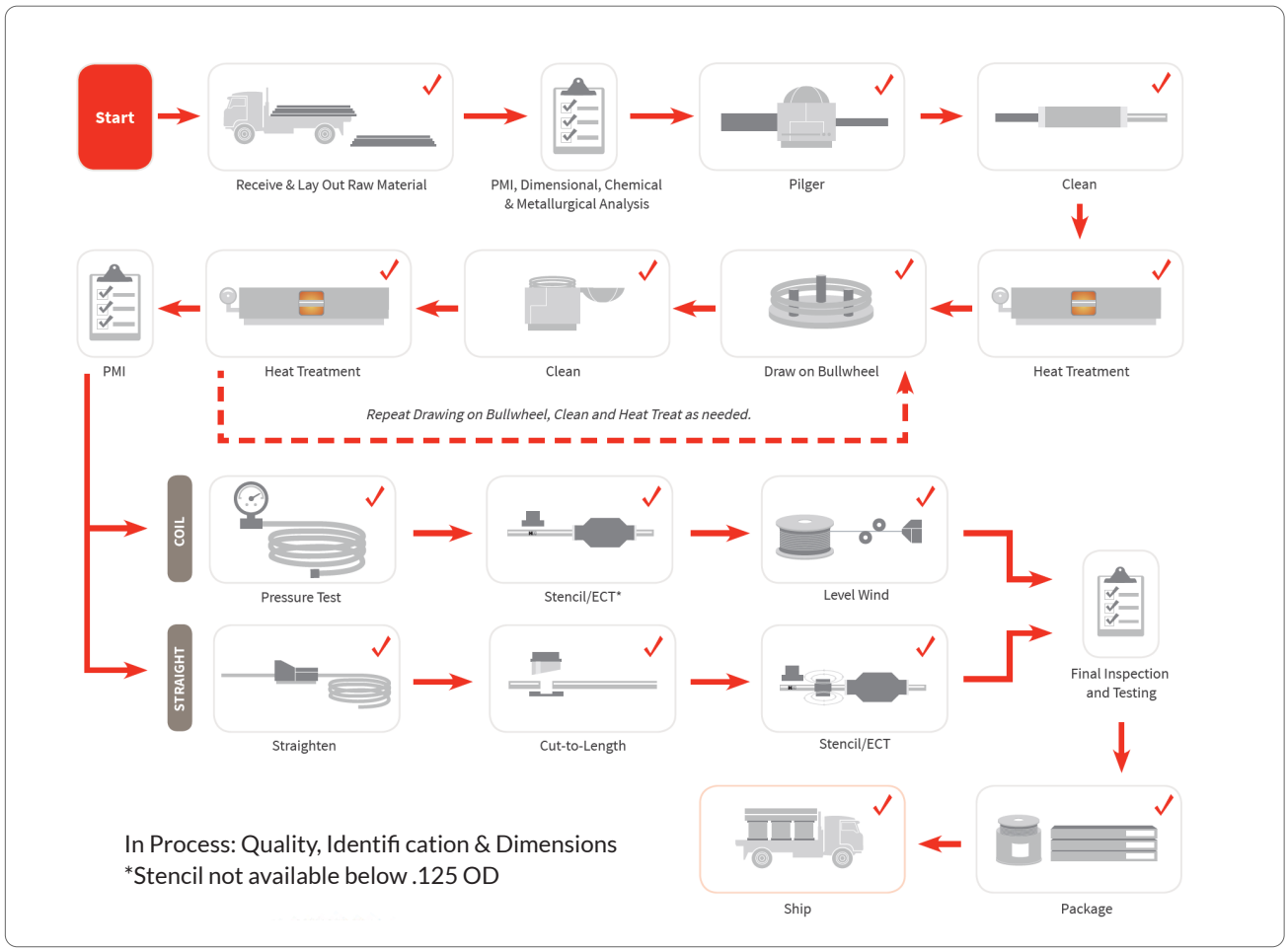


Figure 5

ID Surface Roughness

Ultra-small diameter tubing used in laboratory equipment, medical devices and other high-precision applications requires a smooth ID surface finish to ensure high-purity delivery of gas, solvents, chemicals and other media. Achieving proper ID smoothness is determined by two things: how the tube is first drawn, as well as the engineering expertise of the manufacturing supplier. Drawing, which reduces the tube's dimensions, is one of three main operations that occurs during the manufacturing process. The others are cleaning, to remove drawing lubricants, and heat treatment, to reset the mechanical properties and prepare the tube for redrawing.

There are two main types of drawing operations

Floating Plug

Tubing is pulled through a conical die with a floating plug in the ID. Both the die and the plug determine the drawn OD and ID. This type of drawing involves more tooling and lubrication than other methods, but it yields tubing with more precise dimensions and a smoother surface finish.

Sink Drawing

Unlike floating plug drawing, sink drawing does not utilize an internal support. Tubing is pulled through a conical die, reducing the inside and outside diameters. The resulting ID is determined by several factors, including the inner and outer diameters of the stock tube, die angle and drawing stress.

Answering the need for smaller tubing dimensions and smoother ID surfaces, has developed proprietary tube drawing processes and equipment that can draw stainless steel in coil form, resulting in more reliable flow rates and faster sampling cycles in HPLC applications. Supporting the ID further along in the drawing process and holding tooling to more stringent requirements produces surface finishes as smooth as 20 Ra.

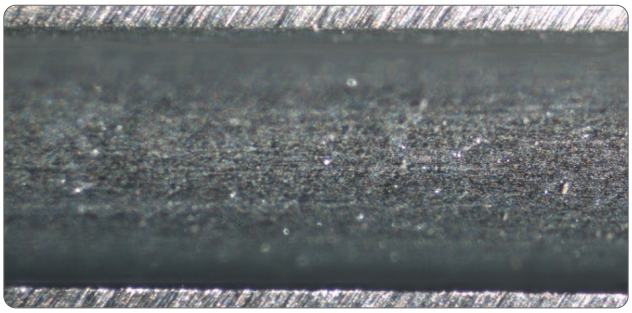


Figure 6

ID Cleanliness

Impurities in USD tubing, such as oil, grease, and other foreign material left over from the manufacturing process, can result in cross-contamination and inaccurate sample readings for the end user. To prevent this, conventional tubing requires additional cleaning prior to installation. For many end users, figuring out a way to effectively clean stainless-steel tubing in long lengths and with such small diameters poses a big challenge. Not only that, but as tube length increases and the ID decreases, the pressure needed to push any media through the coil tubing skyrockets. As a result, standard cleaning methods and equipment aren't effective in cleaning high-precision USD tubes.

Proprietary cleaning methods can effectively degrease USD coil tubing several hundred feet long. After a tube is drawn, lubricant on the outer diameters is removed by this special degreasing process. The tube is then subjected to high pressures to remove ID lubricants. The specialized cleaning equipment allows us to process small-diameter tubing in long coils.

Having ability to clean in coil form significantly reduces the amount of cleaning time required by OEMs and end users who would otherwise have to flush each straight length individually.

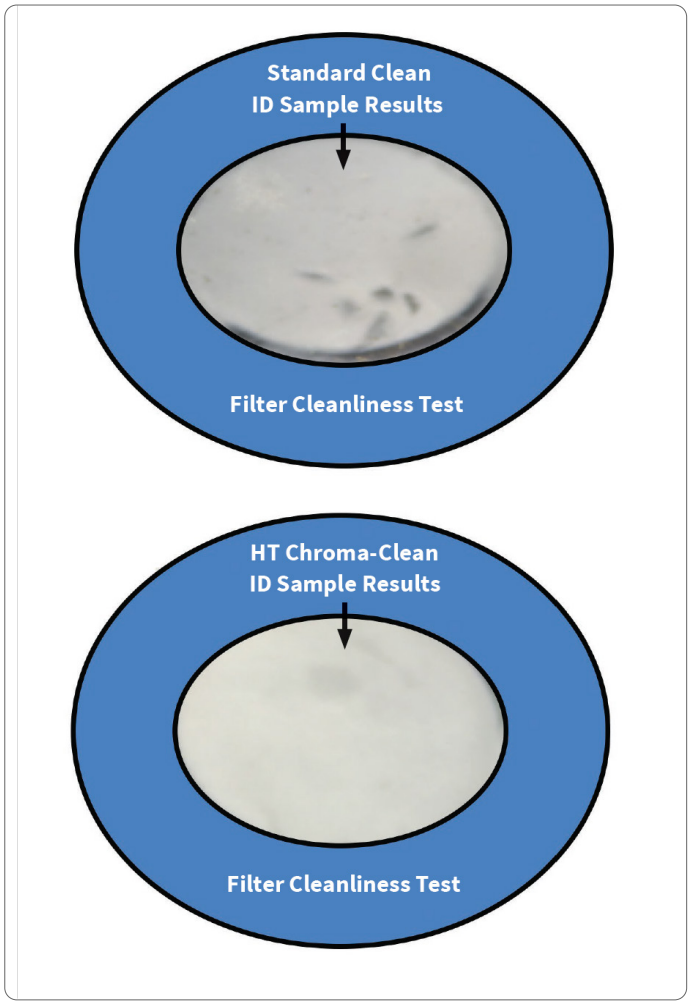


Figure 7

Measurement Quality

When measuring the inside diameter (ID) size of USD tubing, the small dimensions make physical gaging problematic. The ID becomes more starburst-shaped as the tubing is drawn to smaller sizes. This unique geometry yields imprecise results when pinned with circular gauge pins to measure ID size. We uses a variety of proprietary measuring techniques to ensure that these geometric fluctuations are accounted for.

Facilities are ISO 9001-Certified

Serving with the latest testing equipment and trained personnel.

Traceability Throughout The Entire Manufacturing Process:

- Material Test Reports accompany every shipment
- In-house, climate controlled laboratory
- Samples retained from every lot for peace of mind
- 100% Positive Material Identification (PMI)
- 100% Pressure Testing of all coils

Destructive and Non-Destructive Tests

Hydrostatic Testing: a non-destructive test (NDT) for strength and leaks. The test involves filling the tubing with deionized water until it reaches a specified hold pressure. The tubing is then observed for leaks and pressure loss.

Splitflow Testing: a non-destructive test (NDT) used on small diameter tubing to ensure that the interior is free of blockages and the surface is free of leaks. Testing involves holding a tube underwater and flowing Nitrogen through the tube.

Eddy Current Testing: eddy current testing (ECT) is one of many non-destructive electromagnetic (NDE) testing methods. ECT makes use of electromagnetic induction to detect and characterize surface and sub-surface flaws in tubing.

Surface Roughness: smoothness of the OD or ID surface of the tubing. Measurements are taken by a Surfometer verifi ed against certified roughness standards.

Dimensional Analysis: a measurement of the OD, ID, and/or Wall Thickness of the tube using a variety of calibrated micrometers and gauge pins.

Hydraulic Diameter: measure of the cross-sectional fluid fl ow through the inner diameter of the tube. Hydraulic diameter is obtained through a back pressure flow test.

Positive Material Identification (PMI): the analysis of a metallic sample to identify the material grade. This is accomplishedby measuring the % composition of its constituent elements and matching it to a database of known alloys. Typical methods for PMI include X-ray fluorescence (XRF).

Yield Strength: the stress at which a specific amount of plastic deformation is produced, usually taken as 0.2 percent of the unstressed length.

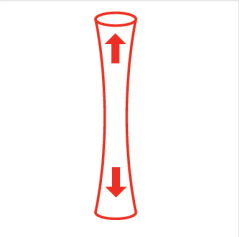
Tensile Strength: a measurement of the force required to pull something to the point where it breaks. The tensile strength of a material is the maximum amount of tensile stress that it can take before failure.

Elongation: a measure of the ductility; the amount of strain deformation a material can experience before failure in tensile testing.

Grain Size: a measure of the density of metallic crystals with the same confi guration within the microstructure of a material. Grain size serves as an indicator of temper within a sample of material.

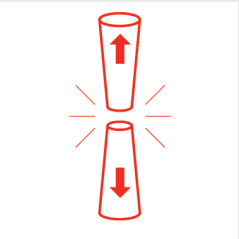
Rockwell Hardness: a hardness scale based on indentation hardness of a material. The Rockwell test determines the hardness by measuring the depth of penetration of an indenter under a large load compared to the penetration made by a preload.

1 STEPS



Yield Strength

2 STEPS

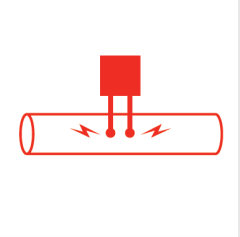


Tensile Strength

3 STEPS

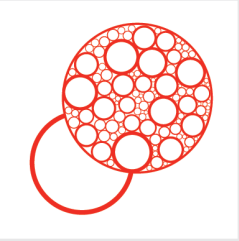
Elongation

4 STEPS



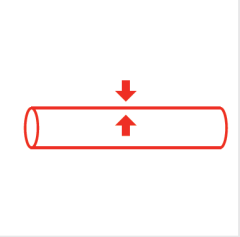
Positive Material Identification (PMI)

5 STEPS



Grain Size

6 STEPS



Rockwell Hardness

Pre-cut Seamless Tubing

1/16" OD Tubing	.005" ID	.010" ID	.020" ID	.030" ID	.040" ID
Length	Part No.	Part No.	Part No.	Part No.	Part No.
10 pieces per package					
5 cm	TU-SS-16-005-0017-10	TU-SS-16-010-0017-10	TU-SS-16-020-0017-10	TU-SS-16-030-0017-10	TU-SS-16-040-0017-10
10 cm	TU-SS-16-005-0037-10	TU-SS-16-010-0037-10	TU-SS-16-020-0037-10	TU-SS-16-030-0037-10	TU-SS-16-040-0037-10
20 cm	TU-SS-16-005-0077-10	TU-SS-16-010-0077-10	TU-SS-16-020-0077-10	TU-SS-16-030-0077-10	TU-SS-16-040-0077-10
30 cm	TU-SS-16-005-0116-10	TU-SS-16-010-0116-10	TU-SS-16-020-0116-10	TU-SS-16-030-0116-10	TU-SS-16-040-0116-10
50 cm	TU-SS-16-005-0195-10	TU-SS-16-010-0195-10	TU-SS-16-020-0195-10	TU-SS-16-030-0195-10	TU-SS-16-040-0195-10
100 cm	TU-SS-16-005-0393-10	TU-SS-16-010-0393-10	TU-SS-16-020-0393-10	TU-SS-16-030-0393-10	TU-SS-16-040-0393-10
50 pieces per package					
5 cm	TU-SS-16-005-0017-50	TU-SS-16-010-0017-50	TU-SS-16-020-0017-50	TU-SS-16-030-0017-50	TU-SS-16-040-0017-50
10 cm	TU-SS-16-005-0037-50	TU-SS-16-010-0037-50	TU-SS-16-020-0037-50	TU-SS-16-030-0037-50	TU-SS-16-040-0037-50
20 cm	TU-SS-16-005-0077-50	TU-SS-16-010-0077-50	TU-SS-16-020-0077-50	TU-SS-16-030-0077-50	TU-SS-16-040-0077-50
30 cm	TU-SS-16-005-0116-50	TU-SS-16-010-0116-50	TU-SS-16-020-0116-50	TU-SS-16-030-0116-50	TU-SS-16-040-0116-50
50 cm	TU-SS-16-005-0195-50	TU-SS-16-010-0195-50	TU-SS-16-020-0195-50	TU-SS-16-030-0195-50	TU-SS-16-040-0195-50
100 cm	TU-SS-16-005-0393-50	TU-SS-16-010-0393-50	TU-SS-16-020-0393-50	TU-SS-16-030-0393-50	TU-SS-16-040-0393-50
100 pieces per package					
5 cm	TU-SS-16-005-0017-100	TU-SS-16-010-0017-100	TU-SS-16-020-0017-100	TU-SS-16-030-0017-100	TU-SS-16-040-0017-100
10 cm	TU-SS-16-005-0037-100	TU-SS-16-010-0037-100	TU-SS-16-020-0037-100	TU-SS-16-030-0037-100	TU-SS-16-040-0037-100
20 cm	TU-SS-16-005-0077-100	TU-SS-16-010-0077-100	TU-SS-16-020-0077-100	TU-SS-16-030-0077-100	TU-SS-16-040-0077-100
30 cm	TU-SS-16-005-0116-100	TU-SS-16-010-0116-100	TU-SS-16-020-0116-100	TU-SS-16-030-0116-100	TU-SS-16-040-0116-100
50 cm	TU-SS-16-005-0195-100	TU-SS-16-010-0195-100	TU-SS-16-020-0195-100	TU-SS-16-030-0195-100	TU-SS-16-040-0195-100
100 cm	TU-SS-16-005-0393-100	TU-SS-16-010-0393-100	TU-SS-16-020-0393-100	TU-SS-16-030-0393-100	TU-SS-16-040-0393-100

Seamless Bulk Coiled Tubing

Material	Type	OD	ID	Coil Length	
				Minimum Order Qty.	
SS 316	Seamless Bulk Coiled	1/16''	.040''	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/16''	.030''	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/16''	.020''	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/16''	.010"	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/16''	.005"	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/8"	.060''	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/8"	.040''	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/8"	.030''	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/8"	.067''	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/8"	.085''	1,000	Request Quote
SS 316	Seamless Bulk Coiled	1/32"	.020''	2,500	Request Quote
SS 316	Seamless Bulk Coiled	1/32"	.010''	2,500	Request Quote
SS 316	Seamless Bulk Coiled	1/32"	.007''	2,500	Request Quote
SS 316	Seamless Bulk Coiled	1/32"	.005''	2,500	Request Quote

Seamless Straight-cut Tubing (10' Sticks)

Material	Type	OD	ID	Coil Length	
				Minimum Order Qty.	
SS 316	Seamless Straight-cut	1/16''	.040''	1,000	Request Quote
SS 316	Seamless Straight-cut	1/16''	.030''	1,000	Request Quote
SS 316	Seamless Straight-cut	1/16''	.020''	1,000	Request Quote
SS 316	Seamless Straight-cut	1/16''	.010"	1,000	Request Quote
SS 316	Seamless Straight-cut	1/16''	.005"	1,000	Request Quote
SS 316	Seamless Straight-cut	1/8"	.060''	1,000	Request Quote
SS 316	Seamless Straight-cut	1/8"	.040''	1,000	Request Quote
SS 316	Seamless Straight-cut	1/8"	.030''	1,000	Request Quote
SS 316	Seamless Straight-cut	1/8"	.067''	1,000	Request Quote
SS 316	Seamless Straight-cut	1/8"	.085''	1,000	Request Quote
SS 316	Seamless Straight-cut	1/32"	.020''	2,500	Request Quote
SS 316	Seamless Straight-cut	1/32"	.010''	2,500	Request Quote
SS 316	Seamless Straight-cut	1/32"	.007''	2,500	Request Quote
SS 316	Seamless Straight-cut	1/32"	.005''	2,500	Request Quote

Weld & Drawn Bulk Coiled Tubing

Material	Type	OD	ID	Coil Length	
				Minimum Order Qty.	
SS 316	Weld & Drawn Bulk Coiled	1/16''	.040''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/16''	.030''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/16''	.020''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/16''	.010"	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/16''	.005"	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/8"	.060''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/8"	.040''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/8"	.030''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/8"	.067''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/8"	.085''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/32"	.020''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/32"	.010''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/32"	.007''	5,000	Request Quote
SS 316	Weld & Drawn Bulk Coiled	1/32"	.005''	5,000	Request Quote

Cleaned Custom Length Tubing

You can order custom length tubing which has been electrolytically cut, deburred, and cleaned. Please contact sales for a quote sales@afplifesciences.com

Weld & Drawn Straight-cut Tubing (10’ Sticks)

Material	Type	OD	ID	Coil Length	
				Minimum Order Qty.	
SS 316	Weld & Drawn Straight-cut	1/16''	.040''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/16''	.030''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/16''	.020''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/16''	.010"	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/16''	.005"	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/8"	.060''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/8"	.040''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/8"	.030''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/8"	.067''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/8"	.085''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/32"	.020''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/32"	.010''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/32"	.007''	1,000	Request Quote
SS 316	Weld & Drawn Straight-cut	1/32"	.005''	1,000	Request Quote

Ultra ALLOY® Deactivated Tubes

A deactivation process passivates or coats the tubing interior with a chemically inert layer. **Deactivation: Polydimethylsiloxane.**

Description	OD	ID	Length	Treatment	Part No.
Ultra ALLOY Deactivated Tube 0.15 x 0.47, 5M	1/64"	0.15 mm	5 m	Deactivated	CT-100110
Ultra ALLOY Deactivated Tube 0.25 x 0.47, 5M	1/64"	0.25 mm	5 m	Deactivated	CT-100111
Ultra ALLOY Deactivated Tube 0.25 x 1.58 (1/16”), 5M	1/16"	0.25 mm	5 m	Deactivated	CT-100112
Ultra ALLOY Deactivated Tube 0.32 x 0.75, 5M	1/32"	0.32 mm	5 m	Deactivated	CT-100113
Ultra ALLOY Deactivated Tube 0.53 x 0.75, 5M	1/32"	0.53 mm	5 m	Deactivated	CT-100114
Ultra ALLOY Deactivated Tube 0.53 x 1.58 (1/16”), 5M	1/16"	0.53 mm	5 m	Deactivated	CT-100115
Ultra ALLOY Deactivated Tube 0.80 x 1.15, 5M	3/64"	0.80 mm	5 m	Deactivated	CT-100116
Ultra ALLOY Deactivated Tube 0.80 x 1.58 (1/16”), 5M	1/16"	0.80 mm	5 m	Deactivated	CT-100117
Ultra ALLOY Deactivated Tube 1.20 x 1.58 (1/16”), 5M	1/16"	1.20 mm	5 m	Deactivated	CT-100118
Ultra ALLOY Deactivated Tube 0.15 x 0.47, 10M	1/64"	0.15 mm	10 m	Deactivated	CT-100119
Ultra ALLOY Deactivated Tube 0.25 x 0.47, 10M	1/64"	0.25 mm	10 m	Deactivated	CT-100120
Ultra ALLOY Deactivated Tube 0.25 x 1.58 (1/16”), 10M	1/16"	0.25 mm	10 m	Deactivated	CT-100121
Ultra ALLOY Deactivated Tube 0.32 x 0.75, 10M	1/32"	0.32 mm	10 m	Deactivated	CT-100122
Ultra ALLOY Deactivated Tube 0.53 x 0.75, 10M	1/32"	0.53 mm	10 m	Deactivated	CT-100123
Ultra ALLOY Deactivated Tube 0.53 x 1.58 (1/16”), 10M	1/16"	0.53 mm	10 m	Deactivated	CT-100124
Ultra ALLOY Deactivated Tube 0.80 x 1.15, 10M	3/64"	0.80 mm	10 m	Deactivated	CT-100125
Ultra ALLOY Deactivated Tube 0.80 x 1.58 (1/16”), 10M	1/16"	0.80 mm	10 m	Deactivated	CT-100126
Ultra ALLOY Deactivated Tube 1.20 x 1.58 (1/16”), 10M	1/16"	1.20 mm	10 m	Deactivated	CT-100127
Ultra ALLOY Deactivated Tube 0.15 x 0.47, 2.5 M	1/64"	0.15 mm	2.5 m	Cleaned and Passivated	CT-100109

Ultra ALLOY Untreated Tubes

The stainless steel capillary tubes have not undergone any surface modification, passivation, or deactivation process.

Description	OD	ID	Length	Treatment	Part No.
Ultra ALLOY Untreated Tube 0.15 x 0.47, 5M	1/64"	0.15 mm	5 m	Untreated	CT-100128
Ultra ALLOY Untreated Tube 0.25 x 0.47, 5M	1/64"	0.25 mm	5 m	Untreated	CT-100129
Ultra ALLOY Untreated Tube 0.25 x 1.58 (1/16"), 5M	1/16"	0.25 mm	5 m	Untreated	CT-100130
Ultra ALLOY Untreated Tube 0.32 x 0.75, 5M	1/32"	0.32 mm	5 m	Untreated	CT-100131
Ultra ALLOY Untreated Tube 0.53 x 0.75, 5M	1/32"	0.53 mm	5 m	Untreated	CT-100132
Ultra ALLOY Untreated Tube 0.53 x 1.58 (1/16"), 5M	1/16"	0.53 mm	5 m	Untreated	CT-100133
Ultra ALLOY Untreated Tube 0.80 x 1.15, 5M	3/64"	0.80 mm	5 m	Untreated	CT-100134
Ultra ALLOY Untreated Tube 0.80 x 1.58 (1/16"), 5M	1/16"	0.80 mm	5 m	Untreated	CT-100135
Ultra ALLOY Untreated Tube 1.20 x 1.58 (1/16"), 5M	1/16"	1.20 mm	5 m	Untreated	CT-100136
Ultra ALLOY Untreated Tube 0.05 x 0.315, 10M	1/64"	0.05 mm	10 m	Untreated	CT-100137
Ultra ALLOY Untreated Tube 0.15 x 0.47, 10M	1/64"	0.15 mm	10 m	Untreated	CT-100138
Ultra ALLOY Untreated Tube 0.25 x 0.47, 10M	1/64"	0.25 mm	10 m	Untreated	CT-100139
Ultra ALLOY Untreated Tube 0.25 x 0.47, 30M	1/64"	0.25 mm	10 m	Untreated	CT-100140
Ultra ALLOY Untreated Tube 0.25 x 1.58 (1/16"), 10M	1/16"	0.25 mm	10 m	Untreated	CT-100141
Ultra ALLOY Untreated Tube 0.32 x 0.75, 10M	1/32"	0.32 mm	10 m	Untreated	CT-100142
Ultra ALLOY Untreated Tube 0.53 x 0.75, 10M	1/32"	0.53 mm	10 m	Untreated	CT-100143
Ultra ALLOY Untreated Tube 0.53 x 1.58 (1/16"), 10M	1/16"	0.53 mm	10 m	Untreated	CT-100144

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