

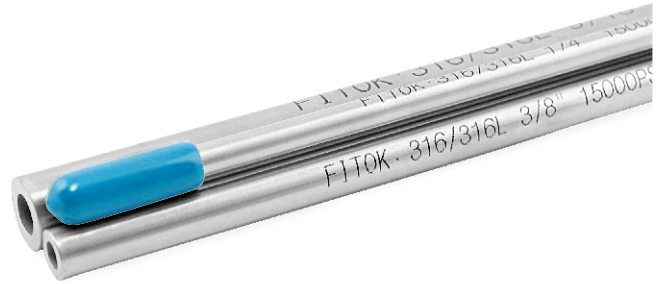
# Medium and High Pressure Tubing

T15, T20D, T20M and T60 Series

## T15 Series

### Features

- ⦿ Material: 316/316L
- ⦿ Working pressure up to 15,000 psig (1034 bar)
- ⦿ Working temperature: -325°F to 800°F (-198°C to 427°C)
- ⦿ Annealed seamless or cold-drawn 1/8-hard seamless tubing
- ⦿ For use with FITOK 20D series (formerly DHL series) double-ferrule tube fittings
- ⦿ Marked with brand, material grade, specification, pressure, annealing code and heat number
- ⦿ Standard length: 20 ft and 6 m



### Materials

UNS	Grade	FITOK Designator	Composition %							
			C	Mn	P	S	Si	Cr	Ni	Mo
S31600/S31603	316/316L	SS	≤0.035	≤2.00	≤0.045	≤0.03	≤1.00	16-18	10-14	2.0-3.0

### Mechanical Properties

#### Cold-drawn 1/8-hard Seamless Tubing

UNS	Grade	Yield Strength ksi	Tensile Strength ksi	Elongation %	Hardness
S31600/S31603	316/316L	75 to 110	105 to 140	≥20	≤26 HRC

#### Annealed Seamless Tubing

UNS	Grade	Yield Strength ksi	Tensile Strength ksi	Elongation %	Hardness
S31600/S31603	316/316L	≥30	≥75	≥30	≤90 HRB

### Dimensional Tolerance

Tube O.D. in.	O.D. Tolerance in.	Wall Thickness Tolerance %
1/8	+/-0.005	+/-10
1/4		
3/8		
1/2		
9/16		
3/4		

## Working Pressure at Ambient Temperature

### Cold-drawn 1/8-hard Seamless Tubing

Tube O.D. in.	Wall Thickness Tolerance in.	Working Pressure <sup>①</sup> psig (bar)
1/4	0.065	15,000 (1034)
3/8	0.083	
1/2	0.109	
9/16	0.125	
3/4	0.165	

① Working pressures are calculated from an S value of 35,000 psi (241 MPa) at -20 to 100°F (-28 to 38°C) for ASME B31.3.

## Annealed Seamless Tubing

Tube O.D. in.	Wall Thickness Tolerance in.	Working Pressure <sup>①</sup> psig (bar)
1/8	0.037	15,000 (1034)
1/4	0.083	15,000 (1034)
	0.065	10,300 (710)
3/8	0.118	15,000 (1034)
	0.095	10,000 (690)
1/2	0.156	15,000 (1034)
	0.134	11,200 (772)
9/16	0.188	15,000 (1034)
3/4	0.240	15,000 (1034)
	0.188	10,000 (690)

① Working pressures are calculated from an S value of 20,000 psi (138 MPa) at -20 to 100°F (-28 to 38°C) for ASME B31.3.

## Elevated Temperature Factors

Temperature		Factor
°F	°C	
100	38	1.00
200	93	
300	149	
400	204	0.96
500	260	0.89
600	316	0.85
700	371	0.81
800	427	0.79

## Ordering Information

### Cold-drawn 1/8-hard Seamless Tubing

Tube O.D. in.	Wall Thickness in.	Ordering Number <sup>①②</sup>	
1/4	0.065	SS-T15-4-065-6M	SS-T15-4-065-20
3/8	0.083	SS-T15-6-083-6M	SS-T15-6-083-20
1/2	0.109	SS-T15-8-109-6M	SS-T15-8-109-20
9/16	0.125	SS-T15-9-125-6M	SS-T15-9-125-20
3/4	0.165	SS-T15-12-165-6M	SS-T15-12-165-20

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② Customized shorter length tubing is available upon request.

### Annealed Seamless Tubing

Tube O.D. in.	Wall Thickness in.	Ordering Number <sup>①②</sup>	
1/8	0.037	SS-T15-A-2-037-6M	SS-T15-A-2-037-20
1/4	0.083	SS-T15-A-4-083-6M	SS-T15-A-4-083-20
	0.065	SS-T15-A-4-065-6M	SS-T15-A-4-065-20
3/8	0.118	SS-T15-A-6-118-6M	SS-T15-A-6-118-20
	0.095	SS-T15-A-6-095-6M	SS-T15-A-6-095-20
1/2	0.156	SS-T15-A-8-156-6M	SS-T15-A-8-156-20
	0.134	SS-T15-A-8-134-6M	SS-T15-A-8-134-20
9/16	0.188	SS-T15-A-9-188-6M	SS-T15-A-9-188-20
3/4	0.240	SS-T15-A-12-240-6M	SS-T15-A-12-240-20
	0.188	SS-T15-A-12-188-6M	SS-T15-A-12-188-20

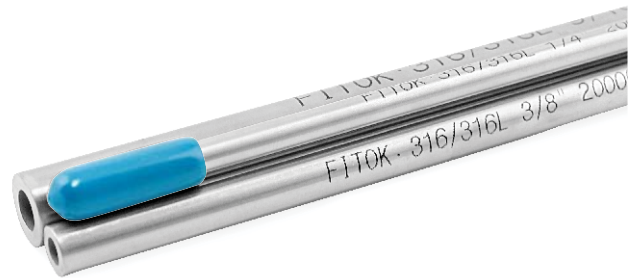
① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② Customized shorter length tubing is available upon request.

## T20D Series

### Features

- ⦿ Material: 316/316L
- ⦿ Working pressure up to 20,000 psig (1379 bar)
- ⦿ Working temperature: -325°F to 800°F (-198°C to 427°C)
- ⦿ Cold-drawn 1/8-hard seamless tubing
- ⦿ For use with FITOK 20D series (formerly DHL series) double-ferrule tube fittings
- ⦿ Marked with brand, material grade, specification, pressure and heat number
- ⦿ Standard length: 20 ft and 6 m



### Materials

UNS	Grade	FITOK Designator	Composition %							
			C	Mn	P	S	Si	Cr	Ni	Mo
S31600/S31603	316/316L	SS	≤0.035	≤2.00	≤0.045	≤0.03	≤1.00	16-18	10-14	2.0-3.0

### Mechanical Properties

UNS	Grade	Yield Strength ksi	Tensile Strength ksi	Elongation %	Hardness
S31600/S31603	316/316L	75 to 110	105 to 140	≥20	≤26 HRC

### Dimensional Tolerance

Tube O.D. in.	O.D. Tolerance in.	Wall Thickness Tolerance %
1/4	+/-0.005	+/-10
3/8		
1/2		
9/16		
3/4		

## Working Pressure at Ambient Temperature

Tube O.D. in.	Wall Thickness Tolerance in.	Working Pressure <sup>①</sup> psig (bar)
1/4	0.065	20,000 (1379)
3/8	0.083	
1/2	0.109	
9/16	0.125	
3/4	0.165	

① Working pressures are calculated from an S value of 50,000 psi (344 MPa) at -20 to 100°F (-28 to 38°C) for ASME B31.3 Chapter IX High Pressure Piping.

## Elevated Temperature Factors

Temperature		Factor
°F	°C	
100	38	1.00
200	93	
300	149	
400	204	0.96
500	260	0.89
600	316	0.85
700	371	0.81
800	427	0.79

## Ordering Information

Tube O.D. in.	Wall Thickness in.	Ordering Number <sup>①②</sup>	
1/4	0.065	SS-T20D-4-065-6M	SS-T20D-4-065-20
3/8	0.083	SS-T20D-6-083-6M	SS-T20D-6-083-20
1/2	0.109	SS-T20D-8-109-6M	SS-T20D-8-109-20
9/16	0.125	SS-T20D-9-125-6M	SS-T20D-9-125-20
3/4	0.165	SS-T20D-12-165-6M	SS-T20D-12-165-20

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② Customized shorter length tubing is available upon request.

## T20M Series

### Features

- ⦿ Material: 316/316L
- ⦿ Working pressure up to 20,000 psig (1379 bar)
- ⦿ Working temperature: -423°F to 1200°F (-252°C to 649°C)
- ⦿ Cold-drawn seamless tubing
- ⦿ For use with FITOK 20M series (formerly 20 series) medium pressure fittings
- ⦿ Marked with brand, material grade, specification, pressure, and heat number
- ⦿ Supplied in fractional sizes up to 20 ft and metric sizes up to 6 m. Nipples in customized length available



### Materials

UNS	Grade	FITOK Designator	Composition %							
			C	Mn	P	S	Si	Cr	Ni	Mo
S31600/S31603	316/316L	SS	≤0.035	≤2.00	≤0.045	≤0.03	≤1.00	16-18	10-14	2.0-3.0

### Dimensional Tolerance

Tube O.D. in.	O.D. Tolerance in.	Tube I.D. in.	I.D. Tolerance in.
1/4	-0.002/-0.007	0.109	0/-0.005
3/8		0.203	
9/16		0.312	
3/4		0.438	
1	-0.005/-0.01	0.562	+/-0.005

### Pressure-Temperature Ratings

Working Pressure psig (bar)				
-423 to 100°F (-252 to 37.8°C)	200°F (93°C)	400°F (204°C)	600°F (316°C)	800°F (427°C)
20,000 (1379)	20,000 (1379)	19,250 (1327)	18,050 (1244)	16,800 (1158)

If tubing is used at temperatures above 800°F (427°C) or reused thereafter, working pressures for tubing in the following table shall apply.

Working Pressure psig (bar)					
-423 to 200°F (-252 to 93°C)	400°F (204°C)	600°F (316°C)	800°F (427°C)	1000°F (538°C)	1200°F (649°C)
8,050 (555)	7,400 (510)	6,800 (469)	6,300 (434)	6,200 (427)	2,900 (200)

## Ordering Information

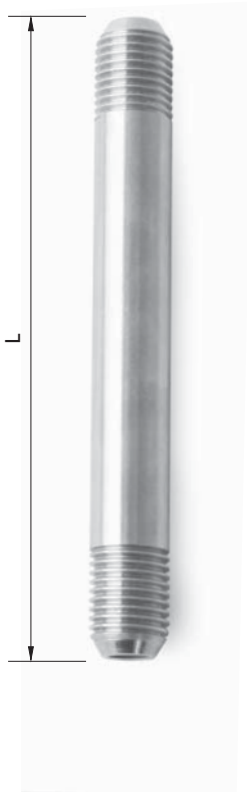
### Cold-drawn Seamless Tubing

Tube O.D. in.	Tube I.D. in.	Ordering Number <sup>①②</sup>	
1/4	0.109	SS-T20M-4-6M	SS-T20M-4-20
3/8	0.203	SS-T20M-6-6M	SS-T20M-6-20
9/16	0.312	SS-T20M-9-6M	SS-T20M-9-20
3/4	0.438	SS-T20M-12-6M	SS-T20M-12-20
1	0.562	SS-T20M-16-6M	SS-T20M-16-20

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② Customized shorter length tubing is available upon request.

## Coned and Threaded Nipples



Tube O.D. in.	Tube I.D. in.	Length L <sup>①</sup> in. (mm)	Ordering Number
1/4	0.109	3.00 (76.2)	SS-T20M-4CT-3
		4.00 (101.6)	SS-T20M-4CT-4
		6.00 (152.4)	SS-T20M-4CT-6
		8.00 (203.2)	SS-T20M-4CT-8
		10.0 (254.0)	SS-T20M-4CT-10
		12.0 (304.8)	SS-T20M-4CT-12
3/8	0.203	3.00 (76.2)	SS-T20M-6CT-3
		4.00 (101.6)	SS-T20M-6CT-4
		6.00 (152.4)	SS-T20M-6CT-6
		8.00 (203.2)	SS-T20M-6CT-8
		10.0 (254.0)	SS-T20M-6CT-10
		12.0 (304.8)	SS-T20M-6CT-12
9/16	0.312	4.00 (101.6)	SS-T20M-9CT-4
		6.00 (152.4)	SS-T20M-9CT-6
		8.00 (203.2)	SS-T20M-9CT-8
		10.0 (254.0)	SS-T20M-9CT-10
		12.00 (304.8)	SS-T20M-9CT-12
3/4	0.438	4.00 (101.6)	SS-T20M-12CT-4
		6.00 (152.4)	SS-T20M-12CT-6
		8.00 (203.2)	SS-T20M-12CT-8
		10.0 (254.0)	SS-T20M-12CT-10
		12.0 (304.8)	SS-T20M-12CT-12
1	0.562	6.00 (152.4)	SS-T20M-16CT-6
		8.00 (203.2)	SS-T20M-16CT-8
		10.0 (254.0)	SS-T20M-16CT-10
		12.0 (304.8)	SS-T20M-16CT-12

① Nipples in customized length available upon request.



## T60 Series

### Features

- ⦿ Material: 316/316L
- ⦿ Working pressure up to 60,000 psig (4137 bar)
- ⦿ Working temperature: -423°F to 1200°F (-252°C to 649°C)
- ⦿ Cold-drawn seamless tubing
- ⦿ For use with FITOK 60 series high pressure fittings
- ⦿ Marked with brand, material grade, specification, pressure, and heat number
- ⦿ Supplied in fractional sizes up to 20 ft and metric sizes up to 6 m. Nipples in customized length available



### Materials

UNS	Grade	FITOK Designator	Composition %							
			C	Mn	P	S	Si	Cr	Ni	Mo
S31600/S31603	316/316L	SS	≤0.035	≤2.00	≤0.045	≤0.03	≤1.00	16-18	10-14	2.0-3.0

### Dimensional Tolerance

Tube O.D. in.	O.D. Tolerance in.	Tube I.D. in.	I.D. Tolerance in.
1/4	-0.002/-0.007	0.083	0/-0.005
3/8	-0.005/-0.01	0.125	
9/16		0.188	

### Pressure-Temperature Ratings

Working Pressure psig (bar)				
-423 to 100°F (-252 to 37.8°C)	200°F (93°C)	400°F (204°C)	600°F (316°C)	800°F (427°C)
60,000 (4137)	60,000 (4137)	57,750 (3982)	54,250 (3740)	50,700 (3496)

If tubing is used at temperatures above 800°F (427°C) or reused thereafter, working pressures for tubing in the following table shall apply.

Working Pressure psig (bar)					
-423 to 200°F (-252 to 93°C)	400°F (204°C)	600°F (316°C)	800°F (427°C)	1000°F (538°C)	1200°F (649°C)
24,200 (1669)	22,200 (1531)	20,500 (1413)	18,850 (1300)	18,600 (1282)	8,750 (603)

## Ordering Information

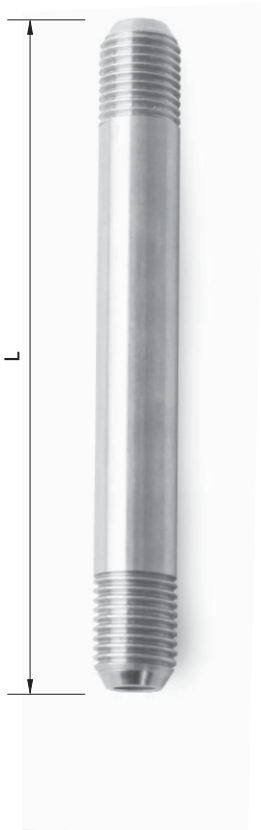
### Cold-drawn Seamless Tubing

Tube O.D. in.	Tube I.D. in.	Ordering Number <sup>①②</sup>	
1/4	0.083	SS-T60-4-6M	SS-T60-4-20
3/8	0.125	SS-T60-6-6M	SS-T60-6-20
9/16	0.188	SS-T60-9-6M	SS-T60-9-20

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② Customized shorter length tubing is available upon request.

### Coned and Threaded Nipples



Tube O.D. in.	Tube I.D. in.	Length L <sup>①</sup> in. (mm)	Ordering Number
1/4	0.083	2.75 (69.9)	SS-T60-4CT-2.75
		3.00 (76.2)	SS-T60-4CT-3
		4.00 (101.6)	SS-T60-4CT-4
		6.00 (152.4)	SS-T60-4CT-6
		8.00 (203.2)	SS-T60-4CT-8
		10.0 (254.0)	SS-T60-4CT-10
		12.0 (304.8)	SS-T60-4CT-12
3/8	0.125	3.00 (76.2)	SS-T60-6CT-3
		4.00 (101.6)	SS-T60-6CT-4
		6.00 (152.4)	SS-T60-6CT-6
		8.00 (203.2)	SS-T60-6CT-8
		10.0 (254.0)	SS-T60-6CT-10
		12.0 (304.8)	SS-T60-6CT-12
9/16	0.188	4.00 (101.6)	SS-T60-9CT-4
		6.00 (152.4)	SS-T60-9CT-6
		8.00 (203.2)	SS-T60-9CT-8
		10.0 (254.0)	SS-T60-9CT-10
		12.0 (304.8)	SS-T60-9CT-12

① Nipples in customized length available upon request.