Stainless Steel Seamless Tubing

Features

- Sizes range from 1/16" to 1 1/2" and 3 mm to 38 mm.
- Material, size, specification and heat code are indicated on the tubing surface.
- Pickling surface finish and mechanical polished surface finish tubes are available.

Material Standards

Grade	UNS Designation	ASTM	ASME
316/316L	S31600/S31603	A269/A213	SA213
304/304L	S31400/S31403		
321	S32100		

Allowable Working Pressure

- The allowable working pressures in the table below for fractional tubing and metric tubing are based on ASME B31.3 at ambient temperature.
- The data in the table are applied to 316 SS, 304 SS and 321 SS. For 316L SS and 304L SS, multiply the data in the table by 0.84 to get the allowable working pressure.
- To work out the allowable working pressure at elevated temperature, take allowable working pressure at ambient temperature to multiply the factors in the table of Elevated Temperature Factors.

Fractional Tubing

Tube O.D. (in.)	Nominal Wall Thickness, in.															
	0.010	0.012	0.014	0.016	0.020	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.156	0.188
	Working Pressure, psig															
	Note: For gas service, select a tube thickness outside of the shaded area															
1/16	5660	6870	8180	9490	12100											
1/8						8580	11000									
3/16						5450	7070	10300								
1/4						4040	5150	7570	10300							
5/16							4040	5860	8080							
3/8							3330	4850	5860							
1/2							2600	3530	4750	6260						
5/8								2930	4040	5250	6060					
3/4								2420	3330	4240	4950	5860				
7/8								2020	2830	3640	4240	4850				
1									2420	3130	3640	4240	4750			
1 1/4										2420	2830	3330	3640	4150	4950	
1 1/2											2320	2730	3030	3430	4040	4950

Metric Tubing

Tube O.D. (mm)	Nominal Wall Thickness, mm												
	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0	3.5	4.0	4.5
	Working Pressure, bar												
	Note: For gas service, select a tube thickness outside of the shaded area												
3	677												
6	313	424	545	717									
8		313	394	525									
10		242	303	404	515	586							
12		202	252	333	414	475							
14		162	202	273	343	384	434	494					
15		151	192	252	313	364	404	453					
16			172	232	293	333	374	404					
18			151	202	263	293	323	374					
20			141	182	232	263	293	333	384				
22			121	162	202	232	263	303	343				
25					182	202	232	263	293	323			
28						182	202	232	263	283	333		
30						172	182	212	242	263	313		
32						162	172	202	222	242	293	333	
38							141	162	192	202	242	273	313

Elevated Temperature Factors

Temperature		Material				
°F	°C	316	316L	304	304L	321
100	38	1.0	1.0	1.0	1.0	1.0
200	93	1.0	1.0	1.0	1.0	1.0
300	149	1.0	1.0	1.0	1.0	1.0
400	204	0.97	0.93	0.94	0.94	1.0
500	260	0.90	0.86	0.88	0.88	0.97
600	316	0.85	0.81	0.82	0.84	0.92
650	343	0.84	0.79	0.81	0.82	0.90
700	371	0.82	0.77	0.80	0.81	0.88
750	399	0.80	0.75	0.78	0.80	0.86
800	427	0.80	0.74	0.76	0.78	0.85
850	454	0.79	0.72	0.75	0.77	0.84
900	486	0.78		0.73		0.83
950	510	0.77		0.72		0.82
1000	538	0.76		0.69		0.81

Example to calculate the allowable working pressure:

Type 316L SS 12 mm O.D.×1.5 mm wall at 800°F (427°C)

1. The allowable working pressure for 316 SS at ambient temperature is 333 bar (shown in the table above), multiply by 0.84 to get 316L SS data. So allowable working pressure for 316L SS at ambient temperature is 333 bar × 0.84 = 280 bar.
2. The elevated temperature factor for 800°F (427°C) is 0.74 (shown in the table above). So the allowable working pressure for 316L SS 12 mm O.D. × 1.5 mm wall at 800°F (427°C) is 280 bar × 0.74 = 207 bar.