

General Technical

Tubing Specifications

Carbon Steel Tubing

Seamless, soft annealed carbon steel tubing to ASTM A 179, Din 2391 or equivalent. 4-1 safety factor considering tensile strength of 47,000 psi at room temperature. For higher temperature service, apply the reducing factors for elevated temperature operation as specified in Table 302.3 1A and 304.1.2 of the code for pressure piping in ANSI B31.3.

Recommended tube hardness is RB 72 or less.

The tubing should be suitable for bending and flaring and free of all surface defects and imperfections.

Stainless Steel Tubing

Seamless, annealed 304 or 316 Stainless Steel tubing to ASTM A 269 or A 213 or equivalent. 4-1 safety factor considering tensile strength of 75,000 psi at room temperature.

Tube hardness should not exceed RB 80. The preferable hardness range is RB 70-74.

Tubing should be suitable for bending and flaring, and should be free of any surface defects and imperfections. A derating factor must be used for drawn and welded tubing.

Copper Tubing

Annealed, soft, seamless copper tubing to ASTM B 75 or equivalent. 5-1 safety factor considering tensile strength of 30,000 psi at room temperature. Maximum hardness of the tubing is not to exceed RB 50. Preferred hardness range is RB 40-45.

Tubing-Working Pressure Tables

Maximum Allowable Working Pressure Tables

Table #1: Stainless Steel Tubing
Wall Thickness of Tube (inches)

TUBE OD (In)	0.01	0.012	0.016	0.02	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.156
1/16	5,587	6,861	9,593	12,185										
1/8					8,565	10,829								
3/16					5,474	7,039	10,116							
1/4					4,020	5,132	7,500	10,135						
5/16						4,037	5,848	8,071						
3/8						3,326	4,791	6,566						
1/2						2,611	3,741	5,092	6,696					
5/8							2,951	3,998	5,225	6,075				
3/4							2,436	3,289	4,283	4,966	5,785			
7/8							2,073	2,793	3,628	4,199	4,881			
1							1,804	2,427	3,146	3,637	4,220	4,688		
1 1/4									2,485	2,867	3,321	3,682	4,149	4,900
1 1/2									2,046	2,358	2,726	3,020	3,398	4,003

The Allowable working pressures for 304 SS or 316 SS seamless tubing to **ASTM A269-04 or equivalent** based on the following data: Temperature: -20°F to 100°F; Ultimate Tensile Strength: 75,000 psi; Allowable stress: 20,000 psi as specified by **ASME B31.3-2002**.

Table #2: Copper Tubing

TUBE OD (In)	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.148	0.165	0.18	0.22
1/8	2,789	3,772											
3/16	1,795	2,328	3,600										
1/4	1,306	1,681	2,550	3,624									
5/16		1,314	1,973	2,767									
3/8		1,078	1,608	2,237									
1/2		791	1,172	1,615	2,145								
5/8			920	1,262	1,667	1,956							
3/4			748	1,025	1,342	1,572	1,850						
7/8			634	868	1,133	1,326	1,556						
1			550	752	981	1,146	1,343	1,486					
1 1/4					771	900	1,052	1,163	1,320	1,481	1,656	1,836	2,308
1 1/2					635	740	878	954	1,082	1,212	1,353	1,497	1,873

The Allowable working pressures for copper seamless tubing to **ASTM B75-02, ASTM B251 or equivalent** based on the following data: Temperature: -20°F to 100°F; Ultimate Tensile Strength: 30,000 psi; Allowable stress: 6,000 psi as specified by **ASME B31.3-2002**.