

ALLOWABLE STRESS VALUES FOR MATERIALS AT VARIOUS TEMPERATURES

VALUES IN ksi (PSI = ksi x 1000)

Temperature	Copper Seamless Annealed Tubing Spec. ASTM B-75	Carbon Steel Seamless Annealed Tubing Spec. ASTM A-179	Stainless Steel				MONEL® 400 Seamless Annealed Tubing Spec. ASTM B-165	INCONEL® 600 Seamless Annealed Tubing Spec. ASTM B-167	HASTELLOY® C-276	
			Type 304		Type 316				Seamless Annealed Tubing Spec. ASTM B-622	Welded Annealed Tubing Spec. ASTM B-626
			Seamless Annealed Tubing Spec. ASTM A-213	Welded Annealed Tubing Spec. ASTM A-249	Seamless Annealed Tubing Spec. ASTM A-213	Welded Annealed Tubing Spec. ASTM A-249				
-20 to 100	6.0	11.7	18.7	15.9	18.7	15.9	17.5	20.0	25.0	21.2
150	5.1	11.7	18.25	15.5	18.7	15.9	16.95	20.0	25.0	21.2
200	4.8	11.7	17.8	15.1	18.7	15.9	16.4	20.0	25.0	21.2
250	4.8	11.7	17.2	14.6	18.55	15.75	15.9	20.0	25.0	21.2
300	4.7	11.7	16.6	14.1	18.4	15.6	15.4	20.0	25.0	21.2
350	4.0	11.7	16.35	13.9	18.2	15.45	15.1	20.0	24.65	20.95
400	3.0	11.7	16.1	13.7	18.0	15.3	14.8	20.0	24.3	20.7
450		11.7	16.0	13.6	18.0	15.3	14.75	20.0	24.1	20.5
500		11.7	15.9	13.5	18.0	15.3	14.7	20.0	23.9	20.3
600		11.7	15.9	13.5	17.0	14.4	14.7	20.0	23.5	20.0
650		11.7	15.9	13.5	16.7	14.2	14.7	20.0	23.3	19.8
700		11.7	15.9	13.5	16.3	13.9	14.7	20.0	23.1	19.6
750		11.5	15.6	13.2	16.1	13.7	14.6	20.0	22.9	19.5
800		10.6	15.1	12.9	15.8	13.4	14.2	20.0	22.8	19.4
850		9.2*	14.9	12.7	15.7	13.4	11.0	19.6	22.6	19.2
900		7.9*	14.7	12.5	15.6	13.2	8.0	16.0	22.3	18.9
950		6.5*	14.4	12.2	15.4	13.1		10.6	22.1	18.8
1000			14.1	11.7	15.3	13.0		7.0	21.8	18.5
1050			12.4	10.4	15.1	12.8		4.5	18.5	15.7
1150			9.8	8.3	12.4	10.5		3.0	15.0	12.7
1200			6.1	5.2	7.4	6.3		2.2	9.8	8.3
1250			4.7	4.0	5.5	4.7		2.0	7.8	6.6
1300			3.7	3.2	4.1	3.5				
1350			2.9	2.5	3.1	2.6				
1400			2.3	2.0	2.3	1.9				
1450			1.8	1.6	1.7	1.5				
1500			1.4	1.2	1.3	1.1				
Min. Tensile Strength (ksi) at 100°F	30.0	47.0	75.0	75.0	75.0	75.0	70.0	80.0	100.0	100.0
Min. Yield Strength (ksi) at 100°F	9.0	26.0	30.0	30.0	30.0	30.0	28.0	35.0	41.0	41.0

* Prolonged exposure to temperatures above 800°F may cause the carbides to convert to graphite. Above allowable stress values extracted from ASME Pressure Vessels Section VIII and ANSI B31.3 Chemical Plant and Petroleum Refinery Piping, a section of the ASME Code for Pressure Piping with the permission of the publisher ASME.