Welded Titanium and Corrosion Resistant Alloy Tubing

ALLOY	UNS	Chemical Composition Limits, %				OTHER	TENSILE STRENGTH MIN, ksi (MPa)	YIELD STRENGTH OFFSET 0.2% MIN, ksi (MPa)	ELONGATION IN 2" OR 50 mm MIN %	ROCKWELL HARDNESS NO., MAX
		C, Max	Cr	Ni	Mo					
Austenitic										
304	S30400	0.080	18-20	8-11	–	–	75 (515)	30 (205)	35	B90
304L	S30403	0.030	18-20	8-12	–	–	70 (485)	25 (170)	35	B90
304LN	S30453	0.030	18-20	8-11	–	N (0.10-0.16)	75 (515)	30 (205)	35	B90
316	S31600	0.080	16-18	10-14	2-3	–	75 (515)	30 (205)	35	B90
316L	S31603	0.030	16-18	10-14	2-3	–	70 (485)	25 (170)	35	B90
316LN	S31653	0.030	16-18	10-13	2-3	N (0.10-0.16)	75 (515)	30 (205)	35	B90
317L	S31703	0.030	18-20	11-15	3-4	–	75 (515)	30 (205)	35	B90
686	N06686	0.010	19-23	Bal.	15-17	Ti (.02-.25), Fe (5), W (3.0-4.4)	100 (690)	45 (310)	45	N/A
C276	N10276	0.010	14.5-16.5	Bal.	15-17	Fe (4.0-7.0), W (3.0-4.5)	100 (690)	41 (283)	40	N/A
625	N06625	0.100	20-23	58.0 min	8-10	Fe (5.0 max), Cb+Ta=3.15-4.15	120 (827)	60 (414)	30	–
825	N08825	0.050	19.5-23.5	38-46	2.5-3.5	Fe (22 min), Cu (1.5-3.0)	85 (585)	35 (240)	30	–
AL-6XN®	N08367	0.030	20-22	23.5-25.5	6-7	N (0.18-0.25)	100 (690)	45 (310)	30	B100
Ferritic										
439	S43035	0.070	17-19	0.50 max	–	Tl 0.20+4(C+N) min 1.10 max; 0.04 N max	60 (415)	30 (205)	20	B90
AL29-4C®	S44735	0.030	28-30	1.00 max	3.6-4.2	(Tl+Cb)=0.20-1.00w/6 (C+N) min; 0.45 N max	75 (515)	60 (415)	18	B100
SEA-CURE®	S44660	0.030	25-28	1-3.5	3-4	(Ti+Nb)=0.020-1.00 w/6(C+N) min; N=0.040 max	85 (585)	65 (450)	20	C25
Duplex										
2003	S32003	0.030	19.5-22.5	3.0-4.0	1.50-2.00	N (0.14-0.20)	100 (690)	70 (485)	25	C30
2101	S32101	0.040	21.0-22.0	1.35-1.7	1.10-0.80	N (0.20-0.25)	95 (655)	70 (485)	25	C30
2102	S32202	0.030	21.5-24.0	1.0-2.8	0.45 max	N (0.18-0.26)	94 (650)	65 (450)	30	C30
2205	S32205	0.030	22.0-23.0	4.5-6.5	3.0-3.5	N (0.14-0.20)	95 (655)	70 (485)	25	C30
2507	S32750	0.030	24.0-26.0	6.0-8.0	3.0-5.0	N (0.24-0.32)	116 (800)	80 (550)	15	C32
Zeron 100®	S32760	0.030	24.0-26.0	6.0-8.0	3.0-4.0	N (0.20-0.30)	109 (750)	80 (550)	25	C32
Reactive Metals										
Ti Grade 2	R50400	Unalloyed Titanium				O_2 (0.25 max)	50 (345)	40 (275)	20	
Ti Grade 7	R52250	Palladium Alloyed Titanium				Pa (0.12-0.25)	50 (345)	40 (275)	20	
Ti Grade 12	R53400	Ni, Mo Alloyed Titanium				Ni (0.6-0.9), Mo (0.2-0.4)	70 (483)	50 (345)	18	
Ti Grade 16	R52402	Palladium Alloyed Titanium				Pa (0.04-0.08)	50 (345)	40 (275)	20	

> Webco manufacturing facilities are ISO 9001 certified.

Welded Titanium and Corrosion Resistant Alloy Tubing

Range of Tubing Sizes*

OUTSIDE DIAMETER		WALL THICKNESS												
Inch	(mm)	Gauge Inch (mm)	25 0.020 0.51	24 0.022 .056	23 0.025 .064	22 0.028 .071	20 0.035 0.89	18 0.049 1.24	16 0.065 1.65	15 0.072 1.83	14 0.083 2.11	13 0.095 2.41	12 0.109 2.77	11 0.120 3.05
0.250	6.35		•	•	•	•	•	•	•					
0.375	9.53		•	•	•	•	•	•	•					
0.500	12.70		•	•	•	•	•	•	•					
0.625	15.88		•	•	•	•	•	•	•	•	•	•		
0.750	19.05		•	•	•	•	•	•	•	•	•	•		
0.875	22.23		•	•	•	•	•	•	•	•	•	•		
1.000	25.40		•	•	•	•	•	•	•	•	•	•		
1.125	28.58			•	•	•	•	•	•	•	•	•		
1.250	31.75				•	•	•	•	•	•	•	•		
1.500	38.10					•	•	•	•	•	•	•		
1.750	44.45					•	•	•	•	•	•	•		
2.000	50.80					•	•	•	•	•	•	•	•	•

*Other sizes available upon request (metric and specials). Not all size combinations are offered in all grades. Please contact Webco at powergensales@webcotube.com.

Common Tubing Specifications

SPECIFICATION	ALLOYS INCLUDED*
ASTM A249/SA249	304, 304H, 304L, 304N, 304LN, 316, 316L, 316N, 316LN, 317L, AL-6XN®
A268/SA268	439 (XM-8), AL29-4C®, SEA-CURE®
ASTM A269	304, 304L, 304LN, 316, 316L, 316LN, 317, AL-6XN®
A789/SA789	2003, 2101,2102, 2205, 2507, Zeron 100®
A688/SA688	304, 304L, 304N, 304LN, 316, 316L, 316N, 316LN, AL-6XN®
A803/SA803	439 (XM-8), AL29-4C®, SEA-CURE®
B338/SB338	Titanium grades 2, 7, 12 and 16 tubing for condensers and heat exchangers
B704/SB704	625, 825

*Alloys other than referenced in these specifications may also be available

Specialty Tubing Alloys

ALLOY		APPLICATIONS
Ferritic	AL29-4C®, SEA-CURE®	Resistance to stress corrosion cracking and pitting crevice corrosion in severe chloride service, including seawater and geothermal brines. Surface condensers, heat exchangers, evaporators, etc. Very good heat transfer.
	439	Designed to resist corrosion in a variety of oxidizing environments from fresh water to boiling acids. Primarily used for heat exchangers. One of the highest heat transfer stainless steel alloys.
Austenitic	AL-6XN®	Nitrogen modified high molybdenum alloy with excellent resistance to pitting/crevice corrosion in chloride environments such as seawater and brine. High strength and available in many product forms for heat transfer and chemical process uses.
Duplex	2003, 2101, 2102, 2205, 2507, Zeron 100®	High strength and resistance to stress corrosion cracking. General corrosion resistance similar to 316 with superior pitting/crevice corrosion resistance on the lower alloy grades. Higher alloy grades have resistance to seawater and some brines.
Reactive Metals	Titanium Grades 2, 7, 12, 16	Resistance to general and local corrosion in wide range of oxidizing and neutral environments. Excellent resistance to chlorides and other halides. Very good heat transfer properties.

Contact Information for Welded Titanium and Corrosion Resistant Alloy Tubing

WEBCO sales, distribution and manufacturing facilities are located in Sand Springs, Tulsa, Kellyville, and Mannford, OK; Oil City and Reno, PA; and Orange, TX, USA. Please use the contact information below or call 918-245-2211 or fax 918-245-0306 with general inquiries.

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