



ASTM A269 Seamless & Welded Austenitic Stainless Steel Tubing
ASTM A270 Seamless & Welded Austenitic Stainless Steel Sanitary Tubing

ASTM A312-94b Seamless Stainless Steel

STANDARD	China	American		Japan
	GB	AISI	ASTM UNS	JIS
2	0Cr18Ni9	304	S30400	SUS304
3	00Cr19Ni10	304L	S30403	SUS304L
4	0Cr23Ni13	309S	S30908	SUS309S
5	0Cr25Ni20	310S	S31008	SUS310S
6	0Cr17Ni12Mo2	316	S31600	SUS316L
7	00Cr17Ni14Mo2	316L	S31603	SUS316L
8	0Cr17Ni12Mo2N	316N	S31651	SUS316N
9	0Cr19Ni13Mo3	317	S31700	SUS317
10	00Cr19Ni10	304L	S30403	SUS304L
11	0Cr23Ni13	309S	S30908	SUS309S

PRODUCT SIZES ANSI B36,10 & B36,19

Nominal Pipe Size in	Outside Diameter	Wall Thickness & Weight														
		ASTM	Sch.5S		Sch.10S		Sch.40S		Sch.40		Sch.80S		Sch.80		Sch.160	
		mm	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m
1/8	10.29	-	-	1.25	0.279	1.73	0.365	1.73	0.365	2.42	0.470	2.42	0.470			
1/4	13.72	-	-	1.66	0.494	2.24	0.634	2.24	0.634	3.03	0.799	3.03	0.799			
3/8	17.15	-	-	1.66	0.634	2.32	0.848	2.32	0.848	3.20	1.10	3.20	1.10			
1/2	21.34	1.66	0.806	2.11	1.00	2.77	1.27	2.77	1.27	3.74	1.62	3.74	1.62	4.78	1.95	
3/4	26.67	1.66	1.02	2.11	1.28	2.87	1.68	2.87	1.68	3.92	2.20	3.92	2.20	5.57	2.90	
1	33.40	1.66	1.30	2.77	2.09	3.38	2.50	3.38	2.50	4.55	3.24	4.55	3.24	6.35	4.24	
1,1/4	42.16	1.66	1.66	2.77	2.69	3.56	3.39	3.56	3.39	4.86	4.47	4.86	4.47	6.35	5.61	
1,1/2	48.26	1.66	1.91	2.77	3.11	3.69	4.06	3.69	4.06	5.08	5.41	5.05	5.41	7.14	7.24	
2	60.33	1.66	2.40	2.77	3.93	3.92	5.45	3.92	5.45	5.54	7.49	5.54	7.49	8.74	11.1	
2,1/2	73.03	2.11	3.69	3.05	5.26	5.16	8.64	5.16	8.64	7.01	11.4	7.01	11.4	9.53	14.9	
3	88.90	2.11	4.52	3.05	6.46	5.49	11.3	5.49	11.3	7.62	15.3	7.62	15.3	11.13	21.3	
3,1/2	101.60	2.11	5.18	3.05	7.41	5.74	13.6	5.74	13.6	8.08	18.6	8.08	18.6	-	-	
4	114.30	2.11	5.84	3.05	8.37	6.02	16.1	6.02	16.1	8.56	22.3	8.56	22.3	13.49	33.5	
5	141.30	2.77	9.46	3.41	11.6	6.56	21.8	6.56	21.8	9.53	31.0	9.53	31.0	15.88	49.1	
6	168.28	2.77	11.3	3.41	13.9	7.12	28.3	7.12	28.3	10.98	42.6	10.98	42.6	18.27	67.6	
8	219.08	2.77	14.8	3.76	20.0	8.18	42.5	8.18	42.5	12.70	64.6	12.70	64.6	23.02	111	
10	273.05	3.41	22.7	4.20	27.8	9.28	60.4	9.28	60.4	12.70	81.5	15.09	96.0	28.58	172	
12	323.85	3.97	31.3	4.58	36.1	9.53	73.9	10.32	79.8	12.70	97.74	17.48	132	33.33	239	

Minimal order quantity: 1-1,5 tons/size/wall thickness

Mechanical properties			
Steel Grade	Tensile Strength, N/mm^2 (min)	Yield Strength, N/mm^2 (min)	Elongation, % (min)
TP304	515	205	35
TP304L	485	170	35
TP316	515	205	35
TP 316Ti	515.0	205.0	
TP316L	485	170	35
TP321	OD < 17,1 mm - 515; OD > 17,1 mm - 485	OD < 17,1 mm - 205; OD > 17,1 mm - 170	35

Chemical composition									
Steel Grade	C max.	Si max.	Mn max.	Cr	Ni	Mo	S	P	Ti Max.
TP304	0,08	0,75	2	18 - 20	8 - 11	-	0,03	0,04	
TP304L	0,035	0,75	2	18 - 20	8 - 13	-	0,03	0,04	
TP316	0,08	0,75	2	16 - 18	11 - 14	2 - 3	0,03	0,04	
TP 316Ti	0,08	0,75	2	16-18	11-14	2 - 3	0,03	0,04	5
TP316L	0,035	0,75	2	16 - 18	10 - 15	2 - 3	0,03	0,04	
TP321	0,08	0,75	2	17 - 20	9 - 13	-	0,03	0,04	0,7

1. Steel Grades - TP 304, TP 304L, TP 316, TP 321
2. Size of pipes in accordance with ANSI/ASME B36. 19M.
3. All technical requirements in accordance with ASTM A530.
4. Length tolerance of measured pipes is not greater than +10 mm.
5. The quality of pipes is ensured by manufacturing process and non-destructive test
6. Inter granular corrosion test in accordance with ASTM A262, Practice E is available

ASTM A-269 304 stainless is a general service commercial specification that is higher quality and is fully annealed for better ductility. It is available in both welded seam and seamless, and is a good spec for the racer to use.

Material Properties		304 Stainless Annealed ASTM A269	321 Stainless Annealed	Titanium Cp2 Grade 2 ASTM B 338
Tensile Strength	lb/in ² (70 F)	85,000	90,000	50,000
Yield Strength	lb/in ² (70 F)	35,000	35,000	40,000
Elongation	percent	55	55	20
Density	lb/in ²	0.290	0.290	0.163
Modulus of Elasticity	x 106 lb/in ²	28	28	15
Coefficient of Thermal Expansion	in/in-F x 10 ⁶ (70 F)	9.9	9.6	4.8
Coefficient of Thermal Conductivity	BTU/ft-hr-F (70 F)	9.40	9.30	12.00

OLMAX GmbH

Fra. F. Grabovca 22/V, 10000 ZAGREB/Croatia

(Work Tel#: +385 1 4663 449

7 Fax#: +385 1 4650 787 7 Fax#: +1 720 3840 904 7 Fax#: +44 709 2384 3443