



Properties

Chemical & Mechanical (taken from pipe specification)

Grade	UNS Number	Manufacturing Specification	Carbon Max.	Manganese Max.	Phosphorous Max.	SulphurMax.	Silicon Max.	Nickel	Chromium	Molybdenum Max.
304	S30400	ASTM A312	0.08	2	0.045	0.03	1	8.00-11.00	18.00-20.00	
304H	S30409	ASTM A312	.04-.10	2	0.045	0.03	1	8.00-11.00	18.00-20.00	
304L	S30403	ASTM A312	0.035	2	0.045	0.03	1	8.00-13.00	18.00-20.00	
310S	S31008	ASTM A312	0.08	2	0.045	0.03	1	19.00-22.00	24.00-26.00	0.75
316	S31600	ASTM A312	0.08	2	0.045	0.03	1	11.00-14.00 A	16.00-18.00	2.00-3.00
316H	S31609	ASTM A312	.04-.10	2	0.045	0.03	1	11.00-14.00 A	16.00-18.00	2.00-3.00
316L	S31603	ASTM A312	0.035	2	0.045	0.03	1	10.00-14.00	16.00-18.00	2.00-3.00
317L	S31703	ASTM A312	0.035	2	0.045	0.03	1	11.00-15.00	18.00-20.00	3.00-4.00
321	S32100	ASTM A312	0.08	2	0.045	0.03	1	9.00-12.00	17.00-19.00	
321H	S32109	ASTM A312	.04-.10	2	0.045	0.03	1	9.00-12.00	17.00-19.00	
347	S34700	ASTM A312	0.08	2	0.045	0.03	1	9.00-13.00	17.00-19.00	
347H	S34709	ASTM A312	.04-.10	2	0.045	0.03	1	9.00-13.00	17.00-19.00	
6% Moly	S31254	ASTM A312	0.02	1	0.03	0.01	0.8	17.50-18.50	19.50-20.50	6.00-6.50
DUPLEX	S31803	ASTM A790	0.03	2	0.03	0.02	1	4.50-6.50	21.00-23.00	2.50-3.50
SUPER DUPLEX	S32550	ASTM A790	0.04	1.5	0.04	0.03	1	4.50-6.50	24.00-27.00	2.90-3.90
SUPER DUPLEX	S32750	ASTM A790	0.03	1.2	0.035	0.02	0.8	6.00-8.00	24.00-26.00	3.00-5.00
SUPER DUPLEX	S32760	ASTM A790	0.05	1	0.03	0.01	1	6.00-8.00	24.00-26.00	3.00-4.00
904L	N08904	ASTM B677	0.02	2	0.045	0.035	1	23.00-28.00	19.00-23.00	4.00-5.00
ALLOY 20	N08020	ASTM B464	0.07	2	0.045	0.035	1	32.00-38.00	19.00-21.00	2.00-3.00
ALLOY 400	N04400	ASTM B165	0.3	2		0.024	0.5	63.00 MIN		
ALLOY 600	N06600	ASTM B167	0.15	1		0.015	0.5	72.00 MIN	14.00-17.00	
ALLOY 625	N06625	ASTM B444	0.1	0.5	0.015	0.015	0.5	58.00 MIN	20.00-23.00	8.00-10.00
ALLOY 800	N08800	ASTM B407	0.1	1.5		0.015	1	30.00-35.00	19.00-23.00	
ALLOY 800H/HT	N08810/11	ASTM B407	.05-.10 G	1.5		0.015	1	30.00-35.00	19.00-23.00	
ALLOY 825	N08825	ASTM B423	0.05	1		0.03	0.5	38.00-46.00	19.50-23.50	2.50-3.50
ALLOY C22	N06022	ASTM B622	0.015	0.5	0.02	0.02	0.08	REMAINDER	20.00-22.50	12.50-14.50
ALLOY C276	N10276	ASTM B622	0.01	1	0.04	0.03	0.08	REMAINDER	14.50-16.50	15.00-17.00
TITANIUM	GRADE 2	ASTM B861	0.08							

A. For welded TP316, TP316H the Nickel range shall be 10.00-14.00%

B. The Titanium content shall be not less than five times the Carbon content and not more than 0.70%

C. The Titanium content shall be not less than four times the Carbon content and not more than 0.60%

D. The Columbium content shall be not less than ten times the Carbon content and not more than 1.00%

E. The Columbium content shall be not less than eight times the Carbon content and not more than 1.00%

G. Alloy N08811 is 0.06-10%

Grade	Titanium	Nitrogen	Copper	Columbium plus Tantalum	Iron	Aluminium	Others	Cobalt	Vanadium	Tensile Strength MIN. ksi (MPa)	Yield Strength MIN. ksi (MPa)	Elongation 2" (50mm) long % min.
304										75(515)	30(205)	35
304H										75(515)	30(205)	35
304L										70(485)	25(170)	35
310S										75(515)	30(205)	35
316										75(515)	30(205)	35
316H										75(515)	30(205)	35
316L										70(485)	25(170)	35
317L										75(515)	30(205)	35
321	B									75(515)*	30(205)*	35
321H	C			D						75(515)*	30(205)*	35
347				E						75(515)	30(205)	35
347H										75(515)	30(205)	35
6% Moly		.18-.22	.50-1.00							98(675)#	45(310)#	35
DUPLEX		.08-.20								90(620)	65(450)	25
SUPER DUPLEX		.10-.25	1.50-2.50							110(760)	80(550)	15
SUPER DUPLEX		.24-.32	.50 MAX							116(800)	80(550)	15
SUPER DUPLEX		.20-.30	.50-1.00				W.50-1.00 +L			109 (750)	80(550)	25
904L			1.00-2.00		REMAINDER					71(490)	31(215)	35
ALLOY 20			3.00-4.00	E	REMAINDER					80(551)	35(241)	30
ALLOY 400			28.00-34.00		2.50 MAX					H	H	H
ALLOY 600			.50 MAX	3.15-4.15	6.00-10.00					H	H	H
ALLOY 625	.40 MAX				5.00 MAX	.40 MAX		1.00 MAX		H	H	H
ALLOY 800	.15-.60		.75 MAX		39.50 MIN	.15-.60				H	H	H
ALLOY 800H/HT	.15-.60 J		.75 MAX		39.50 MIN	.15-.60 J				H	H	H
ALLOY 825	.60-1.20		1.5-3.00 MAX		22.00 MIN	.20 MAX				H	H	H
ALLOY C22					2.00-6.00		W2.50-3.50	2.50 MAX	.35 MAX	100(690)	45(310)	45
ALLOY C276					4.00-7.00		W3.00-4.50	2.50 MAX	.35 MAX	100(690)	41(283)	40
TITANIUM	REMAINDER	.03 MAX			.30 MAX		K			50 (345)	40-65 (275-450)	20

H. See ASTM specifications. Results depend on conditions

J. Alloy N08811 : Al + Ti = 0.85-1.20%

K. Hydrogen 0.015% MAX. Oxygen .25% MAX

L. 40 min by formula %CR + 3.3 x %Mo + 16 x %N

*Seamless greater than 3/8 inch -Tensile 70 (485) Yield 25 (170)

5mm and greater

NOTE: For precise details, including tolerances and residual elements, see ASTM specifications.



Wall Thickness

(Metric) Schedules (ANSI B36.10 & ANSI B36.19)

SPM UK
www.spm.co.uk
[+] +44 161 345 7005

SPM Singapore
www.spm.com.sg
[+] + 65 62648884

SPM Australia
www.spectalpipi.ng.com.au
[+] + 61 89 358 2667

SPM Scotland
www.spm-scotland.co.uk
[+] + 44 1224 249340

SPM USA
www.spm-usa.com
[+] + 1 713 4256362

KEY: Wall Thickness (mm) Weight (kg/m)

N.B. Size	O.D.	Sch 5s	Sch 10s	Sch 10	Sch 20	Sch 30	Sch 40s	Std. Wall	Sch 40	Sch 60	Sch 80s	XS	Sch 80	Sch 100	Sch 120	Sch 140	Sch 160	XXS
6	10.29	-	1.24	-	-	-	1.73	1.73	1.73	-	2.41	2.41	2.41	-	-	-	-	-
8	13.72	-	1.85	-	-	-	2.24	2.24	2.24	-	3.02	3.02	3.02	-	-	-	-	-
10	17.15	-	2.51	-	-	-	2.91	2.91	2.91	-	3.82	3.82	3.82	-	-	-	-	-
15	21.34	1.66	3.68	0.64	1.66	-	4.85	4.85	4.85	-	6.35	6.35	6.35	-	-	-	-	-
20	26.67	2.11	4.78	1.1	4.78	-	6.35	6.35	6.35	-	8.39	8.39	8.39	-	-	-	-	-
25	33.4	2.77	6.05	1.33	6.05	-	8.39	8.39	8.39	-	11.13	11.13	11.13	-	-	-	-	-
32	42.16	3.68	8.08	1.88	8.08	-	11.13	11.13	11.13	-	14.92	14.92	14.92	-	-	-	-	-
40	48.26	4.78	10.67	2.51	10.67	-	15.88	15.88	15.88	-	20.62	20.62	20.62	-	-	-	-	-
50	60.33	6.35	14.27	3.36	14.27	-	20.62	20.62	20.62	-	27.7	27.7	27.7	-	-	-	-	-
65	73.03	8.39	18.88	4.53	18.88	-	27.7	27.7	27.7	-	36.5	36.5	36.5	-	-	-	-	-
80	88.9	11.13	23.82	5.94	23.82	-	36.5	36.5	36.5	-	47.8	47.8	47.8	-	-	-	-	-
90	101.6	13.72	28.26	7.11	28.26	-	47.8	47.8	47.8	-	60.5	60.5	60.5	-	-	-	-	-
100	114.3	16.5	33.31	8.39	33.31	-	60.5	60.5	60.5	-	75.2	75.2	75.2	-	-	-	-	-
125	141.3	21.1	42.16	10.67	42.16	-	95.3	95.3	95.3	-	122.28	122.28	122.28	-	-	-	-	-
150	168.28	27.7	54.9	13.72	54.9	-	122.28	122.28	122.28	-	160.12	160.12	160.12	-	-	-	-	-
200	219.08	36.5	71.1	18.88	71.1	-	190.1	190.1	190.1	-	247.83	247.83	247.83	-	-	-	-	-
250	273.05	47.8	91.3	24.4	91.3	-	247.83	247.83	247.83	-	336.5	336.5	336.5	-	-	-	-	-
300	323.85	60.5	116.4	31.75	116.4	-	317.5	317.5	317.5	-	425.2	425.2	425.2	-	-	-	-	-
350	385.6	75.2	145.3	39.6	145.3	-	425.2	425.2	425.2	-	534.0	534.0	534.0	-	-	-	-	-
400	460.4	95.3	180.3	50.8	180.3	-	534.0	534.0	534.0	-	652.7	652.7	652.7	-	-	-	-	-
450	457.2	106.7	211.6	59.4	211.6	-	652.7	652.7	652.7	-	781.4	781.4	781.4	-	-	-	-	-
500	508	122.28	249.8	70.2	249.8	-	781.4	781.4	781.4	-	920.1	920.1	920.1	-	-	-	-	-
550	558.8	150.8	295.3	83.9	295.3	-	920.1	920.1	920.1	-	1068.8	1068.8	1068.8	-	-	-	-	-
600	609.6	180.3	349.8	100.8	349.8	-	1068.8	1068.8	1068.8	-	1227.5	1227.5	1227.5	-	-	-	-	-
650	660.4	211.6	412.3	120.3	412.3	-	1227.5	1227.5	1227.5	-	1396.2	1396.2	1396.2	-	-	-	-	-
700	711.2	244.0	484.8	142.3	484.8	-	1396.2	1396.2	1396.2	-	1574.9	1574.9	1574.9	-	-	-	-	-
750	762	277.0	567.3	166.8	567.3	-	1574.9	1574.9	1574.9	-	1763.6	1763.6	1763.6	-	-	-	-	-
800	812.8	310.4	660.8	193.8	660.8	-	1763.6	1763.6	1763.6	-	1962.3	1962.3	1962.3	-	-	-	-	-
850	863.6	344.0	765.3	223.8	765.3	-	1962.3	1962.3	1962.3	-	2171.0	2171.0	2171.0	-	-	-	-	-
900	914.4	378.0	881.8	256.8	881.8	-	2171.0	2171.0	2171.0	-	2389.7	2389.7	2389.7	-	-	-	-	-