



Stainless Steel Tubing

Standard						
Item	ASTM A213/A213M			ASTM A312/A312M		
Grade	TP304	TP304L		TP304	TP304L	
	TP316	TP316L		TP316	TP316L	
	TP317	TP317L		TP317	TP317L	
	TP347	TP310S		TP347	TP310S	
	TP309H*	TP310H*		TP317*	TP310H*	
		TP321H Δ			TP321H Δ	
Yield Strength σ0.2 (Mpa)	≥170;	≥205		≥170;	≥205	
Tensile Strength σb (Mpa)	≥485;	≥515		≥485;	≥515	
Elongation %	≥35	≥35		≥35	≥35	
Flattening Test	H=1.09t/(0.09+t/D)			H=1.09t/(0.09+t/D)		
Flange Test	21-68%					
Intergranular corrosion	**、"Δ" ASTM E112			*、"Δ"ASTM E112, min 6#		
	"Δ" min 7#, "**" min 6#					
Hydraulic test (Mpa)	D	P max	P=220.6t/D	D	P max	ASTM A530/A530M
	<25.4	7		≤88.9	17	D≤270MM P=2Rt/D
	25.4-<38.1	10				R=50%σ0.2
	38.1-<50.8	14				
	50.8-<76.2	17				
	76.2-<127	24				
≥127	31		>88.9	19		
Metallograph Analysis	ASTM A262 E			ASTM A262 E		
Non-Destructive Test	ASTM E213 E309 E426			ASTM E213 E309 E426		
Hardness	HRB<90			HRB<90		

Tolerance grade			
Grade	Outside diameter tolerance	Grade	Wall thickness tolerance
D1	±1.50% but at least ±0.75mm	T1	±15% but at least ±0.60mm
D2	±1.00% but at least ±0.50mm	T2	±12.5% but at least ±0.40mm
D3	±0.75% but at least ±0.30mm	T3	±7.5% but at least ±0.15mm
D4	±0.50% but at least ±0.10mm	T4	±5.0% but at least ±0.10mm

Chemical composition									
Grade	Chemical Composition								
	C max	Si max	Mn max	P max	S max	Ni	Cr	Mo	Others
TP 304	0.08	0.75	2	0.04	0.03	8-11	18 - 20		
TP 304H	0.04 -0.10	0.75	2	0.04	0.03	8-11	18 - 20		
TP 304L	0.035	0.75	2	0.04	0.03	8-13	18 - 20		
TP 309S	0.08	0.75	2	0.045	0.03	12-15	22 -24		
TP 310S	0.08	0.75	2	0.045	0.03	19-22	24 -26	0.75 max	
TP 316	0.08	0.75	2	0.04	0.03	10-14	16 - 18	2 - 3	
TP 316L	0.035	0.75	2	0.04	0.03	10-15	16 - 18	2 - 3	
TP 316Ti	0.08	0.75	2	0.04	0.03	11-14	16 - 18	2 - 3	Ti: 5×C%
TP 317	0.08	0.75	2	0.04	0.03	11-14	18 - 20	3 - 4	
TP 321	0.08	0.75	2	0.04	0.03	9-13	17 - 20		Ti: 5×C%
TP 321H	0.04 - 0.10	0.75	2	0.04	0.03	9-13	17 - 20		Ti: 4×C%
TP 347	0.08	0.75	2	0.04	0.03	9-13	17 - 20		Nb+Ta: 10×C% - 1.0
TP 347H	0.04 - 0.10	0.75	2	0.04	0.03	9-13	17 - 20		Nb+Ta: 8×C% - 1.0



Tolerance standard						
Item	ASTM A213		ASTM A312		ASTM A269	
Outside diameter tolerance(mm)	O.D.	tolerance	O.D.	tolerance	O.D.	tolerance
	<25.4	±0.10	10.3-48.3	0.4/-0.8	12.7 <	0.13/-0.13
	25.4 ≤38.1	±0.15	>48.3-114.3	0.8/-0.8	12.7-38.1	0.13/-0.13
	>38.1-<50.8	±0.20	>114.3-219.1	1.6/-0.8	38.1-88.9	0.25/-0.25
	50.8-<63.5	±0.25	>219.1-457.2	2.4/-0.8	88.9-139.7	0.38/-0.38
	63.5-<76.2	±0.30	>457.2-660.4	3.2/-0.8	139.7-203.2	0.76/-0.76
	76.2 ≤101.6	±0.38	>660.4-864	4/-0.8		
	>101.6 ≤190.5	±0.38/-0.64	>864-1219.2	4.8/-0.8		
>190.5 ≤228.6	±0.38/-1.14					
Thickness tolerance(mm)	O.D.	tolerance	±12.5%t		O.D.	tolerance
	≤38.1	+20%/0			≤38.1	±15%t
	>38.1	+22%/0			>38.1	±10%t

COIL TUBE	
1. Material	TP304/304L, 316/316L, etc.
2. Standard	ASTM, ASME, DIN, EN, ISO, JIS, GOST, etc.
3. Type	Seamless
4. Size range	Outside Diameter: from .125 to 2" Wall thickness: .020 to .120 Length: as specified, Max 1000ft per continuous piece Max weight 200lbs per piece
5. Produce process	Pilgering and cold drawn
6. Surface process	Pickling and annealing & BA
7. Marking	LOGO, GRADE, TYPE, STANDARD, SIZE, HEAT NO.
8. Package	Bundles with waterproof cover , plywood box plywood wheel package
14. Certificate	ISO 9001, PED
15. Third party certification	BV, LR, SGS, TUV, CCS, ABS, etc.