



Sanitary Piping Reference Guide

Tube OD	Tube ID	Wall Thickness	Weight Dry	Volume	Weight with Water	Flow at a Mean Velocity GPM		
						5 fps	7 fps	10 fps
<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>lbs/100 ft</i>	<i>gal/100 ft</i>	<i>lbs/100 ft</i>			
1/4	0.180	0.035	8.1	.013	9.2	0.40	0.56	0.79
3/8	0.305	0.035	12.9	.038	16.0	1.14	1.59	2.28
1/2	0.370	0.065	30.6	0.56	35.3	1.7	2.3	3.4
3/4	0.620	0.065	48.2	1.57	61.3	4.7	6.6	9.4
1	0.870	0.065	65.8	3.09	91.5	9.3	13	19
1 1/2	1.370	0.065	100.9	7.66	164.8	23	32	46
2	1.870	0.065	136.1	14.27	255.1	43	60	86
2 1/2	2.370	0.065	171.2	22.92	362.4	69	96	138
3	2.870	0.065	206.4	33.60	486.7	101	141	202
4	3.834	0.083	351.8	59.97	851.9	180	252	360
6	5.782	0.109	694.7	136.39	1832.2	409	573	818
8	7.782	0.109	930.6	247.07	2991.1	741	1038	1482

Sanitary Tubing: Brief Description by Finish Number

No.	Description
1	Industrial or mill finish. Bright annealed, pickled, sand blast or tumbled.
3	Sanitary. ID polished to #150 grit or 32 Ra, OD mill finish.
3A	Polished 150 grit OD, 180 grit ID
5	Industrial. ID mill finish, OD polish to #150 grit or 32 Ra.
7	Sanitary. ID and OD polished to #150 grit or 32 Ra.

Finish Specifications

Process	RA Micro Inch	RA Micron	ISO designation
150 grit	30 - 35	0.75 - 0.875	N6
150 grit + Electropolish	12 - 20	0.3 - .05	
180 grit	20 - 25	0.5 - .0625	
180 grit + Electropolish	10 - 16	0.25 - 0.4	
240 grit	15 - 20	0.375 - 0.5	N5
240 grit + Electropolish	8 - 12	0.2 - 0.3	
320 grit	8 - 12	0.2 - 0.3	N4
320 grit + Electropolish	6 - 12	0.15 - 0.3	

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Chemical Composition Percentage of Metals and Alloys

		304	304L	316	316L	1.4435	2205	AL-6XN®	C-22®	C-276
Carbon	C	0.080	0.030	0.080	0.030	0.030*	0.030*	0.030*	0.010*	0.010*
Manganese	Mn	2.00	2.00	2.00	2.00	2.00*	2.00*	2.00*	1.00*	1.00*
Phosphorus	P	0.045	0.045	0.045	0.045	0.045*	0.030*	0.040*		0.025
Sulfur	S	0.030	0.030	0.030	0.030	0.025	0.020*	0.030*		0.010*
Silicon	Si	1.00	1.00*	1.00*	1.00*	1.00*	1.00*	1.00*	0.08*	0.08*
Chromium	Cr	18.0-20.0	18.0-20.0	16.0-18.0	16.0-18.0	17.0-18.0	22.0-23.0	20.0-22.0	22.0	14.5-16.5
Nickel	Ni	8.0-13.0	8.0-12.0	10.0-14.0	10.0-14.0	12.5-14.0	4.5-6.5	23.5-25.5	56.0	57.0
Molybdenum	Mo			2.0-3.0	2.0-3.0	2.5-3.0	3.0-3.5	6.0-7.0	13.0	15.0-17.0
Tungsten	W								3.0*	3.0-4.5
Vanadium	V								0.35*	0.35*
Cobalt	Co								2.5*	2.5*
Other				0.10-0.16N	0.10-0.16N	0.1 N*,0.05 T*	0.14- 0.20N	0.18-0.25 N	3.0 Fe	4.0-7.0 Fe

*Maximum

Pipe Schedules

Tube vs. Pipe

Manufactured to a set outside diameter, tube is expressed as 1.5" OD, .065" wall. Pipe is specified by a nominal, not actual, inside diameter. The wall thickness of pipe is described by the "schedule," such as schedule 40.

Size (in)	OD (in)	Schedule 5		Schedule 10		Schedule 40		Schedule 80	
		ID	Wall Thickness	ID	Wall Thickness	ID	Wall Thickness	ID	Wall Thickness
1/8	0.405	0.307	0.035	0.269	0.049	0.215	0.068	0.307	0.095
1/4	0.540	0.442	0.049	0.364	0.065	0.302	0.088	0.410	0.119
3/8	0.675	0.577	0.049	0.493	0.065	0.423	0.091	0.545	0.126
1/2	0.840	0.710	0.065	0.622	0.083	0.546	0.109	0.674	0.147
3/4	1.050	0.920	0.065	0.824	0.083	0.742	0.113	0.884	0.154
1	1.315	1.185	0.065	1.049	0.109	0.957	0.133	1.097	0.179
1 1/4	1.660	1.530	0.065	1.380	0.109	1.278	0.140	1.442	0.191
1 1/2	1.900	1.770	0.065	1.610	0.109	1.500	0.145	1.682	0.200
2	2.375	2.245	0.065	2.067	0.109	1.939	0.154	2.157	0.218
2 1/2	2.875	2.709	0.083	2.469	0.120	2.323	0.203	2.635	0.276
3	3.500	3.334	0.083	3.068	0.120	2.900	0.216	3.260	0.300
3 1/2	4.000	3.834	0.083	3.548	0.120	3.364	0.226	3.760	0.318
4	4.500	4.334	0.083	4.026	0.120	3.826	0.237	4.260	0.337
5	5.563	5.345	0.109	5.047	0.134	4.813	0.258	5.295	0.375
6	6.625	6.407	0.109	6.065	0.134	5.761	0.280	6.357	0.432
8	8.625	8.407	0.109	7.981	0.148	7.625	0.322	8.329	0.500