A.S.A PIPE SCHEDULES FOR SEAMLESS AND WELDED PIPE

UPPER FIGURES WALL THICKNESS IN INCHES LOWER FIGURES WEIGHT PER FOOT IN POUNDS

PIPE SIZE	O.D. IN INCH	5S	5	10S	10	20	30	40S & STD	40	60	80S & E. H.	80	100	120	140	160	DOUBLE E. H.	VOLUME CUBIC FEET PER FOOT
1/8	0.405		0.035 0.1383	0.049 0.1863	0.049 0.1863			0.068 0.2447	0.068 0.2447		0.095 0.3145	0.095 0.3145						0.001
1/4	0.540		0.049 0.2570	0.065 0.3297	0.065 0.3297			0.088 0.4248	0.088 0.4248		0.119 0.5351	0.119 0.5351						0.002
3/8	0.675		0.049 0.3276	0.065 0.4235	0.065 0.4235			0.091 0.5676	0.091 0.5676		0.126 0.7388	0.126 0.7388						0.003
1/2	0.840	0.065 0.5383	0.065 0.5383	0.083 0.6710	0.083 0.6710			0.109 0.8510	0.109 0.8510		0.147 1.088	0.147 1.088				0.187 1.304	0.294 1.714	0.005
3/4	1.050	0.065 0.6838	0.065 0.6838	0.083 0.8572	0.083 0.8572			0.113 1.131	0.113 1.131		0.154 1.474	0.154 1.474				0.218 1.937	0.308 2.441	0.008
1	1.315	0.065 0.8678	0.065 0.8678	0.109 1.404	0.109 1.404			0.133 1.679	0.133 1.679		0.179 2.172	0.179 2.172				0.250 2.844	0.358 3.659	0.012
1 1/4	1.660	0.065 1.107	0.065 1.107	0.109 1.806	0.109 1.806			0.140 2.273	0.140 2.273		0.191 2.997	0.191 2.997				0.250 3.765	0.382 5.214	0.019
1 1/2	1.900	0.065 1.274	0.065 1.274	0.109 2.085	0.109 2.085			0.145 2.718	0.145 2.718		0.200 3.631	0.200 3.631				0.281 4.859	0.400 6.408	0.025
2	2.375	0.065 1.604	0.065 1.604	0.109 2.638	0.109 2.638			0.154 3.653	0.154 3.653		0.218 5.022	0.218 5.022				0.343 7.444	0.436 9.029	0.039
2 1/2	2.875	0.083 2.475	0.083 2.475	0.120 3.531	0.120 3.531			0.203 5.793	0.203 5.793		0.276 7.661	0.276 7.661				0.375 10.01	0.552 13.70	0.057
3	3.500	0.083 3.029	0.083 3.029	0.120 4.332	0.120 4.332			0.216 7.576	0.216 7.576		0.300 10.25	0.300 10.25				0.437 14.32	0.600 18.58	0.085
3 1/2	4.000	0.083 3.472	0.083 3.472	0.120 4.973	0.120 4.973			0.226 9.109	0.226 9.109		0.318 12.51	0.318 12.51					0.636 22.85	0.11
4	4.500	0.083 3.915	0.083 3.915	0.120 5.613	0.120 5.613			0.237 10.79	0.237 10.79	0.281 12.68	0.337 14.98	0.337 14.98		0.437 19.01		0.531 22.51	0.674 27.54	0.14
4 1/2	5.000							0.247 12.53			0.355 17.61						0.710 32.53	0.17
5	5.563	0.109 6.349	0.109 6.349	0.134 7.770	0.134 7.770			0.258 14.62	0.258 14.62		0.375 20.78	0.375 20.78		0.500 27.04		0.625 32.96	0.750 38.55	0.21
6	6.675	0.109 7.585	0.109 7.585	0.134 9.290	0.134 9.289			0.280 18.97	0.280 18.97		0.432 28.57	0.432 28.57		0.562 36.39		0.718 45.3	0.864 53.16	0.3
7	7.625							0.301 23.57			0.500 38.05						0.875 63.08	0.4
8	8.625	0.109 9.914	0.109 9.914	0.148 13.40	0.148 13.40	0.250 22.36	0.277 24.70	0.322 28.55	0.322 28.55	0.406 35.64	0.500 43.39	0.500 43.39	0.593 50.87	0.718 60.93	0.812 67.76	0.906 74.69	0.875 72.42	0.52
9	9.625							0.342 33.90			0.500 48.72							0.64
10	10.750	0.134 15.19	0.134 15.19	0.165 18.65	0.165 18.70	0.250 28.04	0.307 34.24	0.365 40.48	0.365 40.48	0.500 54.74	0.500 54.74	0.593 64.33	0.718 76.93	0.843 89.20	1.000 104.1	1.125 115.7		0.8
11	11.750							0.375 45.55			0.500 60.07							0.96
12	12.750	0.156 21.07	0.165 22.18	0.180 24.16	0.180 24.20	0.250 33.38	0.330 43.77	0.375 49.56	0.406 53.53	0.562 73.16	0.500 65.42	0.687 88.51	0.843 107.2	1.000 125.5	1.125 139.7	1.312 160.3		1.13
14	14.000	0.156 23.07		0.188 27.73	0.250 36.71	0.312 45.68	0.375 54.57	0.375 54.57	0.437 63.37	0.593 84.91	0.500 72.09	0.750 106.1	0.937 130.7	1.093 150.7	1.250 170.2	1.406 189.1		1.36
16	16.000	0.165 27.9		0.188 31.75	0.250 42.05	0.312 52.36	0.375 62.58	0.375 62.58	0.500 82.77	0.656 107.5	0.500 82.77	0.843 136.5	1.031 164.8	1.218 192.3	1.437 223.5	1.593 245.1		1.78
18	18.000	0.165 31.43		0.188 35.76	0.250 47.39	0.312 59.03	0.437 82.06	0.375 70.59	0.562 104.8	0.750 138.2	0.500 93.45	0.937 170.8	1.156 208.0	1.375 244.1	1.562 274.2	1.781 308.6		2.25
20	20.000	0.188 39.78		0.218 46.05	0.250 52.73	0.375 78.60	0.500 104.1	0.375 78.60	0.593 122.9	0.812 166.4	0.500 104.1	1.031 208.9	1.280 256.1	1.500 296.4	1.750 341.1	1.968 379.0		2.78
24	24.000	0.218 55.37		0.250 63.41	0.250 63.41	0.375 94.62	0.562 140.8	0.375 94.62	0.687 171.2	0.968 238.1	0.500 125.5	1.218 296.4	1.531 367.4	1.812 429.4	2.062 483.1	2.343 541.9		4
26	26.000				0.312 85.60	0.500 136.2		0.375 102.6			0.500 136.2							4.7
28	28.000				0.312 92.26	0.500 146.8	0.625 182.7	0.375 110.6			0.500 146.8							5.4
30	30.000				0.312 98.93	0.5 157.5	0.625 196.1	0.375 118.6			0.500 157.5							6.25
32	32.000				0.312 105.6	0.500 168.2	0.625 209.4	0.375 126.7	0.688 230.1		0.500 168.2							7.1
34	34.000				0.344 123.7	0.500 178.9	0.625 222.8	0.375 134.7	0.688 244.8		0.500 178.9							8.03
36	36.000				0.312 118.9	0.500 189.5	0.625 236.1	0.375 142.7	0.750 282.3		0.500 189.6							9
38	38.000					0.500 197.75	0.625 249.7	0.375 150.8			0.500 200.4							10.03
40	40.000					0.500 211.12	0.625 263.07	0.375 158.85			0.500 211.13							11.11
42	42.000					0.500 221.82	0.625 276.18	0.375 166.7	0.750 330.4		0.500 221.82							12.25
44	44.000					0.500 232.51	0.625 289.8	0.375 174.9			0.500 232.6							13.44
46	46.000					0.500 243.2	0.625 303.16	0.375 182.9			0.500 243.2							14.69
48	48.000					0.500 253.89	0.625 316.5	0.375 190.7			0.500 253.89							16.00
60	60.000							0.375 238.8			0.500 317.7							25.00

TO CONVERT CUBIC FEET TO CUBIC METERS DIVIDE BY 35.31 .

TO CONVERT CUBIC FEET PER FOOT TO CUBIC METERS PER METER DIVIDE BY 1.5103

Nominal Inside Diameter of ASA schedule pipe

Nominal size	Nominal Outside Dia.	Sched. 10 St	Sched 10 t	Sched. 20	Sched. 30	STDS WALL	Sched. 40	Sched. 60	E.X.# STG.	Sched. 80	Sched. 100	Sched. 120	Sched. 140	Sched. 160	XX STG.
0.50	0.840	0.674	0.674	-	-	0.622	0.622	-	0.546	0.546	-	-	-	0.464	0.252
0.75	1.050	0.884	0.884	-	-	0.824	0.824	-	0.742	0.742	-	-	-	0.612	0.434
1.00	1.315	1.097	1.097	-	-	1.049	1.049	-	0.957	0.957	-	-	-	0.815	0.599
1.25	1.660	1.442	1.442	-	-	1.380	1.380	-	1.278	1.278	-	-	-	1.160	0.896
1.50	1.900	1.682	1.682	-	-	1.610	1.610	-	1.500	1.500	-	-	-	1.338	1.100
2.00	2.375	2.157	2.157	-	-	2.067	2.067	-	1.939	1.939	-	-	-	1.687	1.503
2.50	2.875	2.635	2.635	-	-	2.469	2.469	-	2.323	2.323	-	-	-	2.125	1.771
3.00	3.500	3.260	3.260	-	-	3.068	3.068	-	2.900	2.900	-	-	-	2.624	2.300
3.50	4.000	3.760	3.760	-	-	3.548	3.548	-	3.364	3.364	-	-	-	-	2.728
4.00	4.500	4.260	4.260	-	-	4.026	4.026	-	3.826	3.826	-	3.624	-	3.438	3.152
5.00	5.563	5.295	5.295	-	-	5.047	5.047	-	4.813	4.813	-	4.563	-	4.313	4.063
6.00	6.625	6.375	6.357	-	-	6.065	6.065	-	5.761	5.761	-	5.501	-	5.187	4.897
8.00	8.625	8.329	8.329	8.125	8.071	7.981	7.981	7.813	7.625	7.625	7.437	7.187	7.001	6.813	6.875
10.00	10.750	10.420	10.420	10.250	10.136	10.020	10.020	9.750	9.750	9.562	9.312	9.062	8.750	8.500	8.750
12.00	12.750	12.390	12.390	12.250	12.090	12.000	11.938	11.626	11.750	11.374	11.062	10.750	10.500	10.126	10.750
14.00	14.000	13.625	13.500	13.376	13.250	13.250	13.124	12.812	13.000	12.500	12.124	11.812	11.500	11.188	-
16.00	16.000	15.625	15.500	15.376	15.250	15.250	15.000	14.688	15.000	14.312	13.938	13.562	13.124	12.812	-
18.00	18.000	17.625	17.500	17.376	17.124	17.250	16.876	16.500	17.000	16.124	15.688	15.250	14.876	14.438	-
20.00	20.000	19.564	19.500	19.250	19.000	19.250	18.812	18.376	19.000	17.938	17.438	17.000	16.500	16.062	-
22.00	22.000	-	21.500	-	-	21.250	-	-	21.000	-	-	-	-	-	-
24.00	24.000	23.500	23.500	23.250	22.876	23.250	22.624	22.062	23.000	21.562	20.938	20.376	19.876	19.312	-
26.00	26.000	-	-	-	-	25.250	-	-	25.000	-	-	-	-	-	-
30.00	30.000	29.375	29.376	29.000	28.750	29.250	-	-	29.000	-	-	-	-	-	-

ALL DIMENSIONS ARE IN INCHES

PERMISSIBLE VARIATION IN WEIGHT FOR SEAMLESS AND WELDED PIPE PER A.S.T.M A530

THE WEIGHT OF ANY LENGTH OF SEAMLESS PIPE NPS 12" AND UNDER SHALL NOT VARY MORE THAN 10% OVER AND 3.5% UNDER THAT SPECIFIED. FOR SIZES OVER NPS 12", THE WEIGHT OF ANY LENGTH OF PIPE SHALL NOT VARY MORE THAN 10% OVER AND 5% UNDER THAT SPECIFIED. UNLESS OTHERWISE SPECIFIED, PIPE OF NPS 4" AND SMALLER MAY BE WEIGHED IN CONVENIENT LOTS; PIPE IN SIZES LARGER THAN NPS 4" SHALL BE WEIGHED SEPARATELY.

PERMISSIBLE VARIATIONS IN WALL THICKNESS

SEAMLESS AND WELDED (NO FILLER METAL ADDED) - THE MINIMUM WALL THICKNESS AT ANY POINT SHALL NOT BE MORE THAN 12.5% UNDER THE NOMINAL WALL THICKNESS SPECIFIED.

THE MINIMUM WALL THICKNESS ON INSPECTION IS SHOWN IN APPENDIX X1 OF A.S.T.M 530 AS SHOWN BELOW:

PIPE SIZE	5S	5	10S	10	20	30	40S STD	40	60	80S E.H.	80	100	120	140	160	DBL EXTRA HEAVY
1/8	-	0.030	0.043	0.043	-	-	0.060	0.060	-	0.083	0.083	-	-	-	-	-
1/4	-	0.043	0.057	0.057	-	-	0.077	0.077	-	0.104	0.104	-	-	-	-	-
3/8	-	0.043	0.057	0.057	-	-	0.080	0.080	-	0.110	0.110	-	-	-	-	-
1/2	0.057	0.057	0.073	0.073	-	-	0.095	0.095	-	0.129	0.129	-	-	-	0.164	0.257
3/4	0.057	0.057	0.073	0.073	-	-	0.099	0.099	-	0.135	0.135	-	-	-	0.191	0.270
1	0.057	0.057	0.095	0.095	-	-	0.116	0.116	-	0.157	0.157	-	-	-	0.219	0.313
1 1/4	0.057	0.057	0.095	0.095	-	-	0.123	0.123	-	0.167	0.167	-	-	-	0.219	0.334
1 1/2	0.057	0.057	0.095	0.095	-	-	0.127	0.127	-	0.175	0.175	-	-	-	0.245	0.350
2	0.057	0.057	0.095	0.095	-	-	0.135	0.135	-	0.191	0.191	-	-	-	0.030	0.381
2 1/2	0.073	0.073	0.105	0.105	-	-	0.178	0.178	-	0.242	0.242	-	-	-	0.328	0.483
3	0.073	0.073	0.105	0.105	-	-	0.189	0.189	-	0.263	0.263	-	-	-	0.382	0.525
3 1/2	0.073	0.073	0.105	0.105	-	-	0.198	0.198	-	0.278	0.278	-	-	-	-	0.557
4	0.073	0.073	0.105	0.105	-	-	0.207	0.207	0.246	0.295	0.295	-	0.382	-	0.464	0.590
5	0.095	0.095	0.117	0.117	-	-	0.226	0.226	-	0.328	0.328	-	0.438	-	0.547	0.656
6	0.095	0.095	0.117	0.117	-	-	0.245	0.245	-	0.378	0.378	-	0.492	-	0.628	0.756
8	0.095	0.095	0.130	0.130	0.219	0.242	0.282	0.282	0.355	0.438	0.438	0.519	0.628	0.711	0.793	0.766
10	0.117	0.117	0.144	0.144	0.219	0.269	0.319	0.319	0.438	0.438	0.519	0.628	0.738	0.875	0.984	-
12	0.137	0.144	0.158	0.158	0.219	0.289	0.328	0.355	0.492	0.438	0.601	0.738	0.875	0.984	1.148	-
14	0.137	-	0.165	0.219	0.273	0.328	0.328	0.382	0.519	0.438	0.656	0.820	0.956	1.094	1.230	-
16	0.144	-	0.165	0.219	0.273	0.328	0.328	0.437	0.574	0.438	0.738	0.902	1.066	1.257	1.390	-
18	0.144	-	0.165	0.219	0.273	0.382	0.328	0.492	0.656	0.438	0.82	1.012	1.203	1.367	1.560	-
20	0.165	-	0.165	0.219	0.328	0.437	0.328	0.519	0.711	0.438	0.902	1.12	1.313	1.531	1.722	-
24	0.191	-	0.219	0.219	0.328	0.492	0.328	0.601	0.847	0.438	1.066	1.34	1.59	1.804	2.050	-
26	-	-	-	0.273	0.438	-	0.328	-	-	0.438	-	-	-	-	-	-
28	-	-	-	0.273	0.438	0.547	0.328	-	-	0.438	-	-	-	-	-	-
30	-	-	-	0.273	0.438	0.547	0.328	-	-	0.438	-	-	-	-	-	-
32	-	-	-	0.273	0.438	0.547	0.328	0.602	-	0.438	-	-	-	-	-	-
34	-	-	-	0.301	0.438	0.547	0.328	0.602	-	0.438	-	-	-	-	-	-
36	-	-	-	0.273	0.438	0.547	0.328	0.656	-	0.438	-	-	-	-	-	-

A.S.A. PIPE SCHEDULES FOR SEAMLESS AND WELDED PIPE CONVERSION CHART TO METRIC SYSTEM

UPPER FIGURES - wall thickness in m.m. **LOWER FIGURES - weight in kilograms per meter**

PIPE	DN	METRIC O.D.	SCH5	SCH10	SCH20	SCH30	STD WALL	SCH40	SCH60	EXTRA STRONG	SCH80	SCH100	SCH120	SCH140	SCH160	DOUBLE EXTRA STRONG	Volume Cubic Meter Per Meter
			0.889	1.24	–	1	1.73	1.73	–	2.41	2.41	–	–	–	–	–	–
1/8"	6	10.29	0.21	0.28	–	–	0.3641	0.3641	–	0.468	0.468	–	–	–	–	–	–
			1.24	1.65	–	–	2.24	2.24	–	3.02	3.02	–	–	–	–	–	–
1/4"	8	13.72	0.38	0.5	–	–	0.64	0.64	–	0.81	0.81	–	–	–	–	–	–
			1.24	1.65	–	–	2.31	2.31	–	3.2	3.2	–	–	–	–	–	–
3/8"	10	17.15	0.49	0.64	–	–	0.88	0.88	–	1.12	1.12	–	–	–	–	–	–
			1.65	2.11	–	–	2.77	2.77	–	3.73	3.73	–	–	–	4.75	7.47	–
1/2"	15	21.34	0.8	1.02	–	–	1.29	1.29	–	1.64	1.64	–	–	–	1.95	2.54	–
			1.65	2.11	–	–	2.87	2.87	–	3.91	3.91	–	–	–	5.54	7.82	–
3/4"	20	26.67	1.02	1.3	–	–	1.71	1.71	–	2.22	2.22	–	–	–	2.89	3.63	–
			1.65	2.77	–	–	3.38	3.38	–	4.55	4.55	–	–	–	6.35	9.09	–
1"	25	33.4	1.29	2.11	–	–	2.54	2.54	–	3.28	3.28	–	–	–	4.23	5.45	–
			1.65	2.77	–	–	3.58	3.58	–	4.85	4.85	–	–	–	6.35	9.7	–
1 1/4"	32	42.16	1.65	2.73	–	–	3.43	3.43	–	4.54	4.54	–	–	–	5.6	7.75	–
			1.65	2.77	–	–	3.68	3.68	–	5.08	5.08	–	–	–	7.14	10.2	
1 1/2"	40	48.26	1.9	3.16	–	–	4.11	4.11	–	5.48	5.48	–	–	–	7.23	9.54	0.001
			1.65	2.77	–	–	3.91	3.91	–	5.54	5.54	–	–	–	8.71	11.1	
2"	50	60.33	2.39	3.99	–	–	5.51	5.51	–	7.58	7.58	–	–	–	11.1	13.44	0.003
			2.11	3.05	–	–	5.16	5.16	–	7.01	7.01	–	–	–	9.52	14	
2 1/2"	65	73.03	3.68	5.33	–	–	8.75	8.75	–	11.57	11.57	–	–	–	14.9	20.39	0.004
			2.11	3.05	–	–	5.49	5.49	–	7.62	7.62	–	–	–	11.1	15.2	
3"	80	88.9	4.51	5.54	–	–	11.45	11.45	–	5.48	5.48	–	–	–	21.3	27.65	0.006
			2.11	3.05	–	–	5.74	5.74	–	8.08	8.08	–	–	–	–	16.2	
3 1/2"	88	101.9	5.17	7.51	–	–	13.96	13.96	–	18.9	18.9	–	–	–	–	34	0.008
			2.11	3.05	–	–	6.02	6.02	7.14	8.56	8.56	–	11.1	–	13.5	17.1	
4"	100	114.3	5.83	8.48	–	–	16.03	16.03	18.84	22.62	22.62	–	28.25	–	33.51	40.99	0.009
			2.77	3.4	–	–	6.55	6.55	–	9.53	9.53	–	12.7	–	15.9	19	
5"	125	141.3	9.45	11.56	–	–	22.09	22.09	–	31.38	31.38	–	40.24	–	49.04	57.37	0.016
			2.77	3.4	–	6.35	7.11	7.11	–	10.97	10.97	–	14.3	–	18.2	21.9	
6"	150	168.28	11.48	14.03	33.38	25.33	28.65	28.65	–	43.15	43.15	–	54.2	–	67.47	79.11	0.023
			2.77	3.78	6.35	7.04	8.18	8.18	10.3	12.7	12.7	15.1	18.2	20.6	23	22.2	
8"	200	219.08	15	20.24	32.28	38.76	43.12	43.12	53.7	65.53	65.53	75.79	90.32	100.89	111.18	107.8	0.041
			3.4	4.2	6.35	7.8	9.27	9.27	12.7	12.7	15.1	18.2	21.4	25.4	28.6	–	
10"	250	273.05	22.94	28.17	41.73	50.96	61.14	61.14	82.67	82.67	95.84	114.59	132.85	154.97	172.01	–	0.065
			3.96	4.57	6.35	8.38	9.52	10.3	14.3	12.7	17.4	21.4	25.4	28.6	33.7	–	
12"	300	323.85	31.69	38.5	49.68	65.14	74.85	79.71	108.97	98.81	131.81	159.67	186.75	207.87	238.5	–	0.091
			3.96	4.78	7.92	9.52	9.52	11.1	15.1	12.7	19	23.8	27.8	31.8	35.7	–	
14"	350	355.6	34.84	41.88	67.98	81.21	82.42	94.31	126.51	108.88	157.94	194.64	224.36	253.32	281.49	–	0.126
			4.19	4.78	7.92	9.52	9.52	12.7	16.7	12.7	21.4	26.2	30.9	36.5	40.5	–	
16"	400	406.4	42.13	47.95	77.92	93.13	94.52	123.18	160.04	125.01	203.26	245.34	286.33	332.72	364.94	–	0.164
			4.19	4.78	7.92	11.1	9.52	14.3	19	12.7	23.8	29.4	34.9	39.7	45.2	–	
18"	450	457.2	47.47	54	87.85	122.12	106.61	155.9	205.62	141.14	254.24	309.55	363.33	408.21	459.18	–	0.213
			4.78	5.54	9.52	12.7	9.52	15.1	20.6	12.7	26.2	32.5	38.1	44.4	50	–	
20"	500	508	50.08	69.57	116.97	154.97	118.71	183.14	247.789	157.26	310.91	381.2	441.06	507.63	564.24	–	0.262
			5.54	6.35	9.52	14.3	9.52	17.4	24.8	12.7	30.9	38.9	46	52.4	59.5	–	
24"	600	609.6	83.63	95.77	140.81	209.54	142.91	254.74	354.62	189.53	441.3	546.84	639.18	719.16	806.74	–	0.377
28"	700	711.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.492
32"	800	812.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.656
36"	900	914.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.82
40"	1000	1016	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.033

NOTE:

TO CONVERT CUBIC METERS TO CUBIC FEET MULTIPLY BY 35.31
TO CONVERT KILOGRAMS PER METER TO POUNDS PER FOOT MULTIPLY BY 1.5103

FOR WEIGHTS IN KILOGRAMS PER METER USE FORMULA:

WEIGHT = .0246615 (OD - WALL THICKNESS) X WALL THICKNESS
(ALL DIMENSIONS ARE EXPRESSED IN MILLIMETERS)

FOR WEIGHTS PER METER OF PIPE AND TUBE OF OTHER MATERIALS, REPLACE THE CONSTANT .0246615 IN THE FORMULA AS FOLLOWS.

ALLOY 400	**0.02765**
ALLOY 600	**0.02639**
ALLOY 800	**0.02513**
ALUMINUM	**0.00848**
COPPER	**0.02796**
COPPER NICKEL	**0.02796**
DUPLEX	**0.02450**
STAINLESS STEEL	**0.02504**
TITANIUM	**0.01414**

TABLE OF PROPERTIES OF PIPE

Tabulated below are the most generally required data used in piping design .
Sizes and thicknesses shown are covered by the following standards :
1) American Standard ASA B36.10 2) American Standard ASA B36.19
3) American Petroleum Institute Stan 4) American Petroleum Institute Standard API 5LX
5) New United States Legal Standard for Steel Plate Gauges .

All data is computed from the nominal dimensions listed and the effect of tolerances isnot taken into account.
Values are computed by application of the following formulas :
Radius of Gyration : ($\sqrt{D^2 - d^2}$)/4
Moment of Intertia : $I = R^2A$
Section Modulus : Z = I/0.5D

Nominal Pipe Size	Nominal Outside Diam. D	Desig-nation	Wall Thick-ness	Inside Diam. d	Weight per Foot	Wt. Of Water per Ft. of pipe	Sq. Ft. Inside Surface per Ft.	Sq. Ft. Inside Surface per Ft.	Transverse Area in.^{2} a	Area of Metal in.^{2} A	Moment of Interia in.^{4} I	Section Modulus in.^{3} Z	Radius of Gyration in. R
1/8	0.405	10S	0.049	0.307	0.186	0.0320	0.106	0.0804	0.0740	0.0548	0.00090	0.00440	0.1270
1/8	0.405	Std.	0.068	0.269	0.244	0.0246	0.106	0.0705	0.0568	0.0720	0.00106	0.00530	0.1215
1/8	0.405	X-Stg.	0.095	0.215	0.314	0.0157	0.106	0.0563	0.0364	0.0925	0.00122	0.00600	0.1146
1/4	0.540	10S	0.065	0.410	0.330	0.0570	0.141	0.1073	0.1320	0.0970	0.00280	0.01030	0.1695
1/4	0.540	Std.	0.088	0.364	0.424	0.0451	0.141	0.0955	0.1041	0.1250	0.00331	0.01230	0.1628
1/4	0.540	X-Stg.	0.119	0.302	0.535	0.0310	0.141	0.0794	0.0716	0.1574	0.00378	0.01395	0.1547
3/8	0.675	10S	0.065	0.545	0.423	0.1010	0.177	0.1427	0.2333	0.1245	0.00590	0.01740	0.2160
3/8	0.675	Std.	0.091	0.493	0.567	0.0827	0.177	0.1295	0.1910	0.1670	0.00730	0.02160	0.2090
3/8	0.675	X-Stg.	0.126	0.423	0.738	0.0609	0.177	0.1106	0.1405	0.2173	0.00862	0.02554	0.1991
1/2	0.840	10S	0.083	0.670	0.671	0.1550	0.220	0.1764	0.3568	0.1974	0.01430	0.03410	0.2692
1/2	0.840	Std.	0.109	0.622	0.850	0.1316	0.220	0.1637	0.3040	0.2503	0.01710	0.04070	0.2613
1/2	0.840	X-Stg.	0.147	0.546	1.087	0.1013	0.220	0.1433	0.2340	0.3200	0.02010	0.04780	0.2505
1/2	0.840	160	0.187	0.466	1.310	0.0740	0.220	0.1220	0.1706	0.3836	0.02213	0.05269	0.2402
1/2	0.840	XX-Stg	0.294	0.252	1.714	0.0216	0.220	0.0660	0.0499	0.5043	0.02424	0.05772	0.2192
3/4	1.050	10S	0.083	0.884	0.857	0.2660	0.275	0.2314	0.6138	0.2522	0.02970	0.05660	0.3430
3/4	1.050	Std.	0.113	0.824	1.130	0.2301	0.275	0.2168	0.5330	0.3326	0.03704	0.07055	0.3337
3/4	1.050	X-Stg.	0.154	0.742	1.473	0.1875	0.275	0.1948	0.4330	0.4335	0.04479	0.08531	0.3214
3/4	1.050	160	0.218	0.614	1.940	0.1280	0.275	0.1607	0.2961	0.5698	0.05270	0.10038	0.3041
3/4	1.050	XX-Stg	0.308	0.434	2.440	0.0633	0.275	0.1137	0.1479	0.7180	0.05792	0.11030	0.2840
1	1.315	10S	0.109	1.097	1.404	0.4090	0.344	0.2872	0.9448	0.4129	0.07560	0.1150	0.4282
1	1.315	Std.	0.133	1.049	1.678	0.3740	0.344	0.2740	0.8640	0.4939	0.08734	0.1328	0.4205
1	1.315	X-Stg.	0.179	0.957	2.171	0.3112	0.344	0.2520	0.7190	0.6388	0.10560	0.1606	0.4066
1	1.315	160	0.250	0.815	2.850	0.2261	0.344	0.2134	0.5217	0.8364	0.12516	0.1903	0.3868
1	1.315	XX-Stg	0.358	0.599	3.659	0.1221	0.344	0.1570	0.2818	1.0760	0.14050	0.2136	0.3613
1 1/4	1.660	10S	0.109	1.442	1.806	0.7080	0.434	0.3775	1.633	0.5314	0.1606	0.1934	0.5499
1 1/4	1.660	Std.	0.140	1.380	2.272	0.6471	0.434	0.3620	1.495	0.6685	0.1947	0.2346	0.5397
1 1/4	1.660	X-Stg.	0.191	1.278	2.996	0.5553	0.434	0.3356	1.283	0.8815	0.2418	0.2913	0.5237
1 1/4	1.660	160	0.250	1.160	3.764	0.4575	0.434	0.3029	1.057	1.1070	0.2833	0.3421	0..5063
1 1/4	1.660	XX-Stg	0.382	0.896	5.214	0.2732	0.434	0.2331	0.6305	1.5340	0.3411	0.4110	0.4716
1 1/2	1.900	10S	0.109	1.682	2.085	0.9630	0.497	0.4403	2.221	0.613	0.2469	0.2599	0.6344
1 1/2	1.900	Std.	0.145	1.610	2.717	0.8820	0.497	0.4213	2.036	0.800	0.3099	0.326	0.6226
1 1/2	1.900	X-Stg.	0.200	1.500	3.631	0.7648	0.497	0.3927	1.767	1.068	0.3912	0.4118	0.6052
1 1/2	1.900	160	0.281	1.337	4.862	0.6082	0.497	0.3519	1.405	1.430	0.4826	0.5080	0.5809
1 1/2	1.900	XX-Stg	0.400	1.100	6.408	0.4117	0.497	0.2903	0.950	1.885	0.5678	0.5977	0.5489

TABLE OF PROPERTIES OF PIPE

Nominal Pipe Size	Nominal Outside Diam. D	Wall Thick-ness	Inside Diam. d	Weight per Foot	Wt. Of Water per Ft. of pipe	Sq. Ft. Inside Surface per Ft.	Sq. Ft. Inside Surface per Ft.	Transverse Area $in.^2$ a	Area of Metal $in.^2$ A	Moment of Interia $in.^4$ I	Section Modulus $in.^3$ Z	Radius of Gyration in. R
2	2.375	0.109	2.157	2.638	1.583	0.622	0.5647	3.654	0.775	0.5003	0.4213	0.8034
2	2.375	0.154	2.067	3.652	1.452	0.622	0.5401	3.355	1.075	0.6657	0.5606	0.7871
2	2.375	0.218	1.939	5.022	1.279	0.622	0.5074	2.953	1.477	0.8679	0.7309	0.7665
2	2.375	0.250	1.875	5.673	1.196	0.622	0.4920	2.761	1.669	0.9555	0.8046	0.7565
2	2.375	0.343	1.689	7.450	0.970	0.622	0.4422	2.240	2.190	1.162	0.9790	0.7286
2	2.375	0.436	1.503	9.029	0.769	0.622	0.3929	1.774	2.656	1.311	1.1040	0.7027
2 1/2	2.875	0.120	2.635	3.53	2.360	0.753	0.6900	5.453	1.038	0.9878	0.6872	0.9755
2 1/2	2.875	0.203	2.469	5.79	2.072	0.753	0.6462	4.788	1.704	1.530	1.064	0.9474
2 1/2	2.875	0.276	2.323	7.66	1.834	0.753	0.6095	4.238	2.254	1.924	1.339	0.9241
2 1/2	2.875	0.375	2.125	10.01	1.535	0.753	0.5564	3.547	2.945	2.353	1.638	0.8938
2 1/2	2.875	0.552	1.771	13.69	1.067	0.753	0.4627	2.464	4.028	2.871	1.997	0.8442
3	3.500	0.120	3.260	4.33	3.62	0.916	0.853	8.346	1.272	1.821	1.041	1.196
3	3.500	0.125	3.250	4.52	3.60	0.916	0.851	8.300	1.329	1.900	1.086	1.195
3	3.500	0.156	3.188	5.58	3.46	0.916	0.835	7.982	1.639	2.298	1.313	1.184
3	3.500	0.188	3.125	6.65	3.34	0.916	0.819	7.700	1.958	2.700	1.545	1.175
3	3.500	0.216	3.068	7.57	3.20	0.916	0.802	7.393	2.228	3.017	1.724	1.164
3	3.500	0.250	3.000	8.68	3.06	0.916	0.785	7.184	2.553	3.388	1.936	1.152
3	3.500	0.281	2.938	9.65	2.94	0.916	0.769	6.780	2.842	3.819	2.182	1.142
3	3.500	0.300	2.900	10.25	2.86	0.916	0.761	6.605	3.016	3.892	2.225	1.136
3	3.500	0.438	2.624	14.32	2.34	0.916	0.687	5.407	4.214	5.044	2.882	1.094
3	3.500	0.600	2.300	18.58	1.80	0.916	0.601	4.155	5.466	5.993	3.424	1.047
3 1/2	4.000	0.120	3.760	4.97	4.81	1.047	0.984	11.10	1.46	2.754	1.377	1.372
3 1/2	4.000	0.125	3.750	5.18	4.79	1.047	0.982	11.04	1.52	2.859	1.430	1.371
3 1/2	4.000	0.156	3.688	6.41	4.63	1.047	0.966	10.68	1.88	3.485	1.743	1.360
3 1/2	4.000	0.188	3.624	7.71	4.48	1.047	0.950	10.32	2.27	4.130	2.065	1.350
3 1/2	4.000	0.226	3.548	9.11	4.28	1.047	0.929	9.89	2.68	4.788	2.394	1.337
3 1/2	4.000	0.250	3.500	10.02	4.17	1.047	0.916	9.62	2.94	5.201	2.601	1.329
3 1/2	4.000	0.281	3.438	11.17	4.02	1.047	0.900	9.28	3.29	5.715	2.858	1.319
3 1/2	4.000	0.318	3.364	12.51	3.85	1.047	0.880	8.89	3.68	6.280	3.140	1.307
3 1/2	4.000	0.636	2.728	22.85	2.53	1.047	0.716	5.84	6.72	9.848	4.924	1.210
4	4.500	0.120	4.260	5.61	6.18	1.178	1.115	14.25	1.65	3.97	1.761	1.550
4	4.500	0.125	4.250	5.84	6.15	1.178	1.113	14.19	1.72	4.12	1.829	1.548
4	4.500	0.156	4.188	7.24	5.97	1.178	1.096	13.77	2.13	5.03	2.235	1.537
4	4.500	0.188	4.124	8.56	5.80	1.178	1.082	13.39	2.52	5.86	2.600	1.525
4	4.500	0.219	4.062	10.02	5.62	1.178	1.063	12.96	2.94	6.77	3.867	1.516
4	4.500	0.237	4.026	10.79	5.51	1.178	1.055	12.73	3.17	7.23	3.214	1.510
4	4.500	0.250	4.000	11.35	5.45	1.178	1.049	12.57	3.34	7.56	3.360	1.505
4	4.500	0.281	3.938	12.67	5.27	1.178	1.031	12.17	3.73	8.33	3.703	1.495
4	4.500	0.312	3.876	14.00	5.12	1.178	1.013	11.80	4.11	9.05	4.020	1.482
4	4.500	0.337	3.826	14.98	4.98	1.178	1.002	11.50	4.41	9.61	4.271	1.477
4	4.500	0.438	3.624	19.00	4.47	1.178	0.949	10.32	5.59	11.65	5.177	1.444
4	4.500	0.500	3.500	21.36	4.16	1.178	0.916	9.62	6.28	12.77	5.676	1.425
4	4.500	0.531	3.438	22.60	4.02	1.178	0.900	9.28	6.62	13.27	5.900	1.416
4	4.500	0.674	3.152	27.54	3.38	1.178	0.826	7.80	8.10	15.28	6.793	1.374
5	5.563	0.134	5.295	7.77	9.54	1.456	1.386	22.02	2.29	8.42	3.028	1.920
5	5.563	0.156	5.251	9.02	9.39	1.456	1.375	21.66	2.65	9.70	3.478	1.913
5	5.563	0.188	5.187	10.80	9.16	1.456	1.358	21.13	3.17	11.49	4.129	1.902
5	5.563	0.219	5.125	12.51	8.94	1.456	1.342	20.63	3.68	13.14	4.726	1.891
5	5.563	0.258	5.047	14.62	8.66	1.456	1.321	20.01	4.30	15.16	5.451	1.878
5	5.563	0.281	5.001	15.86	8.52	1.456	1.309	19.64	4.66	16.31	5.862	1.870
5	5.563	0.312	4.939	17.15	8.31	1.456	1.293	19.16	5.15	17.81	6.402	1.860
5	5.563	0.344	4.875	19.19	8.09	1.456	1.276	18.67	5.64	19.28	6.932	1.849
5	5.563	0.375	4.813	20.78	7.87	1.456	1.260	18.19	6.11	20.67	7.431	1.839
5	5.563	0.500	4.563	27.10	7.08	1.456	1.195	16.35	7.95	25.74	9.253	1.799
5	5.563	0.625	4.313	32.96	6.32	1.456	1.129	14.61	9.70	30.03	10.800	1.760
5	5.563	0.750	4.063	36.55	5.62	1.456	1.064	12.97	11.34	33.63	12.090	1.722

TABLE OF PROPERTIES OF PIPE

Nominal Pipe Size	Nominal Outside Diam. D	Desig-nation	Wall Thick-ness	Inside Diam. d	Weight per Foot	Wt. Of Water per Ft. of pipe	Sq. Ft. Inside Surface per Ft.	Sq. Ft. Inside Surface per Ft.	Transverse Area in.[c] a	Area of Metal in.[d] A	Moment of Interia in.[a] I	Section Modulus in.[3] Z	Radius of Gyration in. R
6	6.625	12 Ga.	0.104	6.417	7.25	14.02	1.734	1.680	32.34	2.13	11.33	3.42	2.31
6	6.625	10S	0.134	6.357	9.29	13.70	1.734	1.660	31.75	2.73	14.38	4.34	2.29
6	6.625	8 Ga.	0.164	6.297	11.33	13.50	1.734	1.649	31.14	3.33	17.38	5.25	2.28
6	6.625	API	0.188	6.249	12.93	13.31	1.734	1.639	30.70	3.80	19.71	5.95	2.28
6	6.625	6 Ga.	0.194	6.237	13.34	13.25	1.734	1.633	30.55	3.92	20.29	6.12	2.27
6	6.625	API	0.219	6.187	15.02	13.05	1.734	1.620	30.10	4.41	22.66	6.84	2.27
6	6.625	API	0.250	6.125	17.02	12.80	1.734	1.606	29.50	5.01	25.55	7.71	2.26
6	6.625	API	0.277	6.071	18.86	12.55	1.734	1.591	28.95	5.54	28.00	8.46	2.25
6	6.625	Std.	0.280	6.065	18.97	12.51	1.734	1.587	28.90	5.58	28.14	8.50	2.24
6	6.625	API	0.312	6.001	21.05	12.26	1.734	1.571	28.28	6.19	30.91	9.33	2.23
6	6.625	API	0.344	5.937	23.09	12.00	1.734	1.554	27.68	6.79	33.51	10.14	2.22
6	6.625	API	0.375	5.875	25.10	11.75	1.734	1.540	27.10	7.37	36.20	10.90	2.21
6	6.625	X-Stg.	0.432	5.761	28.57	11.29	1.734	1.510	26.07	8.40	40.49	12.22	2.19
6	6.625	- -	0.500	5.625	32.79	10.85	1.734	1.475	24.85	9.63	45.60	13.78	2.16
6	6.625	120	0.562	5.501	36.40	10.30	1.734	1.470	23.77	10.74	49.91	15.07	2.15
6	6.625	160	0.718	5.189	45.30	9.16	1.734	1.359	21.15	13.36	58.99	17.81	2.10
6	6.625	XX-Stg.	0.864	4.897	53.16	8.14	1.734	1.280	18.83	15.64	66.33	20.02	2.06
8	8.625	12 Ga.	0.104	8.417	9.47	24.1	2.26	2.204	55.6	2.78	25.3	5.86	3.01
8	8.625	10 Ga.	0.134	8.357	12.16	23.8	2.26	2.188	54.8	3.57	32.2	7.46	3.00
8	8.625	10S	0.148	8.329	13.40	23.6	2.26	2.180	54.5	3.94	35.4	8.22	3.00
8	8.625	8 Ga.	0.164	8.297	14.83	23.4	2.26	2.172	54.1	4.36	39.1	9.06	2.99
8	8.625	API	0.188	8.249	16.90	23.2	2.26	2.161	53.5	5.00	44.5	10.30	2.98
8	8.625	6 Ga.	0.194	8.237	17.48	23.1	2.26	2.156	53.3	5.14	45.7	10.60	2.98
8	8.625	API	0.203	8.219	18.30	23.1	2.26	2.152	53.1	5.38	47.7	11.05	2.98
8	8.625	API	0.219	8.187	19.64	22.9	2.26	2.148	52.7	5.80	51.3	11.90	2.97
8	8.625	3 Ga.	0.239	8.147	21.42	22.6	2.26	2.133	52.1	6.30	55.4	12.84	2.96
8	8.625	20	0.250	8.125	22.40	22.5	2.26	2.127	51.8	6.58	57.7	13.39	2.96
8	8.625	30	0.277	8.071	24.70	22.2	2.26	2.115	51.2	7.26	63.3	14.69	2.95
8	8.625	API	0.312	8.001	27.72	21.8	2.26	2.095	50.3	8.15	70.6	16.37	2.94
8	8.625	Std.	0.322	7.981	28.55	21.6	2.26	2.090	50.0	8.40	72.5	16.81	2.94
8	8.625	API	0.344	7.937	30.40	21.4	2.26	2.078	49.5	8.94	76.8	17.81	2.93
8	8.625	API	0.375	7.875	33.10	21.1	2.26	2.062	48.7	9.74	83.1	19.27	2.92
8	8.625	60	0.406	7.813	35.70	20.8	2.26	2.045	47.9	10.48	88.8	20.58	2.91
8	8.625	API	0.438	7.749	38.33	20.4	2.26	2.029	47.2	11.27	94.7	21.97	2.90
8	8.625	X-Stg.	0.500	7.625	43.39	19.8	2.26	2.006	45.6	12.76	105.7	24.51	2.88
8	8.625	100	0.593	7.439	50.90	18.8	2.26	1.947	43.5	14.96	121.4	28.14	2.85
8	8.625	- -	0.625	7.375	53.40	18.5	2.26	1.931	42.7	15.71	126.5	29.33	2.84
8	8.625	120	0.718	7.189	60.70	17.6	2.26	1.882	40.6	17.84	140.6	32.61	2.81
8	8.625	140	0.812	7.001	67.80	16.7	2.26	1.833	38.5	19.93	153.8	35.65	2.78
8	8.625	XX-Stg.	0.875	6.875	72.42	16.1	2.26	1.800	37.1	21.30	162.0	37.56	2.76
8	8.625	160	0.906	6.813	74.70	15.8	2.26	1.784	36.4	21.97	165.9	38.48	2.76
10	10.750	12 Ga.	0.104	10.542	11.83	37.8	2.81	2.76	87.3	3.48	49.3	9.16	3.76
10	10.750	10 Ga.	0.134	10.482	15.21	37.4	2.81	2.74	86.3	4.47	63.0	11.71	3.75
10	10.750	8 Ga.	0.164	10.422	18.56	37.0	2.81	2.73	85.3	5.45	76.4	14.22	3.74
10	10.750	10S	0.165	10.420	18.65	36.9	2.81	2.73	85.3	5.50	76.8	14.29	3.74
10	10.750	API	0.188	10.374	21.12	36.7	2.81	2.72	84.5	6.20	86.5	16.10	3.74
10	10.750	6 Ga.	0.194	10.362	21.89	36.6	2.81	2.71	84.3	6.43	89.7	16.68	3.73
10	10.750	API	0.203	10.344	22.86	36.5	2.81	2.71	84.0	6.71	93.3	17.35	3.73
10	10.750	API	0.219	10.310	24.60	36.2	2.81	2.70	83.4	7.24	100.5	18.70	3.72
10	10.750	3 Ga.	0.239	10.272	28.05	35.9	2.81	2.69	82.9	7.89	109.2	20.32	3.72
10	10.750	20	0.250	10.250	28.03	35.9	2.81	2.68	82.6	8.26	113.6	21.12	3.71
10	10.750	API	0.279	10.192	31.20	35.3	2.81	2.66	81.6	9.18	125.9	23.42	3.70
10	10.750	30	0.307	10.136	34.24	35.0	2.81	2.65	80.7	10.07	137.4	25.57	3.69
10	10.750	API	0.344	10.062	38.26	34.5	2.81	2.63	79.5	11.25	152.3	28.33	3.68
10	10.750	Std.	0.365	10.020	40.48	34.1	2.81	2.62	78.9	11.91	160.7	29.90	3.67
10	10.750	API	0.438	9.874	48.28	33.2	2.81	2.58	76.6	14.19	188.8	35.13	3.65
10	10.750	X-Stg.	0.500	9.750	54.74	32.3	2.81	2.55	74.7	16.10	212.0	39.43	3.63
10	10.750	80	0.593	9.564	64.40	31.1	2.81	2.50	71.8	18.91	244.9	45.56	3.60
10	10.750	100	0.718	9.314	77.00	29.5	2.81	2.44	68.1	22.62	286.2	53.25	3.56
10	10.750	- -	0.750	9.250	80.10	29.1	2.81	2.42	67.2	23.56	296.2	55.10	3.54
10	10.750	120	0.843	9.064	89.20	27.09	2.81	2.37	64.5	26.23	324.3	60.34	3.51
10	10.750	140	1.000	8.750	104.20	26.1	2.81	2.29	60.1	30.63	367.8	68.43	3.46
10	10.750	160	1.125	8.500	116.00	24.06	2.81	2.22	56.7	34.01	399.4	74.31	3.43

TABLE OF PROPERTIES OF PIPE

Nominal Pipe Size	Nominal Outside Diam. D	Desig-nation	Wall Thick-ness	Inside Diam. d	Weight per Foot	Wt. Of Water per Ft. of pipe	Sq. Ft. Inside Surface per Ft.	Sq. Ft. Inside Surface per Ft.	Transverse Area in.^{2} a	Area of Metal in.^{2} A	Moment of Interia in.^{4} I	Section Modulus in.^{3} Z	Radius of Gyration in. R
12	12.750	12 Ga.	0.104	12.54	14.1	53.6	3.34	3.28	123.5	4.13	82.6	12.9	4.47
12	12.750	10 Ga.	0.134	12.48	18.1	53.0	3.34	3.27	122.4	5.31	105.7	16.6	4.46
12	12.750	8 Ga.	0.164	12.42	22.1	52.5	3.34	3.25	121.2	6.48	128.4	20.1	4.45
12	12.750	10S	0.180	12.390	24.2	52.2	3.34	3.24	120.6	7.11	140.4	22.0	4.44
12	12.750	6 Ga.	0.194	12.36	26.0	52.0	3.34	3.23	120.0	7.65	150.9	23.7	4.44
12	12.750	API	0.203	12.34	27.2	52.0	3.34	3.23	119.9	7.99	157.2	24.7	4.43
12	12.750	API	0.219	12.31	29.3	51.7	3.34	3.22	119.1	8.52	167.6	26.3	4.43
12	12.750	3 Ga.	0.239	12.27	32.0	51.3	3.34	3.21	118.3	9.39	183.8	28.8	4.42
12	12.750	20	0.250	12.250	33.4	51.3	3.34	3.12	118.0	9.84	192.3	30.2	4.42
12	12.750	API	0.281	12.19	37.4	50.6	3.34	3.19	116.7	11.01	214.1	33.6	4.41
12	12.750	API	0.312	12.13	41.5	50.1	3.34	3.17	115.5	12.19	236.0	37.0	4.40
12	12.750	30	0.330	12.090	43.8	49.7	3.34	3.16	114.8	12.88	248.5	39.0	4.39
12	12.750	API	0.44	12.06	45.5	49.7	3.34	3.16	114.5	13.46	259.0	40.7	4.38
12	12.750	Std.	0.375	12.000	49.6	48.9	3.34	3.14	113.1	14.58	279.3	43.8	4.37
12	12.750	40	0.406	11.94	53.6	48.5	3.34	3.13	111.9	15.74	300.3	47.1	4.37
12	12.750	API	0.438	11.87	57.5	48.2	3.34	3.11	111.0	16.95	321.0	50.4	4.35
12	12.750	X-Stg.	0.500	11.750	65.4	46.9	3.34	3.08	108.4	19.24	361.5	56.7	4.33
12	12.750	60	0.562	11.63	73.2	46.0	3.34	3.04	106.2	21.52	400.5	62.8	4.31
12	12.750	- -	0.625	11.500	80.9	44.9	3.34	3.01	103.8	23.81	438..7	68.8	4.29
12	12.750	80	0.687	11.38	8.6	44.0	3.34	2.98	101.6	26.03	475.2	74.6	4.27
12	12.750	- -	0.750	11.250	96.2	43.1	3.34	2.94	99.4	28.27	510.7	80.1	4.25
12	12.750	100	0.843	11.06	108.0	41.6	3.34	2.90	96.1	31.53	561.8	88.1	4.22
12	12.750	- -	0.875	11.000	110.9	41.1	3.34	2.88	95.0	32.64	578.5	90.7	4.21
12	12.750	120	1.000	10.750	125.5	39.3	3.34	2.81	90.8	36.91	641.7	100.7	4.17
12	12.750	140	1.125	10.500	140.0	37.5	3.34	2.75	86.6	41.08	700.7	109.9	4.13
12	12.750	- -	1.250	10.250	153.6	35.8	3.34	2.68	82.5	45.16	755.5	118.5	4.09
12	12.750	160	1.312	10.13	161.0	34.9	3.34	2.65	80.5	47.14	781.3	122.6	4.07
12	12.750	- -	1.375	10.000	167.2	34.0	3.34	2.62	78.5	49.14	807.2	126.6	4.05
12	12.750	- -	1.500	9.750	180.4	32.4	3.34	2.55	74.7	53.01	853.8	133.9	4.01
14	14.000	10 Ga.	0.134	13.73	20	64.2	3.67	3.59	148.1	5.84	140.4	20.1	4.90
14	14.000	8 Ga.	0.164	13.67	24	63.6	3.67	3.58	146.8	7.13	170.7	24.4	4.89
14	14.000	6 Ga.	0.194	13.61	29	63.1	3.67	3.56	145.5	8.41	200.6	28.7	4.88
14	14.000	API	0.210	13.580	31	62.8	3.67	3.55	144.8	9.10	216.2	30.9	4.87
14	14.000	API	0.219	13.56	32	62.6	3.67	3.55	144.5	9.48	225.1	32.2	4.87
14	14.000	3 Ga.	0.239	13.52	35	62.3	3.67	3.54	143.6	10.33	244.9	35.0	4.87
14	14.000	10	0.250	13.500	37	62.1	3.67	3.54	143.0	10.82	256.0	36.6	4.86
14	14.000	API	0.281	13.44	41	61.5	3.67	3.52	141.8	12.11	285.2	40.7	4.85
14	14.000	20	0.312	13.38	46	60.8	3.67	3.50	140.5	13.44	314.9	45.0	4.84
14	14.000	API	0.344	13.31	50	60.3	3.67	3.48	139.2	14.76	344.3	49.2	4.83
14	14.000	Std.	0.375	13.250	55	59.7	3.67	3.47	137.9	16.05	372.8	53.2	4.82
14	14.000	40	0.438	13.12	63	58.5	3.67	3.44	135.3	18.66	429.6	61.4	4.80
14	14.000	X-Stg.	0.500	13.000	72	57.4	3.67	3.40	132.7	21.21	483.8	69.1	4.78
14	14.000	60	0.593	12.81	85	55.9	3.67	3.35	129.0	24.98	562.4	80.3	4.74
14	14.000	- -	0.625	12.750	89	55.3	3.67	3.34	127.7	26.26	588.5	84.1	4.73
14	14.000	80	0.750	12.500	107	51.2	3.67	3.27	122.7	31.22	687.5	98.2	4.69
14	14.000	- -	0.875	12.250	123	51.1	3.67	3.21	117.9	36.08	780.1	111.4	4.65
14	14.000	100	0.937	12.13	131	50.0	3.67	3.17	115.5	38.47	820.5	117.2	4.63
14	14.000	- -	1.000	12.000	139	49.0	3.67	3.14	113.1	40.84	868.0	124.0	4.61
14	14.000	120	1.093	11.814	151	47.5	3.67	3.09	109.6	44.32	929.8	132.8	4.58
14	14.000	- -	1.125	11.750	155	47.0	3.67	3.08	108.4	45.50	950.3	135.8	4.57
14	14.000	140	1.250	11.500	171	45.0	3.67	3.01	103.9	50.07	1027.5	146.8	4.53
14	14.000	- -	1.75	11.250	186	43.1	3.67	2.94	99.4	54.54	1099.5	157.1	4.49
14	14.000	160	1.406	11.19	191	42.6	3.67	2.93	98.3	55.63	1116.9	159.6	4.48
14	14.000	- -	1.500	11.000	200	41.2	3.67	2.88	95.0	58.9	1166.5	166.6	4.45

TABLE OF PROPERTIES OF PIPE

Nominal Pipe Size	Nominal Outside Diam. D	Desig-nation	Wall Thick-ness	Inside Diam. d	Weight per Foot	Wt. Of Water per Ft. of pipe	Sq. Ft. Inside Surface per Ft.	Sq. Ft. Inside Surface per Ft.	Transverse Area in.^{2} a	Area of Metal in.^{2} A	Moment of Interia in.^{4} I	Section Modulus in.^{3} Z	Radius of Gyration in. R
16	16.000	10 Ga.	0.134	15.732	23	84.3	4.19	4.12	194.4	6.68	210	26.3	5.61
16	16.000	8 Ga.	0.164	15.672	28	83.6	4.19	4.10	192.9	8.16	256	32.0	5.60
16	16.000	- -	0.188	15.624	32	83.3	4.19	4.09	192.0	9.39	294	36.7	5.59
16	16.000	6 Ga.	0.194	15.612	33	83.0	4.19	4.09	191.4	9.63	301	37.6	5.59
16	16.000	API	0.219	15.562	37	82.5	4.19	4.07	190.2	10.86	338	42.3	5.58
16	16.000	3 Ga.	0.239	15.522	40	82.0	4.19	4.06	189.2	11.83	368	45.9	5.57
16	16.000	10	0.250	15.500	42	82.1	4.19	4.06	189.0	12.40	385	48.1	5.57
16	16.000	API	0.281	15.438	47	81.2	4.19	4.04	187.0	13.90	430	53.8	5.56
16	16.000	20	0.312	15.375	52	80.1	4.19	4.03	185.6	15.40	474	59.2	5.55
16	16.000	API	0.344	15.312	57	80.0	4.19	4.01	184.1	16.94	519	64.9	5.54
16	16.000	Std.	0.375	15.250	63	79.1	4.19	4.00	182.6	18.41	562	70.3	5.53
16	16.000	API	0.438	15.124	73	78.2	4.19	3.96	180.0	21.42	650	81.2	5.51
16	16.000	X-Stg.	0.500	15.000	83	76.5	4.19	3.93	176.7	24.35	732	91.5	5.48
16	16.000	- -	0.625	14.750	103	74.1	4.19	3.86	170.9	30.19	893	111.7	5.44
16	16.000	60	0.656	14.688	108	73.4	4.19	3.85	169.4	31.62	933	116.6	5.43
16	16.000	- -	0.750	14.500	122	71.5	4.19	3.80	165.1	35.93	1047	130.9	5.40
16	16.000	80	0.843	14.314	137	69.7	4.19	3.75	160.9	40.14	1157	144.6	5.37
16	16.000	- -	0.875	14.250	141	69.1	4.19	3.73	159.5	41.58	1192	149.0	5.35
16	16.000	- -	1.000	14.000	160	66.7	4.19	3.66	153.9	47.12	1331	166.4	5.31
16	16.000	100	1.031	13.938	165	66.0	4.19	3.65	152.6	48.49	1366	170.7	5.30
16	16.000	- -	1.125	13.750	179	64.4	4.19	3.60	148.5	52.57	1463	182.9	5.27
16	16.000	120	1.218	13.564	193	62.6	4.19	3.55	144.5	56.56	1556	194.5	5.24
16	16.000	- -	1.250	13.500	197	62.1	4.19	3.53	143.1	57.92	1586	198.3	5.23
16	16.000	- -	1.375	13.250	215	59.8	4.19	3.47	137.9	63.17	1704	213.0	5.19
16	16.000	140	1.438	13.124	224	58.6	4.19	3.44	135.3	65.79	1761	220.1	5.17
16	16.000	- -	1.500	13.000	232	57.4	4.19	3.40	132.7	68.33	1816	227.0	5.15
16	16.000	160	1.593	12.814	245	55.9	4.19	3.35	129.0	72.10	1893	236.6	5.12
18	18.000	10 Ga.	0.134	17.732	26	107.1	4.71	4.64	246.9	7.52	300	33.4	6.32
18	18.000	8 Ga.	0.164	17.672	31	106.3	4.71	4.63	245.3	9.19	366	40.6	6.31
18	18.000	6 Ga.	0.194	17.612	37	105.6	4.71	4.61	243.6	10.85	430	47.8	6.29
18	18.000	3 Ga.	0.239	17.522	45	104.5	4.71	4.59	241.1	13.34	526	58.4	6.28
18	18.000	10	0.250	17.500	47	104.6	4.71	4.58	241.0	13.96	550	61.1	6.28
18	18.000	API	0.281	17.438	49	104.0	4.71	4.56	240.0	14.49	570	63.4	6.27
18	18.000	20	0.312	17.375	59	102.5	4.71	4.55	237.1	17.36	679	75.5	6.25
18	18.000	API	0.344	17.312	65	102.0	4.71	4.53	235.4	19.08	744	82.6	6.24
18	18.000	Std.	0.375	17.250	71	101.2	4.71	4.51	233.7	20.76	807	89.6	6.23
18	18.000	API	0.406	17.188	76	100.6	4.71	4.50	232.0	22.44	869	96.6	6.22
18	18.000	30	0.438	17.124	82	99.5	4.71	4.48	229.5	24.95	963	107.0	6.21
18	18.000	X-Stg.	0.500	17.000	93	98.2	4.71	4.45	227.0	27.49	1053	117.0	6.19
18	18.000	40	0.562	16.876	105	97.2	4.71	4.42	224.0	30.85	1177	130.9	6.17
18	18.000	- -	0.625	16.750	116	95.8	4.71	4.39	220.5	34.15	1290	143.2	6.14
18	18.000	60	0.750	16.500	138	92.5	4.71	4.32	213.8	40.64	1515	168.3	6.10
18	18.000	- -	0.875	16.250	160	89.9	4.71	4.25	207.4	47.07	1730	192.3	6.06
18	18.000	80	0.937	16.126	171	88.5	4.71	4.22	204.2	50.23	1834	203.8	6.04
18	18.000	- -	1.000	16.000	182	87.2	4.71	4.19	201.1	53.41	1935	215.0	6.02
18	18.000	- -	1.125	15.750	203	84.5	4.71	4.12	194.8	59.64	2133	237.0	5.98
18	18.000	100	1.156	15.688	208	83.7	4.71	4.11	193.3	61.18	2182	242.3	5.97
18	18.000	- -	1.250	15.500	224	81.8	4.71	4.06	188.7	65.78	2319	257.7	5.94
18	18.000	120	1.375	15.250	244	79.2	4.71	3.99	182.7	71.82	2498	277.5	5.90
18	18.000	- -	1.500	15.000	265	76.6	4.71	3.93	176.7	77.75	2668	296.5	5.86
18	18.000	140	1.562	14.876	275	75.3	4.71	3.89	173.8	80.66	2750	305.5	5.84
18	18.000	160	1.781	14.438	309	71.0	4.71	3.78	163.7	90.75	3020	335.5	5.77

TABLE OF PROPERTIES OF PIPE

Nominal Pipe Size	Nominal Outside Diam. D	Desig-nation	Wall Thick-ness	Inside Diam. d	Weight per Foot	Wt. Of Water per Ft. of pipe	Sq. Ft. Inside Surface per Ft.	Sq. Ft. Inside Surface per Ft.	Transverse Area in.^{2} a	Area of Metal in.^{2} A	Moment of Interia in.^{4} I	Section Modulus in.^{3} Z	Radius of Gyration in. R
20	20.000	10 Ga.	0.134	19.732	28	132.6	5.24	5.17	305.8	8.36	413	41.3	7.02
20	20.000	8 Ga.	0.164	19.672	35	131.8	5.24	5.15	303.9	10.22	503	50.3	7.01
20	20.000	6 Ga.	0.194	19.612	41	131.0	5.24	5.13	302.1	12.07	592	59.2	7.00
20	20.000	3 Ga.	0.239	19.522	50	129.8	5.24	5.11	299.3	14.84	725	72.5	6.99
20	20.000	10	0.250	19.500	53	130.0	5.24	5.11	299.0	15.52	759	75.9	6.98
20	20.000	API	0.281	19.438	59	128.6	5.24	5.09	296.8	17.41	846	84.6	6.97
20	20.000	20	0.312	19.374	66	128.1	5.24	5.08	295.0	19.36	937	93.7	6.95
20	20.000	API	0.344	19.312	72	127.0	5.24	5.06	292.9	21.24	1026	102.6	6.95
20	20.000	Std.	0.375	19.250	79	126.0	5.24	5.04	291.1	23.12	1113	111.3	6.94
20	20.000	API	0.406	19.188	75	125.4	5.24	5.02	289.2	24.99	1200	120.0	6.93
20	20.000	API	0.438	19.124	92	125.1	5.24	5.01	288.0	26.95	1290	129.0	6.92
20	20.000	X-Stg.	0.500	19.000	105	122.8	5.24	4.97	283.5	30.63	1457	145.7	6.90
20	20.000	40	0.593	18.814	123	120.4	5.24	4.93	278.0	36.15	1704	170.4	6.86
20	20.000	- -	0.625	18.750	129	119.5	5.24	4.91	276.1	38.04	1787	178.7	6.85
20	20.000	60	0.812	18.376	167	114.9	5.24	4.81	265.2	48.95	2257	225.7	6.79
20	20.000	- -	0.875	18.250	179	113.2	5.24	4.78	261.6	52.57	2409	240.9	6.77
20	20.000	- -	1.000	18.000	203	110.3	5.24	4.71	254.5	59.69	2702	270.2	6.73
20	20.000	80	1.031	17.938	209	109.4	5.24	4.80	252.7	61.44	2771	277.1	6.72
20	20.000	- -	1.125	17.750	227	107.3	5.24	4.65	247.4	66.71	2981	298.1	6.68
20	20.000	- -	1.250	17.500	250	104.3	5.24	4.58	240.5	73.63	3249	324.9	6.64
20	20.000	100	1.281	17.438	256	103.4	5.24	4.56	238.8	75.34	3317	331.7	6.63
20	20.000	- -	1.375	17.250	274	101.3	5.24	4.52	233.7	80.45	3508	350.8	6.60
20	20.000	120	1.500	17.000	297	98.3	5.24	4.45	227.0	87.18	3755	375.5	6.56
20	20.000	140	1.750	16.500	342	92.6	5.24	4.32	213.8	100.33	4217	421.7	6.48
20	20.000	160	1.968	16.064	379	87.9	5.24	4.21	202.7	111.49	4586	458.6	6.41
22	22.000	8 Ga.	0.164	21.672	38	159.9	5.76	5.67	368.9	11.25	671	61.0	7.72
22	22.000	6 Ga.	0.194	21.612	45	159.0	5.76	5.66	366.8	13.29	790	71.8	7.71
22	22.000	3 Ga.	0.239	21.522	56	157.7	5.76	5.63	363.8	16.34	967	87.9	7.69
22	22.000	API	0.250	21.500	58	157.4	5.76	5.63	363.1	17.18	1010	91.8	7.69
22	22.000	API	0.281	21.438	65	156.5	5.76	5.61	361.0	19.17	1131	102.8	7.68
22	22.000	API	0.312	21.376	72	155.6	5.76	5.60	358.9	21.26	1250	113.6	7.67
22	22.000	API	0.344	21.312	80	154.7	5.76	5.58	356.7	23.40	1373	124.8	7.66
22	22.000	API	0.375	21.250	87	153.7	5.76	5.56	354.7	25.48	1490	135.4	7.65
22	22.000	API	0.406	21.188	94	152.9	5.76	5.55	352.6	27.54	1607	146.1	7.64
22	22.000	API	0.438	21.124	101	151.9	5.76	5.53	350.5	29.67	1725	156.8	7.62
22	22.000	API	0.500	21.000	115	150.2	5.76	5.50	346.4	33.77	1953	177.5	7.61
22	22.000	- -	0.625	20.750	143	146.6	5.76	5.43	338.2	41.97	2400	218.2	7.56
22	22.000	- -	0.750	20.500	170	143.1	5.76	5.37	330.1	50.07	2829	257.2	7.52
22	22.000	- -	0.875	20.250	198	139.6	5.76	5.30	322.1	58.07	3245	295.0	7.47
22	22.000	- -	1.000	20.000	224	136.2	5.76	5.24	314.2	65.97	3645	331.4	7.43
22	22.000	- -	1.125	19.750	251	132.8	5.76	5.17	306.4	73.78	4029	366.3	7.39
22	22.000	- -	1.250	19.500	277	129.5	5.76	5.10	298.6	81.48	4400	400.0	7.35
22	22.000	- -	1.375	19.250	303	126.2	5.76	5.04	291.0	89.09	4758	432.6	7.31
22	22.000	- -	1.500	19.000	329	122.9	5.76	4.97	283.5	96.60	5103	463.9	7.27

TABLE OF PROPERTIES OF PIPE

Nominal Pipe Size	Nominal Outside Diam. D	Desig-nation	Wall Thick-ness	Inside Diam. d	Weight per Foot	Wt. Of Water per Ft. of pipe	Sq. Ft. Inside Surface per Ft.	Sq. Ft. Inside Surface per Ft.	Transverse Area in.^{2} a	Area of Metal in.^{2} A	Moment of Interia in.^{4} I	Section Modulus in.^{3} Z	Radius of Gyration in. R
24	24.000	8 Ga.	0.164	23.762	42	190.8	6.28	6.20	440.1	12.28	872	72.7	8.43
24	24.000	6 Ga.	0.194	23.612	49	189.8	6.28	6.18	437.9	14.51	1028	85.7	8.42
24	24.000	3 Ga.	0.239	23.522	61	188.4	6.28	6.16	434.5	17.84	1260	105.0	8.40
24	24.000	10	0.250	23.500	63	189.0	6.28	6.15	435.0	18.67	1320	110.0	8.40
24	24.000	API	0.281	23.438	71	187.0	6.28	6.14	431.5	20.94	1472	122.7	8.38
24	24.000	API	0.312	23.376	79	186.9	6.28	6.12	430.0	23.20	1630	136.0	8.38
24	24.000	API	0.344	23.312	87	185.0	6.28	6.10	426.8	25.57	1789	149.1	8.36
24	24.000	Std.	0.375	23.250	95	183.8	6.28	6.09	424.6	27.83	1942	161.9	8.35
24	24.000	API	0.406	23.188	102	183.1	6.28	6.07	422.3	30.09	2095	174.6	8.34
24	24.000	API	0.438	23.124	110	182.1	6.28	6.05	420.0	32.42	2252	187.7	8.33
24	24.000	X-Stg.	0.500	23.000	125	181.0	6.28	6.02	416.0	36.90	2550	213.0	8.31
24	24.000	30	0.562	22.876	141	178.5	6.28	5.99	411.0	41.40	2840	237.0	8.28
24	24.000	- -	0.625	22.750	156	175.9	6.28	5.96	406.5	45.90	3137	261.4	8.27
24	24.000	40	0.687	22.626	171	174.2	6.28	5.92	402.1	50.30	3422	285.2	8.25
24	24.000	- -	0.750	22.500	186	172.1	6.28	5.89	397.6	54.78	3705	308.8	8.22
24	24.000	- -	0.875	22.250	216	168.6	6.28	5.82	388.8	63.57	4257	354.7	8.18
24	24.000	60	0.968	22.064	238	165.8	6.28	5.78	382.3	70.04	4652	387.7	8.15
24	24.000	- -	1.000	22.000	246	164.8	6.28	5.76	380.1	72.26	4788	399.0	8.14
24	24.000	- -	1.125	21.750	275	161.6	6.28	5.69	371.5	80.85	5302	441.8	8.10
24	24.000	80	1.218	21.654	297	158.2	6.28	5.65	365.2	87.17	5673	472.8	8.07
24	24.000	- -	1.250	21.500	304	157.4	6.28	5.63	363.1	89.34	5797	483.0	8.05
24	24.000	- -	1.375	21.250	332	153.8	6.28	5.56	354.7	97.73	6275	522.9	8.01
24	24.000	- -	1.500	21.000	361	150.2	6.28	5.50	346.4	106.03	6740	561.7	7.97
24	24.000	100	1.531	20.938	367	149.3	6.28	5.48	344.3	108.07	6847	570.6	7.96
24	24.000	120	1.812	20.376	429	141.4	6.28	5.33	326.1	126.30	7823	651.9	7.87
24	24.000	140	2.062	19.876	484	134.4	6.28	5.20	310.3	142.10	8627	718.9	7.79
24	24.000	160	2.343	19.314	542	127.0	6.28	5.06	293.1	159..40	9457	788.1	7.70
26	26.000	8 Ga.	0.164	25.672	45	224.4	6.81	6.72	517.6	13.31	1111	85.4	9.13
26	26.000	6 Ga.	0.194	25.612	54	223.4	6.81	6.70	515.2	15.73	1310	100.7	9.12
26	26.000	3 Ga.	0.239	25.522	66	221.8	6.81	6.68	511.6	19.34	1605	123.4	9.11
26	26.000	API	0.250	25.500	67	221.4	6.81	6.68	510.7	19.85	1646	126.6	9.10
26	26.000	API	0.281	25.438	77	220.3	6.81	6.66	508.2	22.70	1877	144.4	9.09
26	26.000	API	0.312	25.376	84	219.2	6.81	6.64	505.8	25.18	2076	159.7	9.09
26	26.000	API	0.344	25.312	94	218.2	6.81	6.63	503.2	27.73	2280	175.4	9.07
26	26.000	API	0.375	25.250	103	217.1	6.81	6.61	500.7	30.19	2478	190.6	9.06
26	26.000	API	0.406	25.188	111	216.0	6.81	6.59	498.3	32.64	2673	205.6	9.05
26	26.000	API	0.438	25.124	120	214.9	6.81	6.58	495.8	35.17	2874	221.1	9.04
26	26.000	API	0.500	25.000	136	212.8	6.81	6.54	490.9	40.06	3259	250.7	9.02
26	26.000	- -	0.625	24.750	169	208.6	6.81	6.48	481.1	49.82	4013	308.7	8.98
26	26.000	- -	0.750	24.500	202	204.4	6.81	6.41	471.4	59.49	4744	364.9	8.93
26	26.000	- -	0.875	24.250	235	200.2	6.81	6.35	461.9	69.07	5458	419.9	8.89
26	26.000	- -	1.000	24.000	267	196.1	6.81	6.28	452.4	78.54	6149	473.0	8.85
26	26.000	- -	1.125	23.750	299	192.1	6.81	6.22	443.0	87.91	6813	524.1	8.80
26	26.000	- -	1.375	23.250	362	184.1	6.81	6.09	424.6	106.37	8088	622.2	8.72
26	26.000	- -	1.500	23.000	393	180.1	6.81	6.02	415.5	115.45	8695	668.8	8.68

TABLE OF PROPERTIES OF PIPE

Nominal Pipe Size	Nominal Outside Diam. D	Desig-nation	Wall Thick-ness	Inside Diam. d	Weight per Foot	Wt. Of Water per Ft. of pipe	Sq. Ft. Inside Surface per Ft.	Sq. Ft. Inside Surface per Ft.	Transverse Area in.^{2} a	Area of Metal in.^{2} A	Moment of Interia in.^{4} I	Section Modulus in.^{3} Z	Radius of Gyration in. R
30	30.000	8 Ga.	0.164	29.672	52	299.9	7.85	7.77	691.4	15.37	1711	114.0	10.55
30	30.000	6 Ga.	0.194	29.612	62	298.6	7.85	7.75	688.6	18.17	2017	134.4	10.53
30	30.000	3 Ga.	0.239	29.522	76	296.7	7.85	7.73	684.4	22.35	2474	165.0	10.52
30	30.000	API	0.250	29.500	79	296.3	7.85	7.72	683.4	23.37	2585	172.3	10.52
30	30.000	API	0.281	29.438	89	295.1	7.85	7.70	680.5	26.24	2897	193.1	10.51
30	30.000	10	0.312	29.376	99	293.7	7.85	7.69	677.8	29.19	3201	213.4	10.50
30	30.000	API	0.344	29.312	109	292.6	7.85	7.67	674.8	32.04	3524	235.0	10.49
30	30.000	API	0.375	29.250	119	291.2	7.85	7.66	672.0	34.90	3823	254..8	10.48
30	30.000	API	0.406	29.188	130	290.7	7.85	7.64	669.0	37.75	4132	275.5	10.46
30	30.000	API	0.438	29.124	138	288.8	7.85	7.62	666.1	40.68	4442	296.2	10.45
30	30.000	20	0.500	29.000	158	286.2	7.85	7.59	660.5	46.34	5033	335.5	10.43
30	30.000	30	0.625	28.750	196	281.3	7.85	7.53	649.2	57.68	6213	414.2	10.39
30	30.000	- -	0.750	28.500	234	276.6	7.85	7.46	637.9	68.92	7371	491.4	10.34
30	30.000	- -	0.875	28.250	272	271.8	7.85	7.39	620.7	80.06	8494	566.2	10.30
30	30.000	- -	1.000	28.000	310	267.0	7.85	7.33	615.7	91.11	9591	639.4	10.26
30	30.000	- -	1.125	27.750	347	262.2	7.85	7.26	604.7	102.05	10653	710.2	10.22
30	30.000	- -	1.250	27.500	384	257.5	7.85	7.20	593.9	112.90	11682	778.8	10.17
30	30.000	- -	1.375	27.250	421	252.9	7.85	7.13	583.1	123.65	12694	846.2	10.13
30	30.000	- -	1.500	27.000	457	248.2	7.85	7.07	572.5	134.30	13673	911.5	10.09
32	32.000	API	0.250	31.500	85	337.8	8.38	8.25	779.2	24.93	3141	196.3	11.22
32	32.000	API	0.281	31.438	95	336.5	8.38	8.23	776.2	28.04	3525	220.3	11.21
32	32.000	API	0.312	31.376	106	335.2	8.38	8.21	773.2	31.02	3891	243.2	11.20
32	32.000	API	0.344	31.312	116	333.8	8.38	8.20	770.0	34.24	4287	268.0	11.19
32	32.000	API	0.375	31.250	127	332.5	8.38	8.18	766.9	37.25	4656	291.0	11.18
32	32.000	API	0.406	31.188	137	331.2	8.38	8.16	764.0	40.29	5025	314.1	11.17
32	32.000	API	0.438	31.124	148	329.8	8.38	8.15	760.8	43.43	5407	337.9	11.16
32	32.000	API	0.500	31.000	168	327.2	8.38	8.11	754.7	49.48	6140	383.8	11.14
32	32.000	- -	0.625	30.750	209	321.9	8.38	8.05	742.5	61.59	7578	473.6	11.09
32	32.000	- -	0.750	30.500	250	316.7	8.38	7.98	730.5	73.63	8990	561.9	11.05
32	32.000	- -	0.875	30.250	291	311.5	8.38	7.92	718.6	85.53	10368	648.0	11.01
32	32.000	- -	1.000	30.000	331	306.4	8.38	7.85	706.8	97.38	11680	730.0	10.95
32	32.000	- -	1.125	29.750	371	301.3	8.38	7.79	695.0	109.0	13003	812.7	10.92
32	32.000	- -	1.250	29.500	410	296.3	8.38	7.72	680.5	120.7	14398	899.9	10.88
32	32.000	- -	1.375	29.250	450	291.2	8.38	7.66	671.9	132.2	15526	970.4	10.84
32	32.000	- -	0.1500	29.000	489	286.3	8.38	7.59	660.5	143.7	16752	1047.0	10.80
34	34.000	API	0.250	33.500	90	382.0	8.90	8.77	881.2	26.50	3773	221.9	11.93
34	34.000	API	0.281	33.438	101	380.7	8.90	8.75	878.2	29.77	4230	248.8	11.92
34	34.000	API	0.312	33.376	112	379.3	8.90	8.74	874.9	32.99	4680	275.3	11.91
34	34.000	API	0.344	33.312	124	377.8	8.90	8.72	871.6	36.36	5147	302.8	11.90
34	34.000	API	0.375	33.250	135	376.2	8.90	.70	867.8	39.61	5597	329.2	11.89
34	34.000	API	0.406	33.188	146	375.0	8.90	8.69	865.0	42.88	6047	355.7	11.87
34	34.000	API	0.438	33.124	157	373.6	8.90	8.67	861.7	46.18	6501	382.4	11.86
34	34.000	API	0.500	33.000	179	370.8	8.90	8.64	855.3	52.62	7385	434.4	11.85
34	34.000	- -	0.625	32.750	223	365.0	8.90	8.57	841.9	65.53	9124	536.7	11.80
34	34.000	- -	0.750	32.500	266	359.5	8.90	8.51	829.3	78.34	10829	637.0	11.76
34	34.000	- -	0.875	32.250	308	354.1	8.90	8.44	816.8	90.66	12442	731.9	11.71
34	34.000	- -	1.000	32.000	353	348.6	8.90	8.38	804.2	103.6	14114	830.2	11.67
34	34.000	- -	1.125	31.750	395	343.2	8.90	8.31	791.6	116.1	15703	923.7	11.63
34	34.000	- -	1.250	31.500	437	337.8	8.90	8.25	779.2	128.5	17246	1014.5	11.58
34	34.000	- -	1.375	31.250	479	332.4	8.90	8.18	766.9	140.9	18770	1104.1	11.54
34	34.000	- -	1.500	31.000	521	327.2	8.90	8.11	754.7	153.1	20247	1191.0	11.50

TABLE OF PROPERTIES OF PIPE

Nominal Pipe Size	Nominal Outside Diam. D	Desig-nation	Wall Thick-ness	Inside Diam. d	Weight per Foot	Wt. Of Water per Ft. of pipe	Sq. Ft. Inside Surface per Ft.	Sq. Ft. Inside Surface per Ft.	Transverse Area in.^{2} a	Area of Metal in.^{2} A	Moment of Interia in.^{4} I	Section Modulus in.^{3} Z	Radius of Gyration in. R
36	36.000	- -	0.164	35.672	63	433.2	9.42	9.34	999.3	18.53	2975	165.3	12.67
36	36.000	- -	0.194	35.612	74	431.8	9.42	9.32	996.0	21.83	3499	194.4	12.66
36	36.000	- -	0.239	35.522	91	429.6	9.42	9.30	991.0	26.86	4293	238.5	12.64
36	36.000	API	0.250	35.500	96	429.1	9.42	9.29	989.7	28.11	4491	249.5	12.64
36	36.000	API	0.281	35.438	107	427.6	9.42	9.28	986.4	31.49	5023	279.1	12.63
36	36.000	API	0.312	35.376	119	426.1	9.42	9.26	982.9	34.95	5565	309.1	12.62
36	36.000	API	0.344	35.312	131	424.6	9.42	9.24	979.3	38.56	6127	340.1	12.60
36	36.000	API	0.375	35.250	143	423.1	9.42	9.23	975.8	42.01	6664	370.2	12.59
36	36.000	API	0.406	35.188	154	421.6	9.42	9.21	972.5	45.40	7191	399.5	12.58
36	36.000	API	0.438	35.124	166	420.1	9.42	9.19	968.9	48.93	7737	429.9	12.57
36	36.000	- -	0.500	35.000	190	417.1	9.42	9.16	962.1	55.76	8785	488.1	12.55
36	36.000	- -	0.625	34.750	236	411.1	9.42	9.10	948.3	69.50	10872	604.0	12.51
36	36.000	- -	0.750	34.500	282	405.3	9.42	9.03	934.7	83.01	12898	716.5	12.46
36	36.000	- -	0.875	34.250	329	399.4	9.42	8.97	921.2	96.60	14906	828.1	12.42
36	36.000	- -	1.000	34.000	374	393.6	9.42	8.90	907.9	109.9	16851	936.2	12.38
36	36.000	- -	1.125	33.750	419	387.8	9.42	8.83	894.5	123.3	18766	1042.6	12.34
36	36.000	- -	1.250	33.500	464	382.1	9.42	8.77	881.3	136.5	20624	1145	12.29
36	36.000	- -	1.375	33.250	509	376.4	9.42	8.70	68.2	149.6	22451	1247.3	12.25
36	36.000		1.500	33.000	553	370.8	9.42	8.64	855.3	162.6	24237	1346.5	12.21
42	42.000	- -	0.250	41.500	112	586.4	10.99	10.86	1352.6	32.82	7126	339.3	14.73
42	42.000	- -	0.375	41.250	167	579.3	10.99	10.80	1336.3	49.08	10627	506.1	14.71
42	42.000	- -	0.500	41.000	222	572.3	10.99	10.73	1320.2	65.18	14037	668.4	14.67
42	42.000	- -	0.625	40.750	276	565.4	10.99	10.67	1304.1	81.28	17373	827.3	14.62
42	42.000	- -	0.750	40.500	331	558.4	10.99	10.60	1288.2	97.23	20689	985.2	14.59
42	42.000	- -	0.875	40.250	385	551.6	10.99	10.54	1272.3	113.0	23896	1137.9	14.54
42	42.000	- -	1.000	40.000	438	544.8	10.99	10.47	1256.6	128.8	27080	1289.5	14.50
42	42.000	- -	1.125	39.750	492	537.9	10.99	10.41	1240.9	144.5	30193	1437.8	14.45
42	42.000	- -	1.250	39.500	544	531.2	10.99	10.34	1225.3	160.0	33233	1582.5	14.41
42	42.000	- -	1.375	39.250	597	524.4	10.99	10.27	1209.9	175.5	36240	1725.5	14.37
Pipe	42.000	- -	1.500	39.000	649	517.9	10.99	10.21	1194.5	190.8	39181	1865.7	14.33