Carbon, Alloy and Stainless Steel Pipes - ASME/ANSI B36.10/19

Pipe sizes, inside and outside diameters, wall thickness, schedules, moment of inertia, transverse area, weight of pipe filled with water - U.S. Customary Units

The steel pipe data chart below can be used to find pipe sizes, diameters, wall thickness, working pressures and more The chart is based on ASME/ANSI B 36.10 Welded and Seamless Wrought Steel Pipe and ASME/ANSI B36.19 Stainless Steel Pipe.

Regardless of schedule number, pipes of a particular size all have the same outside diameter (not withstanding manufacturing tolerances). As the schedule number increases, the wall thickness increases, and the actual bore is reduced. For example:

- A 4 inches *(100 mm)* Schedule 40 pipe has an outside diameter of *4.500 inches (114.30 mm)*, a wall thickness of *0.237 inches (6.02 mm)*, giving a bore of *4.026 inches (102.26 mm)*
- A *4 inches (100 mm)* Schedule 80 pipe has an outside diameter of *4.500 inches (114.30 mm)*, a wall thickness of *0.337 inches (8.56 mm)*, giving a bore of *3.826 inches (97.18 mm)*

Outside Diameter, Identification, Wall Thickness, Inside Diameter

- Area of Metal, Transverse Internal Area, Moment of Inertia, Weight Pipe, Weight Water, External Surface, Elastic Section Modulus

Pipe Size *(inches)*	Outside Diameter *(inches)*	Identification			Wall Thickness *- t -* *(inches)*	Inside Diameter *- d -* *(inches)*
		Steel		Stainless Steel Schedule No.		
		Iron Pipe Size	Schedule No.			
1/8	0.405	. STD XS	. 40 80	10S 40S 80S	.049 .068 .095	.307 .269 .215
1/4	0.540	. STD XS	. 40 80	10S 40S 80S	.065 .088 .119	.410 .364 .302
3/8	0.675	. STD XS	. 40 80	10S 40S 80S	.065 .091 .126	.545 .493 .423
1/2	0.840	. . STD XS . XXS	. . 40 80 160 .	5S 10S 40S 80S . .	.065 .083 .109 .147 .187 .294	.710 .674 .622 .546 .466 .252
3/4	1.050	. . STD XS . XXS	. . 40 80 160 .	5S 10S 40S 80S . .	.065 .083 .113 .154 .219 .308	.920 .884 .824 .742 .612 .434
1	1.315	. . STD XS . XXS	. . 40 80 160 .	5S 10S 40S 80S . .	.065 .109 .133 .179 .250 .358	1.185 1.097 1.049 .957 .815 .599
1 1/4	1.660	. . STD XS . XXS	. . 40 80 160 .	5S 10S 40S 80S . .	.065 .109 .140 .191 .250 .382	1.530 1.442 1.380 1.278 1.160 .896
1 1/2	1.900	. . STD XS . XXS	. . 40 80 160 .	5S 10S 40S 80S . .	.065 .109 .145 .200 .281 .400	1.770 1.682 1.610 1.500 1.338 1.100
2	2.375	. . STD XS .	. . 40 80 160	5S 10S 40S 80S .	.065 .109 .154 .218 .344	2.245 2.157 2.067 1.939 1.687

		XXS	.	.	.436	1.503
2 1/2	2.875	. . STD XS . XXS	. . 40 80 160 .	5S 10S 40S 80S . .	.083 .120 .203 .276 .375 .552	2.709 2.635 2.469 2.323 2.125 1.771
3	3.500	. . STD XS . XXS	. . 40 80 160 .	5S 10S 40S 80S . .	.083 .120 .216 .300 .438 .600	3.334 3.260 3.068 2.900 2.624 2.300
3 1/2	4.000	. . STD XS	. . 40 80	5S 10S 40S 80S	.083 .120 .226 .318	3.834 3.760 3.548 3.364
4	4.500	. . STD XS . . XXS	. . 40 80 120 160 .	5S 10S 40S 80S . . .	.083 .120 .237 .337 .438 .531 .674	4.334 4.260 4.026 3.826 3.624 3.438 3.152
5	5.563	. . STD XS . . XXS	. . 40 80 120 160 .	5S 10S 40S 80S . . .	.109 .134 .258 .375 .500 .625 .750	5.345 5.295 5.047 4.813 4.563 4.313 4.063
6	6.625	. . STD XS . . XXS	. . 40 80 120 160 .	5S 10S 40S 80S . . .	.109 .134 .280 .432 .562 .718 .864	6.407 6.357 6.065 5.761 5.501 5.189 4.897
8	8.625	. . . . STD . XS . . . XXS .	. . 20 30 40 60 80 100 120 140 . 160	5S 10S . . 40S . 80S	.109 .148 .250 .277 .322 .406 .500 .594 .719 .812 .875 .906	8.407 8.329 8.125 8.071 7.981 7.813 7.625 7.437 7.187 7.001 6.875 6.813
10	10.750	. . . . STD XS	. . 20 30 40 60 80 100 120 140 160	5S 10S . . 40S 80S	.134 .165 .250 .307 .365 .500 .594 .719 .844 1.000 1.125	10.482 10.420 10.250 10.136 10.020 9.750 9.562 9.312 9.062 8.750 8.500
12	12.75	. . . . STD . XS	. . 20 30 . 40 . 60 80 100 120 140 160	5S 10S . . 40S . 80S	.156 .180 .250 .330 .375 .406 .500 .562 .688 .844 1.000 1.125 1.312	12.438 12.390 12.250 12.090 12.000 11.938 11.750 11.626 11.374 11.062 10.750 10.500 10.126
14	14.00	. . . . STD . XS	. . 10 20 30 40 . 60 80 100 120 140	5S 10S	156 .188 .250 .312 .375 .438 .500 .594 .750 .938 1.094 1.250	13.688 13.624 13.500 13.376 13.250 13.124 13.000 12.812 12.500 12.124 11.812 11.500

		..	160	.	1.406	11.188
16	16.00	. . . . STD XS	. . 10 20 30 40 60 80 100 120 140 160	5S 10S	.165 .188 .250 .312 .375 .500 .656 .844 1.031 1.219 1.438 1.594	15.670 15.624 15.500 15.376 15.250 15.000 14.688 14.312 13.938 13.562 13.124 12.812
18	18.00	. . . . STD . XS	. . 10 20 . 30 . 40 60 80 100 120 140 160	5S 10S	.165 .188 .250 .312 .375 .438 .500 .562 .750 .938 1.156 1.375 1.562 1.781	17.670 17.624 17.500 17.376 17.250 17.124 17.000 16.876 16.500 16.124 15.688 15.250 14.876 14.438

- *1 in (inch) = 25.4 mm*

Area of Metal, Transverse Internal Area, Moment of Inertia, Weight Pipe, Weight Water, External Surface, Elastic Section Modulus

Pipe Size *(inches)*	Area of Metal *(square inches)*	Transverse Internal Area		Moment of Inertia *- I - (inches^4)*	Weight Pipe *(pounds per foot)*	Weight Water *(pounds per foot)*	External Surface *(square feet per foot of pipe)*	Elastic Section Modulus *(in^3)*
		- a - (square inches)	*- A - (square feet)*					
1/8	.0548 .0720 .0925	.0740 .0568 .0364	.00051 .00040 .00025	.00088 .00106 .00122	.19 .24 .31	.032 .025 .016	.106 .106 .106	.00437 .00523 .00602
1/4	.0970 .1250 .1574	.1320 .1041 .0716	.00091 .00072 .00050	.00279 .00331 .00377	.33 .42 .54	.057 .045 .031	.141 .141 .141	.01032 .01227 .01395
3/8	.1246 .1670 .2173	.2333 .1910 .1405	.00162 .00133 .00098	.00586 .00729 .00862	.42 .57 .74	.101 .083 .061	.178 .178 .178	.01736 .02160 .02554
1/2	.1583 .1974 .2503 .3200 .3836 .5043	.3959 .3568 .3040 .2340 .1706 .050	.00275 .00248 .00211 .00163 .00118 .00035	.01197 .01431 .01709 .02008 .02212 .02424	.54 .67 .85 1.09 1.31 1.71	.172 .155 .132 .102 .074 .022	.220 .220 220 .220 220 .220	.02849 .03407 .04069 .04780 .05267 .05772
3/4	.2011 .2521 .3326 .4335 .5698 .7180	.6648 .6138 .5330 .4330 .2961 .148	.00462 .00426 .00371 .00300 .00206 .00103	.02450 .02969 .03704 .04479 .05269 .05792	.69 .86 1.13 1.47 1.94 2.44	.288 .266 .231 .188 .128 .064	.275 .275 .275 .275 .275 .275	.04667 .05655 .07055 .08531 .10036 .11032
1	.2553 .4130 .4939 .6388 .8365 1.0760	1.1029 .9452 .8640 .7190 .5217 .282	.00766 .00656 .00600 .00499 .00362 .00196	.04999 .07569 .08734 .1056 .1251 .1405	.87 1.40 1.68 2.17 2.84 3.66	.478 .409 .375 .312 .230 .122	.344 .344 .344 .344 .344 .344	.07603 .11512 .1328 .1606 .1903 .2136
1 1/4	.3257 .4717 .6685 .8815 1.1070 1.534	1.839 1.633 1.495 1.283 1.057 .630	.01277 .01134 .01040 .00891 .00734 .00438	.1038 .1605 .1947 .2418 .2839 .3411	1.11 1.81 2.27 3.00 3.76 5.21	.797 .708 .649 .555 .458 .273	.435 .435 .435 .435 .435 .435	.1250 .1934 .2346 .2913 .3421 .4110
1 1/2	.3747 .6133 .7995 1.068 1.429 1.885	2.461 2.222 2.036 1.767 1.406 .950	.01709 .01543 .01414 .01225 .00976 .00660	.1579 .2468 .3099 .3912 .4824 .5678	1.28 2.09 2.72 3.63 4.86 6.41	1.066 .963 .882 .765 .608 .42	.497 .497 .497 .497 .497 .497	.1662 .2598 .3262 .4118 .5078 .5977
2	.4717 .7760 1.075 1.477 2.190 2.656	3.958 3.654 3.355 2.953 2.241 1.774	.02749 .02538 .02330 .02050 .01556 .01232	.3149 .4992 .6657 .8679 1.162 1.311	1.61 2.64 3.65 5.02 7.46 9.03	1.72 1.58 1.45 1.28 .97 .77	.622 .622 .622 .622 .622 .622	.2652 .4204 .5606 .7309 .979 1.104
	.7280 1.039	5.764 5.453	.04002 .03787	.7100 .9873	2.48 3.53	2.50 2.36	.753 .753	.4939 .6868

2 1/2	1.704	4.788	.03322	1.530	5.79	2.07	.753	1.064
	2.254	4.238	.02942	1.924	7.66	1.87	.753	1.339
	2.945	3.546	.02463	2.353	10.01	1.54	.753	1.638
	4.028	2.464	.01710	2.871	13.69	1.07	.753	1.997
3	.8910	8.730	.06063	1.301	3.03	3.78	.916	.7435
	1.274	8.347	.05796	1.822	4.33	3.62	.916	1.041
	2.228	7.393	.05130	3.017	7.58	3.20	.916	1.724
	3.016	6.605	.04587	3.894	10.25	2.6	.916	2.225
	4.205	5.408	.03755	5.032	14.32	2.35	.916	2.876
	5.466	4.155	.02885	5.993	18.58	1.80	.916	3.424
3 1/2	1.021	11.545	.08017	1.960	3.48	5.00	1.047	.9799
	1.463	11.104	.07711	2.755	4.97	4.81	1.047	1.378
	2.680	9.886	.06870	4.788	9.11	4.29	1.047	2.394
	3.678	8.888	.06170	6.280	12.50	3.84	1.047	3.140
4	1.152	14.75	.10245	2.810	3.92	6.39	1.178	1.249
	1.651	14.25	.09898	3.963	5.61	6.18	1.178	1.761
	3.174	12.73	.08840	7.233	10.79	5.50	1.178	3.214
	4.407	11.50	.07986	9.610	14.98	4.98	1.178	4.271
	5.595	10.31	.0716	11.65	19.0	4.47	1.178	5.178
	6.621	9.28	.0645	13.27	22.51	4.02	1.178	5.898
	8.101	7.80	.0542	15.28	27.54	3.38	1.178	6.791
5	1.868	22.44	.1558	6.947	6.36	9.72	1.456	2.498
	2.285	22.02	.1529	8.425	7.77	9.54	1.456	3.029
	4.300	20.01	.1390	15.16	14.62	8.67	1.456	5.451
	6.112	18.19	.1263	20.67	20.78	7.88	1.456	7.431
	7.953	16.35	.1136	25.73	27.04	7.09	1.456	9.250
	9.696	14.61	.1015	30.03	32.96	6.33	1.456	10.796
	11.340	12.97	.0901	33.63	38.55	5.61	1.456	12.090
6	2.231	32.24	.2239	11.85	7.60	13.97	1.734	3.576
	2.733	31.74	.2204	14.40	9.29	13.75	1.734	4.346
	5.581	28.89	.2006	28.14	18.97	12.51	1.734	8.496
	8.405	26.07	.1810	40.49	28.57	11.29	1.734	12.22
	10.70	23.77	.1650	49.61	36.39	10.30	1.734	14.98
	13.32	21.15	.1469	58.97	45.35	9.16	1.734	17.81
	15.64	18.84	.1308	66.33	53.16	8.16	1.734	20.02
8	2.916	55.51	.3855	26.44	9.93	24.06	2.258	6.131
	3.941	54.48	.3784	35.41	13.40	23.61	2.258	8.212
	6.57	51.85	.3601	57.72	22.36	22.47	2.258	13.39
	7.26	51.16	.3553	63.35	24.70	22.17	2.258	14.69
	8.40	50.03	.3474	72.49	28.55	21.70	2.258	16.81
	10.48	47.94	.3329	88.73	35.64	20.77	2.258	20.58
	12.76	45.66	.3171	105.7	43.39	19.78	2.258	24.51
	14.96	43.46	.3018	121.3	50.95	18.83	2.258	28.14
	17.84	40.59	.2819	140.5	60.71	17.59	2.258	32.58
	19.93	38.50	.2673	153.7	67.76	16.68	2.258	35.65
	21.30	37.12	.2578	162.0	72.42	16.10	2.258	37.56
	21.97	36.46	.2532	165.9	74.69	15.80	2.258	38.48
10	4.36	86.29	.5992	63.0	15.19	37.39	2.814	11.71
	5.49	85.28	.5922	76.9	18.65	36.95	2.814	14.30
	8.24	82.52	.5731	113.7	28.04	35.76	2.814	21.15
	10.07	80.69	.5603	137.4	34.24	34.96	2.814	25.57
	11.90	78.86	.5475	160.7	40.48	34.20	2.814	29.90
	16.10	74.66	.5185	212.0	54.74	32.35	2.814	39.43
	18.92	71.84	.4989	244.8	64.43	31.13	2.814	45.54
	22.63	68.13	.4732	286.1	77.03	29.53	2.814	53.22
	26.24	64.53	.4481	324.2	89.29	27.96	2.814	60.32
	30.63	60.13	.4176	367.8	104.13	26.06	2.814	68.43
	34.02	56.75	.3941	399.3	115.64	24.59	2.814	74.29
12	6.17	121.50	.8438	122.4	20.98	52.65	3.338	19.2
	7.11	120.57	.8373	140.4	24.17	52.25	3.338	22.0
	9.82	117.86	.8185	191.8	33.38	51.07	3.338	30.2
	12.87	114.80	.7972	248.4	43.77	49.74	3.338	39.0
	14.58	113.10	.7854	279.3	49.56	49.00	3.338	43.8
	15.77	111.93	.7773	300.3	53.52	48.50	3.338	47.1
	19.24	108.43	.7528	361.5	65.42	46.92	3.338	56.7
	21.52	106.16	.7372	400.4	73.15	46.00	3.338	62.8
	26.03	101.64	.7058	475.1	88.63	44.04	3.338	74.6
	31.53	96.14	.6677	561.6	107.32	41.66	3.338	88.1
	36.91	90.76	.6303	641.6	125.49	39.33	3.338	100.7
	41.08	86.59	.6013	700.5	139.67	37.52	3.338	109.9
	47.14	80.53	.5592	781.1	160.27	34.89	3.338	122.6
14	6.78	147.15	1.0219	162.6	23.07	63.77	3.665	23.2
	8.16	145.78	1.0124	194.6	27.73	63.17	3.665	27.8
	10.80	143.14	.9940	255.3	36.71	62.03	3.665	36.6
	13.42	140.52	.9758	314.4	45.61	60.89	3.665	45.0
	16.05	137.88	.9575	372.8	54.57	59.75	3.665	53.2
	18.66	135.28	.9394	429.1	63.44	58.64	3.665	61.3
	21.21	132.73	.9217	483.8	72.09	57.46	3.665	69.1
	24.98	128.96	.8956	562.3	85.05	55.86	3.665	80.3
	31.22	122.72	.8522	678.3	106.13	53.18	3.665	98.2
	38.45	115.49	.8020	824.4	130.85	50.04	3.665	117.8
	44.32	109.62	.7612	929.6	150.79	47.45	3.665	132.8
	50.07	103.87	.7213	1027.0	170.28	45.01	3.665	146.8
	55.63	98.31	.6827	1117.0	189.11	42.60	3.665	159.6
	8.21	192.85	1.3393	257.3	27.90	83.57	4.189	32.2
	9.34	191.72	1.3314	291.9	31.75	83.08	4.189	36.5

16	12.37	188.69	1.3103	383.7	42.05	81.74	4.189	48.0
	15.38	185.69	1.2895	473.2	52.27	80.50	4.189	59.2
	18.41	182.65	1.2684	562.1	62.58	79.12	4.189	70.3
	24.35	176.72	1.2272	731.9	82.77	76.58	4.189	91.5
	31.62	169.44	1.1766	932.4	107.50	73.42	4.189	116.6
	40.14	160.92	1.175	1155.8	136.61	69.73	4.189	144.5
	48.48	152.58	1.0596	1364.5	164.82	66.12	4.189	170.5
	56.56	144.50	1.0035	1555.8	192.43	62.62	4.189	194.5
	65.78	135.28	.9394	1760.3	223.64	58.64	4.189	220.0
	72.10	128.96	.8956	1893.5	245.25	55.83	4.189	236.7
18	9.25	245.22	1.7029	367.6	31.43	106.26	4.712	40.8
	10.52	243.95	1.6941	417.3	35.76	105.71	4.712	46.4
	13.94	240.53	1.6703	549.1	47.39	104.21	4.712	61.1
	17.34	237.13	1.6467	678.2	58.94	102.77	4.712	75.5
	20.76	233.71	1.6230	806.7	70.59	101.18	4.712	89.6
	24.17	230.30	1.5990	930.3	82.15	99.84	4.712	103.4
	27.49	226.98	1.5763	1053.2	93.45	98.27	4.712	117.0
	30.79	223.68	1.5533	1171.5	104.67	96.93	4.712	130.1
	40.64	213.83	1.4849	1514.7	138.17	92.57	4.712	168.3
	50.23	204.24	1.4183	1833.0	170.92	88.50	4.712	203.8
	61.17	193.30	1.3423	2180.0	207.96	83.76	4.712	242.3
	71.81	182.66	1.2684	2498.1	244.14	79.07	4.712	277.6
	80.66	173.80	1.2070	2749.0	274.22	75.32	4.712	305.5
	90.75	163.72	1.1369	3020.0	308.50	70.88	4.712	335.6

STD, XS and XXS

To distinguish different weights of pipe, three long standing traditional designations are used:

- standard wall - STD
- extra strong wall - XS
- double extra strong wall - XXS

The last two designations are sometimes referred to as extra heavy wall (XH), and double extra heavy wall (XXH).

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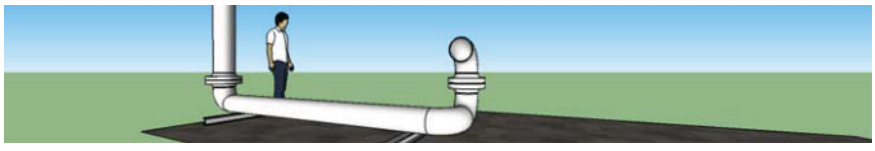

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