



INFRA-METALS



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INFRA-METALS
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With an exceptionally wide range of products and services, Infra-Metals is one of the largest structural steel service providers in the United States. We specifically tailor our centers to meet the needs of the regions they supply, and we maintain a steadfast commitment to providing high quality materials and service promptly and economically.

Our extensive inventory features products ranging from beams and tubes to sheets, channels and expanded metal, and our processing capabilities include just about everything from cutting and drilling to blasting and painting. Infra-Metals is a one-stop shop for all your structural carbon steel needs.

A leading distributor of structural steel and a member of the Reliance Steel & Aluminum Co. family, Infra-Metals serves as a consolidated source for materials and processing and significantly streamlines our clients' procurement procedures. We can provide a wide variety of products with relatively short notice, which combined with our processing capabilities allows us to get our clients the correct material in a form that's immediately ready for the job.



SPECIFICATIONS FOR STRUCTURAL STEEL SHAPES

ASTM – A36 - Standard Specification for Carbon Structural Steel.

This specification covers shapes of structural quality for use in riveted, bolted, or welded construction of bridges and buildings, and for general structural purposes.

ASTM – A572 - Standard Specification for High-Strength Low-Alloy Structural Steel.

This specification covers five grades of high-strength low-alloy shapes intended for riveted, bolted, or welded construction of bridges, or for other construction applications.

ASTM – A588 - Standard Specification for High-Strength Low-Alloy Structural Steel.

This specification covers shapes for welded, riveted, or bolted construction but intended primarily for use in welded bridges and buildings where savings in weight or added durability is important. The atmospheric corrosion resistance of this steel in most environments is substantially better than that of carbon steels with or without copper addition.

ASTM – A709 - Standard Specification for Carbon and High Strength Low-Alloy Shapes.

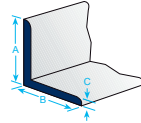
This specification covers shapes, and bars intended for use in bridges. Seven grades are available in four yield strengths.

ASTM – A992 - Standard Specification for Steel for Structural Shapes For Use in Building Framing.

This specification covers rolled shapes for use in building framing or bridges, or for general structural purposes.

Angles - Bar Size

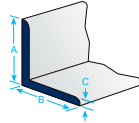
Standard Lengths 20' and 40'



Size in Inches					Estimated Weight Lbs.		
A		B		C	Per Foot	20 Ft. Length	40 Ft. Length
1/2	x	1/2	x	1/8	0.38	7.6	
5/8	x	5/8	x	1/8	0.48	9.6	
3/4	x	3/4	x	1/8	0.59	11.8	
7/8	x	7/8	x	1/8	0.7	14	
1	x	1	x	1/8	0.8	16	32
				3/16	1.16	23.2	46.4
				1/4	1.49	29.8	59.6
1 1/4	x	1 1/4	x	1/8	1.01	20.2	40.4
				3/16	1.48	29.6	59.2
				1/4	1.92	38.4	76.8
1 1/2	x	1 1/2	x	1/8	1.23	24.6	49.2
				3/16	1.8	36	72
				1/4	2.34	46.8	93.6
1 3/4	x	1 3/4	x	1/8	1.44	28.8	57.6
				3/16	2.12	42.4	84.8
				1/4	2.77	55.4	110.8
2	x	1 1/4	x	3/16	1.96	39.2	78.4
				1/4	2.55	51	102
2	x	1 1/2	x	1/8	1.44	28.8	57.6
				3/16	2.12	42.4	84.8
				1/4	2.77	55.4	110.8
2	x	2	x	1/8	1.65	33	66
				3/16	2.44	48.8	97.6
				1/4	3.19	63.8	127.6
				5/16	3.92	78.4	156.8
				3/8	4.7	94	188
2 1/2	x	1 1/2	x	3/16	2.44	48.8	97.6
				1/4	3.19	63.8	127.6
				5/16	3.92	78.4	156.8
2 1/2	x	2	x	3/16	2.75	55	110
				1/4	3.62	72.4	144.8
				5/16	4.5	90	180
				3/8	5.3	106	212
2 1/2	x	2 1/2	x	3/16	3.07	61.4	122.8
				1/4	4.1	82	164
				5/16	5	100	200
				3/8	5.9	118	236
				1/2	7.7	154	308

L Angles - Structural Sizes

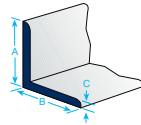
Standard Lengths 20' to 40'



Size in Inches			Estimated Weight Lbs.				
A	B	C	Per Foot	20 Ft. Length	40 Ft. Length		
3	x	2	x	3/16	3.07	61.4	122.8
				1/4	4.1	82	164
				5/16	5	100	200
				3/8	5.9	118	236
				1/2	7.7	154	308
3	x	2 1/2	x	3/16	3.39	67.8	135.6
				1/4	4.5	90	180
				5/16	5.6	112	224
				3/8	6.6	132	264
				1/2	8.5	170	340
3	x	3	x	3/16	3.71	74.2	148.4
				1/4	4.9	98	196
				5/16	6.1	122	244
				3/8	7.2	144	288
				1/2	9.4	188	376
3 1/2	x	2 1/2	x	1/4	4.9	98	196
				5/16	6.1	122	244
				3/8	7.2	144	288
				1/2	9.4	188	376
3 1/2	x	3	x	1/4	5.4	108	216
				5/16	6.6	132	264
				3/8	7.9	158	316
				1/2	10.2	204	408
3 1/2	x	3 1/2	x	1/4	5.8	116	232
				5/16	7.2	144	288
				3/8	8.5	170	340
				7/16	9.8	196	392
				1/2	11.1	222	444
4	x	3	x	1/4	5.8	116	232
				5/16	7.2	144	288
				3/8	8.5	170	340
				1/2	11.1	222	444
				5/8	13.6	272	544
4	x	3 1/2	x	1/4	6.2	124	248
				5/16	7.7	154	308
				3/8	9.1	182	364
				1/2	11.9	238	476
4	x	4	x	1/4	6.6	132	264
				5/16	8.2	164	328
				3/8	9.8	196	392
				7/16	11.3	226	452
				1/2	12.8	256	512
				5/8	15.7	314	628
5	x	3	x	1/4	6.6	132	264
				5/16	8.2	164	328
				3/8	9.8	196	392
				1/2	12.8	256	512

L Angles - Structural Sizes

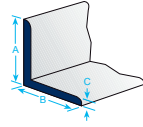
Standard Lengths up to 60'



Size in Inches				Estimated Weight Lbs.			
A	B	C		Per Foot	20 Ft. Length	40 Ft. Length	
5	x	3 1/2	x	1/4	7.0	140	280
				5/16	8.7	174	348
				3/8	10.4	208	416
				1/2	13.6	272	544
				5/8	16.8	336	672
				3/4	19.8	396	792
5	x	5	x	5/16	10.3	206	412
				3/8	12.3	246	492
				7/16	14.3	286	572
				1/2	16.2	324	648
				5/8	20	400	800
				3/4	23.6	472	944
6	x	3 1/2	x	5/16	9.8	196	392
				3/8	11.7	234	468
				1/2	15.3	306	612
				5/16	10.3	206	412
				3/8	12.3	246	492
				7/16	14.3	286	572
6	x	4	x	1/2	16.2	324	648
				5/8	20	400	800
				3/4	23.6	472	944
				7/8	27.2	544	1088
				5/16	12.4	248	496
				3/8	14.9	298	596
6	x	6	x	7/16	17.2	344	688
				1/2	19.6	392	784
				5/8	24.2	484	968
				3/4	28.7	574	1148
				7/8	33.1	662	1324
				1	37.4	748	1496
7	x	4	x	3/8	13.6	272	544
				7/16	15.8	316	632
				1/2	17.9	358	716
				5/8	22.1	442	884
				3/4	26.2	524	1048
8	x	4	x	1/2	19.6	392	784
				9/16	21.9	438	876
				5/8	24.2	484	968
				3/4	28.7	574	1148
				7/8	33.1	662	1324
				1	37.4	748	1496
8	x	6	x	1/2	23	460	920
				9/16	25.7	514	1028
				5/8	28.5	570	1140
				3/4	33.8	676	1352
				7/8	39.1	782	1564
				1	44.2	884	1768

L Angles - Structural Sizes

Standard Lengths up to 60'



Size in Inches					Estimated Weight Lbs.		
A	x	B	x	C	Per Foot	20 Ft. Length	40 Ft. Length
					8	8	1/2
		9/16	29.6	592	1184		
		5/8	32.7	654	1308		
		3/4	38.9	778	1556		
		7/8	45	900	1800		
		1	51	1020	2040		
		1 1/8	56.9	1138	2276		

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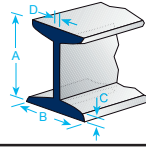
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Miscellaneous Beams

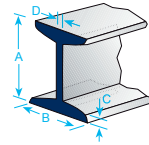
Standard Lengths 20' and 40'



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
M6	4.4	6.00	1.844	0.171	0.114
M8	6.5	8.00	2.281	0.189	0.135
M10	8	9.95	2.690	0.182	0.141
	9	10.00	2.690	0.206	0.157
M12	10	11.97	3.250	0.180	0.149
	10.8	11.97	3.065	0.210	0.160
	11.8	12.00	3.065	0.225	0.177
M12.5	11.6	12.50	3.500	0.211	0.155
	12.4	12.53	3.750	0.228	0.155

Standard "I" Beams

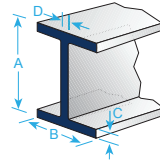
Standard Lengths 20'-60'



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
S3	5.7	3.00	2.330	0.260	0.170
	7.5	3.00	2.509	0.260	0.349
S4	7.7	4.00	2.660	0.293	0.193
	9.5	4.00	2.796	0.293	0.326
S5	10	5.00	3.000	0.326	0.214
	14.75	5.00	3.284	0.326	0.494
S6	12.5	6.00	3.332	0.359	0.232
	17.25	6.00	3.565	0.359	0.465
S7	15.3	7.00	3.662	0.392	0.252
	20	7.00	3.860	0.392	0.450
S8	18.4	8.00	4.001	0.425	0.271
	23	8.00	4.171	0.425	0.441
S10	25.4	10.00	4.661	0.491	0.311
	35	10.00	4.944	0.491	0.594
S12	31.8	12.00	5.000	0.544	0.350
	35	12.00	5.078	0.544	0.428
	40.8	12.00	5.252	0.659	0.462
	50	12.00	5.477	0.659	0.687
S15	42.9	15.00	5.501	0.622	0.411
	50	15.00	5.640	0.622	0.550
S18	54.7	18.00	6.001	0.691	0.461
	70	18.00	6.251	0.691	0.711
S20	66	20.00	6.255	0.795	0.505
	75	20.00	6.385	0.795	0.635
	86	20.30	7.060	0.920	0.660
	96	20.30	7.200	0.920	0.800
S24	80	24.00	7.000	0.870	0.500
	90	24.00	7.125	0.870	0.625
	100	24.00	7.245	0.870	0.745
	106	24.50	7.870	1.090	0.620
	121	24.50	8.050	1.090	0.800

Wide Flange Beams

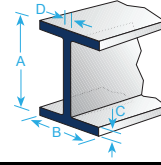
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W4	13	4.16	4.060	0.345	0.280
W5	16	5.01	5.000	0.300	0.240
	19	5.15	5.030	0.430	0.270
W6	8.5	5.83	3.940	0.194	0.170
	9	5.90	3.940	0.215	0.170
	12	6.03	4.000	0.280	0.230
	16	6.28	4.030	0.405	0.260
W6	15	5.99	5.990	0.260	0.230
	20	6.20	6.020	0.365	0.260
	25	6.38	6.080	0.455	0.320
W8	10	7.89	3.940	0.205	0.170
	13	7.99	4.000	0.255	0.230
	15	8.11	4.015	0.315	0.245
W8	18	8.14	5.250	0.330	0.230
	21	8.28	5.270	0.400	0.250
W8	24	7.93	6.490	0.400	0.245
	28	8.06	6.535	0.465	0.285
W8	31	8.00	7.995	0.435	0.285
	35	8.12	8.020	0.495	0.310
	40	8.25	8.070	0.560	0.360
	48	8.50	8.110	0.685	0.400
	58	8.75	8.220	0.810	0.510
	67	9.00	8.280	0.935	0.570
W10	12	9.87	3.960	0.210	0.190
	15	9.99	4.000	0.270	0.230
	17	10.11	4.010	0.330	0.240
	19	10.24	4.020	0.395	0.250

Wide Flange Beams

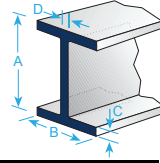
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W10	22	10.17	5.750	0.360	0.240
	26	10.33	5.770	0.440	0.260
	30	10.47	5.810	0.510	0.300
W10	33	9.73	7.960	0.435	0.290
	39	9.92	7.985	0.530	0.315
	45	10.10	8.020	0.620	0.350
W10	49	9.98	10.000	0.560	0.340
	54	10.09	10.030	0.615	0.370
	60	10.22	10.080	0.680	0.420
	68	10.40	10.130	0.770	0.470
	77	10.60	10.190	0.870	0.530
	88	10.84	10.265	0.990	0.605
	100	11.10	10.340	1.120	0.680
	112	11.36	10.415	1.250	0.755
W12	14	11.91	3.970	0.225	0.022
	16	11.99	3.990	0.265	0.220
	19	12.16	4.005	0.350	0.235
	22	12.31	4.030	0.425	0.260
W12	26	12.22	6.490	0.380	0.230
	30	12.34	6.520	0.440	0.260
	35	12.50	6.560	0.520	0.300
W12	40	11.94	8.005	0.515	0.295
	45	12.06	8.045	0.575	0.335
	50	12.19	8.080	0.640	0.370
W12	53	12.06	9.995	0.757	0.345
	58	12.19	10.010	0.640	0.360

Wide Flange Beams

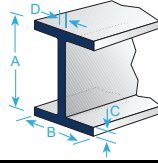
Standard Lengths 20'-70' in 5'0" increments



Section Number	A		B		C		D	
	Weight Per/Foot	Depth of Section	Flange Width	Flange Thickness	Flange Thickness	Web Thickness	Web Thickness	Web Thickness
	lb.	in.	in.	in.	in.	in.	in.	in.
W12	65	12.12	12.000	0.605	0.390			
	72	12.25	12.040	0.670	0.430			
	79	12.38	12.080	0.735	0.470			
	87	12.53	12.125	0.810	0.515			
	96	12.71	12.160	0.900	0.550			
	106	12.89	12.220	0.990	0.610			
	120	13.12	12.320	1.105	0.710			
	136	13.41	12.400	1.250	0.790			
	152	13.71	12.480	1.400	0.870			
	170	14.03	12.570	1.560	0.960			
	190	14.38	12.670	1.735	1.060			
	210	14.71	12.790	1.900	1.180			
	230	15.05	12.895	2.070	1.285			
	252	15.41	13.005	2.250	1.395			
	279	15.85	13.140	2.470	1.530			
305	16.32	13.235	2.705	1.625				
336	16.82	13.385	2.955	1.775				
W14	22	13.74	5.000	0.335	0.230			
	26	13.91	5.025	0.420	0.255			
W14	30	13.84	6.730	0.385	0.270			
	34	13.98	6.785	0.455	0.285			
	38	14.10	6.770	0.515	0.310			
W14	43	13.66	7.995	0.530	0.305			
	48	13.79	8.030	0.595	0.340			
	53	13.92	8.060	0.660	0.370			
	61	13.89	9.995	0.645	0.375			
	68	14.04	10.035	0.720	0.415			
	74	14.17	10.070	0.785	0.450			
	82	14.31	10.130	0.855	0.510			

Wide Flange Beams

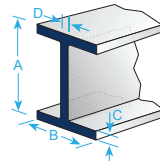
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W14	90	14.02	14.520	0.710	0.440
	99	14.16	14.565	0.780	0.485
	109	14.32	14.605	0.860	0.525
	120	14.48	14.670	0.940	0.590
	132	14.66	14.725	1.030	0.645
W14	145	14.78	15.500	1.090	0.680
	159	14.98	15.565	1.190	0.745
	176	15.22	15.650	1.310	0.830
	193	15.48	15.710	1.440	0.890
	211	15.72	15.800	1.560	0.980
	233	16.04	15.890	1.720	1.070
	257	16.38	15.995	1.890	1.175
	283	16.74	16.110	2.070	1.290
	311	17.12	16.230	2.260	1.410
	342	17.54	16.360	2.470	1.540
	370	17.92	16.475	2.660	1.655
	398	18.29	16.590	2.845	1.770
	426	18.67	16.695	3.035	1.875
	455	19.02	16.835	3.210	2.015
	500	19.60	17.010	3.500	2.190
550	20.24	17.200	3.820	2.380	
605	20.92	17.415	4.160	2.595	
665	21.64	17.650	4.520	2.830	
730	22.42	17.890	4.910	3.070	
W16	26	15.69	5.500	0.345	0.250
	31	15.88	5.525	0.440	0.275
	36	15.86	6.985	0.430	0.295
	40	16.01	6.995	0.505	0.305
	45	16.13	7.035	0.565	0.345
	50	16.26	7.070	0.630	0.380
	57	16.43	7.120	0.715	0.430

Wide Flange Beams

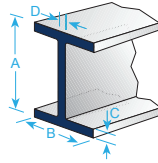
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W16	67	16.33	10.235	0.665	0.395
	77	16.52	10.295	0.760	0.455
	89	16.75	10.365	0.875	0.525
	100	16.97	10.425	0.985	0.585
W18	35	17.70	6.000	0.425	0.300
	40	17.90	6.015	0.525	0.315
	46	18.06	6.060	0.605	0.360
W18	41	17.70	7.450	0.530	0.320
	45	17.86	7.480	0.500	0.340
	50	17.99	7.495	0.570	0.355
	55	18.11	7.530	0.630	0.390
	60	18.24	7.555	0.695	0.415
	65	18.35	7.590	0.750	0.450
	71	18.47	7.635	0.810	0.495
W18	76	18.21	11.035	0.680	0.425
	86	18.39	11.090	0.770	0.480
	97	18.59	11.145	0.870	0.535
	106	18.73	11.200	0.940	0.590
	119	18.97	11.265	1.060	0.655
	130	19.25	11.160	1.200	0.670
	143	19.49	11.220	1.320	0.730
	158	19.72	11.300	1.440	0.810
	175	20.04	11.375	1.590	0.890
	192	20.35	11.455	1.750	0.960
	211	20.67	11.555	1.910	1.060
	234	21.06	11.650	2.110	1.160
	258	21.46	11.770	2.300	1.280
	283	21.85	11.890	2.500	1.400
311	22.32	12.005	2.740	1.520	

Wide Flange Beams

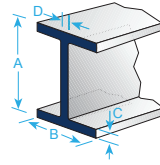
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W21	44	20.66	6.500	0.450	0.350
	50	20.83	6.530	0.535	0.380
	57	21.06	6.555	0.650	0.405
W21	48	20.62	8.140	0.430	0.035
	55	20.80	8.220	0.522	0.375
	62	20.99	8.240	0.615	0.400
	68	21.13	8.270	0.685	0.430
	73	21.24	8.295	0.740	0.455
	83	21.43	8.355	0.835	0.515
	93	21.62	8.420	0.930	0.580
W21	101	21.36	12.290	0.800	0.500
	111	21.51	12.340	0.875	0.550
	122	21.68	12.390	0.960	0.600
	132	21.83	12.440	1.035	0.650
	147	22.06	12.510	1.150	0.720
	166	22.48	12.420	1.360	0.750
	182	22.72	12.500	1.480	0.830
	201	23.03	12.560	1.630	0.910
	223	23.35	12.680	1.790	1.000
	248	23.74	12.775	1.990	1.110
W24	55	23.57	7.005	0.505	0.395
	62	23.74	7.040	0.590	0.430

Wide Flange Beams

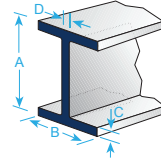
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W24	56	23.48	8.900	0.460	0.355
	61	23.56	8.930	0.500	0.380
	68	23.73	8.965	0.585	0.415
	76	23.92	8.990	0.680	0.440
	84	24.10	9.200	0.770	0.470
	94	24.31	9.065	0.875	0.515
	103	24.53	9.000	0.980	0.550
W24	104	24.06	12.750	0.750	0.500
	117	24.26	12.800	0.850	0.550
	131	24.48	12.855	0.960	0.605
	146	24.74	12.900	1.090	0.650
	162	25.00	12.995	1.220	0.705
	176	25.24	12.890	1.340	0.750
	192	25.47	12.950	1.460	0.810
	207	25.71	13.010	1.570	0.870
	229	26.02	13.110	1.730	0.960
	250	26.34	13.185	1.890	1.040
	279	26.73	13.305	2.090	1.160
	306	27.13	13.405	2.280	1.260
	335	27.52	13.520	2.480	1.380
	370	27.99	13.660	2.720	1.520

Wide Flange Beams

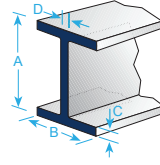
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W27	84	26.71	9.960	0.640	0.460
	94	26.92	9.990	0.745	0.490
	102	27.09	10.015	0.830	0.515
	114	27.29	10.070	0.930	0.570
	129	27.63	10.010	1.100	0.610
W27	146	27.38	13.965	0.975	0.605
	161	27.59	14.020	1.080	0.660
	178	27.81	14.085	1.190	0.725
	194	28.11	14.035	1.340	0.750
	217	28.43	14.115	1.500	0.830
	235	28.66	14.190	1.610	0.910
	258	28.98	14.270	1.770	0.980
	281	29.29	14.350	1.930	1.060
	307	29.61	14.445	2.090	1.160
	336	30.00	14.545	2.280	1.260
	368	30.39	14.665	2.480	1.380
W30	90	29.53	10.400	0.610	0.470
	99	29.65	10.450	0.670	0.520
	108	29.83	10.475	0.760	0.545
	116	30.01	10.495	0.850	0.565
	124	30.17	10.515	0.930	0.585
	132	30.31	10.545	1.000	0.615
	148	30.67	10.480	1.180	0.650

Wide Flange Beams

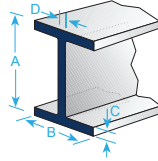
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W30	173	30.44	14.985	1.065	0.655
	191	30.68	15.040	1.185	0.710
	211	30.94	15.105	1.315	0.775
	235	31.30	15.055	1.500	0.830
	261	31.61	15.155	1.650	0.930
	292	32.01	15.255	1.850	1.020
	326	32.40	15.370	2.050	1.140
	357	32.80	15.470	2.240	1.240
	391	33.19	15.590	2.440	1.360
W33	118	32.86	11.480	0.740	0.550
	130	33.09	11.510	0.855	0.580
	141	33.30	11.535	0.960	0.605
	152	33.49	11.565	1.055	0.635
	169	33.82	11.500	1.220	0.670
W33	201	33.68	15.745	1.150	0.715
	221	33.93	15.805	1.275	0.775
	241	34.18	15.860	1.400	0.830
	263	34.53	15.805	1.570	0.870
	291	34.84	15.905	1.730	0.960
	318	35.16	15.985	1.890	1.040
	354	35.55	16.100	2.090	1.160
	387	35.95	16.200	2.280	1.260

Wide Flange Beams

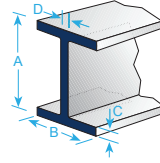
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W36	135	35.55	11.900	0.790	0.600
	150	35.85	11.975	0.940	0.625
	160	36.01	12.000	1.020	0.650
	170	36.17	12.030	1.100	0.680
	182	36.33	12.075	1.180	0.725
	194	36.49	12.115	1.260	0.765
	210	36.69	12.180	1.360	0.830
	232	37.12	12.120	1.570	0.960
	256	37.43	12.215	1.730	0.870
W36	231	36.49	16.470	1.260	0.760
	247	36.67	16.510	1.350	0.800
	262	36.85	16.550	1.440	0.840
	282	37.11	16.595	1.570	0.885
	302	37.33	16.655	1.680	0.945
	330	37.67	16.630	1.850	1.020
	361	37.99	16.730	2.010	1.120
	395	38.41	16.830	2.200	1.220
	441	38.85	16.965	2.440	1.360
	487	39.33	17.086	2.681	1.500
	529	39.80	17.205	2.909	1.610
	652	41.06	17.559	3.539	1.968

Wide Flange Beams

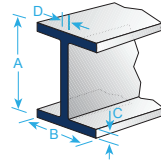
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W40	149	38.20	11.810	0.830	0.630
	167	38.59	11.810	1.025	0.650
	183	38.98	11.810	1.220	0.650
	211	39.37	11.811	1.413	0.752
	235	39.68	11.890	1.575	0.831
	264	40.00	11.929	1.728	0.961
	278	40.16	11.968	1.811	1.024
	294	40.39	12.008	1.929	1.059
	327	40.79	12.126	2.130	1.181
	331	40.79	12.165	2.126	1.220
392	41.57	12.362	2.520	1.417	
W40	199	38.67	15.750	1.065	0.650
	215	38.98	15.750	1.220	0.650
	249	39.38	15.750	1.420	0.750
	277	39.69	15.830	1.575	0.830
	297	39.84	15.825	1.650	0.930
	324	40.16	15.905	1.810	1.000
	362	40.55	16.020	2.010	1.120
	372	40.63	16.060	2.050	1.160
	397	40.95	16.120	2.200	1.220
	431	41.26	16.220	2.363	1.339
	503	42.05	16.417	2.756	1.535
	593	42.99	16.693	3.228	1.791

Wide Flange Beams

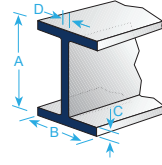
Standard Lengths 20'-70' in 5'0" increments



Section Number	Weight Per/Foot	A	B	C	D
		Depth of Section	Flange Width	Flange Thickness	Web Thickness
	lb.	in.	in.	in.	in.
W44	230	42.91	15.750	1.220	0.710
	262	43.31	15.750	1.420	0.790
	290	43.62	15.830	1.580	0.870
	335	44.02	15.950	1.770	1.020

Standard "H" Pile Beams

Standard Lengths 20'-70' in 5'0" increments



Section Number	A		B		C		D	
	Weight Per/Foot	Depth of Section	Flange Width	Flange Thickness	Flange Thickness	Web Thickness		
	lb.	in.	in.	in.	in.	in.		
HP 8	36	8.02	8.155	0.445	0.445			
	42	9.7	10.075	0.415	0.415			
HP 10	57	10.00	10.225	0.565	0.565			
	53	11.78	12.045	0.435	0.435			
HP 12	63	11.94	12.125	0.515	0.515			
	74	12.13	12.215	0.605	0.605			
	84	12.28	12.295	0.685	0.685			
	89	12.40	12.330	0.720	0.720			
HP 14	73	13.61	14.585	0.505	0.505			
	89	13.83	14.695	0.615	0.615			
	102	14.01	14.785	0.705	0.705			
	117	14.21	14.885	0.805	0.805			
HP 16	88	15.30	15.665	0.540	0.540			
	101	15.50	15.750	0.625	0.625			
	121	15.80	15.875	0.750	0.750			
	141	16.00	16.000	0.875	0.875			
	162	16.30	16.125	1.000	1.000			
	183	16.50	16.250	1.125	1.125			
HP 18	135	17.50	17.750	0.750	0.750			
	157	17.70	17.870	0.870	0.870			
	181	18.00	18.000	1.000	1.000			
	204	18.30	18.125	1.125	1.125			

SPECIFICATIONS FOR CARBON STEEL BARS

HOT ROLLED

MERCHANT BAR QUALITY

A group of commodity steel shapes that consist of rounds, squares, flats, strips, angles and channels, which fabricators, steel service centers and manufacturers cut, bend and shape into products. Merchant products require more specialized processing than reinforcing bar.

M1020

A low carbon, general purpose, merchant quality steel. Suitable for forming and welding.

M1044

Medium carbon bars that are used where greater strength is required. Due to higher carbon content this grade is easily heat treatable but does not weld easily.

ASTM – A588

This specification covers high strength low alloy bars and is primarily intended for use in bridges and buildings where strength and corrosion resistance is a factor.

ASTM – A615

ASTM A615 rebar is most commonly used in low-stress and less-demanding applications and makes an economical choice in situations where a tremendous level of tensile strength is not necessarily needed. Its strength and performance characteristics are grade-dependent, and A614 rebar is available in a full range of standard sizes and grades 40, 60, 75 and 80.

SPECIFICATIONS FOR CARBON STEEL BARS

COLD FINISHED

LOW CARBON

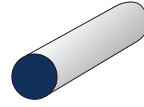
1018 - A low carbon steel with a medium manganese content. Has good hardening properties, fair machinability and is excellent for cold bending and forming operations. Readily brazed and welded. Suitable for shafting and for applications that do not require the greater strength of high carbon and alloy steels. Conforms to ASTM A-108 and AMS 5069. (Not applicable to bars under 2^{15/16"} and sizes lighter than 29.34 lbs per foot.)

GROUND & POLISHED SHAFTING

Extreme size accuracy, straightness and concentricity to minimize wear in high speed applications. **Turned**, ground & polished bars can be machined unsymmetrically, as in key-seating, with minimum distortion because cold drawing strains are not developed. **Drawn**, ground & polished bars combine the strength advantages of cold drawn stock with extra accuracy and lustrous finish. Conforms to ASTM A-108 and QQ-S-637.



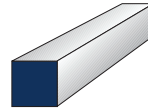
Hot Rolled Rounds



Standard Length 20'

Estimated Weight lbs.			Estimated Weight lbs.		
Size in Inches	Per Foot	20 ft. Bar	Size in Inches	Per Foot	20 ft. Bar
1/4	0.167	3.34	1 1/2	6.013	120.26
5/16	0.261	5.22	1 5/8	7.05	141.00
3/8	0.376	7.52	1 3/4	8.18	163.60
7/16	0.511	10.22	1 7/8	9.39	187.80
1/2	0.668	13.36	2	10.68	213.60
9/16	0.845	16.9	2 1/8	12.06	241.20
5/8	1.043	20.86	2 1/4	13.53	270.60
0.680	1.26	25.2	2 3/8	15.06	301.20
3/4	1.502	30.04	2 1/2	16.7	334.00
25/32	1.63	32.6	2 5/8	18.4	368.00
7/8	2.045	40.9	2 3/4	20.2	404.00
29/32	2.19	43.8	2 7/8	22.07	441.40
1	2.67	53.4	3	24.05	481.00
1 1/8	3.38	67.58	3 1/2	32.71	654.20
1.145	3.5	70	4	42.73	854.60
1 1/4	4.17	83.46	5	66.76	1335.20
1 3/8	5.05	101	6	96.13	1922.60

Hot Rolled Squares

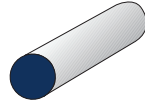


Standard Length 20'

Estimated Weight lbs.			Estimated Weight lbs.		
Size in Inches	Per Foot	20 ft. Bar	Size in Inches	Per Foot	20 ft. Bar
3/8	0.479	9.56	1 1/4	5.32	106.30
1/2	0.85	17	1 3/8	6.44	128.60
5/8	1.33	26.56	1 1/2	7.66	153.00
3/4	1.91	38.26	1 3/4	10.42	208.20
7/8	2.61	52.06	2	13.62	272.00
1	3.4	68	2 1/4	17.23	344.20
1 1/8	4.31	86.06	2 1/2	21.28	425.00

*Hot dipped galvanized sizes available from stock

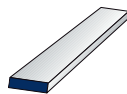
Cold Finished Round Bar



Size (Inches)	Weight Per Linear Ft.	Weight Per 20 ft. Piece
3/16	0.094	1.88
1/4	0.167	3.34
5/16	0.261	5.22
3/8	0.376	7.52
7/16	0.511	10.22
1/2	0.668	13.36
9/16	0.845	16.90
5/8	1.043	20.86
11/16	1.262	25.24
3/4	1.500	30.00
13/16	1.763	35.26
7/8	2.044	40.88
15/16	2.347	46.94
1	2.670	53.40
1 1/16	3.015	60.30
1 1/8	3.380	67.60
1 3/16	3.766	75.32
1 1/4	4.172	83.44
1 5/16	4.600	92.00
1 3/8	5.049	100.98
1 7/16	5.518	110.36
1 1/2	6.008	120.16
1 9/16	6.519	130.38
1 5/8	7.051	141.02
1 11/16	7.604	152.08
1 3/4	8.178	163.56
1 13/16	8.773	175.46
1 7/8	9.388	187.76
1 15/16	10.024	200.48
2	10.681	213.62
2 1/8	12.058	241.16
2 3/16	12.778	255.56
2 1/4	13.519	270.38
2 5/16	14.280	285.60
2 3/8	15.060	301.20
2 7/16	15.870	317.40
2 1/2	16.690	333.80
2 5/8	18.400	368.00
2 11/16	19.290	385.80
2 3/4	20.190	403.80
2 7/8	22.070	441.40
2 15/16	23.042	460.84

Hot Rolled Strip

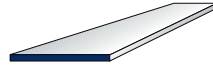
Standard Length 20'



Estimated Weight lbs.				Estimated Weight lbs.				
Size in Inches		Per Foot	20 Ft Bar	Size in Inches		Per Foot	20 Ft. Bar	
1/8 x	1/2	0.213	4.26	3/16 x	2 3/4	1.75	35.00	
	5/8	0.266	5.32		3	1.92	38.40	
	3/4	0.319	6.38		4	2.55	51.00	
	1	0.425	8.50		5	3.19	63.80	
	1 1/8	0.478	9.56		6	3.83	76.60	
	1 1/4	0.531	10.62		7	4.47	89.40	
	1 1/2	0.638	12.76		8	5.1	102.00	
	1 3/4	0.744	14.88		10	6.38	127.60	
	2	0.850	17.00		12	7.66	153.20	
	2 1/2	1.060	21.20					
	3	1.280	25.60		1/4 x	1/2	0.43	8.60
	4	1.700	34.00			5/8	0.531	10.62
	5	2.130	42.60	3/4		0.638	12.76	
	6	2.550	51.00	1		0.85	17.00	
7	2.980	59.60	1 1/8	0.956		19.12		
8	3.400	68.00	1 1/4	1.063		21.26		
10	4.250	85.00	1 1/2	1.28		25.60		
12	5.100	102.00	1 3/4	1.488		29.76		
			2	1.7		34.00		
			2 1/2	2.13		42.60		
3/16 x	1/2	0.319	6.38	2 3/4	2.34	46.80		
	5/8	0.398	7.96	3	2.55	51.00		
	3/4	0.478	9.56	4	3.4	68.00		
	1	0.638	12.76	5	4.25	85.00		
	1 1/8	0.717	14.34	6	5.1	102.00		
	1 1/4	0.797	15.94	7	5.95	119.00		
	1 1/2	0.956	19.12	8	6.8	136.00		
	1 3/4	1.12	22.40	10	8.5	170.00		
	2	1.28	25.60	12	10.2	204.00		
	2 1/2	1.60	32.00					

Hot Rolled Flat Bar

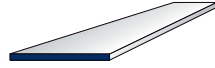
Standard Length 20'



Estimated Weight lbs.				Estimated Weight lbs.			
Size in Inches		Per Foot	20 Ft. Bar	Size in Inches		Per Foot	20 Ft. Bar
1/4 x	3/8	0.319	6.38	5/16 x	2 3/4	2.922	58.44
	1/2	0.430	8.60		3	3.190	63.76
	5/8	0.531	10.62		3 1/2	3.720	74.38
	3/4	0.638	12.76		4	4.250	85.00
	7/8	0.744	14.88		4 1/2	4.780	95.62
	1	0.850	17.00		5	5.310	106.26
	1 1/8	0.956	19.12		5 1/2	5.840	116.80
	1 1/4	1.063	21.26		6	6.380	127.50
	1 3/8	1.170	23.40		7	7.440	148.80
	1 1/2	1.280	25.50		8	8.500	170.00
	1 5/8	1.381	27.62		9	9.600	191.40
	1 3/4	1.488	29.76		10	10.600	212.60
2	1.700	34.00	11	11.700	234.00		
2 1/4	1.913	38.26	12	12.700	255.20		
2 1/2	2.130	42.50	3/8 x	1/2	0.638	12.76	
2 3/4	2.340	46.76		5/8	0.797	15.94	
3	2.550	51.00		3/4	0.956	19.12	
3 1/4	2.763	55.26		7/8	1.116	22.32	
3 1/2	2.980	59.50		1	1.276	25.52	
3 3/4	3.188	63.76		1 1/8	1.434	28.68	
4	3.400	68.00		1 1/4	1.595	31.90	
4 1/2	3.830	76.50		1 3/8	1.753	35.06	
5	4.250	85.00		1 1/2	1.914	38.28	
5 1/2	4.680	93.50		1 5/8	2.072	41.44	
6	5.100	102.00		1 3/4	2.231	44.62	
7	5.950	119.00		2	2.550	51.00	
8	6.800	136.00	2 1/4	2.870	57.38		
9	7.660	153.20	2 1/2	3.190	63.80		
10	8.500	170.20	2 3/4	3.510	70.12		
11	9.360	187.20	3	3.830	76.60		
12	10.200	204.20	3 1/4	4.144	82.88		
5/16 x	1/2	0.531	10.62	3 1/2	4.460	89.26	
	5/8	0.664	13.28	4	5.100	102.00	
	3/4	0.797	15.94	4 1/2	5.742	114.84	
	7/8	0.930	18.60	5	6.380	127.60	
	1	1.060	21.26	5 1/2	7.013	140.26	
	1 1/8	1.195	23.90	6	7.650	153.00	
	1 1/4	1.330	26.56	7	8.930	178.60	
	1 3/8	1.461	29.22	8	10.200	204.00	
	1 1/2	1.590	31.88	9	11.484	229.68	
	1 3/4	1.860	37.18	10	12.760	255.20	
	2	2.130	42.50	11	14.040	280.80	
	2 1/4	2.390	47.82	12	15.310	306.20	
2 1/2	2.660	53.20					

Hot Rolled Flat Bar

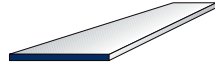
Standard Length 20'



Estimated Weight lbs.				Estimated Weight lbs.			
Size in Inches		Per Foot	20 Ft. Bar	Size in Inches		Per Foot	20 Ft. Bar
1/2 x	5/8	1.063	21.26	5/8 x	9	19.100	383.00
	3/4	1.275	25.50		10	21.270	425.40
	7/8	1.488	29.76		11	23.400	468.00
	1	1.700	34.00		12	25.520	510.40
	1 1/8	1.913	38.26	3/4 x	7/8	2.231	44.62
	1 1/4	2.130	42.50		1	2.550	51.00
	1 3/8	2.338	46.76		1 1/8	2.870	57.38
	1 1/2	2.550	51.00		1 1/4	3.190	63.76
	1 3/4	2.975	59.50		1 1/2	3.830	76.60
	2	3.400	68.00		1 3/4	4.463	89.26
	2 1/4	3.825	76.50		2	5.100	102.00
	2 1/2	4.250	85.00		2 1/4	5.740	114.80
	2 3/4	4.675	93.50		2 1/2	6.380	127.50
	3	5.100	102.00		2 3/4	7.013	140.26
	3 1/4	5.530	110.60		3	7.650	153.00
	3 1/2	5.955	119.10		3 1/4	8.288	165.76
	4	6.800	136.00	3 1/2	8.932	178.64	
	4 1/2	7.660	153.20	4	10.200	204.00	
	5	8.500	170.00	4 1/2	11.480	229.50	
	5 1/2	9.350	187.00	5	12.750	255.00	
6	10.200	204.00	5 1/2	14.030	280.50		
7	11.910	238.20	6	15.300	306.00		
8	13.610	272.20	7	17.870	357.40		
9	15.320	306.40	8	20.420	408.40		
10	17.000	340.40	9	22.970	459.40		
11	18.720	374.40	10	25.520	510.40		
12	20.420	408.40	11	28.080	561.60		
5/8 x	3/4	1.594	31.88	12	30.630	612.60	
	7/8	1.859	37.18	7/8 x	1	2.980	59.50
	1	2.125	42.50		1 1/4	3.720	74.50
	1 1/8	2.390	47.82		1 1/2	4.470	89.26
	1 1/4	2.660	53.12		1 3/4	5.210	104.12
	1 1/2	3.190	63.76		2	5.950	119.00
	1 3/4	3.719	74.38		2 1/4	6.700	133.88
	2	4.250	85.00		2 1/2	7.450	148.76
	2 1/4	4.780	95.62		2 3/4	8.190	163.62
	2 1/2	5.317	106.34		3	8.925	178.50
	2 3/4	5.844	116.88		3 1/2	10.420	208.26
	3	6.380	127.50		4	11.900	238.00
	3 1/4	6.906	138.12		4 1/2	13.390	267.76
	3 1/2	7.438	148.76	5	14.880	297.50	
	4	8.500	170.00	6	17.850	357.00	
	4 1/2	9.560	191.26	7	20.830	416.50	
	5	10.630	212.60	8	23.800	476.00	
	5 1/2	11.690	233.80	9	26.800	536.00	
	6	12.750	255.00	10	29.790	595.66	
	7	14.900	298.00	11	32.800	655.22	
8	17.010	340.20	12	35.740	714.80		

Hot Rolled Flat Bar

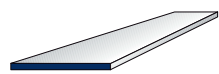
Standard Length 20'



Estimated Weight lbs.				Estimated Weight lbs.			
Size in Inches		Per Foot	20 Ft. Bar	Size in Inches		Per Foot	20 Ft. Bar
1 x	1 1/4	4.250	85.00	1 1/4 x	9	38.250	765.00
	1 1/2	5.100	102.00		10	42.540	850.80
	1 3/4	5.950	119.00		11	46.794	935.88
	2	6.800	136.00		12	51.050	1021.00
	2 1/4	7.650	153.00	1 1/2 x	2	10.200	204.00
	2 1/2	8.500	170.00		2 1/2	12.750	255.00
	2 3/4	9.350	187.00		3	15.314	306.28
	3	10.200	204.00		3 1/2	17.850	357.00
	3 1/4	11.900	238.00		4	20.400	408.00
	4	13.600	272.00		4 1/2	22.950	459.00
	4 1/2	15.310	306.20		5	25.500	510.00
	5	17.000	340.00		6	30.628	612.56
5 1/2	18.700	374.00	7	35.700	714.00		
6	20.420	408.40	8	40.830	816.60		
7	23.800	476.00	9	45.950	919.00		
8	27.200	544.00	10	51.000	1021.16		
9	30.630	612.60	11	56.152	1123.04		
10	34.020	680.40	12	61.258	1225.16		
11	37.440	748.80	1 3/4 x	2	11.900	238.00	
12	40.830	816.60		2 1/2	14.875	297.50	
1 1/8 x	2	7.650		153.00	3	17.850	357.00
	3	11.475		229.50	3 1/2	20.825	416.50
	4	15.300		306.00	4	23.822	476.44
	5	19.100		382.50	4 1/2	26.775	535.50
	6	22.950		459.00	5	29.800	595.00
	7	26.780		535.50	6	35.700	714.00
	8	30.630		612.60	7	41.700	833.00
	9	34.450		689.24	8	47.600	952.00
	10	38.300		765.82	9	53.600	1072.04
	11	42.110		842.40	10	59.556	1191.12
	12	45.900	919.00	11	65.500	1310.28	
	1 1/4 x	1 1/2	6.375	127.50	12	71.500	1429.40
1 3/4		7.440	148.80	2 x	2 1/2	17.000	340.00
2		8.500	170.00		3	20.420	408.40
2 1/4		9.563	191.26		3 1/2	23.800	476.00
2 1/2		10.630	212.60		4	27.225	544.50
2 3/4		11.688	233.76		4 1/2	30.600	612.00
3		12.750	255.00		5	34.000	680.00
3 1/2		14.880	297.60		6	40.830	816.60
4		17.000	340.00		7	47.600	952.00
4 1/2		19.125	382.50		8	54.450	1089.00
5		21.250	425.00		9	61.200	1225.20
5 1/2		23.375	467.50		10	68.100	1361.32
6	25.500	510.00	11		74.900	1497.46	
7	29.750	595.00	12	81.700	1633.60		
8	34.000	680.00					

Hot Rolled Flat Bar

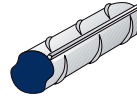
Standard Length 20'



Estimated Weight lbs.				Estimated Weight lbs.			
Size in Inches		Per Foot	20 Ft. Bar	Size in Inches		Per Foot	20 Ft. Bar
2 1/2 x	3	25.500	510.00	3 x	4	40.800	816.00
	3 1/2	29.750	595.00		4 1/2	45.900	918.00
	4	34.032	680.64		5	51.000	1020.00
	4 1/2	38.250	765.00		6	61.200	1224.00
	5	42.500	850.00		7	71.500	1428.00
	6	51.000	1020.00		8	81.700	1632.00
	7	59.500	1190.00		9	91.900	1837.80
	8	68.100	1360.00		10	102.100	2042.00
	9	76.560	1531.50		11	112.300	2246.20
	10	85.010	1701.66		12	122.500	2450.40
	11	93.600	1871.82				
	12	102.100	2042.00				

Reinforcing Bars

Standard Length 20'



Bar Sizes		Weight	Nominal Dimensions in Inches	
No.	Inches	Pounds Per Foot	Diameter Inches	Area Sq Inches
#3	3/8 Rd.	0.376	0.375	0.11
#4	1/2 Rd.	0.668	0.500	0.20
#5	5/8 Rd.	1.043	0.625	0.31
#6	3/4 Rd.	1.502	0.750	0.44
#7	7/8 Rd.	2.044	0.785	0.60
#8	1 Rd.	2.670	1.000	0.79
#9	1 1/8 Rd.	3.400	1.125	1.00
#10	1 1/4 Rd.	4.303	1.250	1.27
#11	1 3/8 Rd.	5.313	1.375	1.56
#14	1 5/8 Rd.	7.650	1.693	2.25
#18	2 1/4 Rd.	13.600	2.257	4.00

The bar numbers are based on the number of 1/8 inches included in the nominal diameter of the bar.

A615 - Grade 40 & 60

SPECIFICATIONS FOR STRUCTURAL STEEL SHAPES

ASTM – A36 - Standard Specification for Carbon Structural Steel.

This specification covers shapes of structural quality for use in riveted, bolted, or welded construction of bridges and buildings, and for general structural purposes.

ASTM – A572 - Standard Specification for High-Strength Low-Alloy Structural Steel.

This specification covers five grades of high-strength low-alloy shapes intended for riveted, bolted, or welded construction of bridges, or for other construction applications.

ASTM – A588 - Standard Specification for High-Strength Low-Alloy Structural Steel.

This specification covers shapes for welded, riveted, or bolted construction but intended primarily for use in welded bridges and buildings where savings in weight or added durability is important. The atmospheric corrosion resistance of this steel in most environments is substantially better than that of carbon steels with or without copper addition.

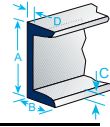
ASTM – A709 - Standard Specification for Carbon and High Strength Low-Alloy Shapes.

This specification covers shapes, and bars intended for use in bridges. Seven grades are available in four yield strengths.

ASTM – A992 - Standard Specification for Steel for Structural Shapes For Use in Building Framing.

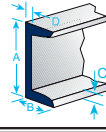
This specification covers rolled shapes for use in building framing or bridges, or for general structural purposes.

Standard Channels

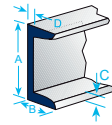


Section Number	Weighth Per Ft. Pound	Depth of Section Inch	Flange		Web
			Width Inch	Thickness Inch	Thickness Inch
			A	B	C
3	3.5	3	1.376	0.273	0.125
	4.1	3	1.410	0.273	0.170
	5	3	1.498	0.273	0.258
	6	3	1.596	0.273	0.356
4	4.5	4	1.585	0.149	0.163
	5.4	4	1.580	0.296	0.184
	7.25	4	1.721	0.296	0.321
5	6.7	5	1.750	0.320	0.190
	9	5	1.885	0.320	0.325
6	8.2	6	1.920	0.343	0.200
	10.5	6	2.034	0.343	0.314
	13	6	2.157	0.343	0.437
7	9.8	7	2.090	0.366	0.210
	12.25	7	2.194	0.366	0.303
	14.75	7	2.299	0.366	0.487
8	11.5	8	2.260	0.390	0.220
	13.75	8	2.343	0.390	0.303
	18.75	8	2.527	0.390	0.487
9	13.4	9	2.433	0.413	0.233
	15	9	2.485	0.413	0.285
	20	9	2.648	0.413	0.448
10	15.3	10	2.600	0.436	0.240
	20	10	2.739	0.436	0.379
	25	10	2.886	0.436	0.523
	30	10	3.033	0.436	0.673
12	20.7	12	2.942	0.501	0.282
	25	12	3.047	0.501	0.387
	30	12	3.170	0.501	0.510
15	33.9	15	3.400	0.650	0.400
	40	15	3.520	0.650	0.520
	50	15	3.716	0.650	0.716

MC Channels



Section Number	Weight Per Ft. Pound	A Depth of Section Inch	B		D
			C Flange		Web
			Width Inch	Thickness Inch	Thickness Inch
3	7.1	2.93	1.940	0.351	0.312
4	13.8	4	2.500	0.500	0.500
6	12	6	2.497	0.375	0.310
	15.1	6	2.941	0.475	0.316
	15.3	6	3.500	0.475	0.375
	16.3	6	3.000	0.475	0.379
	18	6	3.504	0.475	0.379
7	19.1	7	3.452	0.500	0.352
	22.7	7	3.603	0.500	0.503
8	8.5	8	1.874	0.311	0.179
	18.7	8	2.978	0.500	0.353
	20	8	3.025	0.500	0.400
	21.4	8	3.450	0.525	0.375
	22.8	8	3.502	0.525	0.427
9	23.9	9	3.450	0.550	0.400
	25.4	9	3.500	0.550	0.450
10	6.5	10	1.170	0.202	0.152
	8.4	10	1.500	0.280	0.170
	22	10	3.315	0.575	0.290
	25	10	3.405	0.575	0.380
	28.5	10	3.950	0.575	0.425
	33.6	10	4.100	0.575	0.575
	41.1	10	4.321	0.575	0.796
12	10.6	12	1.500	0.309	0.190
	14.3	12	2.125	0.313	0.250
	31	12	3.670	0.700	0.370
	35	12	3.767	0.700	0.465
	40	12	3.890	0.700	0.590
	45	12	4.012	0.700	0.712
	50	12	4.135	0.700	0.835
13	31.8	13	4.000	0.610	0.375
	35	13	4.072	0.610	0.447
	40	13	4.185	0.610	0.560
	50	13	4.412	0.610	0.787
18	42.7	18	3.950	0.625	0.450
	45.8	18	4.000	0.625	0.500
	51.9	18	4.125	0.625	0.600
	58	18	4.200	0.625	0.700



Bar Channels

A B C			Estimated lbs.	
Size in Inches			Per Ft.	Per 20' Length
Section Depth	Flange Width	Web Thickness		
1/2	1/4	1/8	0.28	5.60
3/4	5/16	1/8	0.50	10.00
3/4	3/8	1/8	0.56	11.20
7/8	3/8	1/8	0.65	13.00
7/8	7/16	1/8	0.69	13.80
1	3/8	1/8	0.68	13.60
1	1/2	1/8	0.84	16.80
1 1/8	9/16	1/8	1.16	23.20
1 1/4	1/2	1/8	1.01	20.20
1 1/2	1/2	1/8	1.12	22.40
1 1/2	3/4	1/8	1.17	23.40
2	1/2	1/8	1.43	28.60
2	1	1/8	1.78	35.60
1 1/2	9/16	3/16	1.44	28.80
1 3/4	1/2	3/16	1.55	31.00
2	9/16	3/16	1.86	37.20
2	1	3/16	2.32	46.40
2 1/2	5/8	3/16	2.27	45.40
2	5/8	1/4	2.28	45.60

Expanded Metal



Standard Expanded Metal

Style Designation	Weight Per 100 Sq. Ft.	Diamond Size Inches	Overall Thickness Inches	Standard Sheet Size	
				Width	Length
1/4" No. 18	117	0.26 x 1	0.125	4'	8'
1/2" No. 20	43	0.5 x 1.12	0.134	4'	8' & 10'
1/2" No. 18	70	0.5 x 1.2	0.161	4' & 6'	8' & 10'
1/2" No. 16	87	0.5 x 1.2	0.159	4' & 6'	8' & 10'
1/2" No. 13	146	0.5 x 1.2	0.199	4' & 6"	8'
3/4" No. 16	54	0.923 x 2	0.183	4' & 6"	8' & 10'
3/4" No. 13	80	0.88 x 2	0.185	4' & 6'	8' & 10'
3/4" No. 10	119	0.889 x 2	0.277	4'	8'
3/4" No. 9	180	0.857 x 2	0.29	4' & 6'	8' & 10'
1" No. 16	47	1.01 x 2.4	0.196	4'	8'
1 1/2" No. 16	40	1.35 x 3	0.21	4'	8'
1 1/2" No. 13	60	1.35 x 3	0.213	4' & 6'	8' & 10'
1 1/2" No. 10	79	1.33 x 3	0.248	4' & 6'	8' & 10'
1 1/2" No. 9	119	1.33 x 3	0.289	4' & 6'	8' & 10'
1 1/2" No. 6	250	1.33 x 3	0.385	6'	12'

Flattened Expanded Metal

Style Designation	Weight Per 100 Sq. Ft.	Diamond Size Inches	Overall Thickness Inches	Standard Sheet Size	
				Width	Length
1/4" No.20-22	87	0.26 x 1.03	0.031	4'	8'
1/4" No.18-20	113	0.26 x 1.03	0.042	4'	8'
1/2" No.20-22	41	0.500 x 1.25	0.032	3' & 4'	8'
1/2" No.18-20	66	0.500 x 1.26	0.038	3' & 4'	8' & 10'
1/2" No.16-18	82	0.500 x 1.26	0.050	3' & 4'	8' & 10'
1/2" No.13-15	138	0.500 x 1.26	0.070	3' & 4'	8'
3/4" No.16-18	51	0.923 x 2.10	0.048	3' & 4'	8' & 10'
3/4" No.14-16	68	0.923 x 2.10	0.063	3' & 4'	8'
3/4" No.13-15	76	0.923 x 2.10	0.070	3' & 4'	8' & 10'
3/4" No. 9-11	171	0.857 x 2.10	0.110	3' & 4'	8' & 10'
1" No.16-18	46	1.09 x 2.56	0.048	3' & 4'	8'
1 1/2" No.16(lt)18	29	1.33 x 3.20	0.048	3' & 4'	8'
1 1/2" No.14-16	53	1.33 x 3.20	0.063	3' & 4'	8'
1 1/2" No.13-15	57	1.33 x 3.20	0.070	3' & 4'	8' & 10'
1 1/2" No. 9-11	113	1.33 x 3.20	0.106	3' & 4'	8' & 10'

Grating & Flooring Products

Expanded Metal Grating

Style Designation (wt. per sq. ft.)	Diamond Size a x b Inches	Overall Thickness in In.	Standard Sheet Size	
			Length (SWD)	Width (LWD)
3 lb.	1.333 x 5.333	1/2	4' & 6'	5', 8' & 10'
3.14 lb.	2.00 x 6.0	9/16	4' & 6'	10'
4 lb.	1.333 x 5.333	5/8	4', 5' & 6'	8'
4.27 lb.	1.412 x 4.0	5/8	4' & 6'	8'
5 lb.	1.333 x 5.333	5/8	4'	5', 8' & 10'
6.25 lb.	1.412 x 5.33	47/64	4' & 6'	8'
7 lb.	1.333 x 5.333	3/4	4'	4'2" & 8'4"

Carbon Steel Gratings

Standard or Serrated

Stock Widths 24" & 36", Lengths 20' & 24'

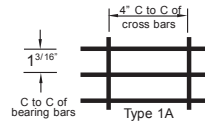
Weight in Pounds per Sq. Ft.

Bearing Bars	Cross Bars	Type 1A	Type 1B
3/4 x 1/8	1/4	3.99	4.63
3/4 x 3/16	1/4	5.67	6.31
1 x 1/8	1/4	5.15	5.79
1 x 3/16	1/4	7.35	7.99
1 1/4 x 1/8	1/4	6.20	6.84
1 1/4 x 3/16	1/4	9.03	9.67
1 1/2 x 1/8	1/4	7.35	7.99
1 1/2 x 3/16	5/16	10.94	11.80
1 3/4 x 3/16	5/16	12.62	13.48
2 x 3/16	5/16	14.30	15.16
2 1/4 x 3/16	5/16	15.87	16.74
2 1/2 x 3/16	5/16	17.55	18.42

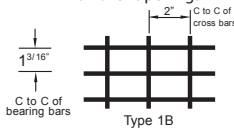
Weight in Pounds per Sq. Ft.

Bearing Bars	Cross Bars	Type 2A	Type 2B
3/4 x 1/8	1/4	4.95	5.59
3/4 x 3/16	1/4	7.11	7.75
1 x 1/8	1/4	6.44	7.08
1 x 3/16	1/4	9.27	9.91
1 1/4 x 1/8	1/4	7.79	8.43
1 1/4 x 3/16	1/4	11.43	12.07
1 1/2 x 1/8	1/4	9.27	9.91
1 1/2 x 3/16	5/16	13.82	14.68
1 3/4 x 3/16	5/16	15.98	16.84
2 x 3/16	5/16	18.14	19.00
2 1/4 x 3/16	5/16	20.16	21.03
2 1/2 x 3/16	5/16	22.23	23.19

General Duty

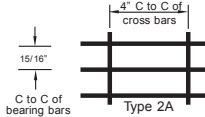


Smaller Openings



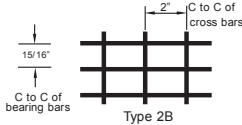
(Standard with Close Cross Bars)

Heavier Loads



(Close Space)

Heaviest Loads



SPECIFICATIONS FOR CARBON STEEL PLATES

ASTM – A36 - Standard Specification for Carbon Steel.

This specification covers carbon steel plates for use in riveted, bolted, or welded construction of bridges and buildings, and for general structural purposes.

ASTM – A572 - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.

This specification covers five grades of high-strength low-alloy structural steel plates intended for riveted or bolted construction of bridges, or for riveted, bolted or welded construction in other applications.

ASTM – A588 - Standard Specification for High-Strength Low-Alloy Structural Steel.

This specification covers HSLA steel plates for welded, riveted or bolted construction but intended primarily for use in welded bridges and buildings where savings in weight and added durability are important. The atmospheric corrosion resistance of this steel is substantially better than that of carbon structural steels with or without copper added.

ASTM – A514 - Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding.

This specification covers quenched and tempered alloy steel plates of structural quality intended primarily for use in welded bridge construction and other structures.

ASTM – A709 - Standard Specification for Carbon and High-Strength Low Alloy and Quenched-and-Tempered Alloy Structural Steel Plates for Bridges.

This specification covers carbon HSLA plates intended for use in bridges. Seven grades are available in four yield strength levels.

SPECIFICATIONS FOR CARBON STEEL PLATES

ASTM – A285 - Standard Specification for Pressure Vessel Plates, Carbon Steel, Low and Intermediate Tensile Strength.

This specification covers carbon steel plates of low and intermediate-tensile strength and is intended for fusion-welded pressure vessels. The plates are available in three grades having different strength levels.

ASTM – A515 - Standard Specification for Pressure Vessel Plates, Carbon Steel, for Intermediate and Higher-Temperature Service.

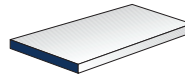
This specification covers carbon-silicon steel plates primarily for intermediate and higher-temperature service in welded boilers and other pressure vessels. The plates are available in three grades each having different strength levels.

ASTM – A516 - Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate and Lower-Temperature Service.

This specification covers carbon steel plates intended primarily for service in welded pressure vessels where improved notch toughness is important. The plates are available in four grades each having different strength levels.

PLATE

Commercial & Specification Grades

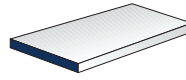


Average Mechanical Properties

Grade	Tensile Strength psi	Minimum Yield psi	Elongation In 2" Min %	Misc. Properties
Low Carbon 3/4" & Under 3/4-1 1/2				.10-.20 Carbon .15-.25 Carbon
Over 1 1/2"	ORDERED TO CHEMISTRY NO PHYSICALS SPECIFIED			.20-.33 Carbon
SPEC. GRADE				
ASTM A-36	50,000 to 80,000	36,000	23	.25-.29 Carbon
ASTM T1-A	105,000 to 135,000.	90,000 to 100,000	17 to 18	.229 to .293 Brinell
AR360	166,000	160,000	15	360 Brinell
AR400	190,000.	184,000	15	400 Brinell
ASTM A285 Grade C	55,000 to 65,000	30,000	25	0.28 Carbon
ASTM A515 Grade 70	70,000 to 85,000	38,000	17	.31 to .35 Carbon
ASTM A516 Grade 70	70,000 to 85,000.	38,000	17	.27 to .31 Carbon
ASTM A572	65,000	50,000	21	0.23 Carbon
A588	70,000	50,000	19	20 Carbon

Stocked ABS Grade A

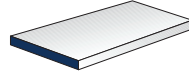
ABS Plate



ABS is plate that is certified to meet the American Bureau of Shipping standards. ABS is produced for maritime applications such as hull and structural parts of ships, barges, offshore rigs or general marine equipment. Available grades include A, B, AH, D, DH & EH. DH and AH are normalized for improved notch toughness

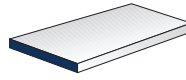
Size (in.)	Stock Sizes (in.)	Wt. Per Sq. Ft.	Wt. Per Sheet
1/4	96 x 240	10.21	1634.00
	96 x 480		3268.00
	120 x 480		4084.00
5/16	96 x 480	12.76	4083.20
3/8	96 x 240	15.32	2451.20
	96 x 288		2941.44
	96 x 360		3676.80
	96 x 480		4902.40
	120 x 240		3064.00
	120 x 480		6128.00
7/16	96 x 480	17.87	5718.40
1/2	96 x 240	20.42	3267.20
	96 x 360		4900.80
	96 x 480		6534.40
	120 x 240		4084.00
	120 x 480		8168.00
5/8	96 x 240	25.53	4084.80
	96 x 360		6127.20
	96 x 480		8169.60
	120 x 480		10212.00
3/4	96 x 240	30.63	4900.80
	96 x 480		9801.60
	120 x 480		12252.00
1	96 x 240	40.84	6534.40
	96 x 480		13068.80
	120 x 480		16336.00
1 1/8	96 x 240	45.95	7352.00
1 1/4	96 x 240	51.05	8168.00
1 3/8	96 x 240	56.16	8985.60
1 1/2	96 x 240	61.27	9803.20
1 5/8	96 x 240	66.37	10619.20
1 3/4	96 x 240	71.47	11435.20
2	96 x 240	81.68	13068.80
2 1/2	96 x 240	102.10	16336.00
2 3/4	96 x 240	112.31	17969.60
3	96 x 240	122.52	19603.20

Hot Rolled Plate



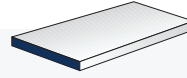
Size (in.)	Stock Sizes (in.)	Wt. Per Sq. Ft.	Wt. Per Sheet
3/16	48 x 96	7.66	245.12
	48 x 120		306.40
	48 x 144		367.68
	48 x 240		612.80
	60 x 120		383.00
	60 x 144		459.60
	60 x 240		777.00
	72 x 120		459.60
	72 x 240		919.20
	96 x 240		1225.60
1/4	48 x 96	10.21	326.72
	48 x 120		408.40
	48 x 144		490.08
	48 x 240		816.80
	60 x 120		510.50
	60 x 144		612.60
	60 x 240		1021.00
	72 x 120		612.60
	72 x 240		1225.20
	84 x 240		1429.40
	96 x 240		1633.60
	96 x 480		3267.20
120 x 480	4084.00		
5/16	48 x 96	12.76	408.32
	48 x 120		510.40
	48 x 144		612.48
	48 x 240		1020.80
	60 x 120		638.00
	60 x 144		765.60
	60 x 240		1276.00
	72 x 240		1531.20
	84 x 240		1786.40
	96 x 240		2041.60
	96 x 480		4083.20
	120 x 480		5104.00
3/8	48 x 96	15.32	490.24
	48 x 120		612.80
	48 x 144		735.36
	48 x 240		1225.60
	60 x 120		766.00
	72 x 120		919.20
	72 x 240		1838.40

Hot Rolled Plate



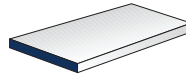
Size (in.)	Stock Sizes (in.)	Wt. Per Sq. Ft.	Wt. Per Sheet
3/8 (con't)	84 x 240	15.32	2144.80
	96 x 240		2451.20
	96 x 360		3676.80
	96 x 480		4902.40
	120 x 240		3064.00
	120 x 480		6128.00
1/2	48 x 96	20.42	653.44
	48 x 120		816.80
	48 x 144		980.16
	60 x 120		1021.00
	72 x 120		1225.20
	72 x 240		2450.40
	84 x 240		2858.80
	96 x 240		3267.20
	96 x 360		4900.80
	96 x 480		6534.40
120 x 480	8168.00		
5/8	48 x 96	25.53	816.96
	48 x 120		1021.20
	48 x 240		2042.40
	60 x 120		1276.50
	72 x 120		1531.80
	72 x 240		3063.60
	84 x 240		3574.20
	96 x 240		4084.80
	96 x 480		8169.60
3/4	48 x 96	30.63	980.16
	48 x 120		1225.20
	60 x 120		1531.50
	72 x 240		3675.60
	84 x 240		4288.20
	96 x 240		4900.80
96 x 480	9801.60		
7/8	48 x 96	35.74	1143.68
	48 x 120		1429.60
	48 x 240		2859.20
	60 x 120		1787.00
	72 x 120		2144.40
	72 x 240		4288.80
	84 x 240		5003.60
	96 x 240		5718.40
	96 x 480		11436.80

Hot Rolled Plate



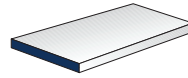
Size (in.)	Stock Sizes (in.)	Wt. Per Sq. Ft.	Wt. Per Sheet
1	48 x 96	40.84	1306.88
	48 x 120		1633.60
	48 x 240		3267.20
	60 x 96		1633.60
	60 x 120		2042.00
	60 x 240		4084.00
	72 x 120		2450.40
	72 x 240		4900.80
	72 x 480		9801.60
	96 x 120		3267.20
	96 x 240		6534.40
	96 x 480		13068.80
	120 x 240		8168.00
	120 x 480		16336.00
1 1/8	96 x 240	45.95	7352.00
	120 x 240		9190.00
1 1/4	48 x 120	51.05	2042.00
	48 x 240		4084.00
	60 x 120		2552.50
	72 x 240		6126.00
	96 x 240		8168.00
1 1/2	48 x 96	61.26	1960.32
	48 x 120		2450.40
	48 x 240		4900.80
	60 x 120		3063.00
	72 x 240		7351.20
	96 x 240		9801.60
1 3/4	48 x 96	71.47	2287.04
	48 x 120		2858.80
	96 x 240		11435.20
2	48 x 96	81.68	2613.76
	48 x 120		3267.20
	48 x 240		6534.40
	96 x 240		13068.80
2 1/4	48 x 96	91.89	2940.48
	48 x 240		7351.20
	96 x 240		14702.40
2 1/2	48 x 96	102.10	3267.20
	48 x 240		8168.00
	96 x 240		16336.00
2 3/4	48 x 96	112.31	3593.92
	96 x 240		17969.60
3	96 x 144	122.52	11761.92
	96 x 240		19603.20

Hot Rolled Plate



Size (in.)	Stock Sizes (in.)	Wt. Per Sq. Ft.	Wt. Per Sheet
3 1/2	96 x 144	142.93	13721.28
	96 x 240		22868.80
4	96 x 144	163.36	15682.56
	96 x 240		26137.60
4 1/2	96 x 144	183.78	17642.88
	96 x 240		29404.80
5	48 x 96	204.20	6534.40
	96 x 144		19603.20
	96 x 240		32672.00
5 1/2	60 x 120	224.61	11230.50
	60 x 240		22461.00
	60 x 480		44922.00
6	60 x 240	245.03	24503.00
	60 x 480		49006.00
	72 x 120		14701.80
	72 x 240		29403.60
	96 x 120		19602.40
	96 x 240		39204.80
6 1/2	96 x 120	265.45	21236.00
	96 x 240		42472.00
7	60 x 120	285.87	14293.50
	60 x 240		28587.00
	96 x 120		22869.60
	96 x 240		45739.20
8	60 x 120	326.71	16335.50
	60 x 240		32671.00
10	84 x 120	408.38	28586.60

Floor Plate



Thickness	Stock Sizes (in.)	Wt. Per Sq. Ft.	Wt. Per Sheet
1/8	48 x 96	6.16	197.12
	48 x 120		246.40
	48 x 144		295.68
	48 x 240		492.80
	60 x 120		308.00
	60 x 240		616.00
3/16	48 x 96	8.71	278.72
	48 x 120		348.84
	48 x 240		696.80
	60 x 120		435.50
	60 x 240		871.00
	72 x 240		1045.20
1/4	48 x 96	11.26	360.32
	48 x 120		450.40
	48 x 240		900.80
	60 x 240		1126.00
	72 x 240		1351.20
	96 x 240		1801.60
5/16	48 x 120	13.81	552.40
	48 x 240		1104.80
	60 x 240		1381.00
	72 x 240		1657.20
	96 x 240		2209.60
3/8	48 x 120	16.37	654.80
	48 x 240		1309.60
	60 x 240		1637.00
	72 x 240		1964.40
	96 x 240		2619.20
1/2	48 x 120	21.47	858.80
	48 x 240		1717.60
	60 x 240		2147.00
	96 x 240		3435.20
5/8	96 x 240	26.58	4252.80
3/4	96 x 240	31.68	5068.80
1	96 x 240	41.89	6702.40

SHEET SELECTION GUIDE

HOT ROLLED

Commercial Quality Sheets produced from low carbon steel and intended for uses involving simple bending or moderate drawing and welding. A wide variety of applications from agriculture implements to automotive equipment, from blower and ventilating systems to hot air registers, from stub barrels and drums to bins and partitions.

HOT ROLLED PICKLED & OILED

Pickled & Oiled Sheets should be used when the tight oxide scale present on Hot Rolled Sheets is objectionable. Pickled and Oiled Sheets with their superior smooth clean surface are recommended for stamping or ordinary drawing applications. After cleaning they can be painted or enameled.

COLD ROLLED

Cold Rolled Commercial Quality Sheets are produced from low carbon steel and are intended for exposed or unexposed parts involving bending, moderate drawing or forming and welding. Sheets of this quality have a greater degree of ductility and are more consistent in performance because of higher standards in production, selection, and processing of the steel. The surface finish is a dull matte texture.

Hot Rolled Steel Sheets

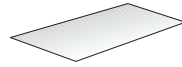


Commercial Quality - Low Carbon

Gauge Number	Stock Sizes (In.)	Wt. Per Sq. Ft.	Wt. Per Sheet
16 Ga.	48 x 96	2.5	80
	48 x 120		100
	48 x 144		120
	60 x 96		100
	60 x 120		125
	60 x 144		150
14 Ga.	48 x 96	3.125	100
	48 x 120		125
	48 x 144		150
	60 x 96		125
	60 x 120		156.3
	60 x 144		187.5
12 Ga.	48 x 96	4.375	140
	48 x 120		175
	48 x 144		210
	60 x 96		175
	60 x 120		218.8
	60 x 144		262.5
	72 x 120		262.5
	72 x 144		315
11 Ga.	48 x 96	5	160
	48 x 120		200
	48 x 144		240
	60 x 96		200
	60 x 120		250
	60 x 144		300
	72 x 120		300
	72 x 144		360
	72 x 240		600
10 Ga.	48 x 96	5.625	180
	48 x 120		225
	48 x 144		270
	60 x 96		225
	60 x 120		281.3
	60 x 144		337.5
	72 x 120		337.5
	72 x 144		405
	72 x 240		675

Sheet Product

AISI Thickness Tolerance Range



Gauge Number	Thickness Inches					
	H.R. & H.R.P.O.		C.R.		Galv.	
	Dec. Equiv.	Tolerance Range	Dec. Equiv.	Tolerance Range	Dec. Equiv.	Tolerance Range
7	0.1793	0.1873 0.1713	0.1793	0.1883 0.1703		
8	0.1644	0.1724 0.1564	0.1644	0.1734 0.1554		
9	0.1495	0.1575 0.1415	0.1495	0.1585 0.1405		
10	0.1345	0.1425 0.1265	0.1345	0.1405 0.1285	0.1382	0.1472 1292.0000
11	0.1196	0.1276 0.1116	0.1196	0.1256 0.1136	0.1233	0.1323 0.1143
12	0.1046	0.1126 0.0966	0.1046	0.1106 0.0986	0.1084	0.1174 0.0994
13	0.0897	0.0967 0.0827	0.0897	0.0947 0.0847	0.0934	0.1014 0.0854
14	0.0747	0.0817 0.0677	0.0747	0.0797 0.0697	0.0785	0.0865 0.0705
15	0.0673	0.0733 0.0613	0.0673	0.0723 0.0623	0.0710	0.0770 0.0650
16	0.0598	0.0658 0.0538	0.0598	0.0648 0.0548	0.0635	0.0695 0.0575
17	0.0538	0.0598 0.0478	0.0538	0.0578 0.0498	0.0575	0.0625 0.0525
18	0.0478	0.0528 0.0428	0.0478	0.0518 0.0438	0.0516	0.0566 0.0466
19	0.0418	0.0458 0.0378	0.0456	0.0506 0.0406		
20	0.0359	0.0389 0.0329	0.04	0.0436 0.0356		
21	0.0329	0.0359 0.0299	0.037	0.0406 0.0326		
22	0.0299	0.0329 0.0269	0.034	0.0376 0.0296		
23	0.0269	0.0299 0.0239	0.031	0.0346 0.0266		
24	0.0239	0.0269 0.0209	0.028	0.0316 0.0236		
25	0.0209	0.0239 0.0719	0.025	0.0287 0.0207		
26	0.0179	0.0199 0.0159	0.022	0.0247 0.0187		
27	0.0164	0.0184 0.0144	0.02	0.0232 0.0172		
28	0.0149	0.0169 0.0129	0.019	0.0217 0.0157		
29	0.0135	0.0155 0.0115	0.017	0.0202 0.0142		
30	0.012	0.013 0.011	0.016	0.0187 0.0127		

SPECIFICATIONS FOR WELDED AND SEAMLESS STEEL PIPE

ASTM – A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

This specification covers cold-formed welded carbon steel round, square, rectangular, or special shape structural tubing for welded, riveted, or bolted construction of bridges and buildings, and for general structural purposes. Four grades are produced each having a different chemistry and tensile requirement.

Structural Tubing is relatively low in cost, has a high strength-to-weight ratio and is easily welded, formed, punched and drilled. Its hollow shape protects and conceals wires, pipes, moving parts and it can be left exposed.

Grades B and C, being the most common stock available, can be subjected to most of the usual fabricating operations. Ductility is good. Bends well, flattens, cuts, punches, flares, flanges and welds easily.

ASTM – A1085 - Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS).

This specification covers cold-formed welded carbon steel hollow structural sections (HSS) for welded or bolted construction that are used in, although not limited to, buildings, bridges, towers, cranes, sign supports and poles, off-shore production and drilling platforms, roll-over protective structures (ROPS), falling object protective structures (FOPS), and amusement rides. This HSS is produced in welded sizes with a periphery of not more than 88 in. (2235 mm)

SPECIFICATIONS FOR WELDED AND SEAMLESS STEEL PIPE

as well as a specified nominal wall thickness of at least 0.148 in (3.8 mm) and not more than 0.875 in. (22 mm). The standard addresses areas such as ordering information, the steel-making process, HSS manufacture, heat analysis, product analysis, tensile requirements, flattening test, permissible variations in dimensions, number of tests, retests, test methods, rejection, certification, product marking, packing and loading, and government procurement.

ASTM – A252 - Standard Specification for Welded and Seamless Steel Pipe Piles.

This specification covers nominal wall cylindrical steel pipe piles in which the steel cylinder acts as a permanent load-carrying member or as a shell to form cast-in-place concrete piles. Ideally suited for application in buildings, retaining walls, and other structures needing solid, dependably, quality made steel piling pipe as its structure. Each welded pile shall be made by seamless, electric resistance welding, flash welding or fusion welding with longitudinal, helical-butt, or helical-lap seams. This specification also deals with material tensile requirements, minimum elongation values and common size and weights per unit length values. ASTM A252.

SPECIFICATIONS FOR WELDED AND SEAMLESS STEEL PIPE

**BLACK AND HOT DIPPED ZINC COATED
(GALVANIZED)**

FOR ORDINARY USES

These specifications cover black and hot dipped galvanized welded and seamless steel pipe. Pipe ordered under these specifications is nominal (average) wall and is intended for ordinary uses in steam, water, gas, and air lines, but is not intended for close coiling or bending, or high-temperature service. No mechanical tests are specified on pipe made to these specifications, except hydrostatic tests which shall be made at the mills, as these specifications are intended to cover pipe purchased mainly from jobber's stocks.

Note - When tension, flattening, or bend tests are required, pipe should be ordered in accordance with the Specifications for Welded and Seamless Steel Pipe (ASTM Designation: A53). In the case of galvanized pipe so ordered, the base metal shall be made and tested in accordance with the Specifications A53 and the pipe shall be galvanized and the coating tested in accordance with these specifications A 120. When specified, results of the mechanical tests on the base material shall be reported to the purchaser.

Note - When galvanized pipe, as covered by these specifications, is bent or otherwise fabricated to a degree which causes the zinc coating to stretch or compress beyond the limit of elasticity, some flaking of the coating may occur.

Specifications	Scope
A-120 SIZES 1/8"-12" Std, E.S. and XX	Covers BLACK and GALVANIZED WELDED SEAMLESS nominal (average) wall pipe for ordinary uses in steam, water, gas and air lines. Pipe to this specification not intended for close coiling, bending, or high-temperature service. Intended primarily to cover pipe purchased mainly from distributors' stocks.
A-53 SIZES 1/8"-24" Std, E.S. and XXX	Covers BLACK and GALVANIZED WELDED SEAMLESS nominal wall pipe for coiling, bending, flanging and other special purposes and is suitable for welding. BUTTWELDED pipe is not intended for flanging (roll back operation to form flange using pipe wall.) Purpose for which pipe is intended should be stated on order.
A-106 SIZES 1/8"-24" A.S.A. Schedules 10 through 160	Covers SEAMLESS nominal wall pipe (welded not permitted) for high-temperature service, suitable for bending, flanging, and similar forming operations. Sizes 1 1/2" and under may be either hot finished or cold drawn. Sizes 2" and larger shall be hot finished unless otherwise specified.
API 5-L SIZES 1/8"-24"	Covers WELDED and SEAMLESS pipe suitable for use in conveying gas, water, and oil in both the oil and natural gas industries.



Pipe Size Chart

Nominal Pipe Size Inches	Outside Diameter Inches	Standard Pipe Schedule	Inside Diameter Inches	Wall Thickness Inches	Weight per ft. lbs. Plain End
1/2	0.840	5	0.710	0.065	0.538
		10	0.674	0.083	0.671
		40 Std.	0.622	0.109	0.851
		80 Ex Hvy	0.546	0.147	1.088
		160	0.466	0.187	1.304
		XX Hvy	0.252	0.294	1.714
3/4	1.050	5	0.920	0.065	0.684
		10	0.844	0.083	0.857
		40 Std.	0.824	0.113	1.130
		80 Ex Hvy	0.742	0.154	1.474
		160	0.614	0.216	1.937
		XX Hvy	0.434	0.308	2.441
1	1.315	5	1.185	0.065	0.868
		10	1.097	0.109	1.404
		40 Std.	1.049	0.133	1.679
		80 Ex Hvy	0.957	0.179	2.172
		160	0.815	0.250	2.844
		XX Hvy	0.599	0.358	3.659
1 1/4	1.660	5	1.530	0.065	1.107
		10	1.442	0.109	1.806
		40 Std.	1.380	0.140	2.273
		80 Ex Hvy	1.278	0.191	2.997
		160	1.160	0.250	3.765
		XX Hvy	0.896	0.382	5.214
1 1/2	1.900	5	1.770	0.065	1.274
		10	1.682	0.109	2.085
		40 Std.	1.610	0.145	2.718
		80 Ex Hvy	1.500	0.200	3.630
		160	1.338	0.281	4.859
		XX Hvy	1.100	0.400	6.408
2	2.375	5	2.245	0.065	1.604
		10	2.157	0.109	2.638
		40 Std.	2.067	0.154	3.653
		80 Ex Hvy	1.939	0.218	5.022
		160	1.689	0.343	7.444
		XX Hvy	1.503	0.436	9.029
2 1/2	2.875	5	2.709	0.083	2.475
		10	2.635	0.120	3.531
		40 Std.	2.469	0.203	5.793
		80 Ex Hvy	2.323	0.276	7.661
		160	2.125	0.375	10.010
		XX Hvy	1.771	0.552	13.700
3	3.500	5	3.334	0.083	3.029
		10	3.260	0.120	4.332
		40 Std.	3.068	0.216	7.596
		80 Ex Hvy	2.900	0.300	10.250
		160	2.624	0.437	14.320
		XX Hvy	2.300	0.600	18.580
3 1/2	4.000	5	3.834	0.083	3.472
		10	3.760	0.120	4.973
		40 Std.	3.548	0.226	9.109
		80 Ex Hvy	3.364	0.318	12.510
4	4.500	5	4.334	0.083	3.915
		10	4.260	0.120	5.613
		40 Std.	4.026	0.237	10.790
		80 Ex Hvy	3.826	0.337	14.980
		120	3.626	0.437	19.010
		160	3.438	0.531	22.510
4 1/2	5.00	XX Hvy	3.152	0.674	27.540
		Std.	4.506	0.247	12.530
		Ex Hvy	4.290	0.355	17.610
		XX Hvy	3.580	0.710	17.610

Pipe Size Chart

Nominal Pipe Size Inches	Outside Diameter Inches	Standard Pipe Schedule	Inside Diameter Inches	Wall Thickness Inches	Weight per ft. lbs. Plain End
5	5.563	5	5.345	0.109	6.349
		10	5.295	0.134	7.770
		40 Std.	5.047	0.258	14.620
		80 Ex Hvy	4.813	0.375	20.780
		120	4.563	0.500	27.040
		160	4.313	0.625	32.960
		XX Hvy	4.063	0.750	38.550
6	6.625	5	6.407	0.109	7.585
		10	6.357	0.134	9.289
		40 Std.	6.065	0.280	18.970
		80 Ex Hvy	5.761	0.432	28.570
		120	5.491	0.562	36.390
		160	5.189	0.719	45.350
		XX Hvy	4.897	0.864	53.160
7	7.625	Std	7.023	0.301	23.570
		Ex Hvy	6.625	0.500	38.050
		XX Hvy	5.875	0.875	63.080
8	8.625	5	8.407	0.109	9.914
		10	8.329	0.148	13.400
		20	8.125	0.250	22.360
		40 Std.	7.981	0.322	28.550
		60	7.813	0.406	35.640
		80 Ex Hvy	7.625	0.500	43.390
		160	6.813	0.906	74.690
		XX Hvy	6.875	0.875	72.420
9	9.625	Std	8.941	0.342	33.900
		Ex Hvy	8.625	0.500	48.720
10	10.750	5	10.482	0.134	15.190
		10	10.420	0.165	18.700
		30	10.136	0.307	34.240
		40 Std.	10.020	0.365	40.480
		Ex Hvy	9.750	0.500	54.740
		140	8.750	1.000	104.130
		160	8.500	1.125	115.640
11	11.750	Std	11.000	0.375	45.550
		Ex Hvy	10.750	0.500	60.070
12	12.750	5	12.438	0.156	21.070
		20	12.250	0.250	33.410
		30	12.126	0.312	41.480
		Std	12.000	0.375	49.560
		40	11.938	0.406	53.530
		Ex Hvy	11.750	0.500	65.420
		*	11.500	0.625	81.010
		80	11.370	0.690	88.960
		*	11.250	0.750	96.210
		*	10.940	0.905	114.590
				160	10.126

*Non-scheduled wall

Pipe Size Chart

Nominal Pipe Size Inches	Outside Diameter Inches	Standard Pipe Schedule	Inside Diameter Inches	Wall Thickness Inches	Weight per ft. lbs. Plain End		
14	14.000	10	13.500	0.250	36.710		
		20	13.376	0.312	45.680		
		30 Std.	13.250	0.375	54.570		
		40	13.124	0.437	63.370		
		Ex Hvy	13.000	0.500	72.090		
		60	12.814	0.593	84.910		
		*	12.250	0.875	122.770		
		80	12.500	0.750	106.230		
		100	12.126	0.937	130.700		
		120	12.000	1.000	139.970		
		140	11.500	1.250	170.200		
		160	11.188	1.406	189.100		
		16	16.000	10	15.500	0.250	42.050
20	15.376			0.312	52.360		
30 Std.	15.250			0.375	62.580		
40 Ex Hvy	15.000			0.500	82.770		
60	14.688			0.656	107.500		
*	14.500			0.750	122.270		
80	14.250			0.875	141.480		
100	14.000			1.000	160.350		
120	13.564			1.218	192.300		
140	13.124			1.437	223.500		
160	12.814			1.593	245.100		
18	18.000			10	17.500	0.250	47.390
				20	17.376	0.312	59.030
		Std.	17.250	0.375	70.590		
		30	17.124	0.437	82.060		
		Ex Hvy	17.000	0.500	93.450		
		40	16.876	0.562	104.800		
		60	16.500	0.750	138.300		
		*	16.250	0.875	160.190		
		80	16.000	1.000	181.730		
		100	15.688	1.156	208.000		
		120	15.250	1.375	244.100		
		140	14.876	1.562	274.200		
		160	14.438	1.781	308.500		
20	20.000	10	19.500	0.250	52.730		
		20 Std.	19.250	0.375	78.600		
		30 Ex Hvy	19.000	0.500	104.100		
		40	18.814	0.593	122.900		
		*	18.500	0.750	154.340		
		60	18.376	0.812	166.400		
		*	18.250	0.875	178.890		
		80	18.000	1.000	203.110		
		100	17.438	1.281	256.100		
		120	17.000	1.500	296.400		
		140	16.500	1.750	341.100		
		160	16.064	1.968	379.000		

*Non-scheduled wall

Pipe Size Chart

Nominal Pipe Size Inches	Outside Diameter Inches	Standard Pipe Schedule	Inside Diameter Inches	Wall Thickness Inches	Weight per ft. lbs. Plain End
22	22.000	10	21.500	0.250	58.070
		20 Std.	21.250	0.375	86.610
		30 Ex Hvy	21.000	0.500	114.800
		60	20.250	0.875	197.400
		80	19.750	1.125	250.800
		100	19.250	1.375	302.900
		120	18.750	1.625	353.600
		140	18.250	1.875	403.000
		160	17.750	2.125	451.100
24	24.000	10	23.500	0.250	63.410
		20 Std.	23.250	0.375	94.710
		20 Ex Hvy	23.000	0.500	125.500
		30	23.000	0.500	125.610
		40	22.750	0.625	156.180
		*	22.500	0.750	186.410
		*	22.250	0.875	216.310
		60	22.000	1.000	245.870
		80	21.564	1.218	296.400
		100	20.938	1.531	367.400
		120	20.376	1.812	429.400
		140	19.876	2.062	483.100
28	28.00	E.H.	27.000	0.500	146.990
		*	26.750	0.625	182.900
		*	26.500	0.750	218.480
		*	26.250	0.875	253.720
		*	26.000	1.000	288.630

*Non-scheduled wall

Pipe Pile

Nominal O.D. in inches	O.D. in Inches	Nominal Wall Thickness	Weight #s/FT
8 5/8	8.625	0.250	22.382
		0.312	27.786
		0.375	33.072
		0.500	43.428
		0.625	53.401
9 5/8	9.625	0.250	25.055
		0.312	31.139
		0.375	37.081
		0.500	48.773
		0.625	60.131
10 3/4	10.750	0.250	28.061
		0.312	34.890
		0.365	40.520
		0.375	41.591
		0.500	54.786
		0.625	67.648
		0.690	74.200
12	12.000	0.250	31.373
		0.312	39.068
		0.375	46.559
		0.500	61.411
		0.625	75.929
12 3/4	12.750	0.250	33.406
		0.312	41.575
		0.375	49.608
		0.500	65.476
		0.625	81.010
		0.690	88.960
		0.750	96.210
		0.905	114.590
14	14.000	0.250	36.747
		0.312	45.753
		0.375	54.619
		0.500	72.158
		0.625	89.362
		0.750	106.230
		0.875	122.770
		1.000	138.970
16	16.000	0.250	42.092
		0.312	52.439
		0.375	62.637
		0.500	82.848
		0.625	102.724
		0.750	122.270
		0.875	141.480
		1.000	160.350
18	18.000	0.250	47.437
		0.312	59.188
		0.375	70.654
		0.500	93.538
		0.625	116.087
		0.750	138.300
		0.875	160.180
		1.000	181.730



Pipe Pile

Nominal O.D. in inches	O.D. in Inches	Nominal Wall Thickness	Weight #s/FT
20	20.000	0.250	52.782
		0.312	65.810
		0.375	78.672
		0.500	104.228
		0.625	129.449
		0.750	154.340
		0.875	178.890
		1.000	203.110
24	24.000	0.312	79.010
		0.375	94.710
		0.500	125.610
		0.625	156.170
		0.750	186.410
		0.875	216.310
		1.000	245.870
28	28.000	0.375	110.740
		0.500	146.990
		0.625	182.900
		0.750	218.480
		0.875	253.720
		1.000	288.630

SPECIFICATIONS FOR CARBON STEEL STRUCTURAL TUBING

ASTM – A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

This specification covers cold-formed welded carbon steel round, square, rectangular, or special shape structural tubing for welded, riveted, or bolted construction of bridges and buildings, and for general structural purposes. Four grades are produced each having a different chemistry and tensile requirement.

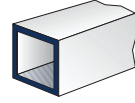
Structural Tubing is relatively low in cost, has a high strength-to-weight ratio and is easily welded, formed, punched and drilled. Its hollow shape protects and conceals wires, pipes, moving parts and it can be left exposed.

Grades B and C, being the most common stock available, can be subjected to most of the usual fabricating operations. Ductility is good. Bends well, flattens, cuts, punches, flares, flanges and welds easily.

ASTM – A1085 - Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS).

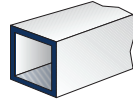
This specification covers cold-formed welded carbon steel hollow structural sections (HSS) for welded or bolted construction that are used in, although not limited to, buildings, bridges, towers, cranes, sign supports and poles, off-shore production and drilling platforms, roll-over protective structures (ROPS), falling object protective structures (FOPS), and amusement rides. This HSS is produced in welded sizes with a periphery of not more than 88 in. (2235 mm) as well as a specified nominal wall thickness of at least 0.148 in (3.8 mm) and not more than 0.875 in. (22 mm). The standard addresses areas such as ordering information, the steel-making process, HSS manufacture, heat analysis, product analysis, tensile requirements, flattening test, permissible variations in dimensions, number of tests, retests, test methods, rejection, certification, product marking, packing and loading, and government procurement.

Square Tubing



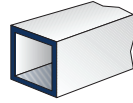
Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
1/2 x 1/2	16	0.065	0.385
	14	0.083	0.470
3/4 x 3/4	16	0.065	0.606
	14	0.083	0.753
	11	0.120	1.028
	1/8	0.125	1.030
1 x 1	16	0.065	0.827
	14	0.083	1.035
	1/8	0.125	1.436
1 1/4 x 1 1/4	16	0.065	1.048
	14	0.083	1.317
	10	0.135	1.9667
	1/8	0.125	1.844
	3/16	0.188	2.62
	1/4	0.250	4.11
1 1/2 x 1 1/2	16	0.065	1.269
	14	0.083	1.60
	1/8	0.125	2.252
	3/16	0.188	3.04
	1/4	0.250	4.11
1 3/4 x 1 3/4	16	0.065	1.49
	14	0.083	1.88
	1/8	0.125	2.66
	3/16	0.188	3.99
2 x 2	16	0.065	1.7103
	14	0.083	2.163
	1/8	0.125	3.067
	3/16	0.188	4.32
	1/4	0.250	5.41
	5/16	0.313	6.32
2 1/2 x 2 1/2	16	0.065	2.15
	14	0.083	2.73
	1/8	0.125	3.90
	3/16	0.188	5.59
	1/4	0.250	7.11
	5/16	0.313	8.43

Square Tubing



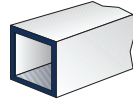
Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
3 x 3	16	0.065	2.59
	14	0.083	3.26
	1/8	0.125	4.75
	3/16	0.188	6.87
	1/4	0.250	8.81
	5/16	0.313	10.58
	3/8	0.375	12.17
3 1/2 x 3 1/2	14	0.083	3.80
	1/8	0.125	5.61
	3/16	0.188	8.15
	1/4	0.250	10.51
	5/16	0.313	12.70
	3/8	0.375	14.72
4 x 4	1/8	0.125	6.46
	3/16	0.188	9.42
	1/4	0.250	12.21
	5/16	0.313	14.83
	3/8	0.375	17.27
	1/2	0.500	21.63
4 1/2 x 4 1/2	3/16	0.188	10.70
	1/4	0.250	13.91
	5/16	0.313	16.96
	3/8	0.375	19.82
	1/2	0.500	25.03
5 x 5	3/16	0.188	11.97
	1/4	0.250	15.62
	5/16	0.313	19.08
	3/8	0.375	22.37
	1/2	0.500	28.43
	5/8	0.625	33.76
5 1/2 x 5 1/2	3/16	0.188	13.30
	1/4	0.250	17.32
	5/16	0.313	21.22
	3/8	0.375	24.93
	1/2	0.500	31.84
6 x 6	3/16	0.188	14.53
	1/4	0.250	19.02
	5/16	0.313	23.34
	3/8	0.375	27.48
	1/2	0.500	35.24
	5/8	0.625	42.30

Square Tubing

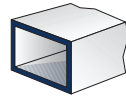


Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
7 x 7	3/16	0.188	17.08
	1/4	0.250	22.42
	5/16	0.313	27.59
	3/8	0.375	32.58
	1/2	0.500	42.05
	5/8	0.625	50.81
8 x 8	3/16	0.188	19.63
	1/4	0.250	25.82
	5/16	0.313	31.84
	3/8	0.375	37.69
	1/2	0.500	48.85
	5/8	0.625	59.32
9 x 9	1/4	0.250	29.23
	5/16	0.313	36.12
	3/8	0.375	42.79
	1/2	0.500	55.66
	5/8	0.625	67.82
10 x 10	3/16	0.188	24.73
	1/4	0.250	32.63
	5/16	0.313	40.35
	3/8	0.375	47.90
	1/2	0.500	62.46
	5/8	0.625	76.33
	3/4	0.750	89.50
12 x 12	3/16	0.188	29.84
	1/4	0.250	39.43
	5/16	0.313	48.86
	3/8	0.375	58.10
	1/2	0.500	76.07
	5/8	0.625	93.34
	3/4	0.750	109.91
14 x 14	5/16	0.313	57.36
	3/8	0.375	68.31
	1/2	0.500	89.68
	5/8	0.625	110.36
	3/4	0.750	130.33
	7/8	0.875	149.61
	1	1.000	168.18

Square Tubing

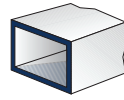


Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
16 x 16	5/16	0.313	65.87
	3/8	0.375	78.52
	1/2	0.500	103.30
	5/8	0.625	127.37
	3/4	0.750	150.75
	7/8	0.875	173.43
	1	1.000	195.40
18 x 18	3/8	0.375	88.73
	1/2	0.500	116.91
	5/8	0.625	144.39
	3/4	0.750	171.16
	7/8	0.875	197.24
	1	1.000	222.63
20 x 20	3/8	0.375	98.94
	1/2	0.500	130.52
	5/8	0.625	161.40
	3/4	0.750	191.58
	7/8	0.875	221.06
	1	1.000	249.85
22 x 22	1/2	0.500	144.13
	5/8	0.625	178.41
	3/4	0.750	212.00
	7/8	0.875	244.88
	1	1.000	277.07



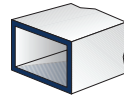
Rectangular Tubing

Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
1 1/2 x 1	16	0.065	1.05
	14	0.083	1.32
	1/8	0.125	1.84
2 x 1	16	0.065	1.27
	14	0.083	1.60
	1/8	0.125	2.25
	3/16	0.188	3.40
2 x 1 1/2	16	0.065	1.49
	14	0.083	1.88
	1/8	0.125	2.63
	3/16	0.188	3.68
2 1/2 x 1	16	0.065	1.49
	14	0.083	1.88
	1/8	0.125	2.66
2 1/2 x 1 1/2	16	0.065	1.69
	14	0.083	2.16
	1/8	0.125	3.06
	3/16	0.188	4.32
	1/4	0.250	5.41
3 x 1	16	0.065	1.71
	14	0.083	2.16
	1/8	0.125	3.06
	3/16	0.188	4.31
	1/4	0.250	5.41
3 x 1 1/2	16	0.065	1.93
	14	0.083	2.45
	1/8	0.125	3.48
	3/16	0.188	4.97
	1/4	0.250	6.26
3 x 2	16	0.065	2.15
	14	0.083	2.73
	1/8	0.125	3.90
	3/16	0.188	5.59
	1/4	0.250	7.11
	5/16	0.313	8.45
3 x 2 1/2	14	0.083	3.01
	1/8	0.125	4.29
	3/16	0.188	6.29
	1/4	0.250	7.96



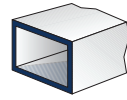
Rectangular Tubing

Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
3 1/2 x 1 1/2	16	0.065	2.15
	14	0.083	2.75
	1/8	0.125	3.90
	3/16	0.188	5.59
	1/4	0.250	7.11
3 1/2 x 2	14	0.083	3.01
	1/8	0.125	4.29
	3/16	0.188	6.29
3 1/2 x 2 1/2	16	0.065	2.59
	14	0.083	3.26
	1/8	0.125	4.75
	3/16	0.188	6.87
	1/4	0.250	8.81
	5/16	0.313	10.58
4 x 2	16	0.065	2.59
	14	0.083	3.29
	1/8	0.125	4.75
	3/16	0.188	6.87
	1/4	0.250	8.81
	5/16	0.313	10.58
	3/8	0.375	12.17
4 x 2 1/2	14	0.083	3.55
	1/8	0.125	5.18
	3/16	0.188	7.51
	1/4	0.250	9.66
4 x 3	14	0.083	3.80
	1/8	0.125	5.61
	3/16	0.188	8.15
	1/4	0.250	10.51
	5/16	0.313	12.70
	3/8	0.375	14.71
4 1/2 x 2	14	0.083	3.55
	1/8	0.125	5.11
	3/16	0.188	7.48
	1/4	0.250	9.65
5 x 2	14	0.083	3.80
	1/8	0.125	5.61
	3/16	0.188	8.15
	1/4	0.250	10.51
	5/16	0.313	12.70
	3/8	0.375	14.71



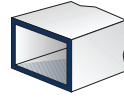
Rectangular Tubing

Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
5 x 2 1/2	1/8	0.125	6.03
	3/16	0.188	8.78
	1/4	0.250	11.36
5 x 3	1/8	1.250	6.46
	3/16	1.880	9.42
	1/4	0.250	12.21
	5/16	0.313	14.83
	3/8	0.357	17.27
	1/2	0.500	21.63
	5/8	0.625	25.26
5 x 4	1/8	0.125	7.31
	3/16	0.188	10.70
	1/4	0.250	13.91
	5/16	0.313	16.96
	3/8	0.375	19.82
	1/2	0.500	25.03
6 x 2	1/8	0.125	6.46
	3/16	0.188	9.42
	1/4	0.250	12.21
	5/16	0.313	14.83
	3/8	0.375	17.27
	1/2	0.500	21.63
	5/8	0.625	25.26
6 x 3	1/8	0.125	7.31
	3/16	0.188	10.70
	1/4	0.250	13.91
	5/16	0.313	16.96
	3/8	0.375	19.82
	1/2	0.500	25.03
6 x 4	1/8	0.125	8.16
	3/16	0.188	11.97
	1/4	0.250	15.62
	5/16	0.313	19.08
	3/8	0.375	22.37
	1/2	0.500	28.43
6 x 5	3/16	0.188	13.30
	1/4	0.250	17.32
	5/16	0.313	21.22
	3/8	0.375	24.93
	1/2	0.500	31.84



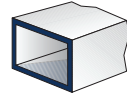
Rectangular Tubing

Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
7 x 3	3/16	0.188	11.97
	1/4	0.250	15.62
	5/16	0.313	19.08
	3/8	0.375	22.37
	1/2	0.500	28.43
7 x 4	3/16	0.188	13.30
	1/4	0.250	17.32
	5/16	0.313	21.22
	3/8	0.375	24.93
	1/2	0.500	31.84
7 x 5	3/16	0.188	14.53
	1/4	0.250	19.02
	5/16	0.313	23.34
	3/8	0.375	27.48
	1/2	0.500	35.24
	5/8	0.625	42.30
8 x 2	3/16	0.188	11.97
	1/4	0.250	15.62
	5/16	0.313	19.08
	3/8	0.375	22.37
8 x 3	3/16	0.188	13.30
	1/4	0.250	17.32
	5/16	0.313	21.22
	3/8	0.375	24.93
	1/2	0.500	31.81
8 x 4	3/16	0.188	14.53
	1/4	0.250	19.02
	5/16	0.313	23.34
	3/8	0.375	27.48
	1/2	0.500	35.24
	5/8	0.625	42.26
8 x 6	3/16	0.188	17.11
	1/4	0.250	22.42
	5/16	0.313	27.59
	3/8	0.375	32.58
	1/2	0.500	42.05
	5/8	0.625	50.81



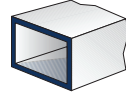
Rectangular Tubing

Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
9 x 3	1/4	0.250	19.02
	5/16	0.313	23.34
	3/8	0.375	27.48
	1/2	0.500	35.24
9 x 5	5/16	0.313	27.59
	3/8	0.375	32.58
	1/4	0.250	22.42
	1/2	0.500	42.05
	5/8	0.625	50.81
9 x 7	3/16	0.188	19.63
	1/4	0.250	25.82
	5/16	0.313	31.86
	3/8	0.375	37.69
	1/2	0.500	48.85
	5/8	0.625	59.32
10 x 2	3/16	0.188	14.55
	1/4	0.250	19.02
	5/16	0.313	23.34
	3/8	0.375	27.48
10 x 3	3/16	0.188	15.80
	1/4	0.250	20.72
	5/16	0.313	25.46
	3/8	0.375	30.03
10 x 4	3/16	0.188	17.08
	1/4	0.250	22.42
	5/16	0.313	27.59
	3/8	0.375	32.58
	1/2	0.500	42.05
	5/8	0.625	50.76
10 x 5	3/16	0.188	18.35
	1/4	0.250	24.12
	5/16	0.313	29.72
	3/8	0.375	35.13
	1/2	0.500	45.45
10 x 6	3/16	0.188	19.66
	1/4	0.250	25.82
	5/16	0.313	31.84
	3/8	0.375	37.69
	1/2	0.500	48.85
	5/8	0.625	59.32
10 x 8	3/16	0.188	22.22
	1/4	0.250	29.23
	5/16	0.313	36.10
	3/8	0.375	42.79
	1/2	0.500	55.66



Rectangular Tubing

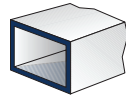
Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
12 x 2	3/16	0.188	17.11
	1/4	0.250	22.42
	5/16	0.313	27.59
	3/8	0.375	32.58
12 x 3	3/16	0.188	18.40
	1/4	0.250	24.10
	5/16	0.313	29.70
	3/8	0.375	35.13
12 x 4	3/16	0.188	19.66
	1/4	0.250	25.82
	5/16	0.313	31.84
	3/8	0.375	37.69
	1/2	0.500	48.85
	5/8	0.625	59.32
12 x 6	3/16	0.188	22.22
	1/4	0.250	29.23
	5/16	0.313	36.10
	3/8	0.375	42.79
	1/2	0.500	55.66
	5/8	0.625	67.82
12 x 8	3/16	0.188	24.77
	1/4	0.250	32.63
	5/16	0.313	40.35
	3/8	0.375	47.90
	1/2	0.500	62.46
	5/8	0.625	76.33
12 x 10	1/4	0.250	36.03
	5/16	0.313	44.70
	3/8	0.375	53.00
	1/2	0.500	69.27
14 x 4	3/16	0.188	22.22
	1/4	0.250	29.23
	5/16	0.313	36.10
	3/8	0.375	42.79
	1/2	0.500	55.66
	5/8	0.625	67.82
14 x 6	3/16	0.188	24.77
	1/4	0.250	32.63
	5/16	0.313	40.35
	3/8	0.375	47.90
	1/2	0.500	62.46
	5/8	0.625	76.33



Rectangular Tubing

Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
14 x 10	1/4	0.250	39.43
	5/16	0.313	48.86
	3/8	0.375	58.10
	1/2	0.500	76.07
	5/8	0.625	93.34
	3/4	0.750	109.91
	7/8	0.875	125.79
16 x 4	1/4	0.250	32.63
	5/16	0.313	40.35
	3/8	0.375	47.90
	1/2	0.500	62.46
	5/8	0.625	76.33
16 x 8	1/4	0.250	39.43
	5/16	0.313	48.86
	3/8	0.375	58.10
	1/2	0.500	76.07
	5/8	0.625	93.34
	3/4	0.750	109.91
	7/8	0.875	125.79
16 x 12	5/16	0.313	57.36
	3/8	0.375	68.31
	1/2	0.500	89.68
	5/8	0.625	110.36
	3/4	0.750	130.33
	7/8	0.875	149.61
	1	1.000	168.18
18 x 6	1/4	0.250	39.43
	5/16	0.313	48.86
	3/8	0.375	58.10
	1/2	0.500	76.07
	5/8	0.625	93.34
	3/4	0.750	109.91
20 x 4	1/4	0.250	39.43
	5/16	0.313	48.86
	3/8	0.375	58.10
	1/2	0.500	76.07
20 x 8	5/16	0.313	57.36
	3/8	0.375	68.31
	1/2	0.500	89.68
	5/8	0.625	110.36
	3/4	0.750	130.33
	7/8	0.875	149.61
	1	1.000	168.18





Rectangular Tubing

Size in Inches	Carbon Steel		Wt. Per Ft in lbs.
	Average Wall		
	Gauge	Decimal	
20 x 12	5/16	0.313	65.87
	3/8	0.375	78.52
	1/2	0.500	103.30
	5/8	0.625	127.38
	3/4	0.750	150.75
	7/8	0.875	173.43
	1	1.000	195.40
24 x 12	3/8	0.375	88.73
	1/2	0.500	116.91
	5/8	0.625	144.39
	3/4	0.750	171.16
	7/8	0.875	197.24
	1	1.000	222.63
30 x 10	1/2	0.500	130.52
	5/8	0.625	161.40
	3/4	0.750	191.58
	7/8	0.875	221.06
	1	1.000	249.85
34 x 10	5/8	0.625	178.41
	3/4	0.750	212.00
	7/8	0.875	244.88
	1	1.000	277.07

VALUE-ADDED SERVICES

Infra-Metals, with locations throughout the Eastern, Mid-Western, South-Western and Southern United States, is committed to meet the ever changing needs of our customers. Our first stage processing capabilities are structured to serve all facets of the steel industry, including structural, miscellaneous, bridge and marine fabrication as well as original equipment manufacturers.

Value-Added equipment and services are tailored to our customers' needs and requirements to help reduce overall costs through better planning, material utilization, "just in time delivery", and reduced handling.





Process Capabilities:	Description
Burning	CNC Burning Machines with tables up to 16' wide and 85' long Oxy fuel / plasma Plasma Beveling .25"-2" Thick, Plasma Arc marking CNC programming from DXF files, NC1 files, auto cad or in house CAD programmer
Drilling	5/16" diameter up to 3-1/4" diameter in up to 8" plate Tap, Counter Sink, Counter Bore & Milling
Saws	Automated Saws with cross Transfer Conveyor systems for Structural cutting up to 40" Wide Flange Beam Sections Miter Cutting up to 60 Degrees
Camber	Cold Camber thru W40 X 397
Press Brake	2200 ton press brake capable of bending up to 3/4" plate 60' long
Blast & Paint	Blast & Paint line capable of 1/4" thru 2" plate up to 12' wide by 40' long As well as channels angles and beams up to 17.75" high and 41" wide.
T Splitter	Rotary Beam Splitter with capacity of 36" sections with straightening capabilities
Ironworker	Ironworkers up to 165 ton capacity
Angle Roll	Roll angles up to 6" x 6" x 3/8"

In addition we subcontract additional processing including machining, galvanizing, sandblasting, painting, forming, shearing and rolling of plate and structural sections.

Infra-Metals Overview Video: <https://www.youtube.com/user/inframetals1>



A.I.S.C. HOT-ROLLED STRUCTURAL STEEL SHAPE DESIGNATIONS

New Designation	Type of Shape	Old Designation	
W 24 x 76	W shape	24 WF 76	
W 14 x 26		14 B 26	
S 24 x 100	S shape	24 I 100	
M 8 x 18.5	M shape	8 M 18.5	
M 10 x 9		10 JR 9.0	
M 8 x 34.3		8 x 8 M 34.3	
C 12 x 20.7	American Std. Channel	12 C 20.7	
MC 12 x 45	Miscellaneous Channel	12 x 4 C 45.0	
MC 12 x 10.6		12 JR C 10.6	
HP 14 x 73	HP shape	14 BP 73	
L 6 x 6 x ³ / ₄	Equal Leg Angle	L6 x 6 x ³ / ₄	
L 6 x 4 x ⁵ / ₈		Unequal Leg Angle	L 6 x 4 x ⁵ / ₈
WT 12 x 38	Structural Tee	ST 12 WF 38	
WT 7 x 13		Cut from W shape	ST 7 B 13
ST 12 x 50	Cut from S shape	ST 12 I 50	
MT 4 x 9.25	Cut from M shape	ST 4 M 9.25	
MT 5 x 4.5		ST 5 JR 4.5	
MT 4 x 17.15		ST 4 M 17.15	
PL ¹ / ₂ x 18	Plate	PL 18 x 1/2	
Bar 1 	Square Bar	Bar 1 	
Bar 1 ¹ / ₄ 	Round Bar	Bar 1 ¹ / ₄ 	
Bar 2 ¹ / ₂ x ¹ / ₂	Flat Bar	Bar 2 ¹ / ₂ x ¹ / ₂	
Pipe 4 Std.	Pipe	Pipe 4 Std.	
Pipe 4 X. Strong		Pipe 4 x-Strong	
Pipe 4 xx . Strong		Pipe 4 xx-Strong	
TS 4 x 4 x .375	Structural Tubing:		
		Square	Tube 4 x 4 x .375
TS 5 x 3 x .375		Rectangular	Tube 5 x 3 x .375
TS 3 OD x .250	Circular	Tube 3 OD x .250	

Approximate Minimum Mechanical Properties of Some Steels

Hot Rolled - Cold Drawn - Annealed
- Quenched & Tempered at 1000° F.

The following table represents an average of results obtained from a large number of tests and is offered only as a guide. In accordance with standard procedure, the specimens used were 1" diameter. Under no condition do we guarantee these statistics to be accurate.

The section size, finishing temperature and cooling rate during the rolling process influence the final mechanical properties of any steel in the As-Rolled condition. The amount of size reduction in cold drawing will affect the mechanical properties of Cold Drawn Bars. Turned and Polished as well as Turned, Ground & Polished Bars have approximately the same mechanical properties as the Hot Rolled Bars from which they were produced.

Approximate mechanical properties

(Tensile and Yield Expressed in Thousands of Pounds Per Square Inch)

AISI Grade	Con- dition	Machin- ability		Strength		Ductility		Hardness	
		1212 equals 100%	S.F. M.	T.S.	Y.P.	EL		Rock- well	
						2"	%		RA
1018	H.R.	52	86	58	32	25	50	116	68B
1018	C.D.	65	107	64	54	15	40	126	72B
M1020	H.R.	50	83	55	30	25	50	110	66B
1035	H.R.	65	107	70	30	20	35	155	83B
1035	C.D.	67	111	90	75	10	40	170	87B
1035	Q&T			95	70	19	55	191	92B
1042	H.R.	61	101	80	50	15	35	175	88B
1042	C.D.	63	104	90	75	12	30	185	91B
1042	Q&T			105	80	15	40	215	96B
M1044	H.R.	53	87	82	49	15	30	170	87B
1045	H.R.	56	92	85	50	15	30	175	88B
1045	C.D.	60	99	90	80	10	30	195	93B
1045	Q&T			110	80	16	40	230	98B
1095	H.R.A	45	74	90	55	15	40	190	90B
1095	Q&T			170	120	10	30	360	39C
1117	H.R.	85	140	60	35	20	45	115	68B
1117	C.D.	90	149	75	60	15	40	143	79B
11L17	H.R.	92	152	60	35	20	45	115	68B
11L17	C.D.	100	165	75	60	15	40	143	79B
1137	H.R.	70	116	85	50	18	35	179	89B
1137	C.D.	75	121	100	85	10	30	197	93B
1137	Q&T			110	85	15	40	250	24C
1141	H.R.	65	107	90	60	15	25	180	89B
1141	C.D.	70	116	100	85	8	20	195	93B
1141	Q&T			120	100	10	35	270	28C
1144	H.R.	75	124	95	60	15	30	200	94B
1144	C.D.	85	110	100	90	7	20	210	96B
1144	Q&T			130	110	15	45	286	30C
1212	C.D.	100	165	80	70	10	40	170	87B
1213	C.D.	150	248	80	70	10	40	170	87B
B1113	C.D.	150	248	80	70	10	40	170	87B
12L14	C.D.	170	281	60	55	12	40	150	81B
(Type A Leaded) 12L14	C.D.	215	355	60	55	12	40	150	81B
Selenium Treated 1215	C.D.	150	248	80	70	10	40	170	87B
Jalcase 100	C.D.	80	132	120	100	10	25	248	24C
Jalcase 100L (Leaded)	C.D.	98	162	120	100	10	25	248	24C
4142	H.R.A.	56	92	85	55	20	45	170	87B
4142	C.D.A.	65	107	100	85	12	40	196	93B
4142	Q & T			150	130	15	45	300	32C
4147-50	H.R.A.	52	86	90	65	20	50	185	92B
4147-50	Q&T			170	145	15	50	350	37C
4340	H.R.A.	45	74	100	70	15	10	220	20C
4340	Q & T			175	155	12	18	370	38C
8620	H.R.	60	99	80	55	18	15	160	84B
8620	Q&T300°			130	92	25	55	218	24C
8620	C.D.	63	104	90	70	15	10	185	90B

HARDNESS CONVERSION TABLE

(Approximate Value)

BRINELL		ROCKWELL				Tensile Strength	
Diameter 3000 Kg. Load 10 mm. Ball	Hard- ness No.	C	B	A	15-N	Shore	1000 Lb./Sq. In.
2.25	745	65.3	-	84.1	92.3	91	-
2.30	712	-	-	-	-	-	-
2.35	682	61.7	-	82.2	91.0	84	-
2.40	653	60.0	-	81.2	90.2	81	-
2.45	627	58.7	-	80.5	89.6	79	-
2.50	601	57.3	-	79.8	89.0	77	-
2.55	578	56.0	-	79.1	88.4	75	-
2.60	555	54.7	-	78.4	87.8	73	298
2.65	534	53.5	-	77.8	87.2	71	288
2.70	514	52.1	-	76.9	86.5	70	274
2.75	495	51.0	-	76.3	85.1	68	264
2.80	477	49.6	-	75.6	85.3	66	252
2.85	461	48.5	-	74.9	84.7	65	242
2.90	444	47.1	-	74.2	84.0	63	230
2.95	429	45.7	-	73.4	83.4	61	219
3.00	415	44.5	-	72.8	82.8	59	212
3.05	401	43.1	-	72.0	82.0	58	202
3.10	388	41.8	-	71.4	81.4	56	193
3.15	375	40.4	-	70.6	80.6	54	184
3.20	363	39.1	-	70.0	80.0	52	177
3.25	352	37.9	(110.0)	69.3	79.3	51	170
3.30	341	36.6	(109.0)	68.7	78.6	50	163
3.35	331	35.5	(108.5)	68.1	78.0	48	158
3.40	321	34.3	(108.0)	67.5	77.3	47	152
3.45	311	33.1	(107.5)	66.9	76.7	46	147
3.50	302	32.1	(107.0)	66.3	76.1	45	143
3.55	293	30.9	(106.0)	65.7	75.5	43	139
3.60	285	29.9	(105.5)	65.3	75.0	-	135
3.65	277	28.8	(104.5)	64.6	74.4	41	131
3.70	269	27.6	(104.0)	64.1	73.7	40	128
3.75	262	26.6	(103.0)	63.6	73.1	39	125
3.80	255	25.4	(102.0)	63.0	72.5	38	121
3.85	248	24.2	(101.0)	62.5	71.7	37	118
3.90	241	22.8	100.0	61.8	70.9	36	114
3.95	235	21.7	99.0	61.4	70.3	35	111
4.00	229	20.5	98.2	60.8	69.7	34	109
4.05	223	(18.8)	97.3	-	-	-	104
4.10	217	(17.5)	96.4	-	-	33	103
4.15	212	(16.0)	95.5	-	-	-	100
4.20	207	(15.2)	94.6	-	-	32	99
4.25	201	(13.8)	93.8	-	-	31	97
4.30	197	(12.7)	92.8	-	-	30	94
4.35	192	(11.5)	91.9	-	-	29	92
4.40	187	(10.0)	90.7	-	-	-	90
4.45	183	(9.0)	90.0	-	-	28	89
4.50	179	(8.0)	89.0	-	-	27	88
4.55	174	(6.4)	87.8	-	-	-	86
4.60	170	(5.4)	86.8	-	-	26	84
4.65	167	(4.4)	86.0	-	-	-	83
4.70	163	(3.3)	85.0	-	-	25	82
4.80	156	(0.9)	82.9	-	-	-	80
4.90	149	-	80.8	-	-	23	-
5.00	143	-	78.7	-	-	22	-
5.10	137	-	76.4	-	-	21	-
5.20	131	-	74.0	-	-	-	-
5.30	126	-	72.0	-	-	20	-
5.40	121	-	69.8	-	-	19	-
5.50	116	-	67.6	-	-	18	-
5.60	111	-	65.7	-	-	15	-

Hardness values are from SAE-ASM-ASTM Committees on Hardness Conversions as printed in ASTM E 140, Table 3. Tensile Strength values are from Federal Test Methods Standard No. 151A-method 241.2 dated Jan. 10, 1961.

METRIC

MEASUREMENT AND CONVERSION

LENGTH - Basic unit is meter (m)

Metric Unit	Meter	Inches	Feet	Yards	Miles
Millimeter (mm)	.001	-	-	-	-
Centimeter (cm)	.01	.3937	-	-	-
Decimeter (dm)	.1	3.937	.3281	.1094	-
Meter (m)	1	39.37	3.281	1.094	-
Decameter (dkm)	10	393.7	32.81	10.94	-
Hectometer (hm)	100	3937	328.1	109.4	-
Kilometer (km)	1000	-	3281	1094	.6214

To convert

In. to Millimeters-multiply by 25.4
 Millimeters to In.-multiply by .03937
 Feet to Meters-multiply by .3048
 Meters to Feet-multiply by 3.281

Yards to Meters-multiply by .9144
 Meters to Yards-multiply by 1.094
 Miles to Kilometer-multiply by 1.609
 Kilometers to Miles-multiply by .6214

AREA - Basic unit is centare (ca) which is 1 square meter

Metric Unit	Meter	Square Inches	Square Feet	Square Yards	Square Miles
Sq. Millimeter (sq. mm)	.000001	-	-	-	-
Sq. Centimeter (sq. cm)	.0001	1.550	-	-	-
Sq. Decimeter (sq. dm)	.01	15.50	.1076	-	-
Centare/Sq. Meter (ca/sq. m)	1	1550	10.76	1.196	-
Area (a)	100	-	1076	119.6	-
Hectare (he)	10,000	-	-	-	2.471
Sq. Kilometer (sq. km)	1,000,000	-	-	-	247.1

To convert

Sq. in. to Sq. cm-multiply by 6.452
 Sq. cm to Sq. In.-multiply by .1550
 Sq. Ft. to Sq. m.-multiply by .0929
 Sq. m. to Sq. Ft.-multiply by 10.76
 Sq. Yds. to Sq. m.-multiply by .8361
 Sq. M. to SQ. Yds.-multiply by 1.196

Acres to Hectares-multiply by .4047
 Hectares to Acres-multiply by 2.471
 Acres to Sq. Km-multiply by .004047
 Sq km. to Acres-multiply by 247.1
 Sq. Mile to Sq. Km-multiply by 2.590
 Sq km. to Sq. Miles-multiply by .3861

VOLUME - Basic unit is stere(s) which is 1 cubic meter

Metric Unit	Steres	Cubic Inch	Cubic Foot	Cubic Yards
Cu Millimeter (cu mm)	.000000001	-	-	-
Cu Centimeter (cu cm)	.000001	.06102	-	-
Cu Decimeter (cu dm)	.001	61.023	-	-
Decistere (ds)	.1	6102.3	3.531	1.308
Stere/Cu Meter (s/cu m)	1	61023	35.31	1.308
Decastere (dks)	10	-	353.1	13.08

To convert

Cu. In. to Cu mm-multiply by 1639
 Cu. mm to Cu. In.-multiply by .000061
 Cu. In. to Cu cm-multiply by 16.39
 Cu cm to Cu In.-multiply by .06102

Cu. Ft to Cu. m-multiply by .0283
 Cu. m to Cu. Ft.-multiply by 35.31
 Cu. Yds. to Cu. m-multiply by .7646
 Cu. m to Cu. Yds.-multiply by 1.308

WEIGHT - Basic unit is gram (g)

Metric Unit	Grams	Grains	Ounce	Pounds
Milligram (mg)	.001	.01543	-	-
Centigram (cg)	.01	.1543	-	-
Decigram (dg)	.1	1.543	-	-
Gram	1	15.43	.03527	-
Decagram (dkg)	10	154.3	.3527	-
Hectogram (hg)	100	1543	3.527	.22046
Kilogram (kg)	1000	-	35.27	2.2046
Quintal (q)	100,000	-	3527	220.46
Metric Ton (MT)	1,000,000	-	-	2204.6

To convert

Grains to Centigrams-multiply by 6.48
 Centigrams to Grains-multiply by .1543
 Ounces to grams-multiply by 28.35
 Tons (2000#) to Metric Tons-multiply by .9078
 Metric Tons to Tons (2000#)-multiply by 1.1023

Grams to Ounces-multiply by .03527
 Pounds to Kilograms-multiply by .4536
 Kilograms to Pounds-multiply by 2.2046



English To Metric Conversion Table

Inches Dec.	mm	Inches Dec.	mm	Inches Frac.	Dec.	mm	Inches Frac.	Dec.	mm
0.01	0.2540	0.51	12.9540	1/61	0.015625	0.3969	33/64	0.515625	13.0969
0.02	0.5080	0.52	13.2080						
0.03	0.7620	0.53	13.4620	1/32	0.031250	0.7938	17/32	0.531250	13.4938
0.04	1.0160	0.54	13.7160	3/64	0.046875	1.1906	35/64	0.546875	13.8906
0.05	1.2700	0.55	13.9700						
0.06	1.5240	0.56	14.2240	1/16	0.062500	1.5875	9/16	0.562500	14.2875
0.07	1.7780	0.57	14.4780	5/64	0.078125	1.9844	37/64	0.578125	14.6841
0.08	2.0320	0.58	14.7320						
0.09	2.2860	0.59	14.9860	3/32	0.093750	2.3812	19/32	0.593750	15.0812
0.10	2.5400	0.60	15.2400						
0.11	2.7940	0.61	15.4940	7/64	0.109375	2.7781	39/64	0.609375	15.4781
0.12	3.0480	0.62	15.7480	1/8	0.125000	3.1750	5/8	0.625000	15.8750
0.13	3.3020	0.63	16.0020						
0.14	3.5560	0.64	16.2560	9/64	0.140625	3.5719	41/64	0.640625	16.2719
0.15	3.8100	0.65	16.5100	5/32	0.156250	3.9688	21/32	0.656250	16.6688
0.16	4.0640	0.66	16.7640						
0.17	4.3180	0.67	17.0180	11/64	0.171875	4.3656	43/64	0.671875	17.0656
0.18	4.5720	0.68	17.2720	3/16	0.187500	4.7625	11/16	0.687500	17.4625
0.19	4.8260	0.69	17.5260						
0.20	5.0800	0.70	17.7800	13/64	0.203125	5.1594	45/64	0.703125	17.8594
0.21	5.3340	0.71	18.0340	7/32	0.218750	5.5562	23/32	0.718750	18.2562
0.22	5.5880	0.72	18.2880						
0.23	5.8420	0.73	18.5420	15/64	0.234375	5.9531	47/64	0.734375	18.6531
0.24	6.0960	0.74	18.7960						
0.25	6.3500	0.75	19.0500	1/4	0.250000	6.3500	3/4	0.750000	19.0500
0.26	6.6040	0.76	19.3040	17/64	0.265625	6.7469	49/64	0.765625	19.4469
0.27	6.8580	0.77	19.5580						
0.28	7.1120	0.78	19.8120	9/32	0.281250	7.1438	25/32	0.781250	19.8437
0.29	7.3660	0.79	20.0660						
0.30	7.6200	0.80	20.3200	19/64	0.296875	7.5406	51/64	0.796875	20.2406
0.31	7.8740	0.81	20.5740	5/16	0.312500	7.9375	13/16	0.812500	20.6375
0.32	7.8280	0.82	20.8280						
0.33	8.3820	0.83	21.0820	21/64	0.328125	8.3344	53/64	0.828125	21.0344
0.34	8.6360	0.84	21.3360	11/32	0.343750	8.7312	27/32	0.843750	21.4312
0.35	8.8900	0.85	21.5900						
0.36	9.1440	0.86	21.8440	23/64	0.359375	9.1281	55/64	0.859375	21.8281
0.37	9.3980	0.87	22.0980	3/8	0.375000	9.5250	7/8	0.875000	22.2250
0.38	9.6520	0.88	22.3520						
0.39	9.9060	0.89	22.6060	25/64	0.390625	9.9219	57/64	0.890625	22.6219
0.40	10.1600	0.90	22.8600						
0.41	10.4140	0.91	23.1140	13/32	0.406250	10.3188	29/32	0.906250	23.0188
0.42	10.6680	0.92	23.3680	27/64	0.421875	10.7156	59/64	0.921875	23.4156
0.43	10.9220	0.93	23.6220						
0.44	11.1760	0.94	23.8760	7/16	0.430000	11.1125	15/16	0.937500	23.8125
0.45	11.4300	0.95	24.1300	29/64	0.453125	11.5094	61/64	0.953128	24.2094
0.46	11.6840	0.96	24.3840						
0.47	11.9380	0.97	24.6380	15/32	0.468750	11.9062	31/32	0.968750	24.6062
0.48	12.1920	0.98	24.8920						
0.49	12.4460	0.99	25.1460	31/64	0.484375	12.3031	63/64	0.984375	25.0031
0.50	12.7000	1.00	25.4000	1/2	0.500000	12.7000	1	1.000000	25.4000

For converting decimal-inches in "thousandths", move decimal point in both columns to left.

Metric to English Conversion Table

mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches
0.01	.00039	0.41	.01614	0.81	.03189	21	.82677	61	2.40157
0.02	.00079	0.42	.01654	0.82	.03228	22	.86614	62	2.44094
0.03	.00118	0.43	.01693	0.83	.03268	23	.09551	63	2.48031
0.04	.00157	0.44	.01732	0.84	.03307	24	.94488	64	2.51968
0.05	.00197	0.45	.01772	0.85	.03346	25	.98425	65	2.55905
0.06	.00236	0.46	.01811	0.86	.03386	26	1.02362	66	2.59842
0.07	.00276	0.47	.01850	0.87	.03425	27	1.06299	67	2.63779
0.08	.00315	0.48	.01890	0.88	.03465	28	1.10236	68	2.67716
0.09	.00354	0.49	.01929	0.89	.03504	29	1.14173	69	2.71653
0.10	.00394	0.50	.01969	0.90	.03543	30	1.18110	70	2.75590
0.11	.00433	0.51	.02008	0.91	.03583	31	1.22047	71	2.79527
0.12	.00472	0.52	.02047	0.92	.03622	32	1.25984	72	2.83464
0.13	.00512	0.53	.02087	0.93	.03661	33	1.29921	73	2.87401
0.14	.00551	0.54	.02126	0.94	.03701	34	1.33858	74	2.91338
0.15	.00591	0.55	.02165	0.95	.03740	35	1.37795	75	2.95275
0.16	.00630	0.56	.02205	0.96	.03780	36	1.41732	76	2.99212
0.17	.00669	0.57	.02244	0.97	.03819	37	1.45669	77	3.03149
0.18	.00709	0.58	.02283	0.98	.03858	38	1.49606	78	3.07086
0.19	.00748	0.59	.02323	0.99	.03898	39	1.53543	79	3.11023
0.20	.00787	0.60	.02362	1.00	.03937	40	1.57480	80	3.14960
0.21	.00827	0.61	.02402	1	.03937	41	1.61417	81	3.18897
0.22	.00866	0.62	.02441	2	.07874	42	1.65354	82	3.22834
0.23	.00906	0.63	.02480	3	.11811	43	1.69291	83	3.26771
0.24	.00945	0.64	.02520	4	.15748	44	1.73228	84	3.30708
0.25	.00984	0.65	.02559	5	.19685	45	1.77165	85	3.34645
0.26	.01024	0.66	.02598	6	.23622	46	1.81102	86	3.38582
0.27	.01063	0.67	.02638	7	.27559	47	1.85039	87	3.42519
0.28	.01102	0.68	.02677	8	.31496	48	1.88976	88	3.46456
0.29	.01142	0.69	.02717	9	.35433	49	1.92913	89	3.50393
0.30	.01181	0.70	.02756	10	.39370	50	1.96850	90	3.54330
0.31	.01220	0.71	.02795	11	.43307	51	2.00787	91	3.58267
0.32	.01260	0.72	.02835	12	.47244	52	2.04724	92	3.62204
0.33	.01299	0.73	.02874	13	.51181	53	2.08661	93	3.66141
0.34	.01339	0.74	.02913	14	.55118	54	2.12598	94	3.70078
0.35	.01378	0.75	.02953	15	.59055	55	2.16535	95	3.74015
0.36	.01417	0.76	.02992	16	.62992	56	2.20472	96	3.77952
0.37	.01457	0.77	.03032	17	.66929	57	2.24409	97	3.81889
0.38	.01496	0.78	.03071	18	.70866	58	2.28346	98	3.85826
0.39	.01535	0.79	.03110	19	.74803	59	2.32283	99	3.89763
0.40	.01575	0.80	.03150	20	.78740	60	2.36220	100	3.93700

For converting millimeters in "thousandths" move decimal point in both columns to left.



Decimal Equivalents

1/64..... 015625	33/64 515625
1/32 03125	17/32 53125
3/64..... 046875	35/64 546875
1/16 0625	9/16 5625
5/64 078125	37/64 578125
3/32 09375	19/32 59375
7/64 109375	39/64 609375
1/8..... 125	5/8..... 625
9/64..... 140625	41/64 640625
5/32 15625	21/32 65625
11/64..... 171875	43/64 671875
3/16 1875	11/16 6875
13/64 203125	45/64..... 703125
7/3221875	23/32 71875
15/64 234375	47/64..... 734375
1/4..... 25	3/4..... 75
17/64 265625	49/64 765625
9/32 28125	25/32 78125
19/64 296875	51/64 796875
5/16 3125	13/16 8125
21/64..... 328125	53/64 828125
11/32 34375	27/32 84375
23/64..... 359375	55/64..... 859375
3/8..... 375	7/8..... 875
25/64..... 390625	57/64 890625
13/32 40625	29/32 90625
27/64..... 421875	59/64..... 921875
7/16 4375	15/16 9375
29/64..... 453125	61/64 953125
15/32 46875	31/32 96875
31/64..... 484375	63/64 984375
1/2..... 5	1..... 1.

CONVERTING INCHES INTO DECIMALS OF A FOOT

Inches	Decimal of a Ft.	Inches	Decimal of a Ft.	Inches	Decimal of a Ft.	
	1/16	.005208	1/16	.38542	1/16	.671875
	1/8	.010416	1/8	.343750	1/8	.677083
	3/16	.015625	3/16	.348958	3/16	.682292
	1/4	.020833	1/4	.354166	1/4	.687500
	5/16	.026042	5/16	.359375	5/16	.692708
	3/8	.031250	3/8	.364583	3/8	.697916
	7/16	.036458	7/16	.369792	7/16	.703125
	1/2	.041666	1/2	.375000	1/2	.708333
0"	9/16	.046875	9/16	.380208	9/16	.713542
	5/8	.052083	5/8	.385416	5/8	.718750
	11/16	.057292	11/16	.390625	11/16	.723958
	3/4	.062500	3/4	.395833	3/4	.729166
	13/16	.067708	13/16	.401042	13/16	.734375
	7/8	.072916	7/8	.406250	7/8	.739583
	15/16	.078125	15/16	.411458	15/16	.744792
	1/16	.088542	1/16	.421875	1/16	.755208
	1/8	.093750	1/8	.427083	1/8	.760416
	3/16	.098958	3/16	.432292	3/16	.765625
	1/4	.104166	1/4	.437500	1/4	.770833
	5/16	.109375	5/16	.442708	5/16	.776042
	3/8	.114583	3/8	.447916	3/8	.781250
	7/16	.119792	7/16	.453125	7/16	.786458
1"	1/2	.125000	1/2	.458333	1/2	.791666
.083333	9/16	.130208	9/16	.463542	9/16	.796875
	5/8	.135416	5/8	.468750	5/8	.802083
	11/16	.140625	11/16	.473958	11/16	.807292
	3/4	.145833	3/4	.479166	3/4	.812500
	13/16	.151042	13/16	.484375	13/16	.817708
	7/8	.156250	7/8	.489583	7/8	.822916
	15/16	.161458	15/16	.494792	15/16	.828125
	1/16	.171875	1/16	.505208	1/16	.838542
	1/8	.177083	1/8	.510416	1/8	.843750
	3/16	.182292	3/16	.515625	3/16	.848958
	1/4	.187500	1/4	.520833	1/4	.854166
	5/16	.192708	5/16	.526042	5/16	.859375
	3/8	.197916	3/8	.531250	3/8	.864583
	7/16	.203125	7/16	.536458	7/16	.869792
2"	1/2	.208333	1/2	.541666	1/2	.875000
.166666	9/16	.213542	9/16	.546875	9/16	.880208
	5/8	.218750	5/8	.552083	5/8	.885416
	11/16	.223958	11/16	.557292	11/16	.890625
	3/4	.229166	3/4	.562500	3/4	.895833
	13/16	.234375	13/16	.567708	13/16	.901042
	7/8	.239583	7/8	.572916	7/8	.906250
	15/16	.244792	15/16	.578125	15/16	.911458
	1/16	.255208	1/16	.588542	1/16	.921875
	1/8	.260416	1/8	.593750	1/8	.927083
	3/16	.265625	3/16	.598958	3/16	.932292
	1/4	.270833	1/4	.604166	1/4	.937500
	5/16	.276042	5/16	.609375	5/16	.942708
	3/8	.281250	3/8	.614583	3/8	.947916
	7/16	.286458	7/16	.619792	7/16	.953125
3"	1/2	.291666	1/2	.625000	1/2	.958333
.250	9/16	.296875	9/16	.630208	9/16	.963542
	5/8	.302083	5/8	.635416	5/8	.968750
	11/16	.307292	11/16	.640625	11/16	.973958
	3/4	.312500	3/4	.645833	3/4	.979166
	13/16	.317708	13/16	.651042	13/16	.984375
	7/8	.322916	7/8	.656250	7/8	.989583
	15/16	.328125	15/16	.661458	15/16	.994792



USEFUL DATA

To find circumference of a circle, multiply diameter by 3.1416.

To find diameter of a circle, multiply circumference by .31831.

To find area of a circle, multiply square of diameter by .7854.

Area of a rectangle = length multiplied by breadth. Doubling the diameter of a circle increases its area four times.

To find area of a triangle, multiply base by 1/2 perpendicular height.

Area of ellipse = product of both diameters times .7854.

Area of parallelogram = base times altitude.

To find side of an inscribed square, multiply diameter by 0.7071 or multiply circumference by 0.2251 or divide circumference by 4.4428.

Side of inscribed cube = radius of sphere times 1.1547.

To find side of an equal square, multiply diameter by .8862 Square. A side multiplied by 1.4142 equals diameter of its circumscribing circle.

A side multiplied by 4.443 equals **circumference of its circumscribing circle**.

A side multiplied by 1.128 equals **diameter of an equal circle**.

A side multiplied by 3.547 equals **circumference of an equal circle**.

To find cubic inches in a ball, multiply cube of diameter by .5236.

To find cubic contents of a cone, multiply area of base by 1/3 the altitude.

Surface of frustum of cone or pyramid = sum of circumference of both ends times 1/2 slant height plus area of both ends.

Contents of frustum of cone or pyramid = multiply area of two ends and get square root. Add the 2 areas and multiply 1/3 altitude.

Doubling the diameter of a pipe increases its capacity four times.

A gallon of water (U.S. standard) weighs 8-1/3 lbs. and contains 231 cubic inches.









A cubic foot of water contains 7-1/2 gallons, 1728 cubic inches, and weighs 62 1/2 lbs.

To find the **pressure in pounds per square inch of a column of water**, multiply the height of the column in feet by .434.

To find capacity of tanks any size, given dimensions of a cylinder in inches, to find its capacity in U.S. gallons: square the diameter, multiply by the length and by .0034.

Weight Formulas

Steel weights are based on 2836 lbs. per cubic inch, aluminum on .0979 lbs. per cubic inch (If 100 alloy). Use conversion factors to convert steel weights to other metals.

Lbs. Per Lineal Foot	Conversion Factors	
	Multiply Steel Weight by	Density Lbs./In. ³
ROUNDS Steel: $2.6729 \times D^2$  Aluminum: $.924 \times D^2$ D = Size, Inches	Aluminum 1100 .3462 .098 2011 .3604 .102 2014 .3568 .101 2017 .3568 .101 2024 .3533 .100 3003 .3498 .099 5005 .3462 .098 5052 .3427 .097 5056 .3356 .095 5083 .3392 .096 5086 .3392 .096 6061 .3462 .098 6063 .3462 .098 7075 .3568 .101 7178 .3604 .102	
SQUARES Steel: $3.4032 \times D^2$  Aluminum: $1.18 \times D^2$ D = Size, Inches	3003 .3498 .099 5005 .3462 .098 5052 .3427 .097 5056 .3356 .095 5083 .3392 .096 5086 .3392 .096 6061 .3462 .098 6063 .3462 .098 7075 .3568 .101 7178 .3604 .102	
HEXAGONS Steel: $2.9473 \times D^2$  Aluminum: $1.02 \times D^2$ D = Size, Inches	3003 .3498 .099 5005 .3462 .098 5052 .3427 .097 5056 .3356 .095 5083 .3392 .096 5086 .3392 .096 6061 .3462 .098 6063 .3462 .098 7075 .3568 .101 7178 .3604 .102	
OCTAGONS Steel: $2.8193 \times D^2$  Aluminum: $.974 \times D^2$ D = Size, Inches	3003 .3498 .099 5005 .3462 .098 5052 .3427 .097 5056 .3356 .095 5083 .3392 .096 5086 .3392 .096 6061 .3462 .098 6063 .3462 .098 7075 .3568 .101 7178 .3604 .102	
FLATS Steel: $3.4032 \times T \times W$  Aluminum: $1.18 \times T \times W$ T = Thickness, In. W = Width, Inches	3003 .3498 .099 5005 .3462 .098 5052 .3427 .097 5056 .3356 .095 5083 .3392 .096 5086 .3392 .096 6061 .3462 .098 6063 .3462 .098 7075 .3568 .101 7178 .3604 .102	
TUBING Steel: $10.68 \times (OD - W) \times W$  Aluminum: $3.70 \times (OD - W) \times W$ OD = OD, Inches W = Wall, Inches	3003 .3498 .099 5005 .3462 .098 5052 .3427 .097 5056 .3356 .095 5083 .3392 .096 5086 .3392 .096 6061 .3462 .098 6063 .3462 .098 7075 .3568 .101 7178 .3604 .102	
CIRCLES Steel: $.22274 \times T \times D^2$  Aluminum: $.077 \times T \times D^2$ D = Diameter, In. T = Thickness, In.	3003 .3498 .099 5005 .3462 .098 5052 .3427 .097 5056 .3356 .095 5083 .3392 .096 5086 .3392 .096 6061 .3462 .098 6063 .3462 .098 7075 .3568 .101 7178 .3604 .102	
RINGS Steel: $.22274 \times T \times (OD^2 - ID^2)$  Aluminum: $.077 \times T \times (OD^2 - ID^2)$ OD = OD, Inches ID = ID, Inches T = Thickness, In.	3003 .3498 .099 5005 .3462 .098 5052 .3427 .097 5056 .3356 .095 5083 .3392 .096 5086 .3392 .096 6061 .3462 .098 6063 .3462 .098 7075 .3568 .101 7178 .3604 .102	
	Stainless 300 Series 1.010 .286 400 Series 1.000 .283 Nickel 200 1.132 .321 201 1.132 .321 400 1.125 .319 600 1.072 .304 625 1.075 .305 718 1.047 .297 X750 1.051 .298 800 1.012 .287 800H 1.012 .287 825 1.037 .294 904L 1.026 .291 Hastelloy® C-276 1.132 .321 B-2 1.174 .333 C-4 1.100 .312 G-3 1.058 .300 Magnesium .229 .065 Beryllium .236 .067 Titanium .575 .163 Zirconium .812 .230 Cast Iron .911 .258 Zinc .911 .258 Brass 1.084 .307 Columbium 1.095 .310 Copper 1.144 .324 Molybdenum 1.303 .369 Silver 1.339 .379 Lead 1.448 .410 Tantalum 2.120 .600 Tungsten 2.462 .697 Gold 2.466 .698	

Circumference and Area of Circles

Dia. in Inches	Circum. in Ft.	In.	Area Sq. Ft.	Dia. in Inches	Circum. in Ft.	In.	Area Sq. Ft.
1/16		13/16		6	1	6 ^{13/16}	.1964
1/8		25/64		6 ^{1/8}	1	7 ^{3/16}	.2046
3/16		19/32		6 ^{1/4}	1	7 ^{5/8}	.2131
1/4		25/32		6 ^{3/8}	1	8	.2217
5/16		63/64		6 ^{1/2}	1	8 ^{3/8}	.2304
3/8		11/64		6 ^{5/8}	1	8 ^{3/4}	.2394
7/16		1 ^{3/8}		6 ^{3/4}	1	9 ^{3/16}	.2485
				6 ^{7/8}	1	9 ^{9/16}	.2578
1/2		1 ^{37/64}		7	1	9 ^{15/16}	.2673
9/16		1 ^{49/64}		7 ^{1/8}	1	10 ^{3/8}	.2763
5/8		1 ^{15/16}		7 ^{1/4}	1	10 ^{3/4}	.2867
11/16		2 ^{5/32}		7 ^{3/8}	1	11 ^{1/8}	.2966
3/4		2 ^{23/64}		7 ^{1/2}	1	11 ^{1/2}	.3068
13/16		2 ^{35/64}		7 ^{5/8}	1	11 ^{15/16}	.3164
7/8		2 ^{3/4}		7 ^{3/4}	2	5 ^{5/16}	.3275
15/16		2 ^{15/16}		7 ^{7/8}	2	11 ^{1/16}	.3382
1		3 ^{9/64}	.0055	8	2	1 ^{1/8}	.3491
1 ^{1/8}		3 ^{1/2}	.0069	8 ^{1/8}	2	1 ^{1/2}	.3601
1 ^{1/4}		3 ^{7/8}	.0085	8 ^{1/4}	2	1 ^{7/8}	.3712
1 ^{3/8}		4 ^{5/16}	.0103	8 ^{3/8}	2	2 ^{1/4}	.3826
1 ^{1/2}		4 ^{11/16}	.0123	8 ^{1/2}	2	2 ^{11/16}	.3941
1 ^{5/8}		5 ^{1/16}	.0144	8 ^{5/8}	2	3 ^{1/8}	.4057
1 ^{3/4}		5 ^{7/16}	.0167	8 ^{3/4}	2	3 ^{7/16}	.4176
1 ^{7/8}		5 ^{7/8}	.0192	8 ^{7/8}	2	3 ^{7/8}	.4296
2		6 ^{1/4}	.0218	9	2	4 ^{1/4}	.4418
2 ^{1/8}		6 ^{5/8}	.0246	9 ^{1/8}	2	4 ^{5/8}	.4541
2 ^{1/4}		7	.0276	9 ^{1/4}	2	5	.4667
2 ^{3/8}		7 ^{7/16}	.0308	9 ^{3/8}	2	5 ^{7/16}	.4794
2 ^{1/2}		7 ^{13/16}	.0341	9 ^{1/2}	2	5 ^{13/16}	.4922
2 ^{5/8}		8 ^{3/16}	.0376	9 ^{5/8}	2	6 ^{3/16}	.5053
2 ^{3/4}		8 ^{5/8}	.0412	9 ^{3/4}	2	5 ^{5/8}	.5185
2 ^{7/8}		9	.0451	9 ^{7/8}	2	7	.5319
3		9 ^{3/8}	.0491	10	2	7 ^{3/8}	.5454
3 ^{1/8}		9 ^{13/16}	.0533	10 ^{1/8}	2	7 ^{3/4}	.5591
3 ^{1/4}		10 ^{3/16}	.0576	10 ^{1/4}	2	8 ^{3/16}	.5730
3 ^{3/8}		10 ^{3/16}	.0621	10 ^{3/8}	2	8 ^{9/16}	.5871
3 ^{1/2}		10 ^{15/16}	.0668	10 ^{1/2}	2	8 ^{7/16}	.6013
3 ^{5/8}		11 ^{3/8}	.0717	10 ^{5/8}	2	9 ^{3/8}	.6157
3 ^{3/4}		11 ^{3/4}	.0767	10 ^{3/4}	2	9 ^{3/4}	.6303
3 ^{7/8}	1	1 ^{1/8}	.0819	10 ^{7/8}	2	10 ^{1/8}	.6450
4	1	9/16	.0873	11	2	10 ^{1/2}	.6600
4 ^{1/8}	1	15/16	.0928	11 ^{1/8}	2	10 ^{15/16}	.6750
4 ^{1/4}	1	1 ^{5/16}	.0985	11 ^{1/4}	2	11 ^{5/16}	.6902
4 ^{3/8}	1	1 ^{11/16}	.1044	11 ^{3/8}	2	11 ^{11/16}	.7057
4 ^{1/2}	1	2 ^{1/8}	.1104	11 ^{1/2}	3	1 ^{1/8}	.7213
4 ^{5/8}	1	2 ^{1/2}	.1104	11 ^{5/8}	3	1 ^{1/2}	.7371
4 ^{3/4}	1	2 ^{7/8}	.1167	11 ^{3/4}	3	7/8	.7530
4 ^{7/8}	1	3 ^{5/16}	.1230	11 ^{7/8}	3	1 ^{1/4}	.7690
		3 ^{11/16}	.1297				
5	1	4 ^{1/16}	.1364	12	3	1 ^{11/16}	.7354
5 ^{1/8}	1	4 ^{7/16}	.1433	12 ^{1/8}	3	2 ^{1/16}	.8019
5 ^{1/4}	1	4 ^{7/8}	.1503	12 ^{1/4}	3	2 ^{7/16}	.8185
5 ^{3/8}	1	5 ^{1/4}	.1575	12 ^{3/8}	3	2 ^{7/8}	.8353
5 ^{1/2}	1	5 ^{5/8}	.1650	12 ^{1/2}	3	3 ^{1/4}	.8523
5 ^{5/8}	1	6	.1726	12 ^{5/8}	3	3 ^{5/8}	.8694
5 ^{3/4}	1	6 ^{7/16}	.1803	12 ^{3/4}	3	4	.8867
5 ^{7/8}	1		.1883	12 ^{7/8}	3	4 ^{7/16}	.9041

Circumference and Area of Circles

Dia. in Inches	Circum. in Ft.	In.	Area Sq. Ft.	Dia. in Inches	Circum. in Ft.	In.	Area Sq. Ft.
1/16		13/16		6	1	6 ^{13/16}	.1964
1/8		25/64		6 ^{1/8}	1	7 ^{3/16}	.2046
3/16		19/32		6 ^{1/4}	1	7 ^{5/8}	.2131
1/4		25/32		6 ^{3/8}	1	8	.2217
5/16		63/64		6 ^{1/2}	1	8 ^{3/8}	.2304
3/8		11/64		6 ^{5/8}	1	8 ^{3/4}	.2394
7/16		1 ^{3/8}		6 ^{3/4}	1	9 ^{3/16}	.2485
				6 ^{7/8}	1	9 ^{9/16}	.2578
1/2		1 ^{37/64}		7	1	9 ^{15/16}	.2673
9/16		1 ^{49/64}		7 ^{1/8}	1	10 ^{3/8}	.2763
5/8		1 ^{5/16}		7 ^{1/4}	1	10 ^{3/4}	.2867
11/16		2 ^{5/32}		7 ^{3/8}	1	11 ^{1/8}	.2966
3/4		2 ^{23/64}		7 ^{1/2}	1	11 ^{1/2}	.3068
13/16		2 ^{35/64}		7 ^{5/8}	1	11 ^{15/16}	.3164
7/8		2 ^{3/4}		7 ^{3/4}	2	5 ^{1/6}	.3275
15/16		2 ^{15/16}		7 ^{7/8}	2	11/16	.3382
1		3 ^{9/64}	.0055	8	2	1 ^{1/8}	.3491
1 ^{1/8}		3 ^{1/2}	.0069	8 ^{1/8}	2	1 ^{1/2}	.3601
1 ^{1/4}		3 ^{7/8}	.0085	8 ^{1/4}	2	1 ^{7/8}	.3712
1 ^{3/8}		4 ^{5/16}	.0103	8 ^{3/8}	2	2 ^{1/4}	.3826
1 ^{1/2}		4 ^{11/16}	.0123	8 ^{1/2}	2	2 ^{11/16}	.3941
1 ^{5/8}		5 ^{1/16}	.0144	8 ^{5/8}	2	3 ^{1/8}	.4057
1 ^{3/4}		5 ^{7/16}	.0167	8 ^{3/4}	2	3 ^{7/16}	.4176
1 ^{7/8}		5 ^{7/8}	.0192	8 ^{7/8}	2	3 ^{7/8}	.4296
2		6 ^{1/4}	.0218	9	2	4 ^{1/4}	.4418
2 ^{1/8}		6 ^{5/8}	.0246	9 ^{1/8}	2	4 ^{5/8}	.4541
2 ^{1/4}		7	.0276	9 ^{1/4}	2	5	.4667
2 ^{3/8}		7 ^{7/16}	.0308	9 ^{3/8}	2	5 ^{7/16}	.4794
2 ^{1/2}		7 ^{13/16}	.0341	9 ^{1/2}	2	5 ^{13/16}	.4922
2 ^{5/8}		8 ^{3/16}	.0376	9 ^{5/8}	2	6 ^{3/16}	.5053
2 ^{3/4}		8 ^{5/8}	.0412	9 ^{3/4}	2	5 ⁸	.5185
2 ^{7/8}		9	.0451	9 ^{7/8}	2	7	.5319
3		9 ^{3/8}	.0491	10	2	7 ^{3/8}	.5454
3 ^{1/8}		9 ^{13/16}	.0533	10 ^{1/8}	2	7 ^{3/4}	.5591
3 ^{1/4}		10 ^{3/16}	.0576	10 ^{1/4}	2	8 ^{3/16}	.5730
3 ^{3/8}		10 ^{9/16}	.0621	10 ^{3/8}	2	8 ^{9/16}	.5871
3 ^{1/2}		10 ^{15/16}	.0668	10 ^{1/2}	2	8 ^{7/16}	.6013
3 ^{5/8}		11 ^{3/8}	.0717	10 ^{5/8}	2	9 ^{3/8}	.6157
3 ^{3/4}		11 ^{3/4}	.0767	10 ^{3/4}	2	9 ^{3/4}	.6303
3 ^{7/8}	1	1 ^{1/8}	.0819	10 ^{7/8}	2	10 ^{1/8}	.6450
4		9/16		11	2	10 ^{1/2}	.6600
4 ^{1/8}	1	15/16	.0873	11 ^{1/8}	2	10 ^{5/16}	.6750
4 ^{1/4}	1	1 ^{5/16}	.0928	11 ^{1/4}	2	11 ^{5/16}	.6902
4 ^{3/8}	1	1 ^{11/16}	.0985	11 ^{3/8}	2	11 ^{11/16}	.7057
4 ^{1/2}	1	2 ^{1/8}	.1044	11 ^{1/2}	3	1 ^{1/8}	.7213
4 ^{5/8}	1	2 ^{1/2}	.1104	11 ^{5/8}	3	1/2	.7371
4 ^{3/4}	1	2 ^{7/8}	.1167	11 ^{3/4}	3	7/8	.7530
4 ^{7/8}	1	3 ^{5/16}	.1230	11 ^{7/8}	3	1 ^{1/4}	.7690
		3 ^{11/16}	.1297				
5	1	4 ^{1/16}	.1364	12	3	1 ^{11/16}	.7354
5 ^{1/8}	1	4 ^{7/16}	.1433	12 ^{1/8}	3	2 ^{1/16}	.8019
5 ^{1/4}	1	4 ^{7/8}	.1503	12 ^{1/4}	3	2 ^{7/16}	.8185
5 ^{3/8}	1	5 ^{1/4}	.1575	12 ^{3/8}	3	2 ^{7/8}	.8353
5 ^{1/2}	1	5 ^{5/8}	.1650	12 ^{1/2}	3	3 ^{1/4}	.8523
5 ^{5/8}	1	6	.1726	12 ^{5/8}	3	3 ^{5/8}	.8694
5 ^{3/4}	1	6 ^{7/16}	.1803	12 ^{3/4}	3	4	.8867
5 ^{7/8}	1		.1883	12 ^{7/8}	3	4 ^{7/16}	.9041

TANK VOLUME

U.S. GALLONS IN ROUND TANKS For One Foot In Depth

Dia. of Tank	No. U.S. Gals.	Cu. Ft. and Area in Sq. Ft.	Dia. of Tank	No. U.S. Gals.	Cu. Ft. and Area in Sq. Ft.
1 ft. 0 in.	5.87	.785	4 ft. 6 in.	118.97	15.90
1 1	6.89	.922	4 7	123.42	16.50
1 2	8.00	1.069	4 8	127.95	17.10
1 3	9.18	1.227	4 9	132.56	17.72
1 4	10.44	1.396	4 10	137.25	18.35
1 5	11.79	1.576	4 11	142.02	18.99
1 6	13.22	1.767	5 0	146.88	19.63
1 7	14.73	1.969	5 1	151.82	20.29
1 8	16.32	2.182	5 2	156.83	20.97
1 9	17.99	2.405	5 3	161.93	21.65
1 10	19.75	2.640	5 4	167.12	22.34
1 11	21.58	2.885	5 5	172.38	23.04
2 0	23.50	3.142	5 6	177.72	23.76
2 1	25.50	3.409	5 7	183.15	24.48
2 2	27.58	3.687	5 8	188.66	25.22
2 3	29.74	3.976	5 9	194.25	25.97
2 4	31.99	4.276	5 10	199.92	26.73
2 5	34.31	4.587	5 11	205.67	27.49
2 6	36.72	4.909	6 0	211.51	28.27
2 7	39.21	5.241	6 3	229.50	30.68
2 8	41.78	5.585	6 6	248.23	33.18
2 9	44.43	5.940	6 9	267.69	35.78
2 10	47.16	6.305	7 0	287.88	38.48
2 11	49.98	6.681	7 3	308.81	41.28
3 0	52.88	7.069	7 6	330.48	44.18
3 1	55.86	7.467	7 9	352.88	47.17
3 2	58.92	7.876	8 0	376.01	50.27
3 3	62.06	8.296	8 3	399.88	53.46
3 4	65.28	8.727	8 6	424.48	56.75
3 5	68.58	9.168	8 9	449.82	60.13
3 6	71.97	9.621	9 0	475.89	63.62
3 7	75.44	10.085	9 3	502.70	67.20
3 8	78.99	10.559*	9 6	530.24	70.88
3 9	82.62	11.045	9 9	558.51	74.66
3 10	86.33	11.541	10 0	587.52	78.54
3 11	90.13	12.048	10 3	617.26	82.52
4 0	94.00	12.566	10 6	647.74	86.59
4 1	97.96	13.095	10 9	678.95	90.76
4 2	102.00	13.635	11 0	710.90	95.03
4 3	106.12	14.186	11 3	743.58	99.40
4 4	110.32	14.748	11 6	776.99	103.87
4 5	114.61	15.321	11 9	811.14	108.43

(continued)

31^{1/2} Gallons equal 1 Barrel

To find the capacity of tanks greater than the largest given in the table, took in the table for a Tank of one-half of the given size and multiply its capacity by 4, or one of one-third its size and multiply its capacity by 9, etc.

TANK VOLUME

U.S. GALLONS IN ROUND TANKS For One Foot In Depth

Dia. of Tank	No. U.S. Gals.	Cu. Ft. and Area in Sq. Ft.	Dia. of Tank	No. U.S. Gals.	Cu. Ft. and Area in Sq. Ft.
<i>(continued)</i>					
12 ft. 0 in.	846.03	113.10	22 ft. 6 in.	2974.30	397.61
12 3	881.65	117.86	22 9	3040.80	406.49
12 6	918.00	122.72	23 0	3108.00	415.48
12 9	955.09	127.68	23 3	3175.90	424.56
13 0	201.06	132.73	23 6	3244.60	433.74
13 3	1031.50	137.89	23 9	3314.00	443.01
13 6	1070.80	143.14	24 0	3384.10	452.39
13 9	1110.80	148.49	24 3	3455.00	461.86
14 0	1151.50	153.94	24 6	3526.60	471.44
14 3	1193.00	159.48	24 9	3598.90	481.11
14 6	1235.30	165.13	25 0	3672.00	490.87
14 9	1278.20	170.87	25 3	3745.80	500.74
15 0	1321.90	176.71	25 6	3820.30	510.71
15 3	1366.40	182.65	25 9	3895.60	520.77
15 6	1411.50	188.69	26 0	3971.60	530.93
15 9	1457.40	194.83	26 3	4048.40	541.19
16 0	1504.10	201.06	26 6	4125.90	551.55
16 3	1551.40	207.39	26 9	4204.10	562.00
16 6	1599.50	213.82	27 0	4283.00	572.56
16 9	1648.40	220.35	27 3	4362.70	583.21
17 0	1697.90	226.98	27 6	4443.10	593.96
17 3	1748.20	233.71	27 9	4524.30	604.81
17 6	1799.30	240.53	28 0	4606.20	615.75
17 9	1851.10	247.45	28 3	4688.80	626.80
18 0	1903.60	254.47	28 6	4772.10	637.94
18 3	1956.80	261.59	28 9	4856.20	649.18
18 6	2010.80	268.80	29 0	4941.00	660.52
18 9	2065.50	276.12	29 3	5026.60	671.96
19 0	2120.90	283.53	29 6	5112.90	683.49
19 3	2177.10	291.04	29 9	5199.90	695.13
19 6	2234.00	298.65	30 0	5287.70	706.86
19 9	2291.70	306.35	30 3	5376.20	718.69
20 0	2350.10	314.16	30 6	5465.40	730.62
20 3	2409.20	322.06	30 9	5555.40	742.64
20 6	2469.10	330.06	31 0	5646.10	754.77
20 9	2529.60	338.16	31 3	5737.50	766.99
21 0	2591.00	346.36	31 6	5829.70	779.31
21 3	2653.00	354.66	31 9	5922.60	791.73
21 6	2715.80	363.05	32 0	6016.20	804.25
21 9	2779.30	371.54	32 3	6110.60	816.86
22 0	2843.60	380.13	32 6	6205.70	829.58
22 3	2908.60	388.82	32 9	6301.50	842.39

31^{1/2} Gallons equal 1 Barrel

To find the capacity of tanks greater than the largest given in the table, look in the table for a Tank of one-half of the given size and multiply its capacity by 4, or one of one-third its size and multiply its capacity by 9, etc.

