Haskins Steel Co., Inc.

3613 E. Main Avenue
PO Box 3524
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REV. 10-15-15

Catalog creation by:
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Welcome to Haskins Steel

Haskins Steel Co., Inc. is pleased to offer this catalog as a reference book. There are sizes listed that may not always be readily available, but are included for information. If you have a question, please call.

We are proud of our reputation as an independent Metal Service Center that stands behind our commitments. We have the following in-house capabilities:

Shearing — Up to 1/2 inch thick, up to 12 feet long
Sawing — Vertical and horizontal band saws, straight and miter cutting
Burning — High-definition plasma and oxygen burning
Forming — 500 ton up to 20 foot in length
Rolling — Up to 3/4 inch x 10 foot
Punching — 185 ton capacity
Delivery

Haskins Steel has a complete drafting department available to make drawings from your sketch or template. We have all current AutoCad and SolidWorks format types. Simply send or email your drawings to your Sales Representative.

Please call us whenever you need standard size shapes, specialty items, forming, shearing, flame cutting or sawing. If we can't do it or don't have it, we'd like to help you find out who has it or can do it.

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Haskins Steel Co., Inc. is in conformance with:
ISO 9001:2008
CERTIFIED
This registration is in respect to the following scope of supply:
Shearing, Burning, Forming, Punching, Sawing and Distribution of Ferrous and Nonferrous Metals

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GUIDE TO SELECTION
ROUND MECHANICAL TUBING – CARBON STEEL

COLD DRAWN SEAMLESS is made from 1026 (UNS G10260) steel in sizes through 9-1/2" OD, from .28 max carbon steel in sizes over 9-1/2" OD. Produced to OD and ID dimensions, except as noted in size listing. Furnished as "as drawn" condition. Cold drawn seamless offers good surface quality and increased mechanical properties over hot finished seamless tubing. Meets ASTM A519. Stocked in lengths of 17 t0 24 feet.

HOT FINSIHED SEAMLESS is made from 1026 (UNS G10260) steel. It is lower in cost than cold drawn and most applicable where precise dimensions and surface quality as of secondary importance. As an industry standard. HF seamless is manufactured to OD and wall dimensions. Meets ATSM A519. Stocked in lengths of 17 t0 24 feet.

DOM (Drawn-over-mandrel) is cold drawn electric resistance welded tube with all flash removed. Each tube is tested for soundness of weld. Preferred over seamless tubing for its excellent OD & ID concentricity. Normalizing and cold drawing over a mandrel makes DOM a uniform and precision product. Made from 1020 (UNS G10200) steel in walls 10 ga. and lighter; from 1026 (UNS G10260) steel in walls heavier than 10 ga. Furnished in "as drawn" condition. Manufactured to OD and ID dimensions except as noted. Meets ASTM A513 Type 5. Stocked in random lengths of 17 to 24 feet.

ELECTRICAL RESISTANCE WELDED is produced from low carbon steel. Tubing with walls heavier than 18 gauge is produced from hot rolled steel; tubing with walls 18 gauge and lighter is produced from cold rolled steel furnished in "as-welded" condition. OD and flash removed on all sizes. For round tubing 1" OD & larger ID is controlled to .010" to .015" (depending on OD). Sizes under 1" OD and all square and rectangles are flash-in. ERW is the lowest cost of all mechanical tubing manufactured to OD and wall dimensions. Meets ASTM A513 Type 1(HR) or Type 2(CR). Stocked in 20' random lengths.

For additional information or questions,
please contact our Sales Representatives.

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ROUND MILD STEEL BARS
20 FT LENGTHS
A36

Size In Inches	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds	Size In Inches	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
3/16	0.094	1.88	3	24.030	480.60
1/4	0.167	3.34	3-1/4	28.210	564.20
5/16	0.261	5.22	3-1/2	32.710	654.20
3/8	0.376	7.52	3-3/4	37.550	751.00
7/16	0.511	10.22	4	42.730	854.60
1/2	0.668	13.36	4-1/4	48.230	964.60
9/16	0.845	16.90	4-1/2	54.080	1081.60
5/8	1.043	20.86	4-3/4	60.250	1205.00
3/4	1.502	30.04	5	66.760	1335.20
7/8	2.044	40.88	5-1/4	73.600	1472.00
1	2.670	53.40	5-1/2	80.780	1615.60
1-1/8	3.380	67.60	5-3/4	88.290	1765.80
1-1/4	4.172	83.44	6	96.130	1922.60
1-1/2	6.010	120.20	6-1/2	112.82	2256.40
1- 5/8	7.050	141.00	7	130.85	2617.00
1- 3/4	8.180	163.60	7-1/2	150.21	3004.20
2	10.680	213.60	8	170.90	3418.00
2-1/4	13.520	270.40	8-1/2	192.93	3858.60
2-1/2	16.690	333.80	9	216.30	4326.00
2-5/8	18.400	368.00	9-1/2	241.00	4820.00
2-3/4	20.200	404.00	10	267.04	5340.80
2-7/8	22.070	441.40			

SQUARE MILD STEEL BARS
20 FT LENGTHS
A36

Size In Inches	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds	Size In Inches	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
1/4	0.213	4.26	1 1/4	5.313	106.26
5/16	0.332	6.64	1 1/2	7.650	153.00
3/8	0.478	9.56	1 5/8	8.980	179.60
7/16	0.651	13.02	1 3/4	10.410	208.20
1/2	0.850	17.00	2	13.600	272.00
9/16	1.080	21.60	2 1/4	17.210	344.20
5/8	1.330	26.60	2 1/2	21.250	425.00
3/4	1.910	38.20	2 3/4	25.710	514.20
7/8	2.603	52.06	3	30.600	612.00
1	3.400	68.00	3 1/2	41.650	833.00
1 1/8	4.303	86.06	4	54.400	1088.00

REBAR — WELDABLE
20 FT LENGTHS
A706

Size No.	Size In Inches	Area - Sq. In.	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
3	3/8	0.11	.376	7.52
4	1/2	0.20	.668	13.36
5	5/8	0.31	1.043	20.86
6	3/4	0.44	1.502	30.04
7	7/8	0.60	2.044	40.88
8	1	0.79	2.670	53.40

Additional sizes and grades are available.

REINFORCING BARS

ASTM A615-Billet Steel Deformed Bars
Grades 40 & 60 - All sizes
20 FT. LENGTHS

Size No.	Diameter In Inches	Nominal Dimension Area Sq. In.	Nominal Dimension Perimeter in Inches	Weight Per Ft in Pounds
3	.3750	.1100	1.1790	.376
4	.5000	.2000	1.5110	.668
5	.6250	.3100	1.9630	1.043
6	.7500	.4400	2.3560	1.502
7	.8750	.6000	2.7490	2.044
8	1.0000	.7900	3.1420	2.670

Additional sizes and grades are available.
Ask your sales representative for more details.

HOT ROLLED STRIP STEEL
(BANDS)
20 FT LENGTHS

Size In Inches		Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds	Size In Inches		Weight Per Ft Pound	Weight Per 20 Ft Bar Pounds
1/8 x	1/2	.213	4.26	**3/16 x**	1/2	.319	6.38
	5/8	.266	5.32		5/8	.398	7.96
	3/4	.319	6.38		3/4	.478	9.56
	7/8	.372	7.44		7/8	.558	11.16
	1	.425	8.50		1	.638	12.76
	1-1/4	.531	10.62		1-1/4	.797	15.94
	1-1/2	.638	12.76		1-1/2	.956	19.12
	1-3/4	.744	14.88		1-3/4	1.120	22.40
	2	.850	17.00		2	1.280	25.60
	2-1/4	.956	19.12		2-1/4	1.430	28.60
	2-1/2	1.063	21.26		2-1/2	1.594	31.88
	2-3/4	1.169	23.38		2-3/4	1.753	35.06
	3	1.275	25.50		3	1.193	38.26
	3-1/2	1.488	29.76		3-1/2	2.230	44.60
	4	1.700	34.00		4	2.550	51.00
	5	2.125	42.50		5	3.188	63.76
	6	2.550	51.00		6	3.825	76.50
	8	3.400	68.00		8	5.100	102.00
	10	4.250	85.00		10	6.375	127.50
	12	5.100	102.00		12	7.650	153.00

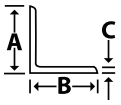
FLAT MILD STEEL BARS
(1/4 INCH AND THICKER)
20 FT LENGTHS
A36

Size In Inches		Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds	Size In Inches		Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
1/4 x	**1/2**	**0.425**	**8.50**	3/8x	1-1/4	1.590	31.80
	5/8	0.531	10.62		1-1/2	1.910	38.20
	3/4	0.638	12.76		1-3/4	2.230	44.60
	1	0.850	17.00		2	2.550	51.00
	1-1/4	1.060	21.20		2-1/4	2.870	57.40
	1-1/2	1.280	25.60		2-1/2	3.190	63.80
	1-3/4	1.490	29.80		3	3.830	76.60
	2	1.700	34.00		3-1/2	4.460	89.20
	2-1/4	1.910	38.20		4	5.100	102.00
	2-1/2	2.130	42.60		4-1/2	5.740	114.80
	2-3/4	2.340	46.80		5	6.380	127.60
	3	2.550	51.00		6	7.650	153.00
	3-1/4	2.760	55.20		7	8.930	178.90
	3-1/2	2.980	59.60		8	10.200	204.00
	4	3.400	68.00		9	11.480	229.60
	4-1/2	3.830	76.00		10	12.750	255.00
	5	4.250	85.00		12	15.300	306.00
	6	5.100	102.00	**1/2 x**	**3/4**	**1.280**	**25.60**
	7	5.950	119.00		1	1.700	34.00
	8	6.800	136.00		1-1/4	2.130	42.50
	9	7.650	153.00		1-1/2	2.550	51.00
	10	8.500	170.00		1-3/4	2.980	59.50
	12	10.200	204.00		2	3.400	68.00
5/16 x	**3/4**	**0.797**	**15.94**		2-1/2	4.250	85.00
	1	1.060	21.20		3	5.100	102.00
	1-1/2	1.590	31.80		3-1/2	5.950	119.00
	2	2.130	42.60		4	6.800	136.00
	2-1/2	2.660	53.20		4-1/2	7.650	153.00
	3	3.190	63.80		5	8.500	170.00
	4	4.250	85.00		6	10.200	204.00
	5	5.310	106.20		7	11.900	238.00
	6	6.380	127.60		8	13.600	272.00
	7	7.440	148.50		9	15.300	306.00
	8	8.500	170.00		10	17.000	340.00
3/8 x	**1/2**	**0.638**	**12.76**		12	20.400	408.00
	3/4	0.956	19.12	**5/8 x**	**1**	**2.130**	**42.50**
	1	1.280	25.60		1-1/2	3.190	63.76

FLAT MILD STEEL BARS (CON'T)
(1/4 INCH AND THICKER)
20 FT LENGTHS
A36

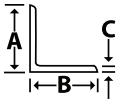
Size In Inches		Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
5/8 x	1-3/4	3.740	74.80
	2	4.250	85.00
	2-1/2	5.310	106.26
	3	6.380	127.50
	3 -1/2	7.440	148.76
	4	8.500	170.00
	4-1/2	9.560	191.20
	5	10.630	212.50
	6	12.750	255.00
	7	14.880	297.60
	8	17.000	340.00
	9	19.130	382.60
	10	21.250	425.00
	12	25.500	510.00
3/4 x	**1**	**2.550**	**51.00**
	1-1/2	3.830	76.50
	1-3/4	4.460	89.20
	2	5.100	102.00
	2-1/2	6.380	127.50
	3	7.650	153.00
	3 -1/2	8.930	178.50
	4	10.200	204.00
	4-1/2	11.490	229.80
	5	12.750	255.00
	6	15.300	306.00
	7	17.850	357.00
	8	20.400	408.00
	9	22.950	459.00
	10	25.500	510.00
	12	30.600	612.00
1 x	**1-1/2**	**5.100**	**102.00**
	1-1/4	4.250	85.00
	1-3/4	5.950	119.00
	2	6.800	136.00
	2-1/2	8.500	170.00
	3	10.200	204.00

Size In Inches		Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
1 x	3-1/2	11.900	238.00
	4	13.600	272.00
	5	17.000	340.00
	6	20.400	408.00
	7	23.800	476.00
	8	27.200	544.00
	9	30.600	612.00
	10	34.000	680.00
	12	40.800	816.00
1-1/4 x	**2**	**8.500**	**170.00**
	3	12.750	255.00
	4	17.000	340.00
	5	21.250	425.00
	6	25.500	510.00
	8	34.000	680.00
1-1/2 x	**2**	**10.200**	**204.00**
	2-1/2	12.750	255.00
	3	15.300	306.00
	3-1/2	17.850	357.00
	4	20.400	408.00
	5	25.500	510.00
	6	30.600	612.00
	8	40.800	816.00
1-3/4	4	23.800	476.00
	4-1/2	26.770	535.40
	5	29.750	595.00
	6	35.700	714.00
	8	47.600	952.00
2 x	**2-1/2**	**17.000**	**340.00**
	3	20.400	408.00
	4	27.200	544.00
	4-1/2	34.000	613.00
	6	40.800	816.00



STEEL ANGLES — BAR SIZES
20 FT LENGTHS
A36

Size In Inches (A)	(B)	(C)	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
1/2 x	1/2 x	1/8	.38	7.60
3/4 x	3/4 x	1/8	.59	11.80
1 x	1 x	1/8	.80	16.00
		3/16	1.16	23.20
		1/4	1.49	29.80
1-1/4 x	1-1/4 x	1/8	1.01	20.20
		3/16	1.48	29.60
		1/4	1.92	38.40
1-1/2 x	1-1/2 x	1/8	1.23	24.60
		3/16	1.80	36.00
		1/4	2.34	46.80
		5/16	2.86	57.20
		3/8	3.35	67.00
1-3/4 x	1-3/4 x	1/8	1.44	28.80
		3/16	2.12	42.40
		1/4	2.77	55.40
2 x	1-1/2 x	1/8	1.44	28.80
		3/16	2.12	42.40
		1/4	2.77	55.40
2 x	2 x	1/8	1.65	33.00
		3/16	2.44	48.80
		1/4	3.19	63.80
		5/16	3.92	78.40
		3/8	4.70	94.00
2-1/2 x	1-1/2 x	3/16	2.44	48.80
		1/4	3.19	63.80
		5/16	3.92	78.40
2-1/2 x	2 x	3/16	2.75	55.00
		1/4	3.62	72.40
		5/16	4.50	90.00
		3/8	5.30	106.00
2-1/2 x	2-1/2 x	3/16	3.07	61.40
		1/4	4.10	82.00
		5/16	5.00	100.00
		3/8	5.90	118.00
		1/2	7.70	154.00



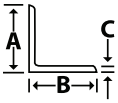
STEEL ANGLES STRUCTURAL

20 FT LENGTHS

A36

Size In Inches (A) (B) (C)	Weight Per Ft Pounds	Weight Per 20′ Bar Pounds
3 x 2 x 3/16	3.07	61.40
1/4	4.10	82.00
5/16	5.00	100.00
3/8	5.90	118.00
1/2	7.70	154.00
3 x 2-1/2 1/4	4.50	90.00
5/16	5.60	112.00
3/8	6.60	132.00
1/2	8.50	170.00
3 x 3 x 3/16	3.71	74.20
1/4	4.90	98.00
5/16	6.10	122.00
3/8	7.20	144.00
7/16	8.30	166.00
1/2	9.40	188.00
3-1/2 x 2-1/2 x 1/4	4.90	98.00
5/16	6.10	122.00
3/8	7.20	144.00
1/2	9.40	188.00
3-1/2 x 3 1/4	5.40	108.00
5/16	6.60	132.00
3/8	7.90	158.00
1/2	10.20	204.00
3-1/2 x 3-1/2 x 1/4	5.80	116.00
5/16	7.20	144.00
3/8	8.50	170.00
1/2	11.10	222.00
4 x 3 x 1/4	5.80	116.00
5/16	7.20	144.00
3/8	8.50	170.00
1/2	11.10	222.00
5/8	13.60	272.00

Size In Inches (A) (B) (C)	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
4 x 3 1/2 1/4	6.20	124.00
5/16	7.70	154.00
3/8	9.10	182.00
1/2	11.90	238.00
4 x 4 x 1/4	6.60	132.00
5/16	8.20	164.00
3/8	9.80	196.00
1/2	12.80	256.00
5/8	15.70	314.00
3/4	18.50	370.00
5 x 3 x 1/4	6.60	132.00
5/16	8.20	164.00
3/8	9.80	196.00
1/2	12.80	256.00
5 x 3-1/2 1/4	7.00	140.00
1/4	7.00	140.00
5/16	8.70	174.00
3/8	10.40	208.00
1/2	13.60	272.00
5/8	16.80	336.00
3/4	19.80	396.00
5 x 5 x 5/16	10.30	206.00
5/16	10.30	206.00
3/8	12.30	246.00
1/2	16.20	324.00
5/8	20.00	400.00
3/4	23.60	472.00
6 x 3-1/2 5 /16	9.80	196.00
3/8	11.70	234.00
1/2	15.30	306.00



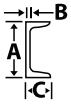
STEEL ANGLES STRUCTURAL
(CON'T)
20 FT LENGTHS

Size In Inches (A) (B) (C)	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
6 x 4 x 5/16	10.30	206.00
3/8	12.30	246.00
1/2	16 20	324.00
5/8	20.00	400.00
3/4	23.60	472.00
7/8	27.20	544.00
6 x 6 x 3/8	14.90	298.00
1/2	19.60	392.00
5/8	24.20	484.00
3/4	28.76	574.00
7/8	33.10	662.00
1	37.40	748.00

Size In Inches (A) (B) (C)	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
7 x 4 x 3/8	13.60	272.00
1/2	17.90	358.00
8 x 4 x 1/2	19.60	392.00
5/8	24.20	484.00
3/4	28.70	574.00
8 x 6 x 1/2	23.00	460.00
5/8	28.50	570.00
8 x 8 x 1/2	26.40	528.00
5/8	32.70	654.00
3/4	38.90	778.00
1	51.00	1020.00

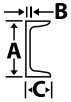
TEES — BAR SIZES
20 FT LENGTHS

Flange Inches	Stem Inches	Stem Thickness Inches	Weight Per Ft Pounds	Weight Per 20 Ft BarPounds
1-1/2	1-1/2	3/16	1.90	38.00
2	2	1/4	3.56	71.20



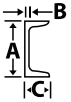
SMALL CHANNELS
BAR SIZES
20 FT LENGTHS
A36

Size In Inches (A) (C) (B)	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
1 x 1/2 x 1/8	.83	16.60
1-1/4 x 1/2 x 1/8	1.01	20.20
1-1/2 x 1/2 x l/8	1.12	22.40
1-1/2 x 3/4 x l/8	1.17	23.40
2 x 1/2 x 1/8	1.33	26.60
2 x 1 x 1/8	1.78	35.60
2 x 1 x 3/16	2.57	51.40



STRUCTURAL CHANNELS
20, 40 FT LENGTHS
CONFORMS TO ASTM A36

Depth of Channel Inches (A)	Weight Per Ft Pounds	Thickness of Web (B)	Width of Flange Inches (C)	Weight Per 20 Ft Bar Pounds
3	4.10	0.170	1.410	82
	5.00	0.258	1.498	100
	6.00	0 356	1.596	120
4	5.40	0.180	1.580	108
	6.25	0.247	1.647	125
	7.25	0.320	1.720	145
5	6.70	0.190	1.750	134
	9.00	0.325	1.885	180
6	8.20	0.200	1.920	164
	10.50	0.314	2.034	210
	13.00	0.437	2.157	260
7	9.80	0.210	2.090	196
	12.25	0.314	2.194	245
	14.75	0.419	2.229	295
8	11.50	0.220	2.260	230
	13.75	0.303	2.343	275
	18.75	0.487	2.527	375
9	13.40	0.230	2.430	268
	15.00	0.285	2.485	300
	20.00	0.448	2.648	400
10	15.30	0.240	2.600	306
	20.00	0.379	2.739	400
	25.00	0.526	2.886	500
	30.00	0.673	3.033	600
12	20.70	0.280	2.940	414
	25.00	0.387	3.047	500
	30.00	0.510	3.170	600
15	33.90	0.400	3.400	678
	40.00	0.520	3.520	800
	50.00	0.716	3.716	1000
18	42.70	0.450	3.950	854
	45.80	0.500	4.000	916
	51.90	0.600	4.100	1033
	58.00	0.700	4.200	1160



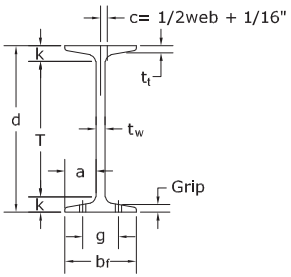
SHIP AND CAR CHANNELS
20, 40 FT LENGTHS
CONFORMS TO ASTM A36

Depth of Channel Inches (A)	Weight Per Ft Pounds	Thickness of Web Inches (B)	Width of Flange Inches (C)	Weight Per 20 Ft Bar Pounds
3	7.1	0.313	1.938	142
4	13.8	0.500	2.500	276
6	12.0	0.313	2.500	240
	15.1	0.313	2.938	302
	15.3	0.340	3.500	306
	16.3	0.375	3.000	326
	18.0	0.375	3.500	360
7	19.1	0.350	3.450	382
	22.7	0.500	3.600	454
8	18.7	0.350	2.975	374
	21.4	0.375	3.450	428
	22.8	0.425	3.500	456
9	25.4	0.450	3.500	508
10	21.9	0.325	3.450	438
	25.3	0.425	3.550	506
	28.3	0.475	3.500	566
	28.5	0.425	3.950	570
12	32.9	0.500	3.500	658
18	42.7	0.450	3.950	854

JUNIOR CHANNELS
20, 40 FT LENGTHS
CONFORMS TO ASTM A36

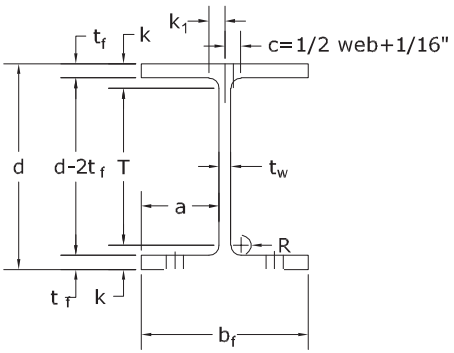
Depth of Channel Inches (A)	Weight Per Ft Pounds	Thickness of Web Inches (B)	Width of Flange Inches (C)	Weight Per 20 Ft Bar Pounds
8″	8.5	0.180	1 7/8	170
10″	6.5	0.150	1 1/8	130
10″	8.4	0.170	1 1/2	168
12″	10.6	0.190	1 1/2	212

AMERICAN STANDARD BEAMS
STANDARD I BEAMS
CONFORMS TO ASTM A36



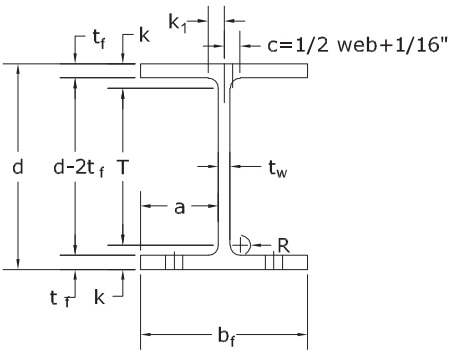
Section No.	Weight per Foot		Flange				a	T	k	R	Grip	Max Flange Fastener
		Depth of Section	Width	Average Thickness	Web Thickness	Half Web Thickness						
		d	b_f	t_f	t_w	$\frac{t_w}{2}$						
	lb	in	in	in	in	in	in	in	in	in	in	in
S3 x	5.7	3	2 3/8	1/4	3/16	1/16	1 1/8	1 3/4	5/8	.27	1/4	
	7.5	3	2 1/2	1/4	3/8	3/16	1 1/8	1 3/4	5/8	.27	1/4	
S4 x	7.7	4	2 5/8	5/16	3/16	1/8	1 1/4	2 5/8	11/16	.29	5/16	
	9.5	4	2 3/4	5/16	5/16	3/16	1 1/4	2 5/8	11/16	.29	5/16	
S5 x	10	5	3	5/16	3/16	1/8	1 3/8	3 1/2	3/4	.31	5/16	
S6 x	12.5	6	3 3/8	3/8	1/4	1/8	1 1/2	4 3/8	13/16	.33	5/16	
	17.25	6	3 5/8	3/8	7/16	1/4	1 1/2	4 3/8	13/16	.33	3/8	5/8
S7 x	15.3	7	3 5/8	3/8	1/4	1/8	1 3/4	5 1/4	7/8	.35	3/8	5/8
S8 x	18.4	8	4	7/16	1/4	1/8	1 7/8	6	1	.37	7/16	3/4
	23	8	4 1/8	7/16	7/16	1/4	1 7/8	6	1	.37	7/16	3/4
S10 x	25.4	10	4 5/8	1/2	5/16	1/8	2 1/8	7 3/4	1 1/8	.41	1/2	3/4
	35	10	5	1/2	5/8	5/16	2 1/8	7 3/4	1 1/8	.41	1/2	3/4
S12 x	31.8	12	5	9/16	3/8	3/16	2 3/8	9 5/8	1 3/16	.45	1/2	3/4
	35	12	5 1/8	9/16	7/16	3/16	2 3/8	9 5/8	1 3/16	.45	1/2	3/4
	40.8	12	5 1/4	11/16	7/16	1/4	2 3/8	9 1/8	1 7/16	.56	5/8	3/4
	50	12	5 1/2	11/16	11/16	5/16	2 3/8	9 1/8	1 7/16	.56	11/16	3/4
S15 x	42.9	15	5 1/2	5/8	7/16	3/16	2 1/2	12 1/4	1 3/8	.51	9/16	3/4
	50	15	5 5/8	5/8	9/16	1/4	2 1/2	12 1/4	1 3/8	.51	9/16	3/4
S18 x	54.7	18	6	11/16	7/16	1/4	2 3/4	15	1 1/2	.56	11/16	7/8
	70	18	6 1/4	11/16	11/16	3/8	2 3/4	15	1 1/2	.56	11/16	7/8
S20 x	66	20	6 1/4	13/16	1/2	1/4	2 7/8	16 3/4	1 5/8	.60	13/16	7/8
	75	20	6 3/8	13/16	5/8	5/16	2 7/8	16 3/4	1 5/8	.60	13/16	7/8
	86	20 1/4	7	15/16	11/16	5/16	3 1/4	16 3/4	1 3/4	.60	15/16	1
	96	20 1/4	7 1/4	15/16	13/16	3/8	3 1/4	16 3/4	1 3/4	.60	15/16	1
S24 x	80	24	7	7/8	1/2	1/4	3 1/4	20 1/2	1 3/4	.60	7/8	1
	90	24	7 1/8	7/8	5/8	5/16	3 1/4	20 1/2	1 3/4	.60	7/8	1

WIDE FLANGE BEAMS
CONFORMS TO ASTM A36



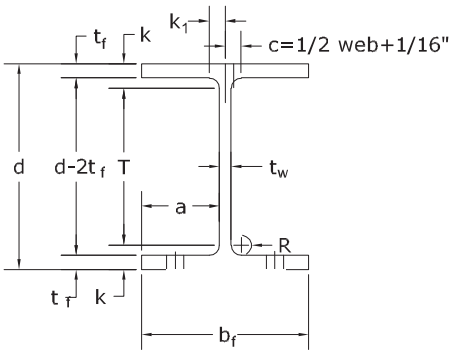
Section No.	Weight per Foot	Depth of Section	Flange		Web Thickness	Half Web Thickness	$d-2T_f$	a	T	k	k_1	R
			Width	Average Thickness								
		d	b_f	t_f	t_w	$\frac{t_w}{2}$						
	lb	in	in	in	in	in	in	in	in	in	in	in
W4 x	13	4 1/8	4	3/8	1/4	1/8	3 1/2	1 7/8	2 3/4	11/16	7/16	0.25
W5 x	16	5	5	3/8	1/4	1/8	4 5/16	2 3/8	3 1/2	3/4	7/16	0.30
	19	5 1/8	5	7/16	1/4	1/8	4 5/16	2 3/8	3 1/2	13/16	7/16	0.30
W6 x	9	5 3/4	4	3/16	3/16	1/8	5 1/2	1 7/8	4 3/4	9/16	3/8	0.25
	12	6	4	1/4	1/4	1/8	5 1/2	1 7/8	4 3/4	5/8	3/8	0.25
	16	6 1/4	4	3/8	1/4	1/8	5 1/2	1 7/8	4 3/4	3/4	7/16	0.25
	15	6	6	1/4	1/4	1/8	5 1/2	2 7/8	4 3/4	5/8	3/8	0.25
	20	6 1/4	6	3/8	1/4	1/8	5 1/2	2 7/8	4 3/4	3/4	7/16	0.25
	25	6 3/8	6 1/8	7/16	5/16	3/16	5 1/2	2 7/8	4 3/4	13/16	7/16	0.25
W8 x	10	7 7/8	4	3/16	3/16	1/8	7 1/2	1 7/8	6 5/8	5/8	7/16	0.30
	13	8	4	1/4	1/4	1/8	7 1/2	1 7/8	6 5/8	11/16	7/16	0.30
	15	8 1/8	4	5/16	1/4	1/8	7 1/2	1 7/8	6 5/8	3/4	1/2	0.30
	18	8 1/8	5 1/4	5/16	1/4	1/8	7 1/2	2 1/2	6 5/8	3/4	7/16	0.30
	21	8 1/4	5 1/4	3/8	1/4	1/8	7 1/2	2 1/2	6 5/8	13/16	1/2	0.30
	24	7 7/8	6 1/2	3/8	1/4	1/8	7 1/2	3 1/8	6 1/8	7/8	9/16	0.40
	28	8	6 1/2	7/16	5/16	3/16	7 1/2	3 1/8	6 1/8	15/16	9/16	0.40
	31	8	8	7/16	5/16	3/16	7 1/2	3 7/8	6 1/8	15/16	9/16	0.40
	35	8 1/8	8	1/2	5/16	3/16	7 1/2	3 7/8	6 1/8	1	9/16	0.40
	40	8 1/4	8 1/8	9/16	3/8	3/16	7 1/2	3 7/8	6 1/8	1 1/16	5/8	0.40
	48	8 1/2	8 1/8	11/16	3/8	3/16	7 1/2	3 7/8	6 1/8	1 3/16	5/8	0.40
	58	8 3/4	8 1/4	13/16	1/2	1/4	7 1/2	3 7/8	6 1/8	1 5/16	11/16	0.40
	67	9	8 1/4	15/16	9/16	5/16	7 1/2	3 7/8	6 1/8	1 7/16	11/16	0.40

WIDE FLANGE BEAMS (CON'T)
CONFORMS TO ASTM A36



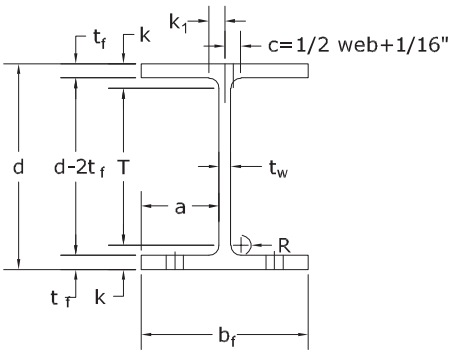
Section No.	Weight per Foot	Flange					$d-2T_f$	a	T	k	k_1	R
		Depth of Section	Width	Average Thickness	Web Thickness	Half Web Thickness						
		d	b_f	t_f	t_w	$\frac{t_w}{2}$						
	lb	in	in	in	in	in	in	in	in	in	in	in
W10 x	12	9 7/8	4	3/16	3/16	1/8	9 7/16	1 7/8	8 5/8	5/8	7/16	0.30
	15	10	4	1/4	1/4	1/8	9 7/16	1 7/8	8 5/8	11/16	7/16	0.30
	17	10 1/8	4	5/16	1/4	1/8	9 7/16	1 7/8	8 5/8	3/4	1/2	0.30
	19	10 1/4	4	3/8	1/4	1/8	9 7/16	1 7/8	8 5/8	13/16	1/2	0.30
	22	10-1/8	5 3/4	3/8	1/4	1/8	9 7/8	2 3/4	8 5/8	3/4	1/2	0.30
	26	10-3/8	5 3/4	7/16	1/4	1/8	9 7/8	2 3/4	8 5/8	7/8	1/2	0.30
	30	10-1/2	5 3/4	1/2	5/16	3/16	9 7/8	2 3/4	8 5/8	15/16	1/2	0.30
	33	9 3/4	8	7/16	5/16	3/16	8 7/16	3 7/8	7 5/8	1 1/16	11/16	0.50
	39	9 7/8	8	1/2	5/16	3/16	8 7/16	3 7/8	7 5/8	1 1/8	11/16	0.50
	45	10 1/8	8	5/8	3/8	3/16	8 7/16	3 7/8	7 5/8	1 1/4	11/16	0.50
	49	10	10	9/16	5/16	3/16	8 7/8	4 7/8	7 5/8	1 3/16	11/16	0.50
	54	10 1/8	10	5/8	3/8	3/16	8 7/8	4 7/8	7 5/8	1 1/4	11/16	0.50
	60	10 1/4	10 1/8	11/16	7/16	1/4	8 7/8	4 7/8	7 5/8	1 5/16	11/16	0.50
	68	10 3/8	10 1/8	3/4	1/2	1/4	8 7/8	4 7/8	7 5/8	1 3/8	3/4	0.50
	77	10 5/8	10 1/4	7/8	1/2	1/4	8 7/8	4 7/8	7 5/8	1 1/2	3/4	0.50
	88	10 7/8	10 1/4	1	5/8	5/16	8 7/8	4 7/8	7 5/8	1 5/8	13/16	0.50
	100	11 1/8	10 3/8	1 1/8	11/16	3/8	8 7/8	4 7/8	7 5/8	1 3/4	7/8	0.50
	112	11 3/8	10 3/8	1 1/4	3/4	3/8	8 7/8	4 7/8	7 5/8	1 7/8	15/16	0.50
W12 x	14	11 7/8	4	1/4	3/16	1/8	11 7/16	1 7/8	10 1/2	11/16	1/2	0.60
	16	12	4	1/4	1/4	1/8	11 7/16	1 7/8	10 1/2	3/4	1/2	0.60
	19	12 1/8	4	3/8	1/4	1/8	11 7/16	1 7/8	10 1/2	13/16	1/2	0.60
	22	12 1/4	4	7/16	1/4	1/8	11 7/16	1 7/8	10 1/2	7/8	1/2	0.60

WIDE FLANGE BEAMS (CON'T)
CONFORMS TO ASTM A36



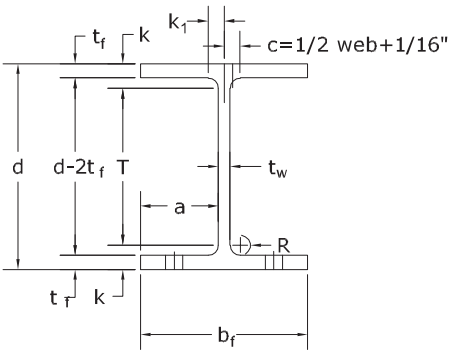
Section No.	Weight per Foot	Depth of Section	Flange Width	Flange Average Thickness	Web Thickness	Half Web Thickness	d-2T_f	a	T	k	k_1	R
		d	b_f	t_f	t_w	$\frac{t_w}{2}$						
	lb	in	in	in	in	in	in	in	in	in	in	in
W12x	26	12 1/4	6 1/2	3/8	1/4	1/8	11 7/16	3 1/8	10 1/2	7/8	1/2	0.60
	30	12 3/8	6 1/2	7/16	1/4	1/8	11 7/16	3 1/8	10 1/2	15/16	1/2	0.60
	35	12 1/2	6 1/2	1/2	5/16	3/16	11 7/16	3 1/8	10 1/2	1	9/16	0.60
	40	12	8	1/2	5/16	3/16	10 5/16	3 7/8	9 1/2	1 1/4	3/4	0.60
	45	12	8	9/16	5/16	3/16	10 15/16	3 7/8	9 1/2	1 1/4	13/16	0.60
	50	12 1/4	8 1/8	5/8	3/8	3/16	10 15/16	3 7/8	9 1/2	1 3/8	13/16	0.60
	53	12	10	9/16	3/8	3/16	10 15/16	4 7/8	9 1/2	1 1/4	13/16	0.60
	58	12 1/4	10	5/8	3/8	3/16	10 15/16	4 7/8	9 1/2	1 3/8	13/16	0.60
	65	12 1/8	12	5/8	3/8	3/16	10 15/16	5 3/4	9 1/2	1 5/16	13/16	0.60
	72	12 1/4	12	11/16	7/16	1/4	10 15/16	5 3/4	9 1/2	1 3/8	7/8	0.60
	79	12 3/8	12 1/8	3/4	1/2	1/4	10 15/16	5 3/4	9 1/2	1 7/16	7/8	0.60
	87	12 1/2	12 1/8	13/16	1/2	1/4	10 15/16	5 3/4	9 1/2	1 1/2	7/8	0.60
	96	12 3/4	12 1/8	7/8	9/16	5/16	10 15/16	5 3/4	9 1/2	1 5/8	7/8	0.60
	106	12 7/8	12 1/4	1	5/8	5/16	10 15/16	5 3/4	9 1/2	1 11/16	15/16	0.60
	120	13 1/8	12 3/8	1 1/8	11/16	3/8	10 15/16	5 3/4	9 1/2	1 13/16	1	0.60
	136	13 3/8	12 3/8	1 1/4	13/16	7/16	10 15/16	5 3/4	9 1/2	1 15/16	1	0.60
	152	13 3/4	12 1/2	1 3/8	7/8	7/16	10 15/16	5 3/4	9 1/2	2 1/8	1 1/16	0.60
	170	14	12 5/8	1 9/16	15/16	1/2	10 15/16	5 3/4	9 1/2	2 1/4	1 1/8	0.60
	190	14 3/8	12 5/8	1 3/4	1 1/16	9/16	10 15/16	5 3/4	9 1/2	2 7/16	1 3/16	0.60
W14 x	22	13 3/4	5	5/16	1/4	1/8	13 1/16	2 3/8	12	7/8	9/16	0.40
	26	13 7/8	5	7/16	1/4	1/8	13 1/16	2 3/8	12	15/16	9/16	0.40
	30	13 7/8	6 3/4	3/8	1/4	1/8	13 1/16	3 1/4	12	15/16	5/8	0.40
	34	14	6 3/4	7/16	5/16	3/16	13 1/16	3 1/4	12	1	5/8	0.40
	38	14 1/8	6 3/4	1/2	5/16	3/16	13 1/16	3 1/4	12	1 1/16	5/8	0.40

WIDE FLANGE BEAMS (CON'T)
CONFORMS TO ASTM A36



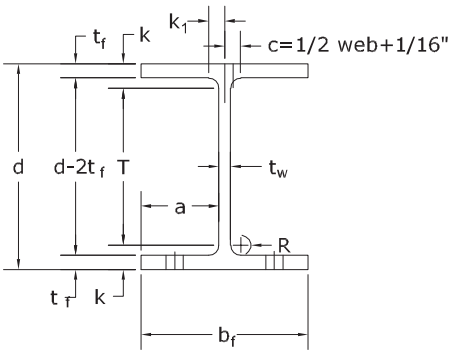
Section No.	Weight per Foot	Depth of Section	Flange Width	Flange Average Thickness	Web Thickness	Half Web Thickness	d-2T_f	a	T	k	k_1	R
		d	b_f	t_f	t_w	$\frac{t_w}{2}$						
	lb	in	in	in	in	in	in	in	in	in	in	in
W14x	43	13 5/8	8	1/2	5/16	3/16	12 5/8	3 7/8	11	1 5/16	7/8	0.60
	48	13 3/4	8	5/8	5/16	3/16	12 5/8	3 7/8	11	1 3/8	7/8	0.60
	53	13 7/8	8	11/16	3/8	3/16	12 5/8	3 7/8	11	1 7/16	15/16	0.60
	61	13 7/8	10	5/8	3/8	3/16	12 5/8	4 3/4	11	1 7/16	15/16	0.60
	68	14	10	3/4	7/16	1/4	12 5/8	4 3/4	11	1 1/2	15/16	0.60
	74	14 1/8	10 1/8	13/16	7/16	1/4	12 5/8	4 3/4	11	1 9/16	15/16	0.60
	82	14 1/4	10 1/8	7/8	1/2	1/4	12 5/8	4 3/4	11	1 5/8	1	0.60
	90	14	14 1/2	11/16	7/16	1/4	12 5/8	7	11 1/4	1 3/8	7/8	0.60
	99	14 1/8	14 5/8	3/4	1/2	1/4	12 5/8	7	11 1/4	1 7/16	7/8	0.60
	109	14 3/8	14 5/8	7/8	1/2	1/4	12 5/8	7	11 1/4	1 9/16	7/8	0.60
	120	14 1/2	14 5/8	15/16	9/16	5/16	12 5/8	7	11 1/4	1 5/8	15/16	0.60
	132	14 5/8	14 3/4	1	5/8	5/16	12 5/8	7	11 1/4	1 11/16	15/16	0.60
	145	14 3/4	15 1/2	1 1/16	11/16	3/8	12 5/8	7 3/8	11 1/4	1 3/4	1	0.60
	159	15	15 5/8	1 3/16	3/4	3/8	12 5/8	7 3/8	11 1/4	1 7/8	1	0.60
	176	15 1/4	15 5/8	1 5/16	13/16	7/16	12 5/8	7 3/8	11 1/4	2	1 1/16	0.60
	193	15 1/2	15 3/4	1 7/16	7/8	7/16	12 5/8	7 3/8	11 1/4	2 1/8	1 1/16	0.60
	211	15 3/4	15 3/4	1 9/16	1	1/2	12 5/8	7 3/8	11 1/4	2 1/4	1 1/8	0.60
	233	16	15 7/8	1 3/4	1 1/16	9/16	12 5/8	7 3/8	11 1/4	2 3/8	1 3/16	0.60
	257	16 3/8	16	1 7/8	1 3/16	5/8	12 5/8	7 3/8	11 1/4	2 9/16	1 3/16	0.60
	283	16 3/4	16 1/8	2 1/16	1 5/16	11/16	12 5/8	7 3/8	11 1/4	2 3/4	1 1/4	0.60
	311	17 1/8	16 1/4	2 1/4	1 7/16	3/4	12 5/8	7 3/8	11 1/4	2 15/16	1 5/16	0.60
	342	17 1/2	16 3/8	2 1/2	1 9/16	13/16	12 5/8	7 3/8	11 1/4	3 1/8	1 3/8	0.60
	370	17 7/8	16 1/2	2 11/16	1 5/8	13/16	12 5/8	7 3/8	11 1/4	3 5/16	1 7/16	0.60
	398	18 1/4	16 5/8	2 7/8	1 3/4	7/8	12 5/8	7 3/8	11 1/4	3 1/2	1 1/2	0.60

WIDE FLANGE BEAMS (CON'T)
CONFORMS TO ASTM A36



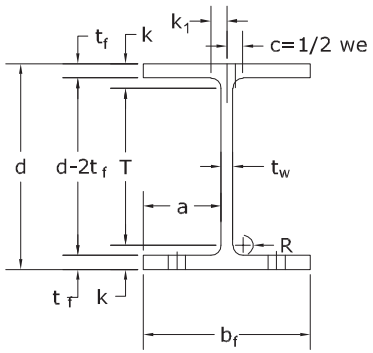
Section No.	Weight per Foot	Depth of Section	Flange Width	Flange Average Thickness	Web Thickness	Half Web Thickness	d-2T_f	a	T	k	k_1	R
		d	b_f	t_f	t_w	$\frac{t_w}{2}$						
	lb	in	in	in	in	in	in	in	in	in	in	in
W14x	426	18 5/8	16 3/4	3 1/16	1 7/8	15/16	12 5/8	7 3/8	11 1/4	3 11/16	1 5/16	0.60
	455	19	16 7/8	3 3/16	2	1	12 5/8	7 3/8	11 1/4	3 7/8	1 5/8	0.60
	500	19 5/8	17	3 1/2	2 3/16	1 1/8	12 5/8	7 3/8	11 1/4	4 3/16	1 3/4	0.60
	550	20 1/4	17 1/4	4 13/16	2 3/8	1 3/16	12 5/8	7 3/8	11 1/4	4 1/2	1 13/16	0.60
	605	20 7/8	17 3/8	4 3/16	2 5/8	1 5/16	12 5/8	7 3/8	11 1/4	4 13/16	1 15/16	0.60
	665	21 5/8	17 5/8	4 1/2	2 13/16	1 7/16	12 5/8	7 3/8	11 1/4	5 3/16	2 1/16	0.60
	730	22 3/8	17 7/8	4 15/16	3 1/16	1 3/16	12 5/8	7 3/8	11 1/4	5 9/16	2 3/16	0.60
W16 x	26	15 3/4	5 1/2	3/8	1/4	1/8	12 5/8	2 5/8	13 5/8	1 1/16	3/4	0.40
	31	15 7/8	5 1/2	7/16	1/4	1/8	12 5/8	2 5/8	13 5/8	1 1/8	3/4	0.40
	36	15 7/8	7	7/16	5/16	3/16	12 5/8	3 3/8	13 5/8	1 1/8	3/4	0.40
	40	16	7	1/2	5/16	3/16	12 5/8	3 3/8	13 5/8	1 3/16	13/16	0.40
	45	16 1/2	7	9/16	3/8	3/16	12 5/8	3 3/8	13 5/8	1 1/4	13/16	0.40
	50	16 1/4	7 1/8	5/8	3/8	3/16	12 5/8	3 3/8	13 5/8	1 5/16	13/16	0.40
	57	16 3/8	7 1/8	11/16	7/16	1/4	12 5/8	3 3/8	13 5/8	1 3/8	7/8	0.40
	67	16 3/8	10 1/4	11/16	3/8	3/16	12 5/8	4 7/8	13 5/8	1 3/8	13/16	0.40
	77	16 1/2	10 1/4	3/4	7/16	1/4	12 5/8	4 7/8	13 5/8	1 7/16	7/8	0.40
	89	16 3/4	10 3/8	7/8	1/2	1/4	12 5/8	4 7/8	13 5/8	1 9/16	7/8	0.40
	100	17	10 3/8	1	9/16	5/16	12 5/8	4 7/8	13 5/8	1 11/16	15/16	0.40
W18 x	35	17 3/4	6	7/16	5/16	3/16	12 5/8	2 7/8	15 1/2	1 1/8	3/4	0.40
	40	17 7/8	6	1/2	5/16	3/16	12 5/8	2 7/8	15 1/2	1 3/16	13/16	0.40
	46	18	6	5/8	3/8	3/16	12 5/8	2 7/8	15 1/2	1 1/4	13/16	0.40
	50	18	7 1/2	9/16	3/8	3/16	12 5/8	3 5/8	15 1/2	1 1/4	13/16	0.40
	55	18 1/8	7 1/2	5/8	3/8	3/16	12 5/8	3 5/8	15 1/2	1 5/16	13/16	0.40
	60	18 1/4	7 1/2	11/16	7/16	1/4	12 5/8	3 5/8	15 1/2	1 3/8	13/16	0.40

WIDE FLANGE BEAMS (CON'T)
CONFORMS TO ASTM A36



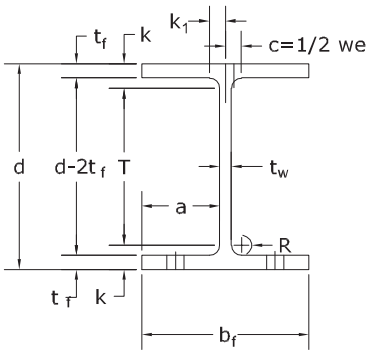
Section No.	Weight per Foot	Depth of Section	Flange Width	Flange Average Thickness	Web Thickness	Half Web Thickness	$d-2T_f$	a	T	k	k_1	R
		d	b_f	t_f	t_w	$\frac{t_w}{2}$						
	lb	in	in	in	in	in	in	in	in	in	in	in
W18x	65	18 3/8	7 5/8	3/4	7/16	1/4	16 7/8	3 5/8	15 1/2	1 7/16	7/8	0.40
	71	18 1/2	7 5/8	13/16	1/2	1/4	16 7/8	3 5/8	15 1/2	1 1/2	7/8	0.40
	76	18 1/4	11	11/16	7/16	1/4	16 7/8	5 1/4	15 1/2	1 3/8	13/16	0.40
	86	18 3/8	11 1/8	3/4	1/2	1/4	16 7/8	5 1/4	15 1/2	1 7/16	7/8	0.40
	97	18 5/8	11 1/8	7/8	9/16	5/16	16 7/8	5 1/4	15 1/2	1 9/16	7/8	0.40
	106	18 3/4	11 1/4	15/16	9/16	5/16	16 7/8	5 1/4	15 1/2	1 5/8	15/16	0.40
	119	19	11 1/4	1 1/16	5/8	5/16	16 7/8	5 1/4	15 1/2	1 3/4	15/16	0.40
W21 x	44	20 5/8	6 1/2	7/16	3/8	3/16	19 3/4	3 1/8	18 1/4	1 3/16	7/8	0.50
	50	20 7/8	6 1/2	9/16	3/8	3/16	19 3/4	3 1/8	18 1/4	1 5/16	7/8	0.50
	57	21	6 1/2	5/8	3/8	3/16	19 3/4	3 1/8	18 1/4	1 3/8	7/8	0.50
	62	21	8 1/4	5/8	3/8	3/16	19 3/4	3 7/8	18 1/4	1 3/8	7/8	0.50
	68	21 1/8	8 1/4	11/16	7/16	1/4	19 3/4	3 7/8	18 1/4	1 7/16	7/8	0.50
	73	21 1/4	8 1/4	3/4	7/16	1/4	19 3/4	3 7/8	18 1/4	1 1/2	15/16	0.50
	83	21 3/8	8 3/8	13/16	1/2	1/4	19 3/4	3 7/8	18 1/4	1 9/16	15/16	0.50
	93	21 5/8	8 3/8	15/16	9/16	5/16	19 3/4	3 7/8	18 1/4	1 11/16	1	0.50
	101	21 3/8	12 1/4	13/16	1/2	1/4	19 3/4	5 7/8	18 1/4	1 9/16	15/16	0.50
	111	21 1/2	12 3/8	7/8	9/16	5/16	19 3/4	5 7/8	18 1/4	1 5/8	15/16	0.50
	122	21 5/8	12 3/8	15/16	5/8	5/16	19 3/4	5 7/8	18 1/4	1 11/16	1	0.50
	132	21 7/8	12 1/2	1 1/16	5/8	5/16	19 3/4	5 7/8	18 1/4	1 13/16	1	0.50
	147	22	12 1/2	1 1/8	3/4	3/8	19 3/4	5 7/8	18 1/4	1 7/8	1 1/16	0.50
W24 x	55	23 5/8	7	1/2	3/8	3/16	22 9/16	3 1/4	21	1 5/16	15/16	0.50
	62	23 3/4	7	9/16	7/16	1/4	22 9/16	3 1/4	21	1 3/8	15/16	0.50
	68	23 3/4	9	9/16	7/16	1/4	22 9/16	4 1/4	21	1 3/8	15/16	0.50
	76	23 7/8	9	11/16	7/16	1/4	22 9/16	4 1/4	21	1 7/16	15/16	0.50

WIDE FLANGE BEAMS (CON'T)
CONFORMS TO ASTM A36



Section No.	Weight per Foot		Flange				$d-2T_f$	a	T	k	k_1	R
		Depth of Section	Width	Average Thickness	Web Thickness	Half Web Thickness						
		d	b_f	t_f	t_w	$\frac{t_w}{2}$						
	lb	in	in	in	in	in	in	in	in	in	in	in
W24x	84	24 1/8	9	3/4	1/2	1/4	22 9/16	4 1/4	21	1 9/16	15/16	0.50
	94	24 1/4	9 1/8	7/8	1/2	1/4	22 9/16	4 1/4	21	1 5/8	1	0.50
	104	24	12 3/4	3/4	1/2	1/4	22 9/16	6 1/8	21	1 1/2	1	0.50
	117	24 1/4	12 3/4	7/8	9/16	5/16	22 9/16	6 1/8	21	1 5/8	1	0.50
	131	24 1/2	12 7/8	15/16	5/8	5/16	22 9/16	6 1/8	21	1 3/4	1 1/16	0.50
	146	24 3/4	12 7/8	1 1/16	5/8	5/16	22 9/16	6 1/8	21	1 7/8	1 1/16	0.50
	162	25	13	1 1/4	11/16	3/8	22 9/16	6 1/8	21	2	1 1/16	0.50
W27 x	84	26 3/4	10	5/8	7/16	1/4	25 7/16	4 3/4	24	1 3/4	15/16	0.60
	94	26 7/8	10	3/4	1/2	1/4	25 7/16	4 3/4	24	1 7/16	15/16	0.60
	102	27 1/8	10	13/16	1/2	1/4	25 7/16	4 3/4	24	1 9/16	15/16	0.60
	114	27 1/4	10 1/8	15/16	9/16	5/16	25 7/16	4 3/4	24	1 5/8	15/16	0.60
	146	27 3/8	14	1	5/8	5/16	25 7/16	6 5/8	24	1 11/16	1	0.60
	161	27 5/8	14	1 1/16	11/16	3/8	25 7/16	6 5/8	24	1 13/16	1	0.60
	178	27 3/4	14 1/8	1 3/16	3/4	3/8	25 7/16	6 5/8	24	1 7/8	1 1/16	0.60
W30 x	99	29 5/8	10 1/2	11/16	1/2	1/4	28 5/16	5	26 3/4	1 7/16	1	0.65
	108	29 7/8	10 1/2	3/4	9/16	5/16	28 5/16	5	26 3/4	1 9/16	1	0.65
	116	30	10 1/2	7/8	9/16	5/16	28 5/16	5	26 3/4	1 5/8	1	0.65
	124	30 1/4	10 1/2	15/16	9/16	5/16	28 5/16	5	26 3/4	1 11/16	1	0.65
	132	30 1/4	10 1/2	1	5/8	5/16	28 5/16	5	26 3/4	1 3/4	1 1/16	0.65
	173	30 1/2	15	1 1/16	5/8	5/16	28 5/16	7 1/2	26 3/4	1 7/8	1 1/16	0.65
	191	30 5/8	15	1 3/16	11/16	3/8	28 5/16	7 1/2	26 3/4	1 15/16	1 1/16	0.65
	211	31	15 1/8	1 5/16	3/4	3/8	28 5/16	7 1/2	26 3/4	2 1/8	1 1/8	0.65

WIDE FLANGE BEAMS (CON'T)
CONFORMS TO ASTM A36



Section No.	Weight per Foot		Flange				$d-2T_f$	a	T	k	k_1	R
		Depth of Section	Width	Average Thickness	Web Thickness	Half Web Thickness						
		d	b_f	t_f	t_w	$\frac{t_w}{2}$						
	lb	in	in	in	in	in	in	in	in	in	in	in
W33 x	118	32 7/8	11 1/2	3/4	9/16	5/16	31 3/8	5 1/2	29 3/4	1 9/16	1 1/16	0.70
	130	33 1/8	11 1/2	7/8	9/16	5/16	31 3/8	5 1/2	29 3/4	1 11/16	1 1/16	0.70
	141	33 1/4	11 1/2	15/16	5/8	5/16	31 3/8	5 1/2	29 3/4	1 3/4	1 1/16	0.70
	152	33 1/2	11 5/8	1 1/16	5/8	5/16	31 3/8	5 1/2	29 3/4	1 7/8	1 1/8	0.70
	201	33 5/8	15 3/4	1 1/8	11/16	3/8	31 3/8	7 1/2	29 3/4	1 15/16	1 1/8	0.70
	221	33 7/8	15 3/4	1 1/4	3/4	3/8	31 3/8	7 1/2	29 3/4	2 1/16	1 3/16	0.70
	241	34 1/8	15 7/8	1 3/8	13/16	7/16	31 3/8	7 2/1	29 3/4	2 3/16	1 3/16	0.70
W36x	135	35 1/2	12	13/16	5/8	5/16	34	5 5/8	32 1/8	1 11/16	1 1/8	0.75
	150	35 7/8	12	15/16	5/8	5/16	34	5 5/8	32 1/8	1 7/8	1 1/8	0.75
	160	36	12	1	5/8	5/16	34	5 5/8	32 1/8	1 15/16	1 1/8	0.75
	170	36 1/8	12	1 1/8	11/16	3/8	34	5 5/8	32 1/8	2	1 3/16	0.75
	182	36 3/8	12 1/8	1 3/16	3/4	3/8	34	5 5/8	32 1/8	2 1/8	1 3/16	0.75
	194	36 1/2	12 1/8	1 1/4	3/4	3/8	34	5 5/8	32 1/8	2 3/16	1 3/16	0.75
	210	36 3/4	12 1/8	1 3/8	13/16	7/16	34	5 5/8	32 1/8	2 5/16	1 1/4	0.75
	230	35 7/8	16 1/2	1 1/4	3/4	3/8	33 3/8	7 7/8	31 1/8	2 3/8	1 7/16	0.95
	245	36 1/8	16 1/2	1 3/8	13/16	7/16	33 3/8	7 7/8	31 1/8	2 1/2	1 7/16	0.95
	260	36 1/4	16 1/2	1 7/16	13/16	7/16	33 3/8	7 7/8	31 1/8	2 9/16	1 1/2	0.95
	280	36 1/2	16 5/8	1 9/16	7/8	7/16	33 3/8	7 7/8	31 1/8	2 11/16	1 1/2	0.95
	300	36 3/4	16 5/8	1 11/16	15/16	1/2	33 3/8	7 7/8	31 1/8	2 13/16	1 1/2	0.95

Cold Finish & Alloy Bars

1018 (HR, CF) — Low carbon, general purpose steel. It has hardening properties suitable for shafting that does not require high strength. Readily weldable.

1045 (HR, CF) — Medium carbon steel used when greater strength and hardness is desired in a rolled condition. Suitable for flame and induction hardening. Uses include gears, axles, bolts, studs and machine parts.

1144 (HR, CF) — A medium carbon steel that has superior machinability when compared to plain carbon steels. Uses include gears, shafts, axles, bolts, studs and pins.

12L14 (CF) — A lead bearing, extraordinarily fast machining steel. It offers ductility with fine surface quality. Readily machinable. Conforms to ASTM A108.

4140 — A medium carbon steel with a broad range of strength and toughness. Attainable through variations in heat treatment. It has harden ability, strength, wear resistance and ductility.

COLD FINISHED STEEL SQUARES

KEY STOCK — 12 FT

1018

Size in Inches	Weight Per Foot Pounds	Weight Per 12′ Bar Pounds
3/16	0.120	1.44
1/4	0.213	2.55
5/16	0.332	3.98
3/8	0.478	5.73
7/16	0.650	7.82
1/2	0.850	10.20
9/16	1.080	12.96
5/8	1.330	15.96
11/16	1.610	19.32
3/4	1.910	22.92
13/16	2.240	26.88
7/8	2.600	31.20
15/16	2.990	35.88
1	3.400	40.80
1 1/8	4.300	51.60
1 1/4	5.310	63.72
1 3/8	6.430	77.16
1 1/2	7.650	91.80
2	13.600	163.20

COLD FINISHED FLAT BARS
12 FT RANDOM LENGTH
1018

Please inquire about the many sizes in stock.
For Weights, See Mild Steel Flats

Size in Inches		Weight Per Ft Pounds	Size in Inches		Weight Per Ft Pounds	Size in Inches		Weight Per Ft Pounds
1/8	1/4	.106	1/4	1/2	.425	5/16	1-3/4	1.859
	3/8	.159		3/4	.638		2	2.215
	1/2	.213		1	.850		2-1/4	2.391
	3/4	.319		1-1/4	1.063		2-1/2	2.656
	1	.425		1-3/8	1.169		3	3.188
	1-1/4	.531		1-1/2	1.275		3-1/2	3.719
	1-1/2	.638		1-3/4	1.488		4	4.250
	1-3/4	.744		2	1.700		4-1/2	4.781
	2	.850		2-1/4	1.913		5	5.313
	2-1/2	1.063		2-1/2	2.125		6	6.375
	3	1.275		2-3/4	2.338	3/8	1/2	.638
	3-1/2	1.488		3	2.550		3/4	.956
	4	1.700		3-1/2	3-1/4		1	1.275
	5	2.125		3-3/4	3.188		1-1/8	1.434
	6	2.550		4	3.400		1-1/2	1.913
3/16	1/4	.159		4-1/4	3.825		1-3/8	1.753
	3/8	.239		5	4.250		1-1/2	1.913
	1/2	.319		5-1/2	4.675		1-5/8	2.072
	3/4	.478		6	5.100		1-3/4	2.231
	1	.638		7	5.950		2	2.550
	1-1/4	.797		8	6.800		2-1/4	2.869
	1-1/2	.956		9	7.650		2-1/2	3.188
	1-3/4	1.116		10	8.500		2-3/4	3.506
	1-7/8	1.195		12	10.20		3	3.825
	2	1.275	5/16	3/8	.398		3-1/4	4.144
	2-1/4	1.434		1/2	.531		3-1/2	4.463
	2-1/2	1.594		3/4	.797		3-3/4	4.781
	3	1.913		7/8	.930		4	5.100
	3-1/2	2.231		1	1.063		4-1/4	5.738
	4	2.550		1-1/8	1.195		5	6.375
	5	3.188		1-1/4	1.328		5-1/2	7.013
	6	3.825		1-3/8	1.461		6	7.650
	10	6.375		1-1/2	1.594		7	8.925

COLD FINISHED FLAT BARS (CON'T)

12 FT RANDOM LENGTHS

1018

Please inquire about the many sizes in stock.

For Weights, See Mild Steel Flats

Size in Inches		Weight Per Ft Pounds	Size in Inches		Weight Per Ft Pounds	Size in Inches		Weight Per Ft Pounds
3/8	8	10.20	5/8	2-3/4	5.844	3/4	10	25.50
	9	11.48		3	6.375		11	28.05
	10	12.75		3-1/4	7.438		12	30.60
	12	15.30		3-1/2	7.969	7/8	1	2.975
1/2	3/4	1.275		4	8.500		1-1/4	3.719
	1	1.700		4-1/2	9.563		1-1/2	4.463
	1-1/4	2.125		5	10.63		1-3/4	5.206
	1-1/2	2.550		5-1/2	11.69		2	5.950
	1-3/4	2.975		6	12.75		2-1/2	7.438
	2	3.400		7	14.88		2-3/4	8.181
	2-1/4	3.825		8	17.00		3	8.925
	2-1/2	4.250		10	21.25		3-1/2	10.41
	2-3/4	4.675		12	25.50		4	11.90
	3	5.100	3/4	1	2.550		5	14.88
	3-1/4	5.525		1-1/4	3.188		6	17.85
	3-1/2	5.950		1-1/2	3.825		8	23.80
	4	6.800		1-3/4	4.463	1	1-1/4	4.250
	4-1/2	7.650		2	5.100		1-1/2	5.100
	5	8.500		2-1/4	5.738		1-3/4	5.950
	5-1/2	9.350		2-1/2	6.375		2	6.800
	6	10.20		2-3/4	7.013		2-1/4	7.650
	7	11.90		3	7.650		2-1/2	8.500
	8	13.60		3-1/4	8.288		2-3/4	9.350
	9	15.30		3-1/2	8.925		3	10.20
	10	17.00		4	10.20		3-1/2	11.90
	12	20.40		4-1/2	11.48		4	13.60
5/8	1	2.125		5	12.75		4-1/2	15.30
	1-1/4	2.556		5-1/2	14.03		5	17.00
	1-1/2	3.188		6	15.30		5-1/2	18.70
	1-3/4	3.719		6-1/2	16.58		6	20.40
	2	4.250		7	17.85		7	23.80
	2-1/4	4.781		8	20.40		8	27.20
	2-1/2	5.313		9	22.95		9	30.60

COLD FINISHED FLAT BARS (CON'T)

12 FT RANDOM LENGTHS

1018

Please inquire about the many sizes in stock.

For Weights, See Mild Steel Flats

Size in Inches		Weight Per Ft Pounds	Size in Inches		Weight Per Ft Pounds	Size in Inches		Weight Per Ft Pounds
1	10	34.00		3-1/2	17.85		6	40.80
	12	40.80		4	20.40		6-1/2	44.20
1-1/8	1-1/4	4.781		4-1/2	22.95		7	47.60
	2	7.650		5	25.50		8	54.40
	2-1/2	9.563		5-1/2	28.05		8-1/2	57.80
	3	11.48		6	30.60		10	68.00
	4	15.30		6-1/2	33.15		12	81.60
1-1/4	1-1/2	6.375		8	40.80	2-1/4	2-1/2	19.13
	1-3/4	7.348		8-1/2	43.35		2-3/4	21.04
	2	8.500		10	51.00		3	22.95
	2-1/4	9.563		12	61.20		3-1/4	24.86
	2-1/2	10.63	1-3/4	2	11.90		3-1/2	26.78
	2-3/4	11.69		2-1/4	13.39		4	30.60
	3	12.75		2-1/2	14.88		5	38.25
	3-1/4	13.81		2-3/4	16.36		6	45.90
	3-1/2	14.88		3	17.85		7-1/2	57.38
	3-3/4	15.94		3-1/2	20.83	2-1/2	3	25.50
	4	17.00		3-3/4	22.31		3-1/2	29.75
	4-1/2	19.13		4	23.80		4	34.00
	5	21.25		4-1/2	26.78		4-1/2	38.25
	5-1/2	23.38		5	29.75		5	42.50
	6	25.50		5-1/2	32.73		6	51.00
	8	34.00		6	35.70		8	68.00
	10	42.50		6-1/2	38.68		10	85.00
	12	51.00	2	2-1/4	15.30	3	3-1/2	35.70
1-3/8	2	9.350		2-1/2	17.00		4	40.80
	3	14.03		2-3/4	18.70		5	51.00
1-1/2	1-3/4	8.925		3	20.40		6	61.20
	2	10.20		3-1/2	23.80		8	81.60
	2-1/4	11.48		4	27.20		10	102.0
	2-1/2	12.75		4-1/2	30.60	3-1/2	5	59.50
	2-3/4	14.03		5	34.00	4	5	68.00
	3	15.30		5-1/2	37.40			

COLD FINISHED AND ALLOY ROUNDS
18 – 24 FT RANDOM LENGTHS

The following rounds are available upon request:
4140 — Heat Treated Stress Relieved, Turned, Ground & Polished
1144 Stress — Available in Cold Drawn Ebony & Turned, Ground & Polished
1045 — Turned, Ground & Polished
12L14 — Cold Finish
1018 — Cold Finish

Size In Inches	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds	Size In Inches	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
3/16	0.094	1.88	1 13/16	8.770	175.50
1/4	0.167	3.34	1 7/8	9.390	187.60
5/16	0.261	5.22	1 15/16	10.020	200.49
3/8	0.375	7.52	2	10.680	213.60
7/16	0.511	10.22	2 1/16	11.360	227.20
1/2	0.668	13.36	2 1/8	12.060	241.20
9/16	0.845	16.90	2 3/16	12.780	255.60
5/8	1.043	20.86	2 1/4	13.520	270.40
11/16	1.260	25.24	2 5/16	14.280	285.60
3/4	1.500	30.04	2 3/8	15.060	301.20
13/16	1.760	35.26	2 7/16	15.870	317.40
7/8	2.040	40.88	2 1/2	16.690	333.80
15/16	2.350	46.94	2 9/16	17.530	350.70
1	2.670	53.41	2 5/8	18.410	368.01
1 1/16	3.020	60.29	2 11/16	19.290	385.74
1 1/8	3.380	67.60	2 3/4	20.200	403.89
1 3/16	3.770	75.31	2 13/16	21.120	422.40
1 1/4	4.170	83.45	2 7/8	22.090	441.44
1 5/16	4.600	92.00	2 15/16	23.040	460.80
1 3/8	5.050	101.00	3	24.030	480.60
1 7/16	5.520	110.40	3 7/16	31.550	631.00
1 1/2	6.010	120.20	3 15/16	41.400	828.00
1 9/16	6.520	130.40	4 7/16	52.580	1051.60
1 5/8	7.050	141.01	4 15/16	65.100	1302.00
1 11/16	7.600	152.00	5 7/16	78.950	1579.00
1 3/4	8.180	163.60	5 15/16	94.140	1882.80

HOT ROLLED STEEL SHEET

In addition to sizes listed in our sheet section,
we can furnish sheets cut
to your exact specifications.

Size in Inches	Thickness in Inches	Theoretical Weight
10 Gauge (5.625# sq. ft.)		
48 x 96	.1345	180
48 x 120	.1345	225
48 x 144	.1345	270
48 x 240	.1345	450
60 x 120	.1345	281
60 x 144	.1345	337
60 x 240	.1345	563
60 x 288	.1345	674
72 x 240	.1345	675
96 x 240	.1345	900
11 Gauge (5.000# sq. ft.)		
48 x 96	.1196	160
48 x 120	.1196	200
48 x 144	.1196	240
48 x 240	.1196	400
60 x 120	.1196	250
60 x 240	.1196	500
60 x 288	.1196	600
72 x 240	.1196	600
12 Gauge (4.375# sq. ft.)		
48 x 96	.1046	140
48 x 120	.1046	175
48 x 144	.1046	210
48 x 240	.1046	350
60 x 120	.1046	218
60 x 144	.1046	262
60 x 240	.1046	437
72 x 240	.1046	525
72 x 288	.1046	630
14 Gauge (3.125# sq. ft.)		
48 x 96	.0747	100
48 x 120	.0747	125
48 x 144	.0747	150
60 x 96	.0747	125
60 x 120	.0747	156
60 x 144	.0747	187
60 x 240	.0747	312
72 x 240	.0747	375

Other widths and lengths available upon request.

HOT ROLLED STEEL SHEET

In addition to sizes listed in our sheet section,
we can furnish sheets cut
to your exact specifications.

Size in Inches	Thickness in Inches	Theoretical Weight
16 Gauge (2.500# sq. ft.)		
48 x 96	.0598	80
48 x 120	.0598	100
48 x 144	.0598	120
60 x 120	.0598	125
60 x 144	.0598	150

Other widths and lengths available upon request.

COLD ROLLED STEEL SHEET

These sheets are produced on continuous sheet mills. They can be used for auto body work, furniture, panels, table tops, partitions, locker work. Will stand simple forming and drawing. Commercial Quality – Oiled

Size in Inches	Thickness in Inches	Theoretical Weight
10 Gauge (5.625# sq.ft.)		
48 x 120	.1345	225
60 x 120	.1345	281
11 Gauge (5.000# sq. ft.)		
48 x 120	.1196	200
60 x 120	.1196	250
60 x 144	.1196	300
12 Gauge (4.375# sq. ft.)		
48 x 120	.1046	175
60 x 120	.1046	218
60 x 144	.1046	263
14 Gauge (3.125# sq. ft.)		
48 x 120	.0747	125
60 x 120	.0747	156
16 Gauge (2.500# sq. ft.)		
48 x 120	.0598	100
48 x 144	.0598	120
60 x 120	.0598	125
18 Gauge (2.000# sq. ft.)		
48 x120	.0478	80
20 Gauge (1.500# sq. ft.)		
48 x 120	.0359	60
22 Gauge (1.250# sq. ft.)		
48 x 120	.0299	50
24 Gauge (1.000# sq. ft.)		
48 x 120	.0239	40

Other widths and lengths available upon request.

PICKELED & OILED SHEET

Low Carbon Commercial Steel
ASTM A1011 CS Type B[1] (A569 CQ)

Gauge	Size In Inches	Thickness In Inches	Est. Wt. Per Sheet in Lbs.
10	60 x 120	.1345	281.3
3/16	48 x 120	.1793	300
1/4	48 x 96	.2500	326

GALVANIZED SHEET

ASTM A653 CS Type B[1]
(A526/A527 CQ)[2]
Sizes 20 Gauge and Lighter are G60.
Sizes over 20 Gauge are G90.

Gauge	Size In Inches	Thickness In Inches	Est. Wt. Per Sq. Ft. in Lbs.	Est. Wt. Per Sheet in Lbs.
10	48 x 120	.1382	5.781	231.2
11	48 x 96	.1233	5.156	165.0
	48 x 120	.1233	5.156	206.2
12	48 x 120	.1084	4.531	181.2
14	48 x 120	.0785	3.281	131.2
16	48 x 120	.0635	2.656	106.2
	48 x 144	.0635	2.656	127.5
18	48 x 96	.0516	2.156	69.0
	48 x 120	.0516	2.156	86.2
	48 x 144	.0516	2.156	103.5
20	48 x 120	.0396	1.656	66.2
22	48 x 120	.0336	1.406	56.3
24	48 x 120	.0276	1.156	46.2
26	48 x 120	.0217	.906	36.2

GALVANNEALED SHEET

ASTM A653 CS TYPE B[1] (A526 CQ)[2]

Gauge	Size In Inches	Thickness In Inches	Est. Wt. Per Sheet in Lbs.
12	48 x 120	.1084	181.2
16	48 x 120	.0635	106.2
	60 X 120	.0635	132.8
18	48 x 120	.0516	86.2
	48 x 144	.0516	103.4
20	48 x 120	.0396	66.2
22	48 X 120	.0336	56.2
24	48 x 120	.0276	46.2
	48 x 144	.0276	55.4

SHEARED AND BURNED PLATE

A36

Plates carried in stock for the following specifications.
Custom shearing and burning available upon request.

Size In Inches	Theoretical Weight	Size In Inches	Theoretical Weight	Size In Inches	Theoretical Weight
3/16 (7.65 # sq. ft.)		3/8 (15.30 # sq. ft.)		240	4080
48x 96	245	48x 96	490	360	6120
120	306	120	612	120 x 240	5100
144	367	240	1224	360	7650
240	612	60 x 240	1530	3/4 (30.60 # sq. ft.)	
60 x 144	459	288	1836	48 x 96	979
240	765	72 x 240	1836	240	2448
288	918	288	2203	288	2938
72 x 144	550	360	2754	60 x 240	3060
240	918	96 x 240	2448	288	3672
288	1102	288	2938	72 x 240	3672
96 x 240	1224	360	3674	288	4406
288	1469	120x 240	3060	96 x 240	4896
1/4 (10.20 # sq. ft.)		288	3672	288	5875
48x 96	326	1/2 (20.40 # sq. ft.)		360	7344
120	408	48x 96	653	120 x 240	6120
144	490	120	816	360	9180
240	816	240	1632	7/8 (35.70 # sq. Ft)	
288	979	60 x 240	2040	48 x 96	1142
60 x 120	510	288	2448	240	2856
144	612	96 x 240	3264	288	3427
240	1020	288	3916	60 x 240	3570
288	1224	360	4896	288	4284
72 x 240	1224	120x 240	4080	96 x 240	5712
288	1469	360	6120	288	6854
96 x240	1632	5/8 (25.50 # sq. ft.)		1 (40.80 # sq. ft.)	
288	1958	48x 96	816	48 x 96	1306
120 x 240	2040	240	2040	240	3264
360	3060	288	2448	288	3917
5/16 (12.75 # sq. ft.)		60 x 240	2550	60 x 240	4080
48 x 240	1020	288	3060	288	4896
60 x 240	1275	360	3825	72 x 240	4896
72 x 240	1530	72 x 240	3060	288	5875
96 x 240	2040	288	3672	96 x 240	6528

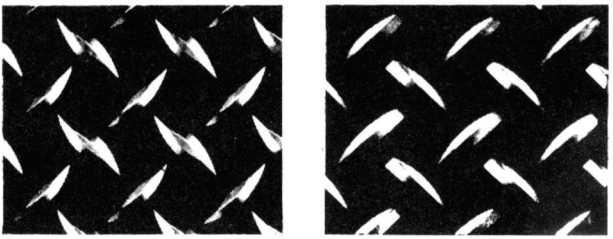
SHEARED AND BURNED PLATE (CON'T)

A36

Plates carried in stock for the following specifications.
Custom shearing and burning available upon request.

Size In Inches	Theoretical Weight	Size In Inches	Theoretical Weight	Size In Inches	Theoretical Weight
288	7834	120 x 240	12240	96 x 144	11751
360	9792	288	14688	3 1/2 (142.80 # sq. ft.)	
120 x 240	8160	1 5/8 (66.30 # sq. ft.)		96 x 144	13709
360	12240	96 x 240	12710		
1 1/8 (45.90 # sq. ft.)		1 3/4 (71.40 # sq. ft.)		4 (163.20 # sq. ft.)	
96 x 240	7344	72x 288	10282	72 x 144	11750
288	8813	96x 240	11424	96 x144	15667
1 1/4 (51.00 # sq. ft.)				4 1/2 (183.60 # sq. ft.)	
60 x 240	5100	2 (81.60 # sq. ft.)		96 x 144	17626
72 x 240	6120	48 x 240	5712	5 (204.00 # sq. ft.)	
288	7344	72x 288	11750	60 x 144	12240
96 x 240	8160	96x 240	13056	72 x 144	14688
1 3/8 (56.10 # sq. ft.)		2 1/4 (91.80 # sq. ft.)		96 x 96	15667
96 x 240	8976	96 x 240	14688	120	16320
1 1/2 (61.20 # sq. ft.)		2 1/2 (102.00 # sq. ft.)		6 (244.80 # sq. ft.)	
48 x 240	4896	72 x 240	12240	72 x 144	17626
60 x 240	6120	96 x 240	16320	96 x 120	19584
72 x 240	7344	2 3/4 (112.00 # sq. ft)		8 (326.40 # sq. ft.)	
288	8813	96 x 144	96x144	72 x 120	19584
96 x 240	9792	3 (122.40 # sq. ft.)		10 (408.00 # sq. ft)	
288	11750	60 x 240	11733	60 x 96	16320

FLOOR PLATE



Typical Patterns

Floor plate provides maximum skid resistance regardless of how the plate is laid or the angle from which it is approached. Patterns are continuous whether adjoining plates are laid end to end, side to side or side to end. Cutting waste is reduced to a minimum. Cleaning is easily accomplished with hose, brush or mop, with rapid & complete drainage.

APPLICATIONS: Running board steps, floors, walkways, platforms, cover plates, stair treads, hatch covers, truck runways, conveyors, etc.

Thickness	Size In Inches	Estimated Weight Per Sq. Foot	Theoretical Weight
14 GA	48 x 96	3.75	120
	48 x 120	3.75	150
1/8	48 x 96	6.15	197
	48 x 120	6.15	246
	60 x 120	6.15	308
	60 x 240	6.15	615
	72 x 240	6.15	738
3/16	48 x 96	8.70	278
	48 x 144	8.70	418
	48 x 240	8.70	696
	60 x 240	8.70	870
	72 x 240	8.70	1044
	96 x 240	8.70	1392
1/4	48 x 240	11.25	900
	60 x 120	11.25	562
	60 x 240	11.25	1125
	72 x 240	11.25	1350
	96 x 240	11.25	1800

FLOOR PLATE (CON'T)

Thickness	Size In Inches	Estimated Weight Per Sq. Foot	Theoretical Weight
3/8	48x120	16.35	654
	60x240	16.35	1635
	72x240	16.35	1962
1/2	48 x 240	21.45	1716
	60 x 240	21.45	2145

HOT ROLLED CARBON PLATE
HIGH STRENGTH LOW ALLOY
A572 GRADE – 50
UP TO 24 FT LENGTHS

Thickness	Size In Inches	Estimated Weight Per Sq. Foot
3/16	72	7.65
	96	7.65
1/4	48	10.20
	60	10.20
	72	10.20
	96	10.20
5/16	72	12.75
	96	12.75
3/8	60	15.30
	96	15.30
1/2	60	20.40
	72	20.40
	96	20.40
5/8	96	25.50
3/4	96	30.60
7/8	96	35.70
1	72	40.80

HOT ROLLED ALLOY PLATE
HEAT TREATED
CONFORMS TO ASTM – A514 GRADE B

Thickness	Size In Inches	Weight Per Ft Pounds
3/16	96 x 240	7.65
1/4	96 x 240	10.20
5/16	96 x 240	12.75
3/8	96 x 240	15.30
1/2	96 x 240	20.40
5/8	96 x 240	25.50
3/4	96 x 240	30.60
7/8	96 x 240	35.70
1	96 x 240	40.80
1-1/4	96 x 240	51.00
1-1/2	96 x 240	61.20
1-3/4	96 x 240	71.40
2	96 x 240	81.60
2-1/2	96 x 240	102.00
3	96 x 240	122.40
3-1/2	96 x 240	142.80

ABRASION RESISTANT
AR 200

Thickness	Width In Inches	Weight Per Ft Pounds
10GA	48	5.63
3/16	72	7.65
	96	7.65
1/4	96	10.20
3/8	60	15.30
	72	15.30
	96	15.30
1/2	72	20.40

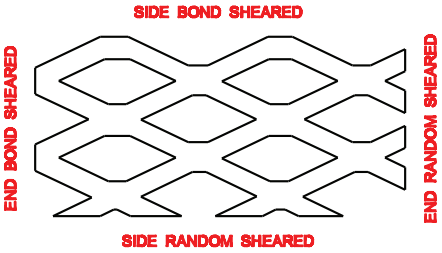
ABRASION RESISTANT ALLOY PLATE
AR 400
UP TO 24 FT LENGTHS

Thickness	Size In Inches	Weight Per Ft Pounds
3/16	96 x 288	7.65
1/4	96 x 288	10.20
5/16	96 x 288	12.75
3/8	96 x 288	15.30
1/2	96 x 288	20.40
5/8	96 x 288	25.50
3/4	96 x 288	30.60
1	96 x 288	40.80
1-1/4	96 x 288	51.00
1-1/2	96 x 288	61.20

ABRASION RESISTANT ALLOY PLATE
AR 500
UP TO 24 FT LENGTHS

Thickness	Size In Inches	Weight Per Ft Pounds
1/4	96 x 288	10.20
3/8	96 x 288	15.30
1/2	96 x 288	20.40
3/4	96 x 288	30.60
1	96 x 288	40.80
1-1/2	96 x 288	61.20

HOW TO ORDER EXPANDED METAL



Side Shearing

The process of cutting a piece of expanded metal parallel to the long dimension of the diamond.

Random Side Shearing

Side shearing is a cut made parallel to the LWD dimension of the sheet which usually leaves open diamonds. Standard tolerance SWD is plus or minus 1/16" when both sides are sheared.

Bond Side Shearing

This cut is made along the length of the sheet on the center line of the bond over the specific width. In most cases it is not practical to attempt to Bond Side Shear either standard or flattened expanded metal, because of camber.

End Shearing

The process of cutting a piece of expanded metal parallel to the short way of the diamond.

End Random Shearing

The process of shearing a piece of expanded metal to the specific length (LWD). This cut normally leaves open diamonds at both ends but accomplishes close tolerance (plus or minus 1/16") when both ends are sheared.

End Bond Shearing

The process of shearing a piece of expanded metal to the specific length (LWD). A plus or minus 1/16"tolerance applies when both ends are sheared. One end is cut on the Bond parallel to the SWD, the other end usually has open diamonds.

NOTE: When End Bond Shearing is requested for both ends, the sheet at the center of the bond ***over*** the specific length. A tolerance minus 0 plus ½ diamond applies. It is possible to End Bond Shear, but extraordinary care must be exercised to maintain the squareness of the sheet.

Squareness

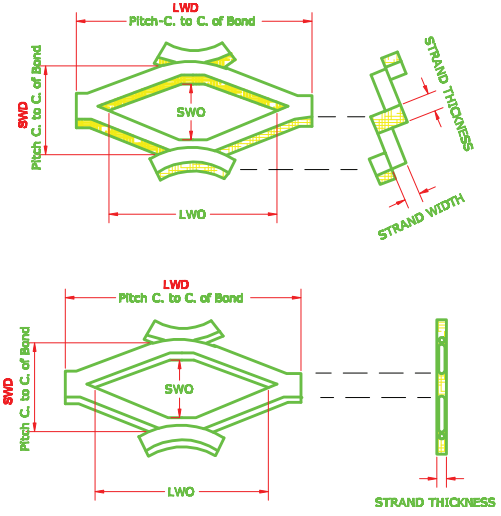
When all four sides of a sheet of expanded metal are sheared, the maximum tolerance will be plus or minus 1/16" per foot of width.

The following information should always be included when placing an expanded metal order.

1. **Specify the number of pieces wanted.**
2. **Specify the nominal width of the diamond SWD.**
3. **Specify the style of the sheet.** Example - #18, #9, or if aluminum, .081, .051, or if grating, 4lb., 5lb., 3.14lb., etc.
4. **Specify whether standard or flattened.**
5. **Specify the type of metal wanted -**Example – Carbon steel, stainless steel, aluminum, etc.
6. **Specify the size of sheet wanted –**Example – 4' SWD x 8' LWD

Here is an example that illustrates the information necessary to fill your order without delay:

Example: 20 pieces ½" #13 standard carbon steel expanded metal 4' SWD x 8' LWD



STANDARD EXPANDED METAL

CARBON STEEL

Style	Wt. in lbs. per c.s.f.		Standard Sizes in Feet		Size of Openings in Inches		Center to Center of Bond in Inches		Sizes of Strands in Inches		Percent Open Area	Overall Thickness in Inches
	Plain	Galv.	Width	Length	Width	Length	Width	Length	Width	Thickness		
3/16" - #24	50	A	B	B	.166	.437	.200	.50	.050	.024	63	.086
3/16" - #22	62	A	B	B	.166	.437	.200	.50	.050	.030	60	.088
3/16" - #20	75	A	B	B	.166	.437	.200	.50	.050	.036	57	.090
1/4" - # 20	86	129	4	8	.172	.719	.255	1.00	.073	.036	45	.125
1/4" - # 18	114	171	4	8	.172	.719	.255	1.00	.073	.048	43	.125
1/2" - # 20	43	59	4	8	.438	.938	.500	1.20	.072	.036	80	.124
1/2" - # 18	70	85	4-6	8-10	.438	.938	.500	1.20	.088	.048	77	.155
1/2" - # 16	86	97	4-6	8-10	.375	.938	.500	1.20	.086	.060	71	.157
1/2" - # 13	147	173	4-6	8-10	.313	.938	.500	1.20	.096	.092	58	.182
3/4" - # 16	54	65	4-6	8-10	.813	1.750	.923	2.00	.099	.060	85	.186
3/4" - # 13	80	92	4-6	8-10	.750	1.688	.923	2.00	.096	.092	78	.195
3/4" - # 10	120	136	4-6	8-10	.750	1.625	.923	2.00	.144	.092	77	.282
3/4" - # 9	180	195	4-6	8-10-12	.688	1.563	.923	2.00	.148	.134	66	.300

STANDARD EXPANDED METAL (CON'T)

CARBON STEEL

Style	Wt. in lbs. per c.s.f.		Standard Sizes in Feet		Size of Openings in Inches		Center to Center of Bond in Inches		Sizes of Strands in Inches		Percent Open Area	Overall Thickness in Inches
	Plain	Galv.	Width	Length	Width	Length	Width	Length	Width	Thickness		
1" - #16	44	51	4	8	1.000	2.063	1.090	2.40	.096	.060	86	.182
1-1/2" - #18	20	25	4	8	1.313	2.625	1.330	3.00	.067	.048	93	.140
1-1/2" - #16	40	48	4	8-10-12	1.250	2.625	1.330	3.00	.107	.060	89	.211
1-1/2" - #13	60	68	4-6	8-10-12	1.188	2.500	1.330	3.00	.104	.092	86	.215
1-1/2" - #10	79	89	4-6	8-10	1.188	2.500	1.330	3.00	.137	.092	85	.289
1-1/2" - # 9	120	131	4-6	8-10-12	1.125	2.375	1.330	3.00	.142	.134	75	.295
1-1/2" - # 6	250	273	4-6	8-10-12	1.000	2.313	1.330	3.00	.201	.198	63	.425
2" - # 10	68	75	B	B	1.625	3.438	1.850	4.00	.164	.092	86	.312
2" - # 9	90	102	B	B	1.563	3.375	1.850	4.00	.149	.134	86	.325

Also available in Aluminum and Stainless Steel.
Please contact your Sales Rep for more information.

FLATTENED EXPANDED METAL

CARBON STEEL

Style	Wt. in lbs. per c.s.f.		Standard Sizes in Feet		Size of Openings in Inches		Center to Center of Bond in Inches		Sizes of Strands in Inches		Percent Open Area	Overall Thickness in Inches
	Plain	Galv.	Width	Length	Width	Length	Width	Length	Width	Thickness		
3/16" - #24	48	A	B	B	.085	.459	.200	.52	.057	.019	41	.019
3/16" - #22	60	A	B	B	.085	.459	.200	.52	.057	.024	40	.024
3/16" - #20	72	A	B	B	.085	.459	.200	.52	.057	.029	39	.029
1/4" - # 20	83	124	4	8	.094	.688	.255	1.03	.086	.030	47	.303
1/4" - # 18	111	165	4	8	.094	.688	.255	1.03	.086	.040	40	.040
1/2" - # 20	40	51	4	8	.375	1.000	.500	1.26	.070	.029	72	.029
1/2" - # 18	66	88	3-4-6	8-10	.281	1.000	.500	1.26	.109	.039	69	.039
1/2" - # 16	82	100	3-4-6	8-10	.250	1.000	.500	1.26	.103	.050	60	.050
1/2" - # 13	140	162	3-4-6	8-10	.250	1.000	.500	1.26	.122	.070	57	.070
3/4" - # 16	51	61	3-4-6	8-10	.750	1.750	.923	2.10	.115	.048	75	.048
3/4" - # 13	75	86	3-4-6	8-10	.688	1.782	.923	2.10	.119	.070	73	.070

FLATTENED EXPANDED METAL (CON'T)

CARBON STEEL

Style	Wt. in lbs. per c.s.f.		Standard Sizes in Feet		Size of Openings in Inches		Center to Center of Bond in Inches		Sizes of Strands in Inches		Percent Open Area	Overall Thickness in Inches
	Plain	Galv.	Width	Length	Width	Length	Width	Length	Width	Thickness		
3/4" - # 9	171	186	3-4-6	8-10-12	.563	1.688	.923	2.12	.164	.120	63	.120
1" - #16	41	50	4	8	.875	2.250	1.090	2.56	.115	.048	77	.048
1-1/2" - #16	38	44	4	8	1.063	2.750	1.330	3.20	.123	.048	82	.048
1-1/2" - #14	46	56	3-4-6	8	1.063	2.750	1.330	3.20	.138	.060	82	.060
1-1/2" - #13	57	68	3-4-6	8	1.063	2.750	1.330	3.20	.138	.070	80	.070
1-1/2" - #9	111	128	3-4-6	8-10-12	1.000	2.563	1.330	3.20	.175	.110	77	.110

Also available in Aluminum and Stainless Steel.
Please contact your Sales Rep for more information.

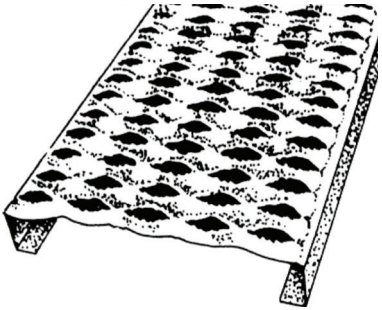
EXPANDED METAL GRATING
CARBON STEEL - STANDARD

Style	Wt. in lbs. per c.s.f.		Standard Sizes in Feet		Size of Openings in Inches		Center to Center of Bond in Inches		Sizes of Strands in Inches		Percent Open Area	Overall Thickness in Inches
	Plain	Galv.	Width	Length	Width	Length	Width	Length	Width	Thickness		
3 lb.	300	320	4-6	8-12	.938	3.438	1.333	5.33	.261	.183	73	.500
3.14 lb.	314	334	4-6	8-10	1.625	4.875	2.000	6.00	.308	.250	74	.562
4 lb.	400	430	4-5-6	8-10	.938	3.428	1.333	5.33	.297	.215	65	.625
4.27 lb.	427	457	4-6	8-10	1.000	2.875	1.412	4.00	.297	.250	58	.625
5 lb.	500	550	4-5-6	8-10	.813	3.375	1.333	5.33	.327	.250	52	.625
6.25 lb.	625	685	4-6	8	.813	3.375	1.412	5.33	.347	.312	55	.750
7 lb.	700	750	4-6	8	.813	3.375	1.412	5.33	.388	.312	60	.750

EXPANDED METAL GRATING
CARBON STEEL - REVERSE

Style	Wt. in lbs. per c.s.f.		Standard Sizes in Feet		Size of Openings in Inches		Center to Center of Bond in Inches		Sizes of Strands in Inches		Percent Open Area	Overall Thickness in Inches
	Plain	Galv.	Width	Length	Width	Length	Width	Length	Width	Thickness		
3 lb.	300	320	10	2- 2 ½ - 3	.938	3.438	1.333	5.33	.261	.183	73	.500
3.14 lb.	314	334	10	2- 2 ½ - 3	1.625	4.875	2.000	6.00	.308	.250	74	.562
4 lb.	400	430	10	2- 2 ½ - 3	.938	3.428	1.333	5.33	.297	.215	65	.625
4.27 lb.	427	457	10	2- 2 ½ - 3	1.000	2.875	1.412	4.00	.297	.250	58	.625
5 lb.	500	550	10	2- 2 ½ - 3	.813	3.375	1.333	5.33	.327	.250	52	.625

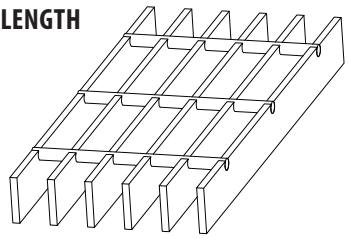
SAFETY GRATING



Tread	Channel	Gauge	Diamond	Wt. Per Ft.
2-1/2	1-1/2	14	1	1.13
4-3/4	2	12	2	3.6
7	2	12	3	4.5
9-1/2	2	12	4	5.4
11-3/4	2	12	5	6.2
18-3/4	2	12	8	8.9
24	2	12	10	10.4

Other sizes and configurations available

BAR GRATE
19 – W- 4
24 FT LENGTH



Size of Bearing Bar x Width	Weight per Square Ft
1/8 x 1 x 36″	5.15
3/16 x 1-1/4 x 36″	9.03
3/16 x 1-1/2 x 36″	10.94

Other sizes and configurations available

SQUARE TUBING

Size	Wall	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
1/2 x 1/2	.065	.380	7.60
5/8 x 5/8	.065	.495	9.90
3/4 x 3/4	.049	.467	9.34
	.065	.630	12.60
	.083	.753	15.06
	.120	1.028	20.56
7/8 x 7/8	.065	.680	13.60
1 x 1	.049	.634	12.68
	.065	.830	16.60
	.072	.910	18.20
	.083	1.040	20.80
	.095	1.170	23.40
	.109	1.320	26.40
	.120	1.440	28.80
1-1/4 x 1-1/4	.065	1.010	20.20
	.072	1.150	23.00
	.083	1.320	26.40
	.095	1.490	29.80
	.120	1.840	36.80
	.188	2.750	55.00
1-1/2 x 1-1/2	.065	1.230	24.60
	.083	1.600	32.00
	.095	1.820	36.40
	.120	2.250	45.00
	.188	3.540	70.80
	.250	4.110	82.20
1-3/4 x 1-3/4	.065	1.37	27.40
	.120	2.660	53.20
2 x 2	.065	1.710	34.20
	.083	2.160	43.20
	.095	2.460	49.20
	.120	3.070	61.40
	.188	4.320	86.40
	.250	5.410	108.20
2-1/2 x 2-1/2	.120	3.840	76.80
	.188	5.590	111.80
	.250	7.110	142.20
3 x 3	.083	3.290	65.80
	.095	3.750	75.00
	.120	4.700	94.00
	.188	6.870	137.40
	.250	8.810	176.20
	.313	11.080	221.60
	.375	13.380	267.60
3-1/2 x 3-1/2	.188	8.300	166.00
	.250	10.810	216.20
	.313	13.190	263.80
	.375	15.940	318.80
4 x 4	.120	6.330	126.60
	.188	9.420	188.40
	.250	12.210	244.20
	.313	14.820	296.40
	.375	17.270	345.40
	.500	21.630	432.60
4-1/2 x 4-1/2	.188	10.700	214.00
	.250	13.910	278.20
5 x 5	.188	11.970	239.40
	.250	15.620	312.40
	.313	19.580	391.60
	.375	22.370	447.40
	.500	29.780	595.60
6 x 6	.188	14.530	290.60
	.250	19.020	380.40
	.313	23.830	476.60
	.375	27.480	549.60
	.500	36.720	734.40
	.500	43.510	870.20

SQUARE TUBING (CON'T)

Size	Wall	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds	Size	Wall	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
7 x 7	.250	22.420	448.40	**10 x 10**	.313	40.350	807.00
	.375	32.580	651.60		.375	47.900	958.00
8 x 8	.188	19.630	392.60		.500	62.460	1249.20
	.250	25.820	516.40		.625	76.330	1526.60
	.313	31.840	636.80	**12 x 12**	.250	39.440	788.80
	.375	37.690	753.80		.375	58.470	1169.40
	.500	50.310	1006.20		.500	77.510	1550.20
10 x 10	.250	33.700	674.00				

RECTANGULAR TUBING

Size	Wall	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds	Size	Wall	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
1 x 1/2	.065	.605	12.10	**3x1-1/2**	.065	1.930	38.60
1-1/2x1/2	.065	.823	16.46		.083	2.450	49.00
1-1/2x3/4	.065	.937	18.74		.120	3.480	69.60
	.120	1.640	32.80		.188	5.060	101.20
1-1/2x1	.065	.048	.096	**3x2**	.083	2.730	54.60
2x1	.065	0.230	4.60		.095	3.020	60.40
	.083	1.600	32.00		.120	3.840	76.80
	.095	1.810	36.20		.188	5.590	111.80
	.120	2.250	45.00		.250	7.110	142.20
2x1-1/2	.083	1.880	37.60	**3-1/2x2-1/2**	.188	6.870	137.40
	.120	2.660	53.20		.250	8.810	176.20
2-1/2x1	.083	1.882	37.64	**4x1-1/2**	.120	4.290	85.80
	.120	2.660	53.20	**4x2**	.065	2.590	51.80
3x1	.083	2.160	43.20		.120	4.700	94.00
	.120	3.050	61.00		.188	6.870	137.40

RECTANGULAR TUBING (CON'T)

Size	Wall	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds	Size	Wall	Weight Per Ft Pounds	Weight Per 20 Ft Bar Pounds
	.250	8.810	176.20	**8x2**	.188	12.410	248.20
	.313	10.580	211.60		.250	15.910	318.20
	. 375	13.430	268.60	**8x3**	.188	13.390	267.20
4x3	.120	5.520	110.40		.250	17.610	352.20
	.188	8.150	163.00		.375	25.670	513.40
	.250	10.510	210.20	**8x4**	.188	14.530	290.60
	.375	14.700	294.00		.250	19.020	380.40
5x2	.120	5.520	110.40		.375	27.480	549.60
	.188	8.150	163.00	**8x6**	.250	22.420	448.40
	.250	10.510	210.20		.375	32.580	651.60
	.313	12.700	254.00		.500	43.510	870.20
	.375	14.710	294.20	**9x7**	.250	25.820	516.40
5x3	.120	6.330	126.00	**10x2**	.250	19.310	386.20
	.188	9.420	188.40	**10x3**	.250	21.010	420.20
	.250	12.210	244.20	**10x4**	.188	17.130	342.60
	.375	17.270	345.40		.250	22.710	454.20
	.500	22.980	459.60		.375	33.320	666.40
6x2	.120	6.330	126.60		.500	43.510	870.20
	.188	9.420	188.40	**10x6**	.250	25.820	516.40
	.250	12.210	244.20		.375	37.690	753.80
	.375	17.270	345.40		.500	50.310	1006.20
6x3	.120	7.148	142.96	**10x8**	.250	29.370	587.40
	.188	10.700	214.00		.375	43.510	870.20
	.250	13.910	278.20		.500	57.110	1142.20
	.375	20.570	411.40	**12x2**	.250	22.710	454.20
	.500	27.200	544.00	**12x4**	.250	26.040	520.80
6x4	.120	8.160	163.20		.375	38.420	768.40
	.188	11.970	239.40	**12x6**	.250	29.370	587.40
	.250	15.620	239.40		.375	43.510	870.20
	.375	22.370	447.40		.500	57.110	1142.20
	.500	29.780	595.60	**12x8**	.250	33.700	674.00
7x4	.250	17.610	352.20		.375	48.610	972.20
7x5	.250	19.310	386.20		.500	63.910	1278.20
	.375	28.220	564.40	**16x4**	.375	47.900	958.00
	.500	36.720	734.40	**16x8**	.500	76.070	1521.40

BLACK, GALVANIZED STEEL AND BARE PIPE
BUTT-WELD OR SEAMLESS, PLAIN ENDS OR THREADED AND COUPLED
21 FT RANDOM LENGTHS

Top Figures: Wall Thickness in Inches | **Bottom Figures: Weight Per Foot in Pounds**

Pipe Size	O.D. (In)	5	10	20	30	40	STD.	60	80	E.H.	100	120	140	160	DBLE. E.H.
1/8	.405	.035 **.14**	.049 **.19**			.068 **.24**	.068 **.24**		.095 **.31**	.095 **.31**					
1/4	.540	.049 **.26**	.065 **.33**			.088 **.42**	.088 **.42**		.119 **.53**	.119 **.53**					
3/8	.675	.049 **.33**	.065 **.42**			.091 **.56**	.091 **.56**		.126 **.73**	.126 **.73**					
1/2	.840	.065 **.54**	.083 **.67**			.109 **.85**	.109 **.85**		.147 **1.09**	.147 **1.09**				.187 **1.30**	.294 **1.71**
3/4	1.050	.065 **.68**	.083 **.86**			.113 **1.13**	.113 **1.13**		.154 **1.47**	.154 **1.47**				.218 **1.94**	.308 **2.44**
1	1.315	.065 **.87**	.109 **1.40**			.133 **1.68**	.133 **1.68**		.179 **2.17**	.179 **2.17**				.250 **2.84**	.358 **3.66**

BLACK, GALVANIZED STEEL AND BARE PIPE (CON'T)

BUTT-WELD OR SEAMLESS, PLAIN ENDS OR THREADED AND COUPLED

21 FT RANDOM LENGTHS

Top Figures: Wall Thickness in Inches | **Bottom Figures: Weight Per Foot in Pounds**

Pipe Size	O.D. (In)	5	10	20	30	40	STD.	60	80	E.H.	100	120	140	160	DBLE. E.H.
1-1/4	1.660	.065 **1.11**	.109 **1.81**			.140 **2.27**	.140 **2.27**		.191 **3.00**	1.91 **3.00**				.250 **3.77**	.382 **6.41**
1-1/2	1.900	.065 **1.27**	.109 **2.09**			.145 **2.72**	.145 **2.72**		.200 **3.63**	.200 **3.63**				.281 **4.86**	.400 **5.21**
2	2.375	.065 **1.60**	.109 **2.64**			.154 **3.65**	.154 **3.65**		.218 **5.02**	.218 **5.02**				.343 **7.46**	.436 **9.03**
2-1/2	2.875	.083 **2.48**	.120 **3.53**			.203 **5.79**	.203 **5.79**		.276 **7.66**	.276 **7.66**				.375 **10.01**	.552 **13.70**
3	3.500	.083 **3.03**	.120 **4.33**			.216 **7.58**	.216 **7.58**		.300 **10.25**	.300 **10.25**				.437 **14.32**	.600 **18.58**
3-1/2	4.000	.083 **3.47**	.120 **4.97**			.226 **9.11**	.226 **9.11**		.318 **12.51**	.318 **12.51**					.636 **22.85**

BLACK, GALVANIZED STEEL AND BARE PIPE (CON'T)
BUTT-WELD OR SEAMLESS, PLAIN ENDS OR THREADED AND COUPLED
21 FT RANDOM LENGTHS

Top Figures: Wall Thickness in Inches | **Bottom Figures: Weight Per Foot in Pounds**

Pipe Size	O.D. (In)	5	10	20	30	40	STD.	60	80	E.H.	100	120	140	160	DBLE. E.H.
4	4.500	.083 **3.92**	.120 **5.61**			.237 **10.79**	.237 **10.79**	.281 **12.66**	.337 **14.98**	.337 **14.98**		.437 **19.01**		.531 **22.51**	.674 **27.54**
5	5.563	.109 **6.35**	.134 **7.77**	.188 **10.79**		.258 **14.62**	.258 **14.62**		.375 **20.78**	.375 **20.78**		.500 **27.04**		.625 **32.96**	.750 **38.55**
6	6.625	.109 **7.59**	.134 **9.29**	.188 **12.92**	.250 **17.02**	.280 **18.97**	.280 **18.97**		.432 **28.57**	.432 **28.57**		.562 **36.39**		.718 **45.30**	.864 **53.16**
8	8.625	.109 **9.91**	.148 **13.40**	.250 **22.36**	.277 **24.70**	.322 **28.55**	.322 **28.55**	.406 **35.64**	.500 **43.39**	.500 **43.39**	.593 **50.87**	.718 **60.93**	.812 **67.76**	.906 **74.69**	.875 **72.42**
10	10.750	.134 **15.19**	.165 **18.70**	.250 **28.04**	.307 **34.24**	.365 **40.48**	.365 **40.48**	.500 **54.74**	.594 **64.43**	.500 **54.74**	.719 **77.03**	.844 **89.29**	1.000 **104.1**	1.125 **115.6**	
12	12.750	.165 **22.18**	.180 **24.20**	.250 **33.38**	.330 **43.77**	.406 **53.53**	.375 **49.56**	.562 **73.16**	.688 **88.63**	.500 **65.42**	.844 **107.3**	1.000 **125.5**	1.125 **139.7**	1.312 **160.3**	
14	14.000		.250 **36.71**	.312 **45.68**	.375 **54.57**	.437 **63.37**	.375 **54.57**	.594 **85.05**	.750 **106.1**	.500 **72.09**	.938 **130.9**	1.094 **150.8**	1.250 **170.2**	1.406 **189.1**	

BLACK, GALVANIZED STEEL AND BARE PIPE (CON'T)
BUTT-WELD OR SEAMLESS, PLAIN ENDS OR THREADED AND COUPLED
21 FT RANDOM LENGTHS

Top Figures: Wall Thickness in Inches | **Bottom Figures: Weight Per Foot in Pounds**

Pipe Size	O.D. (In)	5	10	20	30	40	STD.	60	80	E.H.	100	120	140	160	DBLE. E.H.
16	16.000		.250 **42.05**	.312 **52.36**	.375 **62.58**	.500 **82.77**	.375 **62.58**	.656 **107.5**	.844 **136.6**	.500 **82.77**	1.031 **164.8**	1.219 **192.4**	1.438 **223.6**	1.594 **245.3**	
18	18.000		.250 **47.39**	.312 **59.03**	.437 **82.06**	.562 **104.70**	.375 **70.59**	.750 **138.2**	.938 **170.9**	.500 **93.45**	1.156 **208.0**	1.375 **244.1**	1.562 **274.2**	1.781 **308.5**	
20	20.000		.250 **52.73**	.375 **78.60**	.500 **104.1**	.594 **123.1**	.375 **78.60**	.812 **166.4**	1.031 **208.9**	.500 **104.1**	1.280 **256.1**	1.500 **296.4**	1.750 **341.1**	1.968 **379.0**	
22	22.000		.250 **58.07**	.375 **86.61**	.500 **114.8**		.375 **86.61**	.875 **197.4**	1.125 **250.8**	.500 **114.8**	1.375 **302.9**	1.625 **353.6**	1.875 **403.0**	2.125 **451.06**	
24	24.000		.250 **63.41**	.375 **94.62**	.562 **140.8**	.688 **171.3**	.375 **94.62**	.969 **238.4**	1.218 **296.4**	.500 **125.5**	1.531 **367.4**	1.812 **429.4**	2.062 **483.1**	2.343 **541.9**	
30	30.000		.500 **157.5**	.500 **157.5**	.625 **196.1**		.375 **118.7**			.500 **157.5**					
36	36.000		.500 **189.6**	.500 **189.6**	.625 **236.1**	.750 **282.4**	.375 **142.7**			.500 **189.6**					

HOT ROLLED (ERW) ROUND LIGHTWALL PIPE (SPOUTING)

20 – 40 FT LENGTHS

O. D. in Inches	Gauge	Thickness	Weight Per Ft Pounds	O. D. in Inches	Gauge	Thickness	Weight Per Ft Pounds
3 x	14	.075	2.40	8 x (Con't)	1/4	.250	20.70
	12	.109	3.30	8-5/8 x	12	.109	9.80
	10	.134	4.20		10	.134	12.50
3-1/2 x	14	.075	2.80		3/16	.188	16.90
	12	.109	3.90		1/4	.250	22.40
	10	.134	5.00	10 x	12	.109	11.30
4 x	14	.075	3.20		10	.134	14.50
	12	.109	4.50		3/16	.188	19.70
	10	.134	5.70		1/4	.250	26.00
	3/16	.188	7.60	10-3/4 x	12	.109	12.20
4-1/2 x	14	.075	3.60		10	.134	15.60
	12	.109	5.00		3/16	.188	21.20
	10	.134	6.40		1/4	.250	28.00
	3/16	.188	8.60	12 x	12	.109	13.60
5 x	14	.075	4.00		10	.134	17.50
	12	.109	5.60		3/16	.188	23.70
	10	.134	7.20	12-3/4 x	12	.109	14.50
	3/16	.188	9.60		10	.134	18.60
6 x	14	.075	4.80		3/16	.188	25.20
	12	.109	6.80		1/4	.250	33.40
	10	.134	8.60	14 x	12	.109	15.90
	3/16	.188	11.60		10	.134	20.40
6-5/8 x	14	.075	5.40		3/16	.188	27.70
	12	.109	7.50		1/4	.250	36.70
	10	.134	9.60	16 x	12	.109	18.20
	3/16	.188	12.90		10	.134	23.40
	1/4	.250	17.00		3/16	.188	31.70
7 x	14	.075	5.70		1/4	.250	42.10
	12	.109	7.90	18 x	10	.134	26.30
	10	.134	10.10		3/16	.188	35.76
	3/16	.188	13.60		1/4	.250	47.39
8 x	14	.075	6.50	20 x	3/16	.188	39.78
	12	.109	9.00		1/4	.250	52.70
	10	.134	11.60	22 x	1/4	.250	58.07
	3/16	.188	15.60	30 x	1/4	.250	79.40

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Aluminum

Guide
Sheet/Plate
Floor Plate
Square Bar
Round Bar
Flat Bar
Angle
Channel
Round Tubing
Square & Rectangular Tubing
Pipe

ALUMINUM

GUIDE TO SELECTION

ALUMINUM COIL/SHEET/PLATE
NON-HEAT TREATABLE (COMMON) ALLOYS

1100 (UNS A91100) is commercially pure aluminum (99.00% minimum). Excellent corrosion resistance, workability and weld-ability; high thermal conductivity. Tensile strength range 14 to 24 KSI. Uses include deep drawing, spinning, sheet metal work, decorative and architectural applications, air ducts, name plates, fan blades, etc. Conforms to AMS QQ-A-250/1 and ASTM B209.

3003 (UNS A93003) is alloyed with 1.2% manganese to provide a tensile strength range of 17 to 30 KSI. Excellent workability, weld-ability, and corrosion resistance. Used for drawing, spinning, fuel tanks, sheet metal work and other applications where slightly higher strength than 1100 is required. Conforms to AMS QQ-A-250/2 and ASTM B209.

5005 (UNS A95005) is alloyed with .8% magnesium. Tensile strength range 18 to 30 KSI. Excellent workability, weldability, and corrosion resistance. Specified for applications comparable to 1100 and 3003 — where anodizing is required. Anodized finish matches that of architectural alloy 6063. Conforms to Federal specification ASTM B209.

5052 (UNS A95052) is alloyed with 2.5% magnesium. Tensile strength range 31 to 44 KSI. Very good corrosion resistance, good workability, weldability and strength. Used for aircraft fuel tanks, storm shutters, refrigerator liners, utensils, electronic mounting plates and panels, fan blades, etc. Conforms to AMS QQ-A-250/8 and ASTM B209.

5083 (UNS A95083) is alloyed with 4.45% magnesium, 0.65% manganese and 0.15% chromium. Tensile strength range: 40 to 59 KSI. For use in structures requiring high weld efficiency for maximum joint strength — plus light weight and corrosion resistance. Applications: marine components, truck bodies, construction equipment, tanks, structural towers, drilling rigs, cryogenic applications, etc. Conforms to ASTM B209 and AMS QQ-A-250/6.

5086 (UNS A95086) is alloyed with 4.0% magnesium, .45% manganese and 0.15% chromium. This alloy has a typical tensile strength range of 40 to 54 KSI. It offers resistance to stress corrosion and superior resistance to atmospheric corrosion plus good general workability. Applications include tanks (stationary, trailer and rail-car), marine components and welded assemblies of all kinds. Conforms to AMS QQ-A-250/7 and ASTM B209.

5454 (UNS A95454) is alloyed with 2.7% magnesium, 0.8% manganese and 0.12% chromium. Tensile strength range 36 to 47 KSI. Good formability, weldability and corrosion resistance. Uses include pressure vessels (ASME code approved for up to 400° F.), tanks dump truck bodies, welded structures, etc. Conforms to AMS QQ-A-250/10 and ASTM B209.

HEAT TREATABLE (STRONG) ALLOYS

2024 (UNS A92024) is alloyed with 4.5% copper. Tensile strength range 30 to 63 KSI. Fair workability and corrosion resistance. Forming operations are limited. Used for high strength structural and aircraft applications. Also available as Alclad for improved corrosion resistance. 2024 conforms to AMS QQ-A-250/4 and ASTM B209.

6061 (UNS A96061) is alloyed with 1.0% magnesium and .6% silicon. Tensile strength range 20 to 42 KSI. Good formability, weldability and corrosion resistance. Used for engineering and structural applications, boats, furniture, transportation equipment, etc. Conforms to AMS QQ-A-250/11 and ASTM B209.

7050 is alloyed with zinc (5.7-6.7%), copper (2.0-2.6%) and magnesium (1.9-2.6%) to offer superior strength, stress corrosion resistance and toughness. Stocked in T7451, a temper intermediate to T3 and T76. Used in aircraft and missile applications. Conforms to AMS 4050, MMS 1420, BAG 5439 Class A, BMS 7-323 and MIL-STD 2154.

7075 (UNS A97075) and ***Alclad 7075 are*** heavily alloyed with zinc with lesser amounts of magnesium, copper and chromium. One of the strongest of the aluminum alloys, its use parallels that of 2024 with 7075 selected when higher mechanical properties are desired. Forming operations are limited. Also available as Alclad for improved corrosion resistance. All 7075 flat products conform to ASTM B209; 7075 Bare conforms to AMS QQ-A-250/12, Alclad 7075, AMS QQ-A-250/13.

QC-7 This high-strength aluminum alloy is fully heat treated and stress relieved. It has outstanding thermal conductivity along with high strength and surface hardness and as such it is suitable for polishing and texturing. Used in production injection molds, blow molds, structural foam molds, RIM molds and aluminum die sets, it is weldable and highly machinable. Conforms to ANSI H35.2.

CAST ALUMINUM PLATE

M-1 An extraordinarily dense, dimensionally stable high strength aluminum plate designed especially for the high temp plastic molding industry 100% ultrasonically inspected to insure a porosity-free condition. Superior machinability and high Brinell hardness without heat treatment

make M-1 a cost saving alternative in a variety of mold applications. Conforms to ANSI H35.2.

WEIGHT CONVERSION FACTORS

Once you know the weight of a particular size of sheet or plate in a given alloy, it is easy to determine the appropriate weight for alternative alloys by using these conversion factors.

	1100 5005 6061	3003	5052 5454	5083 5086 5456	2014 Alclad 2014	2024 Alclad 2024	7005 Alclad 7075
Conversion Factor:	1.00	1.01	0.98	0.979	1.03	1.02	1.03
	(.098)	(.099)	(.097)	(.096)	(.101)	(.100)	(.101)

Note: Densities in lbs./cubic inch are indicated in parentheses.

ALUMINUM SHEET/PLATE
5052 H32
NON HEAT TREATED

Gauge	Width	Length	Weight per Sq Ft
.050	48	144	7.13
.063	48	144	8.98
.080	60	144	1.139
.090	48	144	1.287
.100	48	144	1.426
.125	48	120	1.782
.125	48	144	1.782
.125	60	240	1.782
.190	48	120	2.713
.190	48	144	2.713
.190	60	240	2.713
.190	72	240	2.713
.250	48	144	3.564
.250	60	240	3.564
.250	72	240	3.564

ALUMINUM SHEET/PLATE
6061 T6/T651
HEAT TREATED

Sheet	Width	Length	Weight per Sq Ft
.063	48	144	.898
.125	48	144	1.782
.190	48	144	2.713
.250	48-1/2	144-1/2	3.564
.375	48-1/2	144-1/2	5.440
.500	48-1/2	144-1/2	7.250
.500	60-1/2	144-1/2	7.250
.750	48-1/2	144-1/2	10.840
.750	60-1/2	144-1/2	10.840
1.000	48-1/2	144-1/2	14.440
1.000	60-1/2	144-1/2	14.440
1.250	48-1/2	144-1/2	17.960
1.500	60-1/2	144-1/2	21.490

ALUMINUM FLOOR PLATE
3003 -H22
TREAD BRITE (DIAMOND PLATE)

Sheet	Width	Length in Inches	Grade	Weight per Sq Ft
.100	48	192	3003	1.570
.125	48	192	3003	1.920
.188	48	192	3003	2.820
.188	60	192	3003	2.820

ALUMINUM SQUARE BARS
6061-T651
12 FT LENGTHS

Size in Inches	Weight Per Ft Pounds	Weight Per 12 Ft Pounds
1/4	.0735	.882
3/8	.1656	1.987
1/2	.2940	3.528
5/8	.4586	5.503
3/4	.6595	7.914
1	1.176	14.112
1-1/4	1.838	22.056
1-1/2	2.646	31.752
1-3/4	3.598	43.176
2	4.704	56.448

Other types and sizes available upon request.

ALUMINUM ROUND BARS
6061-T651
12 FT LENGTHS

Size in Inches	Weight Per Ft Pounds	Weight Per 12 Ft Pounds
3/8	.1349	1.619
1/2	.2398	2.878
5/8	.3748	4.498
3/4	.5398	6.478
7/8	.7347	8.816
1	.9596	11.515
1-1/8	1.214	14.568
1-3/16	1.353	16.236
1-1/4	1.499	17.988
1-3/8	1.814	21.768
1-1/2	2.159	25.908
1-3/4	2.939	35.268
2	3.838	46.056
2-1/2	5.997	71.964
3	8.636	103.63
3-1/2	11.76	141.12
4	15.35	184.20
4-1/2	19.43	233.16
5	23.99	287.88
5-1/2	28.84	346.08
6	34.21	410.52

ALUMINUM FLAT BARS
6061-T651
12 FT LENGTHS

Size in Inches		Weight Per Ft Pounds	Weight Per 12 Ft Pounds
1/8 x	1/2	.073	.876
	3/4	.109	1.308
	1	.147	1.764
	1-1/4	.183	2.196
	1-1/2	.221	2.652
	2	.294	3.528
	2-1/2	.367	4.404
	3	.441	5.292
	4	.588	7.056
3/16 x	1/2	.110	1.320
	3/4	.165	1.980
	1	.221	2.652
	1-1/4	.275	3.300
	1-1/2	.330	3.960
	1-3/4	.385	4.620
	2	.441	5.292
	2-1/2	.550	6.600
	3	.660	7.920
	4	.882	10.584
1/4 x	1/2	.147	1.764
	3/4	.221	2.652
	1	.300	3.600
	1-1/4	.368	4.416
	1-1/2	.441	5.292
	1-3/4	.515	6.180
	2	.570	6.840
	2-1/2	.735	8.820
	3	.882	10.584
	3-1/2	1.028	12.336
	4	1.141	13.692
	5	1.469	17.628
	6	1.762	21.144
	7	2.095	25.140
	8	2.350	28.200
3/8 x	3/4	.331	3.972
	1	.441	5.292
	1-1/4	.561	6.732
	1-1/2	.660	7.920

ALUMINUM FLAT BAR (CON'T)
6061-T651
12 FT LENGTHS

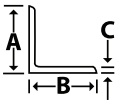
Size in Inches		Weight Per Ft Pounds	Weight Per 12 Ft Pounds
3/8 x (Con't)	1-3/4	.771	9.252
	2	.882	10.584
	2-1/2	1.101	13.212
	3	1.323	15.876
	3-1/2	1.543	18.516
	4	1.764	21.168
	5	2.203	26.436
	6	2.643	31.716
	8	3.524	42.288
1/2 x	3/4	.440	5.280
	1	.588	7.056
	1-1/4	.748	8.976
	1-1/2	.882	10.584
	2	1.176	14.112
	2-1/2	1.485	17.820
	3	1.764	21.168
	3-1/2	2.056	24.672
	4	2.348	28.176
	5	2.937	35.244
	6	3.528	42.336
	8	4.704	56.448
5/8 x	3/4	.5834	7.000
	1	.734	8.808
	1 1/4	.9362	11.234
	1 1/2	1.103	13.236
	2	1.470	17.640
	3	2.203	26.246
	3 1/2	2.573	30.876
	4	2.940	35.280
	5	3.671	44.052
	6	4.500	54.000
	8	7.044	84.528
3/4 x	1	.881	10.572
	1-1/4	1.102	13.224
	1-1/2	1.323	15.876
	2	1.746	20.952
	2-1/2	2.201	26.412
	3	2.646	31.752

Other types and sizes available upon request.

ALUMINUM FLAT BAR (CON'T)

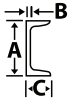
6061-T651
12 FT LENGTHS

Size in Inches		Weight Per Ft Pounds	Weight Per 12' Bar Pounds
	4	3.522	42.264
	5	4.406	52.872
	6	5.292	63.504
	8	7.044	84.528
1 x	1-1/4	1.498	17.976
	1-1/2	1.782	21.384
	1-3/4	2.056	24.672
	2	2.352	28.224
	2-1/2	2.937	35.244
	3	3.528	42.336
	3-1/2	4.193	50.316
	4	4.704	56.448
	5	5.874	70.488
	6	7.056	84.672
1-1/4 x	2	2.940	35.280
	3	4.406	52.872
	4	5.874	70.488
	6	8.820	105.84
1-1/2 x	2	3.528	42.336
	2-1/2	4.406	52.872
	3	5.400	64.800
2 x	2-1/2	5.880	70.560
	3	7.056	84.672
	3-1/2	8.416	100.992
	4	9.398	112.760
	6	14.100	169.200
3 x	5	17.640	211.680
	6	21.150	253.800



ALUMINUM ANGLE
6061-T6
25 FT LENGTHS

Size in Inches (A)	(B)	Thickness in Inches (C)	Weight Per Ft Pounds	Weight Per 25 Ft Pounds
3/4	3/4	1/8	.201	5.025
1	1	1/8	.275	6.875
	1	3/16	.400	10.000
	1	1/4	.514	12.850
1-1/4	1-1/4	1/8	.343	8.575
	1-1/4	3/16	.510	12.750
	1-1/4	1/4	.656	16.400
1-1/2	1-1/2	1/8	.423	10.575
	1-1/2	3/16	.619	15.475
	1-1/2	1/4	.809	20.225
1-3/4	1-3/4	1/8	.497	12.425
	1-3/4	3/16	.731	18.275
	1-3/4	1/4	.956	23.900
2	1-3/4	1/8	.496	12.400
	1-3/4	3/16	.713	17.825
	1-3/4	1/4	.956	23.900
2	2	1/8	.577	14.425
	2	3/16	.850	21.250
	2	1/4	1.111	27.775
2-1/2	2-1/2	1/8	.735	18.375
	2-1/2	1/16	1.040	26.000
	2-1/2	1/4	1.404	35.100
3	1-1/2	1/8	.980	24.500
	2	3/16	1.071	26.775
	2	1/4	1.403	35.075
	3	3/16	1.275	31.875
	3	1/4	1.689	42.225
	3	3/8	2.274	56.85
3-1/2	3-1/2	1/4	1.989	49.725
4	3	1/4	1.988	49.700
	3	3/8	2.920	73.000
	4	1/4	2.283	57.075
	4	3/8	3.366	84.150
6	4	3/8	4.240	106.000



ALUMINUM CHANNEL
6061-T6
AMERICAN STANDARD
25 FT LENGTHS

Size in Inches (A)	(C)	Thickness in Inches (B)	Weight Per Ft Pounds	Weight Per 25 Ft Pounds
2	1	.130	.577	14.425
3	1.410	.170	1.405	35.125
	1.498	.258	1.740	43.500
4	1.580	.180	1.857	46.425
	1.647	.247	2.174	54.350
5	1.750	.190	2.316	57.900
	1.885	.327	3.109	77.725
6	1.920	.200	2.836	70.900
	1.94	.225	3.002	75.050
8	3	.190	4.147	103.675

ALUMINUM ROUND TUBING
6061-T6
20 FT LENGTHS

Sizes in Inches	Thickness in Inches	Weight Per Foot Pounds	Weight Per 20 Ft Pounds
3/4	.065	.165	3.30
1	.065	.225	4.50
	.125	.404	8.08
1-1/4	.125	.530	10.60
1-1/2	.065	.345	6.90
	.083	.435	8.70
	.125	.635	12.70
	.250	1.160	23.20
1-3/4	.250	1.559	31.18
2	.125	.866	17.32
	.188	1.257	25.14
	.250	1.620	32.40
2-1/2	.125	1.097	21.94
	.188	1.625	32.50
	.250	2.076	41.52
3	.125	1.327	26.54
	.250	2.537	50.74
3-1/2	.125	1.559	31.18

Other types and sizes available upon request.

ALUMINUM ROUND TUBING (CON'T)
6061-T6
20 FT LENGTHS

Sizes in Inches	Thickness in Inches	Weight Per Foot Pounds	Weight Per 20 Ft Pounds
4	.125	1.787	35.74
	.250	3.459	69.18
5	.250	8.312	166.24
6	.125	2.765	55.30

ALUMINUM SQUARE & RECTANGULAR TUBING
6061-T6
20 – 24 FT RANDOM LENGTHS

Many sizes available in sharp and round corners.

Sizes in Inches	Thickness in Inches	Weight Per Foot Pounds
1 x 1	.062	.271
	.125	.526
1-1/4 x 1-1/4	.125	.642
1-1/2 x 1-1/2	.065	.428
	.125	.809
2 x 1	.125	.810
2 x 2-1/2	.125	.957
2 x 2	.125	1.102
	.250	2.100
2-1/2 x 1-1/2	.125	1.520
	.125	1.396
3 x 1-1/2	.125	1.250
3 x 2	.125	1.397
3 x 3	.125	1.690
	.250	3.234
4 x 2	.125	1.690
4 x 4	.125	2.255
	.25	4.365
	.375	8.400
5 x 5	.125	2.8373
6 x 4	.250	5.586
6 x 6	.125	3.419
8 x 8	.188	6.8381

Some sizes available in 6063 – T52

ALUMINUM PIPE
6061-T6
EXTRUDED SEAMLESS
SCHEDULE 40 & 80
20 FT LENGTHS

Nominal Size in Inches	Weight Per Ft Pounds	O.D. In Inches	I.D. in Inches	Thickness in Inches
Schedule 40				
1/8	.085	.450	.269	.068
1/4	.147	.540	.364	.088
3/8	.196	.675	.493	.091
1/2	.293	.840	.622	.109
3/4	.391	1.050	.824	.113
1	.581	1.315	1.049	.133
1-1/4	.786	1.660	1.380	.140
1-1/2	.940	1.900	1.610	.145
2	1.264	2.375	2.067	.154
2-1/2	2.004	2.875	2.469	.203
3	2.621	3.500	3.068	.216
3-1/2	3.151	4.000	3.548	.226
4	3.733	4.500	4.026	.237
5	5.057	5.563	5.047	.258
6	6.564	6.625	6.065	.280
8	9.878	8.625	7.981	.322
10	14.000	10.750	10.020	.365
12	18.520	12.750	11.938	.406
Schedule 80				
1-1/4	1.037	1.660	1.278	.191
1-1/2	1.256	1.900	1.500	.200
2	1.737	2.375	1.939	.218
2-1/2	2.650	2.875	2.323	.276
3	3.547	3.500	2.900	.300
4	5.183	4.500	3.826	.337

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Stainless Steel

Guide
Sheet
Plate
Rounds
Angles
Flat Bars
Tubing
Pipe

STAINLESS STEEL

GUIDE TO SELECTION

STAINLESS STEEL
CHROME-NICKEL, NON-HARDENING, AUSTENITIC (NON-MAGNETIC)

203 EZ (S20300). Superior machining austenitic stainless designed specifically for high speed automatic machine operations. Faster speeds, better finish, longer tool life when compared to 303. Same corrosion resistance.

303 (S30300). Free machining variation of T302/304 for use in automatic machining operations. Corrosion resistant to atmospheric exposures, sterilizing solutions, most organic and many inorganic chemicals, most dyes, nitric acid and foods.

304 (S30400). The most widely used of the stainless and heat resisting steels. Offers good corrosion resistance to many chemical corrodents as well as industrial atmospheres. Has very good formability and can be readily welded by all common methods. 304 Prodec offers improved machinability.

304L (S30403). Extra low carbon variation of T304 avoids harmful carbide precipitation due to welding. Same corrosion resistance as T304. Slightly lower mechanical properties than T304. 304L Prodec offers improved machinability.

309/309S (S30900, S30908). Used in high temperature applications. High scale resistance. Corrosion resistance superior to 304. Excellent in resisting sulfite liquors, nitric acid, nitric-sulfuric mixtures, acetic, citric and lactic acids. 309S (.08 max. carbon) resists corrosion in welded parts.

310/310S (S31000, S31008). Higher alloy content improves the characteristics of 309. Corrosion resistance better than 304. Excellent oxidation resistance. 31 OS (.08 max. carbon) offers improved corrosion resistance in welded components.

316 (S31600). Better corrosion and pitting resistance as well as higher strength at elevated temperatures than T304. Used for pumps, valves, textile and chemical equipment, pulp & paper and marine applications. 316 Prodec offers improved machinability.

316L (S31603). Extra low carbon variation of T316 to avoid carbide precipitation due to welding. Same excellent corrosion resistance of T316. 316L Prodec offers improved machinability.

317L (S31703). Moly bearing austenitic steel with alloy content somewhat higher than 316. This chemistry gives 317L superior corrosion resistance in difficult environments, as well as higher creep, stress-to-rupture and tensile strengths at elevated temperatures. Applications include FGD scrubbers, chemical and petrochemical processing equipment and pulp and paper equipment.

254 SMO (UNS S31254) is an austenitic specialty stainless steel designed for maximum resistance to pitting and crevice corrosion, With high levels of chromium, molybdenum and nitrogen, 254 SMO is especially suited for high chloride environments such as brackish water, seawater, pulp mill bleach plants and other high chloride process streams.

321 (S32100). Stabilized with titanium for weldments subject to severe corrosion. No carbide precipitation. Excellent resistance to a variety of corrosive media. Immune to most organic chemicals, dyestuffs and many inorganic chemicals.

Nitronic® 30. A nitrogen-strengthened stainless developed for applications requiring a good level of aqueous corrosion resistance combined with good resistance to abrasive and metal-to-metal wear. Applications include conveyors, hoppers, chutes, mixing equipment, screens, wear plates — anywhere there is wet sliding abrasion.

Nitronic® 50 (S20910) (Formerly 22-13-5). A nitrogen-strengthened austenitic stainless that provides a combination of corrosion resistance and strength. Corrosion resistance greater than that of T316 and T316L plus approximately twice the yield strength. Very good mechanical properties at both elevated and subzero temperatures.

Nitronic® 60 (S21800). Excellent galling resistance, corrosion resistance comparable to T304 plus approximately twice the yield-strength. Metal-to-metal abrasive wear resistance is also good.

CHROME, HARDENABLE MARTENSITIC (MAGNETIC)

410 (S41000). Heat-treatable stainless used widely where corrosion is not severe — air, fresh water, some chemicals and food acids. Typical uses include valve & pump parts, fasteners, cutlery, turbine parts, bushings.

410 DOUBLE TEMPERED (S41000). Quenched and double tempered variation of T410 conforming to NACE MR-01-75API 6A Type III. For parts used in hydrogen sulfide (H2S) service.

416 (S41600). Free-machining variation of T410 with useful corrosion resistance to natural food acids, basic salts, water and most atmospheres.

422 (S42200). A martensitic stainless steel designed for service temperatures up to 1200° F with a good combination of high strength and toughness. It is used in steam turbines as blading and bolting material.

440 C (S44004). A high carbon (.95/1.20%C) chromium steel that can attain the highest hardness (Rockwell C60) of any standard stainless grade. In the hardened and stress relieved condition, 440 C has maximum hardness together with high strength and corrosion resistance. Also has good abrasion resistance. 440 A is lower carbon variety (.60/.75%C) which results in lower hardness but greater toughness in the hardened condition.

CHROME NON-HARDENABLE FERRITIC (MAGNETIC)

409 (S40900). Lowest cost stainless — used extensively in automotive exhaust systems. Because of its combination of economy and good resistance to oxidation and corrosion, it creates opportunities to economically improve the performance of a wide range of parts where surface appearance is not important.

430 (S43000). Is the most popular of the non-hardenable chromium stainless steels. It combines good corrosion and heat resistance with good mechanical properties. Oxidation resistance to 1500° F widely used in both industrial and consumer products.

PRECIPITATION HARDENING, MARTENSITIC (MAGNETIC)

17-4/Type 630 (817400). A precipitation hardening grade combining high strength and hardness with corrosion resistance similar to T304 in most media. Simple low temperature heat treatment at 900/1150° F eliminates scaling and prevents excessive warpage.

17-4 DOUBLE AGED H1150 (S17400). Solution annealed then double age hardened to procedure #1 in NACE MR 01-75. Used in many pressure control applications in the energy market.

15-5 (S15500). A vacuum arc remelted grade which offers high strength and hardness. Excellent corrosion resistance plus excellent transverse toughness.

STANDARD STAINLESS STEEL SHEET FINISHES

#1	Hot rolled, annealed and pickled
#2D	Annealed, pickled and dull cold rolled
#2B	Annealed, pickled and bright cold rolled
#3	Intermediate polish (approximately 100/120 grit)
#4	Standard polish (approximately 150/180 grit)
BA	(Bright annealed) bright cold rolled and controlled atmosphere annealed to retain highly reflective finish.
#8	Mirror finish

STAINLESS SHEET
304L (ALSO AVAILABLE IN 316L)

Gauge	Size in Inches	Thickness in Inches	Weight Per Sq. Ft Pounds	Weight Per Sheet Pounds
7	48 x 120	.1874	7.871	314.80
	48 x 144	.1874	7.871	377.80
	60 x 120	.1874	7.871	393.60
	60 x 144	.1874	7.871	472.30
10	48 x 96	.1350	5.670	181.40
	48 x 120	.1350	5.670	226.80
	48 x 144	.1350	5.670	272.20
	48 x 240	.1350	5.670	453.60
	60 x 96	.1350	5.670	226.80
	60 x 120	.1350	5.670	283.50
	60 x 144	.1350	5.670	340.20
	60 x 240	.1350	5.670	567.00
	72 x 120	.1350	5.670	340.20
	72 x 144	.1350	5.670	408.20
11	48 x 96	.1200	5.040	161.30
	48 x 120	.1200	5.040	201.60
	48 x 144	.1200	5.040	241.90
	48 x 240	.1200	5.040	403.20
	60 x 96	.1200	5.040	241.92
	60 x 120	.1200	5.040	252.00
	60 x 144	.1200	5.040	302.40
	60 x 240	.1200	5.040	504.00
	72 x 120	.1200	5.040	302.40
	72 x 144	.1200	5.040	362.88
12	48 x 96	.1054	4.427	141.70
	48 x 120	.1054	4.427	177.10
	48 x 144	.1054	4.427	212.50
	48 x 240	.1054	4.427	354.20
	60 x 96	.1054	4.427	177.10
	60 x 120	.1054	4.427	221.30
	60 x 144	.1054	4.427	265.30
	60 x 240	.1054	4.427	442.70
	72 x 120	.1054	4.427	265.60
	72 x 144	.1054	4.427	318.70

STAINLESS SHEET (CON'T)
304L (ALSO AVAILABLE IN 316L)

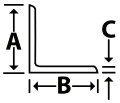
Gauge	Size in Inches	Thickness in Inches	Weight Per Sq. Ft Pounds	Weight Per Sheet Pounds
14	48 x 96	.0751	3.154	100.90
	48 x 120	.0751	3.154	126.20
	48 x 144	.0751	3.154	151.40
	48 x 168	.0751	3.154	176.60
	60 x 96	.0751	3.154	126.20
	60 x 120	.0751	3.154	157.70
	60 x 144	.0751	3.154	189.20
	72 x 120	.0751	3.154	189.20
	72 x 144	.0751	3.154	227.10
16	48 x 96	.0595	2.499	80.00
	48 x 120	.0595	2.499	100.00
	48 x 144	.0595	2.499	120.00
	60 x 96	.0595	2.499	100.00
	60 x 120	.0595	2.499	125.00
	60 x 144	.0595	2.499	149.90
	72 x 120	.0595	2.499	149.90
	72 x 144	.0595	2.499	179.00
18	48 x 96	.0480	2.016	64.50
	48 x 120	.0480	2.016	80.60
	48 x 144	.0480	2.016	96.80
	60 x 96	.0480	2.016	80.60
	60 x 120	.0480	2.016	100.80
	60 x 144	.0480	2.016	121.00
20	48 x 96	.0355	1.491	47.70
	48 x 120	.0355	1.491	59.60
	48 x 144	.0355	1.491	71.60
	60 x 96	.0355	1.491	59.60
	60 x 120	.0355	1.491	74.60
	60 x 144	.0355	1.491	89.50
22	48 x 96	.0293	1.231	39.40
	48 x 120	.0293	1.231	49.20
	48 x 144	.0293	1.231	59.10
24	48 x 96	.0235	.987	31.60
	48 x 120	.0235	.987	39.50
	48 x 144	.0235	.987	47.40

STAINLESS PLATE
304L (ALSO AVAILABLE IN 316L)

Thickness in Inches	Width in Inches	Weight Per Sq. Ft Pounds
3/16	48	8.58
	60	8.58
	72	8.58
	96	8.58
1/4	48	11.16
	60	11.16
	72	11.16
	96	11.16
5/16	48	13.75
	60	13.75
	72	13.75
	96	13.75
3/8	48	16.50
	60	16.50
	72	16.50
	96	16.50
1/2	48	21.66
	60	21.66
	72	21.66
	84	21.66
	96	21.66
5/8	72	26.83
	96	26.83
3/4	48	32.12
	72	32.12
	96	32.12
1	48	42.67
	72	42.67
	96	42.67
1-1/4	72	53.00
	96	53.00
1-1/2	72	63.34
	96	63.34

STAINLESS ROUNDS
303, 304, 304L, 316, 316L
12 FT LENGTHS

Size in Inches	Weight Per Ft Pounds	Size in Inches	Weight Per Ft Pounds
1/8	.042	1-3/4	8.178
3/16	.094	1-13/16	8.770
1/4	.167	1-7/8	9.388
5/16	.216	1-15/16	10.020
3/8	.376	2	10.680
7/16	.511	2-1/8	12.060
1/2	.671	2-3/16	12.790
9/16	.845	2-1/4	13.520
5/8	1.04	2-3/8	15.060
11/16	1.262	2-7/16	15.870
3/4	1.502	2-1/2	16.690
13/16	1.763	2-5/8	18.400
7/8	2.045	2-3/4	20.190
15/16	2.347	2-7/8	22.070
1	2.670	3	24.030
1-1/8	3.380	3-1/8	26.080
1-3/16	3.766	3-1/4	28.210
1-1/4	4.172	3-3/8	30.420
1-5/16	4.600	3-1/2	32.710
1-3/8	5.049	3-5/8	35.090
1-7/16	5.518	3-3/4	37.600
1-1/2	6.008	4	42.730
1-5/8	7.051	5	66.760
1-11/16	7.604	6	96.130



STAINLESS ANGLES
304, 304L, 316, 316L
20-24 FT RANDOM LENGTHS

Stem In Inches (A)	(B)	Thickness In Inches (C)	Weight Per Ft Pounds
3/4	3/4	1/8	.590
1	1	1/8	.800
	1	3/16	1.160
		1/4	1.490
1-1/4	1-1/4	1/8	1.010
		3/16	1.480
		1/4	1.920
1-1/2	1-1/2	1/8	1.230
		3/16	1.800
		1/4	2.340
2	2	1/8	1.650
		3/16	2.440
		1/4	3.190
		3/8	4.700
2-1/2	2-1/2	3/16	3.070
		1/4	4.100
		3/8	5.900
3	1-1/2	1/4	3.510
	2	3/16	3.070
		1/4	4.100
	3	1/4	4.90
		5/16	6.100
		3/8	7.200
3-1/2	3-1/2	1/4	5.800
4	3	1/4	5.800
		3/8	8.500
	4	1/4	6.600
		3/8	9.800
5	3	3/8	9.850
	5	3/8	12.300
6	3	3/8	11.020
	4	1/4	9.2100
	4	3/8	12.300
	6	3/8	14.900

STAINLESS FLAT BARS
304, 304L, 316, 316L
20-24 FT RANDOM LENGTHS

Size in Inches		Weight Per Ft Pounds	Size in Inches		Weight Per Ft Pounds
1/8	1/2	.231	3/8 (Con't)	1-1/4	1.594
	3/4	.319		1-1/2	1.913
	1	.425		2	2.550
	1-1/4	.531		2-1/2	3.188
	1-1/2	.638		3	3.825
	1-3/4	.744		4	5.100
	2	.850		5	6.380
	2-1/2	1.063		6	7.650
	3	1.275	1/2	3/4	1.275
	4	1.700		1	1.700
3/16	1/2	.319		1-1/4	2.125
	3/4	.478		1-1/2	2.550
	1	.638		2	3.400
	1-1/4	.797		2-1/2	4.250
	1-1/2	.956		3	5.100
	1-3/4	1.116		4	6.800
	2	1.275		6	10.200
	2-1/2	1.594	5/8	3/4	1.594
3/16	3	1.913		1	2.125
	4	2.550		1-1/4	2.656
	6	3.825		1-1/2	3.188
1/4	1/2	.425		1-3/4	3.719
	3/4	.638		2	4.250
	1	.850		2-1/2	5.313
	1-1/4	1.063		3	6.375
	1-1/2	1.275		3-1/2	7.438
	1-3/4	1.488		4	8.500
	2	1.700		5	10.630
	2-1/2	2.125		6	12.750
	3	2.550	3/4	1	2.550
	3-1/2	2.987		1-1/4	3.188
	4	3.400		1-1/2	3.830
	5	4.250		1-3/4	4.463
	6	5.100		2	5.100
5/16	1	1.060		2-1/4	5.738
3/8	1/2	.638		2-1/2	6.375
	3/4	.956		3	7.650
	1	1.275		3-1/2	8.925

STAINLESS FLAT BARS (CON'T)

304, 304L, 316, 316L

20-24 FT RANDOM LENGTHS

Size in Inches		Weight Per Ft Pounds
3/4 (Con't)	4	10.200
	5	12.750
	6	15.300
1	1-1/4	4.250
	1-1/2	5.100
	1-3/4	5.920
	2	6.800
	2-1/4	7.650
	2-1/2	8.500
	3	10.200
	3-1/2	11.900
	4	13.600
	5	17.000
	6	20.400

Size in Inches		Weight Per Ft Pounds
1-1/4	2	8.500
	2-1/2	10.630
	3	12.750
	4	17.000
1-1/2	2	10.200
	2-1/2	12.750
	3	15.300
	4	20.400
	6	30.600
1-3/4	2	11.900
2	2-1/2	17.000
	3	20.400
	4	27.200

STAINLESS TUBING
304 SQUARE
20 FT LENGTHS

Size in Inches	Wall Thickness in Gauge	Wall Thickness in Decimal	Weight Per Ft Pounds
1 x 1	11	.120	1.436
	16	.065	.827
	18	.049	.630
1-1/4 x 1-1/4	11	.120	1.844
	14	.083	1.317
	16	.065	1.050
1-1/2 x 1-1/2	7	.180	3.630
	11	.120	2.255
	14	.083	1.610
	16	.065	1.270
1-3/4 x 1-3/4	14	.083	1.880
2 x 2	1/4	.250	6.010
	3/16	.188	4.460
	7	.180	4.455
	11	.120	3.068
	14	.083	2.164
	16	.065	1.710
2-1/2 x 2-1/2	7	.180	5.680
3 x 3	1/4	.250	10.00
	3/16	.188	6.900
	7	.180	6.903
	11	.120	4.700
	14	.083	3.293
4 x 4	1/4	.250	12.68
	3/16	.188	9.270
	7	.180	9.270
	11	.120	6.260
6 x 6	1/4	.250	18.770
8 x 8	3/8	.375	38.890

STAINLESS TUBING
304 RECTANGULAR
20 FT LENGTHS

Size in Inches	Wall Thickness in Gauge	Wall Thickness in Decimal	Weight Per Ft Pounds
1-1/2 x 1	11	.120	1.929
2 x 1	11	.120	2.252
3 x 2	7	.180	5.679
	11	.120	3.884
4 x 2	1/4	.250	10.000
	7	.180	6.903
	11	.120	4.700
4 x 3	7	.180	8.127
6 x 2	1/4	.250	12.680
	7	.180	12.680
4 x 3	1/4	.250	10.890
5 x 3	1/4	.250	12.680
	7	.180	10.520
6 x 3	7	.180	10.520
6 x 4	1/4	.250	16.350
	7	.180	11.900
8 x 4	1/4	.250	18.770
	3/8	.375	28.690

STAINLESS ROUND TUBING
304, 304L, 316, 316L
20 FT LENGTHS

Many sizes available.
Please contact your Sales Representative.

STAINLESS PIPE
20 FT LENGTH

Nominal Size in Inches		Weight Per Ft Pounds	Weight Per 20 Ft Pounds
Schedule 40			
1/8	S40	.245	4.90
1/4	S40	.425	8.50
3/8	S40	.568	11.36
1/2	S40	.841	16.82
3/4	S40	1.131	22.62
1	S40	1.679	33.58
1-1/2	S40	2.718	54.36
2	S40	3.653	73.06
2-1/2	S40	5.79	115.80
3	S40	7.58	151.60
3-1/2	S40	9.109	182.18
4	S40	10.89	217.80
5	S40	14.75	295.00
Schedule 80			
3/4	S80	1.49	29.80
1	S80	2.19	43.80
1-1/2	S80	3.76	75.20
2	S80	5.03	100.60
2-1/2	S80	7.84	156.80

References

Converting Inches and Fractions of an Inch into Decimals of a Foot

Decimal and Metric Equivalent of Fractions of an Inch

US Equivalents of Metric Weights & Measures

Metric Equivalents of US Weights and Measures

Metric Weights and Measures

Gauge Thickness

US Gallons in Round Tanks

Theoretical Weight of Steel Circles

Circumferences and Areas of Circles

Burned or Sheared Flat Shapes

Burned Flat Shapes

Common Formed Shapes

Ordering Guide for Structural Rolling

Standards for Ferrous Metals

Tensile Requirements

A588

Chemical Compositions

Fabricating Practice for Cold Forming

A 572

Chemical Composition

Fabricating Practice for Cold Forming

A 514 - Constructional Alloy Steel – Plate

Chemical Composition

Cold Forming Data for Plates

A514 Grade H

Chemical Composition

Cold Forming Data for Plates

AR 400

Chemical Composition

Forming Properties

AR 500

Chemical Composition

Forming Properties

Average Properties of Standard Steel

REFERENCES

CONVERTING INCHES AND FRACTIONS OF AN INCH INTO DECIMALS OF A FOOT

		1″	2″	3″	4″	5″	6″	7″	8″	9″	10″	11″
		.0833	.16670	.25000	.33330	.41670	.50000	.58330	.66670	.75000	.83330	.91670
1/16	.0052	.08850	.17190	.25520	.33850	.42190	.50520	.58850	.67190	.75520	.83850	.92190
1/8	.0104	.09380	.17710	.26040	.34380	.42710	.51040	.59380	.67710	.76040	.84380	.92710
3/16	.0156	.09900	.18230	.26560	.34900	.43230	.51560	.59900	.68230	.76560	.84900	.93230
1/4	.0208	.10420	.18750	.27080	.35420	.43750	.52080	.60420	.68750	.77080	.85420	.93750
5/16	.0260	.10940	.19270	.27600	.35940	.44270	.52600	.60940	.69270	.77600	.85940	.94270
3/8	.3130	.11460	.19790	.28130	.36460	.44790	.53130	.61460	.69790	.78130	.86460	.94790
7/16	.0365	.11980	.20310	.28650	.36980	.45310	.53650	.61980	.70310	.78650	.86980	.95310
1/2	.0417	.12500	.20830	.29170	.37500	.45830	.54170	.62500	.70830	.79170	.87500	.95830
9/16	.0469	.13020	.21350	.29690	.38020	.46350	.54690	.63020	.71350	.79690	.88020	.96350
5/8	.0521	.13540	.21880	.30210	.38540	.46880	.55210	.63540	.71880	.80210	.88540	.96880
11/16	.0573	.14060	.22400	.30730	.39060	.47400	.55730	.64060	.72400	.80730	.89060	.97400
3/4	.6250	.14580	.22940	.31250	.39580	.47920	.56250	.64580	.72920	.81250	.89580	.97920
13/16	.0677	.15100	.23440	.31770	.40100	.48440	.56770	.65100	.73440	.81770	.90100	.98440
7/8	.0729	.15630	.23960	.32290	.40630	.48960	.57290	.65630	.73960	.82290	.90630	.98960
15/16	.0781	.16150	.24480	.32810	.41150	.49480	.57810	.66150	.74480	.82810	.91150	.99480

DECIMAL AND METRIC EQUIVALENT OF FRACTIONS OF AN INCH

Fraction In Inches	Decimal In Inches	Millimeter Mm	Fraction In Inches	Decimal In Inches	Millimeter Mm
1/64	0.015625	0.396370	33/64	0.515625	13.096710
1/32	0.031250	0.793740	17/32	0.531250	13.493620
3/64	0.046875	1.190610	35/64	0.546875	13.890450
1/16	**0.062500**	**1.587480**	**9/16**	**0.562500**	**14.287370**
5/64	0.078125	1.984350	37/64	0.578125	14.684190
3/32	0.093750	2.381230	19/32	0.593750	15.081110
7/64	0.109375	2.778090	39/64	0.609375	15.477930
1/8	**0.125000**	**3.174970**	**5/8**	**0.625000**	**15.874850**
9/64	0.140625	3.571830	41/64	0.640625	16.271670
5/32	0.156250	3.968710	21/32	0.656250	16.668590
11/64	0.171875	4.365570	43/64	0.671875	17.065410
3/16	**0.187500**	**4.762450**	**11/16**	**0.687500**	**17.462340**
13/64	0.203125	5.159310	45/64	0.703125	17.859150
7/32	0.218750	5.556200	23/32	0.718750	18.256080
15/64	0.234375	5.953050	47/64	0.734375	18.652890
1/4	**0.250000**	**6.349940**	**3/4**	**0.750000**	**19.049820**
17/64	0.265625	6.746790	49/64	0.765625	19.446630
9/32	0.231250	7.143680	25/32	0.781250	19.843560
19/64	0.296875	7.540530	51/64	0.796875	20.240370
5/16	**0.312500**	**7.937430**	**13/16**	**0.812500**	**20.637310**
21/64	0.328125	8.334270	53/64	0.828125	21.034110
11/32	0.343750	8.731170	27/32	0.843750	21.431050
23/64	0.359375	9.128010	55/64	0.859375	21.827850
3/8	**0.375000**	**9.524910**	**7/8**	**0.875000**	**22.224790**
25/64	0.390625	9.921750	57/64	0.890625	22.621590
13/32	0.406250	10.318650	29/32	0.906250	23.018530
27/64	0.421875	10.715490	59/64	0.921875	23.415330
7/16	**0.437500**	**11.112400**	**15/16**	**0.937500**	**23.812280**
29/64	0.453125	11.509230	61/64	0.953125	24.209070
15/32	0.468750	11.906140	31/32	0.968750	24.606020
31/64	0.484375	12.302970	63/64	0.984375	25.002810
1/2	**0.500000**	**12.699880**	**1**	**1.000000**	**25.400000**

US EQUIVALENTS OF METRIC WEIGHTS AND MEASURES

AREA	
1 square centimeter	= 0.155 square inch
1 centiare	= 1.550 square inches
1 are	= 119.6 square yards
1 hectare	= 2.471 acres
1 square kilometer	= 0.3861 square mile

LENGTH	
1 centimeter	= 0.3937 inch
1 decimeter	= 3.937 inches
1 meter	= 39.37 inches
1 decameter	= 3.937 inches
1 hectometer	= 328 feet 1 inch
1 kilometer	= 0.62137 mile

WEIGHT	
1 centigram	= 0.1543 grain
1 decigram	= 1.5432 grains
1 gram	= 15.432 grains
1 kilogram	= 2.2046 pounds
1 quintal	= 220.46 pounds
1 metric tons	= 2,204.6 pounds

CAPACITY	
1 centiliter	= 0.338 fluid ounce
1 deciliter	= 6.1025 cubic inches
1 liter	= 0.9081 dry quart or 1.0567 liquid quarts
1 deciliter	= 0.284 bushel or 2.64 gallons
1 hectoliter	= 2.838 bushels or 26.418 gallons
1 kilometer	= 35.315 cubic feet or 264.18 gallons

VOLUME	
1 cubic centimeter	= 0.061 cubic inch
1 cubic meter	= 1.308 cubic yards

METRIC EQUIVALENTS OF US WEIGHTS AND MEASURES

AVOIRDUPOIS WEIGHT	
1 dram	= 1.772 grams
1 ounce	= 28.3495 grams
1 pound	= 453.59 grams or .4536 kilogram
1 hundred weight	= 45.36 kilograms
1 short ton	= 907.18 kilograms or 0.9072 metric ton
1 long ton	= 1,016.05 kilograms or 1.0160 metric tons

TROY WEIGHT	
1 pennyweight	= 1.555 grams
1 ounce	= 31.1035 grams
1 pound	= 373.24 grams or 0.3732 kilogram

CUBIC MEASURE	
1 cubic inch	= 16.387 cubic centimeters
1 cubic foot	= 0.0283 cubic meter
1 cubic yard	= 0.7646 cubic meter
1 cord	= 3.625 cubic meters

SQUARE MEASURE	
1 square inch	= 6.452 square centimeters
1 square foot	= 929 square centimeters
1 square yard	= 0.8361 square meter
1 square rod	= 25.29 square meters
1 acre	= 40.4687 Ares or 0.4047 hectare
1 square mile	= 259 hectares or 2.59 square kilometers
1 township	= 9,324 hectares or 93.24 square kilometers

LINEAR OR LONG MEASURE	
1 inch	= 2.54 centimeters
1 foot	= 0.3048 meter
1 yard	= 0.9144 meter
1 rod	= 5.029 meters
1 furlong	= 201.17 meters
1 mile	= 1.6093 kilometers
1 league	= 4.83 kilometers

LIQUID MEASURE	
1 fluid ounce	= 0.0297 liter
1 gill	= 0.118 liter
1 pint	= 0.4732 liter
1 quart	= 0.9463 liter
1 gallon	= 3.7853 liters

METRIC EQUIVALENTS OF US WEIGHTS AND MEASURES (CON'T)

DRY MEASURE	
1 quart	= 1.1012 liters
1 peck	= 8.8096 liters
1 bushel	= 35.2383 liters

METRIC WEIGHTS AND MEASURES

AREA	
100 square millimeters (sq mm or mm2)	= 1 square centimeter (sq cm or cm2)
100 square centimeters	= 1 square decimeter (sq dm or dm2)
100 square decimeters	= 1 square meter (sq m or m2)
100 square meters	= 1 are (a)
100 ares	= 1 hectare (ha)
100 hectares	= 1 square kilometer (sq km or km2)

CAPACITY	
10 milliliters (ml)	= 1 centiliters (cl)
10 centiliters	= 1 deciliter (dl)
10 deciliters	= 1 liter (l)
10 liters	= 1 deciliter (dkl)
10 deciliters	= 1 hectoliter (dkl)
10 dectoliters or 1,000 liters	= 1 kiloliter (kl)

LENGTH	
10 millimeters (mm)	= 1 centimeter (cm)
10 centimeters	= 1 decimeter (dm)
10 decimeters	= 1 meter (m)
10 meters	= 1 decameter (dkm)
10 decameters	= 1 hectometer (hm)
10 hectometers or 1,000 meters	= 1 kilometer (km)

VOLUME	
1,000 cubic millimeters (cu mm or mm3)	= 1 cubic centimeter (cu cm or cm 3)
1,000 cubic centimeters	= 1 cubic decimeter (cu dm or dm3)
1,000 cubic decimeters	= 1 cubic meter (cu m or m3)

WEIGHT	
10 milligrams (mg)	= 1 centigram (cg)
10 centigrams	= 1 decigram (dg)
10 decigrams	= 1 gram (g)
1,000 grams	= 1 kilogram or kilo (kg)
100 kilograms	= 1 quintal (q)
10 quintals or 1,000 kilograms	=1 metric ton (MT)

GAUGE THICKNESS

No. of Gauge or Thickness of Sheet	Fractions	Decimals	Stubb's or Birmingham Wire Gauge Decimals	American or Brown & Sharp's Decimals
7-0's	1/2	0.500		
6-0's	15/32	0.468		
5-0's	7/16	0.437		
0000	13/32	0.406	0.454	0.460
000	3/8	0.375	0.425	0.409
00	11/32	0.343	0.380	0.364
0	5/16	0.120	0.340	0.324
1	9/32	0.281	0.300	0.289
2	17/64	0.265	0.284	0.257
3	1/4	0.250	0.259	0.229
4	15/64	0.234	0.238	0.204
5	7/32	0.218	0.220	0.181
6	13/64	0.203	0.203	0.162
7	3/16	0.187	0.180	0.144
8	11/64	0.171	0.165	0.128
9	5/32	0.156	0.148	0.114
10	9/64	0.140	0.134	0.101
11	1/8	0.125	0.120	0.090
12	7/64	0.109	0.109	0.080
13	3/32	0.093	0.095	0.072
14	5/64	0.078	0.083	0.064
15	9/128	0.070	0.072	0.057
16	1/16	0.062	0.065	0.050
17	9/160	0.056	0.058	0.045
18	1/20	0.050	0.049	0.040
19	7/160	0.043	0.042	0.035
20	3/80	0.037	0.035	0.032
21	11/320	0.034	0.032	0.028
22	1/32	0.031	0.028	0.025
23	9/320	0.028	0.025	0.022
24	1/40	0.025	0.022	0.020
25	7/320	0.021	0.020	0.017
26	3/160	0.018	0.018	0.015
27	11/640	0.017	0.016	0.014
28	1/64	0.015	0.014	0.012
29	9/640	0.014	0.013	0.011
30	1/80	0.012	0.012	0.010

GAUGE THICKNESS (CON'T)

No. of Gauge or Thickness of Sheet	Fractions	Decimals	Stubb's or Birmingham Wire Gauge Decimals	American or Brown & Sharp's Decimals
31	7/640	0.010	0.010	0.008
32	13/1280	0.010	0.009	0.008
33	3/320	0.009	0.008	0.007
34	11/1280	0.008	0.007	0.006
35	5/640	0.007	0.005	0.005
36	9/1280	0.007	0.004	
37	17/2560	0.006		
38	1/160	0.006		

US GALLONS IN ROUND TANKS
FOR ONE FOOT IN DEPTH

Dia. Tanks		No. U.S. Gals.	Cu. Ft and Area in Sq. Ft.
1	0	5.87	0.785
1	1	6.89	0.922
1	2	8	1.069
1	3	9.18	1.227
1	4	10.44	1.396
1	5	11.79	1.5765
1	6	13.22	1.767
1	7	14.73	1.969
1	8	16.32	2.182
1	9	17.99	2.405
1	10	19.75	2.64
1	11	21.58	2.885
2	0	23.5	3.142
2	1	25.5	3.409
2	2	27.58	3.687
2	3	29.74	3.976
2	4	31.99	4.276
2	5	34.31	4.587
2	6	36.72	4.909
2	7	39.21	5.241
2	8	41.78	5.585
2	9	44.43	5.94
2	10	47.16	6.305
2	11	49.98	6.681
3	0	52.88	7.069
3	1	55.86	7.467
3	2	58.92	7.876
3	3	62.06	8.296
3	4	65.28	8.727
3	5	68.58	9.168
3	6	71.97	9.621
3	7	75.44	10.085
3	8	78.99	10.559
3	9	82.62	11.045
3	10	86.33	11.541
3	11	90.13	12.048
4	0	94	12.566
4	1	97.96	13.095
4	2	102	13.635
4	3	106.12	14.186
4	4	110.32	14.748
4	5	114.61	15.321
4	6	118.97	15.9
4	7	123.42	16.5
4	8	127.95	17.1
4	9	132.56	17.72
4	10	137.25	18.35
4	11	142.02	18.99
5	0	146.88	19.63
5	1	151.82	20.29
5	2	156.83	20.97
5	3	161.93	21.65
5	4	167.12	22.34
5	5	172.38	23.04
5	6	177.72	23.76
5	7	183.15	24.48
5	8	188.66	25.22
5	9	194.25	25.97
5	10	199.92	26.73
5	11	205.67	27.49
6	0	211.51	28.27
6	3	229.5	30.68
6	6	248.23	33.18
6	9	267.69	35.78
7	0	287.88	38.48
7	3	308.81	41.28
7	6	330.48	44.18
7	9	352.88	47.77
8	0	376.01	50.27
8	3	399.88	53.46
8	6	424.48	56.75
8	9	449.82	60.13
9	0	475.89	63.62
9	3	502.7	67.2
9	6	530.24	70.88
9	9	558.51	74.66
10	0	587.52	78.54
10	3	617.26	82.52
10	6	640.74	86.59
10	9	678.95	90.76
11	0	710.9	95.03
11	3	743.58	99.4
11	6	776.99	103.87
11	9	811.14	108.43
12	0	846.03	113.1
12	3	881.65	117.86
12	6	918	122.72
12	9	955.09	127.68
13	0	992.91	132.72
13	3	1031.5	137.89
13	6	1070.8	143.14
13	9	1110.8	148.49
14	0	1151.5	153.94
14	3	1193	159.48
14	6	1235.3	165.13
14	9	1278.2	170.87
15	0	1321.9	176.71
15	3	1366.4	182.65
15	6	1411.5	188.69
15	9	1457.4	194.83
16	0	1504.1	201.06
16	3	1551.4	207.39
16	6	1599.5	213.82
16	9	1648.4	220.35
17	0	1697.9	226.98
17	3	1748.2	233.71
17	6	1799.3	240.53
17	9	1851.1	247.45

US GALLONS IN ROUND TANKS (CON'T)
FOR ONE FOOT IN DEPTH

Dia. Tanks		No. U.S. Gals.	Cu. Ft and Area in Sq. Ft.
18	0	1903.6	254.47
18	3	1956.8	261.59
18	6	2010.8	268.8
18	9	2065.5	276.12
19	0	2120.9	283.53
19	3	2177.1	291.04
19	6	2234	298.65
19	9	2291.7	306.35
20	0	2350.1	314.16
20	3	2409.2	322.06
20	6	2469.1	330.06
20	9	2529.6	338.16
21	0	2591	346.36
21	3	2653	354.66
21	6	2715.8	363.05
21	9	2779.3	371.54
22	0	2843.6	380.13
22	3	2908.6	388.82
22	6	2974.3	397.61
22	9	3040.8	406.49

Dia. Tanks		No. U.S. Gals.	Cu. Ft and Area in Sq. Ft.
23	0	3108	415.48
23	3	3175.9	424.56
23	6	3244.6	433.74
23	9	3314	443.01
24	0	3384.1	452.39
24	3	3455	461.86
24	6	3526.6	471.44
24	9	3598.9	481.11
25	0	3672	490.87
25	3	3745.8	500.74
25	6	3820.3	510.71
25	9	3895.6	520.77
26	0	3971.6	530.93
26	3	4048.4	541.19
26	6	4125.9	551.55
26	9	4204.1	562
27	0	4283	572.66
27	3	4362.7	583.21
27	6	4443.1	593.96
27	9	4525.3	604.81

Dia. Tanks		No. U.S. Gals.	Cu. Ft and Area in Sq. Ft.
28	0	4606.2	615.75
28	3	4688.8	626.8
28	6	4772.1	637.94
28	9	4856.2	649.18
29	0	4941	660.52
29	3	5026.6	671.96
29	6	5112.9	683.49
29	9	5199.9	695.13
30	0	5287.7	706.86
30	3	5376.2	718.69
30	6	5465.4	730.62
30	9	5555.4	742.64
31	0	5646.1	754.77
31	3	5773.5	766.99
31	6	5829.7	779.31
31	9	5922.6	791.33
32	0	6016.2	804.25
32	3	6110.6	816.86
32	6	6205.7	829.58
32	9	6301.5	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.

A gallon of water (U.S. Standard) weights 8-1/3 pounds and contains 231 cubic inches.

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

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

THEORETICAL WEIGHT OF STEEL CIRCLES

Dia.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
1	0.028	0.042	0.056	0.069	0.083	0.097	0.111	0.125	0.139	0.153	0.167	0.181	0.195		0.223
2	0.111	0.166	0.222	0.278	0.333	0.389	0.444	0.502	0.557	0.612	0.668	0.724	0.779		0.892
3	0.249	0.375	0.500	0.626	0.749	0.874	0.999	1.130	1.250	1.370	1.500	1.630	1.750		2.010
4	0.414	0.666	0.888	1.110	1.330	1.550	1.780	2.010	2.230	2.450	2.670	2.900	3.120		3.570
5	0.693	1.040	1.388	1.740	2.080	2.430	2.780	3.140	3.480	3.890	4.180	4.520	4.870		5.580
6	0.998	1.500	2.000	2.510	3.000	3.500	4.000	4.520	5.010	5.510	6.010	6.510	7.010		8.300
7	1.360	2.040	2.720	3.410	4.080	4.756	5.440	6.150	6.820	7.500	8.190	8.870	9.550		10.930
8	1.770	2.660	3.550	4.450	5.330	6.220	7.110	8.030	8.910	9.800	10.690	11.580	12.470		14.280
9	2.250	3.370	4.500	5.690	6.740	7.870	9.000	10.160	11.280	12.410	13.530	14.660	15.780		18.070
10	2.770	4.160	5.550	6.960	8.330	9.720	11.110	12.540	13.930	15.360	16.710	18.100	19.490		22.310
11	3.350	5.040	6.720	8.420	10.070	11.760	13.440	15.180	16.850	18.530	20.210	21.900	23.580		26.990
12	3.990	5.990	8.000	10.020	11.990	13.990	15.990	18.060	20.050	22.050	24.060	26.060	28.060		32.120
13	4.690	7.030	9.380	11.760	14.070	16.420	18.770	21.220	23.530	25.880	28.230	30.580	32.930		37.700
14	5.430	8.160	10.880	13.640	16.320	19.010	21.770	24.580	26.290	30.020	32.740	35.470	38.190		43.720
15	6.240	9.370	12.490	15.660	18.730	21.860	24.990	28.220	31.330	33.460	37.590	40.710	43.840		50.190
16	7.000	11.000	15.000	18.000	22.000	25.000	29.000	32.000	35.000	39.000	42.000	46.000	49.000		56.000
17	8.000	12.000	16.000	20.000	24.000	28.000	32.000	36.000	40.000	44.000	48.000	52.000	56.000		64.000
18	9.000	14.000	18.000	23.000	27.000	32.000	36.000	40.000	45.000	49.000	54.000	58.000	63.000		71.000

THEORETICAL WEIGHT OF STEEL CIRCLES (CON'T)

Dia.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
19	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000		80.000
20	11.000	17.000	23.000	28.000	34.000	39.000	45.000	50.000	55.000	61.000	66.000	72.000	77.000		88.000
21	12.000	19.000	25.000	31.000	37.000	43.000	49.000	55.000	61.000	67.000	73.000	79.000	85.000		97.000
22	14.000	20.000	27.000	34.000	41.000	47.000	54.000	60.000	67.000	73.000	80.000	87.000	93.000		107.000
23	15.000	22.000	30.000	37.000	44.000	52.000	59.000	66.000	73.000	80.000	88.000	95.000	102.000		117.000
24	16.000	24.000	32.000	40.000	48.000	56.000	64.000	71.000	79.000	87.000	95.000	103.000	111.000		127.000
25	18.000	26.000	35.000	44.000	53.000	61.000	70.000	78.000	86.000	95.000	103.000	112.000	121.000		138.000
26	19.000	28.000	38.000	47.000	56.000	66.000	75.000	84.000	93.000	103.000	112.000	121.000	131.000		149.000
27	20.000	30.000	41.000	51.000	61.000	71.000	81.000	91.000	101.000	111.000	121.000	131.000	141.000		161.000
28	22.000	33.000	44.000	55.000	65.000	76.000	87.000	97.000	108.000	119.000	130.000	141.000	152.000		173.000
29	24.000	35.000	47.000	59.000	71.000	82.000	94.000	104.000	116.000	127.000	139.000	151.000	163.000		186.000
30	25.000	38.000	50.000	63.000	75.000	88.000	100.000	112.000	124.000	137.000	149.000	162.000	174.000		199.000
31	27.000	40.000	51.000	67.000	80.000	94.000	107.000	119.000	133.000	146.000	159.000	173.000	186.000		212.000
32	29.000	43.000	57.000	71.000	86.000	100.000	114.000	127.000	141.000	156.000	170.000	184.000	198.000		226.000
33	30.000	45.000	61.000	76.000	91.000	106.000	121.000	135.000	150.000	165.000	180.000	196.000	211.000		241.000
34	32.000	48.000	65.000	81.000	97.000	113.000	129.000	144.000	160.000	176.000	192.000	208.000	224.000		255.000
35	34.000	51.000	68.000	85.000	102.000	119.000	136.000	152.000	169.000	186.000	203.000	220.000	237.000		271.000

THEORETICAL WEIGHT OF STEEL CIRCLES (CON'T)

Dia.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
36	36.000	54.000	72.000	90.000	108.000	126.000	144.000	162.000	180.000	198.000	216.000	234.000	252.000		288.000
37	38.000	57.000	76.000	95.000	115.000	131.000	153.000	172.000	191.000	210.000	229.000	248.000	267.000		306.000
38	40.000	60.000	80.000	100.000	121.000	141.000	161.000	181.000	201.000	221.000	241.000	261.000	281.000		322.000
39	42.000	64.000	85.000	106.000	127.000	148.000	169.000	190.000	212.000	233.000	254.000	275.000	296.000		338.000
40	45.000	67.000	89.000	111.000	134.000	156.000	178.000	200.000	223.000	245.000	267.000	289.000	312.000		356.000
41	47.000	70.000	94.000	117.000	141.000	164.000	187.000	211.000	234.000	258.000	281.000	304.000	327.000		374.000
42	49.000	74.000	98.000	123.000	148.000	172.000	197.000	221.000	246.000	270.000	295.000	319.000	344.000		394.000
43	52.000	77.000	103.000	129.000	155.000	180.000	206.000	232.000	258.000	283.000	309.000	335.000	360.000		412.000
44	54.000	81.000	108.000	135.000	162.000	188.000	215.000	242.000	269.000	296.000	323.000	350.000	377.000		430.000
45	56.000	85.000	113.000	141.000	169.000	197.000	225.000	253.000	282.000	310.000	338.000	366.000	394.000		450.000
46	59.000	88.000	118.000	147.000	177.000	206.000	235.000	2675.00	294.000	324.000	353.000	383.000	412.000		475.000
47	62.000	92.000	123.000	154.000	185.000	215.000	246.000	277.000	308.000	338.000	369.000	399.000	430.000		492.000
48	64.000	96.000	128.000	160.000	193.000	225.000	257.000	289.000	321.000	353.000	385.000	417.000	449.000		514.000
49	67.000	100.000	134.000	167.000	201.000	234.000	267.000	301.000	334.000	367.000	401.000	434.000	467.000		534.000
50	70.000	105.000	139.000	174.000	209.000	244.000	279.000	313.000	348.000	383.000	418.000	452.000	487.000		558.000
51		109.000	145.000	181.000	217.000	253.000	289.000	325.000	362.000	398.000	434.000	470.000	506.000		578.000
52		113.000	151.000	188.000	226.000	263.000	301.000	339.000	376.000	414.000	452.000	489.000	527.000		602.000

THEORETICAL WEIGHT OF STEEL CIRCLES (CON'T)

Dia.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
53		117.000	156.000	195.000	235.000	273.000	313.000	352.000	391.000	430.000	469.000	508.000	547.000		626.000
54		122.000	162.000	203.000	244.000	284.000	325.000	365.000	406.000	446.000	487.000	527.000	568.000		650.000
55		126.000	168.000	210.000	253.000	295.000	337.000	379.000	421.000	463.000	505.000	547.000	589.000		674.000
56		131.000	175.000	218.000	262.000	305.000	349.000	393.000	436.000	480.000	524.000	567.000	610.000		698.000
57		136.000	181.000	226.000	272.000	317.000	362.000	407.000	453.000	498.000	543.000	587.000	633.000		724.000
58		141.000	187.000	231.000	281.000	328.000	375.000	421.000	468.000	515.000	562.000	609.000	655.000		750.000
59		145.000	191.000	242.000	291.000	339.000	387.000	436.000	484.000	533.000	581.000	629.000	678.000		774.000
60		150.000	200.000	250.000	301.000	351.000	401.000	451.000	501.000	551.000	601.000	651.000	701.000		802.000
61		155.000	207.000	259.000	311.000	362.000	414.000	466.000	518.000	569.000	621.000	673.000	724.000		828.000
62		161.000	214.000	268.000	321.000	375.000	428.000	482.000	535.000	589.000	642.000	695.000	749.000		856.000
63		166.000	221.000	276.000	332.000	387.000	442.000	497.000	553.000	608.000	663.000	718.000	774.000		884.000
64		171.000	228.000	285.000	342.000	399.000	456.000	513.000	570.000	627.000	684.000	741.000	798.000		912.000
65		177.000	235.000	294.000	353.000	412.000	471.000	529.000	588.000	647.000	706.000	764.000	823.000		942.000
66		182.000	243.000	303.000	364.000	425.000	485.000	546.000	607.000	667.000	728.000	788.000	848.000		970.000
67		188.000	250.000	313.000	375.000	438.000	500.000	563.000	625.000	688.000	750.000	812.000	874.000		1006.000
68		193.000	257.000	322.000	386.000	450.000	515.000	579.000	643.000	708.000	772.000	836.000	900.000		1030.000

THEORETICAL WEIGHT OF STEEL CIRCLES (CON'T)

Dia.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
69		199.000	265.000	331.000	398.000	464.000	530.000	596.000	663.000	729.000	795.000	861.000	927.000		1060.000
70		205.000	273.000	341.000	409.000	477.000	545.000	613.000	682.000	750.000	818.000	886.000	954.000		1090.000
71		211.000	281.000	351.000	421.000	491.000	561.000	631.000	702.000	772.000	842.000	912.000	982.000		1122.000
72		217.000	289.000	361.000	433.000	505.000	577.000	649.000	722.000	794.000	866.000	937.000	1009.000		1154.000
73		223.000	297.000	371.000	445.000	519.000	593.000	667.000	742.000	816.000	890.000	964.000	1038.000		1186.000
74		226.000	305.000	381.000	458.000	531.000	610.000	686.000	763.000	839.000	915.000	990.000	1066.000		1220.000
75		235.000	313.00	391.000	470.000	548.000	626.000	704.000	783.000	861.000	939.000	1017.000	1095.000		1252.000
76			322.00	402.00	482.00	563.00	643.00	724.00	804.00	884.00	965.00	1045.00	1126.00		1286.00
77			330.00	413.00	495.00	578.00	660.00	743.00	825.00	908.00	990.00	1073.00	1155.00		1320.00
78			322.00	402.00	482.00	563.00	643.00	724.00	804.00	884.00	965.00	1045.00	1126.00		1286.00
79			330.00	413.00	495.00	578.00	660.00	743.00	825.00	908.00	990.00	1073.00	1155.00		1320.00
80			339.00	423.00	508.00	593.00	677.00	762.00	847.00	932.00	1016.00	1101.00	1186.00		1355.00
81			347.00	434.00	521.00	608.00	695.00	782.00	869.00	956.00	1042.00	1129.00	1216.00		1390.00
82			356.00	445.00	534.00	624.00	713.00	802.00	891.00	980.00	1069.00	1158.00	1247.00		1425.00
83			365.00	457.00	548.00	639.00	731.00	822.00	913.00	1005.00	1096.00	1187.00	1279.00		1461.00
84			374.00	468.00	562.00	655.00	749.00	842.00	936.00	1030.00	1123.00	1217.00	1310.00		1497.00
85			384.00	479.00	575.00	671.00	767.00	863.00	959.00	1055.00	1151.00	1247.00	1342.00		1534.00

THEORETICAL WEIGHT OF STEEL CIRCLES (CON'T)

Dia.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
86			393.00	491.00	589.00	687.00	786.00	884.00	982.00	1080.00	1179.00	1277.00	1375.00		1571.00
87			402.00	503.00	603.00	704.00	805.00	905.00	1006.00	1106.00	1207.00	1307.00	1408.00		1609.00
88			412.00	515.00	618.00	721.00	824.00	927.00	1029.00	1132.00	1235.00	1338.00	1441.00		1647.00
89			421.00	527.00	632.00	737.00	843.00	948.00	1054.00	1159.00	1264.00	1370.00	1475.00		1686.00
90			431.00	539.00	647.00	755.00	862.00	970.00	1078.00	1186.00	1293.00	1401.00	1509.00		1725.00
91			441.00	551.00	662.00	772.00	882.00	992.00	1103.00	1213.00	1323.00	1433.00	1544.00		1764.00
92			451.00	564.00	676.00	789.00	902.00	1015.00	1127.00	1240.00	1353.00	1466.00	1578.00		1804.00
93			461.00	576.00	692.00	807.00	922.00	1037.00	1153.00	1268.00	1383.00	1498.00	1614.00		1844.00
94			471.00	589.00	707.00	825.00	942.00	1060.00	1178.00	1296.00	1414.00	1532.00	1649.00		1885.00
95			482.00	602.00	722.00	843.00	963.00	1083.00	1204.00	1324.00	1445.00	1565.00	1685.00		1926.00
96			492.00	615.00	738.00	861.00	984.00	1107.00	1230.00	1353.00	1476.00	1599.00	1722.00		1968.00
97			502.00	628.00	754.00	879.00	1005.00	1131.00	1256.00	1382.00	1507.00	1633.00	1759.00		2010.00
98			513.00	641.00	770.00	898.00	1026.00	1155.00	1283.00	1411.00	1539.00	1668.00	1796.00		2052.00
99			524.00	655.00	786.00	917.00	1048.00	1179.00	1310.00	1441.00	1572.00	1703.00	1834.00		2095.00
100			535.00	668.00	802.00	936.00	1069.00	1203.00	1337.00	1470.00	1604.00	1738.00	1872.00		2139.00
101			546.00	682.00	819.00	955.00	1091.00	1228.00	1364.00	1501.00	1637.00	1773.00	1910.00	2046.00	2183.00

THEORETICAL WEIGHT OF STEEL CIRCLES (CON'T)

Dia.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
102			557.00	696.00	835.00	974.00	1114.00	1253.00	1392.00	1531.00	1670.00	1810.00	1949.00	2088.00	2227.00
103			568.00	710.00	852.00	994.00	1136.00	1278.00	1420.00	1562.00	1704.00	1846.00	1988.00	2130.00	2272.00
104			579.00	724.00	869.00	1014.00	1159.00	1303.00	1448.00	1593.00	1738.00	1883.00	2027.00	2172.00	2317.00
105			591.00	738.00	886.00	1034.00	1181.00	1329.00	1477.00	1624.00	1772.00	1920.00	2067.00	2215.00	2363.00
106			602.00	753.00	903.00	1054.00	1204.00	1355.00	1506.00	1656.00	1807.00	1957.00	2108.00	2258.00	2409.00
107			614.00	767.00	921.00	1074.00	1228.00	1381.00	1535.00	1688.00	1842.00	1995.00	2148.00	2302.00	2455.00
108			626.00	782.00	938.00	1095.00	1251.00	1408.00	1564.00	1720.00	1877.00	2033.00	2190.00	2346.00	2502.00
109			637.00	797.00	956.00	1116.00	1275.00	1434.00	1594.00	1753.00	1912.00	2072.00	2231.00	2390.00	2550.00
110			649.00	812.00	974.00	1136.00	1299.00	1461.00	1624.00	1786.00	1948.00	2111.00	2273.00	2435.00	2598.00
111			661.00	827.00	992.00	1158.00	1323.00	1488.00	1654.00	1819.00	1984.00	2150.00	2315.00	2481.00	2646.00
112			674.00	842.00	1011.00	1179.00	1347.00	1516.00	1684.00	1853.00	2021.00	2189.00	2358.00	2526.00	2695.00
113			686.00	857.00	1029.00	1200.00	1372.00	1543.00	1715.00	1886.00	2058.00	2229.00	2401.00	2572.00	2744.00
114			698.00	873.00	1048.00	1222.00	1397.00	1571.00	1746.00	1921.00	2095.00	2270.00	2444.00	2619.00	2794.00
115			711.00	889.00	1066.00	1244.00	1422.00	1600.00	1777.00	1955.00	2133.00	2311.00	2488.00	2666.00	2844.00
116			724.00	904.00	1085.00	1266.00	1447.00	1628.00	1809.00	1990.00	2171.00	2352.00	2533.00	2713.00	2894.00
117			736.00	920.00	1104.00	1289.00	1473.00	1657.00	1841.00	2025.00	2209.00	2393.00	2577.00	2761.00	2945.00
118			749.00	936.00	1124.00	1311.00	1498.00	1686.00	1873.00	2060.00	2248.00	2435.00	2622.00	2809.00	2997.00

THEORETICAL WEIGHT OF STEEL CIRCLES (CON'T)

Dia.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
119			762.00	953.00	1143.00	1334.00	1524.00	1715.00	1905.00	2096.00	2286.00	2477.00	2668.00	2858.00	3049.00
120			775.00	969.00	1163.00	1357.00	1550.00	1744.00	1938.00	2132.00	2326.00	2520.00	2713.00	2907.00	3101.00
121			788.00	986.00	1183.00	1380.00	1577.00	1774.00	1971.00	2168.00	2365.00	2562.00	2760.00	2957.00	3154.00
122			802.00	1002.00	1203.00	1403.00	1603.00	1804.00	2004.00	2205.00	2405.00	2606.00	2806.00	3007.00	3207.00
123			815.00	1019.00	1223.00	1427.00	1630.00	1834.00	2038.00	2242.00	2445.00	2649.00	2853.00	3057.00	3261.00
124			829.00	1036.00	1243.00	1450.00	1657.00	1865.00	2072.00	2279.00	2486.00	2693.00	2900.00	3108.00	3315.00
125			842.00	1053.00	1264.00	1474.00	1685.00	1895.00	2106.00	2316.00	2527.00	2738.00	2948.00	3159.00	3369.00
126			856.00	1070.00	1284.00	1498.00	1712.00	1926.00	2140.00	2354.00	2568.00	2782.00	2996.00	3210.00	3424.00
127			870.00	1087.00	1305.00	1522.00	1740.00	1957.00	2175.00	2392.00	2610.00	2827.00	3045.00	3262.00	3480.00
128			884.00	1105.00	1326.00	1547.00	1768.00	1989.00	2210.00	2431.00	2652.00	2873.00	3094.00	3315.00	3536.00
128			898.00	1123.00	1347.00	1572.00	1796.00	2021.00	2245.00	2470.00	2694.00	2919.00	3143.00	3368.00	3592.00
130			912.00	1140.00	1368.00	1596.00	1824.00	2052.00	2281.00	2509.00	2737.00	2965.00	3193.00	3421.00	3649.00
131			927.00	1158.00	1390.00	1621.00	1853.00	2085.00	2316.00	2548.00	2780.00	3011.00	3243.00	3474.00	3706.00
132			941.00	1176.00	1411.00	1647.00	1882.00	2117.00	2352.00	2588.00	2823.00	3058.00	3293.00	3529.00	3764.00
133			955.00	1194.00	1433.00	1672.00	1911.00	2150.00	2389.00	2628.00	2866.00	3105.00	3344.00	3583.00	3822.00
134			970.00	1213.00	1455.00	1698.00	1940.00	2183.00	2425.00	2668.00	2910.00	3153.00	3395.00	3638.00	3880.00
135			985.00	1231.00	1477.00	1724.00	1970.00	2216.00	2462.00	2708.00	2955.00	3201.00	3447.00	3693.00	3939.00

CIRCUMFERENCES AND AREAS OF CIRCLES

Diameter (inches)	Circumfer-ence (inches)	Area (Sq. In.)	Diameter (inches)	Circum-ference (inches)	Area (Sq. In.)
1/64	0.04909	0.00019	37/64	1.81623	0.26250
1/32	0.09817	0.00077	19/32	1.86532	0.27688
3/64	0.14726	0.00173	39/64	1.91441	0.29165
1/16	0.19635	0.00307	5/8	1.96350	0.30680
5/64	0.24544	0.00479	41/64	2.01258	0.32233
3/32	0.29452	0.00690	21/32	2.06167	0.33824
7/64	0.34361	0.00940	43/64	2.11076	0.35454
1/8	0.39270	0.01227	11/16	2.15984	0.37122
9/64	0.44179	0.01553	45/64	2.20893	0.38829
5/32	0.49087	0.01917	23/32	2.25802	0.40574
11/64	0.53996	0.02320	47/64	2.30711	0.42357
3/16	0.58905	0.02761	3/4	2.35619	0.44179
13/64	0.63814	0.03241	49/64	2.40528	0.46039
7/32	0.68722	0.03758	25/32	2.45437	0.47937
15/64	0.73631	0.04314	51/64	2.50346	0.49874
1/4	0.78540	0.04909	13/16	2.55254	0.51849
17/64	0.83449	0.05542	53/64	2.60163	0.53862
9/32	0.88357	0.06213	27/32	2.65072	0.55914
19/64	0.93266	0.06922	55/64	2.69981	0.58004
5/16	0.98175	0.07670	7/8	2.74889	0.60132
21/64	1.03084	0.08456	57/64	2.79798	0.62299
11/32	1.07992	0.09281	29/32	2.84707	0.64504
23/64	1.12901	0.10143	59/64	2.89616	0.66747
3/8	1.17810	0.11045	15/16	2.94524	0.69029
25/64	1.22718	0.11984	61/64	2.99433	0.71349
13/32	1.27627	0.12962	31/32	3.04342	0.73708
27/64	1.32536	0.13978	63/64	3.09251	0.76105
7/16	1.37445	0.15033	1	3.14159	0.78540
29/64	1.42353	0.16126	1 1/16	3.33794	0.88664
15/32	1.47262	0.17257	1 1/8	3.53429	0.99402
31/64	1.52171	0.18427	1 3/16	3.73064	1.10753
1/2	1.57080	0.19635	1 1/4	3.92699	1.22718
33/64	1.61988	0.20881	1 5/16	4.12334	1.35297
17/32	1.66897	0.22166	1 3/8	4.31969	1.48489
35/64	1.71806	0.23489	1 7/16	4.51604	1.62295
9/16	1.76715	0.24850	1 1/2	4.71239	1.76715

CIRCUMFERENCES AND AREAS OF CIRCLES

Diameter (inches)	Circumference (inches)	Area (Sq. In.)	Diameter (inches)	Circumference (inches)	Area (Sq. In.)
1 9/16	4.90874	1.91748	3 3/4	11.78097	11.04466
1 5/8	5.10509	2.07394	3 13/16	11.97732	11.41589
1 11/16	5.30144	2.23654	3 7/8	12.17367	11.79324
1 3/4	5.49779	2.40528	3 15/16	12.37002	12.17674
1 13/16	5.69414	2.58016	4	12.56637	12.56637
1 7/8	5.89049	2.76117	4 1/16	12.76272	12.96214
1 15/16	6.08684	2.94831	4 1/8	12.95907	13.36404
2	6.28319	3.14159	4 3/16	13.15542	13.77208
2 1/16	6.47953	3.34101	4 1/4	13.35177	14.18625
2 1/8	6.67588	3.54656	4 5/16	13.54812	14.60657
2 3/16	6.87223	3.75825	4 3/8	13.74447	15.03301
2 1/4	7.06858	3.97608	4 7/16	13.94082	15.46559
2 5/16	7.26493	4.20004	4 1/2	14.13717	15.90431
2 3/8	7.46128	4.43014	4 9/16	14.33352	16.34917
2 7/16	7.65763	4.66637	4 5/8	14.52987	16.80016
2 1/2	7.85398	4.90874	4 11/16	14.72622	17.25728
2 9/16	8.05033	5.15724	4 3/4	14.92257	17.72055
2 5/8	8.24668	5.41188	4 13/16	15.11891	18.18994
2 11/16	8.44303	5.67266	4 7/8	15.31526	18.66548
2 3/4	8.63938	5.93957	4 15/16	15.51161	19.14715
2 13/16	8.83573	6.21262	5	15.70796	19.63495
2 7/8	9.03208	6.49181	5 1/16	15.90431	20.12890
2 15/16	9.22843	6.77713	5 1/8	16.10066	20.62897
3	9.42478	7.06858	5 3/16	16.29701	21.13519
3 1/16	9.62113	7.36618	5 1/4	16.49336	21.64754
3 1/8	9.81748	7.66990	5 5/16	16.68971	22.16602
3 3/16	10.01383	7.97977	5 3/8	16.88606	22.69064
3 1/4	10.21018	8.29577	5 7/16	17.08241	23.22140
3 5/16	10.40653	8.61790	5 1/2	17.27876	23.75829
3 3/8	10.60288	8.94618	5 9/16	17.47511	24.30132
3 7/16	10.79922	9.28058	5 5/8	17.67146	24.85049
3 1/2	10.99557	9.62113	5 11/16	17.86781	25.40579
3 9/16	11.19192	9.96781	5 3/4	18.06416	25.96723
3 5/8	11.38827	10.32062	5 13/16	18.26051	26.53480
3 11/16	11.58462	10.67957	5 7/8	18.45686	27.10851

CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumference (inches)	Area (Sq. In.)	Diameter (inches)	Circumference (inches)	Area (Sq. In.)
5 15/16	18.65321	27.68835	10 1/4	32.20133	82.51590
6	18.84956	28.27433	10 3/8	32.59402	84.54075
6 1/8	19.24226	29.46470	10 1/2	32.98672	86.59015
6 1/4	19.63495	30.67962	10 5/8	33.37942	88.66409
6 3/8	20.02765	31.91907	10 3/4	33.77212	90.76258
6 1/2	20.42035	33.18307	10 7/8	34.16482	92.88561
6 5/8	20.81305	34.47162	11	34.55752	95.03318
6 3/4	21.20575	35.78470	11 1/8	34.95022	97.20530
6 7/8	21.59845	37.12234	11 1/4	35.34292	99.40196
7	21.99115	38.48451	11 3/8	35.73562	101.62316
7 1/8	22.38385	39.87123	11 1/2	36.12832	103.86891
7 1/4	22.77655	41.28249	11 5/8	36.52102	106.13920
7 3/8	23.16925	42.71830	11 3/4	36.91371	108.43404
7 1/2	23.56195	44.17865	11 7/8	37.30641	110.75341
7 5/8	23.95464	45.66354	12	37.69911	113.09734
7 3/4	24.34734	47.17298	12 1/8	38.09181	115.46580
7 7/8	24.74004	48.70696	12 1/4	38.48451	117.85881
8	25.13274	50.26548	12 3/8	38.87721	120.27637
8 1/8	25.52544	51.84855	12 1/2	39.26991	122.71846
8 1/4	25.91814	53.45616	12 5/8	39.66261	125.18511
8 3/8	26.31084	55.08832	12 3/4	40.05531	127.67629
8 1/2	26.70354	56.74502	12 7/8	40.44801	130.19202
8 5/8	27.09624	58.42626	13	40.84071	132.73229
8 3/4	27.48894	60.13205	13 1/8	41.23340	135.29711
8 7/8	27.88164	61.86238	13 1/4	41.62610	137.88647
9	28.27433	63.61725	13 3/8	42.01880	140.50037
9 1/8	28.66703	65.39667	13 1/2	42.41150	143.13882
9 1/4	29.05973	67.20063	13 5/8	42.80420	145.80181
9 3/8	29.45243	69.02914	13 3/4	43.19690	148.48934
9 1/2	29.84513	70.88219	13 7/8	43.58960	151.20142
9 5/8	30.23783	72.75978	14	43.98230	153.93804
9 3/4	30.63053	74.66191	14 1/8	44.37500	156.69921
9 7/8	31.02323	76.58859	14 1/4	44.76770	159.48492
10	31.41593	78.53982	14 3/8	45.16040	162.29517
10 1/8	31.80863	80.51558	14 1/2	45.55309	165.12997

CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumfer-ence (inches)	Area (Sq. In.)	Diameter (inches)	Circumfer-ence (inches)	Area (Sq. In.)
14 5/8	45.94579	167.98931	19 1/8	60.08296	287.27165
14 3/4	46.33849	170.87319	19 1/4	60.47566	291.03911
14 7/8	46.73119	173.78162	19 3/8	60.86836	294.83111
15	47.12389	176.71459	19 1/2	61.26106	298.64766
15 1/8	47.51659	179.67210	19 5/8	61.65376	302.48874
15 1/4	47.90929	182.65416	19 3/4	62.04646	306.35438
15 3/8	48.30199	185.66077	19 7/8	62.43915	310.24455
15 1/2	48.69469	188.69191	20	62.83185	314.15927
15 5/8	49.08739	191.74760	20 1/8	63.22455	318.09853
15 3/4	49.48009	194.82783	20 1/4	63.61725	322.06234
15 7/8	49.87278	197.93261	20 3/8	64.00995	326.05069
16	50.26548	201.06193	20 1/2	64.40265	330.06358
16 1/8	50.65818	204.21580	20 5/8	64.79535	334.10102
16 1/4	51.05088	207.39421	20 3/4	65.18805	338.16300
16 3/8	51.44358	210.59716	20 7/8	65.58075	342.24953
16 1/2	51.83628	213.82465	21	65.97345	346.36060
16 5/8	52.22898	217.07669	21 1/8	66.36615	350.49621
16 3/4	52.62168	220.35328	21 1/4	66.75884	354.65636
16 7/8	53.01438	223.65440	21 3/8	67.15154	358.84106
17	53.40708	226.98007	21 1/2	67.54424	363.05031
17 1/8	53.79977	230.33029	21 5/8	67.93694	367.28409
17 1/4	54.19247	233.70504	21 3/4	68.32964	371.54242
17 3/8	54.58517	237.10435	21 7/8	68.72234	375.82530
17 1/2	54.97787	240.52819	22	69.11504	380.13272
17 5/8	55.37057	243.97658	22 1/8	69.50774	384.46468
17 3/4	55.76327	247.44951	22 1/4	69.90044	388.82118
17 7/8	56.15597	250.94699	22 3/8	70.29314	393.20223
18	56.54867	254.46901	22 1/2	70.68584	397.60783
18 1/8	56.94137	258.01557	22 5/8	71.07853	402.03796
18 1/4	57.33407	261.58668	22 3/4	71.47123	406.49264
18 3/8	57.72677	265.18233	22 7/8	71.86393	410.97187
18 1/2	58.11946	268.80253	23	72.25663	415.47563
18 5/8	58.51216	272.44726	23 1/8	72.64933	420.00395
18 3/4	58.90486	276.11655	23 1/4	73.04203	424.55680
18 7/8	59.29756	279.81037	23 3/8	73.43473	429.13420
19	59.69026	283.52874	23 1/2	73.82743	433.73614

CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumference (inches)	Area (Sq. In.)	Diameter (inches)	Circumference (inches)	Area (Sq. In.)
23 5/8	74.22013	438.36263	28 1/8	88.35729	621.26223
23 3/4	74.61283	443.01366	28 1/4	88.74999	626.79683
23 7/8	75.00553	447.68923	28 3/8	89.14269	632.35598
24	75.39822	452.38935	28 1/2	89.53539	637.93967
24 1/8	75.79092	457.11401	28 5/8	89.92809	643.54790
24 1/4	76.18362	461.86321	28 3/4	90.32079	649.18068
24 3/8	76.57632	466.63696	28 7/8	90.71349	654.83800
24 1/2	76.96902	471.43525	29	91.10619	660.51987
24 5/8	77.36172	476.25809	29 1/8	91.49889	666.22627
24 3/4	77.75442	481.10547	29 1/4	91.89159	671.95723
24 7/8	78.14712	485.97739	29 3/8	92.28429	677.71272
25	78.53982	490.87386	29 1/2	92.67698	683.49276
25 1/8	78.93252	495.79487	29 5/8	93.06968	689.29735
25 1/4	79.32522	500.74042	29 3/4	93.46238	695.12647
25 3/8	79.71791	505.71052	29 7/8	93.85508	700.98014
25 1/2	80.11061	510.70516	30	94.24778	706.85836
25 5/8	80.50331	515.72435	30 1/8	94.64048	712.76112
25 3/4	80.89601	520.76808	30 1/4	95.03318	718.68842
25 7/8	81.28871	525.83635	30 3/8	95.42588	724.64026
26	81.68141	530.92917	30 1/2	95.81858	730.61665
26 1/8	82.07411	536.04653	30 5/8	96.21128	736.61759
26 1/4	82.46681	541.18843	30 3/4	96.60398	742.64306
26 3/8	82.85951	546.35488	30 7/8	96.99667	748.69308
26 1/2	83.25221	551.54587	31	97.38937	754.76765
26 5/8	83.64491	556.76140	31 1/8	97.78207	760.86675
26 3/4	84.03760	562.00148	31 1/4	98.17477	766.99041
26 7/8	84.43030	567.26610	31 3/8	98.56747	773.13860
27	84.82300	572.55527	31 1/2	98.96017	779.31134
27 1/8	85.21570	577.86898	31 5/8	99.35287	785.50862
27 1/4	85.60840	583.20723	31 3/4	99.74557	791.73045
27 3/8	86.00110	588.57003	31 7/8	100.13827	797.97682
27 1/2	86.39380	593.95737	32	100.53097	804.24773
27 5/8	86.78650	599.36925	32 1/8	100.92367	810.54319
27 3/4	87.17920	604.80568	32 1/4	101.31636	816.86319
27 7/8	87.57190	610.26665	32 3/8	101.70906	823.20773
28	87.96460	615.75217	32 1/2	102.10176	829.57682

CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumference (inches)	Area (Sq. In.)	Diameter (inches)	Circumference (inches)	Area (Sq. In.)
32 5/8	102.49446	835.97045	37 1/4	117.02433	1089.78906
32 3/4	102.88716	842.38863	37 3/8	117.41703	1097.11535
32 7/8	103.27986	848.83135	37 1/2	117.80973	1104.46618
33	103.67256	855.29861	37 5/8	118.20243	1111.84156
33 1/8	104.06526	861.79042	37 3/4	118.59512	1119.24149
33 1/4	104.45796	868.30677	37 7/8	118.98782	1126.66595
33 3/8	104.85066	874.84766	38	119.38052	1134.11496
33 1/2	105.24336	881.41310	38 1/8	119.77322	1141.58852
33 5/8	105.63605	888.00308	38 1/4	120.16592	1149.08662
33 3/4	106.02875	894.61761	38 3/8	120.55862	1156.60926
33 7/8	106.42145	901.25668	38 1/2	120.95132	1164.15644
34	106.81415	907.92029	38 5/8	121.34402	1171.72817
34 1/8	107.20685	914.60845	38 3/4	121.73672	1179.32445
34 1/4	107.59955	921.32115	38 7/8	122.12942	1186.94526
34 3/8	107.99225	928.05839	39	122.52212	1194.59062
34 5/8	108.77765	941.60651	39 1/8	122.91481	1202.26053
34 3/4	109.17035	948.41738	39 1/4	123.30751	1209.95498
34 7/8	109.56305	955.25280	39 3/8	123.70021	1217.67397
35	109.95574	962.11276	39 1/2	124.09291	1225.41750
35 1/8	110.34844	968.99727	39 5/8	124.48561	1233.18558
35 1/4	110.74114	975.90632	39 3/4	124.87831	1240.97820
35 3/8	111.13384	982.83991	39 7/8	125.27101	1248.79537
35 1/2	111.52654	989.79805	40	125.66371	1256.63708
35 5/8	111.91924	996.78073	40 1/8	126.05641	1264.50333
35 3/4	112.31194	1003.78796	40 1/4	126.44911	1272.39413
35 7/8	112.70464	1010.81972	40 3/8	126.84181	1280.30947
36	113.09734	1017.87603	40 1/2	127.23450	1288.24936
36 1/8	113.49004	1024.95689	40 5/8	127.62720	1296.21378
36 1/4	113.88274	1032.06229	40 3/4	128.01990	1304.20276
36 3/8	114.27543	1039.19223	40 7/8	128.41260	1312.21627
36 1/2	114.66813	1046.34672	41	128.80530	1320.25433
36 5/8	115.06083	1053.52575	41 1/8	129.19800	1328.31694
36 3/4	115.45353	1060.72932	41 1/4	129.59070	1336.40408
36 7/8	115.84623	1067.95744	41 3/8	129.98340	1344.51577
37	116.23893	1075.21010	41 1/2	130.37610	1352.65201
37 1/8	116.63163	1082.48731	41 5/8	130.76880	1360.81278

CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumfer-ence (inches)	Area (Sq. In.)	Diameter (inches)	Circumfer-ence (inches)	Area (Sq. In.)
41 3/4	131.16150	1368.99811	46 1/4	145.29866	1680.01578
41 7/8	131.55419	1377.20797	46 3/8	145.69136	1689.10922
42	131.94689	1385.44238	46 1/2	146.08406	1698.22720
42 1/8	132.33959	1393.70133	46 5/8	146.47676	1707.36973
42 1/4	132.73229	1401.98483	46 3/4	146.86946	1716.53680
42 3/8	133.12499	1410.29287	46 7/8	147.26216	1725.72841
42 1/2	133.51769	1418.62545	47	147.65486	1734.94457
42 5/8	133.91039	1426.98258	47 1/8	148.04756	1744.18527
42 3/4	134.30309	1435.36425	47 1/4	148.44026	1753.45051
42 7/8	134.69579	1443.77047	47 3/8	148.83295	1762.74030
43	135.08849	1452.20123	47 1/2	149.22565	1772.05463
43 1/8	135.48119	1460.65653	47 5/8	149.61835	1781.39351
43 1/4	135.87388	1469.13637	47 3/4	150.01105	1790.75693
43 3/8	136.26658	1477.64076	47 7/8	150.40375	1800.14489
43 1/2	136.65928	1486.16970	48	150.79645	1809.55740
43 5/8	137.05198	1494.72317	48 1/8	151.18915	1818.99445
43 3/4	137.44468	1503.30119	48 1/4	151.58185	1828.45604
43 7/8	137.83738	1511.90376	48 3/8	151.97455	1837.94218
44	138.23008	1520.53087	48 1/2	152.36725	1847.45286
44 1/8	138.62278	1529.18252	48 5/8	152.75995	1856.98808
44 1/4	139.01548	1537.85871	48 3/4	153.15264	1866.54785
44 3/8	139.40818	1546.55945	48 7/8	153.54534	1876.13216
44 1/2	139.80088	1555.28474	49	153.93804	1885.74102
44 5/8	140.19357	1564.03456	49 1/8	154.33074	1895.37442
44 3/4	140.58627	1572.80893	49 1/4	154.72344	1905.03236
44 7/8	140.97897	1581.60785	49 3/8	155.11614	1914.71485
45	141.37167	1590.43130	49 1/2	155.50884	1924.42188
45 1/8	141.76437	1599.27931	49 5/8	155.90154	1934.15345
45 1/4	142.15707	1608.15185	49 3/4	156.29424	1943.90957
45 3/8	142.54977	1617.04894	49 7/8	156.68694	1953.69023
45 1/2	142.94247	1625.97057	50	157.07964	1963.49544
45 5/8	143.33517	1634.91675	50 1/8	157.47233	1973.32519
45 3/4	143.72787	1643.88747	50 1/4	157.86503	1983.17948
45 7/8	144.12057	1652.88273	50 3/8	158.25773	1993.05832
46	144.51326	1661.90254	50 1/2	158.65043	2002.96170
46 1/8	144.90596	1670.94689	50 5/8	159.04313	2012.88962

CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumference (inches)	Area (Sq. In.)	Diameter (inches)	Circumference (inches)	Area (Sq. In.)
50 3/4	159.43583	2022.84209	55 1/4	173.57300	2397.47702
50 7/8	159.82853	2032.81910	55 3/8	173.96570	2408.33760
51	160.22123	2042.82065	55 1/2	174.35839	2419.22273
51 1/8	160.61393	2052.84675	55 5/8	174.75109	2430.13240
51 1/4	161.00663	2062.89739	55 3/4	175.14379	2441.06662
51 3/8	161.39932	2072.97258	55 7/8	175.53649	2452.02537
51 1/2	161.79202	2083.07231	56	175.92919	2463.00868
51 5/8	162.18472	2093.19658	56 1/8	176.32189	2474.01652
51 3/4	162.57742	2103.34540	56 1/4	176.71459	2485.04891
51 7/8	162.97012	2113.51876	56 3/8	177.10729	2496.10585
52	163.36282	2123.71667	56 1/2	177.49999	2507.18732
52 1/8	163.75552	2133.93911	56 5/8	177.89269	2518.29335
52 1/4	164.14822	2144.18611	56 3/4	178.28539	2529.42391
52 3/8	164.54092	2154.45764	56 7/8	178.67808	2540.57902
52 1/2	164.93362	2164.75372	57	179.07078	2551.75867
52 5/8	165.32632	2175.07434	57 1/8	179.46348	2562.96287
52 3/4	165.71901	2185.41951	57 1/4	179.85618	2574.19161
52 7/8	166.11171	2195.78922	57 3/8	180.24888	2585.44489
53	166.50441	2206.18347	57 1/2	180.64158	2596.72272
53 1/8	166.89711	2216.60227	57 5/8	181.03428	2608.02509
53 1/4	167.28981	2227.04561	57 3/4	181.42698	2619.35200
53 3/8	167.68251	2237.51350	57 7/8	181.81968	2630.70346
53 1/2	168.07521	2248.00593	58	182.21238	2642.07946
53 5/8	168.46791	2258.52290	58 1/8	182.60508	2653.48001
53 3/4	168.86061	2269.06441	58 1/4	182.99777	2664.90510
53 7/8	169.25331	2279.63047	58 3/8	183.39047	2676.35473
54	169.64601	2290.22108	58 1/2	183.78317	2687.82890
54 1/8	170.03870	2300.83623	58 5/8	184.17587	2699.32762
54 1/4	170.43140	2311.47592	58 3/4	184.56857	2710.85089
54 3/8	170.82410	2322.14015	58 7/8	184.96127	2722.39870
54 1/2	171.21680	2332.82893	59	185.35397	2733.97105
54 5/8	171.60950	2343.54225	59 1/8	185.74667	2745.56794
54 3/4	172.00220	2354.28012	59 1/4	186.13937	2757.18938
54 7/8	172.39490	2365.04253	59 3/8	186.53207	2768.83536
55	172.78760	2375.82948	59 1/2	186.92477	2780.50589
55 1/8	173.18030	2386.64098	59 5/8	187.31746	2792.20096

CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumference (inches)	Area (Sq. In.)	Diameter (inches)	Circumference (inches)	Area (Sq. In.)
59 3/4	187.71016	2803.92057	64 1/4	201.84733	3242.17275
59 7/8	188.10286	2815.66473	64 3/8	202.24003	3254.80048
60	188.49556	2827.43343	64 1/2	202.63273	3267.45276
60 1/8	188.88826	2839.22667	64 5/8	203.02543	3280.12957
60 1/4	189.28096	2851.04446	64 3/4	203.41813	3292.83094
60 3/8	189.67366	2862.88679	64 7/8	203.81083	3305.55684
60 1/2	190.06636	2874.75367	65	204.20353	3318.30729
60 5/8	190.45906	2886.64509	65 1/8	204.59622	3331.08228
60 3/4	190.85176	2898.56105	65 1/4	204.98892	3343.88182
60 7/8	191.24446	2910.50156	65 3/8	205.38162	3356.70590
61	191.63715	2922.46661	65 1/2	205.77432	3369.55452
61 1/8	192.02985	2934.45620	65 5/8	206.16702	3382.42769
61 1/4	192.42255	2946.47034	65 3/4	206.55972	3395.32540
61 3/8	192.81525	2958.50902	65 7/8	206.95242	3408.24765
61 1/2	193.20795	2970.57225	66	207.34512	3421.19445
61 5/8	193.60065	2982.66002	66 1/8	207.73782	3434.16579
61 3/4	193.99335	2994.77233	66 1/4	208.13052	3447.16168
61 7/8	194.38605	3006.90918	66 3/8	208.52322	3460.18211
62	194.77875	3019.07058	66 1/2	208.91591	3473.22708
62 1/8	195.17145	3031.25653	66 5/8	209.30861	3486.29660
62 1/4	195.56415	3043.46702	66 3/4	209.70131	3499.39066
62 3/8	195.95684	3055.70205	66 7/8	210.09401	3512.50926
62 1/2	196.34954	3067.96162	67	210.48671	3525.65241
62 5/8	196.74224	3080.24574	67 1/8	210.87941	3538.82010
62 3/4	197.13494	3092.55440	67 1/4	211.27211	3552.01233
62 7/8	197.52764	3104.88761	67 3/8	211.66481	3565.22911
63	197.92034	3117.24536	67 1/2	212.05751	3578.47043
63 1/8	198.31304	3129.62765	67 5/8	212.45021	3591.73630
63 1/4	198.70574	3142.03449	67 3/4	212.84291	3605.02671
63 3/8	199.09844	3154.46587	67 7/8	213.23560	3618.34166
63 1/2	199.49114	3166.92179	68	213.62830	3631.68116
63 5/8	199.88384	3179.40226	68 1/8	214.02100	3645.04520
63 3/4	200.27653	3191.90727	68 1/4	214.41370	3658.43379
63 7/8	200.66923	3204.43683	68 3/8	214.80640	3671.84691
64	201.06193	3216.99092	68 1/2	215.19910	3685.28459
64 1/8	201.45463	3229.56957	68 5/8	215.59180	3698.74680

CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumference (inches)	Area (Sq. In.)	Diameter (inches)	Circumference (inches)	Area (Sq. In.)
68 3/4	215.98450	3712.23356	73 1/4	230.12167	4214.10300
68 7/8	216.37720	3725.74486	73 3/8	230.51436	4228.49787
69	216.76990	3739.28071	73 1/2	230.90706	4242.91729
69 1/8	217.16260	3752.84110	73 5/8	231.29976	4257.36125
69 1/4	217.55529	3766.42604	73 3/4	231.69246	4271.82976
69 3/8	217.94799	3780.03551	73 7/8	232.08516	4286.32281
69 1/2	218.34069	3793.66953	74	232.47786	4300.84041
69 5/8	218.73339	3807.32810	74 1/8	232.87056	4315.38254
69 3/4	219.12609	3821.01121	74 1/4	233.26326	4329.94923
69 7/8	219.51879	3834.71886	74 3/8	233.65596	4344.54045
70	219.91149	3848.45106	74 1/2	234.04866	4359.15622
70 1/8	220.30419	3862.20780	74 5/8	234.44136	4373.79653
70 1/4	220.69689	3875.98908	74 3/4	234.83405	4388.46139
70 3/8	221.08959	3889.79491	74 7/8	235.22675	4403.15079
70 1/2	221.48229	3903.62528	75	235.61945	4417.86473
70 5/8	221.87498	3917.48019	75 1/8	236.01215	4432.60322
70 3/4	222.26768	3931.35965	75 1/4	236.40485	4447.36625
70 7/8	222.66038	3945.26365	75 3/8	236.79755	4462.15383
71	223.05308	3959.19220	75 1/2	237.19025	4476.96595
71 1/8	223.44578	3973.14529	75 5/8	237.58295	4491.80261
71 1/4	223.83848	3987.12292	75 3/4	237.97565	4506.66382
71 3/8	224.23118	4001.12510	75 7/8	238.36835	4521.54957
71 1/2	224.62400	4015.20000	76	238.76105	4536.45986
71 5/8	225.01658	4029.20308	76 1/8	239.15374	4551.39470
71 3/4	225.40928	4043.27889	76 1/4	239.54644	4566.35408
71 7/8	225.80198	4057.37924	76 3/8	239.93914	4581.33800
72	226.19467	4071.50414	76 1/2	240.33184	4596.34647
72 1/8	226.58737	4085.65358	76 5/8	240.72454	4611.37948
72 1/4	226.98007	4099.82756	76 3/4	241.11724	4626.43704
72 3/8	227.37277	4114.02609	76 7/8	241.50994	4641.51914
72 1/2	227.76547	4128.24916	77	241.90264	4656.62578
72 5/8	228.15817	4142.49677	77 1/8	242.29534	4671.75697
72 3/4	228.55087	4156.76893	77 1/4	242.68804	4686.91270
72 7/8	228.94357	4171.06563	77 3/8	243.08074	4702.09297
73	229.33627	4185.38687	77 1/2	243.47343	4717.29779
73 1/8	229.72897	4199.73266	77 5/8	243.86613	4732.52715

CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumference (inches)	Area (Sq. In.)	Diameter (inches)	Circumference (inches)	Area (Sq. In.)
77 3/4	244.25883	4747.78106	82 1/4	258.39600	5313.26774
77 7/8	244.65153	4763.05950	82 3/8	258.78870	5329.42976
78	245.04423	4778.36250	82 1/2	259.18140	5345.61633
78 1/8	245.43693	4793.69003	82 5/8	259.57410	5361.82744
78 1/4	245.82963	4809.04211	82 3/4	259.96680	5378.06309
78 3/8	246.22233	4824.41874	82 7/8	260.35950	5394.32329
78 1/2	246.61503	4839.81990	83	260.75219	5410.60803
78 5/8	247.00773	4855.24561	83 1/8	261.14489	5426.91731
78 3/4	247.40043	4870.69587	83 1/4	261.53759	5443.25114
78 7/8	247.79312	4886.17067	83 3/8	261.93029	5459.60951
79	248.18582	4901.67001	83 1/2	262.32299	5475.99243
79 1/8	248.57852	4917.19390	83 5/8	262.71569	5492.39988
79 1/4	248.97122	4932.74233	83 3/4	263.10839	5508.83189
79 3/8	249.36392	4948.31530	83 7/8	263.50109	5525.28843
79 1/2	249.75662	4963.91282	84	263.89379	5541.76952
79 5/8	250.14932	4979.53488	84 1/8	264.28649	5558.27516
79 3/4	250.54202	4995.18148	84 1/4	264.67918	5574.80533
79 7/8	250.93472	5010.85263	84 3/8	265.07188	5591.36005
80	251.32742	5026.54832	84 1/2	265.46458	5607.93932
80 1/8	251.72012	5042.26856	84 5/8	265.85728	5624.54313
80 1/4	252.11281	5058.01333	84 3/4	266.24998	5641.17148
80 3/8	252.50551	5073.78266	84 7/8	266.64268	5657.82438
80 1/2	252.89821	5089.57652	85	267.03538	5674.50181
80 5/8	253.29091	5105.39493	85 1/8	267.42808	5691.20380
80 3/4	253.68361	5121.23789	85 1/4	267.82078	5707.93032
80 7/8	254.07631	5137.10538	85 3/8	268.21348	5724.68139
81	254.46901	5152.99743	85 1/2	268.60618	5741.45701
81 1/8	254.86171	5168.91401	85 5/8	268.99887	5758.25717
81 1/4	255.25441	5184.85514	85 3/4	269.39157	5775.08187
81 3/8	255.64711	5200.82081	85 7/8	269.78427	5791.93111
81 1/2	256.03981	5216.81103	86	270.17697	5808.80490
81 5/8	256.43250	5232.82579	86 1/8	270.56967	5825.70323
81 3/4	256.82520	5248.86509	86 1/4	270.96237	5842.62611
81 7/8	257.21790	5264.92894	86 3/8	271.35507	5859.57353
82	257.61060	5281.01733	86 1/2	271.74777	5876.54549
82 1/8	258.00330	5297.13026	86 5/8	272.14047	5893.54200

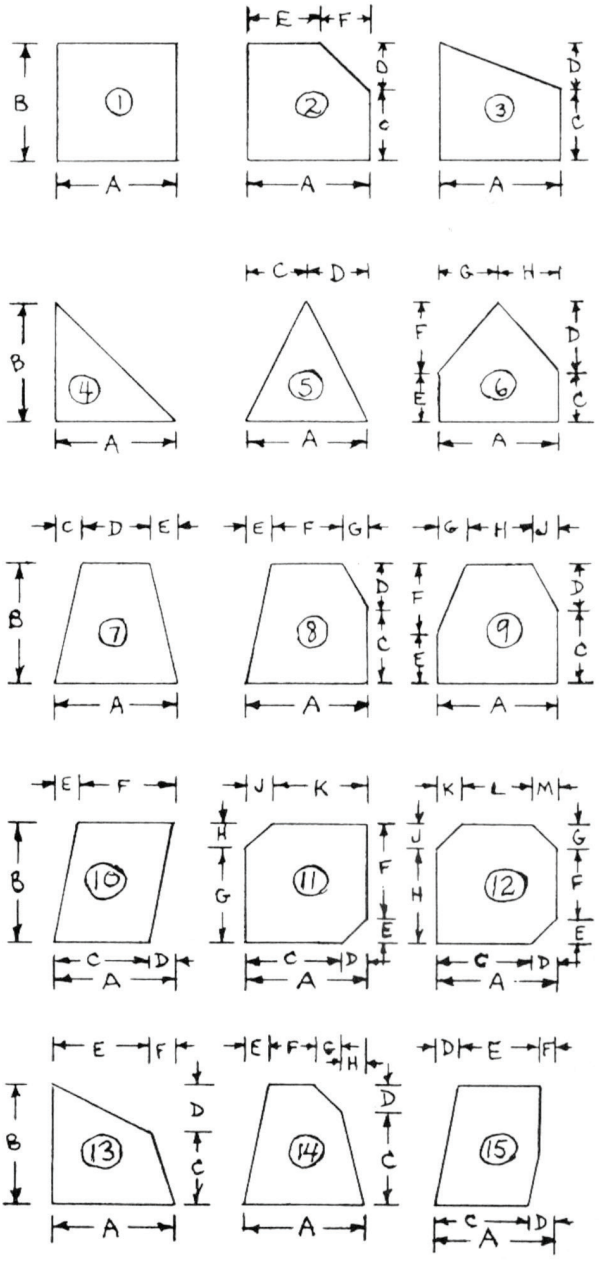
CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumference (inches)	Area (Sq. In.)	Diameter (inches)	Circumference (inches)	Area (Sq. In.)
86 3/4	272.53317	5910.56305	91 1/4	286.67033	6539.66699
86 7/8	272.92587	5927.60865	91 3/8	287.06303	6557.59616
87	273.31856	5944.67879	91 1/2	287.45573	6575.54987
87 1/8	273.71126	5961.77347	91 5/8	287.84843	6593.52813
87 1/4	274.10396	5978.89269	91 3/4	288.24113	6611.53092
87 3/8	274.49666	5996.03646	91 7/8	288.63383	6629.55827
87 1/2	274.88936	6013.20478	92	289.02653	6647.61015
87 5/8	275.28206	6030.39763	92 1/8	289.41923	6665.68658
87 3/4	275.67476	6047.61503	92 1/4	289.81193	6683.78756
87 7/8	276.06746	6064.85698	92 3/8	290.20463	6701.91307
88	276.46016	6082.12347	92 1/2	290.59732	6720.06313
88 1/8	276.85286	6099.41450	92 5/8	290.99002	6738.23774
88 1/4	277.24556	6116.73007	92 3/4	291.38272	6756.43689
88 3/8	277.63825	6134.07019	92 7/8	291.77542	6774.66058
88 1/2	278.03095	6151.43486	93	292.16812	6792.90882
88 5/8	278.42365	6168.82406	93 1/8	292.56082	6811.18159
88 3/4	278.81635	6186.23781	93 1/4	292.95352	6829.47892
88 7/8	279.20905	6203.67611	93 3/8	293.34622	6847.80078
89	279.60175	6221.13894	93 1/2	293.73892	6866.14720
89 1/8	279.99445	6238.62633	93 5/8	294.13162	6884.51815
89 1/4	280.38715	6256.13825	93 3/4	294.52432	6902.91365
89 3/8	280.77985	6273.67472	93 7/8	294.91701	6921.33369
89 1/2	281.17255	6291.23573	94	295.30971	6939.77827
89 5/8	281.56525	6308.82129	94 1/8	295.70241	6958.24740
89 3/4	281.95794	6326.43139	94 1/4	296.09511	6976.74108
89 7/8	282.35064	6344.06603	94 3/8	296.48781	6995.25929
90	282.74334	6361.72522	94 1/2	296.88051	7013.80205
90 1/8	283.13604	6379.40895	94 5/8	297.27321	7032.36936
90 1/4	283.52874	6397.11722	94 3/4	297.66591	7050.96120
90 3/8	283.92144	6414.85004	94 7/8	298.05861	7069.57759
90 1/2	284.31414	6432.60740	95	298.45131	7088.21853
90 5/8	284.70684	6450.38931	95 1/8	298.84401	7106.88401
90 3/4	285.09954	6468.19576	95 1/4	299.23670	7125.57403
90 7/8	285.49224	6486.02675	95 3/8	299.62940	7144.28860
91	285.88494	6503.88229	95 1/2	300.02210	7163.02771
91 1/8	286.27763	6521.76237	95 5/8	300.41480	7181.79136

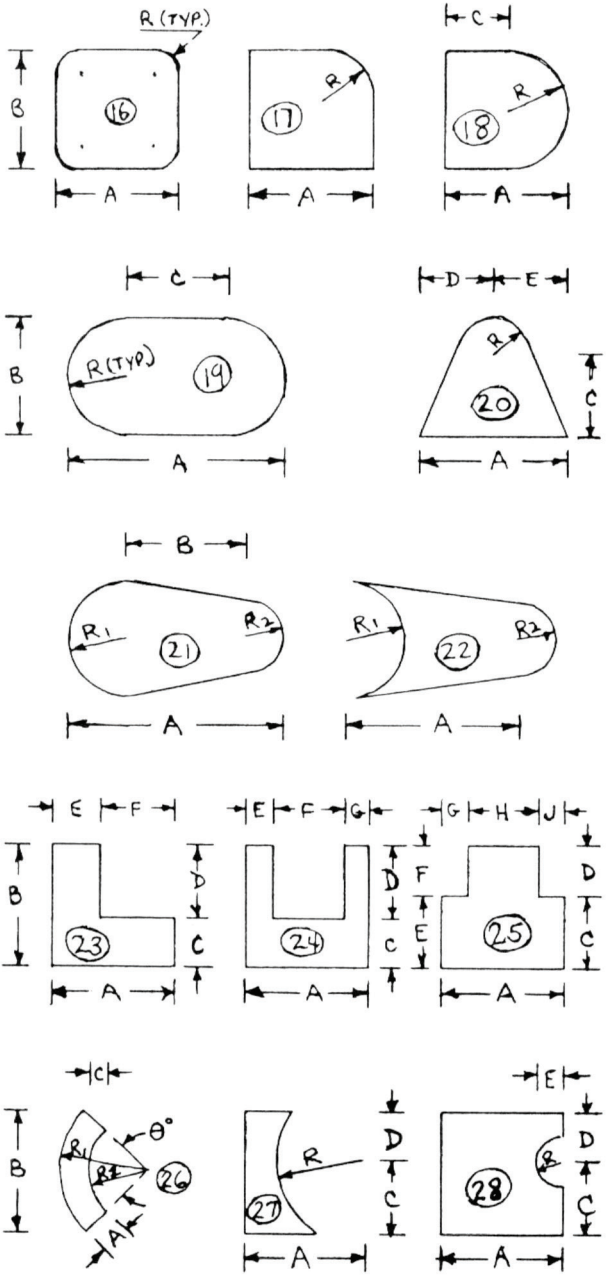
CIRCUMFERENCES AND AREAS OF CIRCLES
(CON'T)

Diameter (inches)	Circumfer-ence (inches)	Area (Sq. In.)	Diameter (inches)	Circumfer-ence (inches)	Area (Sq. In.)
95 3/4	300.80750	7200.57956	97 3/8	305.91259	7447.05959
95 7/8	301.20020	7219.39230	97 1/2	306.30529	7466.19140
96	301.59290	7238.22958	97 5/8	306.69799	7485.34775
96 1/8	301.98560	7257.09141	97 3/4	307.09069	7504.52865
96 1/4	302.37830	7275.97778	97 7/8	307.48339	7523.73409
96 3/8	302.77100	7294.88870	98	307.87608	7542.96407
96 1/2	303.16370	7313.82416	98 1/8	308.26878	7562.21860
96 5/8	303.55639	7332.78416	98 1/4	308.66148	7581.49767
96 3/4	303.94909	7351.76870	98 3/8	309.05418	7600.80129
96 7/8	304.34179	7370.77779	98 1/2	309.44688	7620.12944
97	304.73449	7389.81143	98 5/8	309.83958	7639.48215
97 1/8	305.12719	7408.86961	98 3/4	310.23228	7658.85939
97 1/4	305.51989	7427.95233	98 7/8	310.62498	7678.26118

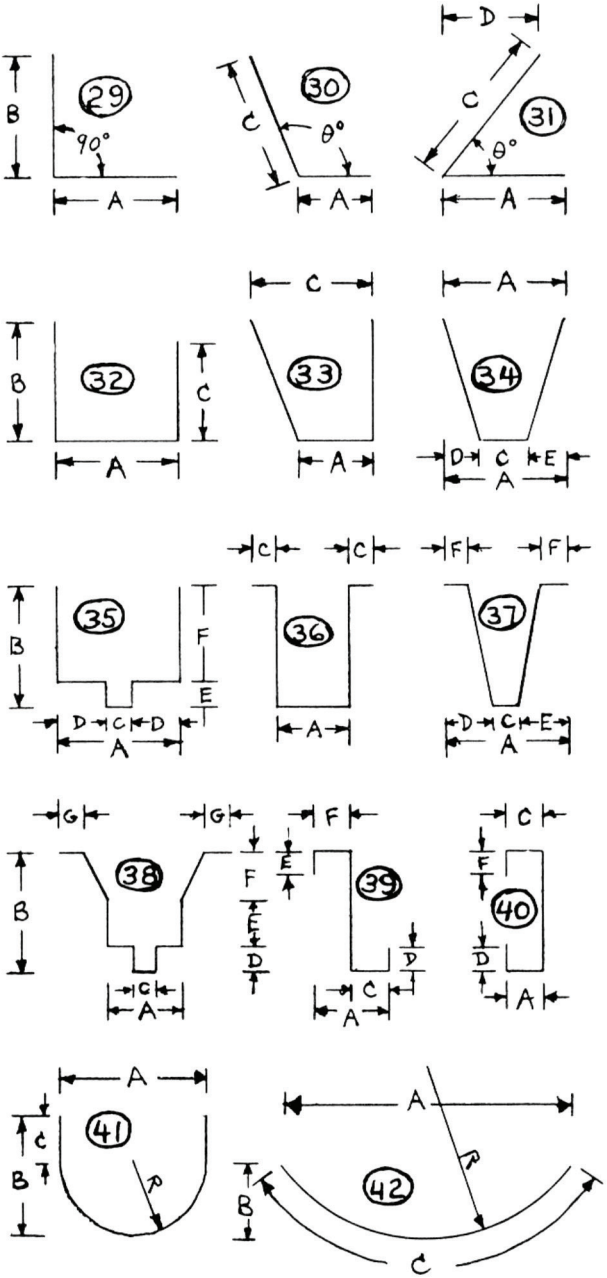
BURNED OR SHEARED FLAT SHAPES



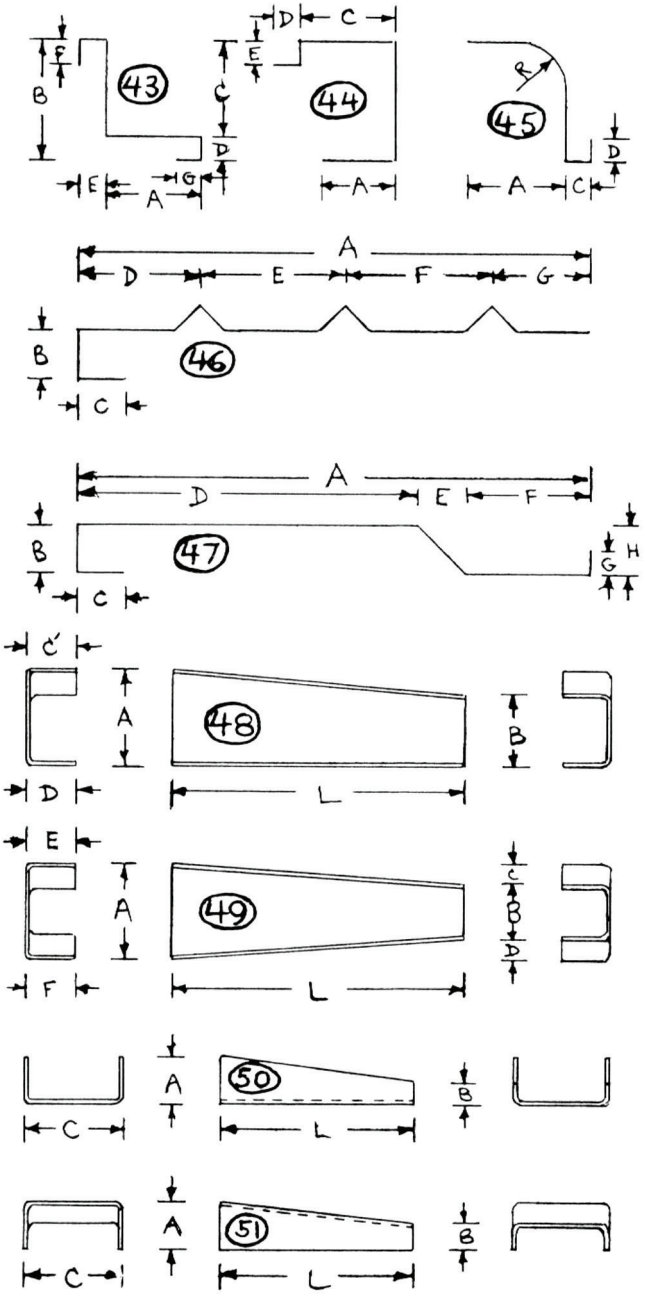
BURNED FLAT SHAPES



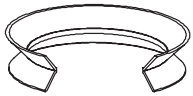
COMMON FORMED SHAPES



COMMON FORMED SHAPES (CON'T)



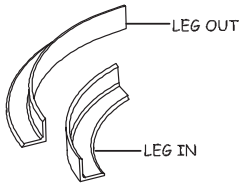
ORDERING GUIDE FOR STRUCTURAL ROLLING

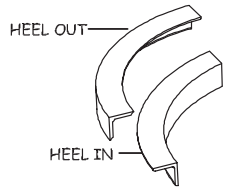


BOTH LEGS OUT

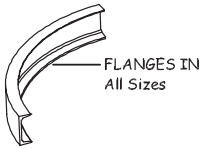
BOTH LEGS IN

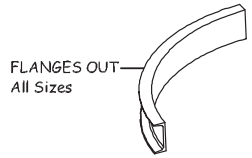
ANGLES
ALL SIZES





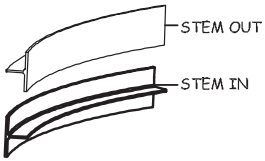
CHANNELS





BEAMS

TEES
ALL SIZES



STANDARDS FOR FERROUS METALS

STANDARD SPECIFICATION FOR STRUCTURAL STEEL

A36

Product	Shapes			Plates				Bars		
Thickness, in. (mm)	All	To 3/4 (19), incl.	Over 3/4 to 1 1/2 (19 to 38), incl.	Over 1 1/2 to 2 1/2 (38 to 64), incl.	Over 2 1/2 to 4 (64 to 102), incl.	Over 4 (102)	To 3/4 (19), incl.	Over 3/4 to 1 1/2 (19 to 38), incl.	Over 1 1/2 to 4 (102), incl.	Over 4 (102)
Carbon, max, percent	0.26	0.25	0.25	0.26	0.27	0.29	0.26	0.27	0.28	0.29
Manganese, percent			.8-1.2	.8-1.2	.85-1.2	.85-1.2		.6-.9	.6-.9	.6-.9
Phosphorus, max, percent	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Sulfur, max, percent	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Silicon, percent				.15-.3	.15-.3	.15-.3				
Copper, min, percent, when copper steel is specified	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

* Manganese content of .85-1.35 percent and silicon content of .15-.30 percent is required for shapes over 426 lb./ft.

TENSILE REQUIREMENTS[1]

A36

Plates, Shapes[2], and Bars:

Tensile strength, psi (MPa) 58,000-80,000 (400-550)

Yield point, min., psi (MPa) ..... 36,000 (250)[3]

Plates and Bars[5,6]:

Elongation in 8 in or 200 mm, min., percent ..... 20[4]

Elongation in 2 in or 50 mm, min., percent 23

Shapes:

Elongation in 8 in. or 200 mm, min., percent ..... 20[4]

Elongation in 2 in or 50 mm, min., percent ..... 21[2]

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[1]For plates wider than 24 inches (610 mm), the test specimen is taken in the transverse direction. See 7.1.2 of Specification A6.

[2]For wide flange shapes over 426 lb./Ft tensile strength minimum of 58,000 psi (400 MPa) only and elongation of 2 inches of 19 percent minimum applies.

[3]Yield point 32,000 psi (220 MPa) for plates over 8 inches in thickness.

[4]See 7.3.

[5]Elongation not required to be determined for floor plate.

[6]For plates wider than 24 inches (610 mm), the elongation requirement is reduced without percentage points.

A 588

Mechanical Properties	Cor-Ten A Sheet, Strip Bars, Structurals Plates 1/2" Thick & Under	Cor-Ten B Plates & Bars 1/2" to 4" Thick Incl.
Yield Point, min, psi	50000	50000
Tensile Strength, min	70000	70000
Elong. In 2", min, percent	22	21
Elong. In 8", min, percent	18	18

Specified minimum yield point and tensile strength shall be reduced by 5000 psi for cold rolled sheet. Elongation for cold rolled sheet lighter than 22 gauge is 20% min.

CHEMICAL COMPOSITIONS
COR-TEN A

C	Mn	P	S	Si	Cu	Cr	Ni
.12 max	.20/.50	.07/.15	.05 max.	.25/.75	.25/.55	.30/1.25	.65 max.

COR-TEN B

C	Mn	P	S	Si	Cu	Cr	Ni
.10/.19	.90/.125	.04 max.	.05 max.	.15/.30	.25/.40	.40/.65	.02/.10

FABRICATING PRACTICE FOR COLD FORMING

Thickness of Material	Suggested Min. Inside Radius
Up to 1/16 in. incl.	1t
Over 1/16 to 1/4 in. incl.	2t
Over 1/4 to 1/2 in. incl.	3t

Hot forming is recommended for thicknesses over 1/2 inch
"COR-TEN"® is a registered trademark of United States Steel

A 572
EX-TEN 50

Mechanical Properties	Plates, Bars, Structural	HR Sheets	CR Sheets
Yield Point Min PSI	50000	50000	50000
Tensile Strength Min PSI	65000	65000	65000
Elong. 8" Min %	18		
Elong. 2" Min %	21	22	20

Impact Properties (TYPICAL)	
Charpy V-Notch	
L / TCVN @ -40 DEGREES F	20 / 15 Ft. / Lbs. (TYPICAL)
L / TCVN @ 0 DEGREES F	23 / 18 Ft. / Lbs. (TYPICAL)
L / TCVN @ 32 DEGREES F	25 / 20 Ft. / Lbs. (TYPICAL)

CHEMICAL COMPOSITION

	C Max.	Mn Max.	P Max.	S Max.	Si Max.	Cb Min.	V Min.
HR & CR Sheets	0.2	1	0.04	0.05	0.3	0.01	
Plates and Bars	0.23	1.35	0.04	0.05	0.3		

FABRICATING PRACTICE FOR COLD FORMING

Thickness	Suggest Min. Inside Radius for Angle Bends
Up to .187 Incl.	1 1/2t
Over .187 to .2299 (Sheets Only)	2t
Plates (1/2" Max)	2 1/2t

Hot forming is recommended for plates over ½" thick. Hot forming may result in the lowering of the as-rolled mechanical properties.

"Ex-Ten 50®" is a registered trademark of United States Steel.

ASTM A514 - GRADE B
CONSTRUCTION ALLOY STEEL – PLATE

"T-1" type A steel can be furnished to the following heat-treated mechanical properties.

Thickness	3/16" to 3/4" Incl.	Over 3/4" to 1 1/4" Incl.
Yield Strength, Ext. under load (min)	100000 psi	100000 psi
Tensile Strength	115000 to 135000 psi	115000 to 135000 psi
Elongation in 2", % (min)	18	18
Reduction of Area, % min	40	50

For maximum resistance to impact abrasion, "T-1" type A steel may be ordered to a minimum hardness of 321 BHN, in which case all other mechanical properties are waived.

Impact Properties (TYPICAL)	
Charpy V-Notch	
L / TCVN @ -40 DEGREES F	25 / 15 Ft. / Lbs. (TYPICAL)
L / TCVN @ 0 DEGREES F	35 / 25 Ft. / Lbs. (TYPICAL)
L / TCVN @ 32 DEGREES F	45 / 30 Ft. / Lbs. (TYPICAL)

CHEMICAL COMPOSITION

C	Mn	P	S	Si	Cr	Mo	V	B	Ti
.12/.21	.7/1	.035 Max	.04 Max.	.20/.35	.40/.65	.15/.25	.03/.08	.0005/ .005	.01/.03

COLD FORMING DATA FOR PLATES

Thickness	Suggested Minimum Inside Radius
Up to 1", Incl.	2T
Over 1" to 1-1/4", incl.	3T

*U.S. Patent No. 2,858,206
"T-1" is a registered trademark of United States Steel

Other grades available upon request.

ASTM A514 - GRADE H

Thickness	1-3/8" to 2", incl.
Yield Strength (Extension Under Load), min.	10000 psi
Tensile Strength	115000/135000 psi
Elongation in 2 inches, % min.	18
Reduction of Area, % min., Plates 3/4" and under	40
Reduction of Area, % min, Plates over 3/4" to 2", incl.	50

CHEMICAL COMPOSITION

C	Mn	P Max.	S Max.	Si	Ni	Cr	Mo	V	Cu	B Min.
.12/.21	.95/1.3	0.035	0.04	.20/.35	.30/.7	.40/.65	.20/.3	.03.08		0.0005

*0.20 / 0.40 if specified when added corrosion resistance is desired.

COLD FORMING DATA FOR PLATES

Thickness	Suggested Minimum Inside Radius
Up to 1" Incl.	2T
Over 1" to 2", incl.	3T

*U.S. Patent No. 2,858,206
"T-1" is a registered trademark of United States Steel

AR 400

Mechanical Properties (TYPICAL)	
Yield Strength	160 Ksi (TYPICAL)
Tensile Strength	170-190 Ksi (TYPICAL)
Elongation in 2", % (min)	15% In 2" (TYPICAL)

CHEMICAL COMPOSITION

Chemistry (%)	
CARBON	Max C 17
MANGANESE	Max Mn 1.50
PHOSPHORUS	Max P .015
SULPHER	Max S .005
SILICONE	Max Si .60
MOLYBDENUM	Max Mo .40
BORON	Min B .0005
CE (TYPICAL)	.42 < 1/2" .48 ≥ 1/2"

FORMING PROPERTIES
90 DEGREE BEND ALL GAUGES

Bend Axis	Transverse to Rolling Direction	Longtudinal to Rolling Direction
	(Easy Way)	(Hard Way)
R/T - Punch Radius / Thickness	3	4
W/T - Die Opening / Thickness	12	14

AR 500

Mechanical Properties (TYPICAL)	
Yield Strength	210-230 Ksi (TYPICAL)
Tensile Strength	230-255 Ksi (TYPICAL)
Elongation in 2", % (min)	14% In 2" (TYPICAL)

CHEMICAL COMPOSITION

Chemistry (%)	
CARBON	Max C .30
MANGANESE	Max Mn 1.15
PHOSPHORUS	Max P .015
SULPHER	Max S .005
SILICONE	Max Si .60
CHROMIUM	Max Cr .65
MOLYBDENUM	Max Mo .40
BORON	Min B .0005
CE (TYPICAL)	.56≤1/2" .61≥1"

FORMING PROPERTIES
90 DEGREE BEND ALL GAUGES

Bend Axis	Transverse to Rolling Direction	Longtudinal to Rolling Direction
	(Easy Way)	(Hard Way)
R/T - Punch Radius / Thickness	5	6
W/T - Die Opening / Thickness	12	16

AVERAGE PROPERTIES OF STANDARD STEELS

These figures show the approximate ranges of physical properties of steels in common use in 1" rounds. Lower range tensile properties are to be expected in large sections, while high properties may apply to smaller sections.

These figures are NOT guaranteed and are given only as an indication of what may be expected and should, under no circumstances, be used in specifying the raw materials. It must not be assumed that these properties will be obtained in all cases, as they vary widely with permissible variations in analysis, size of section, rolling conditions, grain size, and methods of heat treatment.

Dependable physical properties can only be obtained through carefully controlled heat treatment. These figures cannot be used as a basis of acceptance or rejection of material.

AISI or SAE Number	Condition of Steel	Tensile Strength (PSI)	Yield PSI	% Elong in 2"	% Red. Of Area	Brinell	Rockwell	Machinability % of CD-1212	CS & W Color Code
1010	HOT ROLLED	50/60000	30/40000	30/40	55/65	115 Avg	648 Avg	50	
	COLD DRAWN	65/75000	50/60000	20/30	50/60	147 Avg	798 Avg	55	
1212	COLD DRAWN	75/90000	60/70000	12/16	40/50	150/210	80/95B	100	RED
1213	COLD DRAWN	80/95000	70/80000	10/15	35/45	150/210	85/95B	135	GOLD
12L14	COLD DRAWN	70/85000	60/75000	12/18	40/50	150/180	80/90B	185	WHITE
12L14 Plus Tellurium	COLD DRAWN	70/85000	60/75000	12/18	40/50	150/180	80/90B	295	BLUE

AVERAGE PROPERTIES OF STANDARD STEELS (CON'T)

AISI or SAE Number	Condition of Steel	Tensile Strength (PSI)	Yield PSI	% Elong in 2"	% Red. Of Area	Brinell	Rockwell	Machinability % of CD-1212	CS & W Color Code
1018[1]	HOT ROLLED	58	32	25	50	116	65	55	GREEN
	COLD DRAWN	64	54	15	40	126	70	65	GREEN
	Carburized at 1700F, Furnace Cooled, Reheated to 1425F, Quenched in Water, Tempered at 350F, CORE	90000	55000	26	55	185	90B		
1020	HOT ROLLED	55/70000	35/50000	30/40	55/65	120/140	67/80B	50	RED
1117[1]	HOT ROLLED	65/75000	40/50000	25/35	55/65	135/155	74/82B	80	PINK
	COLD DRAWN	80/90000	65/80000	15/20	45/55	150/190	80/90B	90	PINK
	Carburized at 1700F, Furnace Cooled, Reheated to 1425F, Quenched in Water, Tempered at 350F, CORE	95000	58000	24	53	195	92B		

AVERAGE PROPERTIES OF STANDARD STEELS (CON'T)

AISI or SAE Number	Condition of Steel	Tensile Strength (PSI)	Yield PSI	% Elong in 2"	% Red. Of Area	Brinell	Rockwell	Machinability % of CD-1212	CS & W Color Code
1040	HOT ROLLED	85/95000	50/60000	20/30	40/55	175/200	88/93B	60	YELLOW
	COLD DRAWN	90/100000	70/85000	14/20	35/50	190/215	91/98B	62	YELLOW
	Water Quenched from 1550F, Tempered at 1000F	112000	88000	22	60	240	220		
1045	HOT ROLLED	90/105000	55/65000	15/25	35/45	190/220	90/98B	55	YELLOW
	COLD DRAWN	90/110000	75/90000	12/20	30/45	195/230	90/98B	58	YELLOW
	Water Quenched from 1550F, Tempered at 1000F	120000	92000	20	55	255	25C		
1137	HOT ROLLED	90/105000	55/70000	15/25	35/50	180/220	89/98B	65	ALUMINUM WITH RED DOT
	COLD DRAWN	90/110000	75/90000	9/19	25/35	190/225	90/99B	72	ALUMINUM WITH RED DOT
	Water Quenched from 1550F, Tempered at 1000F	120000	105000	18	60	260	26C		
	Oil Quenched from 1550F, Tempered at 1000F	110000	88000	22	62	225	19C		

AVERAGE PROPERTIES OF STANDARD STEELS (CON'T)

AISI or SAE Number	Condition of Steel	Tensile Strength (PSI)	Yield PSI	% Elong in 2"	% Red. Of Area	Brinell	Rockwell	Machinability % of CD-1212	CS & W Color Code
1141[1]	HOLD ROLLED	95/110000	55/70000	15/25		190/220	90/99B	63	ALUMINUM
	COLD DRAWN	100/120000	85/105000	8/18		200/250	93B/24C	70	
	Oil Quenched from 1550F, Tempered at 1000F	120000	90000	20		250	24		
1144	COLD DRAWN	100/120000	90/110000	7/17		210/250	17/24	85	BROWN
	Oil Quenched from 1550F, Tempered at 1000F	122000	92000	19		250	24		
STRESSPROOF®	COLD DRAWN STRESS RELIEVED	125000	100000	12		235/285	22/30	83	ORANGE
FATIGUEPROOF®	ELEVATED TEMPERATURE DRAWN	140000[2]	125000	5/15		280	30-Min	80	GREEN AND ORANGE
1050	HOT ROLLED	95/110000	55/70000	15/25	25/40	200/235	93/99B	50	YELLOW
	COLD DRAWN	90/110000	75/90000	10/20	25/40	195/240	90/100B	51	YELLOW
	Water Quenched From 1525F, Tempered at 1000F	125000	95000	20	55	265	27C		
1095	HOT ROLLED	130/150000	75/95000	7/17	10/25	260/300	26/32C		PURPLE

AVERAGE PROPERTIES OF STANDARD STEELS (CON'T)

AISI or SAE Number	Condition of Steel	Tensile Strength (PSI)	Yield PSI	% Elong in 2"	% Red. Of Area	Brinell	Rockwell	Machinability % of CD-1212	CS & W Color Code
	Water Quenched from 1450F, Tempered at 1000F	170000	110000	14	38	290	36C		
4142[1,3]	HOT ROLLED ANNEALED	90/100000	60/70000	20/30	50/60	185/210	90/95B	55	GREEN & BLACK
	ANNEALED COLD DRAWN	105/120000	85/95000	15/25	45/55	230/250	20/25C	65	GREEN & BLACK
	COLD DRAWN HEAT TREATED	140/155000	125/140000	12/20	45/55	270/300	28/32C	50	RED & BLACK
	1" Rd. Oil Quenched from 1550F, Tempered at 1000F	150/160000	130/140000	15/20	45/55	300/350	32/37C		
	2" Rd. Oil Quenched from 1550F, Tempered at 1000F	145/155000	125/135000	15/20	50/60	300/350	32/37C		
	3" Rd. Oil Quenched from 1550F, Tempered at 1000F	130/145000	115/125000	15/20	50/60	280/310	28/32C		
4147-4150[1,3]	HOT ROLLED ANNEALED	90/110000	65/75000	20/30	45/55	185/215	90/96B	52	GREEN & BLACK WITH ORANGE STRIPE
	1" Rd. Oil Quenched from 1550F, Tempered at 1000F	165/180000	140/155000	15/20	45/55	340/375	37/40C		

AVERAGE PROPERTIES OF STANDARD STEELS (CON'T)

AISI or SAE Number	Condition of Steel	Tensile Strength (PSI)	Yield PSI	% Elong in 2"	% Red. Of Area	Brinell	Rockwell	Machinability % of CD-1212	CS & W Color Code
	2" Rd. Oil Quenched from 1550F, Tempered at 1000F	160/170000	135/150000	15/20	45/55	330/350	36/38C		
	3" Rd. Oil Quenched from 1550F, Tempered at 1000F	150/160000	130/140000	15/20	50/60	310/330	34/36C		
	4" Rd. Oil Quenched from 1550F, Tempered at 1000F	140/155000	120/130000	15/20	50/60	290/315	31/34C		
ETD 150	ELEVATED TEMPERATURE DRAWN	150000	130000	10/30	35/45	1302	132c	75	YELLOW & BROWN
4340	HOT ROLLED ANNEALED	100/120000	65/85000	20/30	45/55	210/250	16/25C	45	PURPLE & ALUMINUM
	2" Rd. Oil Quenched from 1550F, Tempered at 1000F	175/190000	155/170000	12/18	48/55	370/400	38/42C		
	3" Rd. Oil Quenched from 1550F, Tempered at 1000F	170/180000	140/155000	12/20	45/50	350/375	36/39C		
	4" Rd. Oil Quenched from 1550F, Tempered at 1000F	160/170000	135/145000	12/20	40/50	330/360	35/38C		
	5" Rd. Oil Quenched from 1550F, Tempered at 1000F	145/160000	125/135000	10/15	40/50	300/330	31/36C		

AVERAGE PROPERTIES OF STANDARD STEELS (CON'T)

AISI or SAE Number	Condition of Steel	Tensile Strength (PSI)	Yield PSI	% Elong in 2"	% Red. Of Area	Brinell	Rockwell	Machinability % of CD-1212	CS & W Color Code
	HOT ROLLED ANNEALED	90/110000	55/65000	15/25	35/45	190/220	90/99B	42	PURPLE
	6" Rd. Oil Quenched from 1550F, Tempered at 1000F	140/150000	120/130000	10/15	40/50	240/320	30/35C		
4615	HOT ROLLED	75/85000	53/63000	25/35	58/68	150/180	80/87B	50	GREEN AND YELLOW
	COLD DRAWN	90/100000	75/85000	15/25	50/60	190/215	91/96B	58	GREEN AND YELLOW
	1" Rd. Carburized 1700F, Box Cooled, Reheated to 1525F and Quenched in Oil, Tempered at 300F CORE	110/125000	80/100000	18/23	50/60	220/250	20/24C		
4620	HOT ROLLED	80/95000	60/70000	20/30	55/65	165/200	85/93B	52	GREEN AND YELLOW
	COLD DRAWN	95/105000	80/90000	15/25	50/60	200/220	93/97B	60	GREEN AND YELLOW
	1" Rd. Carburized 1700F, Box Cooled, Reheated to 1525F and Quenched in Oil, Tempered at 300F CORE	115/130000	85/105000	18/23	45/55	220/250	20/24C		

AVERAGE PROPERTIES OF STANDARD STEELS (CON'T)

AISI or SAE Number	Condition of Steel	Tensile Strength (PSI)	Yield PSI	% Elong in 2"	% Red. Of Area	Brinell	Rockwell	Machinability % of CD-1212	CS & W Color Code
8620[1,3]	HOT ROLLED	80/95000	60/70000	18/25	55/65	165/200	85/93B	55	PINK AND GREEN
	COLD DRAWN	95/105000	80/90000	15/25	50/60	200/220	93/97B	60	PINK AND GREEN
	1" Rd. Carburized 1700F, Box Cooled, Reheated to 1550F and Quenched in Oil, Tempered at 300F CORE	125/150000	100/120000	15/20	45/55	250/300	24/32C		
8642	HOT ROLLED	100/130000	65/85000	15/25	35/50	210/275	17/29C	50	PINK AND YELLOW
	ANNEALED COLD DRAWN	100/110000	90/100000	13/20	40/50	210/230	17/20C	65	PINK AND YELLOW
	1" Rd. Oil Quenched from 1550F, Tempered at 1000F	150/160000	130/140000	13/20	40/50	300/350	32/37C		
	3" Rd. Oil Quenched from 1550F, Tempered at 1000F	120/140000	100/110000	20/25	40/50	250/290	24/30C		
8742	HOT ROLLED	100/130000	65/85000	15/25	35/50	210/275	17/29C	50	PINK AND YELLOW
	ANNEALED COLD DRAWN	100/110000	90/100000	13/20	40/50	210/230	17/20C	65	PINK AND YELLOW

AVERAGE PROPERTIES OF STANDARD STEELS (CON'T)

AISI or SAE Number	Condition of Steel	Tensile Strength (PSI)	Yield PSI	% Elong in 2"	% Red. Of Area	Brinell	Rockwell	Machinability % of CD-1212	CS & W Color Code
8742	2" Rd. Oil Quenched from 1550F, Tempered at 1000F	140/150000	120/130000	15/25	40/50	270/300	28/32C		
	4" Rd. Oil Quenched from 1550F, Tempered at 1000F	110/125000	90/110000	18/25	40/50	235/265	21/27C		
W110 Drill Rod	ANNEALED						894/97	43	
	1" Rd. Water Quenched from 1450F, Tempered at 400F						C69/62		
01 Drill Rod	ANNEALED						B94/100	39	
	1" Rd. Oil Quenched from 1450F, Tempered at 400F						C59/61		
T1 Drill Rod	ANNEALED						B97/100	25	
	1" Rd. Oil Quenched from 2300F, Tempered at 1100F						C60/64		

[1]With the addition of .15 / .35 percent lead to this grade, mechanical properties are not appreciable affected. Machinability, however, is improved approximately 24 percent.
[2]In the event of disagreement between hardness and tensile strength, the tensile strength shall govern.
[3]Selenium may also be added to these alloys to further improve machining characteristics.
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