



**THE SOURCE FOR STEEL, ALUMINUM  
& STRUCTURAL FIBERGLASS**

**STEEL**  
**REFERENCE BOOK**

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This is a Reference Book of popular sizes of steel that we have compiled as an additional service to our valued customers.

If you are not a customer of ours at present, we invite you to become one. Whether your steel needs are for manufacturing, maintenance, construction, repair, or whatever your end use, we are sure you will be pleased with our service, quality, and price.

All of the items in this book are not carried in stock but are available to us.

Weights shown are for reference only and may vary depending upon the producing mill.

*Fort Dodge Steel, Inc.*

1-800-362-2715



**ANGLES-Bar Size**

Size	Wt./Ft.	Wt./20'
1/2 x 1/2 x 1/8.....	.38	7.6
5/8 x 5/8 x 1/8.....	.48	9.6
3/4 x 3/4 x 1/8.....	.59	11.8
1 x 5/8 x 1/8.....	.64	12.8
1 x 3/4 x 1/8.....	.70	14.0
1 x 1 x 1/8.....	.80	16.0
3/16.....	1.16	23.2
1/4.....	1.49	29.8
1-1/4 x 1-1/4 x 1/8.....	1.01	20.2
3/16.....	1.48	29.6
1/4.....	1.92	38.4
1-3/8 x 7/8 x 1/8.....	.91	18.2
3/16.....	1.32	26.4
1-1/2 x 1-1/4 x 3/16.....	1.64	32.8
1-1/2 x 1-1/2 x 1/8.....	1.23	24.6
3/16.....	1.80	36.0
1/4.....	2.34	46.8
1-3/4 x 1-1/4 x 1/8.....	1.23	24.6
3/16.....	1.80	36.0
1/4.....	2.34	46.8
1 3/4 x 1 3/4 x 1/8.....	1.44	28.8
3/16.....	2.12	42.4
1/4.....	2.77	55.4
2 x 1-1/4 x 3/16.....	1.96	39.2
1/4.....	2.55	51.0
2 x 1-1/2 x 1/8.....	1.44	28.8
3/16.....	2.12	42.4
1/4.....	2.77	55.4
2 x 2 x 1/8.....	1.65	33.0
3/16.....	2.44	48.8
1/4.....	3.19	63.8
5/16.....	3.92	78.4
3/8.....	4.70	94.0
2-1/2 x 1-1/2 x 3/16.....	2.44	48.8
1/4.....	3.19	63.8
2-1/2 x 2 x 3/16.....	2.75	55.0
1/4.....	3.62	72.4
5/16.....	4.50	90.0
3/8.....	5.30	106.0
2 1/2 x 2 1/2 x 3/16.....	3.07	61.4
1/4.....	4.10	82.0
5/16.....	5.00	100.0
3/8.....	5.90	118.0
1/2.....	7.70	154.0

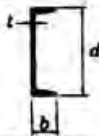
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**ANGLES-Structural**



Size	Wt./Ft.	Wt./20'
3 x 2 x 3/16.....	3.07	61.4
1/4.....	4.10	82.0
3/8.....	5.90	118.0
1/2.....	7.70	154.0
3 x 2-1/2 x 1/4.....	4.50	90.0
3/8.....	6.60	132.0
3 x 3 x 3/16.....	3.70	74.0
1/4.....	4.90	98.0
5/16.....	6.10	122.0
3/8.....	7.20	144.0
1/2.....	9.40	188.0
3-1/2 x 2-1/2 x 1/4.....	4.90	98.0
5/16.....	5.60	112.0
3/8.....	7.20	144.0
3-1/2 x 3 x 1/4.....	5.40	108.0
3/8.....	7.90	158.0
1/2.....	10.20	204.0
3-1/2 x 3-1/2 x 1/4.....	5.80	116.0
5/16.....	7.20	144.0
3/8.....	8.50	170.0
1/2.....	11.10	222.0
4 x 3 x 1/4.....	5.80	116.0
3/8.....	8.50	170.0
1/2.....	11.10	222.0
4 x 3-1/2 x 1/4.....	6.20	124.0
3/8.....	9.10	182.0
1/2.....	11.90	238.0
4 x 4 x 1/4.....	6.60	132.0
3/8.....	9.80	196.0
1/2.....	12.80	256.0
5 x 3 x 1/4.....	6.60	132.0
3/8.....	9.80	196.0
1/2.....	12.80	256.0
5 x 3-1/2 x 1/4.....	7.00	140.0
3/8.....	10.40	208.0
1/2.....	13.60	272.0
5 x 5 x 3/8.....	12.30	246.0
1/2.....	16.20	324.0
6 x 3-1/2 x 3/8.....	11.70	234.0
1/2.....	15.30	306.0
6 x 4 x 3/8.....	12.30	246.0
1/2.....	16.20	324.0
6 x 6 x 3/8.....	14.90	298.0
1/2.....	19.60	392.0

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**CHANNELS**  
- Bar Size

Size	In	Inches	Wt./Ft.	Wt. 20'
d	b	t		
1	x	1/2	x 1/8.....	.84.....16.8
1-1/4	x	1/2	x 1/8.....	1.01.....20.2
1-1/2	x	1/2	x 1/8.....	1.12.....22.4
1-1/2	x	9/16	x 3/16.....	1.44.....28.8
2	x	1/2	x 1/8.....	1.43.....28.6
2	x	9/16	x 3/16.....	1.86.....37.2
2	x	1	x 1/8.....	1.59.....31.8
2	x	1	x 3/16.....	2.32.....46.4



**CHANNELS**  
- Junior

Depth in	Wt.	Flange	Web
Inches x	Ft.	Width	Thick. Wt. 20'
d		b	t
MC8	x	8.5.....1.875.....	180.....170
MC10	x	6.5.....1.127.....	152.....130
		8.4.....1.500.....	170.....168
MC12	x	10.6.....1.500.....	190.....212

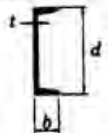


**CHANNELS**  
- Misc. Structural

Depth in	Wt.	Flange	Web
Inches x	Ft.	Width	Thick. Wt. 20'
d		b	t
MC3	x	7.10.....1.938.....	313.....142
MC4	x	13.80.....2.500.....	500.....276
MC6	x	15.30.....3.500.....	340.....306
		16.30.....3.000.....	375.....326
MC7	x	22.70.....3.600.....	500.....454
MC8	x	18.70.....2.975.....	350.....374
		21.40.....3.450.....	375.....428
		22.80.....3.500.....	425.....456
MC10x		21.90.....3.450.....	325.....438

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**CHANNELS**  
- Standard Structural



Depth in	Wt.	Flange	Web
Inches x	Ft.	Width	Thick. Wt. 20'
d		b	t
C3	x	4.1.....1.410.....	170.....82
		5.0.....1.498.....	258.....100
		6.0.....1.596.....	356.....120
C4	x	5.4.....1.580.....	180.....108
		7.25.....1.720.....	320.....145
C5	x	6.7.....1.750.....	190.....134
		9.0.....1.885.....	325.....180
C6	x	8.2.....1.920.....	200.....164
		10.5.....2.034.....	314.....210
		13.0.....2.157.....	437.....260
C7	x	9.8.....2.090.....	210.....196
		14.75.....2.299.....	419.....295
C8	x	11.5.....2.260.....	220.....230
		13.75.....2.343.....	303.....275
		18.75.....2.527.....	487.....375
C9	x	13.4.....2.430.....	230.....268
		20.0.....2.648.....	448.....400
C10	x	15.3.....2.600.....	240.....306
		20.0.....2.739.....	379.....400
		25.0.....2.886.....	526.....500
		30.0.....3.033.....	673.....600
C12	x	20.7.....2.940.....	280.....414
		25.0.....3.047.....	387.....500
		30.0.....3.170.....	510.....600
C15	x	33.9.....3.400.....	400.....678
		40.0.....3.520.....	520.....800
C18	x	42.7.....3.950.....	450.....854
		51.9.....4.100.....	600.....1038

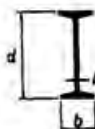
**HANDRAIL -**  
**ORNAMENTAL**



Hot Rolled Mild Steel

Width in Inches	Wt/Ft	Wt/20'
1-3/4	.....1.33.....	.....26.6

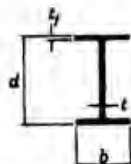
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## S BEAMS

Standard I Structural

Nominal Depth/Inches x Wt./Ft./Lbs.	Depth d	Flange		Web t
		Width b	Thick t <sub>f</sub>	
S3 x 5.7	3.00	2.330	.260	.170
	7.5	2.509	.260	.349
S4 x 7.7	4.00	2.663	.293	.193
	9.5	2.796	.293	.326
S5 x 10.0	5.00	3.004	.326	.214
S6 x 12.5	6.00	3.332	.359	.232
	17.25	3.565	.359	.465
S7 x 15.3	7.00	3.662	.392	.252
S8 x 18.4	8.00	4.001	.425	.271
	23.0	4.171	.425	.441
S10 x 25.4	10.00	4.661	.491	.311
	35.0	4.944	.491	.594
S12 x 31.8	12.00	5.000	.544	.350
	35.0	5.078	.544	.428
	40.8	5.252	.659	.472
	50.0	5.477	.659	.687
S18 x 54.7	18.00	6.001	.691	.461



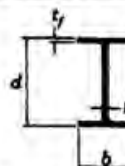
## M - BEAMS

JR., H OR LIGHT BEAMS

Nominal Depth/Inches x Wt./Ft./Lbs.	Depth d	Flange		Web t
		Width b	Thick t <sub>f</sub>	
M4 x 13	4.00	3.940	.371	.254
M5 x 18.9	5.00	5.003	.416	.316
M6 x 4.4	6.00	1.844	.171	.114
M8 x 6.5	8.00	2.281	.189	.135
M10 x 9	10.00	2.690	.206	.157
M12 x 11.8	12.00	3.065	.225	.177

## W - BEAMS

Wide Flange



Nominal Depth/Inches x Wt./Ft./Lbs.	Depth d	Flange		Web t
		Width b	Thick t <sub>f</sub>	
W4 x 13	4.16	4.060	.345	.280
W5 x 16	5.00	5.000	.360	.240
	19	5.030	.430	.270
W6 x 9	5.90	3.940	.215	.170
	12	4.030	.279	.230
	15	5.990	.260	.230
	20	6.018	.367	.258
	25	6.080	.456	.320
W8 x 10	7.90	3.940	.204	.170
	13	4.000	.254	.230
	15	4.015	.314	.245
	21	5.270	.400	.250
	28	6.540	.463	.285
	35	8.027	.493	.315
	48	8.117	.683	.405
W10x 12	9.87	3.960	.210	.190
	15	4.000	.269	.230
	17	4.010	.329	.240
	22	5.750	.360	.240
	26	5.750	.440	.260
	33	7.964	.433	.292
	45	8.022	.618	.350
	49	10.000	.558	.340
W12x 16	11.99	3.990	.265	.220
	22	4.030	.424	.260
	26	6.490	.380	.230
	35	6.560	.520	.300
	45	8.042	.576	.336
	72	12.040	.671	.430
W14x 22	13.72	5.000	.335	.230
	26	5.025	.418	.255
	30	6.733	.383	.270
	48	8.031	.593	.339
W16x 26	15.65	5.500	.345	.250
	31	5.525	.442	.275
	40	7.000	.503	.307
	45	7.039	.563	.346
W18x 35	17.71	6.000	.429	.298
	46	6.060	.605	.360
	55	7.532	.630	.390



## STRIPS

### HR & COLD FINISHED

Size	Wt./Ft.	Wt./12'	Wt./20'
<b><u>1/8 x</u></b>			
1/2	.213	2.56	4.26
5/8	.266	3.19	5.32
3/4	.319	3.83	6.38
7/8	.372	4.46	7.44
1	.425	5.10	8.50
1-1/4	.531	6.37	10.62
1-1/2	.638	7.66	12.76
1-3/4	.744	8.93	14.88
2	.850	10.20	17.00
2-1/4	.956	11.47	19.12
2-1/2	1.062	12.75	21.24
2-3/4	1.170	14.04	23.40
3	1.275	15.30	25.50
3-1/2	1.488	17.86	29.76
4	1.700	20.40	34.00
4-1/2	1.913	22.96	38.26
5	2.125	25.50	42.50
5-1/2	2.338	28.06	46.76
6	2.550	30.60	51.00

**3/16 x**

1/2	.319	3.83	6.38
3/4	.479	5.75	9.58
1	.638	7.66	12.76
1-1/4	.797	9.56	15.94
1-1/2	.956	11.47	19.12
1-3/4	1.116	13.39	22.32
2	1.275	15.30	25.50
2-1/4	1.434	17.21	28.68
2-1/2	1.590	19.08	31.80
2-3/4	1.753	21.04	35.06
3	1.910	22.92	38.20
3-1/4	2.072	24.86	41.44
3-1/2	2.230	26.76	44.60
4	2.550	30.60	51.00
4-1/2	2.869	34.43	57.38
5	3.190	38.28	63.80
5-1/2	3.507	42.08	70.14
6	3.830	45.96	76.60
8	5.100	61.20	102.00

## FLATS

### HR & COLD FINISHED



Size	Wt./Ft.	Wt./12'	Wt./20'
<b><u>1/4 x</u></b>			
1/2	.425	5.10	8.50
5/8	.531	6.37	10.62
3/4	.638	7.66	12.76
1	.850	10.20	17.00
1-1/4	1.060	12.72	21.20
1-1/2	1.280	15.36	25.60
1-3/4	1.488	17.86	29.76
2	1.700	20.40	34.00
2-1/4	1.913	22.96	38.26
2-1/2	2.130	25.56	42.60
2-3/4	2.338	28.06	46.76
3	2.550	30.60	51.00
3-1/4	2.760	33.12	55.20
3-1/2	2.975	35.70	59.50
3-3/4	3.190	38.28	63.80
4	3.400	40.80	68.00
4-1/2	3.825	45.90	76.50
5	4.250	51.00	85.00
5-1/2	4.675	56.10	93.50
6	5.100	61.20	102.00
7	5.950	71.40	119.00
8	6.800	81.60	136.00
10	8.500	102.00	170.00
12	10.200	122.40	204.00

**5/16 x**

3/4	.797	9.56	15.94
1	1.062	12.75	21.24
1-1/4	1.328	15.94	26.56
1-1/2	1.594	19.13	31.88
1-3/4	1.859	22.31	37.18
2	2.125	25.50	42.50
2-1/4	2.391	28.69	47.82
2-1/2	2.656	31.87	53.12
3	3.188	38.26	63.76
3-1/2	3.719	44.63	74.38
4	4.250	51.00	85.00
4-1/2	4.781	57.37	95.62
5	5.313	63.76	106.26
6	6.375	76.50	127.50
8	8.500	102.00	170.00



## FLATS (cont.)

### HR & COLD FINISHED

Size	Wt./Ft.	Wt./12'	Wt./20'
<b>3/8 x</b>			
1	1.28	15.36	25.6
1-1/4	1.60	19.20	32.0
1-1/2	1.91	22.92	38.2
1-3/4	2.23	26.76	44.6
2	2.55	30.60	51.0
2-1/4	2.87	34.44	57.4
2-1/2	3.19	38.28	63.8
3	3.83	45.96	76.6
3-1/2	4.46	53.52	89.2
4	5.10	61.20	102.0
4-1/2	5.74	68.88	114.8
5	6.38	76.56	127.6
6	7.65	91.80	153.0
8	10.20	122.40	204.0

**1/2 x**

3/4	1.28	15.36	25.6
1	1.70	20.40	34.0
1-1/4	2.13	25.56	42.6
1-1/2	2.55	30.60	51.0
1-3/4	2.98	35.76	59.6
2	3.40	40.80	68.0
2-1/4	3.83	45.96	76.6
2-1/2	4.25	51.00	85.0
2-3/4	4.68	56.16	93.6
3	5.10	61.20	102.0
3-1/4	5.53	66.36	110.6
3-1/2	5.95	71.40	119.0
3-3/4	6.38	76.56	127.6
4	6.80	81.60	136.0
4-1/2	7.65	91.80	153.0
5	8.50	102.00	170.0
5-1/2	9.35	112.20	187.0
6	10.20	122.40	204.0
7	11.90	142.80	238.0
8	13.60	163.20	272.0
9	15.30	183.60	306.0
10	17.00	204.00	340.0
12	20.40	244.80	408.0

## FLATS (cont.)

### HR & COLD FINISHED



Size	Wt./Ft.	Wt./12'	Wt./20'
<b>5/8 x</b>			
1	2.13	25.56	42.6
1-1/4	2.66	31.92	53.2
1-1/2	3.19	38.28	63.8
1-3/4	3.72	44.64	74.4
2	4.25	51.00	85.0
2-1/2	5.31	63.72	106.2
3	6.38	76.56	127.6
3-1/2	7.44	89.28	148.8
4	8.50	102.00	170.0
6	12.75	153.00	255.0
8	17.00	204.00	340.0
10	21.25	255.00	425.0

**3/4 x**

1	2.55	30.60	51.0
1-1/4	3.19	38.28	63.8
1-1/2	3.83	45.96	76.6
1-3/4	4.46	53.52	89.2
2	5.10	61.20	102.0
2-1/2	6.38	76.56	127.6
3	7.65	91.80	153.0
3-1/2	8.93	107.16	178.6
4	10.20	122.40	204.0
6	15.30	183.60	306.0
7	17.85	214.20	357.0
8	20.40	244.80	408.0
9	22.95	275.40	459.0
10	25.50	306.00	510.0
12	30.60	367.20	612.0



**FLATS** (cont.)  
HR & COLD FINISHED

Size	Wt./Ft.	Wt./12'	Wt./20'
------	---------	---------	---------

**1 x**

1-1/4	4.25	51.0	85.0
1-1/2	5.10	61.2	102.0
1-3/4	5.95	71.4	119.0
2	6.80	81.6	136.0
2-1/2	8.50	102.0	170.0
3	10.20	122.4	204.0
3-1/2	11.90	142.8	238.0
4	13.60	163.2	272.0
4-1/2	15.30	183.6	306.0
5	17.00	204.0	340.0
6	20.40	244.8	408.0
7	23.80	285.6	476.0
8	27.20	326.4	544.0
10	34.00	408.0	680.0

**1-1/4 x**

2	8.50	102.0	170.0
2-1/4	9.56	114.7	191.2
2-1/2	10.63	127.6	212.6
3	12.75	153.0	255.0
4	17.00	204.0	340.0
6	25.50	306.0	510.0
7	29.75		595.0
8	34.00	408.0	680.0

**1-1/2 x**

2	10.20	122.4	204.0
2-1/2	12.75	153.0	255.0
3	15.30	183.6	306.0
3-1/2	17.85	214.2	357.0
4	20.40	244.8	408.0
6	30.60	367.2	612.0

**-HARD TO FIND ITEMS-**

Our Mill and warehouse connections can render you a real service in finding the items you need

CALL FOR AVAILABILITY  
ON ITEMS NOT LISTED IN THIS  
REFERENCE BOOK

CALL US FOR YOUR  
STAINLESS STEEL  
&  
ALUMINUM  
NEEDS



**SQUARES**  
H R & COLD FINISHED

Size	Wt./Ft.	Wt.12'	Wt.20'
3/16.....	.120	1.44	2.40
1/4.....	.213	2.56	4.26
5/16.....	.332	3.98	6.64
3/8.....	.478	5.74	9.56
7/16.....	.651	7.81	13.02
1/2.....	.850	10.20	17.00
9/16.....	1.08	12.96	21.60
5/8.....	1.33	15.96	26.60
11/16.....	1.61	19.32	32.20
3/4.....	1.91	22.92	38.20
7/8.....	2.60	31.20	52.00
1.....	3.40	40.80	68.00
1-1/6.....	3.83	45.96	76.60
1-1/8.....	4.30	51.60	86.00
1-1/4.....	5.31	63.72	106.20
1-3/8.....	6.43	77.16	128.60
1-1/2.....	7.65	91.80	153.00
1-3/4.....	10.41	124.92	208.20
2.....	13.60	163.20	272.00
2-1/2.....	21.25	255.00	425.00
3.....	30.60	367.20	612.00

**H R ROUNDS**



Size	Wt./Ft.	Wt.20'
1/4.....	.167	3.34
5/16.....	.261	5.22
3/8.....	.376	7.52
7/16.....	.511	10.22
1/2.....	.668	13.36
9/16.....	.845	16.90
5/8.....	1.043	20.86
3/4.....	1.502	30.04
7/8.....	2.04	40.8
1.....	2.67	53.4
1-1/8.....	3.38	67.6
1-1/4.....	4.17	83.4
1-3/8.....	5.05	101.0
1-1/2.....	6.01	120.2
1-3/4.....	8.18	163.6
2.....	10.68	213.6
2-1/2.....	16.69	333.8
3.....	24.03	480.6



## COLD FINISHED ROUNDS

Size	1018, Stressproof/1144	1045, Stress Relieved		
	Wt./Ft.	Wt.12'	Wt.20'	
1/8.....	.042	0.51	.84	
3/16.....	.094	1.13	1.88	
1/4.....	.167	2.00	3.34	
5/16.....	.261	3.13	5.22	
3/8.....	.376	4.51	7.52	
7/16.....	.511	6.13	10.22	
1/2.....	.668	8.02	13.36	
9/16.....	.845	10.14	16.90	
5/8.....	1.043	12.52	20.86	
11/16.....	1.262	15.14	25.24	
3/4.....	1.502	18.02	30.04	
13/16.....	1.763	21.16	35.26	
7/8.....	2.04	24.48	40.8	
15/16.....	2.35	28.20	47.0	
1.....	2.67	32.04	53.4	
1-1/16.....	3.02	36.24	60.4	
1-1/8.....	3.38	40.56	67.6	
1-3/16.....	3.77	45.24	75.4	
1-1/4.....	4.17	50.04	83.4	
1-5/16.....	4.60	55.20	92.0	
1-3/8.....	5.05	60.60	101.0	
1-7/16.....	5.52	66.24	110.4	
1-1/2.....	6.01	72.12	120.2	
1-9/16.....	6.52	78.24	130.4	
1-5/8.....	7.05	84.60	141.0	
1-11/16.....	7.60	91.20	152.0	
1-3/4.....	8.18	98.16	163.6	
1-13/16.....	8.77	105.24	175.4	
1-7/8.....	9.39	112.68	187.8	
1-15/16.....	10.02	120.24	200.4	
2.....	10.68	128.16	213.6	
2-1/16.....	11.36	136.32	227.2	
2-1/8.....	12.06	144.72	241.2	
2-3/16.....	12.78	153.36	255.6	
2-1/4.....	13.52	162.24	270.4	
2-5/16.....	14.28	171.36	285.6	
2-3/8.....	15.06	180.72	301.2	
2-7/16.....	15.87	190.44	317.4	

1-800-362-2715

## COLD FINISHED ROUNDS (cont.)



Size	1018, Stressproof/1144	1045, Stress Relieved		
	Wt./Ft.	Wt.12'	Wt.20'	
2-1/2.....	16.69	200.28	333.8	
2-9/16.....	17.53	210.36	350.6	
2-5/8.....	18.40	220.80	368.0	
2-11/16.....	19.29	231.48	385.8	
2-3/4.....	20.19	242.28	403.8	
2-7/8.....	22.07	264.84	441.4	
2-15/16.....	23.04	276.48	460.8	
3.....	24.03	288.36	480.6	
3-1/16.....	25.05	300.60	501.0	
3-1/8.....	26.08	312.96	521.6	
3-3/16.....	27.13	325.56	542.6	
3-1/4.....	28.21	338.52	564.2	
3-3/8.....	30.42	365.04	608.4	
3-7/16.....	31.55	378.60	631.0	
3-1/2.....	32.71	392.52	654.2	
3-5/8.....	35.09	421.08	701.8	
3-11/16.....	36.31	435.72	726.2	
3-3/4.....	37.55	450.60	751.0	
3-7/8.....	40.10	481.20	802.0	
3-15/16.....	41.40	496.80	828.0	
4.....	42.73	512.76	854.6	

Stressproof® is a registered trademark.

1144 Stress Relieved ASTM A311 B

and Stressproof® are equivalent materials with a min. 100,000 psi yield.

cold finished rounds  
color code identification

1018———orange  
1045———black  
Stressproof / 1144 Stress  
Relieved——white  
11L17———gold  
12L14———green  
1117———red

1-800-362-2715



## HOT ROLLED SHEETS

7 Ga. (.1793") 7.50#/Sq.Ft.  
60 x 120.....375# ea.

3/16 (.1875") 7.65#/Sq.Ft.  
48 x 96.....244.8# ea.  
48 x 120.....306# ea.  
60 x 120.....382.5# ea.  
60 x 144.....459# ea.  
72 x 96.....367.2# ea.

10 Ga. (.1345") 5.625#/Sq.Ft.  
48 x 96.....180# ea.  
36 x 120.....168.75# ea.  
48 x 120.....225# ea.  
48 x 144.....270# ea.  
60 x 120.....281.25# ea.

11 Ga. (.1196") 5.0#/Sq.Ft.  
48 x 96.....160# ea.  
48 x 120.....200# ea.  
48 x 144.....240# ea.  
60 x 120.....250# ea.  
60 x 144.....300# ea.

12 Ga. (.1046") 4.375#/Sq.Ft.  
48 x 96.....140# ea.  
48 x 120.....175# ea.  
48 x 144.....210# ea.  
60 x 96.....175# ea.  
60 x 120.....218.75# ea.  
60 x 144.....262.5# ea.

13 Ga. (.0897") 3.750#/Sq.Ft.  
48 x 144.....180# ea.  
48 x 120.....150# ea.

14 Ga. (.0747") 3.125#/Sq.Ft.  
48 x 96.....100# ea.  
48 x 120.....125# ea.  
60 x 120.....156.25# ea.

16 Ga. (.0598") 2.5#/Sq.Ft.  
48 x 96.....80# ea.  
48 x 120.....100# ea.  
48 x 144.....120# ea.  
60 x 120.....125# ea.

## COLD ROLLED SHEETS



16 Ga. (.0598") 2.5#/Sq.Ft.  
36 x 96.....60# ea.  
36 x 120.....75# ea.  
48 x 96.....80# ea.  
48 x 120.....100# ea.  
60 x 120.....125# ea.  
60 x 144.....150# ea.

18 Ga. (.0478") 2.00#/Sq.Ft.  
48 x 96.....64# ea.  
48 x 120.....80# ea.

20 Ga. (.0359") 1.5#/Sq.Ft.  
36 x 120.....45# ea.  
48 x 120.....60# ea.

22 Ga. (.0299") 1.25#/Sq.Ft.  
48 x 120.....50# ea.

24 Ga. (.0239") 1.00#/Sq.Ft.  
48 x 120.....40# ea.

## GALVANIZED SHEETS



12 Ga. (.1084") 4.531#/Sq.Ft.  
48 x 120.....181.24# ea.

14 Ga. (.0785") 3.281#/Sq.Ft.  
48 x 120.....131.24# ea.

16 Ga. (.0635") 2.656#/Sq.Ft.  
48 x 120.....106.24# ea.

18 Ga. (.0516") 2.156#/Sq.Ft.  
48 x 120.....86.24# ea.

20 Ga. (.0396") 1.656#/Sq.Ft.  
48 x 120.....66.24# ea.

22 Ga. (.0336") 1.406#/Sq.Ft.  
48 x 120.....56.24# ea.

24 Ga. (.0276") 1.156#/Sq.Ft.  
48 x 120.....46.24# ea.



## HOT ROLLED PLATES

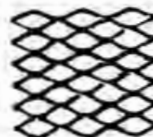
Thickness		Wt./Sq./Ft.	Est. Wt./Sheet
3/16	48 x 96	7.65	244.8
	48 x 120		306.0
	60 x 120		382.5
1/4	48 x 96	10.20	326.4
	48 x 120		408.0
	60 x 120		510.0
5/16	48 x 96	12.75	408.0
	48 x 120		510.0
3/8	48 x 96	15.30	489.6
	48 x 120		612.0
	60 x 120		765.0
1/2	48 x 96	20.40	652.8
	48 x 120		816.0
	60 x 120		1020.0
5/8	48 x 96	25.50	816.0
	48 x 120		1020.0
3/4	48 x 96	30.60	979.2
	48 x 120		1224.0
	60 x 120		1530.0
1	48 x 96	40.80	1305.6
	48 x 120		1632.0
1-1/4	48 x 96	51.00	1632.0
	48 x 120		2040.0
1-1/2	48 x 96	61.20	1958.4
	48 x 96	81.60	2611.2

## FLOOR PLATES



Thickness		Wt./Sq./Ft.	Est. Wt./Sheet
16 Ga	48 x 120	3.00	120.0
14 Ga	48 x 96	3.75	120.0
12 Ga	48 x 96	5.25	168.0
1/8	48 x 96	6.15	196.8
	48 x 120		246.0
3/16	48 x 96	8.70	278.4
	48 x 120		348.0
1/4	48 x 96	11.25	360.0
	48 x 120		450.0
5/16	72 x 96	13.81	662.9

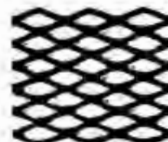
## STANDARD EXPANDED METAL



### 4' x 8' SHEETS

Style	s.w.o.	L.W.O.	Wt./Sheet
1/4 x #18	7/64	23/32	36.48
1/2 x #16	3/8	15/16	27.52
*1/2 x #13	5/16	15/16	47.04
3/4 x #16	13/16	1-3/4	17.28
3/4 x #13	3/4	1-11/16	25.60
3/4 x #9(10ga)	11/16	1-9/16	57.60
1-1/2 x #9(10ga)	1-1/8	2-3/8	38.40

## FLATTENED EXPANDED METAL



### 4' x 8' SHEETS

Style	s.w.o.	L.W.O.	Wt./Sheet
3/16 x #22F	3/32	11/32	23.04
1/4 x #18F	5/64	23/32	34.56
1/2 x #16F	5/16	1	26.24
1/2 x #13F	5/16	1	44.80
3/4 x #16F	3/4	1-3/4	16.32
3/4 x #13F	11/16	1-25/32	24.00
3/4 x #9F(10ga)	9/16	1-11/16	54.72
*1-1/2 x #9F(10ga)	1	2-9/16	36.48

## WALKWAY GRATING



### 4' x 8' SHEETS

Size	Thick.	s.w.o.	L.W.O.	Wt./Sheet
3.0#	.187	15/16	3-7/16	96.00
4.0#	.215	15/16	3-7/16	128.00

\*Also Available in 4' x 10' Sheets

S.W.O. = Short Way Opening Inside to Inside.  
L.W.O. = Long Way Opening Inside to Inside.

All dimensions and weights are approximate and subject to mill tolerances.



**CUTTING EDGE  
STEEL for  
LOADERS & BUCKETS**  
Single Bevel Flat  
Weld-On Blades

SIZE	Type	Wt./Ft.	Length	#/Bar
3/8 x 3	SBF	3.33	19' 1"	64
1/2 x 4	SBF	6.04	20' 6"	124
1/2 x 6	SBF	9.45	19' 1"	180
1/2 x 6	SBF	9.45	38' 2"	361
5/8 x 6	SBF	11.55	17' 1"	205
5/8 x 6	SBF	11.55	34' 2"	410
3/4 x 4	SBF	8.48	15' 5"	131
3/4 x 4	SBF	8.48	30' 10"	261
3/4 x 6	SBF	13.60	18' 3"	248
3/4 x 6	SBF	13.60	36' 6"	496
3/4 x 8	SBF	18.41	18' 1"	333
3/4 x 8	SBF	18.41	36' 2"	666
1 x 8	SBF	25.17	16' 4"	411
1 x 8	SBF	25.17	32' 8"	822



**GRIPSTRUT**  
- 12' -

Width	Height	Gage	Wt./Length
4.75	1.5"	12	38.4
4.75	1.5"	14	27.6
7	1.5"	12	49.2
7	1.5"	14	36.0
7	2.0"	12	54.0
7	2.0"	14	38.4
9.5	1.5"	12	60.0
9.5	1.5"	14	43.2
9.5	2.0"	12	64.8
9.5	2.0"	14	45.6
11.75	1.5"	12	70.8
11.75	1.5"	14	50.4
11.75	2.0"	12	74.4
11.75	2.0"	14	52.8
18.75	1.5"	12	102.0
18.75	2.0"	12	106.8
18.75	2.0"	14	75.6
24	2.0"	12	124.0
24	2.0"	14	80.0

1-800-362-2715

**OPEN STEEL FLOOR  
BAR GRATING**

WEIGHT IN LBS. PER SQ. FT.				
Bearing Bars	Type	Type	Type	Type
	19-W-4	19-W-2	15-W-4	15-W-2
3/4 x 1/8	3.99	4.63	4.95	5.59
3/4 x 3/16	5.67	6.31	7.11	7.75
1 x 1/8	5.15	5.79	6.44	7.08
1 x 3/16	7.35	7.99	9.27	9.91
1-1/4 x 1/8	6.20	6.84	7.79	8.43
1-1/4 x 3/16	9.03	9.67	11.43	12.07
1-1/2 x 1/8	7.35	7.99	9.27	9.91
1-1/2 x 3/16	10.94	11.80	13.82	14.68
1-3/4 x 3/16	12.62	13.48	15.98	16.84
2 x 3/16	14.30	15.16	18.14	19.00
2-1/4 x 3/16	15.87	16.74	20.16	21.03
2-1/2 x 3/16	17.55	18.42	22.32	23.19



Smooth Surface Grating

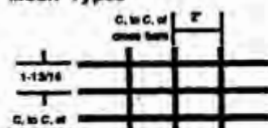


Serrated Surface Grating

**Standard Mesh Types**

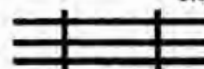


**TYPE 19-W4**  
Standard spacing recommended for all general flooring

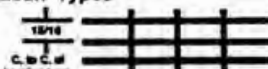


**TYPE 19-W2**  
Used where smaller openings are desired

**Close Mesh Types**



**TYPE 15-W4**  
Used where heavy loads are required



**TYPE 15-W2**  
Used where heavy loads and small openings are required

**When Ordering GRATING, Specify:**  
Type of GRATING  
Size of BEARING BARS (Depth & Width)  
Span ( Direction of Bearing Bars)  
Dimensions of area  
Carbon Steel, Aluminum, or Stainless  
Painted or Galvanized, Smooth or Serrated.

1-800-362-2715



## SQUARE TUBING

Stock Lengths  
20'-24'

Size O.D.	Ga. Thickness	Wall Dec.	Wt. Ft.
1/2 x 1/2	16	.065	.385
3/4 x 3/4	16	.065	.606
	14	.083	.753
	11	.120	1.028
7/8 x 7/8	16	.065	.716
1 x 1	20	.035	.459
	16	.065	.827
	14	.083	1.035
	11	.120	1.436
1-1/4 x 1-1/4	16	.065	1.048
	14	.083	1.317
	12	.109	1.691
	11	.120	1.844
1-1/2 x 1-1/2	16	.065	1.269
	14	.083	1.600
	12	.109	2.060
	11	.120	2.252
	3/16	.188	3.045
1-3/4 x 1-3/4	14	.083	1.882
	11	.120	2.660
2 x 2	14	.083	2.10
	11	.120	3.05
	3/16	.188	4.32
	1/4	.250	5.40
2-1/2 x 2-1/2	14	.083	2.73
	11	.120	3.90
	3/16	.188	5.60
	1/4	.250	7.10
3 x 3	14	.083	3.23
	11	.120	4.75
	3/16	.188	6.88
	1/4	.250	8.80
3-1/2 x 3-1/2	11	.120	5.60
	3/16	.188	8.16
	1/4	.250	10.50
4 x 4	11	.120	6.45
	3/16	.188	9.44
	1/4	.250	12.20
	3/8	.375	17.25
	1/2	.500	22.98

Call for Stock Length

1-800-362-2715

## SQUARE TUBING (cont.)

Stock Lengths  
20'-24'



Size O.D.	Ga. Thickness	Wall Dec.	Wt. Ft.
5 x 5	3/16	.188	11.99
	1/4	.250	15.60
	5/16	.313	19.09
	3/8	.375	22.35
	1/2	.500	28.41
6 x 6	3/16	.188	14.55
	1/4	.250	19.00
	5/16	.313	23.35
	3/8	.375	27.45
	1/2	.500	35.21
7 x 7	1/4	.250	22.40
	3/8	.375	32.55
8 x 8	3/16	.188	19.66
	1/4	.250	25.80
	3/8	.375	37.65
	1/2	.500	48.81

Call for Stock Length  
Larger Sizes Available

## RECTANGULAR TUBING

Stock Lengths  
20'-24'



Size O.D.	Ga. Thickness	Wall Dec.	Wt. Ft.
1-1/2 x 3/4	14	.083	1.176
1-1/2 x 1	14	.083	1.320
	11	.120	1.840
2 x 1	16	.065	1.269
	14	.083	1.600
	11	.120	2.252
2 x 1-1/4	14	.083	1.740
	11	.120	2.460
2 x 1-1/2	14	.083	1.880
	11	.120	2.660
2-1/2 x 1-1/2	14	.083	2.160
	11	.120	3.050
	3/16	.188	4.320

1-800-362-2715

## RECTANGULAR TUBING

Stock Lengths  
20'-24'



Size O.D.	Ga. Thickness	Wall Dec.	Wt. Ft.
3 x 1	.16	.065	1.710
	.14	.083	2.100
	.11	.120	3.050
3 x 1-1/2	.14	.083	2.390
	.11	.120	3.480
	3/16	.188	4.960
3 x 2	1/4	.250	6.250
	.14	.083	2.728
	.11	.120	3.90
4 x 2	3/16	.188	5.60
	1/4	.250	7.10
	.14	.083	3.23
4 x 3	.11	.120	4.75
	3/16	.188	6.88
	1/4	.250	8.80
5 x 2	.11	.120	5.60
	3/16	.188	8.16
	1/4	.250	10.50
5 x 3	.11	.120	5.66
	3/16	.188	8.16
	1/4	.250	10.50
6 x 2	3/16	.188	9.59
	1/4	.250	12.20
	3/8	.375	17.25
6 x 3	.11	.120	6.45
	3/16	.188	9.42
	1/4	.250	12.20
6 x 4	.11	.120	7.33
	3/16	.188	10.71
	1/4	.250	13.91
7 x 5	3/8	.375	19.80
	.11	.120	7.98
	3/16	.188	11.99
7 x 5	1/4	.250	15.60
	3/8	.375	22.35
	1/2	.500	28.41
7 x 5	3/16	.188	14.55
	1/4	.250	19.00
	3/8	.375	27.45
	1/2	.500	35.21

Call for Stock Length  
Larger Sizes Available

1-800-362-2715

## ORNAMENTAL RAILING SUPPLIES

- FORMED HAND RAIL CAP - (1-1/4" wide)
- CHANNEL - (1-1/2 x 1/2 x 1/8)
- SQUARE TUBING - (1 x 11ga, 1 x 14ga, Etc.)
- H R SQUARE BAR - (1/2", 3/4", Etc.)
- H R FLAT - (1/4 x 1, 1/4 x 1-1/4, Etc.)

## HANDRAIL MATERIAL

- FORMED HAND RAIL CAP
- SQUARE TUBING
- RECTANGULAR TUBING
- ROUND TUBING
- PIPE

1-800-362-2715

## **RedKote® Tubing**

**RedKote®**— the most revolutionary product in the history of the steel tube industry.

RedKote® is manufactured using the patented, innovative PalmerKote™ process. The steel tube is descaled and degreased while it's being formed. Then it's coated with primer paint and dried before being cut into finished lengths.

The PalmerKote™ Process was developed to eliminate costly descaling and degreasing operations for the end user. Product is coated in-line with a weldable, non-fuming, nontoxic primer, with a coating thickness of approximately 0.6 mils. The non-fuming, finished product can be welded through the primer coat and requires **no** specialized equipment or procedures.

Steel tube manufactured using the PalmerKote™ process can be welded like any other black tube product. So RedKote® is a weldable, safe, easy-to-use product that comes to you ready to use!

RedKote® is available in a variety of lengths, thicknesses and shapes and can be customized for almost any application.

Call for availability  
&  
more information  
on  
**RedKote®**

®Registered Trademark of Welded Tube Company  
of America

**1-800-362-2715**

RedKote® is ideal for a variety of applications. Here are just a few of them.

### **Agricultural, including:**

- Machinery and Equipment
- Roll Bars for Tractors
- Sheds
- Livestock Pens
- Farm Trailers
- Fence Posts
- Gates and Gate Posts
- Grain Conveyors

### **Mechanical, including:**

- Work Station Frames
- Cargo Trailers
- Boat Trailers
- Motorhome Chassis Framing
- Jigs and Fixtures
- Pallet Stackers
- Pallets
- Roof Racks
- Trampolines
- Racking Systems
- Rail Car Framing
- Bus Chassis Framing
- Truck Bodies, Semi-Trailer Framing
- Mobile Load Stabilizers

### **Architectural/Structural, including:**

- Beams and Columns
- Conveyors
- Fire Escapes
- Floor Joists
- Greenhouses
- Garage Door Framing
- Concrete Frames
- Components for Modular Homes
- Building Framing
- Playground Equipment
- Roof Framing
- Space Frame Structures
- Stair Stringers
- Trusses
- Sign and Light Posts
- Antenna and Transmission Towers
- Hand Rails
- Window Mullions

**1-800-362-2715**



**P.E. BLACK PIPE**

Sch 40 Tested  
21' Length

Nominal Pipe Size (ID)	O D in Inches	Wall in Inches	Wt per Ft
1/8	.405	.068	.24
1/4	.540	.088	.42
3/8	.675	.091	.57
1/2	.840	.109	.85
3/4	1.050	.113	1.13
1	1.315	.133	1.68
1-1/4	1.660	.140	2.27
1-1/2	1.990	.145	2.72
2	2.375	.154	3.65
2-1/2	2.875	.203	5.79
3	3.500	.216	7.58
3-1/2	4.000	.226	9.11
4	4.500	.237	10.79
5	5.563	.258	14.62
6	6.625	.280	18.97
8	8.625	.322	28.55

**EXTRA HEAVY  
P.E. BLACK PIPE**

Sch 80 Tested  
21' Length

Nominal Pipe Size (ID)	O D in Inches	Wall in Inches	Wt per Ft
1/4	.540	.119	.54
3/8	.675	.126	.73
1/2	.840	.147	1.09
3/4	1.050	.154	1.47
1	1.315	.179	2.17
1-1/4	1.660	.191	3.00
1-1/2	1.990	.200	3.63
2	2.375	.218	5.02
2-1/2	2.875	.276	7.66
3	3.500	.300	10.25
3-1/2	4.000	.318	12.51
4	4.500	.337	14.98

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**P.E. BLACK PIPE**

Sch 10  
21' Length



Nominal Pipe Size (ID)	O D in Inches	Wall in Inches	Wt per Ft
3/4	1.050	.083	.857
1	1.315	.109	1.40
1-1/4	1.660	.109	1.81
1-1/2	1.900	.109	2.09

**GALV. PIPE**

Sch 40 Tested  
21' Length

Nominal Pipe Size (ID)	O D in Inches	Wall in Inches	Wt per Ft
1/8	.405	.068	.24
1/4	.540	.088	.42
3/8	.675	.091	.57
1/2	.840	.109	.85
3/4	1.050	.113	1.13
1	1.315	.133	1.68

**REJECT PIPE**

Nominal Pipe Size (ID)	O D in Inches	Wall in Inches	Wt per Ft
3/4	1.050	.113	1.13
1	1.315	.133	1.68
1-1/4	1.660	.140	2.27

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**Drawn Over Mandrel Tubing vs  
Cold Drawn Butt Welded Tubing vs  
Electric Resistance Welded Tubing**

**Drawn over Mandrel Tubing:  
Advantages of D O M**

- |                                |                             |
|--------------------------------|-----------------------------|
| 1. More uniform wall thickness | 4. No spiral on ID          |
| 2. Better surface finish       | 5. Denser ID surface        |
| 3. Less stock removal          | 6. Closer tolerance         |
|                                | 7. Comparable or lower cost |

**DRAWN OVER MANDREL** has very little wall variation and no spiraling eccentricity. The tube is formed and electric resistance welded from flat steel which has very little gauge variation. Any wall variation that may exist in the flat steel runs in the same plane throughout the length of the tube leaving the bore straight and true.

**COLD DRAWN BUTT WELDED TUBING** a low cost 1012 steel tube which has been redrawn from Butt Welded Steel Pipe. Drawn to commercial tolerances and satisfactory for many applications where strength is not critical. Not intended for pressure applications.

**ELECTRIC RESISTANCE WELDED TUBES** are produced from a cold rolled or hot rolled scale-free strip which is formed by rolls at room temperature into a tubular shape. Welding takes place as an electric current heats the two edges of the strip as they are pressed together. Only a narrow band of metal is heated while the rest of the tube remains at room temperature. The weld flash is always trimmed off the outside of the tube. The flash can also be trimmed from the inside by special tooling.

**BUSHING STOCK**

Available in sizes:

11 ga wall to 1/2" wall,

5/8" O.D. to 3" O.D.

**ROUND TUBING**



OD Size	Ga.	Wall	Wt./Ft.
5/8	20	.035	.220
	16	.065	.388
3/4	16	.065	.475
1	14	.083	.812
1-1/4	13	.095	1.172
	12	.109	1.328
1.312 (Pipe Size)	10	.133	1.680
	12	.109	1.404
1-1/2	14	.083	1.256
	13	.095	1.426
	12	.109	1.619
1.660 (Pipe Size)	12	.109	1.442
1 3/4	13	.095	1.679
1.900	12	.109	2.082



**AUGER TUBING**

OD Size	Ga.	Wall	Wt./Ft.
4	12	.109	4.530
	14	.083	3.472
5	12	.109	5.694
	14	.083	4.359
6	12	.109	6.859
	14	.083	5.245
7	12	.109	8.022
	14	.083	6.132
8	12	.109	9.186
	14	.083	7.018
10	12	.109	11.514

## RE-BAR



*Bending available*

Available in  
No Grade Bendable,  
Grade 40, Grade 60

No.	Size	Wt./Ft.	Wt. 20'	20' Pcs.
			Per Ton	
3	3/8"	.376	7.52	266
4	1/2"	.668	13.36	150
5	5/8"	1.043	20.86	96
6	3/4"	1.502	30.04	67
7	7/8"	2.044	40.88	49
8	1"	2.670	53.40	37

Wire Ties also available



## WIRE MESH

5' x 150' Rolls—750 Sq. Ft.

Size		W-Number Wire Size	Rolls/ Bdl.	Wt./ Roll
wire spacing	wire gauge			
6 x 6	10/10	W1.4/W1.4	15	157#
6 x 6	6/6	W2.9/W2.9	8	315#

Call for Availability of other sizes

and

Wire Mats

1-800-362-2715

## CONTRACTOR SUPPLIES

We stock and have available a wide variety of STEEL items for Construction use including:

- Anchor Bolts
- Beams
- Column Material—Beams, Pipe, Plates, Sq/Rect Tubing
- Expanded Metal
- Grating
- Grip Strut
- Handrail Material
- Lintels
- Plates
- Rebar
- Wire Mesh

And we do fabricating and misc. shopwork:

- Bending/ Forming
- Drilling
- Flame Cutting
- Punching
- Rebar Bending
- Rod Threading and Bending for Anchor Bolts, Etc.
- Sawing
- Shearing

Rolled Shapes of Angles, Beams, Channels, Etc. are available, also.

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## **STAINLESS STEEL**

**Angles**  
**Beams**  
**Channels**  
**Tees**  
**Flats**  
**Squares**  
**Rounds**  
**Half Rounds**  
**Hexagons**  
**Sheets**  
**Plates**  
**Diamond Tread Plates**  
**Expanded Metal**  
**Pipe**  
**Round Tubing**  
**Square Tubing**  
**Rectangular Tubing**

**Call us on your requirements for these. We have sources available so that we can offer reasonable prices and good delivery.**

**1-800-362-2715**

## **ALUMINUM**

**Angles**  
**Beams**  
**Channels**  
**Tees**  
**Squares**  
**Rectangles**  
**Rounds**  
**Hexagons**  
**Sheets**  
**Plates**  
**Diamond Tread Plates**  
**Grating**  
**Expanded Metal**  
**Pipe**  
**Round Tubing**  
**Square Tubing**  
**Rectangular Tubing**

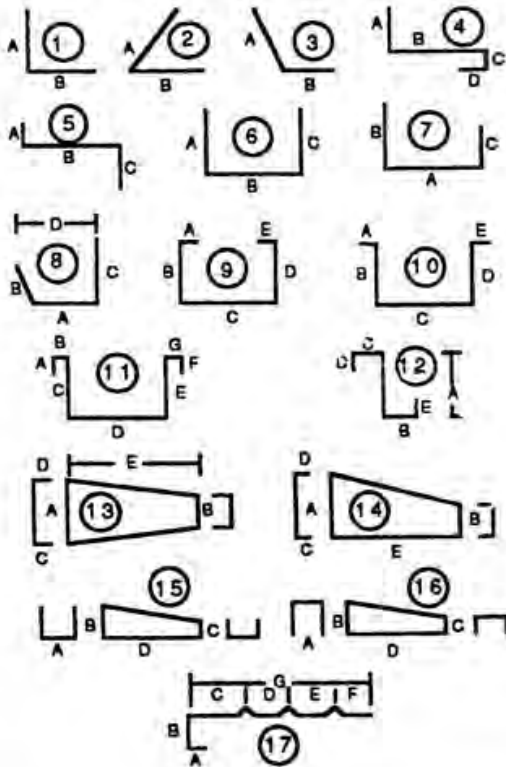
**Call us on your requirements for these. We have sources available so that we can offer reasonable prices and good delivery.**

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**SHEARING & FORMING GUIDE**

FOR SHEET & PLATE (1/4" CAP.)

**FORMED SHAPES**



NOTE: All Items 1-30 can be ordered over the phone. For Special shapes, drawings must be sent to this office before material can be sheared or formed.

**ORDERING INFORMATION**

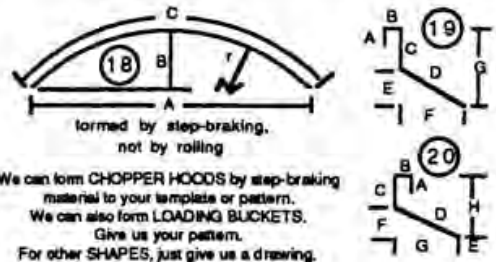
1. Quantity of pcs.
2. Shape number
3. Length in inches
4. Material
5. Dimensions in inches (specify if dimensions are I.D. or O.D.)
6. Date needed

1-800-362-2715

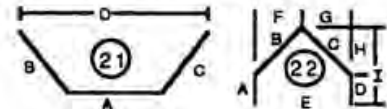
**FORMING & SHEARING GUIDE**

FOR SHEET & PLATE (1/4" CAP.)

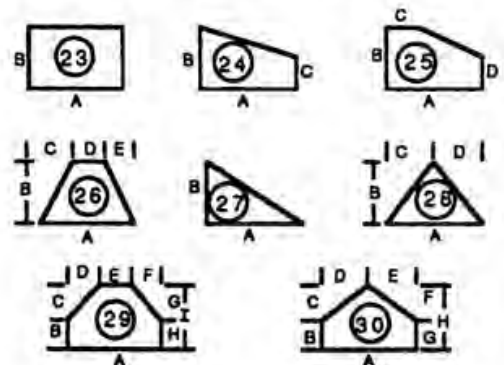
**FORMED SHAPES**



We can form CHOPPER HOODS by step-braking material to your template or pattern. We can also form LOADING BUCKETS. Give us your pattern. For other SHAPES, just give us a drawing.



**SHEARED SHAPES**



**WE ALSO DO  
DRILLING, PUNCHING,  
ROD BENDING,  
ROD THREADING,  
SAWING**

Rolled Shapes of Angles, Beams, Channels, Etc. are available, also.

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## CARBON STEEL

### STANDARD CARBON STEELS

**Definition.** Steel is considered to be carbon steel when no minimum content is specified or required for aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, vanadium, or zirconium, or any other element added to obtain a desired alloying effect; when the specified minimum for copper does not exceed 0.40 per cent; or when the maximum content specified for any of the following elements does not exceed the percentages noted: manganese 1.65, silicon 0.60, copper 0.60.

(AISI) American Iron and Steel Institute  
(SAE) Society of Automotive Engineers  
(ASTM) American Society for Testing Materials

### EFFECT OF COMMON ALLOYING ELEMENTS IN STEEL

By definition, steel is a combination of iron and carbon. Steel is alloyed with various elements to improve physical properties and to produce special properties, such as resistance to corrosion or heat. Specific effects of the addition of such elements are outlined below:

**CARBON (C)**, although not usually considered as an alloying element, is the most important constituent of steel. It raises tensile strength, hardness, and resistance to wear and abrasion. It lowers ductility, toughness, and machinability.

**Manganese (Mn)** is a deoxidizer and degasifier and reacts with sulphur to improve forgeability. It increases tensile strength, hardness, hardenability, and resistance to wear. It decreases tendency toward scaling and distortion. It increases the rate of carbon-penetration in carburizing.

**Phosphorus (P)** increases strength and hardness and improves machinability. However, it adds marked brittleness or cold-shortness to steel.

**Sulphur (S)** improves machinability in free-cutting steels, but without sufficient manganese it produces brittleness at red heat. It decreases weldability, impact toughness, and ductility.

**Silicon (Si)** is a deoxidizer and degasifier. It increases tensile and yield strength, hardness, forgeability, and magnetic permeability.

**Lead (Pb)**, while not strictly an alloying element, is added to improve machining characteristics. It is almost completely insoluble in steel, and minute lead particles, well dispersed, reduce friction where the cutting edge contacts the work. Addition of lead also improves chip-breaking formations.

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## STANDARD STEELS

Studies have been made in the steel industry for the purpose of establishing certain "standard" steels and eliminating as much as possible the manufacture of other steels which vary only slightly in composition from the standard steels. These standard steels are selected on the basis of serving metallurgical and engineering needs of fabricators and users of steel products.

### Numerical Designations of Grades of Carbon Steel

**Numbering System.** A four-numeral series is used to designate gradations of chemical composition of carbon steel, the last two numbers of which are intended to indicate the approximate middle of the carbon range. For example, in the grade designation 1035, 35 represents a carbon range of 0.32 to 0.38 per cent.

It is necessary, however, to deviate from this system and to interpolate numbers in the case of some carbon ranges and for variations in manganese, phosphorus or sulphur with the same carbon range.

The first two digits of the four-numeral series of the various grades of carbon steel and their meanings are as follows:

- 10xx Plain Carbon—Nonresulphurized carbon steel grades, manganese 1.00 per cent maximum.
- 15xx Nonresulphurized carbon steel grades, manganese maximum over 1.00 per cent.
- 11xx Free Cutting (Screw Stock)—Resulphurized carbon steel grades
- 12xx Rephosphorized and resulphurized carbon steel grades

Within the numerical designation system the special purpose elements lead and boron are commonly designated by inserting the letter "L" or "B" respectively between the second and third numerals of the AISI number, e.g., 10L45 and 10B46.

The prefix "M" indicates "merchant quality". The "M" grades are produced to wider carbon and manganese ranges than the corresponding standard grades which are not so prefixed.

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## PLATES TABLE OF EVEN GAGES

Inch Gage	Dec. Gage	Wt. Per Sq. Ft.	Inch Gage	Dec. Gage	Wt. Per Sq. Ft.
3/16	.1875	7.850	3/4	.7500	30.60
1/4	.2500	10.200	7/8	.8750	35.70
5/16	.3125	12.750	1	1.000	40.80
3/8	.3750	15.300	1-1/8	1.125	45.90
7/16	.4375	17.875	1-1/4	1.125	45.90
1/2	.5000	20.400	1-3/8	1.375	56.10
5/8	.6250	25.500	1-1/2	1.500	61.20

## Galvanized and Stainless Sheet Gages and Weights

Gage No.	Galvanized Sheets to Galv. Sheet Gage		Stainless Sheets to Stainless Sheet Gage		
	Thick. in inches	Lbs Per Sq. Ft.	Thick. in inches	Lbs per sq. ft.	
				200 & 300 Series	400 Series
8	.1681	7.031	.171875	7.2187	7.0813
9	.1532	6.408	.156250	6.5625	6.4375
10	.1382	5.781	.140625	5.9062	5.7937
11	.1233	5.156	.125000	5.2500	5.1500
12	.1084	4.531	.109375	4.5937	4.5063
13	.0934	3.906	.093750	3.9375	3.8625
14	.0785	3.281	.078125	3.2812	3.2187
15	.0710	2.969	.070313	2.9531	2.8968
16	.0635	2.658	.062500	2.6250	2.5750
17	.0575	2.406	.056250	2.3625	2.3175
18	.0518	2.156	.050000	2.1000	2.0600
19	.0456	1.908	.043750	1.8375	1.8025
20	.0396	1.658	.037500	1.5750	1.5450
21	.0366	1.531	.034375	1.4437	1.4160
22	.0336	1.406	.031250	1.3125	1.2875
23	.0306	1.281	.028125	1.1813	1.1587
24	.0278	1.156	.025000	1.0500	1.0300
25	.0247	1.031	.021875	.9187	.9013
26	.0217	.9063	.018750	.7875	.7725
27	.0202	.8438	.017188	.7218	.7081
28	.0187	.7813	.015625	.6562	.6438
29	.0172	.7188	.014063	.5906	.5794
30	.0157	.6563	.012500	.5250	.5150

Sheets ordered by gage, weight or thickness are subject to standard thickness and weight tolerances.

The Galvanized Sheet Gage, established by custom, is based on the U.S. Standard Gage.

Each Galvanized Sheet Gage Number is 2.5 ounces per sq. ft. heavier or .0037 inch thicker than the weight or thickness of the corresponding U.S. Standard Gage Number, regardless of coating weights.

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## Gage Decimals

Steel Sheets Manufacturers Std		G A G E	Strip & Tubing Birmingham or Stubs	
Gage Decimal	Weight lbs per sq ft Sheet Steel		Gage Decimal	Weight lbs per sq ft Steel Strip
		00000	.500	20.40
		0000	.454	18.52
		000	.425	17.34
		00	.380	15.30
		0	.340	13.87
		1	.300	12.240
		2	.284	11.587
.2391	10.00	3	.259	10.567
.2242	9.375	4	.238	9.710
.2092	8.75	5	.220	8.976
.1943	8.125	6	.203	8.282
.1793	7.50	7	.180	7.344
.1644	6.875	8	.165	6.732
.1495	6.250	9	.148	6.038
.1345	5.625	10	.134	5.467
.1196	5.00	11	.120	4.896
.1046	4.375	12	.109	4.447
.0897	3.75	13	.095	3.876
.0747	3.125	14	.083	3.386
.0673	2.813	15	.072	2.938
.0598	2.50	16	.065	2.652
.0538	2.25	17	.058	2.366
.0478	2.00	18	.049	1.999
.0418	1.75	19	.042	1.714
.0359	1.50	20	.035	1.428
.0329	1.375	21	.032	1.306
.0299	1.25	22	.028	1.142
.0269	1.125	23	.025	1.020
.0239	1.00	24	.022	.898
.0209	.875	25	.020	.816
.0179	.750	26	.018	.734
.0164	.688	27	.016	.651
.0149	.625	28	.014	.571
.0135	.563	29	.013	.530
.0120	.500	30	.012	.490

STEEL SHEETS-Flat or Coil, Hot Rolled or Cold Rolled

TUBING-Aluminum, Steel, Stainless Steel  
STRIP-Steel, Stainless Steel

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## USEFUL INFORMATION

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

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

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

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

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

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

Area of a parallelogram = base x altitude.

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

Side of inscribed cube = radius of sphere x 1.1547.

To find side of an equal square, multiply diameter by .8862.

Square. A side multiplied by 1.4142 equals diameter of its circumscribing circle.

A side multiplied by 1.128 equals diameter of equal circle.

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

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

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

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

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

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

## WEIGHT FORMULAS

Steel weights are based on 490.06 lbs. per cubic foot

### ROUNDS

$$\text{Wt./Ft.} = D^2 \times 2.6729$$

D = Diameter in inches

### SQUARES

$$\text{Wt./Ft.} = D^2 \times 3.4032$$

D = Diameter in inches

### HEXAGONS

$$\text{Wt./Ft.} = D^2 \times 2.9473$$

D = Diameter in inches

### OCTAGONS

$$\text{Wt./Ft.} = D^2 \times 2.8193$$

D = Diameter in inches

### FLATS

$$\text{Wt./Ft.} = T \times W \times 3.4032$$

T = Thickness

W = Width

### ROUND TUBING

$$\text{Wt./Ft.} = (OD - W) \times W \times 10.68$$

OD = Outside Diameter in inches

W = Wall Thickness in inches

### SQUARE TUBING

$$\text{Wt./Ft.} = (D - t) \times t \times 13.6$$

D = Outside Diameter in inches

t = Wall Thickness in inches

### RECTANGULAR TUBING

$$\text{Wt./Ft.} = [(D_1 + D_2) + 2 - t] \times t \times 13.6$$

D<sub>1</sub> = Dimension of Short Side in inches

D<sub>2</sub> = Dimension of Long Side in inches

t = Wall Thickness in inches

### CIRCLES

$$\text{Wt. of circle in lbs.} = D^2 \times T \times .22274$$

D = Diameter in inches

T = Thickness in inches

## DECIMAL EQUIVALENTS

No. Size Drills	Tap Size	No. Size Drills	Tap Size
80 .0135		1/8 .1250	
79 .0145		30 .1285	
1/64 .0156		29 .1360 8-32,36	
78 .0160		28 .1405	
77 .0180		9/64 .1406	
76 .0200		27 .1440	
75 .0210		26 .1470	
74 .0225		25 .1495 10-24	
73 .0240		24 .1520	
72 .0250		23 .1540	
71 .0260		5/32 .1563	
70 .0280		22 .1570	
69 .0292		21 .1590 10-32	
68 .0310		20 .1610	
1/32 .0313		19 .1660	
67 .0320		18 .1695	
66 .0330		11/64 .1719	
65 .0350		17 .1730	
64 .0360		16 .1770 12-24	
63 .0370		15 .1800	
62 .0380		14 .1820 12-28	
61 .0390		13 .1850	
60 .0400		3/16 .1875	
59 .0410		12 .1890	
58 .0420		11 .1910	
57 .0430		10 .1935	
56 .0465		9 .1960	
3/64 .0469 0-80		8 .1990	
55 .0520		7 .2010 1/4-20	
54 .0550		13/64 .2031	
53 .0595 1-84,72		6 .2040	
1/16 .0625		5 .2055	
52 .0635		4 .2090	
51 .0670		3 .2130 1/4-28	
50 .0700 2-56,64		7/32 .2188	
49 .0730		Letter 2 .2210	
48 .0760		Size 1 .2280	
5/64 .0781		Drills A .2340	
47 .0785 3-48		15/64 .2344	
46 .0810		B .2380	
45 .0820 3-56		C .2420	
44 .0860		D .2460	
43 .0890 4-40		1/4 E .2500	
42 .0935 4-48		F .2570 5/16-18	
3/32 .0938		G .2610	
41 .0960		17/64 .2656	
40 .0980		H .2690	
39 .0995		I .2720 5/16-24	
38 .1015 5-40		J .2770	
37 .1040 5-44		K .2810	
36 .1065 6-32		9/32 .2810	
7/64 .1094		L .2900	
35 .1100		M .2950	
34 .1110		19/64 .2969	
33 .1130 6-40		N .3020	
32 .1180		5/16 .3125 3/8-16	
31 .1200		O .3160	

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## AND TAP DRILL SIZES

Letter Size Drills	Tap Size	Tap Size
P .3230	43/64 .6719	
21/64 .3281	11/16 .6875 3/4-16	
Q .3320 3/8-24	45/64 .7031	
R .3390	23/32 .7188	
11/32 .3438	47/64 .7344	
S .3480	3/4 .7500	
T .3580	49/64 .7656 7/8-9	
23/64 .3594	25/32 .7813	
U .3680 7/16-14	51/64 .7969	
3/8 .3750	13/16 .8125 7/8-14	
V .3770	53/64 .8281	
W .3860	27/32 .8438	
25/64 .3906 7/16-20	55/64 .8594	
X .3970	7/8 .8750 1-8	
Y .4040	57/64 .8906	
13/32 .4063	29/32 .9063	
Z .4130	59/64 .9219 1-12	
27/64 .4219 1/2-13	15/16 .9375 1-14	
7/16 .4375	61/64 .9531	
29/64 .4531 1/2-20	31/32 .9688	
15/32 .4688	63/64 .9844 1-1/8-7	
31/64 .4844 9/16-12	1 .1.0000	
1/2 .5000	1-3/64 .1.0489 1-1/8-12	
33/64 .5156 9/16-18	1-7/64 .1.1094 1-1/4-7	
17/32 .5313 5/8-11	1-1/8 .1.1250	
35/64 .5469	1-1 1/64 .1.1719 1-1/4-12	
9/16 .5625	1-7/32 .1.2188 1-3/8-6	
37/64 .5781 5/8-18	1-1/4 .1.2500	
19/32 .5938	1-19/64 .1.2969 1-3/8-12	
39/64 .6094	1-11/32 .1.3438 1-1/2-6	
5/8 .6250	1-3/8 .1.3750	
41/64 .6406	1-27/64 .1.4219 1-1/2-12	
21/32 .6563 3/4-10	1-1/2 .1.5000	

## PIPE THREAD SIZES

Thread	Drill	Thread	Drill
1/8 - 27	R	1-1/2 - 11-1/2	1-47/64
1/4 - 18	7/16	2 - 11-1/2	2-7/32
3/8 - 18	37/64	2-1/2 - 8	2-5/8
1/2 - 14	23/32	3 - 8	3-1/4
3/4 - 14	59/64	3-1/2 - 8	3-3/4
1 - 11-1/2	1-5/32	4 - 8	4-1/4
1-1/4 - 11-1/2	1-1/2		

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**MATERIAL RETURN POLICY**

**MATERIAL RETURNS** - No merchandise returned will be accepted without prior authorization in the form of a "Return Goods Authorization" issued by us. Customers must contact our office for authorization. Material accepted as "return for credit", where no error on our part exists, will be subject to restocking charges.

Certain items, such as aluminum in thin sheets, are so easily damaged in transit or in the customer's shop, that we do not accept returns.

**RETURN GOODS - DEFECTIVE MATERIAL** - In any case where a shipment proves to be unsuitable, it is understood the buyer will immediately discontinue its use and advise the seller of the facts. This will give the seller an opportunity to make a decision, so further loss may be prevented or minimized.

We limit our responsibility to replacement of the material. No consequential damages, charges for labor, tooling or time will be allowed.

If defective, the returned material must be accompanied by a "Return Goods Authorization".

**RETURN GOODS - NOT DEFECTIVE** - Customers are allowed a reasonable time for receipt and inspection of material shipped by us. We will replace material shipped incorrectly. In the case of customer error, we will accept material returned for replacement, providing the return is made within a reasonable time from the delivery date, and our return goods procedure is followed. However, if the material was plated, polished, masked, or changed from a standard by cutting or sawing, the likelihood is that we cannot accept return. Any such goods must be handled by negotiations and purchase.

Return privileges do not apply in the case of extraordinary quantities or special ordered items obtained for a specific customer order.

All returns, except those due to our error, will be subject to a restocking charge.

**FRACTION, DECIMAL & MILIMETER EQUIVALENTS**

Fraction of Inch	Dec. Equiv.	Mili-Meter	Fraction of Inch	Dec. Equiv.	Mili-Meter
1/64	.0156	0.397			
1/32	.0313	0.794	33/64	0.5118	13.000
	.0394	1.000	17/32	0.5313	13.494
3/64	.0469	1.191	35/64	0.5469	13.891
1/16	.0625	1.588		0.5512	14.000
5/64	.0781	1.984	9/16	0.5625	14.288
	.0787	2.000	37/64	0.5781	14.684
1/12	.0833	2.117	7/12	0.5833	14.817
3/32	.0938	2.381		0.5906	15.000
1/10	1.000	2.540	19/32	0.5938	15.081
7/64	1.094	2.778	3/5	0.6000	15.240
	1.181	3.000	39/64	0.6094	15.478
1/8	1.25	3.175	5/8	0.625	15.875
9/64	1.406	3.572		0.6299	16.000
5/32	1.563	3.969	41/64	0.6406	16.272
	1.575	4.000	21/32	0.6563	16.669
2/12	1.667	4.233	8/12	0.6667	16.933
11/64	1.719	4.366		0.6693	17.000
3/16	1.875	4.763	43/64	0.6719	17.066
	1.969	5.000	11/16	0.6875	17.463
1/5	2.000	5.080	7/10	0.7000	17.780
13/64	2.031	5.159	45/64	0.7031	17.859
7/32	2.188	5.556		0.7067	18.000
15/64	2.344	5.953	23/32	0.7188	18.256
	2.362	6.000	47/64	0.7344	18.653
1/4	2.5	6.350		0.7480	19.000
17/64	2.656	6.747	3/4	0.75	19.050
	2.756	7.000	49/64	0.7656	19.447
9/32	2.813	7.144	25/32	0.7813	19.844
19/64	2.969	7.541		0.7874	20.000
3/10	3.000	7.620	51/64	0.7969	20.241
5/16	3.125	7.938	4/5	0.8000	20.320
	3.150	8.000	13/16	0.8125	20.638
21/64	3.281	8.334		0.8268	21.000
4/12	3.333	8.467	53/64	0.8281	21.034
11/32	3.438	8.731	10/12	0.8333	21.167
	3.543	9.000	27/32	0.8438	21.431
23/64	3.594	9.128	55/64	0.8594	21.828
3/8	3.75	9.525		0.8681	22.000
25/64	3.906	9.922	7/8	0.875	22.225
	3.937	10.000	57/64	0.8906	22.622
2/5	4.000	10.180	9/10	0.9000	22.860
13/32	4.063	10.319		0.9055	23.000
5/12	4.167	10.583	29/32	0.9063	23.019
27/64	4.219	10.716	11/12	0.9167	23.283
	4.331	11.000	59/64	0.9219	23.416
7/16	4.375	11.113	15/16	0.9375	23.813
29/64	4.531	11.509		0.9449	24.000
15/32	4.688	11.906	61/64	0.9531	24.209
	4.724	12.000	31/32	0.9688	24.606
31/64	4.844	12.303		0.9843	25.000
1/2	5.000	12.700	63/64	0.9644	25.003
			1*	1.0000	25.400

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