



# Steel Bars

## Cold Finished & Hot Rolled Bar Products

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## Cold Finished Carbon Bars

### Grade Descriptions

Cold Finished Bars are produced from Special Bar Quality Hot Rolled Bars by cold drawing, turning or grinding or by a combination of these methods. The cross sectional area of the hot rolled bar is cold reduced, resulting in accurate size, smooth surface, increased mechanical properties and machinability.

**1018** is a general purpose low carbon steel with good case hardening qualities. It is especially suited to cold forming and bending operations. Material is suitable for parts which require cold forming (such as crimping, swaging, or bending). For severe bends, however, stress relieving may be necessary to prevent cracking.

**1045** is a medium carbon steel used extensively in induction hardening applications. This is not normally considered a screw machine steel and is only fair for brazing and welding. However, it can be forged satisfactorily and is the most common shafting steel in the medium carbon range.

**1117** is a low carbon, high manganese steel. Machinability is improved over 1018, and case hardening is deep and uniform, supported by a tough ductile core.

**11L17** is a resulfurized steel with good machinability and surface finish. The product is made much the same way as 12L14 where the lead does not alloy with the steel. Lead is retained in its elemental state and is dispersed within the steel's structure allowing chips to break off easier during machining.

**1141** is a medium carbon, special quality, manganese steel, with improved machinability and better heat treatment response. Surface hardness is deeper and more uniform than plain carbon steels.

**1144** is a resulfurized carbon steel containing manganese and sulphur to provide a free-machining steel. It is recommended especially for high-production automatic machine products and machined parts requiring higher strength and wear resistance than is possible with lower carbon steels.

**A311 Class B, includes Stressproof®**, is a medium carbon free machining steel that has been severely cold reduced to improve its mechanical properties. Its inherent strength, without heat treatment, is comparable to heat treated steels of equal hardness. This permits direct use of many parts following the last machining operation, without the necessity of a further hardening treatment.

**12L14** is considered to be one of the fastest machining steels currently produced. This has been achieved through the addition and even dispersal of tiny lead particles throughout the bar. C12L14 gives a smooth, machined surface and because of its low friction component allows increased tool life. This grade is recommended for high-speed automatic screw machine parts.

**1215** is one of the most popular screw stocks marketed today. C1215 provides good surface finish and brazing properties.

**Fatigueproof®** is made by various combinations of mechanical working and thermal treatment which can include Niagara LaSalle's "e.t.d."® (elevated temperature drawing) process. This is a high strength steel bar that eliminates heat treating and secondary operations such as cleaning, straightening, secondary machining and inspections. All this, in combination with free machining and high strength, operates to lower end costs. Fatigueproof® induction hardens satisfactorily, but should be watched for quench cracks. Fatigueproof® is also comparator or roto tested.

## Cold Finished - Rounds

Stock Lengths: 12 foot (Other lengths are available upon request)

Diameter (inches)	Weight (lbs./ft.)	Weight per 12 Foot Bar	1018	1045*	1117	11L17	1141	1144	Stressproof® A311, Class B**	12L14	1215	Fatigueproof®
1/8	0.040	0.48	●							●		
5/32	0.070	0.84	●							●		
3/16	0.090	1.08	●	●						●	●	
13/64	0.110	1.32								●		
7/32	0.130	1.56	●							●	●	
15/64	0.147	1.76								●		
1/4	0.167	2.00	●	●	●				●	●	●	●
17/64	0.190	2.28								●		
9/32	0.210	2.52	●							●	●	
19/64	0.240	2.88								●		
5/16	0.260	3.12	●	●	●				●	●	●	●
21/64	0.290	3.48								●		
11/32	0.320	3.84	●							●	●	
23/64	0.350	4.20								●		
3/8	0.380	4.56	●	●	●		●		●	●	●	●
25/64	0.410	4.92								●		
13/32	0.441	5.29	●							●	●	
27/64	0.480	5.76								●		
7/16	0.510	6.12	●	●	●				●	●	●	●
29/64	0.550	6.60								●		
15/32	0.587	7.04	●							●	●	
31/64	0.630	7.56								●		
1/2	0.670	8.04	●	●	●	●	●	●	●	●	●	●
33/64	0.710	8.52								●		
17/32	0.754	9.04	●							●	●	
35/64	0.798	9.57								●		
9/16	0.850	10.20	●	●	●		●	●	●	●	●	●
19/32	0.940	11.28	●		●					●	●	
39/64	0.990	11.88								●		
5/8	1.040	12.48	●	●	●	●	●	●	●	●	●	●
41/64	1.100	13.20								●		
21/32	1.150	13.80	●							●	●	
11/16	1.260	15.12	●	●	●					●	●	●
23/32	1.380	16.56	●							●	●	
47/64	1.440	17.28								●		
3/4	1.500	18.00	●	●	●	●	●	●	●	●	●	●

\* 1045 is available in turned, ground and polished condition.

\*\* Stressproof® A311 Class B is available in ground and polished condition starting at 3/8".

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## Cold Finished - Rounds

Stock Lengths: 12 and 20 foot (Other lengths are available upon request)

Diameter (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)	1018	1045*	1117	11L17	1141	1144	Stressproof® A311, Class B**	12L14	1215	Fatigueproof®
49/64	1.570	18.84								●		
25/32	1.630	19.56	●							●	●	
13/16	1.760	21.12	●	●	●		●	●	●	●	●	●
27/32	1.901	22.81	●	●	●		●	●	●	●	●	●
7/8	2.040	24.48	●	●	●	●	●	●	●	●	●	●
29/32	2.193	26.31	●	●	●					●	●	●
15/16	2.350	28.20	●	●	●		●	●	●	●	●	
31/32	2.506	30.07	●	●	●		●	●	●	●	●	
1	2.670	32.04	●	●	●	●	●	●	●	●	●	●
1-1/16	3.014	36.17	●	●	●		●	●	●	●	●	●
1-1/8	3.379	40.55	●	●	●	●	●	●	●	●	●	●
1-3/16	3.770	45.24	●	●	●		●	●	●	●	●	●
1-1/4	4.170	50.04	●	●	●	●	●	●	●	●	●	●
1-5/16	4.600	55.20	●	●	●	●	●	●	●	●	●	●
1-3/8	5.050	60.60	●	●	●	●	●	●	●	●	●	●
1-7/16	5.520	66.24	●	●	●		●	●	●	●	●	●
1-1/2	6.010	72.12	●	●	●	●	●	●	●	●	●	●
1-9/16	6.510	78.12	●	●	●		●	●	●	●	●	●
1-5/8	7.050	84.60	●	●	●	●	●	●	●	●	●	●
1-11/16	7.600	91.20	●	●	●		●	●	●	●	●	●
1-3/4	8.170	98.04	●	●	●	●	●	●	●	●	●	●
1-13/16	8.770	105.24	●	●	●		●	●	●	●	●	●
1-7/8	9.390	112.68	●	●	●	●	●	●	●	●	●	●
1-15/16	10.020	120.24	●	●	●		●	●	●	●	●	●
2	10.680	128.16	●	●	●	●	●	●	●	●	●	●
2-1/16	11.360	136.32	●	●	●		●	●	●	●	●	●
2-1/8	12.060	144.72	●	●	●	●	●	●	●	●	●	●
2-3/16	12.780	153.36	●	●	●		●	●	●	●	●	●
2-1/4	13.520	162.24	●	●	●	●	●	●	●	●	●	●
2-5/16	14.280	171.36	●	●	●		●	●	●	●	●	●
2-3/8	15.060	180.72	●	●	●	●	●	●	●	●	●	●
2-7/16	15.870	190.44	●	●	●		●	●	●	●	●	●
2-1/2	16.690	200.28	●	●	●	●	●	●	●	●	●	●
2-9/16	17.530	210.36	●	●	●		●	●	●	●	●	●
2-5/8	18.400	220.80	●	●	●	●	●	●	●	●	●	●
2-11/16	19.290	231.48	●	●	●		●	●	●	●	●	●

\* 1045 is available in ground and polished condition. However, 1/2" to 7/8" diameter may be cold drawn, ground and polished or turned, ground and polished. Over 1" diameter is hot rolled, turned, ground and polished.

\*\* Stressproof® A311 Class B is available in ground and polished condition.

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## Cold Finished - Rounds

Stock Lengths: 12 and 20 foot (Other lengths are available upon request)

Diameter (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)	1018 <sup>(1)(2)</sup>	1045 <sup>(1)(2)(3)</sup>	1117	11L17	1141	1144	Stressproof <sup>®</sup> A311, Class B <sup>(4)</sup>	12L14 <sup>(2)</sup>	1215	Fatigueproof <sup>®</sup>
2-3/4	20.19	242.28	●	●	●	●	●	●	●	●	●	●
2-13/16	21.12	253.44	●	●	●	●	●	●	●	●	●	●
2-7/8	22.07	264.84	●	●	●	●	●	●	●	●	●	●
2-15/16	23.04	276.48	●	●	●	●	●	●	●	●	●	●
3	24.03	288.36	●	●	●	●	●	●	●	●	●	●
3-1/16	25.05	300.60	●	●	●	●	●	●	●	●	●	●
3-1/8	26.08	312.96	●	●	●	●	●	●	●	●	●	●
3-3/16	27.13	325.54	●	●	●	●	●	●	●	●	●	●
3-1/4	28.21	338.52	●	●	●	●	●	●	●	●	●	●
3-3/8	30.42	365.04	●	●	●	●	●	●	●	●	●	●
3-7/16	31.55	378.60	●	●	●	●	●	●	●	●	●	●
3-1/2	32.71	392.49	●	●	●	●	●	●	●	●	●	●
3-5/8	35.09	421.08	●	●	●	●	●	●	●	●	●	●
3-3/4	37.55	450.36	●	●	●	●	●	●	●	●	●	●
3-7/8	40.10	481.20	●	●	●	●	●	●	●	●	●	●
3-15/16	41.40	496.80	●	●	●	●	●	●	●	●	●	●
4	42.73	512.76	●	●	●	●	●	●	●	●	●	●
4-1/8	45.44	545.28	●	●	●	●	●	●	●	●	●	●
4-1/4	48.23	578.76	●	●	●	●	●	●	●	●	●	●
4-3/8	51.11	613.32	●	●	●	●	●	●	●	●	●	●
4-7/16	52.58	630.91	●	●	●	●	●	●	●	●	●	●
4-1/2	54.07	648.84	●	●	●	●	●	●	●	●	●	●
4-5/8	57.12	685.44	●	●	●	●	●	●	●	●	●	●
4-3/4	60.25	723.00	●	●	●	●	●	●	●	●	●	●
4-7/8	63.46	761.52	●	●	●	●	●	●	●	●	●	●
4-15/16	65.10	781.20	●	●	●	●	●	●	●	●	●	●
5	66.75	801.12	●	●	●	●	●	●	●	●	●	●
5-1/8	70.14	841.68	●	●	●	●	●	●	●	●	●	●
5-1/4	73.59	883.20	●	●	●	●	●	●	●	●	●	●
5-7/16	78.94	947.28	●	●	●	●	●	●	●	●	●	●
5-1/2	80.77	969.24	●	●	●	●	●	●	●	●	●	●
5-3/4	88.29	1059.48	●	●	●	●	●	●	●	●	●	●
6	96.13	1153.56	●	●	●	●	●	●	●	●	●	●

(1) Sizes over 10" diameter are rough turned to +1/8 to +3/16" overside

(2) Sizes over 6" diameter are turned and polished. See tolerance chart at the end of this section.

(3) 1045 is available in ground and polished condition. However, 1/2" to 7/8" diameter may be cold drawn, ground and polished or turned, ground and polished. Over 1" diameter is hot rolled, turned, ground and polished.

(4) Stressproof<sup>®</sup> A311 Class B is available in ground and polished condition up through 4" diameter.

## Cold Finished - Rounds

Stock Lengths: 12 and 20 foot (Other lengths are available upon request)

Diameter (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)	1018 <sup>(1) (2)</sup>	1045 <sup>(1) (2) (3)</sup>	1117	11L17	1141	1144	Stressproof® A311, Class B <sup>(4)</sup>	12L14 <sup>(2)</sup>	1215	Fatigueproof®
6-1/4	104.31	1314.99	●	●						●		
6-1/2	112.82	1419.63	●	●						●		
6-3/4	121.68	1528.28	●	●						●		
7	130.84	1640.92	●	●						●		
7-1/4	140.36	1757.59	●	●								
7-1/2	150.21	1878.25	●	●						●		
7-3/4	160.37	2002.92	●	●								
8	170.90	2131.59	●	●						●		
8-1/2	192.93	2400.96	●	●						●		
9	216.30	2686.34	●	●						●		
9-1/2	241.00	2987.74	●	●						●		
10	266.87	3202.42	●	●						●		
10-1/2	302.84	3634.08	●							●		
11	332.29	3987.48	●	●						●		
11-1/2	362.75	4353.00	●									
12	394.54	4734.49	●	●						●		
12-1/2	427.66	5131.92	●	●								
13	462.12	5545.44	●	●								
13-1/2	497.93	5975.16	●	●								
14	535.05	6420.60	●	●								
14-1/2	573.51	6882.12	●	●								
15	613.31	7359.72	●	●								
15-1/2	654.44	7853.28	●	●								
16	696.91	8362.92	●	●								
16-1/2	740.72	8888.64	●	●								
17	785.85	9430.20	●	●								
18	880.14	10561.68	●	●								
19	979.76	11757.12	●	●								
20	1084.73	13016.76	●	●								
22	1310.67	15728.04	●	●								
24	1557.98	18695.76	●	●								
26	1826.64	21919.68	●	●								
28	2116.67	25400.04	●	●								

(1) Sizes over 10" diameter are rough turned to +1/8 to +3/16" overside

(2) Sizes over 6" diameter are turned and polished. See tolerance chart at the end of this section.

(3) 1045 is available in ground and polished condition. However, 1/2" to 7/8" diameter may be cold drawn, ground and polished or turned, ground and polished. Over 1" diameter is hot rolled, turned, ground and polished.

(4) Stressproof® A311 Class B is available in ground and polished condition up through 4" diameter.

## Chrome Plated Steel Bars

Produced from a commercial grade of cold finished and hot rolled steel bars. After centerless grinding the bars are polished and then hard-chrome plated (usually up to .001"). The bar may be induction hardened to core depth of .050" minimum with a surface hardness of RC50 minimum. Primary application is for shafting in the manufacture of hydraulic cylinders.

Diameter (inches)	Weight (lbs./ft.)	1045 75K min. yield/.0005 min. plate	1045/1050 100K min. yield/.0005 min. plate	1045/1050 Induction Hardened 100K min. yield/.001 min. plate
3/8	.375		●	
1/2	.668	●		
5/8	1.04	●		
3/4	1.50	●		
7/8	2.04	●		
1	2.67	●		●
1-1/8	3.38	●		●
1-1/4	4.17	●		●
1-3/8	5.05	●		●
1-1/2	6.01	●		●
1-5/8	7.05	●		
1-3/4	8.18	●		●
2	10.68	●		●
2-1/4	13.52	●		●
2-1/2	16.69	●		●
2-3/4	20.19	●		●
3	24.03	●		●
3-1/4	28.20			●
3-1/2	32.71	●		●
3-3/4	37.55	●		●
4	42.72	●		●
4-1/4	48.23			
4-1/2	54.07	●		
5	66.75	●		

## Cold Finished - Squares

Size (inches)	Weight (lbs./foot)	Weight (lbs./12 ft.)	Stock Lengths : 12 foot			
			1018	1045	12L14	1215
1/8	0.05	0.60	●			
3/16	0.12	1.44	●		●	
1/4	0.21	2.52	●	●	●	●
5/16	0.33	3.96	●	●	●	●
3/8	0.478	5.73	●	●	●	●
7/16	0.65	7.80	●	●	●	
1/2	0.85	10.20	●	●	●	●
9/16	1.08	12.96	●		●	
5/8	1.328	15.93	●	●	●	●
11/16	1.61	19.32	●		●	
3/4	1.91	22.92	●	●	●	●
13/16	2.24	26.88	●		●	
7/8	2.60	31.20	●	●	●	●
15/16	2.99	35.88	●		●	
1	3.40	40.80	●	●	●	●
1-1/16	3.84	46.08	●		●	
1-1/8	4.30	51.60	●	●	●	●
1-3/16	4.80	57.60	●		●	
1-1/4	5.31	63.72	●	●	●	●
1-5/16	5.86	70.32	●		●	
1-3/8	6.43	77.16	●		●	●
1-7/16	7.03	84.36	●		●	
1-1/2	7.65	91.80	●	●	●	●
1-5/8	8.98	107.76	●		●	
1-3/4	10.413	124.95	●	●	●	●
1-13/16	11.163	133.95	●		●	
1-7/8	11.95	143.40	●		●	
2	13.60	163.20	●	●	●	●
2-1/8	15.35	184.20	●		●	
2-1/4	17.22	206.64	●	●	●	
2-3/8	19.18	230.16	●		●	
2-1/2	21.26	255.12	●	●	●	●
2-5/8	23.43	281.16	●		●	
2-3/4	25.71	308.52	●		●	
3	30.60	367.20	●	●	●	●
3-1/4	35.91	430.92	●		●	
3-1/2	41.65	499.80	●	●	●	
3-3/4	47.81	573.72	●		●	
4	54.40	652.80	●	●	●	
4-1/2	68.85	826.20	●		●	
5	85.04	1020.48	●		●	
5-1/2	102.80	1233.60	●		●	
6	122.40	1468.80	●		●	



## Cold Finished - Hexagons

Size (inches)	Weight (lbs./foot)	Weight (lbs./12 ft.)	Stock Lengths : 12 foot						
			1018	1045	1117	12L14	1215	Stressproof®	Fatigueproof®
3/16	0.10	1.20				●			
1/4	0.183	2.19	●			●	●		
5/16	0.28	3.36	●			●	●	●	
3/8	0.41	4.92	●			●	●	●	●
7/16	0.563	6.75	●			●	●	●	●
1/2	0.73	8.76	●	●	●	●	●	●	●
9/16	0.93	11.16	●			●	●	●	
5/8	1.15	13.80	●		●	●	●	●	●
11/16	1.39	16.68	●			●	●	●	
3/4	1.66	19.92	●	●	●	●	●	●	●
13/16	1.94	23.28	●			●	●	●	
7/8	2.25	27.00	●	●	●	●	●	●	●
15/16	2.59	31.08	●			●	●	●	
1	2.94	35.28	●	●	●	●	●	●	●
1-1/16	3.32	39.84	●			●	●		
1-1/8	3.72	44.65	●	●	●	●	●	●	
1-3/16	4.15	49.80	●			●	●	●	
1-1/4	4.60	55.20	●	●	●	●	●	●	
1-5/16	5.07	60.84	●			●	●	●	
1-3/8	5.56	66.72	●	●	●	●	●	●	
1-7/16	6.09	73.08	●			●	●	●	
1-1/2	6.63	79.56	●	●	●	●	●	●	
1-9/16	7.19	86.28	●			●	●	●	
1-5/8	7.78	93.36	●			●	●	●	
1-11/16	8.39	100.68	●			●	●	●	
1-3/4	9.00	108.00	●	●		●	●	●	
1-13/16	9.65	115.89	●			●	●	●	
1-7/8	10.35	124.20	●	●		●	●	●	
2	11.76	141.12	●	●		●	●	●	
2-1/8	13.30	159.60	●			●	●	●	
2-1/4	14.884	178.60	●			●	●	●	
2-3/8	16.58	198.96	●			●	●	●	
2-1/2	18.40	220.80	●	●		●	●	●	
2-5/8	20.29	243.48	●			●	●	●	
2-3/4	22.27	267.24	●			●	●	●	
2-7/8	24.30	291.60	●			●	●	●	
3	26.50	318.00	●			●	●	●	
3-1/4	31.10	373.20	●			●	●	●	
3-1/2	36.08	432.96	●			●	●	●	
3-3/4	41.34	496.08	●			●	●	●	
4	47.04	564.48	●			●	●	●	

# Cold Finished - Flats

Stock Lengths: 12 foot (1018 and 11L17)

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1/8 x</b>		
3/16	0.08	0.96
1/4	0.11	1.32
5/16	0.13	1.56
3/8	0.16	1.92
7/16	0.19	2.23
1/2	0.21	2.52
9/16	0.24	2.86
5/8	0.27	3.24
3/4	0.32	3.84
7/8	0.37	4.46
15/16	0.40	4.81
1	0.43	5.16
1-1/8	0.48	5.76
1-1/4	0.53	6.36
1-1/2	0.64	7.68
1-3/4	0.74	8.88
2	0.85	10.20
2-1/4	0.96	11.52
2-1/2	1.06	12.75
2-3/4	1.17	14.04
3	1.28	15.36
3-1/4	1.38	16.59
3-1/2	1.49	17.88
3-3/4	1.59	19.11
4	1.70	20.40
4-1/4	1.81	21.66
4-1/2	1.91	22.92
4-3/4	2.02	24.24
5	2.13	25.56
5-1/2	2.34	28.08
6	2.55	30.60
7	2.98	35.70
8	3.40	40.80
9	3.83	45.90
10	4.25	51.00
11	4.69	56.28
12	5.13	61.56

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>3/16 x</b>		
1/4	0.16	1.92
5/16	0.19	2.28
3/8	0.24	2.88
7/16	0.28	3.36
1/2	0.32	3.84
9/16	0.36	4.30
5/8	0.40	4.80
11/16	0.44	5.28
3/4	0.48	5.76
13/16	0.52	6.24
7/8	0.56	6.72
15/16	0.64	7.68
1	0.68	8.16

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>3/16 x</b> (Continued)		
1-1/8	0.72	8.62
1-1/4	0.80	9.60
1-3/8	0.88	10.52
1-1/2	0.96	11.52
1-5/8	1.04	12.48
1-3/4	1.12	13.44
1-7/8	1.20	14.34
2	1.28	15.36
2-1/8	1.36	16.28
2-1/4	1.44	17.20
2-1/2	1.59	19.08
2-3/4	1.76	21.03
3	1.92	22.92
3-1/4	2.07	24.86
3-1/2	2.24	26.77
3-3/4	2.39	28.68
4	2.56	30.60
4-1/4	2.71	32.52
4-1/2	2.88	34.42
4-3/4	3.03	36.34
5	3.20	38.28
5-1/2	3.51	42.07
6	3.84	45.96
7	4.47	53.55
8	5.11	61.20
9	5.74	68.85
10	6.38	76.50
11	7.01	84.15
12	7.65	91.80

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1/4 x</b>		
5/16	0.26	3.12
3/8	0.32	3.84
7/16	0.37	4.44
1/2	0.43	5.16
9/16	0.48	5.76
5/8	0.53	6.36
3/4	0.64	7.68
7/8	0.74	8.88
1	0.85	10.20
1-1/8	0.96	11.52
1-1/4	1.06	12.72
1-3/8	1.17	14.04
1-1/2	1.28	15.36
1-5/8	1.38	16.56
1-3/4	1.49	17.88
1-7/8	1.59	19.08
2	1.70	20.40
2-1/4	1.91	22.92
2-1/2	2.13	25.56
2-3/4	2.34	27.96
3	2.55	30.60

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1/4 x</b> (Continued)		
3-1/4	2.76	33.12
3-1/2	2.98	35.64
3-3/4	3.19	38.28
4	3.40	40.80
4-1/4	3.61	43.32
4-1/2	3.83	45.60
4-3/4	4.04	48.48
5	4.25	51.00
5-1/2	4.68	56.16
6	5.10	61.20
6-1/2	5.53	66.36
7	5.95	71.40
8	6.80	81.60
9	7.65	91.80
10	8.50	102.00
11	9.35	112.20
12	10.20	122.40
14	11.90	142.80
16	13.60	163.20

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>5/16 x</b>		
3/8	0.40	4.80
7/16	0.47	5.56
1/2	0.53	6.36
5/8	0.66	7.92
3/4	0.80	9.60
7/8	0.93	11.16
1	1.06	12.72
1-1/8	1.20	14.34
1-1/4	1.33	15.96
1-3/8	1.46	17.52
1-1/2	1.59	19.08
1-3/4	1.86	22.32
2	2.13	25.56
2-1/4	2.39	28.68
2-1/2	2.66	31.92
2-3/4	2.92	35.04
3	3.19	38.28
3-1/2	3.72	44.64
4	4.25	51.00
4-1/2	4.78	57.36
5	5.31	63.72
6	6.38	76.50
7	7.44	89.28
8	8.50	102.00
10	10.63	127.56
12	12.75	153.00

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>3/8 x</b>		
7/16	0.56	6.72
1/2	0.64	7.68
5/8	0.80	9.60
3/4	0.96	11.52

\* Size available in 1018 & 11L17

\*\* Sizes are stocked in 10 foot lengths

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# Cold Finished - Flats

Stock Lengths: 12 foot (1018 and 11L17)

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>3/8 x</b> (Continued)		
7/8	1.12	13.44
1	1.28	15.36
1-1/8	1.43	17.16
1-1/4	1.59	19.08
1-3/8	1.75	21.00
1-1/2	1.91	22.95
1-5/8	2.07	24.84
1-3/4	2.23	26.76
1-7/8	2.39	28.69
2	2.55	30.60
2-1/4	2.87	34.44
2-1/2	3.18	38.16
2-3/4	3.51	42.12
3	3.82	45.84
3-1/4*	4.14	49.68
3-1/2	4.46	53.52
3-3/4	4.78	57.36
4	5.10	61.20
4-1/4	5.42	65.01
4-1/2	5.70	68.40
4-3/4	6.06	72.67
5	6.38	76.56
5-1/2	7.01	84.12
6	7.65	91.80
6-1/2	8.29	99.48
7	8.93	107.16
8	10.20	122.40
9	11.48	137.76
10	12.75	153.00
11	14.03	168.30
12	15.30	183.60
14	18.00	216.00

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>7/16 x</b>		
1/2	0.74	8.88
9/16	0.84	10.08
5/8	0.93	11.16
3/4	1.12	13.44
7/8	1.30	15.60
1	1.49	17.88
1-1/4	1.86	22.32
1-1/2	2.23	26.76
1-3/4	2.60	31.20
2	2.98	35.76
2-1/4	3.35	40.20
2-1/2	3.72	44.64
3	4.46	53.52
3-1/2	5.21	62.52
4	5.95	71.40
4-1/2	6.70	80.40
5	7.44	89.25
6	8.93	107.16

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1/2 x</b>		
9/16	0.96	11.52
5/8	1.06	12.72
3/4	1.28	15.36
7/8	1.49	17.88
1	1.70	20.40
1-1/8	1.91	22.92
1-1/4	2.13	25.56
1-3/8	2.34	28.08
1-1/2*	2.55	30.60
1-5/8	2.77	33.24
1-3/4	2.98	35.76
2*	3.40	40.80
2-1/8	3.61	43.34
2-1/4	3.83	45.96
2-1/2*	4.25	51.00
2-3/4	4.68	56.16
3	5.10	61.20
3-1/4	5.53	66.36
3-1/2	5.95	71.40
3-3/4	6.38	76.56
4	6.80	81.60
4-1/4	7.23	86.76
4-1/2	7.65	91.80
4-3/4	8.07	96.84
5	8.50	102.00
5-1/2	9.35	112.20
5-3/4	9.78	117.30
6	10.20	122.40
6-1/2	11.05	132.60
7	11.90	142.80
8	13.60	163.20
9	15.30	183.60
10	17.00	204.00
11	18.70	224.40
12	20.40	244.80
14	23.80	288.00
16	27.20	326.40
18	30.60	367.20
20	34.00	408.00

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>9/16 x</b>		
5/8	1.20	14.34
3/4	1.44	17.16
1	1.91	22.92
1-1/4	2.39	28.68
1-1/2	2.87	34.44
2	3.83	45.96
2-1/2	4.78	57.38

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>5/8 x</b>		
3/4	1.59	19.08
7/8	1.86	22.32
1*	2.13	25.56
1-1/8	2.39	28.68

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>5/8 x</b> (Continued)		
1-1/4	2.65	31.80
1-3/8	2.92	35.04
1-1/2*	3.19	38.28
1-5/8	3.45	41.40
1-3/4	3.72	44.52
2*	4.25	51.00
2-1/4	4.78	57.36
2-1/2	5.31	63.72
2-3/4	5.84	70.08
3*	6.38	76.56
3-1/4	6.90	82.80
3-1/2	7.44	89.28
3-3/4	7.96	95.52
4	8.50	102.00
4-1/4	9.03	108.37
4-1/2	9.56	114.72
4-3/4	10.09	121.08
5	10.63	127.56
5-1/2	11.69	140.16
6	12.75	153.00
6-1/2	13.81	165.72
7	14.88	178.56
8	17.00	204.00
9	19.13	229.44
10	21.25	255.00
11	23.38	280.56
12	25.50	306.00
14	29.75	357.00

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>3/4 x</b>		
7/8	2.23	26.76
1	2.55	30.60
1-1/8	2.87	34.44
1-1/4*	3.19	38.16
1-3/8	3.51	42.12
1-1/2*	3.83	45.84
1-5/8	4.14	49.68
1-3/4	4.46	53.52
2*	5.10	61.20
2-1/4	5.70	68.40
2-1/2*	6.38	76.56
2-3/4	7.01	84.12
3*	7.65	91.80
3-1/4	8.29	99.48
3-1/2	8.93	107.04
3-3/4	9.56	114.72
4	10.20	122.40
4-1/4	10.84	130.05
4-1/2*	11.48	137.64
4-3/4	12.11	145.32
5*	12.75	153.00
5-1/2	14.03	168.36
6	15.30	183.60

\* Size available in 1018 & 11L17

\*\* Sizes are stocked in 10 foot lengths

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# Cold Finished - Flats

Stock Lengths: 12 foot (1018 and 11L17)

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>3/4 x</b> (Continued)		
6-1/2	16.58	198.96
7	17.85	214.20
8	20.40	244.80
9	22.95	275.40
10	25.50	306.00
11	28.05	336.60
12	30.60	367.20
14	35.70	428.40
<b>16**</b>	<b>40.80</b>	<b>408.00</b>
<b>18**</b>	<b>45.90</b>	<b>459.00</b>
<b>20**</b>	<b>51.00</b>	<b>510.00</b>

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>7/8 x</b>		
1	2.98	35.76
1-1/8	3.35	40.20
1-1/4	3.72	44.64
1-3/8	4.09	49.08
1-1/2*	4.46	54.24
1-3/4	5.21	62.52
2	5.90	70.80
2-1/4	6.69	80.40
2-1/2	7.44	89.28
2-3/4	8.18	98.16
3	8.93	107.16
3-1/2	10.41	124.92
4	11.90	142.80
4-1/2	13.39	160.68
5	14.88	178.44
5-1/2	16.36	196.35
6	17.85	214.20
6-1/2	19.34	232.05
7	20.83	249.96
8	23.80	285.60
9	26.78	321.36
10	29.75	357.00
12	35.70	428.40

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1 x</b>		
1-1/8	3.83	45.96
1-1/4*	4.25	51.00
1-3/8	4.68	56.04
1-1/2*	5.10	61.20
1-5/8*	5.53	66.36
1-3/4*	5.95	71.40
1-7/8	6.38	76.56
2*	6.80	81.60
2-1/4*	7.65	91.80
2-1/2*	8.50	102.00
2-3/4	9.35	112.20
3*	10.20	122.40
3-1/4	11.05	132.60
3-1/2	11.90	142.80
3-3/4	12.75	153.00
4*	13.60	163.20

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1 x</b> (Continued)		
4-1/4	14.45	173.40
4-1/2	15.30	183.60
4-3/4	16.15	193.80
5	17.00	204.00
5-1/2	18.70	224.40
6	20.40	244.80
6-1/2	22.10	265.20
7	23.80	285.60
7-1/2	25.50	306.00
8	27.20	326.40
9	30.60	367.20
10	34.00	408.00
11	37.40	448.80
12	40.80	489.60
14	47.60	571.20
<b>16**</b>	<b>54.40</b>	<b>544.00</b>
<b>18**</b>	<b>61.20</b>	<b>612.00</b>
<b>20**</b>	<b>68.00</b>	<b>680.00</b>

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1-1/8 x</b>		
1-1/4	4.78	57.36
1-1/2	5.74	68.88
1-3/4	6.69	80.28
2	7.65	91.80
2-1/4	8.61	103.20
2-1/2	9.56	114.72
2-3/4	10.52	126.21
3	11.48	137.76
4	15.30	183.60
4-1/4	16.26	195.07
5	19.13	229.56
6	22.95	275.40
8	30.60	367.20

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1-1/4 x</b>		
1-3/8	5.84	70.08
1-1/2*	6.38	77.88
1-5/8	6.91	82.92
1-3/4*	7.44	88.80
1-7/8	7.97	95.63
2*	8.50	102.00
2-1/4	9.58	114.99
2-1/2*	10.63	127.56
2-3/4	11.69	140.16
3	12.75	153.00
3-1/4	13.81	165.72
3-1/2*	14.88	178.56
3-3/4	15.94	191.28
4*	17.00	204.00
4-1/2	19.13	229.56
5	21.25	255.00
5-1/2	23.38	280.56
6	25.50	306.00
7	29.70	356.40

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1-1/4 x</b> (Continued)		
8	34.00	408.00
9	38.25	459.00
10	42.50	510.00
11	46.75	561.00
12	51.00	612.00
14	59.50	714.00

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1-3/8 x</b>		
1-1/2	7.01	84.12
2	9.35	112.20
3	14.03	168.36

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1-1/2 x</b>		
1-5/8	8.29	99.48
1-3/4*	8.93	107.16
2*	10.20	122.40
2-1/4	11.48	137.76
2-1/2*	12.75	153.00
2-3/4	14.03	168.36
3*	15.30	183.60
3-1/4	16.58	198.96
3-1/2*	17.85	214.20
4*	20.40	244.80
4-1/2*	22.95	275.40
5*	25.50	306.00
5-1/2	28.05	336.60
6	30.60	367.20
6-1/2	33.15	397.80
7	35.70	428.40
7-1/2	38.25	459.00
8	40.80	489.60
9	45.90	550.80
10	51.00	612.00
10-1/2	53.55	642.60
<b>11**</b>	<b>56.10</b>	<b>561.00</b>
12	61.20	734.40
14	71.40	856.80
<b>16**</b>	<b>81.60</b>	<b>816.00</b>
<b>20**</b>	<b>102.00</b>	<b>1020.00</b>

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1-5/8 x</b>		
2	11.05	132.60
3	16.59	199.08
4	22.10	265.20
6	33.15	397.80

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1-3/4 x</b>		
2	11.90	142.80
2-1/4	13.30	159.60
2-1/2*	14.88	178.50
2-3/4	16.36	196.80
3*	17.85	214.80
3-1/4	19.34	232.08
3-1/2	20.83	249.60

\* Size available in 1018 & 11L17

\*\* Sizes are stocked in 10 foot lengths

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# Cold Finished - Flats

Stock Lengths: 12 foot (1018 and 11L17)

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft)
<b>1-3/4 x</b> (Continued)		
3-3/4	22.31	267.72
4	23.80	285.60
4-1/2	26.78	321.60
5*	29.75	357.60
5-1/2	32.73	392.76
6	35.70	428.40
7	41.65	499.80
8	47.60	571.20
10	59.50	714.00
12	71.40	856.80

<b>2 x</b>		
2-1/4	15.30	183.60
2-1/2*	17.00	204.00
2-3/4	18.70	224.40
3*	20.40	244.80
3-1/4	22.10	265.20
3-1/2*	23.80	285.60
3-3/4	25.50	306.00
4*	27.20	326.40
4-1/4	28.90	347.00
4-1/2	30.60	367.20
5*	34.00	408.00
5-1/2	37.40	448.80
6*	40.80	489.60
6-1/2	44.20	530.40
7	47.60	571.20
8	54.40	652.80
9	61.20	734.40
10	68.00	816.00
11**	74.80	748.00
12	81.60	979.20
14**	95.20	952.00
16**	108.80	1088.00
20**	136.00	1360.00

<b>2-1/4 x</b>		
2-1/2	19.10	229.20
2-3/4	21.04	252.48
3	22.90	274.80
3-1/4	24.86	298.32
3-1/2	26.70	320.40
4	30.60	367.20
4-1/2	34.40	412.80
5	38.25	459.00
5-1/2	42.08	504.90
6	45.90	550.80
8	61.20	734.40
10	76.50	918.00
12	91.80	1101.60

<b>2-1/2 x</b>		
2-3/4	23.38	280.56
3*	25.50	306.00

<b>2-1/2 x</b> (Continued)		
3-1/2	29.75	357.00
4	25.50	408.00
4-1/2	38.25	459.00
5	42.50	510.00
5-1/2	46.75	561.00
6	51.00	612.00
7	59.50	714.00
8	68.00	816.00
8-1/2	72.25	867.00
9	76.50	918.00
10	85.00	1020.00
12	102.00	1224.00
14**	119.00	1190.00
16**	136.00	1360.00
20**	170.00	1700.00

<b>2-3/4 x</b>		
3	28.05	336.60
3-1/2**	32.72	327.25
4**	37.40	374.00
6**	56.10	561.00

<b>3 x</b>		
3-1/2	35.70	428.40
4*	40.80	489.60
4-1/2	45.90	550.80
5	51.00	612.00
5-1/2**	56.10	561.00
6	61.20	734.40
7	71.40	856.80
8	81.60	979.20
9**	91.80	918.00
10	102.00	1224.00
12**	122.40	1224.00
14**	142.80	1428.00
16**	163.20	1632.00
20**	204.00	2040.00

<b>3-1/2 x</b>		
4**	47.60	476.00
4-1/2**	53.50	535.00
5	59.50	595.00
5-1/2**	65.45	654.50
6**	71.40	714.00
7**	83.30	833.00
8**	95.20	952.00
8-1/2**	101.15	1011.50
9**	107.10	1071.00
10**	119.00	1190.00
12**	142.80	1428.00
14**	166.60	1666.00
16**	190.40	1904.00
20**	238.00	2380.00

<b>4 x</b>		
4-1/2**	61.20	612.00
5**	68.00	680.00
5-1/2**	74.80	748.00
6**	81.60	816.00
7**	95.20	952.00
8**	108.80	1088.00
9**	122.40	1224.00
10**	136.00	1360.00
12**	163.20	1632.00
14**	190.40	1904.00
16**	217.60	2176.00
20**	272.00	2720.00

<b>4-1/2 x</b>		
5**	76.50	765.00
5-1/2**	84.15	841.50
6**	91.80	918.00
7**	107.10	1071.00
8**	122.40	1224.00
9**	137.70	1377.00
10**	153.00	1530.00
12**	183.60	1836.00
14**	214.20	2142.00
16**	244.80	2448.00
20**	306.00	3060.00

<b>5 x</b>		
5-1/2**	93.50	935.00
6**	102.00	1020.00
7**	119.00	1190.00
8**	136.00	1360.00
9**	153.00	1530.00
10**	170.00	1700.00
12**	204.00	2040.00
14**	238.00	2380.00
16**	272.00	2720.00
20**	340.00	3400.00

<b>5-1/2 x</b>		
6**	112.20	1122.00

<b>6 x</b>		
7**	143.64	1436.40
8**	163.20	1632.00
9**	183.60	1836.00
10**	204.00	2040.00
12**	244.80	2448.00
14**	285.60	2856.00
16**	326.40	3264.00
20**	408.00	4080.00

\* Size available in 1018 & 11L17

\*\* Sizes are stocked in 10 foot lengths

## Cold Finished Carbon Steel Bars

### Standard Manufacturing Tolerances

#### Undersize Variation in Inches

Shape & Size (inches)	Carbon to .28% Max.	Max. Carbon Over .28% up to .55%	*Stressproof®	Max. Carbon Over .55% or All Carbons Heat Treated	Fatigueproof®
<b>Rounds</b>					
(Cold Drawn or Turned & Polished)					
Up thru 1-1/2	.002	.003	.004	.005	.005
Over 1-1/2 thru 2-1/2	.003	.004	.005	.006	.006
Over 2-1/2 thru 4	.004	.005	.006	.007	.006
Over 4 thru 6	.005	.006	---	.008	---
Over 6 thru 8	.006	.007	---	.009	---
Over 8 thru 9	.007	.008	---	.010	---
Over 9	.008	.009	---	---	---
<b>Hexagons</b>					
Up thru 3/4	.002	.003	.004	.006	---
Over 3/4 thru 1-1/2	.003	.004	.005	.007	---
Over 1-1/2 thru 2-1/2	.004	.005	.006	.008	---
Over 2-1/2 thru 3-1/8	.005	.006	---	.009	---
<b>Squares</b>					
Up thru 3/4	.002	.004	---	.007	---
Over 3/4 thru 1-1/2	.003	.005	---	.008	---
Over 1-1/2 thru 2-1/2	.004	.006	---	.009	---
Over 2-1/2 thru 3-1/8	.005	.008	---	.011	---
<b>Flats (Width)<sup>(1)</sup></b>					
Up thru 3/4	.003	.004	---	.008	---
Over 3/4 thru 1-1/2	.004	.005	---	.010	---
Over 1-1/2 thru 3	.005	.006	---	.012	---
Over 3 thru 4	.006	.008	---	.016	---
Over 4 thru 6	.008	.010	---	.020	---
Over 6	.013	.015	---	---	---

\* For Cold Drawn, Ground and Polished or Turned, Ground and Polished tolerances for Stressproof®, see below.

<sup>(1)</sup> Tolerances for Flats apply to thickness as well as width and include 16", 18" and 20" wide flats.

Note: Rough turned 1018 rounds are produced to an oversize tolerance of +1/8" to +3/16" oversize.

Shape & Size (inches)	Cold Drawn Turned, Ground & Polished Includes Stressproof®	Bearing Shaft Quality (all undersize)
<b>Rounds</b>		
Up thru 1-1/2	.0010	.0005/.0015
Over 1-1/2 thru 2-1/2	.0015	.0005/.0020
Over 2-1/2 thru 3	.0020	.0005/.0025
Over 3 thru 4	.0030	.0005/.0035
Over 4 thru 6	.0040*	.0005/.0045
Over 6	.0050*	n/a

\* For nonresulphurized steels (steels specified to maximum sulphur limits under 0.08%) or for steels thermally treated, the tolerance is increased by .001"

## Hot Rolled Carbon Bars

### Grade Descriptions

Hot rolled carbon bars, often referred to as "SBQ" or "special bar quality", are known for their superior mechanical properties over commodity grades of merchant bar. These products are produced to specific chemistry and mechanical properties ranges and often are used in engineered applications such as gears, shafts, axles covering markets such as automotive, heavy truck and agricultural equipment.

**CQ** or Commercial Quality Steel is ordinarily produced from a low carbon steel. Specific chemistry and mechanical properties are not inherit in CQ products.

**A36** is produced to a 36 ksi min yield point. A mild carbon steel with many uses that works well for fabricating, welding, bending and cold forming.

**1018** is a general purpose low carbon steel with good case hardening qualities. It is especially suited to cold forming and bending operations and has excellent weldability.

**1044** is a medium carbon steel used when greater strength is needed. Has good heat treating properties when induction or flame hardened.

**1045** is a medium carbon steel used extensively in induction hardening applications. This is not normally considered a screw machine steel and is only fair for brazing and welding. 1045 hot rolled can be used for applications requiring more strength and wear resistance than the low carbon mild steels can provide.

**1117** is a low carbon, high manganese steel. Machinability is improved over 1018 and case hardening is deep and uniform, supported by a tough ductile core. A free machining grade with improved mechanical properties suitable for carburized parts.

**1141** is a medium carbon, special quality, manganese steel with improved machinability and better heat treatment response. Surface hardness is deeper and more uniform than plain carbon steels.

**1144** is a resulphurized carbon steel containing manganese and sulphur to provide a free-machining steel. It is recommended especially for high-production automatic machine products and machined parts requiring higher strength and wear resistance than is possible with lower carbon steels.

## Hot Rolled - Rounds

Stock Lengths: 20 foot (A36, 1018, 1045, 1117, & 1144 grades available.)

Diameter (Inches)	Weight (lbs./foot)	CQ	A-36	1018	1045	1117	1141	1144
3/16	0.094	●						
1/4	0.167	●	●					
5/16	0.260	●	●					
3/8	0.375	●	●					
7/16	0.510	●	●					
1/2	0.670	●	●					
9/16	0.850		●					
5/8	1.040		●					
3/4	1.500		●		●			
7/8	2.050		●		●			
1	2.670		●		●			
1-1/8	3.380		●		●			
1-1/4	4.170		●		●			
1-3/8	5.050		●		●			
1-1/2	6.010		●		●			
1-5/8	7.050		●		●			
1-3/4	8.180		●		●			
1-7/8	9.390		●		●			
2	10.680		●		●		●	
2-1/8	12.234		●		●			
2-1/4	13.704		●		●		●	
2-3/8	15.258		●		●			
2-1/2	16.896		●		●		●	
2-5/8	18.724		●		●			
2-3/4	20.533		●		●		●	
2-7/8	22.426		●		●			
3	24.645		●		●	●	●	●
3-1/8	26.717			●	●			
3-1/4	28.872			●	●	●	●	●
3-3/8	31.111			●	●			
3-1/2	33.434			●	●	●	●	●
3-5/8	36.070			●	●			
3-3/4	38.568			●	●	●	●	●
4	43.814			●	●	●	●	●



## Hot Rolled - Rounds

**Stock Lengths: 20 foot** (A36, 1018, 1045, 1117, & 1144 grades available.)

Diameter (inches)	Weight (lbs./foot)	CQ	A-36	1018	1045	1117	1141	1144
4-1/8	46.562			●	●			
4-1/4	49.394			●	●	●	●	●
4-3/8	52.310			●	●			
4-1/2	55.309			●	●	●	●	●
4-5/8	58.685				●			
4-3/4	61.859			●	●	●	●	●
5	68.459			●	●	●	●	●
5-1/4	75.393			●	●	●	●	●
5-1/2	82.661			●	●	●	●	●
5-3/4	91.359			●	●	●	●	●
6	99.343			●	●	●	●	●
6-1/4	107.662			●	●	●		●
6-1/2	116.315			●	●	●	●	●
6-3/4	126.162			●	●	●		●
7	135.515			●	●	●	●	●
7-1/4	145.202			●	●			●
7-1/2	155.224			●	●	●	●	●
7-3/4	165.580			●	●			●
8	176.271			●	●	●	●	●
8-1/4	187.296			●	●	●		●
8-1/2	199.737			●	●	●	●	●
8-3/4	211.463			●	●			●
9	223.522			●	●	●	●	●
9-1/2	248.207			●	●	●	●	●
9-3/4	263.735				●			
10	277.171			●	●	●	●	●
10-1/2	305.044			●	●	●	●	●
11	334.253			●	●	●		●
11-1/2	364.796			●	●			
12	396.675			●	●	●		●
12-1/2	429.889			●	●			
13	466.624							

# Hot Rolled - Flats (A-36)

Stock Lengths: 20 foot

Size (inches)	Weight (lbs./foot)
<b>1/4 x</b>	
1/2	0.430
5/8	0.530
3/4	0.640
7/8	0.750
1	0.850
1-1/4	1.060
1-3/8	1.170
1-1/2	1.280
1-5/8	1.380
1-3/4	1.490
2	1.700
2-1/4	1.910
2-1/2	2.130
2-3/4	2.330
3	2.550
3-1/4	2.760
3-1/2	2.980
3-3/4	3.190
4	3.400
4-1/4	3.610
4-1/2	3.830
5	4.250
5-1/2	4.680
6	5.100
6-1/2	5.530
7	5.950
7-1/2	6.375
8	6.800
9	7.650
10	8.500
11	9.350
11-1/2	9.870
12	10.200

Size (inches)	Weight (lbs./foot)
<b>5/16 x</b>	
1/2	0.530
3/4	0.797
1	1.060
1-1/4	1.330
1-1/2	1.590
1-3/4	1.860
2	2.130
2-1/4	2.390
2-1/2	2.660
2-3/4	2.920
3	3.190
3-1/2	3.720
4	4.250
4-1/2	4.780
5	5.310
5-1/2	5.840
6	6.380
7	7.440
8	8.500

Size (inches)	Weight (lbs./foot)
<b>3/8 x</b>	
1/2	0.640
5/8	0.800
3/4	0.960
7/8	1.120
1	1.270
1-1/4	1.590
1-3/8	1.750
1-1/2	1.910
1-5/8	2.072
1-3/4	2.230
2	2.550
2-1/4	2.870
2-1/2	3.180
2-3/4	3.500
3	3.830
3-1/4	4.140
3-1/2	4.460
3-3/4	4.780
4	5.100
4-1/2	5.740
5	6.380
5-1/2	7.010
6	7.650
6-1/2	8.290
7	8.930
7-1/2	9.560
8	10.200
9	11.480
10	12.800
11	14.025
12	15.300
14	17.850

<b>7/16 x</b>	
2	2.970

Size (inches)	Weight (lbs./foot)
<b>1/2 x</b>	
3/4	1.280
1	1.700
1-1/4	2.130
1-1/2	2.550
1-5/8	2.760
1-3/4	2.975
2	3.400
2-1/4	3.830
2-1/2	4.250
2-3/4	4.680
3	5.100
3-1/4	5.530
3-1/2	5.950
3-3/4	6.380
4	6.800
4-1/2	7.650
5	8.500
5-1/2	9.350

Size (inches)	Weight (lbs./foot)
<b>1/2 x</b>	
6	10.200
6-1/2	11.060
7	11.900
7-1/2	12.750
8	13.600
9	15.300
10	17.000
11	18.700
12	20.400
14	23.800

Size (inches)	Weight (lbs./foot)
<b>5/8 x</b>	
1	2.130
1-1/4	2.660
1-1/2	3.190
1-3/4	3.720
2	4.250
2-1/4	4.780
2-1/2	5.310
2-3/4	5.840
3	6.380
3-1/4	6.910
3-1/2	7.440
4	8.500
4-1/2	9.560
5	10.630
5-1/2	11.690
6	12.750
7	14.870
8	17.000
9	19.130
10	21.250
11	23.375
12	25.500
14	29.750

Size (inches)	Weight (lbs./foot)
<b>3/4 x</b>	
1	2.550
1-1/8	2.870
1-1/4	3.190
1-1/2	3.830
1-3/4	4.460
2	5.100
2-1/4	5.740
2-1/2	6.380
2-3/4	7.010
3	7.650
3-1/4	8.290
3-1/2	8.930
4	10.200
4-1/2	11.480
5	12.750
5-1/2	14.030
6	15.300
6-1/2	16.575

Thicknesses 3/16" and under, see Hot Rolled Strip (pg. 1-20).

Continued on next page ►

# Hot Rolled - Flats (A-36)

Stock Lengths: 20 foot

Size (inches)	Weight (lbs./foot)
<b>3/4 x</b>	
7	17.900
8	20.400
9	22.950
10	25.500
11	28.050
12	30.600
14	35.700

Size (inches)	Weight (lbs./foot)
<b>7/8 x</b>	
1-1/4	3.720
1-1/2	4.460
1-3/4	5.210
2	5.950
2-1/2	7.400
2-3/4	8.180
3	8.930
3-1/2	10.410
4	11.900
4-1/2	13.390
5	14.880
6	17.850
7	20.830
8	23.800

Size (inches)	Weight (lbs./foot)
<b>1 x</b>	
1-1/4	4.250
1-1/2	5.100
1-3/4	5.950
2	6.800
2-1/4	7.650
2-1/2	8.500
2-3/4	9.350
3	10.200
3-1/4	11.050
3-1/2	11.900
4	13.600
4-1/2	15.300
5	17.000
5-1/2	18.700
6	20.400
7	23.800
8	27.200
9	30.600
10	34.000
12	40.800
14	47.600

Size (inches)	Weight (lbs./foot)
<b>1-1/8 x</b>	
2	7.650
3	11.480
4	15.300
5	19.130
6	22.950
8	30.600

Size (inches)	Weight (lbs./foot)
<b>1-1/4 x</b>	
1-1/2	6.380
1-3/4	7.440
2	8.500
2-1/4	9.560
2-1/2	10.630
2-3/4	11.690
3	12.750
3-1/4	13.810
3-1/2	14.880
4	17.000
4-1/2	19.130
5	21.250
5-1/2	23.380
6	25.500
7	29.750
8	34.000
10	42.500
12	51.000

Size (inches)	Weight (lbs./foot)
<b>1-1/2 x</b>	
1-3/4	8.925
2	10.200
2-1/4	11.480
2-1/2	12.750
2-3/4	14.030
3	15.300
3-1/4	16.580
3-1/2	17.850
4	20.400
4-1/2	22.950
5	25.500
5-1/2	28.050
6	30.600
7	35.700
8	40.800
10	51.000
12	61.200

Size (inches)	Weight (lbs./foot)
<b>1-3/4 x</b>	
2	11.900
2-1/2	14.880
3	17.850
3-1/2	20.830
4	23.800
4-1/2	26.790
5	29.750
5-1/2	32.730
6	35.700
7	41.600

Size (inches)	Weight (lbs./foot)
<b>2 x</b>	
2-1/4	15.300
2-1/2	17.000
3	20.400
3-1/2	23.800
4	27.200
4-1/2	30.600
5	34.000
5-1/2	37.400
6	40.800
7	47.600
8	54.400
10	68.060
12	81.600

Size (inches)	Weight (lbs./foot)
<b>2-1/4 x</b>	
3	22.950
4	30.600
5	38.250

Size (inches)	Weight (lbs./foot)
<b>2-1/2 x</b>	
3	25.500
3-1/2	29.750
4	34.000
4-1/2	38.250
5	42.500
5-1/2	46.750
6	51.000

Size (inches)	Weight (lbs./foot)
<b>3 x</b>	
3-1/2	35.700
4	40.800
4-1/2	45.900
5	51.000
6	61.200

Size (inches)	Weight (lbs./foot)
<b>3-1/2 x</b>	
4	47.600
5	51.000
6	71.400

Size (inches)	Weight (lbs./foot)
<b>4 x</b>	
4-1/2	61.200
5	68.000
6	81.600

**Hot Rolled - Strip**

Stock Lengths: 20 foot

B.W. Gauge and Size	Weight (lbs./foot)	Stock Lengths
<b>1/8 x</b>		
1/2	.210	20'
5/8	.270	20'
3/4	.320	20'
7/8	.370	20'
1	.430	20'
1-1/4	.530	20'
1-3/8	.590	20'
1-1/2	.640	20'
1-3/4	.740	20'
2	.850	20'
2-1/4	.960	20'
2-1/2	1.060	20'
2-3/4	1.170	20'
3	1.280	20'
3-1/2	1.490	20'
4	1.700	20'
4-1/2	1.910	20'
5	2.130	20'
6	2.550	20'
8	3.400	20'
10	4.250	20'
12	5.130	20'

B.W. Gauge and Size	Weight (lbs./foot)	Stock Lengths
<b>3/16 x</b>		
1/2	.320	20'
5/8	.400	20'
3/4	.480	20'
7/8	.557	20'
1	.640	20'
1-1/4	.800	20'
1-3/8	.880	20'
1-1/2	.960	20'
1-3/4	1.120	20'
2	1.280	20'
2-1/4	1.430	20'
2-1/2	1.590	20'
2-3/4	1.750	20'
3	1.910	20'
3-1/4	2.070	20'
3-1/2	2.230	20'
4	2.550	20'
4-1/2	2.870	20'
5	3.190	20'
5-1/2	3.510	20'
6	3.820	20'
8	5.100	20'
10	6.380	20'
12	7.650	20'

Note: Material is also available in 12' lengths and in Pickled & Oiled, please inquire with Alro Sales.

## Hot Rolled - Flats (M1044)

Stock Lengths: 20 foot

Size (inches)	Weight (lbs./foot)
<b>1/4 x</b>	
1	0.850
1-1/4	1.060
1-1/2	1.275
2	1.700

Size (inches)	Weight (lbs./foot)
<b>3/8 x</b>	
1	1.280
1-1/4	1.590
1-1/2	1.910
2	2.550
2-1/2	3.180
3	3.830
4	5.100
5	6.380
6	7.650

Size (inches)	Weight (lbs./foot)
<b>1/2 x</b>	
1	1.700
1-1/2	2.550
2	3.400
2-1/2	4.250
3	5.100
4	6.800
5	8.500
6	10.200

Size (inches)	Weight (lbs./foot)
<b>5/8 x</b>	
2	4.250
2-1/2	5.310
8	17.000

Size (inches)	Weight (lbs./foot)
<b>3/4 x</b>	
1-1/2	3.830
2	5.100
2-1/2	6.380
3	7.650
3-1/2	8.930
4	10.200
5	12.750
6	15.300

Size (inches)	Weight (lbs./foot)
<b>1 x</b>	
2	6.80
2-1/2	8.500
3	10.200
4	13.600
5	17.000
6	20.400

Size (inches)	Weight (lbs./foot)
<b>1-1/4 x</b>	
2	8.500
3-1/2	14.880
4	17.000
5	20.250
6	25.500
8	34.000

Size (inches)	Weight (lbs./foot)
<b>1-1/2 x</b>	
2	10.200
2-1/2	12.750
3	15.300
4	20.400
5	25.500

Size (inches)	Weight (lbs./foot)
<b>2 x</b>	
3	20.400
4	27.200
5	34.000
6	40.800

## Hot Rolled - Squares

Stock Lengths: 20 foot

Size (inches)	Weight (lbs./foot)
3/8	0.480
1/2	0.850
5/8	1.330
3/4	1.910
7/8	2.600
1	3.400
1-1/4	5.310

Size (inches)	Weight (lbs./foot)
1-1/2	7.650
1-3/4	10.400
2	13.600
2-1/4	17.210
2-1/2	21.300
2-3/4	25.700
3	30.600

Size (inches)	Weight (lbs./foot)
3-1/2	41.700
4	54.400
4-1/2	68.900
5	85.000
6	122.400

## Concrete Reinforcing Bars

Material Available in Grades 40 and 60

Stock Lengths: 20 foot and 40 foot

Size (inches)	Bar Number	Weight (lbs./foot)
3/8 Rd.	3	.376
1/2 Rd.	4	.668
5/8 Rd.	5	1.043
3/4 Rd.	6	1.502
7/8 Rd.	7	2.044
1 Rd.	8	2.670
1-1/8 Rd.	9	3.379

*Round bars equal in cross sectional area to the standard square sizes indicated*



Alro will deliver your Concrete Reinforcement order to your facility or job site

## Concrete Reinforcing Mesh

6 x 6 x 6 Gage x 6 Gage ..... 5' x 150'

6 x 6 x 10 Gage x 10 Gage ..... 5' x 150'

## Hot Rolled Steel Bars

### Permissible Variations in Cross Section for Hot-Wrought Round, Square and Round-Cornered Square Bars of Steel

Specified Sizes (inches)	Permissible Variation From Specified Size, in. <sup>A</sup>		Out-of-Round or Out-of-Square <sup>B</sup> (inches)
	Over	Under	
7/16 thru 5/8	0.007	0.007	0.010
Over 5/8 thru 7/8	0.008	0.008	0.012
Over 7/8 thru 1	0.009	0.009	0.013
Over 1 thru 1-1/8	0.010	0.010	0.015
Over 1-1/8 thru 1-1/4	0.011	0.011	0.016
Over 1-1/4 thru 1-3/8	0.012	0.012	0.018
Over 1-3/8 thru 1-1/2	0.014	0.014	0.021
Over 1-1/2 thru 2	1/64	1/64	0.023
Over 2 thru 2-1/2	1/32	0	0.023
Over 2-1/2 thru 3-1/2	3/64	0	0.035
Over 3-1/2 thru 4-1/2	1/16	0	0.046
Over 4-1/2 thru 5-1/2	5/64	0	0.058
Over 5-1/2 thru 6-1/2	1/8	0	0.070
Over 6-1/2 thru 8-1/4	5/32	0	0.085
Over 8-1/4 thru 9-1/2	3/16	0	0.100
Over 9-1/2 thru 10	1/4	0	0.120

<sup>A</sup> Steel bars are regularly cut to length by shearing or hot sawing, which can cause end distortion resulting in those portions of the bar being outside the applicable size tolerance. When this end condition is objectionable, a machine cut end should be considered.

<sup>B</sup> Out-of-round is the difference between the maximum and minimum diameters of the bar, measured at the same transverse cross section. Out-of-square section is the difference in perpendicular distance between opposite faces, measured at the same transverse cross section.

## Square Edge and Round Edge Flats

### Permissible Variations in Thickness and Width for Hot-Wrought Square Edge and Round Edge Flat Bar

Specified Widths (inches)	Permissible variations in thickness, for thickness given over and under in <sup>B</sup>							Widths	
	0.203 up to 0.230	0.233 up to 0.250	0.25 up to 0.50	0.50 up to 1.00	1.00 up to 2.00	2.00 up to 3.00	Over 3.00	Over	Under
Up thru 1	.007	.007	.008	.010	....	....	....	1/64	1/64
Over 1 thru 2	.007	.007	.012	.015	1/32	....	....	1/32	1/32
Over 2 thru 4	.008	.008	.015	.020	1/32	3/64	3/64	1/16	1/32
Over 4 thru 6	.009	.009	.015	.020	1/32	3/64	3/64	3/32	1/16
Over 6 thru 8	*	.015	.018	.025	1/32	3/64	1/16	1/8	3/32**

<sup>A</sup> When a square is held against a face and an edge of a square edge flat bar, the edge shall not deviate by more than 3° or 5% of the thickness.

<sup>B</sup> Steel bars are regularly cut to length by shearing or hot sawing, which can cause end distortion resulting in those portions of the bar being outside the applicable size tolerance. When this end condition is objectionable, a machine cut end should be considered.

\* Flats over 6 to 8 in., incl, in width, are not available as hot-wrought steel bars in thickness under 0.230 in.

## Straightness \*Tolerances Steel Bars

### Hot Rolled Bars

Straightness is a perishable tolerance; therefore, reasonable care in handling and storage should be taken to avoid bending the bars. Deviation from straightness is measured by placing the bar on a level table so that the arc or deviation from straightness is horizontal, and the depth of the arc is measured with a steel scale and a straight edge. A tightly-stretched string can be used as a substitute for a steel scale.

**Hot Rolled Bars**      1/4" in any 5 ft. or  $1/4 \times \frac{\text{no. of ft. of length}}{5}$  inches

**Hot Rolled,  
Thermally Treated**      1/4" in any 5 ft. or  $1/4 \times \frac{\text{no. of ft. of length}}{5}$  inches

\* There is not a published flatness or straightness tolerance for flat bars.

## Straightness \*Tolerances Steel Bars

### Cold Finished Bars

Form Size	Length (in Feet)	Maximum Curvature (Depth of arc in inches)
<b>Rounds</b>		
<b>Less than .28 Carbon</b>		
Less than 5/8"	Less than 15'	1/8" in any 10' portion of the total length
Less than 5/8"	15' and over	1/8" in any 10' portion of the total length
5/8" and over	Less than 15'	1/16" in any 10' portion of the total length
5/8" and over	15' and over	1/8" in any 10' portion of the total length
<b>.28 Carbon and over and all heat treated material</b>		
Less than 5/8"	Less than 15'	3/16" in any 10' portion of the total length
Less than 5/8"	15' and over	5/16" in any 10' portion of the total length
5/8" and over	Less than 15'	1/8" in any 10' portion of the total length
5/8" and over	15' and over	3/16" in any 10' portion of the total length
<b>Hexagons &amp; Squares</b>		
<b>Less than .28 Carbon</b>		
Less than 5/8"	Less than 15'	3/16" in any 10' portion of the total length
Less than 5/8"	15' and over	5/16" in any 10' portion of the total length
5/8" and over	Less than 15'	1/8" in any 10' portion of the total length
5/8" and over	15' and over	3/16" in any 10' portion of the total length
<b>.28 Carbon and over and all heat treated material</b>		
Less than 5/8"	Less than 15'	1/4" in any 10' portion of the total length
Less than 5/8"	15' and over	3/8" in any 10' portion of the total length
5/8" and over	Less than 15'	3/16" in any 10' portion of the total length
5/8" and over	15' and over	1/4" in any 10' portion of the total length

\* There is not a published flatness or straightness tolerance for flat bars.