

# Red Metals

## Brass, Copper and Bronze Products

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**WARNING:** These products can potentially expose you to chemicals including Nickel, Chromium, Lead, Cobalt, Mercury and Beryllium, which are known to the state of California to cause cancer and/or birth defects or other reproductive harm. For more information, visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# 360 Free Cutting Brass - Round Rod

## CDA Alloy 360 (ASTM B16)

Standard Lengths: up thru 6" Diameter: 12 ft. (+/- 1/2")

Over 6" Diameter: Approx. 6 ft. - 8 ft. random

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)	Diameter Tolerance (+ or -)
3/32	0.025	0.300	.0013
1/8	0.045	0.540	.0013
5/32	0.070	0.840	.0015
11/64	0.085	1.020	.0015
3/16	0.101	1.210	.0015
13/64	0.119	1.420	.0015
7/32	0.138	1.656	.0015
15/64	0.159	1.908	.0015
1/4	0.181	2.172	.0015
17/64	0.204	2.448	.0015
9/32	0.230	2.760	.0015
19/64	0.254	3.040	.0015
5/16	0.283	3.396	.0015
21/64	0.311	3.732	.0015
11/32	0.342	4.104	.0015
23/64	0.373	4.470	.0015
3/8	0.407	4.884	.0015
25/64	0.441	5.294	.0015
13/32	0.477	5.724	.0015
7/16	0.554	6.648	.0015
29/64	0.594	7.120	.0015
15/32	0.635	7.620	.0015
31/64	0.678	8.130	.0015
1/2	0.723	8.676	.0015
33/64	0.769	9.228	.0015
17/32	0.816	9.792	.002
35/64	0.865	10.380	.002
9/16	0.915	10.980	.002
19/32	1.019	12.228	.002
39/64	1.074	12.888	.002
5/8	1.130	13.560	.002
41/64	1.187	14.240	.002
21/32	1.245	14.440	.002
11/16	1.367	16.401	.002
23/32	1.494	17.924	.002
3/4	1.627	19.524	.002
25/32	1.765	21.180	.002
13/16	1.909	22.908	.002
27/32	2.059	24.702	.002
7/8	2.215	26.580	.002
57/64	2.295	27.540	.002
29/32	2.375	28.500	.002
15/16	2.542	30.504	.002

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)	Diameter Tolerance (+ or -)
31/32	2.714	32.568	.002
1	2.893	34.716	.002
1-1/16	3.265	39.180	.0025
1-1/8	3.660	43.920	.0025
1-3/16	4.078	48.936	.0025
1-1/4	4.519	54.238	.0025
1-5/16	4.982	59.784	.0025
1-3/8	5.468	65.616	.0025
1-7/16	5.976	71.712	.0025
1-1/2	6.507	78.084	.0025
1-9/16	7.060	84.720	.0025
1-5/8	7.637	91.644	.0025
1-11/16	8.235	98.820	.0025
1-3/4	8.857	106.284	.0025
1-13/16	9.500	114.000	.0025
1-7/8	10.170	122.040	.0025
1-15/16	10.856	130.222	.0025
2	11.568	138.816	.0025
2-1/16	12.302	147.624	.0025
2-1/8	13.059	156.708	.003
2-3/16	13.838	166.056	.003
2-1/4	14.640	175.680	.004
2-5/16	15.465	185.58	.004
2-3/8	16.312	195.744	.004
2-7/16	17.182	206.184	.004
2-1/2	18.075	216.900	.004
2-9/16	18.999	227.98	.004
2-5/8	19.927	239.124	.004
2-3/4	21.870	262.440	.004
2-7/8	23.904	286.848	.0035
3	26.027	312.324	.005
3-1/8	28.242	338.904	.005
3-1/4	30.546	366.552	.005
3-3/8	32.957	395.48	.005
3-1/2	35.426	425.112	.005
3-5/8	38.020	456.24	.005
3-3/4	40.668	488.016	.006
4	46.271	555.252	.006
4-1/4	52.236	626.832	.006
4-1/2	58.562	702.744	.007
4-3/4°	65.249	782.988	+.050/-0
5°	72.298	867.576	+.050/-0
5-1/4°	79.704	956.448	+.050/-0

\* Provided as Cast & Turned only.

Continued on next page



# 360 Free Cutting Brass - Round Rod

## CDA Alloy 360 (ASTM B16)

Standard Lengths: up thru 6" Diameter: 12 ft. (+/- 1/2")

Over 6" Diameter: Approx. 6 ft. - 8 ft. random

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)	Diameter Tolerance (+ or -)
5-1/2°	87.481	1049.772	+0.050/-0
5-3/4°	95.615	1147.380	+0.050/-0
6°	104.110	1249.320	+0.050/-0
6-1/2*°	122.184	977.472	+0.050/-0
7°	141.705	1133.640	+0.050/-0
7-1/2*°	162.672	1301.376	+0.050/-0
8*	185.084	1480.672	+0.050/-0

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)	Diameter Tolerance (+ or -)
9*°	234.247	1873.976	+0.050/-0
10*°	289.194	2313.552	+0.115/-0
11*°	350.100	2800.800	+0.115/-0
12**°	416.439	2498.634	NA

\*Stock Length - 6 to 8' randoms. Weight is calculated from 8' lengths.

\*\* Weight is calculated from 6' lengths.

° Provided as Cast & Turned only.

# 360 Free Cutting Brass - Square Rod

## CDA Alloy 360 (ASTM B16)

Standard Lengths: 12 ft. (+/- 1/2")

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)	Diameter Tolerance (+ or -)
1/8	.058	.696	.002
3/16	.130	1.560	.003
1/4	.230	2.760	.0035
5/16	.360	4.320	.0035
3/8	.518	6.216	.0035
7/16	.705	8.460	.0035
1/2	.921	11.052	.0035
9/16	1.166	13.992	.0045
5/8	1.439	17.268	.0045
11/16	1.741	20.892	.0045
3/4	2.072	24.864	.0045
13/16	2.432	29.184	.0045
7/8	2.821	33.852	.0045

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)	Diameter Tolerance (+ or -)
1	3.684	44.208	.0045
1-1/8	4.663	55.956	.005
1-1/4	5.756	69.072	.005
1-3/8	6.965	83.580	.005
1-1/2	8.289	99.468	.005
1-5/8	9.728	116.736	.005
1-3/4	11.282	135.384	.005
2	14.736	176.832	.005
2-1/4	18.650	223.800	.007
2-1/2	23.025	276.300	.008
3	33.156	397.872	.009
3-1/2	45.129	541.548	.011
4	58.944	707.328	.012

Note: Special sizes and alloys available on mill orders.

# 360 Free Cutting Brass - Hexagon Rod

**CDA Alloy 360 (ASTM B16)**

Standard Lengths: 12 ft. (+/- 1/2")

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)	Diameter Tolerance (+ or -)
1/8	.050	.600	.0025
3/16	.112	1.344	.003
7/32	.153	1.830	.003
1/4	.200	2.400	.003
9/32	.252	3.020	.003
5/16	.312	3.744	.003
11/32	.376	4.510	.003
3/8	.449	5.388	.003
7/16	.611	7.332	.003
15/32	.700	8.400	.003
1/2	.798	9.576	.003
9/16	1.010	12.120	.004
19/32	1.125	13.500	.004
5/8	1.247	14.964	.004
11/16	1.509	18.108	.004
3/4	1.796	21.552	.004
13/16	2.108	25.296	.004
7/8	2.444	29.328	.004
15/16	2.806	33.672	.004
1	3.193	38.316	.004
1-1/16	3.604	43.248	.005
1-1/8	4.041	48.492	.005

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)	Diameter Tolerance (+ or -)
1-3/16	4.502	54.024	.005
1-1/4	4.989	59.868	.005
1-5/16	5.500	66.000	.005
1-3/8	6.036	72.432	.005
1-7/16	6.598	79.176	.005
1-1/2	7.184	86.208	.005
1-5/8	8.431	101.172	.005
1-3/4	9.778	117.336	.005
1-13/16	10.489	125.868	.005
1-7/8	11.225	134.700	.005
2	12.771	153.252	.005
2-1/8	14.417	173.004	.006
2-1/4	16.164	193.968	.007
2-3/8	18.009	216.108	.007
2-1/2	19.955	239.460	.008
2-5/8	22.000	264.000	.008
2-3/4	24.145	289.740	.008
3	28.735	344.820	.009
3-1/8	31.180	374.160	.009
3-1/4	33.724	404.688	.009
3-1/2	39.112	469.344	.011
4	51.085	613.020	.012

*Note: Special sizes and alloys available on mill orders.*

## 360 Free Cutting Brass Benefits:

- Excellent Machinability
- Screw Machine Jobs
- Finest Appearance
- Lower Finishing Costs
- Corrosion Resistance
- High Scrap-Value Recovery



# 360 Free Cutting Brass - Flat Bar

## CDA Alloy 360 (ASTM B16)

Standard Lengths: 12 ft. random

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1/8</b>		
1/4	.115	1.380
3/8	.173	2.070
1/2	.230	2.760
5/8	.287	3.444
3/4	.345	4.140
7/8	.408	4.836
1	.460	5.520
1-1/4	.575	6.900
1-1/2	.690	8.280
1-3/4	.805	9.660
2	.921	11.052
2-1/2	1.151	13.812
3	1.381	16.572
4	1.842	22.104
<b>3/16 x</b>		
1/4	.172	2.064
3/8	.259	3.108
1/2	.345	4.140
5/8	.431	5.172
3/4	.518	6.216
1	.690	8.280
1-1/4	.863	10.356
1-1/2	1.036	12.432
1-3/4	1.208	14.496
2	1.381	16.572
3	2.072	24.864
4	2.763	33.156
<b>1/4 x</b>		
5/16	.287	3.444
3/8	.345	4.140
1/2	.461	5.532
5/8	.576	6.912
3/4	.690	8.280
7/8	.805	9.660
1	.921	11.052
1-1/4	1.151	13.812
1-1/2	1.381	16.572
1-3/4	1.611	19.332
2	1.842	22.104
2-1/4	2.072	24.864
2-1/2	2.302	27.624
3	2.763	33.156
3-1/2	3.223	38.676
4	3.684	44.208
4-1/2	4.144	49.734
5	4.605	55.260
6	5.510	66.120

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>5/16 x</b>		
3/8	.431	5.172
1/2	.575	6.900
5/8	.719	8.628
3/4	.863	10.356
1	1.151	13.812
1-1/4	1.439	17.268
1-1/2	1.726	20.712
2	2.302	27.624
<b>3/8 x</b>		
1/2	.690	8.280
5/8	.863	10.356
3/4	1.036	12.432
7/8	1.208	14.496
1	1.381	16.572
1-1/4	1.726	20.712
1-1/2	2.072	24.864
1-3/4	2.417	29.004
2	2.763	33.156
2-1/2	3.453	41.436
3	4.144	49.728
3-1/2	4.835	58.020
4	5.526	66.312
6	8.289	99.468
<b>1/2 x</b>		
5/8	1.151	13.812
3/4	1.381	16.572
7/8	1.611	19.332
1	1.842	22.104
1-1/4	2.302	27.624
1-1/2	2.763	33.156
1-3/4	3.223	38.676
2	3.684	44.208
2-1/4	4.144	49.728
2-1/2	4.605	55.260
3	5.526	66.312
3-1/2	6.447	77.364
4	7.368	88.416
4-1/2	8.289	99.468
5	9.210	110.520
6	11.052	132.624
<b>5/8 x</b>		
3/4	1.726	20.712
7/8	2.014	24.168
1	2.302	27.624
1-1/4	2.878	34.536
1-1/2	3.453	41.436
1-3/4	4.029	48.348
2	4.605	55.260
2-1/2	5.756	69.072
3	6.907	82.884
4	9.210	110.520

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>3/4 x</b>		
7/8	2.417	29.004
1	2.763	33.156
1-1/8	3.108	37.299
1-1/4	3.453	41.436
1-1/2	4.144	49.728
1-3/4	4.835	58.020
2	5.526	66.312
2-1/4	6.216	74.592
2-1/2	6.907	82.884
3	8.289	99.468
4	11.052	132.624
<b>7/8 x</b>		
1	3.223	38.676
2	6.447	77.364
<b>1 x</b>		
1-1/4	4.605	55.260
1-1/2	5.526	66.312
1-3/4	6.447	77.364
2	7.368	88.416
2-1/2	9.210	110.520
3	11.052	132.624
3-1/2	12.894	154.728
4	14.736	176.832
5	18.420	221.040
6	22.104	265.248
<b>1-1/4 x</b>		
1-1/2	6.907	82.884
1-3/4	8.058	96.696
2	9.210	110.520
2-1/2	11.512	138.144
3	13.815	165.780
4	18.420	221.040
<b>1-1/2 x</b>		
2	11.052	132.624
2-1/2	13.815	165.780
3	16.578	198.936
4	22.104	265.248
<b>1-3/4 x</b>		
2	12.894	154.728
3	19.341	232.092
<b>2 x</b>		
2-1/2	18.420	221.040
3	22.104	265.248
4	29.472	353.664
<b>2-1/2 x</b>		
3	27.630	331.560
<b>3 x</b>		
4	44.200	530.496



# 360 Free Cutting Brass Tolerances

## Round and Hexagonal

Diameter (inches)	Rounds (inches)	Hexagonal (inches)
Up to .150 Incl.	± .0013	± .0025
Over .150 to .500 Incl.	± .0015	± .0030
Over .500 to 1.00 Incl.	± .0020	± .0040
Over 1.00 to 2.00 Incl.	± .0025	± .0050
Over 2.00	± 0.15%*	± 0.30%*

\* Expressed to the nearest 0.001"

## Thickness Tolerance for Rectangular & Square Bar

Thickness (inches)	Width (inches)					
	Up to 1/2" Incl.	Over 1/2" up to 1-1/4" Incl.	Over 1-1/4" up to 2" Incl.	Over 2" up to 4" Incl.	Over 4" up to 8" Incl.	Over 8" up to 12" Incl.
Incl. .062 to .130 Incl.	± .002	± .0025	± .0035	...	...	...
Over .130 to .188 Incl.	± .003	± .0035	± .004	...	...	...
Over .188 to .500 Incl.	± .0035	± .004	± .0045	± .0045	± .006	± .008
Over .500 to 1.00 Incl.	...	± .0045	± .005	± .005	± .007	± .009
Over 1.00 to 2.00 Incl.	...	± .005	± .005	± .006	± .008	...
Over 2.00 to 4.00 Incl.	...	...	...	± .30%*	...	...

\* Expressed to the nearest 0.001"

## Width Tolerance For Rectangles Only For Squares Use Thickness Tolerances

Width (inches)	Tolerance (inches)
Over 0.130 to 0.188 incl.	± .003
Over 0.188 to 0.500 incl.	± .0035
Over 0.500 to 1.25 incl.	± .005
Over 1.25 to 2.00 incl.	± .008
Over 2.00 to 4.00 incl.	± .012
Over 4.00 to 12 incl.	± 0.30%*

\* Expressed to the nearest 0.001"

# 360 Free Cutting Brass - Straightness Tolerances

Drawn Rectangles & Squares - 1/2" maximum bow edgewise curvature (depth arc) in any 6 foot portion of the total length.

### Drawn Rod (General Use)

Length (feet)	Maximum Curvature (depth arc)
Under 2	1/32"
2 and under 5	1/32" in 2 foot portion of the total length
5 and under 10	1/8" in any 5 foot portion or the total length
10 and over	1/2" in any 10 foot portion of the total length



# 260 Half Hard Brass Sheet/Plate

## CDA Alloy 260 (ASTM B36) UNS-C2600

CDA 260 Half Hard Brass, also known as cartridge brass, has a high zinc content (30%) giving it the optimum combination of strength and ductility. It has excellent cold workability and used in the automotive industry as well as plumbing, hardware, and ammunition components. Easily machined, but more often cold formed and is highly corrosion resistant.

Thickness (inches)	Sheet/Plate Size (inches)	Weight, Approx. (lbs./sqft.)
.025	36 x 96	1.110
.032	36 x 96	1.420
.040	36 x 96	1.774
.050	36 x 96	2.220
.063	36 x 96	2.772
.080	36 x 96	3.550
.093	36 x 96	4.156
.125	36 x 96	5.544
.1875	36 x 96	8.320
.250	36 x 96	11.170
.375	36 x 96	16.910
.500	36 x 96	22.655

# 260 Half Hard Brass Sheet/Plate

## Thickness Tolerance

Thickness (inches)	Over 24" wide up to 28" wide	Over 28" wide up to 36" wide	Over 36" wide up to 48" wide	Over 48" wide up to 60" wide
Over .021 to .026 incl	.003	.003	.0035	.004
Over .026 to .037 incl	.0035	.0035	.004	.005
Over .037 to .050 incl	.004	.005	.006	.007
Over .050 to .073 incl	.005	.006	.007	.008
Over .073 to .130 incl	.006	.007	.008	.010
Over .130 to .188 incl	.007	.008	.010	.012
Over .188 to .205 incl	.007	.008	.010	.012
Over .205 to .300 incl	.009	.010	.012	.014
Over .300 to .500 incl	.012	.013	.015	.018

Temper	Tensile Strength		Approximate Rockwell Hardness - "B" Scale			
	Min.	Max.	0.020" - 0.036"		Over 0.036"	
			Min.	Max.	Min.	Max.
M20 - As Hot Rolled	41	51	**	**	**	**
H01 - Quarter Hard	49	59	40	61	44	65
H02 - Half Hard	57	67	60	74	63	77
H04 - Hard	71	81	79	84	81	86

\*\* Per ASTM B-36M Standards

# 110 Copper Rounds

**CDA Alloy 110 (ASTM B187) UNS-C11000**

Standard Lengths: 12 ft.

Diameter (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/8	0.048	.570
3/16	0.108	1.290
1/4	0.190	2.282
5/16	0.298	3.577
3/8	0.428	5.134
7/16	0.581	6.973
1/2	0.761	9.128
9/16	0.961	11.532
5/8	1.189	14.262
3/4	1.711	20.538
7/8	2.330	27.954

Diameter (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
15/16	2.671	32.056
1	3.043	36.512
1-1/8	3.851	46.210
1-1/4	4.754	57.050
1-3/8	5.753	69.030
1-1/2	6.846	82.152
1-5/8	8.035	96.414
1-3/4	9.318	111.818
2	12.171	146.048
2-1/4	15.403	184.842
2-3/8	17.109	205.308

Diameter (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
2-1/2	19.017	228.200
2-5/8	21.013	252.156
2-3/4	23.010	276.121
2-7/8	25.197	302.244
3	27.384	328.607
3-1/2	37.273	447.271
4	48.683	584.191
4-1/4*	54.958	659.496
4-1/2**	61.614	739.368
5***	76.067	912.804
6***	109.536	1314.432

\* 9 ft. mill length

\*\* 8 ft. mill length

\*\*\* 5 - 6 ft. random mill lengths

# 110 Copper Squares

**CDA Alloy 110 (ASTM B187) UNS-C11000**

Standard Lengths: 12 ft.

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/4	0.242	2.907
3/8	0.545	6.541
1/2	0.969	11.628
5/8	1.514	18.169
3/4	2.180	26.163

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
7/8	3.028	36.336
1	3.876	46.512
1-1/4	6.056	72.675
1-1/2	8.721	104.652
1-3/4	11.870	142.443

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
2	15.504	186.048
2-1/2	24.225	290.700
3	34.884	418.608
4**	62.009	744.100

\*\* Produced to ASTM B124

# 110 Copper Flats (Square Edge)

**CDA Alloy 110 (ASTM B187) UNS-C11000**

Standard Lengths: 12 ft.

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/16 x		
1/2	0.122	1.465
5/8	0.153	1.831
3/4	0.183	2.198
1	0.244	2.930
1-1/2	0.360	4.326
1/8 x		
1/2	0.242	2.907
5/8	0.303	3.634
3/4	0.363	4.361
7/8	0.424	5.087

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/8 x		
1	0.485	5.814
1-1/4	0.606	7.268
1-1/2	0.727	8.721
1-3/4	0.848	10.175
2	0.969	11.628
2-1/4	1.090	13.082
2-1/2	1.211	14.535
3	1.454	17.442
4	1.938	23.256
5	2.423	29.070
6	2.907	34.884

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
3/16 x		
3/8	.271	3.250
1/2	0.364	4.372
5/8	0.453	5.436
3/4	0.547	6.558
7/8	0.638	7.651
1	0.729	8.744
1-1/4	0.911	10.930
1-1/2	1.093	13.116
1-3/4	1.268	15.221
2	1.457	17.489

Continued on next page





# 110 Copper Flats (Square Edge)

## CDA Alloy 110 (ASTM B187) UNS-C11000

Standard Lengths: 12 ft.

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>3/16 x</b>		
2-1/4	1.640	19.675
2-1/2	1.822	21.861
3	2.186	26.233
4	2.915	34.977
6	4.372	52.466
<b>1/4 x</b>		
1/2	0.485	5.814
5/8	0.606	7.268
3/4	0.727	8.721
7/8	0.848	10.175
1	0.969	11.628
1-1/4	1.211	14.535
1-1/2	1.454	17.442
1-5/8	1.575	18.896
1-3/4	1.696	20.349
2	1.938	23.256
2-1/4	2.180	26.163
2-1/2	2.423	29.070
2-3/4	2.665	31.977
3	2.907	34.884
3-1/4	3.149	37.791
3-1/2	3.392	40.698
4	3.876	46.512
4-1/2	4.361	52.326
5	4.845	58.140
6	5.814	69.768
7	6.783	81.396
8	7.752	93.024
<b>5/16 x</b>		
7/8	1.062	12.738
1	1.213	14.558
1-1/2	1.820	21.837
2	2.426	29.117
4	4.853	58.233
<b>3/8 x</b>		
1/2	.727	8.724
3/4	1.090	13.082
1	1.454	17.442
1-1/4	1.817	21.803
1-1/2	2.180	26.163
1-3/4	2.544	30.524
2	2.907	34.884
2-1/4	3.270	39.245
2-1/2	3.634	43.605
3	4.361	52.326
3-1/2	5.087	61.047

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>3/8 x</b>		
4	5.814	69.768
4-1/2	6.541	78.489
5	7.268	87.210
6	8.721	104.652
7	10.175	122.094
8	11.628	139.536
12	17.442	209.304
<b>1/2 x</b>		
5/8	1.211	14.535
3/4	1.454	17.442
1	1.938	23.256
1-1/4	2.423	29.070
1-1/2	2.907	34.884
1-3/4	3.392	40.698
2	3.876	46.512
2-1/4	4.361	52.326
2-1/2	4.845	58.140
3	5.814	69.768
3-1/4	6.299	75.582
3-1/2	6.783	81.396
4	7.752	93.024
4-1/4	8.237	98.838
5	9.690	116.280
6	11.628	139.536
8	15.504	186.048
<b>5/8 x</b>		
1	2.423	29.070
1-1/4	3.028	36.338
1-1/2	3.634	43.605
2	4.846	58.140
2-1/2	6.056	72.675
3	7.268	87.210
4	9.690	116.280
5	12.113	145.356
<b>3/4 x</b>		
1	2.907	34.884
1-1/4	3.634	43.605
1-1/2	4.361	52.326
1-3/4	5.087	61.047
2	5.814	69.768
2-1/2	7.268	87.210
2-3/4	7.994	95.931
3	8.721	104.652
3-1/2	10.175	122.094
4	11.628	139.536
5	14.535	174.420
6	17.442	209.304

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1 x</b>		
1-1/4	4.845	58.140
1-1/2	5.814	69.768
1-3/4	6.783	81.396
2	7.752	93.024
2-1/2	9.690	116.280
3	11.628	139.536
3-1/2	13.566	162.792
4	15.504	186.048
5	19.380	232.560
6	23.256	279.072
8	31.008	372.096
<b>1-1/4 x</b>		
1-1/2	7.268	87.210
2	9.690	116.280
2-1/2	12.113	145.350
3	14.535	174.420
3-1/2	16.958	203.490
4	19.380	232.560
5	24.225	290.700
6	29.070	348.840
<b>1-1/2 x</b>		
2	11.628	139.536
2-1/2	14.535	174.420
3	17.442	209.304
3-1/2	20.349	244.188
4	23.256	279.072
5	29.070	348.840
6	34.884	418.608
<b>1-3/4 x</b>		
2	13.566	162.792
2-1/2	16.958	203.490
3	20.349	244.188
<b>2 x</b>		
2-1/2	19.380	232.560
3	23.256	279.072
4	31.008	372.096
5	38.760	465.120
<b>2-1/2 x</b>		
3	29.070	348.840
4	38.760	465.120
<b>3 x</b>		
4	46.512	558.144

# 110 Copper Flats (Full Round Edge)

**CDA Alloy 110 (ASTM B187) UNS-C11000**

Standard Lengths: 12 ft.

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1/8 x</b>		
1/2	0.229	2.748
5/8	0.289	3.468
3/4	0.349	4.188
1	0.470	5.640
1-1/2	0.712	8.544
2	0.953	11.436
3	1.420	17.040
4	1.906	22.872
<b>3/16 x</b>		
3/4	0.543	6.516
1	0.695	8.340
1-1/4	0.876	10.512
1-1/2	1.058	12.696
1-3/4	1.268	15.216
2	1.420	17.040
2-1/2	1.782	21.384
2-3/4	1.963	23.556
3	2.575	30.900

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1/4 x</b>		
3/4	0.673	8.076
1	0.914	10.968
1-1/4	1.156	13.872
1-1/2	1.397	16.764
1-3/4	1.639	19.668
2	1.880	22.560
2-1/2	2.363	28.356
3	2.846	34.152
4	3.812	45.744
5	4.778	57.336
6	5.744	68.928
8	7.676	92.112

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>3/8 x</b>		
1	1.332	15.984
1-1/4	1.694	20.328
1-1/2	2.057	24.684
2	2.781	33.372
2-1/2	3.506	42.072
3	4.230	50.760
4	5.679	68.148
5	7.128	85.536
6	8.577	102.924
<b>1/2 x</b>		
1-1/2	2.690	32.280
2	3.656	43.872
2-1/2	4.622	55.464
3	5.588	67.056
4	7.520	90.240
5	9.660	115.920
6	11.385	136.620

# 110 Cold Rolled 1/8 - 1/2 Hard Copper Sheet

**CDA Alloy 110 (ASTM B152) UNS-C11000**

Thickness (inches)	Size (inches)	Weight (lbs./sqft.)
.032	36 x 96	1.488
.040	36 x 96	1.860
.050	36 x 96	2.326
.063	36 x 96	2.907

Thickness (inches)	Size (inches)	Weight (lbs./sqft.)
.080	36 x 96	3.721
.093	36 x 96	4.465
.125	36 x 96	5.814
.1875	36 x 96	8.744

# 110 Quarter Hard Copper Sheet

CDA Alloy 110 (ASTM B152) UNS-C11000

Thickness (inches)	Size (inches)	Weight (lbs./sqft.)
.0625	36 x 96	2.907
.080	36 x 96	3.721
.125	36 x 96	5.814
.1875	36 x 96	8.744

# Rolled Copper Sheet

Construction Grade/Roofing Copper - ASTM B370

Weight	Thickness (inches)	Size (inches)	Weight (lbs./sqft.)
12 oz.	.0162	36 x 96	0.753
16 oz.	.0216	36 x 96	1.001
16 oz.	.0216	36 x 120	1.001
20 oz.	.0270	36 x 120	1.251
24 oz.	.0323	36 x 120	1.502
36 oz.	.0500	36 x 120	2.326

# 110 Cold Rolled Copper Plate

CDA Alloy 110 (ASTM B152) UNS-C11000

Thickness (inches)	Size (inches)	Weight (lbs./sqft.)
1/4 x	36 x 96	11.628
3/8 x	36 x 96	17.442
1/2 x	36 x 96	23.256
	36 x 144	23.256
5/8 x	36 x 96	29.070
	36 x 144	34.884
3/4 x	36 x 96	34.884
	36 x 144	34.884
1 x	36 x 96	46.512
1-1/4 x	36 x 144	58.140
1-1/2 x	36 x 144	69.768

Thickness (inches)	Size (inches)	Weight (lbs./sqft.)
1-3/4 x	36 x 96	81.396
	36 x 144	81.396
2 x	36 x 96	93.024
2-1/2 x	36 x 96	116.280
3 x	36 x 96	139.536
3-1/2 x	36 x 96	162.792
4 x	36 x 96	186.048
5 x	36 x 96	232.560
6 x	36 x 96	279.070

# 145 Half Hard Tellurium Copper Rounds

**CDA Alloy 145 (ASTM B301) UNS-C14500**

Standard Lengths: 12 ft.

**CDA 145 Tellurium Copper** is used for forgings, screw machine parts or any parts requiring high conductivity, extensive machining, and or corrosion resistance. The addition of Tellurium results in short, clean chips and allows for higher cutting speeds than that of pure copper, with much less wear on tool life. Typical uses include electrical connectors, motor or switch parts, plumbing fittings, welding torch tips, and transistor bases.

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/4	0.190	2.280
5/16	0.297	3.565
3/8	0.428	5.136
7/16	0.582	6.987
1/2	0.760	9.127
9/16	0.975	11.700
5/8	1.189	14.268

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
3/4	1.711	20.532
7/8	2.330	27.960
1	3.043	36.516
1-1/16	3.435	41.217
1-1/8	3.851	42.209
1-1/4	4.754	57.048
1-3/8	5.753	69.036

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1-1/2	6.846	82.152
1-5/8	8.035	96.420
1-3/4	9.318	111.816
1-7/8	10.697	128.364
2	12.171	146.050

# 172 Beryllium Copper Plate

**Low Hard (Supra) - Rockwell C25 - 32**

**High Hard (Ultra) - Rockwell C36 - 42**

**CDA Alloy 172 (ASTM B194) UNS-C17200**

**CDA Beryllium Copper** is the most universally used beryllium copper alloy and is known to demonstrate higher strength and hardness when compared to commercial copper alloys. It has strength and hardness characteristics that are comparable to steel. It is also recognized as an alloy that has outstanding wear & corrosion resistance, thermal fatigue, and thermal conductivity. Typical applications are electrical switches and connectors, fasteners, mold inserts, pump parts and valve seats.

Thickness (inches)	Weight (lbs./sqft.)
1/4	12.176
3/8	17.612
1/2	23.040
5/8	28.480
3/4	34.268
1	45.466
1-1/4	56.208

Thickness (inches)	Weight (lbs./sqft.)
1-1/2	67.660
2	89.128
2-1/4	102.079
2-1/2	111.260
3	130.464
3-1/2	154.556
4	178.747



# 17510 RWMA Class 3 Copper Rounds

CDA Alloy 17510, UNS-C17510

Standard Lengths: 12 ft.

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/8	0.047	.564
3/16	0.104	1.248
1/4	0.187	2.244
5/16	0.291	3.492
3/8	0.420	5.040
7/16	0.570	6.840
1/2	0.747	8.964
9/16	0.943	11.316
5/8	1.166	13.992
3/4	1.680	20.160
7/8	2.286	27.432

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1	2.986	35.832
1-1/8	3.779	45.348
1-1/4	4.666	55.992
1-3/8	5.646	67.752
1-1/2	6.719	80.628
1-5/8	7.885	94.620
1-3/4	9.145	109.740
2	11.945	143.340
2-1/4	15.117	181.404
2-1/2	18.663	223.956
2-3/4	22.583	270.996

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
3	26.875	322.500
3-1/8	29.162	349.944
3-1/4	31.541	378.492
3-1/2	36.580	438.960
3-3/4	41.993	503.916
4-1/8	50.811	609.732
4-1/2	60.469	725.628
5-1/8	78.433	941.196
6-1/8	112.027	1344.324

# 17510 RWMA Class 3 Copper Flats

CDA Alloy 17510, UNS-C17510

Standard Lengths: 12 ft.

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/8 x		
3/4	0.357	4.284
1	0.476	5.712
1/4 x		
1/2	0.476	5.712
3/4	0.713	8.556
1	0.951	11.412
1-1/4	1.189	14.268
1-1/2	1.427	17.124
2	1.902	22.824
2-1/2	2.378	28.536
3/8 x		
1/2	0.713	8.556
3/4	1.070	12.840
1	1.427	17.124
1-1/2	2.140	25.680
2	2.853	34.236
3	4.280	51.360

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/2 x		
5/8	1.189	14.268
3/4	1.427	17.124
1	1.902	22.824
1-1/4	2.378	28.536
1-1/2	2.853	34.236
2	3.804	45.648
3	5.706	68.472
5/8 x		
3/4	1.783	21.396
1	2.378	28.536
1-1/2	3.566	42.792
2	4.755	57.060
3/4 x		
1	2.853	34.236
1-1/4	3.566	42.792
1-1/2	4.280	51.360
2	5.706	68.472
3	8.559	102.708

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1 x		
1-1/4	4.755	57.060
1-1/2	5.706	68.472
3	11.412	136.944
4	15.216	182.592
1-1/4 x		
1-1/2	7.133	85.596
2	9.510	114.120
3	14.265	171.180
1-1/2 x		
2	11.412	136.944
3	17.118	205.416
2 x		
3	22.824	273.888

# 17510 RWMA Class 3 Heat Treated Copper Plate

## CDA Alloy 17510, UNS-C17510

Thickness (inches)	Weight (lbs./sqft.)
3/8	17.118
1/2	22.824
5/8	28.530
3/4	34.236
1	45.648

Thickness (inches)	Weight (lbs./sqft.)
1-1/4	57.060
1-1/2	68.472
1-3/4	79.884
2	91.296
2-1/2	114.120

Thickness (inches)	Weight (lbs./sqft.)
3	136.944
4	182.592
5	228.240
6	257.472

# 180 RWMA Class 3 Copper Rounds, Beryllium Free

## CDA Alloy 180, UNS-C180

Standard Lengths: 12 ft.

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/2	0.758	9.096
5/8	1.185	14.220
3/4	1.706	20.472
7/8	2.322	27.864
1	3.033	36.396
1-1/4	4.739	56.868
1-3/8	5.735	68.820
1-1/2	6.825	81.900

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1-3/4	9.289	111.468
2	12.133	145.596
2-1/4	15.356	184.272
2-1/2	18.958	227.496
2-3/4	22.939	275.268
3	27.299	327.588
3-1/8	29.621	355.452
3-1/2	37.157	445.884

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
3-5/8	39.859	478.308
3-3/4	42.655	511.860
4-1/8	51.612	619.344
4-1/2	61.423	737.076
5	75.831	909.972
5-1/8	79.670	956.040

# 180 Copper Flats, Beryllium Free

## CDA Alloy 180, UNS-C180

Standard Lengths: 12 ft.

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1/4 x</b>		
1	0.966	11.592
1-1/4	1.208	14.496
2	1.932	23.184
<b>3/8 x</b>		
1/2	0.725	8.700
3/4	1.087	13.044
1	1.449	17.388
1-1/2	2.174	26.088
2	2.898	34.776
3	4.347	52.164
<b>1/2 x</b>		
3/4	1.449	17.388
1	1.932	23.184
1-1/4	2.415	28.980

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1/2 x</b>		
1-1/2	2.898	34.776
2	3.864	46.368
2-1/2	4.830	57.960
3	5.796	69.552
<b>5/8 x</b>		
1	2.415	28.980
1-1/2	3.623	43.476
2	4.755	57.060
<b>3/4 x</b>		
1	2.898	34.776
1-1/2	4.347	52.164
2	5.796	69.552
3	8.694	104.328

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1 x</b>		
1-1/4	4.830	57.960
1-1/2	5.796	69.552
2	7.728	92.736
2-1/2	9.660	115.920
3	11.592	139.104
<b>1-1/4 x</b>	<b>x</b>	
1-1/2	7.245	86.940
1-3/4	8.453	101.436
2	9.660	115.920
<b>1-1/2 x</b>	<b>x</b>	
2	11.592	139.104
3	17.388	208.656



# 182 RWMA Class 2 Copper Rounds

**CDA Alloy 182, UNS-C182**

Standard Lengths: 12 ft.

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/8	0.047	.564
3/16	0.106	1.272
1/4	0.189	2.268
5/16	0.294	3.528
3/8	0.425	5.100
7/16	0.577	6.924
1/2	0.756	9.072
9/16	0.955	11.460
5/8	1.181	14.172
3/4	1.701	20.412

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
7/8	2.315	27.780
1	3.024	36.288
1-1/8	3.827	45.924
1-1/4	4.725	56.700
1-3/8	5.717	68.604
1-1/2	6.804	81.648
1-5/8	7.985	95.820
1-3/4	9.260	111.120
2	12.095	145.140
2-1/4	15.308	183.696

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
2-1/2	18.899	226.788
2-5/8	20.836	250.032
2-3/4	22.868	274.416
3	27.214	326.568
3-1/4	31.939	383.268
3-1/2	37.042	444.504
3-3/4	42.522	510.264
4-1/8	51.452	617.424
5-1/8	79.423	953.076

# 182 RWMA Class 2 Copper Squares

**CDA Alloy 182, UNS-C182**

Standard Lengths: 12 ft.

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
3/8	0.542	6.504
1/2	0.963	11.556
5/8	1.505	18.060
3/4	2.167	26.004

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1	3.852	46.224
1-1/4	6.019	72.228
1-1/2	8.667	104.004
2	15.408	184.896

# 182 RWMA Class 2 Copper Hex

**CDA Alloy 182, UNS-C182**

Standard Lengths: 12 ft.

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/2	0.835	10.020
5/8	1.304	15.648
3/4	1.878	22.536
7/8	2.556	30.672
1	3.338	40.056

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1-1/8	4.225	50.700
1-1/4	5.216	62.592
1-3/8	6.312	75.744
1-1/2	7.511	90.132

# 182 RWMA Class 2 Copper Flats

**CDA Alloy 182, UNS-C182**

Standard Lengths: 12 ft.

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1/4 x</b>		
1/2	0.482	5.784
3/4	0.722	8.664
1	0.963	11.556
1-1/2	1.445	17.340
2	1.926	23.112
2-1/2	2.408	28.896
3	2.889	34.668
<b>3/8 x</b>		
1/2	0.722	8.664
3/4	1.083	12.996
1	1.445	17.340
1-1/2	2.167	26.004
2	2.889	34.668
3	4.334	52.008
<b>1/2 x</b>		
3/4	1.445	17.340
1	1.926	23.112
1-1/2	2.889	34.668
2	3.852	46.224

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1/2 x</b>		
2-1/2	4.815	57.780
3	5.778	69.336
4	7.704	92.448
<b>5/8 x</b>		
3/4	1.806	21.672
1	2.408	28.896
1-1/2	3.611	43.332
2	4.815	57.780
4	9.630	115.560
<b>3/4 x</b>		
1	2.889	34.668
1-1/4	3.611	43.332
1-1/2	4.334	52.008
1-3/4	5.056	60.672
2	5.778	69.336
2-1/2	7.223	86.676
3	8.667	104.004
4	11.556	138.672

Size (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
<b>1 x</b>		
1-1/4	4.815	57.780
1-1/2	5.778	69.336
2	7.704	92.448
2-1/2	9.630	115.560
3	11.556	138.672
4	15.408	184.896
<b>1-1/4 x</b>		
1-1/2	7.223	86.676
1-3/4	8.426	101.112
2	9.630	115.560
3	14.445	173.340
<b>1-1/2 x</b>		
2	11.556	138.672
3	17.334	208.008

# 182 RWMA Class 2 Copper Plate

**CDA Alloy 182, UNC-C182**

Thickness (inches)	Weight (lbs./sqft.)
1/4	11.556
3/8	17.334
1/2	23.112
5/8	28.890
3/4	34.668
1	46.224
1-1/4	57.780

Thickness (inches)	Weight (lbs./sqft.)
1-1/2	69.336
2	92.448
2-1/2	115.560
3	138.672
3-1/2	161.784
4	184.896

# 187 Copper Rounds

**CDA Alloy 187, UNS-C187**

Standard Lengths: 12 ft.

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
1/4	0.190	2.280
5/16	0.298	3.576
3/8	0.428	5.136
5/8	1.189	14.268

Dia. (inches)	Weight (lbs./ft.)	Weight (lbs./12 ft.)
3/4	1.711	20.532
7/8	2.330	27.960
1	3.043	36.516





# Copper Products Rod and Bar Tolerances

## Tolerances for Diameter or Distance Between Parallel Surfaces of Cold-Drawn Rod

Diameter or Distance Between Parallel Surfaces	Tolerances, Plus and Minus, <sup>A</sup> in.	
	Round	Hex
Up to 0.150, incl	0.0013	0.0025
Over 0.150 to 0.500, incl	0.0015	0.0030
Over 0.500 to 1.00, incl	0.0020	0.0040
Over 1.00 to 2.00, incl	0.0025	0.0050
Over 2.00	0.1500 <sup>B</sup>	0.3000 <sup>B</sup>

Applicable to alloys C11000 and C14500

<sup>A</sup> When tolerances are specified as all plus or all minus, double the values given.

<sup>B</sup> Percent of specified diameter or distance between parallel surfaces.

## Tolerances for Diameter or Distance Between Parallel Surfaces of As Extruded Rod and Bar

Diameter or Distance Between Parallel Surfaces	Tolerances, Plus and Minus, <sup>A</sup> in.	
	Round	Hex
Up to 1.00, incl	0.020	0.020
Over 1.00 to 2.00, incl	0.030	0.030
Over 2.00 to 3.00, incl	0.050	0.050
Over 3.00 to 3.50, incl	0.070	0.070
Over 3.50 to 4.00, incl	0.120	0.120

Applicable to alloys C11000 and C14500

<sup>A</sup> When tolerances are specified as all plus or all minus, double the values given.

## Thickness Tolerances for Drawn or Rolled Rectangular and Square Bar

Thickness (inches)	Thickness Tolerances, Plus and Minus, <sup>A</sup> for Widths given (inches)			
	2" and under	Over 2" up to 4"	Over 4" up to 8"	Over 8" up to 12"
Up to 0.500, incl	0.003	0.004	0.0045	0.0055
Over 0.500 to 1.00, incl	0.004	0.0045	0.005	0.006
Over 1.00 to 2.00, incl	0.0045	0.005	0.006	-

<sup>A</sup> When tolerances are specified as all plus or all minus, double the values given.

# Copper Products Tolerances

## Thickness Tolerances for Sawed Edge, Deburred Coner Rectangular and Square Bar

Thickness (inches)	Thickness Tolerances, Plus and Minus, <sup>A</sup> for Widths given (inches)			
	2" and under	Over 2" up to 4"	Over 4" up to 8"	Over 8" up to 12"
Up to 0.250, incl	0.0025	0.003	0.0035	0.005
Over 0.250 to 0.375, incl	0.003	0.004	0.0045	0.005
Over 0.375 to 0.500, incl	0.0035	0.0045	0.005	0.006
Over 0.500 to 0.750, incl	0.0055	0.0055	0.0055	0.007
Over 0.750 to 1.000, incl	0.007	0.007	0.007	0.009
Over 1.000 to 1.500, incl	0.015	0.020	0.022	0.025
Over 1.500 to 2.000	0.020	0.024	0.026	0.030

<sup>A</sup> When tolerances are specified as all plus or all minus, double the values given.

## Width Tolerances for Rectangular Bar

Width (inches)	Tolerances, Plus and Minus <sup>A</sup> (inches)
Over 0.188 to 0.500, incl	0.0035
Over 0.500 to 1.25, incl	0.005
Over 1.25 to 2.00, incl	0.008
Over 2.00 to 4.00, incl	0.012
Over 4.00 to 12.00, incl	0.300 <sup>B</sup>

Applicable to alloys C11000 and C14500

<sup>A</sup> When tolerances are specified as all plus or all minus, double the values given.

<sup>B</sup> Percent of specified diameter or distance between parallel surfaces.

## Straightness Tolerances

Drawn Rectangles & Squares - 1/2" maximum bow edgewise curvature (depth of arc) in any 6 foot portion of the total length.

### Drawn Rod (General Use)

Length (feet)	Maximum Curvature (depth arc) (inches)
Under 2	1/32
2 and under 5	1/32 in any 2 foot portion of the total length
5 and under 10	1/8 in any 5 foot portion of the total length
10 and over	1/2 in any 10 foot portion of the total length

# Copper Products Tolerances

## Thickness Tolerances - Rectangular and Square R.W.M.A. Class 2 and Class 3

Thickness (inches)	Width (inches) Tolerance, Plus or Minus			
	Up to .500 incl	Over .500 to 1.25 incl	Over 1.25 to 2.00 incl	Over 2.00 to 4.00 incl
Up to .500 incl	.005	.005	.006	.007
Over .500 to 1.00 incl	...	.006	.007	.008
Over 1.00 to 2.00 incl	...	.006	.007	.009
Over 2.00 to 4.00 incl	...	...	...	0.50%*

\*Expressed to the nearest 0.001.

These tolerance schedules are used by the industry as applicable to commercial material, in absence of other specifications by the purchaser.

## Thickness Tolerances - Rectangles Only R.W.M.A. Class 2 and Class 3

Width (inches)	Tolerance (+/-)
Up to .500 incl.	.005
Over .500 to 1.250 incl.	.007
Over 1.250 to 2.00 incl.	.010
Over 2.00 to 4.00 incl.	.015

Note: For squares use thickness tolerances.

## Length & Width Tolerances - Square Sheared Metal

Length or Width (inches)	Up to 1/16" thick incl.	Over 1/16" to 1/8" incl	Over 1/8" thick
Up to 20" incl.	1/32	3/64	1/16
Over 20" up to 36" incl.	3/64	3/64	1/16
Over 36" up to 120" incl.	1/16	1/16	1/16

## Straightness Tolerances for Square Sheared Metal

Thickness (inches)	Up to 10" wide incl.	Over 10" wide
Up to 1/8 incl.	1/16	1/16
Over 1/8 to 3/16 incl.	1/8	1/8
Over 3/16	1/8	1/8

## Beryllium Copper & R.W.M.A. Class #2 & #3 Tolerances

Diameter (inches)	Cold Drawn Rounds	HR, A&T* Rounds	Cold Drawn Hexagon
Incl. .090 to 1/2 incl	± .002	...	± .004
Over 1/2 to 1.00 incl	± .003	...	± .005
Over 1.00 to 2.00 incl	± .004	...	± .006
Over 2.00 to 3.00 incl	...	± .006	...
Over 3.00 to 4.75 incl	...	± .009	...

\* Hot Rolled, Annealed & Turned.

# Copper Products Tolerances

## Length and Width Tolerances - For Sawed Metal

Width (inches)	Length Tolerance All Plus (inches)	Width Tolerance Plus or Minus in inches		
		For Lengths up to 10 ft. incl		For Lengths Over 10 ft.
		For Thicknesses up to 1-1/2 Incl	For Thicknesses Over 1-1/2	All Thicknesses
Up to 12" wide incl.	1/4	1/32	1/16	1/16
>12" to 120" wide incl.	1/4	1/16	1/16	1/16

## Straightness Tolerances - For Sawed Metal

These tolerance schedules are used by the industry as applicable to commercial material in the absence of other specifications by the purchaser.

Width (inches)	
Up to 3", incl.	1/16
Over 3"	3/64

# Copper Products Tolerances

## Sheet, Strip and Plate

Thickness (inches)	Width (inches), Tolerances Plus or Minus							
	Up to 8 incl	Over 8 to 12 incl	Over 12 to 14 incl	Over 14 to 20 incl	Over 20 to 24 incl	Over 24 to 28 incl	Over 28 to 36 incl	Over 36 to 48 incl
Over .021 to .026 incl	.0015	.002	.002	.0025	.003	.003	.0035	.004
Over .026 to .037 incl	.002	.002	.002	.0025	.0035	.0035	.004	.005
Over .037 to .050 incl	.002	.0025	.0025	.003	.004	.004	.005	.006
Over .050 to .073 incl	.0025	.003	.003	.0035	.005	.005	.006	.007
Over .073 to .130 incl	.003	.0035	.0035	.004	.006	.006	.007	.008
Over .130 to .188 incl	.0035	.004	.004	.0045	.007	.007	.008	.010
Over .188 to .205 incl	.0035	.004	.004	.0045	.007	.007	.008	.010
Over .205 to .300 incl	.004	.0045	.0045	.005	.009	.009	.010	.012
Over .300 to .500 incl	.0045	.005	.005	.006	.012	.012	.013	.015
Over .500 to .750 incl	.0055	.007	.007	.009	.015	.015	.017	.019
Over .750 to 1.00 incl	.007	.009	.009	.011	.018	.018	.021	.024
Over 1.00 to 1.50 incl	...	...	...	...	.022	.022	.025	.029
Over 1.50 to 2.00 incl	...	...	...	...	.026	.026	.030	.036
Over 2.00 to 3.00 incl	...	...	...	...	.031	.031	.031	...
Over 3.00 to 4.00 incl	...	...	...	...	.036	.036	.036	...
Over 4.00 to 5.00 incl	...	...	...	...	.054	.054	.054	...
Over 5.00 to 6.00 incl	...	...	...	...	.059	.059	.059	...

# 932 (SAE 660) Bearing Bronze

## ASTM B505

### Typical Mechanical Properties

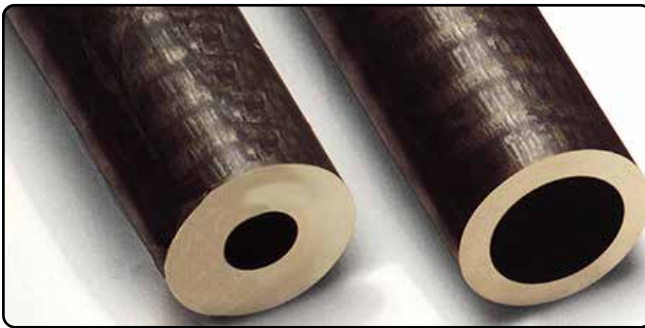
Chemical Composition	932
Copper	83%
Tin	7%
Lead	7%
Zinc	3%
Tensile Strength	35,000 KSI
Yield Strength	20,000 KSI
Elongation in 2 inches	10%
Brinell Number at 500 KG Load	65 - 70 Typical
Equivalent Specifications:	
<a href="#">CDA 932, SAE 660, ASTM B505, QQ-C-390A</a>	

# 954 Aluminum Bronze

## ASTM B505

### Typical Mechanical Properties

Chemical Composition	954
Aluminum	10.5%
Iron	4%
Copper	85.5%
Tensile Strength	85,000 KSI
Yield Strength	32,000 KSI
Elongation in 2 inches	12%
Brinell Number at 500 KG Load	170 Typical



Alro stocks 932 Bearing Bronze Tubing from 1" OD to 16" OD

# 932 Bronze Rounds

**ASTM B505** Standard Lengths: 105" - 107.5"

Diameter (inches)	Approx. Wt. (lbs./foot)
3/8	.510
1/2	.868
5/8	1.321
3/4	1.869
7/8	2.512
1	3.249
1-1/8	4.028
1-1/4	5.009
1-3/8	6.030
1-1/2	7.147
1-5/8	8.358
1-3/4	9.665
1-7/8	11.066
2	12.611

Diameter (inches)	Approx. Wt. (lbs./foot)
2-1/8	14.204
2-1/4	15.893
2-3/8	17.676
2-1/2	19.554
2-5/8	21.527
2-3/4	23.594
2-7/8	25.756
3	28.014
3-1/4	32.812
3-1/2	37.990
3-3/4	43.547
4	50.073
4-1/4	56.464
4-1/2	63.155

Diameter (inches)	Approx. Wt. (lbs./foot)
4-3/4	70.265
5	77.754
5-1/4	86.657
5-1/2	94.953
6	112.682
6-1/2	131.888
7	152.647
7-1/2	174.923
8	198.716
9	250.851
10	310.279
11	374.669
12	445.125
13	523.877

# 954 Bronze Rounds

**ASTM B505** Standard Lengths: 12 ft.

Diameter (inches)	Approx. Wt. (lbs./foot)
3/8	.485
1/2	.800
5/8	1.198
3/4	1.673
7/8	2.227
1	2.861
1-1/8	3.573
1-1/4	4.365
1-3/8	5.236
1-1/2	6.186
1-5/8	7.216
1-3/4	8.325
2	10.884
2-1/4	13.551

Diameter (inches)	Approx. Wt. (lbs./foot)
2-1/2	16.639
2-3/4	20.044
3	23.776
3-1/4	28.336
3-1/2	32.731
3-3/4	37.443
4	42.472
4-1/4	47.817
4-1/2	53.479
4-3/4	60.222
5	66.557
5-1/4	73.208
5-1/2	80.177
5-3/4	89.348

Diameter (inches)	Approx. Wt. (lbs./foot)
6	97.029
6-1/4	105.028
6-1/2	113.343
7	130.924
8	169.886
9	213.917
10	263.015
11	317.182
12	367.416
13	440.718
14	510.089
15	584.527

# 959 Bronze Rounds

**ASTM B505** Standard Lengths: 12 ft.

Diameter (inches)	Approx. Wt. (lbs./foot)
1	2.712
1-1/4	4.318
1-1/2	5.865
1-3/4	7.891
2	10.218
2-1/4	12.846

Diameter (inches)	Approx. Wt. (lbs./foot)
2-1/2	15.773
3	22.529
3-1/2	31.028
4	40.261
4-1/2	50.696
5	63.093

Diameter (inches)	Approx. Wt. (lbs./foot)
6	91.980
8	161.045



# 932 Bronze Flats and Squares

**ASTM B505** Standard Lengths: 12 ft. random

Size (inches)	Weight (lbs./foot)
<b>1/4 x</b>	
2	2.495
3	3.704
4	5.442
8	11.773
12	17.569
<b>3/8 x</b>	
2	3.491
4	7.419
8	15.698
12	23.426
<b>1/2 x</b>	
3/4	1.450
1	2.312
2	4.488
3	6.663
4	9.397
5	11.692
6	14.792
7	17.207
8	19.622
9	22.037
10	24.452
12	29.282
14	34.112
15	36.527
<b>5/8 x</b>	
4	11.374
8	23.546
<b>3/4 x</b>	
1	3.339
2	6.481
3	9.622
4	13.351
5	16.613

Size (inches)	Weight (lbs./foot)
<b>3/4 x</b>	
6	20.709
7	24.090
8	27.471
9	30.852
10	34.233
12	40.995
14	47.757
16	54.519
18	61.281
<b>1 x</b>	
2	8.474
3	12.881
4	17.306
5	21.533
6	26.625
7	30.972
8	35.319
9	39.666
10	44.013
11	48.360
12	52.707
13	57.054
14	61.401
15	65.748
16	70.095
18	78.789
20	89.916
<b>1-1/4 x</b>	
4	21.261
6	32.542
8	43.168
12	64.420

Size (inches)	Weight (lbs./foot)
<b>1-1/2 x</b>	
2	12.459
4	25.216
8	51.017
12	76.133
<b>1-3/4 x</b>	
4	29.171
8	58.866
12	87.846
<b>2 x</b>	
4	33.125
8	66.714
11	91.347
12	99.558
<b>2-1/2 x</b>	
4	41.035
8	82.412
<b>3 x</b>	
11	134.334
<b>4 x</b>	
4	64.764
11	177.321
<b>6 x</b>	
10	239.628
<b>6-1/4 x</b>	
6-1/4	157.035
<b>8 x</b>	
8	255.084

# 954 Bronze Flats and Squares

**ASTM B505** Standard Lengths: 12 ft. random

Size (inches)	Weight (lbs./foot)
<b>1/4 x</b>	
1	1.156
1-1/4	1.428
1-1/2	1.700
1-3/4	1.972
2	2.244
2-1/2	2.788
2-3/4	3.060
3	3.332
3-1/2	3.876
4	4.420

Size (inches)	Weight (lbs./foot)
<b>1/4 x</b>	
5	5.508
6	7.016
8	9.321
10	11.625
12	13.930
<b>3/8 x</b>	
1	1.585
1-1/2	2.331
2	3.077
2-1/2	3.822

Size (inches)	Weight (lbs./foot)
<b>3/8 x</b>	
3	4.568
3-1/2	5.314
4	6.059
5	7.551
6	9.472
8	12.584
10	15.696
12	18.808

Continued on next page

# 954 Bronze Flats and Squares

## ASTM B505

Standard Lengths: 12 ft. random

Size (inches)	Weight (lbs./foot)
<b>1/2 x</b>	
1/2	1.112
1	2.014
1-1/4	2.488
1-1/2	2.962
1-3/4	3.435
2	3.909
2-1/2	4.856
3	5.804
3-1/4	6.278
3-1/2	6.751
4	7.699
4-1/2	8.646
5	9.594
5-1/2	10.541
6	11.929
7	13.888
8	15.848
10	19.766
12	23.685
<b>5/8 x</b>	
1	2.443
1-1/2	3.592
2	4.741
2-1/2	5.891
3	7.040
3-1/2	8.189
4	9.338
4-1/2	10.487
5	11.636
6	14.385
7	16.748
8	19.111
10	23.837
12	28.563
<b>3/4 x</b>	
3/4	2.261
1	2.872
1-1/2	4.223
1-3/4	4.898
2	5.574
2-1/2	6.925
3	8.276
3-1/2	9.627
4	10.978
4-1/2	12.328
5	13.679
6	16.842
7	19.608
8	22.375
10	27.907
12	33.440

Size (inches)	Weight (lbs./foot)
<b>1 x</b>	
1	3.814
1-1/4	4.607
1-1/2	5.484
1-3/4	6.362
2	7.239
2-1/2	8.993
3	10.748
3-1/2	12.502
4	14.256
4-1/2	16.011
5	17.765
6	21.755
7	25.328
8	28.902
9	32.475
10	36.048
12	43.195
<b>1-1/4 x</b>	
1-1/4	5.770
1-1/2	6.746
1-3/4	7.825
2	8.904
2-1/2	11.061
3	13.219
3-1/2	15.377
4	17.535
5	21.851
6	26.668
8	35.429
10	44.189
12	52.950
<b>1-3/8</b>	
3	14.455
4	19.175
<b>1-1/2 x</b>	
1-1/2	8.130
1-3/4	9.288
2	10.568
2-1/2	13.130
3	15.691
3-1/2	18.253
4	20.814
<b>1-1/2 x</b>	
5	25.937
5-1/2	28.498
6	31.581
8	41.956
10	52.330
12	62.705

Size (inches)	Weight (lbs./foot)
<b>1-3/4 x</b>	
2	12.233
2-1/2	15.198
3	18.163
4	24.093
5	30.023
6	36.494
<b>2 x</b>	
2	14.060
2-1/2	17.267
3	20.635
3-1/2	24.003
4	27.372
5	34.109
6	41.407
10	68.612
12	82.215
<b>2-1/2 x</b>	
2-1/2	21.604
3	25.579
4	34.402
5	42.818
6	50.631
12	100.736
<b>3 x</b>	
3	30.761
4	40.487
6	61.059
12	121.235
<b>3-1/2 x</b>	
12	140.745
<b>4 x</b>	
4	53.919
<b>6 x</b>	
6	120.390





# 959 Bronze Flats

## ASTM B505

Standard Lengths: 12 ft. random

Size (inches)	Weight (lbs./foot)
<b>1/4 x</b>	
1	1.612
2	3.029
3	4.446
4	5.863
5	7.279
6	8.696
7	10.113
8	11.530
9	12.947
10	14.470
12	17.303
<b>3/8 x</b>	
1	2.048
2	3.847
3	5.646
4	7.445
5	9.245
6	11.044
7	12.843
8	14.643
9	16.442
10	18.376
12	21.975

Size (inches)	Weight (lbs./foot)
<b>1/2 x</b>	
1	2.483
2	4.665
3	6.846
4	9.028
5	11.210
6	13.392
7	15.574
8	17.755
9	19.937
10	22.283
12	26.646
<b>5/8 x</b>	
1	2.918
1-1/2	4.200
2	5.482
<b>3/4 x</b>	
1	3.353
2	6.300
3	9.247
4	12.194
5	15.141
6	18.087
7	21.034
8	23.981
9	26.928
10	30.095
12	35.989

Size (inches)	Weight (lbs./foot)
<b>1 x</b>	
1-1/4	5.152
2	7.936
2-1/2	9.792
3	11.648
4	15.359
5	19.071
6	22.783
7	26.495
8	30.206
10	37.908
12	45.330
<b>1-1/2 x</b>	
4	21.690
<b>1-3/4 x</b>	
2-1/2	15.846
<b>2 x</b>	
4	28.022
5	34.793
8	55.109
<b>2-1/2 x</b>	
4	34.353
7	59.258
8	67.560



# 932 Bronze Tube

## ASTM B505

Standard Lengths: 105" - 107.5"

ID x OD (inches)	Weight (lbs./foot)
<b>1/2 x</b>	
1	2.687
1-1/8	3.524
1-1/4	4.456
1-3/8	5.484
1-1/2	6.607
1-3/4	9.138
2	12.101
<b>5/8 x</b>	
1	2.307
1-1/8	3.144
1-1/4	4.076
1-3/8	5.104
1-1/2	6.227
1-3/4	8.758
2	11.721
<b>3/4 x</b>	
1	1.832
1-1/8	2.669
1-1/4	3.601
1-3/8	4.628
1-1/2	5.751
1-3/4	8.283
2	11.245
2-1/4	14.545
2-1/2	18.227
2-3/4	22.289
<b>7/8 x</b>	
1-1/8	2.098
1-1/4	3.030
1-3/8	4.058
1-1/2	5.180
1-5/8	6.399
1-3/4	7.712
2	10.674
<b>1 x</b>	
1-1/4	2.364
1-3/8	3.392
1-1/2	4.514
1-5/8	5.732
1-3/4	7.046
1-7/8	8.455
2	10.008
2-1/8	11.611
2-1/4	13.308
2-3/8	15.101
2-1/2	16.990
2-3/4	21.052
3	25.496
3-1/4	30.321
3-1/2	35.528
4	47.928

ID x OD (inches)	Weight (lbs./foot)
<b>1-1/8 x</b>	
1-3/8	2.630
1-1/2	3.753
1-5/8	4.971
1-3/4	6.253
1-7/8	7.693
2	9.247
<b>1-1/4 x</b>	
1-1/2	2.896
1-5/8	4.114
1-3/4	5.428
1-7/8	6.837
2	8.390
2-1/8	9.993
2-1/4	11.690
2-1/2	15.372
2-3/4	19.434
3	23.878
3-1/4	28.703
3-1/2	33.910
4	46.379
<b>1-3/8 x</b>	
1-5/8	3.162
1-3/4	4.476
1-7/8	5.885
2	7.438
2-1/8	9.041
2-1/4	10.738
2-3/8	12.531
2-1/2	14.420
2-5/8	16.403
3	22.926
<b>1-1/2 x</b>	
1-3/4	3.429
1-7/8	4.837
2	6.391
2-1/8	7.993
2-1/4	9.691
2-3/8	11.484
2-1/2	13.372
2-3/4	17.485
3	21.879
3-1/4	26.704
3-1/2	31.910
3-3/4	37.498
4	44.448
4-1/2	57.603

ID x OD (inches)	Weight (lbs./foot)
<b>1-5/8 x</b>	
2	5.248
2-1/8	6.851
2-1/4	8.549
2-3/8	10.342
2-1/2	12.230
2-3/4	16.292
3	20.736
<b>1-3/4 x</b>	
2	4.011
2-1/8	5.613
2-1/4	7.311
2-3/8	9.104
2-1/2	10.992
2-5/8	12.976
2-3/4	15.055
3	19.498
3-1/4	24.324
3-1/2	29.530
3-3/4	35.117
4	42.136
4-1/4	48.523
<b>1-7/8 x</b>	
2-1/4	5.977
2-3/8	7.770
2-1/2	9.659
2-5/8	11.642
3	18.165
<b>2 x</b>	
2-1/4	4.549
2-3/8	6.342
2-1/2	8.230
2-5/8	10.214
2-3/4	12.293
2-7/8	14.467
3	16.737
3-1/4	21.562
3-1/2	26.768
3-5/8	29.514
3-3/4	32.356
4	39.443
4-1/2	52.598
5	67.277
5-1/2	85.095
6	102.919
<b>2-1/8 x</b>	
2-5/8	8.690
2-3/4	10.769

Continued on next page

# 932 Bronze Tube

## ASTM B505

Standard Lengths: 105" - 107.5"

ID x OD (inches)	Weight (lbs./foot)
<b>2-1/4 x</b>	
2-3/4	9.150
2-7/8	11.324
3	13.594
3-1/4	18.419
3-1/2	23.625
3-3/4	29.213
4	36.368
4-1/4	42.755
<b>2-3/8 x</b>	
2-7/8	10.610
3	11.879
3-1/4	16.704
3-1/2	21.911
<b>2-1/2 x</b>	
2-3/4	5.625
2-7/8	7.800
3	10.069
3-1/8	12.434
3-1/4	14.894
3-1/2	20.101
3-3/4	25.688
4	32.913
4-1/4	39.300
4-1/2	46.067
4-3/4	53.217
5	60.747
5-1/2	78.714
6	96.538
7	136.762
<b>2-5/8 x</b>	
3-1/2	18.196
<b>2-3/4 x</b>	
3-1/4	10.989
3-1/2	16.195
3-3/4	21.783
4	29.076
4-1/4	35.463
4-1/2	42.231
4-3/4	49.380
<b>3 x</b>	
3-1/2	11.908
3-3/4	17.496
4	24.858
4-1/4	31.244
4-1/2	38.012
4-3/4	45.162
5	52.692
5-1/2	70.808
6	88.633

ID x OD (inches)	Weight (lbs./foot)
<b>3 x</b>	
6-1/2	107.982
7	128.856
8	175.179
<b>3-1/4 x</b>	
3-3/4	12.828
4	20.258
4-1/4	26.645
4-1/2	33.413
4-3/4	40.562
5	48.093
5-1/2	66.284
<b>3-1/2 x</b>	
4	15.278
4-1/4	21.664
4-1/2	28.432
4-3/4	35.582
5	43.112
5-1/2	61.378
6	79.202
6-1/2	98.551
<b>3-3/4 x</b>	
4-1/2	23.070
4-3/4	30.220
5	37.750
5-1/2	56.091
6	73.915
4-1/2	17.327
4-3/4	24.477
5	32.007
<b>4 x</b>	
5-1/4	42.082
5-1/2	50.422
6	68.246
6-1/2	87.896
7	108.470
7-1/2	130.869
8	154.793
9	207.217
<b>4-1/4 x</b>	
4-3/4	18.352
5	25.883
5-1/4	36.032
5-1/2	44.373
6	62.197
6-1/2	81.546
<b>4-1/2 x</b>	
5	19.377
5-1/2	37.942
6	55.766

ID x OD (inches)	Weight (lbs./foot)
<b>4-1/2 x</b>	
6-1/2	75.115
7	95.989
<b>4-3/4 x</b>	
5-3/4	39.851
6	48.954
6-1/2	68.303
<b>5 x</b>	
5-1/2	23.936
5-3/4	32.657
6	41.760
6-1/2	61.109
7	81.984
7-1/2	104.383
8	128.307
9	180.730
10	241.194
<b>5-1/2 x</b>	
6	26.230
6-1/2	45.579
7	66.453
7-1/2	88.852
8	112.776
<b>5-3/4 x</b>	
6-3/4	47.488
7-1/4	69.125
7-1/2	80.515
8	104.439
8-1/2	129.295
<b>6 x</b>	
6-1/2	28.523
6-3/4	38.770
7	49.397
7-1/4	60.151
7-1/2	71.486
8	95.721
8-1/2	121.170
9	148.144
10	208.754
11	273.499
12	344.345
<b>6-1/2 x</b>	
7-1/4	41.663
7-1/2	52.998
8	77.140
8-1/2	102.589
9	129.564
9-1/2	160.161

Continued on next page

# 932 Bronze Tube

## ASTM B505

Standard Lengths: 105" - 107.5"

ID x OD (inches)	Weight (lbs./foot)
<b>7 x</b>	
7-3/4	44.707
8	57.035
8-1/2	82.484
9	109.458
9-1/2	140.129
10	170.214
11	234.959
12	305.805
<b>7-1/2 x</b>	
8-1/2	60.853
9	89.619
9-1/2	118.571
10	148.657
10-1/2	180.267
<b>8 x</b>	
9	64.672
9-1/4	80.673
9-1/2	95.489
10	125.574
10-1/2	157.184
11	190.320
12	261.165
13	341.876
<b>8-1/2 x</b>	
9-1/2	70.882
10	100.967
10-1/2	132.577
11-1/2	200.372

ID x OD (inches)	Weight (lbs./foot)
<b>9 x</b>	
10	74.834
10-1/4	90.063
10-1/2	106.445
11	139.580
11-1/2	174.240
12	210.425
<b>9-1/2 x</b>	
10-1/2	78.787
11	111.922
11-1/2	146.583
12-1/2	220.478
<b>10 x</b>	
11	82.740
11-1/2	117.400
12	153.585
13	234.686
14	317.903
<b>10-1/2 x</b>	
11-1/2	86.693
12	122.878
12-1/2	160.588
13	204.077
<b>11 x</b>	
12	90.646
12-1/2	131.962
13	171.942
14	255.158
<b>11-1/2 x</b>	
13	138.282
13-1/2	179.128
14-1/2	297.568

ID x OD (inches)	Weight (lbs./foot)
<b>12 x</b>	
13-1/2	143.943
14	186.313
15	275.630
<b>12-1/2 x</b>	
14	148.861
<b>13 x</b>	
14-1/2	154.493
15	200.685
<b>13-1/2 x</b>	
15-1/2	206.838
<b>14 x</b>	
15-1/2	165.759
16	215.057
<b>15 x</b>	
17	229.428
<b>16 x</b>	
17	136.184
18	243.800
19	357.516
20	477.332
<b>17 x</b>	
19	258.171
20	377.988
<b>18 x</b>	
20	272.543

# 954 Bronze Tube

## Standard ASTM B505 Alloy

Standard Lengths: 12 ft. random

ID x OD (inches)	Weight (lbs./foot)
<b>3/4 x</b>	
1-1/4	3.300
1-1/2	5.133
1-3/4	7.285
2	9.755
<b>7/8 x</b>	
1-1/4	2.827
<b>1 x</b>	
1-3/8	3.183
1-1/2	4.139
1-3/4	6.291
2	8.761
2-1/4	11.550
2-1/2	14.658
2-3/4	17.981
3	21.830
3-1/2	31.074
4	40.876
<b>1-1/4 x</b>	
1-3/4	4.978
2	7.449
2-1/4	10.238
2-1/2	13.346
2-3/4	16.772
3	20.517
3-1/2	29.824
<b>1-1/2 x</b>	
1-7/8	4.542
2	5.817
2-1/4	8.606
2-1/2	11.714
2-3/4	15.141
3	18.866
3-1/4	23.833
3-1/2	28.256
3-3/4	32.808
4	38.058
4-1/2	49.135
<b>1-3/4 x</b>	
2-1/8	5.222
2-1/4	6.656
2-1/2	9.764
2-3/4	13.191
3	16.936
3-1/4	21.946
3-1/2	26.369
3-3/4	31.111
4	36.171

ID x OD (inches)	Weight (lbs./foot)
<b>2 x</b>	
2-3/8	5.901
2-1/2	7.495
2-3/4	10.922
3	14.667
3-1/4	19.740
3-1/2	24.163
3-3/4	28.905
4	33.966
4-1/2	45.043
5	58.391
6	89.127
7	122.870
<b>2-1/4 x</b>	
2-5/8	6.581
2-3/4	8.334
3	12.079
3-1/4	17.216
3-1/2	21.639
3-3/4	26.381
4	31.441
<b>2-1/2 x</b>	
3	9.173
3-1/4	14.373
3-1/2	18.796
3-3/4	23.537
4	28.598
4-1/2	39.675
4-3/4	45.429
5	53.074
6	84.270
<b>2-3/4 x</b>	
3-1/4	11.211
3-1/2	15.634
3-3/4	20.375
4	25.436
4-1/4	30.815
4-1/2	36.513
<b>3 x</b>	
3-1/2	12.153
3-3/4	16.895
4	21.955
4-1/4	27.334
4-1/2	33.032
5	46.482
5-1/2	60.189
6	77.793
7	111.902

ID x OD (inches)	Weight (lbs./foot)
<b>3-1/4 x</b>	
3-3/4	13.095
4	18.156
4-1/4	23.535
4-1/2	29.233
5	42.708
<b>3-1/2 x</b>	
4	14.037
4-1/4	19.416
4-1/2	25.114
5	38.616
5-1/2	52.322
6	70.041
<b>3-3/4 x</b>	
4-3/4	27.829
<b>4 x</b>	
4-1/2	15.922
4-3/4	23.099
5	29.474
5-1/2	43.180
6	61.014
6-1/2	67.129
7	95.123
8	134.332
<b>4-1/4 x</b>	
5	24.425
<b>4-1/2 x</b>	
5	19.057
5-1/4	25.751
5-1/2	32.763
6	50.712
6-1/2	67.129
<b>5 x</b>	
5-1/2	21.072
5-3/4	31.405
6	39.135
6-1/2	55.552
7	73.244
8	112.453
9	156.762
10	206.171
<b>5-1/2 x</b>	
6-1/2	42.700
<b>5-3/4 x</b>	
7-1/2	72.038

Continued on next page



# 954 Bronze Tube

**Standard ASTM B505 Alloy**

Standard Lengths: 12 ft. random

ID x OD (inches)	Weight (lbs./foot)
<b>6 x</b>	
7	46.265
8	85.474
9	129.783
10	179.192
<b>6-1/2 x</b>	
7-1/2	49.830
8-1/2	91.589
<b>6-3/4 x</b>	
7-3/4	51.316
<b>7 x</b>	
8	53.395
9	97.704
10	146.266
11	200.461
11-1/2	229.460

ID x OD (inches)	Weight (lbs./foot)
<b>7-1/2 x</b>	
8-1/2	56.632
9-1/2	103.819
10	128.417
11	182.612
<b>8 x</b>	
9	60.525
9-1/2	84.592
10	109.934
<b>8-1/2 x</b>	
9-1/2	36.721
<b>9 x</b>	
11	121.460
12	180.726
<b>10 x</b>	
11	74.354

ID x OD (inches)	Weight (lbs./foot)
<b>10-1/2 x</b>	
12	108.165
<b>11 x</b>	
12	81.443

# Bronze Products Tolerances

## Roundness Tolerances

### Outside Diameter in Maximum Out of Roundness<sup>A</sup> (inches)

<sup>A</sup> The deviation from roundness is measured as the difference between major and minor diameters at any one cross section of the tube.

932 (SAE 660) Bearing Bronze	
Up to 4" excluded	0.020
4" up to 5" included	0.032
Over 5"	0.064

954 and 959 Aluminum Bronze	
Up to 3" included	0.025
Over 3" to 4" included	0.040
Over 4" to 5-1/2" included	0.060
Over 5-1/2"	0.075

## Straightness Tolerances

Product	Length <sup>A</sup> (Feet)	Maximum Curvature <sup>B</sup> (Depth or arc) (inches)
Round Rod or Tube	Up to 10	1/4 in any 5 ft. portion
Round Rod or Tube	10 and Over	1/2 in any 10 ft. portion
Bar and Shape	Any Length	1/2 in any 6 ft. portion

## Finishing Allowances Added to 932 Bearing Bronze Tubes and Rounds

Standard inventory of bars and shapes are produced oversized to finish machine to the print or part size.

Finish Allowances		
Finished Outside Dia. (inches)	Inside Diameter (inches)	Outside Diameter (inches)
Up to 1.999 inclusive	-0.0190 to -0.0640	+0.0290 to +0.0390
Over 2 to 3.999 inclusive	-0.0190 to -0.0640	+0.0340 to +0.0440
Over 4 to 5 inclusive	-0.0470 to -0.1090	+0.0550 to +0.0710
Over 5 to 9 inclusive	-0.0620 to -0.1580	+0.0780 to +0.1100
Over 9 to 12 inclusive	-0.0780 to -0.1820	+0.0940 to +0.1340
Over 12 to 16 inclusive	-0.1020 to -0.2140	+0.1180 to +0.1660

# Bronze Products Tolerances

## Finishing Allowances Added to 932 Bearing Bronze Rectangles

Standard inventory of bars and shapes are produced oversized to finish machine to the print of part size.

Finish Allowances		
Finished Width (inches)	Thickness (inches)	Width (inches)
Up to 3.999 inclusive	+0.047 to +0.079	+0.047 to +0.079
Over 4 to 5 inclusive	+0.078 to +0.110	+0.078 to +0.110
Over 5.001 inclusive	+0.109 to +0.141	+0.109 to +0.141

## Finishing Allowances Added to 954 and 959 Aluminum Bronze Tubes and Rounds

Finish Allowances		
Finished Outside Dia. (inches)	Inside Diameter (inches)	Outside Diameter (inches)
Up to 3 inclusive	-0.0505 to -0.0955	+0.0525 to +0.0725
Over 3 to 4-1/2 inclusive	-0.0900 to -0.1450	+0.0790 to +0.1090
Over 4-1/2 to 5-1/2 inclusive	-0.1000 to -0.1650	+0.1050 to +0.1450
Over 5-1/2 to 9 inclusive	-0.1350 to -0.2100	+0.1630 to +0.2130

## Finishing Allowances Added to 954 Aluminum Bronze Rectangles

Finish Allowances		
Finished Width (inches)	Thickness (inches)	Width (inches)
Up to 3 inclusive	+0.067 to +0.107	+0.043 to +0.083
Over 3 to 5-1/2 inclusive	+0.067 to +0.107	+0.043 to +0.083
Over 5-1/2 to 12 inclusive	+0.087 to +0.127	+0.063 to +0.113
Over 12	+0.163 to +0.263	+0.125 to +0.225

**NOTE:** Thickness of rectangles 3" and thicker will use the over 12" wide tolerances.

## Finishing Allowances Added to 959 Aluminum Bronze Rectangles

Finish Allowances		
Finished Width (inches)	Thickness (inches)	Width (inches)
Up to 3 inclusive	+0.100 to +0.130	+0.113 to +0.163
Over 3 to 5-1/2 inclusive	+0.100 to +0.130	+0.113 to +0.163
Over 5-1/2 to 9-1/2 inclusive	+0.100 to +0.130	+0.113 to +0.163
Over 9-1/2	+0.163 to +0.263	+0.163 to +0.263

