

## STEEL SHEET THICKNESS TOLERANCE CHART

Gauge	H.R. & H.R.P.O.		Cold Rolled		Galvanized	
	Deci. Equiv.	Toler. Range	Deci. Equiv.	Toler. Range	Deci. Equiv.	Toler. Range
7	.1793	.1873/.1713	.1793	.1883/.1703	-	-
8	.1644	.1724/.1564	.1644	.1734/.1554	-	-
9	.1495	.1575/.1415	.1495	.1585/.1405	-	-
10	.1345	.1425/.1265	.1345	.1405/.1285	.1382	.1472/.1292
11	.1196	.1276/.1116	.1196	.1256/.1136	.1233	.1323/.1143
12	.1046	.1126/.0966	.1046	.1106/.0986	.1084	.1174/.0994
13	.0897	.0967/.0827	.0897	.0947/.0847	.0934	.1014/.0854
14	.0747	.0817/.0677	.0747	.0797/.0697	.0785	.0865/.0705
15	.0673	.0733/.0613	.0673	.0723/.0623	.0710	.0770/.0650
16	.0598	.0658/.0538	.0598	.0648/.0548	.0635	.0695/.0575
17	.0538	.0598/.0478	.0538	.0578/.0498	.0575	.0625/.0525
18	.0478	.0528/.0428	.0478	.0518/.0438	.0516	.0566/.0466
19	-	-	.0418	.0458/.0378	.0456	.0506/.0406
20	-	-	.0359	.0389/.0329	.0396	.0436/.0356
21	-	-	.0329	.0359/.0299	.0366	.0406/.0326
22	-	-	.0299	.0329/.0269	.0336	.0376/.0296
23	-	-	.0269	.0299/.0239	.0306	.0346/.0266
24	-	-	.0239	.0269/.0209	.0276	.0316/.0236
25	-	-	.0209	.0239/.0179	.0247	.0287/.0207
26	-	-	.0179	.0199/.0159	.0217	.0247/.0187
27	-	-	.0164	.0184/.0144	.0202	.0232/.0172
28	-	-	.0149	.0169/.0129	.0187	.0217/.0157
29	-	-	.0135	.0155/.0115	.0172	.0202/.0142
30	-	-	.0120	.0130/.0110	.0157	.0187/.0127

- Cold Rolled - Tolerances for widths over 48" thru 72"
- Hot Rolled (H.R.) - Tolerances for widths over 40" thru 48"
- Galvanized - Tolerances for widths over 40" thru 60"

## STEEL GAUGE CHART

Gauge	Carbon Sheets to U.S. Standard or Manufacturers Gauge		Galvanized Sheets to Galvanized Sheet Gauge	
	Thickness	Lbs/Sq.Ft.	Thickness	Lbs/Sq.Ft.
3	.2391"	10.00	-	-
4	.2242	9.375	-	-
5	.2092	8.750	-	-
6	.1943	8.125	-	-
7	.1793	7.500	-	-
8	.1644	6.875	.1681	7.031
9	.1495	6.250	.1532	6.406
10	.1345	5.625	.1382	5.781
11	.1196	5.000	.1233	5.516
12	.1046	4.375	.1084	4.531
13	.0897	3.750	.0934	3.906
14	.0747	3.125	.0785	3.281
15	.0673	2.813	.0710	2.969
16	.0598	2.500	.0635	2.656
17	.0538	2.250	.0575	2.406
18	.0478	2.000	.0516	2.156
19	.0418	1.750	.0456	1.906
20	.0359	1.500	.0396	1.656
21	.0329	1.375	.0366	1.531
22	.0299	1.250	.0336	1.406
23	.0269	1.125	.0306	1.281
24	.0239	1.000	.0276	1.156
25	.0209	.8750	.0247	1.031
26	.0179	.7500	.0217	.9063
27	.0164	.6875	.0202	.8438
28	.0149	.6250	.0187	.7813
29	.0135	.5625	.0172	.7188
30	.0120	.5000	.0157	.6563

- 3/16" thickness and larger are classified as plates
- Sheets ordered by gauge weight or thickness are subject to standard thickness and weight tolerances
- The Galvanized Sheet Gauge is based on the U.S. Standard Gauge
- Each Galvanized Sheet Gauge Number is 2.5 ounces per sq. ft. heavier or .0037" thicker than the weight or thickness of the corresponding U.S. Standard Gauge Number, regardless of coating or weights.

## IDENTIFICATION SYSTEMS

### A.I.S.I. Specifications

The most widely used system for designating carbon and alloy steels is the SAE-AISI system. As a point of technicality, there are two separate systems, but they are nearly identical and have been carefully coordinated by the two groups. The SAE-AISI system is applied to semi-finished forgings, hot-rolled and cold-finished bars, wire rod and seamless tubular goods, structural shapes, plates, sheet, strip, and welded tubing.

Carbon steels contain less than 1.65% Mn, 0.60% Si, and 0.60% Cu; they comprise the lxxx groups in the SAE-AISI system and are subdivided into four distinct series as a result of the difference in certain fundamental properties among them.

Designations for merchant quality steels include the prefix M. A carbon steel designation with the letter B inserted between the second and third digits indicates the steel contains 0.0005 to 0.003% B. Likewise, the letter L inserted between the second and third digits indicates that the steel contains 0.15 to 0.35% Pb for enhanced machinability. Resulfurized carbon steels of the 1 lxx group and resulfurized and rephosphorized carbon steels of the 12xx group are produced for applications requiring good machinability. Steels that having nominal manganese contents of between 0.9 and 1.5% but no other alloying additions now have 15xx designations in place of the 10xx designations formerly used.

Alloy steels contain manganese, silicon, or copper in quantities greater than those listed for the carbon steels, or they have specified ranges or minimums for one or more of the other alloying elements. In the AISI-SAE system of designations, the major alloying elements are indicated by the first two digits of the designation. The amount of carbon, in hundredths of a percent, is indicated by the last two (or three) digits.

For alloy steels that have specific hardenability requirements, the suffix H is used to distinguish these steels from corresponding grades that have no hardenability requirement. As with carbon steels, the letter B inserted between the second and third digits indicates that the steel contains boron. The prefix E signifies that the steel was produced by the electric furnace process.

Series Designation	Types and Classes
10xx	Nonsulphurized Carbon Steel Grades
11xx	Resulphurized Carbon Steel Grades
12xx	Rephosphorized Carbon Steel Grades
13xx	Manganese 1.60% to 1.90%
15xx	Manganese 1.00% to 1.35%, Sulphur 0.20% to .030%
23xx	Nickel 3.50%
25xx	Nickel 5.00%
31xx	Nickel 1.25%, Chromium 0.65% or 0.80%
33xx	Nickel 3.50%, Chromium 1.55%
40xx	Molybdenum 0.25%
41xx	Chromium 0.95%, Molybdenum 0.20%
43xx	Nickel 1.80%, Chromium 0.50% or 0.80%, Molybdenum 0.25%
46xx	Nickel 1.80%, Molybdenum 0.25%
48xx	Nickel 3.50%, Molybdenum 0.25%
50xx	Chromium 0.30% or 0.60%
51xx	Chromium 0.80% or 1.05%
5xxx	Carbon 1.00%, Chromium 0.50%, 1.00% or 1.45%
61xx	Chromium 0.80% or 0.95%, Vanadium 0.10% or 0.15%
86xx	Nickel 0.55%, Chromium 0.50%, Molybdenum 0.20%
87xx	Nickel 0.55%, Chromium 0.50%, Molybdenum 0.25%
92xx	Manganese 0.85%, Silicon 2.00%
93xx	Nickel 3.25%, Chromium 1.20%, Molybdenum 0.12%
94xx	Manganese 1.00%, Nickel 0.45%, Chromium 0.10%, Molybdenum 0.12%
97xx	Nickel 0.55%, Molybdenum 0.20%, Chromium 0.17%
98xx	Nickel 1.00%, Chromium 0.80%, Molybdenum 0.25%

### ASTM (ASME) Specifications

The most widely used standard specifications for steel products in the United States are those published by ASTM. These are complete specifications, generally adequate for procurement purposes. Many ASTM specifications apply to specific products, such as A 574 for alloy steel socket head cap screws. These specifications are generally oriented toward performance of the fabricated end product, with considerable latitude in chemical composition of the steel used to make the end product.

ASTM specifications represent a consensus among producers, specifiers, fabricators, and users of steel mill products. In many cases, the dimensions, tolerances, limits, and restrictions in the ASTM specifications are similar to or the same as the corresponding items of the standard practices in the AISI Steel Products Manuals.

Many of the ASTM specifications have been adopted by the American Society of Mechanical Engineers (ASME) with little or no modification; ASME uses the prefix S and the ASTM designation for these specifications. For example, ASME-SA213 and ASTM A 213 are identical.

Steel products can be identified by the number of the ASTM specification to which they are made. The number consists of the letter A (for ferrous materials) and an arbitrary, serially assigned number. Citing the specification number, however, is not always adequate to completely describe a steel product. For example, A 434 is the specification for heat-treated (hardened and tempered) alloy steel bars. To completely describe steel bars indicated by this specification, the grade (SAE-AISI designation in this case) and class (required strength level) must also be indicated. The ASTM specification A 434 also incorporates, by reference, two standards for test methods (A 370 for mechanical testing and E 112 for grain size determination) and A 29, which specifies the general requirements for bar products.

SAE-AISI designations for the compositions of carbon and alloy steels are sometimes incorporated into the ASTM specifications for bars, wires, and billets for forging. Some ASTM specifications for sheet products include SAE-AISI designations for composition. The ASTM specifications for plates and structural shapes generally specify the limits and ranges of chemical composition directly, without the SAE-AISI designations.

General Specifications. Several ASTM specifications, such as A 20 covering steel plate used for pressure vessels, contain the general requirements common to each member of a broad family of steel products. These general specifications are often supplemented by additional specifications describing a different mill form or intermediate fabricated product.

### Unified Number System (UNS)

UNS Series	Metal
A00001 to A99999	Aluminum and aluminum alloys
C00001 to C99999	Copper and copper alloys
D00001 to D99999	Specified mechanical property steels
E00001 to E99999	Rare earth and rare earth-like metals and alloys
F00001 to F99999	Cast irons
G00001 to G99999	AISI and SAE carbon and alloy steels (Except tool steels)
H00001 to H99999	AISI and SAE H-steels
J00001 to J99999	Cast steels (Except tool steels)
K00001 to K99999	Miscellaneous steels and ferrous alloys.
L00001 to L99999	Low-melting metals and alloys
M00001 to M99999	Miscellaneous nonferrous metals and alloys
N00001 to N99999	Nickel and nickel alloys
P00001 to P99999	Precious metals and alloys
R00001 to R99999	Reactive and refractory metals and alloys
S00001 to S99999	Heat and corrosion resistant (stainless) steels
T00001 to T99999	Tool steels, wrought and cast
W00001 to W99999	Welding filler metals
Z00001 to Z99999	Zinc and zinc alloys

DECIMAL EQUIVALENTS

CONVERTING INCHES INTO DECIMALS OF A FOOT

1/64"	.015625
1/32"	.03125
3/64"	.046875
1/16"	.0625
5/64"	.078125
3/32"	.09375
7/64"	.109375
1/8"	.125
9/64"	.140625
5/32"	.15625
11/64"	.171875
3/16"	.1875
13/64"	.203125
7/32"	.21875
15/64"	.234375
1/4"	.25
17/64"	.265625
9/32"	.28125
19/64"	.296875
5/16"	.3125
21/64"	.328125
11/32"	.34375
23/64"	.359375
3/8"	.375
25/64"	.390625
13/32"	.40625
27/64"	.421875
7/16"	.4375
29/64"	.453125
15/32"	.46875
31/64"	.484375
1/2"	.5

33/64"	.515625
17/32"	.53125
35/64"	.546875
9/16"	.5625
37/64"	.578125
19/32"	.59375
39/64"	.609375
5/8"	.625
41/64"	.640625
21/32"	.65625
43/64"	.671875
11/16"	.6875
45/64"	.703125
23/32"	.71875
47/64"	.734375
3/4"	.75
49/64"	.765625
25/32"	.78125
51/64"	.796875
13/16"	.8125
53/64"	.828125
27/32"	.84375
55/64"	.859375
7/8"	.875
57/64"	.890625
29/32"	.90625
59/64"	.921875
15/16"	.9375
61/64"	.953125
31/32"	.96875
63/64"	.984375
1"	1.0

1/16"	.005208	3-1/16"	.255208	6-1/16"	.505208	9-1/16"	.755208
1/8	.010416	3-1/8	.260416	6-1/8	.510416	9-1/8	.760416
3/16	.015625	3-3/16	.265625	6-3/16	.515625	9-3/16	.765625
1/4	.020833	3-1/4	.270833	6-1/4	.520833	9-1/4	.770833
5/16	.026042	3-5/16	.276042	6-5/16	.526042	9-5/16	.776042
3/8	.031250	3-3/8	.281250	6-3/8	.531250	9-3/8	.781250
7/16	.036458	3-7/16	.286458	6-7/16	.536458	9-7/16	.786458
1/2	.041666	3-1/2	.291666	6-1/2	.541666	9-2	.791666
9/16	.046875	3-9/16	.296875	6-9/16	.546875	9-9/16	.796875
5/8	.052083	3-5/8	.302083	6-5/8	.552083	9-5/8	.802083
11/16	.057292	3-11/16	.307292	6-11/16	.557292	9-11/16	.807292
3/4	.062500	3-3/4	.312500	6-3/4	.562500	9-3/4	.812500
13/16	.067708	3-13/16	.317708	6-13/16	.567708	9-13/16	.817708
7/8	.072916	3-7/8	.322916	6-7/8	.572916	9-7/8	.822916
15/16	.078125	3-15/16	.328125	6-15/16	.578125	9-15/16	.828125
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1-1/16	.088542	4-1/16	.338542	7-1/16	.588542	10-1/16	.838542
1-1/8	.093750	4-1/8	.343750	7-1/8	.593750	10-1/8	.843750
1-3/16	.098958	4-3/16	.348958	7-3/16	.598958	10-3/16	.848958
1-1/4	.104166	4-1/4	.354166	7-1/4	.604166	10-1/4	.854166
1-5/16	.109375	4-5/16	.359375	7-5/16	.609375	10-5/16	.859375
1-3/8	.114583	4-3/8	.364583	7-3/8	.614583	10-3/8	.864583
1-7/16	.119792	4-7/16	.369792	7-7/16	.619792	10-7/16	.869792
1-1/2	.125000	4-1/2	.375000	7-1/2	.625000	10-1/2	.875000
1-9/16	.130208	4-9/16	.380208	7-9/16	.630208	10-9/16	.880208
1-5/8	.135416	4-5/8	.385416	7-5/8	.635416	10-5/8	.885416
1-11/16	.140625	4-11/16	.390625	7-11/16	.640625	10-11/16	.890625
1-3/4	.145833	4-3/4	.395833	7-3/4	.645833	10-3/4	.895833
1-13/16	.151042	4-13/16	.401042	7-13/16	.651042	10-13/16	.901042
1-7/8	.156250	4-7/8	.406250	7-7/8	.656250	10-7/8	.906250
1-15/16	.161458	4-15/16	.411458	7-15/16	.661458	10-15/16	.911458
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2-1/16	.171875	5-1/16	.421875	8-1/16	.671875	11-1/16	.921875
2-1/8	.177083	5-1/8	.427083	8-1/8	.677083	11-1/8	.927083
2-3/16	.182292	5-3/16	.432292	8-3/16	.682292	11-3/16	.932292
2-1/4	.187500	5-1/4	.437500	8-1/4	.687500	11-1/4	.937500
2-5/16	.192708	5-5/16	.442708	8-5/16	.692708	11-5/16	.942708
2 3/8	.197916	5-3/8	.447916	8-3/8	.697916	11-3/8	.947916
2-7/16	.203125	5-7/16	.453125	8-7/16	.703125	11-7/16	.953125
2-1/2	.208333	5-1/2	.458333	8-1/2	.708333	11-1/2	.958333
2-9/16	.213542	5-9/16	.463542	8-9/16	.713542	11-9/16	.963542
2-5/8	.218750	5-5/8	.468750	8-5/8	.718750	11-5/8	.968750
2-11/16	.223958	5-11/16	.473958	8-11/16	.723958	11-11/16	.973958
2-3/4	.229166	5-3/4	.479166	8-3/4	.729166	11-3/4	.979166
2-13/16	.234375	5-13/16	.484375	8-13/16	.734375	11-13/16	.984375
2-7/8	.239583	5-7/8	.489583	8-7/8	.739583	11-7/8	.989583
2-15/16	.244792	5-15/16	.494792	8-15/16	.744792	11-15/16	.994792

**LENGTH - Basic unit is meter (m)**

Metric Unit	Meter	Inches	Feet	Yards	Miles
Millimeter (mm)	.001	-	-	-	-
Centimeter (cm)	.01	.3937	-	-	-
Decimeter (dm)	.1	3.927	.3281	.1094	-
Meter (m)	1	39.37	3.281	1.094	-
Decameter (dkm)	10	393.7	32.81	10.94	-
Hectometer (hm)	100	3937	328.1	109.4	-
Kilometer (km)	1000	-	3281	1094	.6214

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

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

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

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

Sq.Kilometer (sq.km) 1,000,000 -  
 Sq.In. to Sq.cm - multiply by 6.452  
 Sq.cm to Sq.In. - multiply by .1550  
 Sq.Ft. to Sq.m - multiply by .0929  
 Sq.Yds. to Sq.m - multiply by .8361  
 Sq.m to Sq.Yds. - multiply by 1.196

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

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

Metric Unit	Steres	Cub.In.	Cub.Ft.	Cub.Yards
Cu Millimeter (cu mm)	.000000001	-	-	-
Cu Centimeter (cu cm)	.000001	.06102	-	-
Cu Decimeter (cu dm)	.001	61.023	-	-
Decistere (ds)	.1	6102.3	3.531	.1308
Stere/Cu Meter (s/cu m)	1	61023	35.31	1.308
Decastere (dks)	10	-	353.1	13.08

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

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

**WEIGHT - Basic unit is gram (g)**

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

Grains to Centigrams - multiply by 6.48  
 Centigrams to Grains - multiply by .1543  
 Ounces to grams - multiply by 28.35  
 Tons to Metric Tons - multiply by .9078

Grams to Ounces - multiply by .03527  
 Pounds to Kilograms - multiply by .4536  
 Kilograms to Pounds - multiply by 2.2046  
 Metric Tons to Tons - multiply by 1.1023

mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches
1	0.0394	51	2.0079	101	3.9764	151	5.9449	201	7.9134	251	9.8819
2	0.0787	52	2.0472	102	4.0157	152	5.9843	202	7.9528	252	9.9213
3	0.1181	53	2.0866	103	4.0551	153	6.0236	203	7.9921	253	9.9606
4	0.1575	54	2.1260	104	4.0945	154	6.0630	204	8.0315	254	10.0000
5	0.1969	55	2.1654	105	4.1339	155	6.1024	205	8.0709	255	10.0394
6	0.2362	56	2.2047	106	4.1732	156	6.1417	206	8.1102	256	10.0787
7	0.2756	57	2.2441	107	4.2126	157	6.1811	207	8.1496	257	10.1181
8	0.3150	58	2.2835	108	4.2520	158	6.2205	208	8.1890	258	10.1575
9	0.3543	59	2.3228	109	4.2913	159	6.2598	209	8.2283	259	10.1969
10	0.3937	60	2.3622	110	4.3307	160	6.2992	210	8.2677	260	10.2362
11	0.4331	61	2.4016	111	4.3701	161	6.3386	211	8.3071	261	10.2756
12	0.4724	62	2.4409	112	4.4094	162	6.3780	212	8.3465	262	10.3150
13	0.5118	63	2.4803	113	4.4488	163	6.4173	213	8.3858	263	10.3543
14	0.5512	64	2.5197	114	4.4882	164	6.4567	214	8.4252	264	10.3937
15	0.5906	65	2.5591	115	4.5276	165	6.4961	215	8.4646	265	10.4331
16	0.6299	66	2.5984	116	4.5669	166	6.5354	216	8.5039	266	10.4724
17	0.6693	67	2.6378	117	4.6063	167	6.5748	217	8.5433	267	10.5118
18	0.7087	68	2.6772	118	4.6457	168	6.6142	218	8.5827	268	10.5512
19	0.7480	69	2.7165	119	4.6850	169	6.6535	219	8.6220	269	10.5906
20	0.7874	70	2.7559	120	4.7244	170	6.6929	220	8.6614	270	10.6299
21	0.8268	71	2.7953	121	4.7638	171	6.7323	221	8.7008	271	10.6693
22	0.8661	72	2.8346	122	4.8031	172	6.7717	222	8.7402	272	10.7087
23	0.9055	73	2.8740	123	4.8425	173	6.8110	223	8.7795	273	10.7480
24	0.9449	74	2.9134	124	4.8819	174	6.8504	224	8.8189	274	10.7874
25	0.9843	75	2.9528	125	4.9213	175	6.8898	225	8.8583	275	10.8268
26	1.0236	76	2.9921	126	4.9606	176	6.9291	226	8.8976	276	10.8661
27	1.0630	77	3.0315	127	5.0000	177	6.9685	227	8.9370	277	10.9055
28	1.1024	78	3.0709	128	5.0394	178	7.0079	228	8.9764	278	10.9449
29	1.1417	79	3.1102	129	5.0787	179	7.0472	229	9.0157	279	10.9843
30	1.1811	80	3.1496	130	5.1181	180	7.0866	230	9.0551	280	11.0236
31	1.2205	81	3.1890	131	5.1575	181	7.1260	231	9.0945	281	11.0630
32	1.2598	82	3.2283	132	5.1969	182	7.1654	232	9.1339	282	11.1024
33	1.2992	83	3.2677	133	5.2362	183	7.2047	233	9.1732	283	11.1417
34	1.3386	84	3.3071	134	5.2756	184	7.2441	234	9.2126	284	11.1811
35	1.3780	85	3.3465	135	5.3150	185	7.2835	235	9.2520	285	11.2205
36	1.4173	86	3.3858	136	5.3543	186	7.3228	236	9.2913	286	11.2598
37	1.4567	87	3.4252	137	5.3937	187	7.3622	237	9.3307	287	11.2992
38	1.4961	88	3.4646	138	5.4331	188	7.4016	238	9.3701	288	11.3386
39	1.5354	89	3.5039	139	5.4724	189	7.4409	239	9.4094	289	11.3780
40	1.5748	90	3.5433	140	5.5118	190	7.4803	240	9.4488	290	11.4173
41	1.6142	91	3.5827	141	5.5512	191	7.5197	241	9.4882	291	11.4567
42	1.6535	92	3.6220	142	5.5906	192	7.5591	242	9.5276	292	11.4961
43	1.6929	93	3.6614	143	5.6299	193	7.5984	243	9.5669	293	11.5354
44	1.7323	94	3.7008	144	5.6693	194	7.6378	244	9.6063	294	11.5748
45	1.7717	95	3.7402	145	5.7087	195	7.6772	245	9.6457	295	11.6142
46	1.8110	96	3.7795	146	5.7480	196	7.7165	246	9.6850	296	11.6535
47	1.8504	97	3.8189	147	5.7874	197	7.7559	247	9.7244	297	11.6929
48	1.8898	98	3.8583	148	5.8268	198	7.7953	248	9.7638	298	11.7323
49	1.9291	99	3.8976	149	5.8661	199	7.8346	249	9.8031	299	11.7717
50	1.9685	100	3.9370	150	5.9055	200	7.8740	250	9.8425	300	11.8110

## SOLVING GEOMETRIC FIGURES

- To find the CIRCUMFERENCE OF A CIRCLE, multiply the diameter by 3.1416
  - The radius of a circle  $\times 6.283185$  = the circumference
- To find the DIAMETER OF A CIRCLE, multiply the circumference by 0.31831
- The square root of the area of a circle  $\times 1.12838$  = the diameter
- The circumference of a circle  $\times 0.159155$  = the radius
- The square root of the area of a circle  $\times 0.56419$  = the radius
- To find the AREA OF A CIRCLE, multiply the square of the diameter by 0.7854
  - The square of the circumference of a circle  $\times 0.07958$  = the area
- Half the circumference of a circle  $\times \frac{1}{2}$  its diameter = the area
- AREA OF THE SURFACE OF A SPHERE, multiply the square of the diameter by 3.1416
  - To find the AREA OF A TRIANGLE, multiply the base by  $\frac{1}{2}$  the perpendicular height
  - To find the AREA OF A TRAPEZOID, multiply  $\frac{1}{2}$  sum of parallel sides by the perpendicular height
  - To find the AREA OF A REGULAR HEXAGON, multiply the square of one side by 2.598
  - To find the AREA OF A REGULAR OCTAGON, multiply the square of one side by 4.828
  - To find the AREA OF A REGULAR POLYGON, multiply  $\frac{1}{2}$  sum of the sides by inside radius
- To find the VOLUME OF A SPHERE, multiply the cube of the diameter by 0.5236
  - To find the AREA OF A REGULAR HEXAGON, multiply the square of one side by 2.598
- To find the AREA OF AN ELLIPSE, multiply the long diameter  $\times$  short diameter  $\times 0.78540$
- To find the SIDE OF A SQUARE INSCRIBED IN A CIRCLE, multiply the diameter by 0.7071
- To find the SIDE OF A SQUARE EQUAL IN AREA TO A GIVEN CIRCLE, multiply the diameter by 0.8862
- To find the DIAMETER OF A CIRCLE EQUAL IN AREA TO A GIVEN SQUARE, multiply a side of the square by 1.12838
- To find the SIDE OF A HEXAGON INSCRIBED IN A CIRCLE, multiply the diameter of the circle by 0.5
- To find the DIAMETER OF A CIRCLE INSCRIBED IN A HEXAGON, multiply a side of the hexagon by 1.7321
- To find the SIDE OF AN EQUILATERAL TRIANGLE INSCRIBED IN A CIRCLE, multiply the diameter of the circle by 0.866
- To find the DIAMETER OF A CIRCLE INSCRIBED IN AN EQUILATERAL TRIANGLE, multiply the side of the triangle by 0.57735
- To find the AREA OF A SQUARE or RECTANGLE, multiply the base by the height
- To find the AREA OF A REGULAR HEXAGON, multiply the square of one side by 2.598
- To find the AREA OF A REGULAR OCTAGON, multiply the square of one side by 4.828
- To find the AREA OF A REGULAR POLYGON, multiply  $\frac{1}{2}$  sum of the sides by inside radius

## POWER TRANSMISSION

- Bob Dean Supply only carries top quality and reputable power transmission lines such as Browning, Hub City, Morse, and Dodge.
  - Allied Locked**.....Engineering Chain
  - Baldor**.....Electric Motors
  - Bower/BCA**.....Tapered Roller Bearings and Ball Bearings
  - Browning/EPT**.....Sheaves, Sprockets, Bearings, Reducers, Couplings
  - Conveyors Inc.**.....Screw Conveyors
  - Dodge/Rockwell**.....Bearings, Couplings, Speed Reducers, Pulleys
  - Durst/Terrell**.....Gear Boxes
  - Duramax**.....Marine Bearings
  - Falk**.....Gear Reducers and Couplings
  - Flexco**.....Belt Lacing and Belt Fasteners
  - Gates**.....V-Belts
  - HKK**.....Roller Chain
  - Husco**.....PTO Yokes and Ends
  - Intralox**.....Plastic Conveyor Belts
  - Hub City**.....Gear Drives and Bearings
  - Lovejoy**.....Couplings
  - McGill**.....CAM Followers and Spherical Bearings
  - Keystone**.....Wire Belts
  - Marathon**.....Electric Motors
  - Martin**.....Sprockets, Couplings, Screw Conveyors, Sheaves
  - Morse Industrial**.....Gear Reducers
  - Mulhern**.....PVC and Rubber Conveyor Belts
  - National Seal**.....Oil Seals and O-Rings
  - Neapco**.....Agricultural PTO Yokes
  - Omni Metalcraft**.....Roller Conveyors
  - Rexnord**.....Chain and Bearings
  - Reliance**.....Electric Motors and Variable Speed Drives
  - Sealmaster**.....Mounted Bearings
  - Solus/Nolu**.....UHMW Bearings
  - Stober**.....Gear Boxes
  - Superior**.....Troughing Idlers
  - U.S. Motor**.....Electric Motors
  - U.S. Tsubaki**.....Roller Chain and Sprockets
  - Van Corp.**.....Head and Wing Conveyor Pulleys
- We stock over 650 sizes of V-belts, 620 sizes of sheaves and 3,000 sprockets ranging from #41 to #200.
- Electric motors from Baldor and U.S. Motor are in stock up to 100HP TEFC.
- All sizes of roller chain and attachments, Bower/BCA bearings and National Oil Seals are available.

## PUMPS AND ACCESSORIES

- Bob Dean Supply represents many quality pump lines for a variety of applications for the industrial, agricultural and municipal markets.
  - Armstrong**.....Commercial Booster Pumps
  - Barnes**.....Wastewater & Sewage Pumps
  - Berkeley**.....End Suction Centrifugal Pumps
  - CH & E**.....Trash & Diaphragm Pumps
  - Fill-Rite**.....Fuel Pumps and Meters
  - Goolds**.....Full Line
  - Hypro**.....Pressure Washers, Agricultural & Transfer Pumps
  - MP Pump**.....Agricultural Spray & Transfer Pumps
  - Myers**.....Home Water Systems, Wastewater & Sewage Pumps
  - Pacer**.....Non-Metallic Transfer Pumps
  - Peerless**.....Vertical Turbine, Vertical & Horizontal Split Case
  - Protek**.....Hand and Exhaust Primers
  - Sta-Rite**.....Self-Priming Centrifugal Irrigation Pumps
  - Stenner**.....Chemical Feed Pumps
  - Zoeller**.....Wastewater & Sewage Pumps
- Motor lines include U.S. Electric, Goolds, Franklin, Baldor & Honda.
- Accessories from Roto Float, Cla-Val, Flomatic, McCrometer, Square-D, Flowserve.

# INDUSTRIAL SUPPLY

• Bob Dean Supply stocks over 14,000 industrial mill supplies in our Fort Myers warehouse.

## Abrasives

DeWalt, ..... Abrasive Belts and Discs  
Brilliant Abrasives, ..... Wheels, Cloth, Paper, Belts, Discs  
Norton, ..... Wheels, Discs, Paper, Shop Rolls  
Formax, ..... Buffing Compounds and Buffs  
Carbide Burs • Flap Discs & Flap Wheels • Hand Pads  
Wire Wheel Brushes & Wire Cup Brushes

## Air Compressors & Accessories

Dixon, ..... Air Line Couplers  
Ingersoll Rand, ..... Air Compressors and Dryers  
McDaniel, ..... Gauges  
Saylor-Beall, ..... Air Compressors  
Wilkerson, ..... Filters, Regulators and Lubricators

## Air Tools & Accessories

Chicago Pneumatic, ..... Grinders, Chisels, Impact Wrenches  
Florida Pneumatic, ..... Tools, Paving Breakers & Hoists  
JET, ..... Grinders, Drills, Paving Breakers

## Chemicals and Fluids

Aerovoe-Pacific, ..... Aerosols, Lubes, Contact Cleaner  
Blaster, ..... Penetrating Solvent  
Crown, ..... Aerosols, Cold Galvanizing, Layout Dye  
Devcon, ..... Epoxy Compounds, Sealants  
LPS, ..... Contact Cleaner, Lubrications  
Never Seez, ..... Anti-seize compounds  
Osborn International, ..... Aerosols  
Hand Cleaner • Belt Dressing • WD-40 • Rust Inhibitors  
Cleaners and Degreasers • Auto Grease Feeders • Wasp Spray

## Cutting Tools

Brilliant, ..... Masonry and Core Drills  
DeWalt, ..... Chisels, Circular Saws, Saw Blades  
Morse, ..... Reamers, Taps, Dies, Tool Bits, Cutters  
JET, ..... Bolt and Cable Cutters  
L.S.Starrett, ..... Saws, Bandsaw Blades, Hole Saws  
Ridgid, ..... Pipe Dies and Cutting Tools  
Warrens ville, ..... Files  
Annular Cutters • Boring Bars • Countersinks • Drill Bits • Reamers  
End Mills • Deburring Tools • Threading Tools

## Fasteners

All Thread Rod • Anchors • Carriage Bolts • Cotter Pins • Cap Screws  
• Nuts • Plow Bolts • Set Screws • Socket Screws • Spring Pins  
Turnbuckles • U-Bolts • Washers

## Gasketing & Packing

Dixon, ..... Gnylock Gaskets, Banding  
John Crane, ..... Packing  
Garlock, ..... Packing  
Companion Flange Gaskets • Nobestos Gaskets & Sheets  
Spiral Wound Gaskets • Neoprene, Diaphragm, Nobruze, Red Rubber  
and Skirtboard

## Hand and Precision Tools

L.S.Starrett, ..... Rules, Tapes, Micrometers, Calipers  
Elkind, ..... Hex Keys Wrenches and T-Keys  
General, ..... Precision Tools, Punches  
Irwin, ..... Visegrip Locking Tools, Pliers&Clamps  
Ohio, ..... Shim Stock  
Martin Tool, ..... Wrenches, Sockets, Pliers, Chisels, etc.  
Osborn International, ..... Brooms, Wire Brushes, Paint Brushes  
Ridgid, ..... Pipe Wrenches and Pipe Tools  
Union Tool, ..... Shovels, Rakes, Forks, Hand Saws  
Wiss, ..... Snips

## Hose, Valves & Fittings

American, ..... Flanged and Screwed Fittings  
Anvil International, ..... Gate, Ball, Glove & Companion Flanges  
Dezurik, ..... Knife Gate Valves  
Dixon, ..... Hose Couplings, Valves  
Gates, ..... Hydraulic Hose Fittings  
Goodyear, ..... Hose  
Milwaukee Valve, ..... Ball, Gate and Butterfly Valves  
Simmons, ..... Foot and Check Valves  
Tubeline, ..... Weld-on Fittings  
Webstone, ..... Gate and Ball Valves  
Nipples (Black, Galvanized & Stainless Steel) • Pipe Fittings (Black,  
Galvanized & Stainless Steel) • Suction & Discharge Hose • Air King  
Couplers • Cam and Groove Couplings • Clamps • Hose Menders  
Nozzles • Pipe Hangers • Strainers

## Maintenance and Safety

Air King, ..... Pivoting Blowers  
Alemite, ..... Grease Fittings and Lubrication  
Campbell, ..... Coil Chain and Fittings  
Clipper, ..... Belt Lacing  
Coffing, ..... Chain, Cable, Hoists and Trolleys  
Eagle, ..... Gas and Safety Cans  
Hamilton, ..... Casters, Wheel and Trucks  
Indusco, ..... Steel Cable and Wire Rope  
JET, ..... Hoists, Pallet Trucks, Bolt Cutters  
Lawrence, ..... Trolley and Rail  
Lug-All, ..... Lever Type Cable Hoists  
Osborn, ..... Brushes, Brooms, Paint Brushes  
Retco, ..... Rainsuits and Boots  
Samson Cordage, ..... Manilla Rope  
Smith & Wesson, ..... Safety Glasses  
Trico, ..... Oilers  
Wesco, ..... 2 and 4 Wheel Trucks, Drum Cradles  
Wilson, ..... Eye & Hearing Protection, Respirators  
Absorbents • Cleaners • Brooms • Hand Trucks • Hoists • Gloves  
Flashlights • Fans • Safety Vests • Tape

## Paint

Rust-Oleum, ..... Entire Industrial Line  
Aerovoe-Pacific, ..... Spray Paints and Marking Paints

## Power Tools

DeWalt, ..... Drills, Angle Grinders, etc.  
Makita, ..... Drills, Angle Grinders, etc.  
HiTech, ..... Mag Drills, Saws  
Ridgid, ..... Pipe Cutters, Pipe Threaders  
Drills • Grinders • Hole Saws • Magnetic Drill Presses • Tools Bits

## Welding Supplies

Jackson, ..... Welding Helmets & Electrode Holders  
Lincoln, ..... Welding Rods  
Wypo, ..... Tip Cleaners  
Brazeing Rod (Bronze & Steel) • Welding Gloves • Soapstone