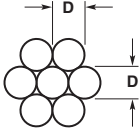
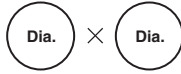
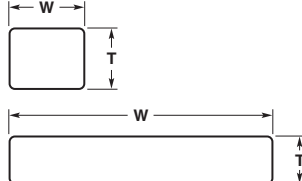


Wire Calculations and Instructions

How to Compute Circular Mil Area of Various Wire Shapes

	U.S. Customary Dimensions	Metric Dimensions
Stranded Wire AWG  Number of Strands	Use Chart 1. Read circular mil area directly from table. Alternate Method Multiply the diameter of one strand (in mils) by itself, and then multiply the result by the total number of strands. $CMA = D^2 \times N$	Use Chart 1. Read circular mil area directly from table. Alternate Method Multiply the diameter of one strand in millimeters by itself, and then by the number of strands, and then by 1500.003. $CMA = D^2 \times N \times 1550.003$
Round Solid Wire AWG 	Use chart 1 or 2. Read circular mil area directly from table. Alternate Method Multiply the diameter in mils by itself. $CMA = D^2$	Use chart 1 or 2. Read circular mil area directly from table. Alternate Method Multiply the diameter in millimeters by itself by 1550.003. $CMA = D^2 \times 1550.003$
Square or Rectangular Wire 	Multiply the width of the wire cross section in mils by the thickness of the wire cross section in mils by 1.2732 and subtract the radius factor included below. $CMA = W \times T \times 1.2732 - \text{radius factor}$	Multiply the width of the wire cross section in millimeters by the thickness in millimeters by 1973.525 and subtract the radius factor included below. $CMA = W \times T \times 1973.525 - \text{radius factor}$

Conversion Table

To Convert From	To	Multiply By
CMA	mm ²	0.0005067075
CMA	in ²	0.0000007854
mm ²	in ²	0.0015500030
mm ²	CMA	1973.525

Radius Factor, U.S. Customary

Radius (in.)	Radius Factor To Subtract (CMA)
.010	110
.012	158
.016	280
.020	438
.026	740
.032	1121
.040	1752
.063	4346
.940	9675

Radius Factor, Metric

Radius (mm)	Radius Factor To Subtract (CMA)
0.25	106
0.30	153
0.35	208
0.40	272
0.50	424
0.60	611
0.80	1086
1.20	2444
0.94	9675

How to Compute Circular Mil Area of Various Wire Shapes (Continued)

**Circular Mil Area (CMA) /
Nominal Wire Sizes**

CMA	Normal Wire Size		No.	Strands		Approximate Conductor Diameter	
	AWG	mm ²		Diameter		Inch	mm
				Inch	mm		
4.0	44	0.002	1	.00195	0.050	.002	0.051
16.0	38	0.008	1	.0040	0.102	.004	0.102
64.0	32	0.032	1	.0080	0.203	.008	0.203
175.0	28	0.089	7	.0050	0.127	.015	0.381
388	24	0.197	1	.0197	0.500	.020	0.508
397	24	0.201	10	.0063	0.160	.023	0.584
400	24	0.203	16	.0050	0.127	.023	0.584
400	24	0.203	4	.0100	0.254	.023	0.584
403	24	0.204	8	.0071	0.180	.023	0.584
634	22	0.321	8	.0089	0.226	.029	0.737
635	22	0.322	16	.0063	0.160	.029	0.737
640	22	0.324	10	.0080	0.203	.029	0.737
640	22	0.324	1	.0253	0.643	.025	0.635
992	20	0.503	1	.0315	0.800	.032	0.813
1000	20	0.507	10	.0100	0.254	.038	0.965
1008	20	0.511	20	.0071	0.180	.039	0.991
1024	20	0.519	16	.0080	0.203	.039	0.991
1600	18	0.811	16	.0100	0.254	.049	1.245
1608	18	0.815	19	.0092	0.234	.049	1.245
1617	18	0.819	7	.0152	0.386	.042	1.067
1624	18	0.823	1	.0403	1.024	.040	1.016
2521	16	1.277	50	.0071	0.180	.059	1.499
2540	16	1.287	16	.0126	0.320	.059	1.499
2581	16	1.308	1	.0508	1.290	.051	1.295
2800	16	1.419	7	.0200	0.508	.061	1.549
3831	14	1.941	19	.0142	0.361	.076	1.930
4099	14	2.077	7	.0242	0.615	.076	1.930
4109	14	2.082	1	.0641	1.628	.064	1.626
6503	12	3.295	19	.0185	0.470	.092	2.337
6512	12	3.300	7	.0305	0.775	.086	2.184
6529	12	3.308	1	.0808	2.052	.081	2.057
9072	10	4.597	7	.0360	0.914	.096	2.438
10080	10	5.108	1	.1004	2.550	.100	2.540
10404	10	5.272	19	.0234	0.594	.117	2.972
16512	8	8	1	.1285	3.260	.129	3.260
16533	8	8	7	.0486	1.230	.146	3.710
16535	8	8	19	.0295	0.750	.148	3.760
262218	6	13	7	.0612	1.550	.184	4.670
26244	6	13	1	.1620	4.110	.162	4.110
26292	6	15	19	.0372	0.940	.202	5.130
41616	4	21	1	.2040	5.182	.204	5.180
41718	4	21	7	.0772	1.961	.232	5.890
41792	4	21	19	.0469	1.191	.226	5.740
95509	0	50	19	.0709	1.800	.354	9.000
97610	0	50	396	.0157	0.400	.406	10.300
98409	0	50	702	.0118	0.300	.370	9.400

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6643447	46	6648417	82	6651494	75		

Engineering Notes



Americas

Argentina – Buenos Aires
Phone: +54-11-4733-2200
Fax: +54-11-4733-2211

Brasil – São Paulo
Phone: +55-11-2103-6000
Fax: +55-11-2103-6030

Chile – Santiago
Phone: +56-2-345-0361
Fax: +56-2-223-1477

Canada – Toronto
Phone: +905-475-6222
Fax: +905-474-5520
Product Information Center:
Phone: +905-470-4425
Fax: +905-474-5525

Colombia – Bogota
Phone: +57-1-319-8959
Fax: +57-1-319-8960

Mexico – Mexico City
Phone: +52-55-1106-0800
+01-800-733-8926
Fax: +52-55-1106-0901

For Latin/South American Countries not shown
Phone: +54-11-4733-2015
Fax: +54-11-4733-2083

United States
Harrisburg, PA
Phone: +1-717-564-0100
Fax: +1-717-986-7575
Product Information Center:
Phone: +1-800-522-6752
Fax: +1-717-986-7575
Troy, MI
Phone: +1-248-273-3359
Fax: +1-248-273-3322

Asia/Pacific

Australia – Sydney
Phone: +61-2-9554-2600
Fax: +61-2-9502-2556
Product Information Center:
Phone: +61-2-9840-8200
Fax: +61-2-9634-6188

India – Bangalore
Phone: +91-80-285-40800
Fax: +91-80-285-40820

Indonesia – Jakarta
Phone: +65-6482-0311
Fax: +65-6482-1012

Japan – Kawasaki, Kanagawa
Phone: +81-44-844-8111
Fax: +81-44-812-3207
Product Information Center:
Phone: +81-44-844-8013
Fax: +81-44-812-3200

Korea – Seoul
Phone: +82-2-3415-4500
Fax: +82-2-3486-3810

Malaysia – Selangor
Phone: +60-3-7805-3055
Fax: +60-3-7805-3066

New Zealand – Auckland
Phone: +64-9-634-4580
Fax: +64-9-634-4586

Philippines – Makati City
Phone: +632-848-0171
Fax: +632-867-8661

People's Republic of China
Hong Kong
Phone: +852-2735-1628
Fax: +852-2735-0243
Shanghai
Phone: +86-21-2407-1588
Fax: +86-21-2407-1599

Singapore – Singapore
Phone: +65-6482-0311
Fax: +65-6482-1012

Taiwan – Taipei
Phone: +886-2-8768-2788
Fax: +886-2-8768-2268

Thailand – Bangkok
Phone: +66-2-955-0500
Fax: +66-2-955-0505

Vietnam – Ho Chi Minh City
Phone: +84-8-930-5546
Fax: +84-8-930-3443

Europe/Middle East/Africa

Austria – Vienna
Phone: +43-1-905-60-0
Fax: +43-1-905-60-1333
Product Information Center:
Phone: +43-1-905-60-1249
Fax: +43-1-905-60-1251

Belarus – Minsk
Phone: +375 17 237 47 94
Fax: +375 17 237 47 94

Belgium – Kessel-Lo
Phone: +32-16-352-300
Fax: +32-16-352-355

Bulgaria – Sofia
Phone: +359-2-971-2152
Fax: +359-2-971-2153

Czech Republic and Slovakia
Czech Republic – Kurim
Phone: +420-541-162-111
Fax: +420-541-162-223
Product Information Center:
Phone: +420-541-162-113
Fax: +420-541-162-132

Denmark – Glostrup
Phone: +45-43-48-04-00
Fax: +45-43-44-14-14

Egypt – Cairo
Phone: +202-419-2334
Fax: +202-417-7647

Estonia – Tartu
Phone: +372-5138-274
Fax: +372-7400-779

Finland – Helsinki
Phone: +358-95-12-34-20
Fax: +358-95-12-34-250

France – Cergy-Pontoise Cedex
Phone: +33-1-3420-8888
Fax: +33-1-3420-8600
Product Information Center:
Phone: +33-1-3420-8686
Fax: +33-1-3420-8623

France Export Divisions –
Cergy-Pontoise Cedex
Phone: +33-1-3420-8804
Fax: +33-1-3420-8699

Germany – Bensheim
Phone: +49-6251-133-0
Fax: +49-6251-133-1600
Product Information Center:
Phone: +49-6251-133-1999
Fax: +49-6251-133-1988

Greece – Athens
Phone: +30-210-9370-396/397
Fax: +30-210-9370-655

Hungary – Budapest
Phone: +36-1-289-1000
Fax: +36-1-289-1010
Product Information Center:
Phone: +36-1-289-1016
Fax: +36-1-289-1017

Ireland – Dublin
Phone: +353-1-866-5612
Fax: +353-1-866-5714

Israel – Petach-Tikva
Phone: +972-3-929-0999
Fax: +972-3-919-1088

Italy – Collegno (Torino)
Phone: +39-011-4012-111
Fax: +39-011-4031-116
Product Information Center:
Phone: +39-011-4012-428
Fax: +39-011-40-287-428

Lithuania and Latvia
Lithuania – Vilnius
Phone: +370-5-213-1402
Fax: +370-5-213-1403
Product Information Center:
Phone: +370-5-211-3016
Fax: +370-5-213-1403

Netherlands – 's-Hertogenbosch
Phone: +31-73-6246-246
Fax: +31-73-6212-365
Product Information Center:
Phone: +31-73-6246-999
Fax: +31-73-6246-998

Norway – Nesbru
Phone: +47-66-77-88-50
Fax: +47-66-77-88-55

Poland – Warsaw
Phone: +48-22-4576-700
Fax: +48-22-4576-720
Product Information Center:
Phone: +48-22-4576-704
Fax: +48-22-4576-720

Romania – Bucharest
Phone: +40-21-311-3479/3596
Fax: +40-21-312-0574

Russia – Moscow
Phone: +7-495-790-7902
Fax: +7-495-721-1893
Product Information Center:
Phone: +7-495-790-7902-404
Fax: +7-495-790-7902-401

Russia – St. Petersburg
Phone: +7-812-718-8192
Fax: +7-812-718-8193

Slovenia – Ljubljana
Phone: +386-1561-3270
Fax: +386-1561-3240

South Africa – Port Elizabeth
Phone: +27-41-503-4500
Fax: +27-41-581-0440

Spain – Barcelona
Phone: +34-93-291-0330
Fax: +34-93-201-7879

Sweden – Upplands Väsby
Phone: +46-8-50-72-50-00
Fax: +46-8-50-72-50-01

Switzerland – Steinach
Phone: +41-71-447-0447
Fax: +41-71-447-0444

Turkey – Istanbul
Phone: +90-212-281-8181/2/3
+90-212-282-5130/5430
Fax: +90-212-281-8184

Ukraine – Kiev
Phone: +380-44-206-2265
Fax: +380-44-206-2264
Product Information Center:
Phone: +380-44-206-2265
Fax: +380-44-206-2264

United Kingdom –
Stanmore, Middlesex
Phone: +44-8706-080208
Fax: +44-208-954-6234
Product Information Center:
Freephone (UK only):
0800-267-666
Phone: +44-8706-080208
Fax: +44-208-420-8095