

# Copper Busbar Ampacity Tables

Ampacities of Copper Bus Bars Alloy UNS C11000

Dimension, In.	Area		Weight Per Ft. in Lb.	DC Resistance at 20 ° C, Microhms/Ft.	30°C Rise		50°C Rise		65°C Rise	
	Sq. In	MCM (Thousand Circ Mills)			Skin Effect Ratio at 90°C	60 Hz Ampacity Amp*	Skin Effect Ratio at 90°C	60 Hz Ampacity Amp*	Skin Effect Ratio at 90°C	60 Hz Ampacity Amp*
1/16 x 1/2	.0312	39.7	.121	264.0	1.00	103	1.00	136	1.00	157
1/16 x 3/4	.0469	59.7	.181	175.0	1.00	145	1.00	193	1.00	225
1/16 x 1	.0625	79.6	.241	132	1.00	187	1.00	250	1.00	285
1/16 x 1 1/2	.0938	119	.362	87.7	1.00	270	1.00	355	1.00	410
1/16 x 2	.125	159	.483	65.8	1.01	345	1.01	460	1.01	530
1/8 x 1/2	.0625	79.6	.241	132	1.00	153	1.00	205	1.00	235
1/8 x 3/4	.0938	119	.362	87.7	1.00	215	1.00	285	1.00	325
1/8 x 1	.125	159	.483	65.8	1.01	270	1.01	360	1.01	415
1/8 x 1 1/2	.188	239	.726	43.8	1.01	385	1.01	510	1.01	590
1/8 x 2	.250	318	.966	32.9	1.02	495	1.02	660	1.02	760
1/8 x 2 1/2	.312	397	1.21	26.4	1.02	600	1.02	800	1.02	920
1/8 x 3	.375	477	1.45	21.9	1.03	710	1.03	940	1.03	1100
1/8 x 3 1/2	.438	558	1.69	18.8	1.04	810	1.03	1100	1.03	1250
1/8 x 4	.500	636	1.93	16.5	1.04	900	1.04	1200	1.04	1400
3/16 x 1/2	.0938	119	.362	87.7	1.00	195	1.00	260	1.00	300
3/16 x 3/4	.141	179	.545	58.4	1.01	270	1.01	360	1.01	415
3/16 x 1	.188	239	.726	43.8	1.01	340	1.01	455	1.01	520
3/16 x 1 1/2	.281	358	1.09	29.3	1.02	480	1.02	630	1.02	730
3/16 x 2	.375	477	1.45	21.9	1.03	610	1.03	810	1.03	940
3/16 x 2 1/2	.469	597	1.81	17.5	1.04	740	1.04	980	1.03	1150
3/16 x 3	.562	715	2.17	14.6	1.05	870	1.05	1150	1.04	1350
3/16 x 3 1/2	.656	835	2.53	12.5	1.07	990	1.06	1300	1.06	1500
3/16 x 4	.750	955	2.90	11.0	1.09	1100	1.08	1450	1.07	1700
1/4 x 1/2	.125	159	.483	65.8	1.01	240	1.01	315	1.01	360
1/4 x 3/4	.188	239	.726	43.8	1.01	320	1.01	425	1.01	490
1/4 x 1	.250	318	.966	32.9	1.02	400	1.02	530	1.02	620
1/4 x 1 1/2	.375	477	1.45	21.9	1.03	560	1.03	740	1.03	860
1/4 x 2	.500	637	1.93	16.5	1.04	710	1.04	940	1.04	1100
1/4 x 2 1/2	.625	796	2.41	13.2	1.06	850	1.06	1150	1.06	1300
1/4 x 3	.750	955	2.90	11.0	1.08	990	1.08	1300	1.07	1550
1/4 x 3 1/2	.875	1110	3.38	9.40	1.10	1150	1.09	1500	1.09	1750
1/4 x 4	1.00	1270	3.86	8.23	1.12	1250	1.11	1700	1.10	1950
1/4 x 5	1.25	1590	4.83	6.58	1.16	1500	1.15	2000	1.14	2350
1/4 x 6	1.50	1910	5.80	5.49	1.18	1750	1.17	2350	1.17	2700

All dimensions are nominal and subject to normal manufacturing tolerances



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Ampacities of Copper Bus Bars Alloy UNS C11000

Dimension, In.	Area		Weight Per Ft. in Lb.	DC Resistance at 20 ° C, Microhms/Ft.	30°C Rise		50°C Rise		65°C Rise	
	Sq. In	MCM (Thousand Circ Mils)			Skin Effect Ratio at 90°C	60 Hz Ampacity Amp*	Skin Effect Ratio at 90°C	60 Hz Ampacity Amp*	Skin Effect Ratio at 90°C	60 Hz Ampacity Amp*
3/8 x 3/4	.281	358	1.09	29.3	1.02	415	1.02	550	1.02	630
3/8 x 1	.375	477	1.45	21.9	1.03	510	1.03	680	1.03	790
3/8 x 1 1/2	.562	715	2.17	14.6	1.05	710	1.04	940	1.04	1100
3/8 x 2	.750	955	2.90	11.0	1.08	880	1.08	1150	1.07	1350
3/8 x 2 1/2	.938	1190	3.62	8.77	1.12	1050	1.10	1400	1.09	1600
3/8 x 3	1.12	1430	4.35	7.35	1.15	1200	1.14	1600	1.13	1850
3/8 x 3 1/2	1.31	1670	5.06	6.38	1.18	1350	1.16	1800	1.15	2100
3/8 x 4	1.50	1910	5.80	5.49	1.20	1500	1.19	2000	1.18	2350
3/8 x 5	1.88	2390	7.26	4.38	1.24	1800	1.23	2400	1.22	2800
3/8 x 6	2.25	2860	8.69	3.66	1.27	2100	1.26	2800	1.24	3250
1/2 x 1	.500	637	1.93	16.5	1.04	620	1.04	820	1.04	940
1/2 x 1 1/2	.750	955	2.90	11.0	1.08	830	1.08	1100	1.07	1250
1/2 x 2	1.00	1270	3.86	8.23	1.12	1000	1.11	1350	1.10	1550
1/2 x 2 1/2	1.25	1590	4.83	6.58	1.16	1200	1.15	1600	1.14	1850
1/2 x 3	1.50	1910	5.80	5.49	1.20	1400	1.19	1850	1.18	2150
1/2 x 3 1/2	1.75	2230	6.76	4.70	1.24	1550	1.22	2100	1.21	2400
1/2 x 4	2.00	2550	7.73	4.11	1.26	1700	1.25	2300	1.24	2650
1/2 x 5	2.50	3180	9.66	3.29	1.32	2050	1.30	2750	1.29	3150
1/2 x 6	3.00	3820	11.6	2.74	1.36	2400	1.34	3150	1.33	3650
1/2 x 8	4.00	5090	15.5	2.06	1.42	3000	1.40	4000	1.39	4600

\*Applicable to typical in-service conditions (indoors, 40°C ambient temperature), horizontal run on edge, and free from external magnetic influences. Furnished by Copper Development Association Inc.

Direct current ampacities may be calculated as follows:

$$I_{DC} = I_{AC} \cdot S$$

$I_{DC}$  = DC Ampacity

$I_{AC}$  = AC Ampacity from chart above

$S$  = Skin Effect Ratio from chart above



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Ampacities of Copper Bus Bars Alloy UNS C11000

Required Ampacity*	Bus Bar Dimension, Inches**		
	30°C Rise	50°C Rise	65°C Rise
100-149	1/16 x 1/2 1/16 x 3/4	1/16 x 1/2	
150-199	1/16 x 1 1/8 x 1/2 3/16 x 1/2	1/16 x 3/4	1/16 x 1/2
200-249	1/8 x 3/4 1/4 x 1/2	1/8 x 1/2	1/16 x 3/4 1/8 x 1/2
250-299	1/16 x 1 1/2 1/8 x 1 3/16 x 3/4	1/16 x 1 1/8 x 3/4 3/16 x 1/2	1/16 x 1
300-349	1/16 x 2 3/16 x 1 1/4 x 3/4	1/4 x 1/2	1/8 x 3/4 3/16 x 1/2
350-399	1/8 x 1 1/2	1/8 x 1 3/16 x 3/4	1/4 x 1/2
400-449	1/4 x 1 3/8 x 3/4	1/4 x 3/4	1/16 x 1 1/2 1/8 x 1 3/16 x 3/4
450-499	1/8 x 2 3/16 x 1 1/2	1/16 x 2 3/16 x 1	1/4 x 3/4
500-599	1/4 x 1 1/2 3/8 x 1	1/8 x 1 1/2 1/4 x 1 3/8 x 3/4	1/16 x 2 1/8 x 1 1/2 3/16 x 1
600-699	1/8 x 2 1/2 3/16 x 2 1/2 x 1	1/8 x 2 3/16 x 1 1/2 3/8 x 1	1/4 x 1 3/8 x 3/4
700-799	1/8 x 3 3/16 x 2 1/2 1/4 x 2 3/8 x 1 1/2	1/4 x 1 1/2	1/8 x 2 3/16 x 1 1/2 3/8 x 1
800-899	1/8 x 3 1/2 3/16 x 3 1/4 x 2 1/2 3/8 x 2	1/8 x 2 1/2 3/16 x 2 1/2 x 1	1/4 x 1 1/2
900-999	3/16 x 3 1/2 1/4 x 3	3/16 x 2 1/2 1/4 x 2 3/8 x 1 1/2	3/16 x 2 1/2 x 1

Required Ampacity*	Bus Bar Dimension, Inches**		
	30°C Rise	50°C Rise	65°C Rise
1000-1249	3/16 x 4 1/4 x 3 1/2 3/8 x 2 1/2 3/8 x 3 1/2 x 2 1/2 x 2 1/2	1/8 x 4 3/16 x 3 1/4 x 2 1/2 3/8 x 2	1/8 x 3 3/16 x 2 1/2 1/4 x 2 3/8 x 1 1/2
1250-1499	1/4 x 4 3/8 x 3 1/2 1/2 x 3	3/16 x 3 1/2 3/16 x 4 1/4 x 3 3/8 x 2 1/2 1/2 x 2	1/8 x 4 3/16 x 3 1/4 x 2 1/2 3/8 x 2
1500-1749	1/4 x 5 3/8 x 4 1/2 x 3 1/2 1/2 x 4	1/4 x 3 1/2 1/4 x 4 3/8 x 3 1/2 x 2 1/2	3/16 x 3 1/2 3/16 x 4 1/4 x 3 3/8 x 2 1/2 1/2 x 2
1750-1999	1/4 x 6 3/8 x 5	3/8 x 3 1/2 1/2 x 3	1/4 x 3 1/2 1/4 x 4 3/8 x 3 1/2 x 2 1/2
2000-2499	1/4 x 8 3/8 x 6 1/2 x 5 1/2 x 6	1/4 x 6 3/8 x 5 1/2 x 4	1/4 x 5 3/8 x 4 1/2 x 3 1/2
2500-2999	1/4 x 10 3/8 x 8	3/8 x 6 1/2 x 5	1/4 x 6 3/8 x 5 1/2 x 4

\* For 60 Hz current.

\*\* Table gives bus bar cross section which will probably be large enough for ampacities within each range. Knowing required ampacity, determine possible bus bar dimensions from the table. Then check previous table to verify that size selected has the necessary ampacity. Example: Assume that required ampacity is 185 amps at 30 C rise. Table 2 indicates that 1/16 x 1 in. size would probably be adequate. This is confirmed by Table 1 which lists the ampacity of 1/6 x 1 in. bus bar as 187 amps.

Furnished by Copper Development Association Inc.

