



CCA

Copper Clad Aluminium busbar

Copper-Clad Aluminium busbar consists of a solid core of electrical grade aluminium, with a pressure bonded outer layer of high conductivity copper.

PROPERTIES

Min. ultimate tensile strength	130-170	MN/m ²
Modus of elasticity	85x10 ³	MN/m ²
Density at 20 ° C	3,63x10 ³	Kg/m ²
Max. electrical resistivity at 20 ° C	2,65x10 ⁻⁸	Ωm
Min. electrical conductivity at 20 ° C	37,7x10 ⁶	1/Ωm
	65	%IACS
Temp. coefficient of resistance at 20 ° C	4,01x10 ⁻³	1/°C
Coeff. of linear thermal expansion ° 20-100	21,9X10 ⁻⁶	1/°C
Melting point	658	°C
Specific heat	711,7	J/kg/°C
Thermal conductivity	2,38X10 ⁶	W/m2/°C

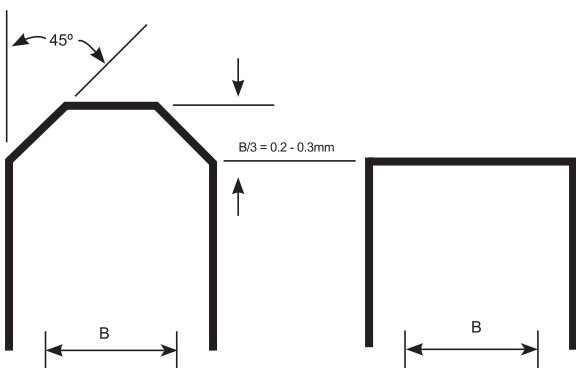
RECOMMENDATIONS FOR DRILLING, PUNCHING AND CUTTING

DRILLING

Recommended drill characteristics:

Cutting speed: 50m/min.
Drill cutting angle: 135°-140°.
Helix angle: 45°.
Lubricant and coolant white spirit.

PUNCHING



The punching tool should be designed in the same way as for use with flat copper bars.

It is important that the die should give adequate support as near as possible to the shearing edge.

CUTTING

Copper-Clad Aluminium (CCA) busbar can be cut using methods that apply to aluminium. Grinding of cut saw to a trapezoidal shape gives good results and deburring is not necessary.

Cutting speed: 50-90 m/sec.

Lubricant and coolant white spirit.

BENDING

N.B. Above factors are for bending normal to the plane.

For edge bending the forming tool radius should be multiples of the width w.

Recommended radius of forming tool				
Thickness t	Width w	≤90°	90°-120°	>120°
t ≤ 3	10 - 25	1t	1t	1t
3 < t ≤ 5	16 - 60	1t	2t	4t
	12 - 50	1t	2t	4t
5 < t ≤ 6,3	50 - 120	2t	3t	4t
	10 - 120	2t	3t	4t
6,3 < t ≤ 10	10 - 120	2t	3t	4t
10 < t ≤ 15	40 - 120	2t	3t	4t

AC/DC CURRENT RATINGS

Check parameters to ensure compatibility of these current ratings with design specification.

Size	Corner radius	Area	Weight	DC Resistance at 20° C	DC Resistance at 65° C	n=1		n=2		n=3		n=4	
mm	mm	mm ²	g/m	μOhm/m	μOhm/m	DC	AC	DC	AC	DC	AC	DC	AC
10x3	0,5	29,79	0,108	890	1050	99	99	188	188	277	277	366	365
20x3	0,5	59,79	0,247	443	523	175	175	322	322	469	466	615	611
25x3	0,5	74,79	0,271	354	418	211	211	386	385	560	557	733	728
10x4	0,5	39,79	0,144	666	786	119	119	229	229	338	337	448	447
16x4	1,5	62,07	0,225	427	504	169	169	319	318	468	466	617	614
20x4	1	79,14	0,287	335	395	205	205	382	382	559	556	736	730
25x4	1	99,14	0,36	267	316	247	247	457	455	665	660	873	863
30x4	1	119,14	0,432	222	26	289	289	529	527	768	761	1007	991
40x4*	1	159,14	0,627	164	194	373	372	676	670	977	961	1277	1242
10x5	0,5	49,79	0,181	532	628	137	137	266	266	395	394	525	522
12x5	0,5	59,79	0,217	443	523	157	157	304	304	451	449	597	594
15x5	sq	75	0,272	353	417	187	187	358	357	528	525	698	693
20x5	1,5	98,07	0,356	270	319	233	233	439	437	644	639	849	840
20x5	sq	100	0,363	265	313	235	235	443	441	650	646	858	848
25x5	1,5	123,07	0,447	215	254	280	280	522	519	763	755	1004	987
30x5	1,5	158,07	0,537	179	211	327	326	604	599	879	867	1154	1127
30x5	sq	150	0,545	177	209	329	328	607	603	885	872	1162	1134
40x5	1,5	198,07	0,719	134	158	418	418	762	752	1105	1079	1446	1388
40x5	sq	200	0,726	133	156	420	416	766	756	1110	1084	1453	1395
50x5*	1,5	248,07	0,977	105	124	511	508	924	905	1334	1285	1743	1637
60x5*	1,5	298,07	1,174	88	103	599	594	1077	1047	1550	1471	2022	1856
80x5*	1,5	398,07	1,568	66	77	773	762	1376	1320	1971	1809	2565	2248
20x6	2	116,57	0,423	227	268	259	259	492	489	725	718	958	943
25x6	2	146,57	0,532	181	213	311	311	584	579	856	845	1128	1103
28x6	2	164,57	0,597	161	190	341	341	638	632	933	918	1228	1194
30x6	2	176,57	0,641	150	177	362	361	673	666	984	965	1294	1252
40x6	2	236,57	0,859	112	132	461	459	848	833	1232	1192	1615	1527
50x6	2	396,57	1,077	89	105	559	555	1018	991	1473	1400	1927	1774
60x6	2,5	354,63	1,287	75	88	653	646	1181	1140	1703	1590	2225	1995
75x6*	2	446,57	1,759	58	69	803	789	1440	1370	2069	1867	2696	2311
80x6*	2	476,57	1,878	55	65	851	834	1521	1441	2183	1950	2844	2406
120x6	2	716,57	2,823	36	43	1222	1179	2155	1979	3075	2538	3990	3103
12x6,3	2	72,17	0,262	367	433	179	179	348	348	517	515	686	681
16x6,3	2	97,37	0,353	272	321	224	224	431	430	639	634	846	837
20x6,3	2	122,57	0,445	216	255	267	267	509	506	750	743	992	975
25x6,3	2	154,07	0,559	172	203	320	320	603	598	885	872	1167	1138
28x6,3	2	172,97	0,628	153	181	352	351	658	651	964	947	1269	1230
32x6,3	2	198,17	0,719	134	158	393	392	731	721	1068	1043	1404	1348
38x6,3	2	235,97	0,857	112	133	454	452	838	824	1220	1181	1602	1515
40x6,3	2	248,57	0,902	107	126	474	472	874	857	1270	1225	1667	1568
50x6,3	2	311,57	1,131	85	100	575	569	1048	1018	1517	1436	1986	1816
63x6,3	2	393,47	1,428	67	80	702	693	1269	1218	1830	1686	2390	2104
65x6,3*	2	406,07	1,600	64	76	727	717	1312	1256	1892	1732	2470	2156
80x6,3*	2	500,57	1,972	52	62	873	855	1563	1476	2246	1989	2926	2451
82x6,3*	2	513,17	2,022	51	60	893	873	1596	1504	2292	2021	2986	2488
100X6,3*	2	626,57	2,469	42	49	1065	1034	1891	1755	2707	2297	3520	2813
120X6,3*	2	752,57	2,965	35	41	1254	1207	2213	2022	3159	2580	4101	3157
16x8	0,25	127,95	0,464	207	244	266	266	517	514	768	760	1019	1001
20x8	2	156,57	0,568	169	200	312	311	601	596	891	877	1180	1149
25x8	2	196,57	0,714	135	159	371	370	708	698	1044	1020	1380	1326

* 20% Cu by volumen

Diameter	Area	Weight	Current Ratings (AMPS): 30° C Rise Over 35° C Ambient			
			DC Resistance at 20° C	DC Resistance at 65° C	DC	AC
mm	mm ²	g/m	μOhm/m	μOhm/m	DC	AC
5	19,63	0,071	1350	1593	67	67
6,3	31,17	0,113	850	1004	92	92
8	50,27	0,182	527	622	129	129
10	78,54	0,285	337	398	176	176
11	95,03	0,345	279	329	202	202
12	113,1	0,411	234	277	228	228
14	153,94	0,559	172	203	283	282
18	254,47	0,924	104	123	403	400
20	314,16	1	84	100	468	464
24	452,39	1,642	59	69	604	596
35	962,11	3,492	28	33	1029	972
40	1256,64	4,562	21	25	1243	1135

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Size	Corner radius	Area	Weight	DC Resistance at 20° C	DC Resistance at 65° C	n=1		n=2		n=3		n=4	
mm	mm	mm ²	g/m	μOhm/m	μOhm/m	DC	AC	DC	AC	DC	AC	DC	AC
30x8	2	236,57	0,859	112	132	430	428	812	797	1193	1154	1573	1487
34x8	2	268,57	0,975	99	116	476	473	894	874	1309	1256	1725	1608
40x8	2	316,57	1,149	84	99	545	540	1014	985	1481	1399	1947	1777
50x8	2	396,57	1,440	67	79	658	649	1211	1161	1760	1620	2309	2030
60x8	2	476,57	1,730	56	66	769	755	1403	1328	2033	1820	2661	2259
75x8	2	596,57	2,166	44	52	933	908	1686	1568	2432	2090	2177	2573
80x8	2	636,57	2,311	42	49	987	958	1779	1644	2564	2175	3346	2674
90x8	2	716,57	2,601	37	44	1094	1057	1963	1795	2824	2338	3681	2871
100x8	2	796,57	2,892	33	39	1201	1154	2146	1942	3080	2494	4012	3061
10x10	sq	100	0,363	265	313	225	225	439	438	654	649	869	859
12x10	1	119,14	0,432	222	263	253	252	493	491	734	727	975	959
12x12	sq	144	0,523	184	217	290	289	568	563	845	834	1123	1098
15x10	1	149,14	0,541	178	210	295	294	575	570	855	843	1134	1108
15x10	sq	150	0,545	177	209	296	295	577	572	857	845	1138	1111
20x10	3	192,27	0,698	138	163	357	356	695	686	1032	1009	1369	1317
20x10	sq	200	0,726	133	156	365	363	709	699	1052	1027	1396	1340
25x10	3	242,27	0,879	109	129	425	422	820	804	1214	1173	1609	1518
25x10	sq	250	0,908	106	125	431	429	833	816	1234	1189	1634	1536
30x10	3	292,27	1,061	91	107	491	487	937	913	1383	1317	1829	1687
30x10	sq	300	1,089	88	104	497	493	949	923	1401	1331	1853	1703
40x10	3	392,27	1,424	68	80	619	611	1165	1116	1708	1575	2251	1984
40x10	sq	400	1,452	66	78	625	617	1176	1126	1725	1586	2273	1996
50x10	3	492,27	1,787	54	64	746	731	1385	1306	2023	1801	2659	2242
50x10	sq	500	1,815	53	63	751	736	1396	1314	2038	1810	2680	2252
60x10	3	592,27	2,150	45	53	870	848	1601	1484	2329	2004	3055	2478
60x10	sq	600	2,178	44	52	875	853	1612	1492	2344	2012	3075	2488
63x10	3	622,27	2,259	43	50	907	882	1665	1536	2420	2063	3173	2547
75x10	3	742,27	2,694	36	42	1053	1015	1918	1737	2778	2282	3635	2814
80x10	3	792,27	2,876	33	39	1114	1070	2023	1819	2925	2371	3825	2921
80x10	sq	800	2,904	33	39	1119	1074	2033	1825	2939	2378	3843	2930
100x10	3	992,27	3,602	27	32	1353	1282	2434	2135	3504	2711	4571	3330
100x10	sq	1000	3,630	27	31	1358	1287	2443	2141	3518	2718	4589	3338
120x10	3	1192,27	4,328	22	26	1589	1488	2837	2439	4071	3032	5301	3713
18x12	sq	216	0,784	123	145	383	381	746	734	1108	1078	1471	1401
20x12	3	232,27	0,843	114	135	406	404	790	776	1174	1137	1558	1476
24x12													