



# COPPER FLAT

MEASUREMENT MATRIX  
(IMPERIAL AND METRIC SYSTEMS)

## FLAT BAR MEASUREMENTS IN INCHES

Width	Thickness (inches)													
	1/16"	3/32"	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1 1/2"	2"	
kg/m														
1/4"		0.135	0.177	0.261	0.356									
5/16"	0.112				0.448									
3/8"	0.135	0.202	0.266	0.406	0.532	0.677	0.817							
1/2"	0.177	0.266	0.356	0.532	0.712		1.064	1.44						
5/8"	0.224	0.335	0.452	0.677	0.903		1.356	1.79	2.26					
3/4"	0.266	0.404	0.541	0.812	1.08		1.62	2.16	2.7	3.27				
1"	0.358	0.532	0.722	1.08	1.44	1.8	2.16	2.89	3.6	4.32	5.76			
1 1/4"			0.885	1.352	1.8	2.23	2.7	3.61	4.43	5.44	7.22			
1 1/2"	0.541	0.81	1.08	1.62	2.17	2.69	3.25	4.33	5.44	6.5	8.56	12.66		
1 3/4"	0.631		1.26	1.9	2.53	3.15	3.79	5.05		7.59				
2"		1.07	1.44	2.16	2.89	3.61	4.33	5.77	7.23	8.67	11.58	17.52	23.16	
2 1/4"			1.63	2.43	3.59	4.06	4.87	6.5		10.77	13			
2 1/2"			1.798	2.71	3.61	4.46	5.41	7.18	8.99	10.83	14.4	21.7	28.8	
2 3/4"				2.976	3.966	4.93	5.95	7.93	9.9					
3"			2.165	3.25	4.33	5.4	6.5	8.66	10.83	12.96	17.26	25.42	34.5	
3 1/4"				3.51	4.69		7.03				18.76			
3 1/2"					5.05	6.26	7.59	10.07	12.56	12.96	15.15			
4"			2.88	4.33	5.77	7.22	8.66	11.55	14.37	17.2	23	34.64	46.33	
4 1/2"			3.25		6.49		9.74	12.99	16.27	1948	26			
5"					7.22	9	10.83	14.44	17.98					
5 1/2"					7.94									
6"			4.3	6.5	8.66		12.99	17.32	21.62	25.98	34.64	51.84	63.3	
8"					11.51				23.1	34.65	46.2			

## FLAT BAR MEASUREMENTS (mm)

Width	Thickness (mm)						
	3	5	6	8	10	15	20
kg/m							
15	x	x			x		
20		x	x		x		
25		x	x				
30		x			x		
40	x	x	x	x	x		
50		x			x		
60		x			x	x	
80		x			x		
100		x			x		
120					x		
130					x		
150					x		x

## ROUND BAR MEASUREMENTS (mm)

	Inches "		mm		Theoretical weight
	Diameter	Length	Diameter	Length	Kg
	1/4"	3660	6,35	3660	1,03
	3/8"	3660	9,52	3660	2,32
	7/16"	3660	11,11	3660	3,16
	1/2"	3660	12,70	3660	4,13
	5/8"	3660	15,87	3660	6,45
	1"	3660	25,40	3660	16,53
1	1/8"	3660	28,58	3660	20,93
1	1/4"	3660	31,75	3660	25,83
1	1/2"	3660	38,10	3660	37,19
1	3/4"	3660	44,45	3660	50,62
	2"	3660	50,80	3660	66,12
			60,00	3660	92,23
2	3/8"	3660	60,32	3660	93,22
2	1/2"	3660	63,50	3660	103,31
	3"	3660	76,20	3660	148,76
3	3/16"	3660	80,96	3660	167,93
3	1/2"	3660	88,90	3660	202,48
	4"	3660	101,60	3660	264,46
			130,00	3660	432,98

\*Square and hexagonal bars (on request)

## TABLE OF STANDARDS (EQUIVALENCE)

EN		DIN		ASTM	AFNOR	BS	JIS	SN
SYMBOLIC	NUMERICAL	SYMBOLIC	NUMERICAL					
Cu-ETP	CW004A	E-Cu58	20065	C11000	CuA1	C101	C1100	Cu-ETP

AMPERAGE

Ambient temperature 35°C | Final temperature of bars 65°C | Conductivity 56 M/Ωmm<sup>2</sup>(ρ= 0.0178Ωmm<sup>2</sup>/m)


Width x Thickness	Alternating current up to 60 Hz								Direct and alternating current 16 2/3 Hz								Static characteristics								
	Painted				Glossed				Painted				Glossed				$x \sqrt{1-x}$			$y \sqrt{\frac{1-y}{F}}$					
	No. of bars				No. of bars				No. of bars				No. of bars				Jx	Wx	Ix	Jx	Wx	Ix			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>
12 x 2	123	202	228		108	182	216		123	202	233		108	182	220		0,0288	0,048	0,346	0,0008	0,008	0,0577			
15 x 2	148	240	261		128	212	247		148	240	267		128	212	252		0,0563	0,075	0,433	0,001	0,01	0,0577			
15 x 3	187	316	381		162	282	361		187	316	387		162	282	365		0,0844	0,113	0,433	0,00338	0,0225	0,0866			
20 x 2	189	302	313		162	264	298		189	302	321		162	266	303		0,133	0,133	0,577	0,00133	0,0133	0,0577			
20 x 3	237	394	454		204	348	431		237	394	463		204	348	437		0,2	0,2	0,577	0,0045	0,03	0,0866			
20 x 5	319	560	728		274	500	690		320	562	729		274	502	687		0,333	0,333	0,577	0,0208	0,0833	0,144			
20 x 10	497	924	1320		427	825	1180		499	932	1300		428	832	1210		0,667	0,667	0,577	0,167	0,333	0,289			
25 x 3	287	470	525		245	412	498		287	470	536		245	414	506		0,391	0,313	0,722	0,00563	0,0375	0,0866			
25 x 5	384	662	869		327	586	795		384	664	841		327	590	794		0,651	0,521	0,722	0,026	0,104	0,144			
30 x 3	337	544	593		285	476	564		337	546	608		286	478	575		0,675	0,45	0,866	0,00675	0,045	0,0866			
30 x 5	447	760	944		379	672	896		448	766	950		380	676	897		1,13	0,75	0,866	0,0313	0,125	0,144			
30 x 10	676	1200	1670		573	1060	1480		683	1230	1630		579	1080	1520		2,25	1,5	0,866	0,25	0,5	0,289			
40 x 3	435	692	725		366	600	690		436	696	748		367	604	708		1,6	0,8	1,15	0,009	0,06	0,0866			
40 x 5	573	952	1140		482	836	1090		576	966	1160		484	848	1100		2,67	1,33	1,15	0,0417	0,167	0,144			
40 x 10	850	1470	2000	2580	715	1290	1770	2280	865	1530	2000		728	1350	1880		5,33	2,67	1,15	0,333	0,667	0,289			
50 x 5	697	1140	1330	2010	583	994	1260	1920	703	1170	1370		588	1020	1300		5,21	2,08	1,44	0,0521	0,208	0,144			
50 x 10	1020	1720	2320	2950	852	1510	2040	2600	1050	1830	2360		875	1610	2220		10,4	4,17	1,44	0,417	0,833	0,289			
60 x 5	826	1330	1510	2310	688	1150	1440	2210	836	1370	1580	2060	696	1190	1500	1970	9	3	1,73	0,0625	0,25	0,144			
60 x 10	1180	1960	2610	3290	985	1720	2300	2900	1230	2130	2720	3580	1020	1870	2570	3390	18	6	1,73	0,5	1	0,289			
80 x 5	1070	1680	1830	2830	885	1450	1750	2720	1090	1770	1990	2570	902	1530	1890	2460	21,3	5,33	2,31	0,0833	0,333	0,144			
80 x 10	1500	2410	3170	3930	1240	2110	2790	3450	1590	2730	3420	4490	1310	2380	3240	4280	42,7	10,7	2,31	0,667	1,33	0,289			
100 x 5	1300	2010	2150	3300	1080	1730	2050	3190	1340	2160	2380	3080	1110	1810	2270	2960	41,7	8,33	2,89	0,104	0,417	0,144			
100 x 10	1810	2850	3720	4530	1490	2480	3260	3980	1940	3310	4100	5310	1600	2890	3900	5150	83,3	16,7	2,89	0,833	1,67	0,289			
120 x 10	2110	3280	4270	5130	1740	2860	3740	4500	2300	3900	4780	6260	1890	3390	4560	6010	144	24	3,46	1	2	0,289			
160 x 10	2700	4130	5360	6320	2220	3590	4680	5530	3010	5060	6130	8010	2470	4400	5860	7110	341	42,7	4,62	1,33	2,67	0,289			
200 x 10	3290	4970	6430	7490	2690	4310	5610	6540	3720	6220	7460	9730	3040	5390	7150	9390	667	66,7	5,77	1,67	3,33	0,289			

When there are several bars in parallel, the distance between the bars is taken in the same way as the thickness. For alternating current, the net distance between the phases is taken as > 0.8 the distance between phase axes. \* Minimum distance.


FORMATS (TINNED, ROLLED, STANDARD LENGTH, ETC.)

Standard length: 3.66 metres (Mexico), 4 metres and 5 metres (Europe and UK)


**Formats available**




Tinned flat bar



CCA flat bar (extrusion of copper in aluminium)

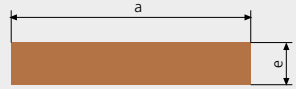


Round and square copper bar

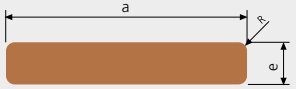


Appearance: Flat, Rolled and Wrapped

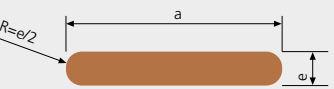
**TYPE OF EDGE**



Sharp edge



Blunt edge



Rounded edge

At VBT we supply high quality silver-finish copper flat bars in line with the most relevant international standards.

**Silver-finish flat bars:**

Tinning microns: 0.3 - 0.7 µm

**Tinned flat bars:**

Tinning microns: 5 µm

**Uses of silver-finish and/or tinned flat bars:**

Electrical components exposed to corrosive atmospheres, thanks to the protective properties provided by the layer of tin.

We can supply both formats in a roll or in lengths, adapting to your needs.

\*Other coverings on request.

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