C102/C110 Copper Alloy Conductor Wire

Introduction

Copper is the “standard” metal used for electrical conductors. Copper has extremely high electrical conductivity, surpassed only by pure silver. It has excellent tensile, solderability, and corrosion characteristics.

C102 is an oxygen free (OF copper that has better drawing and resistance to hydrogen embrittlement than C110 (ETP). OF copper contains less dissolved oxygen than ETP, which gives OF its performance advantage. In most applications, ETP is an acceptable conductor material and is more economical than OF copper.

Both OF and ETP copper conductors are available bare, or plated with silver, nickel, or tin. To learn more please contact our sales department.

Fisk Alloy Wire Inc.
P.O. Box 26
10 Thomas Road N.
Hawthorne, NJ 07506 U.S.A.

Phone: (973) 825-8500
Fax: (973) 427-4585
E-mail: sales@fiskalloy.com

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C102/C110 Copper Alloy Conductor Wire

Specifications
NEMA WC67
ASTM B8
ASTM B33
ASTM B286
ASTM B298
ASTM B355

Physical Properties

SOFT	
Available Platings	Ag, Ni
Elongation	10-20%
Tensile	32 ksi
Electrical Conductivity	100% IACS @ 68 °F
Electrical Resistivity	10.4 Ω-cmil/ft @ 68 ºF
Density	0.323 lb/in³
Coefficient of Thermal Resistance	0.00218 per °F
Melting Point (Solidus)	1,953 °F
Melting Point (Liquidus)	1,980 °F

HARD	
Available Platings	Ag, Ni, Sn
Elongation	1%
Tensile	60 ksi
Electrical Conductivity	96% IACS @ 68 °F
Electrical Resistivity	10.8 Ω-cmil/ft @ 68 ºF
Density	0.323 lb/in³

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Melting Point (Liquidus)	1,980 °F

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NICKEL PLATED COPPER - SOFT (50 MICRO-INCH NICKEL THICKNESS)							
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)
			Nom	Min	Max	Max	Max
18	19/30	2	0.0472	0.0462	0.0482	5.97	5.94
20	19/32	4	0.0378	0.0368	0.0387	9.52	3.86
22	19/34	4	0.0298	0.0289	0.0307	15.4	2.43
24	19/36	4	0.0238	0.0228	0.0247	24.7	1.57
26	19/38	7	0.0191	0.0182	0.0200	40.0	1.03
28	19/40	7	0.0150	0.0140	0.0159	67.5	0.648

SILVER PLATED COPPER - SOFT (40 MICRO-INCH SILVER THICKNESS)							
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)
			Nom	Min	Max	Max	Max
18	19/30	2	0.0469	0.0462	0.0476	5.97	5.83
20	19/32	2.5	0.0378	0.0368	0.0387	9.52	3.75
22	19/34	3	0.0298	0.0289	0.0307	15.4	2.35
24	19/36	4	0.0238	0.0228	0.0247	24.7	1.49
26	19/38	5	0.0191	0.0182	0.0200	40.0	0.965
28	19/40	6.1	0.0150	0.0140	0.0159	67.5	0.589
30	19/42	8	0.0117	0.0112	0.0122	99.0	0.389
32	19/44(1)	10	0.0100	0.00940	0.0105	154	0.266
(1) True Concentric							

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NICKEL PLATED COPPER - SOFT (50 MICRO-INCH NICKEL THICKNESS)							
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)
			Nom	Min	Max	Max	Max
22	7/30	2	0.0300	0.0293	0.0306	16.0	2.28
24	7/32	4	0.0240	0.0234	0.0245	25.3	1.45
26	7/34	4	0.0188	0.0183	0.0193	41.1	0.891
28	7/36	4	0.0150	0.0145	0.0154	66.3	0.566
30	7/38	7	0.0120	0.0115	0.0124	106	0.368
32	7/40	7	0.00890	0.00825	0.00960	204	0.223

SILVER PLATED COPPER - SOFT (40 MICRO-INCH SILVER THICKNESS)							
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)
			Nom	Min	Max	Max	Max
22	7/30	2	0.0300	0.0297	0.0303	15.4	2.24
24	7/32	2.5	0.0240	0.0237	0.0243	24.0	1.44
26	7/34	3	0.0189	0.0186	0.0192	39.0	0.896
28	7/36	4	0.0150	0.0147	0.0153	62.4	0.570
30	7/38	5	0.0120	0.0117	0.0123	98.1	0.368
32	7/40	6.1	0.00930	0.00900	0.00960	167	0.226
34	7/42	8	0.00750	0.00720	0.00780	260	0.150
36	7/44	10	0.00600	0.00570	0.00630	414	0.0973
38	7/46	10	0.00470	0.00450	0.00492	666	0.0598

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Single End

NICKEL PLATED COPPER - SOFT (50 MICRO-INCH NICKEL THICKNESS)							
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft) Max	WEIGHT (lb/mft) Max
			Nom	Min	Max		
30	SE	2	0.0101	0.00990	0.0103	111	0.321
31	SE	4	0.00900	0.00880	0.00920	143	0.256
32	SE	4	0.00810	0.00785	0.00830	178	0.208
33	SE	4	0.00710	0.00690	0.00730	232	0.161
34	SE	4	0.00640	0.00620	0.00660	287	0.132
35	SE	4	0.00570	0.00550	0.00590	365	0.105
36	SE	4	0.00510	0.00490	0.00530	460	0.0850
37	SE	7	0.00460	0.00435	0.00480	590	0.0697
38	SE	7	0.00410	0.00390	0.00430	734	0.0560
39	SE	7	0.00360	0.00340	0.00380	986	0.0437
40	SE	7	0.00320	0.00300	0.00340	1,266	0.0350

SILVER PLATED COPPER - SOFT (40 MICRO-INCH SILVER THICKNESS)							
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft) Max	WEIGHT (lb/mft) Max
			Nom	Min	Max		
30	SE	2	0.0100	0.00990	0.0101	106	0.310
31	SE	2.5	0.00890	0.00880	0.00900	134	0.250
32	SE	2.5	0.00800	0.00790	0.00810	167	0.201
33	SE	3	0.00710	0.00690	0.00720	218	0.159
34	SE	3	0.00630	0.00620	0.00640	270	0.126
35	SE	4	0.00560	0.00550	0.00570	343	0.100
36	SE	4	0.00500	0.00490	0.00510	432	0.0800
37	SE	5	0.00450	0.00435	0.00460	549	0.0645

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AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)
			Nom	Min	Max	Max	Max
38	SE	5	0.00400	0.00390	0.00410	682	0.0520
39	SE	6.1	0.00350	0.00340	0.00360	898	0.0406
40	SE	6.1	0.00310	0.00300	0.00320	1,160	0.0316
41	SE	8	0.00280	0.00270	0.00290	1,430	0.0260
42	SE	8	0.00250	0.00240	0.00260	1,810	0.0209
43	SE	10	0.00220	0.00210	0.00230	2,352	0.0167
44	SE	10	0.00200	0.00190	0.00210	2,880	0.0137
45(1)	SE	10(2)	0.00180	0.00166	0.00190	3,770	0.0108
46(1)	SE	10(2)	0.00157	0.00147	0.00167	4,799	0.00860
47(1)	SE	10(2)	0.00140	0.00130	0.00150	6,232	0.00690
48(1)	SE	10(2)	0.00124	0.00114	0.00134	7,980	0.00560
49(1)	SE	10(2)	0.00111	0.00101	0.00121	10,167	0.00450
50(1)	SE	10(2)	0.000990	0.000890	0.00109	13,212	0.00370
(1) These single end sizes will be hard temper (2) These single end sizes will not have 40 micro-inches of silver							

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