Copper Clad Steel (40%) Copper Alloy Conductor Wire

Introduction

Copper Clad Steel (CCS) is a composite conductor material containing a low carbon steel core surrounded by copper. The copper provides the electrical conductivity, and the steel contributes strength to the conductor. The most common grade of CCS used for electrical conductors has a nominal 40% IACS electrical conductivity. CCS is suitable for applications where high strength and medium conductivity are required. Copper Clad Steel is also suited for high frequency signal applications since high frequency currents travel mainly in the outer skin of a conductor.

CCS is 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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Specifications
ASTM B228
ASTM B452

Physical Properties

SOFT	
Available Platings	Ag, Ni
Elongation	10%
Tensile	45 ksi
Electrical Conductivity	39% IACS @ 68 °F
Electrical Resistivity	26.6 Ω-cmil/ft @ 68 ºF
Density	0.298 lb/in³
Coefficient of Thermal Resistance	0.0021 per °F
Melting Point (Solidus)	1,949 °F
Melting Point (Liquidus)	1,981 °F

HARD	
Available Platings	Ag, Ni, Sn
Elongation	1%
Tensile	110 ksi
Electrical Conductivity	39% IACS @ 68 °F
Electrical Resistivity	26.6 Ω-cmil/ft @ 68 ºF
Density	0.298 lb/in³
Coefficient of Thermal Resistance	0.0021 per °F
Melting Point (Solidus)	1,949 °F
Melting Point (Liquidus)	1,981 °F

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19-Strand

BARE CCS (40%) - HARD TEMPER							
AWG	CONST	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)	BREAK STRG (lb)
		Nom	Min	Max	Max	Max	Min
18	19/30	0.0472	0.0467	0.0477	14.5	5.47	160
20	19/32	0.0378	0.0372	0.0383	22.8	3.51	102
22	19/34	0.0298	0.0292	0.0303	37.1	2.20	63.0
24	19/36	0.0236	0.0231	0.0241	59.0	1.39	39.4
26	19/38	0.0189	0.0184	0.0194	93.3	0.899	24.9
28	19/40	0.0147	0.0141	0.0152	159	0.548	14.7

BARE CCS (40%) - SOFT TEMPER							
AWG	CONST	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)	BREAK STRG (lb)
		Nom	Min	Max	Max	Max	Min
18	19/30	0.0472	0.0467	0.0477	14.5	5.47	65.8
20	19/32	0.0378	0.0372	0.0383	22.8	3.51	41.9
22	19/34	0.0298	0.0292	0.0303	37.1	2.20	25.8
24	19/36	0.0236	0.0231	0.0241	59.0	1.39	16.1
26	19/38	0.0189	0.0184	0.0194	93.3	0.899	10.2
28	19/40	0.0147	0.0141	0.0152	158	0.548	6.04

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7-Strand

BARE CCS (40%) - HARD TEMPER							
AWG	CONST	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)	BREAK STRG (lb)
		Nom	Min	Max	Max	Max	Min
22	7/30	0.0300	0.0297	0.0303	39.4	2.06	59.2
24	7/32	0.0240	0.0237	0.0243	61.5	1.32	37.7
26	7/34	0.0189	0.0186	0.0192	99.9	0.823	23.2
28	7/36	0.0150	0.0147	0.0153	160	0.522	14.5
30	7/38	0.0120	0.0117	0.0123	252	0.337	9.19
32	7/40	0.00930	0.00900	0.00960	427	0.206	5.44

BARE CCS (40%) - SOFT TEMPER							
AWG	CONST	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)	BREAK STRG (lb)
		Nom	Min	Max	Max	Max	Min
22	7/30	0.0300	0.0297	0.0303	39.4	2.06	24.2
24	7/32	0.0240	0.0237	0.0243	61.5	1.32	15.4
26	7/34	0.0189	0.0186	0.0192	99.9	0.823	9.50
28	7/36	0.0150	0.0147	0.0153	160	0.522	5.94
30	7/38	0.0120	0.0117	0.0123	252	0.337	3.76
32	7/40	0.00930	0.00900	0.00960	427	0.206	2.22

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Single End

NICKEL PLATED CCS (40%) - HARD (50 MICRO-INCH NICKEL THICKNESS)								
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft) Max	WEIGHT (lb/mft) Max	BREAK STRG (lb) Min
			Nom	Min	Max			
30	SE	2	0.0101	0.00990	0.0103	282	0.300	8.46
31	SE	4	0.00900	0.00880	0.00920	364	0.238	6.69
32	SE	4	0.00810	0.00785	0.00830	451	0.194	5.32
33	SE	4	0.00710	0.00690	0.00730	575	0.154	4.17
34	SE	4	0.00640	0.00620	0.00660	732	0.121	3.32
35	SE	4	0.00570	0.00550	0.00590	931	0.0966	2.61
36	SE	4	0.00510	0.00490	0.00530	1,172	0.0779	2.07
37	SE	7	0.00460	0.00435	0.00480	1,501	0.0639	1.63
38	SE	7	0.00410	0.00390	0.00430	1,911	0.0513	1.31
39	SE	7	0.00360	0.00340	0.00380	2,514	0.0401	0.0999
40	SE	7	0.00320	0.00300	0.00340	3,230	0.0321	0.0778

NICKEL PLATED CCS (40%) - SOFT (50 MICRO-INCH NICKEL THICKNESS)								
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft) Max	WEIGHT (lb/mft) Max	BREAK STRG (lb) Min
			Nom	Min	Max			
30	SE	2	0.0101	0.00990	0.0103	282	0.300	3.46
31	SE	4	0.00900	0.00880	0.00920	364	0.238	2.73
32	SE	4	0.00810	0.00785	0.00830	451	0.194	2.17
33	SE	4	0.00710	0.00690	0.00730	575	0.154	1.70
34	SE	4	0.00640	0.00620	0.00660	732	0.121	1.35
35	SE	4	0.00570	0.00550	0.00590	931	0.0966	1.06
36	SE	4	0.00510	0.00490	0.00530	1,240	0.0779	0.848
37	SE	7	0.00460	0.00435	0.00480	1,570	0.0639	0.668

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NICKEL PLATED CCS (40%) - SOFT (50 MICRO-INCH NICKEL THICKNESS)								
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft) Max	WEIGHT (lb/mft) Max	BREAK STRG (lb) Min
			Nom	Min	Max			
38	SE	7	0.00410	0.00390	0.00430	1,950	0.0513	0.537
39	SE	7	0.00360	0.00340	0.00380	2,520	0.0401	0.409
40	SE	7	0.00320	0.00300	0.00340	3,300	0.0321	0.318

SILVER PLATED CCS (40%) - HARD (40 MICRO-INCH SILVER THICKNESS)								
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft) Max	WEIGHT (lb/mft) Max	BREAK STRG (lb) Min
			Nom	Min	Max			
30	SE	2	0.0100	0.00990	0.0101	272	0.290	8.46
31	SE	2.5	0.00890	0.00880	0.00900	344	0.229	6.69
32	SE	2.5	0.00800	0.00790	0.00810	427	0.186	5.39
33	SE	3	0.00710	0.00690	0.00720	543	0.147	4.23
34	SE	3	0.00630	0.00620	0.00640	692	0.116	3.32
35	SE	4	0.00560	0.00550	0.00570	880	0.0921	2.61
36	SE	4	0.00500	0.00490	0.00510	1,110	0.0739	2.07
37	SE	5	0.00450	0.00435	0.00460	1,410	0.0602	1.63
38	SE	5	0.00400	0.00390	0.00410	1,750	0.0479	1.31
39	SE	6.1	0.00350	0.00340	0.00363	2,270	0.0375	0.0999
40	SE	6.1	0.00310	0.00300	0.00320	2,960	0.0293	0.0778

SILVER PLATED CCS (40%) - SOFT (40 MICRO-INCH SILVER THICKNESS)								
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft) Max	WEIGHT (lb/mft) Max	BREAK STRG (lb) Min
			Nom	Min	Max			
30	SE	2	0.0100	0.00990	0.0101	272	0.290	3.46
31	SE	2.5	0.00890	0.00880	0.00900	344	0.229	2.73

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SILVER PLATED CCS (40%) - SOFT (40 MICRO-INCH SILVER THICKNESS)								
AWG	CONST	STANDARD PLATE (%)	DIAMETER (inch)			RESIST (Ω/mft)	WEIGHT (lb/mft)	BREAK STRG (lb)
			Nom	Min	Max	Max	Max	Min
32	SE	2.5	0.00800	0.00790	0.00810	427	0.186	2.20
33	SE	3	0.00710	0.00690	0.00720	543	0.147	1.73
34	SE	3	0.00630	0.00620	0.00640	692	0.116	1.35
35	SE	4	0.00560	0.00550	0.00570	880	0.0921	1.06
36	SE	4	0.00500	0.00490	0.00510	1,110	0.0739	0.848
37	SE	5	0.00450	0.00435	0.00460	1,410	0.0602	0.668
38	SE	5	0.00400	0.00390	0.00410	1,750	0.0479	0.537
39	SE	6.1	0.00350	0.00340	0.00363	2,270	0.0375	0.409
40	SE	6.1	0.00310	0.00300	0.00320	2,960	0.0293	0.318

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