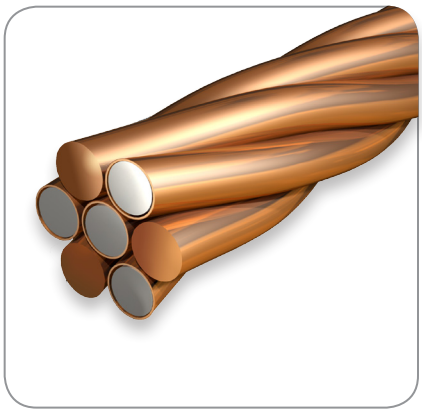
Copperweld®
Composite Conductors (CCC)



TYPE K:
4 Copperweld® Wires / 3 Copper Wires

Applications

- Neutral messenger for aerial cable
- Catenary messenger
- Grounding and power conductor for electrified railroads
- Electrical conductor for utilities

Available Size

Copperweld® Copper Composite conductors are available in standard reels of 600 lbs. Contact an AFL Sales Representative for more information or other reel sizes.

Copperweld® Copper Composite (CCC) conductor provides the designer flexibility of strength and conductivity. By manufacturing the conductor with varying proportions of hard drawn copper wire and 30% conductivity Extra High Strength (EHS) Copperweld® wire, these characteristics can be achieved.

Features

Strength

The steel component of the CCC provides a higher tensile strength. Additionally, it is a lighter weight product compared to solid copper. Combining these factors, it has minimum sag over maximum span lengths. A high and well-defined modulus of elasticity accommodates recurring seasonal temperature changes and stresses without permanent stretch.

Ampacity

CCC conductor offers higher ampacity for the same wire size as standard Copperweld® strand.

Fatigue Resistance

The steel cores within the strands of Copperweld® allow the composite conductors to perform better than solid copper under stress. It is less susceptible to fracture from repeated flexing and mechanical vibration.

Corrosion Resistance

The EHS Copperweld® wire component has the equivalent rust resisting life of an all-copper wire of equal size. CCC conductor is ideally suited for corrosive environments along seaboards, in moist foggy regions, and in industrial and metropolitan areas.

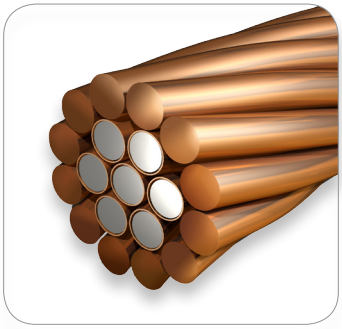
Theft Resistant

With a steel core permanently bonded to a thick copper exterior, the composite conductors offer less scrap value, discouraging theft and leaving the electrical system intact.

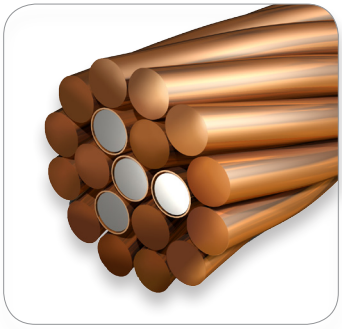
Ordering Instructions

Contact an AFL Sales Representative at 1.800.235.3423 to order Copperweld® Copper Composite Conductor.

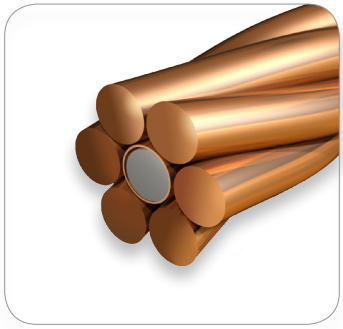
Copperweld® Composite Conductors (CCC) (cont.)



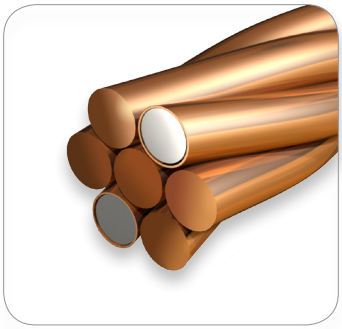
TYPE E: 7 Copperweld® Wires
12 Copper Wires



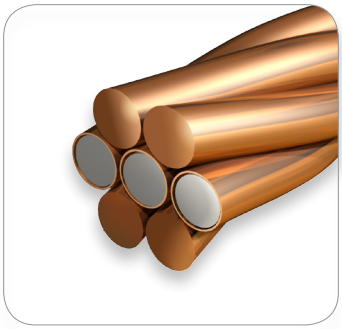
TYPE EK: 4 Copperweld® Wires
15 Copper Wires



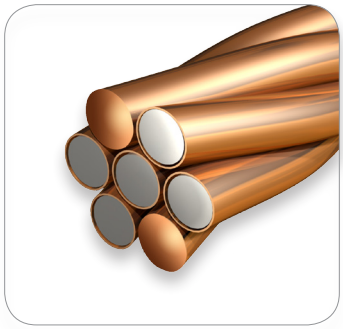
TYPE F: 1 Copperweld® Wire
6 Copper Wires



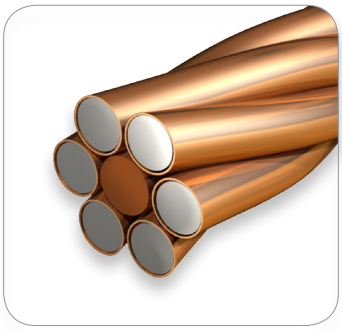
TYPE G: 2 Copperweld® Wires
5 Copper Wires



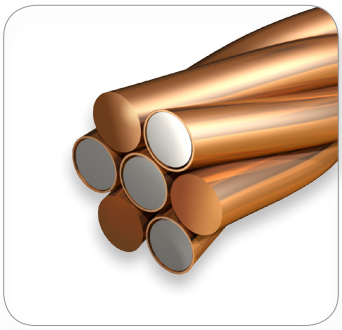
TYPE J: 3 Copperweld® Wires
4 Copper Wires



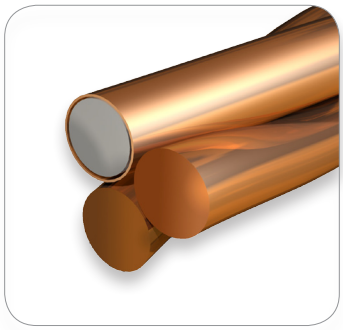
TYPE N: 5 Copperweld® Wires
2 Copper Wires



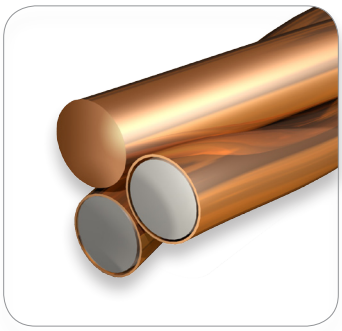
TYPE P: 6 Copperweld® Wires
1 Copper Wire



TYPE K: 4 Copperweld® Wires
3 Copper Wires



TYPE A / TYPE C: 1 Copperweld® Wire
2 Copper Wires



TYPE D: 2 Copperweld® Wires
1 Copper Wire

Copperweld is a registered trademark of Fushi Copperweld, Inc.

Copperweld® Composite Conductors (CCC) (cont.)

Physical and Electrical Characteristics

CATALOG NUMBER	TYPE OF CONDUCTOR	DIAMETER (IN)	DESIGN OF CONDUCTOR		MINIMUM BREAKING LOAD (LBS)	WEIGHT (LBS/ 1000 FT)	CROSS SECTION (SQ IN)
			NUMBER AND DIAMETER OF EHS 30% CCS WIRES (IN)	NUMBER AND DIAMETER OF HARD DRAWN COPPER WIRES (IN)			
350,000 CIRCULAR MILS COPPER EQUIVALENT -.03143 OHMS/K FT AT 68°F							
CCC350E	E	0.788	7 X .1576	12 X .1576	32420	1403.00	0.3704
CCC350EK	EK	0.735	4 X .1470	15 X .1470	23850	1238.00	0.3224
300,000 CIRCULAR MILS COPPER EQUIVALENT -.03667 OHMS/K FT AT 68°F							
CCC300E	E	0.729	7 X .1459	12 X .1459	27770	1203.00	0.3175
CCC300EK	EK	0.680	4 X .1361	15 X .1361	20960	1061.00	0.2763
250,000 CIRCULAR MILS COPPER EQUIVALENT -.04400 OHMS/K FT AT 68°F							
CCC250E	E	0.666	7 X .1332	12 X .1332	23920	1002.00	0.2646
CCC250EK	EK	0.621	4 X .1242	15 X .1242	17840	884.20	0.2303
4/0 AWG CIRCULAR MILS COPPER EQUIVALENT (211,600 CIRCULAR MILS) -.05199 OHMS/K FT AT 68°F							
CCC4/0E	E	0.613	7 X .1225	12 X .1225	20730	848.30	0.2239
CCC4/0EK	EK	0.571	4 X .1143	15 X .1143	15370	748.40	0.1949
CCC4/0F	F	0.550	1 X .1833	6 X .1833	12290	710.20	0.1847
2/0 AWG CIRCULAR MILS COPPER EQUIVALENT (133,100 CIRCULAR MILS) -.08265 OHMS/K FT AT 68°F							
CCC2/0K	K	0.534	4 X .1780	3 X .1780	17600	645.90	0.1742
CCC2/0J	J	0.494	3 X .1648	4 X .1648	13430	560.60	0.1493
CCC2/0F	F	0.436	1 X .1454	6 X .1454	8094	446.80	0.1162
1/0 AWG CIRCULAR MILS COPPER EQUIVALENT (105,500 CIRCULAR MILS) -.1043 OHMS/K FT AT 68°F							
CCC1/0K	K	0.475	4 X .1585	3 X .1585	14490	512.00	0.1381
CCC1/0J	J	0.440	3 X .1467	4 X .1467	10970	444.30	0.1184
CCC1/0F	F	0.388	1 X .1294	6 X .1294	6536	354.10	0.0921
NO. 1 AWG CIRCULAR MILS COPPER EQUIVALENT (83,690 CIRCULAR MILS) -.1315 OHMS/K FT AT 68°F							
CCC1K	K	0.423	4 X .1412	3 X .1412	11900	406.20	0.1096
CCC1J	J	0.392	3 X .1307	4 X .1307	9000	352.50	0.0939
CCC1F	F	0.346	1 X .1153	6 X .1153	5266	280.90	0.0730
NO. 2 AWG CIRCULAR MILS COPPER EQUIVALENT (66,370 CIRCULAR MILS) -.1658 OHMS/K FT AT 68°F							
CCC2K	K	0.377	4 X .1257	3 X .1257	9730	322.10	0.0869
CCC2J	J	0.349	3 X .1164	4 X .1164	7322	279.50	0.0745
CCC2A	A	0.366	1 X .1699	2 X .1699	5876	256.80	0.0680
CCC2F	F	0.308	1 X .1026	6 X .1026	4233	222.80	0.0579
NO. 4 AWG CIRCULAR MILS COPPER EQUIVALENT (41,740 CIRCULAR MILS) -.2636 OHMS/K FT AT 68°F							
CCC4D	D	0.348	2 X .1615	1 X .1615	7340	225.50	0.0615
CCC4A	A	0.290	1 X .1347	2 X .1347	3938	161.50	0.0428
NO. 6 AWG CIRCULAR MILS COPPER EQUIVALENT (26,250 CIRCULAR MILS) -.4150 OHMS/K FT AT 68°F							
CCC6D	D	0.276	2 X .1281	1 X .1281	4942	141.80	0.0387
CCC6A	A	0.230	1 X .1068	2 X .1068	2585	101.60	0.0269
CCC6C	C	0.225	1 X .1046*	2 X .1046	2143	97.34	0.0258
NO. 8 AWG CIRCULAR MILS COPPER EQUIVALENT (16,510 CIRCULAR MILS) -.6598 OHMS/K FT AT 68°F							
CCC8D	D	0.219	2 X .1016	1 X .1016	3256	89.21	0.0243
CCC8A	A	0.199	1 X .1127	2 X .0797	2233	74.27	0.0200
CCC8C	C	0.179	1 X .0808*.	2 X .0834	1362	60.67	0.0160

Copperweld® Composite Conductors (CCC) (cont.)

Loading Tables

CATALOG NUMBER	TYPE OF CONDUCTOR	DIAMETER IN	AREA OF WIRE (A) SQ IN	MODULUS X AREA (EA)	VERTICAL, HORIZONTAL, AND RESULTANT* LOADS (LOADING IN LBS PER LINEAR FOOT OF CONDUCTOR)								
					LIGHT LOADING DISTRICT			MEDIUM LOADING DISTRICT			HEAVY LOADING DISTRICT		
					VERTICAL CONDUCTOR ONLY	HORIZONTAL WIND 9 LBS PER SQ FT	RESULTANT	VERTICAL CONDUCTOR +¼" OF ICE	HORIZONTAL WIND 4 LBS PER SQ FT ¼" OF ICE	RESULTANT	VERTICAL CONDUCTOR +½" OF ICE	HORIZONTAL WIND 4 LBS PER SQ FT ½" OF ICE	RESULTANT
350,000 CIRCULAR MILS COPPER EQUIVALENT													
CCC350E	E	0.788	0.3704	7,223,000	1.4030	0.5910	1.5720	1.7260	0.4293	1.9790	2.2040	5.6900	2.5830
CCC350EK	EK	0.735	0.3224	5,964,000	1.2380	0.5513	1.4050	1.5440	0.4117	1.7980	2.0060	0.5786	2.3880
300,000 CIRCULAR MILS COPPER EQUIVALENT													
CCC300E	E	0.729	0.3175	6,191,000	1.2030	0.5468	1.3710	1.5070	0.4097	1.7620	1.9670	0.5763	2.3500
CCC300EK	EK	0.68	0.2763	5,112,000	1.0610	0.5100	1.2270	1.3500	0.3933	1.6060	1.7950	0.5600	2.1800
250,000 CIRCULAR MILS COPPER EQUIVALENT													
CCC250E	E	0.666	0.2646	5,160,000	1.0020	0.4995	1.1700	1.2870	0.3887	1.5440	1.7270	0.5553	2.1140
CCC250EK	EK	0.621	0.2303	4,261,000	0.8842	0.4658	1.0490	1.1550	0.3737	1.4140	1.5810	0.5403	1.9710
4/0 AWG CIRCULAR MILS COPPER EQUIVALENT (211,600 CIRCULAR MILS)													
CCC4/0E	E	0.613	0.2239	4,366,000	0.8483	0.4598	1.0150	1.1170	0.3710	1.3770	1.5400	0.5377	1.9310
CCC4/0G	G	0.583	0.2077	3,946,000	0.7894	0.4373	0.9524	1.0480	0.3610	1.3090	1.4630	0.5277	1.8550
CCC4/0EK	EK	0.571	0.1949	3,606,000	0.7484	0.4283	0.9123	1.0040	0.3570	1.2650	1.4140	0.5237	1.8080
CCC4/0F	F	0.55	0.1847	3,325,000	0.7102	0.4125	0.8713	0.9589	0.3500	1.2210	1.3630	0.5167	1.7580
2/0 AWG CIRCULAR MILS COPPER EQUIVALENT (133,100 CIRCULAR MILS)													
CCC2/0K	K	0.534	0.1742	3,658,000	0.6459	0.4005	0.8100	0.8896	0.3447	1.1540	1.2890	0.5113	1.6870
CCC2/0J	J	0.494	0.1493	2,986,000	0.5606	0.3705	0.7220	0.7919	0.3313	1.0580	1.1790	0.4980	1.5800
CCC2/0G	G	0.463	0.1307	2,483,000	0.4966	0.3473	0.6560	0.7183	0.3210	0.9301	1.0290	0.4877	1.4350
CCC2/0F	F	0.436	0.1162	2,092,000	0.4468	0.3270	0.6037	0.6601	0.3120	0.9301	1.0290	0.4787	1.4350
1/0 AWG CIRCULAR MILS COPPER EQUIVALENT (105,500 CIRCULAR MILS)													
CCC1/0K	K	0.475	0.1381	2,900,000	0.5120	0.3563	0.6737	0.7374	0.3250	1.0060	1.1180	0.4917	1.5220
CCC1/0J	J	0.44	0.1184	2,368,000	0.4443	0.3300	0.6034	0.6588	0.3133	0.9295	1.0290	0.4800	1.4350
CCC1/0G	G	0.412	0.1036	1,968,000	0.3936	0.3090	0.5504	0.5994	0.3040	0.8721	0.9607	0.4707	1.3700
CCC1/0F	F	0.388	0.09207	1,657,000	0.3541	0.2910	0.5083	0.5524	0.2960	0.8267	0.9062	0.4627	1.3180
NO. 1 AWG CIRCULAR MILS COPPER EQUIVALENT (83,690 CIRCULAR MILS)													
CCC1N	N	0.464	0.1315	2,893,000	0.4813	0.3480	0.6439	0.7033	0.3213	0.9732	1.0810	0.4880	1.5220
CCC1K	K	0.423	0.1096	2,302,000	0.4062	0.3173	0.5654	0.6154	0.3077	0.8880	0.9801	0.4743	1.3890
CCC1J	J	0.392	0.0939	1,878,000	0.3525	0.2940	0.5090	0.5521	0.2973	0.8271	0.9071	0.4640	1.3190
CCC1G	G	0.367	0.08216	1,561,000	0.3122	0.2753	0.4662	0.5040	0.2890	0.7810	0.8513	0.4557	1.2660
CCC1F	F	0.346	0.07303	1,315,000	0.2809	0.2595	0.4324	0.4662	0.2820	0.7448	0.8069	0.4487	1.2230
NO. 2 AWG CIRCULAR MILS COPPER EQUIVALENT (66,370 CIRCULAR MILS)													
CCC2P	P	0.462	0.1303	2,997,000	0.4711	0.3465	0.6348	0.6925	0.3207	0.9631	1.0690	0.4873	1.4750
CCC2N	N	0.413	0.1043	2,295,000	0.3817	0.3098	0.5416	0.5878	0.3043	0.8619	0.9494	0.4710	1.3600
CCC2K	K	0.377	0.08688	1,824,000	0.3221	0.2828	0.4786	0.5170	0.2923	0.7940	0.8674	0.4590	1.2810
CCC2J	J	0.349	0.07447	1,489,000	0.2795	0.2618	0.4329	0.4657	0.2830	0.7450	0.8074	0.4497	1.2240
CCC2A	A	0.366	0.06799	1,292,000	0.2568	0.2745	0.4259	0.4483	0.2887	0.7332	0.7953	0.4553	1.2160
CCC2G	G	0.327	0.06516	1,238,000	0.2476	0.2453	0.3985	0.4270	0.2757	0.7082	0.7618	0.4423	1.8180
CCC2F	F	0.308	0.05792	1,043,000	0.2228	0.2310	0.3709	0.3963	0.2693	0.6791	0.7252	0.4360	1.1460
NO. 4 AWG CIRCULAR MILS COPPER EQUIVALENT (41,740 CIRCULAR MILS)													
CCC4P	P	0.366	0.08196	1,885,000	0.2963	0.2745	0.4539	0.4878	0.2887	0.7668	0.8348	0.4553	1.2510
CCC4N	N	0.328	0.06556	1,442,000	0.2400	0.2460	0.3937	0.4197	0.2760	0.7023	0.7548	0.4427	1.1750
CCC4D	D	0.348	0.06147	1,352,000	0.2255	0.2610	0.3949	0.4114	0.2827	0.6692	0.7528	0.4493	1.1770
CCC4A	A	0.29	0.04276	812,400	0.1615	0.2175	0.3209	0.3294	0.2633	0.6217	0.6527	0.4300	1.0820
NO. 6 AWG CIRCULAR MILS COPPER EQUIVALENT (26,250 CIRCULAR MILS)													
CCC6D	D	0.276	0.03866	850,500	0.1418	0.2070	0.3009	0.3053	0.2587	0.6002	0.6243	0.4253	1.0550
CCC6A	A	0.23	0.02689	510,900	0.1016	0.1725	0.2502	0.2508	0.2433	0.5495	0.5555	0.4100	0.9904
CCC6C	C	0.225	0.02577	489,600	0.0973	0.1688	0.2448	0.2450	0.2417	0.5441	0.5481	0.4083	0.9835
NO. 8 AWG CIRCULAR MILS COPPER EQUIVALENT (16,510 CIRCULAR MILS)													
CCC8D	D	0.219	0.02491	534,800	0.0892	0.1643	0.2369	0.2350	0.2397	0.5357	0.5363	0.4063	0.9728
CCC8A	A	0.199	0.01995	419,000	0.0743	0.1493	0.2167	0.2139	0.2330	0.5163	0.5089	0.3997	0.9471
CCC8C	C	0.179	0.01604	304,800	0.0607	0.1343	0.1973	0.1940	0.2263	0.4981	0.4829	0.3930	0.9226

*Based on Rule 251, National Electrical Safety Code, 1990 Edition