



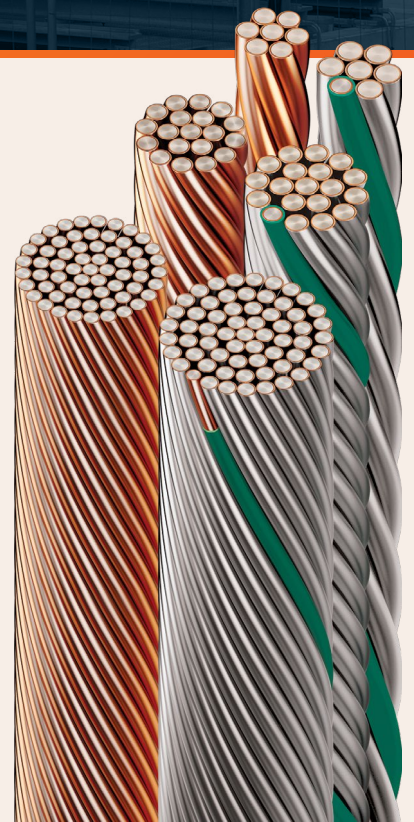
COPPERWELD®
BRAND WIRE

ArcAngel®

Flexible Grounding Conductors

Flexible Copper-Clad Steel (CCS) Conductors for Demanding Utility Applications

Modern substations require grounding conductors that offer more than fault-carrying capacity — they must endure mechanical stress, navigate complex layouts, and deliver long-term reliability. ArcAngel is Copperweld's high-strand-count CCS conductor, engineered to bend easily during installation while combining the electrical performance and corrosion resistance of copper with the strength of steel. Flexible and durable, ArcAngel helps utilities strengthen critical infrastructure from the ground up.



Why Utilities Choose ArcAngel® CCS Grounding Conductors

ArcAngel is engineered for easier installation, high fault performance, and proactive maintenance in complex grounding layouts.

ArcAngel is designed to simplify substation grounding where tight routing, congested equipment pads, and long-term reliability all matter. Its flexible, high-strand construction bends easily during installation while maintaining the electrical performance of copper. With an optional ground fault indicator strand that supports faster inspection and maintenance visibility, ArcAngel helps utilities keep critical grounding systems performing for decades.

Options Designed for Utility Grounding Specifications

ArcAngel is available in configurable constructions — designed for connector compatibility and straightforward specification.

ArcAngel gives utilities the flexibility to match grounding conductors to substation site needs without complicating design or installation. Offered in a standard bare configuration or with an optional ground fault indicator strand with a discreet tin-coated finish, ArcAngel supports maintenance visibility in critical grounding systems. Fully compatible with common grounding connectors and engineered to meet applicable industry standards, ArcAngel is ready to specify.



Increased Flexibility

High strand count improves ease of installation without sacrificing strength, simplifying routing through congested substation layouts.



Improved Electrical Performance

Specifically designed to meet IEEE 80 short circuit current requirements established for copper, ArcAngel delivers reliable fault performance with the added mechanical strength of CCS.



Ground Fault Indicator Strand

Optional fault-identification strand visibly changes appearance when a fault occurs, helping crews quickly identify damage and simplify maintenance.



Superior Strength

Copperweld® CCS conductors resist stretching, breakage, and deformation under stress. This durability also allows utilities to optimize ground grid geometry and conductor sizing for effective grounding performance and reduced step potential.



Corrosion Resistance

Copperweld CCS conductors are engineered to perform in demanding environments. With copper thickness and metallurgical bond integrity that exceed ASTM standards, Copperweld CCS helps protect the steel core and maintain conductor integrity over time.*



Reduced Theft Incentives

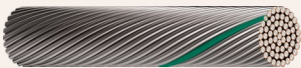
With a rugged steel core and lower scrap value than solid copper, CCS helps reduce theft incentives in remote or unmonitored locations.

Finishes:



Bare

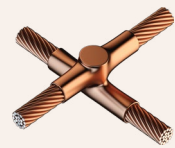
Standard ArcAngel finish for high-performance grounding in demanding utility applications.



Indicator

Optional fault identification strand visibly changes appearance when a fault occurs, simplifying maintenance, while a discreet tin-coated finish blends into substation structures for added theft deterrence.

Connector Compatibility:



Exothermic



Crimp



Compression



Swage

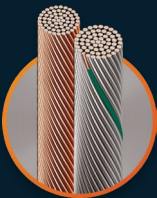
Compliance and Listings:

- **IEEE Standards:** IEEE 80:2013, IEEE 837 EMF
- **ISO Certification:** Copperweld facilities are ISO 9001:2015 certified
- **BABA Compliant:** All bimetallics manufactured at Copperweld's facilities in Fayetteville, TN, USA



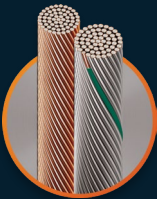
* Service life varies based on soil conditions, installation environment, and exposure factors. Underground performance may be impacted by soil chemistry, pH, moisture, and circulating currents. These conditions influence the performance of all grounding conductor materials, including copper and CCS.

ArcAngel 101 – Replaces 500 kcmil Copper



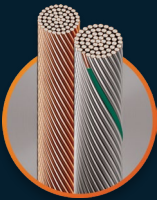
	ArcAngel 101 (CWAA101-BARE/IND)	500 kcmil Copper
Current (kA)*	101.0	101.0
Break Load (lbf)**	25,089	15,240
Diameter (in)	0.941	0.796
Strands	61	19

ArcAngel 73 – Replaces 350 kcmil Copper



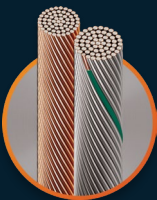
	ArcAngel 73 (CWAA73-BARE/IND)	350 kcmil Copper
Current (kA)*	73.0	73.0
Break Load (lbf)**	17,568	10,680
Diameter (in)	0.801	0.676
Strands	61	19

ArcAngel 52 – Replaces 250 kcmil Copper



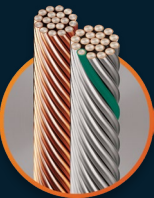
	ArcAngel 52 (CWAA52-BARE/IND)	250 kcmil Copper
Current (kA)*	52.0	52.0
Break Load (lbf)**	13,725	7,627
Diameter (in)	0.677	0.572
Strands	61	19

ArcAngel 44 – Replaces 4/0 Copper



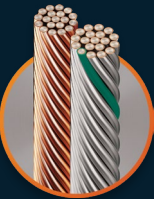
	ArcAngel 44 (CWAA44-BARE/IND)	4/0 Copper
Current (kA)*	44.0	44.0
Break Load (lbf)**	10,541	5,983
Diameter (in)	0.620	0.528
Strands	61	19

ArcAngel 28 – Replaces 2/0 Copper



	ArcAngel 28 (CWAA28-BARE/IND)	2/0 Copper
Current (kA)*	28.0	28.0
Break Load (lbf)**	7,097	3,763
Diameter (in)	0.493	0.402
Strands	19	19

ArcAngel 22 – Replaces 1/0 Copper



	ArcAngel 22 (CWAA22-BARE/IND)	1/0 Copper
Current (kA)*	22.0	22.0
Break Load (lbf)**	5,472	3,221
Diameter (in)	0.445	0.368
Strands	19	19

ArcAngel 14 – Replaces #2 Copper



	ArcAngel 14 (CWAA14-BARE/IND)	#2 Copper
Current (kA)*	14.0	14.0
Break Load (lbf)**	4,019	1,928
Diameter (in)	0.350	0.258
Strands	19	7

* Short circuit current (kA) values are based on IEEE 80:2013, Table 6 (RMS currents, 60 Hz, X/R = 0).
** Break load tensile strength values are based on nominal tested values in accordance with applicable ASTM standards.

Grounding Selection Guide

Copperweld® CCS vs Copper Comparison

In many grounding applications, conductors are upsized beyond what fault current calculations alone require to satisfy both thermal capacity and mechanical strength criteria under applicable standards. With solid copper, tensile strength often drives that size increase. Copperweld CCS conductors, by contrast, deliver mechanical strength alongside electrical conductivity, allowing sizing to more closely reflect fault current requirements without unnecessary oversizing.

Part Name	Copperweld Part #	Strands	Strand Diameter		Nom. Overall Diameter		Area		Fault Current*	Weight		Max. Wire Resistance		Min. Break Load	
			in	mm	in	mm	kcmil	mm²	kA @ 500 ms	lb/kft	kg/km	Ω/kft	Ω/kM	lbf	kgf
Century 19 No. 4	Q6C19X4A	19	0.2043	5.19	1.022	25.96	793.0	401.8	108.8	2255	3,356	0.0349	0.0106	28,608	12,976
ArcAngel 101	CWAA101	61	0.1045	2.65	0.941	23.89	667.0	338.0	101.0	1905	2,835	0.0417	0.0127	25,089	11,380
500 kcmil Copper	CUZ37X1162A	37	0.1162	2.95	0.796	20.22	500.0	253.4	101.0	1544	2,298	0.0224	0.0068	15,240	6,913
Century 19 No. 5	Q6C19X5A	19	0.1819	4.62	0.910	23.10	628.7	318.6	87.1	1788	2,661	0.0440	0.0134	22,333	10,130
ArcAngel 73	CWAA73	61	0.0890	2.26	0.801	20.35	483.0	244.7	73.0	1382	2,056	0.0570	0.0174	17,568	7,969
350 kcmil Copper	CUZ37X0973A	37	0.0973	2.47	0.676	17.17	350.0	177.3	73.0	1081	1,609	0.0310	0.0094	10,680	4,844
Century 19 No. 6	Q6C19X6A	19	0.1620	4.11	0.810	20.57	498.6	252.6	69.7	1418	2,110	0.0554	0.0169	18,810	8,532
Century 19 No. 7	Q6C19X7A	19	0.1443	3.67	0.722	18.33	395.6	200.5	55.8	1125	1,674	0.0699	0.0213	14,107	6,399
ArcAngel 52	CWAA52	61	0.0752	1.91	0.677	17.19	345.0	174.8	52.0	987	1,468	0.0798	0.0243	13,725	6,226
250 kcmil Copper	CUZ37X0822A	37	0.0822	2.09	0.572	14.53	250.0	126.7	52.0	772	1,149	0.0423	0.0129	7,627	3,460
Century 19 No. 8	Q6C19X8A	19	0.1285	3.26	0.643	16.32	313.7	159.0	44.6	892	1,327	0.0881	0.0269	11,902	5,399
ArcAngel 44	CWAA44	61	0.0689	1.75	0.620	15.75	290.0	146.9	44.0	828	1,232	0.0951	0.0290	10,541	4,781
4/0 Copper	CUZ19X1065A	19	0.1065	2.71	0.528	13.40	211.6	107.2	44.0	653	972	0.0500	0.0152	5,983	2,714
Century 7 No. 4	Q6C7X04A	7	0.2043	5.19	0.613	15.57	292.2	148.1	40.1	827	1,231	0.0942	0.0287	10,540	4,781
Century 19 No. 9	Q6C19X9A	19	0.1144	2.91	0.572	14.53	248.7	126.0	35.6	707	1,052	0.1112	0.0339	9,251	4,196
Century 7 No. 5	Q6C7X05A	7	0.1819	4.62	0.546	13.86	231.6	117.4	32.1	656	977	0.1189	0.0362	8,228	3,732
4Thought	Q6C19X1055A	19	0.1055	2.68	0.528	13.40	211.5	107.2	30.4	601	895	0.1307	0.0398	7,952	3,607
Century 19 No. 10	Q6C19X10A	19	0.1019	2.59	0.510	12.94	197.3	100.0	28.4	561	835	0.1401	0.0427	7,421	3,366
ArcAngel 28	CWAA28	19	0.0985	2.50	0.493	12.51	184.0	93.2	28.0	524	780	0.1484	0.0452	7,097	3,219
2/0 Copper	CUZ19X0837A	19	0.0837	2.13	0.402	10.21	133.1	67.4	28.0	411	611	0.0795	0.0242	3,763	1,707
Century 7 No. 6	Q6C7X06A	7	0.1620	4.11	0.486	12.34	183.7	93.1	25.7	520	774	0.1499	0.0457	6,930	3,143
ArcAngel 22	CWAA22	19	0.0890	2.26	0.445	11.30	150.0	76.0	22.0	428	637	0.1818	0.0554	5,472	2,482
1/0 Copper	CUZ19X0745A	19	0.0745	1.89	0.368	9.36	105.6	53.5	22.0	323	481	0.1003	0.0306	3,221	1,461
Century 7 No. 7	Q6C7X07A	7	0.1443	3.67	0.433	11.00	145.8	73.9	20.6	413	615	0.1889	0.0576	5,198	2,358
Century 19 x 0860A	Q6C19X0860A	19	0.0860	2.18	0.430	10.92	140.5	71.2	20.3	400	543	0.1947	0.0593	4,959	2,249
Century 19 x 0827	Q6C19X0827A	19	0.0827	2.10	0.414	10.50	129.9	65.8	19.6	365	595	0.2106	0.0642	4,738	2,149
Century 7 x 1379	Q6C7X1379A	7	0.1379	3.50	0.414	10.51	133.1	67.4	18.8	561	835	0.2068	0.0630	4,568	2,072
Century 7 No. 8	Q6C7X08A	7	0.1285	3.26	0.386	9.79	115.6	58.6	16.4	327	487	0.2382	0.0726	4,385	1,989
Century 19 x 0750	Q6C19X0750A	19	0.0750	1.91	0.375	9.53	106.9	54.2	15.5	304	452	0.2560	0.0780	4,257	1,931
ArcAngel 14	CWAA14	19	0.0700	1.78	0.350	8.89	93.00	47.1	14.0	265	394	0.2939	0.0896	4,019	1,823
2 Copper	CUZ7X0974A	7	0.0974	2.47	0.258	6.54	66.36	33.6	14.0	205	305	0.1594	0.0486	1,928	875
Century 7 No. 9	Q6C7X09A	7	0.1144	2.91	0.343	8.72	91.60	46.4	13.1	386	574	0.3006	0.0916	3,408	1,546
Century 7 No. 10	Q6C7X10A	7	0.1019	2.59	0.306	7.76	72.69	36.8	10.5	206	306	0.3788	0.1155	2,734	1,240
4 Copper	CUZ2043A	1	0.2043	5.19	0.204	5.19	41.74	21.1	9.0	129	192	0.2540	0.0774	1,200	544
Century No. 2	Q6C2576A	1	0.0974	2.47	0.258	6.54	66.36	33.6	8.9	186	277	0.4108	0.1252	2,561	1,162
Century 7 x 0860A	Q6C7X0860A	7	0.0860	2.18	0.258	6.55	51.77	26.2	7.5	147	219	0.5265	0.1605	2,069	938
Century No. 4	Q6C2043A	1	0.2043	5.19	0.204	5.19	41.74	21.1	5.7	117	174	0.6532	0.1991	1,673	759
6 Copper	CUZ1620A	1	0.1620	4.11	0.162	4.11	26.24	13.3	5.0	81	121	0.4030	0.1228	763	346
Century 7 x 068	Q6C7X0680A	7	0.0680	1.73	0.204	5.18	32.37	16.4	4.7	91	135	0.8421	0.2567	1,295	587
Century No. 6	Q6C1620A	1	0.1620	4.11	0.162	4.11	26.25	13.3	3.7	74	110	1.0388	0.3166	1,100	499
8 Copper	CUZ1285A	1	0.1285	3.26	0.129	3.28	16.51	8.4	3.0	51	76	0.6408	0.1953	499	226
Century No. 8	Q6C1285A	1	0.1285	3.26	0.129	3.28	16.51	8.4	2.5	47	69	1.6510	0.5032	696	316

* Short circuit current (kA) values are based on IEEE 80:2013, Table 6 (RMS currents, 60 Hz, X/R = 0). Fusing temps at 1084 °C.

ArcAngel® Resources

Visit copperweld.com for additional Copperweld Power Grid resources, videos, events, and more.

To stay up to date on the latest Copperweld releases, join our eNewsletter mailing list: copperweld.com/updates



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