

Copper Theft Solutions for Electrical Utilities

TechAdvantage 2013

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Copper Theft is a Tremendous Problem

[Copper Theft Insurance Claims Soar](#)

Published: March 27th, 2012

A new insurance industry report confirms what electric cooperatives, phone companies, breweries and many individuals have been all too aware of: Metal theft is on the rise. The National Insurance Crime Bureau tallied figures for 2009 through... [Read more](#)

[Metal Theft Bill Unveiled in Senate](#)

Published: December 4th, 2012

The copper theft epidemic is gaining attention on Capitol Hill, where a bipartisan bill has been introduced in the Senate. The bill would make metal theft a federal crime punishable by up to 10 years in prison, a fine, or both. In most cases, the... [Read more](#)

[Copper Thieves Hit Hawaii Co-op](#)

Published: October 1st, 2012

Hawaii's only electric cooperative is among the latest victims of a rash of copper thefts that have plagued the state in recent months. The thefts occurred on portions of an island familiar to many fans of a classic television show that was... [Read more](#)

[Suspected Co-op Copper Thief Nailed](#)

Published: September 18th, 2012

An honest scrap dealer helped authorities catch a suspect in a spate of copper thefts victimizing a Texas electric cooperative. "There's been a rash of substation copper theft incidents over the last four months," said Doug Turk, director... [Read more](#)

[S.C. Co-ops Target Copper Theft](#)

Published: September 10th, 2012

A South Carolina cooperative is teaming up with the state's Crime Stoppers unit to prevent copper thefts, which has been a problem plaguing the area. [Read more](#)

[Database to Thwart Copper Theft](#)

Published: August 28th, 2012

Ratcheting up the war on metal theft, California will get an online database where scrap dealers will enter their daily purchases. The move was welcomed by electric cooperatives. "The time for turning property crimes into easy profits... [Read more](#)

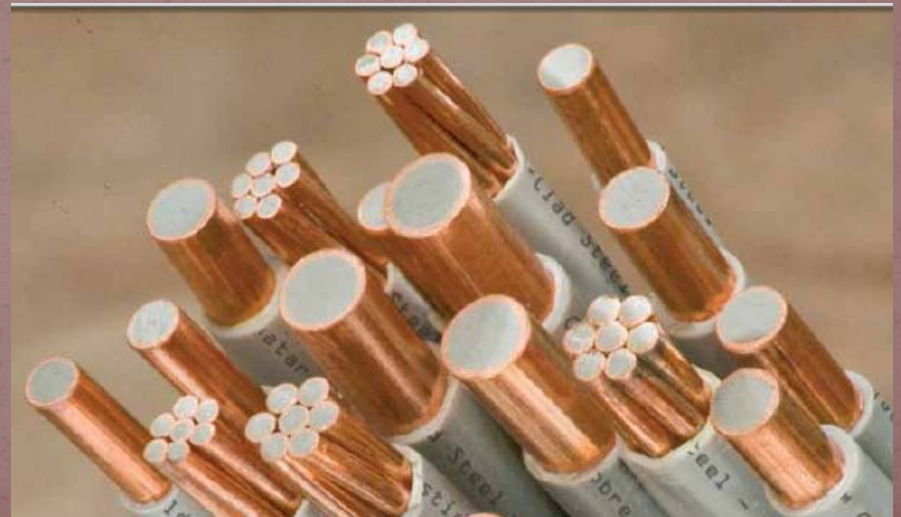
[Federal Copper Theft Law Proposed](#)

Published: August 14th, 2012

When it comes to copper theft, a pair of lawmakers thinks it's time to make a federal case of it. Sen. Charles Schumer, D-N.Y., and Sen. Amy Klobuchar, D-Minn., are sponsoring the Metal Theft Prevention Act. The bill would make it a federal... [Read more](#)

Copper-Clad Steel Wire and Strand

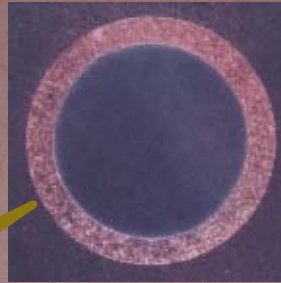
- has ample current carrying capacity
- has excellent fatigue properties
- is 7 - 9% lighter than copper
- has high strength
- is highly theft resistant
- provides a reliable, low impedance path to ground



CCS Anti-Theft Properties

- Magnetic
 - Most professional thieves carry magnets— if the magnet sticks, it isn't copper
- Harder to cut
 - The steel core is much more resistant to cutting than pliable copper, another giveaway
- Worthless at the scrap dealer
 - Because the steel and copper cannot be easily separated in bimetallic wire, the price awarded for scrap is that of mixed metal— about 16¢ a pound— not worth a thief's time and risk... they may steal it once, but not again
 - Actually removes the valuable copper from the pole

Solid Cladding Process

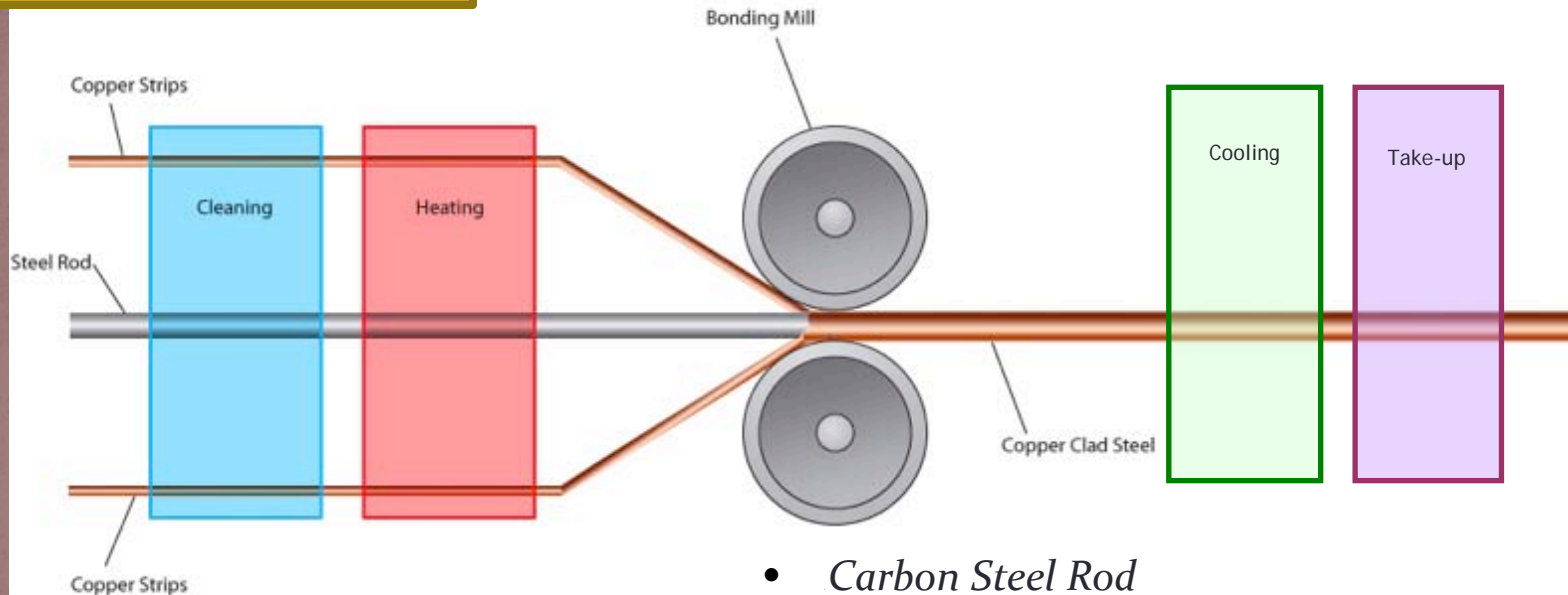


Copper Thickness

6% of total diameter for 30% IACS

10% of total diameter for 40% IACS

The conductive copper cladding is concentric and uniform in ratio to the diameter of the core material, even after being drawn to very fine diameter.



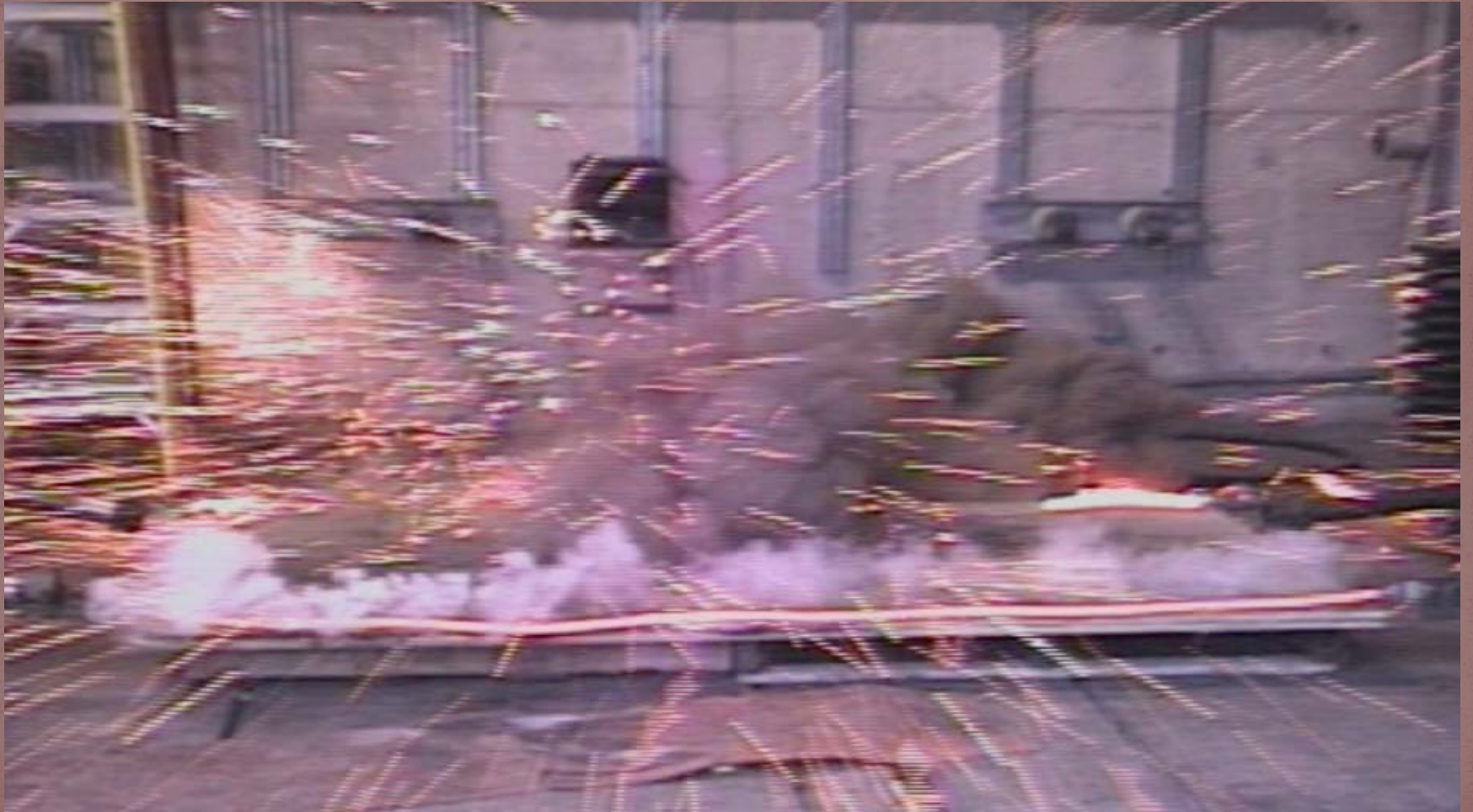
- *Carbon Steel Rod*
- *Two Strips C10200 Oxygen-Free Copper*
- *Extreme Pressure & Cleanliness*
- *Verified Metallurgical Bond*

Corrosion Resistance

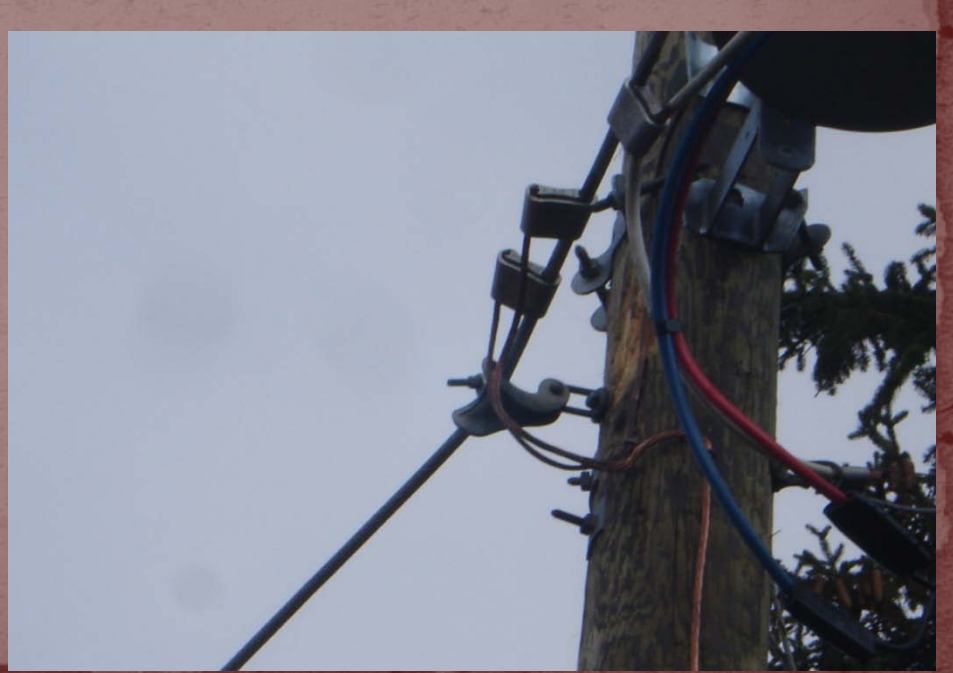
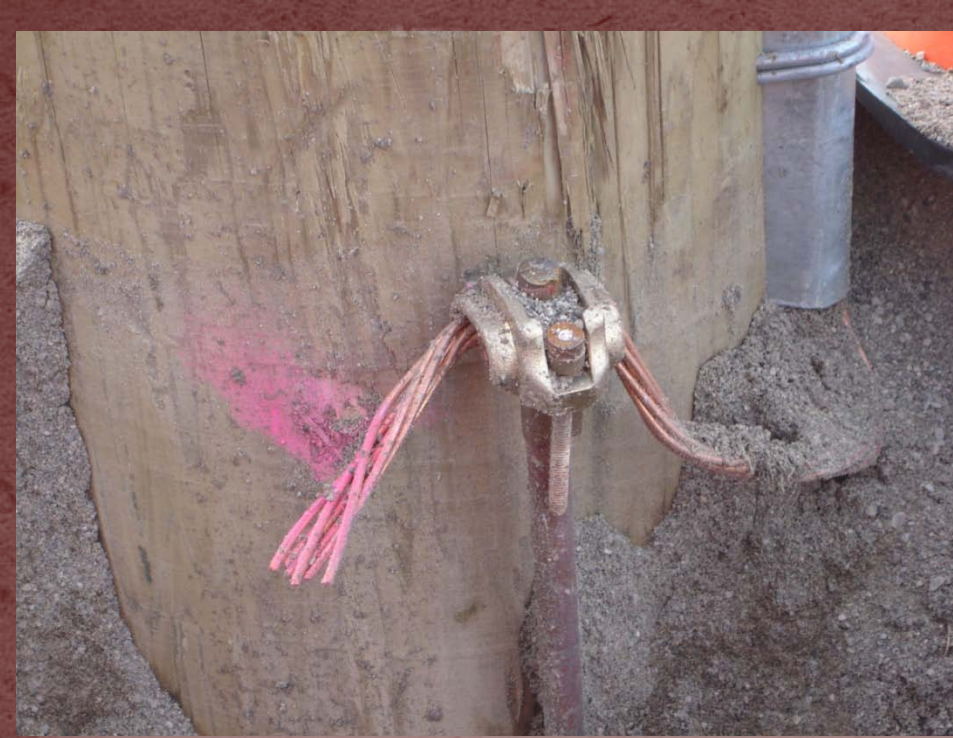
- Conductors buried in 1962 and un-earthed in Feb 2011.
- Conductor size: 7 No. 5 (232 kcmil)
- Conductor Type: 40% LC DSA
- Maximum penetration depth on the tip: 0.859 inch; Average depth: 0.382 inch (2 times the wire diameter)
- No visible corrosion observed at the copper-steel interface/bond



Fusing Current Test

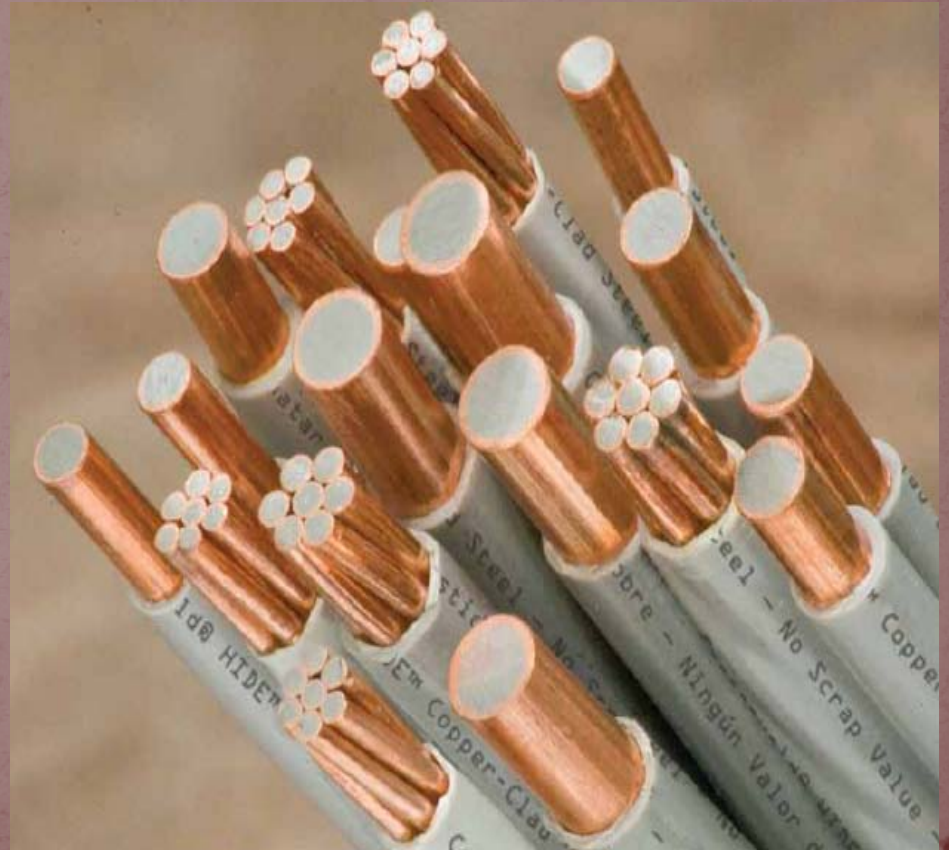


Conductor Size in AWG	# of wires	Diameter of single wire		Overall Diameter		Area		I ² t kA ² s	Fault Current at 0.5 seconds		Weight		Wire Resistance		Min Break Load**	
		inch	mm	inch	mm	cmil	mm ²		kA	lbs/kft	kg/km	Ω/kft	Ω/km	lbf	kgf	
40% CCS LC DSA																
19 No. 4	19	0.2043	5.19	1.02	25.95	793031	401.83	5752.95	107.27	2254.69	3355.44	0.0338	0.1110	21755	9868	
19 No. 5	19	0.1819	4.62	0.91	23.10	628665	318.55	3615.33	85.03	1787.37	2659.98	0.0427	0.1400	17246	7823	
19 No. 6	19	0.1620	4.11	0.81	20.57	498636	252.66	2274.45	67.45	1417.68	2109.81	0.0538	0.1765	13679	6205	
19 No. 7	19	0.1443	3.67	0.72	18.33	395627	200.47	1431.80	53.51	1124.82	1673.96	0.0678	0.2224	10853	4923	
19 No. 8	19	0.1285	3.26	0.64	16.32	313733	158.97	900.39	42.44	891.98	1327.45	0.0855	0.2805	8606	3904	
19 No. 9	19	0.1144	2.91	0.57	14.53	248660	126.00	565.62	33.63	706.97	1052.12	0.1079	0.3539	6821	3094	
4/0	19	0.1055	2.68	0.53	13.40	211475	107.16	409.10	28.60	601.25	894.78	0.1268	0.4161	5801	2631	
19 No. 10	19	0.1019	2.59	0.51	12.94	197289	99.97	356.05	26.69	560.92	834.76	0.1359	0.4460	5412	2455	
40% CCS LC DSA																
7 No. 4	7	0.2043	5.19	0.61	15.57	292169	148.04	780.87	39.52	827.40	1231.34	0.0914	0.3000	8015	3636	
7 No. 5	7	0.1819	4.62	0.55	13.86	231613	117.36	490.72	31.33	655.91	976.13	0.1153	0.3784	6354	2882	
7 No. 6	7	0.1620	4.11	0.49	12.34	183708	93.09	308.72	24.85	520.24	774.23	0.1454	0.4771	5040	2286	
7 No. 7	7	0.1443	3.67	0.43	11.00	145757	73.86	194.34	19.72	412.7719	614.29	0.1833	0.6013	3998	1814	
2/0	7	0.1379	3.50	0.41	10.51	133115	67.45	162.09	18.01	376.9694	561.01	0.2007	0.6584	3652	1656	
7 No. 8	7	0.1285	3.26	0.39	9.79	115586	58.57	122.21	15.63	327.3285	487.13	0.2311	0.7583	3171	1438	
7 No. 9	7	0.1144	2.91	0.34	8.72	91612	46.42	76.77	12.39	259.4356	386.09	0.2916	0.9567	2513	1140	
7 No. 10	7	0.1019	2.59	0.31	7.76	72685	36.83	48.33	9.83	205.8382	306.33	0.3675	1.2058	1994	904	
No. 2	7	0.0860	2.18	0.26	6.55	51772	26.23	24.52	7.00	146.6137	218.19	0.5160	1.6929	1420	644	
No. 4	7	0.0680	1.73	0.20	5.18	32368	16.40	9.58	4.38	91.6633	136.41	0.8253	2.7077	888	403	
40% CCS LC DSA																
No. 2	1	0.2576	6.54	0.26	6.54	66368	33.63	40.29	8.98	186.0875	276.94	0.3985	1.3075	2023	918	
No. 4	1	0.2043	5.19	0.20	5.19	41738	21.15	15.94	5.65	117.0294	174.16	0.6337	2.0790	1272	577	
No. 6	1	0.1620	4.12	0.16	4.12	26250	13.30	6.30	3.55	73.6030	109.54	1.0076	3.3057	800	363	
No. 8	1	0.1285	3.2639	0.13	3.26	16512	8.37	2.49	2.23	46.2982	68.90	1.6018	5.2552	503	228	
No. 9	1	0.1144	2.9058	0.11	2.91	13087	6.63	1.57	1.77	36.6953	54.61	2.0210	6.6305	399	181	
No. 10	1	0.1019	2.5883	0.1019	2.58826	10384	5.26	0.99	1.40	29.11431	43.32806	2.5473	8.3570	316.498	143.56	



Jacketed Ground Wire

- Provides an additional level of protection by making the product not appear at a glance to be copper



The Next Evolution: CAMO™

- A treatment to make the copper on the exterior of the wire have the appearance of a cheaper metal like steel

