

Products Description

The copper-clad Steel strand wire is shaped like a cable, which is made of a plurality of copper-clad single wires. Because of its multi-stranded properties, the electrical conductivity and tensile strength are relatively good, and the product can be customized to enhance the elongation rate by multiple heat treatment in the production process, which has increased the strength and toughness of the steel compared with the pure copper strand. Moreover, the good electrical conductivity and corrosion resistance of the copper material are maintained due to the principle of the skin effect. Therefore, it is very popular in many fields of lightning protection and grounding, especially in power plants, substations, high-speed rail, subways, electrified railways, large-scale chemical plants, mechanical plants, communication base stations, transportation, computer rooms, highways and military bases.

Characteristics:

1.High conductivity (up to 70% and above)

The copper-clad strand wire produced by our company generally has a conductivity of 30%-70%, and more than 70% can be customized according to customer requirements.

2.High tensile strength

The multi-stranded copper-clad strand wire has high tensile strength and can be made into copper-clad steel strand wire with high electrical conductivity and high tensile strength after being enhanced by special treatment process to be suitable for special use occasions.

3.Long life

The copper plating of single-stranded copper-clad round steel (copperweld steel) of multi-stranded copper-clad strand is thick, the excellent production process makes copper layer tightly combined and bent 180-360 degrees without cracking and its life is long and can be more than 30 years.

4.Low cost

The characteristics of high conductivity and corrosion resistance have greatly reduced the number of grounding conductors used in grounding projects, which can significantly save costs and achieve outstanding economic benefits.

5.Convenient construction and transportation

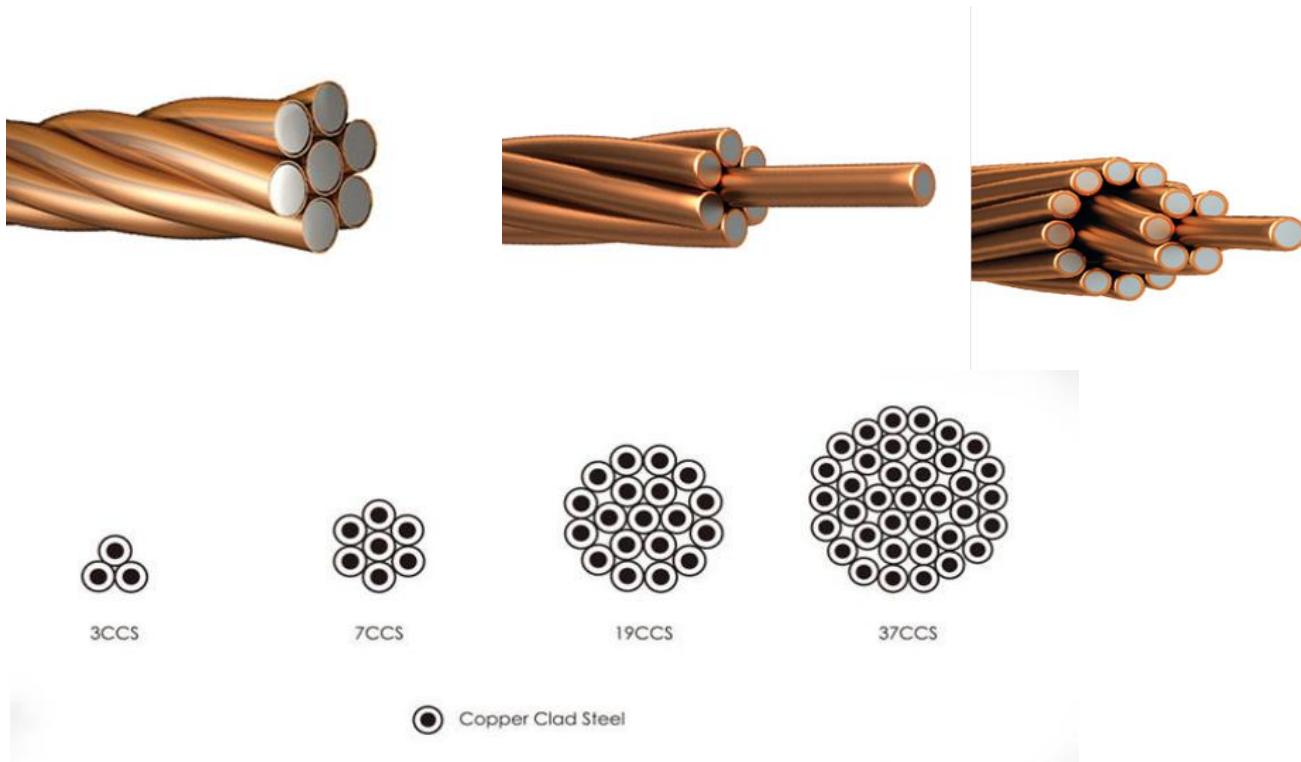
The single length of the copper-clad copperweld strand can be up to 100 meters, because the 100-meter package or the hundred-meter cable can be transported more easily. The welding between the grounding grids during the construction is recommended to use the exothermic welding series products produced by our company. There are different shapes of molds for exothermic welding, so that different permanent joints can be randomly welded. The construction operation is simple and easy to learn, and the various conductors of the grounding grid are welded together to become a true maintenance-free device.

Specification Data

ASTM B-227 Hard drawn copper-clad steel wire

ASTM B-910 Annealed copper-clad steel wire

ASTM B-228 Concentric-lay-stranded copper-clad steel conductors



Stranded Bare Copper-Clad Steel							
Size (No. – Awg)	Diameter	Breaking Load*			Weight	Resistance	
		High Strength (HS)		Extra-High Strength (EHS)		Ohms Per km at 68°F	
	mm	40% Conductivity (kN)	30% Conductivity (kN)	30% Conductivity (kn)	kg per km	40% Conductivity	30% Conductivity
37-Wire Copper-clad Steel Strands							
37 no. 5	32.26	435.34	481.49	579.84	5183	0.07226	0.0963
37 no. 6	28.7	360.54	397.16	481.05	4111	0.09112	0.12146
37 no. 7	25.65	298.02	327.08	397.34	3260	0.1149	0.15314
37 no. 8	22.83	245.95	269	326.63	2586	0.14488	0.19313
37 no. 9	20.35	202.65	220.94	266.64	2050	0.18266	0.24351
37 no. 10	18.11	167.5	182.45	216.31	1626	0.23035	0.30707
19-Wire Copper-clad Steel Strands							
19 no. 5	23.11	223.57	247.29	297.75	2647	0.13986	0.18647
19 no. 6	20.57	185.12	203.94	247.11	2098	0.17637	0.23511
19 no. 7	18.31	153.04	167.94	204.03	1664	0.22238	0.29648
19 no. 8	16.31	126.29	138.13	167.72	1320	0.28044	0.37392
19 no. 9	14.53	104.09	113.48	136.21	1047	0.35358	0.47134
7-Wire Copper-clad Steel Strands							
7 no. 5	13.87	82.37	91.09	109.69	971.148	0.37818	0.50414
7 no. 6	12.34	68.22	75.16	91.05	770.159	0.47691	0.63566
7 no. 7	11	56.38	61.9	75.16	610.744	0.60122	0.80163
7 no. 8	9.78	46.55	50.91	61.81	484.378	0.75834	1.01057
7 no. 9	8.71	38.34	41.8	50.2	384.182	0.95612	1.27461
7 no. 10	7.77	31.69	34.52	40.92	304.624	1.20573	1.6072
3-Wire Copper-clad Steel Strands							
3 no. 5	9.96	37.26	41.22	52.78	415.437	0.88068	1.17391
3 no. 6	8.86	30.86	33.99	38.96	329.449	1.11028	1.48026
3 no. 7	7.9	25.51	27.99	35.25	261.256	1.40023	1.86665
3 no. 8	7.04	21.05	23.02	27.95	207.12	1.76562	2.35373
3 no. 9	6.27	17.35	18.91	22.82	164.35	2.22646	2.96807
3 no. 10	5.59	14.33	15.62	18.51	130.299	2.80735	3.74248
3 no. 12	4.42	9.95		11.41	81.951	4.46408	5.94992

Stranded Bare Copper-Clad Steel: Type "M" Guy Strand					
Catalog	Designation	Stranded Diameter	No. x Diameter of Individual Wires	Rated Strength	Weight
		(mm)	(mm)	(kN.)	kg / km
	6M	6.02	7 x 2.00	26.7	181.54
	8M	7.01	7 x 2.34	35.6	247.01
	10M	7.7	7 x 2.56	44.5	297.6
	12.5M	8.76	7 x 2.92	55.625	385.39
	14M	9.14	7 x 3.05	62.3	421.1
	16M	9.8	7 x 3.25	71.2	482.11
	18M	10.52	7 x 3.50	80.1	556.51
	20M	10.97	7 x 3.66	89	605.62

Specification and modles:

Model	Nominal area	Wire quantity	Outer diameter		Weight/km		Pulling strength				20°C Max resistance	
			Monofilament	Conductor	Grade 30	Grade 40	Grade 40 LC	Grade 30 LC	Grade 40 HS	Grade 30 HS	Grade 40	Grade 30
			mm	mm	Kg/km		kgf				Ω/km	
19 No.5	318.7	19	4.62	23.11	2634	2660.8	7823	8800	8800	9778	0.1442	0.1923
19 No.6	252.7	19	4.11	20.57	2087.8	2110.2	6205	6980	6980	7756	0.1818	0.2424

19 No.7	200.45	19	3.66	18.31	1656.3	1674.1	4923	5538	5538	6154	0.2294	0.3058
19 No. 8	158.96	19	3.26	16.31	1313.6	1327.4	3904	4392	4392	4880	0.289	0.3852
19 No. 9	126.06	19	2.91	14.53	1041.7	1052.5	3094	3481	3481	3868	0.3645	0.4862
7 No. 4	148.06	7	5.19	15.57	1218.6	1231.4	3636	4090	4090	4544	0.3093	0.4124
7 No. 5	117.41	7	4.62	13.87	966.4	976.5	2882	3242	3242	3603	0.3898	0.5197
7 No. 6	93.09	7	4.11	12.34	766.2	774.2	2286	2572	2572	2857	0.4915	0.6552
7 No.7	73.87	7	3.67	11	608	614.4	1814	2040	2040	2267	0.6201	0.8268
7 No. 8	58.56	7	3.26	9.78	482	487	1438	1618	1618	1798	0.7812	1.0414
7 No. 9	46.43	7	2.9	8.71	382.1	386.1	1140	1282	1282	1425	0.9859	1.3144
7 No. 10	36.82	7	2.59	7.77	303.1	306.2	904	1017	1017	1131	1.2422	1.6559
3 No. 5	50.32	3	4.62	9.96	413.4	417.7	1304	1467	1467	1630	0.9082	1.2104
3 No. 6	39.9	3	4.11	8.86	327.8	331.2	1034	1163	1163	1293	1.1447	1.526
3 No. 7	31.64	3	3.66	7.9	259.9	262.6	820	923	923	1026	1.444	1.925
3 No. 8	25.09	3	3.26	7.04	206.1	208.3	651	732	732	813	1.8193	2.4253
3 No. 9	19.9	3	2.91	6.27	163.5	165.1	516	580	580	645	2.2957	3.0605
3 No. 10	15.78	3	2.59	5.59	129.6	130.9	409	460	460	511	2.8929	3.8552
3 No. 12	9.92	3	2.05	4.42	81.5	82.4	260	292	292	325	4.5573	6.0731

Size	Strands*single path	Diameter	Conductivity
mm2		mm	%
10	7*1.4	4.2	18%---70%
16	7*1.7	5.1	18%---70%
25	7*2.14	6.42	18%---70%
35	7*2.52	7.356	
50	7*3.00	9	18%---70%
70	19*1.44	10.7	18%---70%
95	19*2.52	12.6	18%---70%
120	19*2.80	14	18%---70%
150	19*3.15	15.75	18%---70%
185	37*2.52	17.64	18%---70%
240	37*2.85	19.95	18%---70%
300	37*3.15	21.7	18%---70%

Nominal	structure							Line quality	
Sectional Area	Stock/diameter	Area	Breaking load			D.C. Resistance			
mm2	mm	mm2	kg			Ω/km		Kg/km	
			40HS	30HS	30EHS	40%	30%	30%	40%
320	19/4.62	318.71	22788	25206	30350	0.1399	0.1865	2634	2660.8
250	19/4.12	252.71	18849	20788	25188	0.1764	0.2352	2087.9	2110.2
200	19/3.67	200.45	15599	17118	20797	0.2225	0.2966	1656.3	1674.2
160	19/3.26	158.97	12873	14079	17096	0.2805	0.374	1313.6	1327.2

120	19/2.91	126.06	10609	11567	13884	0.3537	0.4715	1041.7	1052.6
150	7/5.19	148.06	10120	11240	13349	0.3	0.4	1218.7	1231.5
120	7/4.62	117.42	8396	9285	11181	0.3783	0.5043	966.41	976.53
90	7/4.12	93.097	6954	7661	9280	0.4771	0.6359	766.25	774.29
70	7/3.67	73.871	5747	6309	7661	0.6014	0.8019	608.06	614.46
60	7/3.26	58.561	4745	5189	6300	0.7586	1.0109	482.02	487.07
50	7/2.91	46.439	3908	4261	5116	0.9564	1.275	382.16	386.18
35	7/2.59	36.826	3230	3519	4171	1.2061	1.6077	303.14	306.26
50	3/4.62	50.322	3798	4201	5380	0.8809	1.1743	413.41	417.73
40	3/4.12	39.903	3145	3465	4424	1.1106	1.4807	327.84	331.26
30	3/3.67	31.645	2600	2854	3593	1.4007	1.8672	259.98	262.66
25	3/3.26	25.097	2145	2347	2849	1.7662	2.3544	206.11	208.34
20	3/2.91	19.903	1768	1928	2326	2.2271	2.969	163.55	165.19
15	3/2.59	15.781	1461	1592	1887	2.8082	3.7436	129.62	130.99
10	3/2.05	9.929	1014			4.4654		81.55	82.414

Copper-clad steel wire

Application:

Telephone wire,CATV cable, Electrical power,Communication overhead wire,Internet Cable,Computer Cable, Electronics contact fittings,Screen line of electric power cable.High temperature conductor,

Hard-Drawn Copper-Clad Steel Wire

Area at 20°C		Tensile Strength, min, psiA				
cmil	in.2,A	Grade 40	Grade 40	Grade 30	Grade 30	
Nominal Diameter,		HS	EHS	HS	EHS	
0.2043	41 740	0.03278	108 000	...	120 000	142 500
0.1819	33 090	0.02599	113 000	...	125 000	150 500
0.1650B	27 230	0.02138	118 000	...	130 000	157 500
0.162	26 240	0.02061	118 000	...	130 000	157 500
0.1443	20 820	0.01635	123 000	...	135 000	164 000
0.1285	16 510	0.01297	128 000	...	140 000	170 000
0.1280B	16 380	0.01287	128 000	...	140 000	170 000
0.1144	13 090	0.01028	133 000	...	145 000	174 100
0.1040B	10 820	0.008495	138 600	156 000	151 000	175 000
0.1019	10 380	0.008155	138 600	...	151 000	179 000
0.0808	6 530	0.005129	115 000	...	120 000	179 000
0.0800B	6 400	0.005027	115 000	...	120 000	179 000
0.0640B	4 096	0.003217	125 000	...	130 000	179 000
0.0403	1 624	0.001276	130 000	...	135 000	179 000
0.0390B	1 521	0.001195	130 000	...	135 000	179 000
0.032	1 024	0.000804	135 000	161 000	145 000	179 000

A Metric equivalents: 1 in. = 25.4 mm (round to four significant figures); 1 in.2 = 645.16 mm2 (round to four significant figures); 1 psi = 6.9 kPa (round to significant figure of U.S. customary units).

B These diameters are often employed by purchasers for communication lines but are not in the American Wire Gage (B & S Wire Gage) series, as are the other diameters listed (Note 3).

Maximum Resistance at 20°C V/1000 ftA

Nominal Diameter, in.	Grades 40 HS	Grades 30 HS
	and 40 EHS	and 30 EHS
0.2043	0.6532	0.8707
0.1819	0.8239	1.098
0.165	1.001	1.335
0.162	1.039	1.385
0.1443	1.309	1.745
0.1285	1.651	2.201
0.128	1.664	2.218
0.1144	2.083	2.777
0.104	2.521	3.36
0.1019	2.625	3.5
0.0808	4.206	5.607
0.08	4.292	5.722
0.064	6.771	9.027
0.0403	17.13	22.83
0.039	18.32	24.42
0.032	27.52	36.69

A Metric equivalents: 1 V/1000 ft = 3.281 V/km (round off to four significant figures).

Annealed Copper-Clad Steel Wire

Hard copper clad steel wire tensile strength and resistance requirements

Diameter mm	Sectional Area mm ²	Tensile Strength MPa				D.C. Resistance Ω/km	
		40HS	40 EHS	30HS	30EHS	40HS, 40EHS	30HS, 30EHS
5.189	21.15	745	1076	828	983	2.1431	2.8568
4.620	16.77	780		863	1038	2.7032	3.6025
4.191	13.79	814		897	1088	3.2843	4.3801
4.115	13.30	814		897	1088	3.4057	4.5442
3.665	10.55	849		932	1132	4.2948	5.7253
3.264	8.37	883		966	1173	5.4169	7.2215
3.251	8.30	883		966	1173	5.4596	7.2773
2.906	6.63	918		1001	1201	6.8343	9.1113
2.642	5.48	956		1042	1208	8.2714	11.0242
2.588	5.26	956		1042	1235	8.6126	11.4835
2.052	3.31	956		1042	1235	13.7999	18.3966
2.032	3.24	956		1042	1235	14.0821	18.7739
1.626	2.08	956		1042	1235	22.2157	29.6176
1.024	0.823	956		1042	1235	56.2035	74.9052
0.991	0.771	956		1042	1235	60.1079	80.1220
0.813	0.519	956		1042	1235	90.2931	120.3799

CATV Copper clad steel wire for lead-in wire

Nominal Dia	allowable deviation				
mm	(mm)	Sectional Area	D.C. Resistance	Breaking load	Quality
		mm ²	Ω/km	N	Kg/km
1.628	0.015	2.082	40.189	1722	16.52
1.45	0.015	1.652	50.7636	1366	13.47
1.29	0.013	1.307	64.0484	1081	10.4
1.151	0.013	1.039	80.7388	859	8.27
1.024	0.01	0.823	101.7897	681	6.71
0.813	0.008	0.519	161.2612	427	4.12
0.724	0.008	0.411	203.7731	334	3.35

Requirements for tensile strength and elongation of copper - clad steel wire for electronic products

Note: for intermediate specifications, the upper limit of tensile strength and the lower limit of elongation are taken

* is the total elongation at break; Elongation after fracture is less than 0.5%

d	Sectional Area	Tensile Strength				Minimum elongation %	
mm	mm ²	MPa				(250mm)	
		30HS	30A	40HS	40A	30HS、40HS	30A、40A
1.83	2.63	875	345	758	310	1.5	15
1.63	2.08	875	345	758	310	1.5	15
1.45	1.65	875	345	758	310	1.5	15
1.29	1.31	875	345	758	310	1.5	15
1.15	1.04	875	345	758	310	1.5	15
1.02	0.823	875	345	758	310	1	15
0.912	0.653	875	345	758	310	1	15
0.813	0.519	875	345	758	310	1	15
0.742	0.412	875	380	758	345	1	15
0.643	0.324	875	380	758	345	1	15
0.574	0.259	875	380	758	345	1	15
0.511	0.205	875	380	758	345	1	10
0.455	0.162	875	380	758	345	1	10
0.404	0.128	875	380	758	345	1	10
0.361	0.102	875	380	758	345	1	10
0.32	0.0804	875	380	758	345	1	10
0.287	0.0647	875	380	758	345	1	10
0.254	0.0507	875	380	758	345	1	10
0.226	0.0401	875	380	758	345	1	10
0.203	0.0324	875	380	758	345	1	10
0.18	0.0255	875	380	758	345	1	10
0.16	0.0201	875	380	758	345	1	10
0.142	0.0159	875	380	758	345	1	10
0.127	0.0127	875	380	758	345	1	10
0.144	0.0103	875	380	758	345	1	10
0.102	0.00811	875	380	758	345	1	10
0.089	0.00621	875	380	758	345	1	10
0.079	0.00487	875	380	758	345	1	10