

# ELEKTRISOLA

**Cu/Ag** (available from Cu/Ag5 to Cu/Ag150)\*

## Silver Plated Copper Wire

### General Description

ELEKTRISOLA silver plated copper wire is composed of a copper core covered by a concentric silver plating. This material combines the advantages of copper, such as the conductivity, with the bright and shiny surface of silver. In addition, the silver coating provides high corrosion resistance. All these advantages make it the favorite choice for high frequency wire, as well as, colored textile wire.

Silver plated brass wire is available in diameters from 0.020mm to 0.500mm (AWG 52 - 24) with all insulation and self-bonding enamels. Besides enameled silver plated brass wire, Elektrisola also produces bare wire in the same diameter range.

### Features

- Very high conductivity
- Improved thermal resistance
- Bright and shiny surface
- Corrosion resistance

### Applications

- Colored wires
- Textile wires
- HF applications
- Microcables

(\*) Amount of Silver in grams per kg wire [g/kg]

## Electrical Characteristics (Note 1)

Symbol	Parameter	Min (Note 3)	Typ (Note 2)	Max (Note 3)	Units
$\chi$	Conductivity		58.5		S*m/mm <sup>2</sup>
$\rho$	Resistivity		0.0171		$\Omega$ *mm <sup>2</sup> /m
$\alpha$	Thermal coefficient of resistance	3900	4100	4300	10E-6/K

## Mechanical Characteristics (Note 1)

Symbol	Parameter	Min (Note 3)	Typ (Note 2)	Max (Note 3)	Units
$\sigma_T$	Tensile strength	220	270	300	N/mm <sup>2</sup>
$\sigma_{Y1\%}$	Yield strength at 1%	120	160	180	N/mm <sup>2</sup>
$\epsilon$	Elongation	15	25	35	%

## Physical Characteristics (Note 1)

Symbol	Parameter	Min <small>(Note 3)</small>	Typ <small>(Note 2)</small>	Max <small>(Note 3)</small>	Units
$\rho$	Density <small>(Note 4)</small>	8.9	9.0	9.1	kg/dm <sup>3</sup>
	Silver plating in percentage of cross-section <small>(Note 5)</small>	0.4		11.3	%

**Note 1:** Unless otherwise specified, all limits are guaranteed for annealed and enameled wire at  $T_A = 20^\circ\text{C}$  and measured according international standard IEC 851 as far as applicable.

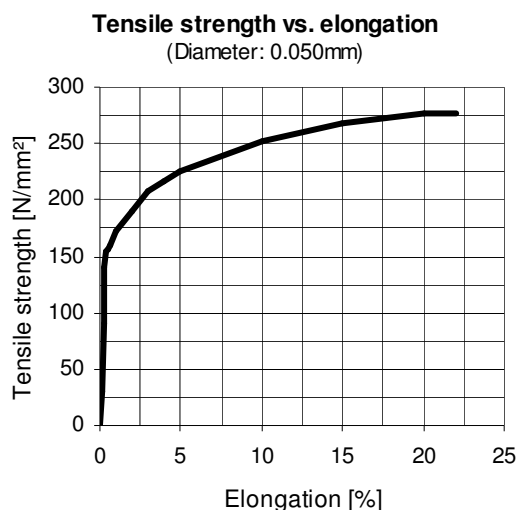
**Note 2:** Typical Values represent the most likely parametric norm.

**Note 3:** All limits are evaluated by testing or statistical analysis but are not guaranteed.

**Note 4:** The density depends of the type of Cu/Ag wire. Cu/Ag is available from Cu/Ag5 (8.9 kg/dm<sup>3</sup>) to Cu/Ag150 (9.1 kg/dm<sup>3</sup>).

**Note 5:** The silver plating of cross-section depends of the type of Cu/Ag wire. Cu/Ag is available from Cu/Ag5 (0.4% silver plating of cross-section) to Cu/Ag150 (11.3%).

## Typical Performance Characteristics



### BANNED SUBSTANCES COMPLIANCE

ELEKTRISOLA FEINDRAHT AG certifies that the products and packing materials meet the provision from the European Union for the Restriction of certain Hazardous Substances (RoHS) and the directive for Waste from Electrical and Electronic Equipment (WEEE).

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## Annex A Electrical Resistance

The limits of electrical resistance are derived from the calculations made in IEC standard 317-0-1 Annex C.1 "Method for the calculation of linear resistance" for copper wire and are restricted by a factor of 2.

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.0098	58	215.3	226.6	238.0
0.0101		202.7	213.4	224.0
0.0109	57	174.0	183.2	192.3
0.0113		161.9	170.5	179.0
0.0120		143.6	151.1	158.7
0.0125	56	132.3	139.3	146.3
0.0130	55.5	122.3	128.8	135.2
0.0135	55	113.5	119.4	125.4
0.0140		105.5	111.0	116.6
0.0145	54.5	98.34	103.5	108.7
0.0155	54	86.06	90.59	95.12
0.0160		80.77	85.02	89.27
0.0165	53.5	75.95	79.94	83.94
0.0170		71.55	75.31	79.08
0.0175	53	67.52	71.07	74.62
0.0180		63.82	67.18	70.53
0.0185	52.5	60.41	63.59	66.77
0.0190		57.28	60.29	63.30
0.0195	52	54.38	57.24	60.10
0.0200		51.69	54.41	57.13
0.0210	51.5	46.89	49.35	51.82
0.0215		44.73	47.08	49.44
0.0220	51	42.72	44.97	47.22
0.0230	50.5	39.09	41.14	43.20
0.0240		35.90	37.79	39.68
0.0245	50	34.45	36.26	38.07
0.0250		33.08	34.82	36.56
0.0260	49.5	30.59	32.20	33.81
0.0270		28.36	29.86	31.35
0.0275	49	27.34	28.78	30.22
0.0280		26.37	27.76	29.15
0.0290	48.5	24.59	25.88	27.17
0.0300		22.97	24.18	25.39
0.0310	48	21.52	22.65	23.78
0.0320		20.19	21.25	22.32
0.0330	47.5	19.02	19.99	20.96
0.0340		17.91	18.83	19.74
0.0350	47	16.91	17.77	18.63
0.0360		15.98	16.79	17.61
0.0370	46.5	15.13	15.90	16.67
0.0380		14.34	15.07	15.80
0.0381	46.1	14.27	14.99	15.72
0.0390	46.0	13.62	14.31	15.00
0.0400		12.94	13.60	14.26
0.0410	45.5	12.32	12.95	13.58
0.0420		11.74	12.34	12.94

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.0430		11.20	11.77	12.34
0.0437		10.84	11.40	11.95
0.0440	45	10.70	11.24	11.79
0.0450		10.23	10.75	11.27
0.0460		9.823	10.29	10.75
0.0470	44.5	9.409	9.853	10.30
0.0480		9.021	9.447	9.872
0.0490		8.657	9.065	9.473
0.0500	44	8.314	8.706	9.098
0.0520	43.5	7.687	8.049	8.411
0.0530		7.400	7.748	8.097
0.0550	43	6.871	7.195	7.519
0.0560		6.628	6.940	7.253
0.0580		6.211	6.470	6.729
0.0600	42.5	5.804	6.046	6.288
0.0620		5.436	5.662	5.888
0.0630	42	5.264	5.484	5.703
0.0650	41.5	4.909	5.151	5.431
0.0670		4.626	4.848	5.104
0.0680		4.494	4.707	4.951
0.0700	41	4.246	4.442	4.666
0.0710		4.129	4.318	4.533
0.0740		3.807	3.975	4.165
0.0750	40.5	3.708	3.869	4.052
0.0780	40	3.433	3.577	3.740
0.0800		3.267	3.401	3.552
0.0830	39.5	3.039	3.159	3.295
0.0850		2.900	3.012	3.139
0.0880	39	2.708	2.811	2.924
0.0900		2.591	2.687	2.794
0.0930	38.5	2.429	2.516	2.613
0.0950		2.329	2.412	2.503
0.1000		2.105	2.176	2.255
0.101	38.0	2.064	2.134	2.210
0.106	37.5	1.877	1.937	2.003
0.110		1.744	1.799	1.858
0.112		1.683	1.735	1.791
0.113	37	1.654	1.705	1.759
0.115		1.598	1.646	1.698
0.118	36.5	1.519	1.563	1.612
0.120		1.469	1.511	1.558
0.125		1.355	1.393	1.434
0.126	36	1.334	1.371	1.411
0.130		1.254	1.288	1.324
0.132		1.217	1.249	1.284
0.134	35.5	1.181	1.212	1.246

## Annex A

### Electrical Resistance (Continued)

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.138		1.114	1.143	1.174
0.140		1.083	1.110	1.140
0.141	35	1.068	1.095	1.124
0.149	34.5	0.9572	0.9804	1.005
0.150		0.9446	0.9673	0.9916
0.159	34.0	0.8416	0.8609	0.8815
0.160		0.8312	0.8502	0.8704
0.169	33.5	0.7458	0.7620	0.7793
0.170		0.7371	0.7531	0.7701
0.179	33	0.6654	0.6793	0.6940
0.180		0.6581	0.6718	0.6862
0.189		0.5974	0.6093	0.6219
0.190	32.5	0.5911	0.6029	0.6153
0.200		0.5339	0.5441	0.5549
0.202	32	0.5235	0.5334	0.5439
0.210		0.4846	0.4935	0.5029
0.212	31.5	0.4756	0.4843	0.4934
0.220		0.4418	0.4497	0.4579
0.222		0.4339	0.4416	0.4497
0.224		0.4263	0.4338	0.4416
0.225	31	0.4207	0.4299	0.4397
0.230		0.4028	0.4114	0.4206
0.236		0.3827	0.3908	0.3993
0.239		0.3732	0.3810	0.3893
0.240	30.5	0.3702	0.3779	0.3860
0.250		0.3414	0.3482	0.3555
0.253	30	0.3334	0.3400	0.3470
0.260		0.3158	0.3220	0.3285
0.265		0.3041	0.3099	0.3161
0.268	29.5	0.2974	0.3030	0.3090

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.270		0.2930	0.2986	0.3044
0.280		0.2726	0.2776	0.2829
0.286	29	0.2613	0.2661	0.2711
0.290		0.2542	0.2588	0.2636
0.295		0.2457	0.2501	0.2547
0.300		0.2377	0.2418	0.2462
0.301	28.5	0.2361	0.2402	0.2445
0.315		0.2157	0.2193	0.2232
0.319	28	0.2104	0.2139	0.2176
0.335		0.1909	0.1939	0.1972
0.339	27.5	0.1864	0.1894	0.1925
0.345		0.1800	0.1829	0.1858
0.350		0.1749	0.1777	0.1805
0.355		0.1701	0.1727	0.1754
0.360	27	0.1654	0.1679	0.1706
0.375		0.1521	0.1548	0.1576
0.380	26.5	0.1482	0.1507	0.1534
0.383		0.1459	0.1484	0.1510
0.390		0.1407	0.1431	0.1456
0.400		0.1338	0.1360	0.1384
0.402	26	0.1325	0.1347	0.1370
0.420		0.1214	0.1234	0.1254
0.425		0.1186	0.1205	0.1225
0.427	25.5	0.1175	0.1194	0.1213
0.450		0.1059	0.1075	0.1092
0.453	25	0.1045	0.1061	0.1077
0.475		0.09506	0.09646	0.09792
0.481	24.5	0.09272	0.09407	0.09548
0.500		0.08584	0.08706	0.08833
0.508	24	0.08317	0.08434	0.08555