

ELEKTRISOLA

CuZn37 (Ms63)

Brass – Copper Zinc Alloy

General Description

ELEKTRISOLA brass wire CuZn37 consists of 63% copper and 37% zinc. The product features very good mechanical properties and corrosion behavior comparable to copper. The lower conductivity and the outstanding bending proof performance makes it the favorite choice for heating applications. Furthermore brass bare wires are suitable for electric discharge removal of material (spark erosion).

CuZn37 wire is available in diameters from 0.020mm to 0.500mm (AWG 52 - 24) with all insulation and self-bonding enamel types as well as bare wires or litz wires.

Features

- Very high mechanical properties
- Outstanding bending proof performance
- Good corrosion resistance

Applications

- Resistance wires
- Heating applications
- Spark erosion
- Guitar strings
- Decoration / fabrics
- Others

Electrical Characteristics (Note 1)

Symbol	Parameter	Min (Note 3)	Typ (Note 2)	Max (Note 3)	Units
χ	Conductivity		15.0		S*m/mm ²
ρ	Resistivity		0.0667		Ω *mm ² /m
α	Thermal coefficient of resistance	1300	1400	1500	10E-6/K
	Resistance (IACS)		26		%

Mechanical Characteristics (Note 1)

Symbol	Parameter	Min (Note 3)	Typ (Note 2)	Max (Note 3)	Units
σ_T	Tensile strength	430	450	480	N/mm ²
$\sigma_{Y1\%}$	Yield strength at 1%	230	290	310	N/mm ²
ε	Elongation	15	25	35	%
<i>BPP</i>	Bending proof performance (Note 4)		2100		%

Physical Characteristics (Note 1)

Symbol	Parameter	Min (Note 3)	Typ (Note 2)	Max (Note 3)	Units
ρ	Density		8.3		kg/dm 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: BPP tests are conducted with a 0.100mm hard drawn bare wire according ELEKTRISOLA internal specification. The value specifies the Time To Fracture (TTF) compared to copper (100%) under these test conditions.

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]	Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.0098	58	795.4	883.8	972.2	0.0430		41.45	45.91	50.36
0.0101		748.9	832.1	915.3	0.0437		40.14	44.45	48.76
0.0109	57	643.0	714.4	785.9	0.0440	45	39.59	43.84	48.10
0.0113		598.3	664.8	731.2	0.0450		37.85	41.92	45.98
0.0120		530.5	589.5	648.4	0.0460		36.22	40.11	44.01
0.0125	56	488.9	543.2	597.6	0.0470	44.5	34.97	38.43	41.88
0.0130	55.5	452.0	502.3	552.5	0.0480		33.53	36.84	40.16
0.0135	55	419.2	465.7	512.3	0.0490		32.17	35.35	38.53
0.0140		389.8	433.1	476.4	0.0500	44	30.90	33.95	37.01
0.0145	54.5	363.4	403.7	444.1	0.0520	43.5	28.57	31.39	34.22
0.0155	54	318.0	353.3	388.6	0.0530		27.50	30.22	32.94
0.0160		298.4	331.6	364.7	0.0550	43	25.53	28.06	30.59
0.0165	53.5	280.6	311.8	343.0	0.0560		24.63	27.07	29.50
0.0170		264.3	293.7	323.1	0.0580		22.96	25.23	27.50
0.0175	53	249.5	277.2	304.9	0.0600	42.5	21.69	23.58	25.46
0.0180		235.8	262.0	288.2	0.0620		20.32	22.08	23.85
0.0185	52.5	223.2	248.0	272.8	0.0630	42	19.68	21.39	23.10
0.0190		211.6	235.1	258.6	0.0650	41.5	18.20	20.09	22.27
0.0195	52	200.9	223.2	245.6	0.0670		17.17	18.91	20.90
0.0200		191.0	212.2	233.4	0.0680		16.69	18.36	20.26
0.0210	51.5	173.2	192.5	211.7	0.0700	41	15.79	17.32	19.07
0.0215		165.3	183.6	202.0	0.0710		15.37	16.84	18.51
0.0220	51	157.8	175.4	192.9	0.0740		14.19	15.50	16.98
0.0230	50.5	144.4	160.5	176.5	0.0750	40.5	13.83	15.09	16.51
0.0240		132.6	147.4	162.1	0.0780	40	12.83	13.95	15.22
0.0245	50	127.3	141.4	155.6	0.0800		12.22	13.26	14.44
0.0250		122.2	135.8	149.4	0.0830	39.5	11.38	12.32	13.38
0.0260	49.5	113.0	125.6	138.1	0.0850		10.87	11.75	12.73
0.0270		104.8	116.4	128.1	0.0880	39	10.16	10.96	11.85
0.0275	49	101.0	112.2	123.5	0.0900		9.730	10.48	11.31
0.0280		97.44	108.3	119.1	0.0930	38.5	9.132	9.814	10.57
0.0290	48.5	90.84	100.9	111.0	0.0950		8.763	9.405	10.11
0.0300		84.88	94.31	103.7	0.1000		7.933	8.488	9.099
0.0310	48	79.49	88.33	97.16	0.101	38.0	7.781	8.321	8.914
0.0320		74.60	82.89	91.18	0.106	37.5	7.083	7.555	8.069
0.0330	47.5	70.38	77.95	85.51	0.110		6.591	7.015	7.477
0.0340		66.31	73.43	80.55	0.112		6.363	6.767	7.205
0.0350	47	62.57	69.29	76.01	0.113	37	6.254	6.648	7.075
0.0360		59.14	65.50	71.85	0.115		6.044	6.418	6.825
0.0370	46.5	55.99	62.00	68.02	0.118	36.5	5.748	6.096	6.473
0.0380		53.08	58.78	64.48	0.120		5.563	5.895	6.254
0.0381	46.1	52.80	58.47	64.15	0.125		5.137	5.432	5.752
0.0390	46.0	50.39	55.81	61.22	0.126	36	5.057	5.347	5.659
0.0400		47.91	53.05	58.20	0.130		4.758	5.023	5.308
0.0410	45.5	45.60	50.50	55.39	0.132		4.618	4.872	5.144
0.0420		43.45	48.12	52.79	0.134	35.5	4.484	4.727	4.989

Annex A

Electrical Resistance (Continued)

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.138		4.233	4.457	4.697
0.140		4.115	4.331	4.561
0.141	35	4.059	4.270	4.495
0.149	34.5	3.643	3.823	4.016
0.150		3.595	3.773	3.962
0.159	34.0	3.207	3.358	3.518
0.160		3.167	3.316	3.473
0.169	33.5	2.845	2.972	3.107
0.170		2.812	2.937	3.070
0.179	33	2.541	2.649	2.764
0.180		2.513	2.620	2.733
0.189		2.283	2.376	2.475
0.190	32.5	2.259	2.351	2.448
0.200		2.042	2.122	2.206
0.202	32	2.003	2.080	2.162
0.210		1.855	1.925	1.998
0.212	31.5	1.821	1.889	1.960
0.220		1.692	1.754	1.818
0.222		1.662	1.722	1.785
0.224		1.633	1.692	1.753
0.225	31	1.605	1.677	1.753
0.230		1.537	1.605	1.676
0.236		1.461	1.524	1.591
0.239		1.425	1.486	1.550
0.240	30.5	1.414	1.474	1.537
0.250		1.304	1.358	1.415
0.253	30	1.274	1.326	1.381
0.260		1.207	1.256	1.306
0.265		1.163	1.209	1.257
0.268	29.5	1.138	1.182	1.228

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.270		1.121	1.164	1.210
0.280		1.043	1.083	1.124
0.286	29	1.001	1.038	1.077
0.290		0.9736	1.009	1.047
0.295		0.9413	0.9754	1.011
0.300		0.9106	0.9431	0.9771
0.301	28.5	0.9047	0.9369	0.9705
0.315		0.8270	0.8555	0.8851
0.319	28	0.8067	0.8341	0.8628
0.335		0.7323	0.7564	0.7814
0.339	27.5	0.7153	0.7386	0.7628
0.345		0.6909	0.7131	0.7362
0.350		0.6716	0.6929	0.7151
0.355		0.6530	0.6735	0.6949
0.360	27	0.6317	0.6550	0.6793
0.375		0.5828	0.6036	0.6253
0.380	26.5	0.5678	0.5878	0.6088
0.383		0.5590	0.5787	0.5991
0.390		0.5394	0.5581	0.5776
0.400		0.5131	0.5305	0.5487
0.402	26	0.5080	0.5253	0.5432
0.420		0.4659	0.4812	0.4971
0.425		0.4551	0.4699	0.4853
0.427	25.5	0.4509	0.4655	0.4807
0.450		0.4065	0.4192	0.4323
0.453	25	0.4012	0.4136	0.4265
0.475		0.3653	0.3762	0.3875
0.481	24.5	0.3563	0.3669	0.3778
0.500		0.3300	0.3395	0.3494
0.508	24	0.3185	0.3289	0.3397