

# ELEKTRISOLA

Ni 99.6%

Pure Nickel 99.6% / Nickel 200 / 2.4060

## General Description

ELEKTRISOLA pure Nickel is especially characterized by very high resistance to oxidation and chemical corrosion. Pure Nickel has good mechanical, electrical, thermal and as well as magneto-strictive properties. Wires of Pure Nickel are mainly used for the manufacture of connections for heating elements. Pure Nickel is magnetic up to approximately 350°C.

Pure Nickel wires are available in diameters from 0.030mm to 0.500mm (AWG 48 - 24) as bare wire, or enameled wire with any insulation and self-bonding enamel. Furthermore litz wire made of Pure Nickel is also available.

## Features

- High mechanical properties
- High corrosion resistance
- High temperature coefficient of electrical resistance

## Applications

- Heating applications
- Electronic components
- Chemical and electrical industries

## Electrical Characteristics (Note 1)

Symbol	Parameter	Min (Note 3)	Typ (Note 2)	Max (Note 3)	Units
$\chi$	Conductivity		11.6		S*m/mm <sup>2</sup>
$\rho$	Resistivity		0.0862		$\Omega$ *mm <sup>2</sup> /m
	Resistance (IACS)		20		%
$\alpha$	Thermal coefficient of resistance	5000		6000	10E-6/K

## Mechanical Characteristics (Note 1)

Symbol	Parameter	Min (Note 3)	Typ (Note 2)	Max (Note 3)	Units
$\sigma_T$	Tensile strength	450	510	570	N/mm <sup>2</sup>
$\sigma_{Y1\%}$	Yield strength at 1%	230	345	460	N/mm <sup>2</sup>
$\varepsilon$	Elongation	15	25	35	%

## Physical Characteristics (Note 1)

Symbol	Parameter	Min (Note 3)	Typ (Note 2)	Max (Note 3)	Units
$\rho$	Density		8.89		kg/dm <sup>3</sup>

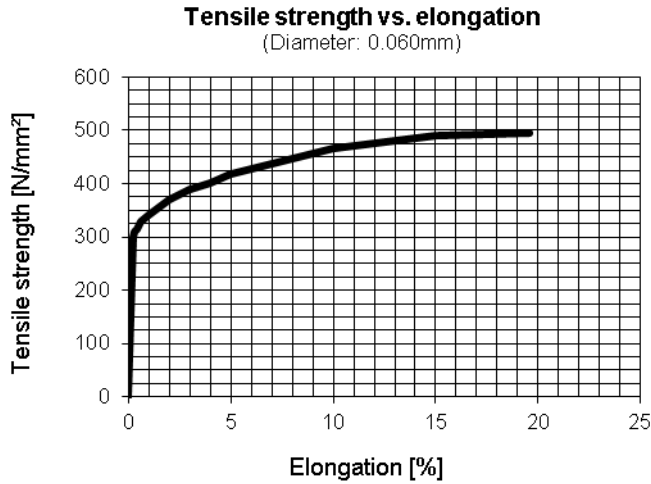
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**Note 1:** Unless otherwise specified, all limits are guaranteed for annealed and enameled wire at TA = 20°C and measured according international standard IEC 851 as far as applicable.

**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.

## 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.

Nom. Diameter [mm]	AWG	Min [ $\Omega/m$ ]	Nominal [ $\Omega/m$ ]	Max [ $\Omega/m$ ]
0.0098	58	1029	1143	1257
0.0101		968	1076	1184
0.0109	57	831	924	1016
0.0113		774	860	946
0.0120		686	762	838
0.0125	56	632	702	773
0.0130	55.5	585	649	714
0.0135	55	542	602	662
0.0140		504	560	616
0.0145	54.5	470	522	574
0.0155	54	411	457	503
0.0160		386	429	472
0.0165	53.5	363	403	443
0.0170		342	380	418
0.0175	53	323	358	394
0.0180		305	339	373
0.0185	52.5	289	321	353
0.0190		274	304	334
0.0195	52	260	289	318
0.0200		247	274	302
0.0210	51.5	224	249	274
0.0215		214	237	261
0.0220	51	204	227	249
0.0230	50.5	187	207	228
0.0240		171.5	191	210
0.0245	50	164.6	183	201
0.0250		158.1	176	193
0.0260	49.5	146.1	162.4	179
0.0270		135.5	150.6	165.6
0.0275	49	130.6	145.1	159.7
0.0280		126.0	140.0	154.0
0.0290	48.5	117.5	130.5	143.6
0.0300		109.8	122.0	134.2
0.0310	48	102.8	114.2	125.6
0.0320		96.5	107.2	117.9
0.0330	47.5	91.0	100.8	110.6
0.0340		85.7	94.9	104.2
0.0350	47	80.9	89.6	98.3
0.0360		76.5	84.7	92.9
0.0370	46.5	72.4	80.2	88.0
0.0380		68.6	76.0	83.4
0.0381	46.1	68.3	75.6	82.9
0.0390	46.0	65.2	72.2	79.2
0.0400		61.9	68.6	75.3
0.0410	45.5	59.0	65.3	71.6
0.0420		56.2	62.2	68.3

Nom. Diameter [mm]	AWG	Min [ $\Omega/m$ ]	Nominal [ $\Omega/m$ ]	Max [ $\Omega/m$ ]
0.0430		53.6	59.4	65.1
0.0437		51.9	57.5	63.1
0.0440	45	51.2	56.7	62.2
0.0450		48.9	54.2	59.5
0.0460		46.8	51.9	56.9
0.0470	44.5	45.2	49.7	54.2
0.0480		43.4	47.6	51.9
0.0490		41.6	45.7	49.8
0.0500	44	40.0	43.9	47.9
0.0520	43.5	36.9	40.6	44.2
0.0530		35.6	39.1	42.6
0.0550	43	33.0	36.3	39.6
0.0560		31.9	35.0	38.2
0.0580		29.7	32.6	35.6
0.0600	42.5	28.1	30.5	32.9
0.0620		26.3	28.6	30.8
0.0630	42	25.4	27.7	29.9
0.0650	41.5	23.5	26.0	28.8
0.0670		22.2	24.5	27.0
0.0680		21.6	23.7	26.2
0.0700	41	20.4	22.4	24.7
0.0710		19.9	21.8	23.9
0.0740		18.4	20.0	22.0
0.0750	40.5	17.9	19.5	21.4
0.0780	40	16.59	18.0	19.7
0.0800		15.80	17.15	18.7
0.0830	39.5	14.71	15.93	17.3
0.0850		14.05	15.19	16.46
0.0880	39	13.14	14.17	15.32
0.0900		12.58	13.55	14.63
0.0930	38.5	11.81	12.69	13.67
0.0950		11.33	12.16	13.08
0.1000		10.26	10.98	11.77
0.101	38.0	10.06	10.76	11.53
0.106	37.5	9.16	9.77	10.43
0.110		8.52	9.07	9.67
0.112		8.23	8.75	9.32
0.113	37	8.09	8.60	9.15
0.115		7.82	8.30	8.82
0.118	36.5	7.43	7.88	8.37
0.120		7.19	7.62	8.09
0.125		6.64	7.02	7.44
0.126	36	6.54	6.91	7.32
0.130		6.15	6.49	6.86
0.132		5.97	6.30	6.65
0.134	35.5	5.80	6.11	6.45

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## Annex A

### Electrical Resistance (Continued)

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.138		5.47	5.76	6.07
0.140		5.32	5.60	5.90
0.141	35	5.25	5.52	5.81
0.149	34.5	4.71	4.94	5.19
0.150		4.65	4.88	5.12
0.159	34.0	4.15	4.34	4.55
0.160		4.10	4.29	4.49
0.169	33.5	3.68	3.84	4.02
0.170		3.64	3.80	3.97
0.179	33	3.29	3.43	3.57
0.180		3.25	3.39	3.53
0.189		2.95	3.07	3.20
0.190	32.5	2.92	3.04	3.17
0.200		2.64	2.74	2.85
0.202	32	2.59	2.69	2.80
0.210		2.40	2.49	2.58
0.212	31.5	2.35	2.44	2.53
0.220		2.19	2.27	2.35
0.222		2.15	2.23	2.31
0.224		2.11	2.19	2.27
0.225	31	2.08	2.17	2.27
0.230		1.99	2.07	2.17
0.236		1.89	1.97	2.06
0.239		1.84	1.92	2.00
0.240	30.5	1.83	1.91	1.99
0.250		1.687	1.76	1.83
0.253	30	1.648	1.715	1.79
0.260		1.561	1.624	1.689
0.265		1.504	1.563	1.625
0.268	29.5	1.471	1.528	1.588

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.270		1.450	1.506	1.565
0.280		1.349	1.400	1.453
0.286	29	1.294	1.342	1.392
0.290		1.259	1.305	1.353
0.295		1.217	1.261	1.307
0.300		1.178	1.220	1.263
0.301	28.5	1.170	1.211	1.255
0.315		1.069	1.106	1.145
0.319	28	1.043	1.079	1.116
0.335		0.947	0.978	1.010
0.339	27.5	0.925	0.955	0.986
0.345		0.893	0.922	0.952
0.350		0.868	0.896	0.925
0.355		0.844	0.871	0.899
0.360	27	0.817	0.847	0.878
0.375		0.754	0.781	0.809
0.380	26.5	0.734	0.760	0.787
0.383		0.723	0.748	0.775
0.390		0.697	0.722	0.747
0.400		0.663	0.686	0.710
0.402	26	0.657	0.679	0.702
0.420		0.602	0.622	0.643
0.425		0.589	0.608	0.628
0.427	25.5	0.583	0.602	0.622
0.450		0.526	0.542	0.559
0.453	25	0.519	0.535	0.552
0.475		0.472	0.486	0.501
0.481	24.5	0.461	0.474	0.489
0.500		0.427	0.439	0.452
0.508	24	0.412	0.425	0.439

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