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	3817	4017	4218
0.0101		3593	3782	3971
0.0109	57	3085	3247	3410
0.0113		2871	3022	3173
0.0120		2545	2679	2813
0.0125	56	2346	2469	2593
0.0130	55.5	2169	2283	2397
0.0135	55	2011	2117	2223
0.0140		1870	1969	2067
0.0145	54.5	1743	1835	1927
0.0155	54	1526	1606	1686
0.0160		1432	1507	1583
0.0165	53.5	1346	1417	1488
0.0170		1268	1335	1402
0.0175	53	1197	1260	1323
0.0180		1131	1191	1250
0.0185	52.5	1071	1127	1184
0.0190		1015	1069	1122
0.0195	52	963.9	1015	1065
0.0200		916.3	964.6	1013
0.0210	51.5	831.2	874.9	918.6
0.0215		792.9	834.7	876.4
0.0220	51	757.3	797.2	837.0
0.0230	50.5	692.9	729.4	765.8
0.0240		636.4	669.8	703.3
0.0245	50	610.6	642.8	674.9
0.0250		586.5	617.3	648.2
0.0260	49.5	542.2	570.8	599.3
0.0270		502.8	529.3	555.7
0.0275	49	484.7	510.2	535.7
0.0280		467.5	492.1	516.7
0.0290	48.5	435.8	458.8	481.7
0.0300		407.3	428.7	450.1
0.0310	48	381.4	401.5	421.6
0.0320		357.9	376.8	395.6
0.0330	47.5	337.1	354.3	371.5
0.0340		317.6	333.8	350.0
0.0350	47	299.7	315.0	330.2
0.0360		283.3	297.7	312.1
0.0370	46.5	268.2	281.8	295.5
0.0380		254.2	267.2	280.2
0.0381	46.1	252.9	265.8	278.7
0.0390	46.0	241.4	253.7	266.0
0.0400		229.4	241.1	252.8
0.0410	45.5	218.4	229.5	240.7
0.0420		208.1	218.7	229.3

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.0430		198.5	208.7	218.8
0.0437		192.2	202.0	211.8
0.0440	45	189.6	199.3	209.0
0.0450		181.3	190.5	199.8
0.0460		173.5	182.3	191.2
0.0470	44.5	166.8	174.7	182.5
0.0480		159.9	167.5	175.0
0.0490		153.5	160.7	167.9
0.0500	44	147.4	154.3	161.3
0.0520	43.5	136.3	142.7	149.1
0.0530		131.2	137.4	143.5
0.0550	43	121.8	127.5	133.3
0.0560		117.5	123.0	128.6
0.0580		109.5	114.7	119.9
0.0600	42.5	102.9	107.2	111.5
0.0620		96.36	100.4	104.4
0.0630	42	93.32	97.21	101.1
0.0650	41.5	87.02	91.32	96.28
0.0670		82.01	85.95	90.48
0.0680		79.66	83.44	87.77
0.0700	41	75.26	78.74	82.71
0.0710		73.20	76.54	80.35
0.0740		67.49	70.46	73.83
0.0750	40.5	65.73	68.59	71.83
0.0780	40	60.86	63.42	66.30
0.0800		57.91	60.29	62.96
0.0830	39.5	53.86	56.01	58.40
0.0850		51.40	53.40	55.64
0.0880	39	48.01	49.82	51.84
0.0900		45.93	47.63	49.52
0.0930	38.5	43.06	44.61	46.33
0.0950		41.29	42.75	44.36
0.1000		37.32	38.58	39.97
0.101	38.0	36.60	37.82	39.17
0.106	37.5	33.27	34.34	35.51
0.110		30.92	31.89	32.94
0.112		29.84	30.76	31.76
0.113	37	29.32	30.22	31.19
0.115		28.32	29.17	30.10
0.118	36.5	26.92	27.71	28.57
0.120		26.04	26.79	27.61
0.125		24.02	24.69	25.42
0.126	36	23.65	24.30	25.01
0.130		22.23	22.83	23.48
0.132		21.57	22.14	22.76
0.134	35.5	20.93	21.49	22.08

Electrical Resistance (Continued)

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.138		19.75	20.26	20.81
0.140		19.20	19.69	20.21
0.141	35	18.93	19.41	19.92
0.149	34.5	16.97	17.38	17.82
0.150		16.74	17.15	17.58
0.159	34.0	14.92	15.26	15.63
0.160		14.73	15.07	15.43
0.169	33.5	13.22	13.51	13.82
0.170		13.07	13.35	13.65
0.179	33	11.80	12.04	12.30
0.180		11.67	11.91	12.16
0.189		10.59	10.80	11.02
0.190	32.5	10.48	10.69	10.91
0.200		9.464	9.646	9.836
0.202	32	9.279	9.456	9.641
0.210		8.590	8.749	8.915
0.212	31.5	8.430	8.585	8.747
0.220		7.832	7.972	8.118
0.222		7.692	7.829	7.971
0.224		7.557	7.690	7.828
0.225	31	7.458	7.621	7.794
0.230		7.140	7.294	7.456
0.236		6.784	6.927	7.079
0.239		6.616	6.755	6.900
0.240	30.5	6.562	6.698	6.843
0.250		6.051	6.173	6.302
0.253	30	5.910	6.028	6.152
0.260		5.598	5.708	5.823
0.265		5.390	5.494	5.603
0.268	29.5	5.271	5.372	5.478

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.270		5.194	5.293	5.396
0.280		4.832	4.921	5.015
0.286	29	4.633	4.717	4.805
0.290		4.507	4.588	4.673
0.295		4.356	4.434	4.514
0.300		4.213	4.287	4.364
0.301	28.5	4.185	4.259	4.335
0.315		3.824	3.888	3.956
0.319	28	3.729	3.792	3.857
0.335		3.383	3.438	3.495
0.339	27.5	3.304	3.357	3.412
0.345		3.191	3.242	3.294
0.350		3.101	3.150	3.200
0.355		3.015	3.062	3.110
0.360	27	2.932	2.977	3.024
0.375		2.703	2.744	2.785
0.380	26.5	2.626	2.672	2.720
0.383		2.586	2.630	2.677
0.390		2.494	2.537	2.581
0.400		2.372	2.411	2.453
0.402	26	2.348	2.388	2.428
0.420		2.153	2.187	2.223
0.425		2.102	2.136	2.171
0.427	25.5	2.083	2.116	2.151
0.450		1.877	1.905	1.935
0.453	25	1.852	1.880	1.909
0.475		1.685	1.710	1.736
0.481	24.5	1.644	1.668	1.693
0.500		1.522	1.543	1.566
0.508	24	1.472	1.495	1.520