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	503.8	530.3	556.8
0.0101		474.3	499.3	524.2
0.0109	57	407.2	428.7	450.1
0.0113		378.9	398.9	418.8
0.0120		336.0	353.7	371.4
0.0125	56	309.7	325.9	342.2
0.0130	55.5	286.3	301.4	316.4
0.0135	55	265.5	279.4	293.4
0.0140		246.9	259.8	272.8
0.0145	54.5	230.1	242.2	254.3
0.0155	54	201.4	212.0	222.6
0.0160		189.0	198.9	208.9
0.0165	53.5	177.7	187.1	196.4
0.0170		167.4	176.2	185.0
0.0175	53	158.0	166.3	174.6
0.0180		149.3	157.2	165.0
0.0185	52.5	141.4	148.8	156.2
0.0190		134.0	141.1	148.1
0.0195	52	127.2	133.9	140.6
0.0200		121.0	127.3	133.7
0.0210	51.5	109.7	115.5	121.3
0.0215		104.7	110.2	115.7
0.0220	51	99.97	105.2	110.5
0.0230	50.5	91.46	96.28	101.1
0.0240		84.00	88.42	92.84
0.0245	50	80.60	84.85	89.09
0.0250		77.41	81.49	85.56
0.0260	49.5	71.57	75.34	79.11
0.0270		66.37	69.86	73.36
0.0275	49	63.98	67.34	70.71
0.0280		61.71	64.96	68.21
0.0290	48.5	57.53	60.56	63.59
0.0300		53.76	56.59	59.42
0.0310	48	50.35	53.00	55.65
0.0320		47.25	49.74	52.22
0.0330	47.5	44.50	46.77	49.04
0.0340		41.92	44.06	46.19
0.0350	47	39.56	41.58	43.59
0.0360		37.39	39.30	41.20
0.0370	46.5	35.40	37.20	39.01
0.0380		33.56	35.27	36.98
0.0381	46.1	33.38	35.08	36.79
0.0390	46.0	31.86	33.48	35.11
0.0400		30.29	31.83	33.37
0.0410	45.5	28.83	30.30	31.77
0.0420		27.47	28.87	30.27

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.0430		26.21	27.54	28.88
0.0437		25.38	26.67	27.96
0.0440	45	25.03	26.31	27.58
0.0450		23.93	25.15	26.37
0.0460		22.90	24.07	25.24
0.0470	44.5	22.02	23.06	24.09
0.0480		21.11	22.10	23.10
0.0490		20.26	21.21	22.17
0.0500	44	19.46	20.37	21.29
0.0520	43.5	17.99	18.83	19.68
0.0530		17.31	18.13	18.95
0.0550	43	16.08	16.84	17.59
0.0560		15.51	16.24	16.97
0.0580		14.46	15.14	15.82
0.0600	42.5	13.58	14.15	14.71
0.0620		12.72	13.25	13.78
0.0630	42	12.32	12.83	13.35
0.0650	41.5	11.49	12.05	12.71
0.0670		10.83	11.35	11.94
0.0680		10.52	11.01	11.59
0.0700	41	9.935	10.39	10.92
0.0710		9.662	10.10	10.61
0.0740		8.909	9.301	9.745
0.0750	40.5	8.677	9.054	9.481
0.0780	40	8.034	8.371	8.751
0.0800		7.644	7.958	8.311
0.0830	39.5	7.110	7.393	7.709
0.0850		6.785	7.049	7.344
0.0880	39	6.337	6.577	6.843
0.0900		6.063	6.288	6.537
0.0930	38.5	5.684	5.888	6.115
0.0950		5.450	5.643	5.856
0.1000		4.926	5.093	5.276
0.101	38.0	4.831	4.993	5.170
0.106	37.5	4.391	4.533	4.687
0.110		4.082	4.209	4.348
0.112		3.939	4.060	4.192
0.113	37	3.871	3.989	4.117
0.115		3.739	3.851	3.973
0.118	36.5	3.553	3.658	3.771
0.120		3.437	3.537	3.645
0.125		3.171	3.259	3.355
0.126	36	3.121	3.208	3.302
0.130		2.934	3.014	3.099
0.132		2.847	2.923	3.005
0.134	35.5	2.763	2.836	2.915

Electrical Resistance (Continued)

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.138		2.607	2.674	2.746
0.140		2.534	2.598	2.668
0.141	35	2.498	2.562	2.629
0.149	34.5	2.240	2.294	2.352
0.150		2.210	2.264	2.320
0.159	34.0	1.969	2.015	2.063
0.160		1.945	1.989	2.037
0.169	33.5	1.745	1.783	1.824
0.170		1.725	1.762	1.802
0.179	33	1.557	1.590	1.624
0.180		1.540	1.572	1.606
0.189		1.398	1.426	1.455
0.190	32.5	1.383	1.411	1.440
0.200		1.249	1.273	1.298
0.202	32	1.225	1.248	1.273
0.210		1.134	1.155	1.177
0.212	31.5	1.113	1.133	1.155
0.220		1.034	1.052	1.072
0.222		1.015	1.033	1.052
0.224		0.9975	1.015	1.033
0.225	31	0.9844	1.006	1.029
0.230		0.9425	0.9628	0.9842
0.236		0.8955	0.9144	0.9344
0.239		0.8734	0.8916	0.9109
0.240	30.5	0.8662	0.8842	0.9032
0.250		0.7988	0.8149	0.8318
0.253	30	0.7801	0.7957	0.8121
0.260		0.7389	0.7534	0.7686
0.265		0.7115	0.7252	0.7396
0.268	29.5	0.6958	0.7091	0.7230

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.270		0.6856	0.6986	0.7123
0.280		0.6378	0.6496	0.6620
0.286	29	0.6115	0.6226	0.6343
0.290		0.5949	0.6056	0.6168
0.295		0.5750	0.5852	0.5959
0.300		0.5561	0.5659	0.5761
0.301	28.5	0.5525	0.5621	0.5722
0.315		0.5047	0.5133	0.5222
0.319	28	0.4922	0.5005	0.5091
0.335		0.4466	0.4538	0.4613
0.339	27.5	0.4362	0.4432	0.4504
0.345		0.4212	0.4279	0.4348
0.350		0.4093	0.4158	0.4224
0.355		0.3980	0.4041	0.4105
0.360	27	0.3870	0.3930	0.3991
0.375		0.3568	0.3622	0.3677
0.380	26.5	0.3467	0.3527	0.3590
0.383		0.3413	0.3472	0.3533
0.390		0.3292	0.3348	0.3407
0.400		0.3131	0.3183	0.3238
0.402	26	0.3100	0.3152	0.3205
0.420		0.2841	0.2887	0.2935
0.425		0.2775	0.2820	0.2866
0.427	25.5	0.2749	0.2793	0.2839
0.450		0.2477	0.2515	0.2554
0.453	25	0.2445	0.2482	0.2521
0.475		0.2224	0.2257	0.2291
0.481	24.5	0.2170	0.2201	0.2234
0.500		0.2009	0.2037	0.2067
0.508	24	0.1942	0.1974	0.2006