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	6297	6629	6960
0.0101		5929	6241	6553
0.0109	57	5090	5358	5626
0.0113		4736	4986	5235
0.0120		4200	4421	4642
0.0125	56	3871	4074	4278
0.0130	55.5	3579	3767	3955
0.0135	55	3318	3493	3668
0.0140		3086	3248	3410
0.0145	54.5	2877	3028	3179
0.0155	54	2517	2650	2782
0.0160		2362	2487	2611
0.0165	53.5	2221	2338	2455
0.0170		2093	2203	2313
0.0175	53	1975	2079	2183
0.0180		1867	1965	2063
0.0185	52.5	1767	1860	1953
0.0190		1675	1763	1852
0.0195	52	1591	1674	1758
0.0200		1512	1592	1671
0.0210	51.5	1371	1444	1516
0.0215		1308	1377	1446
0.0220	51	1250	1315	1381
0.0230	50.5	1143	1203	1264
0.0240		1050	1105	1161
0.0245	50	1008	1061	1114
0.0250		967.7	1019	1070
0.0260	49.5	894.7	941.7	988.8
0.0270		829.6	873.3	916.9
0.0275	49	799.7	841.8	883.9
0.0280		771.4	812.0	852.6
0.0290	48.5	719.1	757.0	794.8
0.0300		672.0	707.4	742.7
0.0310	48	629.3	662.5	695.6
0.0320		590.6	621.7	652.8
0.0330	47.5	556.2	584.6	612.9
0.0340		524.0	550.7	577.4
0.0350	47	494.5	519.7	544.9
0.0360		467.4	491.2	515.0
0.0370	46.5	442.5	465.0	487.6
0.0380		419.5	440.9	462.3
0.0381	46.1	417.3	438.6	459.8
0.0390	46.0	398.3	418.6	438.9
0.0400		378.6	397.9	417.2
0.0410	45.5	360.3	378.7	397.1
0.0420		343.4	360.9	378.4

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.0430		327.6	344.3	361.0
0.0437		317.2	333.4	349.5
0.0440	45	312.9	328.8	344.8
0.0450		299.1	314.4	329.6
0.0460		286.3	300.9	315.5
0.0470	44.5	275.2	288.2	301.2
0.0480		263.9	276.3	288.7
0.0490		253.2	265.1	277.1
0.0500	44	243.2	254.6	266.1
0.0520	43.5	224.8	235.4	246.0
0.0530		216.4	226.6	236.8
0.0550	43	201.0	210.5	219.9
0.0560		193.9	203.0	212.1
0.0580		180.7	189.2	197.8
0.0600	42.5	169.8	176.8	183.9
0.0620		159.0	165.6	172.2
0.0630	42	154.0	160.4	166.8
0.0650	41.5	143.6	150.7	158.9
0.0670		135.3	141.8	149.3
0.0680		131.4	137.7	144.8
0.0700	41	124.2	129.9	136.5
0.0710		120.8	126.3	132.6
0.0740		111.4	116.3	121.8
0.0750	40.5	108.5	113.2	118.5
0.0780	40	100.4	104.6	109.4
0.0800		95.55	99.47	103.9
0.0830	39.5	88.88	92.41	96.37
0.0850		84.81	88.11	91.80
0.0880	39	79.21	82.21	85.54
0.0900		75.79	78.60	81.71
0.0930	38.5	71.05	73.61	76.44
0.0950		68.13	70.54	73.20
0.1000		61.58	63.66	65.95
0.101	38.0	60.38	62.41	64.63
0.106	37.5	54.89	56.66	58.59
0.110		51.02	52.61	54.35
0.112		49.24	50.75	52.40
0.113	37	48.38	49.86	51.46
0.115		46.73	48.14	49.66
0.118	36.5	44.42	45.72	47.14
0.120		42.96	44.21	45.56
0.125		39.63	40.74	41.94
0.126	36	39.01	40.10	41.27
0.130		36.68	37.67	38.74
0.132		35.58	36.54	37.56
0.134	35.5	34.54	35.45	36.43

Electrical Resistance (Continued)

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.138		32.59	33.43	34.33
0.140		31.67	32.48	33.34
0.141	35	31.23	32.02	32.87
0.149	34.5	28.00	28.68	29.40
0.150		27.63	28.29	29.00
0.159	34.0	24.62	25.18	25.78
0.160		24.31	24.87	25.46
0.169	33.5	21.81	22.29	22.80
0.170		21.56	22.03	22.53
0.179	33	19.46	19.87	20.30
0.180		19.25	19.65	20.07
0.189		17.47	17.82	18.19
0.190	32.5	17.29	17.63	18.00
0.200		15.62	15.92	16.23
0.202	32	15.31	15.60	15.91
0.210		14.17	14.44	14.71
0.212	31.5	13.91	14.16	14.43
0.220		12.92	13.15	13.39
0.222		12.69	12.92	13.15
0.224		12.47	12.69	12.92
0.225	31	12.31	12.58	12.86
0.230		11.78	12.03	12.30
0.236		11.19	11.43	11.68
0.239		10.92	11.15	11.39
0.240	30.5	10.83	11.05	11.29
0.250		9.985	10.19	10.40
0.253	30	9.751	9.946	10.15
0.260		9.237	9.417	9.607
0.265		8.894	9.065	9.245
0.268	29.5	8.697	8.864	9.038

Nom. Diameter [mm]	AWG	Min [Ω/m]	Nominal [Ω/m]	Max [Ω/m]
0.270		8.570	8.733	8.904
0.280		7.973	8.120	8.274
0.286	29	7.644	7.783	7.928
0.290		7.436	7.570	7.710
0.295		7.188	7.315	7.449
0.300		6.952	7.074	7.201
0.301	28.5	6.906	7.027	7.153
0.315		6.309	6.416	6.527
0.319	28	6.153	6.256	6.363
0.335		5.582	5.673	5.767
0.339	27.5	5.452	5.540	5.630
0.345		5.265	5.349	5.435
0.350		5.117	5.197	5.280
0.355		4.974	5.052	5.132
0.360	27	4.838	4.912	4.989
0.375		4.461	4.527	4.596
0.380	26.5	4.333	4.409	4.487
0.383		4.266	4.340	4.417
0.390		4.115	4.186	4.259
0.400		3.913	3.979	4.047
0.402	26	3.875	3.939	4.007
0.420		3.552	3.609	3.668
0.425		3.469	3.525	3.582
0.427	25.5	3.437	3.492	3.548
0.450		3.096	3.144	3.193
0.453	25	3.056	3.102	3.151
0.475		2.781	2.822	2.864
0.481	24.5	2.712	2.752	2.793
0.500		2.511	2.546	2.583
0.508	24	2.428	2.467	2.507