

AWG Comparison Table

Common wire gauge and AWG comparison table

AWG (American wire gauge) is a standard of wire diameter specification for differentiation, also known as Brown & Sharpe gauge which has been put into use since 1857 in America. The number before AWG (Like 24AWG/26AWG) means the number of holes that the wire diameter travels through before forming diameter. The bigger of the number is, the more of holes the wire travels through and the smaller of the wire dia is. SWG (standard wire gauge) is another standard in the wire cable industry while BWG (Birmingham wire gauge) refers to the Birmingham gauge which means the thickness or diameter of material.

AWG	SWG		BWG		BG		AWG	
NO.	Inch	Mm	Inch	Mm	Inch	Mm	Inch	Mm
7 / 0	0.500	12.700	--	--	0.6666	16.932	--	--
6 / 0	0.464	11.786	--	--	0.6250	15.875	0.5800	14.732
5 / 0	0.432	10.973	0.500	12.700	0.5883	14.943	0.5165	13.119
4 / 0	0.400	10.160	0.454	11.532	0.5416	13.757	0.4600	11.684
3 / 0	0.372	9.449	0.425	10.795	0.5000	12.700	0.4096	10.404
2 / 0	0.348	8.839	0.330	9.652	0.1152	11.308	0.3648	9.266
0	0.324	8.230	0.340	8.639	0.3954	10.069	0.3249	8.252
1	0.300	7.620	0.300	7.620	0.3532	8.971	0.2893	7.348
2	0.276	7.010	0.284	7.214	0.3147	7.993	0.2576	6.544
3	0.252	6.401	0.259	6.579	0.2804	7.122	0.2294	5.827
4	0.232	5.893	0.238	6.045	0.2500	6.350	0.2043	5.189
5	0.212	5.385	0.220	5.588	0.2225	5.652	0.1819	4.621
6	0.192	4.877	0.203	5.156	0.1981	5.032	0.1620	4.115
7	0.176	4.470	0.180	4.572	0.1764	4.481	0.1443	3.665
8	0.160	4.046	0.165	4.191	0.1570	3.988	0.1285	3.264
9	0.144	3.658	0.148	3.759	0.1398	3.551	0.1144	2.906
10	0.128	3.251	0.134	3.404	0.1250	3.175	0.1019	2.588
11	0.116	2.946	0.120	3.048	0.1313	2.827	0.0907	2.305
12	0.104	2.642	0.109	2.769	0.0991	2.517	0.0808	2.053
13	0.092	2.337	0.095	2.413	0.0882	2.240	0.0720	1.828
14	0.080	2.032	0.083	2.108	0.0785	1.994	0.0648	1.628
15	0.072	1.829	0.072	1.829	0.0699	1.775	0.0571	1.450
16	0.064	1.626	0.065	1.651	0.0625	1.588	0.0508	1.291
17	0.056	1.422	0.058	1.473	0.0556	1.412	0.0453	1.150
18	0.048	1.219	0.049	1.245	0.0495	1.257	0.0403	1.024
19	0.040	1.016	0.042	1.067	0.0440	1.118	0.0359	0.912
20	0.036	0.914	0.035	0.839	0.0392	0.996	0.0320	0.812
21	0.032	0.813	0.032	0.813	0.0349	0.887	0.0285	0.723

22	0.0280	0.711	0.028	0.711	0.03125	0.794	0.02535	0.644
23	0.0240	0.610	0.025	0.635	0.02782	0.707	0.02010	0.573
24	0.0220	0.559	0.022	0.559	0.02476	0.629	0.01790	0.511
25	0.0200	0.508	0.020	0.508	0.02204	0.560	0.01594	0.455
26	0.0180	0.457	0.018	0.457	0.01961	0.498	0.01420	0.405
27	0.0164	0.417	0.016	0.406	0.1745	0.443	0.01420	0.361
28	0.0149	0.376	0.014	0.356	0.01562	0.397	0.01264	0.321
29	0.0136	0.345	0.013	0.330	0.01390	0.353	0.01126	0.286
30	0.0124	0.315	0.012	0.305	0.01230	0.312	0.01003	0.255
31	0.0116	0.295	0.010	0.254	0.01100	0.270	0.00893	0.227
32	0.0109	0.274	0.009	0.229	0.00980	0.249	0.00795	0.202
33	0.0100	0.254	0.008	0.203	0.00870	0.221	0.00708	0.180
34	0.0092	0.234	0.007	0.178	0.00770	0.196	0.00630	0.160
35	0.0084	0.213	0.005	0.127	0.00690	0.175	0.00561	0.143
36	0.0076	0.193	0.004	0.102	0.00610	0.155	0.00500	0.127
37	0.0068	0.173			0.00540	0.137	0.00445	0.113
38	0.0060	0.152			0.00480	0.122	0.00396	0.101
39	0.0052	0.132			0.00430	0.109	0.00353	0.090
40	0.0048	0.122			0.00386	0.098	0.00314	0.080
41	0.0044	0.112			0.00343	0.087	0.00280	0.071
42	0.0040	0.102			0.00306	0.078	0.00249	0.063
43	0.0036	0.091			0.00272	0.069	0.00222	0.056
44	0.0032	0.081			0.00242	0.061	0.00198	0.050
45	0.0028	0.071			0.00215	0.055	0.00176	0.048
46	0.0024	0.061			0.00192	0.049	0.00157	0.046
47	0.0020	0.051			0.00170	0.043	0.00140	0.035
48	0.0016	0.041			0.00152	0.039	0.00124	0.032
49	0.0012	0.030			0.00135	0.034	0.00111	0.028
50	0.0010	0.025			0.00120	0.030	0.00099	0.

DCR、AWG、Wire diameter

Resistivity is used to represent the physical quantity for various material resistance characteristics. Some material is 1 meters long, cross-sectional is 1 square millimeter, the resistance of a wire at room temperature (20 °C), is called this material' s resistivity. According to the ohm' s law: $R=PL/S$ can calculate the resistance for a conductor, R is the resistance ,unit is ohms . P is the resistance ,unit is ohm * m, resistivity according to the material of conductor . L is the length of the conductor, unit is meter. S is the cross-sectional of conductors, unit is square millimetre.

Gauge	inches	Diameter		Cross sect .Area		DCR@ 20 °C		Weight	
AWG		mils	mm	Circ.mils	Sq. mm	ohms/M	Ohms/km	Lbs. /m	kg/km
40	0.0031	3.10	0.079	9.60	0.0049	1080	3540	0.0291	0.0433
39	0.0035	3.50	0.089	12.3	0.0062	847	2780	0.0371	0.0552
38	0.0040	4.00	0.102	16.0	0.0081	648	2130	0.0484	0.7200
37	0.0045	4.50	0.114	20.3	0.0103	512	1680	0.0613	0.0912
36	0.0050	5.00	0.127	25.0	0.0127	415	1360	0.0757	0.1130
35	0.0056	5.60	0.142	31.4	0.0159	331	1080	0.0949	0.1410
34	0.0063	6.30	0.160	39.7	0.0201	261	857	0.120	0.1790
33	0.0071	7.10	0.180	50.4	0.0255	206	675	0.153	0.2280
32	0.0080	8.00	0.203	64.0	0.0324	162	532	0.194	0.2890
31	0.0089	8.90	0.226	79.2	0.0401	131	430	0.240	0.3570
30	0.0100	10.0	0.254	100	0.0507	104	340	0.303	0.4510
29	0.0113	11.3	0.287	128	0.0649	81.2	266	0.387	0.5760
28	0.0126	12.6	0.320	159	0.0806	65.3	214	0.481	0.7160
27	0.0142	14.2	0.361	202	0.1020	51.4	169	0.610	0.9080
26	0.0159	15.9	0.404	253	0.1280	41.0	135	0.765	1.140
25	0.0179	17.9	0.455	320	0.1620	32.4	106	0.970	1.440
24	0.0201	20.1	0.511	404	0.2050	25.7	84.2	1.220	1.820
23	0.0266	22.6	0.574	511	0.2590	20.3	66.6	1.550	2.310
22	0.0253	25.3	0.643	640	0.3240	16.2	53.2	1.940	2.890
21	0.0285	28.5	0.724	812	0.4110	12.8	41.9	2.460	3.660
20	0.0320	32.0	0.813	1020	0.5190	10.1	33.2	3.100	4.610
19	0.0359	35.9	0.912	1290	0.6530	8.05	26.4	3.900	5.800
18	0.0403	40.3	1.020	1620	0.8230	6.39	21.0	4.920	7.320
17	0.0453	45.3	1.150	2050	1.040	5.05	16.6	6.210	9.240
16	0.0508	50.8	1.290	2580	1.310	4.02	13.2	7.810	11.60
15	0.0571	57.1	1.450	3260	1.650	3.18	10.4	9.870	14.70
14	0.0641	64.1	1.630	4110	20.80	2.52	8.28	12.40	18.50

13	0.0720	72.0	1.830	5180	2.630	2.00	6.56	15.70	23.40
12	0.0808	80.8	2.050	6530	3.310	1.59	5.21	19.80	29.50
11	0.0907	90.7	2.300	8230	4.170	1.26	4.14	24.90	37.10
10	0.1019	101.9	2.588	10380	5.260	0.9988	3.23	31.40	46.80
9	0.1144	114.4	2.906	13090	6.630	0.7925	2.60	39.60	59.00
8	0.1285	128.5	3.265	16510	8.370	0.6281	2.061	50.00	74.40
7	0.1443	144.3	3.655	20820	10.55	0.4981	1.634	63.00	93.80
6	0.1620	162.0	4.115	26240	13.30	0.3952	1.296	79.40	118.0
5	0.1819	181.9	4.620	33090	16.77	0.3134	1.028	100.0	149.0
4	0.2043	204.3	5.189	41740	21.15	0.2485	0.8152	126.0	188.0
3	0.2294	229.4	5.827	52620	26.67	0.1917	0.6466	159.0	237.0
2	0.2576	257.6	6.543	66360	33.62	0.1563	0.5128	201.0	299.0
1	0.2893	289.3	7.348	83690	42.41	0.1239	0.4065	253.0	377.0
1/0	0.3249	324.9	8.252	105600	53.49	0.03925	0.3223	319.0	476.0
2/0	0.3648	364.8	9.266	133100	67.43	0.07793	0.2557	403.0	599.0
3/0	0.4096	409.6	10.40	167800	85.01	0.06182	0.2028	508.0	756.0
4/0	0.4600	460.0	11.68	211600	107.22	0.04901	0.1608	641.0	953.0

Multiple Copper Conductor

AWG	Diameter		Area			Weight Kg/km	No. /mm
	Mils	mm	Circular Mil C.M.	Square inch in ²	Square mm ²		
1	289.3	7.348	83.694	0.06573	42.41	377	1/7.349
		8.508				379	19/1.690
		8.500				379	37/1.210
		8.480				377	61/0.941
2	257.6	6.544	66.358	0.05212	33.63	299	1/6.544
		7.410				299	7/2.474
		7.551				299	19/1.502
		7.590				302	37/1.080
4	204.3	5.189	41.738	0.03278	21.15	188	1/5.190
		5.960				188	7/1.962
		5.991				188	19/1.191
		5.992				188	37/0.854
		6.032				188	133/0.450
		6.036				192.2	420/0.254
6	162	4.115	26.244	0.02061	13.3	118.2	1/4.116
		4.770				119.0	7/1.560
		4.829				120.0	19/0.950
		4.749				118.0	37/0.677
		4.803				121.0	266/0.254
8	128.5	3.264	16.512	0.01297	8.368	74.39	1/3.265
		3.690				74.43	7/1.234
		3.771				74.60	19/0.749
		3.760				74.40	37/0.537
		3.783				75.00	133/0.284
10	101.9	2.588	10.384	0.008156	5.262	46.78	1/2.589
		2.961				46.94	7/0.980
		3.005				47.40	19/0.595
		3.017				47.80	105/0.254
		2.974				46.40	259/0.160
12	80.81	2.053	6.53	0.005129	3.309	29.42	1/2.053
		2.325				29.43	7/0.776
		2.371				29.37	19/0.471
		2.365				29.58	65/0.254
		2.395				30.10	168/0.160
14	64.08	1.628	4.106	0.003225	2.081	18.50	1/1.630
		1.845				18.53	7/0.616

		1. 877				18. 50	19/0. 374
		1. 885				18. 66	41/0. 254
		1. 894				18. 81	105/0. 160
16	50. 82	1. 291	2. 583	0. 00 2029	1. 309	11. 64	1/1. 291
		1. 464				11. 67	7/0. 488
		1. 502				11. 83	26/0. 254
		1. 483				11. 65	65/0. 160
18	40. 3	1. 024	1. 624	0. 001275	0. 8226	7. 321	1/1. 024
		1. 192				7. 434	7/0. 390
		1. 178				7. 280	16/0. 254
		1. 212				7. 540	34/0. 180
		1. 163				7. 160	41/0. 160
20	30	0. 8118	1. 021	0. 0008019	0. 5174	4. 60	1/0. 813
		0. 9600				4. 70	7/0. 310
		0. 9421				4. 65	21/0. 180
		0. 9305				4. 54	26/0. 160
22	25. 35	0. 6439	624. 6	0. 0005047	0. 3256	2. 895	1/0. 645
		0. 7650				3. 186	7/0. 254
		0. 7524				2. 970	17/0. 160
24	20. 1	0. 5106	404	0. 0003173	0. 2047	1. 820	1/0. 511
		0. 6000				1. 060	7/0. 200
		0. 60525				1. 920	11/0. 160
26	15. 94	0. 40490	254. 1	0. 0001996	0. 1288	1. 145	1/0. 404
		0. 47400				1. 223	7/0. 160
28	12. 64	0. 32110	159. 8	0. 0001255	0. 08097	0. 7198	1/0. 322
		0. 38100				0. 7903	7/0. 127
30	10. 03	0. 25480	100. 6	0. 0007901	0. 05097	0. 4531	1/0. 254
		0. 30000				0. 4900	7/0. 100
32	7. 950	0. 2091 0	63. 20	0. 00004964	0. 03203	0. 2847	7/0. 080
34	6. 305	0. 16010	39. 75	0. 00003122	0. 0 2014	0. 1790	1/0. 161
36	5	0. 12700	25	0. 00001963	0. 01267	0. 1126	1/0. 128
38	3. 965	0. 1007	15. 72	0. 00001235	0. 007968	0. 07084	1/0. 102
40	3. 145	0. 07987	9. 891	0. 000007768	0. 00 2012	0. 04456	1/0. 080