wire

The way wire is made leads to a “natural” series of sizes. A rod (made in a rolling mill) is heated and pulled through a hole whose diameter is slightly smaller than the rod's. This process is repeated through ever-smaller holes until the wire is as fine as desired (see making wire).

To reduce the number of steps for economy's sake, the manufacturer would like the change in size at each drawing to be as large as possible; on the other hand if the change in size is too great the wire will break while being drawn. Older wire gauges like the Birmingham, Washburn & Moen, and Lancashire came from calling the wire from the first drawing number 1, from the second drawing #2, and so on. Note that the higher the number, the finer the wire.

Brown & Sharpe Wire gauge

Also known as the American Wire Gauge, and used in the United States since at least the *1880*s for wires in all metals but iron and steel. Number 0000 wire is 0.4600 inch in diameter. The diameter of each succeeding size is 0.890525 times the diameter of the previous size.

Washburn & Moen Wire gauge

Also called the Steel Wire Gage, Roebling, and the American Steel and Wire Co. Established about *1830* and named after the Washburn and Moen Manufacturing Company, which was later merged into the American Steel and Wire Co.

Morse Twist Drill gauge

It is a copy of the Lancashire gauge, the sizes being taken from wire and rod imported from Britain.

Stub's Steel Wire gauge

Used for drill rod and tool steel wire. It is the basis of, though not identical to, the numbered sizes of American Standard twist drills. Note that there is also a Stub's Iron Wire Gauge.

Birmingham Wire Gage

The steps are irregular. Departmental sanction by the United States government ended in *1914*.

Imperial Wire Gage, or British Standard Gage

British Standard, or Imperial wire gauge, fixed by order of council *August 23, 1883*. It was constructed by improving the Birmingham wire gage. Made legal standard

March 1, 1884.

Needle Wire gauge

Derived from the Birmingham Wire Gauge. #1 = 18½ B.W.G.; #2 = 19 B.W.G., and so on to #14 = 31 B.W.G. See S. S. Wheeler, Electrical World Nov. 12, 1887

Old English wire gage

Also known as the London gage. *19th century*, brass and copper wire. brass wire for weaving.

Whitworth's wire gauge

Also known as Cocker's Wire Gauge. The gauge number is the diameter of the wire in thousandths of an inch, for example #1 has a diameter of 0.001 inch.

Edison Standard wire gauge

A standard used in the *19th century* by the Edison Electrical Light Company for wires made to carry electric current. The gauge number is the number of thousands of circular mils in the wire's cross section.

Brown and Sharpe music wire gauge

Derived from the Washburn and Moen gauge; #12 = 22 W&M, #13 = 21 W&M. and so on.

Music Wire (English)

Derived from the Birmingham Wire Gauge. #6 = 26 B.W.G.; #7 = 25½ B.W.G.; #8 = 25 B.W.G. and so on up to #20 = 19 B.W.G.

Note that 4/0 is an abbreviation for 0000, 2/0 for 00, and so on. The colored bars are simply to help you locate values. Apologies for the horizontal scrolling.

Wire Gauges. All dimensions in inches.

Gauge	American or Brown & Sharpe Wire Gauge	Birmingham or Stubs' Iron Wire	Stubs' Steel Wire Gauge	Washburn & Moen; Roebling; or American Steel and Wire Co.	Imperial Wire Gauge	Whitworth's	Steel Wire Gauge, Waterbury Co., *1917*	American Steel and Wire Co. (ASW) Music Wire Gauge	American Screw and Wire Co. (music wire)	Wright Wire Co. (music wire)	Washburn & Moen Steel Music Wire	Roebling or Trenton Iron Works (music wire)	Felten & Guilleaume (music wire)	English music wire gauge	Poehlmann Music Wire	Allhoff & Muller (music wire)	W. N. Brunton Music Wire
9/0	—	—	—	—	—	—	0.005	—	—		—	—	—	—	—		—
8/0	—	—	—	—	—	—	0.0055	—	—		0.0083	—	—	—	—		—
7/0	—	—	—	0.4900	0.5000	—	0.006	—			0.0087	—	—	—	—		—
6/0	0.5800	—	—	0.4615	0.4640	—	0.0065	0.004	0.0095		0.0095	—	—	—	—		—
5/0	0.5165	0.500	—	0.4305	0.4320	—	0.007	0.005	0.010		0.010	—	—	—	—		—
4/0	0.4600	0.454	—	0.3938	0.4000	—	0.0075	0.006	0.011		0.011	0.007	0.0068	—	0.006		—

3/0	0.4096	0.425	—	0.3625	0.3720	—	0.008	0.007	0.012		0.012	0.0075	0.0075	—	0.007		
2/0	0.3648	0.380	—	0.3310	0.3480	—	0.0085	0.008	0.0133	0.0085	0.0133	0.0085	0.0087	—	0.008	0.008	0.0085
0	0.3249	0.340	—	0.3065	0.3240	—	0.009	0.009	0.0144	0.009	0.0144	0.009	0.0093	—	0.009	0.009	0.009
1	0.2893	0.300	0.227	0.2830	0.3000	0.001	0.010	0.100	0.0156	0.010	0.0156	0.010	0.0098	—	0.010	0.010	0.011
2	0.2576	0.284	0.219	0.2625	0.2760	0.002	0.011	0.011	0.0166	0.011	0.0166	0.011	0.0106	0.0105	0.011	0.011	0.010
3	0.2294	0.259	0.212	0.2437	0.2520	0.003	0.012	0.012	0.0178	0.012	0.0178	0.012	0.0114	0.0115	0.012	0.012	0.012
4	0.2043	0.238	0.207	0.2253	0.2320	0.004	0.013	0.013	0.0188	0.013	0.0188	0.013	0.0122	0.0125	0.013	0.013	0.013
5	0.1819	0.220	0.204	0.2070	0.2120	0.005	0.014	0.014	0.0202	0.014	0.0202	0.014	0.0138	0.0145	0.014	0.014	0.014
6	0.1620	0.203	0.201	0.1920	0.1920	0.006	0.016	0.016	0.0215	0.016	0.0215	0.016	0.0157	0.0150	0.016	0.016	0.016
7	0.1443	0.180	0.199	0.1770	0.1760	0.007	0.018	0.018	0.0230	0.018	0.023	0.018	0.0177	0.0175	0.018	0.018	0.017
8	0.1285	0.165	0.197	0.1620	0.1600	0.008	0.020	0.020	0.0243	0.020	0.0243	0.020	0.0197	0.0190	0.020	0.020	0.019
9	0.1144	0.148	0.194	0.1483	0.1440	0.009	0.022	0.022	0.0256	0.022	0.0256	0.022	0.0216	0.0220	0.022	0.022	0.022
10	0.1019	0.134	0.191	0.1350	0.1280	0.010	0.024	0.024	0.0270	0.024	0.027	0.024	0.0236	0.0245	0.024	0.024	0.024
11	0.0907	0.120	0.188	0.1205	0.1160	0.011	0.026	0.026	0.0284	0.026	0.0284	0.026	0.0260	0.0270	0.026	0.026	0.027
12	0.0808	0.109	0.185	0.1055	0.1040	0.012	0.028	0.029	0.0296	0.028	0.0296	0.028	0.0283	0.0280	0.029	0.028	0.029
13	0.0720	0.095	0.182	0.0915	0.0920	0.013	0.030	0.031	0.0314	0.0305	0.0314	0.030	0.0303	0.0305	0.031	0.030	0.031
14	0.0641	0.083	0.180	0.0800	0.0800	0.014	0.032	0.033	0.0326	0.0325	0.0326	0.032	0.0323	0.0320	0.033	0.032	0.032
15	0.0571	0.072	0.178	0.0720	0.0720	0.015	0.034	0.035	0.0345	0.034	0.0345	0.034	0.0342	0.0350	0.035	0.034	0.034
16	0.0508	0.065	0.175	0.0625	0.0640	0.016	0.036	0.037	0.0360	0.036	0.036	0.036	0.0362	0.0360	0.037	0.036	0.036
17	0.0453	0.058	0.172	0.0540	0.0560	0.017	0.038	0.039	0.0377	0.038	0.0377	0.038	0.0382	0.0380	0.039	0.038	0.038
18	0.0403	0.049	0.168	0.0475	0.0480	0.018	0.040	0.041	0.0395	0.0405	0.0395	0.040	0.0400	0.0400	0.041	0.040	0.040
19	0.0359	0.042	0.164	0.0410	0.0400	0.019	0.042	0.043	0.0414	0.042	0.0414	0.042	0.0420	0.0420	0.043	0.042	0.042
20	0.0320	0.035	0.161	0.0348	0.0360	0.020	0.044	0.045	0.0434	0.044	0.0434	0.044	0.0440	0.0430	0.045	0.044	0.044
21	0.0285	0.032	0.157	0.03175	0.0320	0.021	0.046	0.047	0.0460	0.046	0.046	0.046	0.0460	0.0445	0.047	0.046	0.046
22	0.0253	0.028	0.155	0.0286	0.0280	0.022	0.048	0.049	0.0483	0.0485	0.0483	0.048	0.0480	0.0470	0.049	0.048	0.048
23	0.0226	0.025	0.153	0.0258	0.0240	0.023	0.051	0.051	0.0510	0.0505	0.051	0.051	0.0510	0.0490	0.051	0.051	0.050
24	0.0201	0.022	0.151	0.0230	0.0220	0.024	0.055	0.055	0.0550	0.0545	0.055	0.055	0.0550	0.0530	0.055	0.055	0.054
25	0.0179	0.020	0.148	0.0204	0.0200	0.025	0.059	0.059	0.0586	0.0583	0.0586	0.059	0.0590	0.0560	0.059	0.059	0.058
26	0.0159	0.018	0.146	0.0181	0.0180	0.026	0.063	0.063	0.0626	0.063	0.0626	0.063	0.0630	0.0605	0.063	0.063	0.062
27	0.0142	0.016	0.143	0.0173	0.0164	0.027	0.067	0.067	0.0675	0.067	0.0658	0.067	0.0670	0.064	0.067	0.067	0.066
28	0.0126	0.014	0.139	0.0162	0.0149	0.028	0.071	0.071	0.0720	0.071	0.072	0.071	0.0710	0.0685	0.071	0.071	0.069
29	0.0113	0.013	0.134	0.0150	0.0136	0.029	0.074	0.075	0.0760	0.0745	0.076	0.074	0.0740	0.0715	0.075	0.074	0.072
30	0.0100	0.012	0.127	0.0140	0.0124	0.030	0.078	0.080	0.0800	0.078	0.080	0.078	0.0780	0.075	0.080	0.078	0.076
31	0.0089	0.010	0.120	0.0132	0.0116	0.031	0.082	0.085	0.0850	0.082	—	0.082	0.0820	—	—	0.082	0.080
32	0.0080	0.009	0.115	0.0128	0.0108	0.032	0.086	0.090	0.0920	0.086	—	0.086	0.0860	—	—	0.086	0.086

33	0.0071	0.008	0.112	0.0118	0.0100	0.033	0.090	0.095	—	0.090	—	0.090	—	—	—	0.090	0.092
34	0.0063	0.007	0.110	0.0104	0.0092	0.034	0.094	0.100	—	0.096	—	0.095	—	—	—	0.094	0.098
35	0.0056	0.005	0.108	0.0095	0.0084	0.035	0.098	0.106	—	—	—	0.100	—	—	—	0.098	0.104
36	0.0050	0.004	0.106	0.0090	0.0076	0.036	0.102	0.112	—	—	—	0.105	—	—	—	0.102	0.110
37	0.0045	—	0.103	—	0.0068	0.037	0.106	0.118	—	—	—	0.110	—	—	—	—	0.117
38	0.0040	—	0.101	—	0.0060	0.038	0.112	0.124	—		—	0.115	—	—	—	—	0.121
39	0.0035	—	0.099	—	0.0052	0.039	0.118	0.130	—		—	0.120	—	—	—	—	0.130
40	0.0031	—	0.097	—	0.0048	0.040	0.125	0.138	—		—	0.125	—	—	—	—	0.140
41	0.0028	—	0.095	—	0.0044	0.041	0.132	0.146	—		—	0.130	—	—	—	—	—
42	0.0025	—	0.092	—	0.0040	0.042	0.139	0.154	—	—	—	—	—	—	—	—	—
43	0.0022	—	0.088	—	0.0036	0.043	0.146	0.162	—	—	—	—	—	—	—	—	—
44	0.00198	—	0.085	—	0.0032	0.044	0.153	0.170	—	—	—	—	—	—	—	—	—
45	0.00176	—	0.081	—	0.0028	0.045	0.160	0.180	—	—	—	—	—	—	—	—	—
46	0.00157	—	0.079	—	0.0024	0.046	—	—	—	—	—	—	—	—	—	—	—
47	0.00140	—	0.077	—	0.0020	0.047	—	—	—	—	—	—	—	—	—	—	—
48	0.00124	—	0.075	—	0.0016	0.048	—	—	—	—	—	—	—	—	—	—	—
49	0.001108	—	0.072	—	0.0012	0.049	—	—	—	—	—	—	—	—	—	—	—
50	0.00099	—	0.069	—	0.0010	0.050	—	—	—	—	—	—	—	—	—	—	—
51		—	0.066	—	—	—	—	—	—	—	—	—	—	—	—	—	—
52	—	—	0.063	—	—	—	—	—	—	—	—	—	—	—	—	—	—
53	—		0.058	—	—	—	—	—	—	—	—	—	—	—	—	—	—
54	—	—	0.055	—	—	—	—	—	—	—	—	—	—	—	—	—	—
55	—	—	0.050	—	—	—	—	—	—	—	—	—	—	—	—	—	—
56	—	—	0.045	—	—	—	—	—	—	—	—	—					
57			0.042														
58			0.041														
59			0.040														
60			0.039														
61			0.038														
62			0.037														
63			0.036														
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68			0.030													
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79			0.014													
80			0.013													

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