

Magnet Wire Insulation Guide

| THERMAL CLASS | INSULATION TYPE | MWS PRODUCT CODE | NEMA STANDARD (MW1000) | IEC STANDARD (60317) | FEDERAL SPECIFICATION (JW 1177) |
|---------------|-----------------------------------|------------------|------------------------------|----------------------------------|---|
| 105°C | Plain Enamel | PE | NONE | NONE | NONE |
| | Formvar* | F | MW 15 (RD) MW 18 (SQ & RECT) | 60317-1(RD) 60317-17(SQ & RECT) | JW 1177/ 14 (RD) JW1177/ 16 (SQ & RECT) |
| | Formvar Bondable | FB | MW 19 | 60317-5 | JW 1177/ 6 |
| 130°C | Polyurethane Nylon Bondable - 130 | PE | NONE | NONE | NONE |
| 155°C | Polyurethane - 155* | P155 | MW 79 | 60317-20 | JW 1177/ 41 |
| | Polyurethane Nylon - 155* | PN155 | MW 80 | 60317-21 | JW 1177/ 42 |
| | Polyurethane Bondable - 155* | PB155 | MW 131 | 60317-35 | NONE |
| | Polyurethane Nylon Bondable - 155 | PNB155 | MW 136 | NONE | NONE |
| | Dacron Glass - 155 | DGLAS 155 | MW 45 (RD) MW 46 (SQ & RECT) | NONE(RD) 60317-60(SQ & RECT) | JW 1177/ 20 (RD) JW1177/ 25 (SQ & RECT) |
| 180°C | Polyurethane - 180* | P180 | MW 82 | 60317-51 | NONE |
| | Polyurethane Nylon - 180* | PN180 | MW 83 | 60317-55 | NONE |
| | Polyester-imide* | PT | MW 30 | 60317-8 | JW 1177/ 12 |
| | Polyester-Nylon* | PTN | MW 76 | 60317-22 | JW 1177/ 38 |
| | Solderable Polyester* | SPT | MW 77 | 60317-23 | JW 1177/ 39 |
| | Solderable Polyester Nylon* | SPTN | MW 78 | NONE | JW 1177/ 40 |
| | Polyurethane Bondable - 180 | PB180 | MW 132 | NONE | NONE |
| | Polyurethane Nylon Bondable - 180 | PNB180 | MW 137 | NONE | NONE |
| | Polyester-imide Bondable | PTB | NONE | 60317-37 | NONE |
| | Polyester-amide-imide Bondable* | APTB | MW 102 | 60317-38 | NONE |
| | Solderable Polyester Bondable | SPTB | NONE | 60317-36 | NONE |
| | Dacron Glass High Temp | DGLAS HT | MW 51 (RD) MW 53 (SQ & RECT) | NONE(RD) 60317-61(SQ & RECT) | JW 1177/ 32 (RD) JW1177/ 34 (SQ & RECT) |
| 200°C | Polyester - 200* | PT200 | MW 74 | 60317-42 | JW 1177/43 |
| | Polyester A/I Topcoat* | APT | MW 35 (RD) MW 36 (SQ & RECT) | 60317-13(RD) 60317-29(SQ & RECT) | JW 1177/ 14 (RD) JW1177/ 13 (SQ & RECT) |
| | Polyester A/I Polyamideimide* | APTIG | MW 73 | 60317-13 | NONE |
| 240°C | Polyimide - ML* | ML** | MW 16 (RD) MW 20 (SQ & RECT) | 60317-46(RD) 60317-47(SQ & RECT) | JW 1177/ 15 (RD) JW1177/ 18 (SQ & RECT) |

* UL Recognized Insulations

** Registered trademark of IST Industrial Summit Technology



Magnet Wire Insulation Guide

| THERMAL CLASS | INSULATION CHARACTERISTICS | GENERAL APPLICATIONS |
|---------------|--|---|
| 105°C | Plain Enamel was one of the earliest film insulations developed for automotive ignition coils. Today it is primarily used in musical instruments for pickup coils. It is manufactured to single build dimensions and stocked in sizes 41 to 43 AWG. | Pickup coils for guitars and other instruments |
| | Formvar was an early synthetic insulation composed of modified polyvinyl resins designed for continuous operation at 105C. It has excellent abrasion resistance and is compatible with most varnishes and impregnating compounds. | Oil filled transformers, motors, solenoids, superconducting coils or other cryogenic applications |
| | Formvar with a superimposed thermoplastic film for use in heat or solvent activated self-bonding coils. | Relays, yoke coils, self-supporting coils |
| 130°C | Class 130°C solderable polyurethane with superimposed thermoplastic polyvinyl butyral film for heat or solvent activated self-bonding coils with excellent bond strength at room temperature. | Voice coils, yoke coils, self-supporting coils |
| 155°C | Solderable film composed of modified polyurethane resins designed mostly for fine wire applications with excellent resistance to moisture and most solvents. | Relays, high frequency coils and transformers, solenoids, small motors |
| | Solderable dual film composed of modified polyurethane resins with a polyamide (nylon) overcoat that provides improvement in severe winding operations. | Appliance motors, relays, toroidal coils, fractional HP motors |
| | Solderable polyurethane or polyurethane with nylon overcoat and a superimposed thermoplastic butyral film for coils requiring Class F service. Coils may be bonded by heat or with denatured alcohol. Generally made as Type 1 insulation build equal to heavy overall diameter. | Voice coils, helical coils, inductors, self-supporting coils |
| | Dacron Glass is a combination of glass and polyester fibers applied as a served filament over bare or film coated magnet wire and may be supplied with an epoxy varnish or as fused unvarnished to prevent fraying of the fibers. | Dry transformers, Class B motors |
| 180°C | Polyurethane film designed for applications requiring high thermal resistance and low soldering temperature. | Relays, ignition coils, solenoids, small transformers |
| | Polyurethane with polyamide (nylon) overcoat for applications requiring high thermal properties and chemical resistance. Soldering temperatures 430°C (14-23 AWG) or 390°C (24 AWG and finer). | Relays, pulse transformers, small appliance motors |
| | Film insulation composed of modified polyester resins with excellent chemical resistance. | Solenoids, servo motors, small appliance motors |
| | Dual film composed of modified polyester resins with a nylon overcoat. Combines continuous 180°C operating temperature and low coefficient of friction for superior winding and insertion properties. | Motor stators, fractional HP motors |
| | Film insulation composed of modified polyesterimide resins designed to solder at 470°C, generally made at 24 AWG and finer sizes. | High temperature relays, transformers, automotive coils |
| | Dual film composed of modified polyesterimide resins with nylon overcoat for superior performance where winding stresses may be severe. Designed to solder at 470°C, this insulation is made mostly in heavier gauge sizes. | Transformers, automotive coils, appliance motors |
| | One part (Polyurethane) or dual (Polyurethane Nylon) insulation system with superimposed thermoplastic film combining high thermal resistance, solderability, and self-bonding features. | Self-supporting coils, relays, voice coils |
| | These are wires that combine characteristics of various class 180°C film insulations with self-bonding feature. Bonding method depends on choice of bond coat. May be made as Type 1 (heavy diameter) or Type 2 (triple diameter) construction. | Voice coils, inductors, yoke coils, small motors |
| 200°C | Like Dacron Glass 155 except treated with high temperature organic varnish. May be served over bare or film coated magnet wire. Available only in shaped or heavy round wire sizes. | Large generators and alternators, dry type transformers |
| | One part film system composed of THEIC modified polyester resins capable of continuous 200°C operating temperature designed specifically for finer size wires. | Coils, relays, small transformers, small appliance motors |
| | A dual film insulation of polyester-amide-imide with polyamideimide (A/I) overcoat for superior windability, heat shock resistance, solvent resistance, and overload protection. | General purpose motors, fractional and integral motors (hermetic and open), dry type transformers |
| 240°C | A triple film system composed of THEIC modified polyester, a corona resistant shield coat, and polyamideimide (A/I) overcoat designed to withstand severe voltage stresses. Made as heavy build construction in round sizes 12 through 24 AWG. | Inverter duty motors, high voltage motors |
| | Film composed of aromatic polyimide resin that features high cut through, exceptional chemical resistance, minimal outgassing and capable of continuous operation at 240°C in extremely harsh environments. | High temperature continuous duty coils, hermetically sealed relays, fractional and integral HP motors |



Copper Magnet Wire Data

| SIZE (AWG) | BARE COPPER | | | | | | | | | SIZE (AWG) |
|---------------|-------------|--------|--------|-----------------------------|-------|-------|-------------------|---------------------------|-----------------------------|---------------|
| | DIAMETER * | | | RESISTANCE** | | | FEET PER POUND | POUNDS PER 1000 FT. | CIRCULAR MILS NOMINAL | |
| | (INCHES) | | | (OHMS PER 1000 FT. AT 20°C) | | | | | | |
| MIN. | NOM. | MAX. | MIN. | NOM. | MAX. | | | | | |
| 6 | .1604 | .1620 | .1633 | .3875 | .3952 | .4031 | 12.59 | 79.44 | 26240 | 6 |
| 7 | .1429 | .1443 | .1454 | .4885 | .4981 | .5079 | 15.87 | 63.03 | 20820 | 7 |
| 8 | .1272 | .1285 | .1294 | .6156 | .6281 | .6410 | 20.01 | 49.98 | 16510 | 8 |
| 9 | .1133 | .1144 | .1153 | .7774 | .7924 | .8079 | 25.24 | 39.62 | 13090 | 9 |
| 10 | .1009 | .1019 | .1027 | .9795 | .9988 | 1.019 | 31.82 | 31.43 | 10380 | 10 |
| 11 | .0898 | .0907 | .0916 | 1.236 | 1.261 | 1.286 | 40.2 | 24.9 | 8226 | 11 |
| 12 | .0800 | .0808 | .0816 | 1.558 | 1.589 | 1.620 | 50.6 | 19.8 | 6529 | 12 |
| 13 | .0713 | .0720 | .0727 | 1.962 | 2.001 | 2.040 | 63.7 | 15.7 | 5184 | 13 |
| 14 | .0635 | .0641 | .0647 | 2.477 | 2.524 | 2.572 | 80.4 | 12.4 | 4109 | 14 |
| 15 | .0565 | .0571 | .0577 | 3.115 | 3.181 | 3.249 | 101 | 9.87 | 3260 | 15 |
| 16 | .0503 | .0508 | .0513 | 3.941 | 4.019 | 4.099 | 128 | 7.81 | 2581 | 16 |
| 17 | .0448 | .0453 | .0458 | 4.944 | 5.054 | 5.167 | 161 | 6.21 | 2052 | 17 |
| 18 | .0399 | .0403 | .0407 | 6.261 | 6.386 | 6.514 | 203 | 4.92 | 1624 | 18 |
| 19 | .0355 | .0359 | .0363 | 7.871 | 8.047 | 8.229 | 256 | 3.90 | 1289 | 19 |
| 20 | .0317 | .0320 | .0323 | 9.941 | 10.13 | 10.32 | 323 | 3.10 | 1024 | 20 |
| 21 | .0282 | .0285 | .0288 | 12.50 | 12.77 | 13.04 | 407 | 2.46 | 812.3 | 21 |
| 22 | .0250 | .0253 | .0256 | 15.82 | 16.20 | 16.59 | 516 | 1.94 | 640.1 | 22 |
| 23 | .0224 | .0226 | .0228 | 19.95 | 20.31 | 20.67 | 647 | 1.55 | 510.8 | 23 |
| 24 | .0199 | .0201 | .0203 | 25.17 | 25.67 | 26.19 | 818 | 1.22 | 404.0 | 24 |
| 25 | .0177 | .0179 | .0181 | 31.66 | 32.37 | 33.10 | 1030 | .970 | 320.4 | 25 |
| 26 | .0157 | .0159 | .0161 | 40.01 | 41.02 | 42.07 | 1310 | .765 | 252.8 | 26 |
| 27 | .0141 | .0142 | .0143 | 50.72 | 51.43 | 52.17 | 1640 | .610 | 201.6 | 27 |
| 28 | .0125 | .0126 | .0127 | 64.30 | 65.33 | 66.37 | 2080 | .481 | 158.8 | 28 |
| 29 | .0112 | .0113 | .0114 | 79.80 | 81.22 | 82.68 | 2590 | .387 | 127.7 | 29 |
| 30 | .0099 | .0100 | .0101 | 101.7 | 103.7 | 105.8 | 3300 | .303 | 100.0 | 30 |
| 31 | .0088 | .0089 | .0090 | 128.0 | 130.9 | 133.9 | 4170 | .240 | 79.21 | 31 |
| 32 | .0079 | .0080 | .0081 | 158.1 | 162.0 | 166.2 | 5160 | .194 | 64.00 | 32 |
| 33 | .0070 | .0071 | .0072 | 200.1 | 205.7 | 211.7 | 6550 | .153 | 50.41 | 33 |
| 34 | .0062 | .0063 | .0064 | 253.2 | 261.3 | 269.8 | 8320 | .120 | 39.69 | 34 |
| 35 | .0055 | .0056 | .0057 | 319.2 | 330.7 | 342.8 | 10500 | .0949 | 31.36 | 35 |
| 36 | .0049 | .0050 | .0051 | 398.7 | 414.8 | 431.9 | 13200 | .0757 | 25.00 | 36 |
| 37 | .0044 | .0045 | .0046 | 490.1 | 512.1 | 535.7 | 16300 | .0613 | 20.25 | 37 |
| 38 | .0039 | .0040 | .0041 | 617.0 | 648.2 | 681.9 | 20600 | .0484 | 16.00 | 38 |
| 39 | .0034 | .0035 | .0036 | 800.2 | 846.6 | 897.1 | 27000 | .0371 | 12.25 | 39 |
| 40 | .0030 | .0031 | .0032 | 1013 | 1079 | 1152 | 34400 | .0291 | 9.61 | 40 |
| 41 | .0027 | .0028 | .0029 | 1233 | 1323 | 1423 | 42100 | .0237 | 7.84 | 41 |
| 42 | .0024 | .0025 | .0026 | 1534 | 1659 | 1801 | 52900 | .0189 | 6.25 | 42 |
| 43 | .0021 | .0022 | .0023 | 1960 | 2143 | 2352 | 68300 | .0147 | 4.84 | 43 |
| 44 | .0019 | .0020 | .0021 | 2352 | 2593 | 2873 | 82600 | .0121 | 4.00 | 44 |
| 45 | .00169 | .00176 | .00183 | 3080 | 3348 | 3616 | 106,500 | .00939 | 3.10 | 45 |
| 46 | .00151 | .00157 | .00164 | 3870 | 4207 | 4544 | 134,400 | .00744 | 2.47 | 46 |
| 47 | .00135 | .00140 | .00146 | 4868 | 5291 | 5714 | 169,200 | .00591 | 1.96 | 47 |
| 48 | .00119 | .00124 | .00129 | 6205 | 6745 | 7285 | 213,400 | .00469 | 1.54 | 48 |
| 49 | .00107 | .00111 | .00116 | 7744 | 8417 | 9090 | 269,700 | .00371 | 1.23 | 49 |
| 50 | .00095 | .00099 | .00103 | 9734 | 10580 | 11430 | 339,700 | .00294 | .98 | 50 |
| 51 | .00085 | .00088 | .00092 | 12320 | 13390 | 14460 | 428,400 | .00233 | .775 | 51 |
| 52 | .00075 | .00078 | .00081 | 15690 | 17050 | 18410 | 540,000 | .00185 | .608 | 52 |
| 53 | .00067 | .00070 | .00073 | 19480 | 21170 | 22860 | 681,200 | .00147 | .490 | 53 |
| 54 | .00060 | .00062 | .00065 | 24820 | 26980 | 29140 | 859,100 | .00116 | .384 | 54 |
| 55 | .00053 | .00055 | .00057 | 31540 | 34280 | 37020 | 1,083,000 | .000923 | .303 | 55 |

* Minimum and maximum dimensions are based on tolerances specified by ASTM Standard B3 and NEMA MW1000-2015 for sizes 6 - 44 AWG. Sizes 45 - 55 AWG dimensions calculated from DC resistance.

** Values are based on a resistivity of 10.371 ohms per circular mil/ft at 20°C. (100% IACS conductivity). Minimum resistance values are based on maximum bare diameter. Maximum resistance values are based on minimum bare diameter.

6 - 44 AWG magnet wire will be furnished to dimensional standard with resistance values as a guideline.

45 - 55 AWG magnet wire will be furnished to resistance with the dimensions as a guideline.



Copper Magnet Wire Data

Dimensional values derived from NEMA MW1000-2015 Standard

| SIZE (AWG) | SINGLE BUILD | | | | HEAVY BUILD | | | | TRIPLE BUILD | | | | **QUADRUPLE BUILD | | | | SIZE (AWG) |
|------------|---------------------|--------|--------|----------------|---------------------|--------|--------|----------------|---------------------|--------|--------|----------------|---------------------|--------|--------|----------------|------------|
| | DIAMETER * (INCHES) | | | FEET PER POUND | DIAMETER * (INCHES) | | | FEET PER POUND | DIAMETER * (INCHES) | | | FEET PER POUND | DIAMETER * (INCHES) | | | FEET PER POUND | |
| | MIN. | NOM. | MAX. | | MIN. | NOM. | MAX. | | MIN. | NOM. | MAX. | | MIN. | NOM. | MAX. | | |
| 6 | .1622 | .1648 | .1665 | 12.545 | .1640 | .1656 | .1672 | 12.5 | .1651 | .1679 | .1688 | 12.455 | .1663 | .1685 | .1706 | 12.41 | 6 |
| 7 | .1446 | .1469 | .1485 | 15.81 | .1464 | .1478 | .1492 | 15.75 | .1475 | .1492 | .1508 | 15.69 | .1488 | .1506 | .1525 | 15.63 | 7 |
| 8 | .1289 | .1302 | .1314 | 19.93 | .1307 | .1320 | .1332 | 19.85 | .1317 | .1333 | .1348 | 19.77 | .1330 | .1349 | .1365 | 19.69 | 8 |
| 9 | .1150 | .1162 | .1173 | 25.12 | .1167 | .1179 | .1190 | 25 | .1177 | .1191 | .1205 | 24.88 | .1190 | .1205 | .1221 | 24.76 | 9 |
| 10 | .1026 | .1037 | .1047 | 31.66 | .1043 | .1054 | .1064 | 31.5 | .1052 | .1064 | .1076 | 31.34 | .1077 | .1088 | .1098 | 31.18 | 10 |
| 11 | .0915 | .0925 | .0936 | 39.6 | .0931 | .0942 | .0952 | 39 | .0940 | .0952 | .0963 | 38.4 | .0964 | .0974 | .0983 | 38.34 | 11 |
| 12 | .0816 | .0825 | .0835 | 50.25 | .0832 | .0842 | .0851 | 49.9 | .0840 | .0851 | .0861 | 49.55 | .0864 | .0873 | .0881 | 49.2 | 12 |
| 13 | .0729 | .0737 | .0746 | 63.3 | .0745 | .0754 | .0762 | 62.9 | .0752 | .0762 | .0771 | 62.5 | .0777 | .0785 | .0793 | 62.1 | 13 |
| 14 | .0651 | .0659 | .0666 | 79.94 | .0667 | .0675 | .0682 | 79.18 | .0683 | .0691 | .0698 | 78.42 | .0699 | .0707 | .0714 | 77.66 | 14 |
| 15 | .0580 | .0587 | .0594 | 100.4 | .0595 | .0603 | .0610 | 99.7 | .0611 | .0618 | .0625 | 99 | .0626 | .0633 | .0640 | 98.3 | 15 |
| 16 | .0517 | .0524 | .0531 | 126.8 | .0532 | .0539 | .0545 | 125.6 | .0546 | .0553 | .0560 | 124.4 | .0561 | .0568 | .0574 | 123.2 | 16 |
| 17 | .0462 | .0469 | .0475 | 159.4 | .0476 | .0482 | .0488 | 157.7 | .0489 | .0496 | .0502 | 156 | .0503 | .0510 | .0516 | 154.3 | 17 |
| 18 | .0412 | .0418 | .0424 | 201.1 | .0425 | .0431 | .0437 | 199.2 | .0438 | .0444 | .0450 | 197.3 | .0451 | .0458 | .0464 | 195.4 | 18 |
| 19 | .0367 | .0373 | .0379 | 253.2 | .0380 | .0386 | .0391 | 250.6 | .0392 | .0398 | .0404 | 248 | .0405 | .0412 | .0418 | 245.4 | 19 |
| 20 | .0329 | .0335 | .0340 | 318.4 | .0341 | .0346 | .0351 | 314.5 | .0352 | .0358 | .0363 | 310.6 | .0364 | .0371 | .0377 | 306.7 | 20 |
| 21 | .0293 | .0298 | .0303 | 400.6 | .0304 | .0310 | .0315 | 395.3 | .0316 | .0321 | .0326 | 390 | .0327 | .0333 | .0340 | 384.7 | 21 |
| 22 | .0261 | .0266 | .0270 | 507.1 | .0271 | .0276 | .0281 | 502.5 | .0282 | .0287 | .0292 | 497.9 | .0293 | .0300 | .0306 | 493.3 | 22 |
| 23 | .0234 | .0239 | .0243 | 633.7 | .0244 | .0249 | .0253 | 625 | .0254 | .0259 | .0263 | 616.3 | .0264 | .0271 | .0277 | 607.6 | 23 |
| 24 | .0209 | .0213 | .0217 | 804.5 | .0218 | .0223 | .0227 | 790.5 | .0228 | .0232 | .0236 | 776.5 | .0237 | .0244 | .0250 | 762.5 | 24 |
| 25 | .0186 | .0190 | .0194 | 1010 | .0195 | .0199 | .0203 | 992.1 | .0204 | .0208 | .0212 | 974.2 | .0213 | .0220 | .0226 | 956.3 | 25 |
| 26 | .0166 | .0170 | .0173 | 1279 | .0174 | .0178 | .0182 | 1254 | .0183 | .0187 | .0191 | 1229 | .0192 | .0198 | .0204 | 1204 | 26 |
| 27 | .0149 | .0153 | .0156 | 1600 | .0157 | .0161 | .0165 | 1571 | .0166 | .0170 | .0173 | 1542 | .0174 | .0180 | .0185 | 1513 | 27 |
| 28 | .0133 | .0137 | .0140 | 2028 | .0141 | .0144 | .0147 | 1987 | .0148 | .0152 | .0155 | 1946 | .0156 | .0162 | .0167 | 1905 | 28 |
| 29 | .0119 | .0123 | .0126 | 2513 | .0127 | .0130 | .0133 | 2463 | .0134 | .0138 | .0141 | 2413 | .0142 | .0147 | .0151 | 2363 | 29 |
| 30 | .0106 | .0109 | .0112 | 3208 | .0112 | .0117 | .0121 | 3136 | .0119 | .0123 | .0126 | 3064 | .0125 | .0132 | .0138 | 2992 | 30 |
| 31 | .0094 | .0097 | .0100 | 4052 | .0100 | .0104 | .0108 | 3948 | .0106 | .0110 | .0114 | 3844 | .0112 | .0119 | .0125 | 3740 | 31 |
| 32 | .0085 | .0088 | .0090 | 4995 | .0090 | .0094 | .0097 | 4873 | .0096 | .0099 | .0102 | 4751 | .0101 | .0107 | .0112 | 4629 | 32 |
| 33 | .0075 | .0078 | .0081 | 6337 | .0080 | .0084 | .0087 | 6161 | .0085 | .0089 | .0092 | 5985 | .0090 | .0096 | .0101 | 5809 | 33 |
| 34 | .0067 | .0070 | .0072 | 8055 | .0071 | .0075 | .0078 | 7837 | .0076 | .0080 | .0083 | 7619 | .0081 | .0086 | .0091 | 7401 | 34 |
| 35 | .0059 | .0062 | .0065 | 10250 | .0064 | .0067 | .0070 | 9891 | .0068 | .0072 | .0075 | 9532 | .0072 | .0077 | .0082 | 9173 | 35 |
| 36 | .0053 | .0056 | .0058 | 12800 | .0057 | .0060 | .0063 | 12380 | .0061 | .0064 | .0067 | 11960 | .0065 | .0070 | .0074 | 11540 | 36 |
| 37 | .0048 | .0050 | .0052 | 15750 | .0051 | .0055 | .0057 | 15290 | .0055 | .0058 | .0061 | 14830 | .0058 | .0063 | .0067 | 14370 | 37 |
| 38 | .0042 | .0045 | .0047 | 20020 | .0046 | .0049 | .0051 | 19360 | .0049 | .0052 | .0055 | 18700 | .0052 | .0056 | .0060 | 18040 | 38 |
| 39 | .0037 | .0040 | .0042 | 26240 | .0040 | .0043 | .0045 | 25270 | .0043 | .0046 | .0049 | 24300 | .0046 | .0050 | .0054 | 23330 | 39 |
| 40 | .0033 | .0035 | .0037 | 33330 | .0035 | .0038 | .0041 | 31940 | .0038 | .0041 | .0044 | 30550 | .0041 | .0045 | .0049 | 29160 | 40 |
| 41 | .0030 | .0032 | .0033 | 40800 | .0032 | .0035 | .0037 | 39340 | .0035 | .0038 | .0040 | 37880 | .0037 | .0041 | .0044 | 36420 | 41 |
| 42 | .0026 | .0028 | .0030 | 50940 | .0029 | .0031 | .0033 | 49600 | .0031 | .0034 | .0036 | 48260 | .0033 | .0036 | .0039 | 46920 | 42 |
| 43 | .0023 | .0025 | .0027 | 66140 | .0025 | .0027 | .0029 | 63170 | .0027 | .0029 | .0032 | 60200 | .0029 | .0033 | .0036 | 57230 | 43 |
| 44 | .0021 | .0023 | .0024 | 80060 | .0023 | .0025 | .0026 | 76160 | .0025 | .0027 | .0029 | 72260 | .0027 | .0030 | .0032 | 68360 | 44 |
| 45 | .00189 | .00205 | .00220 | 103,500 | .00209 | .00225 | .00240 | 99,110 | .00219 | .00245 | .00270 | 94,720 | .00239 | .00260 | .00290 | 90,330 | 45 |
| 46 | .00171 | .00173 | .00200 | 130,000 | .00181 | .00196 | .00210 | 123,800 | .00201 | .00221 | .00240 | 117,600 | .00221 | .00241 | .00260 | 111,400 | 46 |
| 47 | .00145 | .00158 | .00170 | 163,400 | .00165 | .00178 | .00190 | 154,600 | .00185 | .00198 | .00210 | 145,800 | .00205 | .00218 | .00230 | 137,000 | 47 |
| 48 | .00129 | .00140 | .00150 | 204,900 | .00139 | .00155 | .00170 | 196,900 | .00159 | .00175 | .00190 | 188,900 | .00169 | .00190 | .00210 | 180,900 | 48 |
| 49 | .00117 | .00124 | .00130 | 259,700 | .00127 | .00139 | .00150 | 247,500 | .00147 | .00159 | .00170 | 235,300 | .00157 | .00174 | .00190 | 223,100 | 49 |
| 50 | .00105 | .00113 | .00120 | 324,700 | .00115 | .00128 | .00140 | 307,700 | .00125 | .00143 | .00160 | 290,700 | .00135 | .00158 | .00180 | 273,700 | 50 |
| 51 | .00095 | .00103 | .00110 | 406,500 | .00105 | .00117 | .00129 | 383,100 | .00115 | .00133 | .00150 | 359,700 | .00125 | .00148 | .00170 | 336,300 | 51 |
| 52 | .00085 | .00093 | .00100 | 507,600 | .00095 | .00107 | .00105 | 476,200 | .00105 | .00123 | .00140 | 444,800 | .00115 | .00138 | .00160 | 413,400 | 52 |
| 53 | .00072 | .00079 | .00085 | 653,600 | .00080 | .00090 | .00103 | 621,100 | .00087 | .00104 | .00121 | 588,600 | .00097 | .00118 | .00139 | 556,100 | 53 |
| 54 | .00065 | .00070 | .00075 | 826,400 | .00073 | .00082 | .00095 | 775,200 | — | — | — | — | — | — | — | — | 54 |
| 55 | .00058 | .00064 | .00070 | 1,032,000 | .00066 | .00075 | .00087 | 961,500 | — | — | — | — | — | — | — | — | 55 |

* Diameters shown are per NEMA MW1000-2015. For Diameters per NEMA MW1000-1997

** Diameters shown do not include those for Quad Build NEMA MW1000-2015 MW16C.

Blue text above indicates changes from NEMA MW1000-1997.

Red text above indicates sizes not covered by NEMA MW1000-2015.



Half-Size Copper Magnet Wire

Dimensional values derived from NEMA MW1000-2015 Standard

| SIZE (AWG) | BARE COPPER | | | | | | | | | SINGLE BUILD DIAMETER (INCHES) | | | HEAVY BUILD DIAMETER (INCHES) | | |
|---------------|----------------------|-------|-------|---|-------|-------|-------------------|---------------------------|--------------------------|-----------------------------------|-------|-------|----------------------------------|-------|-------|
| | DIAMETER (INCHES) | | | RESISTANCE (OHMS PER 1000 FT. AT 20°C) | | | FEET PER POUND | POUNDS PER 1000 FT. | CIRCULAR MILS NOMINAL | MIN. | NOM.* | MAX. | MIN. | NOM.* | MAX. |
| | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. | | | | | | | | | |
| 4½ | .1909 | .1928 | .1942 | .2753 | .2790 | .2846 | 8.86 | 112.9 | 37290 | | | | .1946 | .1964 | .1982 |
| 5½ | .1700 | .1717 | .1730 | .3469 | .3518 | .3589 | 11.17 | 89.55 | 29580 | | | | .1736 | .1753 | .1769 |
| 6½ | .1514 | .1529 | .1540 | .4373 | .4436 | .4524 | 14.08 | 71.04 | 23470 | | | | .1550 | .1565 | .1579 |
| 7½ | .1348 | .1362 | .1372 | .5510 | .5591 | .5707 | 17.76 | 56.31 | 18600 | | | | .1383 | .1397 | .1410 |
| 8½ | .1201 | .1213 | .1221 | .6956 | .7049 | .7190 | 22.38 | 44.68 | 14760 | .1218 | .1230 | .1241 | .1235 | .1247 | .1258 |
| 9½ | .1069 | .1080 | .1088 | .8745 | .8891 | .9075 | 28.22 | 35.44 | 11710 | .1086 | .1098 | .1108 | .1103 | .1114 | .1125 |
| 10½ | .0952 | .0962 | .0971 | 1.10 | 1.12 | 1.14 | 35.6 | 28.1 | 9270 | .0969 | .0980 | .0991 | .0985 | .0996 | .1007 |
| 11½ | .0847 | .0856 | .0864 | 1.39 | 1.41 | 1.44 | 44.9 | 22.3 | 7360 | .0863 | .0873 | .0883 | .0880 | .0890 | .0900 |
| 12½ | .0755 | .0763 | .0770 | 1.75 | 1.78 | 1.81 | 56.6 | 17.7 | 5840 | .0771 | .0780 | .0789 | .0787 | .0796 | .0805 |
| 13½ | .0672 | .0679 | .0685 | 2.22 | 2.24 | 2.29 | 71.4 | 14.0 | 4620 | .0688 | .0696 | .0704 | .0704 | .0712 | .0720 |
| 14½ | .0599 | .0605 | .0611 | 2.77 | 2.82 | 2.88 | 90.0 | 11.1 | 3670 | .0615 | .0622 | .0629 | .0630 | .0638 | .0645 |
| 15½ | .0534 | .0539 | .0544 | 3.49 | 3.56 | 3.64 | 113 | 8.83 | 2920 | .0549 | .0556 | .0563 | .0564 | .0571 | .0578 |
| 16½ | .0475 | .0480 | .0485 | 4.41 | 4.48 | 4.58 | 143 | 7.00 | 2310 | .0489 | .0496 | .0502 | .0503 | .0510 | .0516 |
| 17½ | .0423 | .0427 | .0431 | 5.56 | 5.66 | 5.77 | 180 | 5.55 | 1830 | .0436 | .0443 | .0449 | .0450 | .0456 | .0462 |
| 18½ | .0376 | .0380 | .0384 | 7.00 | 7.14 | 7.30 | 228 | 4.39 | 1450 | .0389 | .0395 | .0400 | .0401 | .0407 | .0413 |
| 19½ | .0336 | .0339 | .0342 | 8.81 | 8.97 | 9.19 | 286 | 3.50 | 1160 | .0348 | .0354 | .0359 | .0360 | .0366 | .0371 |
| 20½ | .0299 | .0302 | .0305 | 11.1 | 11.4 | 11.6 | 362 | 2.76 | 912 | .0310 | .0316 | .0321 | .0322 | .0327 | .0332 |
| 21½ | .0266 | .0269 | .0272 | 14.0 | 14.3 | 14.5 | 457 | 2.19 | 724 | .0277 | .0282 | .0287 | .0288 | .0293 | .0298 |
| 22½ | .0237 | .0239 | .0241 | 17.7 | 18.0 | 18.5 | 573 | 1.74 | 576 | .0247 | .0252 | .0257 | .0258 | .0263 | .0267 |
| 23½ | .0211 | .0213 | .0215 | 22.2 | 22.6 | 23.3 | 721 | 1.39 | 458 | .0221 | .0226 | .0230 | .0231 | .0236 | .0240 |
| 24½ | .0188 | .0190 | .0192 | 28.1 | 28.7 | 29.3 | 915 | 1.09 | 361 | .0197 | .0202 | .0206 | .0207 | .0211 | .0215 |
| 25½ | .0167 | .0169 | .0171 | 35.5 | 36.3 | 37.2 | 1160 | .865 | 286 | .0176 | .0180 | .0184 | .0185 | .0189 | .0193 |
| 26½ | .0149 | .0150 | .0152 | 44.3 | 45.5 | 46.7 | 1450 | .690 | 228 | .0157 | .0161 | .0165 | .0166 | .0170 | .0173 |
| 27½ | .0133 | .0134 | .0135 | 56.1 | 57.7 | 58.6 | 1840 | .543 | 180 | .0141 | .0145 | .0148 | .0149 | .0153 | .0156 |
| 28½ | .0118 | .0119 | .0120 | 70.8 | 73.2 | 74.5 | 2290 | .436 | 144 | .0126 | .0129 | .0132 | .0133 | .0137 | .0140 |
| 29½ | .0105 | .0106 | .0107 | 90.6 | 92.3 | 94.0 | 2940 | .340 | 112 | .0112 | .0115 | .0118 | .0119 | .0123 | .0126 |

* Nominal dimensional values calculated as the midpoint between minimum and maximum values. NEMA MW1000-2015 does not list "nominal" insulated values.

Sizes finer than 29½ AWG available upon request. For technical data on half-sizes finer than 29½AWG.

Diameters shown are per NEMA MW1000-2015. For Diameters per NEMA MW1000-1997.

Blue text above indicates changes from NEMA MW1000-1997.



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Copper Magnet Wire Data

Dimensional values derived from NEMA MW1000-1997 Standard

| SIZE (AWG) | SINGLE BUILD | | | | HEAVY BUILD | | | | TRIPLE BUILD | | | | QUADRUPLE BUILD | | | | SIZE (AWG) |
|------------|---------------------|--------|--------|----------------|---------------------|--------|--------|----------------|---------------------|--------|--------|----------------|---------------------|--------|--------|----------------|------------|
| | DIAMETER * (INCHES) | | | FEET PER POUND | DIAMETER * (INCHES) | | | FEET PER POUND | DIAMETER * (INCHES) | | | FEET PER POUND | DIAMETER * (INCHES) | | | FEET PER POUND | |
| | MIN. | NOM. | MAX. | | MIN. | NOM. | MAX. | | MIN. | NOM. | MAX. | | MIN. | NOM. | MAX. | | |
| 6 | .1622 | .1648 | .1665 | 12.545 | .1639 | .1659 | .1671 | 12.5 | .1651 | .1679 | .1688 | 12.455 | .1663 | .1685 | .1706 | 12.41 | 6 |
| 7 | .1446 | .1469 | .1485 | 15.81 | .1463 | .1481 | .1491 | 15.75 | .1475 | .1492 | .1508 | 15.69 | .1488 | .1506 | .1525 | 15.63 | 7 |
| 8 | .1288 | .1306 | .1324 | 19.93 | .1305 | .1322 | .1332 | 19.85 | .1317 | .1333 | .1348 | 19.77 | .1330 | .1349 | .1365 | 19.69 | 8 |
| 9 | .1149 | .1165 | .1181 | 25.12 | .1165 | .1177 | .1189 | 25 | .1177 | .1191 | .1205 | 24.88 | .1190 | .1205 | .1221 | 24.76 | 9 |
| 10 | .1024 | .1039 | .1054 | 31.66 | .1040 | .1051 | .1061 | 31.5 | .1052 | .1064 | .1076 | 31.34 | .1065 | .1078 | .1092 | 31.18 | 10 |
| 11 | .0913 | .0927 | .0941 | 39.6 | .0928 | .0938 | .0948 | 39 | .0940 | .0952 | .0963 | 38.4 | .0952 | .0965 | .0978 | 38.34 | 11 |
| 12 | .0814 | .0827 | .0840 | 50.25 | .0829 | .0838 | .0847 | 49.9 | .0840 | .0851 | .0861 | 49.55 | .0852 | .0864 | .0876 | 49.2 | 12 |
| 13 | .0727 | .0739 | .0750 | 63.3 | .0741 | .0749 | .0757 | 62.9 | .0752 | .0762 | .0771 | 62.5 | .0763 | .0774 | .0785 | 62.1 | 13 |
| 14 | .0651 | .0659 | .0666 | 79.94 | .0667 | .0675 | .0682 | 79.18 | .0683 | .0692 | .0700 | 78.42 | .0684 | .0696 | .0709 | 77.66 | 14 |
| 15 | .0580 | .0587 | .0594 | 100.4 | .0595 | .0602 | .0609 | 99.7 | .0610 | .0619 | .0627 | 99 | .0613 | .0625 | .0638 | 98.3 | 15 |
| 16 | .0517 | .0524 | .0531 | 126.8 | .0532 | .0539 | .0545 | 125.6 | .0546 | .0554 | .0562 | 124.4 | .0549 | .0561 | .0572 | 123.2 | 16 |
| 17 | .0462 | .0469 | .0475 | 159.4 | .0476 | .0482 | .0488 | 157.7 | .0489 | .0497 | .0504 | 156 | .0493 | .0504 | .0515 | 154.3 | 17 |
| 18 | .0412 | .0418 | .0424 | 201.1 | .0425 | .0431 | .0437 | 199.2 | .0438 | .0445 | .0452 | 197.3 | .0443 | .0454 | .0464 | 195.4 | 18 |
| 19 | .0367 | .0373 | .0379 | 253.2 | .0380 | .0386 | .0391 | 250.6 | .0392 | .0399 | .0406 | 248 | .0397 | .0407 | .0418 | 245.4 | 19 |
| 20 | .0329 | .0334 | .0339 | 318.4 | .0340 | .0346 | .0351 | 314.5 | .0352 | .0358 | .0364 | 310.6 | .0357 | .0366 | .0376 | 306.7 | 20 |
| 21 | .0293 | .0298 | .0303 | 400.6 | .0304 | .0309 | .0314 | 395.3 | .0315 | .0321 | .0326 | 390 | .0321 | .0330 | .0339 | 384.7 | 21 |
| 22 | .0261 | .0266 | .0270 | 507.1 | .0271 | .0276 | .0281 | 502.5 | .0282 | .0288 | .0293 | 497.9 | .0287 | .0296 | .0305 | 493.3 | 22 |
| 23 | .0234 | .0239 | .0243 | 633.7 | .0244 | .0249 | .0253 | 625 | .0254 | .0259 | .0264 | 616.3 | .0260 | .0268 | .0277 | 607.6 | 23 |
| 24 | .0209 | .0213 | .0217 | 804.5 | .0218 | .0223 | .0227 | 790.5 | .0228 | .0233 | .0238 | 776.5 | .0234 | .0242 | .0250 | 762.5 | 24 |
| 25 | .0186 | .0190 | .0194 | 1010 | .0195 | .0199 | .0203 | 992.1 | .0204 | .0209 | .0214 | 974.2 | .0211 | .0219 | .0226 | 956.3 | 25 |
| 26 | .0166 | .0170 | .0173 | 1279 | .0174 | .0178 | .0182 | 1254 | .0183 | .0188 | .0193 | 1229 | .0189 | .0196 | .0204 | 1204 | 26 |
| 27 | .0149 | .0153 | .0156 | 1600 | .0157 | .0161 | .0164 | 1571 | .0165 | .0169 | .0173 | 1542 | .0171 | .0177 | .0184 | 1513 | 27 |
| 28 | .0133 | .0137 | .0140 | 2028 | .0141 | .0144 | .0147 | 1987 | .0148 | .0152 | .0156 | 1946 | .0154 | .0159 | .0165 | 1905 | 28 |
| 29 | .0119 | .0123 | .0126 | 2513 | .0127 | .0130 | .0133 | 2463 | .0134 | .0138 | .0142 | 2413 | .0140 | .0145 | .0151 | 2363 | 29 |
| 30 | .0106 | .0109 | .0112 | 3208 | .0113 | .0116 | .0119 | 3136 | .0120 | .0124 | .0128 | 3064 | .0126 | .0131 | .0136 | 2992 | 30 |
| 31 | .0094 | .0097 | .0100 | 4052 | .0101 | .0105 | .0108 | 3948 | .0108 | .0110 | .0114 | 3844 | .0114 | .0118 | .0121 | 3740 | 31 |
| 32 | .0085 | .0088 | .0091 | 4995 | .0091 | .0095 | .0098 | 4873 | .0097 | .0101 | .0103 | 4751 | .0103 | .0107 | .0110 | 4629 | 32 |
| 33 | .0075 | .0078 | .0081 | 6337 | .0081 | .0085 | .0088 | 6161 | .0086 | .0090 | .0092 | 5985 | .0092 | .0096 | .0099 | 5809 | 33 |
| 34 | .0067 | .0070 | .0072 | 8055 | .0072 | .0075 | .0078 | 7837 | .0077 | .0080 | .0082 | 7619 | .0082 | .0085 | .0088 | 7401 | 34 |
| 35 | .0059 | .0062 | .0064 | 10250 | .0064 | .0067 | .0070 | 9891 | .0068 | .0071 | .0074 | 9532 | .0073 | .0076 | .0079 | 9173 | 35 |
| 36 | .0053 | .0056 | .0058 | 12800 | .0057 | .0060 | .0063 | 12380 | .0061 | .0064 | .0067 | 11960 | .0065 | .0068 | .0071 | 11540 | 36 |
| 37 | .0047 | .0050 | .0052 | 15750 | .0052 | .0055 | .0057 | 15290 | .0056 | .0059 | .0060 | 14830 | .0060 | .0063 | .0065 | 14370 | 37 |
| 38 | .0042 | .0045 | .0047 | 20020 | .0046 | .0049 | .0051 | 19360 | .0049 | .0052 | .0054 | 18700 | .0053 | .0056 | .0058 | 18040 | 38 |
| 39 | .0036 | .0039 | .0041 | 26240 | .0040 | .0043 | .0045 | 25270 | .0043 | .0046 | .0048 | 24300 | .0046 | .0049 | .0051 | 23330 | 39 |
| 40 | .0032 | .0035 | .0037 | 33330 | .0036 | .0038 | .0040 | 31940 | .0039 | .0041 | .0043 | 30550 | .0042 | .0044 | .0046 | 29160 | 40 |
| 41 | .0029 | .0031 | .0033 | 40800 | .0032 | .0034 | .0036 | 39340 | .0034 | .0036 | .0039 | 37880 | .0037 | .0039 | .0041 | 36420 | 41 |
| 42 | .0026 | .0028 | .0030 | 50940 | .0028 | .0030 | .0032 | 49600 | .0030 | .0032 | .0035 | 48260 | .0032 | .0034 | .0036 | 46920 | 42 |
| 43 | .0023 | .0025 | .0026 | 66140 | .0025 | .0027 | .0029 | 63170 | .0027 | .0029 | .0032 | 60200 | .0029 | .0031 | .0033 | 57230 | 43 |
| 44 | .0020 | .0022 | .0024 | 80060 | .0023 | .0025 | .0027 | 76160 | .0025 | .0027 | .0029 | 72260 | .0027 | .0029 | .0031 | 68360 | 44 |
| 45 | .00179 | .00192 | .00205 | 103,500 | .00199 | .00215 | .00230 | 99,110 | .00219 | .00237 | .00255 | 94,720 | .00239 | .00260 | .00280 | 90,330 | 45 |
| 46 | .00161 | .00173 | .00185 | 130,000 | .00181 | .00196 | .00210 | 123,800 | .00201 | .00218 | .00235 | 117,600 | .00221 | .00241 | .00260 | 111,400 | 46 |
| 47 | .00145 | .00158 | .00170 | 163,400 | .00165 | .00178 | .00190 | 154,600 | .00185 | .00198 | .00210 | 145,800 | .00205 | .00218 | .00230 | 137,000 | 47 |
| 48 | .00129 | .00140 | .00150 | 204,900 | .00139 | .00155 | .00170 | 196,900 | .00159 | .00175 | .00190 | 188,900 | .00169 | .00190 | .00210 | 180,900 | 48 |
| 49 | .00117 | .00124 | .00130 | 259,700 | .00127 | .00139 | .00150 | 247,500 | .00147 | .00159 | .00170 | 235,300 | .00157 | .00174 | .00190 | 223,100 | 49 |
| 50 | .00105 | .00113 | .00120 | 324,700 | .00115 | .00128 | .00140 | 307,700 | .00125 | .00143 | .00160 | 290,700 | .00135 | .00158 | .00180 | 273,700 | 50 |
| 51 | .00095 | .00103 | .00110 | 406,500 | .00105 | .00117 | .00129 | 383,100 | .00115 | .00133 | .00150 | 359,700 | .00125 | .00148 | .00170 | 336,300 | 51 |
| 52 | .00085 | .00093 | .00100 | 507,600 | .00095 | .00107 | .00105 | 476,200 | .00105 | .00123 | .00140 | 444,800 | .00115 | .00138 | .00160 | 413,400 | 52 |
| 53 | .00072 | .00079 | .00085 | 653,600 | .00080 | .00090 | .00103 | 621,100 | .00087 | .00104 | .00121 | 588,600 | .00097 | .00118 | .00139 | 556,100 | 53 |
| 54 | .00065 | .00070 | .00075 | 826,400 | .00073 | .00082 | .00095 | 775,200 | — | — | — | — | — | — | — | — | 54 |
| 55 | .00058 | .00064 | .00070 | 1,032,000 | .00066 | .00075 | .00087 | 961,500 | — | — | — | — | — | — | — | — | 55 |

*Diameters shown are per NEMA MW1000-1997. For Diameters per [NEMA MW1000-2015](#).

Red text above indicates sizes not covered by NEMA MW1000-1997.



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Half-Size Copper Magnet Wire

Dimensional values derived from NEMA MW1000-1997 Standard

| SIZE (AWG) | BARE COPPER | | | | | | | | | SINGLE BUILD DIAMETER (INCHES) | | | HEAVY BUILD DIAMETER (INCHES) | | |
|---------------|----------------------|--------|--------|---|-------|-------|-------------------|---------------------------|---------------|-----------------------------------|--------|--------|----------------------------------|--------|--------|
| | DIAMETER (INCHES) | | | RESISTANCE (OHMS PER 1000 FT. AT 20°C) | | | FEET PER POUND | POUNDS PER 1000 FT. | CIRCULAR MILS | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. |
| | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. | | | | | | | | | |
| 4½ | .1912 | .1931 | .1950 | .2727 | .2781 | .2837 | 8.86 | 112.9 | 37290 | | | | .1949 | .1968 | .1986 |
| 5½ | .1703 | .1720 | .1737 | .3437 | .3506 | .3576 | 11.17 | 89.55 | 29580 | | | | .1736 | .1754 | .1772 |
| 6½ | .1517 | .1532 | .1547 | .4334 | .4419 | .4507 | 14.08 | 71.04 | 23470 | | | | .1549 | .1566 | .1582 |
| 7½ | .1350 | .1364 | .1378 | .5462 | .5574 | .5682 | 17.76 | 56.31 | 18600 | | | | .1382 | .1398 | .1413 |
| 8½ | .1203 | .1215 | .1227 | .6889 | .7025 | .7178 | 22.38 | 44.68 | 14760 | | | | .1234 | .1248 | .1261 |
| 9½ | .1071 | .1082 | .1093 | .8697 | .8859 | .9025 | 28.22 | 35.44 | 11710 | | | | .1101 | .1114 | .1126 |
| 10½ | .0952 | .0962 | .0972 | 1.10 | 1.12 | 1.14 | 35.6 | 28.1 | 9270 | | | | .0983 | .0994 | .1004 |
| 11½ | .0847 | .0856 | .0865 | 1.38 | 1.41 | 1.44 | 44.9 | 22.3 | 7360 | | | | .0877 | .0887 | .0897 |
| 12½ | .0755 | .0763 | .0771 | 1.74 | 1.78 | 1.81 | 56.6 | 17.7 | 5840 | | | | .0784 | .0793 | .0802 |
| 13½ | .0672 | .0679 | .0686 | 2.20 | 2.24 | 2.29 | 71.4 | 14.0 | 4620 | | | | .0700 | .0708 | .0716 |
| 14½ | .0599 | .0605 | .0611 | 2.77 | 2.82 | 2.88 | 90.0 | 11.1 | 3670 | .0615 | .0623 | .0630 | .0631 | .0639 | .0646 |
| 15½ | .0534 | .0539 | .0544 | 3.49 | 3.56 | 3.64 | 113 | 8.83 | 2920 | .0549 | .0555 | .0561 | .0564 | .0570 | .0576 |
| 16½ | .0475 | .0480 | .0485 | 4.41 | 4.48 | 4.58 | 143 | 7.00 | 2310 | .0489 | .0496 | .0503 | .0504 | .0511 | .0517 |
| 17½ | .0423 | .0427 | .0431 | 5.56 | 5.66 | 5.77 | 180 | 5.55 | 1830 | .0437 | .0443 | .0448 | .0451 | .0457 | .0463 |
| 18½ | .0376 | .0380 | .0384 | 7.00 | 7.14 | 7.30 | 228 | 4.39 | 1450 | .0389 | .0395 | .0401 | .0402 | .0408 | .0414 |
| 19½ | .0336 | .0339 | .0342 | 8.81 | 8.97 | 9.19 | 286 | 3.50 | 1160 | .0348 | .0353 | .0358 | .0361 | .0366 | .0370 |
| 20½ | .0299 | .0302 | .0305 | 11.1 | 11.4 | 11.6 | 362 | 2.76 | 912 | .0311 | .0316 | .0321 | .0322 | .0328 | .0333 |
| 21½ | .0266 | .0269 | .0272 | 14.0 | 14.3 | 14.5 | 457 | 2.19 | 724 | .0277 | .0282 | .0287 | .0288 | .0293 | .0298 |
| 22½ | .0237 | .0239 | .0241 | 17.7 | 18.0 | 18.5 | 573 | 1.74 | 576 | .0248 | .0252 | .0255 | .0258 | .0262 | .0266 |
| 23½ | .0211 | .0213 | .0215 | 22.2 | 22.6 | 23.3 | 721 | 1.39 | 458 | .0221 | .0226 | .0230 | .0231 | .0236 | .0240 |
| 24½ | .0188 | .0190 | .0192 | 28.1 | 28.7 | 29.3 | 915 | 1.09 | 361 | .0198 | .0202 | .0206 | .0207 | .0212 | .0216 |
| 25½ | .0167 | .0169 | .0171 | 35.5 | 36.3 | 37.2 | 1160 | .865 | 286 | .0176 | .0180 | .0184 | .0185 | .0189 | .0193 |
| 26½ | .0148 | .0150 | .0152 | 44.3 | 45.5 | 46.7 | 1450 | .690 | 228 | .0158 | .0162 | .0165 | .0166 | .0170 | .0174 |
| 27½ | .0133 | .0134 | .0135 | 56.1 | 57.7 | 58.6 | 1840 | .543 | 180 | .0141 | .0145 | .0148 | .0149 | .0153 | .0156 |
| 28½ | .0118 | .0119 | .0120 | 70.8 | 73.2 | 74.5 | 2290 | .436 | 144 | .0126 | .0130 | .0133 | .0134 | .0137 | .0140 |
| 29½ | .0105 | .0106 | .0107 | 90.6 | 92.3 | 94.0 | 2940 | .340 | 112 | .0112 | .0116 | .0119 | .0120 | .0123 | .0126 |
| 30½ | .0094 | .0095 | .0096 | 112.5 | 114.9 | 117.4 | 3660 | .2732 | 90.25 | .0101 | .0104 | .0107 | .0108 | .0111 | .0114 |
| 31½ | .0083 | .0084 | .0085 | 143.5 | 147.0 | 150.5 | 4680 | .2136 | 70.56 | .0089 | .0092 | .0095 | .0096 | .0099 | .0103 |
| 32½ | .0074 | .0075 | .0076 | 179.6 | 184.4 | 189.4 | 5870 | .1703 | 56.25 | .0080 | .0083 | .0086 | .0086 | .0090 | .0093 |
| 33½ | .0066 | .0067 | .0068 | 224.3 | 231.0 | 238.1 | 7360 | .1359 | 44.89 | .0071 | .0074 | .0077 | .0077 | .0081 | .0084 |
| 34½ | .0058 | .0059 | .0060 | 288.1 | 297.9 | 308.3 | 9490 | .1054 | 34.81 | .0063 | .0065 | .0068 | .0068 | .0071 | .0074 |
| 35½ | .0052 | .0053 | .0054 | 355.7 | 369.2 | 383.5 | 11760 | .08503 | 28.09 | .0056 | .0058 | .0061 | .0061 | .0064 | .0067 |
| 36½ | .0046 | .0047 | .0048 | 450.1 | 469.5 | 490.1 | 14950 | .06687 | 22.09 | .0050 | .0053 | .0055 | .0054 | .0057 | .0060 |
| 37½ | .0041 | .0042 | .0043 | 560.9 | 587.9 | 617.0 | 18730 | .05340 | 17.64 | .0044 | .0047 | .0050 | .0049 | .0052 | .0054 |
| 38½ | .0036 | .0037 | .0038 | 718.2 | 757.7 | 800.2 | 24130 | .04144 | 13.69 | .0038 | .0041 | .0044 | .0043 | .0046 | .0048 |
| 39½ | .0032 | .0033 | .0034 | 897.1 | 952.3 | 1013 | 30340 | .03296 | 10.89 | .0034 | .0037 | .0039 | .0038 | .0041 | .0043 |
| 40½ | .0029 | .0030 | .0031 | 1079 | 1152 | 1233 | 36710 | .02724 | 9.00 | .0031 | .0034 | .0036 | .0035 | .0037 | .0039 |
| 41½ | .0025 | .0026 | .0027 | 1423 | 1534 | 1659 | 48880 | .02046 | 6.76 | .0027 | .0029 | .0031 | .0030 | .0032 | .0034 |
| 42½ | .0023 | .0024 | .0025 | 1659 | 1801 | 1960 | 57340 | .01744 | 5.76 | .0025 | .0026 | .0028 | .0027 | .0029 | .0031 |
| 43½ | .0020 | .0021 | .0022 | 2143 | 2352 | 2593 | 74900 | .01335 | 4.41 | .0021 | .0023 | .0025 | .0024 | .0026 | .0028 |
| 44½ | .0018 | .0019 | .0020 | 2593 | 2873 | 3201 | 91490 | .01093 | 3.61 | .0019 | .0021 | .0023 | .0022 | .0024 | .0026 |
| 45½ | .00160 | .00166 | .00173 | 3465 | 3764 | 4051 | 119,900 | .00834 | 2.7556 | .00170 | .00182 | .00194 | .00190 | .00205 | .00220 |
| 46½ | .00142 | .00148 | .00154 | 4373 | 4735 | 5143 | 150,800 | .00663 | 2.1904 | .00152 | .00163 | .00174 | .00172 | .00186 | .00200 |
| 47½ | .00127 | .00132 | .00137 | 5526 | 5952 | 6430 | 189,700 | .00527 | 1.7424 | .00137 | .00148 | .00159 | .00157 | .00169 | .00181 |
| 48½ | .00113 | .00117 | .00122 | 6968 | 7576 | 8122 | 241,500 | .00414 | 1.3689 | .00123 | .00133 | .00143 | .00133 | .00144 | .00155 |
| 49½ | .00101 | .00105 | .00109 | 8729 | 9407 | 10167 | 299,400 | .00334 | 1.1025 | .00111 | .00119 | .00127 | .00121 | .00132 | .00143 |
| 50½ | .00090 | .00093 | .00097 | 11022 | 11991 | 12804 | 382,000 | .002618 | .8649 | .00100 | .00108 | .00115 | .00110 | .00121 | .00132 |

Diameters shown are per NEMA MW1000-1997. For Diameters per [NEMA MW1000-2015](#)



佳昭企業有限公司
NEARSON ENTERPRISE CORP.