ENAMELLED COPPER WIRES

KIN COPPER ELECTRIC

ESSEX (GP/MR) 200°C

Modified Polyester/Polyamide Imide Coated Enamelled Copper Wire, Class H 200˚C IEC 60317, JIS C3202, NEMA 35-C

No.	Stock Code	SWG	MM	Packing	Price/Kg (RM)
1	SAIEI3200	10	3.20	PT25	
2	SAIEI3000	10 ½	3.00	PT25	
3	SAIEI2900	11	2.90	PT25	
4	SAIEI2800	11 ½	2.80	PT25	
5	SAIEI2600	12	2.60	PT25	
6	SAIEI2500	12 ½	2.50	PT25	
7	SAIEI2300	13	2.30	PT25	
8	SAIEI2100	13 ½	2.10	PT25	
9	SAIEI2000	14	2.00	PT25	
10	SAIEI1900	14 ½	1.90	PT25	
11	SAIEI1800	15	1.80	PT25	
12	SAIEI1700	15 ½	1.70	PT25	
13	SAIEI1600	16	1.60	PT25	
14	SAIEI1500	16 ½	1.50	PT25	
15	SAIEI1450	16 ½	1.45	PT25	
16	SAIEI1400	17	1.40	PT25	
17	SAIEI1300	17 ½	1.30	PT25	
18	SAIEI1250	18	1.25	PT25	
19	SAIEI1200	18	1.20	PT25	
20	SAIEI1150	18 ½	1.15	PT25	
21	SAIEI1100	18 ½	1.10	PT25	
22	SAIEI1050	19	1.05	PT25	
23	SAIEI1000	19	1.00	PT25	
24	SAIEI0950	19 ½	0.95	PT25	
25	SAIEI0900	20	0.90	PT25	
26	SAIEI0850	20 ½	0.85	PT25	
27	SAIEI0800	21	0.80	PT25	
28	SAIEI0750	21 ½	0.75	PT25	
29	SAIEI0700	22	0.70	PT25	
30	SAIEI0670	22 ½	0.67	PT25	
31	SAIEI0650	22 ½	0.65	PT25	
32	SAIEI0600	23	0.60	PT25	
33	SAIEI0550	24	0.55	PT25	
34	SAIEI0500	25	0.50	PT25	
35	SAIEI0450	26	0.45	PT25	
36	SAIEI0400	27	0.40	PT25	
37	SAIEI0370	28	0.37	PT25	
38	SAIEI0350	29	0.35	PT25	
39	SAIEI0320	30	0.32	PT25	

* This type of enamelled wire exhibits good solvent & abrasion resistance as well as high tolerance of overload.
* Applications: HVT coil for transformer, motor for automobile, electric devices, transformers, motors used in Freon gas.



ENAMELLED COPPER WIRES

KIN COPPER ELECTRIC

ESSEX (GP/MR) 200°C

Modified Polyester/Polyamide Imide Coated Enamelled Copper Wire, Class H 200˚C IEC 60317, JIS C3202, NEMA 35-C

No.	Stock Code	SWG	MM	Packing	Price/Kg (RM)
40	SAIEI0300	30 ½	0.30	PT25	
41	SAIEI0290	31	0.29	PT25	
42	SAIEI0270	32	0.27	PT25	
43	SAIEI0250	33	0.25	PT25	
44	SAIEI0230	34	0.23	PT25	
45	SAIEI0210	35	0.21	PT25	
46	SAIEI0200	35 ½	0.20	PT25	
47	SAIEI0190	36	0.19	PT25	
48	SAIEI0170	37	0.17	PT25	
49	SAIEI0150	38	0.15	PT25	
50	SAIEI0100	42	0.10	PT25	

* This type of enamelled wire exhibits good solvent & abrasion resistance as well as high tolerance of overload.
* Applications: HVT coil for transformer, motor for automobile, electric devices, transformers, motors used in Freon gas.



GP/MR-200® HD

Magnet Wire / Winding Wire

PRODUCT DATA SHEET

NEMA MW36-C

Class 200 - Rectangular Copper
Polyester/Polyamideimide coated magnet wire / winding wire

GP/MR-200® HD has been engineered to provide enhance dielectric breakdown voltage, adhesion, scrape abrasion, and chemical resistance with excellent thermal properties. Product meets and exceeds all of the requirements of NEMA MW 36-C.

Product Attributes

- Superior dielectric values
- Excellent unilateral and repeated scrape abrasion resistance
- Excellent heat shock resistance
- High moisture and chemical resistance



Engineering Highlights

Performance data is representative of rectangular heavy build GP/MR-200® HD copper magnet wire†

	Required Performance - MW 1000	Typical Performance
Thermal Stability	200°C min.	213°C
Thermoplastic Flow	300°C min., CU	395°C
Adherence and Flexibility	30% elong., no cracks, CU	No cracks
Elongation	30% min.	40%
Heat Shock Resistance	220°C, 15% elong.	No cracks
Dielectric Breakdown (AC)	12" shot box, no elong., straight, l,500V	Exceeds 5kV
Dielectric Breakdown (AC)	10% elong., 90° flat bend, l,500V	Exceeds 5kV
Dielectric Breakdown (AC)	10% elong., 90° edge bend, l,500V	Exceeds 5kV
Chemical Resistance	Passes all NEMA chemical resistance requirements	

† *The values shown represent typical average results and are not intended to be used as design data or specification limits.*

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ESSEX®

GP/MR-200®

Magnet Wire | Winding Wire

Product Data Sheet



NEMA	MW 35, MW 36, MW 73
Thermal Class	200°C (Copper), 220°C (Aluminum)
Conductor	Copper and Aluminum
Shape	Round, Square and Rectangular
Insulation Material	Polyester/ Polyamide-imide
Size Range	Round Copper: Single Build: 14-33 AWG; Heavy Build: 4-33 AWG, Round Aluminum: Single Build: 14-22 AWG; Heavy Build: 2-22 AWG, Square and Rectangular
Key Applications	Fractional and Integral HP Motors Hermetic Motors DC Motors Power Tools Automotive Alternators and Generators All Dry Type Transformers, Class 105 through 200 Electronics, All Types of Coils, Class 105 Through 200

PRODUCT DESCRIPTION

GP/MR-200® magnet wire is the standard of comparison for magnet wire performance in virtually every severe and heavy duty application. The combination of a modified Polyester basecoat and an improved Polyamide-imide topcoat results in an insulation system with outstanding physical toughness, excellent dielectric properties, and superior chemical resistance to most common solvents and refrigerants.

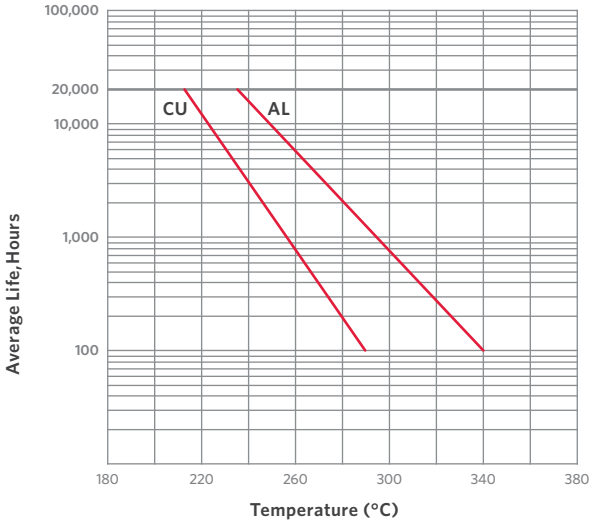
Windability of GP/MR-200® magnet wire, verified by years of experience on virtually every type of winder, has always been excellent. Improvements in the topcoat have resulted in a product that is even more superior with regard to high slot fill and insertability.

FEATURES AND BENEFITS

Thermal Classification	GP/MR-200® magnet wire is classified as Class 200°C on Copper conductor and Class 220°C on Aluminum.
Thermoplastic Flow	GP/MR-200® Copper magnet wire has excellent thermoplastic flow (cut-thru) properties, with typical test values near 390°C.
Windability	The windability of GP/MR-200® magnet wire is excellent, and has been recently improved in the areas of lubricity and scrape resistance. This has been accomplished without sacrificing other key thermal and chemical properties.
Electrical	GP/MR-200® magnet wire insulation exhibits high dielectric strength retention under high moisture conditions. Hydrolysis resistance is excellent.
Chemical	As shown by property data presented elsewhere in this brochure, resistance of GP/MR-200® magnet wire to both traditional refrigerants and replacement refrigerants (for CFC's and HCFC's) is excellent. GP/MR-200® magnet wire has been the standard for hermetic applications virtually since its inception.
Stripping Method	Insulation piercing, mechanical stripping, hot staking and flame welding processes can all be used with copper GP/MR-200® magnet wire. Flame welding processes are not recommended for aluminum GP/MR-200® magnet wire. If the connection is to be soldered, the insulation must be removed prior to soldering.
Normal Availability	• Round Copper Sizes: 14-33 AWG, Single Build 4-33 AWG, Heavy Build • Round Aluminum Sizes: 14-22 AWG, Single Build 2-22 AWG, Heavy Build • Square and Rectangular Please consult Magnet Wire Marketing for additional sizes (including metric) and build information

THERMAL ENDURANCE

18 AWG Heavy Build CU/AL



GP/MR-200®

Magnet Wire | Winding Wire

PROPERTIES

		TEST DETAILS	TYPICAL PERFORMANCE*	REQUIRED PERFORMANCE**
THERMAL				
Heat Shock Resistance		20% Elongation, 220°C x 0.5hr	1xD, no cracks	3xD, no cracks
Thermal Endurance		20,000 hrs, per ASTM D 2307	213°C (CU), 236°C (AL)	≥ 200°C (CU), ≥ 220°C (AL)
Thermoplastic Flow		Crossing method, 5°C/minute rise rate	395°C, 2kg weight (CU only)	≥ 300°C, 2kg weight (CU only)
PHYSICAL				
Abrasion Resistance		Unidirectional Scrape	1550g (CU), 1500g (AL)	≥ 980g & ≥ 1150g avg (CU), ≥ 590g & ≥ 690g avg (AL)
		Repeated Scrape	150 strokes, 700g weight (CU)	-
Adherence and Flexibility		20% Elongation, mandrel wrap (CU), 15% Elongation, mandrel wrap (AL)	1xD, no cracks (CU), 2xD, no cracks (AL)	3xD, no cracks (CU & AL)
Coefficient of Friction		Dynamic Coefficient of Friction per MW 750	Dry Lube: .02 - .06 (CU & AL)	-
Elongation		Elongate to break	38% (CU), 25% (AL)	≥ 32% (CU), ≥ 15% (AL)
Springback		Mandrel wrap	54° (CU)	≤ 58° (CU)
ELECTRICAL				
Continuity		100 ft, graphite fiber brush	≤ 1 fault @ 1500 VDC (CU & AL)	≤ 5 fault @ 1500 VDC (CU), ≤ 10 fault @ 1500 VDC (AL)
Dielectric Breakdown Voltage	Room Temperature	Twisted pairs @ ambient	12,200 volts (CU), 10,000 volts (AL)	≥ 5,700 volts (CU & AL)
	Rated Temperature	Twisted pairs @ 200°C	10,300 volts	≥ 4,275 volts
CHEMICAL				
Solubility		Immersed in 60°C Xylene solvent x 0.5hr, needle scrape	Passes	≥ 575g (CU), ≥ 345g (AL)
		Immersed in 60°C Xylene/Butyl solvent x 0.5hr, needle scrape	Passes	≥ 575g (CU), ≥ 345g (AL)
Other Solvents		Petroleum naphtha, 3% toluene, ethanol, 5% sulfuric acid, 1% potassium hydroxide, butyl acetate, acetone for 24 hours at room temperature.	Passes	≥ 575g (CU), ≥ 345g (AL)
Refrigerant Resistance			Refrigerant	
	Extraction	≤ 85% of refrigerant critcal pressure x 6 hour, collect residue, measure percent of insulation weight loss	R22	0.15%
			R134a	0.03%
			R123	0.14%
				≤ 0.25%
	Dielectric Breakdown after Conditioning	Twisted pairs, exposed to refrigerant at 75-85% of critical pressure x 72 hours	R22	13,000 volts
			R134a	14,300 volts
			R123	14,900 volts
				≥ 5,700 volts

** Performance data is representative of 18 AWG heavy build Copper or Aluminum magnet wire where applicable.*

*** Requirements for 18 AWG heavy build per NEMA MW 35, MW 36 and MW 73.*

CLASS ONE ENAMELLED WIRE

JIS Standard

Conductor		Minimun thickness of film (mm)	Overall Dia.		Weight (kg/km)	Conductor Resistance 20°C (Ω/km)	
Dia (mm)	Tolerance of Dia. +_(mm)		Standard (mm)	Max. (mm)	Copper	Copper	
						Standard	Max.
3.20	0.030	0.034	3.303	3.338	72.2	2.144	2.184
3.00	0.030	0.034	3.098	3.128	63.4	2.439	2.488
2.90	0.030	0.034	2.998	3.028	59.3	2.610	2.665
2.80	0.030	0.034	2.898	2.928	55.3	2.800	2.860
2.70	0.030	0.034	2.798	2.828	51.4	3.011	3.079
2.60	0.030	0.034	2.698	2.728	47.7	3.247	3.323
2.50	0.030	0.034	2.598	2.628	44.1	3.512	3.598
2.40	0.025	0.033	2.496	2.526	40.7	3.811	3.891
2.30	0.025	0.032	2.393	2.422	37.4	4.150	4.241
2.20	0.025	0.032	2.293	2.322	34.2	4.536	4.640
2.10	0.025	0.031	2.191	2.220	31.2	4.978	5.098
2.00	0.025	0.030	2.089	2.118	28.3	5.488	5.627
1.90	0.025	0.030	1.989	2.018	25.5	6.081	6.244
1.80	0.025	0.029	1.886	1.914	22.9	6.775	6.967
1.70	0.025	0.029	1.786	1.814	20.5	7.596	7.824
1.60	0.025	0.028	1.684	1.712	18.2	8.575	8.849
1.50	0.016	0.028	1.584	1.612	16.0	9.756	9.967
1.40	0.016	0.027	1.481	1.508	13.9	11.20	11.46
1.30	0.016	0.027	1.381	1.408	12.0	12.99	13.31
1.20	0.012	0.026	1.278	1.304	10.2	15.24	15.55
1.10	0.012	0.026	1.178	1.204	8.63	18.14	18.54
1.00	0.012	0.025	1.076	1.102	7.14	21.95	22.84
0.95	0.010	0.024	1.018	1.038	6.44	24.32	24.84
0.90	0.010	0.023	0.966	0.986	5.78	27.10	27.71
0.85	0.010	0.022	0.914	0.934	5.16	30.38	31.11
0.80	0.001	0.021	0.862	0.882	4.57	34.30	35.174
0.75	0.008	0.020	0.810	0.830	4.02	39.03	39.87
0.70	0.008	0.019	0.757	0.776	3.50	44.80	45.84
0.65	0.008	0.018	0.705	0.724	3.02	51.96	53.26
0.60	0.008	0.017	0.653	0.672	2.58	60.98	62.63
0.55	0.006	0.017	0.602	0.620	2.17	72.57	74.72
0.50	0.006	0.017	0.547	0.560	1.80	87.81	90.68
0.45	0.006	0.016	0.495	0.508	1.46	109.2	113.1
0.40	0.005	0.015	0.443	0.456	1.15	138.2	141.6
0.37	0.005	0.014	0.411	0.424	0.99	161.5	165.9
0.35	0.005	0.014	0.390	0.402	0.88	180.5	185.7
0.32	0.005	0.014	0.360	0.372	0.74	215.9	222.7
0.30	0.005	0.014	0.340	0.352	0.65	245.6	257.3
0.29	0.004	0.013	0.328	0.340	0.61	266.3	273.8
0.28	0.004	0.013	0.318	0.330	0.57	285.7	294.0
0.27	0.004	0.013	0.308	0.320	0.53	307.3	316.5
0.26	0.004	0.013	0.298	0.310	0.49	331.4	341.7
0.25	0.004	0.013	0.287	0.298	0.46	358.4	370.1
0.24	0.004	0.013	0.277	0.288	0.42	388.9	402.1
0.23	0.004	0.013	0.267	0.278	0.39	423.4	438.5
0.22	0.004	0.012	0.255	0.266	0.35	462.8	480.1
0.21	0.003	0.012	0.245	0.256	0.32	507.9	522.7
0.20	0.003	0.012	0.235	0.246	0.29	560.0	577.1
0.19	0.003	0.012	0.225	0.236	0.27	620.5	640.5
0.18	0.003	0.012	0.215	0.226	0.24	691.4	714.9
0.17	0.003	0.011	0.203	0.214	0.21	775.1	803.1
0.16	0.003	0.011	0.193	0.204	0.19	875.0	908.7
0.15	0.003	0.010	0.181	0.192	0.17	995.6	1,036
0.14	0.003	0.010	0.171	0.182	0.15	1,143	1,193
0.13	0.003	0.010	0.161	0.172	0.13	1,325	1,388
0.12	0.003	0.010	0.151	0.162	0.110	1,556	1,636
0.11	0.003	0.009	0.139	0.150	0.091	1,851	1,956
0.10	0.003	0.009	0.129	0.140	0.076	2,240	2,380

CLASS TWO, THREE ENAMELLED WIRES

JIS Standard

Conductor		Class Two				Class Three				Conductor Resistance	
Dia (mm)	Tolerance of Dia. +_(mm)	Minimun thickness of film (mm)	Overall Dia.		Weight (kg/km) (mm)	Minimun thickness of film (mm)	Overall Dia.		Weight (kg/km) (mm)	20°C (Ω/km)	
			Standard (mm)	Max. (mm)			Standard (mm)	Max. (mm)		Standard	Max.
1.00	0.013	0.017	1.048	1.062	7.08	-	-	-	-	21.95	22.49
0.95	0.010	0.017	0.996	1.008	6.39	-	-	-	-	24.32	24.84
0.90	0.010	0.016	0.944	0.959	5.74	-	-	-	-	27.10	27.71
0.85	0.010	0.015	0.892	0.904	5.12	-	-	-	-	30.38	31.11
0.80	0.010	0.015	0.841	0.852	4.54	-	-	-	-	34.30	35.17
0.75	0.008	0.014	0.788	0.798	3.99	-	-	-	-	39.03	39.87
0.70	0.008	0.013	0.736	0.746	3.47	-	-	-	-	44.80	45.84
0.65	0.008	0.012	0.684	0.694	3.00	-	-	-	-	51.96	53.26
0.60	0.008	0.012	0.634	0.644	2.56	0.008	0.6240	0.632	2.54	60.38	62.64
0.55	0.006	0.012	0.583	0.592	2.15	0.008	0.5736	0.581	2.14	72.57	74.18
0.50	0.006	0.012	0.5330	0.542	1.78	0.008	0.5236	0.531	1.77	87.81	89.95
0.45	0.006	0.011	0.4810	0.490	1.44	0.007	0.4716	0.479	1.43	109.2	112.1
0.40	0.005	0.011	0.4305	0.439	1.14	0.007	0.4216	0.429	1.13	138.2	141.7
0.37	0.005	0.010	0.3985	0.407	0.98	0.007	0.3906	0.397	0.97	161.5	165.9
0.35	0.005	0.010	0.3785	0.387	0.88	0.007	0.3706	0.377	0.87	180.5	185.7
0.32	0.005	0.010	0.3485	0.357	0.73	0.007	0.3406	0.347	0.73	215.9	222.8
0.30	0.005	0.010	0.3285	0.337	0.65	0.007	0.3206	0.327	0.64	245.6	254.0
0.29	0.004	0.009	0.3160	0.324	0.60	0.006	0.3086	0.315	0.60	266.3	273.9
0.28	0.004	0.009	0.3060	0.314	0.57	0.006	0.2986	0.305	0.56	285.7	294.1
0.27	0.004	0.009	0.2960	0.304	0.52	0.006	0.2886	0.295	0.52	307.3	316.6
0.26	0.004	0.009	0.286	0.294	0.49	0.006	0.2786	0.285	0.48	331.4	341.8
0.25	0.004	0.009	0.276	0.284	0.45	0.006	0.2686	0.275	0.45	358.4	370.2
0.24	0.004	0.009	0.266	0.274	0.42	0.006	0.2586	0.265	0.41	388.9	402.2
0.23	0.004	0.009	0.256	0.264	0.38	0.006	0.2986	0.250	0.38	423.4	438.6
0.22	0.004	0.008	0.244	0.252	0.35	0.005	0.2366	0.243	0.35	462.8	480.1
0.21	0.003	0.008	0.2335	0.241	0.32	0.005	0.2260	0.232	0.31	507.9	522.8
0.20	0.003	0.008	0.2235	0.231	0.29	0.005	0.2160	0.222	0.29	560.0	577.2
0.19	0.003	0.008	0.2135	0.221	0.26	0.005	02060	0.212	0.26	620.5	640.6
0.18	0.003	0.008	0.2035	0.211	0.24	0.005	0.1960	0.202	0.23	691.4	715.0
0.17	0.003	0.007	0.1915	0.199	0.21	0.005	0.1856	0191	0.21	775.1	803.2
0.16	0.003	0.007	0.1815	0.189	0.19	0.005	0.1756	0.181	0.18	875.0	908.8
0.15	0.003	0.006	0.1695	0.177	0.16	0.004	0.1636	0169	0.16	995.6	1,037
0.14	0.003	0.006	0.1595	0.167	0.14	0.004	0.1536	0.159	0.14	1,143	1,193
0.13	0.003	0.006	0.1495	0.157	0.12	0.004	0.1436	0.149	0.12	1,325	1,389
0.12	0.003	0.006	0.1395	0.147	0.11	0.004	0.1336	0.139	0.10	1,556	1,636
0.11	0.003	0.005	0.1275	0.135	0.089	0.003	0.1220	0.128	0.087	1.1851	1,957
0.10	0.003	0.005	0.1175	0.125	0.074	0.003	0.1120	0.118	0.072	2,240	2,381
0.09	0.003	0.005	0.1065	0.113	0.060	0.003	0.1016	0.107	0.059	2,765	2,959
0.08	0.003	0.005	0.0965	0.103	0.048	0.003	0.0916	0.097	0.047	3,500	3,778
0.07	0.003	0.004	0.0845	0.091	0.036	0.003	0.0806	0.085	0.036	4,572	4,990
0.06	0.003	0.004	0.0745	0.081	0.027	0.003	0.0706	0.075	0.027	6,287	6,966
0.05	0.003	0.004	0.0635	0.069	0.020	0.003	0.0600	0.064	0.019	9,050	10,240
0.04	0.002	0.003	0.0510	0.056	0.012	0.002	0.0480	0.052	0.012	14,140	15,670

CLASS ZERO ENAMELLED WIRE

JIS Standard

Conductor		Minimun thickness of film (mm)	Overall Dia.		Weight (kg/km)	Conductor Resistance 20°C (Ω/km)	
Dia (mm)	Tolerance of Dia. +_(mm)		Standard (mm)	Max. (mm)	Copper	Copper	
						Standard	Max.
3.20	0.030	0.049	3.343	3.388	72.4	2.144	2.184
3.00	0.030	0.049	3.138	3.178	63.7	2.439	2.488
2.90	0.030	0.049	3.038	3.078	59.5	2.610	2.665
2.80	0.030	0.049	2.938	2.978	55.5	2.800	2.860
2.70	0.030	0.049	2.838	2.878	51.7	3.011	3.079
2.60	0.030	0.049	2.738	2.778	47.9	3.247	3.323
2.50	0.030	0.049	2.638	2.678	44.3	3.512	3.598
2.40	0.025	0.048	2.538	2.574	40.9	3.811	3.891
2.30	0.025	0.046	2.430	2.468	37.6	4.150	4.241
2.20	0.025	0.046	2.330	2.368	34.4	4.536	4.640
2.10	0.025	0.045	2.228	2.266	31.2	4.978	5.098
2.00	0.025	0.044	2.125	2.162	28.4	5.488	5.627
1.90	0.025	0.044	2.025	2.062	25.7	6.081	6.244
1.80	0.025	0.042	1.920	1.956	23.1	6.775	6.967
1.70	0.025	0.042	1.820	1.856	20.6	7.596	7.824
1.60	0.025	0.041	1.718	1.754	18.3	8.575	8.849
1.50	0.016	0.041	1.618	1.654	16.1	9.756	9.967
1.40	0.016	0.039	1.513	1.548	14.0	11.20	11.46
1.30	0.016	0.039	1.413	1.448	12.1	12.99	13.31
1.20	0.012	0.037	1.308	1.342	10.3	15.24	15.55
1.10	0.012	0.037	1.208	1.242	8.70	18.14	18.54
1.00	0.012	0.036	1.105	1.138	7.20	21.95	22.84
0.95	0.010	0.034	1.045	1.072	6.49	24.32	24.84
0.90	0.010	0.033	0.993	1.020	5.83	27.10	27.71
0.85	0.010	0.032	0.940	0.966	5.21	30.38	31.11
0.80	0.001	0.031	0.888	0.914	4.62	34.30	35.174
0.75	0.008	0.030	0.835	0.860	4.06	39.03	39.87
0.70	0.008	0.028	0.780	0.804	3.54	44.80	45.84
0.65	0.008	0.027	0.728	0.752	3.06	51.96	53.26
0.60	0.008	0.026	0.675	0.698	2.61	60.98	62.63
0.55	0.006	0.025	0.623	0.646	2.20	72.57	74.72
0.50	0.006	0.025	0.568	0.586	1.82	87.81	90.68
0.45	0.006	0.024	0.515	0.532	1.48	109.2	113.1
0.40	0.005	0.023	0.463	0.480	1.17	138.2	141.6
0.37	0.005	0.022	0.430	0.446	1.00	161.5	165.9
0.35	0.005	0.021	0.480	0.424	0.90	180.5	185.7
0.32	0.005	0.021	0.378	0.394	0.76	215.9	222.7
0.30	0.005	0.021	0.358	0.374	0.67	245.6	257.3
0.29	0.004	0.020	0.345	0.360	0.62	266.3	273.8
0.28	0.004	0.020	0.335	0.350	0.58	285.7	294.0
0.27	0.004	0.020	0.325	0.340	0.54	307.3	316.5
0.26	0.004	0.020	0.315	0.330	0.50	331.4	341.7
0.25	0.004	0.020	0.304	0.318	0.47	358.4	370.1
0.24	0.004	0.020	0.294	0.308	0.43	388.9	402.1
0.23	0.004	0.020	0.284	0.298	0.40	423.4	438.5
0.22	0.004	0.019	0.272	0.286	0.36	462.8	480.1
0.21	0.003	0.019	0.262	0.276	0.33	507.9	522.7
0.20	0.003	0.019	0.252	0.266	0.30	560.0	577.1
0.19	0.003	0.019	0.242	0.256	0.27	620.5	640.5
0.18	0.003	0.019	0.232	0.246	0.25	691.4	714.9
0.17	0.003	0.018	0.219	0.232	0.22	775.1	803.1
0.16	0.003	0.018	0.209	0.222	0.20	875.0	908.7
0.15	0.003	0.017	0.197	0.210	0.17	995.6	1,036
0.14	0.003	0.017	0.187	0.200	0.15	1,143	1,193
0.13	0.003	0.017	0.177	0.190	0.13	1,325	1,388
0.12	0.003	0.017	0.167	0.180	0.110	1,556	1,636
0.11	0.003	0.016	0.154	0.166	0.096	1,851	1,956
0.10	0.003	0.016	0.144	0.156	0.081	2,240	2,380

NEMA ENAMELLED WIRE DIMENSIONS

AWG NO.	Conductor			Single		Heavy		Triple	
	Nom. (mm)	Min. (mm)	Max. (mm)	Min. Increase in Dia. (mm)	Max. Overall Dia. (mm)	Min. Increase in Dia. (mm)	Max. Overall Dia. (mm)	Min. Increase in Dia. (mm)	Max. Overall Dia. (mm)
7	3.665	3.630	3.683			0.086	3.787		
8	3.264	3.231	3.282			0.084	3.383		
9	3.206	2.878	2.921			0.081	3.020		
10	2.588	2.563	2.601			0.079	2.695		
11	2.304	2.281	2.316			0.076	2.408		
12	2.052	2.032	2.062			0.074	2.151		
13	1.829	1.811	1.839			0.071	1.923		
14	1.628	1.613	1.636	0.041	1.692	0.081	1.732	0.122	1.778
15	1.450	1.435	1.458	0.038	1.509	0.076	1.547	0.114	1.593
16	1.290	1.278	1.298	0.036	1.349	0.074	1.384	0.109	1.427
17	1.151	1.138	1.156	0.036	1.207	0.071	1.240	0.104	1.280
18	1.024	1.013	1.029	0.033	1.077	0.066	1.110	0.099	1.148
19	0.912	0.902	0.917	0.030	0.963	0.064	1.993	0.094	1.031
20	0.813	0.805	0.818	0.030	0.861	0.058	0.892	0.089	0.925
21	0.724	0.716	0.726	0.028	0.770	0.056	0.798	0.084	0.828
22	0.643	0.635	0.645	0.028	0.686	0.053	0.714	0.081	0.744
23	0.574	0.569	0.577	0.025	0.617	0.051	0.643	0.076	0.671
24	0.511	0.505	0.513	0.025	0.551	0.048	0.577	0.074	0.605
25	0.455	0.450	0.457	0.023	0.493	0.046	0.516	0.069	0.544
26	0.404	0.399	0.406	0.023	0.439	0.043	0.462	0.066	0.490
27	0.361	0.358	0.363	0.020	0.396	0.041	0.417	0.061	0.439
28	0.320	0.318	0.323	0.020	0.356	0.041	0.373	0.058	0.396
29	0.287	0.284	0.290	0.018	0.320	0.038	0.338	0.056	0.361
30	0.254	0.251	0.256	0.018	0.284	0.036	0.302	0.053	0.325
31	0.226	0.224	0.229	0.015	0.254	0.033	0.274		
32	0.203	0.201	0.206	0.015	0.231	0.030	0.249		
33	0.180	0.178	0.183	0.013	0.206	0.028	0.224		
34	0.160	0.157	0.163	0.013	0.183	0.025	0.198		
35	0.142	0.140	0.145	0.010	0.163	0.023	0.178		
36	0.127	0.124	0.130	0.010	0.147	0.020	0.160		
37	0.114	0.112	0.117	0.008	0.132	0.020	0.145		
38	0.102	0.099	0.104	0.008	0.119	0.018	0.130		
39	0.089	0.086	0.091	0.005	0.104	0.015	0.114		
40	0.079	0.076	0.081	0.005	0.094	0.015	0.102		
41	0.071	0.069	0.074	0.005	0.084	0.013	0.091		
42	0.0640	0.061	0.066	0.050	0.0760	0.0100	0.0810		
43	0.0560	0.053	0.058	0.050	0.0660	0.0100	0.0740		
44	0.0510	0.048	0.053	0.025	0.0610	0.0100	0.0690		
45	0.0447			0.025	0.0521	0.0076	0.0584		
46	0.0399			0.025	0.0470	0.0076	0.0533		
47	0.0356			0.025	0.0432	0.0076	0.0483		
48	0.0315			0.025	0.0381	0.0051	0.0432		
49	0.0282			0.025	0.0330	0.0051	0.0381		
50	0.0251			0.025	0.0305	0.0051	0.0356		