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Specification

Polyesterimide enamelled round copper wire. Class180
1.00~ 4.00mm EIW (MW30-C)

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This specification specifies wires can be used to TV coils motors,Transformer,Communication. Components etc. The wires that is Polyesterimide enamelled round copper wire.

Temperature grade : Class180.

The coating is based on Polyesterimide resins.

Table 1

TYPE	BULID	MARK
Polyesterimide enamelled round copper wire	1	1EIW

See NO.6, and must conform to the Table 2.

Table 2

Item	Standard	Tested	Standard JIS C3003
Appearance	Surface clear, smooth, uniformity	6.1	/
Dimensions	See attached sheet	6.2	5.2
Pin hole test	Type1 \leq 3 holes	6.3	6.0
Adherence and Flexibility	No cracks visible in the film coating,	6.4	7.2B
Dielectric Breakdown voltage	Not less than the Value in The Attached Sheet	6.5	8.1
Resistance To Cut-through	Median not less than 300°C	6.6	10.2
Heat shock	No cracks visible in the film coating after conditioning at 200°C	6.7	12.2B
Solvent-resistance	Enamel surface no bent or stretch	6.8	13.1
Electrical resistance	Not more than the Value in The Attached Sheet	6.9	17
Elongation	See attached sheet, and not less than the Value	6.10	18

(performed by vision seeing ,finger touching , nail cracking)

- ① No crack ,no dirty on the surface .
- ② To be smooth on the surface and display uniform.

Using' precision not lower than 1/1000mm. micrometer ,takes a 15~ 20 mm. specimen wire

piece ,45° angle against wire bobbin direction ,totally measuring 3 times ,takes the average value for the final outside diameter record. By using alcohol burner or no harm to the conductor's surfaces solvent to remove the out-layer of vanish ,takes the value of wire conductor's diameter, same as totally take 3 times ,and takes the average records.

Conductor diameter , Minister increase in Diameter , Maximum Overall Diameter(see attached sheet).

The intent of this test is to find insulation defects afer treatment with a salt water solution.

A wire sample approximately 5 M in length ,The specimen shall be immersed in an electrolytic solution of sodium chloride(2g/l) added with a proper quantity of phenolphthalein alcohol solution(30g/l) for the easy

evidence of any pin holes (typically pink streams in the solution), with the conductor of the wire and the solution connected to an electrical circuit with an open-circuit d.c. test voltage of 12 v.

Parameters please refer to Table 3.

Table 3 Test Voltages and Max. fault count

Voltage	The number of pin holes
12 v	Type 1
	≤ 3holes/5M

A straight piece of wire shall be wound for 10 continuous and adjacent turns around a polished mandrel of the diameter given in the Table 4

The coating shall show not crack after the wire has been elongated as specified in table 4 and wound on the appropriate mandrel.

Table 4 Flexibility and Adhesion : Elongation and mandrel diameters

Nominal conductor Dia. mm	Elongation before winding on mandrel %	Mandrel Diameter mm.	Observation method
0.100~0.350	20	---	Normal vision
0.351~0.200	---	1d	
d = nominal conductor diameter of the wire.			

Taken from the same axis about 35CM in three samples for each of the sample around its circumference or the diameter of the smooth surface provided a trial stick tightly wound 10 turns to make contact with each other. Then visual inspection whether the cracks exposed film conductor the coating shall show no crack or loss of adhesion.

Three test specimens about 50cm in length shall be taken from the same bobbin, and fold each of them into 2, by applying twist it at the portion about 120mm. in length to the number of twists and the appropriate tensile force given according to the addition table, remove the tension force, cut the folded part, and 50Hz or 60Hz AC-voltage increase at 500V/s. the breakdown voltage value shall be measure (see – Table 5&).

Table 5 Loads applied to the wire and number of twists

Nominal conductor diameter mm		Load N	Number of twists
Over	Up to and including		
0.100	0.250	0.85	33
0.250	0.355	1.70	23
0.355	0.500	3.40	16

Table 6 Rates offset voltage increase

Breakdown voltage v		Rate of increase V/s
over	Up to and including	
/	500	20
500	2500	100

0.500	0.710	7.00	12
0.710	1.060	13.5	8
1.060	1.400	27.0	6
1.400	2.000	54.0	3

2500	/	500

Two straight pieces of wire shall be inserted into the metal block crossing each other at right angles, with the metal block pre-heated at the temperature specified in the relevant standard. The temperature shall be measured as close as possible to the crossing point and shall not vary by more than $\pm 3^{\circ}\text{C}$ from the specified value. The crossing point shall lie centrally under the piston. Two straight pieces of wire shall be placed in parallel, side by side, and a third piece shall be placed at right angles across the first two with the crossing points arranged symmetrically to the axis of the piston.

Keep this temperature for at least 2 minutes for checking whether short-circuit. (see – Table 7)

Table 7 Resistance To Cut through flow test loads

Conductor diameter		Tension (N)	Time from inserting until loading min
Over	Up to and including		
0.100	0.125	1.25	1
0.125	0.315	2.20	
0.315	0.500	4.50	
0.500	0.800	9.00	
0.800	1.250	18.00	2
1.250	1.600	36.00	
Test Time		2min	
Temperature		300°C	

Three test specimens about 35cm in length shall be taken from the same bobbin, a straight piece of wire shall be wound for 10 continuous and adjacent turns around a polished mandrel of the diameter given in the relevant standard, and the standard value to see Table 8. The mandrel shall be rotated with a rate of 1 r/s to 3 r/s with a tension applied to the wire which is just sufficient to keep it in contact with the mandrel. Elongating or twisting the wire shall be avoided. Any suitable equipment shall be used. Then it is at temperature at 200°C for 1 hour in a thermostatic oven, and after allowing them to return to ordinary temperature, examine them by normal vision, whether the film is cracked and the conductor is visible or not (see – Table 8).

Table 8 Heat shock: Elongation and mandrel diameters

Nominal conductor diameter mm	Mandrel diameter mm
0.100~0.350	20%
0.351~0.750	2d
0.751~4.000	3d
Temperature at 200°C for 1 hour in a thermostatic oven*	

The test method according to JIS C3003 TEST 13. and using a pencil of hardness “H” the coating shall not be removed.

Electrical resistance is the D.C. resistance at 20°C of 1 m of wire. The method used shall provide a precision of 0.5%. if the resistance R_t measuring at a temperature t other than 20°C, the resistance R_{20} at 20°C shall be calculated by means of the formula:

$$R_{20} = \frac{R_t}{1 + a (t - 20)}$$

Where

t -----is the actual temperature in degrees Celsius the measurement;

a -----is the temperature coefficient in K^{-1} , in here is $a_{20} = 3.96 \times 10^{-3} K^{-1}$

Take a test piece about 40cm. in length, mark the bench mark with a gauge length of 250mm. on its central part, and test it with the testing machine. Separation rate of 300mm/min. less. When the test piece is cut at outside of the gauge length or within 25mm. from bench mark, the test is ineffective.

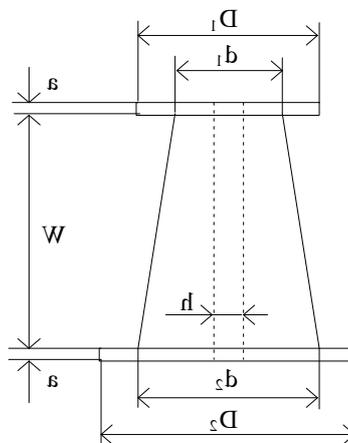
Measure the length between bench mark by connecting the cut parts, and obtain the elongation from the following formula:

$$\text{Length between benchmark connected cut part (mm)} - 250$$

$$\text{Elongation} = \frac{\text{Length between benchmark connected cut part (mm)} - 250}{250} * 100\%$$

The packing method used plastic bobbin, then the bobbins type and approximately net weight to see the Table 9.

导体径 mm	线盘 No.	标准 净重 kg	镗 径 mm		内 径 mm		内幅 mm W	镗厚 mm a	轴孔径 mm h
			D ₁	D ₂	d ₁	d ₂			
1.00-1.70	PT-25	25	215	230	110	130	250	15	32
1.80-4.50	30P	45	330	330	200	200	180	15	42
1.80-4.50	35P	65	380	380	200	200	180	15	42



标称直径	导体偏差	最小漆膜厚 (mm)		最大外径 (mm)d		最小击穿电压 V		20℃时的电阻 Ω/m		最小伸长率
		2EIW	1EIW	2EIW	1EIW	2EIW	1EIW	最小	最大	
mm	(+/-)mm									≥%
1.000	0.010	0.035	0.064	1.061	1.093	2700	5000	0.02116	0.02240	32
1.040	0.011	0.035	0.066	1.103	1.136	2700	5000	0.01954	0.02073	32
1.060	0.011	0.035	0.066	1.123	1.156	2700	5000	0.01881	0.01995	32
1.080	0.011	0.035	0.066	1.143	1.176	2700	5000	0.01813	0.01921	32
1.120	0.011	0.035	0.066	1.183	1.216	2700	5000	0.01687	0.01785	32
1.160	0.013	0.036	0.068	1.225	1.258	2700	5000	0.01568	0.01669	33
1.180	0.013	0.036	0.068	1.245	1.278	2700	5000	0.01516	0.01612	33
1.200	0.013	0.036	0.068	1.265	1.298	2700	5000	0.01467	0.01558	33
1.250	0.013	0.036	0.068	1.315	1.348	2700	5000	0.01353	0.01435	33
1.300	0.014	0.037	0.070	1.367	1.401	2700	5000	0.01252	0.01325	34
1.320	0.014	0.037	0.070	1.387	1.421	2700	5000	0.01215	0.01285	34
1.350	0.014	0.037	0.070	1.417	1.451	2700	5000	0.01162	0.01228	34
1.400	0.014	0.037	0.070	1.467	1.501	2700	5000	0.01079	0.01143	34
1.450	0.016	0.039	0.072	1.519	1.555	2700	5000	0.00833	0.01319	34
1.500	0.016	0.039	0.072	1.569	1.605	2700	5000	0.009390	0.009968	34
1.560	0.016	0.039	0.072	1.629	1.665	2700	5000	0.008689	0.009208	34
1.600	0.016	0.039	0.072	1.669	1.705	2700	5000	0.008264	0.008749	34
1.620	0.018	0.040	0.074	1.691	1.728	2700	5000	0.008043	0.008554	34
1.680	0.018	0.040	0.074	1.751	1.788	2700	5000	0.007485	0.007947	34
1.700	0.018	0.040	0.074	1.771	1.808	2700	5000	0.007312	0.007759	34
1.740	0.018	0.040	0.074	1.811	1.848	2700	5000	0.006983	0.007403	34
1.800	0.018	0.040	0.074	1.871	1.908	2700	5000	0.006529	0.006913	34
1.810	0.020	0.041	0.076	1.883	1.919	2700	5000	0.006444	0.006851	35
1.880	0.020	0.041	0.076	1.953	1.991	2700	5000	0.005978	0.006345	35
1.900	0.020	0.041	0.076	1.973	2.011	2700	5000	0.005854	0.006211	35
1.950	0.020	0.041	0.076	2.023	2.061	2700	5000	0.005561	0.005893	35
2.000	0.020	0.041	0.076	2.073	2.111	2700	5000	0.005289	0.005600	35
2.020	0.022	0.042	0.078	2.095	2.134	2700	5000	0.005175	0.005499	35
2.100	0.022	0.042	0.078	2.175	2.214	2700	5000	0.004793	0.005084	35
2.120	0.022	0.042	0.078	2.195	2.234	2700	5000	0.004703	0.004987	35
2.240	0.022	0.042	0.078	2.315	2.354	2700	5000	0.004812	0.004462	35
2.260	0.025	0.043	0.080	2.336	2.377	2700	5000	0.004133	0.004395	35
2.300	0.025	0.043	0.080	2.377	2.417	2700	5000	0.003992	0.004241	35
2.360	0.025	0.043	0.080	2.437	2.477	2700	5000	0.003794	0.004026	35
2.400	0.025	0.043	0.080	2.477	2.517	2700	5000	0.003670	0.003892	35
2.500	0.025	0.043	0.080	2.577	2.617	2700	5000	0.003385	0.003584	35
2.800	0.028	0.044	0.082	2.879	2.921	1300	2500	0.002698	0.002857	36
3.150	0.032	0.046	0.085	3.232	3.275	1300	2500	0.002131	0.002258	36
3.550	0.036	0.047	0.087	3.634	3.678	1300	2500	0.001678	0.001778	37
4.000	0.040	0.048	0.090	4.087	4.132	1300	2500	0.001322	0.001400	37