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NUM.

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# SPECIFICATION APPROVAL SHEET

Modifiy polyurethane Enamelled Copper Wire

UEWH/U (180°C) Grade 1  
Size Range: (0.04-1.00)

NOTE : Approval content

Products Spec. (Page2~5)

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Product Catalogue

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Test Report

Tianjin Ruiyuan Electric Material Co.,Ltd

APPROVED	CHECKED	PREPARED

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ADD : 22th Building, Jinnan Economic Industrial Park, 300350 Jinnan District, Tianjin, China

**1. Materials name:**

- 1.1. Conductor materials :** The conductor shall be the enameled copper wire specified in IEC 60317.
- 1.2. Insulation covering :** The insulating film of the wire shall be made by baking insulating varnish mainly composed of Modified polyurethane on the conductor uniformly and perfectly .
- 1.3 Thermal Class :** IEC60317-51 class 180 °C(MW82-C).
- 1.4 Environment request :** Conforms to "ROHS" and "does not have the halogen" the request.

**2. Examination item and characteristic :**

Item	Characteristic
<b>Appearance</b>	(1)Surface no injuries and adhesion (2)Smooth surface and color uniform (3)Insulation film is not nail scrape
<b>Dimension</b>	The size shall be as given in table
<b>Pinhole</b>	DC 12V   11in, Maximum 8 take a test piece of about 5M
<b>Flexibility</b>	Elongation method, no crack on the film
<b>Adherence</b>	No crack on the film
<b>Resistance to abrasion</b>	The size shall be as given in table 1
<b>Continuity of insulation</b>	The number of faults per 30m of wire shall not exceed the values give in table and test voltages.
<b>Dielectric breakdown voltage</b>	Shall meet the values specified in attached table 1
<b>Resistance to cut though</b>	No failure shall occur within 2min at 225°C
<b>Resistance to heat shock</b>	C 1) Film shall show no crack though which conductor is visible; C 2) The specimen shall be heat to 200±50°C , 20% 112hr ;
<b>Resistance to solvent</b>	Nail method or Pencil method, the film peels no expose the conductor.
<b>Solderability</b>	Solder shall adhere to the conductor uniformly
<b>Conductor resistance</b>	Shall meet the values specified in attached table 1
<b>Elongation</b>	Shall meet the values specified in attached table 1
<b>Springiness</b>	Shall meet the values specified in attached table 1

**3. Test methods:**

- 3.1 Appearance:** Comply with IEC60317-0-1.
- 3.2 Dimension:** Comply with No. test 4 of IEC 60851-2
- 3.3 Pinhole :** Comply with NO. 23 of IEC60851-5.
- 3.4 Flexibility:** Comply with No. test 8 of IEC 60851-3
- 3.5 Adherence:** Comply with No. test 8 of IEC 60851-3
- 3.6 Resistance to abrasion:** Comply with No. test 11 of IEC 60851-3.
- 3.7 Continuity of insulation :** Comply with No. test 14 of IEC 60851-5

Nominal conductor diameter(mm)		Voltage(d.c)V	Nominal conductor diameter(mm)		Maximam number of faults per 30m
>	小		>	小	
0.05	0.125	350	-	0.05	40
0.125	0.25	500	0.05	0.08	40
0.25	0.50	750	0.08	0.125	30
0.50	1.60	1000	0.125	1.60	10

3.8 Dielectric breakdown voltage: Comply with No. test 13 of IEC 60851-5. next table of hook no and twist number.

Conductor diameter(mm)		Hook no(g)	Length or twist number
>	≤		
	0.04	6	--
0.04	0.045	8	--
0.045	0.05	10	--
0.05	0.056	12	--
0.056	0.063	15	--
0.063	0.071	20	--
0.071	0.08	25	--
0.08	0.09	30	--
0.09	0.10	40	--
0.10	0.25	85	33
0.25	0.355	170	23
0.355	0.50	340	16
0.50	0.710	700	12
0.710	1.06	1350	8
1.06	1.40	2700	6
1.40	2.00	5400	4

3.9. Resistance to Cut through test

: Comply with NO.3.50 of MW 1000 test. So next table of exert weight:

Conductor diameter(mm)	Exert weigh(g)
0.04~0.071	100
0.079~0.114	150
0.127~0.254	250
0.287~0.361	300
0.404~0.455	600
0.511~0.912	1000
1.024~1.628	2000

3.10 Resistance to heat shock test: Comply with No9 of IEC60317-0- 1 test.

For nominal conductor diameters up to and including 0.140mm :

Nominal conductor diameter (mm)		Elongation before winding on mandrel (%)	Mandrel diameter (mm)
Above	up to and including		
	0.050	20 <sup>a</sup>	0.15
0.050	0.063	15 <sup>a</sup>	0.15
0.063	0.080	10	0.15
0.080	0.112	5	0.15
0.112	0.140		0.15

a Or to the breaking-point of copper, whichever is less

Nonfinal conductor diameters up to and including 1.0001mm:

Conductor diameter(mm)	Mandrel diameter (mm)	Conductor diameter(mm)	Mandrel diameter (mm)
0.160	0.250	0.450	1.000
0.180	0.280	0.500	1.120
0.200	0.315	0.560	1.250
0.224	0.355	0.630	1.400
0.250	0.400	0.710	1.600
0.280	0.630	0.800	1.800
0.315	0.710	0.900	2.000
0.355	0.800	1.000	2.240
0.400	0.900		

3.11. Resistance to solvent test : Comply with No. test 12 of IEC 60851-4.

3.12. Solderability Comply with No. 3.13 of MW- 1000 test. So next table of dipping time:

Conductor diameter [ mm)	Covered with continuous film of solder after immersion as follows
0.04-0.114	390°C/4s
0.127~0.254	390°C/5s
0.287-0.511	390°C/6s
0.574~0.813	430°C/8s
0.912~1.628	430°C/10s

3.13. Conductor resistance test: Comply with No. test 5 of IEC 60851-5.

3.14. Elongation: Comply with No. test 6 of IEC 60851-3. The size shall be as given in table 1.

Elongation (%) = [(length between gauge lines with parts in contact) - (gauge length)] / (gauge length) x 100

3.15. Springiness: Comply with No. test 7 of IEC 60851-3

4. Packing of axle specification: So next table

Conductor diameter (cpmm)	Gluey of axle		Min. weight (kg)
	JIS	PEWSC	
0.04~0.09	PT-4	ER-SL	0.5
0.10~0.15	PT-4	ER-5L	1.0
0.16~0.29	PT-10	ER-6L	3.5
0.30-0.69	PT-15	ER-7L	5.0
0.70~1.60	PT-25	ER-9L	9.0

5.

Packing:

Mark in the reel

5.1 Wire name and kind

5.2 Conductor diameter

5.3 Operating number

5.4 Manufacturing date

5.5 Net weight of one reel of winding

6. Storage conditions and shelf life.

6.1 There are no specific requirements in any of International Standards (JIS3202, 3003, NEMA1000).

6.2 Recommend to store in room temperature, dry and ventilated environment.

6.3 If the product is stored more than 3 years, tests should be performed in accordance with International Standards to check its validity before use.

Attached table 1

Diameter (<pm)	Tolerance (mm)	Min. Increase in diameter (mm)	Max. Overall Diameter Grade 2 (mm)	Min. Dielectric breakdown voltage (v)	Max. Conductor resistance 20°C (Q/KM)	Min. Elongation (%)	Max Springiness	Resistance to Abrasion(g)	
								Average	Minimum
0.040	±0.002	0.004	0.049	250	15202	9	--	--	--
0.045	±0.003	0.005	0.055	275	12445	9	--	--	--
0.050	±0.003	0.005	0.060	300	9938	10	--	--	--
0.056	±0.003	0.006	0.067	325	7815	10	--	--	--
0.063	±0.003	0.007	0.076	375	6098	12	--	--	--
0.071	±0.003	0.007	0.084	425	4747	13	--	--	--
0.080	±0.003	0.007	0.094	425	3703	14	70	--	--
0.090	±0.003	0.008	0.105	500	2900	15	67	--	--
0.100	±0.003	0.008	0.117	500	2333	16	64	--	--
0.112	±0.003	0.009	0.130	1300	1848	17	64	--	--
0.125	±0.003	0.010	0.144	1500	1475	17	62	--	--
0.140	±0.003	0.011	0.160	1600	1170	18	59	--	--
0.160	±0.003	0.012	0.182	1700	890.6	19	59	--	--
0.180	±0.003	0.013	0.204	1700	700.7	20	57	--	--
0.200	±0.003	0.014	0.226	1800	565.7	21	54	--	--
0.224	±0.003	0.015	0.252	1900	449.5	21	51	--	--
0.250	±0.004	0.017	0.281	2100	362.8	22	49	230	195
0.280	±0.004	0.018	0.312	2200	288.2	22	47	250	210
0.315	±0.004	0.019	0.349	2200	227	23	50	270	230
0.355	±0.004	0.020	0.392	2300	178.2	23	48	290	250
0.400	±0.005	0.021	0.439	2300	140.7	24	45	315	270
0.450	±0.005	0.022	0.491	2300	110.9	25	44	340	290
0.500	±0.005	0.024	0.544	2400	89.59	25	43	365	310
0.560	±0.006	0.025	0.606	2500	71.53	26	41	390	330
0.630	±0.006	0.027	0.679	2600	56.38	27	46	420	355
0.710	±0.007	0.028	0.762	2600	44.42	28	44	450	380
0.800	±0.008	0.030	0.855	2600	35	28	41	480	410
0.900	±0.009	0.032	0.959	2700	27.65	29	45	520	440
1.000	±0.010	0.034	1.062	2700	22.4	30	42	560	475

Note: This product specification acknowledgement will come into effect one month after it is delivered to your company with or without your acknowledgement.