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# SPECIFICATION APPROVAL SHEET

Modifiy polyurethane Enamelled Copper Wire

UEWH/U (180° C) Grade 2  
Size Range: (0.04-1.00)

NOTE : Approval content

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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
Appearance	(1)Surface no injuries and adhesion (2)Smooth surface and color uniform (3)Insulation film is not nail scrape
Dimension	The size shall be as given in table
Pinhole	DC 12V 1min, Maximum 5 take a test piece of about 5M
Flexibility	Elongation method, no crack on the film
Adherence	No crack on the film
Resistance to abrasion	The size shall be as given in table 1
Continuity of insulation	The number of faults per 30m of wire shall not exceed the values give in table and test voltages.
Dielectric breakdown voltage	Shall meet the values specified in attached table 1
Resistance to cut through	No failure shall occur within 2min at 225°C
Resistance to heat shock	C 1) Film shall show no crack through which conductor is visible; C 2) The specimen shall be heat to 200±50°C, 20% 112hr;
Resistance to solvent	Nail method or Pencil method, the film peels no expose the conductor.
Solderability	Solder shall adhere to the conductor uniformly
Conductor resistance	Shall meet the values specified in attached table 1
Elongation	Shall meet the values specified in attached table 1
Springiness	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)		Maximum number of faults per 30m
>	:S;		>	∴;	
0.05	0.125	500	-	0.05	10
0.125	0.25	750	0.05	0.08	5
0.25	0.50	1000	0.08	0.125	5
0.50	1.60	1500	0.125	1.60	5

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 of 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 No.9 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

N01ninal conductor dimneters up to and including 1.0001111n:

Conductor diameter(mm)	Mandrel diameter (mm)	Conductor diarneter(rnrm)	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 J	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 p<sub>m</sub> sin 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-5L	0.5
0.10-0.15	PT-4	ER-SL	1.0
0.16-0.29	PT-10	ER-6L	3.5
0.30~0.69	PT-15	ER-7L	5.0
0.70,yl.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, d<sub>y</sub> 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 (cpmm)	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	0.008	0.054	475	15202	9	--	--	--
0.045	±0.003	0.010	0.061	550	12445	9	--	--	--
0.050	±0.003	0.010	0.066	600	9938	10	--	--	--
0.056	±0.003	0.010	0.074	650	7815	10	--	--	--
0.063	±0.003	0.012	0.083	700	6098	12	--	--	--
0.071	±0.003	0.012	0.091	700	4747	13	--	--	--
0.080	±0.003	0.014	0.101	850	3703	14	80	--	--
0.090	±0.003	0.015	0.113	900	2900	15	77	--	--
0.100	±0.003	0.016	0.125	950	2333	16	73	--	--
0.112	±0.003	0.017	0.139	2700	1848	17	73	--	--
0.125	±0.003	0.019	0.154	2800	1475	17	70	--	--
0.140	±0.003	0.021	0.171	3000	1170	18	67	--	--
0.160	±0.003	0.023	0.194	3200	890.6	19	67	--	--
0.180	±0.003	0.025	0.217	3300	700.7	20	65	--	--
0.200	±0.003	0.027	0.239	3500	565.7	21	62	--	--
0.224	±0.003	0.029	0.266	3700	449.5	21	59	--	--
0.250	±0.004	0.032	0.297	3900	362.8	22	56	410	350
0.280	±0.004	0.033	0.329	4000	288.2	22	53	440	370
0.315	±0.004	0.035	0.367	4100	227	23	55	475	400
0.355	±0.004	0.038	0.411	4300	178.2	23	53	510	430
0.400	±0.005	0.040	0.459	4400	140.7	24	50	545	460
0.450	±0.005	0.042	0.513	4400	110.9	25	48	580	490
0.500	±0.005	0.045	0.566	4600	89.59	25	47	620	525
0.560	±0.006	0.047	0.630	4600	71.53	26	44	665	560
0.630	±0.006	0.050	0.704	4800	56.38	27	50	710	600
0.710	±0.007	0.053	0.789	4800	44.42	28	47	760	645
0.800	±0.008	0.056	0.884	4900	35	28	43	810	690
0.900	±0.009	0.060	0.989	5000	27.65	29	48	870	740
1.000	±0.010	0.063	1.094	5000	22.4	30	45	930	790

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