

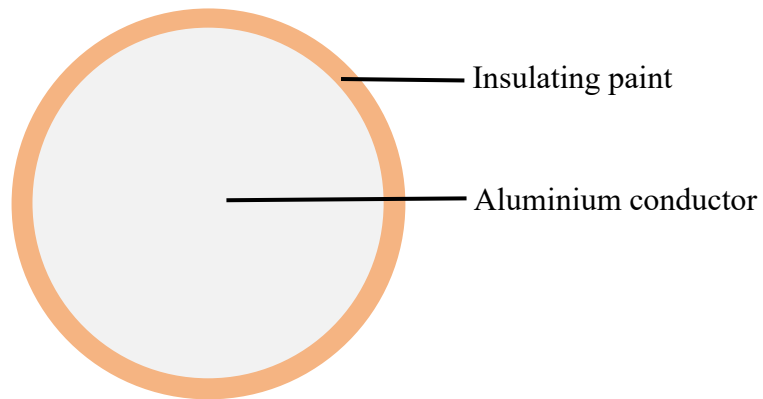


ZHENGZHOU TASUU INDUSTRY CO.,LTD

Specification of Round Enameled Aluminium Wire

1. Product

1.1 Enameled Aluminium Wire



1.2 Chemical composition

Chemical composition (%)								
Al	Si	Fe	Cu	Zn	Ti	V	Mg	Impurity
≥99.7%	0.057	0.1	0.001	0.001	0.001	0.005	0.001	0.20

2、 Thermal class

Type	Thermal class	Insulating paint
QQ/PVF	120	Polyethylene acetal
QZ/PEW	130	Polyester
QZ/PEW	155	Modified polyester
QZY/EIW	180	Polyimide
Q(ZY/XY)	200/220	Polyester or polyester overcoated with polyamide-imide
QY	240	Polyimide

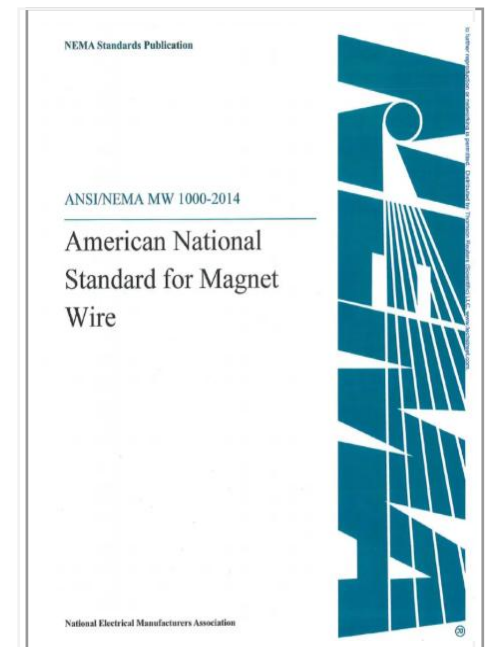
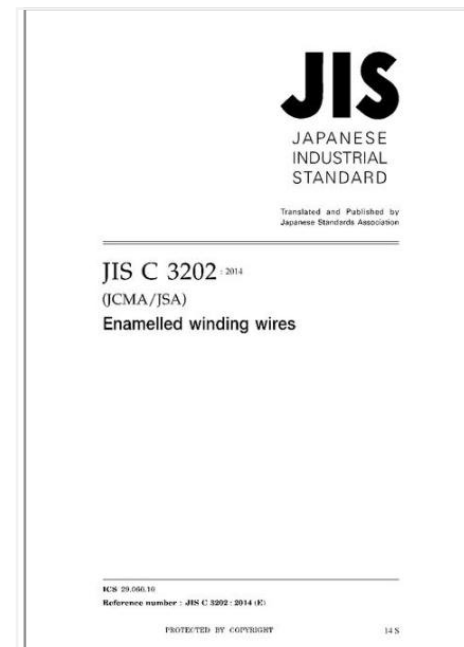
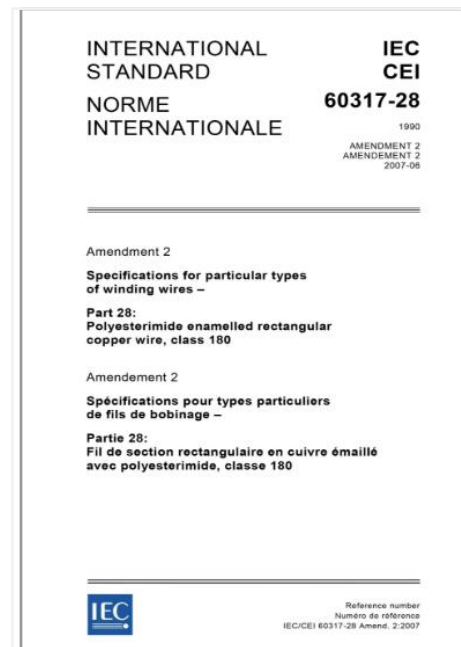
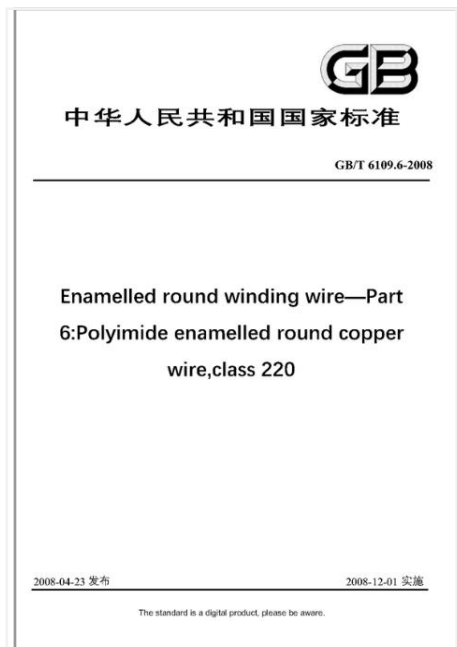
3、 Technical standard

China Standard: GB/T6109-2008

International Standard: IEC60317-2005

Japanese Standard: JIS/C3202-2014

USA Standard: NEMA-MW 1000



4、Dimension

Nominal conductor diameter (mm)	Conductor tolerance (mm)	Minimum film thickness (mm)			Maximum outside diameter (mm)		
		Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3
0.250	0.004	0.017	0.032	0.048	0.281	0.297	0.312
0.280	0.004	0.018	0.033	0.050	0.312	0.329	0.345
0.315	0.004	0.019	0.035	0.053	0.349	0.367	0.384
0.355	0.004	0.020	0.038	0.057	0.392	0.411	0.428
0.400	0.005	0.021	0.040	0.060	0.439	0.459	0.478
0.450	0.005	0.022	0.042	0.064	0.491	0.513	0.533
0.500	0.005	0.024	0.045	0.067	0.544	0.566	0.587
0.560	0.006	0.025	0.047	0.071	0.606	0.630	0.653

0.630	0.006	0.027	0.050	0.075	0.679	0.704	0.728
0.710	0.007	0.028	0.053	0.080	0.762	0.789	0.814
0.800	0.008	0.030	0.056	0.085	0.855	0.884	0.911
0.900	0.009	0.032	0.060	0.090	0.959	0.989	1.018
1.000	0.010	0.034	0.063	0.095	1.062	1.094	1.124
1.120	0.011	0.034	0.065	0.098	1.184	1.217	1.248
1.250	0.013	0.035	0.067	0.100	1.316	1.349	1.381
1.400	0.014	0.036	0.069	0.103	1.468	1.502	1.535
1.600	0.016	0.038	0.071	0.107	1.670	1.706	1.740
1.800	0.018	0.039	0.073	0.110	1.872	1.909	1.944
2.000	0.020	0.040	0.075	0.113	2.074	2.112	2.148
2.240	0.022	0.041	0.077	0.116	2.316	2.355	2.392
2.500	0.025	0.042	0.079	0.119	2.578	2.618	2.656

2.800	0.028	0.043	0.081	0.123	2.880	2.922	2.961
3.150	0.032	0.045	0.084	0.127	3.233	3.276	3.316
3.550	0.036	0.046	0.086	0.130	3.635	3.679	3.721
4.000	0.040	0.047	0.089	0.134	4.088	4.133	4.176
4.500	0.045	0.049	0.092	0.138	4.591	4.637	4.681
5.000	0.050	0.050	0.094	0.142	5.093	5.141	5.186

5、Elongation

Elongation at break and tensile strength shall not be less than those specified in the following table.

Conductor diameter(mm)	Minimum elongation(%)	Minimum tensile strength(N/mm²)
≤0.400	10	90
0.401-1.000	12	90
1.001-2.000	15	80
2.000-5.000	15	70

6、 Flexibility and adhesion

a.Round bar winding (It is applicable to the enameled aluminium wire with the conductor diameter $\leq 1.600\text{mm.}$)

After rolling on the specified 3D round rod, the paint film should not crack.

b.Stretching (It is applicable to the enameled aluminium wire with the conductor diameter $> 1.600\text{mm.}$)

After stretching the enameled aluminum wire by 15%, the paint film should not crack.

c.Snap fracture (It is applicable to the enameled aluminium wire with the conductor diameter $\leq 1.000\text{mm.}$)

The paint film shall not crack or lose adhesion.

d.Peel twist (It is applicable to the enameled aluminium wire with the conductor diameter $> 1.000\text{mm.}$)

It is applicable to peel twist,but there is no specific requirement.

7、Heat shock

a.When the conductor of enameled aluminium wire $\leq 1.600\text{mm}$, the paint film should not crack after baking for 30min after 3d winding.

b.When the conductor of enameled aluminium wire $> 1.600\text{mm}$, the paint film should not crack after baking for 30min after stretching.

Insulation type	Temperature resistance grade	Heat shock temperature (°C)
QQ/PVF	120	----
QZ/PEW	130	155
QZ/PEW	155	175
QZY/EIW	180	200
Q(ZY/XY)	200	220

8、Softening breakdown

Insulation type	Temperature resistance grade	Softening breakdown temperature (°C)
QQ/PVF	120	--
QZ/PEW	130	--
QZ/PEW	155	--
QZY/EIW	180	265
Q(ZY/XY)	200	320

9、Scratch resistance

The following data of scratch resistance is based on the 130°C polyester enameled aluminium wire.

Conductor diameter (mm)	Minimum average scratch force (N)		
	grade 1	grade 2	grade 3
0.400	1.95	3.15	--
0.450	2.10	3.40	--
0.500	2.25	3.60	--
0.560	2.40	3.85	--
0.630	2.55	4.15	--
0.710	2.75	4.45	--
0.800	2.95	4.75	--
0.900	3.15	5.10	--

1.000	3.40	5.45	--
1.120	3.70	5.80	--
1.250	3.95	6.25	--
1.400	4.25	6.65	--
1.600	4.60	7.15	--
1.800	--	7.70	--
2.000	--	8.20	--
2.240	--	8.75	--
2.500	--	9.30	--
>2.500	--	--	--

10、Solvent resistantance

After treatment with standard solvent, the paint layer should not be scratched when tested with a pencil of hardness H.

11、Breakdown voltage

Conductor diameter (mm)	Minimum breakdown voltage (V)					
	Grade 1		Grade 2		Grade 3	
	Room temperature	High temperature	Room temperature	High temperature	Room temperature	High temperature
0.250	2100	1600	3900	2900	5500	4100
0.280	2200	1700	4000	3000	5800	4400

0.315	2200	1700	4100	3100	6100	4600
0.355	2300	1700	4300	3200	6400	4800
0.400	2300	1700	4400	3300	6600	5000
0.450	2300	1700	4400	3300	6800	5100
0.500	2400	1800	4600	3500	7000	5300
0.560	2500	1900	4600	3500	7100	5300
0.630	2600	2000	4800	3600	7100	5300
0.710	2600	2000	4800	3600	7200	5400
0.800	2600	2000	4900	3700	7400	5600
0.900	2700	2000	5000	3800	7600	5700

1.0-2.5	2700	2000	5000	3800	7600	5700
≥ 2.500	1300	1000	2500	2500	3800	2900

12、DC resistance (20℃)

Conductor diameter (mm)	Nominal resistance (Ω/m)	Conductor diameter (mm)	Nominal resistance (Ω/m)
0.250	0.5683	1.120	0.02831
0.280	0.4530	1.250	0.02273
0.315	0.3579	1.400	0.01812
0.355	0.2818	1.600	0.01387
0.400	0.2220	1.800	0.01096

0.450	0.1754	2.000	0.008879
0.500	0.1421	2.240	0.007078
0.560	0.1133	2.500	0.005683
0.630	0.08948	2.800	0.004530
0.710	0.07045	3.150	0.003579
0.800	0.05549	3.550	0.002818
0.900	0.04385	4.000	0.002220
1.000	0.03552	4.500	0.001754
--	--	5.000	0.001421

13、 Continuity of insulated paint film

(It is applicable to the enameled aluminium wire with the conductor diameter below 1.600mm.)

Conductor diameter (mm)	Maximum number of pinholes per 30m		
	Grade 1	Grade 2	Grade 3
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≤ 1.600	25	10	5

14、Temperature index

The test shall be conducted according to GB/T4074-2009. The temperature index shall not be less than the specified value in the product standard. The failure time at the lowest test temperature shall not be less than 5000 hours.

Type of insulated paint film	QQ/PVF	QZ/PEW	QA/UEW	QZY/EIW	Q(ZY/XY)
Temperature index	120	130	155	180	200

15、 Refrigerant resistance

It is applicable to the type of enameled wire used for compressor. Other products are not required. The percentage of extract shall not exceed 0.5%. The minimum breakdown voltage shall be 75% of the specified value.

16、 Transformer oil resistance

It is applicable to transformer oil resistance , but there is no specific requirements.

17、 Packaging\ Identification \ Storage

17.1 Packaging: The enameled aluminum wire shall be evenly and tightly wound on the coil. Each coil can only have one section. The size of the coil shall be determined by the supplier and the supplier according to the wire gauge.



17.2 Identification: Each roll of enameled aluminum wire shall be attached with a label indicating.

- a. Manufacturer
- b. Product name
- c. Model
- d. Size
- e. N.W.
- f. Date of manufacture

17.3 Storage:

During storage, pay attention to protecting from rain, moisture and corrosion, and avoid mechanical damage and contamination of the surface during transportation.

18、 Applications

Transformer

Fans

Electric welding machine

UPS power supply

Inverter

19、Manufacturer

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