

KHAITAN WINDING WIRE PRIVATE LIMITED

AN ISO 9001: 2008 CERTIFIED COMPANY

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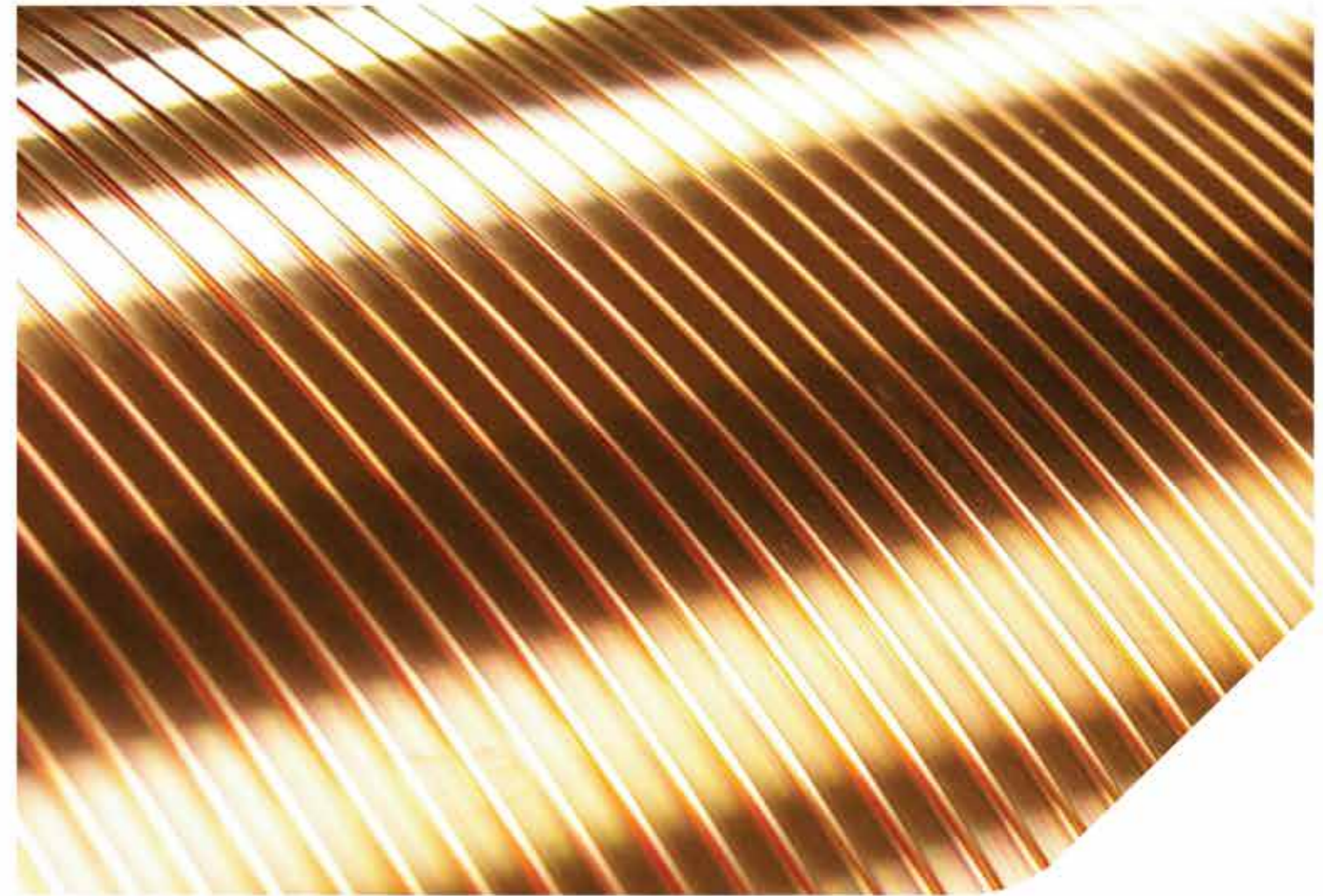
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WHERE POWER EMPOWERS

KWW
Wires and Strips



ABOUT US

Khaitan Winding Wire Pvt. Ltd. (KWW) was incepted in the year 1995. Since then, the company has established itself as the most acknowledged manufacturer and supplier of superlative quality of Enamelled Winding Wire made of Copper & Aluminium and Submersible Winding Wire.

To have a stellar presence in the industry KWW is manned by specially trained expert staff who operate proficiently & productively to give the best to all its customers. To deliver products and satisfy the expectations of the customers, the company gives umpteen importance to the

quality and for this has installed 'state of the art' machineries and equipments imported from different countries. This along with the adherence to the ethics and core values mounts to the growing recognition and success of the company at large and it has been serving Indian industry since 17 years.

EWV is produced as per IEC, IS, BS, NEMA standard. Our customers are based all over India and includes Large & Medium Electrical equipment manufacturers and retailers for replacement / repairing sector.



VISION, MISSION & VALUES

- 1 To be a true value leader in manufacturing of Copper & Aluminium Wires and Strips.
- 2 Be a highly effective, lean and fast-moving organization.
- 3 Be a great place to work where people are inspired to give their best.

ENAMELLED ROUND COPPER WIRE

KWW has steadily worked to raise the industry standards and has developed a full range of enamelled round copper wire. These wires meet all requirements and applications while providing advanced services to boost manufacturing efficiency.

Particular	Thermal Class	Specification	Size Range
Polyester Enamelled copper wire	130	IS 13730 / IEC 60317 Part - 34:2000	8 SWG to 40 SWG 4.00 mm to 0.120 mm
Modified Polyester Enamelled copper wire	155	IS:13730 / IEC 60317 Part- 3:1996	8 SWG to 40 SWG 4.00 mm to 0.120 mm
Polyesterimide Enamelled copper wire	180	IS:13730 / IEC60317 Part - 8:1996	8 SWG to 40 SWG 4.00 mm to 0.120 mm
Self Solderable (Polyurethane) Enamelled copper wire	155	IS:13730/IEC 60317 Part - 20:1993	21 SWG to 40 SWG 0.80 mm to 0.120 mm
	180	IS:13730/IEC 60317 Part - 51	21 SWG to 40 SWG 0.80 mm to 0.120 mm
Poly Vinyl Acetal Enamelled copper wire	105	IS:13730/IEC 60317 Part : 1:1993	8 SWG to 25 SWG 4.00 mm to 0.50 mm
Dual Coated Polyesterimide (Base coat) With Polyamide -imide (Top coat) copper wire	200	IS:13730/IEC - 60317 Part : 13:1993	8 SWG to 40 SWG 4.00 mm to 0.120 mm

► **Packing :** PT-4, PT-10, PT-25, PT-45, PT-90 & as per customers requirements

► **Application :** Motors - AC/DC, Transformers, Alternators, Relay Coils, White goods appliances, Fans, Light fittings & other electrical & electronic equipments



RECTANGULAR ENAMELLED COPPER STRIPS

In addition to producing enamelled round copper wire, KWW is also a leader in enamelled rectangular copper wires. Our product offerings support the most demanding and specific requirements.

Particular	Thermal Class	Specification	Size Range
Modified Polyester Enamelled Rectangular copper strips	155	IS 13730/IEC 60317 Part - 16:1996	Width - 3 mm to 15 mm, Thick - 1.0 to 4.5 mm Cross section area 5 to 65 sq.mm
Polyesterimide Enamelled Rectangular copper strips	180	IS:13730/IEC 60317 Part- 28:1996	Width - 3 mm to 15 mm, Thick - 1.0 to 4.5 mm Cross section area 5 to 65 sq.mm
Dual coated Polyesterimide (base coat) with Polyamide - imide (Top coat) Enamelled rectangular copper strips	200	IS:13730/IEC 60317 Part- 29:1996	Width - 3 mm to 15 mm, Thick - 1.0 to 4.5 mm Cross section area 5 to 65 sq.mm
Poly Vinyl acetal enamelled Rectangular copper strip	105	IS:13730/IEC 60317 Part- 17:1996	Width - 3 mm to 15 mm, Thick - 1.0 to 4.5 mm Cross section area, 5 to 65 sq.mm

► Packing :	Flange Dia (mm) +/- 5mm	Qty (kg)
	350	40
	400	60
	450	90
	500	120

► **Application :** Transformers, Traction Motor, Alternator, H.V. Motors & Generators



PAPER INSULATED COPPER WIRES & STRIPS

Paper Insulated Copper Wires are the most commonly used wires for winding coils of transformers and other electrical equipment. We manufacture various types of (single/double/triple/multiple) paper insulated copper wires in accordance with international standards as well as per customer's design requirements.

Particular	Specification	Size Range
Paper covered (Electrical grade Imported Kraft paper) Round copper conductor	IS 7404 Part 1:1991	0.8 mm to 4.00 mm
Paper covered (Electrical grade Imported Kraft paper) Rectangular copper conductor	IS 13730/IEC - 60317 Part 27:1996	Width - 3 mm to 25 mm Thick - 1.0 mm to 5.0 mm Cross sectional area 5 to 75 sq. mm
Aromatic Polyamide (Nomex) Paper covered Rectangular Copper conductor Temp-Index 200	IS11174:1984	Width - 3 mm to 25 mm Thick - 1.0 mm to 5.0 mm Cross sectional area 5 to 75 sq. mm
Mica covered Rectangular Copper conductor	As per customers Specification	Width - 3 mm to 25 mm, Thick - 1.0 mm to 5.0 mm Cross sectional area 5 to 75 sq. mm
Polyester Film covered Rectangular Copper Conductor	As per customers Specification	Width - 3 mm to 25 mm Thick - 1.0 mm to 5.0 mm Cross sectional area 5 to 75 sq. mm

► **Packing :**

Flange Dia (mm) +/- 5mm	Qty (kg)
350	40
400	60
450	90
500	120

- **Application :** Transformers (Dry & oil immersed) Power stabilizers & heavy Electrical Equipments.
Paper winding configuration - Buttlap, overlap and interleaved



BARE COPPER WIRE & STRIPS

Particular	Specification	Size Range
Bare Copper Wires (Annealed or Hard)	IS 4412	1.0 mm to 6.00 mm
Bare Copper Strip	IS 1897 / IS 6160	Width - 3 to 45 mm, Thickness - 1.0 mm to 10 mm Cross Sectional area - 5 to 250 sqmm

- **Packaging :** Wires & Strips : 40 kg to 100 kg Bundle / spool

► **Application :**

- Bare copper wire : Bunched conductor, wire rope, cable, cotton, paper & Fibre Glass covered insulation & various types of electrical & Electronic equipments.
- Bare Copper Strips : For paper, Nomex and Fibre glass insulation which is used in transformer industry and switchgear, Control panel and other types of Electrical Equipments
- Electrical Conductivity (IACS@20°C) - 100% minimum for annealed wire



COPPER TAPES / COPPER FLATS

Particular	Specification	Size Range
Copper Tapes/Copper Flats in edges (Corner) as per customers requirements	Relevant IS, IEC & as per customer specification	Width 3 mm to 40 mm Thick 1.0 mm to 5.0 mm Cross section area 5 to 250 sq.mm.



- **Packaging :** In coil or in bundle

- **Application :** Electrical Conductivity (IACS@20°C) - 100% minimum

BUNCHED COPPER WIRE / ROPES

Particular	Specification	Size Range
Bunched Copper Rope	As per customer specification	10 mm ² to 200 mm ²

- **Packaging :** In wooden drum

- **Application :** For earthing purpose in current & power transformer



SUBMERSIBLE WINDING WIRE

"KWW" Winding Wires have excellent electrical, mechanical, thermal and chemical properties. We manufacture poly wrapped winding wire made out of continuous Cast Copper Rod for submersible pump motors which are insulated with best quality Polyester and biaxially oriented Poly-propylene films. The Copper Conductor of 99.99% purity and high conductivity is drawn and annealed to stringent specifications.

Sl. No	Nominal Conductor Diameter (mm)	Tolerance + (mm)	Nominal Resistance Ohms/KM At 20°C	Over All Diameter (mm)	Weight of Poly Wrapped (kg/km)	Elongation Minimum (%)
1	0.40	0.004	137.15	0.70	1.467	24
2	0.50	0.005	87.78	0.80	2.154	25
3	0.60	0.006	60.96	0.90	2.980	26
4	0.70	0.007	44.78	1.00	3.946	28
5	0.80	0.008	34.29	1.10	5.052	28
6	0.90	0.009	27.09	1.20	6.298	29
7	1.00	0.010	21.94	1.30	7.683	30
8	1.10	0.011	18.14	1.50	9.208	30
9	1.20	0.012	15.24	1.60	10.873	31
10	1.30	0.013	12.98	1.70	12.678	32
11	1.40	0.014	11.20	1.80	14.891	32
12	1.50	0.015	9.75	1.90	16.989	32
13	1.60	0.016	8.57	2.00	19.227	32
14	1.70	0.017	7.59	2.10	21.605	32
15	1.80	0.018	6.77	2.20	24.122	32
16	1.90	0.019	6.08	2.30	26.780	32
17	2.00	0.020	5.49	2.50	29.576	33
18	2.10	0.021	4.98	2.60	32.513	33
19	2.20	0.022	4.53	2.70	35.589	33
20	2.30	0.023	4.15	2.80	38.850	33
21	2.40	0.024	3.81	2.90	42.161	33
22	2.50	0.025	3.51	3.00	45.656	33
23	2.60	0.026	3.25	3.10	49.291	34
24	2.70	0.027	3.01	3.20	53.066	34
25	2.80	0.028	2.80	3.30	56.980	34
26	2.90	0.029	2.61	3.40	61.035	34
27	3.00	0.030	2.44	3.50	65.228	34

► Features :

- Less current leakage - No air gap between the films
- Each coil tested at 3500V
- Heat shock test - At 150°C
- Manufactured by ultra modern automatic plant as per IS 8783 (Part-4/Sec-3)

► **Application :** Used in submersible pumps motor of all sizes for Domestic and Industrial applications.



ENAMELLED ROUND ALUMINIUM WIRE

With the growth in demand for Enamelled Aluminium Wire, Khaitan Winding Wire Pvt. Ltd. has ventured into manufacturing of Enamelled Aluminium Wire.

To deliver products and services which conform to international standards and satisfy the expectations of the customer, the Company gives umpteen importance to the quality and for this, the Company has installed "state of the art" machineries & equipments which includes Rod Break down machine and inline drawing cum enamelling machine with ultrasonic cleaner imported from different countries.

Particular	Thermal Class	Specification	Size Range
Polyester Enamelled round aluminium wire	130	IS 13730 / IEC 60317 Part - 9:2000	10 SWG to 27 SWG 3.50 mm to 0.4 mm
Modified Polyester Enamelled round aluminium wire	155	IS:13730 / IEC 60317	10 SWG to 27 SWG 3.50 mm to 0.4 mm
Polyesterimide Enamelled round aluminium wire	180	IS:13730 / IEC 60317 Part - 15:1996	10 SWG to 27 SWG 3.50 mm to 0.4 mm
Self Solderable (Polyurethane) Enamelled round aluminium wire	155	IS:13730 / IEC 60317	10 SWG to 27 SWG 3.50 mm to 0.4 mm
Dual Coated Polyesterimide (Base coat) With Polyamide -imide (Top coat) round aluminium wire	200	IS:13730 / IEC - 60317 Part - 25:1993	10 SWG to 27 SWG 3.50 mm to 0.4 mm

Enamelled aluminium wire is produced as per IEC, IS, BS, NEMA standards. Our customers are based all over India and includes large & medium Electrical equipment manufacturers and retailers for replacement/repairing sector.

► **Packing:** PT-15, PT-25, PT-45, PT-90 & as per customers requirement.

► **Application:** Electrical Motors / Transformers / Automobile / Home Appliances / Light Fittings / Fans / Pump & Other Electrical & Electronic Equipments.





QUALITY

The company has an excellently designed in-house quality testing department where latest machinery and equipment are installed for effective quality assurance. It aims to enlarge its capability continuously in the value chain and become the most preferred player with commitment to quality, safety, environment, cost economics and delivery. A great combination of technology, information, experience & qualified manpower gives us that extra edge to

be among the leaders in this sector. Training programs are held from time to time to improve the quality consciousness & skills of the workforce. Moreover, all of our employees necessarily abide by the principles & procedures set by the "Handbook of Quality Assurance" in order that all products are in compliance with customer requirements and national and international standards & law.



FRAMEWORK

Moving from strength to strength with persistence and commitment the company has installed most modern plant & machineries for drawing as well as enamelling of copper & aluminium wires and strips.

The company is also equipped with latest material handling equipments like Crane, Forklift etc. for easy handling of materials. Weight and packing of material is done through computerize barcode labeling.

The company visualizes to benchmark itself against global standards and be in alignment with world class

standards in all it activities from Selecting equipments to manpower, maintenance, manufacturing & after sales service. To produce concentric conductors, free from surface defects and excellent mechanical properties, low oxy electrolytic grade copper is drawn in tandem high speed RBD with in line resistance annealing machine. The best available wire enamels are used to impart di-electric strength & corrosion resistance while systematic periodic & preventive maintenance enable us to live up to high Corporate standards & delivery commitments.



ACCREDITATION

Commitment expects recognition. We have bagged the prestigious ISO 9001:2008 & UL certification & our products also boast of the ISI marks. Moreover, we were awarded SE 1B rating by CRISIL.



TECHNICAL DATA



Thermal Class	120/E	130/B	155/F	155/F	180/H	200/N	
Chemical Base of Enamel	Polyvinyl Acetal	Modified Polyester	Polyurethane Solderable	Modified Polyester	Theic Modified Polyesterimide	Theic Modified Polyesterimide + Polyamideimide	Polyamide-imide
Specification IS IEC Nema 1000	13730-12 60317-12 -	13730-34 60317-34 -	13730-20 60317-20 MW 79C	13730-3 60317-3 MW 5C	13730-8 60317-8 MW 30C	13730-13 60317-13 MW 76C	13730-26 60317-26 MW 81C
Range (mm) SWG	4.00-0.500 8-25	4.00-0.12 8-40	0.800-0.12 21-40	4.00-0.12 8-40	4.00-0.12 8-40	4.00-0.12 8-40	4.00-0.12 8-40
Cut Through °C	170	240	200	240	300	320	350
Heat Shock °C	155	155	175	175	200	220	220
Abrasion Resistance	Excellent	Good	Fair	Good	Excellent	Excellent	Excellent
Flexibility/Adherence	Excellent	Good	Good	Good	Excellent	Excellent	Fair
Characteristics	Golden Color Excellent Mechanical Properties and Resistance to Transformer Oil	Brownish Color Excellent Flexibility & Heat Stock	Good Solderability & High Moisture Resistance	Excellent Heat Shok with Balanced Electrical & Mechanical Properties	High Adhesion Heat Shok & Thermal Resistance	Excellent Hermatic Resistance & High Speed Windability	Excellent Thermal Properties, Heat Shock, Abrasion Resistance, Low Coefficient of Friction, Freon Resistance
Application	Oil Filled Transformers, Domestic Appliances, Chokes & Ballasts, filled with resins	Fans, Motor, Transformers, Relay Coils	Electronic Equipment	Electric Motors, Transformers, Appliances, Hand Tools	Hermatic Motors, Transformers, Hand Tools, Motors for Arduous Duties	Dry Type Transformers, Hermatic Motors, Automotive Altemators Solenoids	Hermatic Motors, Oil Filled Transformers, high speed Winding

STANDARD SWG SIZE

Nominal Conductor Diameter		Conductor Toler-ance	Fine Covering Grade 1		Medium Covering Grade 2		Thick Covering Grade 3		Conductor Resistance at 20 C for 1 meter (ohms)		
			minimum increase in Dia	maximum overall Dia	minimum increase in Dia	maximum overall Dia	minimum increase in Dia	maximum overall Dia			
SWG	mm	mm	mm	mm	mm	mm	mm	mm	nominal	maximum	minimum
8	4.064	0.041	0.049	4.155	0.092	4.201	0.138	4.245	0.001317	-	-
9	3.657	0.037	0.047	3.745	0.089	3.790	0.134	3.833	0.001627	-	-
10	3.251	0.033	0.046	3.336	0.086	3.380	0.130	3.422	0.002059	-	-
11	2.946	0.030	0.045	3.029	0.084	3.072	0.127	3.112	0.002508	-	-
12	2.642	0.027	0.043	2.722	0.081	2.764	0.123	2.783	0.003118	-	-
13	2.337	0.024	0.042	2.415	0.079	2.455	0.119	2.493	0.003985	-	-
14	2.032	0.020	0.041	2.108	0.077	2.147	0.116	2.184	0.005271	-	-
15	1.829	0.019	0.040	1.903	0.075	1.941	0.113	1.977	0.006506	-	-
16	1.626	0.017	0.039	1.698	0.073	1.735	0.110	1.770	0.008232	-	-
17	1.422	0.015	0.038	1.492	0.071	1.528	0.107	1.562	0.01076	-	-
18	1.219	0.013	0.035	1.285	0.067	1.318	0.100	1.350	0.01465	-	-
19	1.016	0.011	0.034	1.080	0.065	1.113	0.098	1.144	0.02108	-	-
20	0.914	0.010	0.034	0.976	0.063	1.008	0.095	1.038	0.02605	0.02686	0.02528
21	0.813	0.009	0.032	0.872	0.060	0.902	0.090	0.931	0.03293	0.03396	0.03194
22	0.711	0.008	0.030	0.766	0.056	0.795	0.085	0.822	0.04305	0.04442	0.04175
23	0.610	0.006	0.027	0.659	0.050	0.684	0.075	0.708	0.05848	0.06017	0.05687
24	0.559	0.006	0.025	0.605	0.047	0.629	0.071	0.652	0.06965	0.07178	0.06760
25	0.508	0.006	0.025	0.554	0.047	0.578	0.071	0.601	0.08434	0.08711	0.08168
26	0.457	0.005	0.024	0.501	0.045	0.523	0.067	0.544	0.1042	0.1075	0.1011
27	0.417	0.005	0.022	0.458	0.042	0.480	0.064	0.500	0.1252	0.1293	0.1212
28	0.376	0.005	0.021	0.417	0.040	0.435	0.060	0.454	0.1539	0.1595	0.1487
29	0.345	0.005	0.020	0.382	0.038	0.401	0.057	0.418	0.1829	0.1888	0.1772
30	0.315	0.004	0.019	0.349	0.035	0.367	0.053	0.384	0.2193	0.2269	0.2121
31	0.295	0.004	0.019	0.329	0.035	0.347	0.053	0.364	0.2501	0.2592	0.2414
32	0.274	0.004	0.018	0.306	0.033	0.323	0.050	0.339	0.2899	0.3011	0.2792
33	0.254	0.004	0.018	0.286	0.033	0.303	0.050	0.319	0.3374	0.3512	0.3242
34	0.234	0.004	0.017	0.265	0.032	0.281	0.048	0.296	0.3974	0.4149	0.3809
35	0.213	0.003	0.015	0.241	0.029	0.255	0.043	0.269	0.4798	0.4978	0.4625
36	0.193	0.003	0.014	0.219	0.027	0.232	0.039	0.245	0.5842	0.6081	0.5618
37	0.173	0.003	0.013	0.197	0.025	0.210	0.036	0.222	0.7271	0.7596	0.6967
38	0.152	0.003	0.012	0.174	0.023	0.186	0.033	0.197	0.9418	0.9888	0.8982
39	0.132	0.003	0.011	0.152	0.021	0.162	0.030	0.171	1.2496	1.3192	1.1841
40	0.122	0.003	0.010	0.141	0.019	0.151	0.028	0.160	1.4623	1.5502	1.3811
41	0.112	0.003	0.009	0.130	0.017	0.139	0.026	0.147	1.7354	1.8477	1.6318
42	0.102	0.003	0.009	0.119	0.017	0.128	0.026	0.136	2.0923	2.2398	1.9574
43	0.091	0.003	0.008	0.107	0.016	0.115	0.023	0.122	2.6298	2.8348	2.4423

ENAMELLED RECTANGULAR COPPER WINDING WIRES

Properties	Type Class	PVA 105	Mod. PE 155	PEI 180	DC (PEI + PAI) 200
Standard	IS:13730	Part 17	Part 16	Part 28	Part 29
	IES-317	Part 17	Part 16	Part 28	Part 29
	NEMA 1000	MW 18C	-	-	MW 36C
Thickness	mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm
Covering	Grade	G2	G2	G2	G2
Elongation (%) (min.)	IS/IEC-Min.	30	30	30	30
	Nema-Min.	32	-	-	32
	KWW Value	40	40	40	40
Springiness (Deg.) (max.)	IS/IEC-Max.	5.0	5.0	5.0	5.0
	NEMA-Max.	5.0	-	-	5.0
	KWW Value	4.0	4.0	4.0	4.0
Flexibility (No Crack)	IS/IEC	4×W/T	4×W/T	4×W/T	4×W/T
	NEMA	30% Prest.	-	-	30% Prest.
	KWW Value	3×W/T	3×W/T	3×W/T	3×W/T
Heat Shock (½hr) Deg-C	IS/IEC	155-6×T	175-5×T	200-6×T	220-6×T
	NEMA	150-30% Pt	-	-	220-30% Pt
	KWW Value	175-6×T	200-5×T	200-6×T	240-6×T
BDV (V)	IS/IEC-Min.	2000	2000	2000	2000
	NEMA-Min.	2500	-	-	2500
	KWW Value	3200	3200	3200	3200
Range (mm)	Width	3.0-15.0	3.0-15.0	3.0-15.0	3.0-15.0
	Thickness	1.5-4.5	1.5-4.5	1.5-4.5	1.5-4.5
Application		For E Class Oil, Synthetic liquid filled transformers, AC/DC alternator motors, Turbo generators and Traction motors.	For F Class Dry type transformers, AC/DC alternator motors, Turbo generators and Traction Motors.	For H Class Dry type transformers, AC/DC alternator motors, Turbo generators and Traction Motors.	For H+ Class Dry type transformers, AC/DC alternator motors, Turbo generators and Traction Motors.

MAJOR APPLICATIONS



Relay Coils

Transformers

Alternators

Motors

Domestic Appliances