

## Range of Product

### Winding Wires Made of Copper/Aluminium

#### Enamelled Wires Round

- Modified Polyvinyl Acetal Enamelled Round Copper Wires, Class 105 & Class 130
  - Modified Polyester Enamelled Round Copper Wires, Class 155 & Class 130
- Solderable Polyurethane + Bonding Enamelled Round Copper Wires, Class 180, Class 155 & Class 130
  - Solderable Polyurethane Enamelled Round Copper Wires, Class 180, Class 155 & Class 130
- Polyimide Enamelled Round Copper Wires, Class 220 · Polyester imide Enamelled Round Copper Wires, Class 180
  - Dual Coated Polyesterimide + Polyamide - imide Enamelled Round Copper Wires, Class 200
    - Polyamide-imide Enamelled Round Copper Wires, Class 200
  - Solderable Polyesterimide + Bonding Enamelled Round Copper Wires, Class 180

#### Enamelled Wires Rectangular

- Polyvinyl Acetal Enamelled Rectangular Copper Wires, Class 105
- Modified Polyester Enamelled Rectangular Copper Wires, Class 155
  - Polyesterimide Enamelled Rectangular Copper Wires, Class 180
- Dual Coated Polyesterimide + Polyamide-imide Enamelled Rectangular Copper Wires, Class 200

#### Glass Fibre Covered Wires

- Round Glass Fibre wound Polyester Varnish Bonded Class 155
- Round Glass Fibre wound Polyester imide Varnish Bonded Class 180
- Rectangular Glass Fibre wound Polyester Varnish Bonded Class 155
- Rectangular Glass Fibre wound Polyester imide Varnish Bonded Class 180
- Enamelled Rectangular Glass Fibre wound Polyester Varnish Bonded Class 155
- Enamelled Rectangular Glass Fibre wound Polyester imide Varnish Bonded Class 180

#### Winding Wire Made of Copper For Submersible Motors

- Polyester & Polyethylene Insulated Winding Wires

#### PVC Insulated Cables

- 3 Core Flat Cables for Submersible Pump Motors

#### Electrolytic Copper Conductors

- Round (Bare Annealed, Bunched & Stranded Wires) · Rectangular

#### Electrolytic Aluminium Conductors

- Round (Bare Annealed, Bunched & Stranded Wires) · Rectangular

#### Impregnating Varnish - Air Drying



## BHARAT INSULATION COMPANY (INDIA) PVT. LTD.

(formerly known as Bharat Insulation Company (India) Limited)

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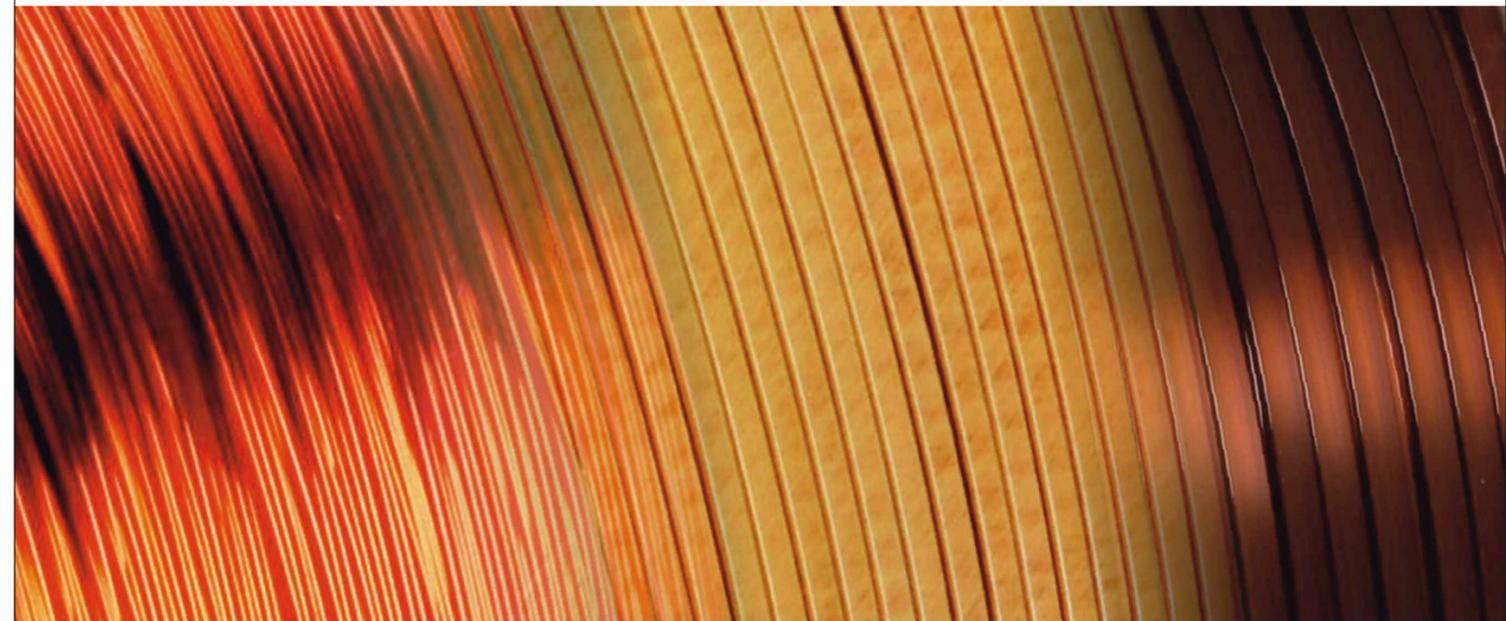
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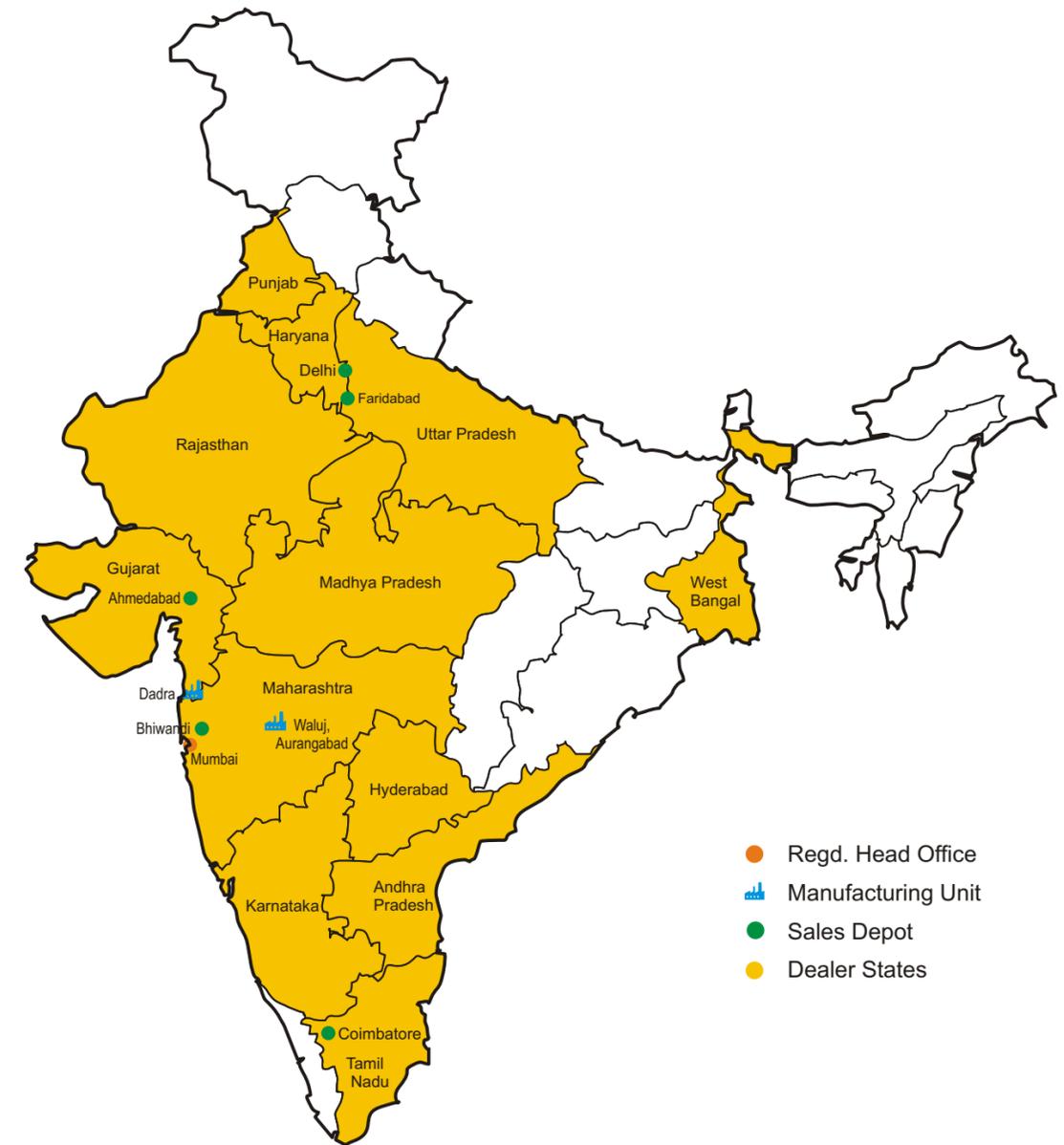
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## Product Catalogue



## Our Branches



### Our Certificates:



UL recognized component for BIC H' DC Wires



# Company Profile

For more than six decades - Bharat Insulation Company (India) Private Limited (BIC) has been in the fore front manufacturing various types of enamelled copper / aluminium winding wires.

In pursuit of achieving business excellence, our motivated team of trained and dedicated employees develop, manufacture and supply products and offer services that exceeds the expectations of our customers. This is in keeping with our corporate policy that ensures total quality management leading to customer satisfaction.

The consistent quality of our products competitive pricing and timely deliveries have helped BIC build a wide client base that includes discerning multinational corporations.

This is in keeping with our corporate vision, 'To be a growing, reputed and profitable business entity'. All this leads to customer delight ..... our ultimate aim.



Website: [www.bicwire.com](http://www.bicwire.com)

**Diameters, Increase in Diameters and Resistance of Enamelled Round Copper Winding Wires based on IS 13730-0-1**

Nominal Conductor Diameter		Conductor Tolerance ±	Grade 1		Grade 2		Grade 3		Conductor Resistance at 20 Deg. C for 1 meter (Ohms)		
(SWG)	(mm)		Min. increase	Max. overall dia	Min. increase	Max. overall dia	Min. increase	Max. overall dia	Nominal	Max.	Min.
4	5.893	0.059	0.054	5.986	0.098	6.034	0.146	6.079	0.000617	-	-
5	5.385	0.054	0.052	5.478	0.096	5.526	0.144	5.571	0.000751	-	-
6	4.877	0.049	0.050	4.970	0.094	5.018	0.142	5.063	0.000915	-	-
7	4.470	0.045	0.049	4.561	0.092	4.607	0.138	4.651	0.001090	-	-
8	4.064	0.041	0.048	4.155	0.091	4.197	0.137	4.245	0.001320	-	-
9	3.658	0.037	0.047	3.746	0.089	3.791	0.134	3.834	0.001630	-	-
10	3.251	0.033	0.046	3.336	0.086	3.380	0.130	3.422	0.002060	-	-
11	2.946	0.029	0.045	3.029	0.084	3.072	0.127	3.112	0.002508	-	-
12	2.642	0.026	0.043	2.722	0.081	2.764	0.123	2.803	0.003118	-	-
13	2.337	0.023	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	0.018	0.040	1.903	0.075	1.941	0.113	1.977	0.006506	-	-
16	1.626	0.016	0.039	1.698	0.073	1.735	0.110	1.770	0.008232	-	-
17	1.422	0.014	0.038	1.492	0.071	1.528	0.107	1.562	0.01076	-	-
18	1.219	0.012	0.035	1.285	0.067	1.318	0.100	1.350	0.01465	-	-
19	1.016	0.010	0.034	1.080	0.065	1.113	0.098	1.144	0.02108	-	-
20	0.914	0.009	0.034	0.976	0.063	1.008	0.095	1.038	0.02605	0.02686	0.02526
21	0.813	0.008	0.032	0.872	0.060	0.902	0.090	0.931	0.03293	0.03396	0.03194
22	0.711	0.007	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	0.005	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	0.004	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	2.6283	2.8348	2.4423
44	0.081	0.003	0.008	0.096	0.015	0.103	0.022	0.110	3.3173	3.6082	3.0584
45	0.071	0.003	0.007	0.084	0.012	0.091	0.018	0.097	4.3176	4.7475	3.9409



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**Enamelled Round Copper Winding Wires**

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## Types of Enamelled Round Copper Winding Wires and its Applications

		Modified Polyvinyl Acital	Modified Polyvinyl Acital (For hermetic applications)	Modified Polyurethane	Dual coated Modified Polyurethane + Bondal	Modified Polyester	Modified Polyester	Modified Polyurethane	Dual coated Polyurethane + Polyamide	Polyester - Imide	Dual coated Polyesterimide + Epoxy Bondal	Dual coated Polyester (Imide) + Polyamide	Polyamide - Imide	Dual coated Polyester (Imide) Polyamide Imide	Polyimide
PROPERTY	Type Class	PVA 105	Mod. PVA 120	PU 130	PU + Bond. 130	PE 130	Mod. PE 155	PU 155	PU + PA 155	PEI 180	PEI +PA 180	PEI + PA 180	PAI 200	DC(PEI+PAI) 200	PI 220
STANDARD	IS : 13730	Part 1	Part 12	Part 4	Part 2	Part 34	Part 3	Part 20	Part 21	Part 8	Part 37	Part 22	Part 26	Part 13	Part 7
	IEC - 60317	Part 1	Part 12	Part 4	Part 2	Part 34	Part 3	Part 20	Part 21	Part 8	Part 37	Part 22	Part 26	Part 13	Part 7
	NEMA 1000	MW 15 C	-	MW 75 C	-	-	MW 5 C	MW 79 C	MW 80 C	MW 30 C	-	MW 76 C	MW 81 C	MW 35 C, 73 C	MW 16 C
SIZE							1.00	0.30	0.30	1.00	1.00	1.00	1.00	1.00	1.00
COVERING	Grade	G2	G2	G1	G1B	G2	G2	G1	G1	G2	G1B	G2	G1	G2	G2
ELOGATION (%)	IS/IEC - Min.	30	30	23	23	30	30	23	23	30	30	30	30	30	30
	NEMA - Min.	32	-	26	-	-	32	26	26	32	-	32	32	32	32
	BIC Value	36	36	30	30	36	36	30	30	36	36	36	36	36	36
SPRINGNESS (Deg.)	IS/IEC - Max.	45	45	50	50	45	45	50	50	45	45	45	42	45	45
	NEMA - Max.	58	-	55	-	-	58	55	50	58	-	58	58	58	58
	BIC Value	38	38	43	47	38	38	43	43	38	38	38	36	38	38
FLEXIBILITY (No Crack)	IS/IEC	1 X D	1 X D	1 X D	1 X D	1 X D	1 X D	1 X D	1 X D	1 X D	1 X D	1 X D	1 X D	1 X D	1 X D
	NEMA	20% +3d	-	15% +1d	-	-	20% +3d	15% +1d	15% +1d	20% +3d	-	20% +3d	20% +3d	20% +3d	20% +3d
	BIC Value	10% +1d	10% +1d	15% +1d	15% +1d	10% +1d	10% +1d	15% +1d	15% +1d	10% +1d	10% +1d	10% +1d	10% +1d	10% +1d	10% +1d
ABRASION (N)	IS/IEC - Min.	9.6/11.3	9.6/11.3	2.3/2.7	2.3/2.7	8.8/10.4	8.8/10.4	2.3/2.7	2.65/3.2	9.2/10.9	5.75/6.75	9.6/11.3	5.95/7.05	9.6/11.3	6.6/7.8
	NEMA - Min.	980/1150	-	250/290	-	-	-	250/290	285/335	980/1150	-	980/1150	550/645	980/1150	710/835
	BIC Value	10.6/12.4	10.6/12.4	2.7/3.7	2.7/3.7	9.7/11.4	9.7/11.4	2.7/3.7	3.2/4.2	10.1/12.0	6.8/7.8	10.6/12.4	7.9/8.9	10.6/12.4	7.3/8.6
HEAT SHOCK (1/2 Hr.) Deg. C	IS/IEC	155 - 1d	175 - 1d	155 - 0.71mm	155 - 0.71mm	155 - 6d	175 - 2.24mm	175 - 0.71mm	175 - 0.71mm	200 - 2.24mm	200 - 2.24mm	200 - 2.24mm	220 - 2.24mm	220 - 2.24mm	240 - 2.24mm
	NEMA	175 - 20% +3d	-	175 - 6d	-	-	175 - 20% +3d	175 - 20% +3d	175 - 20% +3d	200 - 20% +3d	-	200 - 20% +3d	240 - 20% +3d	220 - 20% +3d	280 - 20% +3d
	BIC Value	175 - 1d	200 - 1d	175 - 0.71mm	175 - 0.71mm	175 - 6d	200 - 2.24mm	200 - 0.71mm	200 - 0.71mm	220 - 2.24mm	220 - 2.24mm	220 - 2.24mm	240 - 2.24mm	240 - 2.24mm	260 - 2.24mm
CUT THROUGH (For 2 min.) Deg. C	IS/IEC	170	170	170	170	240	240	200	200	300	300	320	350	320	400
	NEMA	180	-	200	-	-	250	200	200	300	-	325	325	300	450
	BIC Value	190	190	190	190	260	260	220	220	320	320	340	370	340	420
HV PIN HOLE (V DC)	IS/IEC	1500 - 5	1500 - 5	750 - 25	750 - 25	1500 - 5	1500 - 5	750 - 25	750 - 25	1500 - 5	1000 - 25	1500 - 5	1000 - 25	1500 - 5	1500 - 5
	NEMA	1500 - 5	-	750 - 25	-	1500 - 5	1500 - 5	750 - 25	750 - 25	1500 - 5	-	1500 - 5	1000 - 25	1500 - 5	1500 - 5
	BIC Value	1500 - 2	1500 - 2	750 - 5	750 - 5	1500 - 2	1500 - 2	750 - 5	750 - 5	1500 - 2	1000 - 5	1500 - 2	1000 - 5	1500 - 2	1500 - 2
BDV (V)	IS/IEC - Min.	5000	5000	2200	2200	5000	5000	2200	2200	5000	2700	5000	2700	5000	5000
	NEMA - Min.	5700	-	2425	-	-	5700	2425	2175	5700	-	5125	3175	5700	5700
	BIC Value	8000	8000	4500	4500	8000	8000	4500	4500	8000	5500	8000	5500	8000	8000
RANGE	SWG	4 - 45	4 - 45	21 - 45	21 - 45	4 - 45	4 - 45	21 - 45	21 - 45	4 - 45	16 - 45	4 - 45	16 - 45	4 - 45	4 - 45
Applications		For E Class Oil, Synthetic liquid filled transformers, Motors, DC fields, Armature winding ballasts, Ele. meter coils, Portable tools & Domestic appliances.	For B Class Motors for hermetic, Refrigeration & Air cond. systems	For B Class Direct soldering and bonding small motors, Ignation coils, Low voltage tranformers, Relays, Solenoids and TV deflection coils.	For B Class Direct soldering and bonding small motors, Ignation coils, Low voltage transformers, Relays, Solenoids and TV deflection coils.	For B Class Dry type Transformers, Stator winding fractional and HP motors, DC & Armature winding.	For F Class Dry type transformers, Stator winding fractional and HP motors, DC & Armature winding, Hand tools Contactor coils, Motors for domestic appliances.	For F Class Direct soldering and bonding small motors, Ignation coils, Low voltage transformers, Relays, Solenoids and TV Deflection coils.	For F Class Direct soldering and bonding small motors, Ignation coils, Low voltage transformers, Relays, Solenoids and TV deflection coils & used on high speed automatic coil winding machine.	For H Class Dry type transformers, Stator winding fractional and HP motors, DC & Armature winding, Hand tools contactor coils, Motors for chemical ind. and High torque continuous working requirements.	For H Class Direct bonding clutch & brake coils, Helical & toroidal coils, Deflection yoke coils.	For H Class Dry type transformers, stator winding fractional and HP motors, DC & Armature winding, Encapsulated coils & used on high speed automatic coil winding machine.	For W Class Motors for atomic power station, Hermetic, Hand tools, Chemical industries, Furnaces and Working in radioactive atmosphere.	For W Class Dry type transformers, Stator winding fractional and HP motors, DC & Armature winding, Hand tools contactor coils, Motors for chemical industries, Automotive alternator stators, Solenoids, Television play-back transformers, Toroidal yokes.	For C Class Dry type transformers, Fractional and integral HP motors, High temp continuous duty coils, Relays, Hermetic and sealed units, Heavy duty hand tool motors.



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**Enamelled Rectangular  
Copper Winding Wires**

# Enamelled Rectangular Copper Winding Wires

SPECIFICATION	IEC-60317-17	IEC-60317-18	IEC-60317-16	IEC-60317-28	IEC-60317-29/	IEC-60317-30	IEC-60317-58		
STANDARD	NEMA				NEMA	IEC-60317-47	draft)		
	MW-18C				MW-36C	NEMA			
THERMAL CLASS	105	120	155	180	200	220/240	220	120	180
Chemical base of base coat	Polyvinyl Acetal	Polyvinyl Acetal	Polyester	Polyesterimide	Polyesterimide	Polyimide	Polyamide-imide	Polyvinyl Acetal	Polyesterimide
Chemical base of Top coat					Polyamide-imide			Epoxy-Bond coat	Epoxy-Bond coat
Range of Wire (Diameter)	Cross section area up to 80 sp.mm, Thickness : from 1.3-8 mm, Width : from 2.0-16 mm								
Insulation Range	IEC Grade 1:0.060-0.110, IEC Grade 2:0.120-0.179; NEMA Grade Heavy : Increase in thickness : 0.076-0.127, Grade Quadruple : increase in thickness : 0.127-0.178 mm							In addition to base coat increase in dimensions, additional bond coat increase in thickness of 0.030-0.050 mm	
Standard colour	Golden Yellow	Golden Yellow	Brown	Brown	Brown	Light Brown	Light Brown	Golden Yellow	Brown
TECHNICAL PROPERTIES AS PER IEC-60317-0-2									
Flexibility & Adherence									
:Mandrel Bending on thickness on width	2-1 t & 2-3 W	2-1 t & 2-3 W	3-4 t & 4-5 W	3-4 t & 4-5 W	3-4 t & 4-5 W	3-4 t & 4-5 W	3-4 t & 4-5 W	2-1 t & 3-4 W	3-4 t & 4-6 W
:Adherence (no crack after stretching %)	20	20	15	15	15	10	15	15	15
Heat Shock No cracks after bending on thickness/ Temperature °C	2-3 t/155	2-3 t/155	6 t/175	6 t/200	6 t/200	6 t/260	6 t/240	2-3 t/155	6 t/200
Break down voltage at Room temp. (minimum) Volts	Grade 1 : > 1000, Grade 2 : >2000								
Resistance to hot transformer oil	Excellent	Excellent	Not applicable	Excellent	Excellent	Not applicable	Not applicable	Excellent	Excellent
Heat Bonding temperature/Time	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	110 C/48 h or 120 C/24 h	
SPECIAL CHARACTERISTICS & APPLICATION	High mechanical strength, strong adhesion of enamel to copper conductor, Excellent hydrolysis & oil resistance	Good thermal and overall good mechanical, electrical and chemical properties	High thermal and overall good mechanical, electrical and chemical resistance	High thermal, electrical and mechanical, properties, excellent heat shock and burnout	Very high thermal properties	Very high thermal properties	Bondable coating with excellent mechanical properties	Bondable coating with excellent thermal properties	
Special Notes	Oil filled power & distribution transformers, Inductance coils, etc.	Oil filled large transformers Loco transformers, chokes & Inductance coils, etc.	Large rotating Machines such as: motors, DC motors, High Voltage motors etc.	Large and special electrical machines such as: generators, alternators, Motors, HV motors, Dry type transformers, Inductor coils, etc.	Special electrical machine and magnet coils for aerospace industry	Large and special electrical machines such as: generators, Motors, HV motors, Dry type transformers, Inductor coils, etc.	Oil filled large transformers Loco transformers, chokes & Inductance coils, particularly with improved mechanical strength(hoop stress) to resist high short circuit currents.		

## Cross Sectional Areas, Width, Thickness and Corner Radius of Rectangular Wires

Thickness		0.80	0.90	1.00	1.12	1.25	1.40	1.60	1.80	2.00	2.24	2.50	2.80	3.15	3.55	4.00
Width	mm	Corner Radius*			Corner Radius 0.50 mm			Corner Radius 0.65 mm			Corner Radius 0.800 mm				1.00	
	2.00	1.463	1.626	1.785	2.026	2.286	2.586	-	-	-	-	-	-	-	-	-
2.24	1.655	1.842	2.025	2.294	2.586	2.922	3.370	-	-	-	-	-	-	-	-	-
2.50	1.863	2.076	2.285	2.586	2.911	3.286	3.786	4.138	-	-	-	-	-	-	-	-
2.80	2.103	2.346	2.585	2.922	3.286	3.706	4.266	4.678	5.238	-	-	-	-	-	-	-
3.15	2.383	2.661	2.935	3.314	3.723	4.196	4.826	5.308	5.938	6.694	-	-	-	-	-	-
3.55	2.703	3.021	3.335	3.762	4.223	4.756	5.466	6.028	6.738	7.590	8.326	-	-	-	-	-
4.00	3.063	3.426	3.785	4.266	4.786	5.386	6.186	6.838	7.638	8.598	9.451	10.651	-	-	-	-
4.50	3.463	3.876	4.285	4.826	5.411	6.086	6.986	7.738	8.638	9.718	10.701	12.051	13.626	-	-	-
5.00	3.863	4.326	4.785	5.386	6.036	6.786	7.786	8.638	9.638	10.838	11.951	13.451	15.201	17.201	-	-
5.60	4.343	4.866	5.385	6.058	6.786	7.626	8.746	9.718	10.838	12.182	13.451	15.131	17.091	19.331	21.542	-
6.30	4.903	5.496	6.085	6.842	7.661	8.606	9.866	10.978	12.238	13.750	15.201	17.091	19.296	21.816	24.342	-
7.10	-	6.216	6.885	7.738	8.661	9.726	11.146	12.418	13.838	15.542	17.201	19.331	21.816	24.656	27.542	-
8.00	-	-	7.785	8.746	9.786	10.986	12.586	14.038	15.638	17.558	19.451	21.851	24.651	27.851	31.142	-
9.00	-	-	-	9.866	11.036	12.386	14.186	15.838	17.638	19.798	21.951	24.651	27.801	31.401	35.142	-
10.00	-	-	-	-	12.286	13.786	15.786	17.638	19.638	22.038	24.451	27.451	30.951	34.951	39.142	-

\* 0.50 Nominal Thickness

### Regd. Office:

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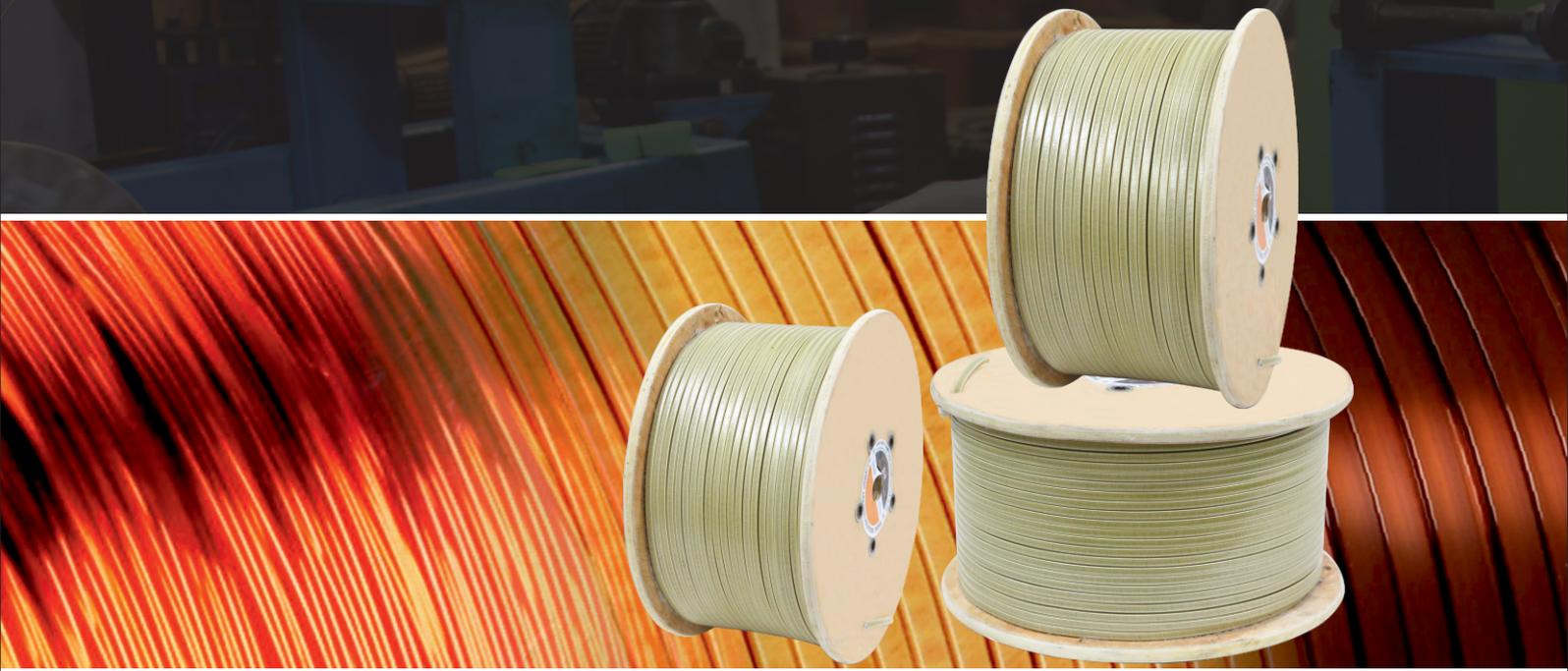
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**Enamelled / Fibre Glass  
Covered Aluminium Winding Wires**

# Fibre Glass Covered Varnish Treated Bare / or Enamelled Aluminium Wires

## Rectangular Wires

PROPERTY	Type Class	BARE 155 Class	BARE 180 Class	Enamelled 155 Class	Enamelled 180 Class
STANDARD (Ref.)	IS:13730	Part 32	Part 31	Part 32	Part 31
	IEC - 60317	Part 32	Part 31	Part 32	Part 31
SIZE	mm	2.5 mm T	2.5 mm T	2.5 mm T	2.5 mm T
COVERING	Double	Grade G2	Grade G2	Grade 2 G2	Grade 2 G2
ELONGATION (%)	IS/IEC - Min.	25	32	32	32
	BIC Value	32	40	40	40
SPRINGNESS (DEG.)	IS/IEC - Max.	5.0	5.5	5.5	5.5
	BIC Value	3.5	4.0	4.5	4.5
FLEXIBILITY (NO CRACK)	IS/IEC	10 x w/T	10 x w/T	10 x w/T	10 x w/T
	BIC Value	7 x w/T	7 x w/T	7 x w/T	7 x w/T
ADHERENCE (10% PREST.)	IS/IEC - Max.	10% Str-No Crack	10% Str-No Crack	10% Str-No Crack	10% Str-No Crack
	BIC Value	15% Str-No Crack	15% Str-No Crack	15% Str-No Crack	15% Str-No Crack
BDV (V)	Max.	560	560	2000	2000
	IS/IEC - Min.	800	900	3200	3200
RANGE (mm)	Width	4.0 - 15.0	4.0- 15.0	4.0 - 15.0	4.0- 15.0
	Thickness	2.0- 6.0	2.0- 6.0	2.0- 6.0	2.0- 6.0
Applications		For F class Motors, Transformers, Coils	For H class Motors, Transformers, Coils	For F class Motors, Transformers, Coils	For H class Motors, Transformers, Coils

## Round Wires

PROPERTY	Type Class	BARE 155 Class	BARE 180 Class
STANDARD	IS:4685	Part I	Part I
COVERING	Double	Double	Double
ELONGATION (%)	IS - Min	25	25
	BIC Value	30	30
FLEXIBILITY (NO CRACK)	IS	10 X d	10 X d
	BIC Value	6 X d	6 X d
HEAT SHOCK 48 HRS. UNBENT	IS	175 Deg. C	200 Deg. C
	BIC Value	200 Deg. C	220 Deg. C
TACKINESS 65 DEG. C - 5 MIN	IS	No Tacky	No Tacky
	BIC Value	No Tacky	No Tacky
BDV (V)	IS - Min	450	450
	BIC Value	750	750
RANGE (mm)		3.0 to 8.0	3.0 to 8.0

## Increase in Covering Dimension :

### Fibre Glass Covered Rectangular Wires

Width (mm)		Glass Fibre Bare (mm)				Glass Fibre Enamelled (mm)			
		Single	Grade G1	Double	Grade G2	Single	Grade 2 G1	Double	Grade 2 G2
Over	Upto	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
-	3.15	0.12	0.20	0.21	0.33	0.24	0.36	0.37	0.51
3.15	6.30	0.14	0.22	0.23	0.37	0.26	0.38	0.39	0.53
6.30	12.50	0.16	0.26	0.27	0.43	0.28	0.42	0.43	0.57
12.50	16.00	0.18	0.30	0.31	0.47	0.30	0.46	0.47	0.63

### Fibre Glass Covered Round Wires

Size (mm)	Tolerance +/-	Double covering Overall Dia. Max	Covering Min.	Resistance Ohm / meter at 20 Deg. C
mm	mm	mm	mm	Nom.
3.00	0.030	3.285	0.200	0.0039457
3.15	0.032	3.435	0.200	0.0035789
3.35	0.034	3.690	0.200	0.0031643
3.55	0.036	3.890	0.250	0.0028178
4.00	0.040	4.345	0.250	0.0022194
4.50	0.045	4.845	0.250	0.0017536
5.00	0.050	5.345	0.250	0.0014204
5.50	0.055	5.845	0.250	0.0011739
6.00	0.060	6.345	0.250	0.0009864
6.50	0.065	6.845	0.250	0.0008405
7.00	0.070	7.345	0.300	0.0007247
7.50	0.075	7.845	0.300	0.0006313
8.00	0.080	8.345	0.300	0.0005549

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## Diameters, Increase in Diameters and Resistance of Enamelled Round Aluminium Winding Wires based on IS 13730-0-1

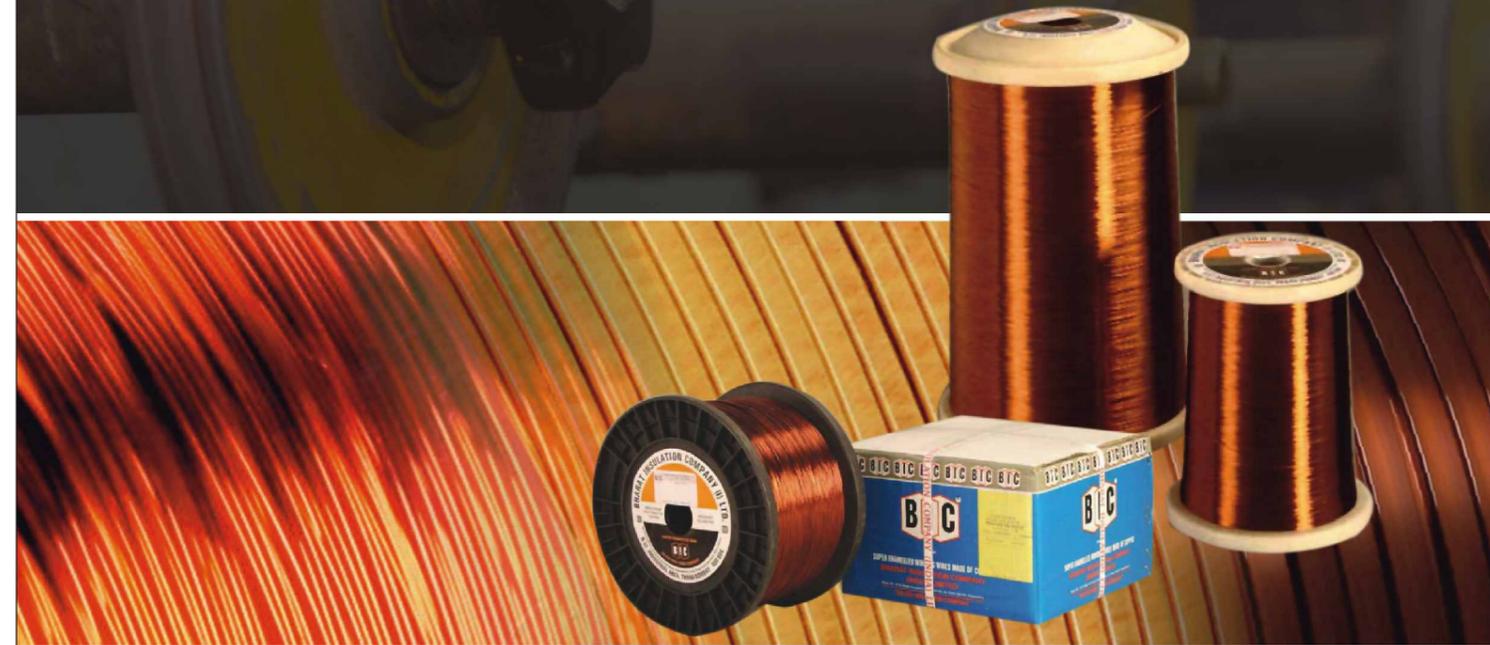
Nominal Conductor Diameter		Conductor Tolerance ±	Grade 1		Grade 2		Grade 3		Conductor Resistance at 20 Deg. C for 1 meter (Ohms)		
(SWG)	(mm)		Min. increase	Max. overall dia	Min. increase	Max. overall dia	Min. increase	Max. overall dia	Nominal	Max.	Min.
4	5.893	0.059	0.054	5.986	0.098	6.034	0.146	6.079	0.001023	-	-
5	5.385	0.054	0.052	5.478	0.096	5.526	0.144	5.571	0.001225	-	-
6	4.877	0.049	0.050	4.970	0.094	5.018	0.142	5.063	0.001493	-	-
7	4.470	0.045	0.049	4.561	0.092	4.607	0.138	4.651	0.001777	-	-
8	4.064	0.041	0.048	4.155	0.091	4.197	0.137	4.245	0.002150	-	-
9	3.658	0.037	0.047	3.746	0.089	3.791	0.134	3.834	0.002654	-	-
10	3.251	0.033	0.046	3.336	0.086	3.380	0.130	3.422	0.003360	-	-
11	2.946	0.029	0.045	3.029	0.084	3.072	0.127	3.112	0.004092	-	-
12	2.642	0.026	0.043	2.722	0.081	2.764	0.123	2.803	0.005087	-	-
13	2.337	0.023	0.042	2.415	0.079	2.455	0.119	2.493	0.006502	-	-
14	2.032	0.020	0.041	2.108	0.077	2.147	0.116	2.184	0.008600	-	-
15	1.829	0.018	0.040	1.903	0.075	1.941	0.113	1.977	0.010615	-	-
16	1.626	0.016	0.039	1.698	0.073	1.735	0.110	1.770	0.013431	-	-
17	1.422	0.014	0.038	1.492	0.071	1.528	0.107	1.562	0.017562	-	-
18	1.219	0.012	0.035	1.285	0.067	1.318	0.100	1.350	0.023898	-	-
19	1.016	0.010	0.034	1.080	0.065	1.113	0.098	1.144	0.034401	-	-
20	0.914	0.009	0.034	0.976	0.063	1.008	0.095	1.038	0.042508	0.043785	0.041280
21	0.813	0.008	0.032	0.872	0.060	0.902	0.090	0.931	0.053726	0.055339	0.052175
22	0.711	0.007	0.030	0.766	0.056	0.795	0.085	0.822	0.070247	0.072357	0.068218
23	0.610	0.006	0.027	0.659	0.050	0.684	0.075	0.708	0.095434	0.098300	0.092680
24	0.559	0.006	0.025	0.605	0.047	0.629	0.071	0.652	0.113643	0.117266	0.110166
25	0.508	0.005	0.025	0.554	0.047	0.578	0.071	0.601	0.137606	0.141739	0.133632
26	0.457	0.005	0.024	0.501	0.045	0.523	0.067	0.544	0.170033	0.175528	0.164763
27	0.417	0.005	0.022	0.458	0.042	0.480	0.064	0.500	0.204217	0.211267	0.197479
28	0.376	0.005	0.021	0.417	0.040	0.435	0.060	0.454	0.251182	0.260542	0.242268
29	0.345	0.004	0.020	0.382	0.038	0.401	0.057	0.418	0.298350	0.308402	0.288732
30	0.315	0.004	0.019	0.349	0.035	0.367	0.053	0.384	0.357885	0.370770	0.345592
31	0.295	0.004	0.019	0.329	0.035	0.347	0.053	0.364	0.408057	0.423486	0.393371
32	0.274	0.004	0.018	0.306	0.033	0.323	0.050	0.339	0.473003	0.491923	0.455046
33	0.254	0.004	0.018	0.286	0.033	0.303	0.050	0.319	0.550424	0.573780	0.528331
34	0.234	0.004	0.017	0.265	0.032	0.281	0.048	0.296	0.648534	0.677906	0.620857
35	0.213	0.003	0.015	0.241	0.029	0.255	0.043	0.269	0.782718	0.813180	0.753768
36	0.193	0.003	0.014	0.219	0.027	0.232	0.039	0.245	0.953345	0.993386	0.915447



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**Enamelled Round Aluminium Winding Wires**

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## Types of Enamelled Round Aluminium Winding Wires and its Applications

		Modified Polyester	Modified Polyester	Polyester - Imide	Dual Coated
<b>PROPERTY</b>	Type Class	PE 130	Mod. PE 155	PEI 180	DC(PEI+PAI) 200
<b>STANDARD</b>	IS : 13730	Part 9	Part 3	Part 15	Part 25
	IEC - 60317	Part 9	Part 3	Part 15	Part 25
	NEMA 1000	-	MW 5 C	MW 30 C	MW 35 C, 73 C
<b>SIZE</b>		1.111mm	1.111mm	1.111mm	1.111mm
<b>COVERING</b>	Grade	G2	G2	G2	G2
<b>ELOGIATION (%)</b>	IS/IEC - Min.	12	12	12	12
	NEMA - Min.	20	20	20	20
	BIC Value	30	30	30	30
	IS/IEC - Max.	N/A	N/A	N/A	N/A
<b>SPRINGNESS (Deg.)</b>	NEMA - Max.	N/A	N/A	N/A	N/A
	BIC Value	N/A	N/A	N/A	N/A
	IS/IEC	3 X D	3 X D	3 X D	3 X D
<b>FLEXIBILITY (No Crack)</b>	NEMA	10% + 3D	10% + 3D	10% + 3D	10% + 3D
	BIC Value	1 X D	1 X D	1 X D	1 X D
	IS/IEC - Min.	4.4/5.2	4.4/5.2	4.6/5.35	5.4/6.2
<b>ABRASION (N)</b>	NEMA - Min.	-	-	830/950	830/950
	BIC Value	6.8/7.6	6.8/7.6	7.0/7.8	8.1/8.8
	IS/IEC	155 - 6.3 mm	175 - 3.55mm	200 - 3.55mm	220 - 3.55mm
<b>HEAT SHOCK</b>	NEMA	-	175 - 10% + 3d	200 - 10% +3d	220 - 10% +3d
<b>(1/2 Hr.) Deg. C</b>	BIC Value	175 - 5.00 mm	175 - 2.55mm	200 - 2.55mm	220 - 2.55mm
	IS/IEC	240	270	300	320
<b>CUT THROUGH</b>	NEMA	-	250	300	300
<b>(For 2 min.) Deg. C</b>	BIC Value	280	290	310	330
	IS/IEC	N/A	N/A	N/A	N/A
<b>HV PIN HOLE (V DC)</b>	NEMA	1000 - 10	1000 - 10	1000 - 10	1000 - 10
	BIC Value	1000 - 10	1000 - 10	1000 - 10	1000 - 10
	IS/IEC - Min.	5000	5000	5000	5000
<b>BDV (V)</b>	NEMA - Min.	-	5700	5700	5700
	BIC Value	8000	8000	8000	8000
<b>RANGE</b>	SWG	4 TO 36 SWG	4 TO 36 SWG	4 TO 36 SWG	4 TO 36 SWG
<b>APPLICATIONS</b>		For B Class Dry type Transformers, Stator winding fractional and HP motors, DC & Armature winding.	For F Class Dry type Transformers, Stator winding fractional and HP motors, DC & Armature winding, Hand tools Contactor coils, Motors for domestic appliances.	For H Class Dry type Transformers, Stator winding fractional and HP motors, DC & Armature winding, Hand tools Contactor coils, Motors for chemical industries and High torque continuous working requirements.	For W Class Dry type Transformers, Stator winding fractional and HP motors, DC & Armature winding, Hand tools Contactor coils, Motors for chemical industries, Automotive alternator stators, Solenoids, Television playback transformers, Toroidal yokes.



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**Enamelled Rectangular  
Aluminium Winding Wires**

## Enamelled Rectangular Aluminium Winding Wires

SPECIFICATION STANDARD	IEC-60317-16	IEC-60317-28	IEC-60317-29/ NEMA MW-36C
THERMAL CLASS	155°C	180°C	200°C
Chemical base of base coat	Modified Polyester	Polyester imide	Polyester imide
Chemical base of Top coat			Polyamide-imide
Range of Wire (Diameter)	Cross section area 10.0 to 60 mm <sup>2</sup>		
Thickness	3-5 mm		
Width	5-12 mm		
Increase in Diameter (mm)			
IEC 60317 Grade 1	0.060 to 0.110		
IEC 60317 Grade 2	0.120 to 0.170		
NEMA 1000 Heavy	0.076 to 0.127		
NEMA 1000 Quadruple	0.127 to 0.178		
Standard Colour	Brown	Brown	Brown
TECHNICAL PROPERTIES AS PER IEC-60317-0-2			
Flexibility & Adherence			
Mandrel Bending on thickness and width	3-4 t & 4-5 W	3-4 t & 4-5 W	3-4 t & 4-5 W
Adherence (no crack after stretching %)	15	15	15
Heat Shock No cracks after bending on thickness / Temperature°C	6 t / 175	6 t / 200	6 t / 220
Break down voltage at Room temp. (minimum) Volts	2000 V	2000 V	2000 V
Resistance to hot transformer oil	Not applicable	Not applicable	Not applicable
Heat Bonding temperature / Time	Not applicable	Not applicable	Not applicable
Special Characteristics & Application	High thermal, Mechanical, electrical and chemical	High thermal, electrical and Mechanical, properties, excellent heat shock &	Very high thermal properties
Special Notes	Large rotating Machines such as: motors, DC motors, High Voltage motors etc.	Large and special electrical machines such as: generators, alternators, Motors, HV motors, Dry type transformers, Inductor coils, etc.	Special electrical machine and magnet coils for aerospace industry

## Cross Sectional Areas, Width, Thickness and Corner Radius of Rectangular Wires

Thickness		0.80	0.90	1.00	1.12	1.25	1.40	1.60	1.80	2.00	2.24	2.50	2.80	3.15	3.55	4.00
Width	mm	Corner Radius*			Corner Radius 0.50 mm				Corner Radius 0.65 mm			Corner Radius 0.800 mm				1.00
	2.00	1.463	1.626	1.785	2.026	2.286	2.586	-	-	-	-	-	-	-	-	-
2.24	1.655	1.842	2.025	2.294	2.586	2.922	3.370	-	-	-	-	-	-	-	-	-
2.50	1.863	2.076	2.285	2.586	2.911	3.286	3.786	4.138	-	-	-	-	-	-	-	-
2.80	2.103	2.346	2.585	2.922	3.286	3.706	4.266	4.678	5.238	-	-	-	-	-	-	-
3.15	2.383	2.661	2.935	3.314	3.723	4.196	4.826	5.308	5.938	6.694	-	-	-	-	-	-
3.55	2.703	3.021	3.335	3.762	4.223	4.756	5.466	6.028	6.738	7.590	8.326	-	-	-	-	-
4.00	3.063	3.426	3.785	4.266	4.786	5.386	6.186	6.838	7.638	8.598	9.451	10.651	-	-	-	-
4.50	3.463	3.876	4.285	4.826	5.411	6.086	6.986	7.738	8.638	9.718	10.701	12.051	13.626	-	-	-
5.00	3.863	4.326	4.785	5.386	6.036	6.786	7.786	8.638	9.638	10.838	11.951	13.451	15.201	17.201	-	-
5.60	4.343	4.866	5.385	6.058	6.786	7.626	8.746	9.718	10.838	12.182	13.451	15.131	17.091	19.331	21.542	-
6.30	4.903	5.496	6.085	6.842	7.661	8.606	9.866	10.978	12.238	13.750	15.201	17.091	19.296	21.816	24.342	-
7.10	-	6.216	6.885	7.738	8.661	9.726	11.146	12.418	13.838	15.542	17.201	19.331	21.816	24.656	27.542	-
8.00	-	-	7.785	8.746	9.786	10.986	12.586	14.038	15.638	17.558	19.451	21.851	24.651	27.851	31.142	-
9.00	-	-	-	9.866	11.036	12.386	14.186	15.838	17.638	19.798	21.951	24.651	27.801	31.401	35.142	-
10.00	-	-	-	-	12.286	13.786	15.786	17.638	19.638	22.038	24.451	27.451	30.951	34.951	39.142	-

\* 0.50 Nominal Thickness

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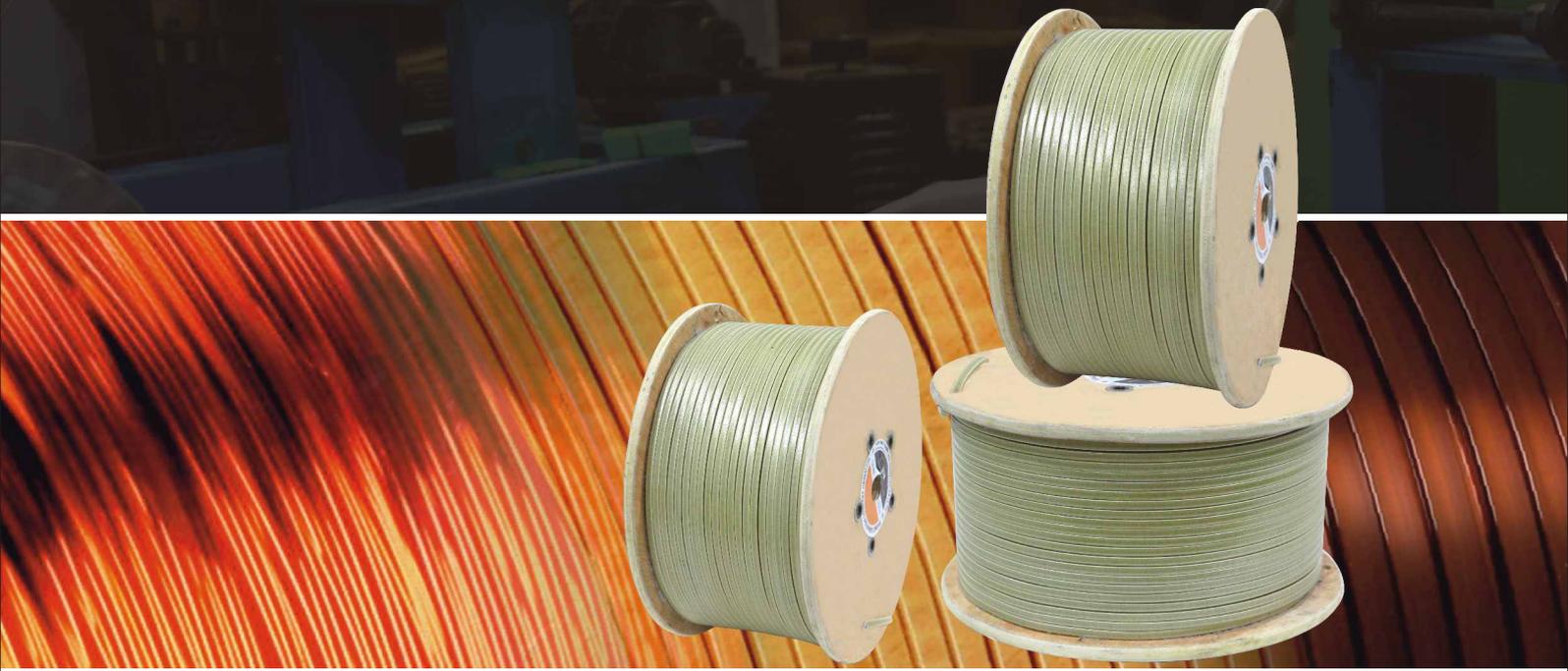
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# Fibre Glass Covered Varnish Treated Bare / or Enamelled Aluminium Wires

## Rectangular Wires

PROPERTY	Type Class	BARE 155 Class	BARE 180 Class	Enamelled 155 Class	Enamelled 180 Class
STANDARD (Ref.)	IS:13730	Part 32	Part 31	Part 32	Part 31
	IEC - 60317	Part 32	Part 31	Part 32	Part 31
SIZE	mm	2.5 mm T	2.5 mm T	2.5 mm T	2.5 mm T
COVERING	Double	Grade G2	Grade G2	Grade 2 G2	Grade 2 G2
ELONGATION (%)	IS/IEC - Min.	32	32	32	32
	BIC Value	40	40	40	40
SPRINGNESS (DEG.)	IS/IEC - Max.	5.5	5.5	5.5	5.5
	BIC Value	4.0	4.0	4.5	4.5
FLEXIBILITY (NO CRACK)	IS/IEC	10 x w/T	10 x w/T	10 x w/T	10 x w/T
	BIC Value	7 x w/T	7 x w/T	7 x w/T	7 x w/T
ADHERENCE (10% PREST.)	IS/IEC - Max.	10% Str-No Crack	10% Str-No Crack	10% Str-No Crack	10% Str-No Crack
	BIC Value	15% Str-No Crack	15% Str-No Crack	15% Str-No Crack	15% Str-No Crack
BDV (V)	Max.	560	560	2000	2000
	IS/IEC - Min.	800	900	3200	3200
RANGE (mm)	Width	4.0 - 15.0	4.0- 15.0	4.0 - 15.0	4.0- 15.0
	Thickness	2.0- 6.0	2.0- 6.0	2.0- 6.0	2.0- 6.0
Applications		For F class Motors, Transformers, Coils	For H class Motors, Transformers, Coils	For F class Motors, Transformers, Coils	For H class Motors, Transformers, Coils

## Round Wires

PROPERTY	Type Class	BARE 155 Class	BARE 180 Class
STANDARD	IS:4685	Part I	Part I
COVERING	Double	Double	Double
ELONGATION (%)	IS - Min	25	25
	BIC Value	30	30
FLEXIBILITY (NO CRACK)	IS	10 X d	10 X d
	BIC Value	6 X d	6 X d
HEAT SHOCK 48 HRS. UNBENT	IS	175 Deg. C	200 Deg. C
	BIC Value	200 Deg. C	220 Deg. C
TACKINESS 65 DEG. C - 5 MIN	IS	No Tacky	No Tacky
	BIC Value	No Tacky	No Tacky
BDV (V)	IS - Min	450	450
	BIC Value	750	750
RANGE (mm)		3.0 to 8.0	3.0 to 8.0

## Increase in Covering Dimension :

### Fibre Glass Covered Rectangular Wires

Width (mm)		Glass Fibre Bare (mm)				Glass Fibre Enamelled (mm)			
		Single	Grade G1	Double	Grade G2	Single	Grade 2 G1	Double	Grade 2 G2
Over	Upto	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
-	3.15	0.12	0.20	0.21	0.33	0.24	0.36	0.37	0.51
3.15	6.30	0.14	0.22	0.23	0.37	0.26	0.38	0.39	0.53
6.30	12.50	0.16	0.26	0.27	0.43	0.28	0.42	0.43	0.57
12.50	16.00	0.18	0.30	0.31	0.47	0.30	0.46	0.47	0.63

### Fibre Glass Covered Round Wires

Size (mm)	Tolerance +/-	Double covering Overall Dia. Max	Covering Min.	Resistance Ohm / meter at 20 Deg. C
mm	mm	mm	mm	Nom.
3.00	0.030	3.331	0.180	0.0039457
3.15	0.032	3.481	0.180	0.0035789
3.35	0.034	3.683	0.180	0.0031643
3.55	0.036	3.883	0.180	0.0028178
4.00	0.040	4.335	0.180	0.0022194
4.50	0.045	4.845	0.180	0.0017536
5.00	0.050	5.345	0.180	0.0014204
5.50	0.055	5.940	0.210	0.0011739
6.00	0.060	6.440	0.210	0.0009864
6.50	0.065	6.940	0.210	0.0008405
7.00	0.070	7.440	0.210	0.0007247
7.50	0.075	7.950	0.210	0.0006313
8.00	0.080	8.450	0.210	0.0005549

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Buy the Best - Buy BIC Products

**BHARAT INSULATION COMPANY (INDIA) PVT. LTD.**

(formerly known as Bharat Insulation Company (India) Limited)



**Submersible Winding Wire**

## Poly Wrapped Winding Wire

BIC thin walled speciality winding wires for submersible pump motors have multi layers of Insulation film which makes them impervious to water and have excellent insulation properties. The conductor is manufactured from treated electrolytic copper with 99.99% purity ensuring low electrical losses. BIC wires are soft and are easy to wind new motors or repair old motors, particularly since they are thin walled. BIC winding wires for submersible pump motors are manufactured to adhere to IS 8783 (Part 4/ Sec 3) and have excellent Electrical, Mechanical, Chemical and Thermal properties.

## Key Performance Characteristics

Volume Resistivity at 27°C	Finished Wire
Tensile Strength (min)	1 x 10 <sup>16</sup> ohms-cm
Elongation at Break (min)	50 N/mm <sup>2</sup>
Water absorption (Gravimetric)	125%
Treatment Temperature (±2°C)	70°C for 24 hours
Water absorbed (max)	2 mg/cm <sup>2</sup>



## Poly Wrapped Submersible Winding Wires of Copper

Ref : 8783, 1995 : IS : 10051, 1981 IS : 12788

Sr. No.	Nominal Conductor Diameter	Max Over all Diameter	Over all Diameter (BICIL-Standard)	Area of Conductor	Nominal Resistance	Elongation at Break	Elongation at Break (BICIL-Standard)
	mm	mm	mm	mm <sup>2</sup>	Ω per meter at 20° C	Minimum %	Minimum %
1	0.40	0.9000	0.7000	0.1257	0.1360	24	28
2	0.50	1.0000	0.8000	0.1964	0.0871	25	28
3	0.60	1.1000	0.9000	0.2828	0.0605	26	30
4	0.70	1.2000	1.0000	0.3849	0.0444	28	32
5	0.80	1.3000	1.1000	0.5027	0.0340	28	32
6	0.90	1.4000	1.2500	0.6363	0.0269	29	32
7	1.00	1.5000	1.3500	0.7855	0.0218	30	34
8	1.10	1.6000	1.4500	0.9505	0.0180	30	34
9	1.20	1.7000	1.5500	1.1311	0.0151	31	35
10	1.30	1.8000	1.6500	1.3275	0.0129	32	35
11	1.40	2.0000	1.7500	1.5396	0.0111	32	35
12	1.50	2.1000	1.9000	1.7674	0.0097	32	35
13	1.60	2.2000	2.0000	2.0109	0.0085	32	36
14	1.70	2.3000	2.1000	2.2701	0.0075	32	36
15	1.80	2.4000	2.2000	2.5450	0.0067	32	36
16	1.90	2.5000	2.3000	2.8357	0.0060	32	36
17	2.00	2.6000	2.4000	3.1416	0.0055	33	37
18	2.10	2.7000	2.5000	3.4641	0.0049	33	37
19	2.20	2.8000	2.6000	3.8018	0.0045	33	37
20	2.30	3.1000	2.8000	4.1553	0.0041	33	37
21	2.40	3.2000	2.9000	4.5245	0.0038	33	37
22	2.50	3.3000	3.0000	4.9094	0.0035	33	37

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Buy the Best - Buy BIC Products

## **BHARAT INSULATION COMPANY (INDIA) PVT. LTD.**

(formerly known as Bharat Insulation Company (India) Limited)



## **Tin Can Welding Copper Wire**



## COMPOSITION

Manufactured from ETP grade copper with Purity of 99.9% with less than 400 ppm oxygen or from Oxygen free copper with purity of 99.95% with less than 10 ppm oxygen.



## SURFACE FINISH

Clean, Smooth, Bright and free of oxidization and wire drawing process residue.



## PACKAGING

Palletised octabins of corrugated paper with centre cone for trouble free de-reeling of 120 meters per minute.

### ► Per Package Qty

250 kg, 500 kg, 850 kg per Octabin

### ► Electrical Properties

Max. Specific resistance ( $\Omega\text{mm}^2/\text{m}$ ) 0.017241  
Min. Conductivity ( $\text{m}/\Omega\text{mm}^2$ ) 58

### ► Application

For welding Tin Can Containers on high speed machines.

### ► Mechanical Properties

Yield Strength, Rp. 0.2 ( $\text{N}/\text{mm}^2$ )  
**Minimum 180**

Tensile Strength Rp. 0.2 ( $\text{N}/\text{mm}^2$ ) **245 - 285**

Elongation at Fracture **22% - 28%**

### Sizes Available

Nominal Diameter of round section copper wire with tolerance of  $\pm 0.04$  mm.

- 1.24 mm
- 1.38 mm
- 1.50 mm
- 1.60 mm
- 1.80 mm
- 2.00 mm
- 2.50 mm



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Buy the Best - Buy BIC Products

**BHARAT INSULATION COMPANY (INDIA) PVT. LTD.**



**Tapped Copper / Aluminum Round  
& Rectangular Conductors**

## Tapped Copper / Aluminum Round & Rectangular Conductors

Rectangular and Round Electrolytic Copper and Aluminium is taped with various insulations and are used as winding wires in oil filled transformers, dry type transformers, switchgears and traction motors etc.

Following are some of the standard products we manufacture however we can tape various insulations systems with varied covering and thermal class as per our customer's requirement.

### Details of our products with range, thermal class, insulation grade & specifications: -

Product Paper Covered Conductors	Base Metal	Specification	Unit of Measure	Range		Dimensions (Width)		Dimension (Thickness)		Dimension Insulation Thickness	
				Min	Max	Min (mm)	Max (mm)	Min (mm)	Max (mm)	Min (mm)	Max (mm)
<b>Rectangular</b>	Copper	IS-13730 Part-27	mm <sup>2</sup>	10.00	100.00	5.00	20.00	2.00	5.00	0.20	1.50
<b>Round</b>	Copper	IS-7404 Part- I	mm	1.00	6.00					0.20	0.50
<b>Rectangular</b>	Aluminium	IS-6162 Part-II	mm <sup>2</sup>	10.00	100.00	5.00	20.00	2.00	5.00	0.20	1.50
<b>Round</b>	Aluminium	IS-6162 Part-I	mm	1.00	6.00					0.20	0.50
<b>Insulation</b>	<b>Electrical Grade Insulating Kraft Paper</b>										
<b>Insulation Grade</b>	<b>DPC/TPC/MPC</b>										
<b>Thermal Class</b>	<b>105 °C</b>										

Aromatic Polyamide/ Nomex*(Dupont) Covered Conductors	Base Metal	Specification	Unit of Measure	Range		Dimensions (Width)		Dimension (Thickness)		Dimension Insulation Thickness	
				Min	Max	Min (mm)	Max (mm)	Min (mm)	Max (mm)	Min (mm)	Max (mm)
<b>Rectangular</b>	Copper	MW-60 C	mm <sup>2</sup>	10.00	100.00	5.00	20.00	2.00	5.00	0.10	1.00
<b>Round</b>	Copper	MW-61 C	mm	2.00	6.00					As per Customer	
<b>Rectangular</b>	Aluminium	MW-60 A	mm <sup>2</sup>	10.00	100.00	5.00	20.00	2.00	5.00	0.10	1.00
<b>Round</b>	Aluminium	MW-61 A	mm	2.00	6.00					As per Customer	
<b>Insulation</b>	<b>Aromatic Polyamide</b>										
<b>Insulation Grade</b>	<b>A1 to A5 &amp; B1 to B5</b>										
<b>Thermal Class</b>	<b>220 °C</b>										

Epoxy/Glass Mica Covered Conductors	Base Metal	Specification	Unit of Measure	Range		Dimensions (Width)		Dimension (Thickness)		Dimension Insulation Thickness	
				Min	Max	Min (mm)	Max (mm)	Min (mm)	Max (mm)	Min (mm)	Max (mm)
<b>Rectangular</b>	Copper	As per Customer	mm <sup>2</sup>	10.00	60.00	5.00	12.00	2.00	5.00	As per Customer	
<b>Round</b>	Copper	As per Customer	mm	2.00	6.00					As per Customer	
<b>Rectangular</b>	Aluminium	As per Customer	mm <sup>2</sup>	10.00	60.00	5.00	12.00	2.00	5.00	As per Customer	
<b>Round</b>	Aluminium	As per Customer	mm	2.00	6.00					As per Customer	
<b>Insulation</b>	<b>Epoxy/Glass Mica</b>										
<b>Insulation Grade</b>	<b>As per Customer</b>										
<b>Thermal Class</b>	<b>200 °C</b>										

Polyester Film Covered Conductors	Base Metal	Specification	Unit of Measure	Range		Dimensions (Width)		Dimension (Thickness)		Dimension Insulation Thickness	
				Min	Max	Min (mm)	Max (mm)	Min (mm)	Max (mm)	Min (mm)	Max (mm)
<b>Rectangular</b>	Copper	As per Customer	mm <sup>2</sup>	10.00	100.00	5.00	20.00	2.00	5.00	0.20	0.50
<b>Round</b>	Copper	As per Customer	mm	2.00	8.00					0.20	0.50
<b>Rectangular</b>	Aluminium	As per Customer	mm <sup>2</sup>	10.00	100.00	5.00	20.00	2.00	5.00	0.20	0.50
<b>Round</b>	Aluminium	As per Customer	mm	2.00	8.00					0.20	0.50
<b>Insulation</b>	<b>Polyester Film</b>										
<b>Insulation Grade</b>	<b>As per Customer</b>										
<b>Thermal Class</b>	<b>155 °C</b>										

Aromatic Polyimide / Apical Film Covered Conductors	Base Metal	Specification	Unit of Measure	Range		Dimensions (Width)		Dimension (Thickness)		Dimension Insulation Thickness	
				Min	Max	Min (mm)	Max (mm)	Min (mm)	Max (mm)	Min (mm)	Max (mm)
<b>Rectangular</b>	Copper	IS-13730 Part-44	mm <sup>2</sup>	10.00	50.00	5.00	10.00	2.00	5.00	As per Customer	
<b>Round</b>	Copper	IS-13730 Part-43	mm	2.00	5.00					As per Customer	
<b>Rectangular</b>	Aluminium	As per Customer	mm <sup>2</sup>	10.00	50.00	5.00	10.00	2.00	5.00	As per Customer	
<b>Round</b>	Aluminium	As per Customer	mm	2.00	5.00					As per Customer	
<b>Insulation</b>	<b>Aromatic Polyimide / Apical film</b>										
<b>Insulation Grade</b>	<b>As per Customer</b>										
<b>Thermal Class</b>	<b>240 °C</b>										

Insulating Kraft / Crepe Paper Covered Conductors	Base Metal	Specification	Unit of Measure	Range		Dimensions (Width)		Dimension (Thickness)		Dimension Insulation Thickness	
				Min	Max	Min (mm)	Max (mm)	Min (mm)	Max (mm)	Min (mm)	Max (mm)
<b>Rectangular</b>	Copper	IS-13730 Part-27	mm <sup>2</sup>	10.00	100.00						
<b>Round</b>	Copper	IS-7404 Part- I	mm	2.00	5.00					As per Customer	
<b>Rectangular</b>	Aluminium	IS-6162 Part-II	mm <sup>2</sup>	10.00	100.00						
<b>Round</b>	Aluminium	IS-6162 Part-I	mm	2.00	5.00					As per Customer	
<b>Insulation</b>	<b>Insulating Kraft / Crepe Paper</b>										
<b>Insulation Grade</b>	<b>2/3 Bunch (Only For Rectangular)</b>										
<b>Thermal Class</b>	<b>105 °C</b>										



**INSULATING VARNISHES**



**BHARAT INSULATION COMPANY (INDIA) PVT. LTD.**



## **GLOW STRONG BOND AD** **AIR DRYING VARNISH CLEAR 120 (E)**

### **DESCRIPTION**

Glow Strong Bond AD is a clear fast air drying impregnating varnish with excellent moisture resistance based on Phenolic Modified Alkyd Resin.

Glow Strong Bond AD has a temperature index of 120° C (E) with anti tracking properties. When cured completely the clear smooth film of Glow Strong Bond AD exhibits very good resistance against water, mild acids, alkalis and oils and has excellent electrical properties under humid conditions.

Glow Strong Bond AD is ideally suitable for impregnating and finishing of small coils and stators.

Glow Strong Bond AD is also suitable for use in transformers, motors, fans and coating of printed circuit boards.

Glow Strong Bond AD can be applied by spraying, brushing and dipping methods.

Glow Strong Bond AD is also recommended for quick repair work on motors, transformers and other electrical equipments.

### **PROPERTIES OF GLOW STRONG BOND AD**

Chemical Base:	Modified Alkyd Resin
Appearance	Clear Liquid
Colour	Dark Brown
Viscosity- FB4 At 30°C	30±2 Seconds
Solids Content (2 gms /140°C / 1.5 Hour)	40±2 %
Specific Gravity At 30°C	0.90
Flash Point (Closed Cup)	>37°C

### **DRYING PROPERTIES AT 30°C**

Surface dry	15-20 Minutes
Hard dry	1-2 Hours
Full Dry	24 Hours
The Suggested curing schedule is 24 hours at room temperature	

### **PROPERTIES OF CURED FILM**

VOLUME RESISTIVITY	
at 30°C	10 <sup>15</sup> Ω .cm.
after 24 hours water immersion	10 <sup>14</sup> Ω .cm.
DIELECTRIC STRENGTH	
at 30°C	110KV /mm
at 120°C	100KV/mm
after 24 hours water immersion	90KV /mm
Specimen cured for 24 hours at room temperature	

### **SHELF LIFE**

12 Months When Stored in Original Sealed Containers at RT

### **PACKING**

0.45/0.9/4/21/180 kg

### **RECOMMENDED THINNER**

THINNER Glow Strong Bond AD

### **COMPATIBILITY WITH THINNER**

1: min1

The above information is given for general guidance for the use of our product. Keeping in view the variable operating conditions and methods, it is recommended that each consumer evaluates the suitability of the product. The company does not accept any responsibility whatsoever for any damage, injury or loss resulting from the use of the above information.

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