ENAMEL WINDING WIRES

Enamel Winding Wires are the Enamel Insulated Conductors that are widely used in construction and electrical equipments. Lumbini Vidyut Udyog makes Enamelled Wires conforming to IS:13730. In addition, enamelled wires conforming to International Standards such as the British Standards (BS), IEC, etc. are also manufactured. The Customer base comprises of companies manufacturing electrical goods, and all other industrial application wherein copper wire winding is essential.

RANGE & APPLICATION OF ENAMELLED WINDING WIRES		
DESCRIPTION	SPECIFICATION	APPLICATION
Polyester enamelled copper wire	IS-13730 (PART 34)	General purposes, motors, transformers, fan etc
Modified Polyester Enamelled Copper Wire	IS-13730 (PART 3)	Special motors, handtools, generators etc.
Polyesterimide Enamelled Copper Wire	IS-13730 (PART 8)	Hermetic application & all thermal 'H' class equipment
Polyesterimide Enamelled Copper Wire (self-Solderable)	IS-13730 (PART 20) IS-13730 (PART 4)	Telecommunication, television & electronic euipment
Polyvinyl Acetal (PVA) Enamelled Copper Wire	IS-13730 (PART 1)	All general quipment requiring high mechanical properties
Dual Coated Enamelled Copper Wire Base Coat: Polyesterimide Top Coat: Polyamide-Imide	IS-13730 (PART 13)	Hermetic application, special purpose motors, refrigerators, handtools etc.

FEATURES OF ENAMELLED WINDING WIRES

- High flexibility of the enamel.
- Good resistance to abrasion.
- High mechanical and thermal properties.
- Suitable for windings that are subjected to constantly high temperature and mechanical stress.
- Good chemical resistance.

PARAMETER OF DIFFERENT TYPES OF ENAMELLED WINDING WIRES

TYPES OF TEST	POLYESTER PART 34	POLYESTER PART 3	PVA PART 1	POLYURE-THANE PART 4	POLYURE-THANE PART 4	POLYURE-THANE PART 4	DUAL COATED PART 13
Thermal Class	130	155	105	130	155	180	200
Mandrel Winding	1 X d	1 X d	1 X d	1 X d	1 X d	1 X d	1 X d
Elongation	30% (Min)	30% (Min)	30% (Min)	30% (Min)	30% (Min)	30 % (Min)	30% (Min)
Springiness	41 (Max)	41 (Max)	41 (Max)	41 (Max)	41 (Max)	41 (Max)	41 (Max)
Jerk	No loss of adhesion	No loss of adhesion	No loss of adhesion	No loss of adhesion	No loss of adhesion	No loss of adhesion	No loss of adhesion
Break Down Voltage	5 KV (Min)	5 KV (Min)	5 KV (Min)	5 KV (Min)	5 KV (Min)	5 KV (Min)	5 KV (Min)
Cut - Through	240°C,18N for 2 mins	240°C,18N for 2 mins	170°C,18N for 2 mins	170°C,18N for 2 mins	200°C,18N for 2 mins	300°C,18N for 2 mins	320°C,18N for 2 mins
Heat - Shock	155°C,6xd 30 mins	175°C, .24mm 30 mins	155°C, 1xd 30 mins	155°C, 2.24 mm 30 mins	175°C, 2.24 mm 30 mins	200°C, 2.24 mm 30 mins	202°C, 2.24 mm 30 mins
Resistance at 20°c per meter	0.02116Ω (Min.) 0.02240Ω (Max.)	0.02116Ω (Min.) 0.02240Ω (Max.)	0.02116Ω (Min.) 0.02240Ω (Max.)	0.02116Ω (Min.) 0.02240Ω (Max.)	0.02116Ω (Min.) 0.02240Ω (Max.)	0.02116Ω (Min.) 0.02240Ω (Max.)	0.02116Ω (Min.) 0.02240Ω (Max.)
Resistance to abrasion	Min : 8.8 N Av : 10.4 N	Min : 8.8 N Av : 10.4 N	Min : 9.6 N Av : 11.3 N	Min : 7.9 N Av : 9.3 N	Min : 7.9 N Av : 9.3 N	Min : 9.2 N Av : 10.9 N	Min : 9.6 N Av : 11.3 N
Continuity of covering	5 Faults/ 30m(Max.) at 1500 volts	5 Faults/ 30m(Max.) at 1500 volts	5 Faults/ 30m(Max.) at 1500 volts	5 Faults/ 30m(Max.) at 1500 volts	5 Faults/ 30m(Max.) at 1500 volts	5 Faults/ 30m(Max.) at 1500 volts	5 Faults/ 30m(Max.) at 1500 volts
Swg range	12-38	12-38	12-38	20-38	20-38	12-38	22-28

NOTE: ABOVE VALUES ARE AS PER IS:13730 SPECIFICATIONS FOR 1.0 MM WIRE OF GRADE 2 (MEDIUM COVERING)

DIAMETERS AND INCREASE IN DIAMETERS OF ENAMELLED ROUND WINDING WIRES

NOMINAL CONDUCTOR DIAMETER SWG (MM)	CONDUCTOR TOLERANCE ± (MM)	GRADE 1		GRADE 2		CONDUCTOR RESISTANCE AT 20°C FOR 1 METER (OHMS)		
		MINIMUM INCREASE (MM)	MAXIMUM OVERALL DIA. (MM)	MINIMUM INCREASE (MM)	MAXIMUM OVERALL DIA. (MM)	NOMINAL	MINIMUM	MAXIMUM
6.401	0.064	0.055	6.500	0.100	6.554	0.000531	0.000520	0.000532
5.893	0.059	0.054	5.990	0.098	6.042	0.000626	0.000630	0.000639
5.385	0.054	0.053	5.482	0.096	5.530	0.000750	0.000723	0.000765
4.877	0.049	0.052	4.970	0.094	5.018	0.000913	0.000881	0.000933
4.470	0.045	0.050	4.561	0.092	4.607	0.001089	0.000105	0.000111
4.064	0.040	0.050	4.155	0.092	4.201	0.001317	0.00127	0.00134
3.658	0.037	0.049	3.746	0.089	3.791	0.001626	0.00157	0.00166
3.251	0.032	0.048	3.336	0.086	3.380	0.002057	0.00198	0.00209
2.946	0.030	0.045	3.029	0.084	3.072	0.002508	0.00242	0.00256
2.642	0.027	0.043	2.722	0.081	2.764	0.003118	0.00300	0.00318
2.337	0.024	0.042	2.415	0.079	2.455	0.003985	0.00384	0.00407
2.032	0.020	0.041	2.108	0.077	2.147	0.005271	0.00507	0.00532
1.829	0.019	0.040	1.903	0.075	1.941	0.006506	0.00626	0.00664
1.626	0.017	0.039	1.698	0.073	1.735	0.008232	0.00742	0.00842
1.422	0.015	0.038	1.492	0.071	1.528	0.01076	0.0104	0.0109
1.219	0.013	0.035	1.285	0.067	1.318	0.01465	0.0141	0.0149
1.016	0.011	0.034	1.080	0.065	1.113	0.02108	0.0206	0.0212
0.914	0.010	0.034	0.976	0.063	1.008	0.02605	0.02528	0.02686
0.813	0.009	0.032	0.872	0.060	0.902	0.03293	0.03194	0.03396
0.711	0.008	0.030	0.766	0.056	0.795	0.04305	0.04175	0.04442
0.610	0.006	0.027	0.659	0.050	0.684	0.05848	0.05687	0.06017
0.559	0.006	0.025	0.605	0.047	0.629	0.06965	0.06760	0.07178
0.508	0.006	0.025	0.554	0.047	0.578	0.0843	0.08168	0.08711
0.457	0.005	0.024	0.501	0.045	0.523	0.1042	0.1011	0.1075
0.417	0.005	0.022	0.458	0.042	0.480	0.1252	0.1212	0.1293
0.376	0.005	0.021	0.417	0.040	0.435	0.1539	0.1487	0.1595
0.345	0.005	0.020	0.382	0.038	0.401	0.1829	0.1722	0.1888
0.315	0.004	0.019	0.349	0.035	0.367	0.2193	0.2121	0.2269
0.295	0.004	0.019	0.329	0.035	0.347	0.2501	0.2414	0.2592
0.274	0.004	0.018	0.306	0.033	0.323	0.2899	0.2792	0.3011
0.254	0.004	0.018	0.286	0.033	0.303	0.3374	0.3242	0.3512
0.234	0.004	0.017	0.265	0.032	0.281	0.3974	0.3809	0.4149
0.213	0.003	0.015	0.241	0.029	0.255	0.4798	0.4625	0.4978
0.193	0.003	0.014	0.219	0.027	0.232	0.5842	0.5618	0.6081
0.173	0.003	0.013	0.197	0.025	0.210	0.7271	0.6967	0.7596
0.152	0.003	0.012	0.174	0.023	0.186	0.9418	0.8982	0.9888
0.132	0.003	0.011	0.152	0.021	0.162	1.2496	1.1841	1.3192
0.122	0.003	0.010	0.141	0.019	0.151	1.4623	1.3811	1.5502
0.112	0.003	0.009	0.130	0.017	0.139	1.7354	1.6318	1.8477
0.102	0.003	0.009	0.119	0.017	0.128	2.0923	1.9574	2.2398
0.091	0.003	0.008	0.107	0.016	0.115	2.6298	2.4423	2.8348
0.081	0.003	0.008	0.096	0.015	0.103	3.3192	3.058	3.6082
0.071	0.003	0.007	0.084	0.012	0.091	4.3167	3.9408	4.7475
0.061	0.002	0.007	0.074	0.011	0.081	5.8541	5.3272	6.3809
0.051	0.002	0.007	0.062	0.010	0.068	8.3794	7.6253	9.1335
0.041	0.002	0.005	0.050	0.010	0.056	12.9500	11.6939	14.2062