

LITMUS
INDUSTRIES LIMITED

— **ENAMEL WIRES
&
COPPER STRIPS**

www.litmus.com.np

OVERVIEW

The foundation of Litmus Industries (formerly known as Lumbini Vidyut) dates back to 1977, laid with a vision of creating deep connections, value, and growth for our people, partners, and stakeholders.

As Nepal's leading manufacturer of wires, cables, and conductors, Litmus is the largest company in the sector and the first and only public company in this field. Playing a vital role in Nepal's electrification journey, Litmus provides reliable products that strengthen the nation's energy infrastructure. Our brand expression, Electrifying Nepal, reflects its mission of bringing innovation and energy to power a brighter future, much like the first rays of sunlight bringing hope to a new day.

Since 2014, under the purview of Ramesh Corp, Litmus has driven progressive change. As the foremost and most trusted brand in Nepal's wires, cables, and conductors industry, we take immense pride in illuminating an electrified Nepal. Our commitment remains unwavering as we advance in harmony with the nation's growth agenda, contributing to its vitality and progress.



CERTIFICATIONS

The Litmus manufacturing facilities are proud to have ISO 9001:2015 certification, guaranteeing a quality management system that ensures the consistent delivery of products that meet customer, statutory, and regulatory requirements.

Litmus products have obtained certifications from the Nepal Bureau of Standards and Metrology and ISI certification from the Bureau of Indian Standards, demonstrating our dedication to providing quality products in Nepal.

In recognition of our unwavering commitment to superior quality, Litmus received the "NS Quality Award" from the government of Nepal in 2010, distinguishing us as the only cable manufacturing company in Nepal to be honored for such excellence.

Some of our products have prestigious certifications like KEMA for energy utilization, as well as CPRI, TAG, and ERDA certificates, which not only increase their acceptance in Nepal but also in other South Asian countries. These awards, accolades, and certifications highlight Litmus' dedication to innovation, propelling us towards a brighter and more innovative future.



PRODUCT RANGE OF WINDING WIRES



ENAMEL WIRES.



PAPER INSULATED STRIPS.



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 equipment
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	POLYURETHANE PART 4	POLYURETHANE PART 4	POLYURETHANE 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	4l (Max)	4l (Max)	4l (Max)	4l (Max)	4l (Max)	4l (Max)	4l (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 CONDUCT-OR DIAMETER SWG (MM)	CONDUCT-OR 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

PAPER INSULATED STRIPS

The Paper Insulated Copper Flat/Round Wires are made from high class electrolytic copper and wrapped insulated paper. The Paper Insulated Copper is tested as per the IS, BS & IEC guidelines by the Quality Control Department. Various tests such as physical, mechanical, electrical, thermal etc. are carried out before the dispatch of the final products. The production process is demonstrated in the chart below.

PACKING

Available in wooden reels in weight of 20/30/50 kgs

WRAPPING METHODS

50% overlapping as per the standard or as per the customer requirement.



PRODUCT RANGE



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