



**LUMBINI
VIDYUT**
UDYOG (P) LTD.



LOTUS
WINDING WIRES
CATALOGUE





LUMBINI VIDYUT UDYOG PVT. LTD., established in 1977 as the first ACSR Conductor Manufacturing Unit in Nepal, has broadened its product range in various types of Wires and Conductors within the past four decades. Today, it is one of the most prominent and reputed players in the Cable Industry in Nepal. The company has grown under the umbrella of Lucky Group, one of the largest private industrial and trading conglomerates in Nepal. The group has diverse businesses ranging from trading and manufacturing of goods like Vegetable Oil/Ghee to engineering and chemical goods like Cement, PVC and PE Compounds, Masterbatch, PVC Pipes, Casing Capping, Enamelled Wires, Paper Insulated Copper Strips, Conductors and PVC/XLPE Insulated Power and Control Cables.

The company manufactures several types of Winding Wires with the brand name 'LOTUS' that contains Enamelled Winding Wires, Poly Insulated Wires, PVC Insulated Wires, Paper Insulated Wires. Similarly, House-wires, Multi-strand Cables and Power Cables are manufactured with the brand name 'LITMUS'. Overhead Conductors such as AAC, ACSR, AAAC and ABC are also produced for transmission line purposes.

Inevitably, 'Lotus Enamel Winding Wires' are also exported to prominent regions of India like Delhi, Varanasi, West Bengal Region, Nagpur etc. For the last 15 years, it has created excellent goodwill and brand value on the firm basis of impeccable quality and customer service in the Indian Market. The Company's mission has always remained to cater only the best products, services and solutions to all its customers, achieved by a diligent team of Quality Control who persistently supervise the products in every step of the production process.

The company is located at Butwal Industrial Estate, Butwal, Nepal.

PRODUCT RANGE OF WINDING WIRES



- ⚡ ENAMELLED COPPER WINDING WIRES
- ⚡ PAPER INSULATED WINDING WIRES & STRIPS
- ⚡ SUBMERSIBLE MOTORS WINDING WIRES
- ⚡ ALUMINIUM WINDING WIRES FOR OEM CUSTOMERS

SALIENT FEATURES



SOME SALIENT FEATURES OF LOTUS WINDING WIRES:

- ▶ Made from quality raw materials.
- ▶ ISO 9001: 2008 certified company.
- ▶ Caters to various International Standards (IS, BS, IEC).
- ▶ Manufacturing experience in the field of Winding Wires for over 2 decades.
- ▶ In-house testing facility with inspection at every stage of the manufacturing process.
- ▶ Supervised by highly experienced and trained engineers and professionals.
- ▶ Well-established packaging and delivery system.
- ▶ Quality product and services at competitive pricing.
- ▶ Clientele ranging from private to public sectors.



QUALITY CONTROL



QUALITY POLICY

It has always been LVU's endeavour to give the best quality product with professional service. The management of Lumbini Vidyut Udyog Pvt. Ltd. is committed to produce and supply the best products for customer satisfaction, safety and durability.

The Management has achieved this through:

- ▶ Implementing a Quality Management System as per ISO 9001: 2008.
- ▶ Effective utilization of available resources.
- ▶ Continuous training and appraisal of employees.
- ▶ Continuous improvement in the Quality Management System.

QUALITY OBJECTIVE

The Company has established quality measures at every level of the organization. The Quality measures are as follows:

- ▶ Establishing an effective system to reduce wastage and cost of products and increasing the productivity of the organization.
- ▶ Innovating new products as per the changing market needs.
- ▶ Standardizing raw materials and manufactured products.
- ▶ Ensuring improved process control, appropriate maintenance and optimum use of machinery and equipments.
- ▶ Maintaining efficiency and duly calibrated monitoring and measuring equipments.
- ▶ Achieving superior product quality.
- ▶ Creating company work culture in order to elevate staff morale, dedication and loyalty.
- ▶ Achieving customer satisfaction, reliability and ensuring drop-in customer complaints.

QUALITY ASSURANCE

The Quality Control Department is equipped with impeccable facilities and a quality control team that keeps a close eye on every aspect of the production process. The Routine Test is carried out for manufacturing process assurance. Type Test is carried out in a sampling basis for each lot of the production process to confirm the relevant specification. Acceptance Test is done in the company laboratory as per customer demand. The final product is issued with a Test Certificate conforming to the relevant standard.

ENAMELLED COPPER WINDING WIRES



Enamelled Copper Winding Wires are the Enamel Insulated Conductors that are widely used in construction and electrical equipments.

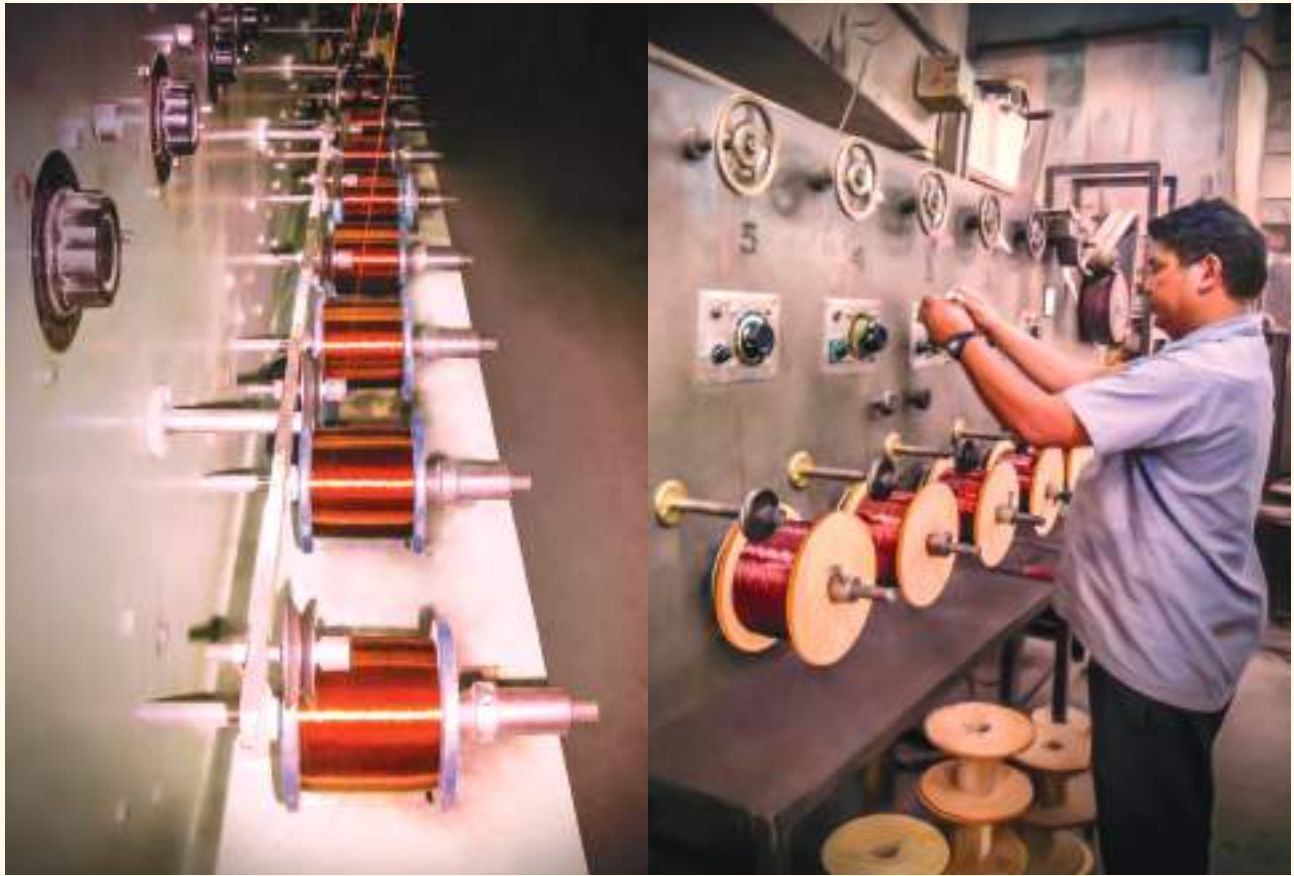
Lumbini Vidyut Udyog makes Enamelled Wires conforming to IS:13730. In addition, enamelled wires conforming to International Standards such as the British Standards (BS), IEC, etc. are also manufactured. The Customer base comprises of companies manufacturing electrical goods, and all other industrial 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 AND ALL THERMAL 'H' CLASS EQUIPMENT
POLYURETHANE ENAMELLED COPPER WIRE (SELF - SOLDERABLE)	IS-13730 (PART 20) IS-13730 (PART 4)	TELECOMMUNICATION, TELEVISION & ELECTRONIC EQUIPEMENT
POLYVINYL ACETAL (PVA) ENAMELLED COPPER WIRE	IS-13730 (PART 1)	ALL GENERAL EQUIPMENT 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.



THE PRODUCTION PROCESS

The production process is the heart of Lotus Winding Wire. Each step in the production process contains proper resource utilization and energy conservation efforts. Copper Wire is used all over the world in electrical equipments. Enamelled Copper Wire, also called 'Magnet Wire' is also widely used. The difference between the Enamelled Copper Wire and Regular Wire is in the insulation surrounding the wire. Enamelled Copper Wire is insulated with an enamel coating.

Each application of Winding Wire presents a different set of requirements. The product in use should be unaffected by environmental conditions and must contain good mechanical and electrical properties such as flexibility, adhesion, abrasion resistance and high dielectric strength. Taking into account all these properties, stringent measures are then taken by the Quality Control Department which is equipped with specialized apparatus for testing Enamelled Copper Wires as per the guidelines of IS:13778 and IEC: 851. The production process is demonstrated in the chart below.



TEST

Various Tests are carried out to ensure the Enamel Wire conforms to the Standards of the industry. These tests range from Physical Test, Dimension Test, Elongation Test to Electrical Resistance of Conductor and BDV Test (High Voltage Test).

PACKING

Enamel Wires are packed in Wooden Reels, Labelled Boxes or Special Packing, depending on the requirement of the customer.

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 20	POLYESTERIMIDE PART 8	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, 2.24mm 30 mins	155°C, 1xd 30 mins	155°C, 2.24mm 30 mins	175°C, 2.24mm 30 mins	200°C, 2.24mm 30 mins	220°C, 2.24mm 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	5Faults/30m (Max.) at 1500 volts	5Faults/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
3	6.401	0.064	0.055	6.500	0.100	6.554	0.000531	0.000520	0.000532
4	5.893	0.059	0.054	5.990	0.098	6.042	0.000626	0.000630	0.000639
5	5.385	0.054	0.053	5.482	0.096	5.530	0.000750	0.000723	0.000765
6	4.877	0.049	0.052	4.970	0.094	5.018	0.000913	0.000881	0.000933
7	4.470	0.045	0.050	4.561	0.092	4.607	0.001089	0.000105	0.000111
8	4.064	0.040	0.050	4.155	0.092	4.201	0.001317	0.00127	0.00134
9	3.658	0.037	0.049	3.746	0.089	3.791	0.001626	0.00157	0.00166
10	3.251	0.032	0.048	3.336	0.086	3.380	0.002057	0.00198	0.00209
11	2.946	0.030	0.045	3.029	0.084	3.072	0.002508	0.00242	0.00256
12	2.642	0.027	0.043	2.722	0.081	2.764	0.003118	0.00300	0.00318
13	2.337	0.024	0.042	2.415	0.079	2.455	0.003985	0.00384	0.00407
14	2.032	0.020	0.041	2.108	0.077	2.147	0.005271	0.00507	0.00532
15	1.829	0.019	0.040	1.903	0.075	1.941	0.006506	0.00626	0.00664
16	1.626	0.017	0.039	1.698	0.073	1.735	0.008232	0.00742	0.00842
17	1.422	0.015	0.038	1.492	0.071	1.528	0.01076	0.0104	0.0109
18	1.219	0.013	0.035	1.285	0.067	1.318	0.01465	0.0141	0.0149
19	1.016	0.011	0.034	1.080	0.065	1.113	0.02108	0.0206	0.0212
20	0.914	0.010	0.034	0.976	0.063	1.008	0.02605	0.02528	0.02686
21	0.813	0.009	0.032	0.872	0.060	0.902	0.03293	0.03194	0.03396
22	0.711	0.008	0.030	0.766	0.056	0.795	0.04305	0.04175	0.04442
23	0.610	0.006	0.027	0.659	0.050	0.684	0.05848	0.05687	0.06017
24	0.559	0.006	0.025	0.605	0.047	0.629	0.06965	0.06760	0.07178
25	0.508	0.006	0.025	0.554	0.047	0.578	0.08434	0.08168	0.08711
26	0.457	0.005	0.024	0.501	0.045	0.523	0.1042	0.1011	0.1075
27	0.417	0.005	0.022	0.458	0.042	0.480	0.1252	0.1212	0.1293
28	0.376	0.005	0.021	0.417	0.040	0.435	0.1539	0.1487	0.1595
29	0.345	0.005	0.020	0.382	0.038	0.401	0.1829	0.1722	0.1888
30	0.315	0.004	0.019	0.349	0.035	0.367	0.2193	0.2121	0.2269
31	0.295	0.004	0.019	0.329	0.035	0.347	0.2501	0.2414	0.2592
32	0.274	0.004	0.018	0.306	0.033	0.323	0.2899	0.2792	0.3011
33	0.254	0.004	0.018	0.286	0.033	0.303	0.3374	0.3242	0.3512
34	0.234	0.004	0.017	0.265	0.032	0.281	0.3974	0.3809	0.4149
35	0.213	0.003	0.015	0.241	0.029	0.255	0.4798	0.4625	0.4978
36	0.193	0.003	0.014	0.219	0.027	0.232	0.5842	0.5618	0.6081
37	0.173	0.003	0.013	0.197	0.025	0.210	0.7271	0.6967	0.7596
38	0.152	0.003	0.012	0.174	0.023	0.186	0.9418	0.8982	0.9888
39	0.132	0.003	0.011	0.152	0.021	0.162	1.2496	1.1841	1.3192
40	0.122	0.003	0.010	0.141	0.019	0.151	1.4623	1.3811	1.5502
41	0.112	0.003	0.009	0.130	0.017	0.139	1.7354	1.6318	1.8477
42	0.102	0.003	0.009	0.119	0.017	0.128	2.0923	1.9574	2.2398
43	0.091	0.003	0.008	0.107	0.016	0.115	2.6298	2.4423	2.8348
44	0.081	0.003	0.008	0.096	0.015	0.103	3.3192	3.058	3.6082
45	0.071	0.003	0.007	0.084	0.012	0.091	4.3167	3.9408	4.7475
46	0.061	0.002	0.007	0.074	0.011	0.081	5.8541	5.3272	6.3809
47	0.051	0.002	0.007	0.062	0.010	0.068	8.3794	7.6253	9.1335
48	0.041	0.002	0.005	0.050	0.010	0.056	12.9500	11.6939	14.2062

PAPER INSULATED WINDING WIRES & STRIPS



Paper Insulated Copper/Aluminium Conductors are the most commonly used conductors for winding coils of transformers and other electrical equipment. Insulated with paper, the conductor has excellent electrical and thermal properties.

RANGE OF PAPER INSULATED WINDING WIRES

TYPES	SIZES
SOLID ROUND WIRE	From 1.40mm to 3.50mm in DPC/TPC.
RECTANGULAR FLAT WIRES & STRIPS	From 2mm X 4mm to 3mm X 15mm in DPC/TPC.

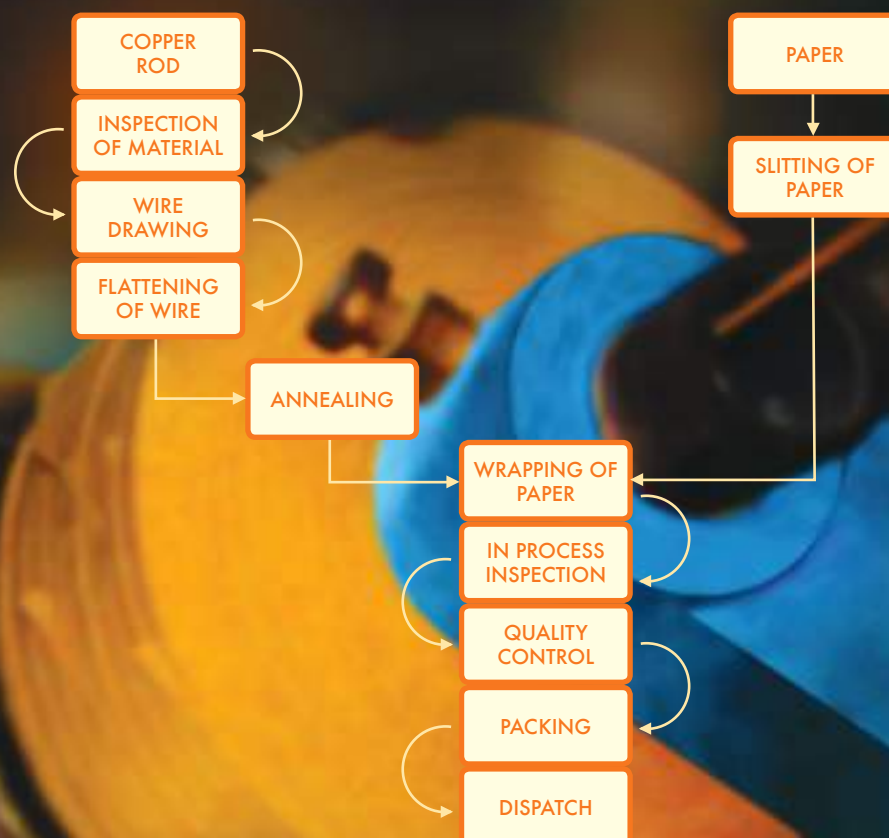
FEATURES OF PAPER INSULATED WINDING WIRES & STRIPS

- ▶ Good mechanical & thermal properties.
- ▶ Resistance to abrasion.
- ▶ Good flexibility for winding coils.



THE PRODUCTION PROCESS

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 visual, 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.

SUBMERSIBLE MOTORS WINDING WIRES



Submersible Motors are made to function under water. The Winding Wires used to wind them are solid bare copper conductor insulated by jacketing multi-layered polyester and polypropylene films to ensure its durability and reliability over an extensive period of time.

FEATURES OF SUBMERSIBLE MOTORS WINDING WIRES

- ▶ High insulation resistance. ▶ High di-electric strength. ▶ Good chemical and thermal resistance.
- ▶ Reliable insulation wire. ▶ High-performance thrust bearing.

SIZE RANGE

From 0.60mm to 3.00mm
(SWG 10 to SWG 23).

PACKING

Standard: 100mtr. Coils.
Special Packing: As per customer
requirement.



LVU PRODUCT RANGE



⚡ DOMESTIC CABLES

HOUSE WIRING CABLES

NS: 344, BS: 6004, IS: 694

- ▶ Single Core
- ▶ Circular Twins, Three and Four Core
- ▶ Flat Twin or Three Core

FLEXIBLE CABLES

BS: 6004, IS: 694

- ▶ Multi-strand Flexible Cables
- ▶ Parallel or Twisted Twin
- ▶ Circular Twin, Three and Four Core
- ▶ Flat Twin and Three Core

⚡ PVC / XLPE POWER CABLES

BS: 6346, IS: 1554, IS: 7098

- ▶ Copper Conductor - Armoured & Unarmoured
(Single core up to 630 mm², Multi core up to 400 mm²)
- ▶ Aluminium Conductor - Armoured & Unarmoured
(Single core up to 1000 mm², Multi core up to 400 mm²)

⚡ PVC CONTROL CABLES

BS: 6346, IS: 1554

- ▶ Copper Conductor - Armoured & Unarmoured
(Up to 61 core in size 1.5 mm², 2.5 mm²)

⚡ OTHER CABLES

- ▶ Concentric Cables
- ▶ Drop Wires, Jumper Wires
- ▶ Flat Cables (For Submersible Pumps & Motors)

BS: 6346

IEC: 189

IS: 694

⚡ SPECIALITY CABLES

- ▶ FRLS Cables (Fire Retardant Low Smoke Cable)
- ▶ Anti-Rodent/Anti-Termite Cables
- ▶ ZHFR (Zero Halogen Fire Retardant)
- ▶ Lead Free Cable
- ▶ Auto Cables

IS: 694, BS: 6346

IS: 2465, BS: 6862

⚡ WIRES

- ▶ Stay Wires/Earth Wires/Core Wires
- ▶ Bare Copper Wires
- ▶ Bare Aluminium Wires

**IS: 2141, IS: 12776, BS: 183
IS: 8130, ASTM: B49/98
BS 2627**

⚡ OVERHEAD TRANSMISSION AND DISTRIBUTION CONDUCTORS

BS: 215, NS: 259, IS: 398

- ▶ Aluminium Conductor Steel Reinforced (ACSR) upto 61 Strands for overhead electrical power transmission
- ▶ All Aluminium Conductors (AAC) upto 61 Strands for overhead transmission of power
- ▶ All Aluminium Alloy Conductors (AAAC) upto 61 Strands for overhead transmission of power
- ▶ Ground Wires for Transmission Lines

⚡ INSULATED CONDUCTORS

IS: 398, IS: 7098

⚡ AERIAL BUNCHED CABLES (ABC CABLES)

IS: 14255, BS: 7870

IEC: 208, IEC: 502

⚡ ENAMEL COPPER WINDING WIRES

IS: 13730

⚡ PAPER INSULATED WIRES & STRIPS

IEC: 60317





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Corporate Office:

Lucky Tower, Tripureshwor, Kathmandu, Nepal. P.O. Box 2377

Phone No.: + 977 1 4260878/4260785/4265631 | Fax No.: + 977 1 4257829

Email: info@linepal.com | Web: www.linepal.com

Works:

Butwal Industrial Estate, Butwal, Nepal

Ph No.: + 977 71 540328/ 546198 | Fax No.: + 977 71 541198

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