UMANG
BOARDS
LIMITED

WINDING WIRE

PRODUCT CATALOG

PRECISION · PERFORMANCE · RELIABILITY

umangboards.com/winding-wires/

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WINDING WIRES & CONDUCTORS

Established in 1999, Umang Boards Limited (UBL) has steadily grown into a respected and reliable name in the power and transformer industry, built on a foundation of manufacturing discipline, technical understanding, and long-standing customer relationships.

Our operations are supported by a well-developed manufacturing facility spread across a land area of 51,000 sq. meters, enabling efficient production, process control, and consistent output.

Over the years, UBL has strengthened its capabilities through continuous improvement, investment in modern machinery, and a focus on disciplined manufacturing practices. Our facility is designed to ensure smooth production flow, controlled processing conditions, and adherence to industry standards.

The Winding Wires Division reflects this foundation—built on experience, supported by strong infrastructure, and driven by a commitment to quality and reliability.

With over two decades of manufacturing expertise, UBL continues to uphold its core values of consistency, integrity, and continuous improvement, making us a dependable partner for the power industry.

OUR Certificates 2026


TÜVNORD

Certificate


TÜVNORD

Certificate

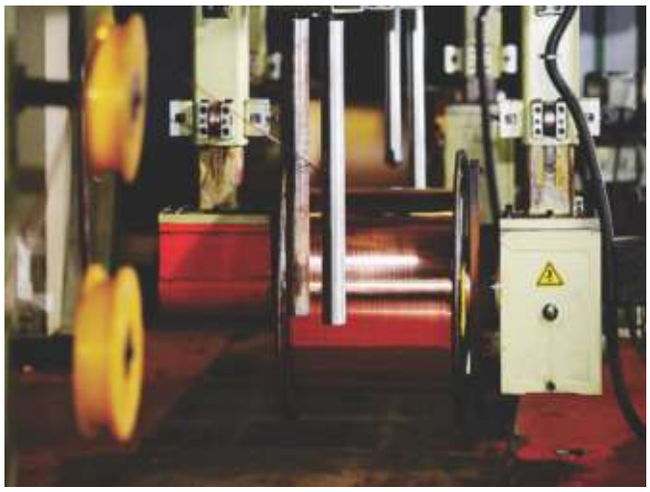

TÜVNORD

Certificate

MACHINERY AND PROCESS

At Umang Boards Limited (UBL), our winding wire division is equipped with state-of-the-art machinery and process systems, designed to ensure consistent quality, dimensional accuracy, and high production efficiency across all product categories.

OUR MANUFACTURING INFRASTRUCTURE INCLUDES:

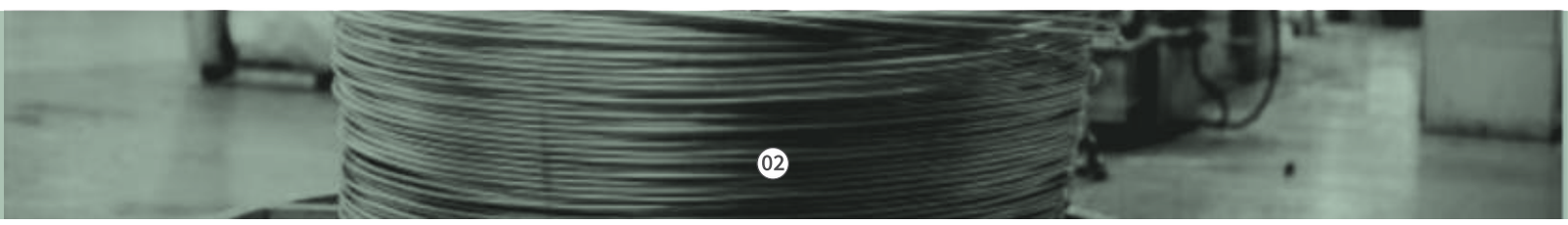


- Advanced Continuous Extrusion (Conform) Machines for aluminium conductors, ensuring uniform grain structure and dimensional stability
- High-precision wire drawing and rolling systems for both aluminium and copper conductors
- Modern enamelling lines with controlled temperature profiles and multi-coat application capability
- Dedicated lines for paper covering, fibre glass covering, and continuously transposed conductors (CTC)
- Precision tension control and winding systems to maintain uniform insulation and conductor integrity

PROCESS EXCELLENCE

Our manufacturing processes are designed with a strong focus on:

- Uniform insulation build and adhesion
- Controlled curing cycles for enamel coatings
- Surface preparation and cleanliness of conductor prior to insulation
- Inline monitoring of critical parameters such as temperature, speed, and coating thickness
- Each stage of production is governed by standard operating procedures (SOPs) and monitored through process control systems, ensuring repeatability and consistency across batches.



RAW MATERIAL AND ITS QUALITY

The foundation of a high-performance winding conductor lies in the quality and consistency of raw materials. At UBL, we adopt a stringent selection and validation process for all incoming materials.

CONDUCTORS (ALUMINIUM & COPPER)

- Sourced from reputed primary manufacturers
- Conforming to relevant IS / IEC standards

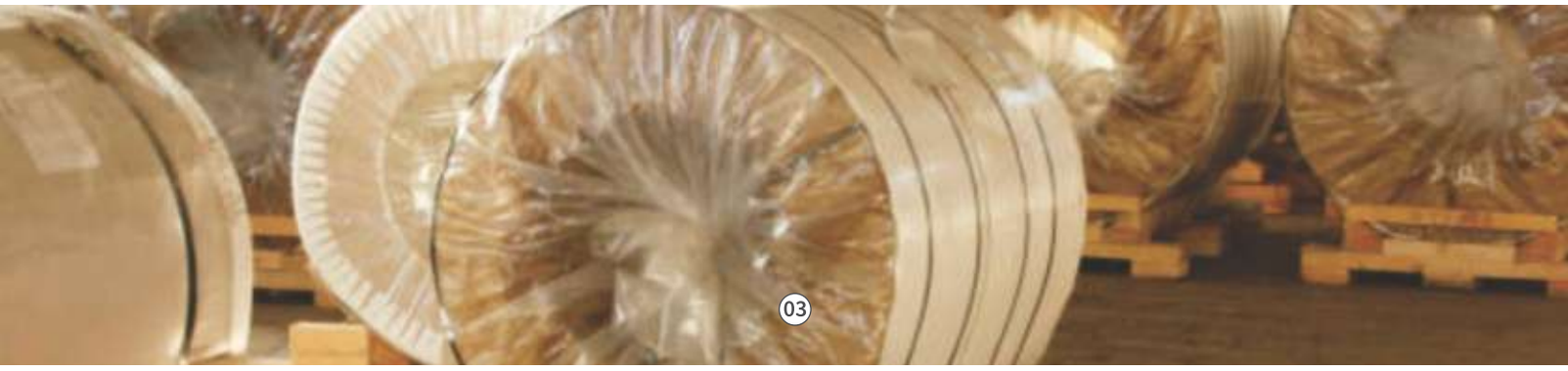
Controlled for :
- Purity and conductivity
- Mechanical properties (elongation, tensile strength)
- Dimensional accuracy

Insulation Materials
- High-grade enamel resins (Polyester, Polyesterimide, THEIC-based systems)
- Premium electrical grade paper for paper-covered conductors
- Quality fibre glass yarns with uniform coverage characteristics

Incoming Quality Control
All raw materials undergo strict incoming inspection and testing, including:

- Chemical and physical property verification
- Conductor surface quality checks
- Compatibility validation with insulation systems

Material Handling & Storage
- Controlled storage conditions to prevent moisture absorption and contamination
- FIFO-based material usage system
- Dedicated handling protocols to maintain material integrity



LAB, QUALITY & TESTING EQUIPMENTS

Quality assurance at UBL is supported by a well-equipped in-house laboratory and a robust quality management system aligned with ISO standards.

TESTING INFRASTRUCTURE

Our Lab Is Equipped With Advanced Testing Instruments for :

- Pin Hole Testing (High Voltage DC testers)
- Breakdown Voltage (BDV) Testing
- Elongation and Tensile Strength Testing
- Conductor Resistance Measurement
- Adhesion and Flexibility Testing (Mandrel Test)
- Heat Shock and Thermal Performance Testing
- Dielectric Loss / Tan Delta Test
- Cut-through Resistance Test
- Moisture Content Test

Process Quality Control
Continuous in-process inspection at critical stages

Monitoring of:
- Coating thickness
- Surface finish
- Dimensional tolerances

Quality Systems
Implementation of:

- PFMEA (Process Failure Mode and Effects Analysis)
- Control Plans for each product category
- CAPA system for continuous improvement
- Batch-wise traceability system ensuring complete tracking from raw material to dispatch

LAB, QUALITY &
TESTING EQUIPMENTS

PACKAGING

At UBL, packaging is treated as a critical quality function, ensuring that the product reaches the customer without any mechanical or environmental damage.

PACKAGING DESIGN

- Engineered plastic / wooden bobbin structures designed to withstand transit stresses
- Material selection optimized to prevent:

  -Moisture ingress
  -Dust contamination
  -Surface damage

HANDLING & PROTECTION

- Use of high-strength corrugated boxes (upgraded 7-ply) for improved load-bearing capacity
- Controlled placement and cushioning to minimize impact
- Secured winding and securing of coil ends to prevent coil movement and deformation
- clearly defined handling instructions and labelling

LOGISTICS CONSIDERATIONS

- Optimized palletization for load stability.
- Packaging qualified for long-distance transportation.
- Designed for repeated handling across supply chains.
- Standardized dispatch configurations.

CONTINUOUS IMPROVEMENT

Based on field feedback and internal analysis,

- Performance monitoring across logistics cycles.
- Feedback-driven design refinements.
- Continuous optimization of packing configurations and materials.

PAPER INSULATED ALUMINIUM CONDUCTORS
(Rectangular / Round)

Paper insulated aluminium conductors are manufactured using high conductivity aluminium conductors wrapped with layers of electrical insulation paper. Multiple insulation layers provide high dielectric strength, mechanical protection and reliable performance in transformer windings.
The insulation paper may consist of electrical grade kraft paper, thermally upgraded paper, Nomex®, crepe paper, mica paper or polyester insulation depending on application requirements.

PAPER INSULATED COPPER CONDUCTORS
(Rectangular / Round)

Paper insulated copper conductors are manufactured from high conductivity electrolytic copper wrapped with layers of electrical insulation paper. The insulation provides excellent dielectric strength and thermal stability required for transformer windings.
These conductors are commonly used in applications requiring high electrical conductivity and long operational life.

Manufacturing Range

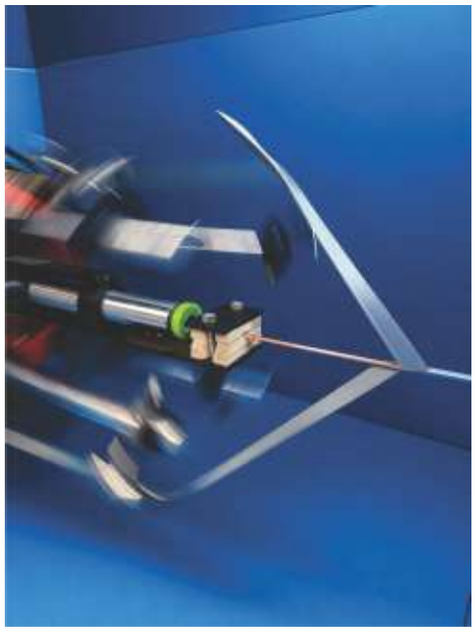
Parameter	Minimum	Maximum
Width	3 mm	30 mm
Thickness	0.80 mm	5 mm
Cross Section Area	3.2 sq.mm	150 sq.mm
Width / Thickness Ratio	1.2	8

Note : "IEC, IS, DIN or any Other Relevant Customized Standards"

Insulation Range

Parameter	Minimum	Maximum
Conductor Diameter	0.80 mm	6.0 mm
Radial Insulation	0.300 mm	10.00 mm

Note : "IEC, IS, DIN or any Other Relevant Customized Standards"



Insulation Option

- Electrical Grade Kraft Paper
- Thermally Upgraded Paper (TUP)
- Nomex® Paper
- Crepe Paper
- Mica Paper
- Kapton
- Polyester Paper

Applications

- Power Transformers
- Distribution Transformers
- Dry Type Transformers
- High Voltage Motors
- Wind Turbine Generators

ENAMELLED ALUMINIUM
Winding Wires

Enamelled aluminium winding wires consist of aluminium conductors coated with thin enamel insulation that provides electrical insulation and mechanical protection. These wires are widely used where weight reduction and cost efficiency are important.

ENAMELLED COPPER WINDING WIRES
(Magnet Wires)

Enamelled copper winding wires are manufactured from electrolytically refined copper coated with high-quality enamel insulation. These wires offer excellent conductivity, mechanical strength and durability.

Size Range

Parameter	Minimum	Maximum
AWG	26	4
SWG	27	5
Diameter	0.40 mm	5.40 mm
Insulation Grade	1	3

Note : “IEC, IS, DIN or any Other Relevant Customized Standards”

Applications

- Transformers
- Electric Motors
- Generators
- Household Appliances
- Industrial Equipment

ENAMELLED ALUMINIUM
Rectangular Strips

Enamelled aluminium rectangular strips are flat aluminium conductors coated with electrical insulation enamel. The rectangular shape improves winding density and allows efficient use of space inside electrical coils.
Aluminium offers the advantage of lower weight and cost compared to copper while providing good electrical conductivity.

ENAMELLED COPPER
Rectangular Strips

Enamelled copper rectangular strips are flat copper conductors coated with enamel insulation. The rectangular profile provides better space utilization in coils and improves current distribution.
Copper conductors provide excellent electrical conductivity and are commonly used in high efficiency electrical equipment.

Size Range

Parameter	Minimum	Maximum
Width	3.15 mm	15 mm
Thickness	1.12 mm	5 mm
Cross Section Area	3.5 sq.mm	120 sq.mm

Note : “IEC, IS, DIN or any Other Relevant Customized Standards”

Insulation Thermal Classes

Insulation Type	Temperature
Modified Polyester	155°C
Polyesterimide	180°C
Dual Coated	200 / 220°C
Self Solderable	155°C / 180°C

Note : “IEC, IS, DIN or any Other Relevant Customized Standards”

Applications

- Power Transformers
- Motors & Generators
- Renewable Energy Transformers
- Automotive Electrical Systems

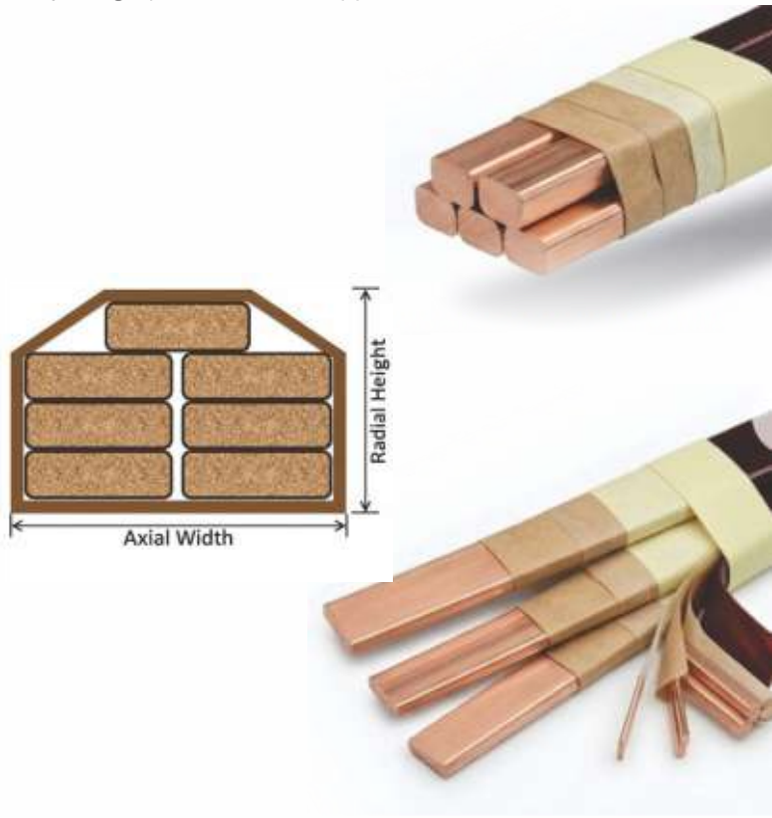
TWIN / TRIPLE BUNCHED PAPER
Insulated Copper Strips

Twin or triple bunched copper strips consist of two or three copper conductors bundled together and insulated with multiple layers of insulation paper. This design improves current carrying capacity while maintaining flexibility and low electrical losses.
These conductors provide reliable insulation and mechanical stability in high-power electrical applications.

Manufacturing Range

Parameter	Minimum	Maximum
Width	4 mm	30 mm
Thickness	0.80 mm	5 mm
Cross Section Area	3.2 sq.mm	150 sq.mm

Note : "IEC, IS, DIN or any Other Relevant Customized Standards"



Wrapping Methods

- Butt Wound Wrapping
- Conventional Overlapped Wrapping
- Multi Layer Insulation (Up to 16 Layers)
- Combination Insulation Systems

Applications

- Transformer Windings
- Generator Windings
- High Current Electrical Equipment

CONTINUOUSLY TRANSPOSED CONDUCTORS
(CTC)

Continuously Transposed Conductors consist of multiple insulated rectangular copper strands that are transposed along the length of the conductor. This design balances magnetic flux exposure across strands and reduces eddy current losses.

Manufacturing Range

Parameter	Range
Number of Strands	5 – 48
Strip Width	3.15 – 11.50 mm
Strip Thickness	0.90 – 3.00 mm
Number of Layers	Up to 24
Transposing Factor	6 – 12

Note : "IEC, IS, DIN or any Other Relevant Customized Standards"

Applications

- Large Power Transformers
- Furnace Transformers
- HVDC Transformers
- Traction Locomotive Transformers
- Reactors

FIBRE GLASS COVERED COPPER / ALUMINIUM CONDUCTORS

Fiberglass covered conductors use glass fibre yarn insulation bonded with thermosetting varnish. The insulation offers excellent thermal resistance, mechanical strength and durability in harsh operating environments.

Size Range

Parameter	Minimum	Maximum
Thickness	1 mm	6 mm
Width	4 mm	20 mm
Cross Section Area	4 sq.mm	120 sq.mm

Note : "IEC, IS, DIN or any Other Relevant Customized Standards"

Insulation System

Two Layers of E-Grade Fibre Glass Yarn
Tangential Wrapping with Thermosetting Varnish Bonding

Varnish Options

Class B Insulation
Class F Insulation
Class H Insulation

Applications

Electric Motors
Generators
Transformers
Industrial Heating Equipment

BARE ALUMINIUM FOIL / STRIP CONDUCTORS

Bare aluminium foil conductors are flat aluminium strips used as electrical conductors in transformer and electrical equipment manufacturing. These conductors are supplied without insulation and are typically used in foil winding transformers where external insulation layers are applied during coil manufacturing.

The rectangular geometry allows uniform current distribution, improved winding compactness and efficient heat dissipation. Aluminium foil conductors also offer advantages such as low weight, good conductivity and cost efficiency.

These conductors are manufactured using high quality aluminium and are available in various widths and thicknesses depending on application requirements.

Manufacturing Range

Parameter	Minimum	Maximum
Width	4 mm	30 mm
Thickness	0.80 mm	10 mm
Cross Section Area	10 sq.mm	150 sq.mm
Width / Thickness Ratio	1.2	8

Note : "IEC, IS, DIN or any Other Relevant Customized Standards"

Applications

- Foil Winding Transformers
- Distribution Transformers
- Switchgear Equipment
- CT & PT Manufacturing
- Electrical Busbars
- Motors and Electrical Equipment

NOTES

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