UNIVERSAL METALS PAKISTAN (PVT) LTD

Paper Covered Aluminium Strip

Product Catalogue

For Power & Distribution Transformer Windings

EC Grade Aluminium 1350 | Kraft & TUK Paper Insulation

universalmetals.com.pk

Product Overview

Universal Metals manufactures paper covered aluminium strip for oil-filled and dry-type transformer windings. Our EC grade aluminium 1350 strip is wrapped with high-quality kraft or thermally upgraded kraft (TUK) paper insulation, providing a lightweight and cost-effective alternative to copper conductors.

At approximately one-third the weight and significantly lower material cost compared to copper, aluminium strip windings have become the standard choice for distribution transformers worldwide, with millions of units in reliable service.

Key Features

- EC Grade Aluminium 1350 — minimum 99.5% purity, "e61% IACS conductivity
- Kraft & Thermally Upgraded Kraft (TUK) paper insulation options
- Strip thickness: 0.3 mm to 3.0 mm
- Strip width: 10 mm to 200 mm
- Paper wrapping: single, double, or multiple layers
- Soft temper (O) for excellent winding formability
- Burr-free, deburred edges for safe paper application
- Custom dimensions to OEM specifications

Applications

- Oil-filled distribution transformers (LV & HV windings)
- Dry-type transformers
- Power transformers
- Series and shunt reactors
- Welding transformers
- Specialty winding applications

Material Specifications

Aluminium Strip — EC Grade 1350

The aluminium strip conforms to EC grade 1350 with the following properties:

Property	Specification
Alloy Designation	EC 1350 (AA 1350)
Aluminium Content	"e 99.50%
Temper	O (Soft / Annealed)
Electrical Conductivity	"e 61% IACS
Resistivity at 20°C	"d 0.02826 :›vÖÛ"öÐ
Density	2.70 g/cm³
Tensile Strength	60 – 105 MPa
Elongation	"e 15%
Strip Thickness Range	0.3 – 3.0 mm
Strip Width Range	10 – 200 mm
Edge Condition	Deburred, burr height "d 0.03 mm
Surface Finish	Smooth, free from scratches and inclusions

Paper Insulation Options

Property	Kraft Paper	TUK Paper
Thermal Class	105°C (Class A)	120°C
Composition	100% sulfate wood pulp	Thermally stabilised kraft
Dielectric Strength	"e 10 kV/mm	"e 12 kV/mm
Paper Thickness	0.08 – 0.50 mm	0.08 – 0.50 mm
Oil Compatibility	Excellent	Excellent
Aging Rate	Standard	Significantly reduced
Application	Standard transformers	High-load / compact designs

Dimensional Range & Tolerances

Standard Strip Dimensions

Paper covered aluminium strip is available in the following standard dimensional ranges. Custom dimensions are available on request to meet specific OEM transformer design requirements.

Parameter	Range	Tolerance
Strip Thickness	0.3 – 3.0 mm	± 0.02 to ± 0.05 mm
Strip Width	10 – 200 mm	± 0.1 to ± 0.5 mm
Paper Thickness (per layer)	0.08 – 0.50 mm	± 0.01 mm
Number of Paper Layers	1 – 6 layers	As specified
Total Insulation Build-up	0.16 – 3.0 mm	± 10%
Edge Radius / Chamfer	Per specification	As agreed
Coil Inner Diameter	150 – 500 mm	± 5 mm
Coil Weight	50 – 500 kg	Per order

Insulation Wrapping Configurations

Designation	Description	Typical Application
SPC	Single Paper Covered	Low voltage windings
DPC	Double Paper Covered	Standard distribution transformers
TPC	Triple Paper Covered	Higher voltage applications
MPC	Multiple Paper Covered (4+)	Power transformers, reactors

Applicable Standards

Paper covered aluminium strip is manufactured and tested in accordance with the following national and international standards:

International Standards

- IEC 60076 — Power transformers
- IEC 60317-27 — Paper-covered rectangular/round winding wires
- IEC 60554 — Cellulose-based insulating papers
- IEC 60228 — Conductors of insulated cables
- DIN 46446 — Insulated winding wires

Indian / Regional Standards

- IS 13730 (Parts 0-27) — Winding wires including paper-covered conductors
- IS 2026 — Power transformers specification

Quality Assurance

Every production batch undergoes comprehensive testing and inspection to ensure compliance with specified standards:

- Dimensional verification — strip thickness, width, insulation build-up
- Electrical conductivity measurement (eddy current / resistivity)
- Tensile strength and elongation testing
- Insulation thickness measurement (micrometer, per layer)
- Dielectric breakdown voltage testing
- Surface quality inspection — visual and instrument-based
- Edge burr measurement ("d 0.03 mm)
- Paper moisture content verification

Material test certificates and certificates of conformity are provided with every consignment for project documentation and regulatory compliance.

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