

ENAMELED COPPER CLAD ALUMINUM WIRE (ECCA)

Cost-Effective, Lightweight & High-Performance Winding Conductors

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B2B Magnet Wire Manufacturer

1. EXECUTIVE SUMMARY & VALUE DRIVERS

Modern electrical equipment manufacturing demands high electrical performance combined with optimized material costs and reduced unit weight. **Zhengzhou LP Industry Co., Ltd.** offers industry-leading **ECCA Wire (Enameled Copper Clad Aluminum Wire)**, combining the superior electrical conductivity and direct solderability of copper with the light weight and economic advantages of an aluminum core.

💰 30%–45% Cost Savings

Dramatically lowers raw material expenses compared to pure copper wire while maintaining equivalent electrical performance.

⚖️ 50%+ Weight Reduction

Lightweight conductor (approx. 37% density of pure copper) reduces equipment bearing wear and cuts international shipping costs.

🔥 High Thermal Resistance

Insulation grades rated Class 155°C (F), 180°C (H), and 200°C (C) for long-term operational stability under extreme thermal stress.

⚡ Direct Solderability

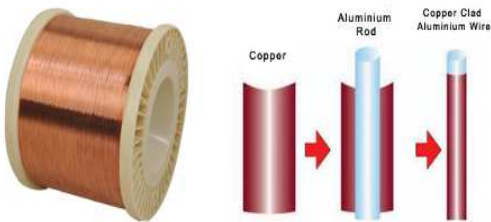
Seamless copper clad coating allows direct soldering without stripping the enamel layer or requiring specialized chemical fluxes.

2. KEY PRODUCT PORTFOLIO & APPLICATION SCENARIOS

A. Precision Micro-Motors & Household Appliance Winding

Engineered for high-speed small/medium electric motors, micro-motors, and fan stators. ECCA wire directly replaces pure copper wire to provide identical power output while extending rotor bearing lifetime through weight reduction.

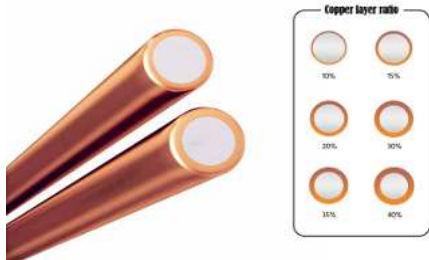
- **Solderability** Fast direct soldering at 360°C–400°C.
- **Copper Cladding** Standard 10% or 15% copper volume ratio with exceptional bonding strength.
- **Flexibility** Superior bendability without risk of copper-aluminum layer separation.



B. High-Frequency Transformers, Inductors & Degaussing Coils

Ideal for switch-mode power supplies (SMPS), high-frequency transformers, TV degaussing coils, and audio voice coils. Under high-frequency AC operation, the skin effect concentrates current along the outer copper shell, giving ECCA electrical performance virtually identical to solid copper.

- **Skin Effect** Maximizes high-frequency AC current conduction along the outer copper layer.
- **Thermal Shock** Superior resistance against sudden temperature fluctuations without film cracking.



3. MASTER TECHNICAL SPECIFICATION MATRIX

Parameter / Characteristic	ECCA Wire (Copper Clad Aluminum)	Enameled Pure Copper Wire (Reference)
Copper Volume Ratio	10% ± 1.5% or 15% ± 1.5%	100% Pure Copper
Density (g/cm³)	3.32 – 3.63 g/cm³ (Approx. 37% of Copper)	8.89 g/cm³
DC Resistivity (Ω-mm²/m)	≤ 0.02743 (10% Cu) / ≤ 0.02676 (15% Cu)	≤ 0.017241
Conductor Diameter Range	0.12 mm – 3.00 mm	0.02 mm – 6.00 mm
Enamel Insulation Coating	Polyurethane (UEW), Polyester (PEW), Polyesterimide (EIW)	UEW, PEW, EIW, AIW
Thermal Class	130°C, 155°C, 180°C, 200°C	130°C – 220°C
Compliance Standards	IEC 60317, NEMA MW 1000, SJ/T 11211	IEC, NEMA, JIS, GB/T

4. QUALITY ASSURANCE & PRODUCTION CONTROL

At Zhengzhou LP Industry Co., Ltd., continuous clad-casting technology and precision wire drawing ensure flawless concentricity and uniform copper layer thickness across every batch:

- **Inline Laser Gauge:** Continuous optical monitoring of conductor diameter and film thickness.
- **Breakdown Voltage (BDV) Test:** Guarantees high dielectric strength under severe electrical stress.
- **Pinhole & Adhesion Testing:** Thermal shock and stretch-bend tests confirm zero film peeling or copper-aluminum layer separation.



Request Custom Samples & Direct Factory Quote

We provide custom wire diameters, thermal grades, and packaging configurations based on your technical drawings and winding machine needs.

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