



DRAWN COPPER WIRE



About Universal Metals

Universal Metals (Pvt.) Ltd manufactures a comprehensive range of bare drawn copper wire from high-purity copper rod in FRHC, ETP, and OFC grades, each with a minimum copper content of 99.9% (OFC: 99.99%). Our wire drawing facility employs precision multi-pass reduction technology to deliver consistent dimensional accuracy, uniform mechanical properties, and certified electrical conductivity across the full product range from 0.15 mm to 3.25 mm diameter.

Available in soft-annealed, half-hard, and hard-drawn tempers, our drawn copper wire meets ASTM B49/B1/B2/B3 and IEC 60228 requirements. Each coil is supplied with full material test certificates covering electrical resistivity, tensile strength, elongation, and dimensional verification. The copper rod feedstock meets a minimum conductivity of 101% IACS per ASTM B49, and the finished annealed wire achieves $\geq 101\%$ IACS conductivity.

Applications

Drawn copper wire serves as a fundamental conductor material across a wide range of electrical and electromechanical products:

- Transformer and motor winding feedstock
- Flexible cable conductor stranding (IEC 60228 Class 5/6)
- Coaxial cable inner conductors
- Electrical connector and terminal wire
- Electronic harness and signal cables
- Overhead and building wire conductors (hard-drawn)
- Screened cable braid wire
- Tinning feedstock for downstream processing

Mechanical and electrical properties by temper – FRHC, ETP, and OFC grades (99.9% Cu min.; OFC: 99.99% Cu min.)

Temper	Desig.	Tensile Strength	Elongation (min)	Conductivity	Resistivity at 20°C
Soft / Annealed	O / M20	196 - 250 MPa	≥20%	≥101% IACS	≤0.01707 Ω·mm ² /m
Half-Hard	H02	~290 MPa	10 - 20%	≥100% IACS	≤0.017241 Ω·mm ² /m
Hard Drawn	H04	310 - 415 MPa	6 - 15%	≥97% IACS	≤0.01777 Ω·mm ² /m

Note: Tensile strength and elongation are diameter-dependent per ASTM B1/B2/B3. Hard-drawn fine wire (≤0.5 mm) may achieve tensile strengths above 380 MPa. All properties are tested in our in-house laboratory.

Chemical Composition

Property	Requirement	Notes
Copper (Cu)	≥99.90% (OFC: ≥99.99%)	FRHC, ETP, or OFC grade per ASTM B49
Oxygen (O)	5 to 650 ppm (grade-dependent)	FRHC: 100 to 400 ppm; ETP: 100 to 650 ppm; OFC: ≤5 ppm
Other impurities	Balance	Per ASTM B49

Maximum DC resistance at 20°C for soft-annealed copper wire ($\geq 101\%$ IACS, $\rho \leq 0.01707 \Omega \cdot \text{mm}^2/\text{m}$)

Nom. Diameter (mm)	Cross Section (mm ²)	DC Resistance (Ω/km)	Diameter Tolerance (mm)
0.15	0.01767	966.0	± 0.002
0.20	0.03142	543.8	± 0.002
0.30	0.07069	241.5	± 0.003
0.40	0.12566	135.8	± 0.004
0.50	0.19635	86.9	± 0.005
0.63	0.31172	54.8	± 0.006
0.80	0.50265	34.0	± 0.008
1.00	0.78540	21.75	± 0.010
1.25	1.22718	13.92	± 0.013
1.50	1.76715	9.66	± 0.015
2.00	3.14159	5.44	± 0.020
2.50	4.90874	3.48	± 0.025
3.00	7.06858	2.42	± 0.030
3.25	8.29588	2.06	± 0.033

Intermediate diameters available on request. Hard-drawn wire resistance will be approximately 4% higher than soft-annealed values at the same diameter. Resistance values calculated at 20°C; multiply by 1.00393 per degree above 20°C for temperature correction.

All drawn copper wire is supplied exclusively on corrugated cardboard octagonal spools

Spool Model	Outer Dia. (mm)	Core Dia. (mm)	Height (mm)	Approx. Net Wt.
S650	φ800	φ480	1,100	Up to 2,000 kg
S800	φ1,100	φ601	1,100	Up to 2,000 kg