

COPPER & COPPER ALLOYS

Flat, Shaped and Round Wire ASTM B152, ASTM B747, QQ-C-576

Applications

Electrical/electronic and solar applications where strength is not required. Additional applications are downspouts, gutters, roofing, gaskets, heat sinks, busbars, nails, printing rolls, rivets, etc. parts.

Description

In general, copper alloys exhibit good to excellent corrosion resistance and high thermal conductivity and very high electrical conductivity. Pure copper's electrical conductivity is so high that many metals are measured against it in the form of the IACS (International Annealed Copper Standard).

Chemistry Typical

UNS #	COPPER*	OXYGEN	SILVER	PHOSPHORUS	ARSENIC
C10100	99.99 min	0.0005 max			0.0005 max
C10200	99.95 min	0.001 max		0.0003 max	
C10400	99.95 min	0.001 max	0.027 min		
C10500	99.95 min	0.001 max	0.034 min		
C10700	99.95 min	0.001 max	0.085 min		
C11000	99.90 min				
C12000	99.90 min			0.004-0.012	
C12100	99.90 min		0.014	0.004-0.012	
C15000	Balance*				0.10-0.20 Zr
C15500	99.75 min		0.027-0.10	0.040-0.080	0.08-0.13 Mg

* Contact Ulbrich Wire for request regarding the availability of other copper alloys.

* Contact Ulbrich Technical Department for limits for additional trace elements and impurity levels.

* Copper Values include Silver.

* Copper plus named elements.

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Physical Properties

Typical Density: 0.332 lbs/in³, 8.92 g/cm³

Electrical Conductivity: (% IACS at 68°F 20°C, annealed): 85-101%

Specific Heat: BTU/lb-°F (J/g-°C): 0.0920 (0.385)

Mean Coefficient of Thermal Expansion: $\mu\text{in/in-}^\circ\text{F}$ ($\mu\text{m/m-}^\circ\text{C}$)
68 - 572 °F (20 - 300 °C): 9.8 (17.6)

Thermal Conductivity: BTU-in/hr-ft²-°F (W/m•K): 2712 (390.8)

Modulus of Elasticity: KSI (MPa)
17 x 10³ in tension

Melting Range: 1981 °F (1083 °C)

Forms

Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 26 - 38 KSI (179 - 262 MPa)

Yield Strength: 10 KSI (69 MPa) Nominal

Elongation: 35%

Properties: Tempered

Copper alloys can be cold worked to various tempers.

** Actual physical and mechanical properties are alloy dependent. Contact Ulbrich Technical Service for alloy specific properties.*

Additional Properties

Corrosion Resistance

Contact Ulbrich Wire for specific information.

Wire Finishes

XC - Extra clean. Annealed or annealed and cold rolled.

Contact Ulbrich Wire with special finish requests.

Heat Treatment

Copper alloys are non hardenable by heat treatment.

Welding

Contact Ulbrich Wire for specific information.

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