

CuPHC

CuPHC | C10300

Cu-PHC is a deoxidized, oxygen-free copper with a very low residual phosphorus content. It features very high electrical conductivity (min. 100% IACS) along with excellent formability, weldability, and brazability.

Its applications include components for electrical parts, baseplates for power modules, and the cable industry.

Comparable Standarts	
SIC	UNS
C103	C10300

Chemical Composition %	
Cu	P
min 99.95	0.001-0.005

Physical Properties		
Melting Point	1083	[°C]
Density	8.94	(g/cm³)
Cp @ 20°C	0.377	[kJ/kgK]
Thermal Conductivity	390	(W/mK)
Electrical Conductivity	≥ 100	%IACS
Modules of Elasticity	127	[GPa]
α @ 20°C	17.7	[10-6/K]

Note: The specified conductivity applies to the soft condition only.

Cp specific heat

 $\boldsymbol{\alpha}$ thermal expansion coefficent

Fabrication Properties	
Cold Formability	excellent
Hot Formability	excellent
Soldering ability	excellent
Oxyacetylene welding	fair
Gas shield arc welding	excellent
Resistance welding	not recommended
Machining	not recommended
Brazing	excellent

Electrical Conductivity

 $Electrical\ conductivity\ depends\ on\ chemical\ composition, the\ level\ of\ cold\ work, and\ grain\ size.\ High\ levels\ of\ cold\ work\ and\ a\ fine\ grain\ size\ reduce\ conductivity.$

Typcial Uses

Telecommunication cables, terminals, clad products, busbars, baseplates for power modules, electrical conductors.

Corrosion Resistance

Copper is resistant to natural and industrial atmospheres, as well as to maritime air, potable and utility water, non-oxidizing acids, alkaline solutions. and neutral salt solutions.

However, copper has poor corrosion resistance in environments such as ammonia, halogen, cyanide, and hydrogen sulfide solutions and atmospheres, oxidizing acids, and seawater—especially under high-flow conditions.

Mechanical Properties Bend ratio 90° [r] Tensile Strength [MPa] Yield Strangth [MPa] Elongation A50 [%] Hardness HV [-] GW BW R220 220-260 ≤ 140 40-65 0 R240 240-300 ≥ 180 65-95 R290 290-360 ≥ 250 90-110 R360 ≥ 360 ≥ 110

Other tempers are available upon request.

r = x * t (thickness $t \le 0.5$ mm)

 $\label{eq:GW} \text{GW bend axis transverse to rolling direction. BW bend axis parallel to rolling direction.}$

Dimensional Specifications		
Thickness (mm)	Width (mm)	
0.04-0.20	10-400	
0.21-0.50	5-400	
0.51-1.00	5-600	
1.01-4.00	15-600	
4.01-7.00	25-600	