

# 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 Standards		
JIS	UNS	
C103	C10300	
Chemical Composition %		
Cu	P	
min 99.95	0.001-0.005	
Physical Properties		
Melting Point	1083	[°C]
Density	8.94	(g/cm <sup>3</sup> )
Cp @ 20°C	0.377	[kJ/kgK]
Thermal Conductivity	390	(W/mK)
Electrical Conductivity	≥ 100	%IACS
Modulus of Elasticity	127	[GPa]
α @ 20°C	17.7	[10 <sup>-6</sup> /K]
Note: The specified conductivity applies to the soft condition only.		
Cp specific heat		
α thermal expansion coefficient		
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.		
Typical Uses		Corrosion Resistance
Telecommunication cables, terminals, clad products, busbars, baseplates for power modules, electrical conductors.		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

	Tensile Strength [MPa]	Yield Strength [MPa]	Elongation A50 [%]	Hardness HV [-]	Bend ratio 90° [r]	
					GW	BW
R220	220-260	≤ 140	≥ 33	40-65	0	0
R240	240-300	≥ 180	≥ 8	65-95	0	0
R290	290-360	≥ 250	≥ 4	90-110	0	0
R360	≥ 360	≥ 320	≥ 2	≥ 110	0	0.5

Other tempers are available upon request.

$r = x * t$  (thickness  $t \leq 0.5\text{mm}$ )

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