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

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/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

α 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

	Tensile Strength [MPa]	Yield Strangth [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 ≤ 0.5mm)

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

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