CuFe2P

CuFe2P | C19400

The alloy features good strength, good electrical and thermal conductivity properties. It is suited for applications at elevated temperatures and has decent relaxation properties.
The alloy is well formable, corrosion-resistant, and tarnish-resistant, and is suitable for joining techniques.
Application areas include electrical components, spring parts with moderate spring and relaxation properties, and semiconductor surfaces.

Comparable Standarts

EN	JIS	UNS
CW107C	C1940	C19400

Chemical Composition %

Cu	Zn	Fe	Pb	P
rem.	0.05-0.20	2.1-2.6	max 0.03	0.015-0.15

Physical Properties

Density	8.8	(g/cm³)
Melting Point	1088	[°C]
Cp @ 20°C	0.386	[kJ/kgK]
Thermal Conductivity	265	(W/mK)
Electrical Conductivity	≥ 35	MS/m
Electrical Conductivity	≥60	%IACS
Modules of Elasticity	123	[GPa]
α @ 20°C	17.6	[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
Machinability	not recomended
Oxyacetylene welding	good
Gas shield arc welding	excellent
Resistance welding	not recomended
Brazing	excellent
Soldering	excellent

Electrical Conductivity

Electrical conductivity depends on chemical composition, the level of cold deformation, and grain size. High levels of deformation and a small grain size reduce conductivity.

Typcial Uses

Automotive, electrical components, connectors, contact springs, semiconductor substrates.

Corrosion Resistance

CuFe0.1P is resistant to natural and industrial atmospheres, marine air, potable and service water, non-oxidizing acids, alkaline solutions, and neutral saline solutions.
CuFe0.1P exhibits low corrosion resistance in environments containing ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres, oxidizing acids, and seawater (especially at high flow rates).
Cu alloys containing Fe exhibit improved corrosion resistance compared to pure copper, especially against salt-bearing and alkaline waters. More over these alloys also demonstrate greater resistance to pitting and erosion corrosion.

Mechanical Properties

	Tensile Strength [MPa]	Yield Strength [MPa]	Elongation A50 [%]	Hardness HV [-]	Bend ratio 90° [r]		Bend ratio 180° [r]	
					GW	BW	GW	BW
R300	300-340	≤ 240	≥ 20	80-100	0	0	0	0
R340	340-390	≥ 240	≥ 16	100-120	0	0	0	0
R370	370-430	≥ 330	≥ 8	120-140	0	0	0	0
R420	420-480	≥ 380	≥ 6	130-150	0.5	0.5	0.5	1.5
R470	470-530	≥ 440	≥ 4	140-160	0.5	0.5	0.5	5
R530	530-580	≥ 470	≥ 4	150-165	1	2	-	-

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)
0.10-0.20	10-420
0.21-1.00	5-430
1.01-3.00	15-430

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Rev. | 10.2025