CuFe0.1P

CuFe0.1P | C19210

CuFe0.1P is a low-alloyed, age hardened copper alloy. It combines very high electrical (min. 84% IACS) and thermal conductivity with relatively high strength. The alloy has an improved temperature resistance as well as good relaxation properties and is suited for welding and soldering.
Fields of application are automotive and electrical engineering, connectors, springs and the production of lead-frames.

Comparable Standarts

JIS	UNS
C1921	C19210

Chemical Composition %

Cu	Fe	P
rem.	0.05-0.15	0.025-0.04

Physical Properties

Density	8.89	(g/cm³)
Melting Point	1082	[°C]
Cp @ 20°C	0.386	[kJ/kgK]
Thermal Conductivity	350	(W/mK)
Electrical Conductivity	≥ 49	MS/m
Electrical Conductivity	≥84	%IACS
Modules of Elasticity	130	[GPa]
@20-300°C	17	[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 recommended
Oxyacetylene welding	good
Gas shield arc welding	excellent
Resistance welding	not recommended
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, terminals, lead frames, contacts, connectors, relays, springs, cooling fins, heat exchangers.

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	300-380	≤300	≥ 10	80-110	0	0	0	0
R360	360-440	≥260	≥ 3	110-130	0.5	0.5	0.5	0.5
R420	420-500	≥350	≥ 2	120-150	1.5	1.5	1.5	1.5

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)
0.10-0.20	10-420
0.21-1.00	5-440
1.01-3.00	15-440

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Rev. | 11.2026