

Cu-OFE

EN 2024 06

Comparable standards: Aurubis designations:

UNS C10100 • EN CW009A • JIS C1011 C101 • OFE-OK • PNA 203

Description

Cu-OFE is an oxygen-free, high conductivity copper with a minimum of 99.99% Cu. It offers the advantages of both electrolytic tough pitch copper (ETP) and phosphor deoxidized copper. The high purity with less than 5ppm oxygen and the absence of deoxidizers accounts for min. 101% IACS electrical conductivity as well as no susceptibility to hydrogen embrittlement. Cu-OFE has a very good formability and can be soldered and welded, which makes it superior to Cu-ETP in these aspects.

Composition



Composition of this alloy is in accordance with RoHS for electric & electronic components and ELV for the automotive industry.

Melting point	Density	c _p @ 20°C	Young's modulus	Thermal cond.	Electrical cond.		α @20-300°C	
[°C]	[g/cm ³]	[kJ/kgK]	[GPa]	[W/mK]			[10 ⁻⁶ /K]	
1083	8.94	0.394	127	394	≥ 58	≥100	17.7	
Note: The specified conductivity applies to thecp specific heat capacitysoft condition only.α coefficient of thermal expansion								
	Tensile	Yield	Elongation	Hardness HV				
	Strength	Strength	A ₅₀		90° [r]			
	[MPa]	[MPa]	[%]	[-]	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		
					GW bend a	xis transvers	se to rolling	
Cold formability			excellent					
Hot formability			excellent					
Soldering Brazing			excellent					
			excellent					
Oxyacetylene welding				fair				
Gas shielded arc welding			good					
Resistance welding				not recommended				
	point [°C] 1083 Note: The special soft condition or R220 R240 R240 R290 R360 Cold formabilit Soldering Brazing Oxyacetylene Gas shielded	point[g/cm³][°C][g/cm³]10838.94Note: The specified conductivity soft condition only.Tensile Strength [MPa]R220220-260R240240-300R290290-360R360≥ 360Cold formabilityHot formabilitySolderingBrazingOxyacetylene weldingGas shielded arc welding	point@ 20°C[°C][g/cm³][kJ/kgK]10838.940.394Note: The specified conductivity applies to the soft condition only.YieldTensile StrengthYield Strength[MPa][MPa][MPa]R220220-260≤ 140R240240-300≥ 180R290290-360≥ 250R360≥ 360≥ 320SolderingSolderingGas shielded arc welding	point@ 20°Cmodulus[°C][g/cm³][kJ/kgK][GPa]10838.940.394127Note: The specified conductivity applies to the soft condition only. YieldElongation A_{50} Mote: The specified conductivity applies to the soft condition only.YieldElongation A_{50} Image: Specified conductivity applies to the soft condition only.Image: Specified conductivity applies to the soft condition only.Image: Specified conductivity applies to the soft condition only.YieldElongation A_{50} Image: Specified conductivity applies to the soft condition only.Image: Specified conductivity applies to the soft condition only.Image: Specified conductivity applies to the soft condition only.YieldElongation A_{50} Image: Specified conductivity applies to the soft condition only.Image: Specified condition only.Image: S	point@ 20°Cmoduluscond.[°C][g/cm³][kJ/kgK][GPa][W/mK]10838.940.394127394Note: The specified conductivity applies to the soft condition only.Note: The specified conductivity applies to the soft condition only.Elongation A ₅₀ Hardness HV A ₅₀ Image: Condent conductivity applies to the soft condition only.Image: Condent conductivity applies to the soft condition only.Elongation A ₅₀ Hardness HV A ₅₀ Image: Condent conductivity applies to the soft condition only.Image: Condent conductivity applies to the soft condition only.Elongation A ₅₀ Hardness HV A ₅₀ Image: Condent conductivity applies to the soft condition only.Image: Condent conductivity applies to the soft condition only.R220220-260≤ 140≥ 33R240240-300≥ 180≥ 8R290290-360≥ 250≥ 4R360≥ 360≥ 320≥ 2Image: Cold formabilityImage: Condent cond	point@ 20°Cmoduluscond.co[°C][g/cm³][kJ/kgK][GPa][W/mK][MS/m]10838.940.394127394 ≥ 58 Note: The specified conductivity applies to the soft condition only. C_p specific f a coefficienTensile StrengthYield StrengthElongation A_{50}Hardness HV 90'[MPa][MPa][%][-]GWR220220-260 ≤ 140 ≥ 33 40-650R240240-300 ≥ 180 ≥ 8 65-950R290290-360 ≥ 250 ≥ 4 90-1100R360 ≥ 360 ≥ 320 ≥ 2 ≥ 110 0r = x * t (thi direction.GW bend a direction.Cold formabilityHot formabilitySolderingBrazingOxyacetylene weldingGas shielded arc welding	point@ 20°Cmoduluscond.cond.[°C][g/cm³][kJ/kgK][GPa][W/mK][MS/m][%IACS]10838.940.394127394 ≥ 58 ≥ 100 Note: The specified conductivity applies to the soft condition only.C _p specific heat capacity a coefficient of thermal of c _p specific heat capacity a coefficient of thermal of coefficient only.TensileYieldElongationHardness HVBend ratioStrengthStrengthStrength[%][-]GWBWR220220-260 ≤ 140 ≥ 33 40-6500R240240-300 ≥ 180 ≥ 8 65-9500R290290-360 ≥ 250 ≥ 4 90-11000R360 ≥ 360 ≥ 320 ≥ 2 ≥ 110 00r = x * t (thickness t ≤ 0 GW bend axis transvers direction. BW bend axis direction. BW bend	

Machinability

not recommended



Electrical conductivity	The electrical conductivity depends on chemical composition, the level of cold deformation and the grain size. A high level of deformation as well as a small grain size decrease the conductivity.
Corrosion Resistance	Copper is resistant to: Natural and industrial atmospheres as well as maritime air, drinking and service water, non oxidizing acids, alkaline solutions and neutral saline solutions. Copper is not resistant to: Ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres, oxidizing acids and sea water (especially at high flow rates).
Typical uses	Radar components, conductors, contacts and terminals, base plates for power modules, printed circuits, carrier tapes, flat-type cables, flexible circuits, terminal lugs, copper ceramic substrates, vakuum technology, components of electrical engineering

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