

Cu-ETP

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Comparable standards: UNS C11000 • EN CW004A • JIS C110
 Aurubis designations: C110 • SM 0008 • ETP • PNA 211

Description Cu-ETP strip material is an electrolytically refined, oxygen-containing copper. It has a very good electrical conductivity and is economically interesting, compared to other high-conductivity copper alloys. It should be noted that the soldering and welding properties of the material are limited due to the oxygen content.
 Cu-ETP strips are used in electrical engineering and electronics components

Composition

Cu	O	Bi	Pb
[%]	[%]	[%]	[%]
min 99.90	max 0.04	max 0.0005	max 0.005

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

Physical properties

Melting point	Density	c _p @ 20°C	Young's modulus	Thermal cond.	Electrical cond.		α @20-300°C
					[°C]	[g/cm³]	
1083	8.9	0.394	127	390	≥ 58	≥100	17.7

Note: The specified conductivity applies to the soft condition only.

c_p specific heat capacity
 α coefficient of thermal expansion

Mechanical properties

	Tensile Strength	Yield Strength	Elongation A ₅₀	Hardness HV	Bend ratio 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	0.5
R360	≥ 360	≥ 320	≥ 2	≥ 110	1	2

r = x * t (thickness t ≤ 0.5mm)
 GW bend axis transverse to rolling direction. BW bend axis parallel to rolling direction.

Fabrication properties

Cold formability	excellent
Hot formability	excellent
Soldering	excellent
Brazing	good
Oxyacetylene welding	not recommended
Gas shielded arc welding	fair
Resistance welding	not recommended
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).
Due to the oxygen content Cu-ETP is not resistant to hydrogen embrittlement in reducing atmospheres at elevated temperatures.

Typical uses

Automotive industry, stamped parts, electrical conductors, contacts, terminals, components for chemical processes

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