

CuZn10

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Comparable standards: UNS C22000 • EN CW501L • JIS C2200
 Aurubis designations: C220 • SM 1090 • PNA 222

Description

CuZn10 is a solid solution strengthened copper alloy containing 10% zinc (brass). CuZn10 has very good cold formability and is suited for bending, stamping and other cold forming processes. The alloy may be soldered, brazed or welded. As the zinc content increases, the strength improves, yet the conductivity and ductility are reduced. CuZn10 has a good resistance to stress corrosion cracking, yet the alloy should be stress relieved if exposed to an ammonia atmosphere.

Due to the raised zinc content brass has economical advantages.

Fields of application are architecture, stamped and deep drawn products, dry goods, jewelry, cosmetic packaging and components of mechanical and electrical engineering.

Composition

Cu	Fe	Pb	Zn	Al	Ni	Sn
[%]	[%]	[%]	[%]	[%]	[%]	[%]
89-91	0.05 max	0.05 max	rem	0.02 max	0.3 max	0.1 max

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
					[MS/m]	[%IACS]	
[°C]	[g/cm ³]	[kJ/kgK]	[GPa]	[W/mK]			[10 ⁻⁶ /K]
1043	8.8	0.38	117	189	≥ 25	≥ 43	18.4

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]		Bend ratio 180° [r]	
					[MPa]	[MPa]	[%]	[-]
R240	240-290	≤ 140	≥ 36	50-80	0	0	0	0
R280	280-360	≥ 200	≥ 13	80-110	0	0	0	0.5
R350	≥ 350	≥ 290	≥ 4	≥ 110	0	0.5	1	1.5

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	good
Soldering	excellent
Brazing	excellent
Oxyacetylene welding	good
Gas shielded arc welding	good
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

Brass is resistant to: Natural, industrial and salt bearing atmospheres, drinking water, alkaline and neutral saline solutions.

Brass is not resistant to: Acids, ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres as well as sea water (especially at high flow rates).

CuZn10 is hardly sensitive to stress corrosion cracking and is resistant to dezincification, different to brass alloys with higher zinc contents. Yet the alloy should be stress relieved if stress corrosion cracking might be an issue.

Typical uses

Architectural, stamped and deep drawn products, jewelry, dry goods, cosmetic packaging, components of electrical engineering, mechanical and building engineering.

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