CuSn10

Comparable standards: UNS C52400
Aurubis designations: C5240 • PNA 292

Description

CuSn10 is a solid solution strengthened copper alloy (bronze) with 10% tin. The high tin content results in high strength and springiness at an adequate conductivity. The alloy is wear-resistant, has very good corrosion resistance and can be readily soldered. Moreover CuSn10 has good sliding properties.
Fields of application are stamped parts, connectors, spring contacts, springs, bushings and bearings, metal hose, the paper industry, ship and apparatus manufacturing as well as electrical and mechanical engineering.

Composition

Cu [%]	Sn [%]	P [%]	Fe [%]	Pb)0,05 max; [%]	Zn [%]
rem	9.0-11.0	0.03-0.35	0.1 max		0.2 max

This alloy is in accordance with RoHS 2002/96/CE for electric & electronic components and 2002/53/CE for the automotive industry.

Physical properties

Melting point [°C]	Density [g/cm³]	c_p @ 20°C [kJ/kgK]	Electrical cond. [%IACS]	Thermal cond. [W/mK]	Young's modulus [GPa]	α @ 20°C [10^{-6}/K]
999	8.78	0.377	≥10	50	110	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 [MPa]	Yield Strength [MPa]	Elongation A_{50} [%]	Hardness HV [-]	Bend ratio 90° [r] GW	Bend ratio 90° [r] BW
R650	650-750	≤ 580	≥ 11	200-240	0	0
R750	750-850	≥ 650	≥ 9	230-270	0	1.5
R850	850-950	≥ 780	≥ 5	250-290	1	2.5
R950	950-1050	≥ 900	≥ 1	270-310	-	-
R1000	≥ 1000	≥ 950	-	≥ 290	-	-

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.

Fabrication properties

Cold formability	excellent
Hot formability	not recommended
Soldering	excellent
Brazing	excellent
Oxyacetylene welding	fair
Gas shielded arc welding	good
Resistance welding	good
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	Bronce is resistant to: Natural and industrial atmospheres as well as maritime air, drinking and service water (if the flow rate is not excessive), seawater, non oxidizing acids, alkaline solutions and neutral saline solutions. Bronce is not resistant to: Ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres, oxidizing acids. Bronce alloys have an improved resistivity towards seawater and pitting corrosion.
Typical uses	Automotive, components of electrical engineering, connectors, relays and conductor springs, retaining clamps, springs, metal hose, bushings, slide bearings, paper-, textile- and chemical indsutry as well as mechanical and apparatus engineering and shipbuilding