CuSn5

CuSn5 | C51000

CuSn5 is a solid solution strengthened copper alloy with 5% tin. The alloy is highly suitable for cold forming processes with high strength and hardness. It is corrosion resistant and has good solderability. It offers good electrical conductivity and is used in applications where a combination of conductivity and strength is of great importance.

Comparable Standarts

EN	JIS	UNS
CW451K	C5102	C51000

Chemical Composition %

Cu	Zn	Sn	Pb	P
rem	0.2 max	4.5-5.5	0.02 max	0.01-0.4

Physical Properties

Melting Point	1049	[°C]
Density	8.9	(g/cm³)
Cp @ 20°C	0.377	[kJ/kgK]
Thermal Conductivity	96	(W/mK)
Electrical Conductivity	≥17	%IACS
Modules of Elasticity	120	[GPa]
@20-300°C	18	[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	not recommended
Soldering ability	excellent
Oxyacetylene welding	fair
Gas shield arc welding	good
Resistance welding	good
Machining	not recommended
Brazing	excellent

Electrical Conductivity

Electrical conductivity depends on chemical composition, the level of cold deformation, and grain size. High levels of deformation and small grain size reduce conductivity.

Typcial Uses

Automotive, electrical components, connectors, relays and conductor springs, clamps, springs, metal hose, bushings, mechanical and apparatus engineering.

Corrosion Resistance

Bronze is resistant to natural and industrial atmospheres, as well as maritime air, potable and service water (if the flow rate is not excessive), seawater, non-oxidizing acids, alkaline solutions, and neutral saline environments.
However, bronze has low corrosion resistance to ammonia, halogenide, cyanides, hydrogen sulfide solutions and atmospheres, as well as oxidizing acids.
Bronze alloys exhibit enhanced resistance to seawater and pitting 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
R310	310-390	≤ 250	≥ 45	75-105	0	0	0	0
R400	400-500	≥ 240	≥ 14	120-160	0	0	0	0
R490	490-580	≥ 430	≥ 8	160-190	0	0	1	2
R550	550-640	≥ 510	≥ 4	180-210	0	1.5	2	3
R630	630-720	≥ 600	≥ 2	200-230	1.5	4	3	5
R690	≥ 690	≥ 670	-	≥ 220	2.5	9	-	-

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	10-340
0.21-1.00	5-340
1.01-4.00	15-340
4.01-5.00	25-340

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