CuSn6

CuSn6 | C51900

CuSn6 is a solid solution strengthened copper alloy (bronze) with 6% tin. The alloy has high strength with adequate conductivity and good spring properties, making it highly suitable for cold forming processes. It is wear-resistant, offers excellent corrosion resistance, and can be easily soldered.
Application areas are pressed products, connectors, spring contacts, springs, metal hoses, the paper industry, ship component manufacturing, as well as electrical and mechanical parts.

Comparable Standarts

EN	JIS	UNS
CW452K	C5191	C51900

Chemical Composition %

Cu	Zn	Ni	Sn	Fe	Pb	P
rem	max 0.2	0.2 max	5.5-7.0	0.1 max	0.02 max	0.01-0.4

Physical Properties

Melting Point	1040	[°C]
Density	8.8	(g/cm³)
Cp @ 20°C	0.377	[kJ/kgK]
Thermal Conductivity	75	(W/mK)
Electrical Conductivity	≥16	MS/m
Modules of Elasticity	118	[GPa]
α @ 20°C	18.5	[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	fiar
Gas shield arc welding	good
Resistance welding	good
Machining	not recommended
Brazing	excellent

Electrical Conductivity

Electrical conductivity depends on chemical composition, 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 hoses, bushings, paper industry, textile industry, chemical industry, machinery parts, and shipbuilding.

Corrosion Resistance

Bronze is resistant to natural and industrial atmospheres, maritime air, potable and service water (if flow rate is not excessive), seawater, non-oxidizing acids, alkaline solutions, and neutral salt environments. It has low corrosion resistance to ammonia, halogenides, cyanides, hydrogen sulfide solutions and atmospheres, and 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
R350	350-420	≤ 300	≥ 45	80-110	0	0	0	0
R420	420-520	≥ 360	≥ 17	125-165	0	0	0	0
R500	500-590	≥ 460	≥ 8	160-190	0	0	1	2
R560	560-650	≥ 530	≥ 5	180-210	0.5	1	2	3
R640	640-730	≥ 610	≥ 3	200-230	1	3.5	3	4
R720	≥ 720	≥ 690	-	≥ 220	-	-	-	-

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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