

C51100 (CuSn4) 18 08 US

Comparable standards: UNS C51100 • EN CW450K • JIS C5111
 Aurubis designations: C511 • PNA284

Description CuSn4 is a solid solution strengthened copper alloy (bronze) with 4 % tin. It combines high strength, good electrical conductivity, excellent formability, corrosion resistance and can easily be soldered.
 The main usage is for electrical connectors

Composition

Cu*	Sn	Zn	Fe	P	Pb
[%]	[%]	[%]	[%]	[%]	[%]
rem	3.5 – 4.9	0.30 max	0.10 max	0.03 - 0.35	0.05 max

*) Cu + sum of named elements min 99.5 %

Physical properties

Melting point	Density	Specific heat cap. at 20°C	Electrical cond.	Thermal cond. at 20°C	Mod. of elasticity	Coef. of therm exp. at 20°C
[°F] [°C]	[lb/in ³] [g/cm ³]	[Btu/lb°F] [kJ/kgK]	[%IACS] [MS/m]	[Btu/ft h °F] [W/mK]	x1000 ksi [GPa]	[10 ⁻⁶ /°F] [10 ⁻⁶ /K]
1945 1063	0.32 8.86	0.09 0.38	20 12	48 84	16 110	9.9 17.8

The specified conductivity applies to the soft condition only

Mechanical properties

	Tensile strength Rm	Yield strength Rp0.2 nominal	Elongation 2'' nominal	Hard-ness nominal HR30T HV	min bend ratio 90°		min. bend ratio 180°	
	[ksi] [MPa]	[ksi] [MPa]	[%]		GW	BW	GW	BW
Soft	46-54 317-373	22 152	47	52 80	0.0	0.0	0.0	0.0
H02 (1/2H)	55-70 379-483	50 345	31	65 125	0.0	0.0	0.0	0.0
H04 (H)	72-87 497-600	75 517	11	74 185	0.0	1.0	0.0	1.0
H06 (EH)	84-99 579-683	87 600	5	78 225	0.5	2.0	0.5	3.0
H08 (SH)	91-105 623-724	93 642	2	79 245				
H10 (ES)	96-109 662-752	97 669	1	80 250				

Other tempers are available upon request.
 GW bend axis transverse to rolling direction. BW bend axis parallel to rolling direction

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Fabrication properties	Cold formability	excellent
	Hot formability	poor
	Soldering	excellent
	Brazing	excellent
	Oxyacetylene welding	fair
	Gas shield arc welding	good
	Resistance welding	good

Stress relaxation resistance

Typical temperature for min 70 % remaining stress after 3000 h: 125 °C

Typical uses

Bridge bearing plates, bellows, clutch discs, electrical connectors, switches, terminals, contacts, diaphragms, fuse, clips, fasteners, lock washers, sleeve bushings, mechanical springs, switch parts, terminal brackets, chemical hardware, kettles, pots, perforated sheets, textile machinery parts

Applicable specifications

ASTM B103, B888

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