C42520

CuZn8Sn2

C42520 is a precipitation and solid solution strengthened alloy developed for use in the electronic and automotive connector markets. Its unique combination of properties provides higher current carrying capacity than phosphor bronzes at the same strength level. C42520 is predominantly used in press-fit pins (compliant pins) with a flexible press-fit zone.

Chemical composition (Reference)	
Cu	89.8 %
Sn	2 %
Fe	0.1 %
Ni	0.1 %
P	0.1 %
Zn	remainder

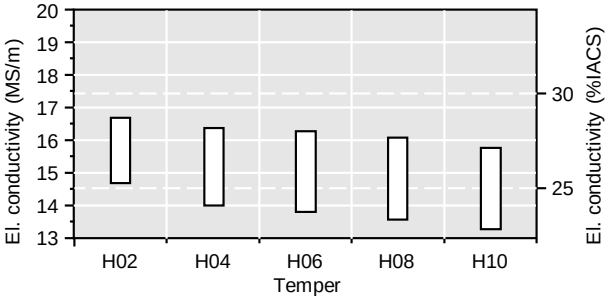
Physical properties (Reference values at room temperature)				
Electrical conductivity	17	MS/m	30	%IACS
Thermal conductivity	130	W/(m·K)	75	Btu·ft/(ft²·h·℉)
Coefficient of electrical resistance*	1.1	10^{-3}/K	0.6	10^{-3}/℉
Coefficient of thermal expansion*	18.4	10^{-6}/K	10.2	10^{-6}/℉
Density	8.80	g/cm³	0.318	lb/in³
Modulus of elasticity	110	GPa	16,000	ksi
Specific heat	0.377	J/(g·K)	0.090	Btu/(lb·℉)
Poisson´s ratio	0.34		0.34	

* Between 0 and 300 ℃

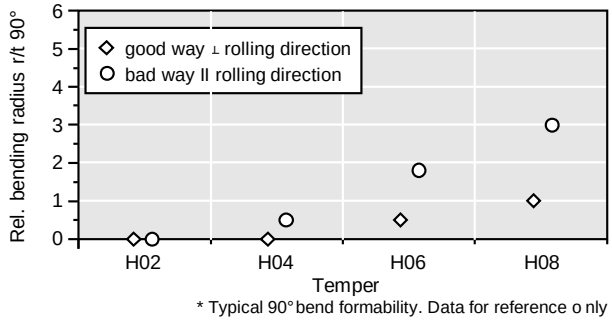
Mechanical properties (values in brackets are for information only)

Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50} / $A_{2"}$
	MPa	ksi	MPa	ksi	%
H02	460-565	67-82	≥ 415	≥ 60	≥ 20
H04	550-655	80-95	≥ 515	≥ 75	≥ 8
H06	620-725	90-105	≥ 585	≥ 85	≥ 6
H08	655-760	95-110	≥ 620	≥ 90	≥ 4
H10	690-795	100-115	≥ 655	≥ 95	≥ 3

Electrical conductivity



Bendability* (Strip thickness t ≤ 0.4 mm)



* Typical 90° bend formability. Data for reference o nly

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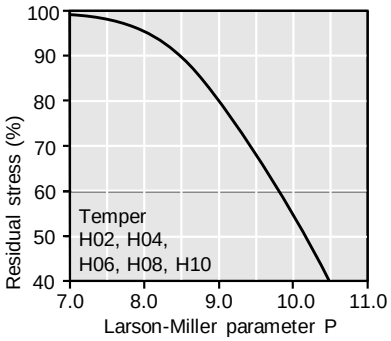
Thermal stress relaxation



Stress remaining after thermal relaxation as a function of Larson-Miller parameter P
(F. R. Larson, J. Miller, Trans ASME74 (1952) 765–775) given by:
P = (20 + log(t))*(T + 273)*0.001.
Time t in hours, temperature T in ℃.
Example: P = 9 is equivalent to 1,000 h/118 ℃.
Measured on stress relief annealed specimens parallel to rolling direction.
Total stress relaxation depends on the applied stress level.
Furthermore, it is increased to some extent by cold deformation.

Fatigue strength

The fatigue strength is defined as the maximum bending stress amplitude which a material withstands for 10^7 load cycles under symmetrical alternate load without breaking. It is dependent on the temper tested and is about 1/3 of the tensile strength R_m.

Types and formats available

- Standard coils with outside diameters up to 1,400 mm
- Traverse-wound coils with drum weights up to 1.5 t
- Multicoil up to 5 t
- Hot-dip tinned strip
- Contour-milled strip

Dimensions available

- Strip thickness from 0.10 mm, thinner gauges on request
- Strip width from 3 mm, however min. 10 x strip thickness

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06.21 | RP.TMA.UL/Bm