wieland

C19500

CuFe1.5CoSnP

Alloy C19500 is a high strength, moderate electrical conductivity copper alloy, the properties of which are comparable to the common CuFeP alloys, e.g. C19400. It is typically used for electrical sockets, springs and clips.

Chemical composition (Reference)	
Cu	≥ 96 %
Fe	1.5 %
Co	0.8 %
Sn	0.5 %
P	0.15 %

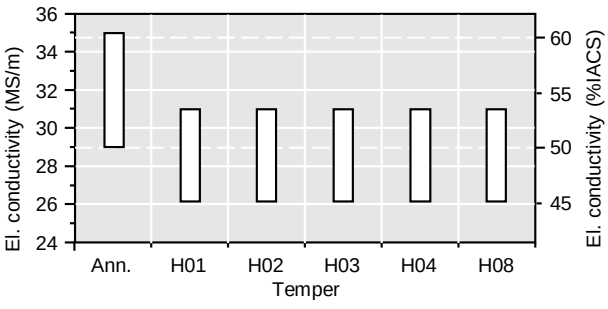
Physical properties (Reference values at room temperature)				
Electrical conductivity	29	MS/m	50	%IACS
Thermal conductivity	200	W/(m·K)	115	Btu·ft/(ft²·h·℉)
Coefficient of electrical resistance*	1.9	10^{-3}/K	1.1	10^{-3}/℉
Coefficient of thermal expansion*	16.6	10^{-6}/K	9.2	10^{-6}/℉
Density	8.92	g/cm³	0.322	lb/in³
Modulus of elasticity	119	GPa	17,300	ksi
Specific heat	0.385	J/(g·K)	0.092	Btu/(lb·℉)
Poisson´s ratio	0.34		0.34	

* Between 0 and 300 ℃

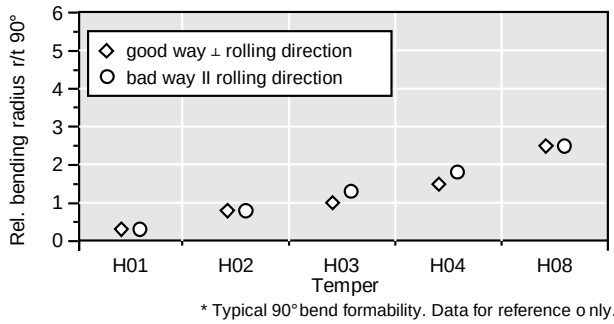
Mechanical properties (values in brackets are for information only)

Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50} / $A_{2"}$
	MPa	ksi	MPa	ksi	%
Annealed	345-415	50-60	≥ 145	≥ 21	≥ 22
H01	415-495	60-72	≥ 310	≥ 45	≥ 5
H02	470-540	68-78	≥ 455	≥ 66	≥ 3
H03	515-585	75-85	≥ 495	≥ 72	≥ 2
H04	565-620	82-90	≥ 545	≥ 79	≥ 2
H08	605-670	88-97	≥ 585	≥ 85	≥ 1

Electrical conductivity



Bendability* (Strip thickness t ≤ 0.4 mm)

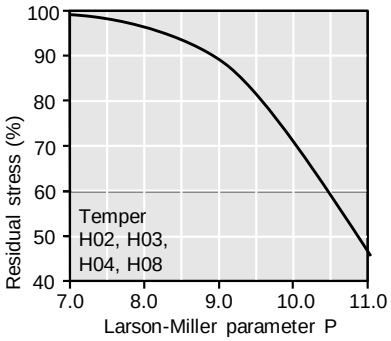


* Typical 90° bend formability. Data for reference only.

C19500

CuFe1.5CoSnP

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

Wieland-Werke AG | Graf-Arco-Straße 36 | 89079 Ulm | Germany
info@wieland.com | wieland.com
Wieland Rolled Products North America | 4803 Olympia Park Plaza, Suite 3000 | Louisville, Kentucky | USA
infona@wieland.com | wieland-rolledproductsna.com

06.21 | RP.TMA.UL/Bm