Wieland-K57

CuNi1Co1Si | C70350

C70350 is a high-performance alloy that is produced to very high strength tempers. The precipitation of silicides, evenly distributed throughout the bulk, delivers high strength levels, good conductivity and excellent resistance to thermal stress relaxation. C70350 is an alternative to the high-strength tempers of alloy C70250 and often used for miniaturized connectors, CPU sockets, and board to board connectors. Foil thicknesses can be achieved below 0.10 mm.

Chemical composition (Reference)	
Ni	1.5 %
Co	1.1 %
Si	0.6 %
Cu	remainder

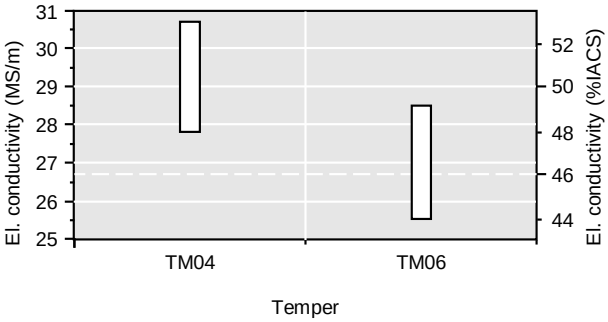
Physical properties (Reference values at room temperature)				
Electrical conductivity	29	MS/m	50	%IACS
Thermal conductivity	200	W/(m·K)	115	Btu·ft/(ft²·h·℉)
Coefficient of electrical resistance*	1.8	10^{-3}/K	1.0	10^{-3}/℉
Coefficient of thermal expansion*	17.6	10^{-6}/K	9.8	10^{-6}/℉
Density	8.82	g/cm³	0.319	lb/in³
Modulus of elasticity	131	GPa	19,000	ksi
Specific heat	0.390	J/(g·K)	0.093	Btu/(lb·℉)
Poisson´s ratio	0.34		0.34	

* Between 0 and 300 ℃

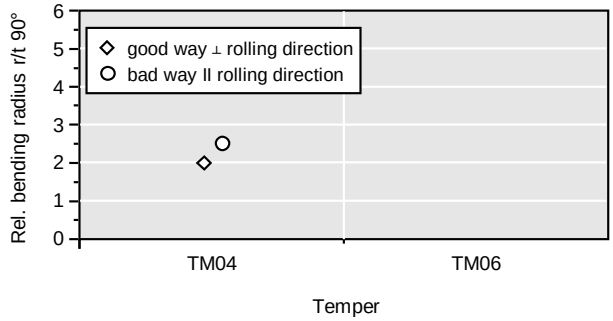
Mechanical properties (values in brackets are for information only)

Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50}	Hardness HV
	MPa	ksi	MPa	ksi	%	
TM04	770-900	112-131	750-850	109-124	≥ 4	(220-280)
TM06	840-970	123-142	810-920	118-134	≥ 1	(240-300)

Electrical conductivity



Bendability (Strip thickness t ≤ 0.2 mm)



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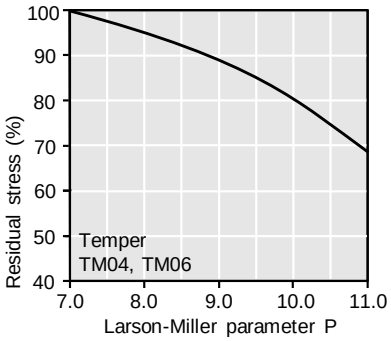
Thermal stress relaxation



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 0.08-0.20 mm, other gauges on request
- Strip width from 3 mm, however min. 10 x strip thickness

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