WIELAND-K57®

ROLLED PRODUCTS

CuNi1Co1Si

C70350

Material Designation	
EN	no EN standard
UNS*	C70350

**Unified Numbering System (USA)*

Chemical Composition (Reference)	
Ni	1.5 %
Co	1.1 %
Si	0.6 %
Cu	balance

Typical Applications

- Components for the electrical indusrty
- Stamped parts
- Relay springs
- Connectrors suitable for use at elevated temperatures

Physical Properties*		
Electrical Conductivity***	MS/m % IACS	29 50
Thermal Conductivity	W/(m·K)	200
Coefficient of Electrical Resistance**	10^{-3}/K	1.83
Coefficient of Thermal Expansion**	10^{-6}/K	17.6
Density	g/cm³	8.82
Modulus of Elasticity	GPa	131
Specific Heat	J/(g·K)	0.39
Poisson's Ratio		0.34

* *Reference values at room temperature*

** *For TM06 45%IACS*

*** *Between 0 and 300 °C*

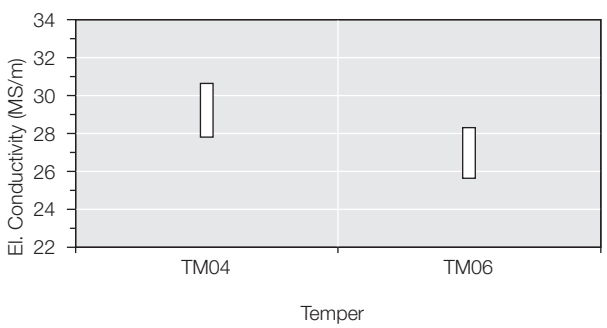
Fabrication Properties	
Capacity for Being Cold Worked	good
Machinability	less suitable
Capacity for Being Electroplated	good
Capacity for Being Hot-Dip Tinned	good
Soft Soldering	good
Resistance Welding	fair
Gas Shielded Arc Welding	good
Laser Welding	less suitable

Corrosion Resistance

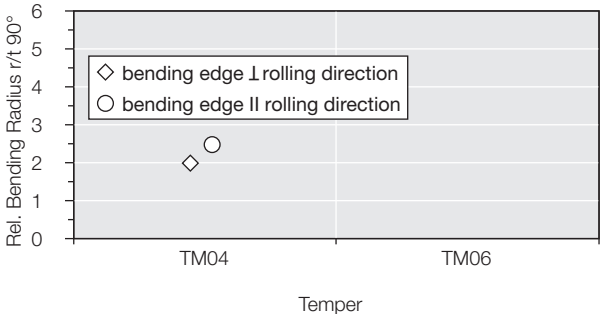
Wieland-K57® has good corrosion resistance in natural atmosphere. It is insensitive to stress corrosion cracking.

Mechanical Properties			
Temper		**TM04**	**TM06**
Tensile Strength R_m	MPa	770–900	840–970
Yield Strength $R_{p0,2}$	MPa	750–850	810–920
Elongation A_{50mm}	%	≥ 4	≥ 1
Hardness HV (only for information)		(220–280)	(240–300)

Electrical Conductivity



Bendability (Strip Thickness t ≤ 0.2 mm)



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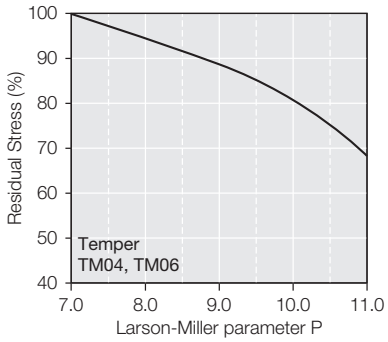
Thermal Stress Relaxation



Stress remaining after thermal relaxation as a function of Larson-Miller parameter P (F. R. Larson, J. Miller, TransASME74 (1952) 765–775) given by:

P = (20 + log(t))*(T + 273)*0.001.

Time t in hours, temperature T in °C.

Example: P = 9 is equivalent to 1.000 h/118 °C.

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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11/18 Bm (MC.ED.UL/Ri)