Wieland-K73
CuNi1ZnSi
C19005

Rolled Products

Wieland

Material Designation

EN	no EN standard
UNS*	C19005

** Unified Numbering System (USA)*

Chemical Composition (Reference)

Ni	1.5 %
Si	0.3 %
Zn	0.4 %
Cu	balance

Typical Applications

- Components for the electrical industry
- Stamped parts
- Relay springs
- Connectors suitable for use at elevated temperatures

Physical Properties*

Electrical Conductivity	MS/m %IACS	27 47
Thermal Conductivity	W/(m·K)	250
Coefficient of Electrical Resistance**	10^{-3}/K	1.8
Coefficient of Thermal Expansion**	10^{-6}/K	16.8
Density	g/cm³	8.90
Modulus of Elasticity	GPa	127
Specific Heat	J/(g·K)	0.377
Poisson's Ratio		0.34

* *Reference values at room temperature*
** *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

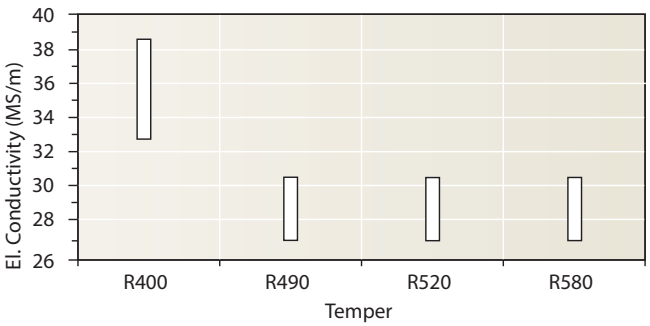
Corrosion Resistance

Wieland-K73 has good corrosion resistance in natural atmosphere. It is insensitive to stress corrosion cracking.

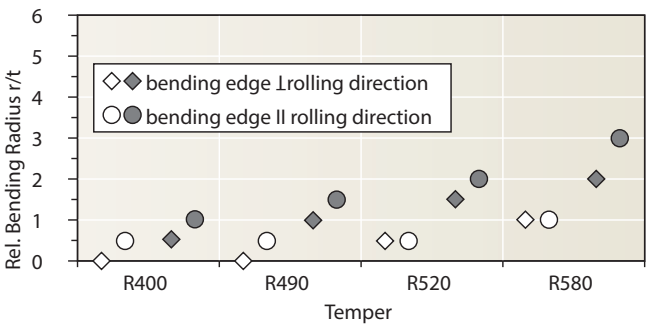
Mechanical Properties

Temper		R400	R490	R520	R580
Tensile Strength R_m	MPa	400–460	490–550	520–590	580–650
Yield Strength $R_{p0.2}$	MPa	≥ 360	≥ 410	≥ 440	≥ 540
Elongation A_{50mm}	%	≥ 8	≥ 10	≥ 9	≥ 8
Hardness HV (for information only)		(120–150)	(140–170)	(150–180)	(170–200)

Electrical Conductivity



Bendability (Strip Thickness t ≤ 0.5 mm) ◇○ 90° ◆● 180°



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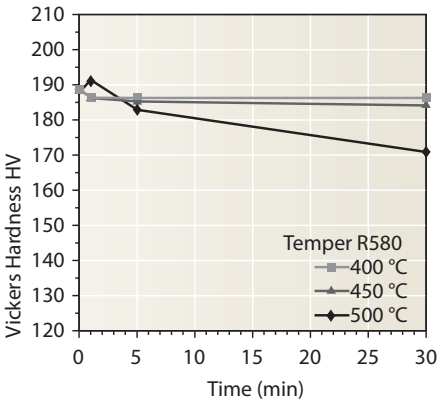
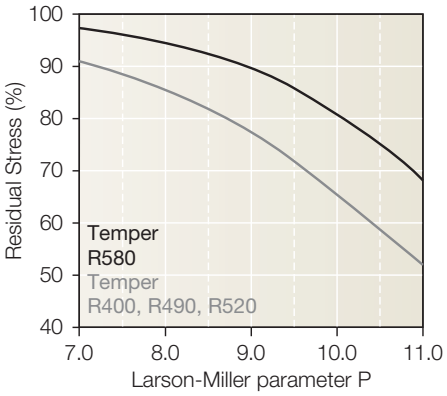
Resistance to Softening



Vickers hardness
after heat treatment
(typical values)

Thermal Stress Relaxation



Stress remaining after thermal relaxation as a function of Larson-Miller parameter (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 °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 1400 mm
- Traverse-wound coils with drum weights up to 1.5 t
- Multicoil up to 5 t
- Hot-dip tinned strip
- Contour-milled strip
- Sheet
- Strip and sheet with protective coating

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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12/17 Bm (GSW/Ri)