

**Material Designation**

EN	no EN standard
UNS*	C19010

\* Unified Numbering System (USA)

**Chemical Composition (Reference)**

Ni	1.3 %
Si	0.25 %
P	0.03 %
Cu	balance

**Typical Applications**

- Components for the electrical industry
- Stamped parts
- Connectors
- Relay springs

**Physical Properties\***

Electrical Conductivity	MS/m	29
	%IACS	50
Thermal Conductivity	W/(m·K)	250
Coefficient of Electrical Resistance**	10 <sup>-3</sup> /K	2.0
Coefficient of Thermal Expansion**	10 <sup>-6</sup> /K	16.8
Density	g/cm <sup>3</sup>	8.89
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

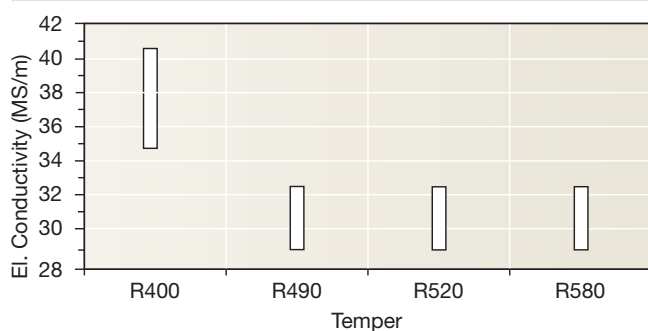
**Corrosion Resistance**

Wieland-K76® has good corrosion resistance in natural atmosphere. It is insensitive to stress corrosion cracking.

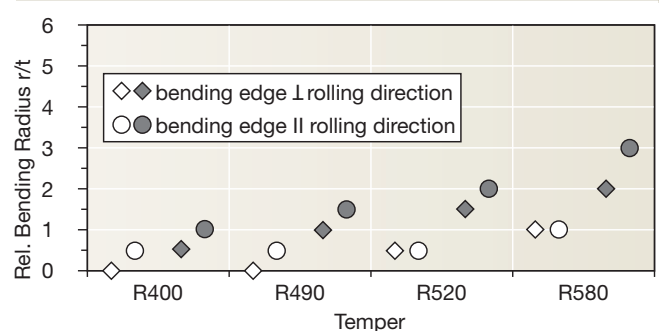
**Mechanical Properties**

Temper		R400	R490	R520	R580
Tensile Strength R <sub>m</sub>	MPa	400–460	490–550	520–590	580–650
Yield Strength R <sub>p0.2</sub>	MPa	≥ 360	≥ 410	≥ 440	≥ 540
Elongation A <sub>50mm</sub>	%	≥ 8	≥ 10	≥ 9	≥ 8
Hardness HV (for information only)		(120–150)	(140–170)	(150–180)	(170–200)

**Electrical Conductivity**



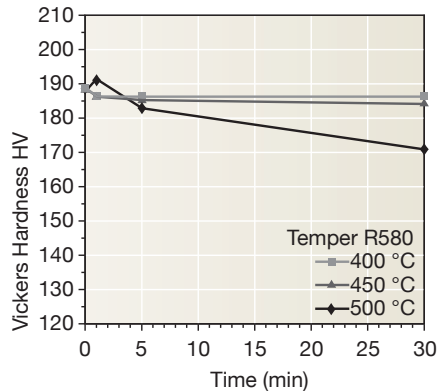
**Bendability (Strip Thickness t ≤ 0.5 mm) ◇○90° ◆●180°**



# Wieland-K76®

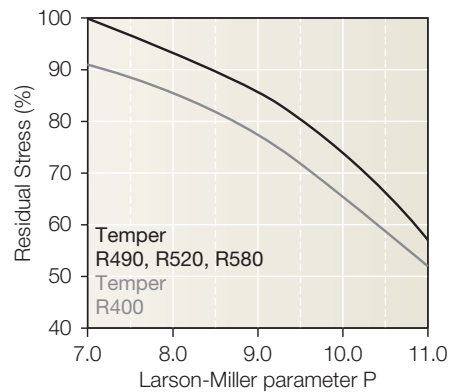
CuNiSiP  
C19010

## 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:  
 $P = (20 + \log(t))(T + 273) \cdot 0.001$   
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  $\frac{1}{3}$  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

Wieland-Werke AG

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