

CuSn1CrNiTi

C18090

Material Designation	
EN	no EN standard
UNS*	C18090

\*Unified Numbering System (USA)

Chemical Composition (Reference)	
Sn	0.6 %
Ni	0.4 %
Cr	0.3 %
Ti	0.3 %
Cu	balance

- Typical Applications**
- Components for the electrical industry
  - Connectors
  - Contact springs
  - Relay springs
  - Semiconductor components

Physical Properties*		
Electrical Conductivity	MS/m % IACS	35 60
Thermal Conductivity	W/(m·K)	240
Coefficient of Electrical Resistance**	10 <sup>-3</sup> /K	2.13
Coefficient of Thermal Expansion**	10 <sup>-6</sup> /K	17.6
Density	g/cm <sup>3</sup>	8.87
Modulus of Elasticity	GPa	133
Specific Heat	J/(g·K)	0.385
Poisson's Ratio		0.34

\* Reference values at room temperature

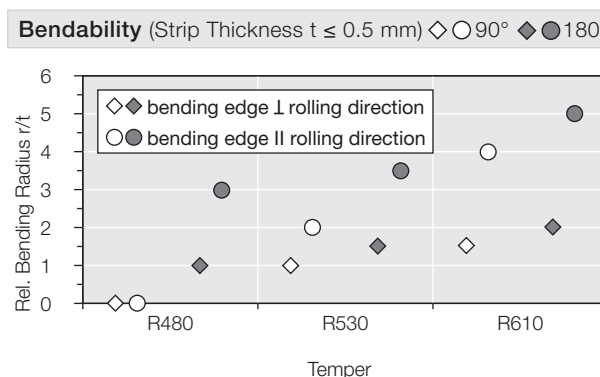
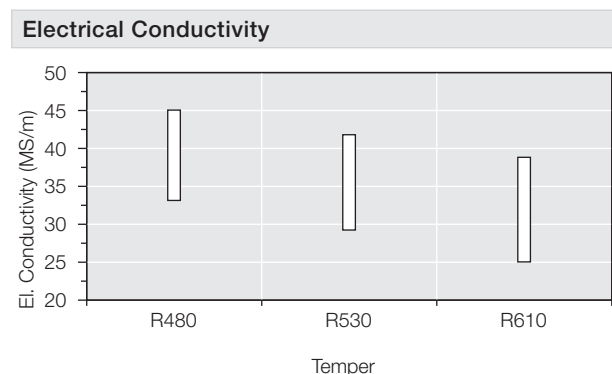
\*\* Between 0 and 300 °C

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	fair

**Corrosion Resistance**

Wieland-K62® is resistant to pure water vapour and non oxidizing acids and alkalis as well as neutral saline solutions. The material is insensitive to stress corrosion cracking.

Mechanical Properties				
Temper		R480	R530	R610
Tensile Strength R <sub>m</sub>	MPa	480–580	530–630	610–710
Yield Strength R <sub>p0.2</sub>	MPa	≥ 400	≥ 450	≥ 520
Elongation A <sub>50mm</sub>	%	≥ 9	≥ 6	≥ 3
Hardness HV (only for information)		(130–170)	(160–200)	(180–220)

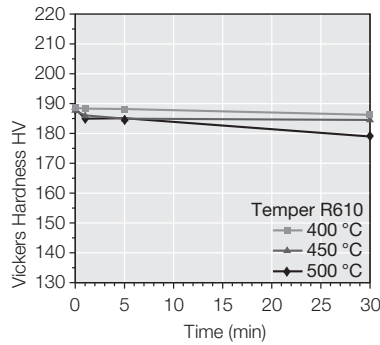
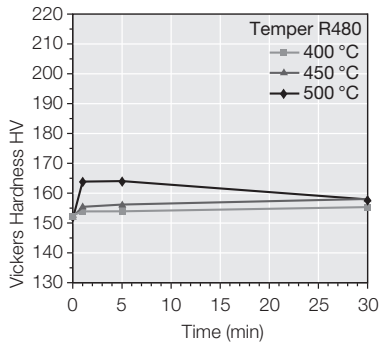


# WIELAND-K62®

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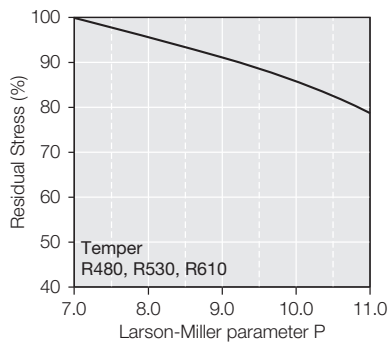
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## Resistance to Softening



Vickers hardness after heat treatment (typical values)

## Thermal Stress Relaxation



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

$$P = (20 + \log(t)) \cdot (T + 273) \cdot 0.001.$$

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 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

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