WIELAND-K88®

ROLLED PRODUCTS

CuCrAgFeTiSi

C18080

Material Designation	
EN	no EN standard
UNS*	C18080

**Unified Numbering System (USA)*

Chemical Composition (Reference)	
Cr	0.5 %
Ag	0.2 %
Fe	0.08 %
Ti	0.06 %
Si	0.03 %
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	46 79
Thermal Conductivity	W/(m·K)	320
Coefficient of Electrical Resistance**	10^{-3}/K	3.0
Coefficient of Thermal Expansion**	10^{-6}/K	17.6
Density	g/cm³	8.92
Modulus of Elasticity	GPa	140
Specific Heat	J/(g·K)	0.381
Poisson's Ratio		0.34

* *Reference values at room temperature*

** *Between 0 and 300 °C*

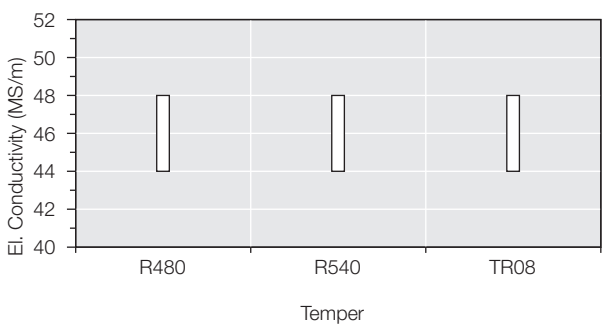
Fabrication Properties	
Capacity for Being Cold Worked	good
Machinability	less suitable
Capacity for Being Electroplated	good
Capacity for Being Hot-Dip Tinned	good
Soft Soldering	good
Resistance Welding	fair
Gas Shielded Arc Welding	excellent
Laser Welding	fair

Corrosion Resistance

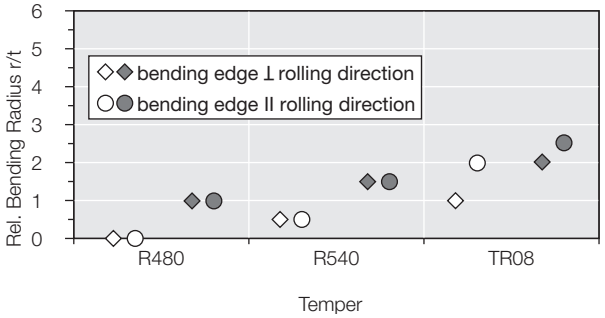
Wieland-K88® is resistant to pure water vapour and non oxidizing acids and alkalis as well as neutral saline solutions. The material is insensitive to stress corrosion cracking.

Mechanical Properties				
Temper		**R480**	**R540**	**TR08**
Tensile Strength R_m	MPa	480–560	540–630	520–620
Yield Strength $R_{p0,2}$	MPa	≥ 450	≥ 520	≥ 500
Elongation A_{50mm}	%	≥ 7	≥ 2	≥ 7
Hardness HV (only for information)		(140–170)	(150–180)	(160–190)

Electrical Conductivity



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



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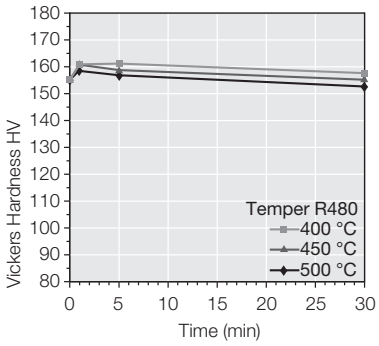
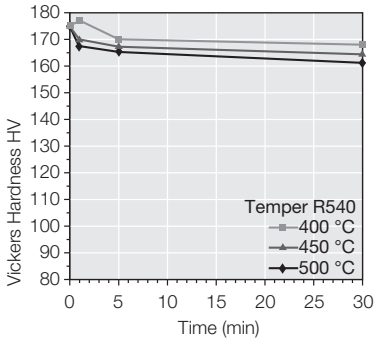
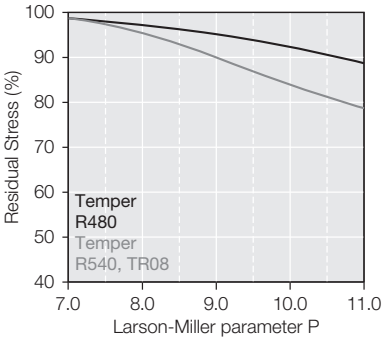
Resistance to Softening





Vickers hardness after heat treatment (typical values)

Thermal Stress Relaxation



Stress remaining after thermal relaxation as a function of Larson-Miller parameter 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 for Temper R480 and R540:
  0.10 / 0.15 / 0.20 / 0.25 / 0.30 / 0.32 / 0.35 and 0.40 mm
- Strip thickness for Temper TR08:
  0.50 / 0.60 / 0.64 / 0.80 and 1.00 mm
  Other gauges on request
- Strip width from 3 mm, however min. 10 x strip thickness

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05/17 Bm (GSW/Au)