

Wieland-B14 SUPRALLOY®

CuSn4
C51100

Rolled Products

Material Designation	
EN	CuSn4
UNS*	C51100

* Unified Numbering System (USA)

Chemical Composition (Reference)	
Sn	4 %
Cu	balance

Typical Applications
• Miniaturized connectors
• Contact springs
• Relais springs

Physical Properties*		
Electrical Conductivity	MS/m	12
	%IACS	21
Thermal Conductivity	W/(m·K)	100
Coefficient of Electrical Resistance**	10 ⁻³ /K	1.3
Coefficient of Thermal Expansion**	10 ⁻⁶ /K	18.0
Density	g/cm ³	8.85
Modulus of Elasticity	GPa	120
Specific Heat	J/(g·K)	0.377
Poisson's Ratio		0.34

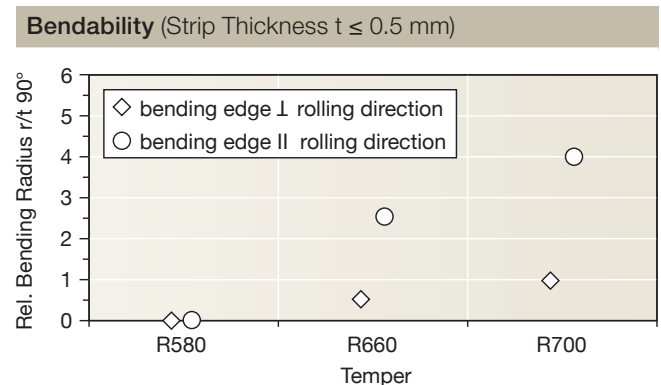
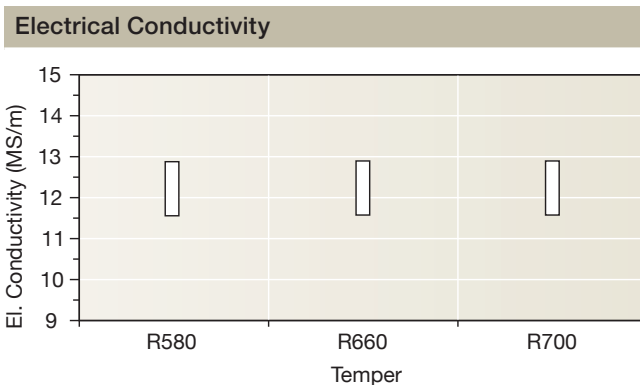
* Reference values at room temperature

** Between 0 and 300 °C

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

Corrosion Resistance
Resistant to seawater and industrial atmosphere. Largely insensitive to stress corrosion cracking.

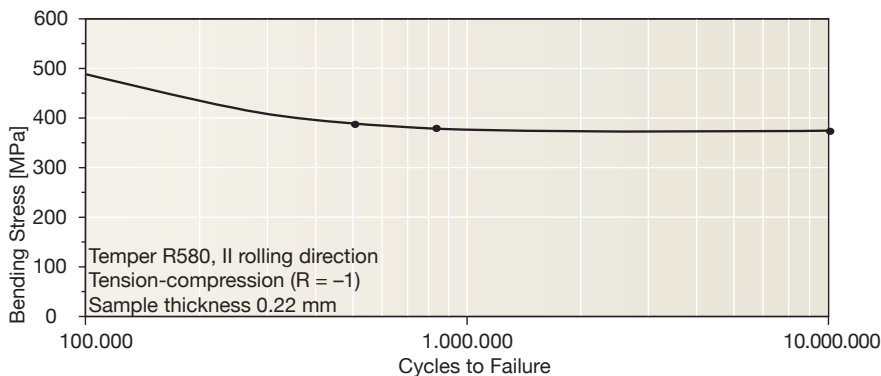
Mechanical Properties				
Temper		R580	R660	R700
Tensile Strength R _m	MPa	580–680	660–760	700–800
Yield Strength R _{p0.2}	MPa	≥ 530	≥ 630	≥ 690
Elongation A _{50mm}	%	≥ 13	≥ 7	≥ 3
Hardness HV (for information only)		(170–230)	(180–240)	(190–250)



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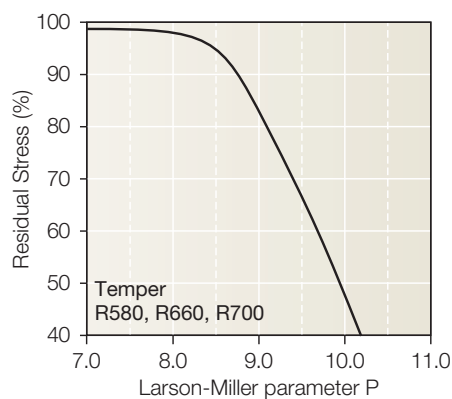
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Fatigue Strength / Woehler Curve (for information only)



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.

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.

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

Dimensions Available

- Strip thickness from 0.10–0.40 mm, thinner gauges on request
- Strip width from 7 mm

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