Wieland-B14 SUPRALLOY®

CuSn4 | C51100 | CW450K

Wieland-B14 SUPRALLOY® is the fine-grain variant of the standard CuSn4 bronze with identical chemical composition and the same UNS designation. The fine-grained microstructure on one hand provides enhanced formability. This allows the designers to increase connector spring forces by maintaining the forming operations. In addition, the resistance against high cycle fatigue is considerably improved, which increases the safety of components in vibrating environments.

Chemical composition (Reference)	
Sn	4 %
Cu	remainder

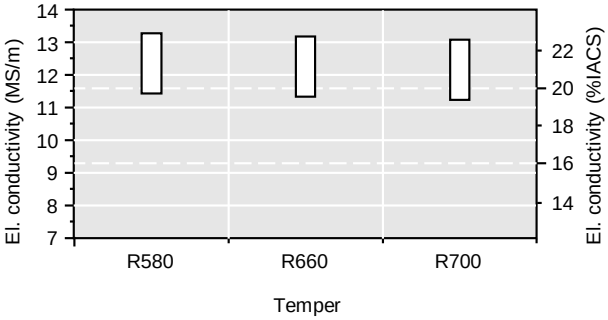
Physical properties (Reference values at room temperature)				
Electrical conductivity	13	MS/m	22	%IACS
Thermal conductivity	84	W/(m·K)	48	Btu·ft/(ft²·h·℉)
Coefficient of electrical resistance*	1.3	10^{-3}/K	0.7	10^{-3}/℉
Coefficient of thermal expansion*	17.8	10^{-6}/K	9.9	10^{-6}/℉
Density	8.85	g/cm³	0.320	lb/in³
Modulus of elasticity	120	GPa	17,500	ksi
Specific heat	0.377	J/(g·K)	0.090	Btu/(lb·℉)
Poisson´s ratio	0.34		0.34	

* Between 0 and 300 ℃

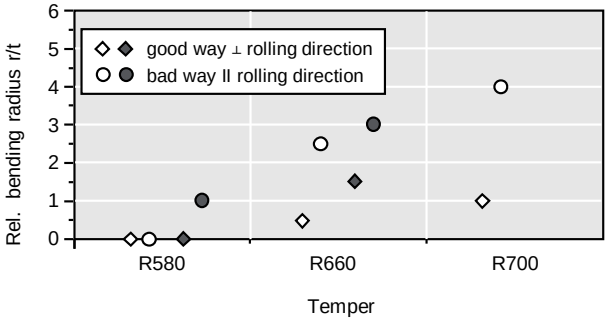
Mechanical properties (values in brackets are for information only)

Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50}	Hardness HV
	MPa	ksi	MPa	ksi	%	
R580	580-680	84-99	≥ 530	≥ 77	≥ 13	(170-230)
R660	660-760	96-110	≥ 630	≥ 91	≥ 7	(180-240)
R700	700-800	102-116	≥ 690	≥ 100	≥ 3	(190-250)

Electrical conductivity



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



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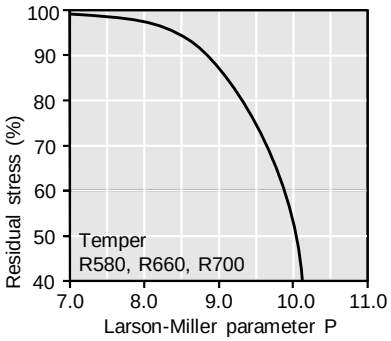
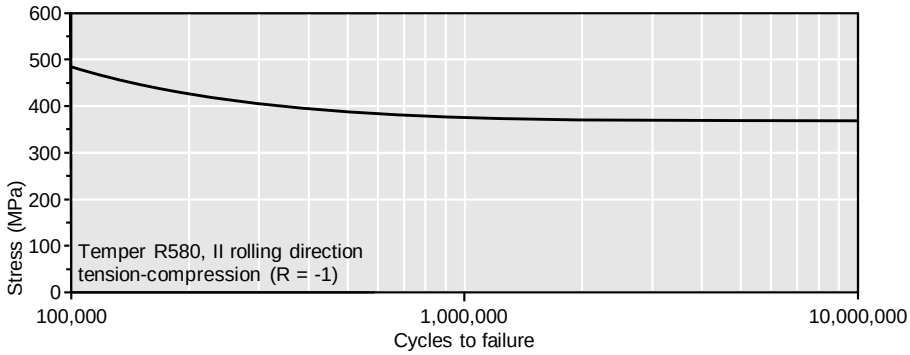
Thermal stress relaxation



Stress remaining after thermal relaxation as a function of Larson-Miller parameter P
(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 ℃.
Example: P = 9 is equivalent to 1,000 h/118 ℃.
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 (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.

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 0.10-0.40 mm, R580: 0.10-0.64 mm, thinner gauges on request
- Strip width from 7 mm

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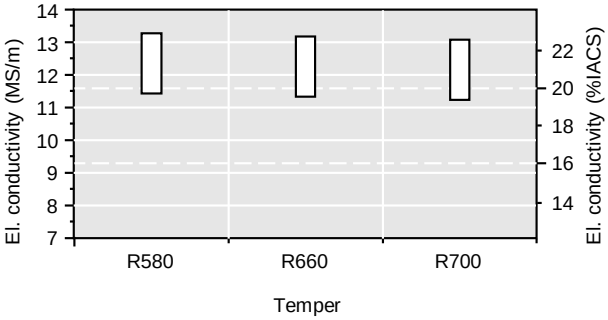

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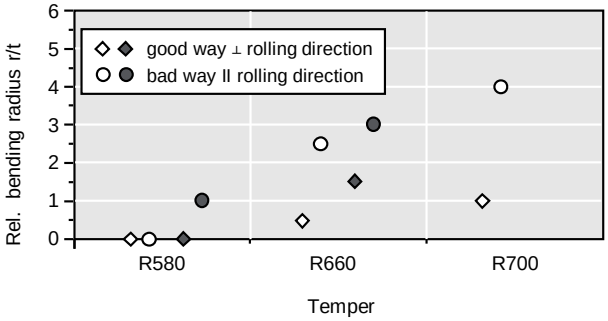

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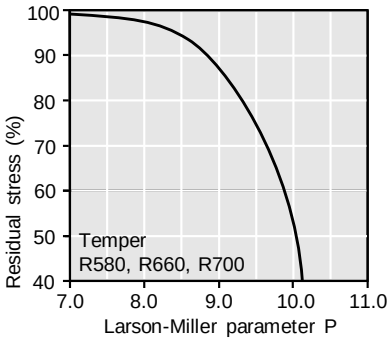

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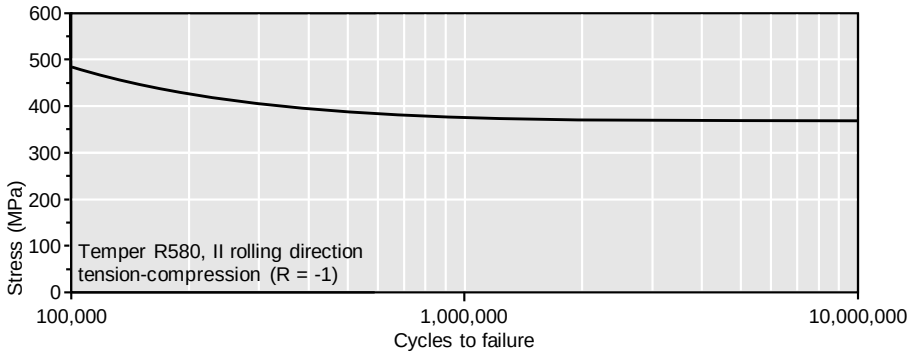

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