

CuSn2Fe0.1P

C50715

Material Designation	
EN	no EN standard
UNS*	C50715

\*Unified Numbering System (USA)

Chemical Composition (Reference)	
Sn	2 %
Si	0.1 %
Zn	0.03 %
Cu	balance

Typical Applications
<ul style="list-style-type: none"> <li>• Components for the electrical industry</li> <li>• Stamped parts</li> <li>• Connectors</li> </ul>

Physical Properties*		
Electrical Conductivity	MS/m % IACS	18 30
Thermal Conductivity	W/(m·K)	150
Coefficient of Electrical Resistance**	10 <sup>-3</sup> /K	1.4
Coefficient of Thermal Expansion**	10 <sup>-6</sup> /K	17.6
Density	g/cm <sup>3</sup>	8.89
Modulus of Elasticity	GPa	123
Poisson's Ratio		0.34

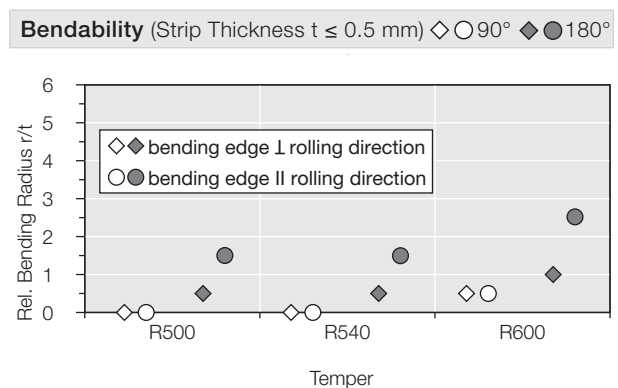
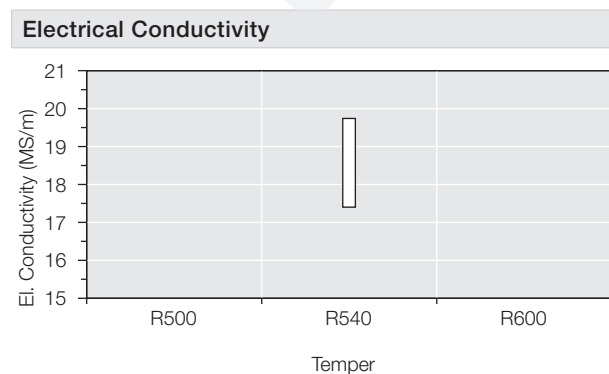
\* Reference values at room temperature

\*\* 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		R500	R540	R580
Tensile Strength R <sub>m</sub>	MPa	500–580	540–620	600–680
Yield Strength R <sub>p0.2</sub>	MPa	≥ 460	≥ 500	≥ 560
Elongation A <sub>50mm</sub>	%	≥ 6	≥ 5	≥ 3

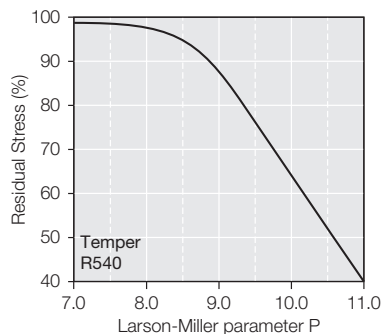


# WIELAND-B31

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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, 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 1400 mm
- Traverse-wound coils with drum weight 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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