

# Wieland-S12

CuSn3Zn9  
C42500

## Rolled Products



Material Designation	
EN	CuSn3Zn9
UNS*	C42500

\* Unified Numbering System (USA)

Chemical Composition (Reference)	
Sn	3 %
Zn	9 %
Cu	balance

Typical Applications
• Components for the electrical industry
• Connectors

Physical Properties*		
Electrical Conductivity	MS/m %IACS	16 28
Thermal Conductivity	W/(m·K)	120
Coefficient of Electrical Resistance**	10 <sup>-3</sup> /K	1.0
Coefficient of Thermal Expansion**	10 <sup>-6</sup> /K	18.4
Density	g/cm <sup>3</sup>	8.75
Modulus of Elasticity	GPa	126
Specific Heat	J/(g·K)	0.380
Poisson's Ratio		0.34

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

**Corrosion Resistance**

Wieland-S12 has a low sensitivity to stress corrosion cracking. It is resistant to sea water and industrial atmosphere.

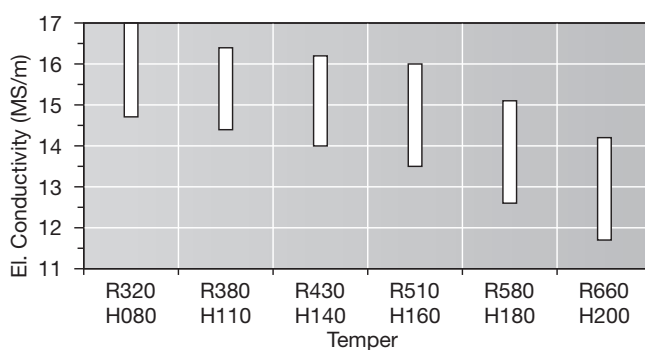
\* Reference values at room temperature  
\*\* Between 0 and 300 °C

Mechanical Properties							
Temper		R320	R380	R430	R510	R580	R660
Tensile Strength R <sub>m</sub>	MPa	320–380	380–430	430–520	510–600	580–690	≥ 660
Yield Strength R <sub>p0.2</sub>	MPa	≤ 230	≥ 200	≥ 330	≥ 430	≥ 520	≥ 610
Elongation A <sub>50mm</sub>	%	≥ 25	≥ 16	≥ 6	≥ 3	–	–

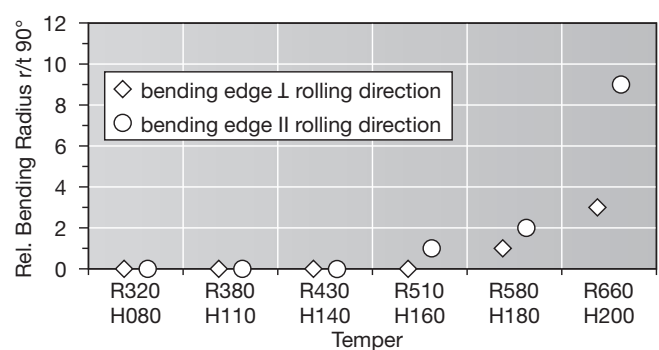
Intermediate tempers are feasible. Higher elongation values can be obtained by additional heat treatments.

Temper	H080	H110	H140	H160	H180	H200
Hardness HV	80–110	110–140	140–170	160–190	180–210	≥ 200

### Electrical Conductivity



### Bendability (Strip Thickness t ≤ 0.5 mm)

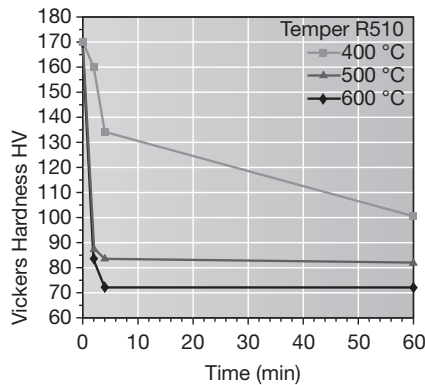
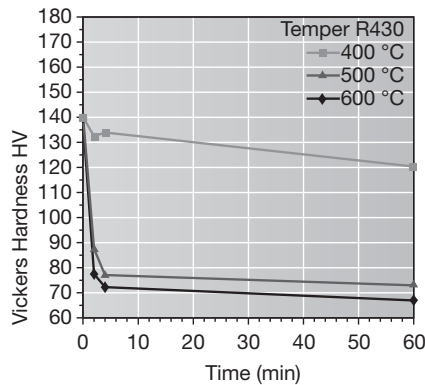


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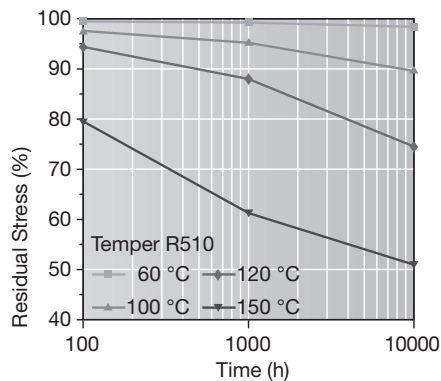
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## Resistance to Softening



Vickers hardness after heat treatment (typical values)

## Stress Relaxation



Stress remaining as a function of service temperature and time. Measured on stress relief annealed specimens parallel to rolling direction. Values extrapolated according to F. R. Larson, J. Miller, Trans ASME74 (1952) 765-775. Total stress relaxation depends on the applied stress level.

## 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 weights up to 1.5 t
- Multicoil up to 5 t
- Hot-dip tinned strip
- Contour-milled strip
- Sheet
- Strip and sheet with protective coating

## Dimensions Available

- Strip thickness from 0.10 mm, thinner gauges on request
- Strip width from 3 mm, however min. 10 x strip thickness

Wieland-Werke AG

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Rolled Products Division

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