

# Wieland-B15

CuSn5  
C51000

## Rolled Products



Material Designation	
EN	CuSn5
UNS*	C51000

\* Unified Numbering System (USA)

Chemical Composition (Reference)	
Sn	5 %
Cu	balance

Typical Applications
• Stamped parts
• Connectors
• Contact springs

Physical Properties*		
Electrical Conductivity	MS/m %IACS	10 17
Thermal Conductivity	W/(m·K)	96
Coefficient of Electrical Resistance**	10 <sup>-3</sup> /K	0.9
Coefficient of Thermal Expansion**	10 <sup>-6</sup> /K	18.0
Density	g/cm <sup>3</sup>	8.85
Modulus of Elasticity	GPa	120
Specific Heat	J/(g·K)	0.380
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

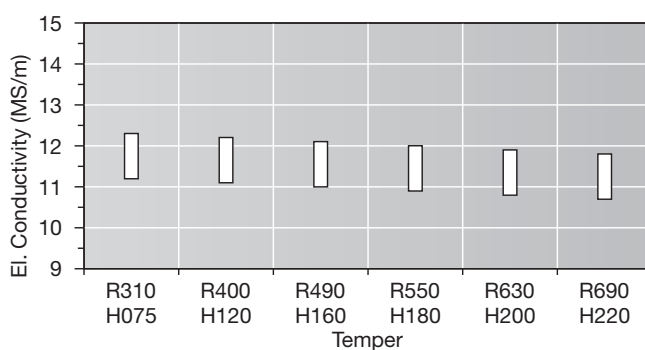
**Corrosion Resistance**  
Resistant to seawater and industrial atmosphere. Largely insensitive to stress corrosion cracking.

Mechanical Properties							
Temper		R310	R400	R490	R550	R630	R690
Tensile Strength R <sub>m</sub>	MPa	310–390	400–500	490–580	550–640	630–720	≥ 690
Yield Strength R <sub>p0.2</sub>	MPa	≤ 250	≥ 340	≥ 450	≥ 520	≥ 600	≥ 670
Elongation A <sub>50mm</sub>	%	≥ 45	≥ 14	≥ 8	≥ 4	≥ 3	–

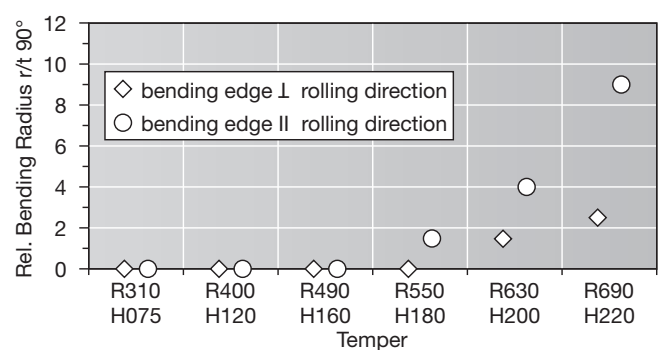
Intermediate tempers are feasible. Higher elongation values can be obtained by additional heat treatments.

Temper	H075	H120	H160	H180	H200	H220
Hardness HV	75–105	120–160	160–190	180–210	200–230	≥ 220

### Electrical Conductivity



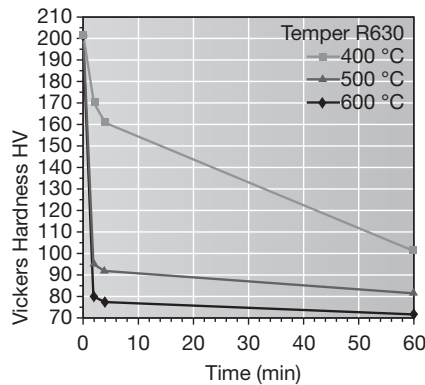
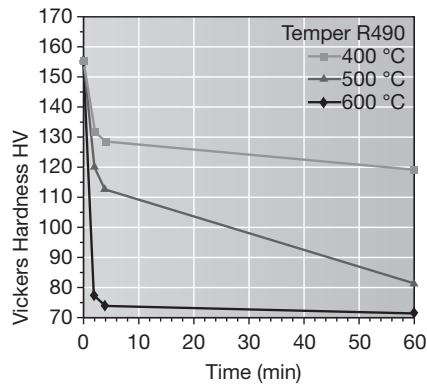
### Bendability (Strip Thickness t ≤ 0.5 mm)



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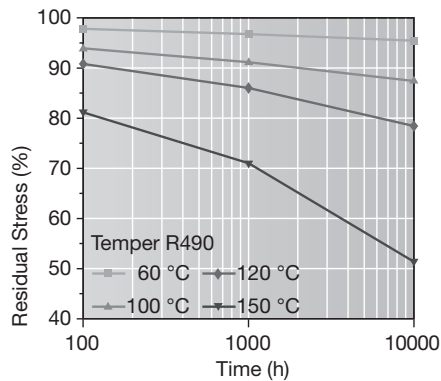
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## Resistance to Softening



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

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