

CuZn15

C23000

Material Designation	
EN	CW502L
UNS*	C23000

\* Unified Numbering System (USA)

Chemical Composition (Reference)	
Cu	85 %
Zn	balance

- Typical Applications**
- Jewellery and metal goods
  - Components for the electrical industry
  - Cladding panels

Physical Properties*		
Electrical Conductivity	MS/m	21
	%IACS	36
Thermal Conductivity	W/(m·K)	159
Coefficient of Electrical Resistance**	10 <sup>-3</sup> /K	2.6
Coefficient of Thermal Expansion**	10 <sup>-6</sup> /K	18.5
Density	g/cm <sup>3</sup>	8.75
Modulus of Elasticity	GPa	122
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	good
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	fair

**Corrosion Resistance**

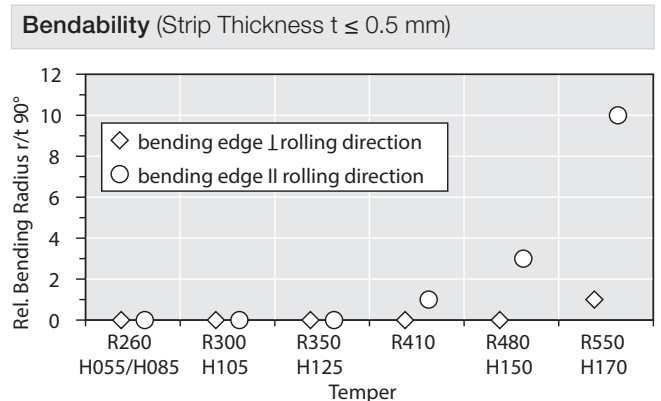
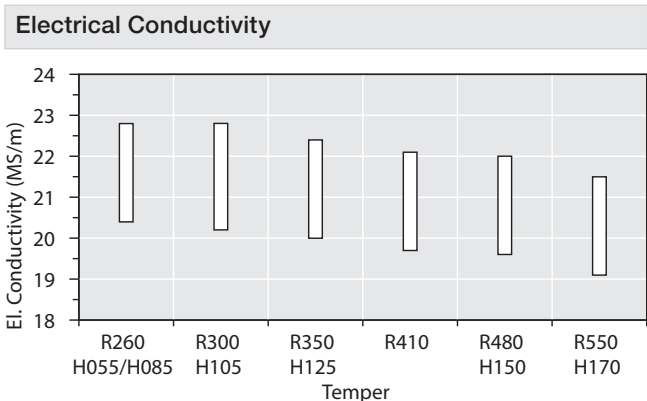
Good resistance to: fresh water, neutral or alkaline saline solutions, organic compounds as well as land, sea, and industrial atmosphere.

Not resistant to: acids, hydrous sulphur compounds, hydrous ammonia in the non-stress-relieved condition. Low sensitivity to stress corrosion cracking.

Mechanical Properties							
Temper		R260	R300	R350	R410	R480	R550
Tensile Strength R <sub>m</sub>	MPa	260–310	300–370	350–420	410–490	480–560	≥ 550
Yield Strength R <sub>p0.2</sub>	MPa	≤ 170	≥ 150	≥ 250	≥ 360	≥ 430	–
Elongation A <sub>50mm</sub>	%	≥ 36	≥ 16	≥ 8	≥ 3	–	–

Temper		H055	H085	H105	H125	H150	H170
Hardness HV		55–85	85–115	105–135	125–155	150–180	≥ 170

Temper		G010	G020	G035
Grain Size	mm	≤ 0.015	0.015–0.030	0.025–0.050
Hardness HV		≤ 105	≤ 85	≤ 75

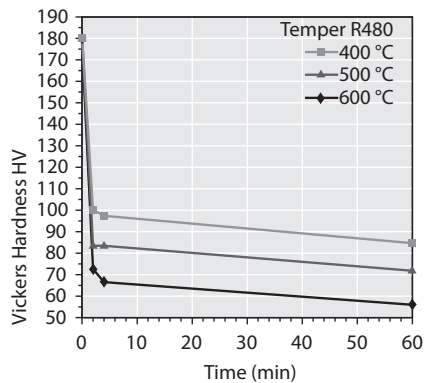


# WIELAND-M15

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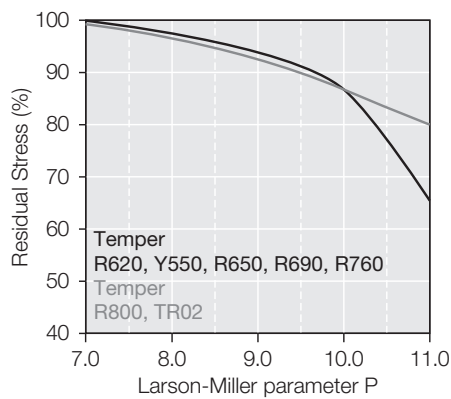
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## Resistance to Softening



Vickers hardness after heat treatment (typical values)

## 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 rolled to temper 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 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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