

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 ⁻³ /K	2.6
Coefficient of Thermal Expansion**	10 ⁻⁶ /K	18.5
Density	g/cm ³	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

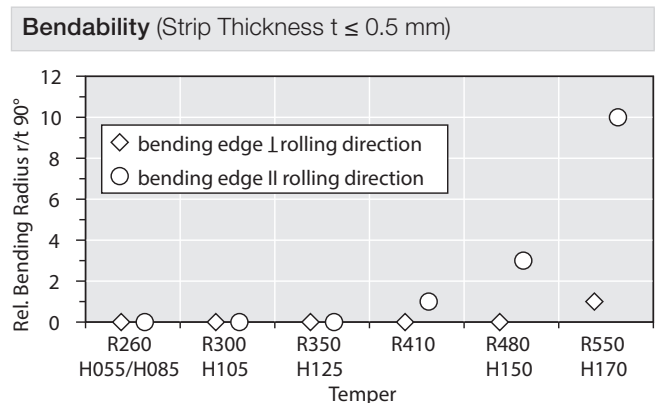
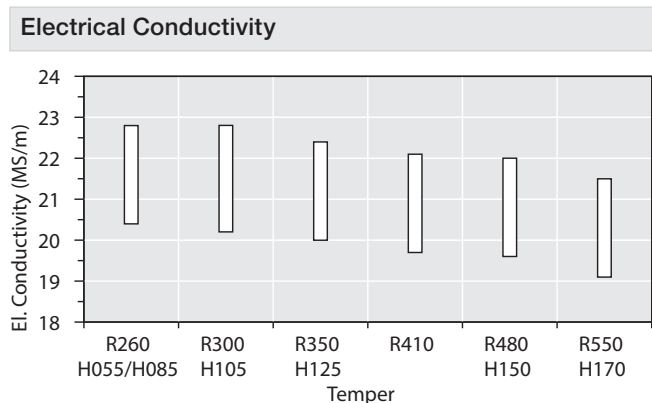
Good resistance to: fresh water, neutral or alkaline saline solutions, organic compounds as well as land, sea, and industrial atmosphere.

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 _m	MPa	260–310	300–370	350–420	410–490	480–560	≥ 550
Yield Strength R _{p0.2}	MPa	≤ 170	≥ 150	≥ 250	≥ 360	≥ 430	–
Elongation A _{50mm}	%	≥ 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

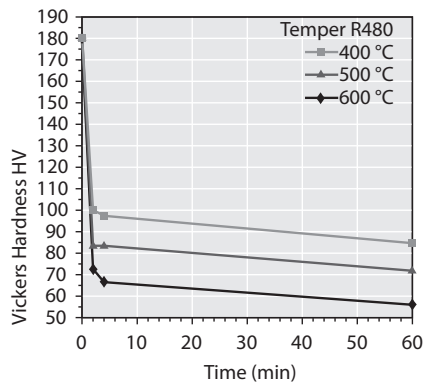


WIELAND-M15

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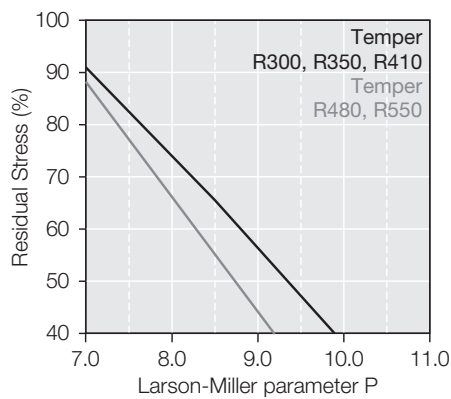
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Resistance to Softening



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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