

Wieland-N17

CuNi18Zn27
C77000

Rolled Products



Material Designation	
EN	CuNi18Zn27
UNS*	C77000

* Unified Numbering System (USA)

Chemical Composition (Reference)	
Cu	55 %
Ni	18 %
Zn	balance

Typical Applications
• Connectors
• Relay springs
• Electrical contacts

Physical Properties*		
Electrical Conductivity	MS/m %IACS	3.3 6
Thermal Conductivity	W/(m·K)	32
Coefficient of Electrical Resistance**	10 ⁻³ /K	0.3
Coefficient of Thermal Expansion**	10 ⁻⁶ /K	17.7
Density	g/cm ³	8.70
Modulus of Elasticity	GPa	135
Specific Heat	J/(g·K)	0.380
Poisson's Ratio		0.34

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	excellent
Gas Shielded Arc Welding	excellent
Laser Welding	good

Corrosion Resistance

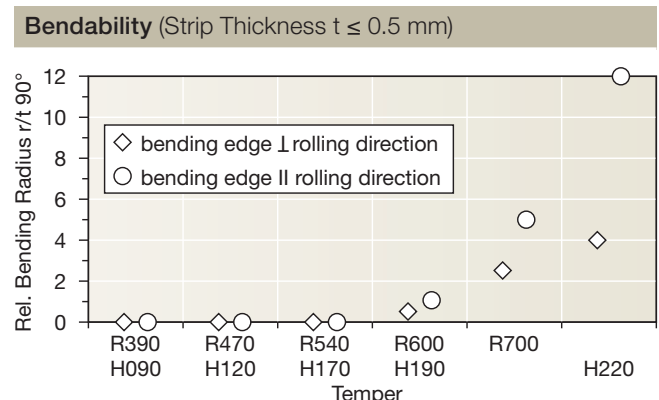
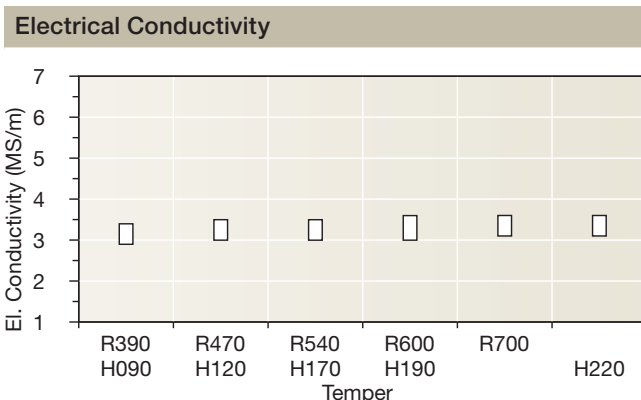
Good resistance to atmospheric influences, organic compounds, neutral and alkaline saline solutions. Not resistant to oxidizing acids, hydrous ammonia (sensitivity to stress corrosion cracking is much lower than that of brass).

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

Mechanical Properties						
Temper		R390	R470	R540	R600	R700
Tensile Strength R _m	MPa	390–470	470–540	540–630	600–700	700–800
Yield Strength R _{p0.2}	MPa	≤ 280	≥ 280	≥ 450	≥ 550	≥ 660
Elongation A _{50mm}	%	≥ 30	≥ 11	≥ 4	≥ 2	≥ 1

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

Temper	H090	H120	H170	H190	H220
Hardness HV	90–120	120–170	170–200	190–220	220–250

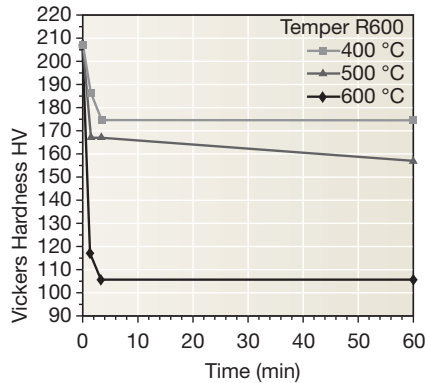
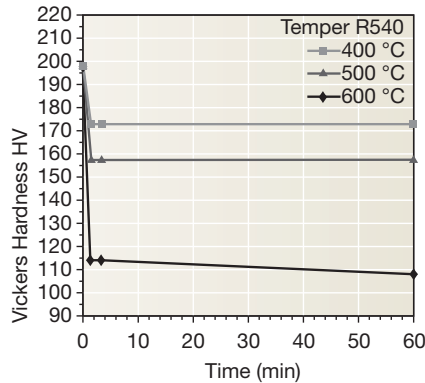


Wieland-N17

CuNi18Zn27

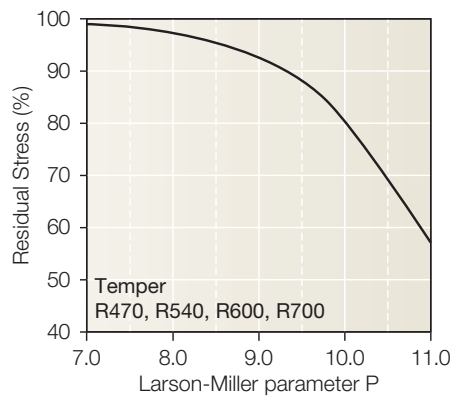
C77000

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:

$$P = (20 + \log(t)) \cdot (T + 273) \cdot 0.001$$

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 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

www.wieland.com

Graf-Arco-Str. 36, 89079 Ulm, Germany, Phone +49 731 944 2030, Fax +49 731 944 4257, info@wieland.de

This printed matter is not subject to revision. No claims can be derived from it unless there is evidence of intent or gross negligence. The product characteristics are not guaranteed and do not replace our experts' advice.