Wieland-N18

CuNi18Zn20 | C76400 | CW409J

C76400 is a nickel silver that exhibits moderate to high strength, an excellent stiffness, good formability, corrosion resistance, and solderability. This combination makes it a favorable alloy for shielding, connectors, and relays. The excellent corrosion resistance allows for use in harsh environments.

Chemical composition (Reference)	
Cu	62 %
Ni	18 %
Zn	remainder

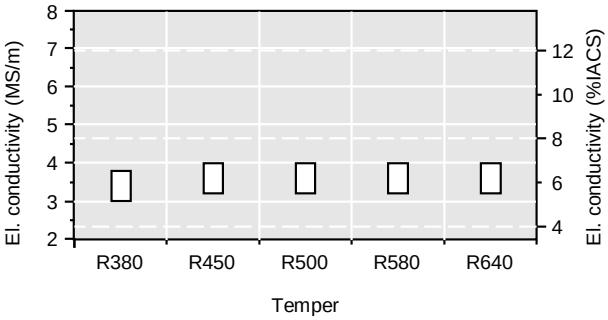
Physical properties (Reference values at room temperature)				
Electrical conductivity	3.5	MS/m	6	%IACS
Thermal conductivity	33	W/(m·K)	19	Btu·ft/(ft²·h·℉)
Coefficient of electrical resistance*	0.3	10^{-3}/K	0.2	10^{-3}/℉
Coefficient of thermal expansion*	17.7	10^{-6}/K	9.8	10^{-6}/℉
Density	8.72	g/cm³	0.315	lb/in³
Modulus of elasticity	125	GPa	18,000	ksi
Specific heat	0.383	J/(g·K)	0.091	Btu/(lb·℉)
Poisson´s ratio	0.34		0.34	

* Between 0 and 300 ℃

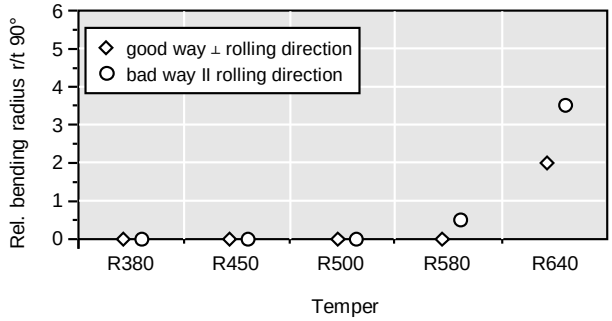
Mechanical properties (values in brackets are for information only)

Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50}	Hardness HV
	MPa	ksi	MPa	ksi	%	
R380	380-450	55-65	≤ 250	≤ 36	≥ 27	(85-115)
R450	450-520	65-75	≥ 250	≥ 36	≥ 9	(115-160)
R500	500-590	73-86	≥ 410	≥ 59	≥ 3	(160-190)
R580	580-670	84-97	≥ 510	≥ 74	-	(180-210)
R640	640-730	93-106	≥ 600	≥ 87	-	(200-230)

Electrical conductivity



Bendability (Strip thickness t ≤ 0.5 mm)



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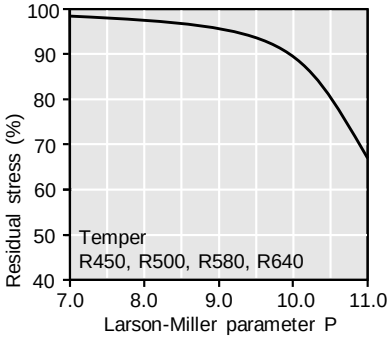
Thermal stress relaxation

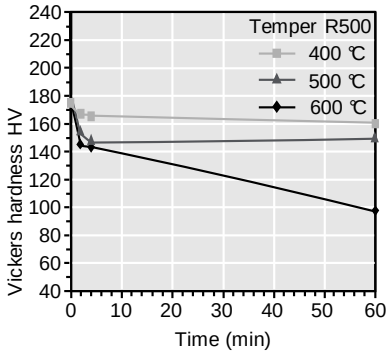


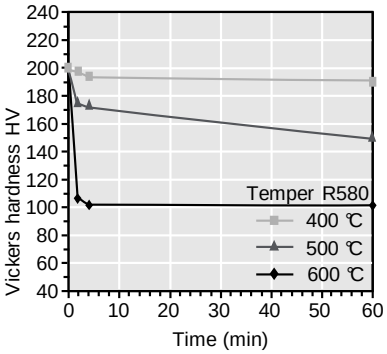
Stress remaining after thermal relaxation as a function of Larson-Miller parameter P
(F. R. Larson, J. Miller, Trans ASME74 (1952) 765–775) given by:
P = (20 + log(t))*(T + 273)*0.001.
Time t in hours, temperature T in ℃.
Example: P = 9 is equivalent to 1,000 h/118 ℃.
Measured on stress relief annealed 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 1/3 of the tensile strength R_m.

Resistance to softening





Vickers hardness after heat treatment (typical values)

Types and formats available

- Standard coils with outside diameters up to 1,400 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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