Wieland-L49

CuNi9Sn2 | C72500 | CW351H

Developed by Bell Laboratories to solve issues of stress corrosion found in field components, C72500 is widely used in n the telecommunications industry as well as for connectors. C72500 has a combination of very good fatigue strength, high temperature stability and resistance to corrosion, which allows its use in very demanding environments.

Chemical composition (Reference)	
Ni	9 %
Sn	2 %
Cu	remainder

Physical properties (Reference values at room temperature)				
Electrical conductivity	6.5	MS/m	11	%IACS
Thermal conductivity	55	W/(m·K)	32	Btu·ft/(ft²·h·°F)
Coefficient of electrical resistance*	0.6	10^{-3}/K	0.3	10^{-3}/°F
Coefficient of thermal expansion*	16.5	10^{-6}/K	9.2	10^{-6}/°F
Density	8.89	g/cm³	0.321	lb/in³
Modulus of elasticity	137	GPa	20,000	ksi
Specific heat	0.375	J/(g·K)	0.089	Btu/(lb·°F)
Poisson´s ratio	0.34		0.34	

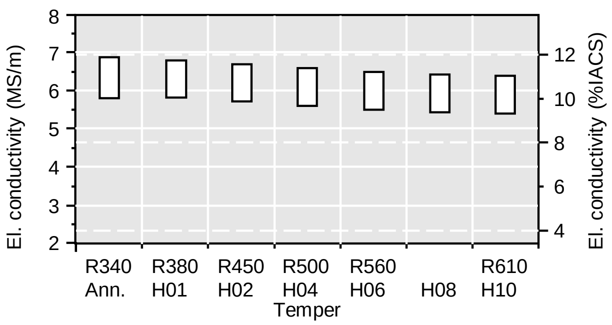
* Between 0 and 300 °C

Mechanical properties (values in brackets are for information only)

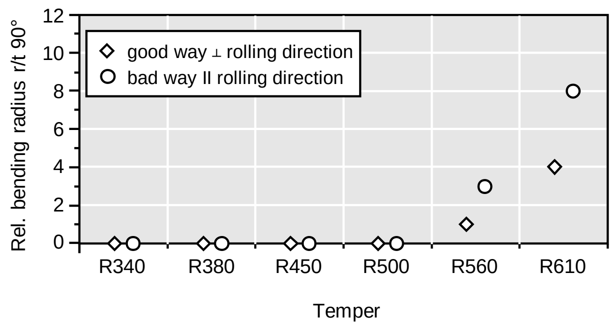
Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50}	Hardness HV
	MPa	ksi	MPa	ksi	%	
R340	340-410	49-59	≤ 250	≤ 36	≥ 30	(75-110)
R380	380-470	55-68	≥ 200	≥ 29	≥ 10	(110-150)
R450	450-530	65-77	≥ 370	≥ 54	≥ 6	(140-170)
R500	500-580	73-84	≥ 450	≥ 65	≥ 3	(160-190)
R560	560-650	81-94	≥ 520	≥ 75	≥ 2	(180-210)
R610	≥ 610	≥ 88	≥ 580	≥ 84	-	(≥ 190)
Annealed	310-450	45-65	(145)	(21)	(35)	
H01*	380-515	55-75	(435)	(63)	(15)	
H02*	450-550	65-80	(470)	(68)	(10)	
H04*	515-620	75-90	(550)	(80)	(3)	
H06*	550-655	80-95	(585)	(85)	(2)	
H08*	585-690	85-100	(620)	(90)	(≥ 1)	
H10*	620-725	90-105	(655)	(95)	(≤ 1)	

* According to ASTM B122

Electrical conductivity



Bendability (Strip thickness t ≤ 0.5 mm)



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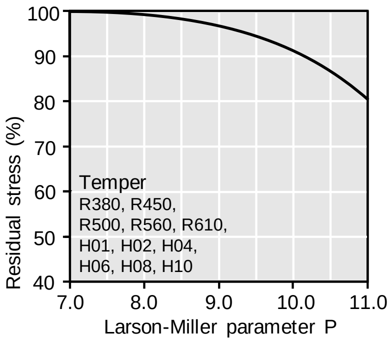
Thermal stress relaxation

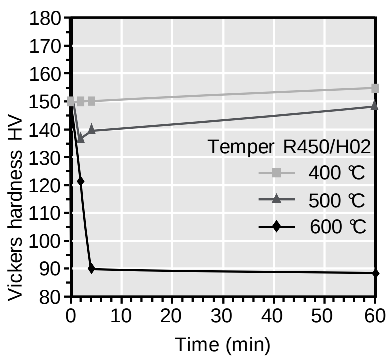


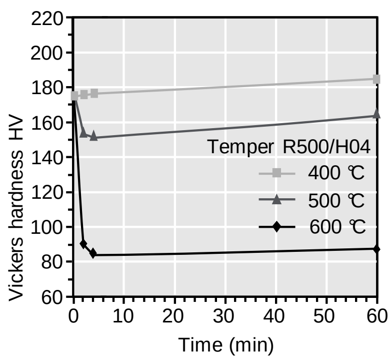
Stress remaining after thermal relaxation as a function of Larson-Miller parameter P
(F. R. Larson, J. Miller, Trans ASME74 (1952) 765–775) given by:
P = (20 + log(t))*(T + 273)*0.001.
Time t in hours, temperature T in ℃.
Example: P = 9 is equivalent to 1,000 h/118 ℃.
Measured on stress relief annealed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

Softening resistance





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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