

CuNi3Si1Mg

C70250

Material Designation	
EN	no EN standard
UNS*	C70250

*Unified Numbering System (USA)

Chemical Composition (Reference)	
Ni	3 %
Si	0.65 %
Mg	0.15 %
Cu	balance

Typical Applications

- Components for the electrical industry
- Stamped parts
- Relay springs
- Semiconductor components
- Connectors suitable for use at elevated temperatures

Physical Properties*		
Electrical Conductivity	MS/m	25
	% IACS	43
Thermal Conductivity	W/(m·K)	190
Coefficient of Electrical Resistance**	10 ⁻³ /K	1.8
	10 ⁻⁶ /K	17.6
Density	g/cm ³	8.82
Modulus of Elasticity	GPa	130
Specific Heat	J/(g·K)	0.399
Poisson's Ratio		0.34

* Reference values at room temperature

** Between 0 and 300 °C

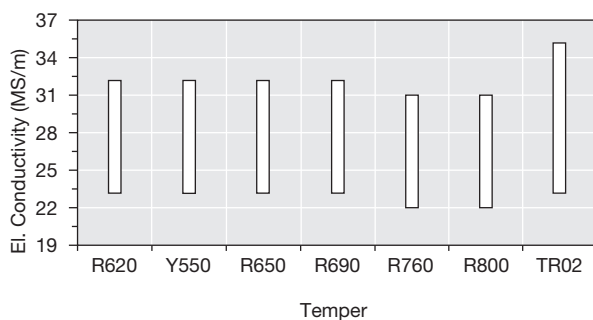
Fabrication Properties	
Capacity for Being Cold Worked	good
Machinability	less suitable
Capacity for Being Electroplated	good
Capacity for Being Hot-Dip Tinned	good
Soft Soldering	good
Resistance Welding	fair
Gas Shielded Arc Welding	good
Laser Welding	less suitable

Corrosion Resistance

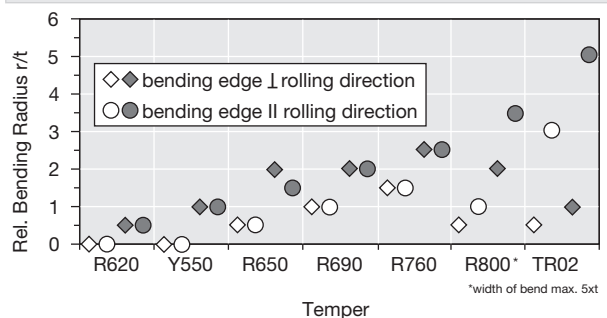
Wieland-K55® has good corrosion resistance in natural atmosphere. It is insensitive to stress corrosion cracking.

Mechanical Properties								
Temper		R620	Y550	R650	R690	R760	R800	TR02
Tensile Strength R _m	MPa	620–700	620–740	650–780	690–800	760–840	800–900	608–725
Yield Strength R _{p0.2}	MPa	≥ 500	≥ 550	≥ 585	≥ 655	≥ 720	≥ 750	550–650
Elongation A _{50mm}	%	≥ 14	≥ 14	≥ 7	≥ 5	≥ 5	≥ 1	≥ 6
Hardness HV (only for information)		(180–220)	(180–220)	(200–240)	(200–240)	(210–250)	(230–270)	(180–220)

Electrical Conductivity



Bendability (Strip Thickness t ≤ 0.5 mm) ◇○90° ◆●180°



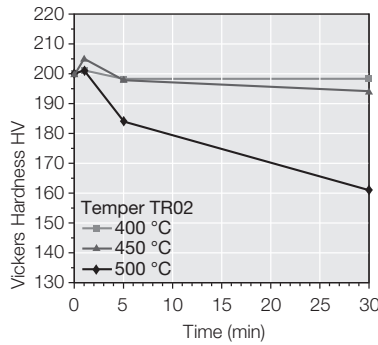
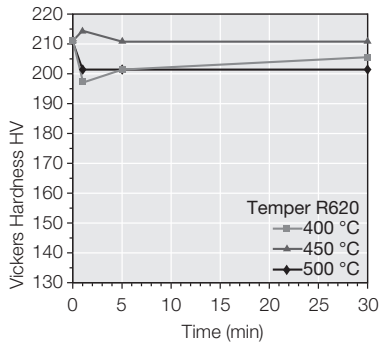
*width of bend max. 5xt

WIELAND-K55®

CuNi3Si1Mg

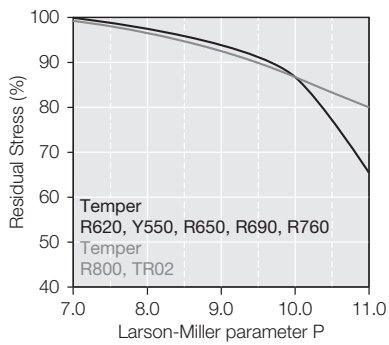
C70250

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

P (F. R. Larson, J. Miller, TransASME74 (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 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

Wieland-Werke AG

wieland.com

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

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.