C70250

CuNi3Si

Alloy Designation	
EN	CuNi3Si
DIN CEN/TS 13388	
UNS	C70250

Chemical Composition (Balance) Weight percentage		
Cu	Rest	%
Ni	3	%
Si	0.65	%
Mg	0.15	%

Characteristics

CuNi3Si is an optimized CuNiSi alloy that can be hardened by cold forming and by precipitation of NiSi-phases during a heat treatment. It has excellent bendability, excellent hot and cold forming properties, a high strength and a good corrosion resistance.

Due to the NiSi-precipitations the relaxation properties, even at temperatures up to 150 °C are excellent. In combination with a tin coating even at temperatures around 150 °C (3.000h) the tin coating does not peel off. The electrical and thermal conductivity is good. Welding, soldering and brazing properties are good too.

Main Applications

Automotive Switches and Relays, Contacts, Connectors, Terminals.
Electrical Switches and Relays, Contacts, Connectors, Terminals, Components for the electrical industry, Stamped parts, Semiconductor Components.

Mechanical Properties (EN 1652)

Temper		Tensile Strength Rm	Yield Strength Minimum $Rp_{0.2}$	Elongation Minimum A_{50mm}	Hardness HV *	Bending 90° gw	Bending 90° bw
						rel. Bending Radius R/T	
		MPa	MPa	%	HV	Strip Thickness ≤ 0.50mm	
R620	TM00	620 .. 760	500	10	180 .. 240	0	0
R650	TM02	650 .. 825	585	7	190 .. 250	1	1
R690	TM03	690 .. 860	655	5	210 .. 250	1.5	1.5
R760		760 .. 840	720	3	220 .. 260	-	-

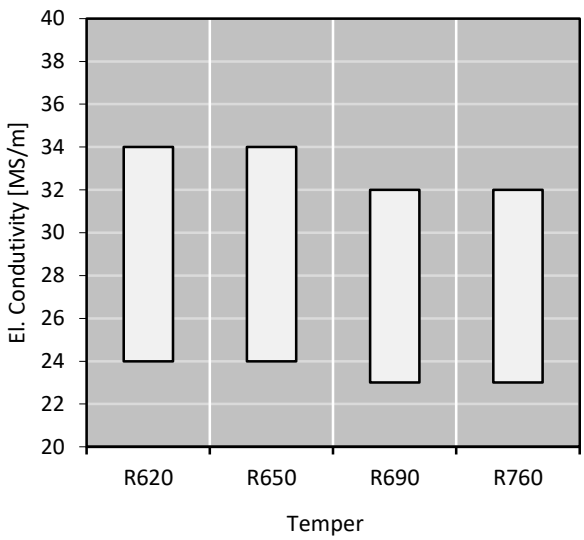
Other tempers on request / *only for information

Physical Properties

Typical values in annealed temper at 20 °C

Density		8.87	g/cm³
Thermal expansion coefficient	20 .. 300 °C	17.6	10^{-6}/K
Specific heat capacity		0.399	J/(g·K)
Thermal conductivity		190	W/(m·K)
Electrical conductivity	MS/m	23	MS/m
Electrical conductivity	IACS	40	%
Thermal coefficient of electrical resistance	(0 .. 100 °C)	3	10^{-3}/K
Modulus of elasticity	GPa	130	GPa

Electrical Conductivity



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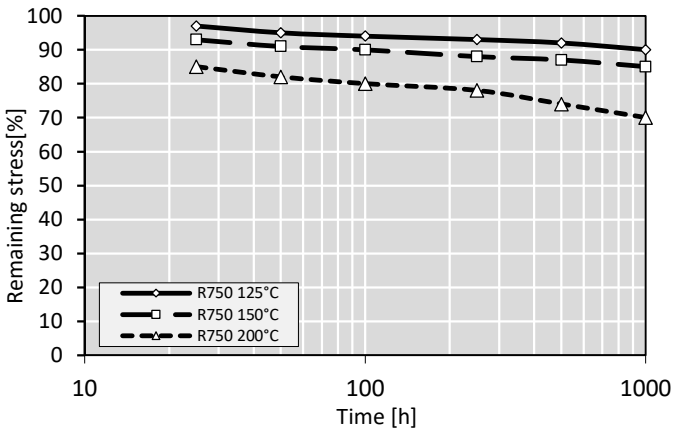
Fabrication Properties *	
Cold Forming Properties	Good
Machinability (Rating 20)	Less suitable
Electroplating Properties	Good
Hot Tinning Properties	Good
Soft Soldering, Brazing	Good
Resistance Welding	Fair
Gas Shielded Arc Welding	Good
Laser Welding	Less suitable

* For more details call our technical service

Corrosion Resistance *

CuNi3Si has good corrosion resistance in natural atmosphere. It is insensitive to stress corrosion cracking.

Relaxation Properties



Relaxation values give an indication about stress relieve of strip under tension for a certain time and temperature.
Typical test sample thickness is 0.3 – 0.6 mm.

Initial Stress
80% von $Rp_{0,2}$
Parallel Rolling Direction

Bend Fatigue (at room temperature)

The fatigue strength gives an indication about the resistance to variations in applied tension. It is measured under symmetrical alternating load. The maximum bending load for 10^7 load cycles without crack is measured. Dependent on the temper class it is approximately 1/3 of the tensile strength R_m.

Available delivery forms *
Strips in coils
Traverse-wound coils with drum weights up to 1.5 t
TECSTRIP®_multicoil up to 2.5 t
Hot-Dip-Tinned strips in thickness range 0.10 up to 1.20 mm

* For more details call our sales service

Due to continued improvements within our production process, the details stated in our brochure can not be guaranteed. We reserve the right to update or amend our products, without prior notification. We suggest that you obtain confirmation of our product details / specifications prior to committing to specific alloys.

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