C70250

6.3. CuNi3Si

ENGINEERING COPPER SOLUTIONS

Alloy Designation	
EN	CuNi3Si
DIN CEN/TS 13388	
UNS	C70250

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.

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

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 (only for information)	Bending 90° gw	Bending 90° bw
		MPa	MPa	%	HV	rel. Bending Radius R/T	
						Strip Thickness ≤ 0.50mm	
R540	TF00	540 .. 640	440	18	150 .. 200	0	0
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	TM05	760 .. 840	720	3	220 .. 260	3	3
R840 *	TM08	840 .. 920	810	1	240 .. 275	2.5 **	3.5 **
R900 *	TM10	900 .. 1000	880	1	260 .. 300	4 **	8 **

* only for thicknesses between 0.10 and 0.50 mm (other thicknesses on request) ** Bending radii with maximum bending width 5 x t

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

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