

CuNi2Si0.4

20 04

Comparable standards: UNS C70260 • EN CW111C

Aurubis designations: C7026

Description

CuNi2Si_{0,4} is a precipitation-hardened copper alloy. It combines medium electrical conductivity (min. 40% IACS) with high strength and very good relaxation behaviour. This is achieved by the application of a special process consisting of cold working and heat treatment. CuNi2Si_{0,4} also has excellent spring properties and good corrosion resistance.

Fields of application are automotive, connectors, leadframes and electrical engineering.

Composition

Cu*	Ni**	Si	Fe	Mn	Pb
[%]	[%]	[%]	[%]	[%]	[%]
rem	1.6-2.5	0.4-0.8	0.2 max	0.1 max	0.02 max

Composition of this alloy is in accordance with RoHS for electric & electronic components and ELV for the automotive industry.

Physical properties

Melting point	Density	c _p @ 20°C	Young's modulus	Thermal cond.	Electrical cond.		α @20-300°C
					[MS/m]	[%IACS]	
[°C]	[g/cm ³]	[kJ/kgK]	[GPa]	[W/mK]			[10 ⁻⁶ /K]
1087	8.8	0.38	130	156-195	≥ 23	≥40	18

Note: The specified conductivity applies to the soft condition only.

c_p specific heat capacity

α coefficient of thermal expansion

Mechanical properties

	Tensile Strength	Yield Strength	Elongation A ₅₀	Hardness HV
	[MPa]	[MPa]	[%]	[-]
R420	420-480	≥380	≥ 16	130-150
R460	460-580	≥430	≥ 14	140-160
R520	520-590	≥480	≥ 13	150-170
R600	600-670	≥570	≥ 10	180-220
R620	620-690	≥580	≥ 7	190-220
R680	680-780	≥620	≥ 5	200-240

r = x * t (thickness t ≤ 0.5mm)

GW bend axis transverse to rolling direction. BW bend axis parallel to rolling direction.

Fabrication properties

Cold formability	good
Hot formability	excellent
Soldering	good
Brazing	good
Oxyacetylene welding	good
Gas shielded arc welding	good
Resistance welding	good
Machinability	fair

Electrical conductivity

The electrical conductivity depends on chemical composition, the level of cold deformation and the grain size. A high level of deformation as well as a small grain size decrease the conductivity.

**Corrosion
Resistance**

CuNi2Si0.4 is resistant to: Natural and industrial atmospheres as well as maritime air, drinking and service water, non oxidizing acids, alkaline solutions and neutral saline solutions.
CuNi2Si0.4 is not resistant to: Ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres, oxidizing acids and sea water (especially at high flow rates).

Typical uses

Automotive, electrical engineering, connectors, springs, relays, sockets, clips, leadframes, pins

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