C19010 (CuNi1.5Si)

18 08 US

Comparable standards: UNS C19010 • JIS C1901

Aurubis designations: 7036 • PNA290

Description

CuNi1.5Si is a precipitation-hardened copper alloy combining high electrical and thermal conductivity with elevated strength and good stress relaxation resistance. The special process of cold working and heat treatment ensures consistent properties combined with excellent formability. Alloy CuNi1.5Si has good corrosion resistance in industrial atmospheres and is resistant against stress corrosion cracking.

Composition

Cu* [%]	Ni [%]	Si [%]	P [%]
rem.	0.8 – 1.8	0.15 – 0.35	0.01 – 0.05

*) Cu + sum of named elements 99.5 % min

Physical properties

Melting point [°F] [°C]	Density [lb/in³] [g/cm³]	Specific heat cap. at 20°C [Btu/lb°F] [kJ/kgK]	Electrical cond. [%IACS] [MS/m]	Thermal cond. at 20°C [Btu/ft h °F] [W/mK]	Mod. of elasticity x1000 ksi [GPa]	Coef. of therm exp. at 20°C [10⁻⁶/°F] [10⁻⁶/K]
1944 1062	0.323 8.94	0.09 0.377	≥ 50.0 ≥ 29.0	149 258	18.5 127	9.3 16.8

Mechanical properties

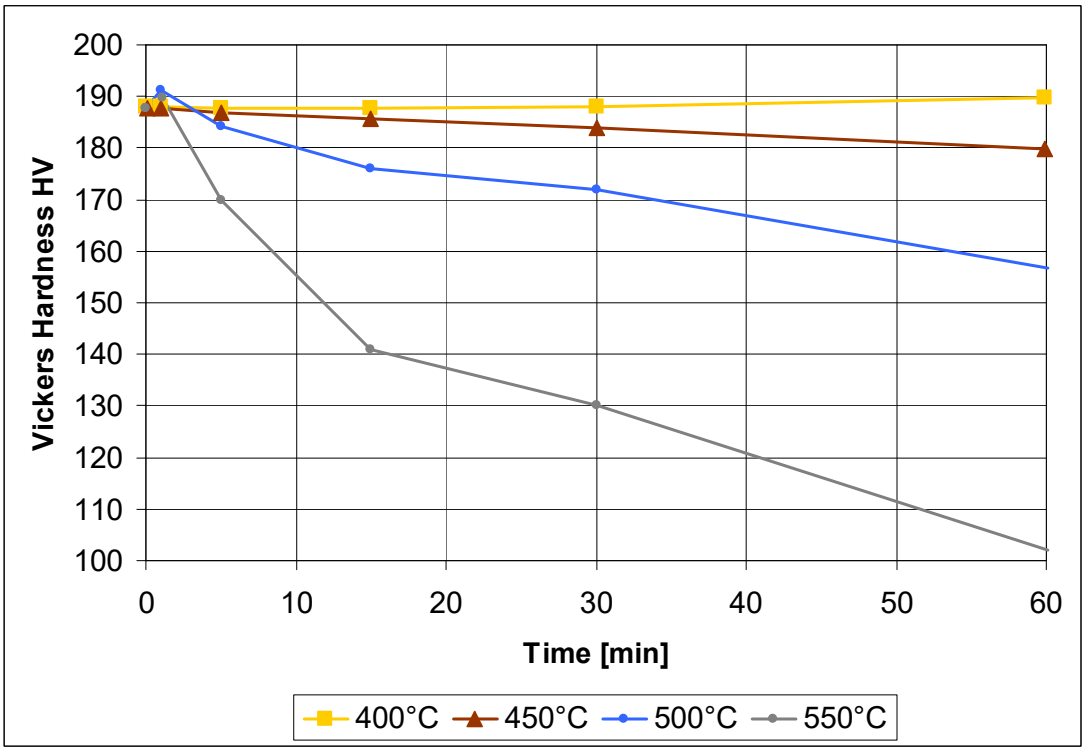
	Tensile strength Rm [ksi] [MPa]	Yield strength Rp0.2 min [ksi] [MPa]	Elon-gation 2" min [%]	Hard-ness HR30T HV [-]	min bend ratio 90° GW	min bend ratio 90° BW	min. bend ratio 180° GW	min. bend ratio 180° BW
TM06 R520S	75-86 520-590	64 440	9	150-170	0.5	0.5	1.5	2.0
TM08 R580S	84-94 580-650	78 540	8	170-200	0.5	0.5	1.5	2.0

Other tempers are available upon request.
GW bend axis transverse to rolling direction. BW bend axis parallel to rolling direction

Fabrication properties

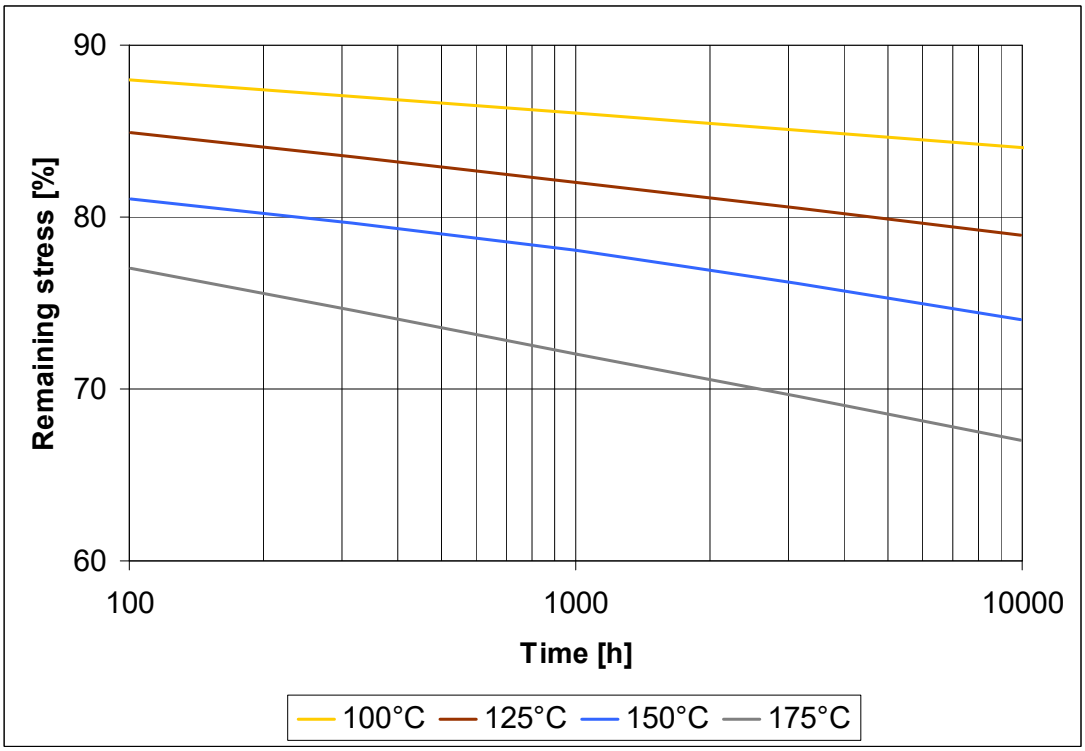
Cold formability	good
Hot formability	excellent
Soldering	good
Brazing	good
Oxyacetylene welding	good
Gas shielded arc welding	good

Softening stability



Vickers hardness after heat treatment.
(Temper H08, age hardened (R580S), typical values)

Stress relaxation resistance



Stress remaining as a function of temperature and time.
Measured with Cantilever-Bending-Test (ASTM E 328 – 02).
Values above 1000 h calculated with Larson – Miller – Parameters.
Initial stress 0.5·Rp0.2 (Temper H08, age hardened (R580S))

Typical uses Automotive, Electrical engineering, Connectors, Springs