CuSn0.15

EN_2024_06

Comparable standards: UNS C14415 • EN CW117C

Aurubis designations: C14415 • CuSn0.15 • PNA 216

Description

CuSn0.15 is solid solution strengthened by a small tin adddition. It has increased strength as well as good electrical and thermal conductivity. Moreover the alloy exhibts an increased temperature stability compared to highest conductive copper alloys.
The alloy can be well formed, exhibits a good corrosion resistance and is suited for soldering, brazing and welding.

Composition

Cu [%]	Sn [%]
rem	0.10-0.15

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

Physical properties

Melting point [°C]	Density [g/cm³]	c_p @ 20°C [kJ/kgK]	Young's modulus [GPa]	Thermal cond. [W/mK]	Electrical cond. [MS/m]	Electrical cond. [%IACS]	α @20-300°C [10^{-6}/K]
1081	8.93	0.385	130	340	≥ 47	≥81	17.3

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

c_p specific heat capacity

α coefficient of thermal expansion

Mechanical properties

	Tensile Strength [MPa]	Yield Strength [MPa]	Elongation A_{50} [%]	Hardness HV [-]	Bend ratio 90° [r] GW	Bend ratio 90° [r] BW	Bend ratio 180° [r] GW	Bend ratio 180° [r] BW
R250	250-320	≥ 200	≥ 9	60-90	0	0	0	0
R300	300-370	≥ 250	≥ 4	85-110	0	0		
R360	360-430	≥ 300	≥ 3	105-130	0	0		
R420	420-490	≥ 350	≥ 2	120-140	1	1		

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	excellent
Hot formability	excellent
Soldering	excellent
Brazing	excellent
Oxyacetylene welding	fair
Gas shielded arc welding	good
Resistance welding	not recommended
Machinability	not recommended

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.

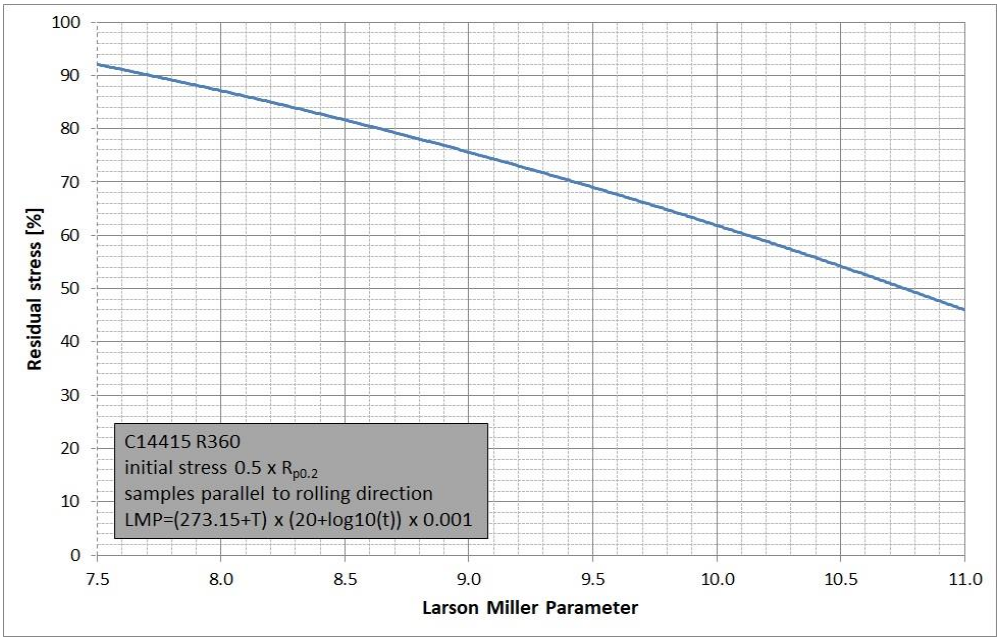
Corrosion Resistance

Copper 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.
Copper is not resistant to: Ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres, oxidizing acids and sea water (especially at high flow rates).
CuSn0.15 has an improved resistance to pitting- and erosion corrosion compared to Cu-DHP.

Typical uses

Automotive, components of electrical engineering, connectors, leadframes

Relaxation Behaviour



Stress relaxation data shown as residual stress against Larson Miller Parameter. The Larson Miller Parameter represents temperature and time.
Test method: Mandrel test according to ASTM E328.