

# CuSn2Fe0.1

EN\_2026\_01

Comparable standards: UNS C50715  
 Aurubis designations: PNA 328

**Description** CuSn2Fe0.1 is a solid solution and precipitation strengthened copper alloy (bronze). This alloy has good corrosion resistance, very good cold workability and good electrical conductivity of min. 30% IACS. Due to the Fe-P precipitates the alloy has high strength and good relaxation behaviour, thus it can be used at elevated temperatures and where high strength in combination with conductivity is required.

**Composition**

Cu	Sn	Fe	P	Pb
[%]	[%]	[%]	[%]	[%]
rem	1.7-2.3	0.05-0.15	0.025-0.04	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 <sub>p</sub> @ 20°C	Young's modulus	Thermal cond.	Electrical cond.		α @20-300°C
					[MS/m]	[%IACS]	
[°C]	[g/cm³]	[kJ/kgK]	[GPa]	[W/mK]			[10 <sup>-6</sup> /K]
1060	8.9	0.38	121	140	≥ 18	≥31	17.7

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

c<sub>p</sub> specific heat capacity  
 α coefficient of thermal expansion

**Mechanical properties**

	Tensile Strength	Yield Strength	Elongation A <sub>50</sub>	Hardness HV	Bend ratio 90° [r]		Bend ratio 180° [r]	
					GW	BW	GW	BW
	[MPa]	[MPa]	[%]	[-]				
R390	395-500	290-415	≥ 16	120-140	0	0	0	0
R510	515-600	440-545	≥ 6	150-180	0	0	0	1
R550	555-625	490-570	≥ 5	165-185	0	0	0	1.5
R600	605-665	550-625	≥ 3	180-200	0	0	0	2.5

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	fair
Soldering	excellent
Brazing	excellent
Oxyacetylene welding	fair
Gas shielded arc welding	good
Resistance welding	good
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.

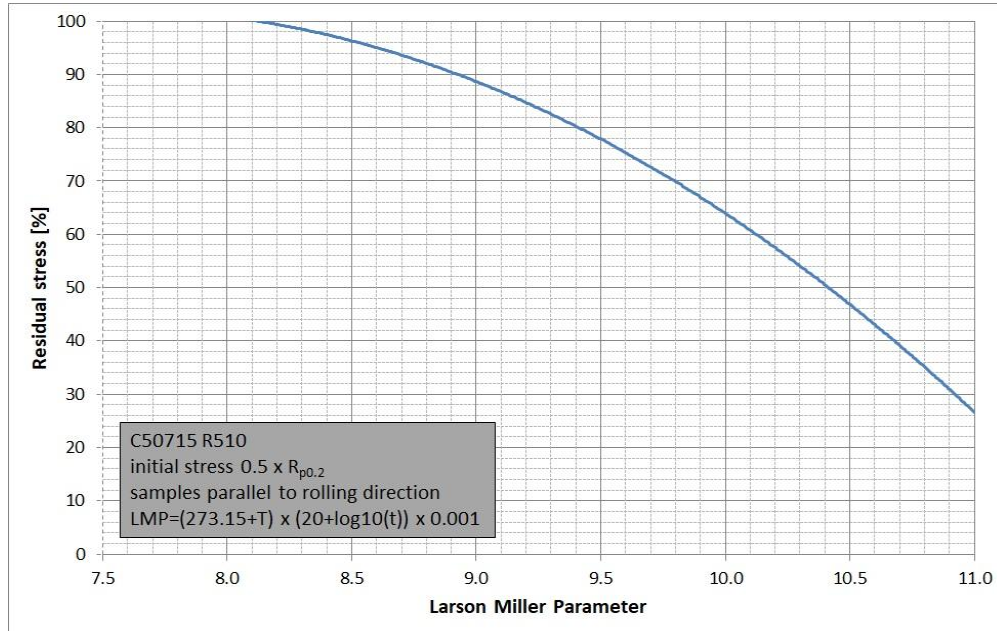
**Corrosion Resistance**

CuSn2Fe0.1 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.  
 CuSn2Fe0.1 is not resistant to: Ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres, oxidizing acids and sea water (especially at high flow rates).  
 CuSn2Fe0.1 is resistant to pitting corrosion, even in sea water.

**Typical uses**

Stamped parts, components of electrical engineering, connectors, contact springs, switch elements

**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.

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