CuZn40 BlueBrass®

EN_2025_02

Comparable standards: • EN CW509L

Aurubis designations: PNA 311

Description

This lead-free brass alloy with approx. 40% zinc complements the BlueBrass® alloy portfolio and complies with the EN CW509L standard alloy with limited lead content < 0.1% (RoHS conformity). Due to the combination of alloy composition and microstructure, it has good mechanical properties and good machinability with good cold formability for processes such as crimping, flanging, riveting, etc. The material can also be easily hot and cold formed, opening up new possibilities in component manufacture. Areas of application include automotive, electrical engineering components and general mechanical engineering

Composition

Cu [%]	Pb [%]	Fe [%]	Ni [%]	Sn [%]	Si [%]	Mn [%]
59.5-61.5	< 0.1	< 0.2	< 0.3	< 0.2	0.1 max	0.1 max

Al [%]	Zn [%]
0.05 max	Rest

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]	α @20-300°C [10^{-6}/K]
900	8.4	0.377	105	117	≥ 15	20

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 [%]	Hardness HV [-]
	430-700	150-650	8-37	120-200

Fabrication properties

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

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	Brass is resistant to: Natural, industrial and salt bearing atmospheres, drinking water, alkaline and neutral saline solutions. Brass is not resistant to: Acids, ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres as well as sea water (especially at high flow rates). Under certain circumstances (high Cu-content and low carbon-hardness) dezincification can be an issue with CuZn40. The alloy also has a certain sensitivity to stress corrosion cracking when exposed to certain environments (e.g. ammonia, amine or sal ammoniac). The alloy should be stress relieved if stress corrosion cracking might be an issue. The stress cracking corrosion resistance (inspected in accordance with EN 14977:2006) and the dezincification resistance (inspected in accordance with DIN EN ISO 6509:1995) are comparable to those of conventional CuZn39Pb3.
Typical uses	Machined parts of any kind, components for electrical and mechanical engineering, connector pins, screws, clamps