

CuZn42 BlueBrass®

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Comparable standards:

Aurubis designations: PNA 378

Description

BlueBrass® is a brass alloy with approximately 42% zinc which offers good mechanical properties combined with good machinability, due to its unique combination of alloy composition and microstructure. Moreover the material has very good hot- and good cold formability which opens up new possibilities for component manufacturing.

PNA 378 has a very low lead content making the alloy suitable for jewelery applications according to REACH standards.

Fields of application are the watch industry, jewelry, automotive as well as components for electrical and mechanical engineering.

Composition

Cu	Fe	Sn	Ni	Si	Mn	Zn
[%]	[%]	[%]	[%]	[%]	[%]	[%]
57.0-58.5	0.1-0.5	0.1-0.5	0.1-0.5	0.1 max	0.1 max	rem
Pb						
[%]						
≤0.03						

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
[°C]	[g/cm ³]	[kJ/kgK]	[GPa]	[W/mK]	[MS/m]	[10 ⁻⁶ /K]
900	8.4	0.377	105	113	≥ 14.6	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	Yield Strength	Elongation A_{50}	Hardness HV
	[MPa]	[MPa]	[%]	[-]
	450-750	200-690	7-35	

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 Cl content and low carbon-hardness) dezincification can be an issue with CuZn42. 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

Jewelery articles, machined parts of any kind, components for electrical and mechanical engineering, connector pins, screws, clamps

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