CuZn37

EN_2024_03

Comparable standards: UNS C27200 • EN CW508L • JIS C2720

Aurubis designations: C272/C274 • SM1063 • PNA 243

Description

CuZn37 is a solid solution strengthened copper alloy (brass) with 37% zinc.
The alloy has good cold forming properties and is economically interesting due to the high zinc content. CuZn37 can be brazed and soldered, welding processes need to be executed with care, due to the high zinc content.
As the zinc content increases in the alloy, the strength improves yet the conductivity and ductility are reduced. Moreover, it should be noted that as the zinc content rises, the tendency to stress corrosion cracking increases in the event of exposure to an ammonia atmosphere. This type of corrosion can, however, be countered in many cases by the removal of internal stress.
Fields of application are deep drawn parts, metal ware, components of electrical engineering, connectors, mechanical engineering, signs and decoration as well as musical instruments.

Composition

Cu [%]	Fe [%]	Pb [%]	Zn [%]	Al [%]	Ni [%]	Sn [%]
62-64.0	0.1 max	0.1 max	rem	0.05 max	0.3 max	0.1 max

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]
920	8.4	0.377	110	116	≥ 16	≥28	20.5

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
R300	300-370	≤ 180	≥ 38	55-95	0	0	0	0
R350	350-440	≥ 170	≥ 19	95-125	0	0	0	0
R410	410-490	≥ 300	≥ 8	120-155	0	0	0	1
R480	480-560	≥ 430	≥ 3	150-180	0	0.5	1	2
R550	≥ 550	≥ 500	-	≥ 170	1	2	3	4

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

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 β - phase bearing alloys. 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.

Typical uses

Metal ware, electric and mechanical engineering, connectors, electric brackets, clips & contacts, radiator cores & tanks, holloware base metal, lamps, bowls, trays, flashlight socket shells, grommets, eyelets, fasteners, bead chain, hardware items as knobs, roses, hinges, stencils, springs, cartridge & shell cases, hose couplings, decorative pots and planters, musical instruments