

CuZn30

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Comparable standards: UNS C26000 • EN CW505L • JIS C2600
 Aurubis designations: C260 • PNA 226

Description

CuZn30 is a solid solution strengthened copper alloy containing 30% zinc (brass). The alloy has very good cold forming properties and can be brazed and soldered, welding processes need to be executed with care, due to the high zinc content.

As the zinc content increases, the strength improves, yet the conductivity and ductility are reduced and the alloy gets more susceptible to stress corrosion cracking if exposed to an ammonia atmosphere, compared to pure copper. If exposed to an ammonia atmosphere, CuZn30 should be stress relieved.

Due to the raised zinc content the alloy has economical advantages

Composition

Cu	Fe	Pb	Zn	Al	Ni	Sn
[%]	[%]	[%]	[%]	[%]	[%]	[%]
69-71	0.05 max	0.05 max	rem	0.02 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	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]	[%IACS]	[10 ⁻⁶ /K]
954	8.53	0.377	110	121	≥ 16	≥28	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	Bend ratio 90° [r]	
	[MPa]	[MPa]	[%]	[-]	GW	BW
R270	270-350	≤ 160	≥ 40	55-90	0	0
R350	350-430	≥ 170	≥ 21	95-125	0	0
R410	410-490	≥ 260	≥ 9	120-155	0	0
R480	480-560	≥ 430	≥ 4	150-180	0	1
R550	550-640	≥ 530	≥ 2	170-200	0.5	2
R630	≥ 630	≥ 610	-	≥190	1	3

$r = x * t$ (thickness $t \leq 0.5\text{mm}$)

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	good
Gas shielded arc welding	good
Resistance welding	fair
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 CuZn30. 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

Deep drawn parts, screws, mechanical engineering, Automotive, components of electrical engineering, hard ware, connectors, cases, chains, heat exchangers, coolers, springs, fittings, locks, watch industry, jewelry

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