

Designation	CuZn37	DIN	EN Nr.	UNS (ASTM)	AISI	LMSA
		~2.0321	~CW508L	~C27200	-	B210

Chemical composition (weight %)

Zn	Cu	Ni	Pb	Fe	Sn	Al	Autres
Balance	62.0-65.5	≤ 0.30	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.05	≤ 0.10

In order to achieve maximum homogeneity and consistent quality, the actual tolerances on both alloy components and impurities are significantly tighter and more precisely defined than the standard composition indicated.

Main technical properties and features

The alloy CuZn37 is a brass, which has primarily a homogeneous α faces centered cubic single phase, solid solution of Zn in copper. Depending on the cooling conditions during the production process, some traces of the β body centered cubic phase are possible. The α phase is very ductile at low temperatures and large cold deformation by rolling, deep drawing, bending, inside spinning, etc. are possible. On the other hand, the β (or ordered β') phase in brass reduces ductility, corrosion resistance, but improve drastically the hot workability and significantly the machinability. The machinability of CuZn37 is moderate; its machinability index is estimated at 35% of those of the free cutting brass, CuZn39Pb3. Amongst the Cu and Zn alloys, there are other brasses having lower amount of Zn, consequently a lower tensile strength and hardness but an improved cold deformability. Lamineries MATTHEY SA produces also the CuZn28, for example.

The brass CuZn37 is sensitive to the stress-corrosion cracking, a cracking process that requires the simultaneous action of a corrosive agent (in ammoniacal atmosphere, for example) and sustained tensile stress. The stresses may be significantly below the yield strength of the material, and can be residual or applied. Moreover, it should be noted that as the zinc content rises, the inclination to stress corrosion cracking increases. To reduce this risk of corrosion, a stress relieving annealing is frequently done. The recrystallization temperature of CuZn37 is generally between 450 - 600°C and the stress-relieving temperature is between 250 - 350°C for 2-6h heat treatment. It is one of the most suitable brasses for mirror polishing. The soft or hard soldability of CuZn37 is excellent, however because of the low melting temperature and high vapor pressure of zinc (906°C), the weldability of this alloy and generally, of brasses, is moderate.

Typical manufacturing range

		Thickness (mm)	Width (mm)	Length (mm)
Rolled products	Strip in coil ¹⁾	0.010 - 2.000	1.5 - 200.0	-
	Foil cut to length ¹⁾	0.010 - 1.500	10.0 - 200.0	100 - 3000

1) Not all our production possibilities are presented here. Other dimensions or other product forms available upon request. Certain combinations of thicknesses and widths are not possible.

Mechanical properties of strips

Temper		R _{p0.2} (N/mm ²)	R _m (N/mm ²)	A _{50mm} (%)	Hv (N/mm ²)
R300	H55 soft annealed	≤ 180	300-370	≥ 38	55-95
R350	H95 1/4 hard	≥ 170	350-440	≥ 19	95-125
R410	H120 1/2 hard	≥ 300	410-490	≥ 8	120-155
R480	H150 hard	≥ 430	480-560	≥ 3	150-180
R550	H170 extra hard	≥ 500	550-630	-/-	170-200
R630	H190 spring hard	≥ 600	≥ 630	-/-	≥ 190

Typical uses

The CuZn28 is used in many different applications, like needles, wheels, dials, etc. for the watch industry, contact parts in relays, stamped-rolled connectors, chemical etched parts, deep drawing parts, etc.

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Physical properties

Modulus of elasticity	kN/mm ²	110
Poisson ratio		0.3
Density	kg/dm ³	8.44
Melting point / Melting range	°C	902 – 920
Linear dilatation coefficient (x10 ⁻⁶) for a temperature range 20 - 200°C.	/°C	20.2
Thermal conductivity at 20°C	W/m °K	120
Specific heat at 20°C	μΩcm	6.67
Electrical conductivity	MS/m	15
Electrical conductivity	% IACS	26
Magnetic properties		Non magnetic

Tolerances

Thickness	Thickness (mm)		EN Standard		Lamineries MATTHEY SA		
	≥	<	10140 Precision	10258 Precision	LMSA Standard	LMSA Precision	LMSA Extreme
<p>The table shown is an outline of our typical thickness tolerances available, which are tighter than industry standards.</p> <p>Upon request: our "Precision" and "Extreme" tolerances are also available.</p>	0.025	0.025	-	-	-	-	± 0.001
	0.025	0.050	-	-	± 0.003	± 0.002	± 0.0015
	0.050	0.065	-	± 0.003	± 0.003	± 0.0025	± 0.002
	0.065	0.100	-	± 0.004	± 0.004	± 0.0035	± 0.003
	0.100	0.125	± 0.005	± 0.006	± 0.005	± 0.004	± 0.003
	0.125	0.150	± 0.005	± 0.006	± 0.005	± 0.005	± 0.004
	0.150	0.250	± 0.010	± 0.008	± 0.008	± 0.006	± 0.004
	0.250	0.300	± 0.010	± 0.009	± 0.009	± 0.007	± 0.005
	0.300	0.400	± 0.010	± 0.010	± 0.010	± 0.007	± 0.005
	0.400	0.500	± 0.015	± 0.012	± 0.012	± 0.008	± 0.006
	0.500	0.600	± 0.015	± 0.014	± 0.014	± 0.010	± 0.007
	0.600	0.800	± 0.015	± 0.015	± 0.015	± 0.010	± 0.007
	0.800	1.000	± 0.015	± 0.018	± 0.018	± 0.012	± 0.009
	1.000	1.200	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012
	1.200	1.250	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012
1.25	1.500	± 0.020	± 0.020	± 0.020	± 0.015	± 0.014	

Width

Our width tolerance is + 0.2 -0.0 mm (or ± 0.1 mm upon request). They are available for slit widths < 125 mm and thicknesses < 1.00 mm. Special tolerances upon request.

Camber

Camber	Width (mm)		Camber max. (mm/m)			
	>	≤	LMSA standard		LMSA extrêmes	
			≤ 0.5 mm	> 0.5 mm	≤ 0.5 mm	> 0.5 mm
Our tolerance "standard" respects the EN Standard 1654 (Length of measurement 1000 mm).	3	6	12	-	6	-
Other tolerances upon request.	6	10	8	10	4	5
	10	20	4	6	2	3
	20	250	2	3	1	1.5

Surface

Special surface qualities upon request

Flatness

Special requirement on the longitudinal or transversal flatness upon request