

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

Chemical composition

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

Values (Weight %). In order to achieve maximum homogeneity and consistent quality, the actual manufacturing tolerances are tighter and more precisely than the composition indicated.

Main technical properties and features

The alloy CuZn37 is a brass, which has primarily a homogeneous α face-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 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 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.

Typical manufacturing range

	Thickness (mm)	Width (mm)	Length (mm)
Rolled products Strip in coils ^[1]	0.010 - 2.000	1.5 - 200.0	-
Strip as sheets ^[1]	0.010 - 1.500	10.0 - 200.0	100 - 3000

^[1] Not all our production possibilities are presented here. Other dimensions or product forms available upon request. Some 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} (%)	Hardness HV
R300	H55	soft annealed	180 max.	300 - 370	38 min.	55 - 95
R350	H95	¼ hard	170 min.	350 - 440	19 min.	95 - 125
R410	H120	½ hard	300 min.	410 - 490	8 min.	120 - 155
R480	H150	hard	430 min.	480 - 560	3 min.	150 - 180
R550	H170	extra hard	500 min.	550 - 630	-	170 - 200
R630	H190	spring hard	600 min.	630 min.	-	190 min.

Physical properties

Modulus of elasticity	kN/mm ²	110
Poisson ratio		0.3
Density	g/cm ³	8.44
Melting point / Melting range	°C	902 – 920
Linear dilatation coefficient	10 ⁻⁶ ./ °C	20.2
Thermal conductivity at 20°C	W/m °K	120
Electrical resistivity	μΩcm	6.67
Electrical conductivity	MS/m	15
Electrical conductivity	% IACS	26
Magnetic properties		Non magnetic

Tolerances (strip and foil)

Thickness	Thickness (mm)		EN Standard		Lamineries MATTHEY		
	≥	<	10140 Precision	10258 Precision	LMSA Standard	LMSA Precision	LMSA Extreme
<p>The table shown is an outline of our typical thickness tolerances available. They are tighter than industry standards.</p> <p>Our "LMSA Precision" and "LMSA Extreme" tolerances are available upon request.</p>	-	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
1.250	1.500	± 0.020	± 0.020	± 0.020	± 0.015	± 0.014	
Width	Our width tolerances "Standard" is +0.2, -0.0 (or ± 0.1 mm upon request). They are available for slit widths < 125 mm and thicknesses < 1.00 mm. Special tolerances upon request.						
Camber	Width (mm)		Camber max. (mm/m)				
<p>Our tolerance "LMSA Standard" respects the EN Standard 1654 (Length of measurement 1000 mm). Other tolerances upon request.</p>	>	≤	LMSA Standard		LMSA Extreme		
			≤ 0.5 mm	> 0.5 mm	≤ 0.5 mm	> 0.5 mm	
	3	6	12	-	6	-	
	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						

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