

Designation	DIN	EN Nr.	UNS (ASTM)	AISI	LMSA
CuZn28	2.0261	CW504L	25600	-	B200

Chemical composition

Zn	Cu	Ni	Pb	Fe	Sn	Al	Others
Balance	71.0 - 73.0	≤ 0.30	≤ 0.05	≤ 0.05	≤ 0.10	≤ 0.02	≤ 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 CuZn28 is a brass, which has a homogeneous face centered cubic α phase, solid solution of Zn in copper. The α phase is very ductile at low temperature. CuZn28 (PAM) has an interesting compromise of relatively high tensile strength and hardness with an excellent cold deformability. Amongst the Cu and Zn alloys, there are other brasses having higher amount of Zn, a higher tensile strength and hardness but consequently a reduced cold deformability. Lamineries MATTHEY produces also the CuZn37 for example.

The brass CuZn28 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 CuZn28 is generally between 450 - 600 °C and the stress-relieving temperature is between 200 - 300 °C for 2-6h heat treatments. The machinability of CuZn28 is poor; its machinability index is estimated at 30 % of those of the free cutting brass, CuZn39Pb3. It is one of the most suitable brasses for mirror polishing. The soft or hard soldability of CuZn28 is excellent, however because of the low melting temperature (906 °C), and high zinc vapor pressure the weldability of this alloy and generally, of brasses, is moderate.

Typical uses

The CuZn28 is used in many different applications, like needles, dials, etc. for the watch industry; chemical etching, eyelets, rivets, caps, 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
R270	H55	soft annealed	160 max.	270 - 350	40 min.	55 - 90
R350	H95	½ hard	170 min.	350 - 450	21 min.	95 - 140
R450	H130	hard	340 min.	450 - 550	9 min.	130 - 175
R540	H160	extra hard	490 min.	540 min.	-	165 min.

Physical properties

Modulus of elasticity	kN/mm ²	115
Poisson ratio		0.3
Density	g/cm ³	8.55
Melting point / Melting range	°C	910 / 965
Linear dilatation coefficient	10 ⁻⁶ /°C	19.5
Thermal conductivity at 20°C	W/m °K	125
Electrical resistivity	μΩcm	5.9
Electrical conductivity	MS/m	17
Electrical conductivity	% IACS	29
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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