LAMINERIES MATTHEY
NOTZ group advanced metal solutions

CuZn38Pb2

		DIN	EN Nr.	UNS (ASTM)	AISI	LMSA
Designation	**CuZn38Pb2**	-	CW608N	35300	-	**B221**

Chemical composition

Zn	Cu	Al	Fe	Ni	Pb	Sn	Others
Balance	60.0 - 61.0	≤ 0.05	≤ 0.20	≤ 0.30	1.60 - 2.50	≤ 0.20	≤ 0.20

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 CuZn38Pn2 is a brass alloy containing 61 % copper and 2 % lead. This alloy is composed by a heterogeneous biphasic structure consisting of alpha (α) and beta (β') phases, the α phase is face-centered cubic and the β' phase is cubic centered. The CuZn38Pb2 presents a good machinability combined with an excellent cold and hot formability, making this alloy suitable for bending, riveting and upsetting. This alloy has a good resistance to organic acids, neutral and alkaline compounds. Nevertheless, in the cold rolling temper and under internal /external stress, it has a poor resistance to acids and ammonia, as is therefore susceptible to stress corrosion cracking. Stress corrosion cracking can be largely controlled by stress relief annealing treatment (typically at 250 ºC). The good machineability is imputed by a finely dispersed lead content in its microstructure. The presence of lead reduces the grain size and server as a chip breaker.

Typical uses

CuZn38Pb2 in precision cold rolled strips is used in many sectors such as watch parts, precision mechanical components, electrical industry, 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			$Rp_{0.2}$ (N/mm^2)	R_m (N/mm^2)	A_{50mm} (%)	Hardness HV
	H60	soft	200 max.	290 - 370	40 min.	60 - 110
R200	H110	½ hard	200 min.	370 - 440	19 min.	110 - 140
R370	H140	hard	370 min.	440 - 540	5 min.	140 - 170
R540	H170	extra hard	490 min.	540 - 630	-	170 - 200
R550	H190	spring	550 min.	630 min.	-	190 min.

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Physical properties

Modulus of elasticity	kN/mm²	102
Density	g/cm³	8.44
Melting point	°C	885 - 900
Linear dilatation coefficient	10^{-6}·/ °C	20
Thermal conductivity at 20°C	W/m °K	110
Thermal capacity at 20°C	J/kg K	377
Electrical resistivity	μΩcm	7.2
Electrical conductivity at 20°C	MS/m	13.9 [1]
Electrical conductivity at 20°C	% IACS	24 [1]
Magnetic properties		Diamagnétique

[1] Values for soft temper. The electrical conductivity decrease slightly for higher strain hardening.

Tolerances (strip and foil)

Thickness

The table shown is an outline of our typical thickness tolerances available. They are tighter than industry standards.

Our "LMSA Precision" and "LMSA Extreme" tolerances are available upon request.

Thickness (mm)		EN Standard		Lamineries MATTHEY		
≥	<	10140 Precision	10258 Precision	LMSA Standard	LMSA Precision	LMSA Extreme
-	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

Our tolerance "LMSA Standard" respects the EN Standard 1654 (Length of measurement 1000 mm).
Other tolerances upon request.

Width (mm)		Camber max. (mm/m)			
		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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