

Designation	DIN	EN Nr.	UNS (ASTM)	AISI	WCA
CuZn39Pb2	-	CW612N	37700	-	104

Chemical composition

Zn	Cu	Al	Fe	Ni	Pb	Sn	Others
Balance	58.5 - 60	≤ 0.10	≤ 0.40	≤ 0.30	1.50 - 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 CuZn39Pb2 is a leaded brass alloy containing 59% of copper. The microstructure shows an heterogeneous biphasic structure with alpha crystals and a significant amount of beta crystals. The beta phase lead to a very good hot formability, but a limited cold formability. The same beta phase, combined with the chip breaker effect of lead confer a very good machinability to this alloy. CuZn39Pb2 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 °C).

Typical uses

CuZn39Pb2 in precision cold rolled strips is used in many sectors such as clock and watch parts, precision mechanical components, electrical industry, etc.

Typical manufacturing range

	Thickness (mm)	Width (mm)	Length (mm)
Rolled products Strip in coils ^[1]	0.10 – 2.00	3 - 110	-
Strip as sheets ^[1]	0.10 – 2.00	10 - 110	500 - 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
R360	H090	soft	270 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.

Physical properties

Modulus of elasticity	kN/mm ²	102
Density	g/cm ³	8.44
Melting point	°C	880 - 895
Linear dilatation coefficient	10 ⁻⁶ /°C	21.1
Thermal conductivity at 20°C	W/m °K	109
Thermal capacity at 20°C	J/kg K	377
Electrical resistivity	μΩcm	7.2
Electrical conductivity at 20°C	MS/m	15 ^[1]
Electrical conductivity at 20°C	% IACS	26 ^[1]
Magnetic properties		Diamagnétique

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

Tolerances (strip and foil)

Thickness	Thickness (mm)		EN Standard		WEBER + CALIBRA		
	≥	<	10140 Precision	10258 Precision	WCA Standard	WCA Precision	WCA Extreme
<p>The table shown is an outline of our typical thickness tolerances available. They are tighter than industry standards.</p> <p>Our "WCA Precision" and "WCA 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 "WCA Standard" respects the EN Standard 1654 (Length of measurement 1000 mm). Other tolerances upon request.</p>	>	≤	WCA Standard		WCA 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						

WCA-MK 035 / Edition 2023/10

The provided information in this document is informative without any guarantee. They do not imply any contractual obligation on our behalf.

