

Designation	DIN	EN Nr.	UNS (ASTM)	AISI	WCA
<b>CuZn38Pb2</b>	-	CW608N	35300	-	103

## 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 CuZn38Pb2 is a brass alloy containing 61 % copper and 2 % lead. This alloy is composed by a heterogeneous biphasic structure consisting of alpha ( $\alpha$ ) and beta ( $\beta'$ ) phases, the  $\alpha$  phase is face-centered cubic and the  $\beta'$  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 °C). 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)
<b>Rolled products</b> Strip in coils <sup>[1]</sup>	0.10 – 3.50	3 - 110	-
Strip as sheets <sup>[1]</sup>	0.10 - 3.50	10 - 110	500 - 3000

<sup>[1]</sup> 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 <sub>p0.2</sub> (N/mm <sup>2</sup> )	R <sub>m</sub> (N/mm <sup>2</sup> )	A <sub>50mm</sub> (%)	Hardness HV
R340 H090 soft	240 max.	340 – 420	33 min.	75 - 110
R400 H110 ½ hard	200 min.	400 - 480	14 min.	110 - 140
R470 H140 hard	390 min.	470 - 550	5 min.	140 - 170
R540 H165 extra hard	490 min.	540 min.	-	165 min.

## Physical properties

Modulus of elasticity	kN/mm <sup>2</sup>	102
Density	g/cm <sup>3</sup>	8.44
Melting point	°C	885 - 900
Linear dilatation coefficient	10 <sup>-6</sup> /°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 <sup>[1]</sup>
Electrical conductivity at 20°C	% IACS	24 <sup>[1]</sup>
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	
<b>Width</b>	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.						
<b>Camber</b>	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		
<b>Surface</b>	Special surface qualities upon request						
<b>Flatness</b>	Special requirement on the longitudinal or transversal flatness upon request						

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