

<b>Designation</b>	<b>CuNi12Zn24</b>	DIN 2.0730	EN Nr. CW403J	UNS (ASTM) C75700	AISI -	LMSA <b>B400</b>
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### Chemical composition

Zn	Cu	Fe	Mn	Ni	Pb	Sn	Others
Balance	63.0 - 66.0	≤ 0.30	≤ 0.50	11.0 - 13.0	≤ 0.03	≤ 0.03	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

Nickel silver CuNi12Zn24 provides good resistance to atmospheric corrosion, organic compounds as well as neutral and alkaline saline solutions., however it is poorly resistant to oxidizing acids. The sensitivity to stress corrosion cracking of this alloy is much lower than that of brass. Nickel silver CuNi12Zn24 has an alpha single-phase structure. The alloy has excellent cold forming properties, on the other hand, its hot formability is limited. The colour is yellow silver, much less grey than that of CuNi18Zn20. Nickel silver is mainly used for the fabrication of connectors, relay springs, and in the optical and watch making industry, for example. Its machinability is rather poor. It is better to use a leaded nickel silver, e.g. CuNi12Zn25Pb1 (B420) if the machinability plays an important role. Nickel silver CuNi12Zn24 can be easily polished or plated and can be brazed or welded. Its weldability by laser however is not good. Its annealing temperature is situated typically between 620 and 700 °C. It is possible to decrease the presence of internal stress by a stress-relieving heat treatment between 300 - 350 °C.

### Typical uses

Contact springs, connectors, wheels and pinions for the watch industry, pressure membranes, etc. Various parts for precision, electronic as well as optical instruments. Parts made by stamping or even deep drawing, bending and cutting.

### Typical manufacturing range

	Thickness (mm)	Width (mm)	Length (mm)
<b>Rolled products</b> Strip in coils <sup>[1]</sup>	0.010 - 2.000	1.5 - 200.0	-
Strip as sheets <sup>[1]</sup>	0.010 - 1.500	10.0 - 200.0	100 - 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>m</sub> (N/mm <sup>2</sup> )	A <sub>50mm</sub> (%)	Hardness HV
R340	H80	soft annealed	340 - 410	45 min.	80 - 115
R410	H110	½ hard	410 - 470	30 min.	110 - 145
R470	H140	¾ hard	470 - 540	13 min.	140 - 170
R540	H165	hard	540 - 610	5 min.	165 - 190
R610	H185	extra hard	610 min.	-	185 min.

Other tempers can be guaranteed, according to other standards such as EN 1652 or 1654, for example.

## Physical properties

Modulus of elasticity	kN/mm <sup>2</sup>	125
Poisson ratio		0.34
Density	g/cm <sup>3</sup>	8.67
Melting point / Melting range	°C	1060 - 1110
Linear dilatation coefficient	10 <sup>-6</sup> ./ °C	18
Thermal conductivity at 20°C	W/m °K	42
Electrical resistivity	μΩcm	21.55
Electrical conductivity	MS/m	4.4
Electrical conductivity	% IACS	8.0
Specific heat at 20°C	J/(kg. K)	380
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	
<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 "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		
<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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