

Designation	DIN	EN Nr.	UNS (ASTM)	AISI	LMSA
CuNi18Zn20	2.0740	CW409J	C76400	-	B410

Chemical composition (Weight %)

Cu	Fe	Mn	Ni	Pb	Sn	Zn	Autre
60-63	0.3	0.5	17-19	0.03	0.03	Balance	0.2

In order to achieve maximum homogeneity and consistent quality, the actual tolerances on both alloy components and impurities, are significantly tighter and more precisely defined than the standard analysis indicated.

Main technological properties

Nickel silver CuNi18Zn20 provides good resistance to atmospheric corrosion, organic compounds as well as neutral and alkaline saline solutions. 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 CuNi18Zn20 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 silvery, sharply greyer than that of CuNi12Zn24. 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 good machinability is necessary. Nickel silver CuNi18Zn20 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. To decrease the presence of internal stress, a stress-relieving heat treatment between 300-350°C is possible.

Typical manufacturing range

		Thickness (mm)	Width (mm)	Length (mm)
Rolled products	Strips in coils ¹⁾	0.015 - 2.000	1.5 - 200.0	-
	Strips, sheets in ¹⁾	0.015 - 1.500	10.0 - 200.0	100 - 3000

1) Not all our production possibilities are presented here. Other dimensions or other product forms are available upon request. Certain combinations of thicknesses and widths are not possible.

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Mechanical properties of strips

Temper			Rm (N/mm ²)	Rp0.2 (N/mm ²)	A _{50mm} (%)	Hv (N/mm ²)
R370	H90	annealed	370-430	max. 250	40	90-125
R430	H120	½ hard	430-520	min. 250	22	120-155
R520	H150	¾ hard	520-610	min. 400	6	150-190
R610	H185	hard	610-700	min. 500	2	185-210
R680	H200	extra hard	min. 680	min. 610	-	min. 200

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

Physical properties

Modulus of elasticity	kN/mm ²	135
Poisson ratio		0.34
Density	kg/dm ³	8.7
Melting point / Melting range	°C	1060-1110
Linear dilatation coefficient (20-200°C)	/ °C	0,0000177
Thermal conductivity at 20°C	W/m °K	32
Electrical resistivity	μΩcm	28.7
Electrical conductivity	MS/m	3.3
Electrical conductivity	% IACS	6.0
Specific heat	J/(g.K)	0.380
	Btu/ft-hr. °F	0.218
Magnetical properties		Non magnetic

Typical uses

Relay springs, hinges for glasses, connectors, components for the watch industry, pressure membranes, etc.
Various parts for precision, electronic as well as optical instruments.
Parts made by stamping, folding or bending and cutting.

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Tolerances

Thickness	Thickness (mm)		EN Standard		Lamineries MATTHEY SA		
	≥	<	10140 Precision	10258 Precision	LMSA Standard	LMSA Precision	LMSA Extreme
<p>The table shown is an outline of our typical thickness tolerances available, which are tighter than industry standards.</p> <p>Upon request: our "Precision" and "Extreme" tolerances are also available.</p>	0.025	0.025	-	-	-	-	± 0.001
	0.050	0.050	-	-	± 0.003	± 0.002	± 0.0015
	0.065	0.065	-	± 0.003	± 0.003	± 0.0025	± 0.002
	0.100	0.100	-	± 0.004	± 0.004	± 0.0035	± 0.003
	0.125	0.125	± 0.005	± 0.006	± 0.005	± 0.004	± 0.003
	0.150	0.150	± 0.005	± 0.006	± 0.005	± 0.005	± 0.004
	0.250	0.250	± 0.010	± 0.008	± 0.008	± 0.006	± 0.004
	0.300	0.300	± 0.010	± 0.009	± 0.009	± 0.007	± 0.005
	0.400	0.400	± 0.010	± 0.010	± 0.010	± 0.007	± 0.005
	0.500	0.500	± 0.015	± 0.012	± 0.012	± 0.008	± 0.006
	0.600	0.600	± 0.015	± 0.014	± 0.014	± 0.010	± 0.007
	0.800	0.800	± 0.015	± 0.015	± 0.015	± 0.010	± 0.007
	1.000	1.000	± 0.015	± 0.018	± 0.018	± 0.012	± 0.009
	1.200	1.200	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012
	1.500	1.500	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012

Width

Our "standard" width tolerance is + 0.2 -0.0 mm (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)			
	>	≤	LMSA standard		LMSA extreme	
			≤ 0.5 mm	> 0.5 mm	≤ 0.5 mm	> 0.5 mm
<p>Our tolerance "standard" respects the EN Standard 1654 (Length of measurement 1000 mm).</p> <p>Other tolerances upon request.</p>	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