

Designation	DIN	EN Nr.	UNS (ASTM)	AISI	LMSA
Cu56Ni25Zn19	-	-	C79360	-	B440

Chemical composition

Zn	Cu	Ni	Mn	Sn	Fe	Pb	Autres
Balance	55.0 - 57.0	24.0 - 26.0	0.50 max.	0.20 max.	0.30 max.	0.03 max.	2.0 max.

Values (Weight %). In order to achieve maximum homogeneity and consistent quality, the actual manufacturing tolerances are tighter and more precise than the composition indicated.

Main technical properties and features

ARCAP® AP1C is a non-magnetic, single-phase alpha copper-nickel alloy with high mechanical strength and excellent corrosion resistance in various environments (seawater, non-oxidizing acids). This alloy has good formability, it can easily work hardened, and it is suited to deep drawing.

This alloy has good polishing and machining properties. ARCAP® AP1C alloy can be easily brazed or welded using conventional methods (TIG, laser, resistance). A post-weld stress-relief treatment prevents any geometric distortion of the parts.

ARCAP® AP1C has very low lead content and meets the requirements of European directives (REACH) for lead-free products.

Typical uses

Micro components for the watchmaking industry, electronics industry, fiber optic connectors, aeronautical industry and defense industry.

Typical manufacturing range

	Thickness (mm)	Width (mm)	Length (mm)
Rolled products Strip in coils ^[1]	0.010 - 1.000	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	R _m (N/mm ²)	R _{p0.2} (N/mm ²)	A _{50mm} (%)	Hardness HV
soft annealed	450 max.	300 max.	30 min.	130 max.
½ hard	450 - 550	300 min.	15 min.	130 - 165
¾ hard	520 - 620	400 min.	5 min.	160 - 190
hard	620 - 730	550 min.	1 min.	190 - 220
extra hard	730 min.	700 min.	-	220 min.

Physical properties

Modulus of elasticity	kN/mm ²	163 - 170
Density	g/cm ³	8.80
Melting point / Melting range	°C	1150 - 1170
Linear dilatation coefficient 20 to 300°C	10 ⁻⁶ / °C	16
Thermal conductivity at 20°C	W/m °K	22
Electrical resistivity	μΩcm	35 - 40
Electrical conductivity	% IACS	4.3 - 4.9
Magnetic properties (Oersted)		Nonmagnetic (10 ⁻⁶)

Heat treatment

Annealing can be carried out at 600 - 650°C for 15 - 60 min in a neutral or reducing atmosphere.
Stress-relief treatment can be carried out in a neutral or reducing atmosphere at a temperature of between 250 - 300°C for around 60 min.

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