

Designation	DIN	EN Nr.	UNS (ASTM)	AISI	LMSA
Cu64Ni25Zn11	-	-	-	-	B450

Chemical composition

Zn	Cu	Ni	Mn	Sn	Fe	Pb	Others
Balance	63.0 - 67.0	24.0 - 26.0	0.5 max.	0.2 max.	0.3 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® AP1 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 excellent formability comparatively to grade AP1C, it can easily work hardened, and it is suited to deep drawing.

This alloy has good polishing and machining properties. ARCAP® AP1 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® AP1 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 and fiber optic connectors.

Typical manufacturing range

	Thickness (mm)	Width (mm)	Length (mm)
Rolled products Strip in coils ^[1]	0.010 - 1.500	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	420 max.	300 max.	30 min.	120 max.
½ hard	370 - 470	300 min.	20 min.	120 - 150
¾ hard	450 - 550	370 min.	10 min.	150 - 170
hard	520 - 600	470 min.	3 min.	165 - 185
extra hard	580 min.	530 min	1 min.	180 - 210

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)		Non Magnetic (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).</p> <p>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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