

5.5. NB18 - CuNi18Zn20

Alloy Designation	
EN	CuNi18Zn20
DIN-EN	CW409J
UNS	C76400
JIS	C7521

Characteristics
NB18 is a nickel silver alloy containing 18 % nickel and 20 % zinc. The alloy has good cold-forming properties, is tarnish resistant and has very good spring properties. Like all copper alloys the copper-nickel-zinc alloys are not susceptible to embrittlement at lower temperature. The corrosion resistance of nickel silver is considerably better than that of binary copper-zinc alloys. NB18 is insensitive to stress corrosion cracking. NB18 is used for contact springs in relays, EMI shieldings and jewelry.

Chemical Composition		
Weight percentage		
Cu	Balance	%
Ni	18	%
Zn	20	%
Fe	< 0,2	%
Mn	< 0,5	%
Pb	< 0,01	%

Main Application
Coins, Caps for quartz crystals, Electromagnetic shieldings, Deep drawing parts, Tableware, Security keys, Cutlery, Contact springs, Connector, Leaf springs for relays, Electric contacts.

Mechanical Properties						
Temper	Tensile Strength Rm	Yield Strength Minimum Rp0,2	Elongation Minimum A50 mm	Hardness HV*	Bendability 90°	
					gw	bw
	MPa	MPa	%	HV	rel. Bending radius R/T	
					Thickness < 0,50 mm	
R370	370 .. 460	250	30	85 .. 125	0	0
R450	450 .. 520	250	9	115 .. 160	0	0
R500	500 .. 590	410	3	160 .. 190	0	0
R580	580 .. 680	510	2	180 .. 210	0	0,5
R640	640 .. 730	600	-	200 .. 230	-	-

Physical Properties			
Typical values in annealed temper at 20°C			
Density		8,7	g/cm ³
Thermal expansion coefficient	20 .. 300°C	17	10-6/K
Thermal conductivity		27	W/(m*K)
Electrical conductivity	MS/m	3	MS/m
Electrical conductivity	IACS	5	%
Thermal coefficient of electrical resistance	(0 .. 100°C)	0,3	10-3/K
Modulus of elasticity	GPa	135	GPa

Fabrication Properties	
Cold Forming Properties	Excellent
Mechinability	Satisfactory
Electroplating Properties	Excellent
Hot Tinning Properties	Satisfactory
Soft Soldering, Brazing	Satisfactory
Resistance Welding	Excellent
Gas Shielded Arc Welding	Good
Laser Welding	Good

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