Edition from	20.04.2020	Alloy data sheet	No. 170

Alloy	ISO	EN	ASTM
C97	CuNiPb1P	-	C19160

Others:

- -

Main characteristics

Free machining heat-treated leaded nickel copper offering both high mechanical strength and electrical conductivity.

Chemical Composition

Cu	Ni	Pb	P
Remainder	0,8 - 1,2 %	0,8 - 1,2 %	0,15 – 0,3 %

Impurities Max.	Zn	Sn	Fe	Others
	0,25 %	0,05 %	0,05 %	0,25 %

Product portfolio

Hot extruded and cold drawn products

Section type	Round, square, hexagonal, flat
Rod	Available
Wire	Available
Profile	On demand

Examples of use

Connectors and spring contacts.

Mechanical properties

Form	Temper	Dimension Ø, SW	UTS N/mm^2	YS N/mm^2	A %	Hardness
Round rods	Work hardened and thermally hardened	0,5 – 5,0	> 620	> 560	> 2	HB min. 180
Round wires (max. 6,35 mm)		5,1 - 6,0	> 590	> 520	> 3	HB min. 170
		6,1 – 9,5	> 570	> 490	> 3	HB min. 160
		9,6 - 40	> 550	> 490	> 3	HB min. 150

Other tempers on demand

Physical properties

Density	kg/dm^3	8,9
Melting range	°C	1075 – 1080
Linear expansion coefficient (20-200°C)		0,000018
Specific heat	J/kg K	380
Thermal conductivity at 20°C (68° F)	W/m · K	245
Electrical conductivity at 20° C (68° F)	% IACS	> 50
Elasticity modulus	kN/mm^2	124

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Workability	Cold working, maximum section reduction	%	good
	Hot working, temperature range	°C	medium
	Machining, compared with CuZn39Pb3 (100 %)	%	good, 70
	Solution annealing	°C	700
	Stress relieving	°C	not possible
	Soft soldering		good
	Hard soldering		medium
	Autogenous welding		medium
	Arc welding		medium
	Resistance welding		medium

Symbols

Ø = round rod diameter (mm)
SW = width across flats (hexagonal or square rods) (mm)
UTS = ultimate tensile strength
YS = yield stress at 0,2 %
A = tensile elongation