C19005

SUNDWIGER Messingwerk

SB20 – CuNi1,5Zn0,4Sn0,2Si0,3

Material Designation

DIN-EN Symbol	CuNi1,5Zn0,4Sn0,2Si0,3
DIN-EN	-
UNS	C19005
JIS	-

Physical Properties

Electrical conductivity soft	33,5	MS/m
Thermal conductivity	250	W/(m·K)
Thermal expansion coefficient **	17	10-6/K
Density	8,9	g/cm³
Modulus of elasticity	128	GPa = kN/mm²
Stress relaxation:		
H Temper condition up to	120	°C fair
TM Temper condition up to	140	°C fair

* Reference values at room temperature
** Between 20 and 300 °C

Nominal Composition (mass content in %)

Cu	Balance
Ni	1,5
Si	0,3
Zn	0,4
Sn	0,2
Fe	< 0,1
Pb	< 0,005
Other	< 0,2

Typical Applications

- Age-hardenable alloys for connectors and power transistor carriers and semiconductor devices
- Leaf springs for relays
- Stamped-bent parts
- Transistor carriers
- Connector pins
- Carriers
- Car electrics

About The Alloy

SB20 is an age-hardening CuNiSi alloy for current-carrying formed parts on which particular requirements are placed.

It has an α-structure with very fine precipitations and recommends itself both for lead frames which require a high rigidity of the pins and for connectors with
particularly high demands on the electrical conductivity with average strength and good relaxation behaviour.

SB20 in hot-dip tinned condition shows a very good adhesion of the tin layer at higher application temperatures.

In addition, SB20 is also suitable for current-carrying formed parts and contact springs due to its good fatigue strength, forming and spring properties.

The alloy is registered with the U.S. EPA as Antimicrobial.

Mechanical Properties *)

Temper condition		O **R 360** H 100	H02 **R 400** H 125	H03 **R 460** H 135	H06 **R 520** H 145	TM10 ** **R 580** H 180	TM03 ** **R 580S** H 180S
Tensile strength in N/mm²		360 - 430	400 - 460	460 - 520	520 - 580	580 - 650	580 - 650
0.2 % yield Strength in N/mm²		> 250	> 350	> 430	> 470	> 540	> 540
Elongation A_{L50} %		> 12	> 10	> 8	> 5	> 7	> 10
Vickers hardness HV		100 - 130	125 - 150	135 - 160	145 - 170	180 - 200	180 - 210
Electrical conductivity in % IACS		57	57	57	55	45	48
Minimum radius of the bending mandrel for 90° bend and strip thickness s							
0.10 ≤ s ≤ 0.25 mm	transverse parallel	0 x s 0 x s	0 x s 0.5 x s	0 x s 0.5 x s	0.5 x s 1.5 x s	0.5 x s 1.5 x s	0 x s 0.5 x s
0.25 < s ≤ 0.8 mm	transverse parallel	0 x s 0 x s	0 x s 0.5 x s	0.5 x s 1 x s	1.5 x s 2.5 x s	- -	1 x s 1.5 x s

*) Reference values **) mill aged

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Processing Instructions	
Cold forming properties	very good
Machinability	sufficient
Electroplating properties	good
Hot-dip tinning properties	good
Soldering	good
Resistance welding	good
Gas shielded arc welding	good
Laser welding	good

Available Versions
Coils with standard outer diameters of 1200 mm
Strips in reel form with coil weight of up to 1500 kg
Multipancake up to 2.5 t
Hot-dip tinned strips
Profiled strips
Electroplated strips (tin, nickel)

Available Dimensions
Bright pre-rolled strips 1 to 2.5 mm
Precision strip thickness from 0.05 to 1.2 mm
Strip width from 3.0 to 600 mm, but at least 10 times of the strip thickness
Other widths available on request

Your Local Contact Person	
Europe	Asia

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