

High-Performance Alloys SB20

Material Designation	
DIN-EN Symbol	CuNi1,5Zn0,4Sn0,2Si0,3
DIN-EN	-
UNS	C19005
JIS	-
The Miller Company	-

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/cm ³
Modulus of elasticity	128	GPa = kN/mm ²
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		

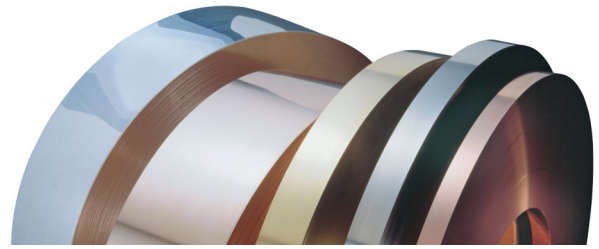
Nominal Composition (mass content in %)	
Cu	Balance
Ni	1.5
Si	0.3
Zn	0.4
Sn	0.2
Fe	< 0.1
Pb	< 0.005
Other	< 0.2

Typical Applications
<ul style="list-style-type: none"> 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
<p>SB20 is an age-hardening CuNiSi alloy for current-carrying formed parts on which particular requirements are placed.</p> <p>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.</p> <p>SB20 in hot-dip tinned condition shows a very good adhesion of the tin layer at higher application temperatures.</p> <p>In addition, SB20 is also suitable for current-carrying formed parts and contact springs due to its good fatigue strength, forming and spring properties.</p> <p>The alloy is registered with the U.S. EPA as Antimicrobial.</p>

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/mm ²		360 - 430	400 - 460	460 - 520	520 - 580	580 - 650	580 - 650
0.2 % yield Strength in N/mm ²		> 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	0 x s	0 x s	0 x s	0.5 x s	0.5 x s	0 x s
	parallel	0 x s	0.5 x s	0.5 x s	1.5 x s	1.5 x s	0.5 x s
0.25 < s ≤ 0.8 mm	transverse	0 x s	0 x s	0.5 x s	1.5 x s	-	1 x s
	parallel	0 x s	0.5 x s	1 x s	2.5 x s	-	1.5 x s
*) Reference values **) mill aged							

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

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.	

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)	

Your Local Contact Person		
Europe	USA	Asia

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<p>Sundwiger Messingwerk GmbH</p> <p>Hönnetalstraße 110 58675 Hemer Germany Phone +49 2372 661-0 Fax +49 2372 661-259 E-Mail: sales-sundwig@sundwiger-mw.com www.sundwiger-mw.com</p>	<p>The Miller Company</p> <p>275 Pratt Street CT 06450 Meriden USA Phone +1 203 63969-02 Fax +1 203 63969-24 E-Mail: sales@themillerco.com www.sundwiger-mw.com</p>	<p>Diehl Metall (Shenzhen) Co. Ltd.</p> <p>Block 25 Shatoujiao Free Trade Zone 518081 Shenzhen - P.R. China Phone +86 755 25261454-0 Fax +86 755 25260974 E-Mail: sales@sundwiger-mw.com.cn www.sundwiger-mw.com</p>
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