# C19010

## SB21 – CuNi1,5Si

SUNDWIGER Messingwerk

### Material Designation

| | |
|---|---|
| DIN-EN Symbol | CuNi1,5Si |
| DIN-EN | - |
| UNS | C19010 |
| JIS | - |

### Physical Properties

| | | |
|---|---|---|
| Electrical conductivity soft | 33,5 | MS/m |
| Thermal conductivity | 260 | 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 | 1,3 |
| Si | 0,35 |
| Zn | 0,2 |
| Fe | < 0,1 |
| Pb | < 0,005 |
| P | 0,015 |
| 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

SB21 is an age-hardening CuNi1,5Si 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.

In addition, SB21 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<br>**R 360**<br>H 100 | H02<br>**R 410**<br>H 125 | H04<br>**R 460**<br>H 135 | H06<br>**R 520**<br>H 145 | TM06 **<br>**R 520S**<br>H 180S | TM08 **<br>**R 580S**<br>H 180S |
|---|---|---|---|---|---|---|---|
| Tensile strength in N/mm² | | 360 - 430 | 410 - 470 | 460 - 520 | 520 - 580 | 520 - 590 | 580 - 650 |
| 0.2 % yield Strength in N/mm² | | 300 | 360 | 410 | 460 | 440 | 520 |
| Elongation $A_{L50}$ % | | > 12 | > 10 | > 8 | > 5 | > 9 | > 8 |
| Vickers hardness HV | | 100 - 130 | 125 - 155 | 135 - 165 | 145 - 170 | 155 - 180 | 160 - 210 |
| Electrical conductivity in % IACS | | 60 | 60 | 60 | 55 | 45 | 50 |
| Minimum radius of the bending mandrel for 90° bend and strip thickness s | | | | | | | |
| 0.10 ≤ s ≤ 0.25 mm | transverse<br>parallel | 0 x s<br>0 x s | 0 x s<br>0.5 x s | 0 x s<br>0.5 x s | 0.5 x s<br>1.5 x s | 0.5 x s<br>0.5 x s | 1.0 x s<br>1.0 x s |
| 0.25 < s ≤ 0.8 mm | transverse<br>parallel | 0 x s<br>0 x s | 0 x s<br>0.5 x s | 0.5 x s<br>1 x s | 1.5 x s<br>2.5 x s | -<br>- | 1 x s<br>1.5 x s |

*) Reference values **) mill aged

| 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 |
|---|---|
| Sundwiger Messingwerk GmbH<br><br>Hönnetalstraße 110<br>58675 Hemer<br>Deutschland<br>Tel. +49 2372 661-100<br>Fax +49 2372 661-48100<br>E-Mail: sales-sundwig@sundwiger-mw.com<br>www.sundwiger-mw.com | Sundwiger Metal (Shenzhen) Co. Ltd.<br><br>5F, Block 25, Shatoujiao Free Trade Zone<br>518081 Shenzhen<br>P.R. of China<br>Tel. +86 755 2235 7466<br>Fax +86 755 25260974<br>E-Mail: sales@sundwiger-mw.com.cn<br>www.sundwiger-mw.com |