High-Performance Alloys
SB28

Material Designation
DIN-EN Symbol: CuNi3SiMg
DIN-EN: -
UNS: C70250
JIS: -
The Miller Company: C7025

Nominal Composition (mass content in %)
- Cu: Balance
- Ni: 3.0
- Si: 0.6
- Mg: 0.1
- Zn: < 0.3
- Fe: < 0.1
- Pb: < 0.005
- Other: < 0.1

About The Alloy
SB28 is an age-hardening CuNi3Si alloy, that, in comparison with SB22, has higher contents of nickel and silicon with additions of magnesium in order to be able to adjust a particularly high strength and stress relaxation resistance.

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 strength, electrical conductivity, thermal load and relaxation behaviour.

In addition, SB28 can also be used for current-carrying formed parts and contact springs due to its good fatigue strength, forming and spring properties. The alloy can be surface-refined to various procedures.

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

Physical Properties
- Electrical conductivity soft: 25 MS/m
- Thermal conductivity: 190 W/(m∙K)
- Thermal expansion coefficient **: 17.6 x 10^-6/K
- Density: 8.8 g/cm³
- Modulus of elasticity: 132 GPa
- Stress relaxation:
  - TM Temper condition up to: 175 °C fair

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

Mechanical Properties *)

<table>
<thead>
<tr>
<th>Temper condition</th>
<th>TM00 **</th>
<th>TM02 **</th>
<th>TM03 **</th>
<th>TM04 **</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 620 H 180</td>
<td>620 - 750</td>
<td>650 - 780</td>
<td>690 - 810</td>
<td>710 - 830</td>
</tr>
<tr>
<td>R 650 H 200</td>
<td>500</td>
<td>585</td>
<td>655</td>
<td>700</td>
</tr>
<tr>
<td>R 690 H 220</td>
<td>&gt; 12</td>
<td>&gt; 9</td>
<td>&gt; 7</td>
<td>&gt; 4</td>
</tr>
<tr>
<td>R 710 H 225</td>
<td>180 - 230</td>
<td>200 - 240</td>
<td>220 - 250</td>
<td>225 - 255</td>
</tr>
</tbody>
</table>

- Tensile strength in N/mm²
- 0.2 % yield Strength in N/mm²
- Elongation A₅₀ %
- Vickers hardness HV
- Electrical conductivity in % IACS

Minimum radius of the bending mandrel for 90° bend and strip thickness s

<table>
<thead>
<tr>
<th>0.10 ≤ s ≤ 0.50 mm</th>
<th>transverse</th>
<th>parallel</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 620 H 180</td>
<td>0 x s</td>
<td>1 x s</td>
</tr>
<tr>
<td>R 650 H 200</td>
<td>1 x s</td>
<td>1.5 x s</td>
</tr>
<tr>
<td>R 690 H 220</td>
<td>1.5 x s</td>
<td>2.0 x s</td>
</tr>
<tr>
<td>R 710 H 225</td>
<td>2.0 x s</td>
<td></td>
</tr>
</tbody>
</table>

*) Reference values, **) mill aged
### Available Versions

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

### Available Dimensions

- Bright pre-rolled strip 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.

### Processing Instructions

<table>
<thead>
<tr>
<th>Property</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold forming properties</td>
<td>very good</td>
</tr>
<tr>
<td>Machinability</td>
<td>satisfactory</td>
</tr>
<tr>
<td>Electroplating properties</td>
<td>good</td>
</tr>
<tr>
<td>Hot-dip tinning properties</td>
<td>good</td>
</tr>
<tr>
<td>Soldering</td>
<td>good</td>
</tr>
<tr>
<td>Resistance welding</td>
<td>good</td>
</tr>
<tr>
<td>Gas shielded arc welding</td>
<td>good</td>
</tr>
<tr>
<td>Laser welding</td>
<td>good</td>
</tr>
</tbody>
</table>

### Your Local Contact Person

<table>
<thead>
<tr>
<th>Region</th>
<th>Contact Details</th>
</tr>
</thead>
</table>
| Europe      | Sundwiger Messingwerk GmbH & Co. KG  
Hönnetalstraße 110  
58675 Hemer  
Germany  
Phone +49 2372 661-100  
Fax +49 2372 661-260  
E-Mail: michael.koehler@diehl.com  
www.diehl.com/metall |
| USA         | The Miller Company  
275 Pratt Street  
CT 06450 Meriden  
USA  
Phone +1 203 63969-02  
Fax +1 203 63969-24  
E-Mail: sales-meriden@diehl.com  
www.diehl.com/metall |
| Asia        | Diehl Metall (Shenzhen) Co. Ltd.  
5F, Block 25, Shatoujiao Free Trade Zone  
518081 Shenzhen  
P.R. of China  
Tel. +86 755 2235 7466  
Fax +86 755 25260974  
E-Mail: sales-shenzhen@diehl.com  
www.diehl.com/metall |

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