## Bronze (Copper-Tin)

**BB60**

### Material Designation
- DIN-EN Symbol: CuSn6
- DIN-EN: CW452K
- UNS: C51900
- JIS: C5191
- The Miller Company: C519

### Nominal Composition (mass content in %)

<table>
<thead>
<tr>
<th>Element</th>
<th>Cu</th>
<th>Balance</th>
<th>Sn</th>
<th>Zn</th>
<th>Ni</th>
<th>Fe</th>
<th>Pb</th>
<th>P</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>&lt; 0.2</td>
<td>&lt; 0.2</td>
<td>&lt; 0.1</td>
<td>&lt; 0.005</td>
<td>0.03-0.35</td>
<td>&lt; 0.1</td>
</tr>
</tbody>
</table>

### About The Alloy

BB60 is a 6% tin bronze which is distinguished by a very good combination of strength and electrical conductivity. It is used for connectors and current-carrying springs in contacts.

Among the 4 to 8% tin bronzes BB60 exhibits a high electrical conductivity; the highest reachable strength is significantly higher than for BB40 and BB50. By means of an additional tempering after the cold forming process the bendability can be further improved.

The alloy is registered with the U.S. EPA as Antimicrobial and with respect to Pb and Cd meets the OEKO-TEX Standard 100.

### Physical Properties

- **Electrical conductivity** (soft): 8.1 MS/m
- **Thermal conductivity**: 66 W/(m·K)
- **Thermal expansion coefficient**: 18 °C⁻¹
- **Density**: 8.8 g/cm³
- **Modulus of elasticity**: 115 GPa

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

### Typical Applications
- Connectors for electrical engineering, electronics and automotive technology
- Stamped-bent parts
- Contact springs
- Leaf springs for relays
- Slide bearings
- Slide bars

### Mechanical Properties (*)

<table>
<thead>
<tr>
<th>Temper condition</th>
<th>O 350 H 80</th>
<th>H02 420 H 125</th>
<th>H03 500 H 160</th>
<th>H04 580 H 180</th>
<th>H06 640 H 200</th>
<th>H08 720 H 220</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile strength in N/mm²</td>
<td>350 - 420</td>
<td>420 - 520</td>
<td>500 - 590</td>
<td>580 - 660</td>
<td>640 - 730</td>
<td>720 - 800</td>
</tr>
<tr>
<td>0.2 % yield Strength in N/mm²</td>
<td>&lt; 300</td>
<td>370</td>
<td>450</td>
<td>530</td>
<td>600</td>
<td>690</td>
</tr>
<tr>
<td>Elongation A₅₀ %</td>
<td>&gt; 50</td>
<td>&gt; 20</td>
<td>&gt; 12</td>
<td>&gt; 7</td>
<td>&gt; 4</td>
<td>&gt; 2</td>
</tr>
<tr>
<td>Electrical conductivity in % IACS</td>
<td>14</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>0.10 ≤ s ≤ 0.25 mm</th>
<th>transverse</th>
<th>parallel</th>
<th>0 x s</th>
<th>0 x s</th>
<th>0 x s</th>
<th>0 x s</th>
<th>0 x s</th>
<th>0 x s</th>
<th>0 x s</th>
<th>0 x s</th>
<th>0 x s</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25 ≤ s ≤ 1.0 mm</td>
<td>transverse</td>
<td>parallel</td>
<td>0 x s</td>
<td>0 x s</td>
<td>0 x s</td>
<td>0 x s</td>
<td>0 x s</td>
<td>1 x s</td>
<td>0 x s</td>
<td>1 x s</td>
<td>2 x s</td>
</tr>
</tbody>
</table>

*) Reference values
### 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.

### Processing Instructions

<table>
<thead>
<tr>
<th>Property</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold forming properties</td>
<td>very good</td>
</tr>
<tr>
<td>Machinability</td>
<td>sufficient</td>
</tr>
<tr>
<td>Electroplating properties</td>
<td>very good</td>
</tr>
<tr>
<td>Hot-dip tinning properties</td>
<td>very good</td>
</tr>
<tr>
<td>Soldering</td>
<td>very 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>very good</td>
</tr>
</tbody>
</table>

### Your Local Contact Person

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