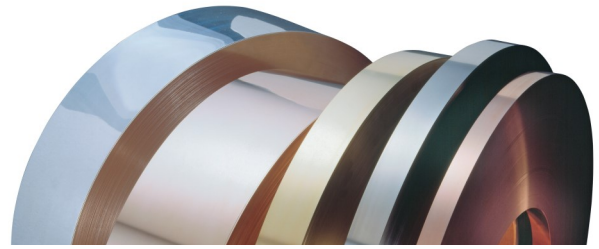


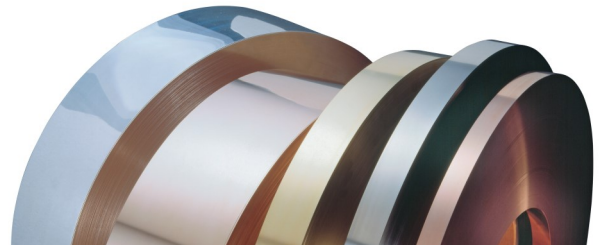
## Bronze (Copper-Tin) BB40



| Material Designation       |        |                             | Nominal Composition<br>(mass content in %)                                 |         | About The Alloy     |  |  |             |
|----------------------------|--------|-----------------------------|--|---------|---------------------|--|--|-------------|
| DIN-EN Symbol              | CuSn4  |                             | Cu   | Balance |                     | <p>BB40 is a 4 % 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.</p> <p>Among the 4 to 8 % tin bronzes BB40 exhibits the highest electrical conductivity. By means of an additional tempering after the cold forming process the bendability can be further improved.</p> <p>The alloy is registered with the U.S. EPA as Antimicrobial and with respect to Pb and Cd meets the OEKO-TEX Standard 100.</p> |  |             |
| DIN-EN                     | CW450K |                             | Sn   | 4       |                     |  |  |             |
| UNS                        | C51100 |                             | Zn   | < 0.2   |                     |  |  |             |
| JIS                        | C5111  |                             | Ni   | < 0.2   |                     |  |  |             |
| The Miller Company         | C511   |                             | Fe   | < 0.1   |                     |  |  |             |
| <b>Physical Properties</b> |        |                             | Pb   | < 0.005 |                     |  |  |             |
|                            |        |                             | Electrical conductivity soft   | 11.6    | MS/m                |  | p  | 0.03 - 0.35 |
|                            |        |                             | Thermal conductivity   | 86      | W/(m·K)             |  | Other  | < 0.1       |
|                            |        |                             | Thermal expansion coefficient **   | 17      | 10 <sup>-6</sup> /K |  | <b>Typical Applications</b>  |             |
|                            |        |                             | Density  | 8.9     | g/cm <sup>3</sup>   |  | <ul style="list-style-type: none"> <li>• Connectors for electrical engineering, electronics and automotive technology</li> <li>• Stamped-bent parts</li> <li>• Contact springs</li> <li>• Leaf springs for relays</li> <li>• Slide bearings</li> <li>• Slide bars</li> </ul> |             |
| Modulus of elasticity      | 120    | GPa<br>= kN/mm <sup>2</sup> | <p>* Reference values at room temperature<br/>** Between 20 and 300 °C</p> |         |                     |  |  |             |

| Mechanical Properties *)   |            |                    |                       |                       |                       |                       |
|--|------------|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Temper condition   |            | O<br>R 290<br>H 70 | H02<br>R 390<br>H 115 | H03<br>R 480<br>H 150 | H04<br>R 540<br>H 170 | H06<br>R 610<br>H 190 |
| Tensile strength in N/mm <sup>2</sup>  |            | 290 - 390          | 390 - 490             | 480 - 570             | 540 - 630             | 610 - 690             |
| 0.2 % yield Strength in N/mm <sup>2</sup>  |            | < 190              | 320                   | 440                   | 510                   | 570                   |
| Elongation A <sub>LS0</sub> %  |            | > 45               | > 20                  | > 10                  | > 6                   | > 3                   |
| Vickers hardness HV  |            | 70 - 105           | 115 - 155             | 150 - 180             | 170 - 200             | 190 - 220             |
| Electrical conductivity in % IACS  |            | 20                 | 19                    | 19                    | 19                    | 19                    |
| Minimum radius of the bending mandrel for 90° bend and strip thickness s, tempered quality |            |                    |                       |                       |                       |                       |
| 0.10 ≤ s ≤ 0.25 mm   | transverse | 0 x s              | 0 x s                 | 0 x s                 | 0 x s                 | 0 x s                 |
|  | parallel   | 0 x s              | 0 x s                 | 0 x s                 | 1 x s                 | 2.5 x s               |
| 0.25 < s ≤ 0.5 mm  | transverse | 0 x s              | 0 x s                 | 0 x s                 | 0 x s                 | 1 x s                 |
|  | parallel   | 0 x s              | 0 x s                 | 1 x s                 | 2 x s                 | 4 x s                 |
| *) Reference values  |            |                    |                       |                       |                       |                       |

## Bronze (Copper-Tin) BB40



| Processing Instructions    |            |
|----------------------------|------------|
| Cold forming properties    | very good  |
| Machinability              | sufficient |
| Electroplating properties  | very good  |
| Hot-dip tinning properties | very good  |
| Soldering                  | very good  |
| Resistance welding         | good       |
| Gas shielded arc welding   | good       |
| Laser welding              | very 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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We reserve the right to make alterations especially where necessitated by technical developments or changes in availability. Please ask for the latest edition of this material data sheet.