

## Bronze (Copper-Tin) BB40 Plus Ecobronze

| Material Designation |           |
|----------------------|-----------|
| DIN-EN Symbol        | (CuSn4+)  |
| DIN-EN               | CW450K    |
| UNS                  | C51100    |
| JIS                  | C5111     |
| The Miller Company   | C511 Plus |

| Physical Properties              |     |                             |
|----------------------------------|-----|-----------------------------|
| Electrical conductivity soft     | 12  | MS/m                        |
| Thermal conductivity             | 86  | W/(m·K)                     |
| Thermal expansion coefficient ** | 17  | 10 <sup>-6</sup> /K         |
| Density                          | 8.9 | g/cm <sup>3</sup>           |
| Modulus of elasticity            | 120 | GPa<br>= kN/mm <sup>2</sup> |

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

| Nominal Composition<br>(mass content in %) |             |
|--|-------------|
| Cu   | Balance     |
| Sn   | 4           |
| Zn   | < 0.2       |
| Ni   | < 0.2       |
| Fe   | < 0.1       |
| Pb   | < 0.005     |
| P  | 0.03 - 0.35 |
| Other                                      | < 0.1       |

| Typical Applications   |
|--|
| <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> |

**About The Alloy**

The Ecobronze BB40 Plus is a modified 4 % tin bronze which is distinguished by a very fine structure with considerably higher strength and elongation and a high electrical conductivity.

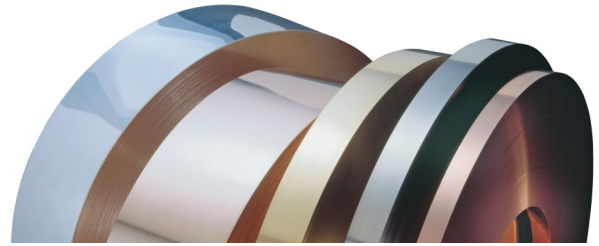
It is used for miniaturized connectors and current-carrying springs in contacts.

Among the 4 to 8 % tin bronzes BB40 Plus exhibits the highest electrical conductivity. Regarding the strength it reaches the level of a standard 6 % bronze.

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

| Mechanical Properties *)  |                          |                          |                          |                          |       |
|---|--------------------------|--------------------------|--------------------------|--------------------------|-------|
|   | H06S<br>R 600S<br>H 190S | H08S<br>R 660S<br>H 200S | H10S<br>R 700S<br>H 210S | H12S<br>R 750S<br>H 220S |       |
| Temper condition  |                          |                          |                          |                          |       |
| Tensile strength in N/mm <sup>2</sup>   | 600 - 680                | 660 - 720                | 700 - 800                | 750 - 840                |       |
| 0.2 % yield strength in N/mm <sup>2</sup>   | 560                      | 625                      | 660                      | 720                      |       |
| Elongation A <sub>L50</sub> %   | > 13                     | > 7                      | > 5                      | > 2                      |       |
| Vickers hardness HV   | 190 - 220                | 200 - 230                | 210 - 240                | 220 - 245                |       |
| Electrical conductivity in % IACS   | 20                       | 20                       | 20                       | 20                       |       |
| Minimum radius of the bending mandrel for 90° bend and strip thickness s with a thickness/width ratio of < 10 |                          |                          |                          |                          |       |
| 0.10 ≤ s ≤ 0.25 mm  | transverse               | 0 x s                    | 0 x s                    | 0.5 x s                  | 1 x s |
|   | parallel                 | 1 x s                    | 2 x s                    | 3 x s                    | 4 x s |

\*) Reference values



## Bronze (Copper-Tin) BB40 Plus Ecobronze

| 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 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.   |  |

| 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)                    |  |

| Your Local Contact Person |     |      |
|---------------------------|-----|------|
| Europe                    | USA | Asia |

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