**COPPER ALLOY No. C33500 (LOW LEADED BRASS)**

### Composition – percent

<table>
<thead>
<tr>
<th></th>
<th>Nominal</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>63.5</td>
<td>63.0</td>
<td>63.9</td>
</tr>
<tr>
<td>Lead</td>
<td>3.5</td>
<td>.7</td>
<td></td>
</tr>
<tr>
<td>Zns</td>
<td>.01</td>
<td>.005</td>
<td>.010</td>
</tr>
</tbody>
</table>

### Nearest Applicable A S T M Specifications

<table>
<thead>
<tr>
<th>Flat Product</th>
<th>B121</th>
<th>Pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>B433</td>
<td></td>
</tr>
<tr>
<td>Shape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tube</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wire</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>English Units</th>
<th>C. S. Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting Point (Liquidus)</td>
<td>1700 °F</td>
<td>927 °C</td>
</tr>
<tr>
<td>Melting Point (Solidus)</td>
<td>1650 °F</td>
<td>920 °C</td>
</tr>
<tr>
<td>Density</td>
<td>8.47</td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient of Thermal Expansion</td>
<td>per ′F from 0°F to 32°F</td>
<td>per ′C from 0°C to 100°C</td>
</tr>
<tr>
<td>Coefficient of Thermal Conductivity</td>
<td>0.00011 per ′F from 68°F to 32°F</td>
<td>0.000203 per ′C from 20°C to 100°C</td>
</tr>
<tr>
<td>Thermal Conductivity</td>
<td>69 Btu hr/ft 2 °F ft/ft °F</td>
<td>33 cal/cm hr °F cm/°F</td>
</tr>
<tr>
<td>Electrical Resistivity (American)</td>
<td>39.9 (ams)</td>
<td>6.4 (mhos/cm at 20°C)</td>
</tr>
<tr>
<td>Electrical Conductivity</td>
<td>0.09</td>
<td>0.15</td>
</tr>
<tr>
<td>Modulus of Elasticity (Tension)</td>
<td>15,000 psi</td>
<td>1050 kg/m</td>
</tr>
<tr>
<td>Modulus of Rigidity</td>
<td>6,600 psi</td>
<td>4500 kg/m</td>
</tr>
</tbody>
</table>

### Typical Uses

**Hardware:** butts, hinge brass, watch backs

**Common Fabrication Processes:**
- Bending, drawing, machining, piercing and punching, stamping

### Fabrication Properties

- **Suitability for being joined by:**
  - Brazing: Excellent
  - Oxyacetylene Welding: Fair
  - Gas Shielded Arc Welding: Not Recommended
  - Resistance: Sems Not Recommended

- **Jointing:**
  - Butt: Fair

- **Mechanical Properties:**
  - **Annealed Temper:**
    - **Nominal Grain Size:**
      - 400
      - 200
      - 100
      - 50
      - 25
      - 10
      - 5
      - 2
      - 1
    - **Elongation in 2 in.:**
      - 31
      - 26
      - 19
      - 14
      - 10
      - 7
      - 5
      - 3
      - 2
    - **Bend Test:**
      - 120
      - 90
      - 60
      - 45
      - 30
      - 22.5
      - 18
      - 15
      - 12
    - **Fatigue Strength:**
      - 300
      - 240
      - 180
      - 150
      - 120
      - 90
      - 60
      - 45
      - 30

The values listed above represent reasonable approximations suitable for general engineering use. Due to commercial variations in composition and manufacturing limitations, they should not be used for specification purposes. See applicable A.S.T.M. specification references.