The strength of copper can be exceeded significantly by alloying of magnesium, thereby the conductivity is only slightly reduced. By alloying of Mg in the range of 0.1 to 0.8 %, the ratio of tensile strength and conductivity can be adjusted very precisely. CuMg is suitable for electric connections, for connector pins and for overhead telephone lines. In recent years, this alloy has become more and more important as a material for contact wire and catenary cables for high-speed trains. This alloy family is used as a substitution for copper-cadmium which is already prohibited in many countries due to its toxic properties.

Typical Applications
- Conductor wire
- Connector wire
- Pins
- Telecommunications cable
- Catenary cables
- Contact wire for high-speed trains

Correspondent Standards for Railway Applications:
- DIN 17 666: Low-alloyed wrought copper alloys
- EN 50 149: Railway applications - stationary equipment, grooved contact wire of copper and copper alloys
- Ebs (DR-M) 25 - 45.020: Contact wire of copper-magnesium-wrought alloy, technical delivery conditions, overhead line Re 250 DR
- DIN 43 138: Flexible cables for catenary systems and return lines
- DIN 43 140: Contact wire, technical delivery conditions
- DIN 48 200, Teil 2: Wire for catenary cables
- DIN 48 201, Teil 2: Catenary cables
- DIN 48 203, Teil 2: Wire and cables for wrought copper alloy lines
- DIN 48 300: Wire for overhead telephone lines
- NF C 34 - 110 - 1: Copper alloy wire for overhead line conductors
- NF C 34 - 110 - 2: Copper alloy conductors for overhead lines
- NF C 34 - 110 - 3: Hard drawn copper conductors for overhead lines
- SIP 1221: Properties of bronze overhead lines

Available Dimensions
- Rolled, modified square wire
  - 5.1 mm
  - 7.4 mm
  - max. 2000 kg
- Round wire
  - 1.2 - 6.2 mm in coils
  - max. 100 kg
  - 1.8 - 6.2 mm on stands
  - max. 1500 kg
  - 0.5 - 3 mm on reels
  - max. 1000 kg
  - 1.5 - 3 mm on acropaks
  - max. 400 kg
  - On request: in drums
  - max. 400 kg
- Catenary wire
  - On drums, cross-section area: 100 / 120 / 150 mm² customized length (max. 1.5 km)
- Contact wire
  - On drums (for high-speed trains)
### Physical Properties*

<table>
<thead>
<tr>
<th>DMA Symbol</th>
<th>SD01</th>
<th>SD02</th>
<th>SD03</th>
<th>SD04 / SD05 **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical conductivity in % IACS (hard condition)</td>
<td>80</td>
<td>77</td>
<td>72</td>
<td>64</td>
</tr>
<tr>
<td>Electrical conductivity in MS/m</td>
<td>46.4</td>
<td>44.6</td>
<td>41.7</td>
<td>37.1</td>
</tr>
<tr>
<td>Density in g/cm³</td>
<td>8.9</td>
<td>8.9</td>
<td>8.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

* Reference values at room temperature | ** Symbol for contact wire

### Mechanical Properties*

<table>
<thead>
<tr>
<th>DMA Symbol</th>
<th>SD01</th>
<th>SD02</th>
<th>SD03</th>
<th>SD04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile strength in N/mm²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>soft</td>
<td>220 - 290</td>
<td>230 - 300</td>
<td>250 - 320</td>
<td>270 - 340</td>
</tr>
<tr>
<td>hard</td>
<td>300 - 400</td>
<td>360 - 460</td>
<td>400 - 500</td>
<td>510 - 610</td>
</tr>
<tr>
<td>springhard</td>
<td>400 - 500</td>
<td>460 - 560</td>
<td>500 - 600</td>
<td>610 - 710</td>
</tr>
<tr>
<td>super springhard</td>
<td>500 - 700</td>
<td>560 - 800</td>
<td>600 - 820</td>
<td>710 - 1000</td>
</tr>
<tr>
<td>Elongation soft A100 in %</td>
<td>&gt; 30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Reference values at room temperature

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**Your Contact Person**

**Worldwide**

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