

# Wieland-B05

CuSn5  
Phosphor bronze

# Extruded and drawn products



| Material designation |               |
|----------------------|---------------|
| EN                   | CuSn5, CW451K |
| UNS                  | C51000        |

| Chemical composition* |         |
|-----------------------|---------|
| Cu                    | balance |
| Sn                    | 5%      |
| P                     | 0.35%   |

\* Reference values in % by weight

| Physical properties*                     |                     |          |
|--|---------------------|----------|
| Electrical conductivity                  | MS/m<br>%IACS       | 10<br>17 |
| Thermal conductivity                     | W/(m·K)             | 96       |
| Thermal expansion coefficient (0–300 °C) | 10 <sup>-6</sup> /K | 18       |
| Density                                  | g/cm <sup>3</sup>   | 8.85     |
| Modulus of elasticity                    | GPa                 | 120      |

\* Reference values at room temperature

### Corrosion resistance

In general excellent resistance to corrosion in seawater, industrial atmosphere and to stress corrosion cracking.

| Product standards |               |
|-------------------|---------------|
| Rod               | EN 12163:1998 |
| Wire              | EN 12166:1998 |

### Material properties and typical applications

**Wieland-B05** is a phosphor bronze with a tin content of 5 % making it possible to achieve medium mechanical strength. It exhibits good resistance to wear and corrosion. Phosphor bronzes have good cold working properties. **Wieland-B05** is used primarily in the UK and USA.

### Types of delivery

The Extruded and Drawn Products Division supplies bars, wire, sections and tubes. Please get in touch your contact person regarding the available delivery forms, dimensions and tempers.

### Fabrication properties

| Forming                           |           | Surface treatment        |                     |
|-----------------------------------|-----------|--------------------------|---------------------|
| Machinability (CuZn39Pb3 = 100 %) | 20 %      | <b>Polishing</b>         |                     |
| Capacity for being cold worked    | excellent | mechanical               | excellent           |
| Capacity for being hot worked     | poor      | electrolytic             | excellent           |
|                                   |           | Electroplating           | excellent           |
| Joining                           |           | Heat treatment           |                     |
| Resistance welding (butt weld)    | good      | Melting range            | 930–1060 °C         |
| Inert gas shielded arc welding    | excellent | Hot working              | 750–850 °C          |
| Gas welding                       | excellent | Soft annealing           | 500–700 °C<br>1–3 h |
| Hard soldering                    | excellent | Thermal stress relieving | 200–300 °C<br>1–3 h |
| Soft soldering                    | excellent |                          |                     |