

## Copper-zinc casting alloy **BZG** alloy 2170

**BZG** is a non-standardised sliding and construction material with high strength and hardness. It is a casting material with better sliding properties than ZB 37 = CuZn34Mn3Al2Fe1-C = CC764S. Through the addition of small quantities of lead and silicon the sliding properties are comparable to the forging material BZ 2 = CuZn37Mn3Al2PbSi = CW713R. It is a substitute material for non-forgeable parts. BZG is highly suitable for medium sliding speeds and medium surface pressures. A hard mating material is recommended.

ZOLLERN brand	BZG
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### // Composition (mass fraction in %), not standardised

Cu	Al	Fe	Ni	Mn
58	1.7	max. 1.0	max. 2.0	2.0
Pb	Si	Sn	Zn	Other
0.7	0.5	max. 0.2	Rest	max. 0.3

### // Strength properties at room temperature

(Guideline values, for information only)				
Not standardised	R <sub>m</sub> N/mm <sup>2</sup>	R <sub>p0.2</sub> N/mm <sup>2</sup>	A <sub>5</sub> %	HB
Sand casting	~ 500	~ 250	~ 5	~ 150
Centrifugal casting	~ 500	~ 250	~ 5	~ 150

### // Physical properties (reference values)

Density at 20 °C	8.1 kg/dm <sup>3</sup>
Melting temperature/range	880 – 900 °C
Specific heat capacity at 20 °C	0.419 J/g × °C
Thermal conductivity	0.55 W/cm °C
Electrical conductivity at 20°C	4 – 8 MS/m 7 – 14 % IACS
Electrical resistance at 20°C	0.125 – 0.25 Ω mm <sup>2</sup> /m
Coefficient of linear expansion in the range from 20°C to 200°C	19 × 10 <sup>-6</sup> °C <sup>-1</sup>
Shrinkage	1.5 – 2.3 %
Young's modulus	91 KN/mm <sup>2</sup>
Permeability	< 1.3

### // Dynamic strength values at room temperature (reference values)

Rotational bending fatigue strength R <sub>bw</sub> at 10 <sup>6</sup> load cycles	150 N/mm <sup>2</sup>
Notched impact energy (ISO - V/KV)	17 joules

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### Areas of application

**BZG** is preferred for very large parts subject to sliding stress in mechanical engineering, if the blanks cannot be produced by forging.

- Locking nuts, spindle nuts, pressure nuts that move under load
- centrifugally cast worm wheel rims
- Worm wheel blanks on cast gray iron hubs
- Bearing bushes, guide bushes, bearing rings

### Machinability

Machining operations are easily possible. The machinability index is approx. 50 (CuZn39Pb3 = 100). Mechanical polishing is easily possible, electrochemical polishing less so.

<b>Relaxation annealing</b>	350 – 480 °C
<b>Soft soldering</b>	less good
<b>Brazing</b>	less good
<b>Welding</b>	Inert gas-shielded arc welding is possible. However, smoke is generated due to the evaporation of zinc (smoke extraction). Filler metal e.g. CuZn40Sn1MnNiSi = CF731R or S-CuAl8Ni2, which reduces fume generation.
<b>Galvanisability</b>	average

