

## Copper-tin casting alloy **GBz 10** alloy 3250

**GBz 10** is a corrosion and seawater resistant copper-tin alloy with relatively high elongation.

It is a construction material with a good combination of corrosion resistance and toughness.

For thick-walled castings in which a dense microstructure is required, CuAl10Fe5Ni5-C or CuZn16Si4-C should be used.

ZOLLERN brand	GBz 10
EN designation	CuSn10-C
EN material no:	CC480K

EN 1982

### // National designations

DIN	G-CuSn10
DIN	2.1050
USA	≈ C90700 / ≈ C91600
GB	≈ CT 1
F	≈ U - E 10 Z1

≈ (substantial coherence)

### // Composition (mass fraction in %) EN 1982

Cu	Ni	P	Sn	Pb	Zn
88.0 – 90.0	max. 2.0	max. 0.2	9.0 – 11.0	max. 1.0	max. 0.5

### // Strength properties at room temperature

(minimum values)

[1] EN 1982	R <sub>m</sub> N/mm <sup>2</sup>	R <sub>p0.2</sub> N/mm <sup>2</sup>	A <sub>5</sub> %	HB
[1] Sand casting	250	130	18	70
[1] Mask mould casting	250	130	18	70
[1] Centrifugal casting	280	160	10	80

### // Strength properties

at elevated temperatures (reference values)

Temperature	°C	20	150	200	250	300
Tensile strength	R <sub>m</sub> N/mm <sup>2</sup>	270	229	213	198	182
0.2% limit	R <sub>p0.2</sub> N/mm <sup>2</sup>	130	117	112	108	102
Elongation	A <sub>5</sub> %	18	10	-	-	-

### // Physical properties

Density at 20°C	8.7 kg/dm <sup>3</sup>
Melting temperature range	830 – 1020°C
Shrinkage	approx. 1.5 %
Coefficient of linear expansion in the range 20 – 200°C	18.5 x 10 <sup>-6</sup> °C <sup>-1</sup>
Electrical conductivity at 20°C	7 – 8 MS/m approx. 13 % IACS
Electrical resistance at 20°C	0.133 Ω mm <sup>2</sup> /m
Young's modulus	90 – 110 KN/mm <sup>2</sup>
Permeability	< 1.01

### // Dynamic strength values

at room temperature (reference values)

Bending fatigue strength R <sub>bw</sub> at 10 <sup>8</sup> load cycles	100 N/mm <sup>2</sup>
Notched impact energy (ISO - V/KV)	30 joules

## Copper-tin casting alloy **GBz 10** alloy 3250

**GBz 10** is a corrosion and seawater resistant copper-tin alloy with relatively high elongation. It is a construction material with a good combination of corrosion resistance and toughness. For thick-walled castings in which a dense microstructure is required, CuAl10Fe5Ni5-C or CuZn16Si4-C should be used.

### Areas of application

- Valve and pump housings
- Guide wheels and impeller for pumps and water turbines
- Split rings and Kaplan or pump blades

### Machinability

**GBz 10** is easy to machine. Turning, milling, drilling etc. is possible without problems. Relatively short rolling chips are formed.

**Machinability index** approx. 60 (CuZn39Pb3 = 100)

**Relaxation annealing** 400 – 600 °C

**Soft soldering** good

**Brazing** good

**Welding** TIG, MIG and manual electrode welding are possible. However, there is a danger of heat cracks in some cases. Suitable filler material  
CuSn8 = CF453 K or  
CuSn12 = CF461 K

**Galvanisability** good, but denser casting necessary

