

Copper-zinc casting alloy **ZB 80** alloy 2080

ZB 80 is a construction material with good corrosion and seawater resistance. It is very easy to cast and has a good mould-filling capacity. It is therefore also possible to cast complicated, thin-walled parts with a good surface finish.

ZOLLERN brand	ZB80
EN designation	CuZn16Si4-C
EN material no:	CC7615

EN 1982, ASTM B584

// ISO / national designations

DIN	G-CuZn15Si4
DIN	2.0492
USA	C87500

// Composition (mass fraction in %) EN 1982

Cu	Si	Ni	Pb	Al
78.0 – 83.0	3.0 – 5.0	max. 1.0	max. 0.8	max. 0.1
Fe	Mn	Sn	Zn*	P
max. 0.6	max. 0.2	max. 0.3	Rest	max. 0.03

* ASTM B584 Zn 12 – 16 %

// Strength properties at room temperature

(minimum values)					
	R _m N/mm ²	R _{p0.2} N/mm ²	A ₅ %	HB	
[1] EN 1982 [2] ASTM B584, R _{p0.5} *					
[1] Sand casting	400	230	10	100	
[1] Mask mould casting	400	230	10	100	
[1] Centrifugal casting	500	300	8	130	
[2] Sand casting	414	207*	16	-	

// Strength properties at elevated temperatures (reference values)

Temperature	°C	20	150	200	250	300
Tensile strength	R _m N/mm ²	400	354	334	316	298
0.2% limit	R _{p0.2} N/mm ²	230	234	235	236	237
Elongation	A ₅ %	10	9	9	7	10

// Physical properties (reference values)

Density at 20 °C	8.3 kg/dm ³
Melting temperature/range	830 – 900 °C
Thermal conductivity at 20°C	0.34 W/cm °C
Electrical conductivity at 20°C	3 – 5 MS/m 5 – 9 % IACS
Electrical resistance at 20°C	0.20 – 0.33 Ω mm ² /m
Coefficient of linear expansion from 20°C to 200°C	18 x 10 ⁻⁶ °C ⁻¹
Shrinkage	1.5 %
Young's modulus	98 KN/mm ²
Permeability	< 1.01

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

Bending fatigue strength R _{bw} at 10 ⁸ load cycles	150 N/mm ²
Notched impact energy (ISO - V/KV)	35 joules

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Areas of application

Due to the good mould-filling capacity thin-walled, pressure-tight brass parts can be easily cast.

For example

- Seawater pump housings, heat exchanger parts and water boxes for coolers
- Manifolds and fittings for marine diesel engines
- Valves for seawater and fresh water operation
- Parts for medical technology

Machinability

ZB 80 is easy to machine by turning and milling. Sharp tools are necessary for drilling and thread cutting. The machining index is approx. 30. (CuZn39Pb3 = 100). Mechanical polishing is easily possible, electrochemical less so.

Relaxation annealing 350 – 450°C

Soft soldering suitable

Brazing suitable

Welding Inert gas-shielded arc welding is possible. However, smoke is generated due to the evaporation of zinc (smoke extraction). Analytically equivalent or similar filler materials are not available. Possible filler material e.g. S-CuAl8Ni or CuZn40Si = CF724R

Galvanisability average

