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Solid metals. Fine solutions.

Wrought copper-zinc alloy special brass **ZB 68** Alloy 2070

ZB 68 is a sliding material and construction material for average stress. The good sliding properties also allow the use of unhardened counterpart materials. ZB 68 has good solderability, does not become brittle at low temperatures and is therefore also suitable for cryogenics.

ZOLLERN brand	ZB 68
EN designation	CuZn31Si1
EN material no:	CW708R

EN 12420, not standardised
EN 12163:1998 Drawn bars

// National designations / ISO

DIN	CuZn31Si1
DIN	2.0490
ISO	CuZn31Si1
USA	C69800

// Composition (weight by per cent in %)

Cu	Fe	Ni	Pb	Si
66.0 – 70.0	max. 0.4	max. 0.5	max. 0.8	0.7 – 1.3

Zn	Other
Rest	max. 0.5

// Strength properties at room temperature

	(minimum values)			
[1] not standardised, Zollern values [2] EN 12163:1998 min. 200 kg	$R_{p0.2}$ N/mm²	R_m N/mm²	A_5 %	HB
[1] Forgings up to 80 mm thickness	180	390	20	80
[1] Forgings over 80 mm thickness	160	370	22	80
[2] Rods R460, drawn up to 30 mm Ø thickness or SW	240	460	22	120-160

// Strength properties at elevated temperatures (reference values)

Temperature	°C	20	200	300	400	500
0.2% limit	$R_{p0.2}$ N/mm²	330	320	315	310	240
Tensile strength	R_m N/mm²	480	460	460	460	370
Elongation	A_5 %	28	30	30	29	27

// Physical properties

Density at 20 °C	8.4 kg/dm³
Melting temperature/range	880 – 915 °C
Coefficient of linear expansion from 20° to 100°C	19 x 10^{-6} °C^{-1}
Specific heat at 20°C	0.368 J/g x °C
Thermal conductivity at 20°C	0.84 W/cm x°C
Electr. conductivity at 20°C	8 - 10 MS/m 14 - 17 % IACS
Electr. resistance at 20°C	0.10 - 0.125 Ω mm²/m
Temperature coefficient of the electrical resistance (0 - 100°C)	0.0010 °C^{-1}
Permeability	< 1.01
Young's modulus	109 KN/mm²
Shear modulus G	38 KN/mm²

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

Rotational bending fatigue strength R_{bw} at 20 x10^6 load cycles, 30% cold-formed	160 N/mm²
Notched impact energy (ISO - V/KV)	23 joules

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Areas of application

ZB 68 is used for

- bearing bushes, guide bushes, sliding strips and other sliding elements in the vehicle and gearbox construction
- Rods can be drawn relatively hard and thus be used for higher loads
- Hydraulic parts are also made from ZB 68
- Due to its good toughness at low temperatures, ZB 68 is suitable for cryogenics.

Machinability

ZB 68 is hot and easily cold formable. Machining is easily possible. The cutting index is 40, where CuZn39Pb3 = 100.

Relaxation annealing	250 – 350°C
Soft annealing	500 - 600°C
Soft soldering	well suited
Brazing	moderately suitable
Welding	Inert gas-shielded arc welding is possible. However, smoke develops due to the evaporation of Zn
Surface treatment	ZB 68 can be mechanically polished well, electroplated coatings arepossible

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All information is given to the best of our knowledge. This does not constitute a guarantee of properties. Our liability shall be determined in accordance with the individual contractual provisions or our general terms and conditions.

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