

Copper-zinc casting alloy **PB** alloy 2200

PB is a construction material with medium strength values and very good toughness. Due to the reduced Al content of max. 1.5%, this alloy is also suitable for oxygen fittings. Zollern alloy 2240 meets the requirements of VdTÜV 450 and AD2000.

ZOLLERN brand	PB
EN designation	CuZn35Mn2Al1Fe1-C
EN material no:	CC765S

EN 1982, ASTM B584, BS1400

// ISO / national designations

DIN	G-CuZn35Al1
DIN	2.0592
USA	C 86500
GB	HTB1
F	≈ U - Z36N3

≈ (substantial coherence)

// Composition (mass fraction in %) EN 1982

Cu	Al*	Fe*	Ni*	Mn*
57.0 – 65.0	0.5 – 2.50	0.5 – 2.0	max. 6.0	0.5 – 3.0

Pb	Si	Sn	Zn*	P
max. 0.5	max. 0.1	max. 1.0	Rest	max. 0.03

* ASTM B584 Ni max 1 % Al 0.5 – 1.5 % Mn 0.1 – 1.5 % Zn 36 – 42 %
* BS 1400 HTB1 Ni max 1 % Fe 0.7 – 2.0 % Mn 0.1 – 3.0 %

// 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} * [3] BS 1400				
[1] Sand casting	450	170	20	110
[1] Mask mould casting	450	170	20	110
[1] Centrifugal casting	500	200	18	120
[2] Sand casting	448	172*	20	-
[3] Sand casting	470	170	18	-
[3] Centrifugal casting	500	210	20	-

// Strength properties at elevated temperatures (reference values)

Temperature	°C	20	150	200	250	300
Tensile strength	R _m N/mm ²	450	358	324	280	240
0.2% limit	R _{p0.2} N/mm ²	170	173	173	174	175
Elongation	A ₅ %	20	38	36	35	34

// Physical properties (reference values)

Density at 20°C	8.2 kg/dm ³
Melting temperature/range	880 – 900 °C
Specific heat capacity at 20°C	0.419 J/g × °C
Thermal conductivity at 20°C	0.55 W/cm °C
Electrical conductivity at 20°C	5 – 10 MS/m 8 – 17 % IACS
Electrical resistance at 20°C	0.10 – 0.20 Ω mm ² /m
Coefficient of linear expansion from 20°C to 200°C	19 × 10 ⁻⁶ °C ⁻¹
Shrinkage	approx. 1.5 – 2.3 %
Young's modulus	98 KN/mm ²
Permeability	< 1.1

// 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)	40 joules

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Areas of application

PB is predominantly used for parts subjected to static loads or parts that move only slightly under load.

For example:

- Pressure nuts in rolling mills and spindle presses
- Parts for ship superstructures
- Propeller blades
- Housings and other parts for oxygen fittings

Machinability

All machining operations are easily possible. The machinability index is approx. 40 (CuZn39Pb3 = 100). Mechanical polishing is easily possible, electrochemical less so.

Relaxation annealing approx. 350 – 480°C

Soft soldering less suitable

Brazing less suitable

Welding 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

Galvanisability average

