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Solid metals. Fine solutions.

Wrought copper-aluminium alloy **EBz-Oe** alloy 1590

EBz-Oe belongs to the group of high-strength aluminium multi-components bronzes. The composition of EBz-Oe lies outside the standardised materials CW307G and CW308G and was developed by ZOLLERN to ensure higher strength values for shrink rings / cap rings in electric motor construction. The material is quenched and tempered and has a high corrosion resistance.
Not suitable for long bars or parts with a wall thickness greater than 100 mm.

ZOLLERN brand	EBz-Oe
EN designation	Not standardised
	~ CuAl10Ni6Fe6

// Composition (weight by per cent in %)

Cu	Al	Fe	Mn	Ni
Rest	10.0 - 10.6	6.2 - 6.6	approx. 0.4	5.8 - 6.2
Pb	**Si**	**Sn**	**Zn**	**Other**
max. 0.05	max. 0.2	max. 0.1	max. 0.4	max. 0.2

// Strength properties at room temperature

	(minimum values)			
	$R_{p0.2}$ N/mm²	R_m N/mm²	A_5 %	HB
Forged pieces and rings up to 80 mm thickness or wall thickness	440	740	12	205

// Physical properties

Density at 20 °C	7.6 kg/dm³
Melting temperature/range	1060 – 1075 °C
Coefficient of linear expansion	
from - 200° to 20°C	15 x 10^{-6} °C^{-1}
from 20° to 100°C	15 x 10^{-6} °C^{-1}
from 20° to 300°C	17 x 10^{-6} °C^{-1}
Specific heat at 20°C	0.452 J/g x °C
Thermal conductivity at 20°C	0.63 W/cm x°C
Electr. conductivity at 20°C	4 - 6 MS/m 7 - 10% IACS
Electr. resistance at 20°C	0.167 - 0.25 Ω mm²/m
Temperature coefficient of the electrical resistance (0 - 100°C)	0.0005 °C^{-1}
Permeability	< 1.9
Young's modulus	120 KN/mm²

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Areas of application

EBz-Oe is a high-strength material with a high load capacity and high corrosion resistance to Cl-containing water, neutral and acidic aqueous media.
The material is particularly suitable for

- rotor and winding caps
- shrink rings or cap rings in electrical engineering.

Machinability

Carbide tools are needed for turning and milling and sharp tools are needed for drilling and thread cutting. This results in a machinability that is better than that of austenitic stainless steel. Shorter rolling and flowing chips are formed. Cutting and die-sinking is easily possible.

Relaxation annealing	650 – 720°C
Soft annealing	800 - 850°C with subsequent furnace cooling down to 650°C, then air cooling
Heat shrinking	Heating up to approx. 250°C for shrinkage is permissible.
Soft soldering	not recommendable
Brazing	poor, fluxes containing fluoride and chloride of type F - SH1 and silver solders are advantageous
Welding	good, both TIG, MIG and manual electrode welding is possible, filler metal e.g. Cu 6327 = CuAl8Ni2Fe2Mn2 according to EN ISO 24373 or S-CuAl8Ni2, DIN 1733
Surface treatment	polishing and galvanic treatments are possible. For galvanic coatings, a copper backup bar is advisable

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