

Wieland-B09/B10 Phosphor bronze

Extruded/drawn products

Wieland-B09/B10 is a phosphor bronze with a tin content of 8 % making it possible to achieve very high mechanical strength and good spring properties. It has excellent wear and corrosion resistance and is therefore also used for bearings. Phosphor bronzes exhibit good cold working properties and can be satisfactorily machined with adequate tooling parameters. A very pure type of CuSn8 is **Wieland-B10** meeting the highest demands, for example, of Bourdon tubes.

Chemical composition*

Cu	balance
Sn	8%
P	0.2%

* Reference values in % by weight

Material designation

EN	CuSn8, CW453K
UNS	C52100
DIN*	CuSn8, 2.1030
BS*	Pb104
NF*	CuSn8P

* Former national standards

Physical properties*

Electrical conductivity	MS/m	6.5
	% IACS	11
Thermal conductivity	W/(m*K)	58
Thermal expansion coefficient (0-300°C)	10 ⁻⁶ /K	18.5
Density	g/cm ³	8.8
Modulus of elasticity	GPa	115

* Reference values at room temperature
1 GPa = 1 kN/mm²
1 MS/m = 1 m/Ω • mm²

Fabrication properties

Forming

Machinability	25%
(CuZn39Pb3 = 100 %)	
Capacity for being cold worked	excellent
Capacity for being hot worked	poor
Joining	
Resistance welding	good
Inert gas shielded arc welding	good
Hard soldering	good
Soft soldering	excellent

Corrosion resistance*

In general excellent resistance to corrosion in seawater, industrial atmosphere and to stress corrosion cracking.

Surface treatment

Polishing	mechanical	good
	electrolytic	fair
Electroplating		good

Heat treatment

Melting range	960-1020 °C
Hot working	700-800 °C
Soft annealing	500-700 °C, 1-3 h
Thermal stress-relieving	200-300 °C, 1-3 h

Product standards

Rod	EN 12163
Wire	EN 12166
Section	EN 12167
Tube	EN 12449

Mechanical properties (values can be achieved and are a function of size and form)

Reference values	from (soft/extruded)	to (hard)
R _m [MPa]	350	950
R _{p0.2} [MPa]	140	900
A ₅ [%]	70	35
HB	75	180

Forms and sizes available

Material										
Wieland	EN designation		Outside diameter		Wall thickness		Circumscribing diameter		Diameter / width across flats	
	Brief designation	Number	from	to	from	to	from*	to	from	to
B09/B10	CuSn8	CW453K	3	90	0.1	10				
Round tubes										
Drawn sections							2.5	100		
Extruded sections								100		
Sectional tubes								70		
Round and polygonal rods									2	100
Round wires									0.3	
Polygonal wires									2	

All values in mm

* Depending on the form, cross-sections in the lower size range are also available as wire.

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