

**Wieland-B44**  
CuSn4Pb4Zn4  
Leaded phosphor bronze

**Extruded and drawn products**



Material designation	
EN	CuSn4Pb4Zn4 CW456K
UNS	C54400

Chemical composition*	
Cu	balance
Sn	4%
Zn	4%
Pb	4%
P	0,2%

\* Reference values in % by weight

Physical properties*		
Electrical conductivity	MS/m %IACS	12 21
Thermal conductivity	W/(m·K)	86.5
Thermal expansion coefficient (0–300 °C)	10 <sup>-6</sup> /K	17.3
Density	g/cm <sup>3</sup>	8.9
Modulus of elasticity	GPa	103

\* Reference values at room temperature

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

Product standards	
Rod	EN 12164

**Material properties and typical applications**

**Wieland-B44** is a multi-alloy phosphor bronze containing 4 % tin, 4 % zinc and 4% lead. This makes it possible to achieve high mechanical strength and good spring properties. **Wieland-B44** exhibits excellent wear and corrosion resistance. It has good cold working and excellent machining properties. Special applications are spring contacts for the electronic industry as well as slide bearings and valve components. In the size range between 2 and 4 mm very high mechanical strength can be achieved.

**Types of delivery**

The Extruded and Drawn Products Division supplies bars, wire, sections and tubes. Please get in touch with your contact person regarding the available delivery forms, dimensions and tempers.

**Fabrication properties**

Forming		Surface treatment	
Machinability (CuZn39Pb3 = 100 %)	70 %	<b>Polishing</b>	
Capacity for being cold worked	good	mechanical	good
Capacity for being hot worked	poor	electrolytic	good
		Electroplating	excellent
Joining		Heat treatment	
Resistance welding (butt weld)	fair	Melting range	930–1000 °C
Inert gas shielded arc welding	poor	Soft annealing	500–650 °C 1–3 h
Gas welding	poor	Thermal stress relieving	200–250 °C 1–3 h
Hard soldering	fair		
Soft soldering	excellent		

**Trademarks**



Further information is provided in the brochure on WICONNEC.

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## Mechanical properties according to EN

Round rods										acc. to EN 12164	
Temper	Diameter		Tensile strength $R_m$ MPa min.	Yield strength $R_{p0.2}$ MPa min.	Elongation at rupture			Hardness HB			
	mm from	mm to			A100 %	A11.3 %	A %	min.	max.		
M	all		as manufactured – without specified mechanical properties								
R450	2	12	450	350	6	8	10	–	–		
H115	2	12	–	–	–	–	–	115	150		
R550	2	6	550	480	3	5	–	–	–		
H140	2	6	–	–	–	–	–	140	170		
R640	2	4	640	580	–	–	–	–	–		
H160	2	4	–	–	–	–	–	160	180		
R720	2	4	720	620	–	–	–	–	–		
H180	2	4	–	–	–	–	–	180	210		

Wieland-Werke AG

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