

# Wieland-B44

CuSn4Pb4Zn4 | Leaded phosphor bronze

## 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	12
	%IACS	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
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## 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 BU Extruded Products 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

Machinability (CuZn39Pb3 = 100 %)	70 %
Capacity for being cold worked	good
Capacity for being hot worked	poor

### Surface treatment

Polishing	
mechanical electrolytic	good good
Electroplating	excellent

## Joining

Resistance welding (butt weld)	fair
Inert gas shielded arc welding	poor
Gas welding	poor
Hard soldering	fair
Soft soldering	excellent

## Heat treatment

Melting range	930–1,000 °C
Soft annealing	500–650 °C 1–3 h
Thermal stress relieving	200–300 °C 1–3 h

## 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 $R_m$	Yield strength $R_{p0.2}$	Elongation %			Hardness			
	mm		MPa	MPa	A100	A11.3	A	HB			
	from	to	min.	min.	min.	min.	min.	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		