

# eco BS4®

CuSn5NiPS | lead-free phosphor bronze

## Material designation

EN	not standardized
UNS	not standardized

## Chemical composition<sup>1</sup>

Cu	Rest
Sn	5 %
Ni	0,6 %
P	0,3 %
S	0,3 %
Pb	max. 0,09 %

<sup>1</sup>Reference values in % by weight

## Physical properties<sup>2</sup>

Electrical conductivity	MS/m %IACS	8,5 14,7
Thermal conductivity	W/(m·K)	–
Thermal expansion coefficient (0-300°C)	10 <sup>-6</sup> /K	19
Density	g/cm <sup>3</sup>	8,8
Modulus of elasticity	GPa	119

<sup>2</sup>Reference values at room temperature

## Corrosion resistance<sup>3</sup>

Bronze alloys are known to have excellent resistance to corrosion in seawater, industrial atmosphere and to stress corrosion cracking.

<sup>3</sup>Reference values

## Product standards

Rod	not standardized
Wire	not standardized
Profile	not standardized
Hollow rod	not standardized
Tube	not standardized

## Material properties and typical applications

**eco BS4®** is a lead-free phosphor bronze, that has high strength with corresponding spring properties. The wear and corrosion resistance are very good. This phosphor bronze has good cold working capacity. Special application fields are springy electronic-contacta and bearings (plain bearings or valve parts). In the size range between 2 and 4 mm very high mechanical strength values can be achieved.

The mechanical properties are comparable to those of CuSn4Pb4Zn4 - CW456K.

This alloy is lead-free according to RoHS and ELV.

## 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

### Joining

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

### Surface treatment<sup>4</sup>

Polishing	
mechanical electrolytic	good fair
Electroplating	good

<sup>4</sup>for further fabrication properties, please call your contact person.

### Heat treatment

Melting range	–
Soft annealing	550 – 650 °C 2 – 3 h
Thermal stress relieving	200 – 250 °C 1 – 2 h

## Trademarks

wieland ecoline