

Wieland-B06/BV9

CuSn6 | Phosphor bronze

Material designation

EN	CuSn6 CW452K
UNS	C51900

Chemical composition*

Sn	6.3 %
P	B06 0.04 % BV9 0.2 %
Cu	balance
Pb	≤0.02 %

Wieland BV9

Pb	≤ 90 ppm
Cd	< 50 ppm

*Reference values in % by weight

Physical properties*

Electrical conductivity	MS/m	9
	%IACS	15
Thermal conductivity	W/(m·K)	75

Thermal expansion coefficient

(0–300 °C)	10 ⁻⁶ /K	18.5
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Density	g/cm ³	8.8
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Modulus of elasticity	GPa	118
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*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 12163
Wire	EN 12166
Section	EN 12167
Tube	EN 12449

Material properties and typical applications

Wieland-B06/BV9 is a phosphor bronze containing 6 % tin making it possible to achieve high mechanical strength and good spring properties. It also exhibits good resistance to wear and corrosion. Phosphor bronze has good cold working properties and can be machined satisfactorily with suitable tool parameters.

With its reduced contents of lead and cadmium our **Wieland-BV9** meets the requirements of the Oeko-Tex Standard 100 product class I and of the CPSIA.

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 tempsers.

Fabrication properties

Forming

Machinability 20 %
(CuZn39Pb3 = 100 %)

Capacity for being cold worked excellent

Capacity for being hot worked poor

Joining

Resistance welding (butt weld) good

Inert gas shielded arc welding excellent

Gas welding good

Hard soldering good

Soft soldering excellent

Surface treatment

Polishing

mechanical good

electrolytic good

Electroplating good

Heat treatment

Melting range 910–1,040 °C

Hot working 750–850 °C

Soft annealing 500–700 °C
1–3 h

Thermal stress relieving 200–300 °C
1–3 h

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Mechanical properties according to EN

Round rods/polygonal rods acc. to EN 12163											
Temper	Diameter		Width across flats		Tensile strength R _m	Yield strength R _{p0.2}		Elongation %			Hardness
	mm		mm		MPa	MPa		A100	A11.3	A	HB
	from	to	from	to	min.	min.	max.	min.	min.	min.	min. max.
M	all		all		as manufactured – without specified mechanical properties						
R340	2	60	2	60	340	–	270	35	40	45	– –
H080	2	60	2	60	–	–	–	–	–	–	80 110
R420	2	40	2	40	420	220	–	–	25	30	– –
H120	2	40	2	40	–	–	–	–	–	–	120 155
R520	2	8	–	–	520	400	–	4	5	–	– –
H150	2	8	–	–	–	–	–	–	–	–	150 180
R700	2	4	–	–	700	600	–	–	–	–	– –
H180	2	4	–	–	–	–	–	–	–	–	180 215

Rectangular rods acc. to EN 12167											
Temper	Thickness			Tensile strength R _m	Yield strength R _{p0.2}		Elongation %			Hardness	
	mm			MPa	MPa		A100	A11.3	A	HB	
	von		bis	min.	min.	max.	min.	min.	min.	min.	max.
M	all			as manufactured – without specified mechanical properties							
R420	3		40	420	220	–	20	25	30	–	–
H120	3		40	–	–	–	–	–	–	120	155
R520	3		6	520	400	–	3	5	–	–	–
H150	3		6	–	–	–	–	–	–	150	180

Tubes acc. to EN 12449											
Temper	Wall thickness		Tensile strength R _m	Yield strength R _{p0.2}		Elongation %		Hardness			
	mm		MPa	MPa		A100		HV		HB	
	max.		min.	min.	max.	min.		min.	max.	min.	max.
M	20		as manufactured – without specified mechanical properties								
R340	10		340	–	260	50	–	–	–	–	–
H070	10		–	–	–	–	–	70	105	65	100
R400	5		400	220	–	30	–	–	–	–	–
H105	5		–	–	–	–	–	105	150	100	145
R490	3		490	390	–	10	–	–	–	–	–
H140	3		–	–	–	–	–	140	175	135	170
R580	2		580	500	–	5	–	–	–	–	–
H170	2		–	–	–	–	–	170	–	165	–

Round wires acc. to EN 12166											
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.	max.	min.	min.	min.	min.	min.	max.
M	all		as manufactured – without specified mechanical properties								
R340	1.5	20	340	–	270	35	40	45	–	–	–
H085	1.5	20	–	–	–	–	–	–	85	115	–
R420	0.1	12	420	220	–	20	25	30	–	–	–
H125	1.5	12	–	–	–	–	–	–	125	165	–
R520	0.1	8	520	400	–	3	5	–	–	–	–
H155	1.5	8	–	–	–	–	–	–	155	190	–
R700	0.1	4	700	600	–	–	–	–	–	–	–
H190	1.5	4	–	–	–	–	–	–	190	225	–
R900	0.1	1.5	900	800	–	–	–	–	–	–	–
H245	–	–	–	–	–	–	–	–	245	–	–