

Wieland-B06/BV9

CuSn6
Phosphor bronze

Extruded and drawn products



Material designation	
EN	CuSn6 CW452K
UNS	C51900

Chemical composition*		
Sn		6,3 %
P	bei B06	0,04 %
	bei BV9	0,2 %
Cu		balance

* 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)		18,5
	10 ⁻⁶ /K	
Density	g/cm ³	8,8
Modulus of elasticity	GPa	118

* 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.

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 %)	20 %	Polishing	
Capacity for being cold worked	excellent	mechanical	good
Capacity for being hot worked	poor	electrolytic	good
		Electroplating	good
Joining		Heat treatment	
Resistance welding (butt weld)	good	Melting range	910–1040 °C
Inert gas shielded arc welding	excellent	Hot working	750–850 °C
Gas welding	good	Soft annealing	500–700 °C 1–3 h
Hard soldering	good	Thermal stress relieving	200–300 °C 1–3 h
Soft soldering	excellent		

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Mechanical properties according to EN

Round rods/polygonal rods acc. to EN 12163

Temper	Diameter		Width across flats		Tensile strength		Yield strength		Elongation at rupture			Hardness		
	mm from	mm to	mm from	mm to	R_m	$R_{p0.2}$		A100	A11.3	A	HB			
					MPa min.	MPa min.	MPa 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		Yield strength		Elongation at rupture			Hardness		
	mm from	mm to	R_m	$R_{p0.2}$		A100	A11.3	A	HB			
			MPa min.	MPa min.	MPa 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	Wallthickness	Tensile strength		Yield strength		Elongation at rupture			Hardness		
		R_m	$R_{p0.2}$	$R_{p0.2}$		A100	HV		HB		
		MPa min.	MPa min.	MPa 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		Yield strength		Elongation at rupture			Hardness		
	mm from	mm to	R_m	$R_{p0.2}$		A100	A11.3	A	HB			
			MPa min.	MPa min.	MPa max.	% 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	–		

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