

Wieland-Z29

CuZn39Pb2 | Machining brass

Material designation

EN	CuZn39Pb2 CW612N
UNS	C37700

Chemical composition*

Cu	59.5 %
Pb	2.3 %
Zn	balance

*Reference values in % by weight

Physical properties*

Electrical conductivity	MS/m	13.9
	%IACS	24
Thermal conductivity	W/(m·K)	109
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	21.1
Density	g/cm ³	8.44
Modulus of elasticity	GPa	102

*Reference values at room temperature

Corrosion resistance

Machining brass is generally quite resistant against organic substances as well as neutral or alkaline compounds.

Stress corrosion cracking should be taken into account, especially in an ammoniacal atmosphere and whilst under mechanical stress.

Dezincification in warm, acidic waters should also be taken into consideration.

Product standards

Rod	EN 12164 EN 12165
Wire	EN 12166
Section	EN 12167
Hollow rod	EN 12168

Material properties and typical applications

Wieland-Z29 is a brass with excellent machining and good hot-drop forging properties. It can be sufficiently cold worked. Due to its good ductility **Wieland-Z29** is also often used for the production of connectors with high torque requirements.

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 %)	90 %
Capacity for being cold worked	poor
Capacity for being hot worked	excellent

Joining

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

Surface treatment

Polishing	
mechanical	good
electrolytic	poor
Electroplating	excellent

Heat treatment

Melting range	880–895 °C
Hot working	650–800 °C
Soft annealing	450–600 °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 12164	
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								
R360	6	80	5	60	360	–	300	–	15	20	–	–	
H070	6	80	5	60	–	–	–	–	–	–	70	100	
R410	2	40	2	35	410	–	230	–	8	10	12	–	
H100	2	40	2	35	–	–	–	–	–	–	100	145	
R500	2	14	2	10	500	–	350	–	3	5	8	–	
H120	2	14	2	10	–	–	–	–	–	–	120	–	

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			
	from	to		min.	min.	max.	min.	min.	min.	min.	max.		
M	all			as manufactured – without specified mechanical properties									
R360	3	20		360	–	300	10	15	20	–	–		
H070	3	20		–	–	–	–	–	–	70	100		
R410	3	10		410	–	220	–	8	10	12	–		
H100	3	10		–	–	–	–	–	–	100	145		
R500	3	10		500	–	350	–	2	5	8	–		
H120	3	10		–	–	–	–	–	–	120	–		

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.	max.		
M	all			as manufactured – without specified mechanical properties									
R360	0,5	20		360	–	300	10	15	20	–	–		
H080	1,5	20		–	–	–	–	–	–	80	110		
R410	0,5	14		410	–	220	–	8	10	12	–		
H100	1,5	14		–	–	–	–	–	–	100	160		
R500	0,5	8		500	–	350	–	2	5	–	–		
H130	1,5	8		–	–	–	–	–	–	130	–		